

Stormwater Control Plan
for
Santa Barbara Polo Villas Residential Development

August 7, 2017
Updated April 16, 2018
Updated November 6, 2018
Updated August 30, 2019
Updated September 4, 2019

Client:

3250 - 3282 VIA REAL LLC
123 East Carrillo Street
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Project Number 2064144500

\\Us1377-f01\workgroup\2064\active\2064144500\engineering\drainage\Submittals\2018-11\Stormwater Quality

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Stormwater Control Plan Exhibit

- Pre-Project Condition
- Watersheds Post-Project Condition
- BMP Locations

Stormwater Control Measures Sizing Calculator (submit Excel file)

Appendices

Retention and Detention Calculations

NRCS Soil Report

This Stormwater Control Plan was prepared using the template dated January 2017.

I. Project Data

Table 1. Project Data

Project Name/Project Case Number	Santa Barbara Polo Villas Residential Development
Project Location	3250-3280 Via Real, Carpinteria APN 005-270-19, 29, 24
Project Phase No.	NA
Project Type and Description	The project proposes to construct 25 single family dwellings (estates and villas) and 15 condominiums (villas), for a total of 40 residential units. The existing 12-unit complex at 3250 Via Real will be demolished.
New Impervious Surface Area (sf)	453,457
Replaced Impervious Surface Area (sf)	44,800
Pre-Project Impervious Surface Area (sf)	44,800
Post-Project Impervious Surface Area (sf)	497,257
“Net Impervious” Area, if applicable	NA
Watershed Management Zone(s)	1
Tier	Tier 4
Design Storm Frequency Used (85 th or 95 th percentile) and Design Storm Depth (in)	95 th
Urban Sustainability Area, if applicable	NA

II. Setting

II.A. Project Location and Description

The project is located at 3250 – 3282 in the Toro Canyon Planning Area of Santa Barbara County. The project proposes to construct 25 single family dwellings (estates and villas) and 15 condominiums, for a total of 40 residential units. The existing 12-unit complex at 3250 Via Real will be demolished. Portions of the Garrapata Creek will be restored, and a public trail is proposed. The project location and site plan are illustrated in Figures A and B, respectively.

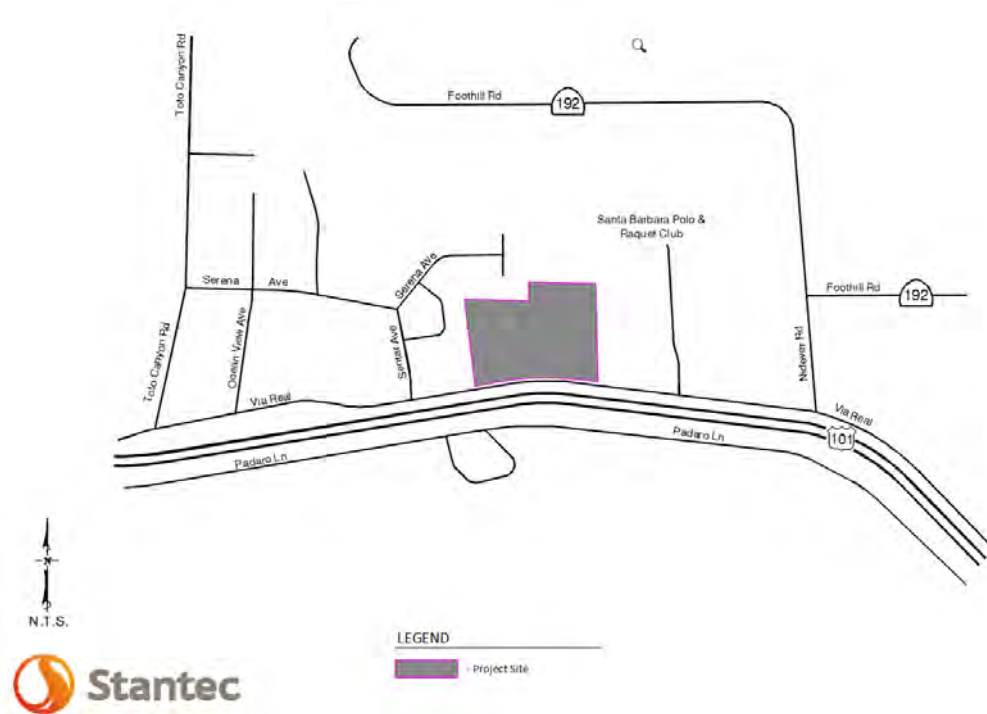


Figure A – Project Location

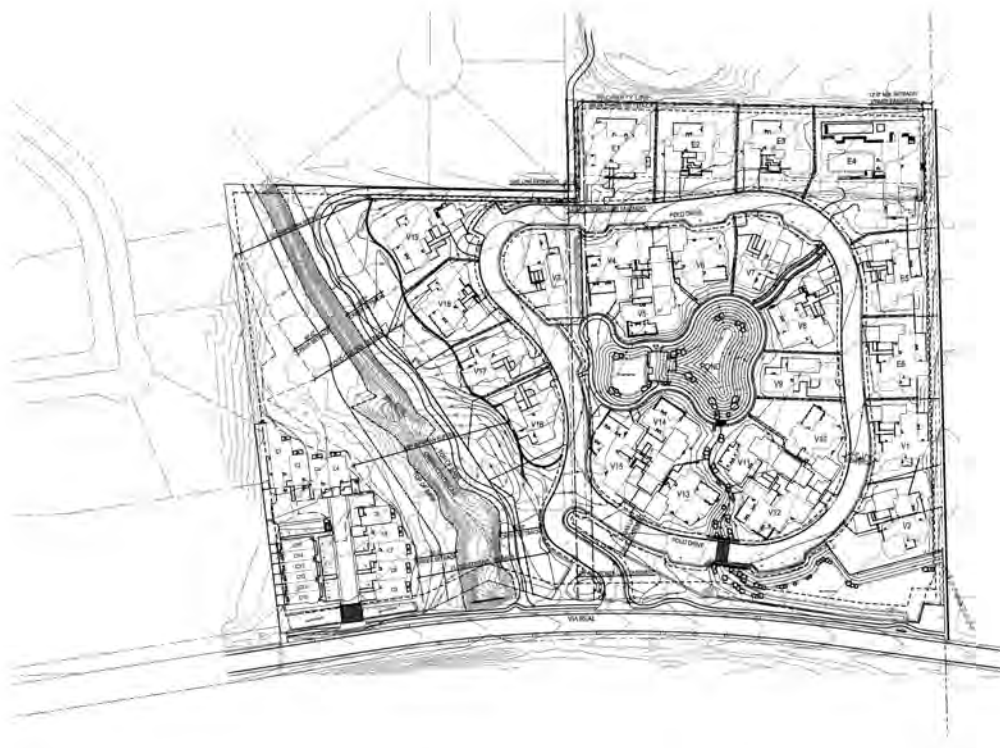


Figure B – Site Plan

II.B. Existing Site Features and Conditions

The project site is approximately 11.4 acres and is comprised of two (2) legal parcels which will be combined. The project site is divided by Garrapata Creek. Existing 12 unit residences are located on the westerly side of the creek. Polo practice facilities, horse stables, a well, a residence, and residential accessory structures are located on the easterly side of the creek. The site is bisected by an existing sewer and a 22" high-pressure gas main. The project site slopes mildly to Garrapata Creek from the westerly property boundary to the approximate midpoint of the project. The remainder of the site slopes gently to the southeast.

The current FIRM map includes a shallow flooding Flood Zone AO to the east of Garrapata Creek as shown in Figure C below. The Letter of Map Revision removes Zone AO from the firm map and has been used for the design of this project. The LOMR was issued 04/23/2019 and becomes effective 09/05/2019.

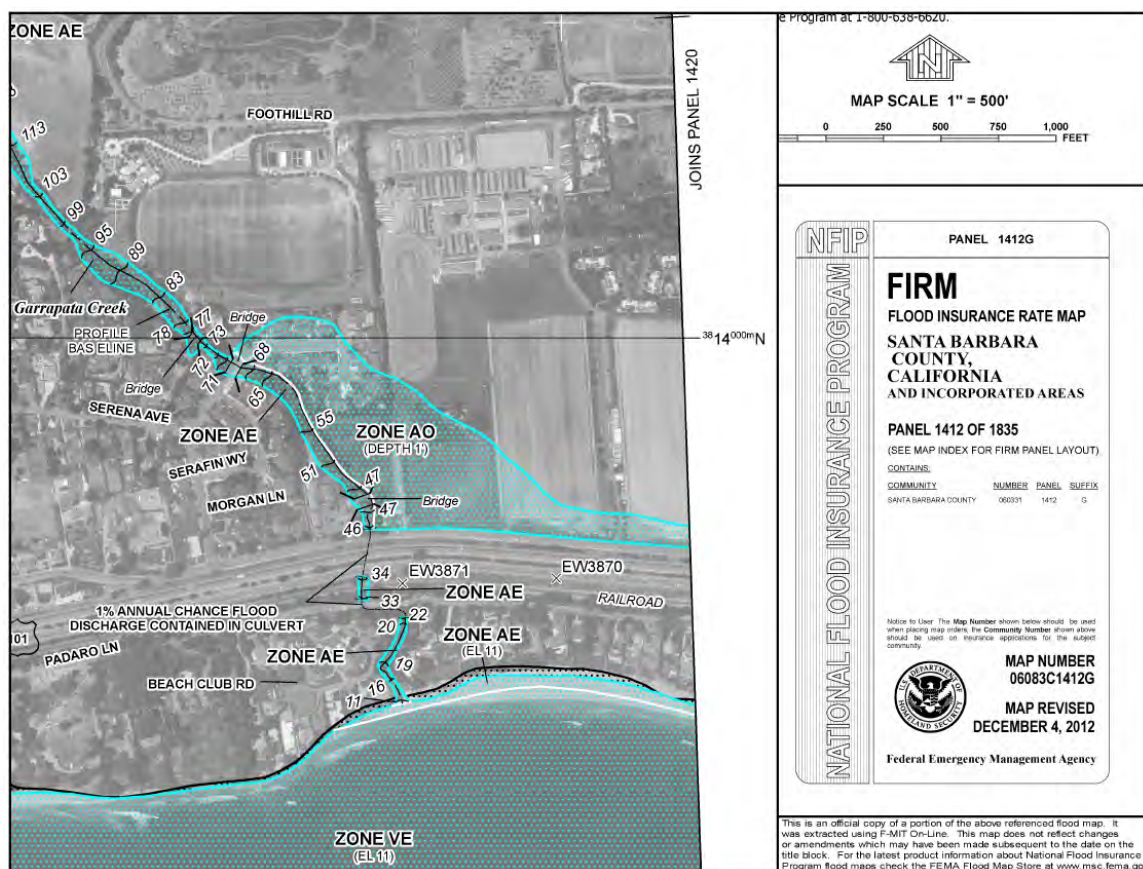


Figure C - FEMA Flood Map

The soils are indicated to be Hydrologic Soil Group Type B which have adequate infiltration capacity. See attached NRCS Hydrologic Soils Report in the Appendices.

The grounds west of Garrapata Creek are occupied by the existing apartments and a number of large trees. The creek is generally typical riparian habitat for the area. Horse paddocks and polo practice areas are located on the east side of the creek.

Drainage for the site is directed either to an 8' x 8' reinforced box culvert within Garrapata Creek or to a 2' x 4' reinforced box culvert under Via Real at the Southeast corner of the site. An existing

private 12" to 30" diameter storm drain runs within the project area along the easterly boundary and passes under Via Real, discharging to Caltrans facilities. This storm drain generally carries off-site stormwater through the project site.

II.C. Opportunities and Constraints for Stormwater Control

Where possible, open areas within the developed concept have been identified as stormwater treatment areas.

- An area in the center of the main development on the east side of Garrapata Creek had been identified for a water feature and storage for irrigation water. This has been expanded to provide a combined bioretention and detention basin labeled as Bioretention SCM D-1 and Pond C-2 on the watershed post-project condition exhibit in the attachments.
- An area at the southeast corner has been selected to receive stormwater runoff also for treatment via bioretention and detention labeled as Bioretention SCM A-1 on the watershed post-project condition exhibit in the attachments.
- Flow from portions of the site tributary to Garrapata Creek discharge from only roofs and patios and will be spread and released in a non-erosive manner to drain to Garrapata Creek.

The approach for detention is to shift as much of the existing area tributary to Garrapata Creek to the east and detain those flows such that they do not exceed the pre-project flow to the southeasterly corner of the project. This eliminates tributary area to Garrapata Creek, reducing the peak flow rates to that watershed to less than the pre-project condition.

The project constraints include:

- A 22" high-pressure gas line passing through the middle of the project.
- A sewer line adjacent to the high-pressure gas line.
- A Zone AO area covering most of the project east of Garrapata Creek. This will be eliminated through the processing of a Letter of Map Revision (LOMR) submitted to FEMA. The LOMR was issued 04/23/2019.

II.D. Summary of Design Approach for Meeting the Post-Construction Requirements

Watershed area from the existing westerly portion of the project site will be shifted to the easterly portion sufficient to eliminate the need for detention in the westerly portion of the proposed project site.

Almost all stormwater from the developed portions of the projects will be filtered through bioretention basins. The 95th percentile storm will be retained onsite through the use of bioretention and detention, and the peak flowrates will be reduced to below the pre-project flowrates for the 2-, 5-, and 10-year storm events. These discharge locations include Garrapata Creek, the southeasterly corner of the project, and the project as a whole. The Garrapata Creek and the southeasterly corner of the project are labeled on the watershed post-project condition exhibit in the attachments. The flow to the project as a whole is defined as the combination of the Garrapata Creek and southeasterly corner flowrates

III. Low Impact Development Design Strategies

III.A. Site Design and Runoff Reduction (Performance Requirement No.1)

Runoff reduction is accomplished with detention basins.

III.A.1. Limit disturbance to creeks and natural drainage features, if applicable

A large portion of the site is maintained undeveloped through the use of the riparian setback and public trail areas.

III.A.2. Minimize compaction of highly permeable soils, if applicable

Bioretention basin areas will be minimally compacted. Underlying soils will not be compacted.

III.A.3. Limit of clearing and grading of native vegetation to minimum area needed, if applicable

Project development areas are concentrated away from the Garrapata Creek, leaving those areas undeveloped and untouched except for creek restoration. Creek centerline, top of bank, fifty (50) foot top of bank setback, and the ESH riparian buffer are labeled on the watershed post project conditions exhibit in the attachments.

III.A.4. Apply setbacks from creeks, wetlands, and riparian habitats, if applicable

A 50 feet flood setback and a larger riparian habitat setback have been provided.

III.A.5. Minimize stormwater runoff using one or more of the following site design measures:

- Stormwater runoff has been minimized by collecting rainwater into a central pond for use in irrigation and infiltrating the 95th percentile runoff via bioretention ponds.

III.A.6. Consideration of drainage as a design element within the project

Drainage features are used as the significant open spaces for this project including riparian areas, central and southeasterly basin areas.

Surface flow is used for overflow and overland escape facilities.

III.A.7. Tier 3 projects must include:

The development envelopes consist of areas to the west and east of Garrapata Creek. West of the creek, Drainage Area F will consist of low-cost housing. East of the creek, Drainage Areas A, B, C, D, and G will consist of single family dwellings interspersed with amenities. A riparian setback at least 50 feet from Garrapata Creek has been established and development is clustered on other parts of the project site.

III.B. Site Constraints

III.B.1. Limitation of development envelope due to site constraints including:

- High-pressure gas line.
- Riparian setback.
- Existing 20' sewer easement

III.C. Dispersal of Runoff to Pervious Areas

Runoff of portions of residences in Drainage Area E-1, consisting of roof runoff and patio runoff, tributary to Garrapata Creek will be directed to Garrapata Creek by overland flow in an unconcentrated and shallow manner.

III.C.1. Reduce amount of runoff for which Structural Control Measures are required.

Approximately 2.4 acres adjacent to Garrapata Creek will be free of structural improvements (except for a pedestrian trail). It will be reserved for riparian habitat.

IV. Documentation of Drainage Design

IV.A. Descriptions of each Drainage Management Area

Watersheds A, C, and D are intensely developed and discharge to centralized treatment ponds. Due to the intricate combined bioretention/detention function, the bioretention analysis was completed in HydroCAD instead of the County spreadsheet. Data for these analyses is attached in the appendices.

Table 2. Drainage Management Areas

DMA Name	DMA Type	Area (sf)	Surface type	Drains to
A-1	Bioretention Basin A-1	0 21238	Impervious Landscape	SCM A-1 and then Offsite
A-2	Single Family Dwellings	39541 23489	Road/Roof & Hardscape Landscape	SCM A-1 and then Offsite
A-3	Single Family Dwellings	27745 9250	Road/Roof & Hardscape Landscape	SCM A-1 and then Offsite
A-4	Single Family Dwellings	6709 1616	Road/Roof & Hardscape Landscape	SCM A-1 and then Offsite
A-5	Single Family Dwellings	3828 6530	Road/Roof & Hardscape Landscape	SCM A-1 and then Offsite
A-6	Single Family Dwellings	6577 1174	Road/Roof & Hardscape Landscape	SCM A-1 and then Offsite
A-7	Single Family Dwellings	9552 2537	Road/Roof & Hardscape	SCM A-1 and then Offsite

DMA Name	DMA Type	Area (sf)	Surface type	Drains to
			Landscape	
B-1	Landscape areas	0	Road/Roof & Hardscape	To the east off site
		9612	Landscape	
C-1	Single Family Dwellings	41585	Road/Roof & Hardscape	To Pond C-1 and then to SCM A-1
		16681	Landscape	
C-2	Single Family Dwellings and Storage Pond	11492	Roof, Hardscape & Pond	To Pond C-1 and then to SCM A-1
		26359	Landscape	
D-1	Single Family Dwellings	30439	Road/Roof & Hardscape	SCM D-1 and then off-site through outlet in Southeast corner
		28168	Landscape	
E-1	Various Single Family Dwellings	8835	Roof & Hardscape	Garrapata Creek
		89	Landscape	
E-2	Creek setback and Riparian Vegetation	126537	Open Space	Garrapata Creek
F-1	High Density Residential	17168	Road/Roof & Hardscape	SCM F (Chamber Filter)
		3607	Landscape	
F-2	High Density Residential	10546	Road/Roof & Hardscape	SCM F (Chamber Filter)
		2370	Landscape	
G-1	Roadway	2600	Road/Roof & Hardscape	Via Real
		2887	Landscape	

Drainage Management Area Narrative Descriptions

DMA A-1 totaling 21238 square feet, drains bioretention basin area. DMA A-1 drains to culvert under Via Real.

DMA A-2 totaling 63030 square feet, drains roof, hardscape, landscape, and road area. DMA A-2 drains to SCM-A-1.

DMA A-3 totaling 36995 square feet, drains roof, hardscape, landscape, and road area. DMA A-3 drains to SCM-A-1.

DMA A-4 totaling 8325 square feet, drains roof, hardscape, landscape, and road area. DMA A-4 drains to SCM-A-1.

DMA A-5 totaling 10358 square feet, drains roof, hardscape, landscape, and road area. DMA A-5 drains to SCM-A-1.

DMA A-6 totaling 7751 square feet, drains roof, hardscape, landscape, and road area. DMA A-6 drains to SCM-A-1.

DMA A-7 totaling 12089 square feet, drains roof, drains landscape and road area. DMA A-7 drains to SCM A-1.

DMA B-1 totaling 9612 square feet, drains landscape area. DMA B-1 drains to adjacent property to the east (APN 005-270-042).

DMA C-1 totaling 58266 square feet, drains roof, hardscape, landscape, and road area. DMA C-1 drains to SCM-A-1 after being detained in Pond C-2.

DMA C-2 totaling 37851 square feet, drains roof, hardscape, landscape and road areas. DMA D5-R drains to SCM-A-1 after being detained in Pond C-2.

DMA D-1 totaling 58203 square feet, drains roof, hardscape, landscape and road areas. DMA D-1 drains to SCM-D-1.

DMA E-1 totaling 8935 square feet, drains roof, hardscape, and landscape areas. DMA E-1 sheetflows shallow, unconcentrated stormwater into DMA E-2.

DMA E-2 totaling 125537 square feet, drains restored riparian habitat and creek overbank areas. DMA E-2 drains to Garrapata Creek and is self-treating.

DMA F-1 totaling 20775 square feet, drains roof, hardscape, landscape, and road area. DMA F-1 drains to SCM F (bioretention basin with storage enhanced with chambers) and ultimately to Garrapata Creek.

DMA F-2 totaling 12916 square feet, drains roof, hardscape, landscape, and road area. DMA F-2 drains to SCM F (bioretention basin with two (2) storage enhanced with chambers) and ultimately to Garrapata Creek.

DMA G-1 totaling 5588 square feet, drains landscape, and road area. DMA G-1 drains to Via Real right of way.

IV.B. Description of each Stormwater Structural Control Measure

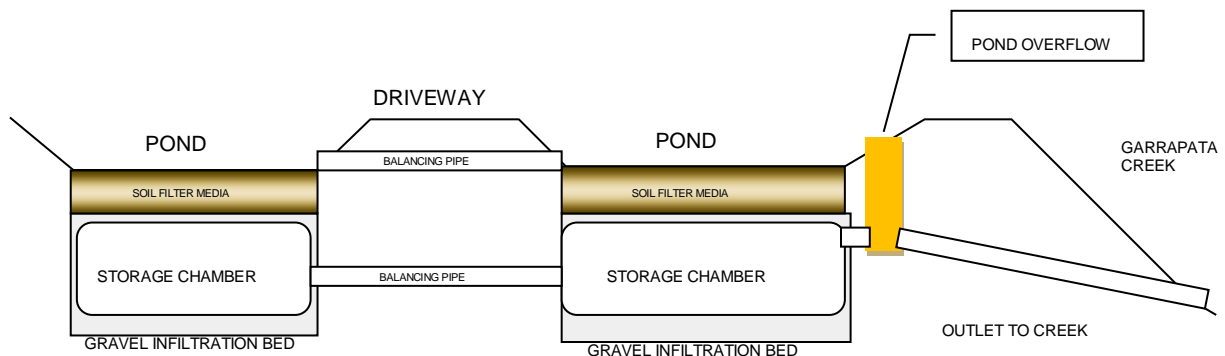
SCM A-1 (Bioretention), totaling 7578 square feet, is a bioretention basin and located at the southeast corner of the project. SCM A-1 treats and retains runoff from DMAs A-1 through A-7. Low flows exceeding the 95th percentile flowrate are collected in a perforated underdrain and metered through a catchbasin outlet off-site to an existing 2' x 4' reinforced concrete box culvert under Via Real. Emergency escape is provided by a 4'x1.5' opening in the property line wall to Via Real at an invert elevation of 45.7'.

SCM C-2 (Pond), totaling 6349 square feet, is a detention basin and located in the central area east of Garrapata Creek. SCM C-2 detains stormwater runoff from DMAs C-1 and C-2. Pollutants discharging to the pond will settle to the bottom of the pond. It is a lined storage pond with a static level of elevation 44 and an emergency overflow elevation of 48'. Low flows are collected via pipeline to Bioretention SCM A-1 for treatment. High flow bypass discharges to an artificial creek bed which drains to Bioretention SCM A-1.

SCM D-1 (Bioretention), totaling 1956 square feet, is a bioretention basin and located adjacent to and west of Pond SCM C-2 in the central portion of the project. Bioretention SCM D-1 treats and retains runoff from DMA D-1. Low flows exceeding the 95% are collected in a perforated underdrain and metered through a catchbasin to a pipeline that bypasses Bioretention SCM A-1 and discharges off-site in Via Real right of way. Emergency overflow will be to the adjacent Pond SCM C-2.

SRA E-2, totaling 125537square feet, is an area retained in its natural condition or restored, as necessary. It includes a portion of Garrapata Creek and receives flow from DMAs E-1 and E-2.

SCM F (Bioretention), totaling 1771 square feet, is a bioretention basin with enhanced chamber storage located at the southwest corner of the project on the westerly side of Garrapata Creek. Bioretention SCM F treats and retains runoff from DMAs F-1 and F-2 as it enters the basins on either side of the driveway via surface flow. Underground chambers are used to increase the storage volume for retention. A perforated underdrain receives flows exceeding the 95th percentile flow. Flow from Bioretention SCM F discharges to Garrapata Creek. Emergency overflow is to Garrapata Creek.



Tributary Area = 33693 sf

Soil Media Surface Area = 1771 sf

Soil Media Surface area as a percent of the tributary area = 5.26 percent

IV.C. Tabulation and Sizing Calculations for Structural Control Measures

See attached DMA calculation sheet, spreadsheets, and HydroCAD (Post Project Condition_ output as follows:

SCM A-1 (bioretention), Tributary DMAs and HydroCAD Post Construction Retention Calcs pages 7-8 (95th Percentile Storm), 19-20 (2-year storm), 31-32 (5-year storm), and 43-44 (10-year storm)

Pond C-2 (detention only), Tributary DMAs and HydroCAD Post Construction Detention Calc pages 9 (95th Percentile Storm), 21 (2-year storm), 33 (5-year storm), and 45 (10-year storm)

SCM D-1 (bioretention), Tributary DMA and HydroCAD Post Construction Retention Calc pages 10 (95th Percentile Storm), 22 (2-year storm), 34 (5-year storm), and 46 (10-year storm)

SCM E-2 (bioretention), Tributary DMAs and HydroCAD Post Construction Retention Calcs pages 10-11 (95th Percentile Storm), 22-23 (2-year storm), 34-35 (5-year storm), and 46-47 (10-year storm)

SCM F (bioretention), Tributary DMAs and HydroCAD Post Construction Retention Calcs pages 11 (95th Percentile Storm), 23 (2-year storm), 35 (5-year storm), and 47 (10-year storm)

Include the following note on final plans:

Bioretention facilities shall be protected during construction from sediment and erosion. Heavy machinery will not compact soils in areas of infiltration. If any sediment discharges into LID facility, contractor shall restore to performance design specifications as verified by civil engineer. Contractor shall notify grading or building inspector 24-hours prior to installation of gravel and bioretention soil to verify material quality.

V. Source Control Measures

V.A. Site activities and potential sources of pollutants

See Table 3 on the next page for site activities and potential sources of pollutants.

V.B. Source Control BMPs Table

Designation	Description	Areas that drain to it
SRA - E-2 (Self-retaining Area)	SRA E-2 , totaling 125537 square feet, is an area retained in its natural condition or restored, as necessary. It includes a portion of Garrapata Creek. It receives flow from DMAs E-1 and E-2.	E-1

Table 3. Source Control BMPs

Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
<p>Streets and Driveways</p> <p>Illicit dumping in streets or right of way</p> <p>Oil/heavy metals, etc from roads and automobiles</p> <p>Trash</p>	<p>Show on final drawings:</p> <p>Mark all street inlets with the words “No Dumping! Flows to the Ocean.”</p> <p>Direct street drainage to bioretention basins.</p> <p>Periodically remove trash from the surface of the bioretention basins, catchbasins, and streets.</p>	<ul style="list-style-type: none"> • Maintain and periodically repaint or replace inlet markings. • Provide stormwater pollution prevention information to new site owners, lessees, or operators. • See applicable operational BMPs in Fact Sheet SC-44, “Drainage System Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com • Include the following in lease agreements: “Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.”
Landscape/ Outdoor Pesticide Use/Building and Grounds Maintenance	<p>Show on final drawings:</p> <ul style="list-style-type: none"> • locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. • self-retaining landscape areas. • stormwater treatment and retention SCMs. 	<p>State that final landscape plans will accomplish all of the following.</p> <ul style="list-style-type: none"> • Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. • Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides

		<p>that can contribute to stormwater pollution.</p> <ul style="list-style-type: none"> • Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. • Consider using pest-resistant plants, especially adjacent to hardscape. • To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.
<p>Pool, bioretention ponds, detention basin.</p> <p>Sediment, nutrients, trash, bacteria, organics</p>	<p>Show on final drawings:</p> <p>all water features</p>	<p>Do not use copper-based algicides. Control algae with chlorine or other alternatives, such as sodium bromide.</p> <p>Prevent backflow of pool into storm drainage devices.</p> <p>Clean pool filters in appropriate locations – not in street.</p> <p>Reduce fertilizer use in areas around ponds.</p> <p>Discourage public from feeding birds.</p> <p>Prevent landscape wastes from entering ponds and basins.</p> <p>Provide trash receptacles.</p> <p>Drain and clean detention basin as needed.</p>
<p>Refuse areas</p> <p>Trash, chemical leakage,</p>	<p>Show on final drawings:</p> <p>Show where site refuse and recycled materials will be</p>	<p>Provide adequate number of receptacles.</p> <p>Inspect receptacles regularly;</p>

organics	handled and stored for pickup.	<p>repair or replace leaky receptacles.</p> <p>Keep receptacles covered.</p> <p>Prohibit/prevent dumping of liquid or hazardous wastes. Post “no hazardous materials” signs.</p> <p>Inspect and pick up litter daily and clean up spills immediately.</p>
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VI. Stormwater Facility Maintenance

Maintenance activities for bioretention BMPs may include:

- Periodic removal of trash
- Inspection of facilities before and after runoff events
- Replacement of surface mulch as needed
- Maintenance of plants
- Drain and clean detention basin

VII. Stormwater Control Plan/Construction Documents Cross-Checklist

Not appropriate for this level of design. A detailed cross check list will be included for the final design.

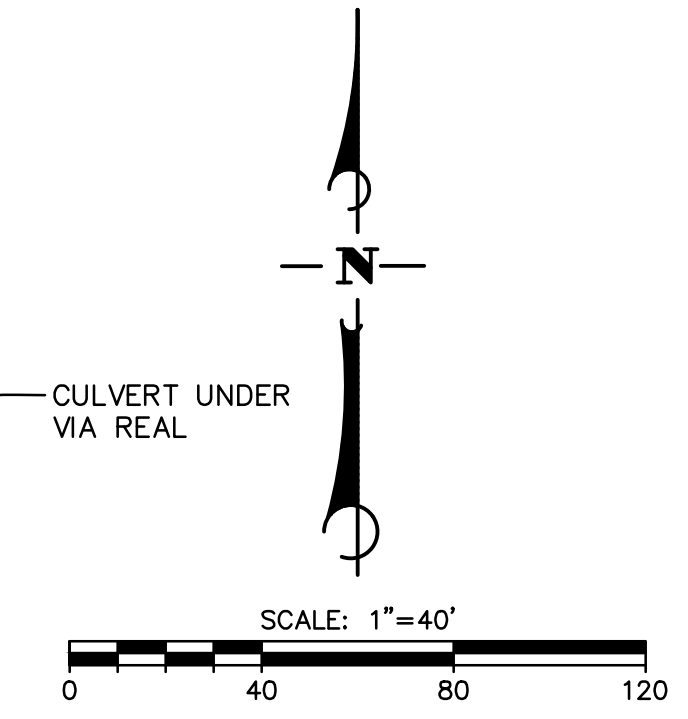
VIII. Certifications

The preliminary design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of the Santa Barbara County Project Clean Water's Stormwater Technical Guide.

Appendices

- Pre-Project Condition Exhibit
- Watershed Post Project Conditions Exhibit
- BMPs Exhibit
- Preliminary Grading and Drainage Plan
- Watershed Management Zone Image
- Requirements for Large Development Projects
- On-Site Drainage Summary (95th Percentile Event)
- Pond Geometry
- Pre- and Post-Construction Check
- HydroCAD calculations
- NRCS Hydrologic Soil Report
- Polo Estates Meeting Notes and Communications

DESIGN DESIGNED CHECKED CHECKED PLOT DATE: 10/12/2018 4:59:27 PM PLOT BY: Rossi, Emilio PLOT DATE: 10/16/2018 10:36:59 AM




FOR REDUCED PLANS
ORIGINAL SCALE IN INCHES

0 1 2 3

NO.	DATE	REVISION BLOCK	APPD.

PREPARED FOR:



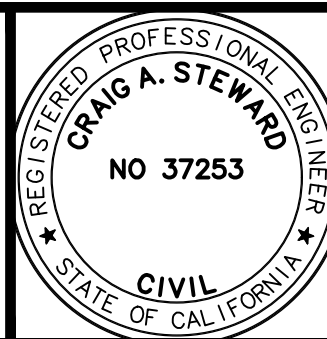
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PROJECT ENGINEER XXXXX
PROJECT ENGINEER R.C.E.

PREPARED BY:

XX/XX/XXXX
DATE

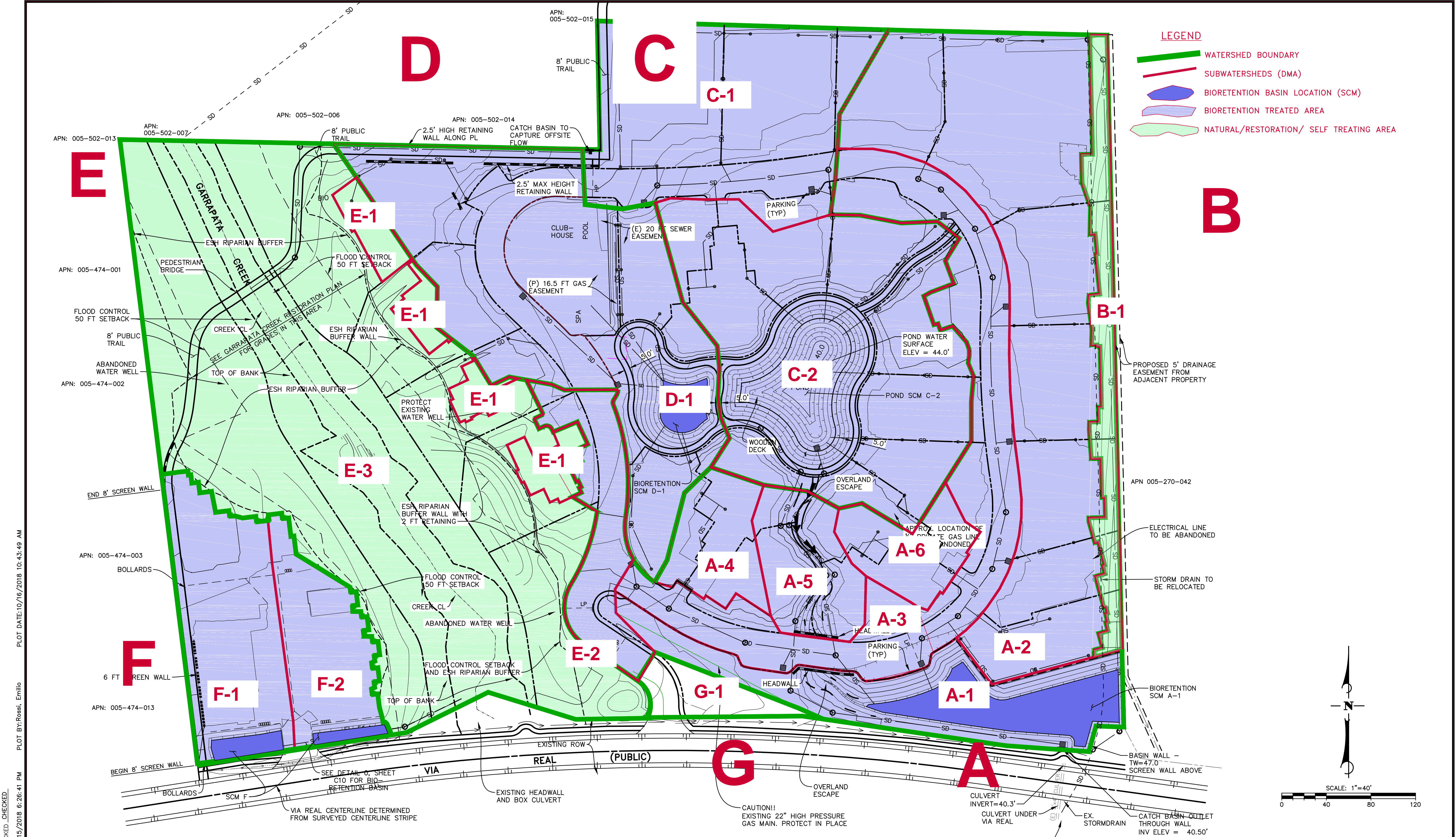


**PRE-PROJECT CONDION
DRAINAGE ANALYSIS
SANTA BARBARA POLO VILLAS
RESIDENTIAL DEVELOPMENT**

CARPINTERIA, CALIFORNIA

STANTEC PROJECT NO. 2064144500
SHEET 1 OF 3
PLAN DATE 10/16/2018

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FOR REDUCED PLANS
ORIGINAL SCALE IN INCHES

0 1 2 3

NO.	DATE	REVISION BLOCK	APPD.

PREPARED FOR:

PREPARED BY:

Stantec

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PROJECT ENGINEER XXXXX XX/XX/XXXX
PROJECT ENGINEER R.C.E. DATE

**BMPS
STORMWATER CONTROL PLAN
SANTA BARBARA POLO VILLAS
POST PROJECT CONDITION**

SANTA BARBARA COUNTY, CALIFORNIA

STANTEC PROJECT NO.
2064144500

SHEET
3 OF 3

PLAN DATE
10/15/2018

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Design Team



Issue:

2017.08.07
DEVELOPMENT PLAN SUBMITTAL

2018.02.28
SBAR SUBMITTAL

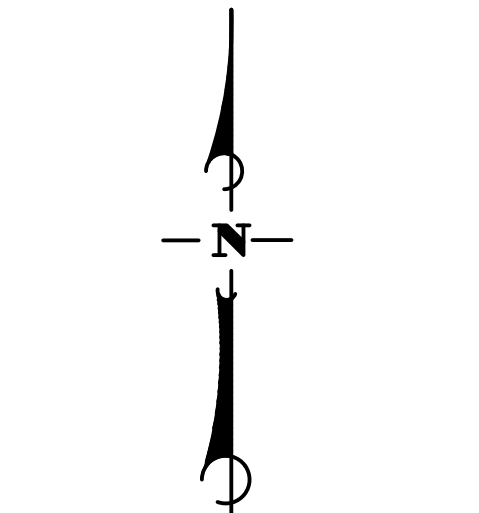
2018.11.30
COUNTY PLANNING COMMISSION REVIEW

2019.08.30
REVISED COUNTY PLANNING COMMISSION REVIEW

SANTA BARBARA POLO VILLAS RESIDENTIAL DEVELOPMENT

3250-3282 Via Real
Carpinteria, CA

Case No. 17TRM-00000-00002
Vesting Tentative Tract Map No. TT14831



SCALE: 1"=80'
0 80 160 240

PROJECT NO: 2064144500
DATE: 2019.09.04
DRAWN BY: VTR/ECR
CHECKED BY: DBE

SHEET TITLE

General Information and Notes

C1

VESTING TENTATIVE TRACT MAP 14,831

COUNTY OF SANTA BARBARA, CA

LEGAL DESCRIPTION

PARCEL ONE:

ALL THAT PORTION OF THE OUTSIDE PUEBLO LAND OF THE CITY OF SANTA BARBARA, SITUATED IN THE COUNTY OF SANTA BARBARA, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:
BEGINNING AT THE MOST NORTHEASTERLY CORNER OF THAT TRACT OF LAND DESCRIBED IN THE DEED TO THE STATE OF CALIFORNIA, RECORDED JULY 20, 1964 AS INSTRUMENT NO. 30708 IN BOOK 2060, AT PAGE 1134 OF OFFICIAL RECORDS, RECORDS OF SAID COUNTY;
THENCE ALONG THE NORTHERLY LINE OF SAID STATE OF CALIFORNIA TRACT OF LAND, THE FOLLOWING COURSES AND DISTANCES: NORTH 72°49'43" WEST, 5.38 FEET; SOUTH 63°46'48" WEST, 81.88 FEET; AND SOUTH 81°05'30" WEST, 188.92 FEET TO THE NORTHWESTERLY CORNER OF SAID STATE OF CALIFORNIA TRACT OF LAND, AND A POINT ON THE WESTERLY LINE OF THAT TRACT OF LAND DESCRIBED IN THE DEED TO JOSEPH OSIEL, A WIDOWER, RECORDED JULY 12, 1949 AS INSTRUMENT NO. 8507 IN BOOK 863, AT PAGE 82 OF OFFICIAL RECORDS, RECORDS OF SAID COUNTY; THENCE ALONG THE WESTERLY, NORTHERLY AND EASTERLY LINES OF SAID OSIEL TRACT OF LAND, THE FOLLOWING COURSES AND DISTANCES: NORTH 7°55' WEST, 558.74 FEET, MORE OR LESS, TO THE NORTHWEST CORNER THEREOF; SOUTH 89°46' EAST, 430 FEET; AND SOUTH 2°19' EAST, 432 FEET TO THE NORTHEASTERLY CORNER OF THE TRACT OF LAND DESCRIBED IN THE DIRECTOR'S DEED TO WILLIAM A. SLOMINSKI, ET AL., RECORDED SEPTEMBER 18, 1964 AS INSTRUMENT NO. 40091 IN BOOK 2070 AT PAGE 612 OF OFFICIAL RECORDS, RECORDS OF SAID COUNTY; THENCE CONTINUING SOUTH 2°19' EAST 81.97 FEET TO THE SOUTHEASTERLY CORNER OF SAID SLOMINSKI TRACT OF LAND; THENCE ALONG THE SOUTHERLY LINE OF SAID SLOMINSKI TRACT OF LAND SOUTH 88°21'58" WEST 32.81 FEET AND NORTH 73°39'06" WEST, 76.65 FEET TO THE POINT OF BEGINNING.
APN# 005-270-029

PARCEL TWO:

BEGINNING AT THE SOUTHEAST CORNER OF TRACT NO. 10,132, UNIT 2 AS SHOWN ON MAP FILED IN BOOK 58, PAGE 74 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY;
THENCE ALONG THE EASTERLY BOUNDARY LINE OF SAID TRACT, NORTH 2° 17'30" EAST 113.87 FEET TO THE SOUTHWEST CORNER OF PARCEL "C" OF PARCEL MAP NO. 11,642 AS SHOWN ON MAP FILED IN BOOK 12, PAGE 41 OF PARCEL MAPS IN THE OFFICE OF SAID COUNTY RECORDER;
THENCE ALONG THE SOUTHERLY BOUNDARY LINE OF SAID PARCEL "C", SOUTH 89°51'20" EAST 457.86 FEET TO THE INTERSECTION WITH THE EASTERLY BOUNDARY LINE OF THE LAND DESCRIBED AS PARCEL FOUR IN THE DEED TO HOWARD B. LEWIS, ET UX., RECORDED JULY 21, 1943, AS INSTRUMENT NO. 5813, IN BOOK 571, PAGE 430, OF SAID OFFICIAL RECORDS;
THENCE ALONG SAID EASTERLY LINE TO AND ALONG THE EASTERLY BOUNDARY LINE OF THE LAND CONVEYED TO JAMES R. CALLAWAY, ET UX., BY DEED RECORDED JUNE 17, 1971, AS INSTRUMENT NO. 18507, IN BOOK 2351, PAGE 1315 OF SAID OFFICIAL RECORDS, SOUTH 2°45' EAST 612 FEET MORE OR LESS TO THE NORTHEAST CORNER OF THE LAND DESCRIBED IN THE QUITCLAIM DEED TO THE STATE OF CALIFORNIA RECORDED DECEMBER 4, 1951, AS INSTRUMENT NO. 18769, IN BOOK 1034, PAGE 343 OF SAID OFFICIAL RECORDS;
THENCE ALONG THE NORTHERLY BOUNDARY LINE OF SAID LAST MENTIONED LAND, NORTH 87°34' WEST 25.00 FEET TO THE NORTHEAST CORNER OF THE LAND DESCRIBED IN THE DEED TO THE STATE OF CALIFORNIA RECORDED MAY 16, 1951, AS INSTRUMENT NO. 7629, IN BOOK 991, PAGE 59 OF SAID OFFICIAL RECORDS;
THENCE ALONG THE NORTHERLY BOUNDARY LINE OF SAID LAST MENTIONED LAND, SOUTH 14°16'30" WEST 24.46 FEET AND NORTH 89°29'40" WEST 73.90 FEET TO THE MOST EASTERLY CORNER OF THE LAND DESCRIBED IN THE DEED TO THE STATE OF CALIFORNIA RECORDED JUNE 17, 1964, AS INSTRUMENT NO. 25323, IN BOOK 2055, PAGE 87 OF SAID OFFICIAL RECORDS;
THENCE ALONG THE NORTHERLY BOUNDARY LINE OF SAID LAST MENTIONED LAND, NORTH 82°41'07" WEST 184.78 FEET TO AN ANGLE POINT THEREON;
THENCE CONTINUING ALONG SAID NORTHERLY LINE, TO AND ALONG THE SOUTHERLY BOUNDARY LINE OF THE LAND DESCRIBED IN THE DEED TO GEORGE WILLIAM HOLMAN, ET AL., RECORDED AUGUST 13, 1964, AS INSTRUMENT NO. 34720, IN BOOK 2064, PAGE 1463, OF SAID OFFICIAL RECORDS, SOUTH 89°11'21" WEST 170.38 FEET TO THE INTERSECTION WITH THE SOUTHERLY PROLONGATION OF THE EASTERLY BOUNDARY LINE OF THE LAND DESCRIBED IN THE DEED TO FAY C. CHAMBERS, ET UX., RECORDED JANUARY 11, 1951, AS INSTRUMENT NO. 524, IN BOOK 962, PAGE 271 OF SAID OFFICIAL RECORDS;
THENCE ALONG SAID PROLONGATION AND EASTERLY LINE, NORTH 1° 29'37" WEST 513 FEET MORE OR LESS TO THE POINT OF BEGINNING.
APN# 005-270-017, 019, 033, 034

UTILITY PROVIDERS

WATER:	CARPINTERIA VALLEY WATER DISTRICT
SEWER DISPOSAL:	CARPINTERIA SANITARY DISTRICT
GAS:	SOUTHERN CALIFORNIA GAS
ELECTRIC:	SOUTHERN CALIFORNIA EDISON
CABLE TV:	COX COMMUNICATION
TELEPHONE:	FRONTIER

PROJECT INFORMATION

AREA GROSS +/- 11.48 ACRES
AREA NET +/- 7.80 ACRES

ADDRESS: 3250-3282 VIA REAL

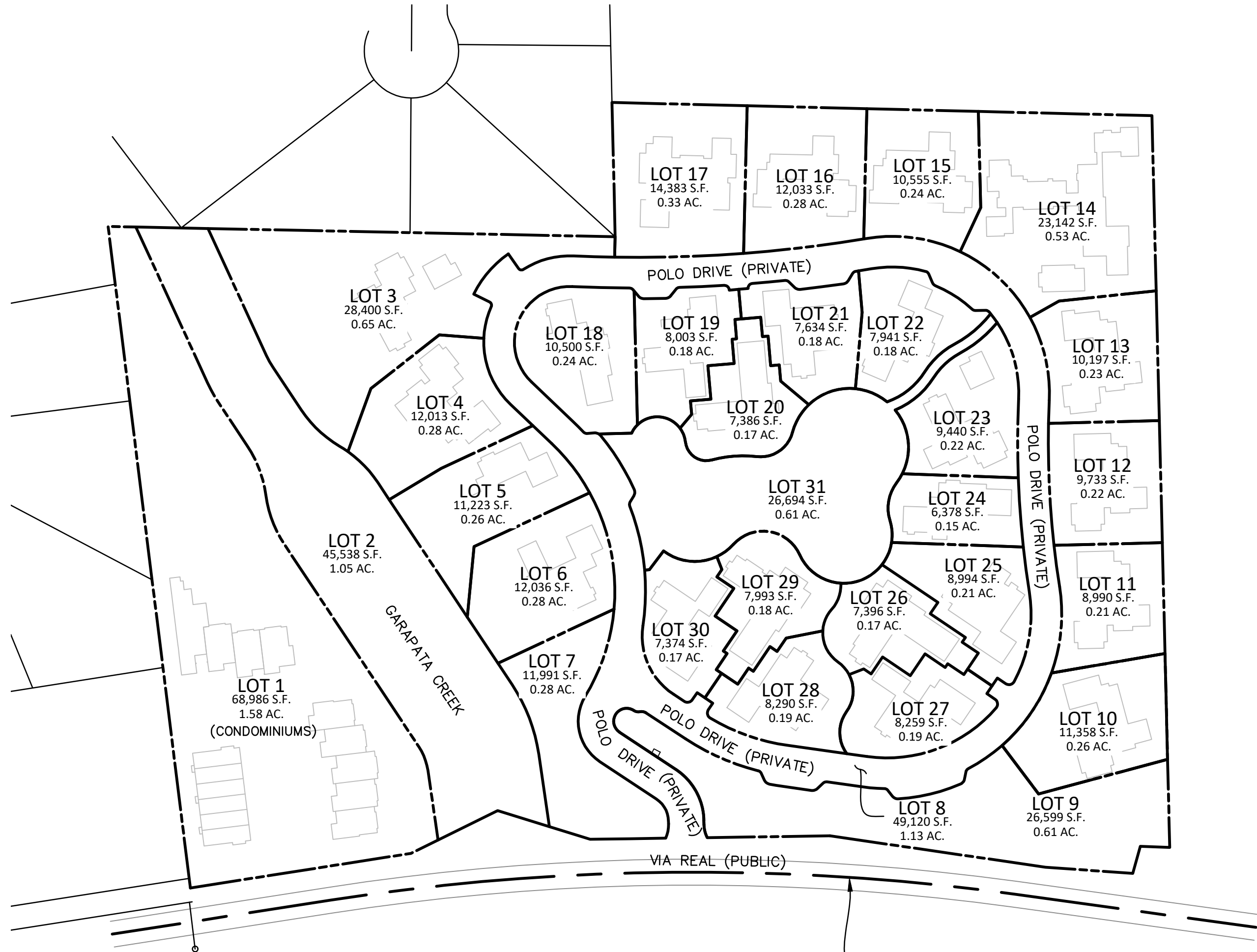
APN: 005-270-017; 005-270-019, 029, 033, & 034

PROJECT INCLUDES FORTY (40) NEW DWELLING UNITS:
TWENTY-FIVE (25) SINGLE FAMILY HOMES
FIFTEEN (15) CONDOMINIUM HOMES

LOT DATA TABLE	
TOTAL NUMBER OF LOTS	31
NUMBER OF SINGLE FAMILY LOTS	25
NUMBER OF CONDOMINIUM LOTS	1 (15 HOMES)
NUMBER OF COMMON AREA LOTS (5)	GARAPATA CREEK (LOT 2)
	OPEN SPACE (LOT 7)
	POLO DRIVE (LOT 8*)
	OPEN SPACE (LOT 9)
	OPEN SPACE (LOT 31)

*NOTE: LOT 8 TO BE OFFERED AS A PUBLIC UTILITIES EASEMENT AND ACCESS EASEMENT FOR ADJOINING LOTS ON MAP

SUPERVISORIAL DISTRICT: 1
ZONING: DESIGN RESIDENTIAL (DR-3.3)
COASTAL ZONE: ALL OR PORTION WITHIN COASTAL ZONE
PLAN AREA: ALL OR PORTION WITHIN TORO CANYON PLAN
RURAL REGION: ALL OR PORTION WITHIN SOUTH COAST EXISTING DEVELOPED RURAL NEIGHBORHOOD
COMPREHENSIVE PLAN: RES-3.3

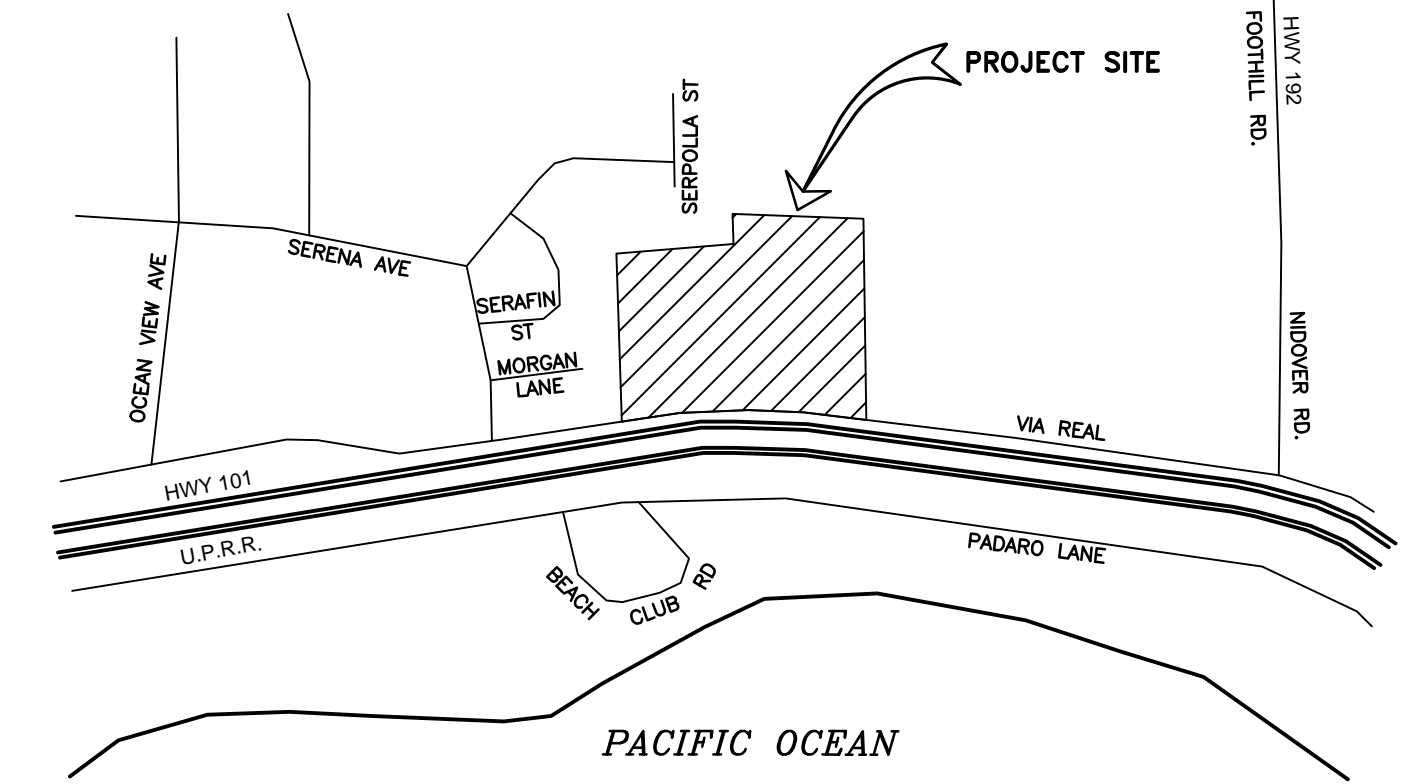


SITE MAP

SCALE: 1" = 80'

SHEET INDEX

C1	GENERAL INFORMATION AND NOTES
C2	EXISTING SITE CONDITIONS
C3	EXISTING AND PROPOSED EASEMENTS
C4	BOUNDARY AND LOT LAYOUT
C5	BOUNDARY AND LOT LAYOUT DETAILS
C6	BOUNDARY AND LOT LAYOUT DETAILS
C7	PRELIMINARY GRADING AND DRAINAGE PLAN
C8	PRELIMINARY GRADING DETAIL
C9	PRELIMINARY CREEK RESTORATION GRADING PLAN
C10	SECTIONS
C11	SECTIONS
C12	PRELIMINARY UTILITY PLAN
C13	TREE REMOVAL PLAN



VICINITY MAP

N.T.S.

PROJECT DIRECTORY

OWNER
WEST BLUFF CAPITAL
NEIL BOTTS
827 STATE STREET, SUITE 11
SANTA BARBARA, CA 93105
TEL: (303) 717-0289

PLANNING
PLANNING & PERMITTING SERVICES INC.
LAUREL FISHER, A.I.C.P.
1625 STATE STREET, SUITE 1
SANTA BARBARA, CA 93101
TEL: (805) 966-2758

ARCHITECT
DESIGNARC
MARK SHIELDS
29 WEST CALLE LAURELESS
SANTA BARBARA, CA 93105
TEL: (805) 687-1525

LANDSCAPE ARCHITECT
GIRVIN ASSOCIATES, INC.
GEORGE GIRVIN
109 WEST COTA STREET
SANTA BARBARA, CA 93101
TEL: (805) 653-7400
FAX: (805) 653-7401

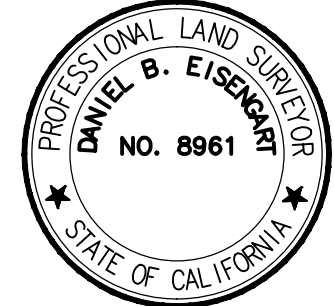
CIVIL ENGINEER:
STANTEC
DON DONALDSON, R.C.E.
111 EAST VICTORIA ST.
SANTA BARBARA, CA 93101
TEL: (805) 963-9532
FAX: (805) 966-9801

SURVEYOR:
STANTEC
DANIEL EISENGART, P.L.S.
111 EAST VICTORIA ST.
SANTA BARBARA, CA 93101
TEL: (805) 966-9532
FAX: (805) 966-9801

GEOTECHNICAL ENGINEER:
EARTH SYSTEMS PACIFIC
DOUGLAS DUNHAM, G.E.
2049 PREISKER LANE, SUITE E
SANTA MARIA, CA 93454
TEL: (805) 928-2991
FAX: (805) 567-4292

SURVEYOR'S STATEMENT

THIS MAP, AND THE SURVEY IT REPRESENTS, WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.



DATE: AUGUST 30, 2019

DANIEL EISENGART, P.L.S. 8961
111 EAST VICTORIA ST.
SANTA BARBARA, CA 93101
TEL: (805) 963-9532

OWNER'S STATEMENT

I HEREBY APPLY FOR APPROVAL OF THE DIVISION OF REAL PROPERTY SHOWN ON THIS PLAT AND CERTIFY THAT I AM THE LEGAL OWNER OR THE AUTHORIZED AGENT OF THE LEGAL OWNER OF SAID REAL PROPERTY AND THAT THE INFORMATION SHOWN HEREON IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

WEST BLUFF CAPITAL

NAME	TITLE	DATE
NEIL BOTTS		
827 STATE STREET, SUITE 11		
SANTA BARBARA, CA 93105		
TEL: (303) 717-0289		

GENERAL NOTES

EXISTING PRIVATE SITE IMPROVEMENTS TO BE DEMOLISHED PRIOR TO GRADING.

SURVEYOR’S NOTES

1. BOUNDARY AND EASEMENT INFORMATION
THE BOUNDARY INFORMATION SHOWN HEREON IS BASED ON THE LEGAL DESCRIPTION GIVEN IN THE PRELIMINARY TITLE REPORT NOTED BELOW AND WAS COMPILED FROM RECORD DEEDS AND MAP(S) FILED IN IN THE SANTA BARBARA COUNTY RECORDER'S OFFICE AND IS FOR INFORMATIONAL PURPOSES ONLY. THIS SURVEY TIED TO SEVERAL MONUMENTS OF RECORD IN ORDER TO ORIENT THE TOPOGRAPHIC AND PLANIMETRIC MAPPING TO THE COMPILED BOUNDARY. THIS MAP DOES NOT REPRESENT A BOUNDARY ESTABLISHMENT SURVEY.

THIS MAP WAS PREPARED IN CONJUNCTION WITH A PRELIMINARY REPORT OF TITLE ISSUED BY FIDELITY NATIONAL TITLE COMPANY AS ESCROW NO. FSBA-4201170031-RR, DATED JULY 6, 2017. SAID REPORT IS PRESUMED TO BE COMPLETE AND ACCURATE. STANTEC DOES NOT WARRANT THE COMPLETENESS OR ACCURACY OF SAID REPORT.

2. BASIS OF BEARINGS AND COORDINATES
BEARINGS SHOWN ON THIS MAP ARE REFERENCED TO THE CALIFORNIA COORDINATE SYSTEM, NAD 83, ZONE 5 GRID (EPOCH 2011), DEFINED LOCALLY BY CONTINUOUSLY OPERATING REFERENCE STATIONS OPERATED BY THE CALIFORNIA SPATIAL REFERENCE CENTER. THIS SURVEY TIED TO STATIONS COPR, CSST, AND P519.

ALL DISTANCES AND COORDINATES ARE REFERENCED TO SAID CALIFORNIA COORDINATE SYSTEM AND ARE EXPRESSED IN US SURVEY FOOT UNITS.

3. ELEVATIONS
ELEVATIONS SHOWN HEREON ARE EXPRESSED IN U.S. SURVEY FEET AND ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), DEFINED LOCALLY BY CALIFORNIA DIVISION OF HIGHWAYS MONUMENT BEING A 2 INCH BRASS CAP, STAMPED "CAL DIV HWY 130 24". ELEVATION=105.525 FEET.

SEE CONTROL POINT LISTING

4. SITE INFORMATION
ADDRESS: 3250 AND 3282, VIA REAL, CARPENTERIA, CA
APN: 005-270-017, 019, 029, 033 & 034

CONTROL POINT LISTING

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1,977,765.30	6,089,624.23	43.941	SET 1/2 IP W/PLUG
2	1,977,831.63	6,089,175.02	49.439	SET MAG APNL
3	1,977,797.11	6,088,824.73	53.382	SET MAG APNL
4	1,978,015.98	6,088,782.96	55.594	SET MAG APNL
5	1,978,279.70	6,088,779.70	56.914	SET 1/2 IP W/PLUG
6	1,977,805.92	6,089,625.35	43.558	SET MAG ANPL
7	1,978,078.48	6,089,620.24	45.332	SET 1/2 IP W/PLUG
8	1,978,443.36	6,089,604.68	50.414	SET 1/2 IP W/PLUG
9	1,978,093.26	6,089,301.47	49.175	SET 2X2 HUB
10	1,978,308.01	6,089,182.10	54.176	SET 2X2 HUB
11	1,978,076.25	6,089,047.30	48.865	SET 2X2 HUB
12	1,978,274.45	6,088,909.04	58.220	SET 2X2 HUB
13	1,977,750.93	6,088,729.89	54.803	SET MAG APNL
14	1,977,828.06	6,089,082.36	50.359	FD PK-TIN WP503
200	1,977,521.65	6,084,419.13	105.525	FD 2BC CAL DIV HWY 130 24
201	1,977,813.16	6,088,797.79	51.980	FD 1/2IP OPEN DWN 0.2
202	1,978,066.31	6,088,766.30	57.250	FD 1/2 IP LS8462
203	1,978,217.78	6,088,747.55	59.260	FD 1/2 IP RCE8462
204	1,978,316.72	6,088,735.19	60.615	FD 1/2 IP RCE8462
205	1,978,364.59	6,088,790.88	52.160	FD 1/2 IP RCE8462
206	1,977,846.79	6,089,171.54	49.616	FD 1/2 IP LS3228
207	1,977,846.30	6,089,137.72	49.954	FD 1 IP W/TAG ILLEGIBLE
208	1,978,357.06	6,089,158.84	55.460	FD 3IN BC FFF



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DEVELOPMENT PLAN SUBMITTAL

2018.02.28
SBAR SUBMITTAL

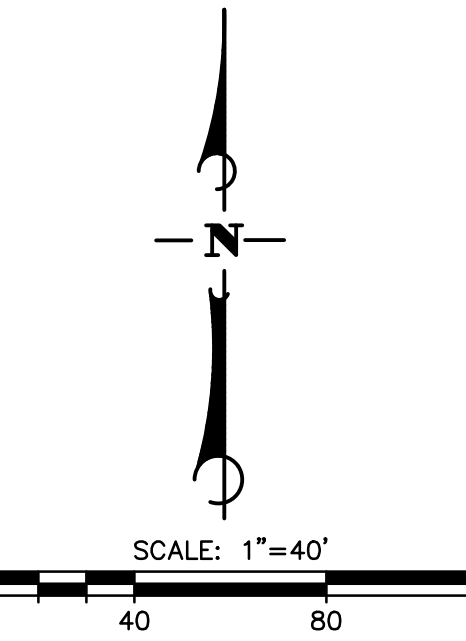
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VILLAS RESIDENTIAL
DEVELOPMENT

3250-3282 Via Real
Carpinteria, CA

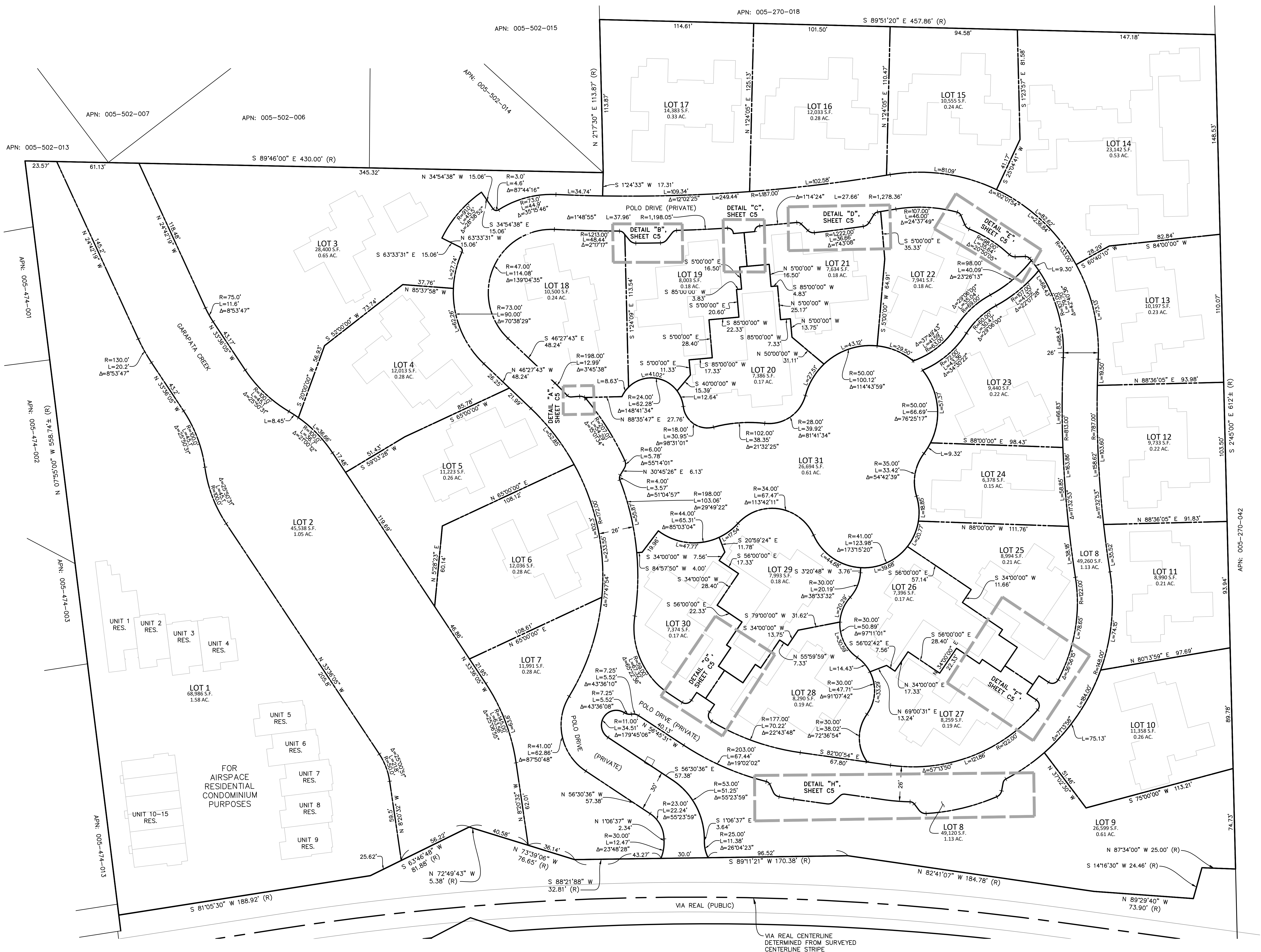
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Vesting Tentative Tract Map No.
TT14831



PROJECT NO: 2064144500
DATE: 2019.09.04
DRAWN BY: ECR
CHECKED BY: DED

SHEET TITLE

Existing Site
Conditions



Plot Planning • Civil Design • Land Planning • Farm Resilience • C.I. Lic. 91620
101 West Center Street, Suite 100, San Jose, California 95128 • 408.633.5565 FAX 408.633.5566
444 Alameda Avenue, Suite 201, San Francisco, California 94103 • 415.393.9401 FAX 415.393.9217

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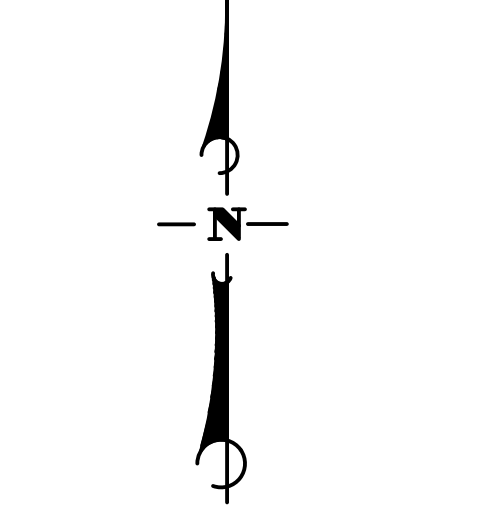
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Carpinteria, CA

Case No. 17TRM-00000-00002
Vesting Tentative Tract Map No.
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SCALE: 1"=30'

PROJECT NO.: 2064144500
DATE: 2019.09.04
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CHECKED BY: DBE

SHEET TITLE

Boundary and Lot Layout

C4

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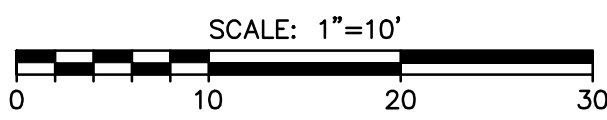
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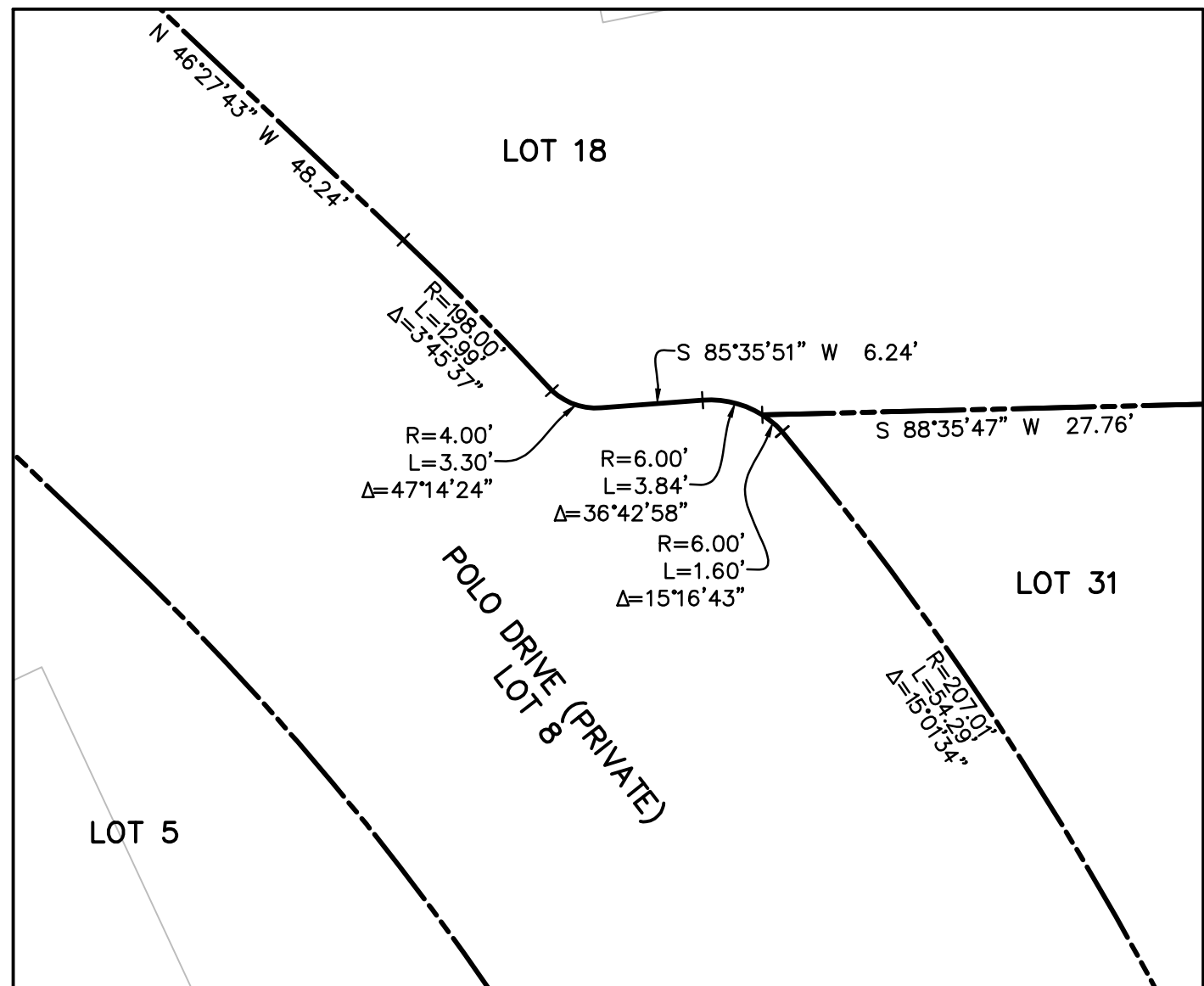


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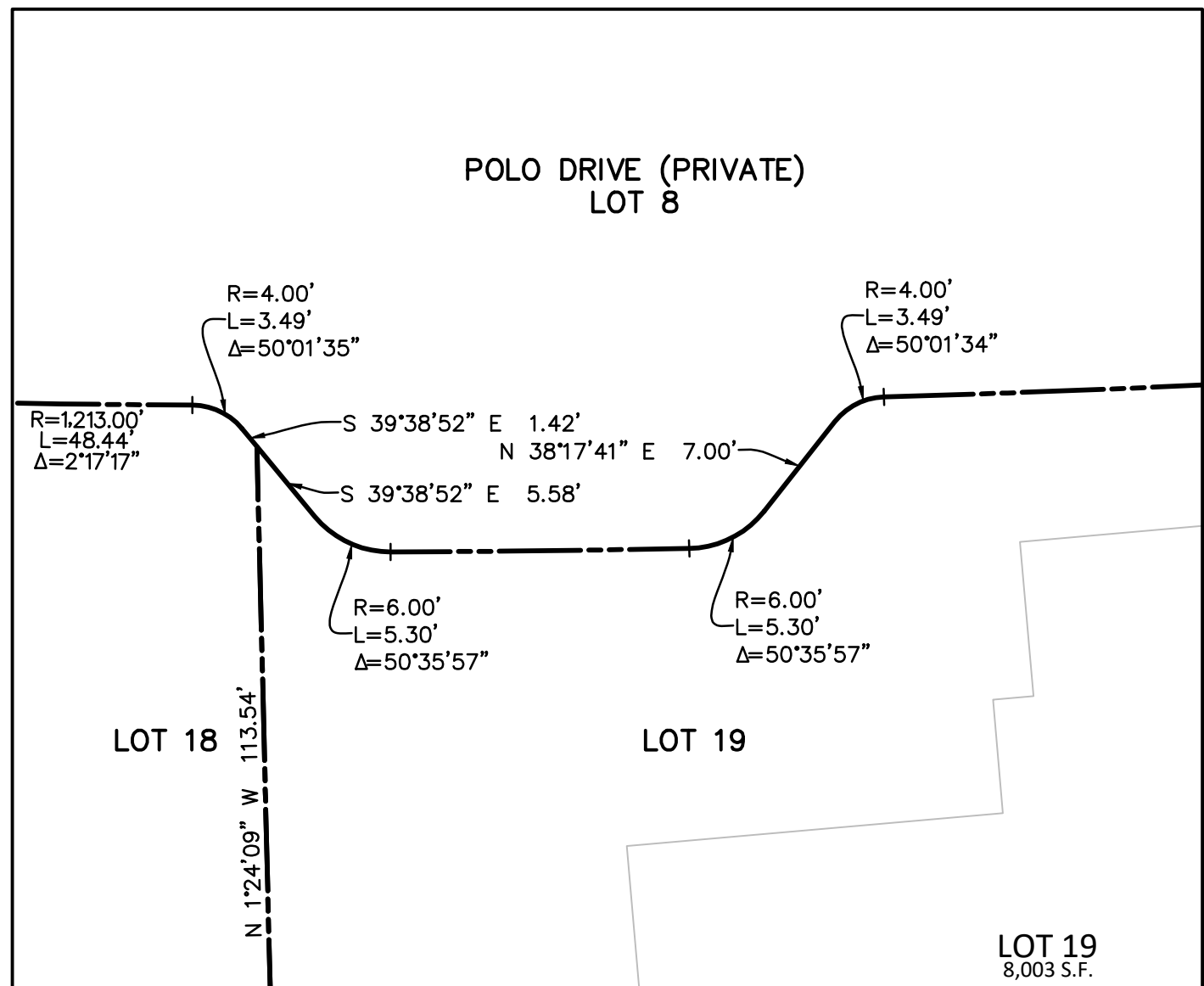
SHEET TITLE

Boundary and Lot
Layout Details

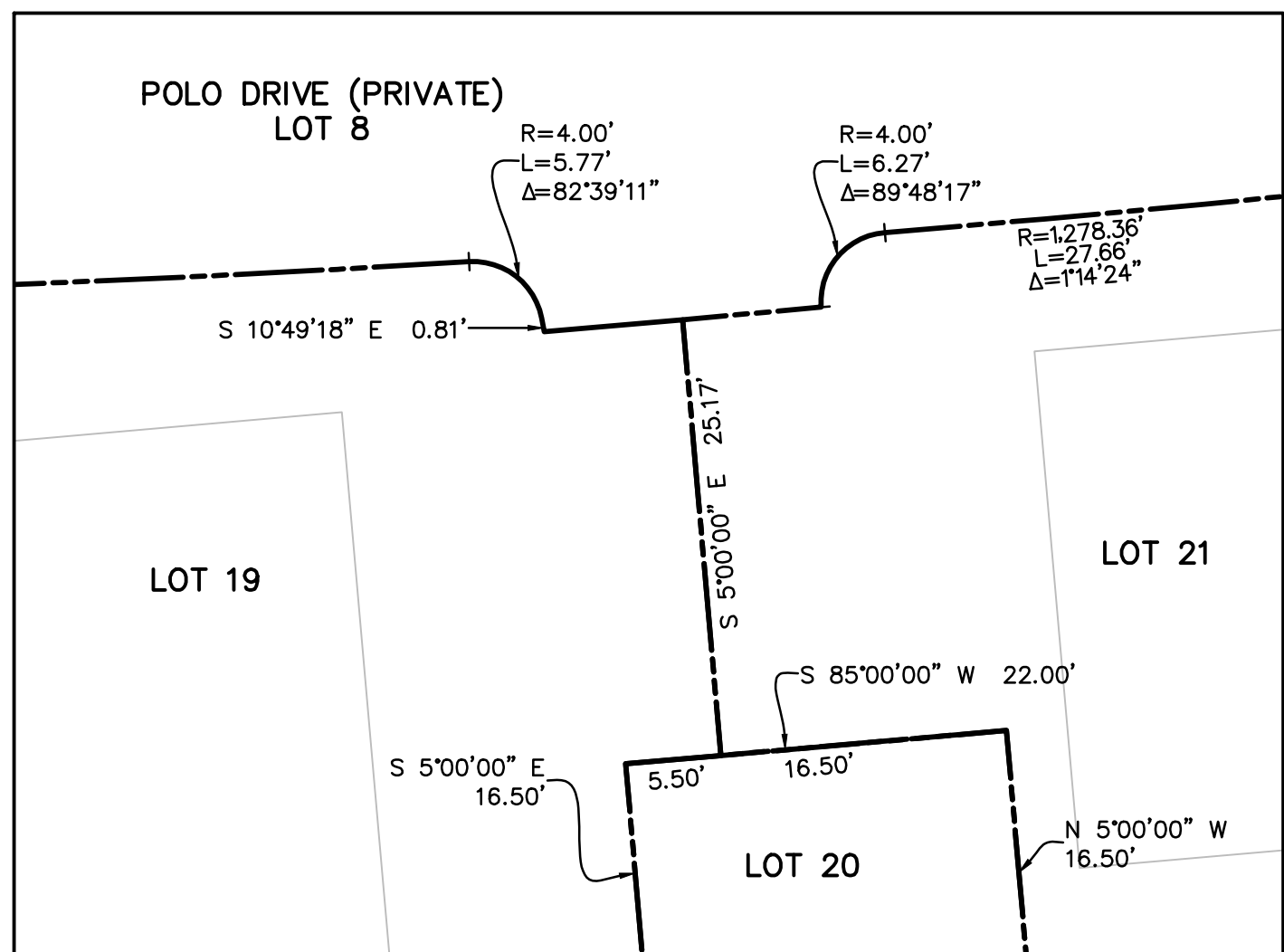
C5



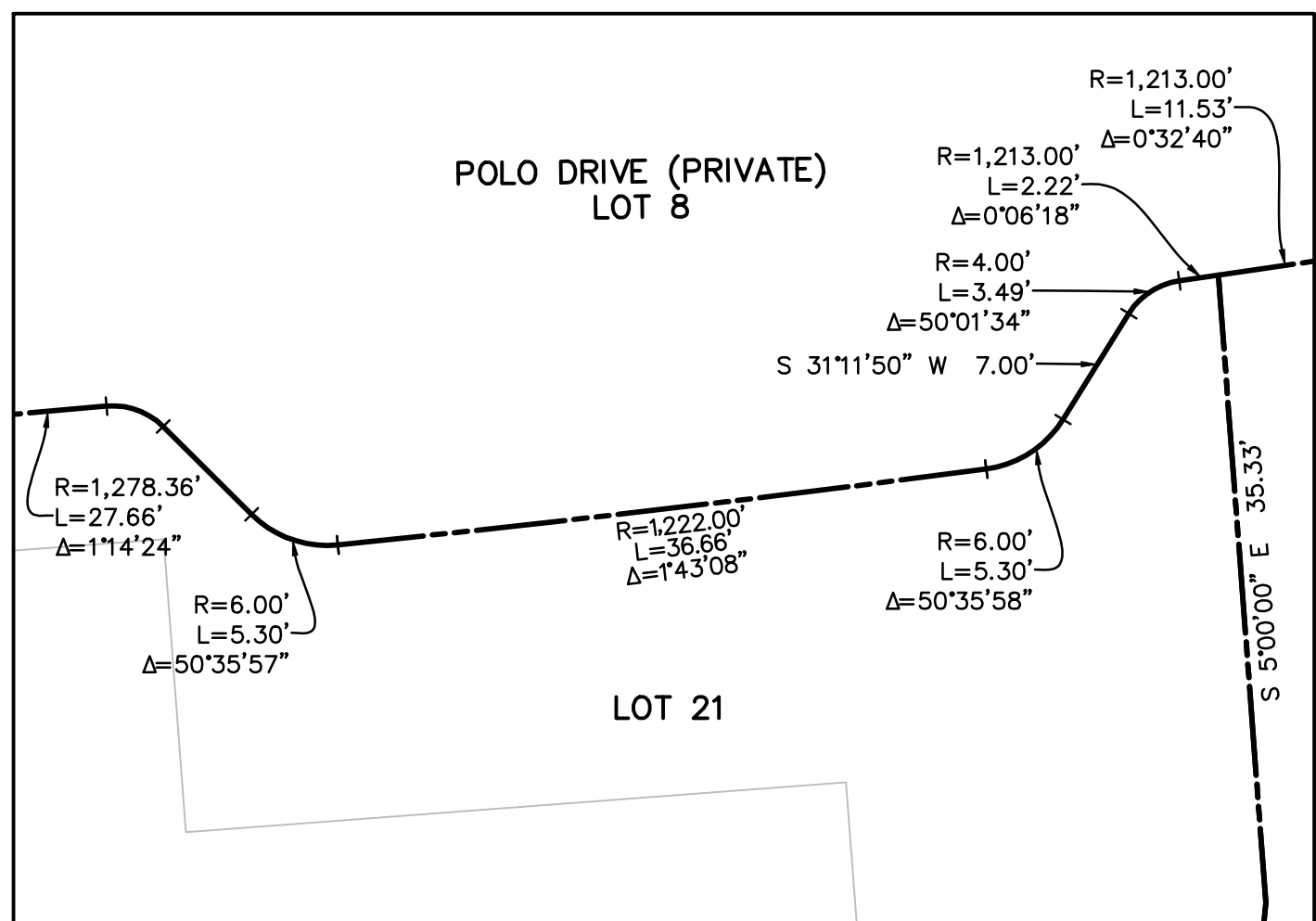
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C5 C4 SCALE: 1" = 10'



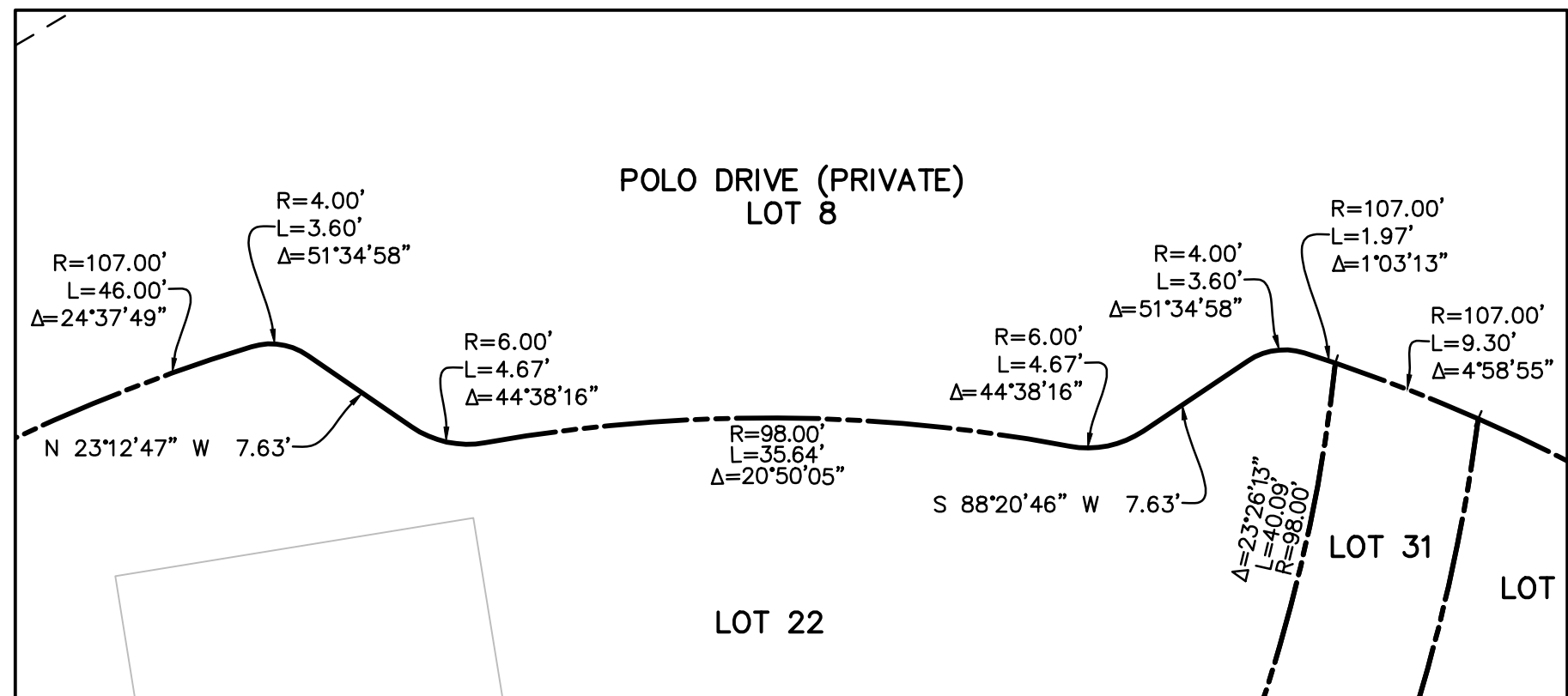
B DETAIL "B"
C5 C4 SCALE: 1" = 10'



C DETAIL "C"
C5 C4 SCALE: 1" = 10'



D DETAIL "D"
C5 C4 SCALE: 1" = 10'



E DETAIL "E"
C5 C4 SCALE: 1" = 10'

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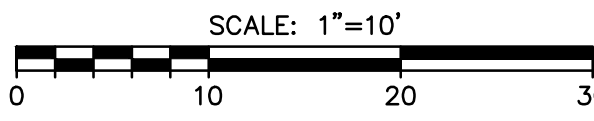
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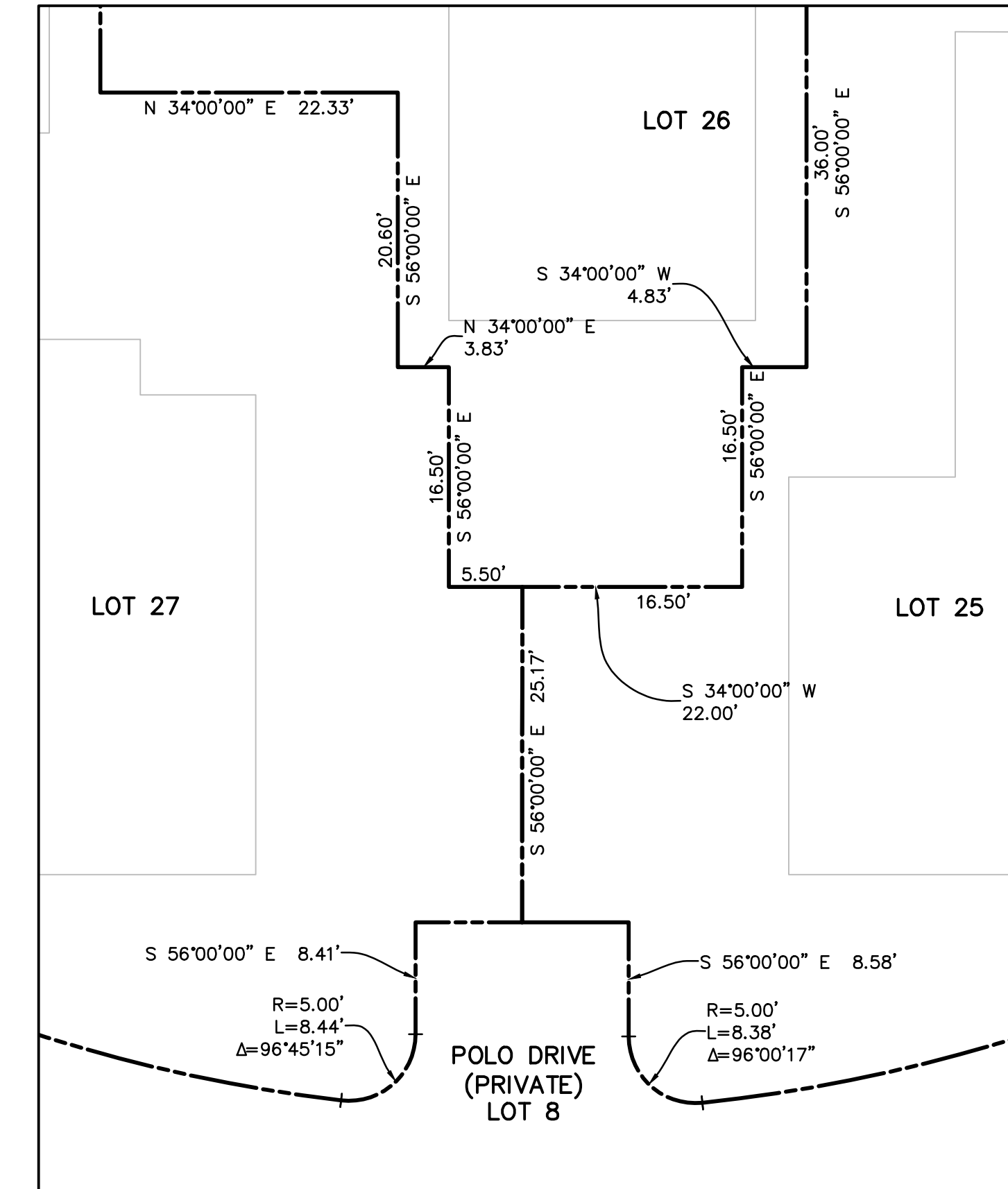


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DRAWN BY: VTR/ECR
CHECKED BY: DBE

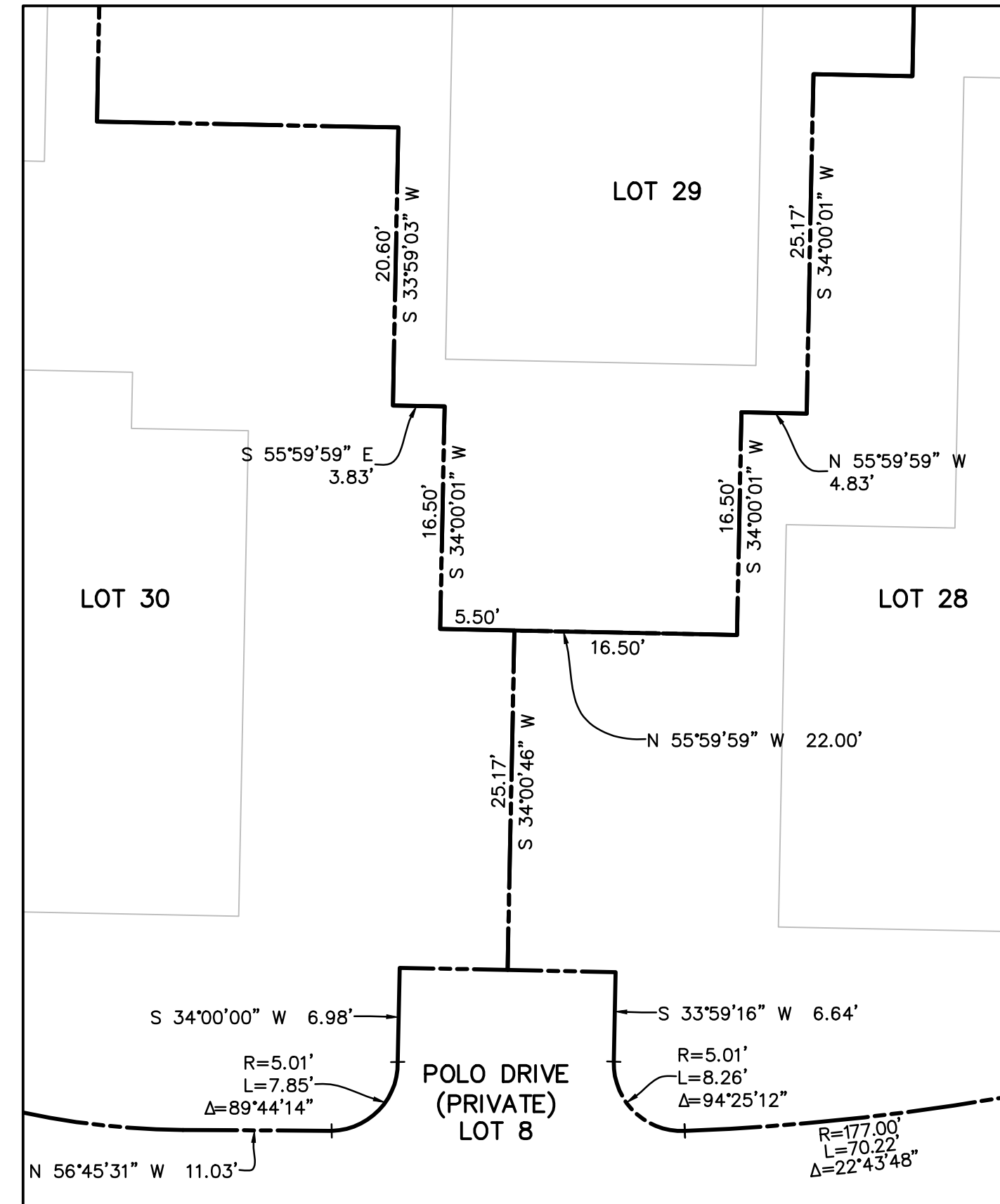
SHEET TITLE

Boundary and Lot
Layout Details

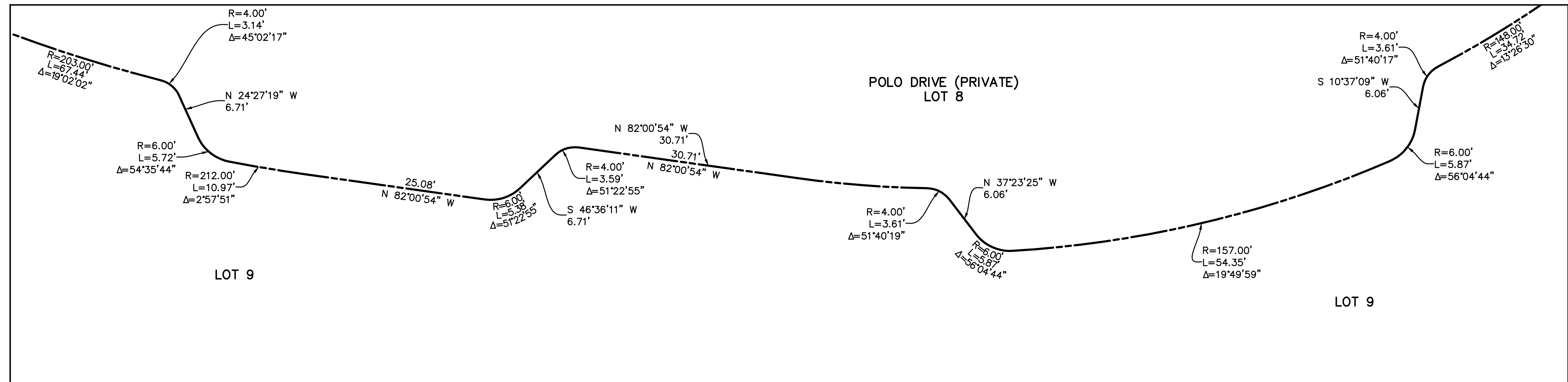
C6



F DETAIL "F"
C6 C4 SCALE: 1" = 10'



G DETAIL "G"
C6 C4 SCALE: 1" = 10'



H DETAIL "H"
C6 C4 SCALE: 1" = 10'

CUT (RAW)	5,300 CY
FILL (RAW)	23,100 CY

THE ABOVE QUANTITIES ARE FOR BUILDING PERMIT PURPOSES ONLY AND HAVE NOT BEEN FACTORED TO INCLUDE ALLOWANCES FOR BULKING, CLEARING AND GRUBBING, SUBSIDENCE, SHRINKAGE, OVER EXCAVATION AND RECOMPACTION, UNDERGROUND UTILITY AND SUBSTRUCTURE SPOILS, STRUCTURAL SECTIONS AND CONSTRUCTION METHODS.

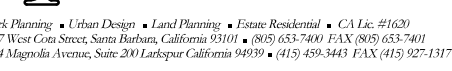
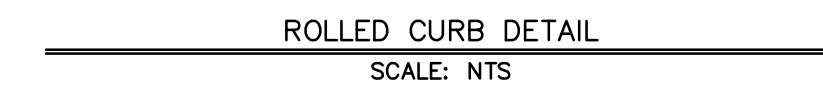
1. NO DEVELOPMENT MAY OCCUR WITHIN THE FLOOD CONTROL SETBACK (50' SETBACK FROM THE TOP OF BANK OF THE GARAPATA CREEK).

THE ABOVE QUANTITIES ARE FOR BUILDING PERMIT PURPOSES ONLY AND HAVE NOT BEEN FACTORED TO INCLUDE ALLOWANCES FOR BULKING, CLEARING AND GRUBBING, SUBSIDENCE, SHRINKAGE, OVER EXCAVATION AND RECOMPACTION, UNDERGROUND UTILITY AND SUBSTRUCTURE SPOILS, STRUCTURAL SECTIONS AND CONSTRUCTION METHODS.



---	TRACT BOUNDARY/PROPERTY LINE	---	S	---	EXISTING SEWER
---	PROPOSED LOT LINE	---	SD	---	EXISTING STORM DRAIN
---	PROPOSED/EXISTING EASEMENT LIMITS	---	W	---	EXISTING DOMESTIC WATER LINE
---	PROPOSED CENTERLINE	G		---	EXISTING GAS LINE
---	PROPOSED GRADING DAYLIGHT	---	OHW	---	EXISTING OVERHEAD ELECTRICAL
---	PROPOSED FLOWLINE	E		---	EXISTING UNDERGROUND ELECTRICAL
---	PROPOSED MAJOR CONTOUR	---		---	EXISTING EDGE OF PAVEMENT
55	PROPOSED MINOR CONTOUR				
55	EXISTING MAJOR CONTOUR	EDF			EXTENDED DEPTH FOOTING
55	EXISTING MINOR CONTOUR	FF			FINISHED FLOOR
S	PROPOSED SEWER	FL			FLOWLINE
SD	PROPOSED STORM DRAIN	HT			HEIGHT
W	PROPOSED DOMESTIC WATER LINE	INV			INVERT
G	PROPOSED GAS	TG			TOP OF GRATE
IRR	PROPOSED IRRIGATION	TTD			TOP OF TRENCH DRAIN

SEE SHEET C11 FOR PRIVATE DRIVE AND VIA REAL
TYPICAL SECTIONS



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GIRVIN ASSOCIATES, INC.
LANDSCAPE ARCHITECTS

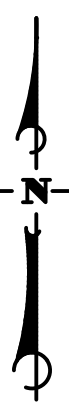


SUR:

018.11.30
COUNTY PLANNING COMMISSION
REVIEW

**SANTA BARBARA POLICE
VILLAS RESIDENTIAL
DEVELOPMENT**

Case No. 17TRM-00000-00002
 Testing Tentative Tract Map No.
 TT14831



DATE: 2019.09.04
DRAWN BY: ECR
CHECKED BY: DED

Preliminary Grading and Drainage Plan

C7

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Design Team



Issue:

2017.08.07
DEVELOPMENT PLAN SUBMITTAL

2018.02.28
SBAR SUBMITTAL

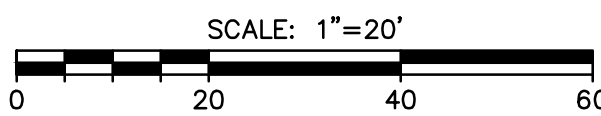
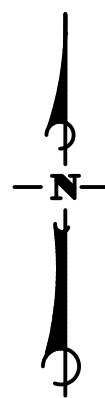
2018.11.30
COUNTY PLANNING COMMISSION
REVIEW

2019.08.30
REVISED COUNTY PLANNING
COMMISSION REVIEW

SANTA BARBARA POLO VILLAS RESIDENTIAL DEVELOPMENT

3250-3282 Via Real
Carpinteria, CA

Case No. 17TRM-00000-00002
Vesting Tentative Tract Map No.
TT14831

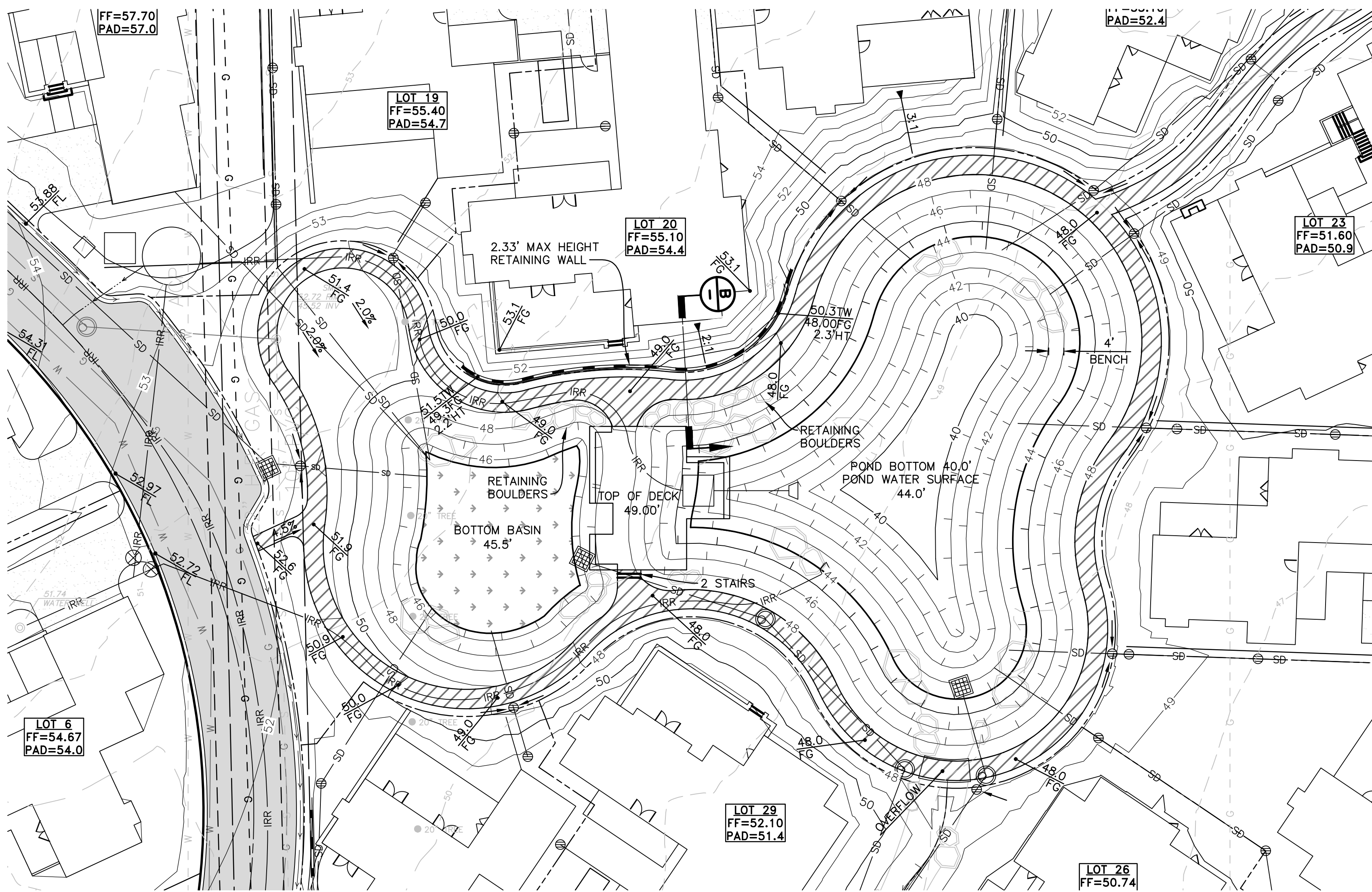


PROJECT NO: 2064144500
DATE: 2019.09.04
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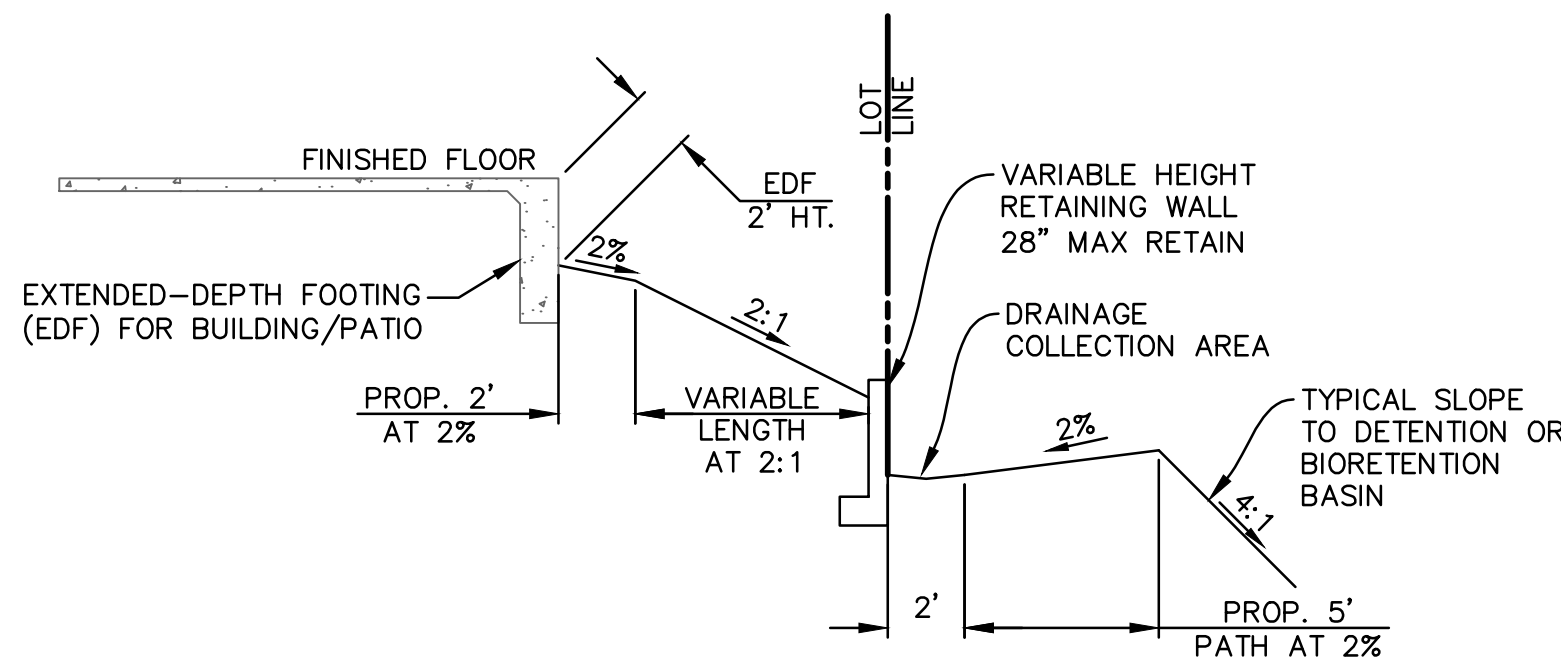
SHEET TITLE

Preliminary Grading Detail

C8



A GRADING DETAIL
C7 SCALE: 1"=20'



B TYPICAL GRADING SECTION

SCALE: NTS

NOTE: PROPOSED 5' PATH AT 2% TYPICALLY FLOWS INTO DRAINAGE COLLECTION AREA

Design Team

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2017.08.07
DEVELOPMENT PLAN SUBMITTAL

2018.02.28
SBAR SUBMITTAL

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SANTA BARBARA POLO
VILLAS RESIDENTIAL
DEVELOPMENT

3250-3282 Via Real
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Case No. 17TRM-00000-00002
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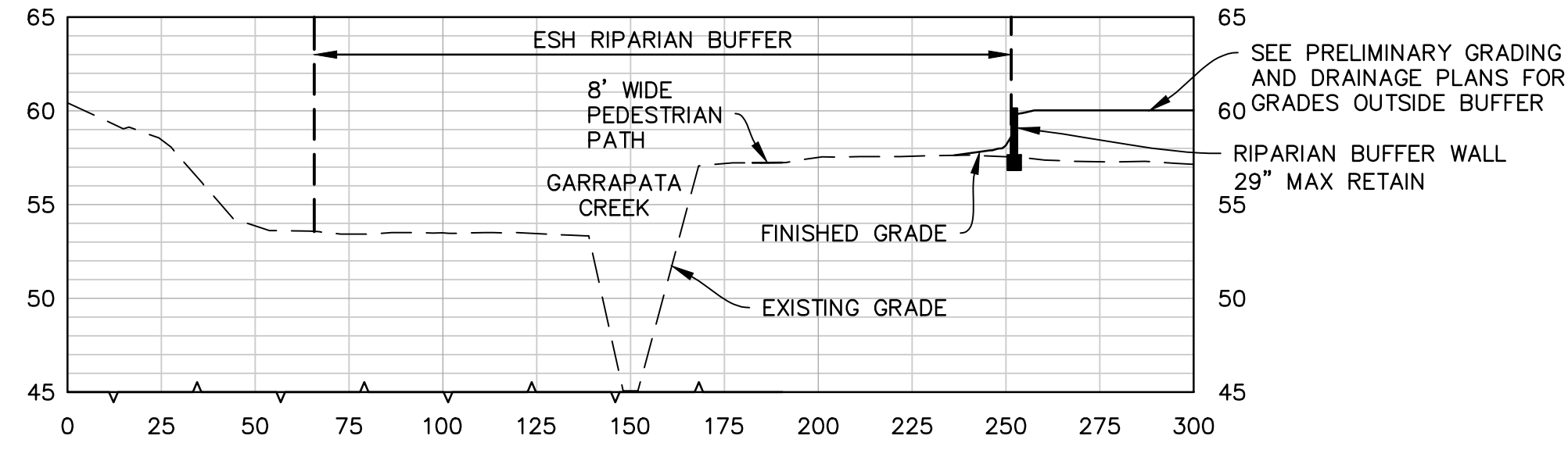
PROJECT NO.: 2064144500
DATE: 2019.09.04
DRAWN BY: ECR
CHECKED BY: DED

SHEET TITLE

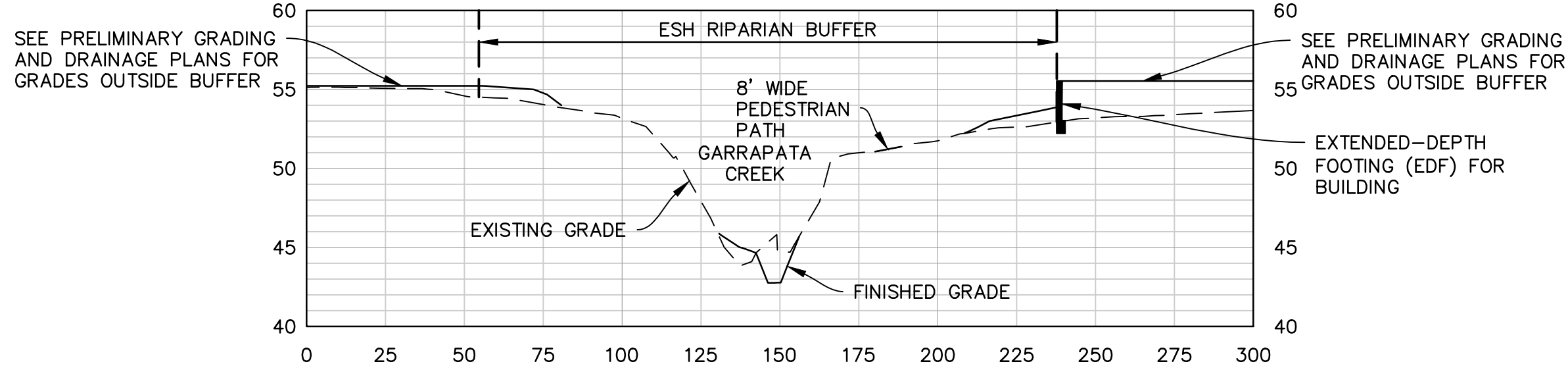
Preliminary Creek
Restoration Grading Plan

1" = 40'-0"

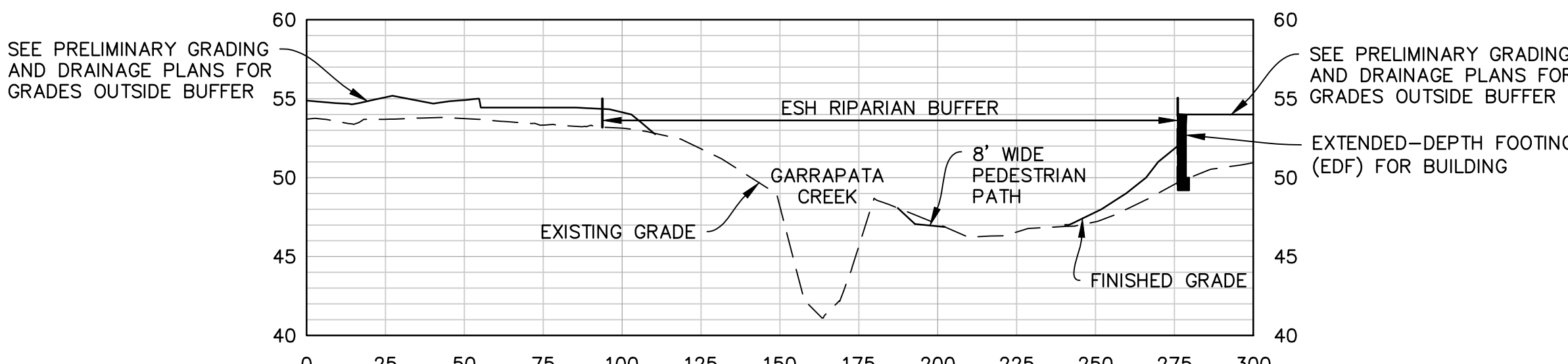
C9



SECTION A-A
SCALE: 1"=40' HOR, 1"=8' VERT



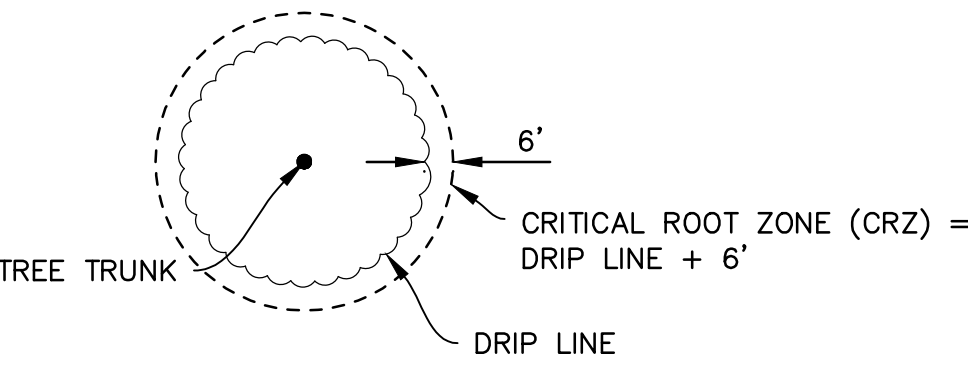
SECTION B-B
SCALE: 1"=40' HOR, 1"=8' VERT



SECTION C-C
SCALE: 1"=40' HOR, 1"=8' VERT

LEGEND

X TREE TO BE REMOVED
(PER TREE REMOVAL PLAN)



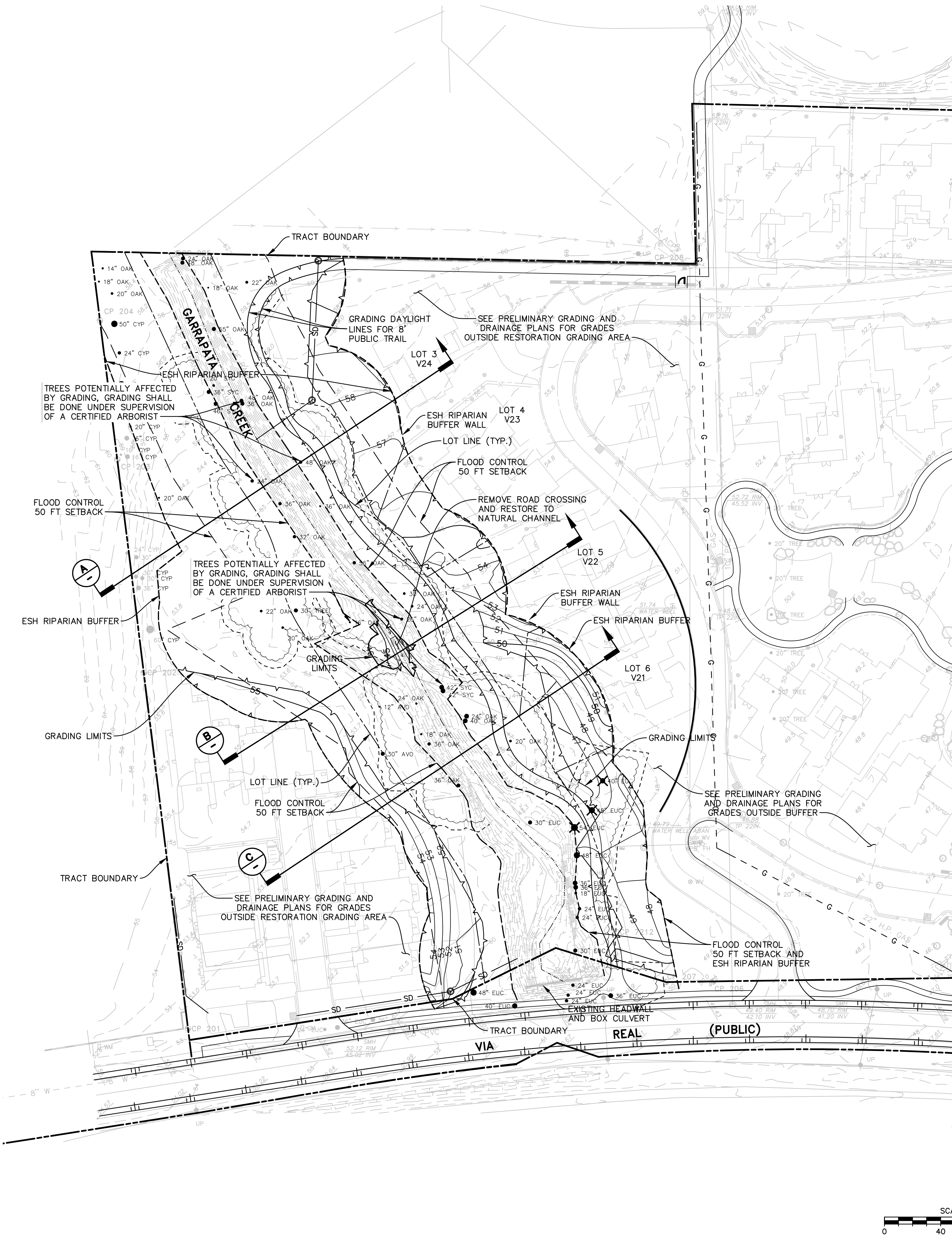
EARTHWORK QUANTITIES (WITHIN ESH BUFFER)

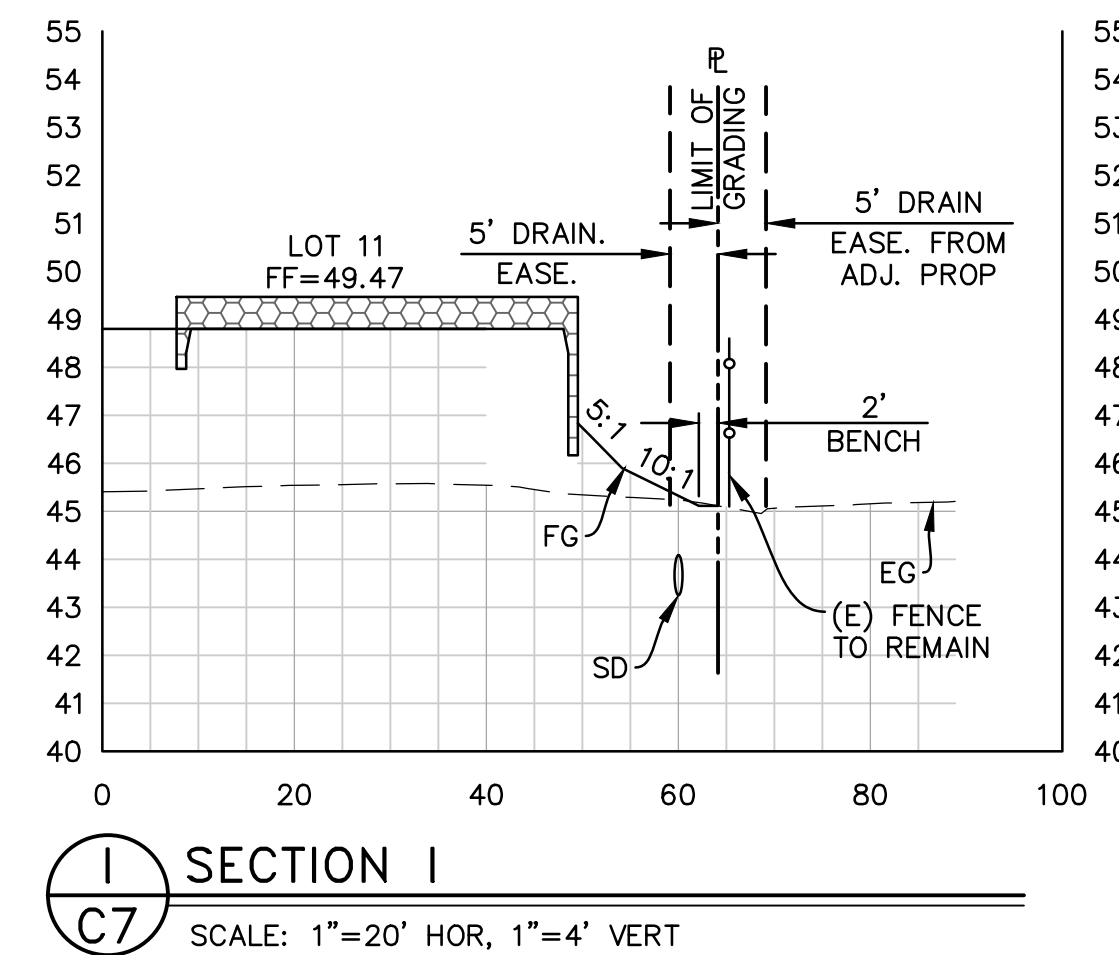
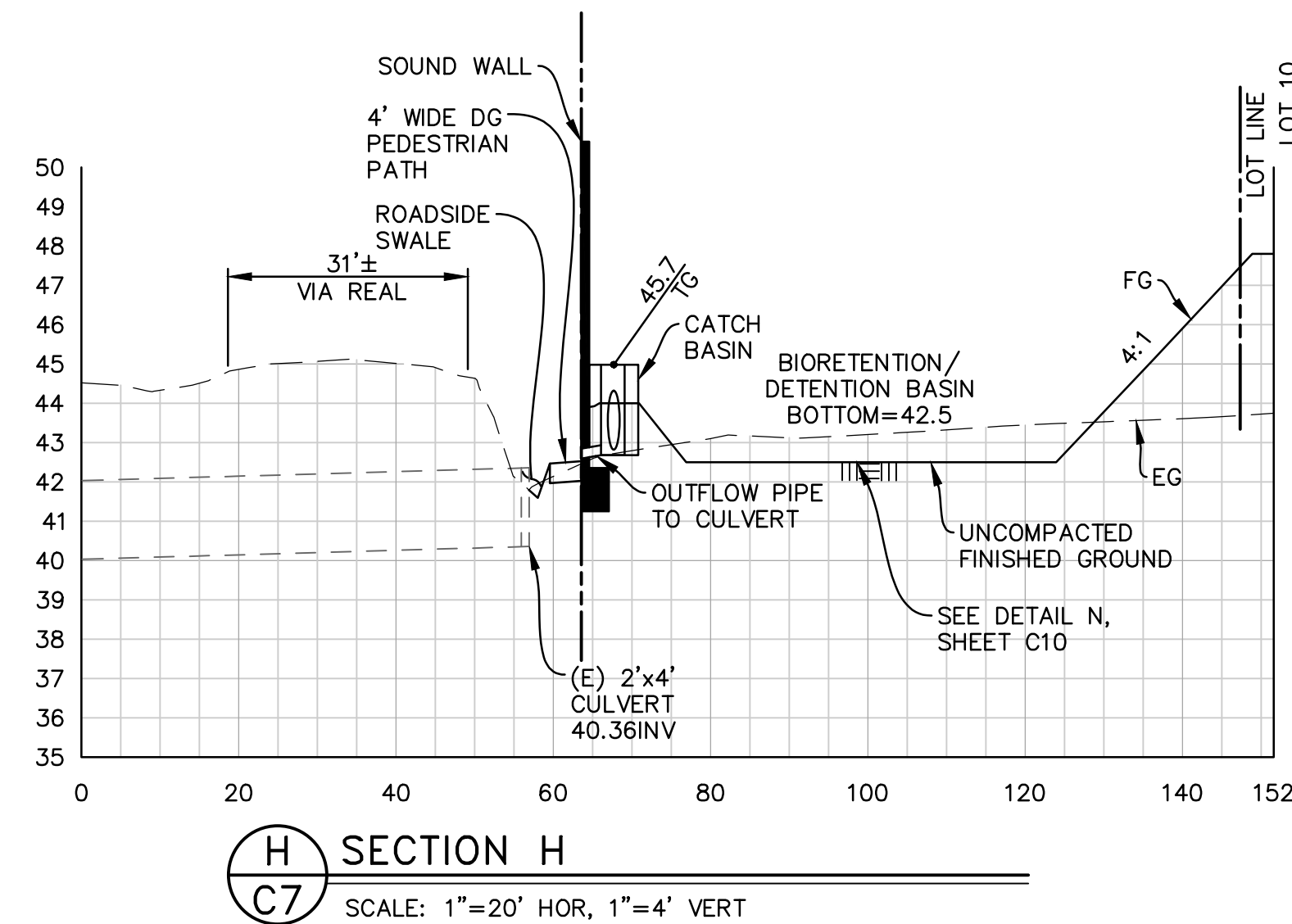
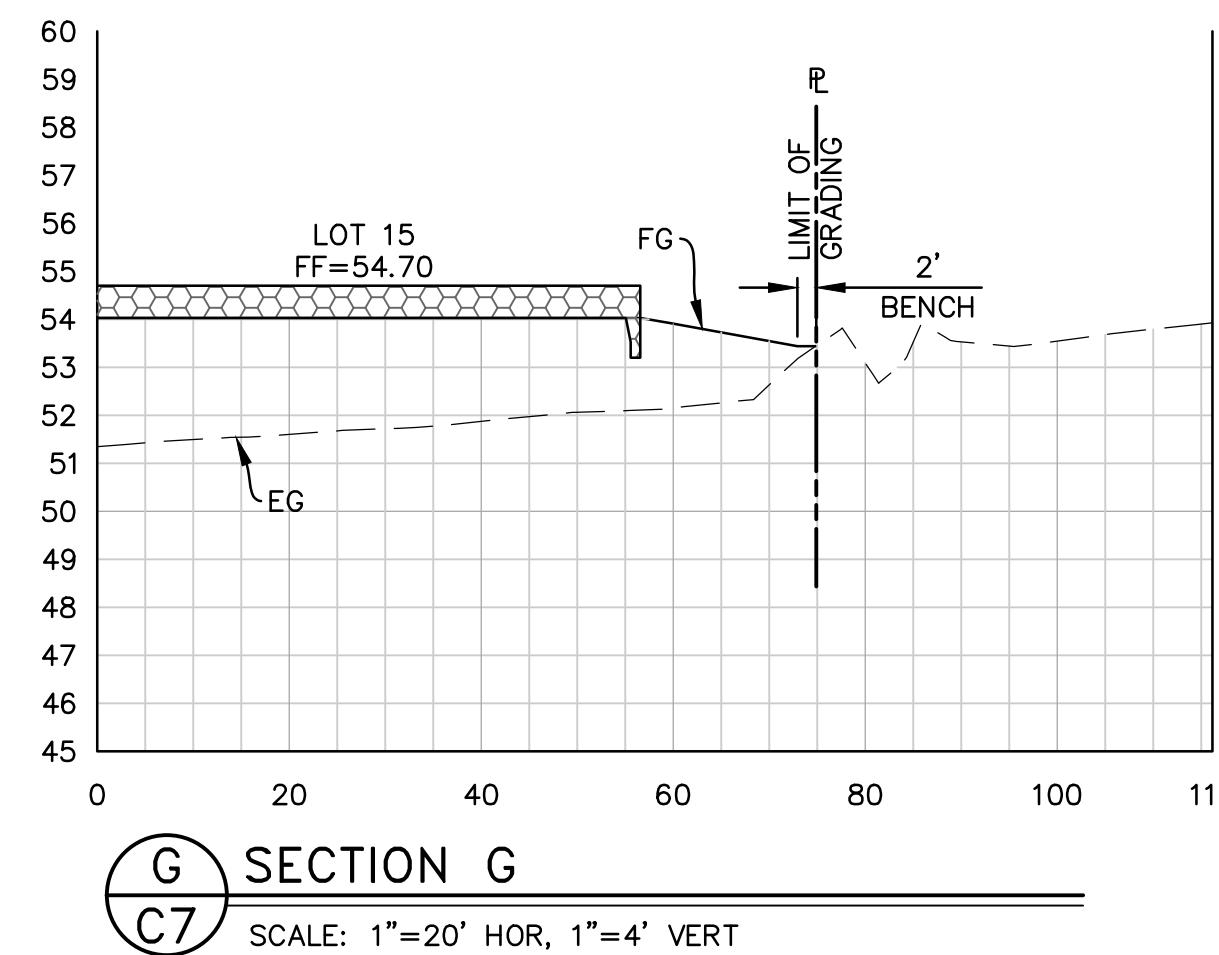
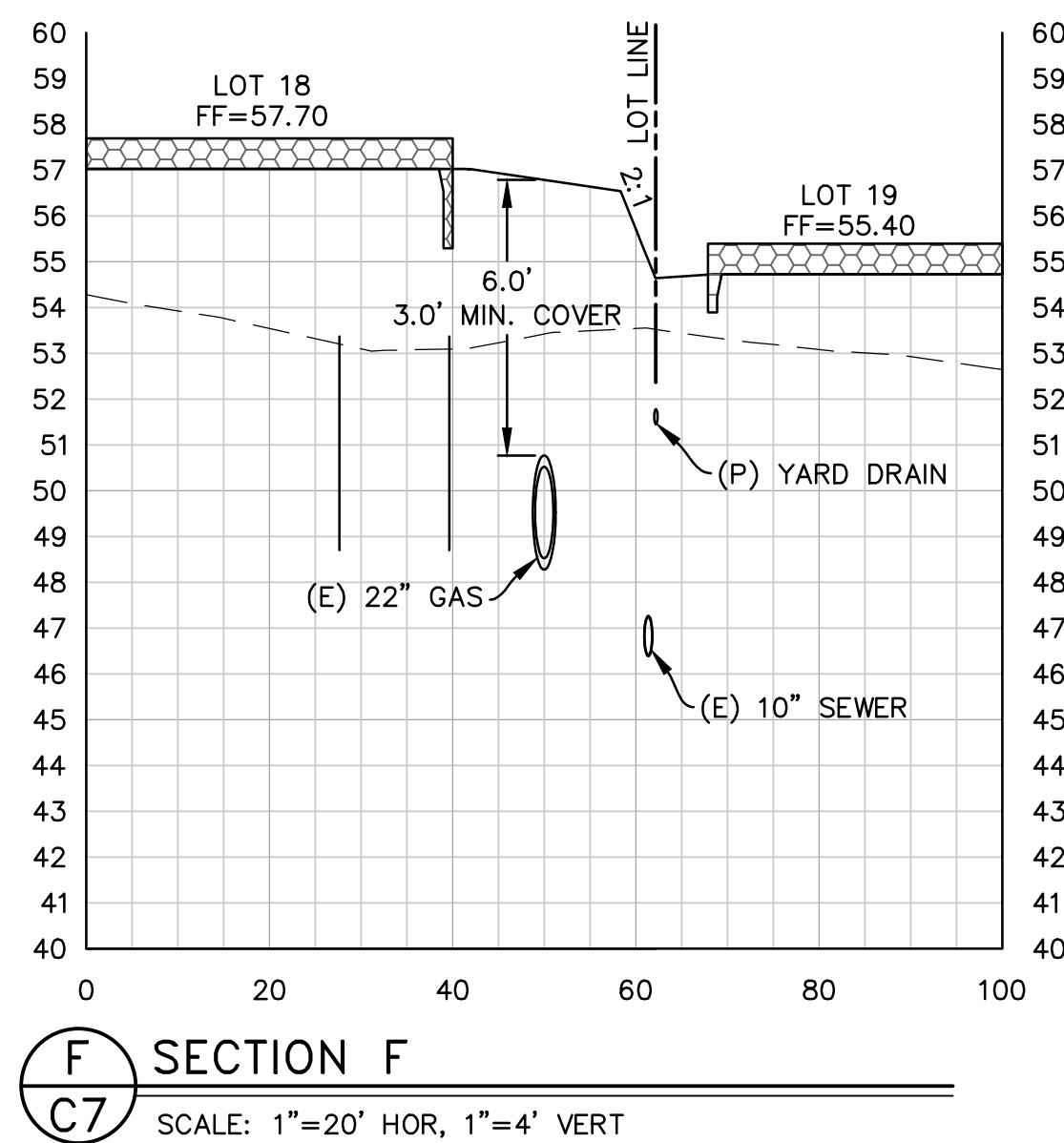
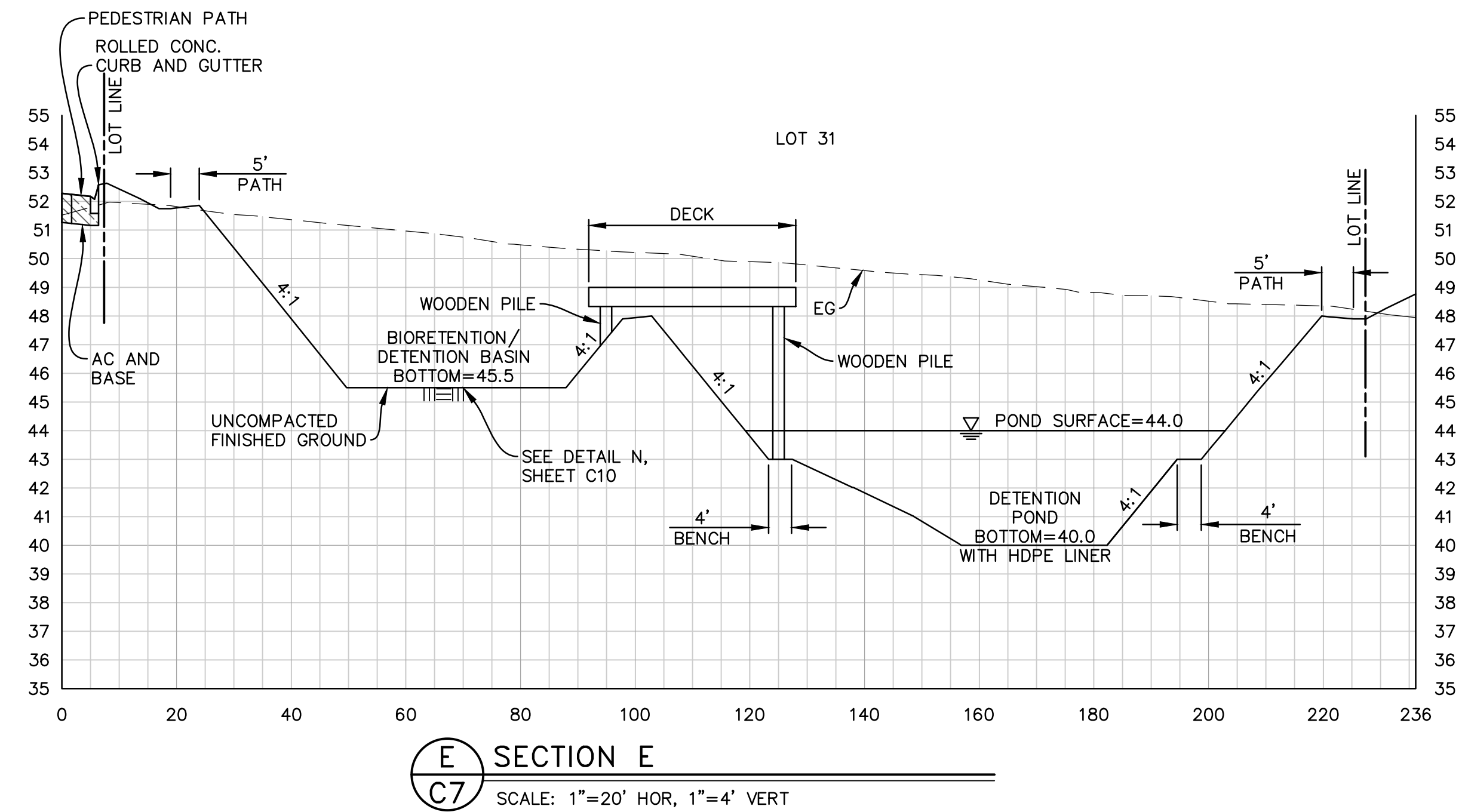
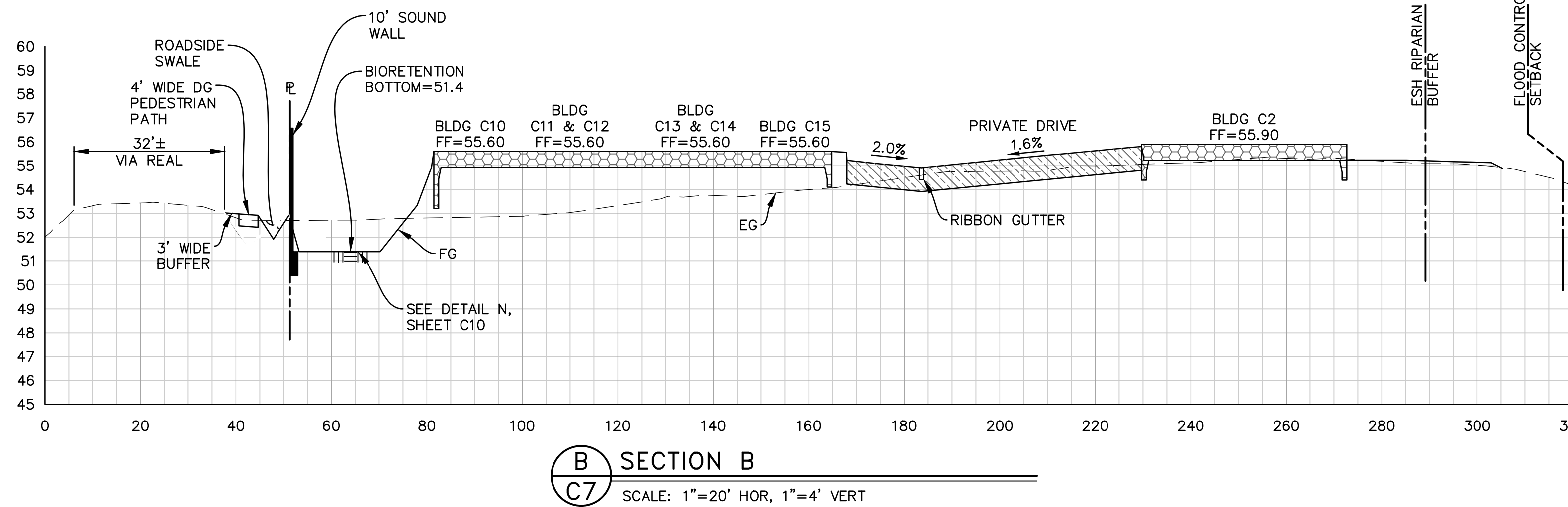
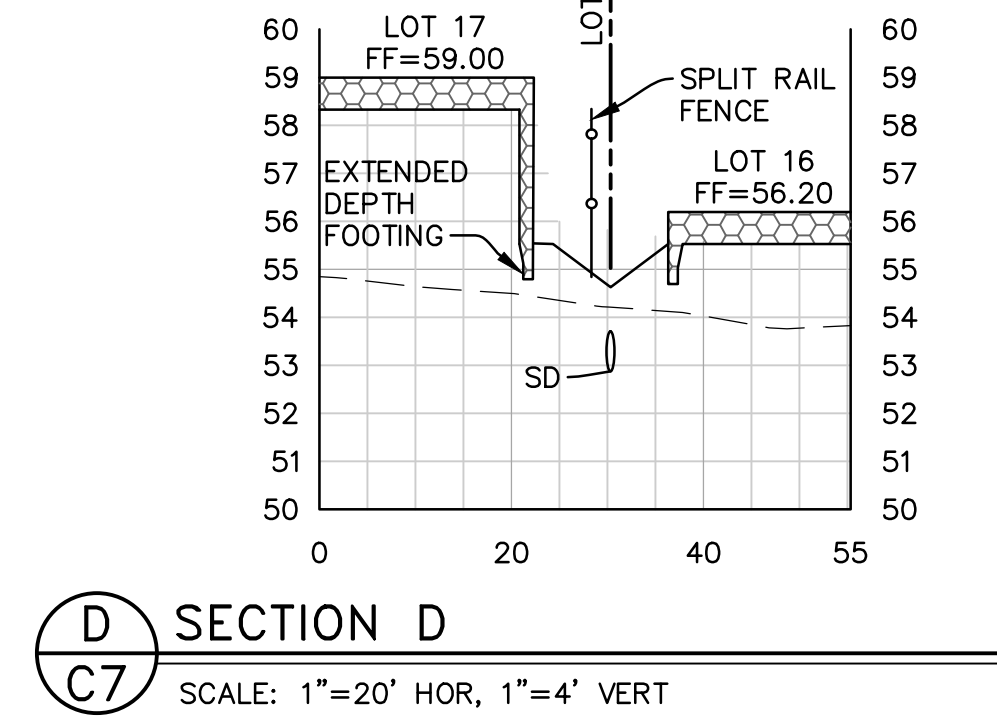
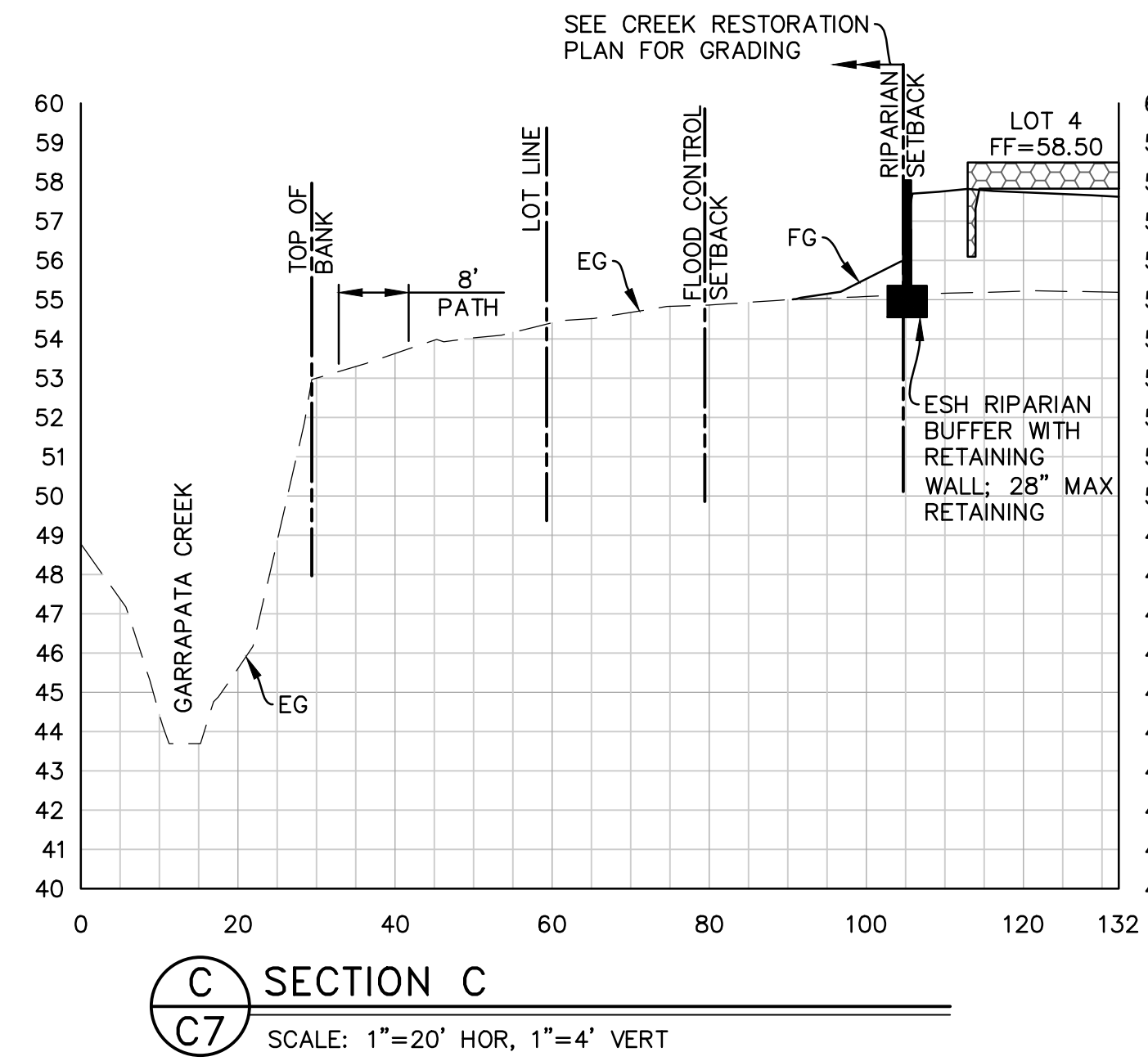
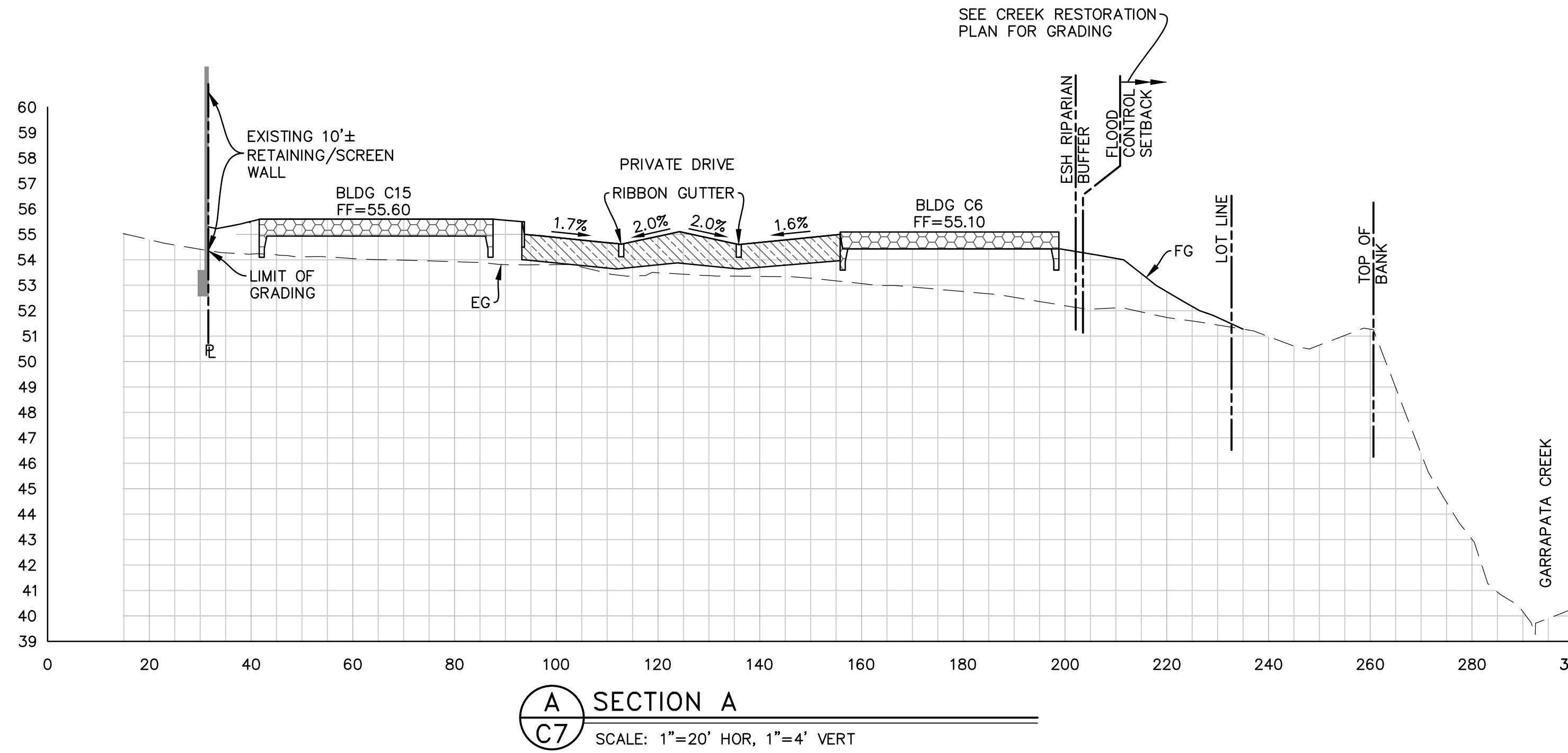
RAW CUT 100 CY
RAW FILL 800 CY

THE ABOVE QUANTITIES ARE APPROXIMATE IN PLACE VOLUMES CALCULATED FROM THE EXISTING GROUND TO THE PROPOSED FINISH GRADE OR SUBGRADE. EXISTING GROUND IS DEFINED BY THE TOPOGRAPHIC CONTOURS AND/OR SPOT ELEVATIONS ON THE PLAN. PROPOSED FINISH GRADE IS DEFINED AS THE DESIGN SURFACE ELEVATION OF EARTH TO BE CONSTRUCTED. PROPOSED SUBGRADE ELEVATION IS DEFINED AS THE DESIGN SURFACE ELEVATION OF EARTH TO BE CONSTRUCTED BENEATH PAVEMENTS OR STRUCTURES.

THE ABOVE QUANTITIES HAVE NOT BEEN FACTORED TO INCLUDE ALLOWANCES FOR BULKING, CLEARING AND GRUBBING, SUBSIDENCE, SHRINKAGE, OVER EXCAVATION AND RECOMPACTION, UNDERGROUND UTILITY AND SUBSTRUCTURE SPOILS, STRUCTURAL SECTIONS AND CONSTRUCTION METHODS.

THE ABOVE QUANTITIES HAVE BEEN INCLUDED IN THE OVERALL PROJECT GRADING QUANTITIES ON SHEET C7.





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Design Team

Issue:

2017.08.07
DEVELOPMENT PLAN SUBMITTAL

2018.02.28
SBAR SUBMITTAL

2018.11.30
COUNTY PLANNING COMMISSION
REVIEW

2019.08.30
REVISED COUNTY PLANNING
COMMISSION REVIEW

SANTA BARBARA POLO VILLAS RESIDENTIAL DEVELOPMENT

3250-3282 Via Real
Carpinteria, CA

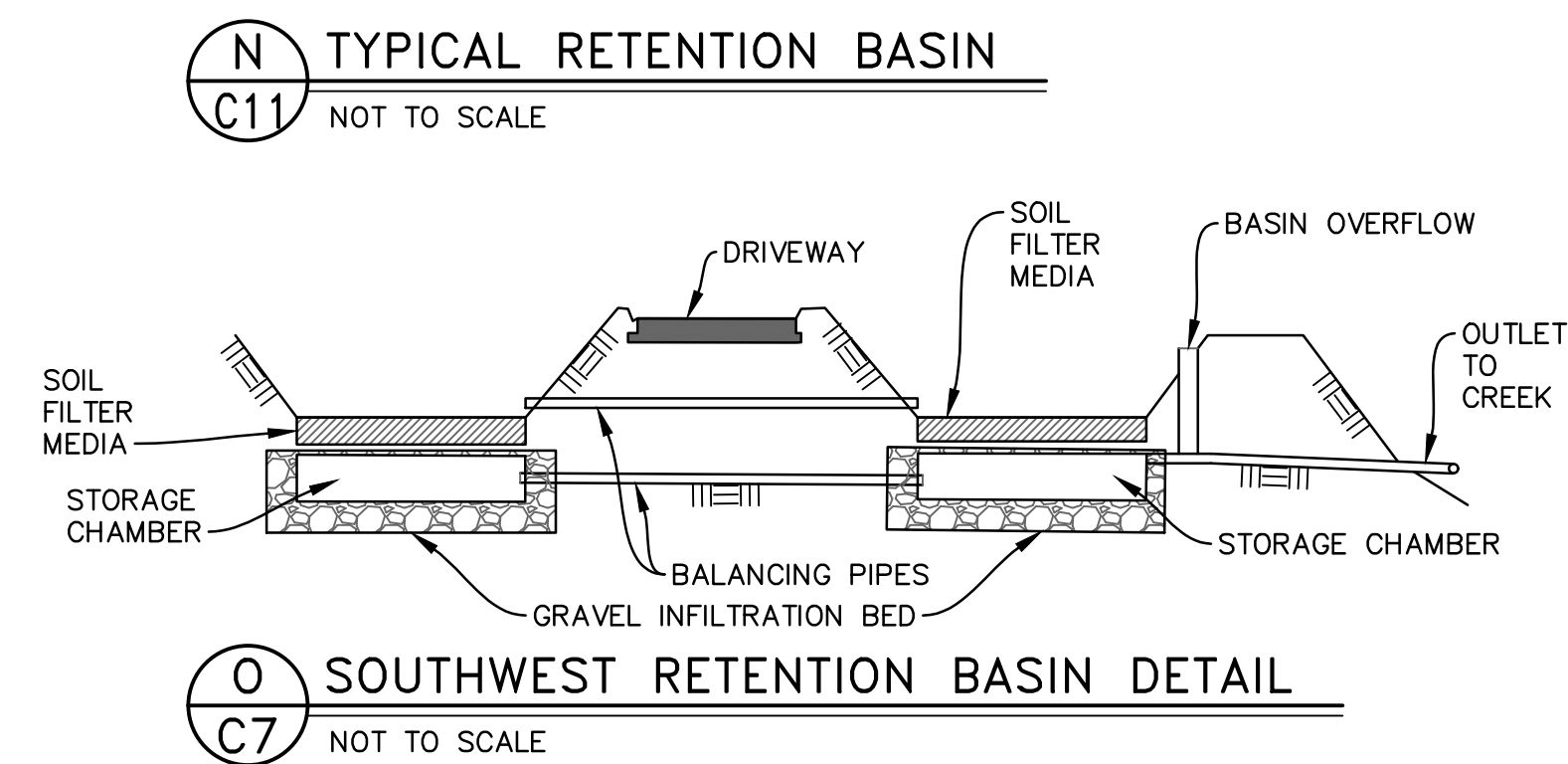
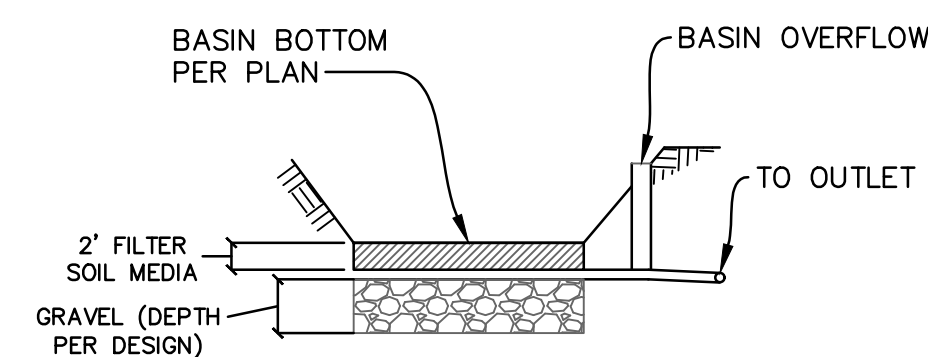
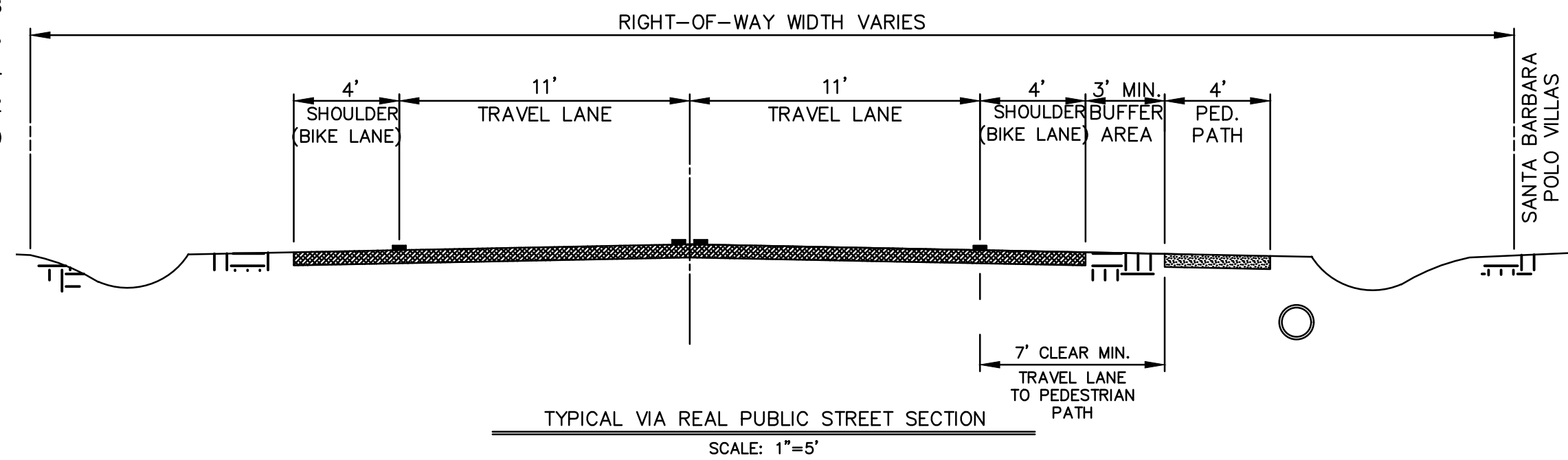
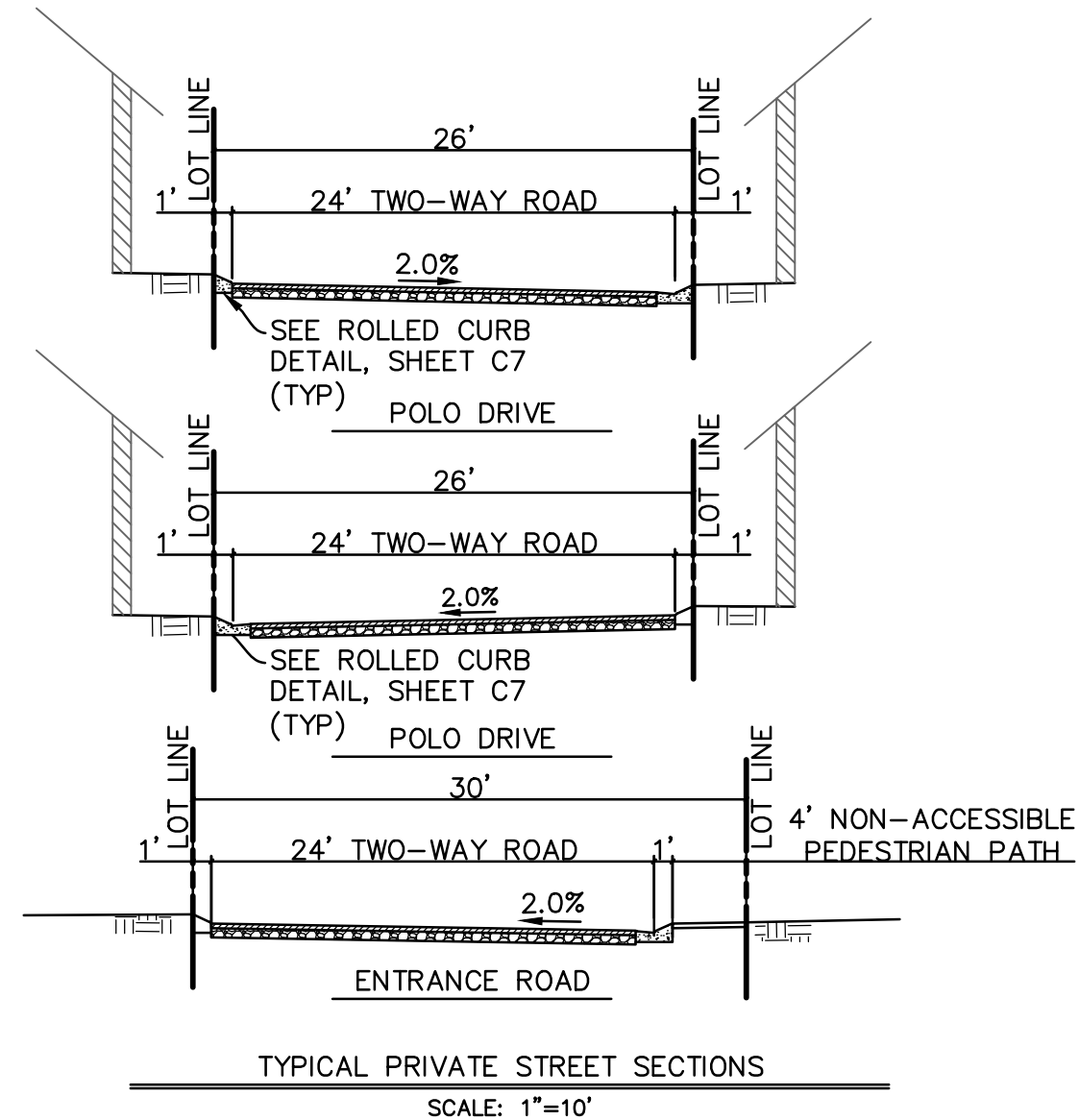
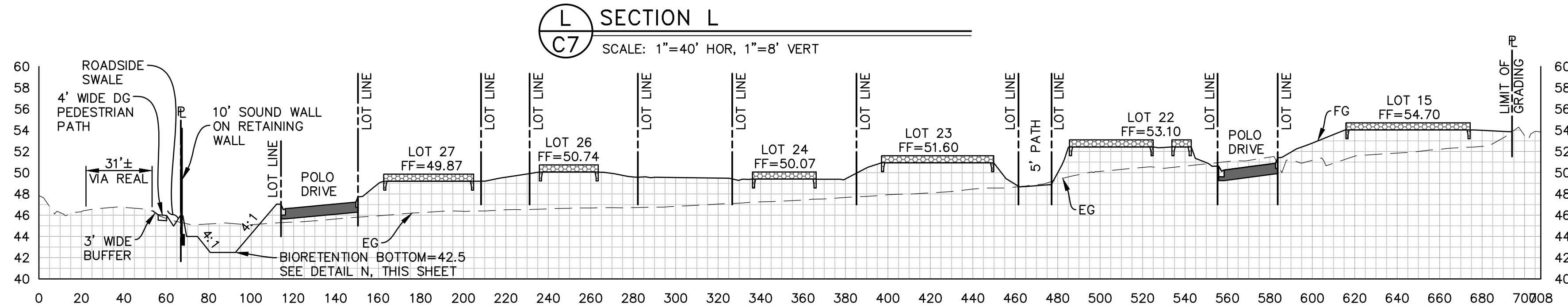
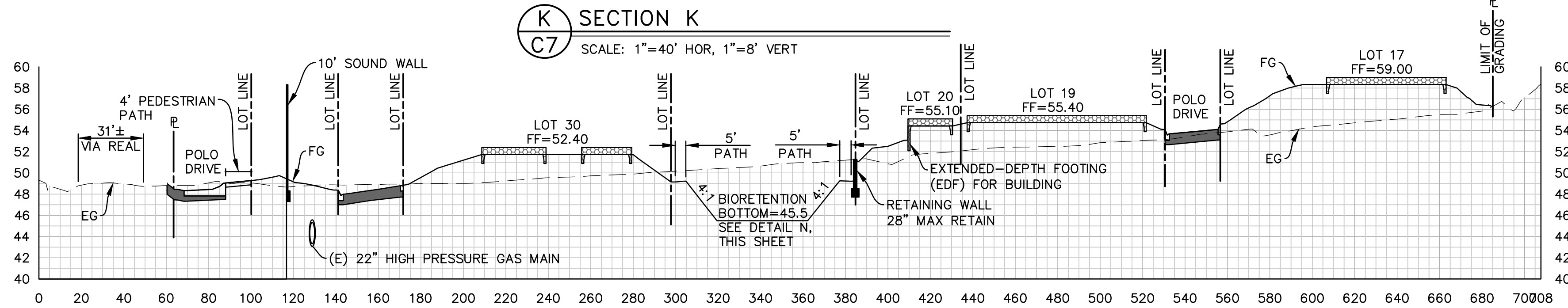
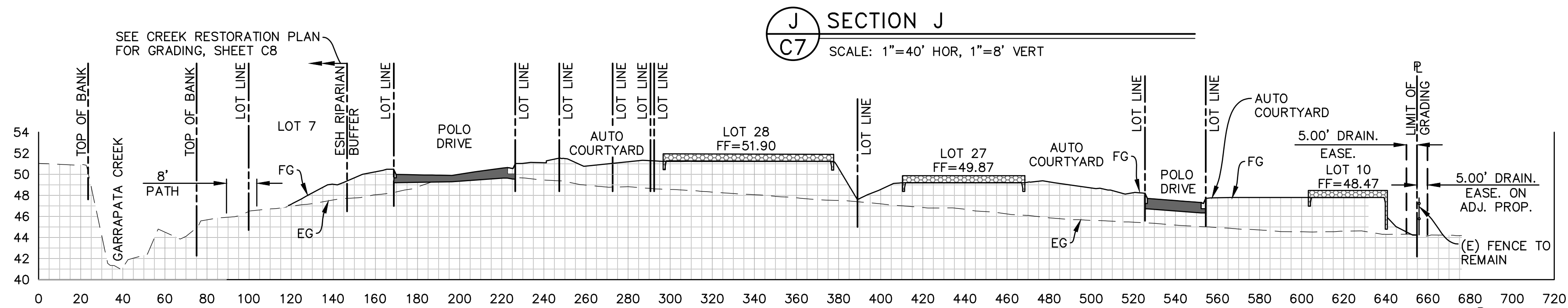
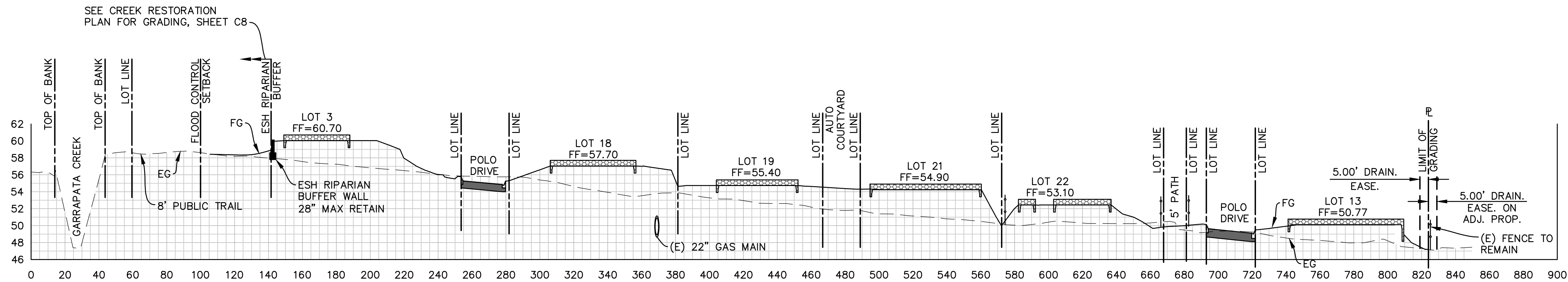
Case No. 17TRM-00000-00002
Vesting Tentative Tract Map No.
TT14831

PROJECT NO.: 2064144500
DATE: 2019.09.04
DRAWN BY: ECR
CHECKED BY: DED

SHEET TITLE

Sections

C11



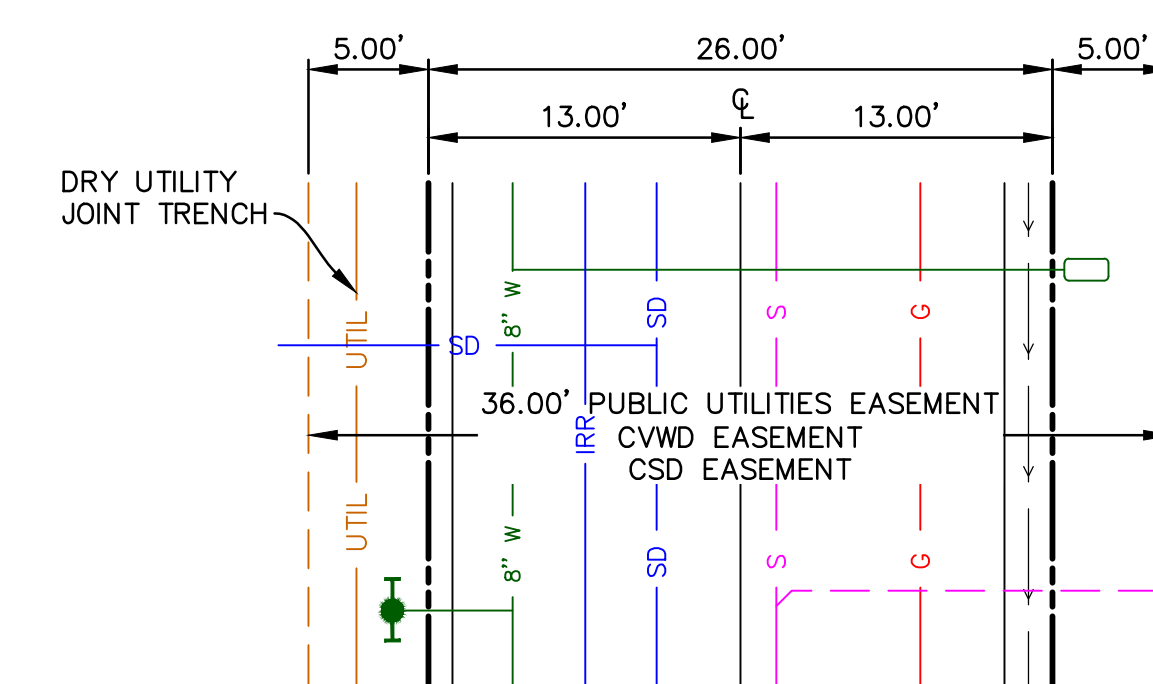


GENERAL NOTES

1. PROPOSED FIRE AND POTABLE WATER SYSTEM TO BE DEDICATED TO CARPINTERIA VALLEY WATER DISTRICT (CVWD).
2. EXISTING CVWD EASEMENTS TO BE QUITCLAIMED.
3. IRRIGATION WATER FOR SINGLE FAMILY DWELLINGS TO BE PROVIDED BY PRIVATE WELL.
4. IRRIGATION WATER FOR CONDOMINIUM AREA TO BE PROVIDED BY CVWD.
5. ONE (1) WATER METER AND ONE (1) FIRE LINE WITH A BACKFLOW PREVENTER PER CSFDP REQUIREMENTS IS TO BE PROVIDED FOR EACH NEW DWELLING UNIT.
6. EXISTING WATER METERS TO BE REMOVED.
7. PROPOSED SANITARY SEWER TO BE DEDICATED TO CARPINTERIA SANITARY DISTRICT (CSD).

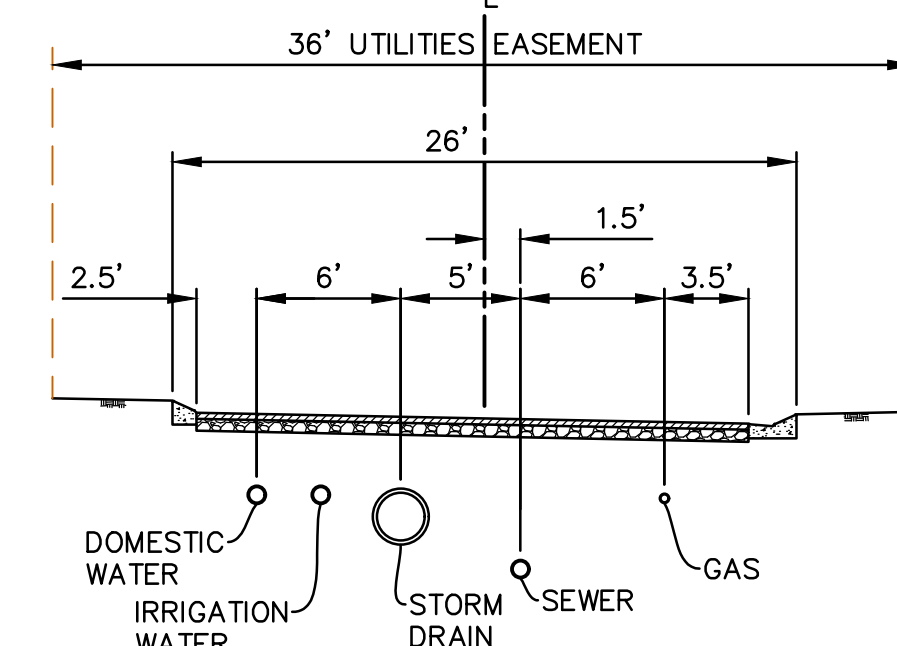
LEGEND

- G --- EXISTING GAS LINE
- G --- PROPOSED GAS LINE
- FW --- PROPOSED FIRE WATER LINE
- W --- PROPOSED FIRE WATER LINE LATERAL (PRIVATE)
- W --- EXISTING WATER LINE
- 8" W --- PROPOSED WATER LINE TO BE DEDICATED TO CARPINTERIA VALLEY WATER DISTRICT
- S --- PROPOSED WATER LATERAL (PRIVATE)
- S --- EXISTING SEWER LINE
- S --- PROPOSED SEWER LINE TO BE DEDICATED TO CARPINTERIA SANITARY DISTRICT
- SD --- PROPOSED SEWER LATERALS
- SD --- EXISTING STORM DRAIN
- SD --- PROPOSED STORM DRAIN
- SD --- PROPOSED FIRE HYDRANT
- SD --- PROPOSED CVWD FIRE LINE WITH BACKFLOW PREVENTER PER CSFDP REQUIREMENTS (ABOVEGROUND)
- IRR --- PROPOSED IRRIGATION LINE
- 36' --- 36' WIDE UTILITIES EASEMENT
- G --- PROPOSED CVWD WATER METER
- G --- PROPOSED GATE VALVE
- G --- PROPOSED SEWER MANHOLE
- G --- PROPOSED STORM DRAIN MANHOLE
- G --- PROPOSED STORM DRAIN CATCH BASIN



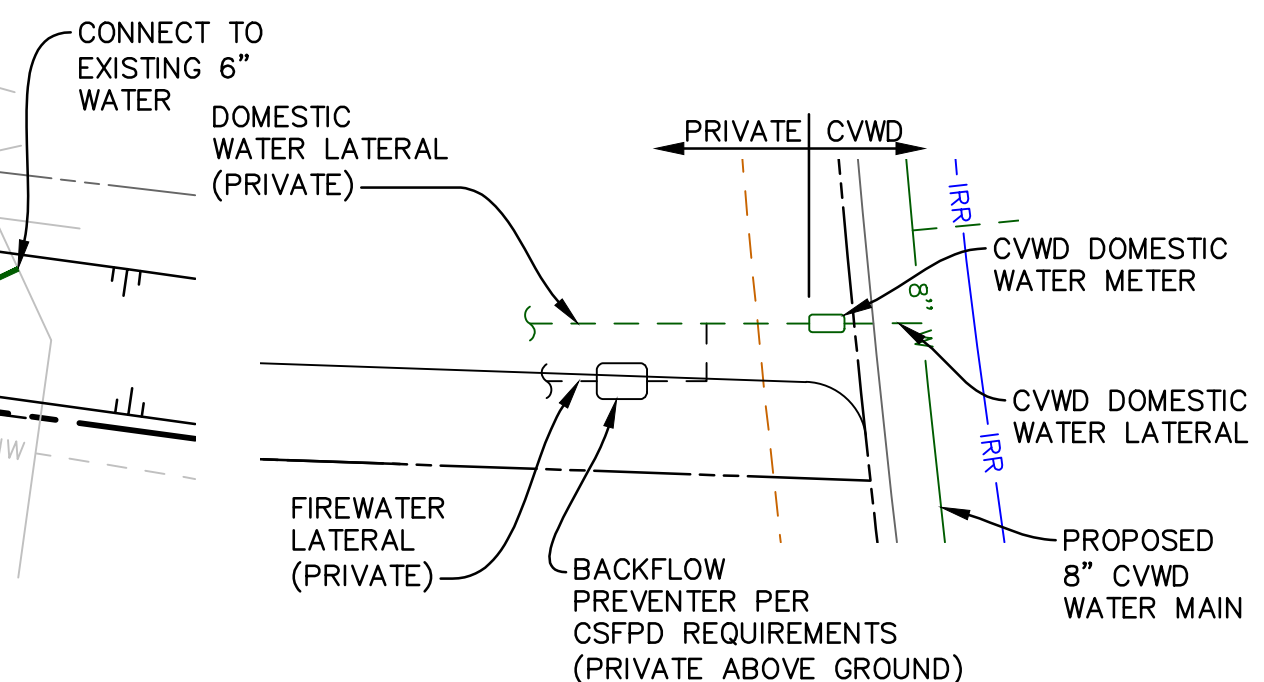
POLO DRIVE TYPICAL EASEMENT

SCALE: NTS



TYPICAL ROAD SECTION

SCALE: NTS



TYPICAL DOMESTIC AND FIREWATER CONNECTION DETAIL FOR SINGLE FAMILY DWELLINGS

SCALE: NTS

Design Team

Issue:

2017.08.07
DEVELOPMENT PLAN SUBMITTAL

2018.02.28
SBAR SUBMITTAL

2018.11.30
COUNTY PLANNING COMMISSION REVIEW

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SANTA BARBARA POLO VILLAS RESIDENTIAL DEVELOPMENT

3250-3282 Via Real
Carpinteria, CA

Case No. 17TRM-00000-00002
Vesting Tentative Tract Map No. TT14831

PROJECT NO: 2064144500

DATE: 2019.09.04

DRAWN BY: ECR

CHECKED BY: DED

SHEET TITLE

Preliminary Utility Plan

C12

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2017.08.07
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2018.02.28
SBAR SUBMITTAL

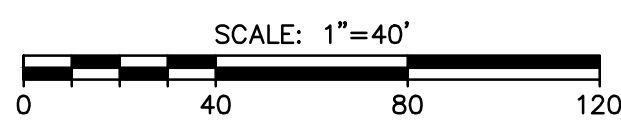
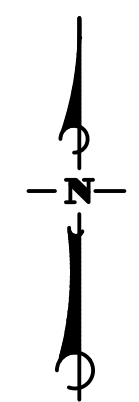
2018.11.30
COUNTY PLANNING COMMISSION
REVIEW

2019.08.30
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COMMISSION REVIEW

**SANTA BARBARA POLO
VILLAS RESIDENTIAL
DEVELOPMENT**

3250-3282 Via Real
Carpinteria, CA

Case No. 17TRM-00000-00002
Vesting Tentative Tract Map No.
TT14831



PROJECT NO: 2064144500
DATE: 2019.09.04
DRAWN BY: ECR
CHECKED BY: DED

SHEET TITLE

Tree Removal Plan

C13



GENERAL NOTES

1. PROPOSED TREES TO BE REMOVED:
 - THIRTEEN (13) UNKNOWN TREES
 - ONE (1) TIPOU TREE
 - NINE (9) PALM TREE
 - NINE (9) EUCALYPTUS TREES
2. ALL OTHER TREES WILL BE PROTECTED

LEGEND

X TREE TO BE REMOVED

HYDROLOGY



WMZ =

1

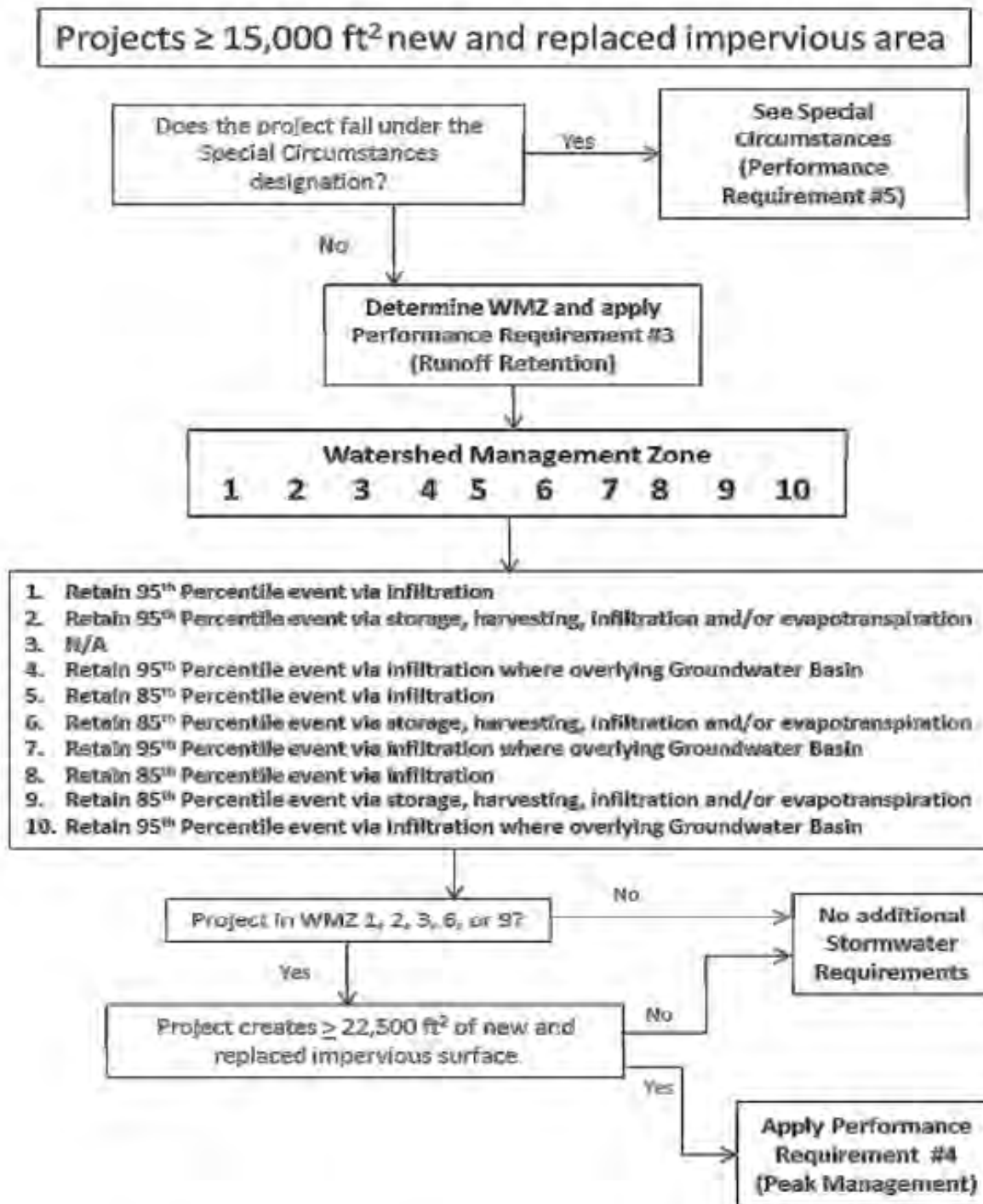


Figure 1c. Requirements for Large Development Projects



95th Percentile Event =

2.37 inches

ON-SITE DRAINAGE SUMMARY

Area Designation (DMA)	Tributary Area	% Impervious	Development (based on % Impervious)	Pervious Area	Impervious Area
	SF		to set CN	SF	SF
A-1	21238	0%	Open Space	21238	0
A-2	63030	63%	Commercial	23489	39541
A-3	36995	75%	Commercial	9250	27745
A-4	8325	81%	Commercial	1616	6709
A-5	10358	37%	Residential	6530	3828
A-6	7751	85%	Commercial	1174	6577
A-7	12089	79%	Commercial	2537	9552
Total	159786				
B-1	9612	0%	Open Space	9612	0
C-1	58266	71%	Commercial	16681	41585
C-2	37851	30%	Residential	26359	11492
Total	96117				
D-1	58607	52%	LL SFD	28168	30439
E-1	8924	99%	Commercial	89	8835
E-2	126537	0%	Open Space	126537	0
Total	135461				
F-1	20775	83%	Commercial	3607	17168
F-2	12916	82%	Commercial	2370	10546
Total	33691				
G-1	5487	47%	Residential	2887	2600
Grand Total	498762	square feet		282144	216617
Grand Total	11.45	acres			

Percent Pervious 43%

Percent Impervious 57%

Pre-Project Condition

Designation	Area, sf	Area, ac
X-1	49,119	1.1
X-2	169,294	3.9
X-3	280,162	6.4

Total	498,575	11.45	454,696
Percent Pervious		91%	
Percent Impervious		9%	

POND GEOMETRY

Bioretention Pond A-1 (SCM A-1)

Elevation	Area, sf
42.5	7578
43	8947.41
44	11302.1
45	14027.73
46	15642.31
47	19011.63
48	40875.54

Pipe Invert Out =	40.5 ft
Top of Grate =	44.0 ft
Overflow Window =	44.7 ft - provides 1 ft freeboard
Perf Pipe Invert =	40.5 ft
Gravel Bottom =	38.5 ft
Top of Soil =	42.5 ft
Ponding Elev ₁₀₀ =	43.7 ft
Lowest Adj FF =	48.1 ft

Detention Pond C (SCM C-2)

Elevation	Area, sf
44	6348.76
45	7819.20
46	9372.98
47	11047.03
48	11047.03
49	11047.03

Pipe Invert out =	44 ft
Top of Grate =	46.5 ft
Overflow Elev =	47 ft
Ponding Elev ₁₀₀ =	46.62 ft - provides 0.38 ft freeboard
Lowest Adj FF =	49.2 ft

Below elevation 44, the pond is considered full
No infiltration in this pond

Bioretention Pond D (SCM D-1)

Elevation	Area, sf
45.5	1619.68
46	1956.11
47	2669.81
48	3523.66
49	3523.66

Pipe Invert Out =	43.9 ft
Invert _{perf} =	44
Top of Grate =	47 ft
Overflow =	47.9 ft
Perf Pipe Invert =	43.5 ft
Top of Gravel =	43.5 ft
Gravel Bottom =	38 ft
Top of Soil =	46 ft
Ponding Elev ₁₀₀ =	47.47 ft
Lowest Adj FF =	50.4 ft

Bioretention Basin F {Chambers} (SCM F)

Gravel _{bottom} =	42.65 ft
Invert _{outlet} =	49.40 ft
Gravel _{top} =	49.40 ft
Top of Soil =	51.40 ft
Top of Grate =	52.50 ft
Ponding Elev ₁₀₀ =	52.48 ft
Overflow Elev =	52.80 ft
Lowest Adj FF =	53.40 ft

Recommendation:

20-ADS Stormtech MC-4500 Chambers

Overall system size: 88' long x 6.75 ft high x 10.33 ft wide

Elevation	Area, sf
42.65 Chamber	
43.4 Chamber	
49.4 Chamber	
51.4	1771.2
52	2369.8
53	5712.15
54	5712.15

Bioretention Pond E-2 (SCM E-2)

Invert_{outlet} = 45 ft

Gravel_{top} = 45 ft

Gravel_{bottom} = 44

Top of Soil = 47 ft

Overflow = 49 ft

Ponding Elev₁₀₀ =

Lowest Adj FF =

Elevation	Area, sf
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43	285
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45	285
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47	285
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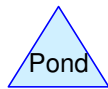
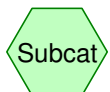
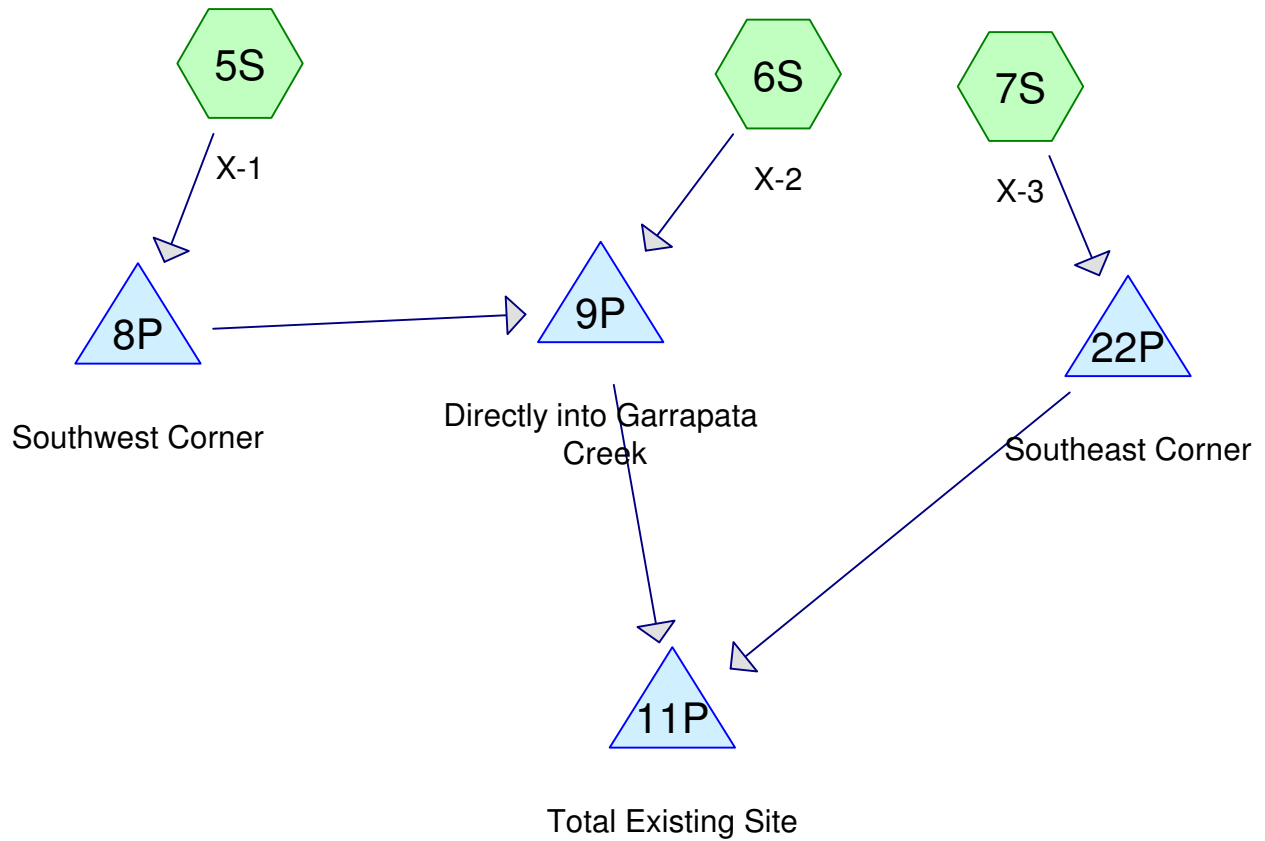
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49	1979
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50	1979
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PRE- AND POST-CONSTRUCTION CONDITION CHECK

Condition	Pre-Project	Post-Project	Difference
Location	cfs	cfs	cfs
95th Percentile			
SCM A-1	-	0.00	-
SCM D-1	-	0.00	-
SCM F	-	0.00	-
2-year			
Total Project	5.96	0.61	-5.35
To Garrapata Creek	3.19	0.46	-2.73
To East	2.87	0.38	-2.49
5-year			
Total Project	11.31	1.95	-9.36
To Garrapata Creek	5.80	1.64	-4.16
To East	5.69	1.25	-4.44
10-year			
Total Project	15.12	4.17	-10.95
To Garrapata Creek	7.67	3.15	-4.52
To East	7.71	2.63	-5.08



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.130	85	1/8 acre lots, 65% imp, HSG B (5S)
10.320	80	Pasture/grassland/range, Poor, HSG B (6S, 7S)
11.450	80	TOTAL AREA

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Type I 24-hr SC-002yr Rainfall=3.20"

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Summary for Subcatchment 5S: X-1

Runoff = 1.19 cfs @ 9.98 hrs, Volume= 0.196 af, Depth= 2.08"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (ac)	CN	Description
1.130	85	1/8 acre lots, 65% imp, HSG B
0.395	61	35.00% Pervious Area
0.735	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 6S: X-2

Runoff = 2.02 cfs @ 10.02 hrs, Volume= 0.454 af, Depth= 1.40"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (ac)	CN	Description
* 3.890	80	Pasture/grassland/range, Poor, HSG B
3.890	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	300	0.0267	0.24		Sheet Flow,
					Grass: Short n= 0.150 P2= 3.20"
1.7	155	0.0450	1.48		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
22.7	455	Total			

Summary for Subcatchment 7S: X-3

Runoff = 2.78 cfs @ 10.04 hrs, Volume= 0.751 af, Depth= 1.40"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (ac)	CN	Description
* 6.430	80	Pasture/grassland/range, Poor, HSG B
6.430	80	100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	300	0.0233	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
8.4	396	0.0126	0.79		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
30.6	696	Total			

Summary for Pond 8P: Southwest Corner

Inflow Area = 1.130 ac, 65.00% Impervious, Inflow Depth = 2.08" for SC-002yr event
 Inflow = 1.19 cfs @ 9.98 hrs, Volume= 0.196 af
 Primary = 1.19 cfs @ 9.98 hrs, Volume= 0.196 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 9P: Directly into Garrapata Creek

Inflow Area = 5.020 ac, 14.63% Impervious, Inflow Depth = 1.56" for SC-002yr event
 Inflow = 3.19 cfs @ 10.01 hrs, Volume= 0.651 af
 Primary = 3.19 cfs @ 10.01 hrs, Volume= 0.651 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 11P: Total Existing Site

Inflow Area = 11.450 ac, 6.41% Impervious, Inflow Depth = 1.47" for SC-002yr event
 Inflow = 5.96 cfs @ 10.02 hrs, Volume= 1.402 af
 Primary = 5.96 cfs @ 10.02 hrs, Volume= 1.402 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 22P: Southeast Corner

Inflow Area = 6.430 ac, 0.00% Impervious, Inflow Depth = 1.40" for SC-002yr event
 Inflow = 2.78 cfs @ 10.04 hrs, Volume= 0.751 af
 Primary = 2.78 cfs @ 10.04 hrs, Volume= 0.751 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

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Type I 24-hr SC-005yr Rainfall=4.61"

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Summary for Subcatchment 5S: X-1

Runoff = 1.86 cfs @ 9.98 hrs, Volume= 0.305 af, Depth= 3.24"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (ac)	CN	Description
1.130	85	1/8 acre lots, 65% imp, HSG B
0.395	61	35.00% Pervious Area
0.735	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 6S: X-2

Runoff = 3.97 cfs @ 10.02 hrs, Volume= 0.828 af, Depth= 2.56"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (ac)	CN	Description
* 3.890	80	Pasture/grassland/range, Poor, HSG B
3.890	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	300	0.0267	0.24		Sheet Flow,
					Grass: Short n= 0.150 P2= 3.20"
1.7	155	0.0450	1.48		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
22.7	455	Total			

Summary for Subcatchment 7S: X-3

Runoff = 5.49 cfs @ 10.03 hrs, Volume= 1.369 af, Depth= 2.56"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (ac)	CN	Description
* 6.430	80	Pasture/grassland/range, Poor, HSG B
6.430	80	100.00% Pervious Area

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Type I 24-hr SC-005yr Rainfall=4.61"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	300	0.0233	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
8.4	396	0.0126	0.79		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
30.6	696	Total			

Summary for Pond 8P: Southwest Corner

Inflow Area = 1.130 ac, 65.00% Impervious, Inflow Depth = 3.24" for SC-005yr event
 Inflow = 1.86 cfs @ 9.98 hrs, Volume= 0.305 af
 Primary = 1.86 cfs @ 9.98 hrs, Volume= 0.305 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 9P: Directly into Garrapata Creek

Inflow Area = 5.020 ac, 14.63% Impervious, Inflow Depth = 2.71" for SC-005yr event
 Inflow = 5.80 cfs @ 10.00 hrs, Volume= 1.134 af
 Primary = 5.80 cfs @ 10.00 hrs, Volume= 1.134 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 11P: Total Existing Site

Inflow Area = 11.450 ac, 6.41% Impervious, Inflow Depth = 2.62" for SC-005yr event
 Inflow = 11.31 cfs @ 10.01 hrs, Volume= 2.503 af
 Primary = 11.31 cfs @ 10.01 hrs, Volume= 2.503 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 22P: Southeast Corner

Inflow Area = 6.430 ac, 0.00% Impervious, Inflow Depth = 2.56" for SC-005yr event
 Inflow = 5.49 cfs @ 10.03 hrs, Volume= 1.369 af
 Primary = 5.49 cfs @ 10.03 hrs, Volume= 1.369 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

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Type I 24-hr SC-010yr Rainfall=5.55"

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Summary for Subcatchment 5S: X-1

Runoff = 2.34 cfs @ 9.98 hrs, Volume= 0.382 af, Depth= 4.05"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (ac)	CN	Description
1.130	85	1/8 acre lots, 65% imp, HSG B
0.395	61	35.00% Pervious Area
0.735	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 6S: X-2

Runoff = 5.36 cfs @ 10.01 hrs, Volume= 1.095 af, Depth= 3.38"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (ac)	CN	Description
* 3.890	80	Pasture/grassland/range, Poor, HSG B
3.890	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	300	0.0267	0.24		Sheet Flow,
					Grass: Short n= 0.150 P2= 3.20"
1.7	155	0.0450	1.48		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
22.7	455	Total			

Summary for Subcatchment 7S: X-3

Runoff = 7.49 cfs @ 10.02 hrs, Volume= 1.810 af, Depth= 3.38"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (ac)	CN	Description
* 6.430	80	Pasture/grassland/range, Poor, HSG B
6.430	80	100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	300	0.0233	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
8.4	396	0.0126	0.79		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
30.6	696	Total			

Summary for Pond 8P: Southwest Corner

Inflow Area = 1.130 ac, 65.00% Impervious, Inflow Depth = 4.05" for SC-010yr event
 Inflow = 2.34 cfs @ 9.98 hrs, Volume= 0.382 af
 Primary = 2.34 cfs @ 9.98 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 9P: Directly into Garrapata Creek

Inflow Area = 5.020 ac, 14.63% Impervious, Inflow Depth = 3.53" for SC-010yr event
 Inflow = 7.67 cfs @ 10.00 hrs, Volume= 1.477 af
 Primary = 7.67 cfs @ 10.00 hrs, Volume= 1.477 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 11P: Total Existing Site

Inflow Area = 11.450 ac, 6.41% Impervious, Inflow Depth = 3.44" for SC-010yr event
 Inflow = 15.12 cfs @ 10.01 hrs, Volume= 3.286 af
 Primary = 15.12 cfs @ 10.01 hrs, Volume= 3.286 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 22P: Southeast Corner

Inflow Area = 6.430 ac, 0.00% Impervious, Inflow Depth = 3.38" for SC-010yr event
 Inflow = 7.49 cfs @ 10.02 hrs, Volume= 1.810 af
 Primary = 7.49 cfs @ 10.02 hrs, Volume= 1.810 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

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Type I 24-hr SC-025yr Rainfall=6.71"

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Summary for Subcatchment 5S: X-1

Runoff = 2.95 cfs @ 9.98 hrs, Volume= 0.478 af, Depth= 5.08"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-025yr Rainfall=6.71"

Area (ac)	CN	Description
1.130	85	1/8 acre lots, 65% imp, HSG B
0.395	61	35.00% Pervious Area
0.735	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 6S: X-2

Runoff = 7.13 cfs @ 10.01 hrs, Volume= 1.435 af, Depth= 4.43"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-025yr Rainfall=6.71"

Area (ac)	CN	Description
* 3.890	80	Pasture/grassland/range, Poor, HSG B
3.890	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	300	0.0267	0.24		Sheet Flow,
					Grass: Short n= 0.150 P2= 3.20"
1.7	155	0.0450	1.48		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
22.7	455	Total			

Summary for Subcatchment 7S: X-3

Runoff = 9.98 cfs @ 10.02 hrs, Volume= 2.372 af, Depth= 4.43"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-025yr Rainfall=6.71"

Area (ac)	CN	Description
* 6.430	80	Pasture/grassland/range, Poor, HSG B
6.430	80	100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	300	0.0233	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
8.4	396	0.0126	0.79		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
30.6	696	Total			

Summary for Pond 8P: Southwest Corner

Inflow Area = 1.130 ac, 65.00% Impervious, Inflow Depth = 5.08" for SC-025yr event
 Inflow = 2.95 cfs @ 9.98 hrs, Volume= 0.478 af
 Primary = 2.95 cfs @ 9.98 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 9P: Directly into Garrapata Creek

Inflow Area = 5.020 ac, 14.63% Impervious, Inflow Depth = 4.57" for SC-025yr event
 Inflow = 10.04 cfs @ 10.00 hrs, Volume= 1.914 af
 Primary = 10.04 cfs @ 10.00 hrs, Volume= 1.914 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 11P: Total Existing Site

Inflow Area = 11.450 ac, 6.41% Impervious, Inflow Depth = 4.49" for SC-025yr event
 Inflow = 19.98 cfs @ 10.01 hrs, Volume= 4.286 af
 Primary = 19.98 cfs @ 10.01 hrs, Volume= 4.286 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 22P: Southeast Corner

Inflow Area = 6.430 ac, 0.00% Impervious, Inflow Depth = 4.43" for SC-025yr event
 Inflow = 9.98 cfs @ 10.02 hrs, Volume= 2.372 af
 Primary = 9.98 cfs @ 10.02 hrs, Volume= 2.372 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

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Type I 24-hr SC-050yr Rainfall=7.56"

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Summary for Subcatchment 5S: X-1

Runoff = 3.40 cfs @ 9.98 hrs, Volume= 0.551 af, Depth= 5.85"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-050yr Rainfall=7.56"

Area (ac)	CN	Description
1.130	85	1/8 acre lots, 65% imp, HSG B
0.395	61	35.00% Pervious Area
0.735	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 6S: X-2

Runoff = 8.44 cfs @ 10.01 hrs, Volume= 1.690 af, Depth= 5.21"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-050yr Rainfall=7.56"

Area (ac)	CN	Description
* 3.890	80	Pasture/grassland/range, Poor, HSG B
3.890	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	300	0.0267	0.24		Sheet Flow,
					Grass: Short n= 0.150 P2= 3.20"
1.7	155	0.0450	1.48		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
22.7	455	Total			

Summary for Subcatchment 7S: X-3

Runoff = 11.83 cfs @ 10.02 hrs, Volume= 2.794 af, Depth= 5.21"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-050yr Rainfall=7.56"

Area (ac)	CN	Description
* 6.430	80	Pasture/grassland/range, Poor, HSG B
6.430	80	100.00% Pervious Area

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Type I 24-hr SC-050yr Rainfall=7.56"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	300	0.0233	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
8.4	396	0.0126	0.79		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
30.6	696	Total			

Summary for Pond 8P: Southwest Corner

Inflow Area = 1.130 ac, 65.00% Impervious, Inflow Depth = 5.85" for SC-050yr event
 Inflow = 3.40 cfs @ 9.98 hrs, Volume= 0.551 af
 Primary = 3.40 cfs @ 9.98 hrs, Volume= 0.551 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 9P: Directly into Garrapata Creek

Inflow Area = 5.020 ac, 14.63% Impervious, Inflow Depth = 5.36" for SC-050yr event
 Inflow = 11.80 cfs @ 10.00 hrs, Volume= 2.241 af
 Primary = 11.80 cfs @ 10.00 hrs, Volume= 2.241 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 11P: Total Existing Site

Inflow Area = 11.450 ac, 6.41% Impervious, Inflow Depth = 5.28" for SC-050yr event
 Inflow = 23.59 cfs @ 10.01 hrs, Volume= 5.035 af
 Primary = 23.59 cfs @ 10.01 hrs, Volume= 5.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 22P: Southeast Corner

Inflow Area = 6.430 ac, 0.00% Impervious, Inflow Depth = 5.21" for SC-050yr event
 Inflow = 11.83 cfs @ 10.02 hrs, Volume= 2.794 af
 Primary = 11.83 cfs @ 10.02 hrs, Volume= 2.794 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

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Type I 24-hr SC-100yr Rainfall=8.38"

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Summary for Subcatchment 5S: X-1

Runoff = 3.85 cfs @ 9.98 hrs, Volume= 0.621 af, Depth= 6.60"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-100yr Rainfall=8.38"

Area (ac)	CN	Description
1.130	85	1/8 acre lots, 65% imp, HSG B
0.395	61	35.00% Pervious Area
0.735	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 6S: X-2

Runoff = 9.71 cfs @ 10.01 hrs, Volume= 1.939 af, Depth= 5.98"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-100yr Rainfall=8.38"

Area (ac)	CN	Description
* 3.890	80	Pasture/grassland/range, Poor, HSG B
3.890	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	300	0.0267	0.24		Sheet Flow,
					Grass: Short n= 0.150 P2= 3.20"
1.7	155	0.0450	1.48		Shallow Concentrated Flow,
					Short Grass Pasture Kv= 7.0 fps
22.7	455	Total			

Summary for Subcatchment 7S: X-3

Runoff = 13.63 cfs @ 10.02 hrs, Volume= 3.205 af, Depth= 5.98"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-100yr Rainfall=8.38"

Area (ac)	CN	Description
* 6.430	80	Pasture/grassland/range, Poor, HSG B
6.430	80	100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	300	0.0233	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
8.4	396	0.0126	0.79		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
30.6	696	Total			

Summary for Pond 8P: Southwest Corner

Inflow Area = 1.130 ac, 65.00% Impervious, Inflow Depth = 6.60" for SC-100yr event
 Inflow = 3.85 cfs @ 9.98 hrs, Volume= 0.621 af
 Primary = 3.85 cfs @ 9.98 hrs, Volume= 0.621 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 9P: Directly into Garrapata Creek

Inflow Area = 5.020 ac, 14.63% Impervious, Inflow Depth = 6.12" for SC-100yr event
 Inflow = 13.52 cfs @ 10.00 hrs, Volume= 2.561 af
 Primary = 13.52 cfs @ 10.00 hrs, Volume= 2.561 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 11P: Total Existing Site

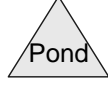
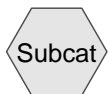
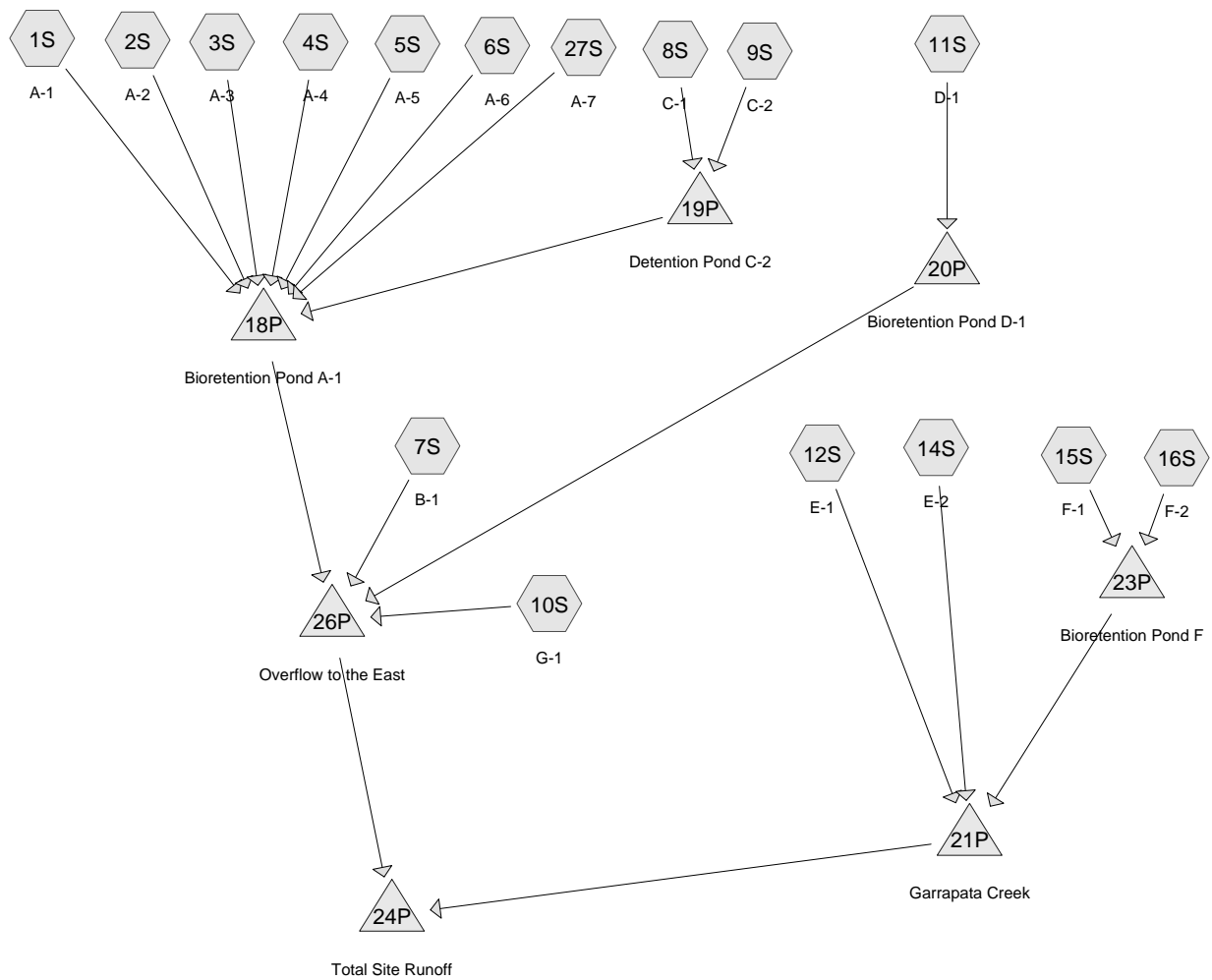
Inflow Area = 11.450 ac, 6.41% Impervious, Inflow Depth = 6.04" for SC-100yr event
 Inflow = 27.11 cfs @ 10.01 hrs, Volume= 5.766 af
 Primary = 27.11 cfs @ 10.01 hrs, Volume= 5.766 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 22P: Southeast Corner

Inflow Area = 6.430 ac, 0.00% Impervious, Inflow Depth = 5.98" for SC-100yr event
 Inflow = 13.63 cfs @ 10.02 hrs, Volume= 3.205 af
 Primary = 13.63 cfs @ 10.02 hrs, Volume= 3.205 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Routing Diagram for 201810-Preliminary Evaluation-Stormwater

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
37,851	72	1/3 acre lots, 30% imp, HSG B (9S)
15,845	75	1/4 acre lots, 38% imp, HSG B (5S, 10S)
121,637	85	1/8 acre lots, 65% imp, HSG B (2S, 11S)
9,612	69	50-75% Grass cover, Fair, HSG B (7S)
146,775	61	>75% Grass cover, Good, HSG B (1S, 14S)
70,780	92	Urban commercial, 85% imp, HSG B (4S, 6S, 12S, 15S, 16S, 27S)
95,261	88	Urban industrial, 72% imp, HSG B (3S, 8S)
497,761	78	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
497,761	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 14S, 15S, 16S, 27S
0	HSG C	
0	HSG D	
0	Other	
497,761		TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	19P	43.99	42.50	271.0	0.0055	0.013	18.0	0.0	0.0
2	20P	43.52	40.60	572.0	0.0051	0.013	18.0	0.0	0.0
3	23P	43.00	40.00	75.0	0.0400	0.013	18.0	0.0	0.0

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: A-1	Runoff Area=21,238 sf 0.00% Impervious Runoff Depth=0.16" Tc=12.0 min CN=61/0 Runoff=0.01 cfs 282 cf
Subcatchment2S: A-2	Runoff Area=63,030 sf 65.00% Impervious Runoff Depth=1.45" Tc=12.0 min CN=61/98 Runoff=1.09 cfs 7,604 cf
Subcatchment3S: A-3	Runoff Area=36,995 sf 72.00% Impervious Runoff Depth=1.59" Tc=12.0 min CN=62/98 Runoff=0.71 cfs 4,909 cf
Subcatchment4S: A-4	Runoff Area=8,325 sf 85.00% Impervious Runoff Depth=1.84" Tc=12.0 min CN=58/98 Runoff=0.19 cfs 1,274 cf
Subcatchment5S: A-5	Runoff Area=10,358 sf 38.00% Impervious Runoff Depth=0.91" Tc=12.0 min CN=61/98 Runoff=0.10 cfs 788 cf
Subcatchment6S: A-6	Runoff Area=7,751 sf 85.00% Impervious Runoff Depth=1.84" Tc=12.0 min CN=58/98 Runoff=0.18 cfs 1,186 cf
Subcatchment7S: B-1	Runoff Area=9,612 sf 0.00% Impervious Runoff Depth=0.36" Tc=12.0 min CN=69/0 Runoff=0.02 cfs 291 cf
Subcatchment8S: C-1	Runoff Area=58,266 sf 72.00% Impervious Runoff Depth=1.59" Tc=12.0 min CN=62/98 Runoff=1.12 cfs 7,731 cf
Subcatchment9S: C-2	Runoff Area=37,851 sf 30.00% Impervious Runoff Depth=0.75" Tc=12.0 min CN=61/98 Runoff=0.30 cfs 2,378 cf
Subcatchment10S: G-1	Runoff Area=5,487 sf 38.00% Impervious Runoff Depth=0.91" Tc=12.0 min CN=61/98 Runoff=0.06 cfs 417 cf
Subcatchment11S: D-1	Runoff Area=58,607 sf 65.00% Impervious Runoff Depth=1.45" Tc=12.0 min CN=61/98 Runoff=1.01 cfs 7,070 cf
Subcatchment12S: E-1	Runoff Area=8,924 sf 85.00% Impervious Runoff Depth=1.84" Tc=12.0 min CN=58/98 Runoff=0.20 cfs 1,365 cf
Subcatchment14S: E-2	Runoff Area=125,537 sf 0.00% Impervious Runoff Depth=0.16" Tc=12.0 min CN=61/0 Runoff=0.04 cfs 1,665 cf
Subcatchment15S: F-1	Runoff Area=20,775 sf 85.00% Impervious Runoff Depth=1.84" Tc=12.0 min CN=58/98 Runoff=0.47 cfs 3,178 cf
Subcatchment16S: F-2	Runoff Area=12,916 sf 85.00% Impervious Runoff Depth=1.84" Tc=12.0 min CN=58/98 Runoff=0.29 cfs 1,976 cf
Subcatchment27S: A-7	Runoff Area=12,089 sf 85.00% Impervious Runoff Depth=1.84" Tc=12.0 min CN=58/98 Runoff=0.27 cfs 1,850 cf

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Type I 24-hr 95th % Rainfall=2.37"

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Pond 18P: Bioretention Pond A-1 Peak Elev=42.00' Storage=17,426 cf Inflow=2.73 cfs 27,933 cf
Discarded=0.13 cfs 27,931 cf Primary=0.00 cfs 0 cf Outflow=0.13 cfs 27,931 cf

Pond 19P: Detention Pond C-2 Peak Elev=44.54' Storage=3,689 cf Inflow=1.42 cfs 10,109 cf
Outflow=0.26 cfs 10,042 cf

Pond 20P: Bioretention Pond D-1 Peak Elev=43.52' Storage=4,219 cf Inflow=1.01 cfs 7,070 cf
Discarded=0.04 cfs 7,070 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 7,070 cf

Pond 21P: Garrapata Creek Inflow=0.20 cfs 3,030 cf
Primary=0.20 cfs 3,030 cf

Pond 23P: Bioretention Pond F Peak Elev=49.38' Storage=3,757 cf Inflow=0.76 cfs 5,155 cf
Discarded=0.03 cfs 4,108 cf Primary=0.00 cfs 0 cf Outflow=0.03 cfs 4,108 cf

Pond 24P: Total Site Runoff Inflow=0.27 cfs 3,738 cf
Primary=0.27 cfs 3,738 cf

Pond 26P: Overflow to the East Inflow=0.07 cfs 708 cf
Primary=0.07 cfs 708 cf

Total Runoff Area = 497,761 sf Runoff Volume = 43,963 cf Average Runoff Depth = 1.06"
54.76% Pervious = 272,570 sf 45.24% Impervious = 225,191 sf

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Summary for Subcatchment 1S: A-1

Runoff = 0.01 cfs @ 13.03 hrs, Volume= 282 cf, Depth= 0.16"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
21,238	61	>75% Grass cover, Good, HSG B
21,238	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 2S: A-2

Runoff = 1.09 cfs @ 9.98 hrs, Volume= 7,604 cf, Depth= 1.45"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
63,030	85	1/8 acre lots, 65% imp, HSG B
22,061	61	35.00% Pervious Area
40,970	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 3S: A-3

Runoff = 0.71 cfs @ 9.98 hrs, Volume= 4,909 cf, Depth= 1.59"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
36,995	88	Urban industrial, 72% imp, HSG B
10,359	62	28.00% Pervious Area
26,636	98	72.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr 95th % Rainfall=2.37"

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Summary for Subcatchment 4S: A-4

Runoff = 0.19 cfs @ 9.98 hrs, Volume= 1,274 cf, Depth= 1.84"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
8,325	92	Urban commercial, 85% imp, HSG B
1,249	58	15.00% Pervious Area
7,076	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 5S: A-5

Runoff = 0.10 cfs @ 9.98 hrs, Volume= 788 cf, Depth= 0.91"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
10,358	75	1/4 acre lots, 38% imp, HSG B
6,422	61	62.00% Pervious Area
3,936	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 6S: A-6

Runoff = 0.18 cfs @ 9.98 hrs, Volume= 1,186 cf, Depth= 1.84"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
7,751	92	Urban commercial, 85% imp, HSG B
1,163	58	15.00% Pervious Area
6,588	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr 95th % Rainfall=2.37"

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Summary for Subcatchment 7S: B-1

Runoff = 0.02 cfs @ 10.05 hrs, Volume= 291 cf, Depth= 0.36"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
9,612	69	50-75% Grass cover, Fair, HSG B
9,612	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 8S: C-1

Runoff = 1.12 cfs @ 9.98 hrs, Volume= 7,731 cf, Depth= 1.59"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
58,266	88	Urban industrial, 72% imp, HSG B
16,314	62	28.00% Pervious Area
41,952	98	72.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 9S: C-2

Runoff = 0.30 cfs @ 9.98 hrs, Volume= 2,378 cf, Depth= 0.75"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
37,851	72	1/3 acre lots, 30% imp, HSG B
26,496	61	70.00% Pervious Area
11,355	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr 95th % Rainfall=2.37"

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Summary for Subcatchment 10S: G-1

Runoff = 0.06 cfs @ 9.98 hrs, Volume= 417 cf, Depth= 0.91"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
5,487	75	1/4 acre lots, 38% imp, HSG B
3,402	61	62.00% Pervious Area
2,085	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 11S: D-1

Runoff = 1.01 cfs @ 9.98 hrs, Volume= 7,070 cf, Depth= 1.45"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
58,607	85	1/8 acre lots, 65% imp, HSG B
20,512	61	35.00% Pervious Area
38,095	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 12S: E-1

Runoff = 0.20 cfs @ 9.98 hrs, Volume= 1,365 cf, Depth= 1.84"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
8,924	92	Urban commercial, 85% imp, HSG B
1,339	58	15.00% Pervious Area
7,585	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr 95th % Rainfall=2.37"

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Summary for Subcatchment 14S: E-2

Runoff = 0.04 cfs @ 13.03 hrs, Volume= 1,665 cf, Depth= 0.16"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
125,537	61	>75% Grass cover, Good, HSG B
125,537	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 15S: F-1

Runoff = 0.47 cfs @ 9.98 hrs, Volume= 3,178 cf, Depth= 1.84"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
20,775	92	Urban commercial, 85% imp, HSG B
3,116	58	15.00% Pervious Area
17,659	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 16S: F-2

Runoff = 0.29 cfs @ 9.98 hrs, Volume= 1,976 cf, Depth= 1.84"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
12,916	92	Urban commercial, 85% imp, HSG B
1,937	58	15.00% Pervious Area
10,979	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr 95th % Rainfall=2.37"

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Summary for Subcatchment 27S: A-7

Runoff = 0.27 cfs @ 9.98 hrs, Volume= 1,850 cf, Depth= 1.84"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr 95th % Rainfall=2.37"

Area (sf)	CN	Description
12,089	92	Urban commercial, 85% imp, HSG B
1,813	58	15.00% Pervious Area
10,276	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Pond 18P: Bioretention Pond A-1

Inflow Area = 255,903 sf, 58.14% Impervious, Inflow Depth > 1.31" for 95th % event
 Inflow = 2.73 cfs @ 9.98 hrs, Volume= 27,933 cf
 Outflow = 0.13 cfs @ 6.90 hrs, Volume= 27,931 cf, Atten= 95%, Lag= 0.0 min
 Discarded = 0.13 cfs @ 6.90 hrs, Volume= 27,931 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 42.00' @ 24.08 hrs Surf.Area= 7,578 sf Storage= 17,426 cf

Plug-Flow detention time= 1,201.6 min calculated for 27,912 cf (100% of inflow)
 Center-of-Mass det. time= 1,200.6 min (2,032.1 - 831.5)

Volume	Invert	Avail.Storage	Storage Description	
#1	35.50'	107,214 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.50	7,578	0.0	0	0
40.50	7,578	40.0	15,156	15,156
42.50	7,578	20.0	3,031	18,187
43.00	8,947	100.0	4,131	22,318
44.00	11,302	100.0	10,125	32,443
45.00	14,028	100.0	12,665	45,108
46.00	15,642	100.0	14,835	59,943
47.00	19,012	100.0	17,327	77,270
48.00	40,876	100.0	29,944	107,214

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.50'	0.750 in/hr Exfiltration over Surface area
#2	Primary	40.50'	24.0" Vert. Orifice/Grate C= 0.600
#3	Device 2	42.50'	18.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	45.00'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads

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#5 Primary 47.00' **20.0' long x 1.0' breadth Broad-Crested Rectangular Weir**
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
 2.50 3.00
 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
 3.30 3.31 3.32

Discarded OutFlow Max=0.13 cfs @ 6.90 hrs HW=35.63' (Free Discharge)

1=Exfiltration (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.50' (Free Discharge)

2=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 19P: Detention Pond C-2

Inflow Area = 96,117 sf, 55.46% Impervious, Inflow Depth = 1.26" for 95th % event
 Inflow = 1.42 cfs @ 9.98 hrs, Volume= 10,109 cf
 Outflow = 0.26 cfs @ 10.96 hrs, Volume= 10,042 cf, Atten= 82%, Lag= 58.7 min
 Primary = 0.26 cfs @ 10.96 hrs, Volume= 10,042 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 44.54' @ 10.96 hrs Surf.Area= 7,146 sf Storage= 3,689 cf

Plug-Flow detention time= 271.3 min calculated for 10,042 cf (99% of inflow)
 Center-of-Mass det. time= 266.5 min (1,004.3 - 737.8)

Volume	Invert	Avail.Storage	Storage Description
#1	43.99'	48,016 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.99	0	0	0
44.00	6,349	32	32
45.00	7,819	7,084	7,116
46.00	9,373	8,596	15,712
47.00	11,047	10,210	25,922
48.00	11,047	11,047	36,969
49.00	11,047	11,047	48,016

Device	Routing	Invert	Outlet Devices
#1	Primary	43.99'	18.0" Round Culvert L= 271.0' Ke= 0.200 Inlet / Outlet Invert= 43.99' / 42.50' S= 0.0055 '/ Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	44.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	46.50'	12.0" x 12.0" Horiz. Orifice/Grate C= 0.600 in 12.0" x 12.0" Grate Limited to weir flow at low heads
#4	Primary	48.00'	15.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

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2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.26 cfs @ 10.96 hrs HW=44.54' (Free Discharge)

- 1=Culvert (Passes 0.26 cfs of 1.27 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.26 cfs @ 2.95 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 20P: Bioretention Pond D-1

Inflow Area = 58,607 sf, 65.00% Impervious, Inflow Depth = 1.45" for 95th % event
 Inflow = 1.01 cfs @ 9.98 hrs, Volume= 7,070 cf
 Outflow = 0.04 cfs @ 21.32 hrs, Volume= 7,070 cf, Atten= 96%, Lag= 680.4 min
 Discarded = 0.04 cfs @ 21.32 hrs, Volume= 7,070 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 43.52' @ 21.32 hrs Surf.Area= 1,620 sf Storage= 4,219 cf

Plug-Flow detention time= 1,014.4 min calculated for 7,070 cf (100% of inflow)
 Center-of-Mass det. time= 1,014.2 min (1,745.9 - 731.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	37.00'	14,223 cf	Custom Stage Data (Conic) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
37.00	1,620	0.0	0	0	1,620
43.50	1,620	40.0	4,212	4,212	2,547
45.50	1,620	20.0	648	4,860	2,833
46.00	1,956	100.0	893	5,753	3,177
47.00	2,670	100.0	2,304	8,056	3,911
48.00	3,224	100.0	2,943	10,999	4,497
49.00	3,224	100.0	3,224	14,223	4,699

Device	Routing	Invert	Outlet Devices
#1	Discarded	37.00'	0.750 in/hr Exfiltration over Wetted area
#2	Primary	43.52'	18.0" Round Culvert L= 572.0' Ke= 0.200 Inlet / Outlet Invert= 43.52' / 40.60' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	44.00'	0.5" Vert. Orifice/Grate C= 0.600
#4	Device 2	47.00'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads
#5	Primary	47.90'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

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Discarded OutFlow Max=0.04 cfs @ 21.32 hrs HW=43.52' (Free Discharge)

1=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=37.00' (Free Discharge)

2=Culvert (Controls 0.00 cfs)

3=Orifice/Grate (Controls 0.00 cfs)

4=Orifice/Grate (Controls 0.00 cfs)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 21P: Garrapata Creek

Inflow Area = 168,152 sf, 21.54% Impervious, Inflow Depth = 0.22" for 95th % event

Inflow = 0.20 cfs @ 9.98 hrs, Volume= 3,030 cf

Primary = 0.20 cfs @ 9.98 hrs, Volume= 3,030 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 23P: Bioretention Pond F

Inflow Area = 33,691 sf, 85.00% Impervious, Inflow Depth = 1.84" for 95th % event

Inflow = 0.76 cfs @ 9.98 hrs, Volume= 5,155 cf

Outflow = 0.03 cfs @ 20.52 hrs, Volume= 4,108 cf, Atten= 96%, Lag= 632.0 min

Discarded = 0.03 cfs @ 20.52 hrs, Volume= 4,108 cf

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 49.38' @ 20.52 hrs Surf.Area= 905 sf Storage= 3,757 cf

Plug-Flow detention time= 1,589.1 min calculated for 4,105 cf (80% of inflow)

Center-of-Mass det. time= 1,476.9 min (2,199.7 - 722.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	42.65'	1,564 cf	10.33'W x 87.62'L x 6.75'H Field A 6,111 cf Overall - 2,201 cf Embedded = 3,910 cf x 40.0% Voids
#2A	43.40'	2,201 cf	ADS_StormTech MC-4500 +Cap x 20 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
#3	49.40'	11,704 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		15,469 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.40	1,771	0.0	0	0
51.40	1,771	20.0	708	708
52.00	2,370	100.0	1,242	1,951
53.00	5,712	100.0	4,041	5,992
54.00	5,712	100.0	5,712	11,704

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Device	Routing	Invert	Outlet Devices
#1	Discarded	42.65'	0.750 in/hr Exfiltration over Surface area
#2	Primary	43.00'	18.0" Round Culvert L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 43.00' / 40.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	49.40'	4.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	52.50'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads
#5	Primary	53.00'	5.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.02 cfs @ 20.52 hrs HW=49.38' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=42.65' (Free Discharge)↑ **2=Culvert** (Controls 0.00 cfs)↑ **3=Orifice/Grate** (Controls 0.00 cfs)↑ **4=Orifice/Grate** (Controls 0.00 cfs)↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 24P: Total Site Runoff**

Inflow Area = 497,761 sf, 45.24% Impervious, Inflow Depth = 0.09" for 95th % event
 Inflow = 0.27 cfs @ 9.99 hrs, Volume= 3,738 cf
 Primary = 0.27 cfs @ 9.99 hrs, Volume= 3,738 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 26P: Overflow to the East

Inflow Area = 329,609 sf, 57.33% Impervious, Inflow Depth = 0.03" for 95th % event
 Inflow = 0.07 cfs @ 10.00 hrs, Volume= 708 cf
 Primary = 0.07 cfs @ 10.00 hrs, Volume= 708 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: A-1	Runoff Area=21,238 sf 0.00% Impervious Runoff Depth=0.44" Tc=12.0 min CN=61/0 Runoff=0.03 cfs 786 cf
Subcatchment2S: A-2	Runoff Area=63,030 sf 65.00% Impervious Runoff Depth=2.08" Tc=12.0 min CN=61/98 Runoff=1.52 cfs 10,948 cf
Subcatchment3S: A-3	Runoff Area=36,995 sf 72.00% Impervious Runoff Depth=2.27" Tc=12.0 min CN=62/98 Runoff=0.99 cfs 7,002 cf
Subcatchment4S: A-4	Runoff Area=8,325 sf 85.00% Impervious Runoff Depth=2.57" Tc=12.0 min CN=58/98 Runoff=0.26 cfs 1,785 cf
Subcatchment5S: A-5	Runoff Area=10,358 sf 38.00% Impervious Runoff Depth=1.40" Tc=12.0 min CN=61/98 Runoff=0.15 cfs 1,211 cf
Subcatchment6S: A-6	Runoff Area=7,751 sf 85.00% Impervious Runoff Depth=2.57" Tc=12.0 min CN=58/98 Runoff=0.24 cfs 1,662 cf
Subcatchment7S: B-1	Runoff Area=9,612 sf 0.00% Impervious Runoff Depth=0.78" Tc=12.0 min CN=69/0 Runoff=0.06 cfs 624 cf
Subcatchment8S: C-1	Runoff Area=58,266 sf 72.00% Impervious Runoff Depth=2.27" Tc=12.0 min CN=62/98 Runoff=1.56 cfs 11,028 cf
Subcatchment9S: C-2	Runoff Area=37,851 sf 30.00% Impervious Runoff Depth=1.20" Tc=12.0 min CN=61/98 Runoff=0.45 cfs 3,788 cf
Subcatchment10S: G-1	Runoff Area=5,487 sf 38.00% Impervious Runoff Depth=1.40" Tc=12.0 min CN=61/98 Runoff=0.08 cfs 641 cf
Subcatchment11S: D-1	Runoff Area=58,607 sf 65.00% Impervious Runoff Depth=2.08" Tc=12.0 min CN=61/98 Runoff=1.41 cfs 10,179 cf
Subcatchment12S: E-1	Runoff Area=8,924 sf 85.00% Impervious Runoff Depth=2.57" Tc=12.0 min CN=58/98 Runoff=0.28 cfs 1,914 cf
Subcatchment14S: E-2	Runoff Area=125,537 sf 0.00% Impervious Runoff Depth=0.44" Tc=12.0 min CN=61/0 Runoff=0.20 cfs 4,644 cf
Subcatchment15S: F-1	Runoff Area=20,775 sf 85.00% Impervious Runoff Depth=2.57" Tc=12.0 min CN=58/98 Runoff=0.64 cfs 4,455 cf
Subcatchment16S: F-2	Runoff Area=12,916 sf 85.00% Impervious Runoff Depth=2.57" Tc=12.0 min CN=58/98 Runoff=0.40 cfs 2,770 cf
Subcatchment27S: A-7	Runoff Area=12,089 sf 85.00% Impervious Runoff Depth=2.57" Tc=12.0 min CN=58/98 Runoff=0.37 cfs 2,593 cf

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Pond 18P: Bioretention Pond A-1 Peak Elev=42.76' Storage=20,222 cf Inflow=3.80 cfs 40,733 cf
Discarded=0.14 cfs 30,684 cf Primary=0.35 cfs 10,047 cf Outflow=0.49 cfs 40,731 cf

Pond 19P: Detention Pond C-2 Peak Elev=44.77' Storage=5,320 cf Inflow=2.00 cfs 14,816 cf
Outflow=0.32 cfs 14,746 cf

Pond 20P: Bioretention Pond D-1 Peak Elev=46.23' Storage=6,223 cf Inflow=1.41 cfs 10,179 cf
Discarded=0.06 cfs 9,511 cf Primary=0.01 cfs 668 cf Outflow=0.07 cfs 10,179 cf

Pond 21P: Garrapata Creek Inflow=0.46 cfs 7,451 cf
Primary=0.46 cfs 7,451 cf

Pond 23P: Bioretention Pond F Peak Elev=49.60' Storage=3,834 cf Inflow=1.04 cfs 7,225 cf
Discarded=0.05 cfs 5,281 cf Primary=0.08 cfs 893 cf Outflow=0.13 cfs 6,174 cf

Pond 24P: Total Site Runoff Inflow=0.61 cfs 19,432 cf
Primary=0.61 cfs 19,432 cf

Pond 26P: Overflow to the East Inflow=0.38 cfs 11,981 cf
Primary=0.38 cfs 11,981 cf

Total Runoff Area = 497,761 sf Runoff Volume = 66,032 cf Average Runoff Depth = 1.59"
54.76% Pervious = 272,570 sf 45.24% Impervious = 225,191 sf

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Summary for Subcatchment 1S: A-1

Runoff = 0.03 cfs @ 10.06 hrs, Volume= 786 cf, Depth= 0.44"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
21,238	61	>75% Grass cover, Good, HSG B
21,238	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 2S: A-2

Runoff = 1.52 cfs @ 9.98 hrs, Volume= 10,948 cf, Depth= 2.08"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
63,030	85	1/8 acre lots, 65% imp, HSG B
22,061	61	35.00% Pervious Area
40,970	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 3S: A-3

Runoff = 0.99 cfs @ 9.98 hrs, Volume= 7,002 cf, Depth= 2.27"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
36,995	88	Urban industrial, 72% imp, HSG B
10,359	62	28.00% Pervious Area
26,636	98	72.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-002yr Rainfall=3.20"

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Summary for Subcatchment 4S: A-4

Runoff = 0.26 cfs @ 9.98 hrs, Volume= 1,785 cf, Depth= 2.57"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
8,325	92	Urban commercial, 85% imp, HSG B
1,249	58	15.00% Pervious Area
7,076	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 5S: A-5

Runoff = 0.15 cfs @ 9.99 hrs, Volume= 1,211 cf, Depth= 1.40"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
10,358	75	1/4 acre lots, 38% imp, HSG B
6,422	61	62.00% Pervious Area
3,936	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 6S: A-6

Runoff = 0.24 cfs @ 9.98 hrs, Volume= 1,662 cf, Depth= 2.57"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
7,751	92	Urban commercial, 85% imp, HSG B
1,163	58	15.00% Pervious Area
6,588	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-002yr Rainfall=3.20"

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Summary for Subcatchment 7S: B-1

Runoff = 0.06 cfs @ 10.01 hrs, Volume= 624 cf, Depth= 0.78"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
9,612	69	50-75% Grass cover, Fair, HSG B
9,612	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 8S: C-1

Runoff = 1.56 cfs @ 9.98 hrs, Volume= 11,028 cf, Depth= 2.27"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
58,266	88	Urban industrial, 72% imp, HSG B
16,314	62	28.00% Pervious Area
41,952	98	72.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 9S: C-2

Runoff = 0.45 cfs @ 9.99 hrs, Volume= 3,788 cf, Depth= 1.20"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
37,851	72	1/3 acre lots, 30% imp, HSG B
26,496	61	70.00% Pervious Area
11,355	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-002yr Rainfall=3.20"

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Summary for Subcatchment 10S: G-1

Runoff = 0.08 cfs @ 9.99 hrs, Volume= 641 cf, Depth= 1.40"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
5,487	75	1/4 acre lots, 38% imp, HSG B
3,402	61	62.00% Pervious Area
2,085	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 11S: D-1

Runoff = 1.41 cfs @ 9.98 hrs, Volume= 10,179 cf, Depth= 2.08"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
58,607	85	1/8 acre lots, 65% imp, HSG B
20,512	61	35.00% Pervious Area
38,095	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 12S: E-1

Runoff = 0.28 cfs @ 9.98 hrs, Volume= 1,914 cf, Depth= 2.57"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
8,924	92	Urban commercial, 85% imp, HSG B
1,339	58	15.00% Pervious Area
7,585	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-002yr Rainfall=3.20"

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Summary for Subcatchment 14S: E-2

Runoff = 0.20 cfs @ 10.06 hrs, Volume= 4,644 cf, Depth= 0.44"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
125,537	61	>75% Grass cover, Good, HSG B
125,537	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 15S: F-1

Runoff = 0.64 cfs @ 9.98 hrs, Volume= 4,455 cf, Depth= 2.57"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
20,775	92	Urban commercial, 85% imp, HSG B
3,116	58	15.00% Pervious Area
17,659	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 16S: F-2

Runoff = 0.40 cfs @ 9.98 hrs, Volume= 2,770 cf, Depth= 2.57"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
12,916	92	Urban commercial, 85% imp, HSG B
1,937	58	15.00% Pervious Area
10,979	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Summary for Subcatchment 27S: A-7

Runoff = 0.37 cfs @ 9.98 hrs, Volume= 2,593 cf, Depth= 2.57"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-002yr Rainfall=3.20"

Area (sf)	CN	Description
12,089	92	Urban commercial, 85% imp, HSG B
1,813	58	15.00% Pervious Area
10,276	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Pond 18P: Bioretention Pond A-1

Inflow Area = 255,903 sf, 58.14% Impervious, Inflow Depth > 1.91" for SC-002yr event
 Inflow = 3.80 cfs @ 9.99 hrs, Volume= 40,733 cf
 Outflow = 0.49 cfs @ 16.43 hrs, Volume= 40,731 cf, Atten= 87%, Lag= 386.9 min
 Discarded = 0.14 cfs @ 16.43 hrs, Volume= 30,684 cf
 Primary = 0.35 cfs @ 16.43 hrs, Volume= 10,047 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 42.76' @ 16.43 hrs Surf.Area= 8,281 sf Storage= 20,222 cf

Plug-Flow detention time= 1,027.2 min calculated for 40,703 cf (100% of inflow)
 Center-of-Mass det. time= 1,026.5 min (1,857.1 - 830.6)

Volume	Invert	Avail.Storage	Storage Description	
#1	35.50'	107,214 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.50	7,578	0.0	0	0
40.50	7,578	40.0	15,156	15,156
42.50	7,578	20.0	3,031	18,187
43.00	8,947	100.0	4,131	22,318
44.00	11,302	100.0	10,125	32,443
45.00	14,028	100.0	12,665	45,108
46.00	15,642	100.0	14,835	59,943
47.00	19,012	100.0	17,327	77,270
48.00	40,876	100.0	29,944	107,214

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.50'	0.750 in/hr Exfiltration over Surface area
#2	Primary	40.50'	24.0" Vert. Orifice/Grate C= 0.600
#3	Device 2	42.50'	18.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	45.00'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads

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#5 Primary 47.00' **20.0' long x 1.0' breadth Broad-Crested Rectangular Weir**
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
 2.50 3.00
 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
 3.30 3.31 3.32

Discarded OutFlow Max=0.14 cfs @ 16.43 hrs HW=42.76' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.35 cfs @ 16.43 hrs HW=42.76' (Free Discharge)

↑ **2=Orifice/Grate** (Passes 0.35 cfs of 16.96 cfs potential flow)

↑ **3=Orifice/Grate** (Orifice Controls 0.35 cfs @ 1.72 fps)

↑ **4=Orifice/Grate** (Controls 0.00 cfs)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 19P: Detention Pond C-2

Inflow Area = 96,117 sf, 55.46% Impervious, Inflow Depth = 1.85" for SC-002yr event
 Inflow = 2.00 cfs @ 9.99 hrs, Volume= 14,816 cf
 Outflow = 0.32 cfs @ 11.25 hrs, Volume= 14,746 cf, Atten= 84%, Lag= 76.0 min
 Primary = 0.32 cfs @ 11.25 hrs, Volume= 14,746 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 44.77' @ 11.25 hrs Surf.Area= 7,474 sf Storage= 5,320 cf

Plug-Flow detention time= 265.7 min calculated for 14,736 cf (99% of inflow)
 Center-of-Mass det. time= 264.1 min (1,001.8 - 737.7)

Volume	Invert	Avail.Storage	Storage Description
#1	43.99'	48,016 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.99	0	0	0
44.00	6,349	32	32
45.00	7,819	7,084	7,116
46.00	9,373	8,596	15,712
47.00	11,047	10,210	25,922
48.00	11,047	11,047	36,969
49.00	11,047	11,047	48,016

Device	Routing	Invert	Outlet Devices
#1	Primary	43.99'	18.0" Round Culvert L= 271.0' Ke= 0.200 Inlet / Outlet Invert= 43.99' / 42.50' S= 0.0055 '/ Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	44.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	46.50'	12.0" x 12.0" Horiz. Orifice/Grate C= 0.600 in 12.0" x 12.0" Grate Limited to weir flow at low heads
#4	Primary	48.00'	15.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

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2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.33 cfs @ 11.25 hrs HW=44.77' (Free Discharge)

- 1=Culvert (Passes 0.33 cfs of 2.41 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.33 cfs @ 3.72 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 20P: Bioretention Pond D-1

Inflow Area = 58,607 sf, 65.00% Impervious, Inflow Depth = 2.08" for SC-002yr event
 Inflow = 1.41 cfs @ 9.98 hrs, Volume= 10,179 cf
 Outflow = 0.07 cfs @ 20.74 hrs, Volume= 10,179 cf, Atten= 95%, Lag= 645.4 min
 Discarded = 0.06 cfs @ 20.74 hrs, Volume= 9,511 cf
 Primary = 0.01 cfs @ 20.74 hrs, Volume= 668 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 46.23' @ 20.74 hrs Surf.Area= 2,111 sf Storage= 6,223 cf

Plug-Flow detention time= 1,154.7 min calculated for 10,179 cf (100% of inflow)
 Center-of-Mass det. time= 1,154.7 min (1,884.1 - 729.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	37.00'	14,223 cf	Custom Stage Data (Conic) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
37.00	1,620	0.0	0	0	1,620
43.50	1,620	40.0	4,212	4,212	2,547
45.50	1,620	20.0	648	4,860	2,833
46.00	1,956	100.0	893	5,753	3,177
47.00	2,670	100.0	2,304	8,056	3,911
48.00	3,224	100.0	2,943	10,999	4,497
49.00	3,224	100.0	3,224	14,223	4,699

Device	Routing	Invert	Outlet Devices
#1	Discarded	37.00'	0.750 in/hr Exfiltration over Wetted area
#2	Primary	43.52'	18.0" Round Culvert L= 572.0' Ke= 0.200 Inlet / Outlet Invert= 43.52' / 40.60' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	44.00'	0.5" Vert. Orifice/Grate C= 0.600
#4	Device 2	47.00'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads
#5	Primary	47.90'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

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Discarded OutFlow Max=0.06 cfs @ 20.74 hrs HW=46.23' (Free Discharge)

1=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.01 cfs @ 20.74 hrs HW=46.23' (Free Discharge)

2=Culvert (Passes 0.01 cfs of 8.44 cfs potential flow)

3=Orifice/Grate (Orifice Controls 0.01 cfs @ 7.16 fps)

4=Orifice/Grate (Controls 0.00 cfs)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 21P: Garrapata Creek

Inflow Area = 168,152 sf, 21.54% Impervious, Inflow Depth = 0.53" for SC-002yr event

Inflow = 0.46 cfs @ 10.02 hrs, Volume= 7,451 cf

Primary = 0.46 cfs @ 10.02 hrs, Volume= 7,451 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 23P: Bioretention Pond F

Inflow Area = 33,691 sf, 85.00% Impervious, Inflow Depth = 2.57" for SC-002yr event

Inflow = 1.04 cfs @ 9.98 hrs, Volume= 7,225 cf

Outflow = 0.13 cfs @ 11.88 hrs, Volume= 6,174 cf, Atten= 88%, Lag= 113.8 min

Discarded = 0.05 cfs @ 11.40 hrs, Volume= 5,281 cf

Primary = 0.08 cfs @ 11.88 hrs, Volume= 893 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 49.60' @ 11.88 hrs Surf.Area= 2,676 sf Storage= 3,834 cf

Plug-Flow detention time= 1,140.0 min calculated for 6,174 cf (85% of inflow)

Center-of-Mass det. time= 1,052.3 min (1,769.1 - 716.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	42.65'	1,564 cf	10.33'W x 87.62'L x 6.75'H Field A 6,111 cf Overall - 2,201 cf Embedded = 3,910 cf x 40.0% Voids
#2A	43.40'	2,201 cf	ADS_StormTech MC-4500 +Cap x 20 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
#3	49.40'	11,704 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		15,469 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.40	1,771	0.0	0	0
51.40	1,771	20.0	708	708
52.00	2,370	100.0	1,242	1,951
53.00	5,712	100.0	4,041	5,992
54.00	5,712	100.0	5,712	11,704

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Device	Routing	Invert	Outlet Devices
#1	Discarded	42.65'	0.750 in/hr Exfiltration over Surface area
#2	Primary	43.00'	18.0" Round Culvert L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 43.00' / 40.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	49.40'	4.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	52.50'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads
#5	Primary	53.00'	5.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.05 cfs @ 11.40 hrs HW=49.45' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.05 cfs)**Primary OutFlow** Max=0.08 cfs @ 11.88 hrs HW=49.60' (Free Discharge)↑ **2=Culvert** (Passes 0.08 cfs of 20.57 cfs potential flow)↑ **3=Orifice/Grate** (Orifice Controls 0.08 cfs @ 1.50 fps)↑ **4=Orifice/Grate** (Controls 0.00 cfs)↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 24P: Total Site Runoff**

Inflow Area = 497,761 sf, 45.24% Impervious, Inflow Depth = 0.47" for SC-002yr event

Inflow = 0.61 cfs @ 10.02 hrs, Volume= 19,432 cf

Primary = 0.61 cfs @ 10.02 hrs, Volume= 19,432 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 26P: Overflow to the East

Inflow Area = 329,609 sf, 57.33% Impervious, Inflow Depth = 0.44" for SC-002yr event

Inflow = 0.38 cfs @ 16.42 hrs, Volume= 11,981 cf

Primary = 0.38 cfs @ 16.42 hrs, Volume= 11,981 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: A-1	Runoff Area=21,238 sf 0.00% Impervious Runoff Depth=1.14" Tc=12.0 min CN=61/0 Runoff=0.21 cfs 2,020 cf
Subcatchment2S: A-2	Runoff Area=63,030 sf 65.00% Impervious Runoff Depth=3.24" Tc=12.0 min CN=61/98 Runoff=2.38 cfs 17,031 cf
Subcatchment3S: A-3	Runoff Area=36,995 sf 72.00% Impervious Runoff Depth=3.49" Tc=12.0 min CN=62/98 Runoff=1.52 cfs 10,748 cf
Subcatchment4S: A-4	Runoff Area=8,325 sf 85.00% Impervious Runoff Depth=3.86" Tc=12.0 min CN=58/98 Runoff=0.38 cfs 2,679 cf
Subcatchment5S: A-5	Runoff Area=10,358 sf 38.00% Impervious Runoff Depth=2.37" Tc=12.0 min CN=61/98 Runoff=0.27 cfs 2,045 cf
Subcatchment6S: A-6	Runoff Area=7,751 sf 85.00% Impervious Runoff Depth=3.86" Tc=12.0 min CN=58/98 Runoff=0.36 cfs 2,494 cf
Subcatchment7S: B-1	Runoff Area=9,612 sf 0.00% Impervious Runoff Depth=1.68" Tc=12.0 min CN=69/0 Runoff=0.18 cfs 1,345 cf
Subcatchment8S: C-1	Runoff Area=58,266 sf 72.00% Impervious Runoff Depth=3.49" Tc=12.0 min CN=62/98 Runoff=2.39 cfs 16,927 cf
Subcatchment9S: C-2	Runoff Area=37,851 sf 30.00% Impervious Runoff Depth=2.11" Tc=12.0 min CN=61/98 Runoff=0.86 cfs 6,659 cf
Subcatchment10S: G-1	Runoff Area=5,487 sf 38.00% Impervious Runoff Depth=2.37" Tc=12.0 min CN=61/98 Runoff=0.14 cfs 1,083 cf
Subcatchment11S: D-1	Runoff Area=58,607 sf 65.00% Impervious Runoff Depth=3.24" Tc=12.0 min CN=61/98 Runoff=2.21 cfs 15,836 cf
Subcatchment12S: E-1	Runoff Area=8,924 sf 85.00% Impervious Runoff Depth=3.86" Tc=12.0 min CN=58/98 Runoff=0.41 cfs 2,872 cf
Subcatchment14S: E-2	Runoff Area=125,537 sf 0.00% Impervious Runoff Depth=1.14" Tc=12.0 min CN=61/0 Runoff=1.23 cfs 11,938 cf
Subcatchment15S: F-1	Runoff Area=20,775 sf 85.00% Impervious Runoff Depth=3.86" Tc=12.0 min CN=58/98 Runoff=0.95 cfs 6,686 cf
Subcatchment16S: F-2	Runoff Area=12,916 sf 85.00% Impervious Runoff Depth=3.86" Tc=12.0 min CN=58/98 Runoff=0.59 cfs 4,157 cf
Subcatchment27S: A-7	Runoff Area=12,089 sf 85.00% Impervious Runoff Depth=3.86" Tc=12.0 min CN=58/98 Runoff=0.56 cfs 3,891 cf

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Pond 18P: Bioretention Pond A-1 Peak Elev=42.94' Storage=21,798 cf Inflow=5.98 cfs 64,418 cf
Discarded=0.15 cfs 32,664 cf Primary=1.00 cfs 31,747 cf Outflow=1.15 cfs 64,411 cf

Pond 19P: Detention Pond C-2 Peak Elev=45.21' Storage=8,791 cf Inflow=3.25 cfs 23,586 cf
Outflow=0.43 cfs 23,510 cf

Pond 20P: Bioretention Pond D-1 Peak Elev=47.03' Storage=8,148 cf Inflow=2.21 cfs 15,836 cf
Discarded=0.07 cfs 11,774 cf Primary=0.20 cfs 3,897 cf Outflow=0.27 cfs 15,671 cf

Pond 21P: Garrapata Creek Inflow=1.64 cfs 19,025 cf
Primary=1.64 cfs 19,025 cf

Pond 23P: Bioretention Pond F Peak Elev=51.01' Storage=4,337 cf Inflow=1.55 cfs 10,843 cf
Discarded=0.05 cfs 5,570 cf Primary=0.51 cfs 4,215 cf Outflow=0.55 cfs 9,785 cf

Pond 24P: Total Site Runoff Inflow=1.95 cfs 57,098 cf
Primary=1.95 cfs 57,098 cf

Pond 26P: Overflow to the East Inflow=1.25 cfs 38,073 cf
Primary=1.25 cfs 38,073 cf

Total Runoff Area = 497,761 sf Runoff Volume = 108,410 cf Average Runoff Depth = 2.61"
54.76% Pervious = 272,570 sf 45.24% Impervious = 225,191 sf

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Summary for Subcatchment 1S: A-1

Runoff = 0.21 cfs @ 10.01 hrs, Volume= 2,020 cf, Depth= 1.14"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
21,238	61	>75% Grass cover, Good, HSG B
21,238	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 2S: A-2

Runoff = 2.38 cfs @ 9.98 hrs, Volume= 17,031 cf, Depth= 3.24"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
63,030	85	1/8 acre lots, 65% imp, HSG B
22,061	61	35.00% Pervious Area
40,970	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 3S: A-3

Runoff = 1.52 cfs @ 9.98 hrs, Volume= 10,748 cf, Depth= 3.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
36,995	88	Urban industrial, 72% imp, HSG B
10,359	62	28.00% Pervious Area
26,636	98	72.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-005yr Rainfall=4.61"

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Summary for Subcatchment 4S: A-4

Runoff = 0.38 cfs @ 9.98 hrs, Volume= 2,679 cf, Depth= 3.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
8,325	92	Urban commercial, 85% imp, HSG B
1,249	58	15.00% Pervious Area
7,076	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 5S: A-5

Runoff = 0.27 cfs @ 9.99 hrs, Volume= 2,045 cf, Depth= 2.37"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
10,358	75	1/4 acre lots, 38% imp, HSG B
6,422	61	62.00% Pervious Area
3,936	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 6S: A-6

Runoff = 0.36 cfs @ 9.98 hrs, Volume= 2,494 cf, Depth= 3.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
7,751	92	Urban commercial, 85% imp, HSG B
1,163	58	15.00% Pervious Area
6,588	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-005yr Rainfall=4.61"

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Summary for Subcatchment 7S: B-1

Runoff = 0.18 cfs @ 10.00 hrs, Volume= 1,345 cf, Depth= 1.68"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
9,612	69	50-75% Grass cover, Fair, HSG B
9,612	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 8S: C-1

Runoff = 2.39 cfs @ 9.98 hrs, Volume= 16,927 cf, Depth= 3.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
58,266	88	Urban industrial, 72% imp, HSG B
16,314	62	28.00% Pervious Area
41,952	98	72.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 9S: C-2

Runoff = 0.86 cfs @ 9.99 hrs, Volume= 6,659 cf, Depth= 2.11"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
37,851	72	1/3 acre lots, 30% imp, HSG B
26,496	61	70.00% Pervious Area
11,355	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-005yr Rainfall=4.61"

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Summary for Subcatchment 10S: G-1

Runoff = 0.14 cfs @ 9.99 hrs, Volume= 1,083 cf, Depth= 2.37"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
5,487	75	1/4 acre lots, 38% imp, HSG B
3,402	61	62.00% Pervious Area
2,085	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 11S: D-1

Runoff = 2.21 cfs @ 9.98 hrs, Volume= 15,836 cf, Depth= 3.24"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
58,607	85	1/8 acre lots, 65% imp, HSG B
20,512	61	35.00% Pervious Area
38,095	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 12S: E-1

Runoff = 0.41 cfs @ 9.98 hrs, Volume= 2,872 cf, Depth= 3.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
8,924	92	Urban commercial, 85% imp, HSG B
1,339	58	15.00% Pervious Area
7,585	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-005yr Rainfall=4.61"

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Summary for Subcatchment 14S: E-2

Runoff = 1.23 cfs @ 10.01 hrs, Volume= 11,938 cf, Depth= 1.14"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
125,537	61	>75% Grass cover, Good, HSG B
125,537	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 15S: F-1

Runoff = 0.95 cfs @ 9.98 hrs, Volume= 6,686 cf, Depth= 3.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
20,775	92	Urban commercial, 85% imp, HSG B
3,116	58	15.00% Pervious Area
17,659	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 16S: F-2

Runoff = 0.59 cfs @ 9.98 hrs, Volume= 4,157 cf, Depth= 3.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
12,916	92	Urban commercial, 85% imp, HSG B
1,937	58	15.00% Pervious Area
10,979	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Summary for Subcatchment 27S: A-7

Runoff = 0.56 cfs @ 9.98 hrs, Volume= 3,891 cf, Depth= 3.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-005yr Rainfall=4.61"

Area (sf)	CN	Description
12,089	92	Urban commercial, 85% imp, HSG B
1,813	58	15.00% Pervious Area
10,276	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Pond 18P: Bioretention Pond A-1

Inflow Area = 255,903 sf, 58.14% Impervious, Inflow Depth > 3.02" for SC-005yr event
 Inflow = 5.98 cfs @ 9.99 hrs, Volume= 64,418 cf
 Outflow = 1.15 cfs @ 12.04 hrs, Volume= 64,411 cf, Atten= 81%, Lag= 123.3 min
 Discarded = 0.15 cfs @ 12.04 hrs, Volume= 32,664 cf
 Primary = 1.00 cfs @ 12.04 hrs, Volume= 31,747 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 42.94' @ 12.04 hrs Surf.Area= 8,786 sf Storage= 21,798 cf

Plug-Flow detention time= 728.1 min calculated for 64,411 cf (100% of inflow)
 Center-of-Mass det. time= 727.8 min (1,568.8 - 841.0)

Volume	Invert	Avail.Storage	Storage Description	
#1	35.50'	107,214 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.50	7,578	0.0	0	0
40.50	7,578	40.0	15,156	15,156
42.50	7,578	20.0	3,031	18,187
43.00	8,947	100.0	4,131	22,318
44.00	11,302	100.0	10,125	32,443
45.00	14,028	100.0	12,665	45,108
46.00	15,642	100.0	14,835	59,943
47.00	19,012	100.0	17,327	77,270
48.00	40,876	100.0	29,944	107,214

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.50'	0.750 in/hr Exfiltration over Surface area
#2	Primary	40.50'	24.0" Vert. Orifice/Grate C= 0.600
#3	Device 2	42.50'	18.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	45.00'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads

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#5 Primary 47.00' **20.0' long x 1.0' breadth Broad-Crested Rectangular Weir**
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
 2.50 3.00
 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
 3.30 3.31 3.32

Discarded OutFlow Max=0.15 cfs @ 12.04 hrs HW=42.94' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=0.98 cfs @ 12.04 hrs HW=42.94' (Free Discharge)

↑ **2=Orifice/Grate** (Passes 0.98 cfs of 18.16 cfs potential flow)

↑ **3=Orifice/Grate** (Orifice Controls 0.98 cfs @ 2.26 fps)

↑ **4=Orifice/Grate** (Controls 0.00 cfs)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 19P: Detention Pond C-2

Inflow Area = 96,117 sf, 55.46% Impervious, Inflow Depth = 2.94" for SC-005yr event
 Inflow = 3.25 cfs @ 9.99 hrs, Volume= 23,586 cf
 Outflow = 0.43 cfs @ 11.96 hrs, Volume= 23,510 cf, Atten= 87%, Lag= 118.5 min
 Primary = 0.43 cfs @ 11.96 hrs, Volume= 23,510 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 45.21' @ 11.96 hrs Surf.Area= 8,145 sf Storage= 8,791 cf

Plug-Flow detention time= 297.1 min calculated for 23,510 cf (100% of inflow)
 Center-of-Mass det. time= 294.8 min (1,031.2 - 736.4)

Volume	Invert	Avail.Storage	Storage Description
#1	43.99'	48,016 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.99	0	0	0
44.00	6,349	32	32
45.00	7,819	7,084	7,116
46.00	9,373	8,596	15,712
47.00	11,047	10,210	25,922
48.00	11,047	11,047	36,969
49.00	11,047	11,047	48,016

Device	Routing	Invert	Outlet Devices
#1	Primary	43.99'	18.0" Round Culvert L= 271.0' Ke= 0.200 Inlet / Outlet Invert= 43.99' / 42.50' S= 0.0055 '/ Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	44.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	46.50'	12.0" x 12.0" Horiz. Orifice/Grate C= 0.600 in 12.0" x 12.0" Grate Limited to weir flow at low heads
#4	Primary	48.00'	15.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

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2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.43 cfs @ 11.96 hrs HW=45.21' (Free Discharge)

- 1=Culvert (Passes 0.43 cfs of 5.19 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.43 cfs @ 4.92 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 20P: Bioretention Pond D-1

Inflow Area = 58,607 sf, 65.00% Impervious, Inflow Depth = 3.24" for SC-005yr event
 Inflow = 2.21 cfs @ 9.98 hrs, Volume= 15,836 cf
 Outflow = 0.27 cfs @ 12.12 hrs, Volume= 15,671 cf, Atten= 88%, Lag= 128.0 min
 Discarded = 0.07 cfs @ 12.12 hrs, Volume= 11,774 cf
 Primary = 0.20 cfs @ 12.12 hrs, Volume= 3,897 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 47.03' @ 12.12 hrs Surf.Area= 2,688 sf Storage= 8,148 cf

Plug-Flow detention time= 1,052.4 min calculated for 15,660 cf (99% of inflow)
 Center-of-Mass det. time= 1,046.2 min (1,773.0 - 726.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	37.00'	14,223 cf	Custom Stage Data (Conic) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
37.00	1,620	0.0	0	0	1,620
43.50	1,620	40.0	4,212	4,212	2,547
45.50	1,620	20.0	648	4,860	2,833
46.00	1,956	100.0	893	5,753	3,177
47.00	2,670	100.0	2,304	8,056	3,911
48.00	3,224	100.0	2,943	10,999	4,497
49.00	3,224	100.0	3,224	14,223	4,699

Device	Routing	Invert	Outlet Devices
#1	Discarded	37.00'	0.750 in/hr Exfiltration over Wetted area
#2	Primary	43.52'	18.0" Round Culvert L= 572.0' Ke= 0.200 Inlet / Outlet Invert= 43.52' / 40.60' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	44.00'	0.5" Vert. Orifice/Grate C= 0.600
#4	Device 2	47.00'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads
#5	Primary	47.90'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

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Discarded OutFlow Max=0.07 cfs @ 12.12 hrs HW=47.03' (Free Discharge)

1=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.14 cfs @ 12.12 hrs HW=47.03' (Free Discharge)

2=Culvert (Passes 0.14 cfs of 9.22 cfs potential flow)

3=Orifice/Grate (Orifice Controls 0.01 cfs @ 8.36 fps)

4=Orifice/Grate (Weir Controls 0.12 cfs @ 0.61 fps)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 21P: Garrapata Creek

Inflow Area = 168,152 sf, 21.54% Impervious, Inflow Depth = 1.36" for SC-005yr event

Inflow = 1.64 cfs @ 10.01 hrs, Volume= 19,025 cf

Primary = 1.64 cfs @ 10.01 hrs, Volume= 19,025 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 23P: Bioretention Pond F

Inflow Area = 33,691 sf, 85.00% Impervious, Inflow Depth = 3.86" for SC-005yr event

Inflow = 1.55 cfs @ 9.98 hrs, Volume= 10,843 cf

Outflow = 0.55 cfs @ 10.44 hrs, Volume= 9,785 cf, Atten= 64%, Lag= 27.6 min

Discarded = 0.05 cfs @ 10.10 hrs, Volume= 5,570 cf

Primary = 0.51 cfs @ 10.44 hrs, Volume= 4,215 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 51.01' @ 10.44 hrs Surf.Area= 2,676 sf Storage= 4,337 cf

Plug-Flow detention time= 754.0 min calculated for 9,785 cf (90% of inflow)

Center-of-Mass det. time= 691.1 min (1,402.2 - 711.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	42.65'	1,564 cf	10.33'W x 87.62'L x 6.75'H Field A 6,111 cf Overall - 2,201 cf Embedded = 3,910 cf x 40.0% Voids
#2A	43.40'	2,201 cf	ADS_StormTech MC-4500 +Cap x 20 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
#3	49.40'	11,704 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		15,469 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.40	1,771	0.0	0	0
51.40	1,771	20.0	708	708
52.00	2,370	100.0	1,242	1,951
53.00	5,712	100.0	4,041	5,992
54.00	5,712	100.0	5,712	11,704

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Device	Routing	Invert	Outlet Devices
#1	Discarded	42.65'	0.750 in/hr Exfiltration over Surface area
#2	Primary	43.00'	18.0" Round Culvert L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 43.00' / 40.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	49.40'	4.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	52.50'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads
#5	Primary	53.00'	5.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.05 cfs @ 10.10 hrs HW=49.87' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.05 cfs)**Primary OutFlow** Max=0.51 cfs @ 10.44 hrs HW=51.01' (Free Discharge)↑ **2=Culvert** (Passes 0.51 cfs of 22.93 cfs potential flow)↑ **3=Orifice/Grate** (Orifice Controls 0.51 cfs @ 5.79 fps)↑ **4=Orifice/Grate** (Controls 0.00 cfs)↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 24P: Total Site Runoff**

Inflow Area = 497,761 sf, 45.24% Impervious, Inflow Depth = 1.38" for SC-005yr event

Inflow = 1.95 cfs @ 10.00 hrs, Volume= 57,098 cf

Primary = 1.95 cfs @ 10.00 hrs, Volume= 57,098 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 26P: Overflow to the East

Inflow Area = 329,609 sf, 57.33% Impervious, Inflow Depth = 1.39" for SC-005yr event

Inflow = 1.25 cfs @ 12.08 hrs, Volume= 38,073 cf

Primary = 1.25 cfs @ 12.08 hrs, Volume= 38,073 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

201810-Preliminary Evaluation-Stormwater*Type I 24-hr SC-010yr Rainfall=5.55"*

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: A-1	Runoff Area=21,238 sf 0.00% Impervious Runoff Depth=1.71" Tc=12.0 min CN=61/0 Runoff=0.36 cfs 3,028 cf
Subcatchment2S: A-2	Runoff Area=63,030 sf 65.00% Impervious Runoff Depth=4.05" Tc=12.0 min CN=61/98 Runoff=2.99 cfs 21,282 cf
Subcatchment3S: A-3	Runoff Area=36,995 sf 72.00% Impervious Runoff Depth=4.33" Tc=12.0 min CN=62/98 Runoff=1.89 cfs 13,336 cf
Subcatchment4S: A-4	Runoff Area=8,325 sf 85.00% Impervious Runoff Depth=4.74" Tc=12.0 min CN=58/98 Runoff=0.47 cfs 3,287 cf
Subcatchment5S: A-5	Runoff Area=10,358 sf 38.00% Impervious Runoff Depth=3.08" Tc=12.0 min CN=61/98 Runoff=0.36 cfs 2,658 cf
Subcatchment6S: A-6	Runoff Area=7,751 sf 85.00% Impervious Runoff Depth=4.74" Tc=12.0 min CN=58/98 Runoff=0.44 cfs 3,060 cf
Subcatchment7S: B-1	Runoff Area=9,612 sf 0.00% Impervious Runoff Depth=2.37" Tc=12.0 min CN=69/0 Runoff=0.26 cfs 1,895 cf
Subcatchment8S: C-1	Runoff Area=58,266 sf 72.00% Impervious Runoff Depth=4.33" Tc=12.0 min CN=62/98 Runoff=2.98 cfs 21,004 cf
Subcatchment9S: C-2	Runoff Area=37,851 sf 30.00% Impervious Runoff Depth=2.79" Tc=12.0 min CN=61/98 Runoff=1.18 cfs 8,804 cf
Subcatchment10S: G-1	Runoff Area=5,487 sf 38.00% Impervious Runoff Depth=3.08" Tc=12.0 min CN=61/98 Runoff=0.19 cfs 1,408 cf
Subcatchment11S: D-1	Runoff Area=58,607 sf 65.00% Impervious Runoff Depth=4.05" Tc=12.0 min CN=61/98 Runoff=2.78 cfs 19,789 cf
Subcatchment12S: E-1	Runoff Area=8,924 sf 85.00% Impervious Runoff Depth=4.74" Tc=12.0 min CN=58/98 Runoff=0.50 cfs 3,524 cf
Subcatchment14S: E-2	Runoff Area=125,537 sf 0.00% Impervious Runoff Depth=1.71" Tc=12.0 min CN=61/0 Runoff=2.15 cfs 17,896 cf
Subcatchment15S: F-1	Runoff Area=20,775 sf 85.00% Impervious Runoff Depth=4.74" Tc=12.0 min CN=58/98 Runoff=1.17 cfs 8,203 cf
Subcatchment16S: F-2	Runoff Area=12,916 sf 85.00% Impervious Runoff Depth=4.74" Tc=12.0 min CN=58/98 Runoff=0.73 cfs 5,100 cf
Subcatchment27S: A-7	Runoff Area=12,089 sf 85.00% Impervious Runoff Depth=4.74" Tc=12.0 min CN=58/98 Runoff=0.68 cfs 4,773 cf

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Pond 18P: Bioretention Pond A-1 Peak Elev=43.12' Storage=23,421 cf Inflow=7.54 cfs 81,151 cf
Discarded=0.16 cfs 33,885 cf Primary=1.86 cfs 47,224 cf Outflow=2.02 cfs 81,109 cf

Pond 19P: Detention Pond C-2 Peak Elev=45.54' Storage=11,550 cf Inflow=4.15 cfs 29,808 cf
Outflow=0.49 cfs 29,727 cf

Pond 20P: Bioretention Pond D-1 Peak Elev=47.10' Storage=8,337 cf Inflow=2.78 cfs 19,789 cf
Discarded=0.07 cfs 11,891 cf Primary=0.72 cfs 7,724 cf Outflow=0.79 cfs 19,615 cf

Pond 21P: Garrapata Creek Inflow=3.15 cfs 28,032 cf
Primary=3.15 cfs 28,032 cf

Pond 23P: Bioretention Pond F Peak Elev=51.72' Storage=5,083 cf Inflow=1.90 cfs 13,302 cf
Discarded=0.05 cfs 5,628 cf Primary=0.62 cfs 6,612 cf Outflow=0.67 cfs 12,240 cf

Pond 24P: Total Site Runoff Inflow=4.17 cfs 86,283 cf
Primary=4.17 cfs 86,283 cf

Pond 26P: Overflow to the East Inflow=2.63 cfs 58,251 cf
Primary=2.63 cfs 58,251 cf

Total Runoff Area = 497,761 sf Runoff Volume = 139,046 cf Average Runoff Depth = 3.35"
54.76% Pervious = 272,570 sf 45.24% Impervious = 225,191 sf

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Summary for Subcatchment 1S: A-1

Runoff = 0.36 cfs @ 10.00 hrs, Volume= 3,028 cf, Depth= 1.71"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
21,238	61	>75% Grass cover, Good, HSG B
21,238	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 2S: A-2

Runoff = 2.99 cfs @ 9.98 hrs, Volume= 21,282 cf, Depth= 4.05"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
63,030	85	1/8 acre lots, 65% imp, HSG B
22,061	61	35.00% Pervious Area
40,970	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 3S: A-3

Runoff = 1.89 cfs @ 9.98 hrs, Volume= 13,336 cf, Depth= 4.33"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
36,995	88	Urban industrial, 72% imp, HSG B
10,359	62	28.00% Pervious Area
26,636	98	72.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-010yr Rainfall=5.55"

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Summary for Subcatchment 4S: A-4

Runoff = 0.47 cfs @ 9.98 hrs, Volume= 3,287 cf, Depth= 4.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
8,325	92	Urban commercial, 85% imp, HSG B
1,249	58	15.00% Pervious Area
7,076	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 5S: A-5

Runoff = 0.36 cfs @ 9.99 hrs, Volume= 2,658 cf, Depth= 3.08"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
10,358	75	1/4 acre lots, 38% imp, HSG B
6,422	61	62.00% Pervious Area
3,936	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 6S: A-6

Runoff = 0.44 cfs @ 9.98 hrs, Volume= 3,060 cf, Depth= 4.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
7,751	92	Urban commercial, 85% imp, HSG B
1,163	58	15.00% Pervious Area
6,588	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-010yr Rainfall=5.55"

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Summary for Subcatchment 7S: B-1

Runoff = 0.26 cfs @ 10.00 hrs, Volume= 1,895 cf, Depth= 2.37"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
9,612	69	50-75% Grass cover, Fair, HSG B
9,612	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 8S: C-1

Runoff = 2.98 cfs @ 9.98 hrs, Volume= 21,004 cf, Depth= 4.33"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
58,266	88	Urban industrial, 72% imp, HSG B
16,314	62	28.00% Pervious Area
41,952	98	72.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 9S: C-2

Runoff = 1.18 cfs @ 9.99 hrs, Volume= 8,804 cf, Depth= 2.79"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
37,851	72	1/3 acre lots, 30% imp, HSG B
26,496	61	70.00% Pervious Area
11,355	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-010yr Rainfall=5.55"

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Summary for Subcatchment 10S: G-1

Runoff = 0.19 cfs @ 9.99 hrs, Volume= 1,408 cf, Depth= 3.08"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
5,487	75	1/4 acre lots, 38% imp, HSG B
3,402	61	62.00% Pervious Area
2,085	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 11S: D-1

Runoff = 2.78 cfs @ 9.98 hrs, Volume= 19,789 cf, Depth= 4.05"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
58,607	85	1/8 acre lots, 65% imp, HSG B
20,512	61	35.00% Pervious Area
38,095	98	65.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 12S: E-1

Runoff = 0.50 cfs @ 9.98 hrs, Volume= 3,524 cf, Depth= 4.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
8,924	92	Urban commercial, 85% imp, HSG B
1,339	58	15.00% Pervious Area
7,585	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Type I 24-hr SC-010yr Rainfall=5.55"

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Summary for Subcatchment 14S: E-2

Runoff = 2.15 cfs @ 10.00 hrs, Volume= 17,896 cf, Depth= 1.71"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
125,537	61	>75% Grass cover, Good, HSG B
125,537	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 15S: F-1

Runoff = 1.17 cfs @ 9.98 hrs, Volume= 8,203 cf, Depth= 4.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
20,775	92	Urban commercial, 85% imp, HSG B
3,116	58	15.00% Pervious Area
17,659	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 16S: F-2

Runoff = 0.73 cfs @ 9.98 hrs, Volume= 5,100 cf, Depth= 4.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
12,916	92	Urban commercial, 85% imp, HSG B
1,937	58	15.00% Pervious Area
10,979	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

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Summary for Subcatchment 27S: A-7

Runoff = 0.68 cfs @ 9.98 hrs, Volume= 4,773 cf, Depth= 4.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type I 24-hr SC-010yr Rainfall=5.55"

Area (sf)	CN	Description
12,089	92	Urban commercial, 85% imp, HSG B
1,813	58	15.00% Pervious Area
10,276	98	85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Pond 18P: Bioretention Pond A-1

Inflow Area = 255,903 sf, 58.14% Impervious, Inflow Depth > 3.81" for SC-010yr event
 Inflow = 7.54 cfs @ 9.99 hrs, Volume= 81,151 cf
 Outflow = 2.02 cfs @ 10.81 hrs, Volume= 81,109 cf, Atten= 73%, Lag= 49.5 min
 Discarded = 0.16 cfs @ 10.81 hrs, Volume= 33,885 cf
 Primary = 1.86 cfs @ 10.81 hrs, Volume= 47,224 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 43.12' @ 10.81 hrs Surf.Area= 9,233 sf Storage= 23,421 cf

Plug-Flow detention time= 617.4 min calculated for 81,109 cf (100% of inflow)
 Center-of-Mass det. time= 615.9 min (1,467.0 - 851.2)

Volume	Invert	Avail.Storage	Storage Description	
#1	35.50'	107,214 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.50	7,578	0.0	0	0
40.50	7,578	40.0	15,156	15,156
42.50	7,578	20.0	3,031	18,187
43.00	8,947	100.0	4,131	22,318
44.00	11,302	100.0	10,125	32,443
45.00	14,028	100.0	12,665	45,108
46.00	15,642	100.0	14,835	59,943
47.00	19,012	100.0	17,327	77,270
48.00	40,876	100.0	29,944	107,214

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.50'	0.750 in/hr Exfiltration over Surface area
#2	Primary	40.50'	24.0" Vert. Orifice/Grate C= 0.600
#3	Device 2	42.50'	18.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	45.00'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads

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#5 Primary 47.00' **20.0' long x 1.0' breadth Broad-Crested Rectangular Weir**
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
 2.50 3.00
 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
 3.30 3.31 3.32

Discarded OutFlow Max=0.16 cfs @ 10.81 hrs HW=43.12' (Free Discharge)

1=Exfiltration (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=1.86 cfs @ 10.81 hrs HW=43.12' (Free Discharge)

2=Orifice/Grate (Passes 1.86 cfs of 19.26 cfs potential flow)

3=Orifice/Grate (Orifice Controls 1.86 cfs @ 2.68 fps)

4=Orifice/Grate (Controls 0.00 cfs)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 19P: Detention Pond C-2

Inflow Area = 96,117 sf, 55.46% Impervious, Inflow Depth = 3.72" for SC-010yr event
 Inflow = 4.15 cfs @ 9.99 hrs, Volume= 29,808 cf
 Outflow = 0.49 cfs @ 12.40 hrs, Volume= 29,727 cf, Atten= 88%, Lag= 144.9 min
 Primary = 0.49 cfs @ 12.40 hrs, Volume= 29,727 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 45.54' @ 12.40 hrs Surf.Area= 8,656 sf Storage= 11,550 cf

Plug-Flow detention time= 326.8 min calculated for 29,727 cf (100% of inflow)
 Center-of-Mass det. time= 324.9 min (1,060.1 - 735.2)

Volume	Invert	Avail.Storage	Storage Description
#1	43.99'	48,016 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.99	0	0	0
44.00	6,349	32	32
45.00	7,819	7,084	7,116
46.00	9,373	8,596	15,712
47.00	11,047	10,210	25,922
48.00	11,047	11,047	36,969
49.00	11,047	11,047	48,016

Device	Routing	Invert	Outlet Devices
#1	Primary	43.99'	18.0" Round Culvert L= 271.0' Ke= 0.200 Inlet / Outlet Invert= 43.99' / 42.50' S= 0.0055 '/ Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	44.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	46.50'	12.0" x 12.0" Horiz. Orifice/Grate C= 0.600 in 12.0" x 12.0" Grate Limited to weir flow at low heads
#4	Primary	48.00'	15.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

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2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.49 cfs @ 12.40 hrs HW=45.54' (Free Discharge)

- 1=Culvert (Passes 0.49 cfs of 7.20 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.49 cfs @ 5.64 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 20P: Bioretention Pond D-1

Inflow Area = 58,607 sf, 65.00% Impervious, Inflow Depth = 4.05" for SC-010yr event
 Inflow = 2.78 cfs @ 9.98 hrs, Volume= 19,789 cf
 Outflow = 0.79 cfs @ 10.59 hrs, Volume= 19,615 cf, Atten= 72%, Lag= 36.3 min
 Discarded = 0.07 cfs @ 10.59 hrs, Volume= 11,891 cf
 Primary = 0.72 cfs @ 10.59 hrs, Volume= 7,724 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 47.10' @ 10.59 hrs Surf.Area= 2,725 sf Storage= 8,337 cf

Plug-Flow detention time= 857.3 min calculated for 19,615 cf (99% of inflow)
 Center-of-Mass det. time= 851.0 min (1,576.2 - 725.2)

Volume	Invert	Avail.Storage	Storage Description		
#1	37.00'	14,223 cf	Custom Stage Data (Conic) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
37.00	1,620	0.0	0	0	1,620
43.50	1,620	40.0	4,212	4,212	2,547
45.50	1,620	20.0	648	4,860	2,833
46.00	1,956	100.0	893	5,753	3,177
47.00	2,670	100.0	2,304	8,056	3,911
48.00	3,224	100.0	2,943	10,999	4,497
49.00	3,224	100.0	3,224	14,223	4,699

Device	Routing	Invert	Outlet Devices
#1	Discarded	37.00'	0.750 in/hr Exfiltration over Wetted area
#2	Primary	43.52'	18.0" Round Culvert L= 572.0' Ke= 0.200 Inlet / Outlet Invert= 43.52' / 40.60' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	44.00'	0.5" Vert. Orifice/Grate C= 0.600
#4	Device 2	47.00'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads
#5	Primary	47.90'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

201810-Preliminary Evaluation-Stormwater

Type I 24-hr SC-010yr Rainfall=5.55"

Prepared by Stantec Consulting Ltd.

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Discarded OutFlow Max=0.07 cfs @ 10.59 hrs HW=47.10' (Free Discharge)

1=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.67 cfs @ 10.59 hrs HW=47.10' (Free Discharge)

2=Culvert (Passes 0.67 cfs of 9.29 cfs potential flow)

3=Orifice/Grate (Orifice Controls 0.01 cfs @ 8.45 fps)

4=Orifice/Grate (Weir Controls 0.66 cfs @ 1.05 fps)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 21P: Garrapata Creek

Inflow Area = 168,152 sf, 21.54% Impervious, Inflow Depth = 2.00" for SC-010yr event

Inflow = 3.15 cfs @ 10.02 hrs, Volume= 28,032 cf

Primary = 3.15 cfs @ 10.02 hrs, Volume= 28,032 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 23P: Bioretention Pond F

Inflow Area = 33,691 sf, 85.00% Impervious, Inflow Depth = 4.74" for SC-010yr event

Inflow = 1.90 cfs @ 9.98 hrs, Volume= 13,302 cf

Outflow = 0.67 cfs @ 10.45 hrs, Volume= 12,240 cf, Atten= 65%, Lag= 27.9 min

Discarded = 0.05 cfs @ 10.45 hrs, Volume= 5,628 cf

Primary = 0.62 cfs @ 10.45 hrs, Volume= 6,612 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 51.72' @ 10.45 hrs Surf.Area= 2,992 sf Storage= 5,083 cf

Plug-Flow detention time= 619.6 min calculated for 12,231 cf (92% of inflow)

Center-of-Mass det. time= 568.5 min (1,277.1 - 708.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	42.65'	1,564 cf	10.33'W x 87.62'L x 6.75'H Field A 6,111 cf Overall - 2,201 cf Embedded = 3,910 cf x 40.0% Voids
#2A	43.40'	2,201 cf	ADS_StormTech MC-4500 +Cap x 20 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
#3	49.40'	11,704 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		15,469 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.40	1,771	0.0	0	0
51.40	1,771	20.0	708	708
52.00	2,370	100.0	1,242	1,951
53.00	5,712	100.0	4,041	5,992
54.00	5,712	100.0	5,712	11,704

201810-Preliminary Evaluation-Stormwater

Type I 24-hr SC-010yr Rainfall=5.55"

Prepared by Stantec Consulting Ltd.

Printed 10/12/2018

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Device	Routing	Invert	Outlet Devices
#1	Discarded	42.65'	0.750 in/hr Exfiltration over Surface area
#2	Primary	43.00'	18.0" Round Culvert L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 43.00' / 40.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	49.40'	4.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	52.50'	18.0" x 18.0" Horiz. Orifice/Grate C= 0.600 in 18.0" x 18.0" Grate Limited to weir flow at low heads
#5	Primary	53.00'	5.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.05 cfs @ 10.45 hrs HW=51.72' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.05 cfs)**Primary OutFlow** Max=0.62 cfs @ 10.45 hrs HW=51.72' (Free Discharge)↑ **2=Culvert** (Passes 0.62 cfs of 24.02 cfs potential flow)↑ **3=Orifice/Grate** (Orifice Controls 0.62 cfs @ 7.06 fps)↑ **4=Orifice/Grate** (Controls 0.00 cfs)↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 24P: Total Site Runoff**

Inflow Area = 497,761 sf, 45.24% Impervious, Inflow Depth = 2.08" for SC-010yr event

Inflow = 4.17 cfs @ 10.57 hrs, Volume= 86,283 cf

Primary = 4.17 cfs @ 10.57 hrs, Volume= 86,283 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 26P: Overflow to the East

Inflow Area = 329,609 sf, 57.33% Impervious, Inflow Depth = 2.12" for SC-010yr event

Inflow = 2.63 cfs @ 10.64 hrs, Volume= 58,251 cf

Primary = 2.63 cfs @ 10.64 hrs, Volume= 58,251 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



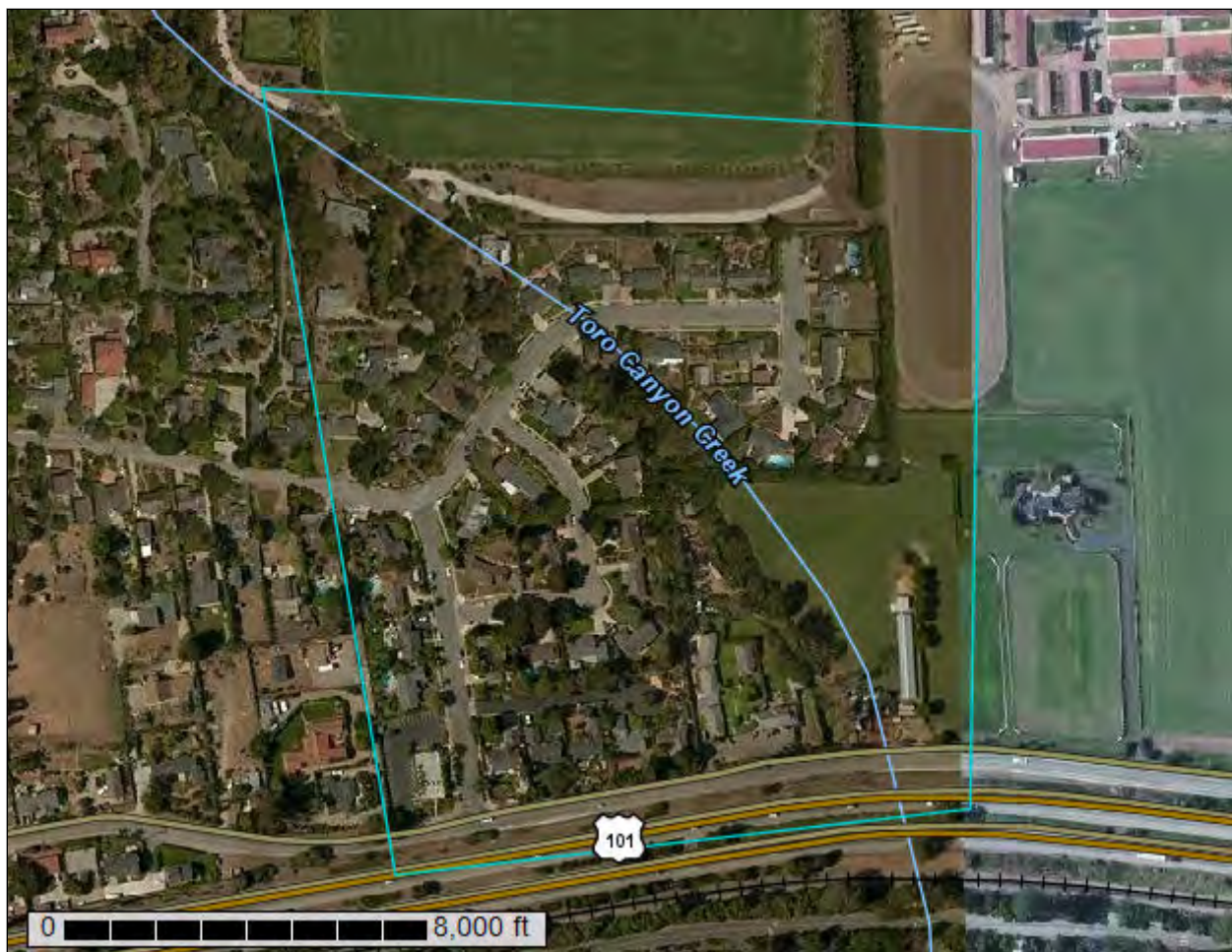
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Santa Barbara County, California, South Coastal Part



February 13, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Soil Map


The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Santa Barbara County, California, South Coastal Part
Survey Area Data: Version 9, Sep 12, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 5, 2010—Sep 14, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Santa Barbara County, California, South Coastal Part (CA673)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BaA	Ballard fine sandy loam, 0 to 2 percent slopes	18.5	48.6%
BaC	Ballard fine sandy loam, 2 to 9 percent slopes	9.5	24.8%
MeC	Milpitas-Positas fine sandy loams, 2 to 9 percent slopes	10.2	26.7%
Totals for Area of Interest		38.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Santa Barbara County, California, South Coastal Part

BaA—Ballard fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hc43

Elevation: 200 to 1,900 feet

Mean annual precipitation: 16 to 24 inches

Mean annual air temperature: 61 to 63 degrees F

Frost-free period: 300 to 330 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ballard and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ballard

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 31 inches: fine sandy loam

H2 - 31 to 42 inches: stony clay loam

H3 - 42 to 60 inches: very stony clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 1

Land capability classification (nonirrigated): 3c

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Elder

Percent of map unit: 10 percent

Landform: Alluvial fans

Landform position (two-dimensional): Footslope

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Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Goleta

Percent of map unit: 5 percent
Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear, convex
Hydric soil rating: No

BaC—Ballard fine sandy loam, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: hc44
Elevation: 200 to 1,900 feet
Mean annual precipitation: 16 to 24 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 300 to 330 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ballard and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ballard

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 31 inches: fine sandy loam
H2 - 31 to 42 inches: stony clay loam
H3 - 42 to 60 inches: very stony clay loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

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Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Elder

Percent of map unit: 4 percent
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Botella

Percent of map unit: 4 percent
Landform: Valleys
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ballard

Percent of map unit: 4 percent
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Goleta

Percent of map unit: 3 percent
Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear, convex
Hydric soil rating: No

MeC—Milpitas-Positas fine sandy loams, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: hc63

Elevation: 30 to 800 feet

Mean annual precipitation: 14 to 20 inches

Mean annual air temperature: 60 to 61 degrees F

Frost-free period: 300 to 330 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Milpitas and similar soils: 40 percent

Positas and similar soils: 40 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Milpitas

Setting

Landform: Terraces

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Mixed alluvium

Typical profile

H1 - 0 to 25 inches: fine sandy loam

H2 - 25 to 54 inches: gravelly clay

H3 - 54 to 68 inches: very gravelly sandy loam

Properties and qualities

Slope: 2 to 9 percent

Depth to restrictive feature: 20 to 28 inches to abrupt textural change

Natural drainage class: Moderately well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Ecological site: CLAYPAN (R015XD115CA)

Hydric soil rating: No

Description of Positas

Setting

Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 19 inches: fine sandy loam
H2 - 19 to 41 inches: clay
H3 - 41 to 68 inches: clay loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: 14 to 26 inches to abrupt textural change
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: CLAYPAN (R015XD115CA)
Hydric soil rating: No

Minor Components

Ballard

Percent of map unit: 7 percent
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Botella

Percent of map unit: 7 percent
Landform: Valleys
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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Eroded soils

Percent of map unit: 6 percent

Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group (Polo Estates)

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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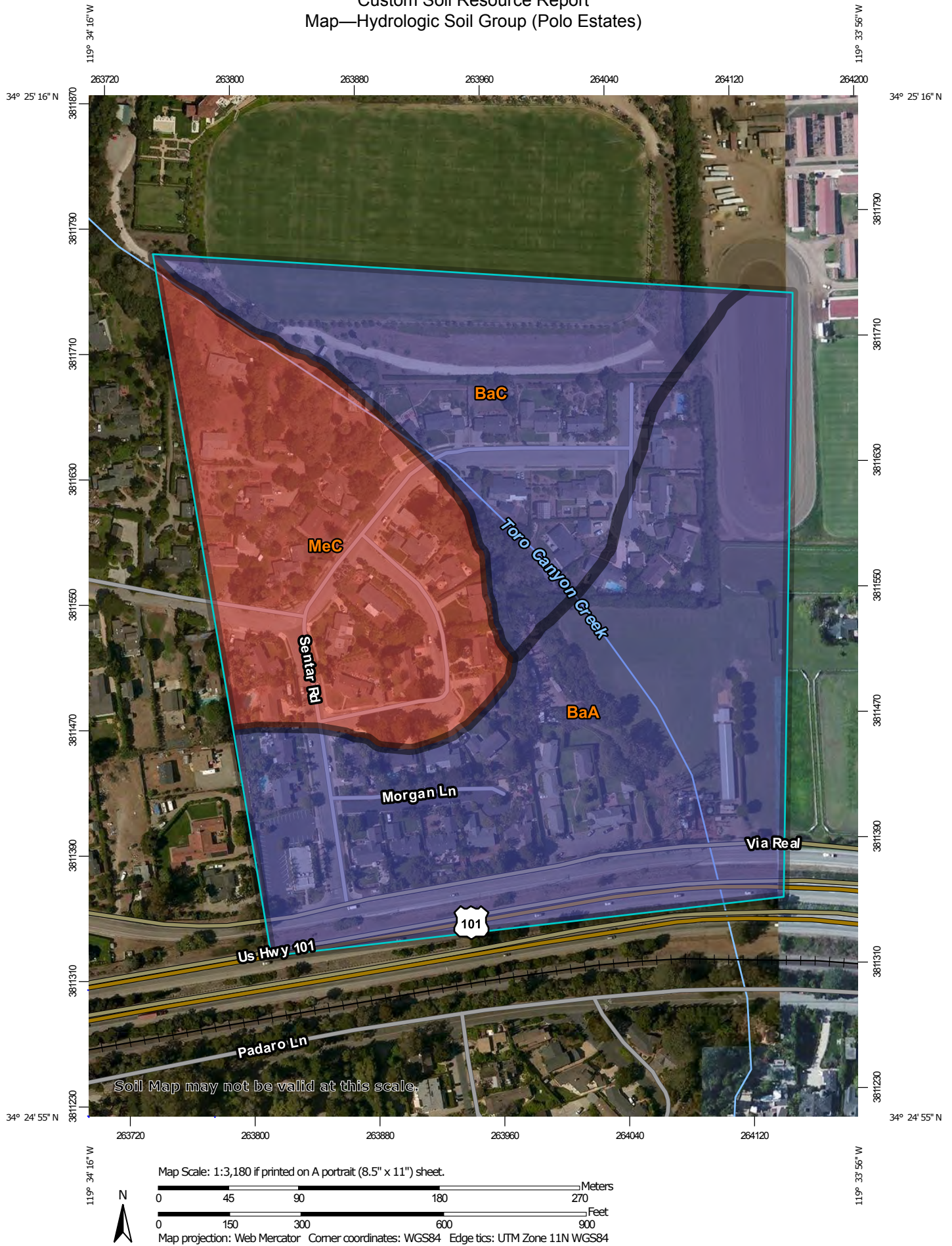
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report


Map—Hydrologic Soil Group (Polo Estates)



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MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines


 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points






 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available


Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Santa Barbara County, California, South Coastal Part
 Survey Area Data: Version 9, Sep 12, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 5, 2010—Sep 14, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group (Polo Estates)

Hydrologic Soil Group— Summary by Map Unit — Santa Barbara County, California, South Coastal Part (CA673)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BaA	Ballard fine sandy loam, 0 to 2 percent slopes	B	18.5	48.6%
BaC	Ballard fine sandy loam, 2 to 9 percent slopes	B	9.5	24.8%
MeC	Milpitas-Positas fine sandy loams, 2 to 9 percent slopes	D	10.2	26.7%
Totals for Area of Interest			38.2	100.0%

Rating Options—Hydrologic Soil Group (Polo Estates)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

From: Thierumaran, Yoganathan
Sent: Wednesday, April 11, 2018 9:22 AM
To: Gerber, Joyce <jgerber@co.santa-barbara.ca.us>
Cc: Corsa, Hansel <hacorsa@co.santa-barbara.ca.us>
Subject: 17TRM-00000-00002; Via Real Tract Map

Hi Joyce,

Please see our comments/incompleteness items below after our initial review. One of the main issues that is not addressed in this submittal is the elevation of the Finish Floor.

- All the structures within the special flood hazard area shall have the finish floor two feet above the base flood elevation/depth.
 - All but a few buildings will be will be in the floodplain and below the two (2) foot requirement until the LOMR is approved and finalized. We cannot currently comply with this requirement.
- Overlay the SFHA on the grading and drainage plans.
 - The Special Flood Hazard Area has been added to the grading and drainage plans.
- Please separate the Flood Control portion of the report and label the ponds and DMA's with distinct notations.
 - The Flood Control portion of the report has been separated from the Storm Water Quality Report. Distinct notations (SCM A-1, Pond C-2, SCM D-1, and SCM F)
- Although you're using the basins for both detaining and retaining, show only the detention part of the basins in the FC section of the report. This means only counting storage above invert elevation of the first discharge device.
 - Bioretention areas are modeled as detention areas for the flood control analyses as shown in attachments in Section 7.1 of this report.
- State why there are two F basins and only one in the model calcs.
 - There is a pipe connecting both pipes and they are modeled and labeled as one detention area.
- Provide capacity calculations for the emergency spillways on each detention basin (i.e. use 100 year cfs and run it across proposed cross section to confirm 1FT between this water surface elevation and top of spillway).
 - Emergency spillways have been designed for each detention basin using the 100 year storm event.
- Some of the cross-lot drainage easement doesn't appear to go all the way to the basin, is it correct/the intention?
 - The stormdrain between lots 23 and 24 has been modified to be within their respective lots
 - Stormdrain easement has been added to the following locations:
 - Between lots 27/28 and 29/30
 - North of lot 3
 - South east of lot 1
- Where does the overflow go from the basin in the SE corner? Also, please clarify (add some language in the report) how the outlet device in that basin works. Is all the outflow from the basin goes through the culvert under Via Real. What other flows are going through that culvert (besides the 12" to 30" SD that report mentions about) and does it have enough capacity?
- Why does the 40cfs overflow to the east at Via Real? Why is it not contained?
 - There will not be 40 cfs of overflow as LOMR is assumed to be accepted for the design of this project.

Please let me know if you have any other questions.

Thanks,
Maran

Yoganathan Thierumaran, P.E., CFM

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