

CITY OF SAN MARCOS, CALIFORNIA PRIORITY DEVELOPMENT PROJECT (PDP) STORM WATER QUALITY MANAGEMENT PLAN (SWQMP) FOR ASCEND TOWN HOMES SP25-0003 MELROSE DRIVE AT DIAMOND STREET SAN MARCOS, CA 92078 ASSESSOR'S PARCEL NUMBER(S): 223-341-17 ENGINEER OF WORK:  ROBERT D. DENTINO, PE 45629
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PREPARED FOR:

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DATE OF SWQMP:
03/13/2026

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ACRONYMS

APN	Assessor's Parcel Number
BMP	Best Management Practice
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NRCS	Natural Resources Conservation Service
PDP	Priority Development Project
PE	Professional Engineer
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SSD	Significant Site Design
SWQMP	Storm Water Quality Management Plan

PDP SWQMP PREPARER'S CERTIFICATION PAGE

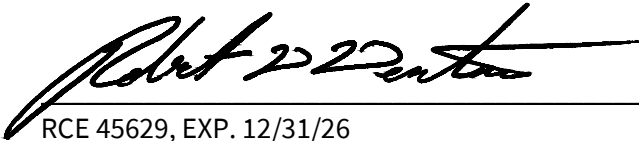
Project Name: Ascend Townhomes

Permit Application Number: SP25-0003

PREPARER'S CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the PDP requirements of the City of San Marcos BMP Design Manual, which is a design manual for compliance with City of San Marcos Municipal Code and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100 as amended by Order No. R9-2015-0001, R9-2015-0100, and R9-2017-0077) requirements for storm water management.

I have read and understand that the City Engineer has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by the City of San Marcos Land Development Division is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.



RCE 45629, EXP. 12/31/26

Robert D. Dentino

Print Name

Excel Engineering

Company

03/13/2026

Date



PDP SWQMP PROPERTY OWNER'S CERTIFICATION PAGE

Project Name: Ascend Townhomes
Permit Application Number: SP25-0003

PROPERTY OWNER'S CERTIFICATION

This PDP SWQMP has been prepared for MDLV Investments, LLC by Excel Engineering. The PDP SWQMP is intended to comply with the PDP requirements of the City of San Marcos BMP Design Manual, which is a design manual for compliance with City of San Marcos Municipal Code and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100 as amended by Order No. R9-2015-0001, R9-2015-0100, and R9-2017-0077) requirements for storm water management.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan. Once the undersigned transfers its interests in the property, its successor-in-interest shall bear the aforementioned responsibility to implement the best management practices (BMPs) described within this plan, including ensuring on-going operation and maintenance of structural BMPs. A signed copy of this document shall be available on the subject property into perpetuity.



Property Owner's Signature

Michael D. Levin

Print Name

MDLV Investments, LLC

Company

03/13/2026

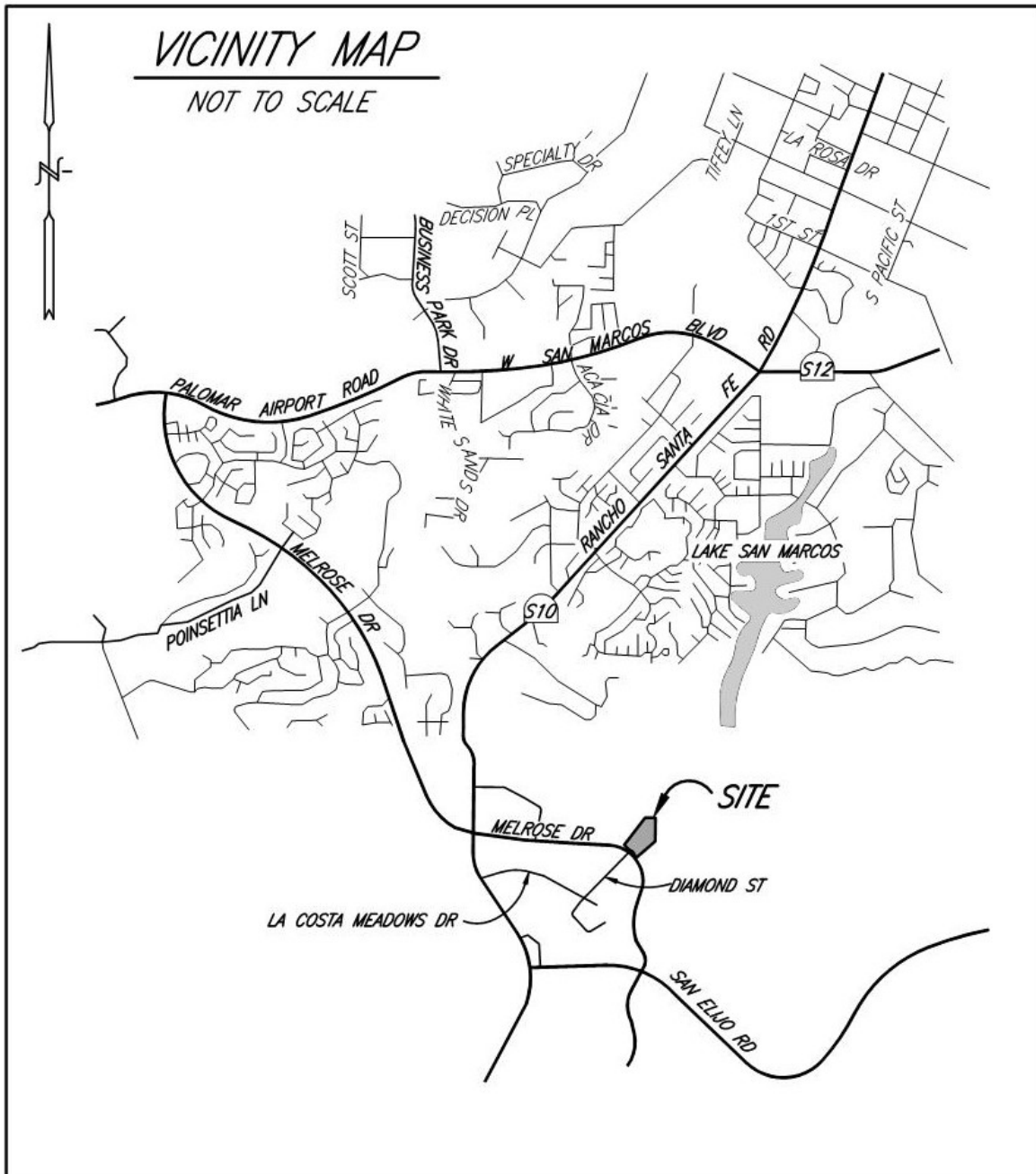
Date

SUBMITTAL RECORD

Use this Table to keep a record of submittals of this PDP SWQMP. Each time the PDP SWQMP is re-submitted, provide the date and status of the project. In column 4 summarize the changes that have been made or indicate if response to plancheck comments is included. When applicable, insert response to plancheck comments behind this page.

Submittal Number	Date	Project Status	Summary of Changes
1	2/25/2025	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	Initial Submittal
2	9/18/2025	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	2 nd SDP TM submittal
3	11/10/2025	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	3 rd SDP TM submittal
4	01/14/2026	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	4 th SDP TM submittal
5	03/20/2026	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	5 th SDP TM submittal

PROJECT VICINITY MAP



**Applicability of Storm Water
Best Management Practices (BMP) Requirements**
(Storm Water Intake Form for all Development Permit Applications)

Form J-1
[July 2025]

Project Identification

Project Name: Ascend Townhomes

Description: Proposed residential project will include multi-unit condos, streets, sidewalks, and utilities.

Permit Application Number (if applicable): SP25-0003

Date: 03/13/2026

Project Address: Melrose Drive and Diamond Street, San Marcos, CA 92078

APN: 223-341-17

The project is (select one): ☒ New Development ☐ Redevelopment

The total proposed newly created or replaced impervious area is: 350,138 ft² (8.03) acres

The total proposed disturbed area is: 657,585 ft² (15.0961) acres

Determination of Requirements

This form is required as part of the City's application process. The purpose of this form is to identify potential land development planning storm water requirements that apply to development projects. Depending on the outcome, the project will either be subject to "Standard Project," "Priority Development," and/or "Trash Capture" requirements, or the project will not be considered a development project.

Development projects are defined as: construction, rehabilitation, redevelopment, or reconstruction of any public or private development projects. In addition, the identification of a development project, as it relates to storm water regulations, would truly apply to development and redevelopment activities that have the potential to contact storm water and contribute a source of pollutants, or reduce the natural absorption and infiltration abilities of the land.

To access the BMP Design Manual, Storm Water Quality Management Plan (SWQMP) templates, and other pertinent information related to this program please refer to: <http://www.san-marcos.net/departments/development-services/watershed/development-planning>

Please contact Land Development Engineering staff with any questions on this form: engineeringdivision@san-marcos.net

Please answer each of the following steps below, starting with Step 1 and progressing through each step as noted.

STEP 1: Determine if project is a "development project"

Question	Answer
Is the project a "development project" (See definition above)? See Section 1.3 of the BMP Design Manual for further guidance, if necessary.	☒ Yes, <u>continue to Step 2.</u> No, permanent BMP requirements do not apply. No SWQMP will be required. <u>Provide brief discussion below</u> then Skip to Step 5 and select " Not a development project "
Discussion / justification if the project is <i>not</i> a "development project" (e.g., the project includes <i>only</i> interior remodels within an existing building):	

STEP 2: Determine if project is exempt from PDP requirements pursuant to MS4 Permit Provision E.3.b. (3)

Question	Answer
Is the project <i>limited to</i> any of the following: Option 1. Constructing new or retrofitting paved sidewalks, bicycle lanes or trails which are one or more of the following: • Designed and constructed to direct storm water runoff to adjacent vegetated areas, or other nonerodable permeable areas • Designed and constructed to be hydraulically disconnected from paved streets or roads • Designed and constructed with permeable pavements or surfaces in accordance with USEPA Green Streets guidance Option 2. Retrofitting or redeveloping existing paved alleys, streets, or roads that are designed and constructed in accordance with the USEPA Green Streets guidance Option 3. Ground Mounted Solar Array that meets the criteria provided in section 1.4.2 of the BMP manual	Yes, permanent BMP requirements do not apply. <u>Provide brief discussion below, identifying which Option applies to the project then skip to Step 4 to determine if Trash Capture requirements apply. In Step 5 select “Standard Project”</u> ☒ No, project is <i>not</i> PDP exempt. <u>Continue to Step 3.</u>

Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:

Step 3: Determine if project is a Priority Development Project (PDP)

Question	Answer
Step 3a: Please answer all the following questions then continue to Step 3b:	
New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.	☒ Yes No
Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.	Yes ☒ No
New and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses: (i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification (SIC) code 5812). (ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater. (iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.	☒ Yes No

New or redevelopment projects that create and/or replace 2,500 square feet or more of impervious surface (collectively over the entire project site) and discharging directly to an Environmentally Sensitive Area (ESA). “Discharging directly to” includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). <i>Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and San Diego Water Board; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and San Diego Water Board; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees. See BMP Design Manual Section 1.4.2 for additional guidance</i>	Yes ☒ No
New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses: (i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (ii) Retail gasoline outlets (RGOs). This category includes RGOs that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.	Yes ☒ No
New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction. <i>Note: See BMP Design Manual Section 1.4.2 for additional guidance.</i>	☒ Yes No
Question	Answer
Step 3b: Was “Yes” selected for one or more of the questions above?	☒ Yes, project is a PDP. If project is a redevelopment project, <u>continue to Step 3c</u>. If project is a new development project, Skip to Step 4. In Step 5 select “Priority Development Project (PDP)” No, project is a Standard Project, Skip to Step 4 to determine if Trash Capture requirements apply. In Step 5 select “Standard Project”
Step 3c: For redevelopment projects, provide the following information and continue to Step 3d: The area of existing (pre-project) impervious area at the project site is: _____ ft² (A) The total proposed newly created or replaced impervious area is _____ ft² (B) Percent impervious surface created or replaced (B/A)* 100: _____%	
Step 3d: Is the percent impervious surface created or replaced less than or equal to fifty percent?	Yes, only new impervious areas are considered PDP. <u>Continue to Step 4</u>. No, entire project area is considered PDP. <u>Continue to Step 4</u>.
Step 4: Determine if trash capture requirements apply	
Question	Answer
Step 4a: Is the Project within any of the following Priority Land Use (PLU) categories? High Density Residential (R-2, R-3-6, R3-10) Industrial (L-I, B-P, I, I-2) Commercial (C, NC, OP, SR) Mixed Urban (MU-1, MU-2, MU-3, MU-4) Public Transportation Stations	☒ Yes, <u>continue to Step 4b</u>. No, project is exempt from Trash Capture requirements. <u>Provide brief discussion below then Skip to Step 5</u>.

Step 4b: Is the project <i>limited to</i> any of the following: Option 1: A single family home or an addition or alteration of one single family home? Option 2: An accessory dwelling unit (ADU)? Option 3: Creating equal to or less than 250 SF of new or replaced impervious area? Option 4: Trenching of underground utilities? Option 5: EV charging stations, self-sustaining fuel cells, transformers, generators and related supporting infrastructure?	Yes, project is exempt from Trash Capture requirements. <u>Provide brief discussion below, identifying which Option applies to the project then continue to Step 5.</u> ☒ No, project is subject to Trash Capture requirements. <u>Continue to Step 5</u> and <u>Select “Trash Capture”</u> in addition to Standard or PDP.
Discussion / justification if trash capture requirements do not apply:	

Step 5: Identify project type. Select the applicable project type(s) below based on Step 1-4 of this form:
Not a development project: project is not subject to requirements in the BMP manual
☒ Trash Capture: project must comply with trash capture requirements and provide a PDP or Trash Capture SWQMP
Standard Project: project must comply with stormwater requirements of the BMP manual and provide completed Forms J-3 and J-4
☒ Priority Development Project (PDP): project must comply with stormwater requirements of the BMP manual and provide a PDP SWQMP

Site Information Checklist For PDPs		Form J-2B (PDP) [July 2025]
Project Summary Information		
Project Hydrologic Unit	Select One: ☒ Carlsbad 904	
Project Watershed (Refer to Figure A.2-1 in Appendix A for Hydrologic Sub Areas map)	Select One: Agua Hedionda 904.31 904.32 San Marcos ☒ 904.51 904.52 904.53 Escondido Creek 904.61 904.62	
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	<u>16.7511</u> Acres (<u>729,676</u> Square Feet)	
Area to be Disturbed by the Project (Project Area)	<u>15.0961</u> Acres (<u>657,585</u> Square Feet)	
Project Proposed Impervious Area (subset of Project Area)	<u>8.0381</u> Acres (<u>350,138</u> Square Feet)	
Project Proposed Pervious Area (subset of Project Area)	<u>7.0580</u> Acres (<u>307,447</u> Square Feet)	
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.		

Description of Existing Site Condition

Current Status of the Site (select all that apply):

- ☐ Existing development
- ☐ Previously graded but not built out
- ☐ Demolition completed without new construction
- ☐ Agricultural or other non-impervious use
- ☒ Vacant, undeveloped/natural

Description / Additional Information:

The site is currently an undeveloped hillside.

Existing Land Cover Includes (select all that apply):

- ☒ Vegetative Cover
- ☐ Non-Vegetated Pervious Areas
- ☐ Impervious Areas

Description / Additional Information:

The site consists of natural undisturbed terrain with medium-dense brush and vegetated cover.

Underlying Soil belongs to Hydrologic Soil Group (select all that apply):

- ☐ NRCS Type A
- ☐ NRCS Type B
- ☐ NRCS Type C
- ☒ NRCS Type D

Approximate Depth to Groundwater (GW):

- ☐ GW Depth < 5 feet
- ☐ 5 feet < GW Depth < 10 feet
- ☒ 10 feet < GW Depth < 20 feet
- ☐ GW Depth > 20 feet

Existing Natural Hydrologic Features (select all that apply):

- ☐ Watercourses
- ☐ Seeps
- ☐ Springs
- ☐ Wetlands
- ☒ None

Description / Additional Information:

Description of Existing Site Drainage Patterns

How is storm water runoff conveyed from the site? At a minimum, this description should answer:

- (1) whether existing drainage conveyance is natural or urban;
- (2) Is runoff from offsite conveyed through the site? if yes, quantify all offsite drainage areas, design flows, and locations where offsite flows enter the project site, and summarize how such flows are conveyed through the site;
- (3) Provide details regarding existing project site drainage conveyance network, including any existing storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels; and
- (4) Identify all discharge locations from the existing project site along with a summary of conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.

Describe existing site drainage patterns:

The property is currently surrounded by mostly undeveloped hillsides, except for a portion of residential street atop of the most northerly hillside which all drain south into a natural valley at the bottom of the hills. The valley continues draining south into an existing Type-F inlet where it enters the public storm drain system via a 48" RCP in Melrose Drive.

There is a small natural ridge that develops in the lower western portion of the property that splits a small portion of the hillside flows west towards an existing access road with adjacent brownditches collecting this flow into an existing 30" pipe in the access road.

Along the Melrose Drive Right of Way there is a 30'- 50' high cut slope that drains into a brownditch adjacent to the sidewalk on Melrose Drive. The brownditch drains south along Melrose Dr. till it reaches the D-25 where it discharges into Melrose Drive.

All existing off-site flows that are intercepted by the project footprint have already been intercepted by the project as part of the approved Rough Grading plans for the previously approved industrial-use pad (GP 22-00018). Those existing flows that are intercepted and routed around the project are calculated and detailed in the approved hydrology/hydraulics study for that approved plan/permit.

Description of Proposed Site Development

Project Description / Proposed Land Use and/or Activities:

The project proposes to build multi-family condominiums, streets, and corresponding utilities. A total of 4 biofiltration basins and 2 biofiltration swales will be used for both pollutant treatment control and low flow hydromod control. One Modular Wetlands system will be used for additional pollutant treatment and 2 underground hydromod detention pipe systems are proposed.

List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):

The proposed impervious areas of the project will include buildings, hardscape flatwork (sidewalks), streets, and parking.

List/describe proposed pervious features of the project (e.g., landscape areas):

The proposed pervious features will include landscape areas and biofiltration basins throughout the site.

Does the project include grading and changes to site topography?

☒ Yes

☐ No

Description / Additional Information:

Overall the site will be modified from the predeveloped industrial pad graded by GP22-00018 and the sheet grades manipulated to provide pad areas for the condominium/townhome rows, their associated driveways and streets, etc. The grades will be raised and lowered from the existing elevation as needed to drain to each of the selected BMPs. Overall the site will be relatively flat throughout. Retaining walls will be constructed along the exterior of the project as part of the predeveloped condition approved grading permit.

Description of Proposed Site Drainage Patterns

Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

☒ Yes

☐ No

If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre- and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations.

Describe proposed site drainage patterns:

All offsite flows are captured either by a brow-ditch or a 48" pipe that routes the flow to their respective POC. All on-site drainage is routed by way of sheet flow, initially, to more defined flowpaths (curbs and gutter, ribbon gutters, or brow ditches) directly into water quality treatment systems (surface biofiltration basins or modular wetland systems) or collected into storm drain inlets and routed through storm drain piping to those basins. From there, peak flow attenuation will occur (as well as water quality treatment) and the resultant flows will pipe via private storm drain conveyance pipes to the POCs.

For more information on the flows, see the Drainage Study for this project.

Identification and Narrative of Receiving Water and Pollutants of Concern			
Describe flow path of storm water from the project site discharge location(s), through urban storm conveyance systems as applicable, to receiving creeks, rivers, and lagoons as applicable, and ultimate discharge to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable): The flow path of storm water from the project site discharges to San Marcos Creek, Batiquitos Lagoon, then ultimately to the Pacific Ocean.			
List any 303(d) impaired water bodies within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:			
303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs / WQIP Highest Priority Pollutant	
San Marcos Creek	Indicator Bacteria, Phosphorus, Selenium	Nutrients	
Batiquitos Lagoon	Pathogen		
Identification of Project Site Pollutants			
Identify pollutants expected from the project site based on all proposed use(s) of the site (see BMP Design Manual Appendix B.6):			
Pollutant	Not Applicable to the Project Site	Expected from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment		X	
Nutrients	X		
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris		X	
Oxygen Demanding Substances		X	
Oil & Grease		X	
Bacteria & Viruses		X	
Pesticides		X	

Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the BMP Design Manual)?

- ☒ Yes, hydromodification management flow control structural BMPs required.
- ☐ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.

Description / Additional Information (to be provided if a 'No' answer has been selected above):

Critical Coarse Sediment Yield Areas*

***This Section only required if hydromodification management requirements apply**

Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within the project drainage boundaries?

- ☒ Yes
- ☐ No, no critical coarse sediment yield areas (CCSYA) to be protected based on WMAA maps

If yes, demonstrate that CCSYA is not impacted per Appendix H of the BMP Design Manual and check the following that apply:

- ☒ On-site impacts are avoided, therefore no further analysis is required.
- ☒ On-site and/or upstream CCSYAs are passed through to the downstream channel, therefore no further analysis is required.
- ☐ CCSYAs are not avoided or bypassed through the site, therefore a No Net Impact Analysis has been provided in Attachment 2b.

Discussion / Additional Information:

Onsite PCCSYA do not meet the criteria for high sediment yield production and all offsite PCCSYA's will be bypassed through the site and hydraulically separated from all onsite flows. Furthermore, the previously approved SWQMP for the rough grading plan showed no PCCSYA impact. See the PCCSYA exhibit as part of Attachment 2b.

Flow Control for Post-Project Runoff*

***This Section only required if hydromodification management requirements apply**

List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit.

There is one POC located within the existing 48" RCP heading out of the BMP/Detention Basin at the southerly corner of the site at the project's main entry off of Melrose/Diamond. All onsite storm water runoff as well as the street improvements ultimately flow into this storm drain located at the south corner of the site.

Has a geomorphic assessment been performed for the receiving channel(s)?

☒ No, the low flow threshold is 0.1Q2 (default low flow threshold)

☐ Yes, the result is the low flow threshold is 0.1Q2

☐ Yes, the result is the low flow threshold is 0.3Q2

☐ Yes, the result is the low flow threshold is 0.5Q2

If a Channel Screening Study (SCCWRP) has been performed, provide title, date, and preparer:

Discussion / Additional Information: (optional)

Other Site Requirements and Constraints
When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements. There is a spacing constraint at the southwesterly portion of the site (DMAs 4 and 5) where the grades and proposed development (needs for driveways and building pads as well as a secondary access/fire lane) do not allow for a bioretention basin to be installed. In this case, Modular Wetlands Bio Clean was chosen.
Optional Additional Information or Continuation of Previous Sections As Needed
This space provided for additional information or continuation of information from previous sections as needed.

Baseline BMPs for Existing and Proposed Site Features for All Development Projects		Form J-3 [July 2025]	
A. BMPS for Existing Natural Site Features (See Fact Sheet BL-1)			
1. Check the boxes below for each existing feature on the site.		2. Select the BMPs to be implemented for each identified feature. Explain why any BMP not selected is infeasible in Form J-3/J-4-E	
☒ Check here if none are applicable		2a. Conserve natural features (SD-G)	2b. Provide buffers around waterbodies (SD-H)
☐ Natural Waterbodies		☐	☐
☐ Natural storage reservoirs & drainage corridors		☐	--
☐ Natural areas, soils, & vegetation (incl. trees)		☐	--
B. BMPs for Common Impervious Outdoor Site Features (See Fact Sheet BL-2)			
1. Check the boxes below for each proposed feature.		2. Select the BMPs to be implemented for each proposed feature. If neither BMP SD-B, nor SD-I is selected for a feature, explain why both BMPs are infeasible in Form J-3/J-4-E	
☐ Check here if none are applicable		2a. Direct runoff to pervious areas (SD-B)	2b. Construct surfaces from permeable materials (SD-I)
☒ Streets and roads		☒	☐
☒ Sidewalks & walkways		☒	☐
☒ Parking areas & lots		☒	☐
☒ Driveways		☒	☐
☒ Patios, decks, & courtyards		☒	☐
☒ Hardcourt recreation areas		☒	☐
☐ Other:		☐	☐
C. ☒ BMPs for Rooftop Areas: Check this box if rooftop areas are proposed and select at least one BMP below. If no BMPs are selected, explain why they are infeasible in Form J-3/J-4-E			(See Fact Sheet BL-3 for descriptions)
☒ Direct runoff to pervious areas (SD-B)		☐ Install green roofs (SD-C)	☐ Install rain barrels (SD-E)
D. ☒ BMPs for Landscaped Areas: Check this box if landscaping is proposed and select at least one BMP below. If no BMPs are selected, explain why they are infeasible in Form J-3/J-4-E			(See Fact Sheet BL-4 for descriptions)
☒ Sustainable Landscaping (SD-K)			

Note: All features and BMPS must be shown on applicable construction plans. See applicable Fact Sheets in Appendix D of the BMP Design Manual for additional Information.

Use Form J-3/J-4-E to explain BMP feasibility or inapplicability, or to describe features not listed in this form.

Additional explanation may be required by City Staff.

Baseline BMPs for Pollutant Generating Sources for All Development Projects

Form J-4
[July 2025]

A. Management of Stormwater Discharges

1. Identify all proposed outdoor work areas below ☒ Check here if none are proposed	2. Which BMPs will be used to prevent materials from contacting rainfall or runoff? (See Fact Sheet BL-5) (Select all feasible BMPs for each work area ¹)			3. Where will runoff from the work area be routed? (See Fact Sheet BL-6) (Select one or more for each work area)			
	Overhead covering (rooftops, etc.) (SC-A)	Separation of flows from adjacent areas (berms, etc.) (SC-B)	Wind protection (screens, etc.) (SC-C)	Sanitary sewer ² (SC-D)	Containment system SC-E)	Stormwater S-BMP or SSD-BMP ³	Other ⁴
☐ Trash & Refuse Storage	☐	☐	☐	☐	☐	☐	☐
☐ Materials & Equipment Storage	☐	☐	☐	☐	☐	☐	☐
☐ Loading & Unloading	☐	☐	--	☐	☐	☐	☐
☐ Fueling	☐	☐	--	☐	☐	☐	☐
☐ Maintenance & Repair	☐	☐	--	☐	☐	☐	☐
☐ Vehicle & Equipment Cleaning	☐	☐	--	☐	☐	☐	☐
☐ Other:	☐	☐	--	☐	☐	☐	☐

B. Prevention of Non-stormwater Discharges (See Fact Sheet BL-7)

Select on option for each feature below:

•Storm drain inlets and catch basins...	☐ are not proposed.	☒ will be labeled with stenciling or signage to discourage dumping (SC-F).
•Educational BMP Signage...	☒ are not proposed.	☐ will be labeled with educational signage (SC-G).
•Interior work surfaces, floor drains, & sumps...	☒ are not proposed.	☐ will not discharge directly or indirectly to the MS4 or receiving waters.
•Drain lines (e.g. air conditioning, boiler, etc.)...	☐ are not proposed.	☒ will not discharge directly or indirectly to the MS4 or receiving waters.
•Fire sprinkler test water...	☐ are not proposed.	☒ will not discharge directly or indirectly to the MS4 or receiving waters.

¹ Each BMP is Required where feasible. If none are selected for any feature, explain why in Form J-3/J-4-E

² Separate wastewater agency approvals will be required.

³ Structural Treatment Control BMPs (S-BMPs) and Significant Site Design BMPs (SSD-BMPs) may not receive discharges from work areas that concentrate pollutants in a manner that will impair their functioning. Discharges from proposed work area must also be included in DCV calculations for the applicable BMP.

⁴ Describe other proposed options for managing stormwater discharges in Form J-3/J-4-E

Required Explanations for BMP Infeasibility for forms J-3 and J-4		Form J-3/J-4-E [July 2025]
Baseline BMPs (from J-3 and J-4) Required Justifications: Provide explanations of BMP inapplicability and/or infeasibility as indicated per forms J-3 and J-4. Justify why individual BMPs will not be implemented or will only be partially implemented. Additional Explanation: Describe any proposed features and/or BMPs not listed in forms J-3 or J-4.		
BMP-Feature Combination		Explanation
Feature		
BMP		
Feature		
BMP		
Feature		
BMP		
Feature		
BMP		

Summary of PDP Structural BMPs	Form J-5 (PDPs) [July 2025]
PDP Structural BMPs	
All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the BMP Design Manual). PDPs subject to trash capture requirements, must also implement structural BMPs for trash capture (see Chapter 4 of the BMP Design Manual). Storm water pollutant control, flow control for hydromodification management, trash capture control, and flood control detention can be achieved within the same structural BMP(s). PDP structural BMPs must be verified by the City of San Marcos at the completion of construction. This will include requiring the project owner or project owner's representative and engineer of record to certify construction of the structural BMPs (see Section 1.12 of the BMP Design Manual). PDP structural BMPs must be maintained into perpetuity, and the City of San Marcos must confirm the maintenance (see Section 7 of the BMP Design Manual). Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).	
Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the BMP Design Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate. Step 1, the project was divided up and evaluated at the DMA scale. Each DMA area was classified as Self-Treating, Self-Retaining or Draining to a Best Management Practice (BMP). Step 2, For the DMAs that drain to BMPs, the appropriate runoff factors were applied to each area and the required Design Capture Volume (DCV) of each sub area calculated. For this project, Harvest and reuse is not considered feasible. Step 3, due to the impermeability of the underlying soils, (soil type D), infiltration BMPs are not feasible. Step 3A&B for the no infiltration condition leads to section 5.5.3 which is the Biofiltration BMP category. The various sizing methods included in Appendix B.5 were followed and the entire DCV can be treated within the proposed BMPs (Modular Wetlands and biofiltration basins). Step 4, each biofiltration BMP is preliminarily sized in accordance to the treatment sizing spreadsheet provided by the County of San Diego Automated Stormwater Pollutant Control Worksheets. This project requires hydromodification controls onsite, so the biofiltration BMPs will accomplish both storm water treatment and flow control mitigation in an integrated design combined with hydromodification detention. (Continue on next page as necessary.)	

(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)

DMA 7 and DMA 8 are self-mitigating areas and drain to natural pervious areas; therefore they are not a part of sizing calculations.

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-1	
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☒ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☒ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose (select all that apply): ☒ Pollutant control ☒ Hydromodification control ☐ Detention of the 100-year storm event (conjunctive use) ☐ Pre-treatment/forebay for another structural BMP ☒ Trash Capture ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place, Escondido, CA 92029
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-2	
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☒ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☒ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose (select all that apply): ☒ Pollutant control ☒ Hydromodification control ☒ Detention of the 100-year storm event (conjunctive use) ☐ Pre-treatment/forebay for another structural BMP ☒ Trash Capture ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place, Escondido, CA 92029
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-2.1	
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☒ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☒ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose (select all that apply): ☒ Pollutant control ☒ Hydromodification control ☐ Detention of the 100-year storm event (conjunctive use) ☐ Pre-treatment/forebay for another structural BMP ☒ Trash Capture ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place, Escondido, CA 92029
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-2.2	
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☒ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose (select all that apply): ☐ Pollutant control ☒ Hydromodification control ☒ Detention of the 100-year storm event (conjunctive use) ☐ Pre-treatment/forebay for another structural BMP ☐ Trash Capture ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place, Escondido, CA 92029
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-3	
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☒ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☒ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose (select all that apply): ☒ Pollutant control ☒ Hydromodification control ☒ Detention of the 100-year storm event (conjunctive use) ☐ Pre-treatment/forebay for another structural BMP ☒ Trash Capture ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place, Escondido, CA 92029
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-4	
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☒ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose (select all that apply): ☐ Pollutant control ☒ Hydromodification control ☐ Detention of the 100-year storm event (conjunctive use) ☐ Pre-treatment/forebay for another structural BMP ☐ Trash Capture ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place, Escondido, CA 92029
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-4.1	
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☒ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose (select all that apply): ☒ Pollutant control ☐ Hydromodification control ☐ Detention of the 100-year storm event (conjunctive use) ☐ Pre-treatment/forebay for another structural BMP ☒ Trash Capture ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place, Escondido, CA 92029
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-5	
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☒ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☒ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose (select all that apply): ☒ Pollutant control ☒ Hydromodification control ☒ Detention of the 100-year storm event (conjunctive use) ☐ Pre-treatment/forebay for another structural BMP ☒ Trash Capture ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place, Escondido, CA 92029
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-6	
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☒ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☒ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose (select all that apply): ☒ Pollutant control ☒ Hydromodification control ☒ Detention of the 100-year storm event (conjunctive use) ☐ Pre-treatment/forebay for another structural BMP ☒ Trash Capture ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place, Escondido, CA 92029
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA

ATTACHMENT 1
BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist on next page.	☒ Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID (Worksheet B.1) matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	☒ Included on DMA Exhibit in Attachment 1a ☐ Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Form J-6, Harvest and Use Feasibility Screening Checklist (Required only for habitable structures over 9 stories in height) Refer to Appendix B.4.2 of the BMP Design Manual to complete Form J-6.	☐ Included ☒ N/A
Attachment 1d	Supporting documentation for Analysis of Infiltration Restrictions in the form of Geotechnical Report and SWQMP preparer conclusions (Required) Refer to Appendix C of the BMP Design Manual guidance.	☒ Included
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required) (Worksheets B.2 and B.3) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	☒ Included
Attachment 1f	Significant Site Design BMP Design Worksheets / Calculations (when applicable) Refer to Appendix I	☐ Included ☒ N/A

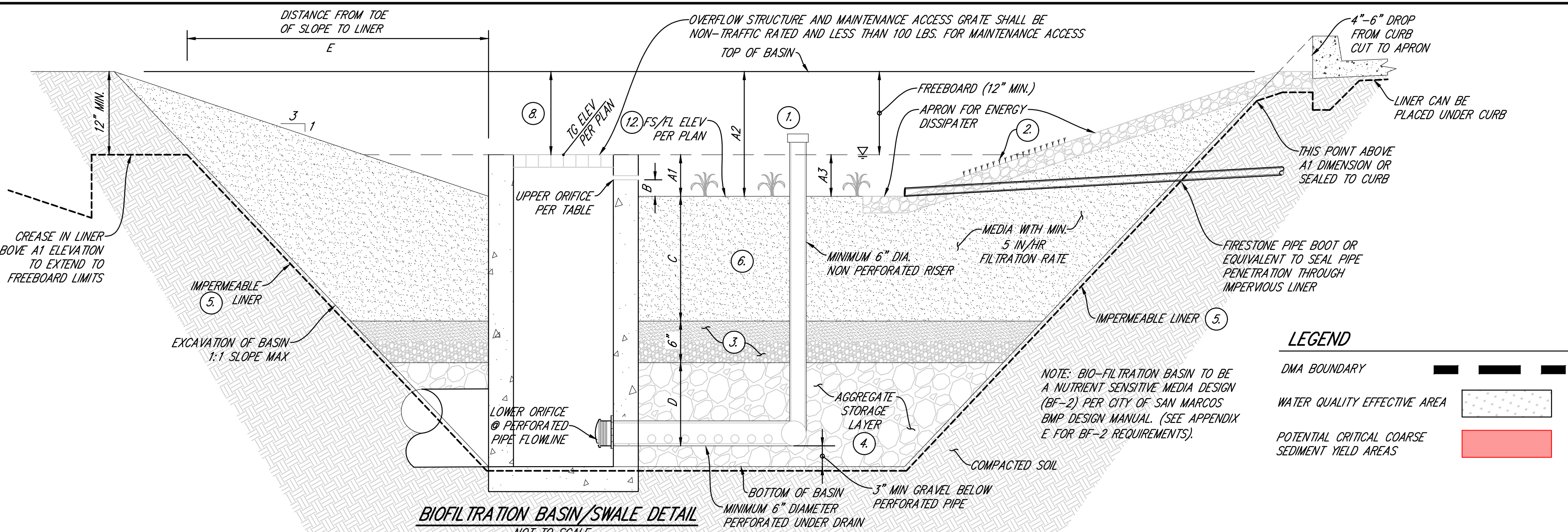
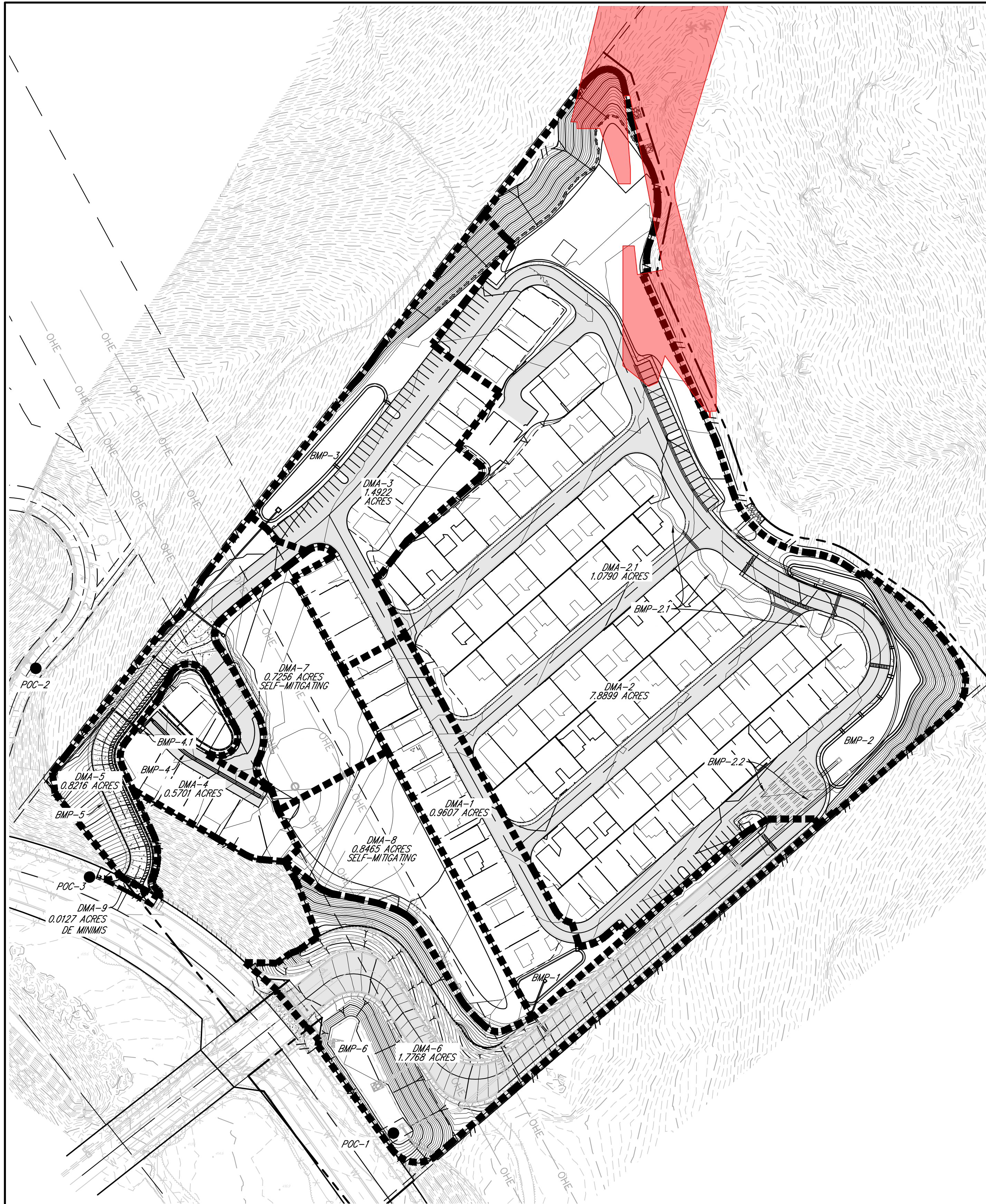
Attachment 1A

DMA Exhibit

Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

- ☒ Underlying hydrologic soil group
- ☒ Approximate depth to groundwater
- ☒ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☒ Critical coarse sediment yield areas to be protected
- ☒ Existing topography and impervious areas
- ☒ Existing and proposed site drainage network and connections to drainage offsite
- ☒ Proposed demolition
- ☒ Proposed grading
- ☒ Proposed impervious features
- ☒ Proposed design features and surface treatments used to minimize imperviousness
- ☒ Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
- ☒ Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form J-3 and J-4)
- ☒ Structural BMPs (identify location, type of BMP, and size/detail)



STRUCTURAL BMP SUMMARY TABLE															
DMA NAME	DMA TYPE	BMP NAME	TYPE OF BMP	EFFECTIVE AREA (SQFT)	A1 (INCH) TOP OF GRATE	A2 (INCH) TOP OF BASIN	A3 (INCH) PONDING	B (INCH) UPPER ORIFICE	C (INCH) MEDIA	D (INCH) GRAVEL	E (FEET) OFFSET	BOX RISER OVERFLOW STRUCTURE SIZE (INCHES)	ORIFICES DIAMETER		IMPERMEABLE LINER ?
													UPPER (INCH)	LOWER (INCH)	
DMA-1	DRAINS TO BMP-1	BMP-1	BIOFILTRATION	1915	6	18	6	-	18	12	4.50	36X36	-	0.75	YES
DMA-2	DRAINS TO BMP-2	BMP-2	BIOFILTRATION	8052	6	18	6	-	18	12	4.50	48X48	-	2.00	YES
DMA-2.1	DRAINS TO BMP-2.1	BMP-2.1	BIO-SWALE	2260	6	18	6	-	18	12	4.50	24X24	-	0.75	YES
DMA-3	DRAINS TO BMP-3	BMP-3	BIOFILTRATION	5518	6	18	6	3	18	12	4.50	24X24	(3) 1'x18"	1.00	YES
DMA-4	DRAINS TO BMP-4.1	BMP-4.1	MODULAR WETLAND	1290 CF	-	-	-	-	-	-	-	-	-	0.50	-
DMA-5	DRAINS TO BMP-5	BMP-5	BIO-SWALE	2409	6	18	6	-	18	12	4.50	24X24	-	0.75	YES
DMA-6	DRAINS TO BMP-6	BMP-6	BIOFILTRATION	5344	12	30	6	6	18	12	7.50	48X48	(4) 1'x18"	1.00	YES

BMP NAME	TYPE OF BMP	PIPE DIAMETER (FT)	STORAGE VOLUME (CF)	LOWER ORIFICE DIAMETER (INCH)
BMP-2.2	DETENTION PIPES	4	111.36	2.00
BMP-4	DETENTION PIPES	4	1988	0.50

SOURCE CONTROL BMP		
	SOURCE CONTROL REQUIREMENT	IMPLEMENTATION
SC-1	PREVENTION OF ILLICIT DISCHARGES	EFFECTIVE IRRIGATION WILL BE IMPLEMENTED AND VEHICLE WASHING IS PROHIBITED
SC-2	STORM DRAIN STENCILING OR SIGNAGE	STENCIL EVERY INLET WITH PROHIBITIVE WORDS: "NO DUMPING! DRAINS TO WATERWAYS" AND "NO CONTAMINE" IN SPANISH.
SC-6	ADDITIONAL BMPs BASED ON POTENTIAL SOURCES OF RUNOFF POLLUTANTS	MAINTAIN LANDSCAPING USING MINIMUM OR NO PESTICIDES
SITE DESIGN BMP		
	SITE DESIGN REQUIREMENT	IMPLEMENTATION
SD-1	MAINTAIN NATURAL DRAINAGE PATHWAYS AND HYDROLOGIC FEATURES	THE PREDEVELOPED DRAINAGE PATHWAY WAS CONSERVED. SEE HYDROLOGY REPORT
SD-2	CONSERVE NATURAL AREAS, SOILS, AND VEGETATION	EXISTING SLOPES WITHIN THE PROJECT AREA ARE CONSERVED
SD-3	MINIMIZE IMPERVIOUS AREA	PARKING AND DRIVE ISLES WERE DESIGNED TO THE MINIMUM REQUIRED SIZES TO REDUCE IMPERVIOUS AREAS
SD-4	MINIMIZE SOIL COMPACTION	THE EXISTING SDGE OPEN SPACE AREA WILL NOT BE DISTURBED
SD-6	RUNOFF COLLECTION	ONSITE STORM DRAIN TREATMENT TO MINIMIZE THE TRANSPORT OF RUNOFF AND POLLUTANTS TO THE MS4 AND RECEIVING WATERS
SD-7	LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES	DROUGHT TOLERANT PLANT SPECIES TO BE IMPLEMENTED ONSITE

NOTE: HOA WILL BE THE FINAL OWNER OF BMPs, MAINTAIN BMPs INTO PERPETUITY, AND FUNDING MECHANISM FOR MAINTENANCE.

DMA SUMMARY TABLE									
DMA NAME	DMA AREA (ACRES)	IMPERVIOUS AREA (ACRES)	% IMPERVIOUS	HSG	AREA WEIGHTED RUNOFF COEFFICIENT	DCV (CUBIC FEET)	TREATED BY (BMP ID)	POLLUTANT CONTROL TYPE	DRAINS TO (POC ID)
DMA-1	0.9607	0.5860	61	D	0.67	1449	BMP-1	BIOFILTRATION	POC-1
DMA-2	7.8899	4.4271	56	D	0.64	11365	BMP-2	BIOFILTRATION	POC-1
DMA-2.1	1.0790*	0.7013*	65	D	0.69	1676*	BMP-2.1	BIOFILTRATION	POC-1
DMA-3	1.4922	0.9639	65	D	0.69	2317	BMP-3	BIOFILTRATION	POC-2
DMA-4	0.5701	0.3534	62	D	0.67	1290	BMP-4.1	MODULAR WETLANDS	POC-2
DMA-5	0.8216	0.5341	65	D	0.69	1276	BMP-5	BIOFILTRATION	POC-3
DMA-6	1.7768	1.1549	65	D	0.69	2759	BMP-6	BIOFILTRATION	POC-1
DMA-7	0.7256	0.0000	0	D	0.30	-	-	SELF MITIGATING	POC-2
DMA-8	0.8465	0.0000	0	D	0.30	-	-	SELF MITIGATING	POC-1
DMA-9	0.0127	0.0127	100	D	0.90	-	DE MINIMIS	DE MINIMIS	POC-3
NO. OF DMAs	TOTAL DMA AREA (ACRES)	TOTAL IMPERVIOUS AREA (ACRES)	% IMPERVIOUS		AREA WEIGHTED RUNOFF COEFFICIENT	TOTAL DCV (CUBIC FEET)	TOTAL AREA TREATED (ACRES)		NO. OF POCs
10	15.0961	8.0381	53	D	0.62	20456	13,5113		3

*DMA-2.1 IS A PART OF DMA-2 AND USED AS PRE-TREATMENT HYDROMODIFICATION CONTROL, THEREFORE DMA-2.1 AREAS ARE NOT INCLUDED IN OVERALL AREA CALCULATIONS.

- WATER QUALITY BASIN INSTALLATION NOTES:**
- AN UNDERDRAIN CLEANOUT WITH A MINIMUM 8-INCH DIAMETER AND LOCKABLE CAP IS PLACED EVERY 250 TO 300 FEET AS REQUIRED BASED ON UNDERDRAIN LENGTH. THE TOP OF CLEANOUT ELEVATION TO EXTEND 3" ABOVE A-3 DIMENSION.
 - VEGETATION USED SHOULD BE SUITABLE FOR THE CLIMATE PER LANDSCAPE PLANS AND SHOULD CONFORM TO THE REQUIREMENTS IN APPENDIX E.26 OF THE CITY'S BMP MANUAL.
 - FILTER COARSE IS A MINIMUM OF 6 INCHES PROVIDED IN TWO SEPARATE 3 INCH LAYERS. THE TOP LAYER SHALL BE MADE OF ASTM C33 CHOKER SAND AND THE BOTTOM LAYER BE OF ASTM NO. 8 AGGREGATE. MARKERS STAKES SHALL BE USED TO ENSURE UNIFORM LIFT THICKNESS.
 - AASHTO NO. 57 STONE OR CLASS 2 PERMEABLE PER CAL TRANS SPECIFICATION 68-2.09F(3) IS RECOMMENDED FOR THE AGGREGATE STORAGE LAYER. WASHED, OPEN-GRADED CRUSHED ROCK MAY BE USED, HOWEVER, A 4 INCH MINIMUM WASHED PEA GRAVEL FILTER COARSE LAYER AT THE TOP OF THE CRUSHED ROCK IS REQUIRED.
 - IMPERMEABLE LINER SHALL BE INSTALLED WHEN THE BIOFILTRATION BASIN IS WITHIN 10 FEET OF RETAINING WALLS OR BUILDING FOUNDATIONS, OR AS RECOMMENDED BY THE SOILS ENGINEER, OR REQUIRED BY THESE PLANS. IMPERMEABLE LINER SHALL BE 30 MIL THICK (PER COUNTY OF SAN DIEGO GREEN STREETS DESIGN STANDARD DRAWING GS-3.00 AND COUNTY GREEN STREETS SUPPLEMENT TO CAL TRANS SPECIFICATIONS 20-11.08B) CONFIGURED TO ENTIRELY ENCOMPASS THE SIDES OF THE WATER QUALITY BASIN.
 - BIOFILTRATION SOIL MEDIA LAYER (BSM) SHALL CONSIST OF 60% TO 80% BY VOLUME SAND, UP TO 20% BY VOLUME TOPSOIL, AND UP TO 20% BY VOLUME COMPOST (PER CITY OF SAN MARCOS BMP DESIGN MANUAL SECTION F.3).
 - THE AGGREGATE STORAGE LAYER SHALL BE COMPACTED IN ACCORDANCE WITH SOILS ENGINEER'S RECOMMENDATIONS.
 - OVERFLOW STRUCTURE TO HAVE A MINIMUM OF 12 INCHES OF FREEBOARD.
 - ALL LINER INSTALLATIONS: FIELD WELDING OF SEAMS, AND OBSERVATION OF SOIL MAX PLACEMENT SHALL REQUIRE SPECIAL INSPECTION BY THE PROJECT GEOTECHNICAL ENGINEER OR OTHER QUALIFIED PERSON. A LETTER CERTIFYING PROPER INSTALLATION SHALL BE PROVIDED TO THE ENGINEER OF RECORD TO ACCEPTANCE OF THE FACILITIES.
 - SPECIAL INSPECTION SHALL BE REQUIRED FOR CONSTRUCTION OF ALL BIOFILTRATION BASINS. INSPECTION SHALL BE PERFORMED BY A QUALIFIED INDIVIDUAL (SUCH AS: ENGINEER OF RECORD, OSD). INSPECTION SHALL INCLUDE:
 - VERIFICATION OF OVERALL DIMENSIONS PRIOR TO PLACEMENT OF MATERIALS.
 - PLACEMENT OF THE LINER, IF REQUIRED; AND SEAMS OR PENETRATIONS
 - PLACEMENT OF THE GRAVEL, FILTER MATERIALS, AND FILTER MEDIA;
 - ALL INLET AND OUTLET STRUCTURES INCLUDING UNDERDRAINS, IF REQUIRED.
 - CONTRACTOR SHALL TAKE PICTURES AT EACH STAGE OF INSTALLATION AND SUBMITTED TO ENGINEER FOR VERIFICATION OF INSTALL.

INSPECTOR SHALL BE GIVEN A MINIMUM OF 48 HOURS PRIOR TO INSPECTION. UPON COMPLETION THE INSPECTOR SHALL PROVIDE A CERTIFICATION TO THE ENGINEER OF WORK.

- PROPOSED MATERIALS, SUCH AS AGGREGATE, FILTER MATERIAL, AND FILTER MEDIA SHALL BE SUBMITTED TO THE ENGINEER OF WORK FOR APPROVAL.
- THE FINISHED SURFACE OF BIOFILTRATION BASINS SHALL BE FLAT AND THE FINISHED SURFACE FLOWLINE OF BIO-SWALES SHALL BE 2% MAX SLOPE IN THE LONGITUDINAL DIRECTION.

HYDROLOGIC SOIL GROUP
THE HYDROLOGIC SOIL GROUP FOR THIS SITE IS TYPE D.

EXISTING SITE FEATURES:

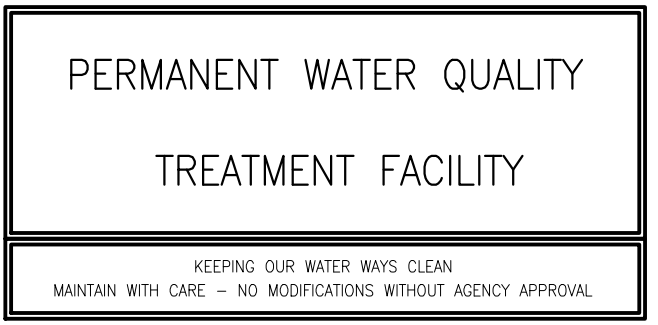
- THE APPROXIMATE DEPTH TO GROUNDWATER IS GREATER THAN 10 FEET.
- THERE ARE NO NATURAL HYDROLOGIC FEATURES ON THE SITE.
- THE SITE PROPOSES TO CONNECT TO THE EXISTING PUBLIC STORM DRAIN SYSTEM LOCATED IN THE SOUTH EDGE OF THE SITE.
- BASED ON WATERSHED MAPPING OF POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREAS (PCCSYA), THERE ARE NO PCCSYA LOCATED WITHIN THE PROJECT BOUNDARY OR TRIBUTARY TO THE RUNOFF BYPASSED AROUND THE SITE.

ASCEND TOWNHOMES DMA EXHIBIT



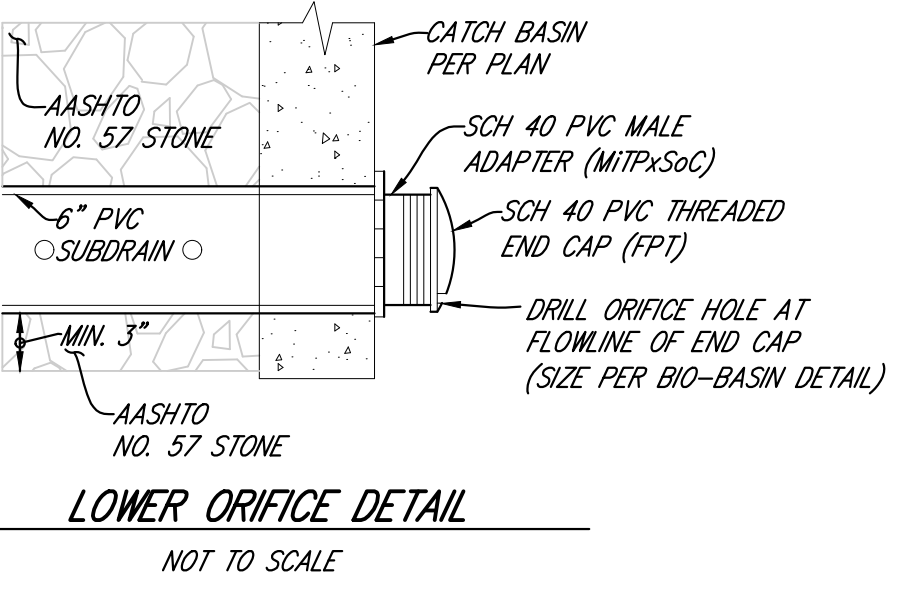
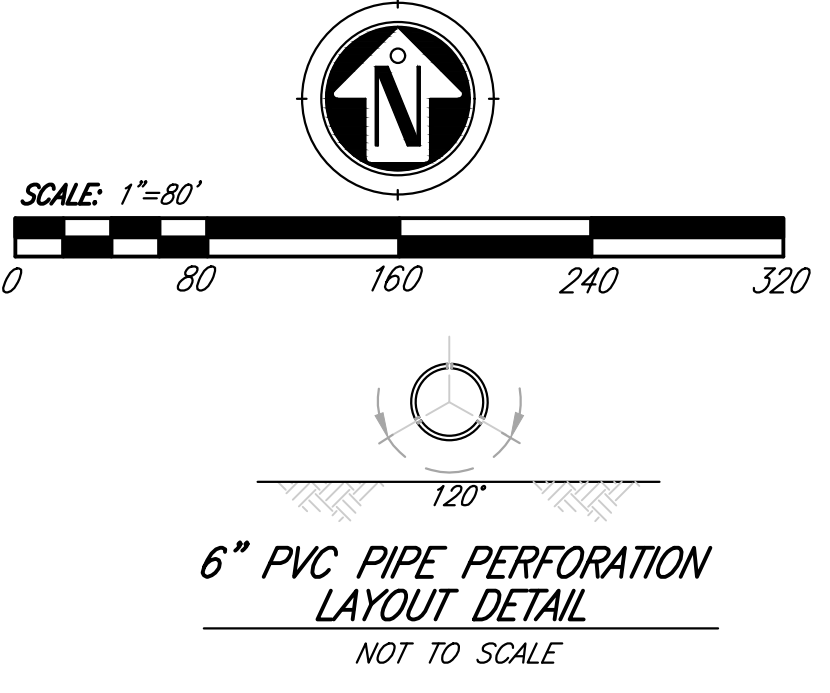
DETAIL
"NO DUMPING" AT CATCH BASINS

NOTE: ALL CATCH BASINS WITH GRATES SHALL BE STENCILED WITH CITY REQUIRED ITEM PER ABOVE DETAIL (DAS MANUFACTURING #SDO OR EQUIVALENT).



DETAIL
WATER QUALITY SIGN- PLACED AT EACH BIOFILTRATION BASIN

NOTE: ALL BIOFILTRATION AREAS WILL HAVE A SIGN POSTED TO BE VISIBLE AT ALL TIMES.



Attachment 1D

Categorization of Infiltration Feasibility Condition

Worksheet I-8 : Categorization of Infiltration Feasibility Condition

Categorization of Infiltration Feasibility Condition		Worksheet I-8	
Part 1 - Full Infiltration Feasibility Screening Criteria Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: The NRCS soils across the site are all Type D soils. The site soils are consistent with the NRCS mapped soil types based on site explorations and percolation testing. According to the soil report, the approximate depth to groundwater is greater than 20 feet, which should have an infiltration rate of 0.			
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
Provide basis: The NRCS soils across the site are all Type D soils. The site soils are consistent with the NRCS mapped soil types based on site explorations and percolation testing. According to the soil report, the approximate depth to groundwater is greater than 20 feet, which should have an infiltration rate of 0.			
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Worksheet I-8 Page 2 of 4

Criteria	Screening Question	Yes	No
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: The NRCS soils across the site are all Type D soils. The site soils are consistent with the NRCS mapped soil types based on site explorations and percolation testing. According to the soil report, the approximate depth to groundwater is greater than 20 feet, which should have an infiltration rate of 0. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: The NRCS soils across the site are all Type D soils. The site soils are consistent with the NRCS mapped soil types based on site explorations and percolation testing. According to the soil report, the approximate depth to groundwater is greater than 20 feet, which should have an infiltration rate of 0. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 1 Result*	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

Worksheet I-8 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: Due to site soils not percolating and the significant amount of clayey soils, it is unlikely that any appreciable volume of water will infiltrate. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
Provide basis: The NRCS soils across the site are all Type D soils. The site soils are consistent with the NRCS mapped soil types based on site explorations and percolation testing. According to the soil report, the approximate depth to groundwater is greater than 20 feet, which should have an infiltration rate of 0. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			

Worksheet I-8 Page 4 of 4

Criteria	Screening Question	Yes	No
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: The NRCS soils across the site are all Type D soils. The site soils are consistent with the NRCS mapped soil types based on site explorations and percolation testing. According to the soil report, the approximate depth to groundwater is greater than 20 feet, which should have an infiltration rate of 0. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: The NRCS soils across the site are all Type D soils. The site soils are consistent with the NRCS mapped soil types based on site explorations and percolation testing. According to the soil report, the approximate depth to groundwater is greater than 20 feet, which should have an infiltration rate of 0. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration. If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration.	No Inf.	

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings

Attachment 1E

Pollutant Control BMP Design
Worksheets & Calculations

Automated Worksheet B.1: Calculation of Design Capture Volume (V2.0)

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units
Standard Drainage Basin Inputs	1	Drainage Basin ID or Name	DMA-1	DMA-2	DMA-2.1	DMA-3	DMA-4	DMA-5	DMA-6				unitless
	2	85th Percentile 24-hr Storm Depth	0.62	0.62	0.62	0.62	0.62	0.62	0.62				inches
	3	Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90)	25,526	192,845	30,550	42,251	15,396	23,264	50,309				sq-ft
	4	Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30)											sq-ft
	5	Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10)											sq-ft
	6	Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10)											sq-ft
	7	Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14)											sq-ft
	8	Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23)											sq-ft
	9	Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30)	16,320	150,840	16,450	22,750	9,437	12,526	27,090				sq-ft
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	10	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	No	No	No	No	No	No	No				yes/no
	11	Impervious Surfaces Directed to Dispersion Area per SD-B (Ci=0.90)											sq-ft
	12	Semi-Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.30)											sq-ft
	13	Engineered Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.10)											sq-ft
	14	Natural Type A Soil Serving as Dispersion Area per SD-B (Ci=0.10)											sq-ft
	15	Natural Type B Soil Serving as Dispersion Area per SD-B (Ci=0.14)											sq-ft
	16	Natural Type C Soil Serving as Dispersion Area per SD-B (Ci=0.23)											sq-ft
	17	Natural Type D Soil Serving as Dispersion Area per SD-B (Ci=0.30)											sq-ft
	18	Number of Tree Wells Proposed per SD-A											#
	19	Average Mature Tree Canopy Diameter											ft
	20	Number of Rain Barrels Proposed per SD-E											#
21	Average Rain Barrel Size											gal	
Initial Runoff Factor Calculation	22	Total Tributary Area	41,846	343,685	47,000	65,001	24,833	35,790	77,399	0	0	0	sq-ft
	23	Initial Runoff Factor for Standard Drainage Areas	0.67	0.64	0.69	0.69	0.67	0.69	0.69	0.00	0.00	0.00	unitless
	24	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	25	Initial Weighted Runoff Factor	0.67	0.64	0.69	0.69	0.67	0.69	0.69	0.00	0.00	0.00	unitless
	26	Initial Design Capture Volume	1,449	11,365	1,676	2,317	860	1,276	2,759	0	0	0	cubic-feet
Dispersion Area Adjustments	27	Total Impervious Area Dispersed to Pervious Surface	0	0	0	0	0	0	0	0	0	0	sq-ft
	28	Total Pervious Dispersion Area	0	0	0	0	0	0	0	0	0	0	sq-ft
	29	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ratio
	30	Adjustment Factor for Dispersed & Dispersion Areas	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
	31	Runoff Factor After Dispersion Techniques	0.67	0.64	0.69	0.69	0.67	0.69	0.69	n/a	n/a	n/a	unitless
	32	Design Capture Volume After Dispersion Techniques	1,449	11,365	1,676	2,317	860	1,276	2,759	0	0	0	cubic-feet
Tree & Barrel Adjustments	33	Total Tree Well Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
	34	Total Rain Barrel Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
Results	35	Final Adjusted Runoff Factor	0.67	0.64	0.69	0.69	0.67	0.69	0.69	0.00	0.00	0.00	unitless
	36	Final Effective Tributary Area	28,037	219,958	32,430	44,851	16,638	24,695	53,405	0	0	0	sq-ft
	37	Initial Design Capture Volume Retained by Site Design Elements	0	0	0	0	0	0	0	0	0	0	cubic-feet
	38	Final Design Capture Volume Tributary to BMP	1,449	11,365	1,676	2,317	860	1,276	2,759	0	0	0	cubic-feet

No Warning Messages

x1.5
=1,290

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units
Basic Analysis	1	Drainage Basin ID or Name	DMA-1	DMA-2	DMA-2.1	DMA-3	DMA-4	DMA-5	DMA-6	-	-	-	unitless
	2	85th Percentile Rainfall Depth	0.62	0.62	0.62	0.62	0.62	0.62	0.62	-	-	-	inches
	3	Predominant NRCS Soil Type Within BMP Location	D	D	D	D	D	D	D				unitless
	4	Is proposed BMP location Restricted or Unrestricted for Infiltration Activities?	Restricted	Restricted	Restricted	Restricted	Restricted	Restricted	Restricted				unitless
	5	Nature of Restriction	Soil Type	Soil Type	Soil Type	Soil Type	Soil Type	Soil Type	Soil Type				unitless
	6	Do Minimum Retention Requirements Apply to this Project?	Yes	Yes	Yes	Yes	Yes	Yes	Yes				yes/no
	7	Are Habitable Structures Greater than 9 Stories Proposed?	No	No	No	No	No	No	No				yes/no
Advanced Analysis	8	Has Geotechnical Engineer Performed an Infiltration Analysis?	No	No	No	No	No	No	No				yes/no
	9	Design Infiltration Rate Recommended by Geotechnical Engineer											in/hr
Result	10	Design Infiltration Rate Used To Determine Retention Requirements	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-	-	in/hr
	11	Percent of Average Annual Runoff that Must be Retained within DMA	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	-	-	-	percentage
	12	Fraction of DCV Requiring Retention	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-	-	-	ratio
	13	Required Retention Volume	14	114	17	23	9	13	28	-	-	-	cubic-feet

Automated Worksheet B.3: BMP Performance (V2.0)

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units
BMP Inputs	1	Drainage Basin ID or Name	DMA-1	DMA-2	DMA-2.1	DMA-3	DMA-4	DMA-5	DMA-6	-	-	-	sq-ft
	2	Design Infiltration Rate Recommended	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-	-	in/hr
	3	Design Capture Volume Tributary to BMP	1,449	11,365	1,676	2,317	860	1,276	2,759	-	-	-	cubic-feet
	4	Is BMP Vegetated or Unvegetated?	Vegetated	Vegetated	Vegetated	Vegetated		Vegetated	Vegetated				unitless
	5	Is BMP Impermeably Lined or Unlined?	Lined	Lined	Lined	Lined		Lined	Lined				unitless
	6	Does BMP Have an Underdrain?	Underdrain	Underdrain	Underdrain	Underdrain		Underdrain	Underdrain				unitless
	7	Does BMP Utilize Standard or Specialized Media?	Standard	Standard	Standard	Standard		Standard	Standard				unitless
	8	Provided Surface Area	1,915	8,052	2,260	5,518		2,409	5,344				sq-ft
	9	Provided Surface Ponding Depth	6	6	6	6		6	6				inches
	10	Provided Soil Media Thickness	18	18	18	18		18	18				inches
	11	Provided Gravel Thickness (Total Thickness)	12	12	12	12		12	12				inches
	12	Underdrain Offset	3	3	3	3		3	3				inches
	13	Diameter of Underdrain or Hydromod Orifice (Select Smallest)	0.75	2.00	0.75	1.00		0.75	1.00				inches
	14	Specialized Soil Media Filtration Rate											in/hr
	15	Specialized Soil Media Pore Space for Retention											unitless
	16	Specialized Soil Media Pore Space for Biofiltration											unitless
	17	Specialized Gravel Media Pore Space											unitless
Retention Calculations	18	Volume Infiltrated Over 6 Hour Storm	0	0	0	0	0	0	0	0	0	0	cubic-feet
	19	Ponding Pore Space Available for Retention	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	unitless
	20	Soil Media Pore Space Available for Retention	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	unitless
	21	Gravel Pore Space Available for Retention (Above Underdrain)	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.40	0.40	0.40	unitless
	22	Gravel Pore Space Available for Retention (Below Underdrain)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	unitless
	23	Effective Retention Depth	2.10	2.10	2.10	2.10	0.00	2.10	2.10	0.00	0.00	0.00	inches
	24	Fraction of DCV Retained (Independent of Drawdown Time)	0.23	0.12	0.24	0.42	0.00	0.33	0.34	0.00	0.00	0.00	ratio
	25	Calculated Retention Storage Drawdown Time	120	120	120	120	0	120	120	0	0	0	hours
	26	Efficacy of Retention Processes	0.25	0.14	0.26	0.41	0.00	0.33	0.34	0.00	0.00	0.00	ratio
	27	Volume Retained by BMP (Considering Drawdown Time)	357	1,601	428	941	0	424	940	0	0	0	cubic-feet
	28	Design Capture Volume Remaining for Biofiltration	1,092	9,764	1,248	1,376	860	852	1,819	0	0	0	cubic-feet
Biofiltration Calculations	29	Max Hydromod Flow Rate through Underdrain	0.0244	0.1715	0.0244	0.0432	0.0000	0.0244	0.0432	0.0000	0.0000	0.0000	cfs
	30	Max Soil Filtration Rate Allowed by Underdrain Orifice	0.55	0.92	0.47	0.34	0.00	0.44	0.35	0.00	0.00	0.00	in/hr
	31	Soil Media Filtration Rate per Specifications	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	in/hr
	32	Soil Media Filtration Rate to be used for Sizing	0.55	0.92	0.47	0.34	0.00	0.44	0.35	0.00	0.00	0.00	in/hr
	33	Depth Biofiltered Over 6 Hour Storm	3.30	5.52	2.79	2.03	0.00	2.62	2.10	0.00	0.00	0.00	inches
	34	Ponding Pore Space Available for Biofiltration	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	unitless
	35	Soil Media Pore Space Available for Biofiltration	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	unitless
	36	Gravel Pore Space Available for Biofiltration (Above Underdrain)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	unitless
	37	Effective Depth of Biofiltration Storage	13.20	13.20	13.20	13.20	0.00	13.20	13.20	0.00	0.00	0.00	inches
	38	Drawdown Time for Surface Ponding	11	7	13	18	0	14	17	0	0	0	hours
	39	Drawdown Time for Effective Biofiltration Depth	24	14	28	39	0	30	38	0	0	0	hours
	40	Total Depth Biofiltered	16.50	18.72	15.99	15.23	0.00	15.82	15.30	0.00	0.00	0.00	inches
	41	Option 1 - Biofilter 1.50 DCV: Target Volume	1,637	14,646	1,872	2,064	1,290	1,278	2,728	0	0	0	cubic-feet
	42	Option 1 - Provided Biofiltration Volume	1,637	12,562	1,872	2,064	0	1,278	2,728	0	0	0	cubic-feet
	43	Option 2 - Store 0.75 DCV: Target Volume	819	7,323	936	1,032	645	639	1,364	0	0	0	cubic-feet
	44	Option 2 - Provided Storage Volume	819	7,323	936	1,032	0	639	1,364	0	0	0	cubic-feet
	45	Portion of Biofiltration Performance Standard Satisfied	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	ratio
Result	46	Do Site Design Elements and BMPs Satisfy Annual Retention Requirements?	Yes	Yes	Yes	Yes	No	Yes	Yes	-	-	-	yes/no
	47	Overall Portion of Performance Standard Satisfied (BMP Efficacy Factor)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	ratio
	48	Deficit of Effectively Treated Stormwater	0	0	0	0	-860	0	0	n/a	n/a	n/a	cubic-feet

Attention!

DMA-4 =
MODULAR
WETLANDS

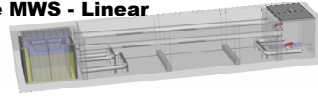
-Minimum annual retention criteria are not satisfied for each individual drainage area. Implement additional site design elements, increase structural BMP retention capacity, or demonstrate that such requirements are satisfied at the project-level
-This BMP does not fully satisfy the performance standards for pollutant control for the drainage area.

MWS - LINEAR VOLUME BASED SIZING SHEET

Project Location

Project Name	Ascend Townhomes
City/Town	San Marcos
State	California
Zip Code	92078

The MWS - Linear



Hybrid Stormwater Treatment System

SIZING CALCULATIONS

Impervious Area

Inputs	Units	Notes/References
BMP Drainage Area (not required)	0.570087236	Acres
Watershed Impervious Ratio (not required)	0.62	This includes all areas that will contribute runoff to the proposed BMP, including pervious areas, impervious areas, and off-site areas, whether or not they are directly or indirectly connected to the BMP.
Runoff Coefficient "C" (not required)	0.67	Watershed Imperviousness Ratio", is equal to the percent of total impervious area in the "BMP Drainage Area" divided by 100

Water Quality Volume	1290	cubic feet
Design Storm Duration	6	hours

Use sizing procedures provided by state or local agencies to determine the appropriate Water Quality Volume. Intensities and design storms vary widely by region and method.
Default at 6 hours. May vary depending on geographical region.

MWS - Linear Sizing

# of MWS - Linear Systems	1	quantity	Select the number of systems required to treat the water quality volume. Will vary depending on drain down time regulations.
Discharge Rate	10	gallons/minute	10 gpm/minute recommended for High Level Treatment

Volume Treated During Event

Processed through MWS - Linear	480	cubic feet	10 gals/minute
--------------------------------	-----	------------	----------------

Volume Treated Following Event

Volume Held in MWS - Linear (Static)	154	cubic feet
Volume Needed in Pre-Storage	656	cubic feet

Set at zero to start. Size pre-storage system to hold this volume

Sizing complete when equal to value of zero.

TOTAL STORMWATER TREATED	1290	cubic feet
Drain Down Time	10.13	hours

Note: This amount should be equal to the "Water Quality Volume"

Drain down time must be equal to or less than requirement of local jurisdiction. Default 48 hours.

Feel free to fax or email proposed sizing calculations to Modular Wetland Systems, Inc. for assistance with sizing, compliance, and design.

Phone: 760.433.7640

Fax: 760.433.3176

Email: Info@modularwetlands.com

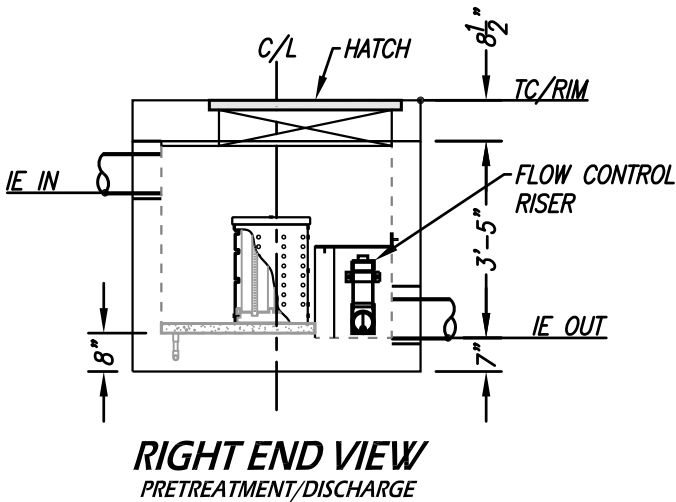
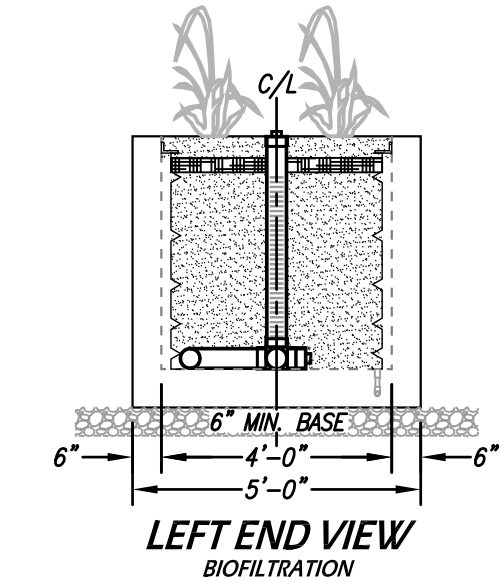
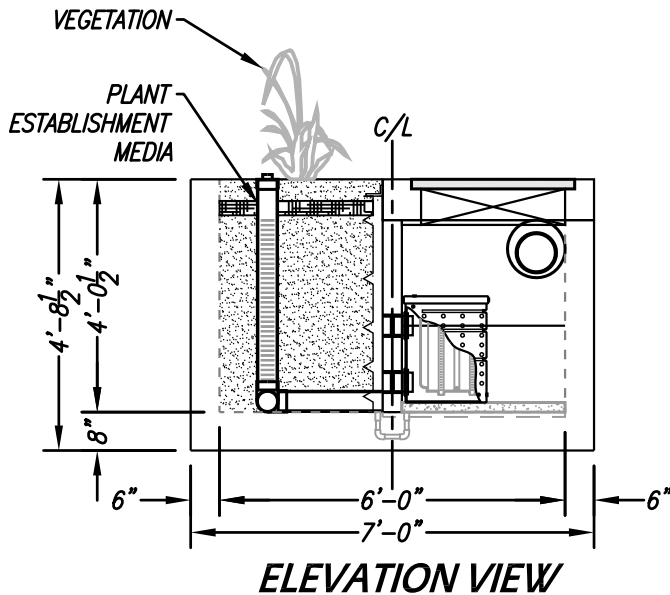
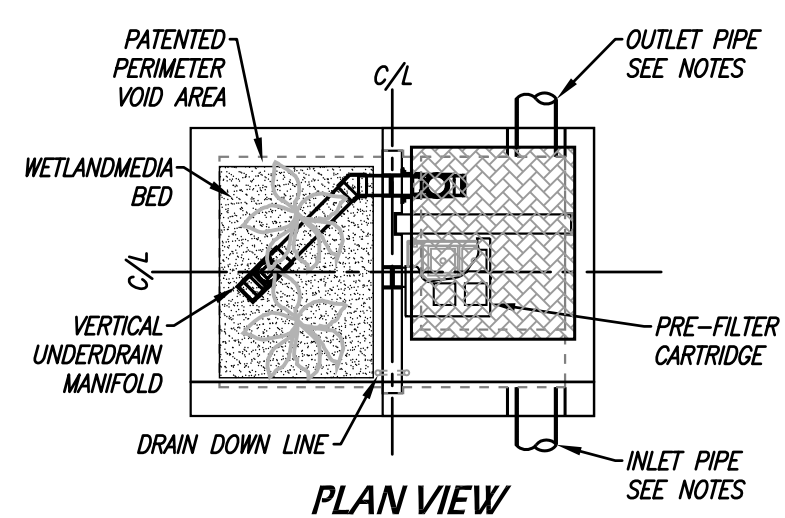
SITE SPECIFIC DATA			
PROJECT NAME		Ascend Townhomes	
PROJECT LOCATION		San Marcos, CA	
STRUCTURE ID		BMP-4.1	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
1,290		N/A	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	30" X 36"	N/A	N/A
WETLANDMEDIA VOLUME (CY)			1.48
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø 0.5"
MAXIMUM PICK WEIGHT (LBS)			TBD
NOTES:			

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.



TREATMENT Volume (CF)	1,290
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL: THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MODULAR WETLANDS SYSTEMS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MODULAR WETLANDS SYSTEMS IS PROHIBITED.


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MWS-L-4-6-V

STORMWATER BIOFILTRATION SYSTEM

STANDARD DETAIL

ATTACHMENT 2

BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

- ☐ Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements. Provide documentation in this Attachment 2 demonstrating hydromodification exemption.

Indicate which Items are Included behind this cover sheet:

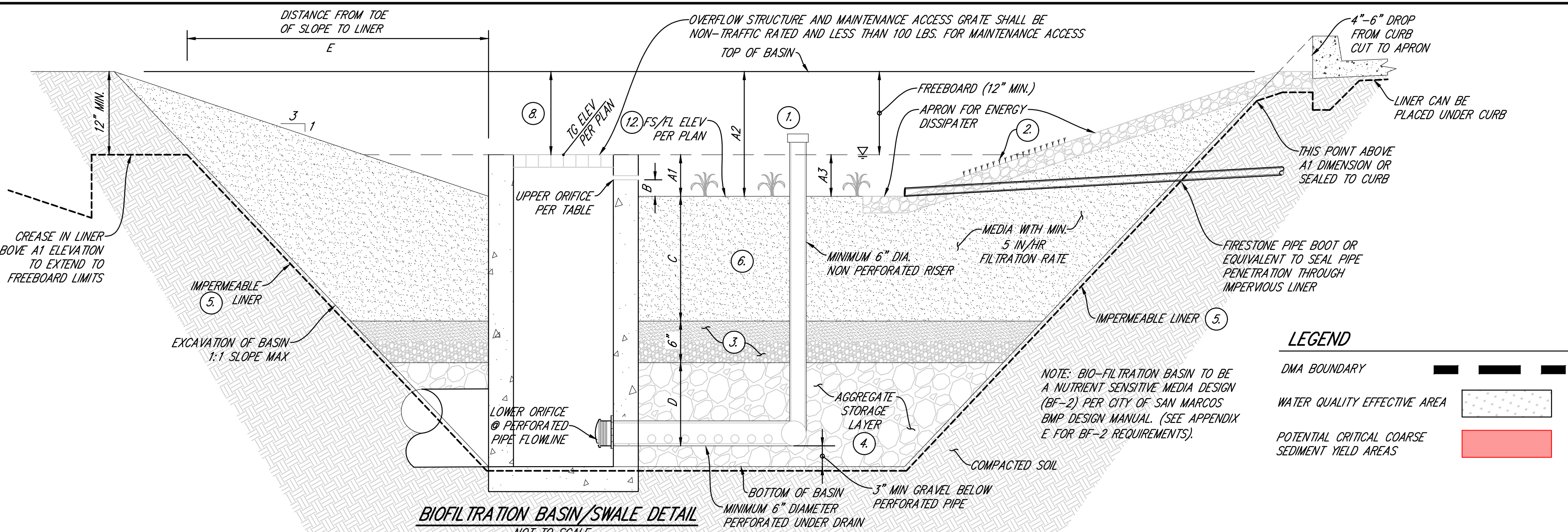
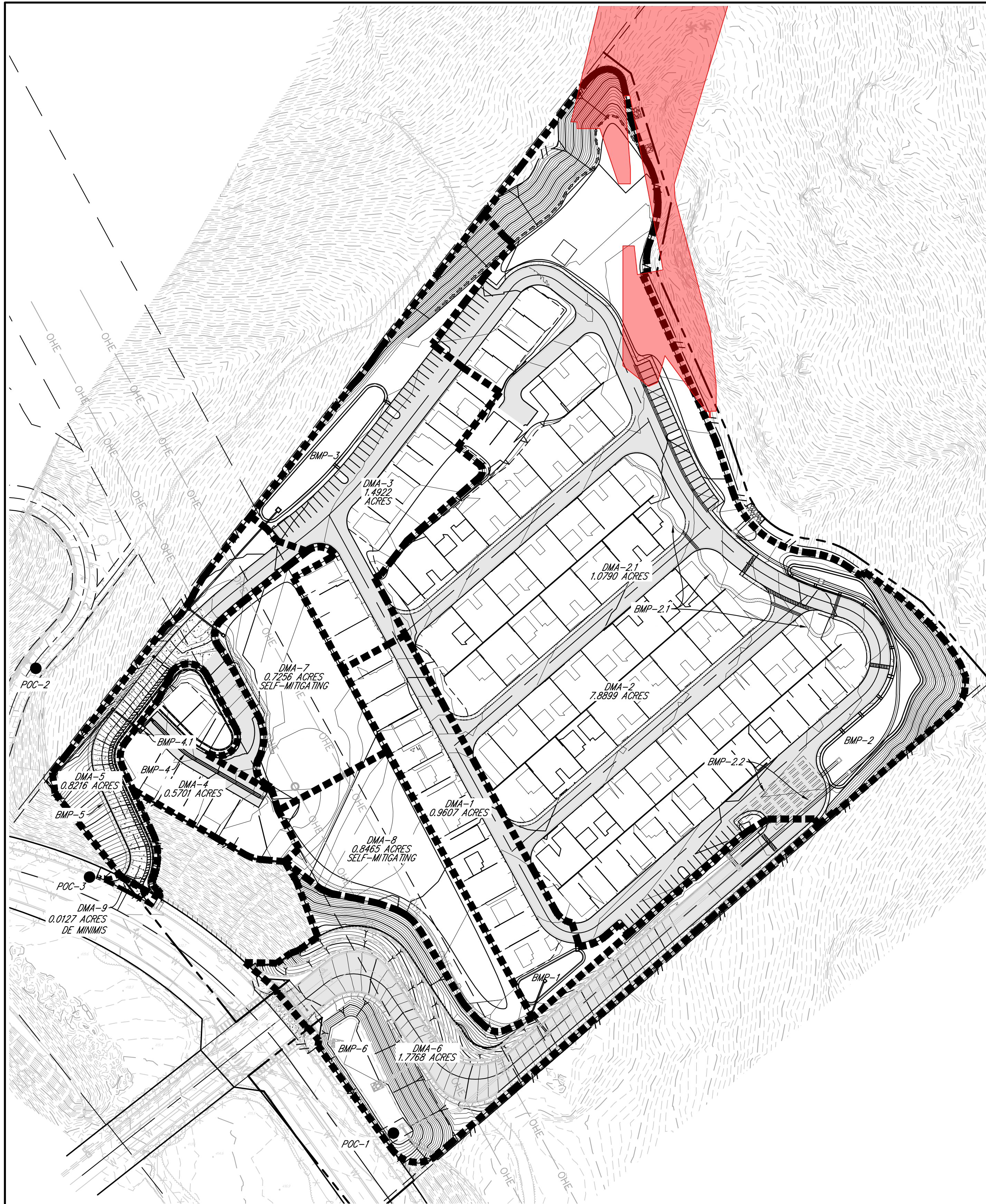
Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management Exhibit (Required) See Hydromodification Management Exhibit Checklist on next page.	☒ Included
Attachment 2b	Management of Critical Coarse Sediment Yield Areas Exhibit and Analysis (Required) See Section 6.2 and Appendix H of the BMP Design Manual.	☒ Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map ☒ Analysis per Appendix H
Attachment 2c	Channel screening study (SCCWRP) for low flow threshold (Optional) See Section 6.3.4 of the BMP Design Manual.	☒ Not performed ☐ Included ☐ Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the BMP Design Manual	☒ Included ☐ Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	☐ Included ☒ Not required because BMPs will drain in less than 96 hours

Attachment 2A:
Hydromodification Management Exhibit

**Use this checklist to ensure the required information has been included on the
Hydromodification Management Exhibit:**

The Hydromodification Management Exhibit must identify:

- ☒ Underlying hydrologic soil group
- ☒ Approximate depth to groundwater
- ☒ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☒ Critical coarse sediment yield areas to be protected
- ☒ Existing topography
- ☒ Existing and proposed site drainage network and connections to drainage offsite
- ☒ Proposed grading
- ☒ Proposed impervious features
- ☒ Proposed design features and surface treatments used to minimize imperviousness
- ☒ Point(s) of Compliance (POC) for Hydromodification Management
- ☒ Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
- ☒ Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)



STRUCTURAL BMP SUMMARY TABLE															
DMA NAME	DMA TYPE	BMP NAME	TYPE OF BMP	EFFECTIVE AREA (SQFT)	A1 (INCH) TOP OF GRATE	A2 (INCH) TOP OF BASIN	A3 (INCH) PONDING	B (INCH) UPPER ORIFICE	C (INCH) MEDIA	D (INCH) GRAVEL	E (FEET) OFFSET	BOX RISER OVERFLOW STRUCTURE SIZE (INCHES)	ORIFICES DIAMETER		IMPERMEABLE LINER ?
													UPPER (INCH)	LOWER (INCH)	
DMA-1	DRAINS TO BMP-1	BMP-1	BIOFILTRATION	1915	6	18	6	-	18	12	4.50	36X36	-	0.75	YES
DMA-2	DRAINS TO BMP-2	BMP-2	BIOFILTRATION	8052	6	18	6	-	18	12	4.50	48X48	-	2.00	YES
DMA-2.1	DRAINS TO BMP-2.1	BMP-2.1	BIO-SWALE	2260	6	18	6	-	18	12	4.50	24X24	-	0.75	YES
DMA-3	DRAINS TO BMP-3	BMP-3	BIOFILTRATION	5518	6	18	6	3	18	12	4.50	24X24	(3) 1'x18"	1.00	YES
DMA-4	DRAINS TO BMP-4.1	BMP-4.1	MODULAR WETLAND	1290 CF	-	-	-	-	-	-	-	-	-	0.50	-
DMA-5	DRAINS TO BMP-5	BMP-5	BIO-SWALE	2409	6	18	6	-	18	12	4.50	24X24	-	0.75	YES
DMA-6	DRAINS TO BMP-6	BMP-6	BIOFILTRATION	5344	12	30	6	6	18	12	7.50	48X48	(4) 1'x18"	1.00	YES

BMP NAME	TYPE OF BMP	PIPE DIAMETER (FT)	STORAGE VOLUME (CF)	LOWER ORIFICE DIAMETER (INCH)
BMP-2.2	DETENTION PIPES	4	111.36	2.00
BMP-4	DETENTION PIPES	4	1988	0.50

SOURCE CONTROL BMP		
	SOURCE CONTROL REQUIREMENT	IMPLEMENTATION
SC-1	PREVENTION OF ILLICIT DISCHARGES	EFFECTIVE IRRIGATION WILL BE IMPLEMENTED AND VEHICLE WASHING IS PROHIBITED
SC-2	STORM DRAIN STENCILING OR SIGNAGE	STENCIL EVERY INLET WITH PROHIBITIVE WORDS: "NO DUMPING! DRAINS TO WATERWAYS" AND "NO CONTAMINE" IN SPANISH.
SC-6	ADDITIONAL BMPs BASED ON POTENTIAL SOURCES OF RUNOFF POLLUTANTS	MAINTAIN LANDSCAPING USING MINIMUM OR NO PESTICIDES
SITE DESIGN BMP		
	SITE DESIGN REQUIREMENT	IMPLEMENTATION
SD-1	MAINTAIN NATURAL DRAINAGE PATHWAYS AND HYDROLOGIC FEATURES	THE PREDEVELOPED DRAINAGE PATHWAY WAS CONSERVED. SEE HYDROLOGY REPORT
SD-2	CONSERVE NATURAL AREAS, SOILS, AND VEGETATION	EXISTING SLOPES WITHIN THE PROJECT AREA ARE CONSERVED
SD-3	MINIMIZE IMPERVIOUS AREA	PARKING AND DRIVE ISLES WERE DESIGNED TO THE MINIMUM REQUIRED SIZES TO REDUCE IMPERVIOUS AREAS
SD-4	MINIMIZE SOIL COMPACTION	THE EXISTING SDGE OPEN SPACE AREA WILL NOT BE DISTURBED
SD-6	RUNOFF COLLECTION	ONSITE STORM DRAIN TREATMENT TO MINIMIZE THE TRANSPORT OF RUNOFF AND POLLUTANTS TO THE MS4 AND RECEIVING WATERS
SD-7	LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES	DROUGHT TOLERANT PLANT SPECIES TO BE IMPLEMENTED ONSITE

NOTE: HOA WILL BE THE FINAL OWNER OF BMPs, MAINTAIN BMPs INTO PERPETUITY, AND FUNDING MECHANISM FOR MAINTENANCE.

DMA SUMMARY TABLE									
DMA NAME	DMA AREA (ACRES)	IMPERVIOUS AREA (ACRES)	% IMPERVIOUS	HSG	AREA WEIGHTED RUNOFF COEFFICIENT	DCV (CUBIC FEET)	TREATED BY (BMP ID)	POLLUTANT CONTROL TYPE	DRAINS TO (POC ID)
DMA-1	0.9607	0.5860	61	D	0.67	1449	BMP-1	BIOFILTRATION	POC-1
DMA-2	7.8899	4.4271	56	D	0.64	11365	BMP-2	BIOFILTRATION	POC-1
DMA-2.1	1.0790*	0.7013*	65	D	0.69	1676*	BMP-2.1	BIOFILTRATION	POC-1
DMA-3	1.4922	0.9639	65	D	0.69	2317	BMP-3	BIOFILTRATION	POC-2
DMA-4	0.5701	0.3534	62	D	0.67	1290	BMP-4.1	MODULAR WETLANDS	POC-2
DMA-5	0.8216	0.5341	65	D	0.69	1276	BMP-5	BIOFILTRATION	POC-3
DMA-6	1.7768	1.1549	65	D	0.69	2759	BMP-6	BIOFILTRATION	POC-1
DMA-7	0.7256	0.0000	0	D	0.30	-	-	SELF MITIGATING	POC-2
DMA-8	0.8465	0.0000	0	D	0.30	-	-	SELF MITIGATING	POC-1
DMA-9	0.0127	0.0127	100	D	0.90	-	DE MINIMIS	DE MINIMIS	POC-3
NO. OF DMAs	TOTAL DMA AREA (ACRES)	TOTAL IMPERVIOUS AREA (ACRES)	% IMPERVIOUS		AREA WEIGHTED RUNOFF COEFFICIENT	TOTAL DCV (CUBIC FEET)	TOTAL AREA TREATED (ACRES)		NO. OF POCs
10	15.0961	8.0381	53	D	0.62	20456	13,5113		3

*DMA-2.1 IS A PART OF DMA-2 AND USED AS PRE-TREATMENT HYDROMODIFICATION CONTROL, THEREFORE DMA-2.1 AREAS ARE NOT INCLUDED IN OVERALL AREA CALCULATIONS.

- WATER QUALITY BASIN INSTALLATION NOTES:**
- AN UNDERDRAIN CLEANOUP WITH A MINIMUM 8-INCH DIAMETER AND LOCKABLE CAP IS PLACED EVERY 250 TO 300 FEET AS REQUIRED BASED ON UNDERDRAIN LENGTH. THE TOP OF CLEANOUP ELEVATION TO EXTEND 3" ABOVE A-3 DIMENSION.
 - VEGETATION USED SHOULD BE SUITABLE FOR THE CLIMATE PER LANDSCAPE PLANS AND SHOULD CONFORM TO THE REQUIREMENTS IN APPENDIX E.26 OF THE CITY'S BMP MANUAL.
 - FILTER COARSE IS A MINIMUM OF 6 INCHES PROVIDED IN TWO SEPARATE 3 INCH LAYERS. THE TOP LAYER SHALL BE MADE OF ASTM C33 CHOKER SAND AND THE BOTTOM LAYER BE OF ASTM NO. 8 AGGREGATE. MARKERS STAKES SHALL BE USED TO ENSURE UNIFORM LIFT THICKNESS.
 - AASHTO NO. 57 STONE OR CLASS 2 PERMEABLE PER CAL TRANS SPECIFICATION 68-2.09F(3) IS RECOMMENDED FOR THE AGGREGATE STORAGE LAYER. WASHED, OPEN-GRADED CRUSHED ROCK MAY BE USED, HOWEVER, A 4 INCH MINIMUM WASHED PEA GRAVEL FILTER COARSE LAYER AT THE TOP OF THE CRUSHED ROCK IS REQUIRED.
 - IMPERMEABLE LINER SHALL BE INSTALLED WHEN THE BIOFILTRATION BASIN IS WITHIN 10 FEET OF RETAINING WALLS OR BUILDING FOUNDATIONS, OR AS RECOMMENDED BY THE SOILS ENGINEER, OR REQUIRED BY THESE PLANS. IMPERMEABLE LINER SHALL BE 30 MIL THICK (PER COUNTY OF SAN DIEGO GREEN STREETS DESIGN STANDARD DRAWING GS-3.00 AND COUNTY GREEN STREETS SUPPLEMENT TO CAL TRANS SPECIFICATIONS 20-11.08B) CONFIGURED TO ENTIRELY ENCOMPASS THE SIDES OF THE WATER QUALITY BASIN.
 - BIOFILTRATION SOIL MEDIA LAYER (BSM) SHALL CONSIST OF 60% TO 80% BY VOLUME SAND, UP TO 20% BY VOLUME TOPSOIL, AND UP TO 20% BY VOLUME COMPOST (PER CITY OF SAN MARCOS BMP DESIGN MANUAL SECTION F.3).
 - THE AGGREGATE STORAGE LAYER SHALL BE COMPACTED IN ACCORDANCE WITH SOILS ENGINEER'S RECOMMENDATIONS.
 - OVERFLOW STRUCTURE TO HAVE A MINIMUM OF 12 INCHES OF FREEBOARD.
 - ALL LINER INSTALLATIONS: FIELD WELDING OF SEAMS, AND OBSERVATION OF SOIL MAX PLACEMENT SHALL REQUIRE SPECIAL INSPECTION BY THE PROJECT GEOTECHNICAL ENGINEER OR OTHER QUALIFIED PERSON. A LETTER CERTIFYING PROPER INSTALLATION SHALL BE PROVIDED TO THE ENGINEER OF RECORD TO ACCEPTANCE OF THE FACILITIES.
 - SPECIAL INSPECTION SHALL BE REQUIRED FOR CONSTRUCTION OF ALL BIOFILTRATION BASINS. INSPECTION SHALL BE PERFORMED BY A QUALIFIED INDIVIDUAL (SUCH AS: ENGINEER OF RECORD, OSD). INSPECTION SHALL INCLUDE:
 - VERIFICATION OF OVERALL DIMENSIONS PRIOR TO PLACEMENT OF MATERIALS.
 - PLACEMENT OF THE LINER, IF REQUIRED; AND SEAMS OR PENETRATIONS
 - PLACEMENT OF THE GRAVEL, FILTER MATERIALS, AND FILTER MEDIA;
 - ALL INLET AND OUTLET STRUCTURES INCLUDING UNDERDRAINS, IF REQUIRED.
 - CONTRACTOR SHALL TAKE PICTURES AT EACH STAGE OF INSTALLATION AND SUBMITTED TO ENGINEER FOR VERIFICATION OF INSTALL.

INSPECTOR SHALL BE GIVEN A MINIMUM OF 48 HOURS PRIOR TO INSPECTION. UPON COMPLETION THE INSPECTOR SHALL PROVIDE A CERTIFICATION TO THE ENGINEER OF WORK.

- PROPOSED MATERIALS, SUCH AS AGGREGATE, FILTER MATERIAL, AND FILTER MEDIA SHALL BE SUBMITTED TO THE ENGINEER OF WORK FOR APPROVAL.
- THE FINISHED SURFACE OF BIOFILTRATION BASINS SHALL BE FLAT AND THE FINISHED SURFACE FLOWLINE OF BIO-SWALES SHALL BE 2% MAX SLOPE IN THE LONGITUDINAL DIRECTION.

HYDROLOGIC SOIL GROUP
THE HYDROLOGIC SOIL GROUP FOR THIS SITE IS TYPE D.

EXISTING SITE FEATURES:

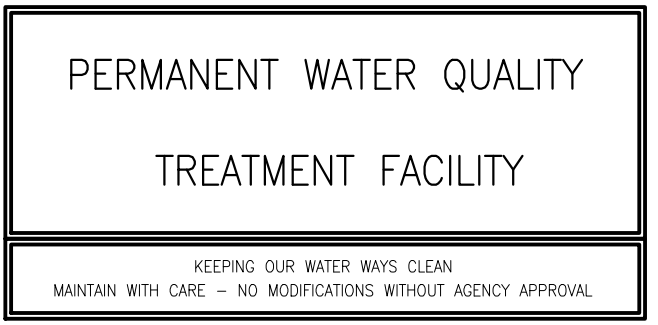
- THE APPROXIMATE DEPTH TO GROUNDWATER IS GREATER THAN 10 FEET.
- THERE ARE NO NATURAL HYDROLOGIC FEATURES ON THE SITE.
- THE SITE PROPOSES TO CONNECT TO THE EXISTING PUBLIC STORM DRAIN SYSTEM LOCATED IN THE SOUTH EDGE OF THE SITE.
- BASED ON WATERSHED MAPPING OF POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREAS (PCCSYA), THERE ARE NO PCCSYA LOCATED WITHIN THE PROJECT BOUNDARY OR TRIBUTARY TO THE RUNOFF BYPASSED AROUND THE SITE.

ASCEND TOWNHOMES DMA EXHIBIT



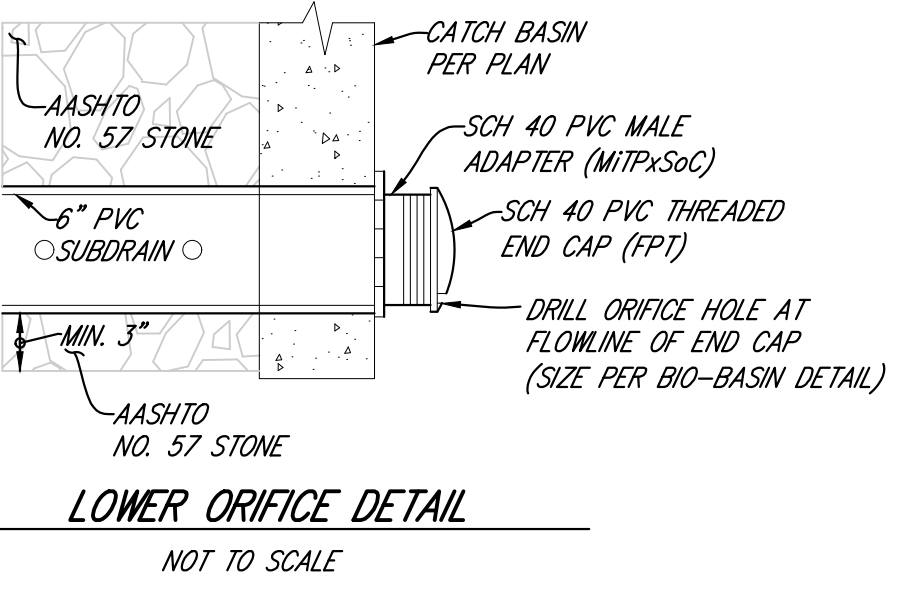
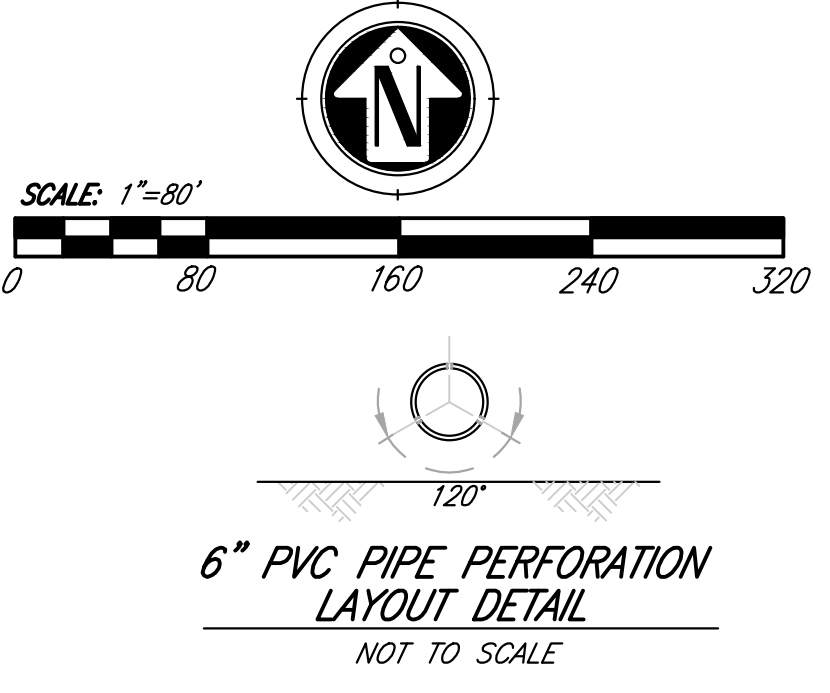
DETAIL
"NO DUMPING" AT CATCH BASINS

NOTE: ALL CATCH BASINS WITH GRATES SHALL BE STENCILED WITH CITY REQUIRED ITEM PER ABOVE DETAIL (DAS MANUFACTURING #SDO OR EQUIVALENT).



DETAIL
WATER QUALITY SIGN- PLACED AT EACH BIOFILTRATION BASIN

NOTE: ALL BIOFILTRATION AREAS WILL HAVE A SIGN POSTED TO BE VISIBLE AT ALL TIMES.



Attachment 2B:

Management of Critical Coarse Sediment Yield Areas

POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREA ANALYSIS

FOR THE:

ASCEND TOWNHOMES

APN 223-341-17

Melrose Drive and Diamond Street, San Marcos, CA 92078

PREPARED FOR:

MDLV Investments, LLC

440 State Place

Escondido, CA 92029

Contact: Michael Levin

Email: mdlevin@excelengineering.net

PREPARED BY:

EXCEL ENGINEERING

440 State Place

Escondido, CA 92029

Tel: (760) 745-8118

Project No: 25-037

DATE PREPARED:

03/13/2026

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1.1 Purpose of Study

1.2 Project Description

2.0 Vicinity Map

3.0 Methodology To Identify PCCSYAs

3.1 Identification of PCCSYAs

3.2 Existing Site Conditions

3.3 Refinement Options – Depositional Analysis

4.0 Calculations

5.0 Conclusion

6.0 References

7.0 Attachments

Attachment 1 – WMAA PCCSYA Maps

Attachment 2 – Clearing and Grading History of Site

Attachment 3 – Jurisdictional Water Fill Grading Plans DWG. NO. GP26-00001

Attachment 4 – Section H.7.1 from San Marcos BMP Design Manual

Attachment 5 – Pre-Development Hydrology Map

Attachment 6 – 2-year 24-hour Runoff Calculations

1.0 PROJECT DESCRIPTION

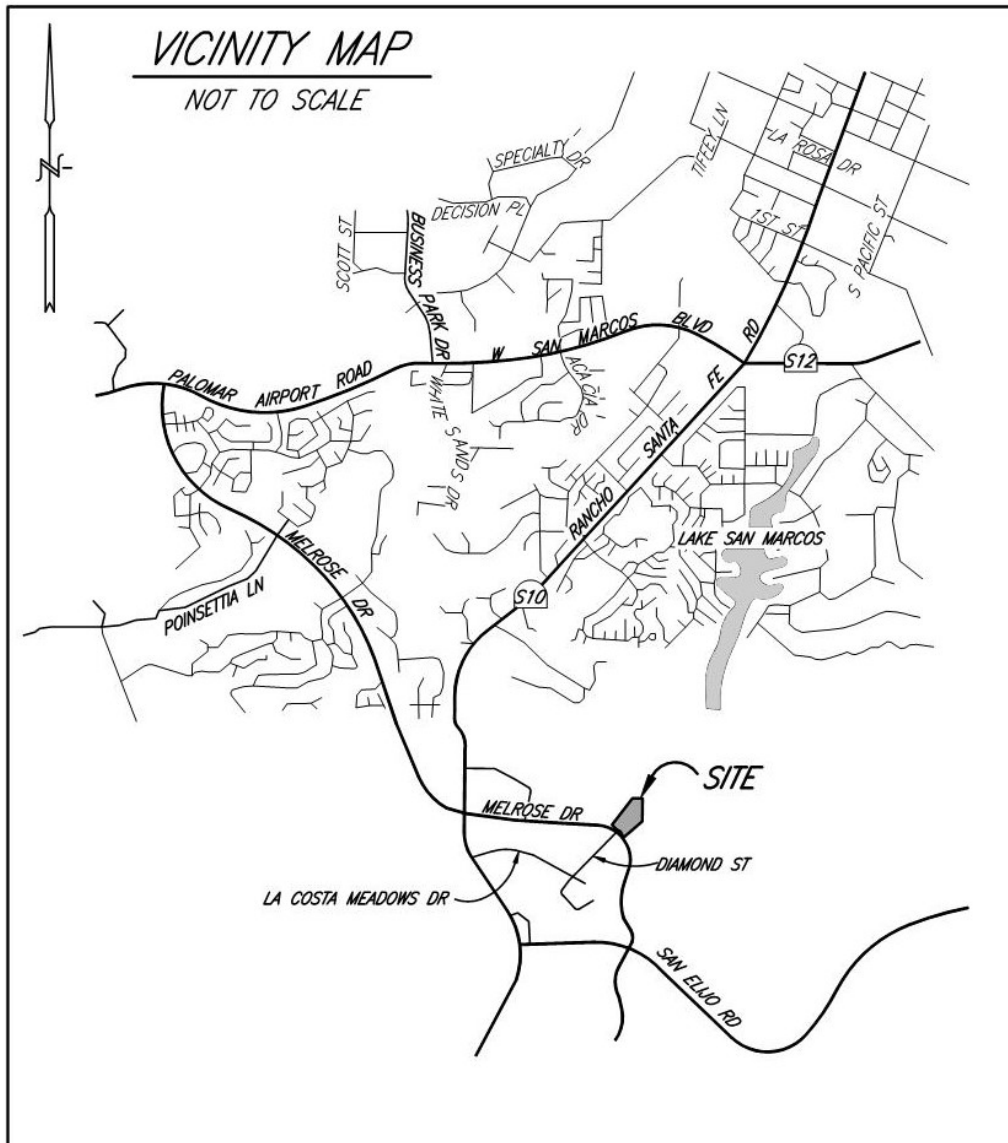
1.1 Purpose of Study

The purpose of this study is to demonstrate that the Potential Critical Coarse Sediment Yield Areas (PCCSYA), as identified by the Watershed Management Area Analysis (WMAA) Map, should be removed from consideration as PCCSYA for the proposed Ascend Townhomes project.

1.2 Project Description

The project proposes an approximately 14-acre pad to be used for residential, high density use. Improvements consist primarily of hardscape, sidewalks, driveways, buildings, and landscaping amenities as well as retaining walls and slope grading, and drainage infrastructure to allow offsite flows to bypass around the site.

2.0 VICINITY MAP



3.0 METHODOLOGY TO IDENTIFY PCCSYAs

3.1 Identification of PCCSYAs

The Watershed Management Area Analysis (WMAA) Map prepared by the County of San Diego and provided by the Comprehensive WMAA Mapping Data GIS provided by Project Clean Water is used to identify the PCCSYAs of the proposed project. Attachment 1 displays the WMAA areas identified as PCCSYA for the project with an overlay of the project limits. As shown on sheet 1 of Attachment 1, only a small portion of the WMAA PCCSYAs exists within the onsite project limits, located in the northwest corner of the site. The remaining PCCSYAs upstream of the project will be bypassed through the project site in a proposed storm drain pipe that is hydraulically separated from all proposed onsite storm flows. Sheet 2 of Attachment 1 shows the proposed routing of bypassed runoff through the site from upstream areas identified as PCCSYAs.

A history of the project site's disturbance and further refinement options discussed in the following sections will be applied to determine if the PCCSYA identified areas can be removed from consideration as critical designation.

3.2 Existing Site Conditions

In 1987, the site was cleared and graded under the permits for grading plan 86-614. The portion of the PCCSYA within the onsite limits of the proposed project is within the previously disturbed footprint of GP-86-614, which should remove this area from consideration as PCCSYA, as the GLU or vegetation will be classified as "disturbed" once grading was complete. Attachment 2 explains a brief history of the clearing and grading history of the project site and includes pages from GP-86-614.

The property is currently mostly undeveloped hillsides, except for a portion of residential street atop of the most northerly hillside which all drains south into a natural valley at the bottom of the hills. This valley continues south and drains to a natural sink area within the United States Army Corps of Engineers (USACE) Jurisdictional Drainage Area. A minor grading plan was created for this USACE Jurisdictional Drainage Area to support the fill placed over the natural sink area in order to create a rough graded pad area to support future improvements proposed by the Ascend Townhomes project number SP25-0003. The Jurisdictional Water Fill Grading Plans DWG. NO. GP26-00001 are included in Attachment 3 of this study.

The natural sink condition will remain unchanged by the fill proposed per GP26-00001. The proposed Ascend Townhomes project will install an inlet at this natural sink location along the northern property line, which will capture all upstream offsite runoff and PCCSYAs. From the inlet, offsite flows will be bypassed and conveyed through the site in a 48" storm drain pipe. This bypass pipe runs south through the site where it ultimately connects to the existing Type-F catch basin identified as POC-1. Please see the Preliminary Hydrology / Hydraulics Study for project number SP25-0003 for further information of existing and proposed drainage patterns and infrastructure.

3.3 Refinement Options – Depositional Analysis

According to the City of San Marcos BMP Design Manual Section H.7, areas identified as PCCSYAs may be removed from consideration if it is demonstrated that these sources are deposited into existing systems prior to reaching the first downstream unlined water of the state. Depositional systems may include natural sinks, existing structural BMPs, existing hardened MS4 systems or other existing similar features that produce a peak velocity from the discrete 2-year, 24-hour runoff event of less than 3 ft/s in the system being analyzed.

It is clear that the aforementioned natural sink created at the proposed inlet of the bypass system can be used for depositional analysis as described in Section H.7.1 of the San Marcos BMP Design Manual. See Attachment 4 for excerpts from the City of San Marcos BMP Design Manual Appendices.

4.0 CALCULATIONS

The portion of fill area to be constructed per GP26-00001 will be used as the depositional analysis system area to determine if offsite upstream PCCSYA flows meet the requirements to qualify for exemption from CCSYA designation.

Peak runoff for the 2-year, 24-hour runoff storm event was calculated by the modified rational method using CivilD software in accordance with the County's Hydrology Manual. Rainfall quantities for the 2-year, 6-hour and 24-hour rainfall events were obtained using Rainfall Isopluvials from the County's Hydrology Manual.

The tributary areas draining to the natural sink are delineated on the Pre-Developed Hydrology Map included as Attachment 5 of this study. The natural sink channel area is designated as Node 107.5 on the map and in the corresponding calculations. The resulting calculations show that the peak 2-year, 24-hour velocity through the depositional area is 1.5 ft/s. This velocity is below the 3 ft/s threshold to qualify for exemption from CCYSA designation. Please see Attachment 6 for calculations.

5.0 CONCLUSION

This study along with the attached supporting documents and calculations shows that the WMAA PCCSYAs tributary to the proposed Ascend Townhomes project should be removed from consideration as critical coarse sediment due to the existing site disturbance and the depositional analysis of the natural sink location which proved to produce velocities below the threshold to qualify as CCYSA.

6.0 REFERENCES

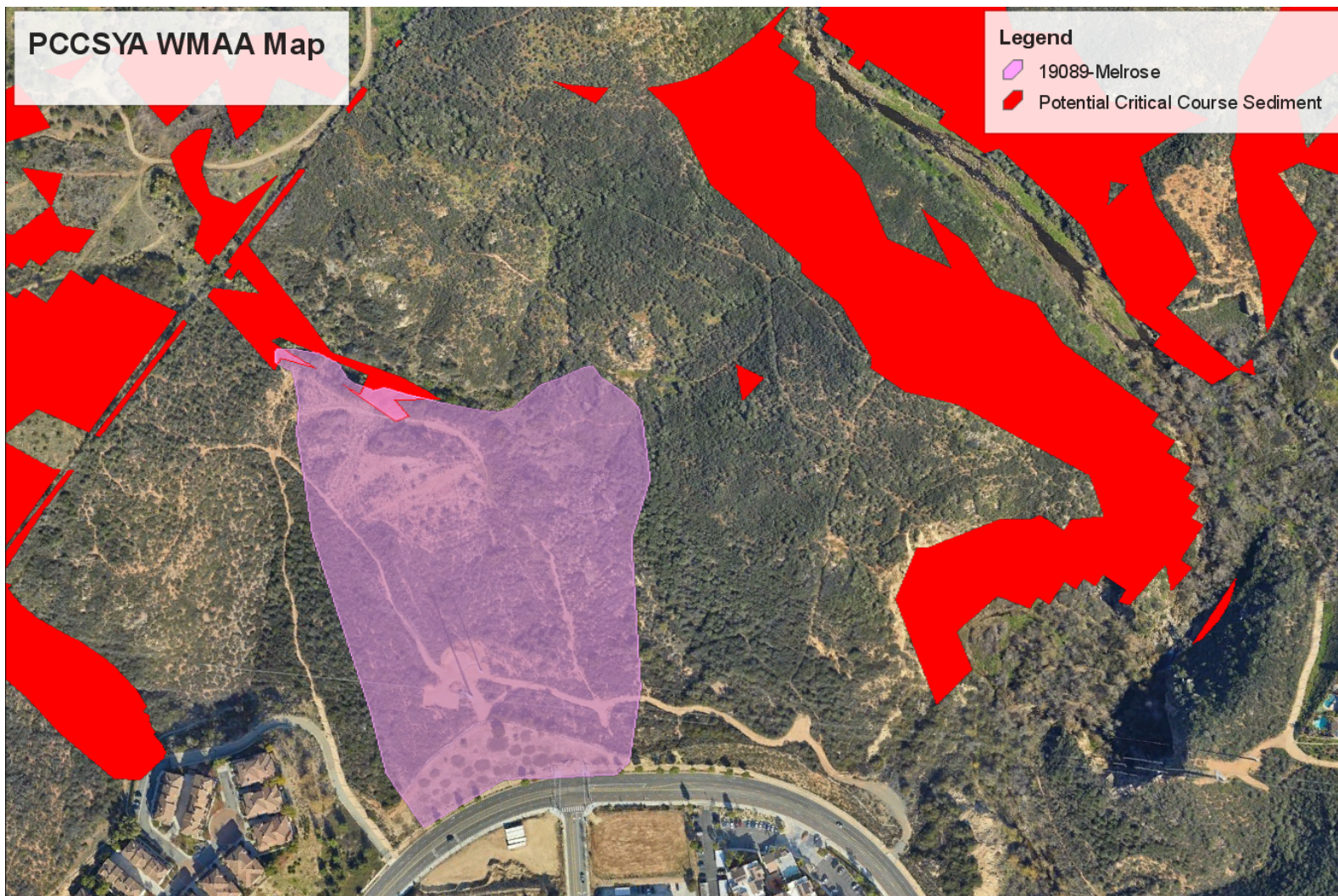
- "Preliminary Hydrology / Hydraulics Study" for Ascend Townhomes, prepared by Excel Engineering, dated 03/11/2026
- City of San Marcos BMP Design Manual Appendices, dated July 2025
- County of San Diego Hydrology Manual, June 2003

ATTACHMENT 1

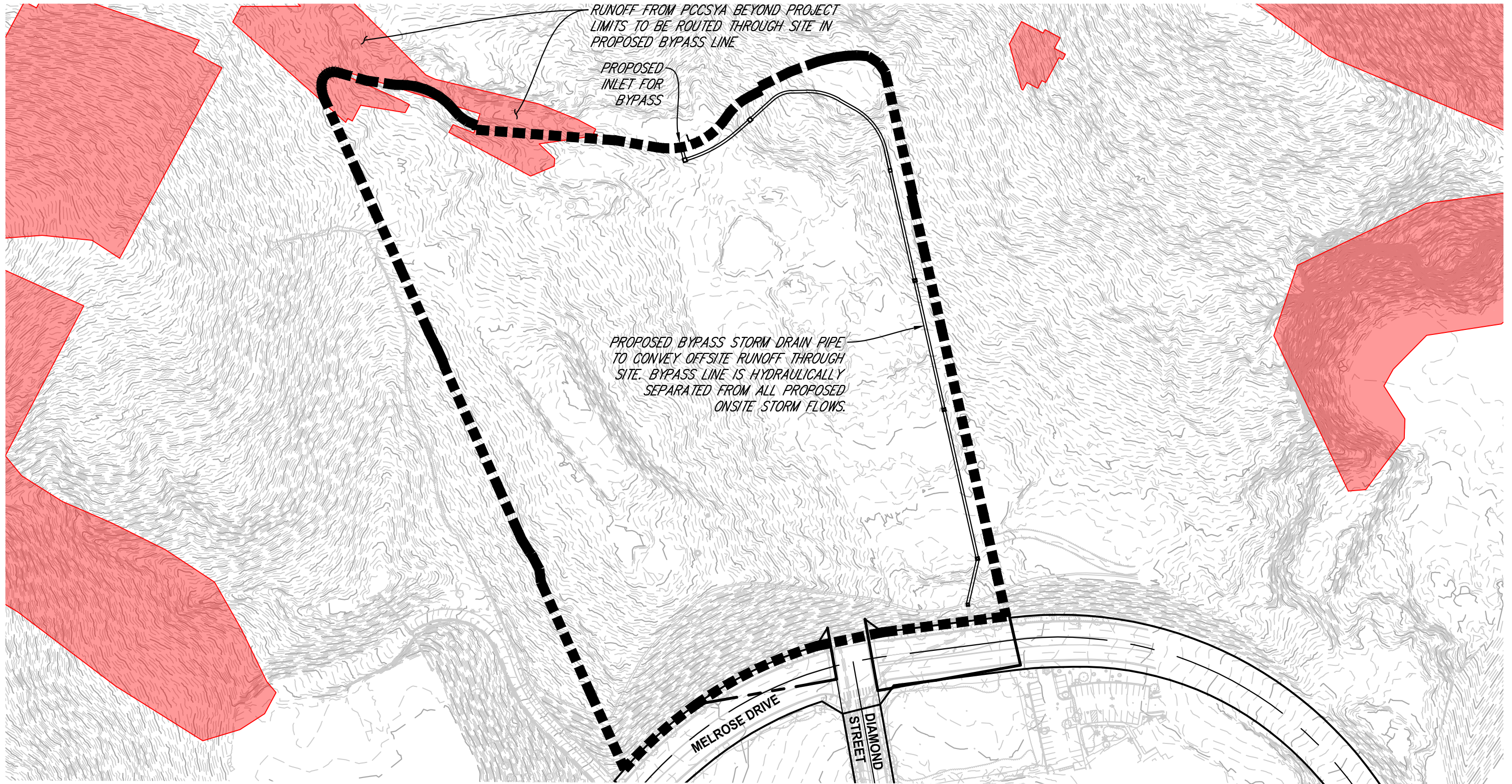
PCCSYA WMAA Map

Legend

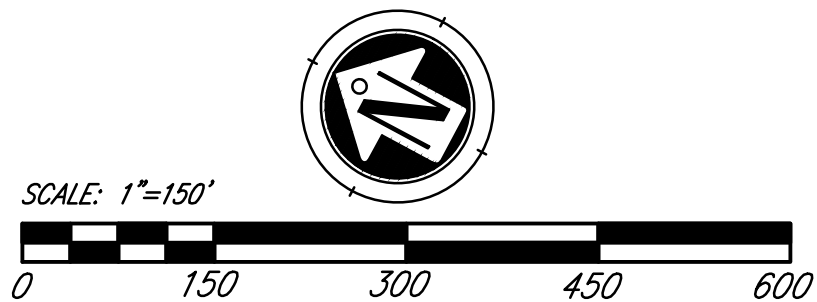
- 19089-Melrose
- Potential Critical Course Sediment



Offsite Potential Critical Coarse Sediment Yield areas will be bypassed through the site. See sheet 2 for PCCSYA Bypass Exhibit.



EXCEL
ENGINEERING
 LAND PLANNING • ENGINEERING • SURVEYING
 440 STATE PLACE, ESCONDIDO, CA 92029
 PH (760)745-8118 FX (760)745-1890



LEGEND



PROPOSED PROJECT LIMITS



POTENTIAL CRITICAL COARSE
 SEDIMENT YIELD AREAS

POTENTIAL CRITICAL COARSE
 SEDIMENT YIELD AREA MAP FOR:
 ASCEND TOWNHOMES

ATTACHMENT 2

July 5, 2022

Re: Clearing and grading history of the Diamond industrial site

- In 1986 Grading Plan drawing number 86-614 was approved in conjunction with the Industrial subdivisions in the City of San Marcos known as: City of San Marcos Tracts 218 & 292. (Exhibit A). ND 223-86 was approved as part of the TSM 292 entitlements. TSM 292 underlies the proposed Diamond Street Industrial site. The attached Exhibit B has three panels, see image on left. Lots 2 through 14 of Tract 292 are within the boundary of the Diamond Street industrial Parcel Map.
- In 1987 the site was cleared and graded under the permits for grading plan 86-614. The middle panel on Exhibit B shows the original subdivision overlayed on 1987 aerial photo. You can see that the site is fully disturbed southerly of the onsite drainage.
- The right panel on Exhibit B shows the Diamond Street Industrial Parcel A, San Marcos TPM 20-001, proposed impacts overlayed on the 1987 aerial photo. The development footprint is fully in the impacted footprint.
- Exhibit C is the Diamond Street pad reviewed by Geocon incorporated, 3-13-22. The soils report clearly shows the areas of existing fills and manufactured slopes. See highlights added in orange for fills and blue for the manufactured slopes grading as part of the Melrose Drive Improvement plans (City of San Marcos Drawing Number IP-4556). The proposed area of disturbance for the Diamond Street Industrial site, San Marcos TPM 20-001, is within previously disturbed site areas.

Please let me know if you need any additional information.

Sincerely,

Michael D Levin, PLS

EXHIBIT A

LEGEND

EXISTING CONTOURS
 PROPOSED CONTOURS
 SLOPES (2:1 UNLESS NOTED)
 SWALE WITH 12" HIGH BERM
 BROWN DITCH (PER D-75)
 DAYLIGHT LINE
 CRIB RETAINING WALL
 SAND BAG DAM, MIN. 2 BAGS HIGH,
 CONSTRUCTED SO THAT TOP OF DAM
 IS LEVEL.

EROSION CONTROL NOTES

1. IN CASE EMERGENCY WORK IS REQUIRED, CONTACT LUCIAN LULY, AT 743-0978.
2. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ON SITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.
3. DEVICES SHOWN ON PLANS SHALL NOT BE MOVED OR MODIFIED WITHOUT THE APPROVAL OF THE PUBLIC WORKS INSPECTOR.
4. THE CONTRACTOR SHALL RESTORE ALL EROSION CONTROL DEVICES TO WORKING ORDER TO THE SATISFACTION OF THE CITY ENGINEER AFTER EACH RUN-OFF PRODUCING RAINFALL.
5. THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL MEASURES AS MAY BE REQUIRED BY THE CITY ENGINEER DUE TO UNCOMPLETED GRADING OPERATIONS OR UNFORSEEN CIRCUMSTANCES WHICH MAY ARISE.
6. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATERS CREATE A HAZARDOUS CONDITION.
7. ALL EROSION CONTROL MEASURES PROVIDED PER THE APPROVED GRADING PLANS SHALL BE INCORPORATED HEREON.
8. GRADED AREAS AROUND THE PROJECT PERIMETER MUST DRAIN AWAY FROM THE FACE OF SLOPE AT THE CONCLUSION OF EACH WORKING DAY.
9. ALL REMOVABLE PROTECTIVE DEVICES SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE FIVE-DAY RAIN PROBABILITY FORECAST EXCEEDS 40%.

LEGAL DESCRIPTION:

LOTS 1-4, 30 OF SAN MARCOS TRACT NO. 218 PER MAP NO. 10750 TOGETHER WITH A PORTION OF THE NORTH HALF OF SECTION 29, TOWNSHIP 12 SOUTH, RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, AS SHOWN ON LICENSED SURVEYOR'S MAP NO. 443, FILED IN THE OFFICE OF THE RECORDER OF SAID SAN DIEGO COUNTY.

GENERAL NOTES

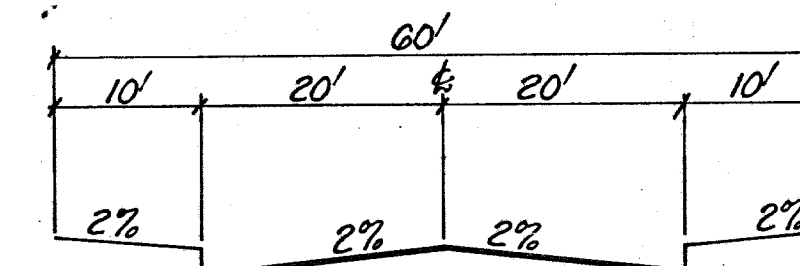
1. IMPORT MATERIAL SHALL BE OBTAINED FROM A LEGAL SITE.
2. ALL SLOPES OVER 5' IN HEIGHT WILL BE PLANTED IN ACCORDANCE WITH PLANNING DEPARTMENT REQUIREMENTS.
3. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK.
4. APPROVAL OF THESE PLANS BY THE CITY DOES NOT AUTHORIZE ANY WORK OR GRADING TO BE PERFORMED UNTIL THE PROPERTY OWNER'S PERMISSION HAS BEEN OBTAINED.
5. ALL OPERATIONS CONDUCTED ON THE PREMISES, INCLUDING THE WARMING UP, REPAIR, DEPARTURE OR RUNNING OF ANY EQUIPMENT SHALL BE LIMITED TO THE HOURS OF 7:00 A.M. TO 4:30 P.M., MONDAY THRU FRIDAY. NO WORK SHALL BE PERFORMED ON THE PREMISES ON SATURDAYS, SUNDAYS, OR HOLIDAYS.
6. NOTWITHSTANDING THE MINIMUM STANDARDS SET FORTH IN THE GRADING ORDINANCE AND NOTWITHSTANDING THE APPROVAL OF THESE GRADING PLANS, THE PERMITTEE IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO ADJACENT PROPERTY. NO PERSON SHALL EXCAVATE ON LAND SO CLOSE TO THE PROPERTY LINE AS TO ENDANGER ANY ADJOINING PUBLIC STREET, SIDEWALK, ALLEY, FUNCTION OF ANY SEWAGE DISPOSAL SYSTEM, OR ANY OTHER PUBLIC OR PRIVATE PROPERTY WITHOUT SUPPORTING AND PROTECTING SUCH PROPERTY FROM SETTLING, CRACKING, EROSION, SILLING, SCOUR, OR OTHER DAMAGE WHICH MIGHT RESULT FROM THE GRADING DESCRIBED ON THIS PLAN. THE CITY WILL HOLD THE PERMITTEE RESPONSIBLE FOR CORRECTION OF NON-DEDICATED IMPROVEMENTS WHICH DAMAGE ADJACENT PROPERTY.
7. ALL MAJOR SLOPES SHALL BE ROUNDED INTO EXISTING TERRAIN TO PRODUCE A CONTOURED TRANSITION FROM CUT OR FILL FACES TO NATURAL GROUND AND ABUTTING CUT OR FILL SLOPES.
8. DUST CONTROL MEASURES SHALL BE UTILIZED AT ALL TIMES DURING CONSTRUCTION TO THE SATISFACTION OF THE BUILDING DIRECTOR.
9. ALL WORK SHOWN ON THIS PLAN TO BE COMPLETED IN ACCORDANCE WITH CITY ORDINANCE AND CHAPTER 70 OF THE UNIFORM BUILDING CODE (LATEST EDITION).
10. ALL GRADING SHALL BE SUPERVISED BY AN INDIVIDUAL APPROPRIATELY LICENSED UNDER THE BUSINESS AND PROFESSIONS CODE.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE ADJOINING STREETS IN A CLEAN CONDITION.
12. A PERMIT MUST BE OBTAINED FROM THE SAN MARCOS FIRE PROTECTION DISTRICT FOR ANY BLASTING ANTICIPATED. A SEPARATE PERMIT FROM THE CITY WILL BE REQUIRED PRIOR TO ANY CONSTRUCTION, EXCAVATION, STORAGE OF MATERIALS OR ANY OTHER ENCROACHMENTS.
13. A CONSTRUCTION, EXCAVATION, OR ENCROACHMENT PERMIT WILL BE REQUIRED FOR ANY WORK IN THE CITY RIGHT-OF-WAY.

OWNER/PERMITTEE:

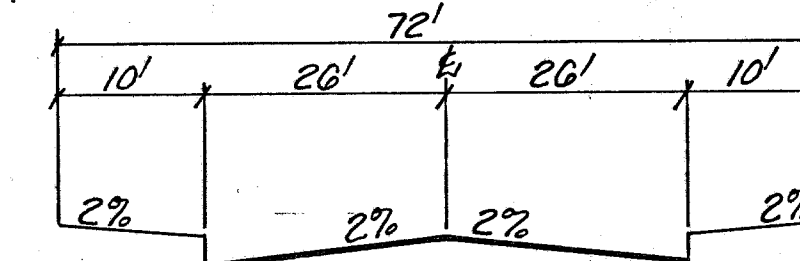
BOB MARTIN
 980 N. HALE AVE.
 ESCONDIDO, CA 92025
 (619) 745-0081

SLOPE RATIOS:

CUT: 2:1
 FILL: 2:1



TYPICAL SECTION: DIAMOND STREET
 NO SCALE

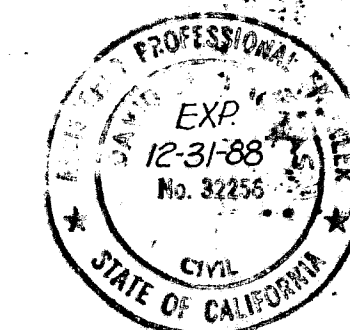


TYPICAL SECTION: LA COSTA MEADOWS DR.
 NO SCALE

EXCAVATION: 140,800 CY. FILL: 149,800 CY.
 WASTE/IMPORT: 0 CY.

ENGINEER OF WORK:

THOMAS ENGINEERS
 7518 QUINTA ST.
 CARLSBAD, CA 92008
 (619) 436-1191



APN 223-030-64, 223-340-01, THRU 15

PRIVATE CONTRACT

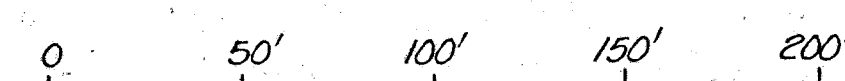
SHEET 1	CITY OF SAN MARCOS	3 SHEETS
GRADING PLANS FOR: SAN MARCOS TRACTS 218 & 292		
CALIFORNIA COORDINATE INDEX 342-1701		
Approved By:	Signature of David M. Thomas DAVID M. THOMAS R.E. 32255	Grading Permit No. 456
Date		

PERMITS	
REZONE PERMIT NO.	NONE
SPECIAL USE PERMIT NO.	NONE
TENTATIVE MAP NO.	NONE
BENCH MARK	
DESCRIPTION:	STANDARD BRONZE DISC IN CONCRETE MONUMENT
LOCATION:	ABOUT 200' NORTH OF STATION 261+98.72 RANCHO RANCHO SANTA FE ROAD (R.S. 404) NEAR FENCE, EAST SIDE OF ROAD
RECORD FROM:	COUNTY BENCH LEVELS J-0302
ELEVATION:	176.18
DATUM:	U.S.C. & G.S.

APPROVED CHANGES			
No.	Description	Approved by	Date

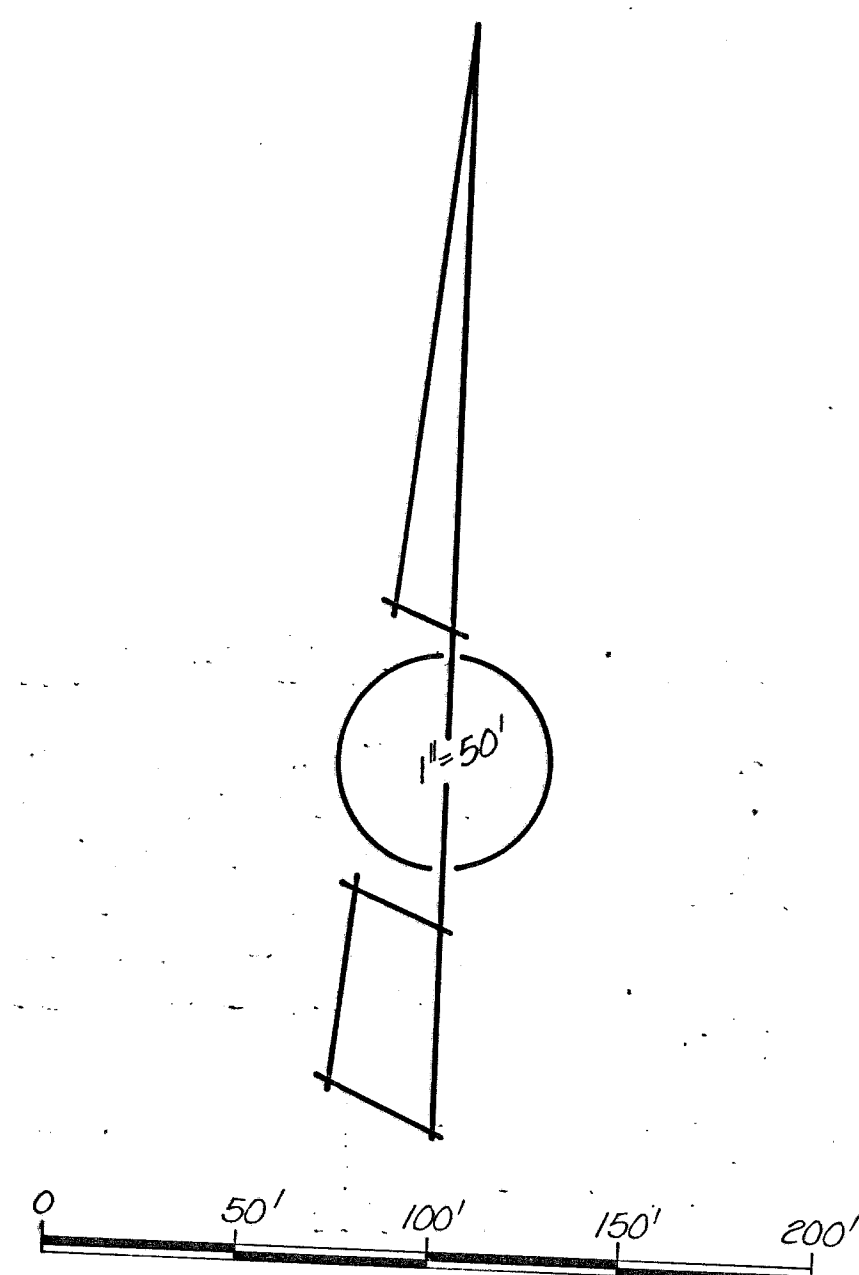
VICINITY MAP
 NO SCALE

CONSTRUCT D-75 DITCH, DOWN CUT SLOPE AND INTO D-25 OUTLET



SEED MIX FOR CUT AND FILL SLOPES FOR ALL BANKS OVER 5' IN HEIGHT

BOTANICAL NAME	COMMON NAME	APPLICATION RATE
<i>Artemisia californica</i>	Coast sagebrush	1 lb. per acre
<i>Atriplex semibaccata</i>	Australian saltbush	10 lbs. per acre
<i>Baccharis sarothroides</i>	Broom baccharis	1 lb. per acre
<i>Encelia f. acron</i>	Yucca encelia	3 lbs. per acre
<i>Eriogonum fasciculatum</i>	California buckwheat	10 lbs. per acre
<i>Isomeris arborea</i>	Bladder pod	1 lb. per acre
<i>Lotus corniculatus</i> (inoculate)	Birdsfoot trefoil	1 lb. per acre
<i>Salvia apiana</i>	White sage	2 lbs. per acre



WE ARE THE OWNERS OF THE PROPERTY DIRECTLY EAST OF THE ABOVE-REFERENCED PROJECT. OUR ASSESSOR'S PARCEL NUMBER IS 223-030-08. WE UNDERSTAND THAT THE OWNERS OF THE PROJECT WISH TO GRADE UPON OUR PROPERTY TO CONSTRUCT TSM 292.

WE HAVE REVIEW THE CURRENT GRADING PLAN FOR THEIR PROJECT
AND HEREBY GIVE OUR CONSENT FOR THEM TO GRADE ON OUR PROPERTY
AS SHOWN ON THE GRADING PLAN.

SINCERELY,

Janette Brewer

JURAT FOR INDIVIDUALS
COUNTY OF SAN DIEGO)
STATE OF CALIFORNIA) SS

ON THIS _____ DAY OF _____, 198____, BEFORE
ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR SAID
COUNTY AND STATE PERSONALLY APPEARED Jeanette

Browner Jacob Browner
(PERSONALLY KNOWN TO ME) (PROVEN ON THE BASIS OF SATISFACTORY EVIDENCE) TO BE THE PERSONS WHOSE NAMES ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGE TO ME THAT THEY EXECUTED THE SAME.

WITNESS MY HAND AND OFFICIAL SEAL

Audrey J. Jernsma
NOTARY PUBLIC IN AND FOR
SAID COUNTY AND STATE

MY COMMISSION EXPIRES: Nov. 2, 1990

DRAINAGE SYSTEM NOTE:

IF CAST-IN-PLACE CONCRETE PIPE IS USED IN LIEU OF PRE-CAST RCP, DIAMETERS INDICATED ON THIS PLAN SHALL BE INCREASED BY 6 INCHES

PERMITS		PRIVATE CONTRACT	
		SHEET 2	CITY OF SAN MARCOS ENGINEER'S DEPARTMENT
		3 SHEETS	
REZONE PERMIT NO. <u>NONE</u>		GRADING PLANS FOR: SAN MARCOS TRACTS 218 & 292	
SPECIAL USE PERMIT NO. <u>NONE</u>			
TENTATIVE MAP NO. <u>NONE</u>			
BENCH MARK		CALIFORNIA COORDINATE ¹⁹⁸³ NAD 83	
DESCRIPTION: <u>STANDARD BROWNE DISC IN CONCRETE MONUMENT</u>		Approved _____ By: _____ Engineer of work <i>[Signature]</i> <u>RCE 32256</u>	
LOCATION: <u>ABOUT 200' NORTH OF STATION 261.98.72 RANCHO SANTA FE ROAD (R.S. 454) NEAR FENCE, EAST SIDE OF ROAD</u>			
RECORD FROM: <u>COUNTY BENCH LEVEL J-0302</u>			
ELEVATION: <u>176.18</u> DATUM: <u>U.S.C. & G.S.</u>			
		Date _____	
		Grading Permit No. <u>86-614</u>	

FILE NO. 45

ENGINEER'S NAME: THOMAS ENGINEERS
PHONE NO. (619) 436-1191

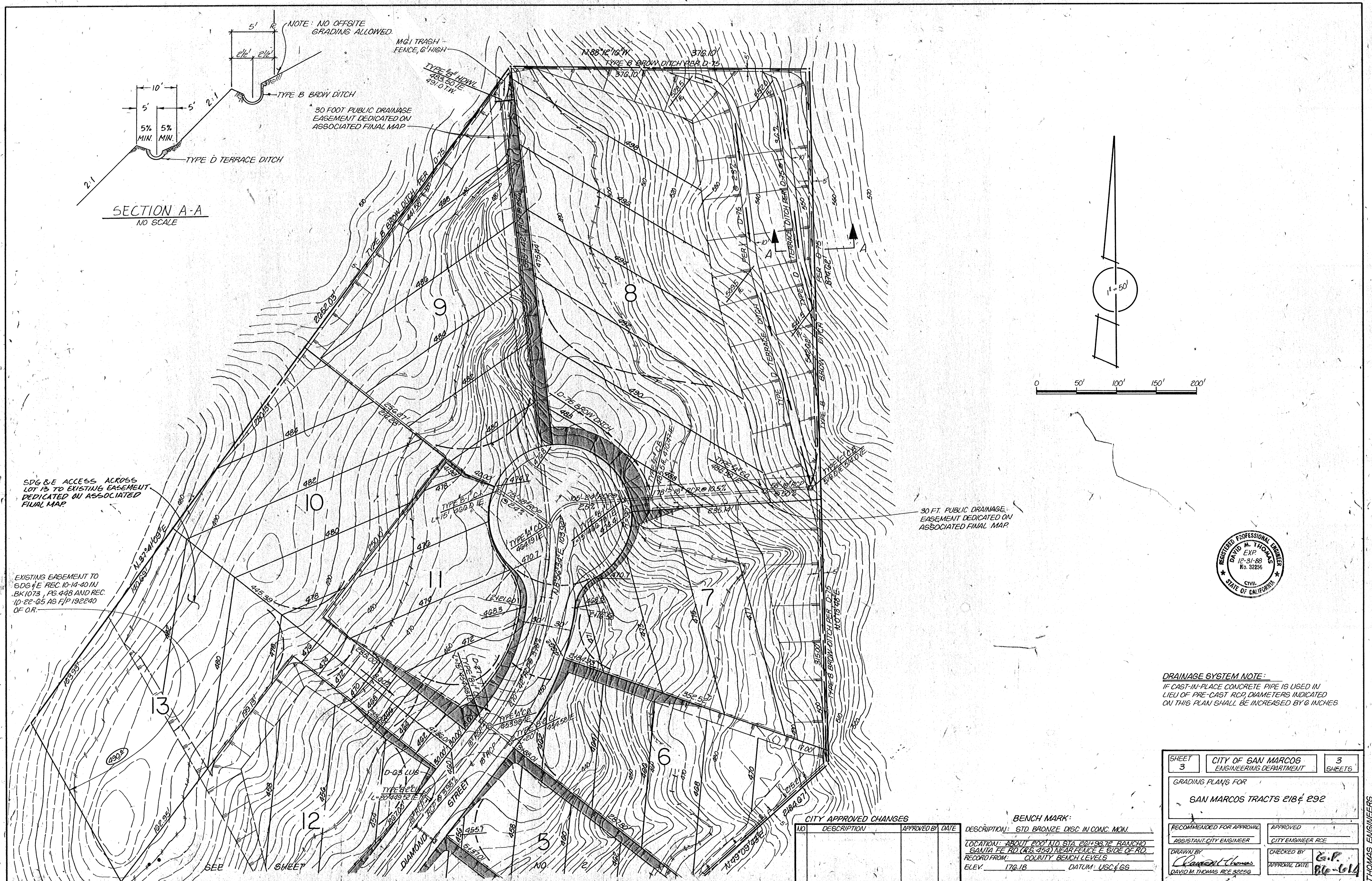
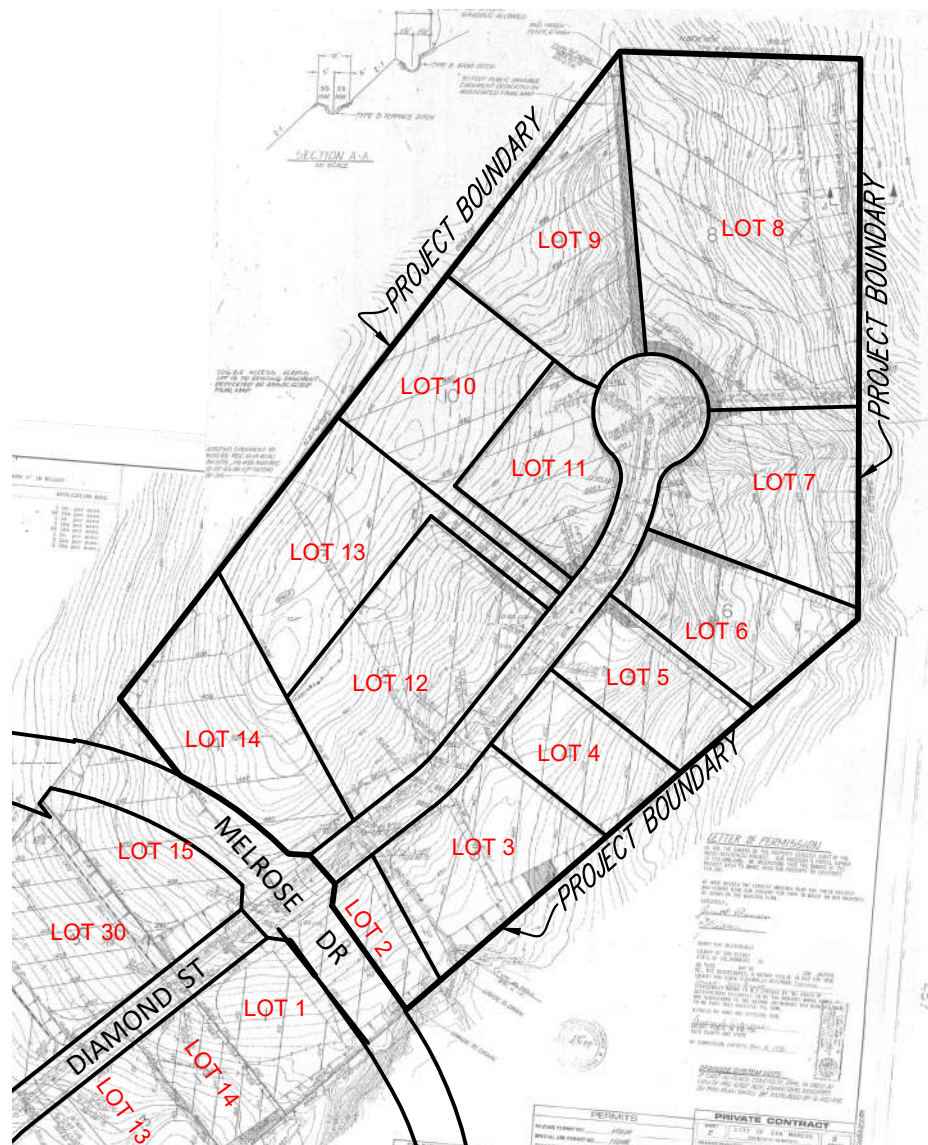
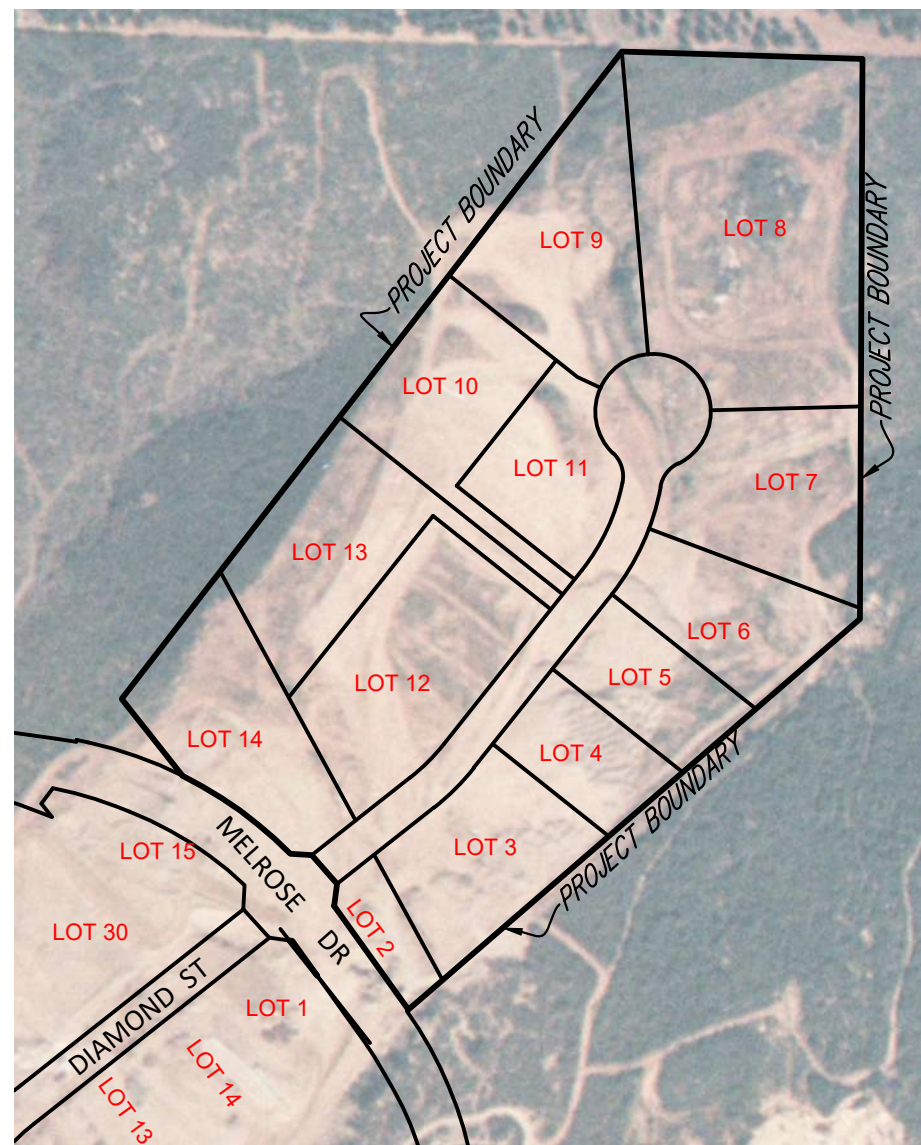


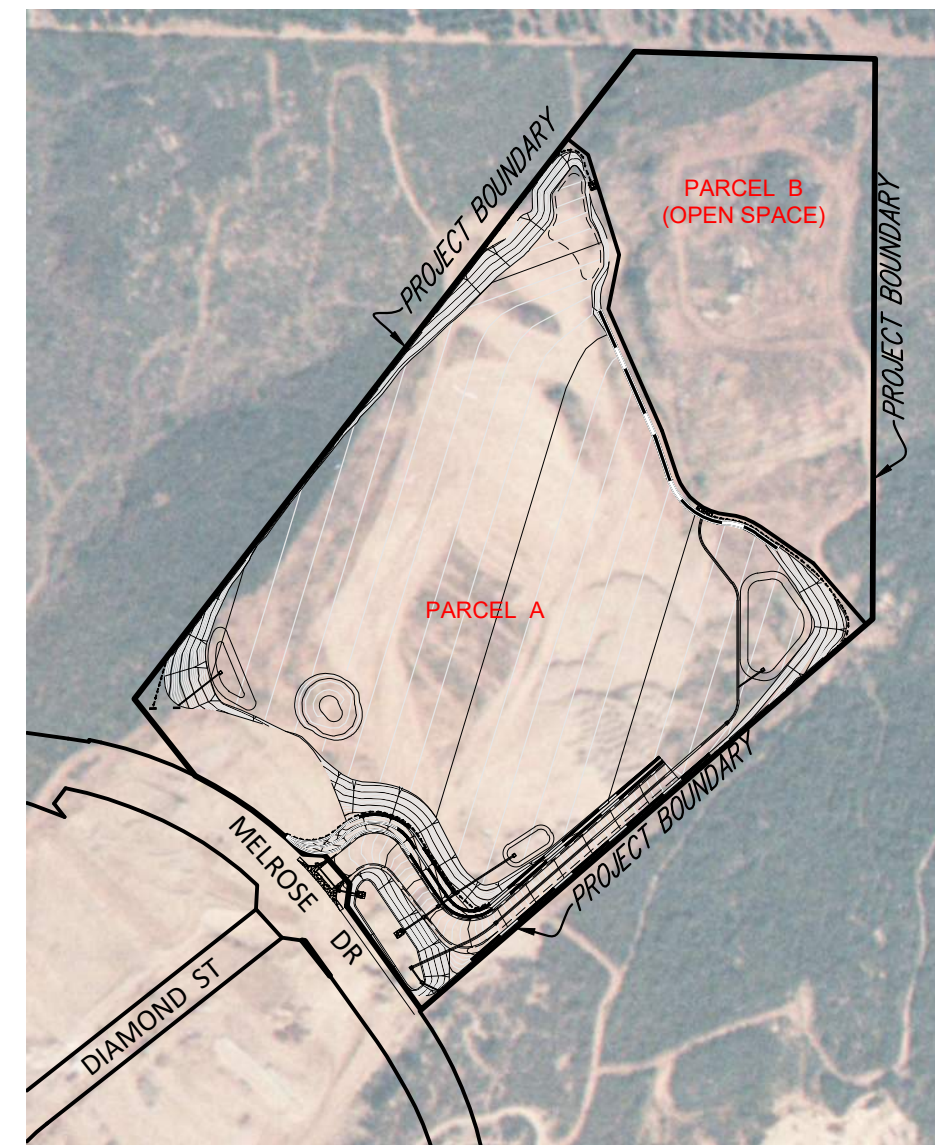
EXHIBIT B



PROJECT SITE WITH UNDERLYING
APPROVED 1986 GRADING PLAN SHOWN
(CITY OF SAN MARCOS DWG NO. 86-614)



PROJECT SITE WITH 1987 AERIAL
PHOTO SHOWN



PROJECT SITE WITH THE CURRENT
GRADING PLAN, UNDERLAYED WITH THE
1987 AERIAL PHOTO

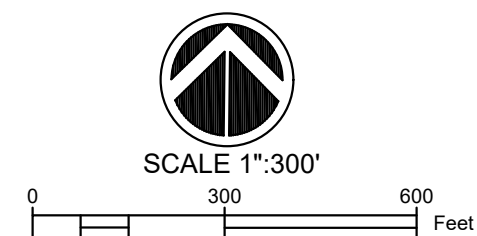
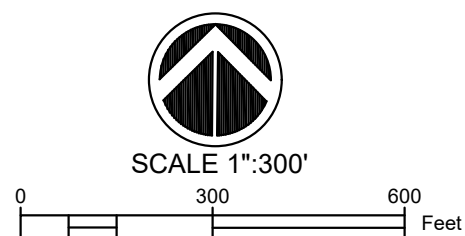
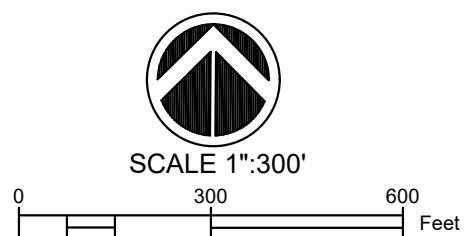


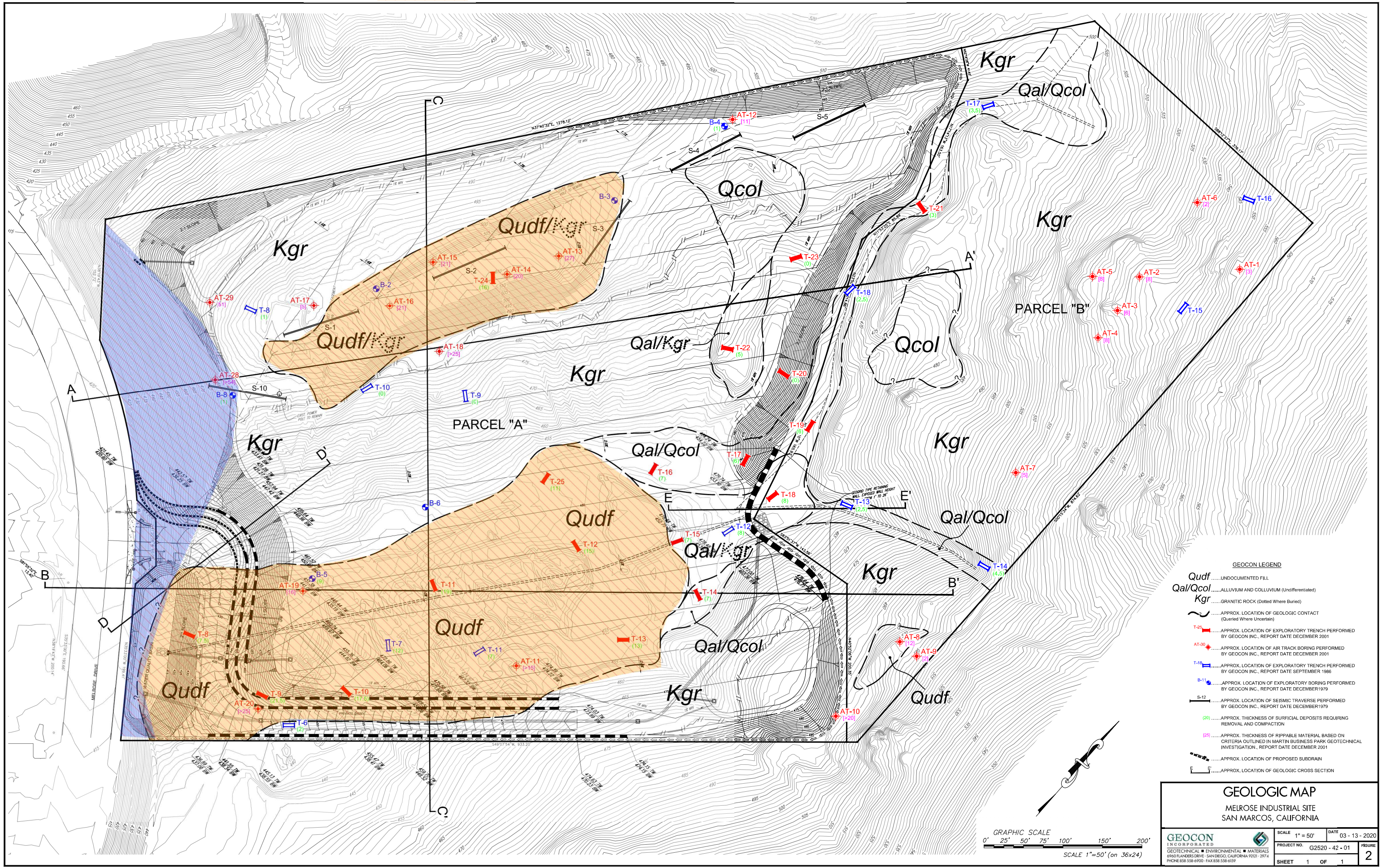
EXHIBIT C



existing fills in disturbed foot print see 1987 aerial photo for disturbed footprint



existing cut slope



- GEOCON LEGEND**
- Qudf.....UNDOCUMENTED FILL
 - Qal/Qcol.....ALLUVIUM AND COLLUVIUM (Undifferentiated)
 - Kgr.....GRANITIC ROCK (Dotted Where Buried)
 -APPROX. LOCATION OF GEOLOGIC CONTACT (Queried Where Uncertain)
 - T-25.....APPROX. LOCATION OF EXPLORATORY TRENCH PERFORMED BY GEOCON INC., REPORT DATE DECEMBER 2001
 - AT-30.....APPROX. LOCATION OF AIR TRACK BORING PERFORMED BY GEOCON INC., REPORT DATE DECEMBER 2001
 - T-18.....APPROX. LOCATION OF EXPLORATORY TRENCH PERFORMED BY GEOCON INC., REPORT DATE SEPTEMBER 1986
 - B-11.....APPROX. LOCATION OF EXPLORATORY BORING PERFORMED BY GEOCON INC., REPORT DATE DECEMBER 1979
 - S-12.....APPROX. LOCATION OF SEISMIC TRAVERSE PERFORMED BY GEOCON INC., REPORT DATE DECEMBER 1979
 - (20).....APPROX. THICKNESS OF SURFICIAL DEPOSITS REQUIRING REMOVAL AND COMPACTION
 - (25).....APPROX. THICKNESS OF RIPPLEABLE MATERIAL BASED ON CRITERIA OUTLINED IN MARTIN BUSINESS PARK GEOTECHNICAL INVESTIGATION, REPORT DATE DECEMBER 2001
 -APPROX. LOCATION OF PROPOSED SUBDRAIN
 - E.....APPROX. LOCATION OF GEOLOGIC CROSS SECTION

GEOLOGIC MAP
MELROSE INDUSTRIAL SITE
SAN MARCOS, CALIFORNIA

GEOCON
INCORPORATED

GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

6900 FLANAGAN DRIVE, SAN DIEGO, CALIFORNIA 92121-2974

PHONE 619-558-6900 • FAX 619-558-6159

SCALE 1" = 50'

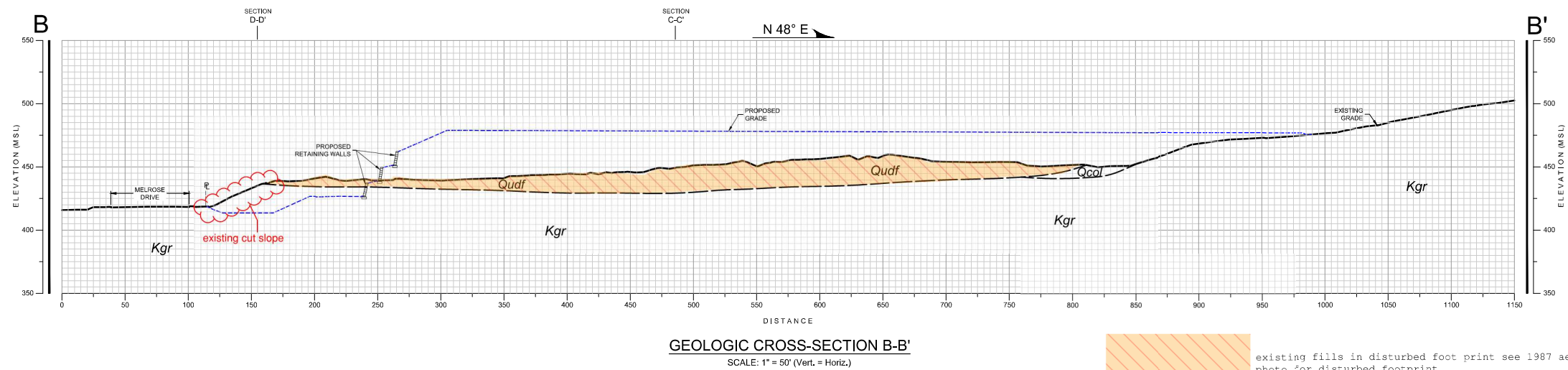
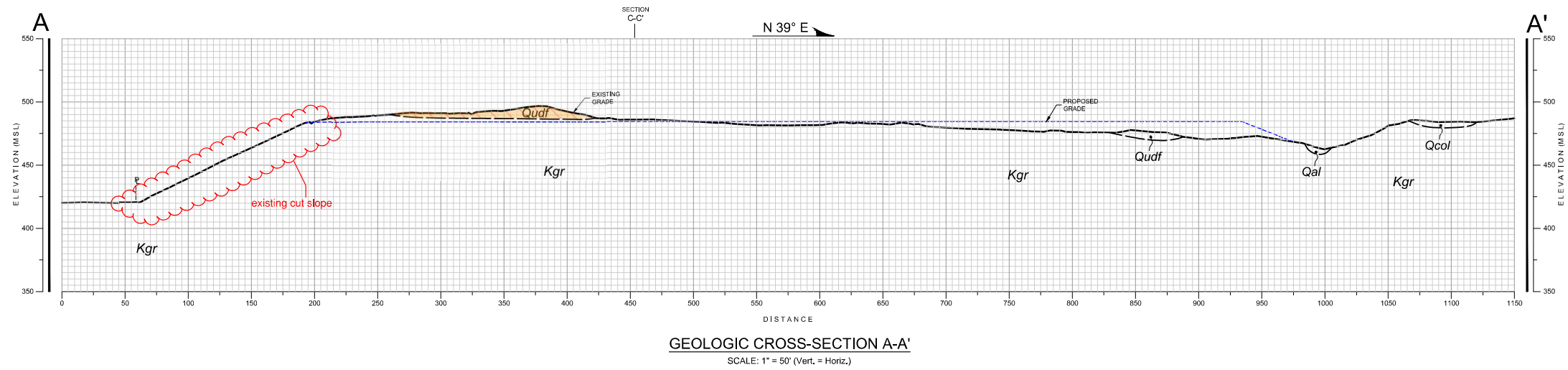
DATE 03 - 13 - 2020

PROJECT NO. G2520 - 42 - 01

SHEET 1 OF 1

FIGURE 2

Printed 03/13/2020 7:30AM | By ALVIN LADRELLINO | File Location: Y:\PROJECTS\G2520-42-01 (Melrose Industrial Site)\SHEET\G2520-42-01 Geo Map.dwg



existing fills in disturbed foot print see 1987 aerial photo for disturbed footprint

- GEOCON LEGEND**
- Qudf* UNDOCUMENTED FILL
 - Qal* ALLUVIUM
 - Qcol* COLLUVIUM
 - Kgr* GRANITIC ROCK
 - APPROX. LOCATION OF GEOLOGIC CONTACT

GEOLOGIC CROSS SECTION

MELROSE INDUSTRIAL SITE
SAN MARCOS, CALIFORNIA

GEOCON INCORPORATED GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS 6950 FLANKERS DRIVE, SAN DIEGO, CALIFORNIA 92121-2974 PHONE 619.558-6900 • FAX 619.558-6159		SCALE 1" = 50'	DATE 03 - 13 - 2020
PROJECT NO. G2520 - 42 - 01		FIGURE 3	
SHEET 1 OF 2			

Printed 03/13/2020 7:43AM | By: ALVIN LADRELL ONO | File Location: Y:\PROJECTS\G2520-42-01 (Melrose Industrial Site)\SHEET\FIG 300-42-01 *Section.dwg

ATTACHMENT 3

GRADING NOTES

- CALL THE ASSIGNED CITY OF SAN MARCOS ENGINEERING INSPECTOR 24-HOURS BEFORE COMMENCEMENT OF WORK.
- IMPORTED MATERIAL SHALL BE OBTAINED FROM A LEGAL SITE.
- ALL CUT AND FILL SLOPES SHALL BE PLANTED WITH A MIXTURE OF TREES, SHRUBS, AND GROUND COVER TO CONTROL EROSION. SLOPE LANDSCAPING SHALL BE INSTALLED AS SOON AS PRACTICAL. IRRIGATION SYSTEMS ARE REQUIRED AND SHALL BE INSTALLED FOR PERPETUAL MAINTENANCE OF THE PLANT LIFE USED FOR SLOPE STABILIZATION IN ACCORDANCE WITH SECTION 17.32.170, TITLE 19, AND TITLE 20 OF THE CITY'S GRADING ORDINANCE.
- PRECISE LOCATIONS/ELEVATIONS OF THE EXISTING UNDERGROUND UTILITIES ARE NOT KNOWN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAKING SUFFICIENT EXPLORATIONS TO LOCATE ALL UTILITIES AND SUBSTRUCTURES WHETHER SHOWN ON THE PLANS OR NOT AND TO PROTECT THEM FROM ANY POSSIBLE DAMAGE PRIOR TO AND DURING CONSTRUCTION. THE EXPENSE OF REPAIR OR REPLACEMENT OF SAID UTILITIES AND SUBSTRUCTURES SHALL BE BORNE BY THE CONTRACTOR. CONTRACTOR SHALL NOTIFY THE ENGINEER-OF-WORK OF ANY POTENTIAL CONFLICTS SUFFICIENTLY IN TIME FOR CONSTRUCTION CHANGES TO BE MADE AND APPROVED.
- THE CONTRACTOR SHALL CONTACT THE UNDERGROUND SERVICE ALERT AT 1-800-422-4133 AT LEAST 48 HOURS PRIOR TO EXCAVATING TO VERIFY THE LOCATIONS OF UNDERGROUND FACILITIES OF THE FOLLOWING UTILITIES:

AT&T
SAN DIEGO GAS & ELECTRIC
VALLECITOS WATER DISTRICT
COX COMMUNICATIONS
BUENA SANITATION DISTRICT
VISTA IRRIGATION DISTRICT

A DIG ALERT IDENTIFICATION NUMBER MUST BE ISSUED BEFORE A "PERMIT TO EXCAVATE" IS VALID PER GOVERNMENT CODE SECTION 4216.
- APPROVAL OF THESE PLANS BY THE CITY DOES NOT AUTHORIZE ANY WORK OR GRADING TO BE PERFORMED UNTIL THE PROPERTY OWNER'S PERMISSION IS OBTAINED AND A VALID GRADING PERMIT HAS BEEN ISSUED.
- ALL OPERATIONS CONDUCTED ON THE PREMISES, INCLUDING THE WARMING UP, REPAIR, ARRIVAL, DEPARTURE, OR RUNNING OF ANY EQUIPMENT SHALL BE LIMITED TO THE HOURS OF 7:00 A.M. TO 4:30 P.M. MONDAY THROUGH FRIDAY. NO WORK SHALL BE PERFORMED ON SATURDAY, SUNDAY, OR HOLIDAYS.
- ALL MAJOR SLOPES SHALL BE SHAPED AND TRIMMED AS SHOWN ON THE PLANS AND ROUNDED INTO EXISTING SLOPES TO PROVIDE A SMOOTH TRANSITION FROM CUT OR FILL FACES TO NATURAL GROUND AND ADJUTING CUT OR FILL SLOPES. ALL STONES, ROOTS OR OTHER WASTE MATTER EXPOSED ON EXCAVATION OR EMBANKMENT SLOPES SHALL BE REMOVED AND DISPOSED OF OFF-SITE IN A LEGAL MANNER BY THE CONTRACTOR.
- NOTWITHSTANDING THE MINIMUM STANDARDS SET FORTH IN THE CITY'S GRADING ORDINANCE AND THE APPROVAL OF THESE GRADING PLANS, THE PERMITTEE IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO ADJACENT PROPERTY. NO PERSON SHALL EXCAVATE ON LAND SO CLOSE TO THE PROPERTY LINE AS TO ENDANGER ANY SYSTEM, OR ANY OTHER PUBLIC OR PRIVATE PROPERTY WITHOUT SUPPORTING AND PROTECTING SUCH PROPERTY FROM SETTLING, CRACKING, EROSION, SILTING, SCOUR OR OTHER DAMAGE WHICH MIGHT RESULT FROM THE GRADING DESCRIBED ON THIS PLAN. THE CITY WILL HOLD THE PERMITTEE RESPONSIBLE FOR CORRECTION OF NON-DEDICATED IMPROVEMENTS, WHICH CAUSE DAMAGE TO ADJACENT PROPERTY.
- THE ENGINEER-OF-WORK SHALL BE NOTIFIED WHEN CONSTRUCTION COMMENCES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION/GRADING OF SLOPES, PADS, STREET GRADES, AND INFRASTRUCTURE IMPROVEMENTS ACCORDING TO THESE PLANS. THE ENGINEER-OF-WORK SHALL BE CONTACTED WHEN CHANGES OR ADDITIONS ARE MADE DURING THE PROGRESS OF CONSTRUCTION OR IF THERE IS A MISUNDERSTANDING OF THESE PLANS OR FIELD STAKES AND AN INTERPRETATION IS NEEDED.
- CERTIFICATION FROM THE REGISTERED CIVIL ENGINEER STATING THAT THE GRADING HAS BEEN COMPLETED PER THE APPROVED PLAN, AND THE COMPACTION REPORT FROM THE GEOTECHNICAL ENGINEER ON ANY REQUIRED FILL AREAS SHALL BE PROVIDED PRIOR TO BUILDING PERMITS BEING ISSUED.
- MINIMUM 90% COMPACTION IS REQUIRED IN ALL ON-SITE FILL AREAS WITH A MINIMUM OF 95% COMPACTION TWELVE INCHES (12") BELOW FINISHED SUBGRADE IN A PUBLIC STREET.
- EXCAVATIONS, FILLS, AND OBSTRUCTIONS IN PUBLIC PLACES SHALL CONFORM TO THE REQUIREMENTS OF CITY ORDINANCE 2022-1521 SUBJECT TO THE APPROVAL OF THE DIRECTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ANY MONUMENTATION AND/OR BENCHMARKS. ANY MONUMENTATION AND/OR BENCHMARKS, WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION, SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. SUCH POINTS SHALL BE REFERENCED AND REPLACED WITH APPROPRIATE MONUMENTATION BY A LICENSED LAND SURVEYOR OR A REGISTERED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED BY THE LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER AS REQUIRED BY THE LAND SURVEYOR'S ACT.
- DUST CONTROL MEASURES, SUCH AS THE PERIODIC WETTING DOWN OF THE BARE AND EXPOSED AREAS, SHALL BE UTILIZED AT ALL TIMES DURING CONSTRUCTION TO THE SATISFACTION OF THE ENGINEERING AND/OR BUILDING INSPECTORS.
- ALL WORK SHOWN ON THESE PLANS TO BE COMPLETED IN ACCORDANCE WITH CITY GRADING ORDINANCE CHAPTER 17.32.
- ALL GRADING SHALL BE SUPERVISED BY AN INDIVIDUAL APPROPRIATELY LICENSED UNDER THE BUSINESS AND PROFESSIONS CODE.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE ADJOINING PUBLIC STREETS AND RIGHTS-OF-WAY IN A CLEAN AND DUST FREE CONDITION WITHIN THE LIMITATION OF THE CITY MUNICIPAL CODE SECTION 14.15.030 ILLICIT "DISCHARGES PROHIBITED." THIS SECTION OF THE CODE PROHIBITS THE "WASHING DOWN" OF A STREET INTO A PUBLIC STORM DRAIN. THE CONTINUOUS USE OF STREET SWEEPING MACHINES MAY BE ADVISABLE.
- THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUALLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER, THE ENGINEER, AND THE CITY HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER, ENGINEER, OR CITY.
- A PERMIT MUST BE OBTAINED FROM THE SAN MARCOS FIRE DEPARTMENT PRIOR TO ANY BLASTING. SEPARATE CITY PERMITS ARE REQUIRED PRIOR TO ANY CONSTRUCTION, EXCAVATION, STORAGE OF MATERIALS OR ANY OTHER ENCROACHMENTS.
- A RIGHT-OF-WAY PERMIT WILL BE REQUIRED FOR ANY WORK WITHIN THE CITY RIGHT-OF-WAY.
- ACCESSIBLE PARKING SPACE(S) SHALL HAVE A MAXIMUM SLOPE NOT EXCEEDING 2% IN ANY DIRECTION.

GENERAL NOTES

- CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR OF ALL DAMAGES INCURRED AS A DIRECT RESULT OF CONSTRUCTION ACTIVITIES. PRIOR TO THE FINAL ACCEPTANCE AND APPROVAL OF IMPROVEMENTS SHOWN ON THESE PLANS ALL REPAIR AND REHABILITATION WILL BE DONE TO FACILITIES DISRUPTED BY CONSTRUCTION ACTIVITIES. ALL REPAIR WILL BE IN CONFORMANCE TOT HE CITY OF SAN MARCOS STANDARDS.

SOURCE OF TOPO

THE EXISTING TOPOGRAPHY SHOWN HEREON IS A COMBINATION OF THE FIELD TOPOGRAPHIC SURVEY CONDUCTED BY REPRESENTATIVES OF EXCEL ENGINEERING ON JULY 15, 2020, AND THE AERIAL PROVIDED BY AEROTECH MAPPING, INC. FLOWN JANUARY 15, 2020.

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS BETWEEN SAN MARCOS HORIZONTAL CONTROL POINTS CP-036 AS SHOWN ON THE CITY OF SAN MARCOS CONTROL SURVEY, ROS 23731, RECORDED NOVEMBER 5, 2020 AS FILE NUMBER 2020-7000375.

SITE ADDRESS AND ASSESSOR PARCEL NUMBERS

INTERSECTION OF DIAMOND STREET AND MELROSE DRIVE,
SAN MARCOS, CALIFORNIA 92078

ASSESSOR PARCEL NO: 223-341-17

LEGAL DESCRIPTION

PARCEL 1 OF PM 22146

OWNER

MDLV INVESTMENTS, LLC
MICHAEL D. LEVIN, MANAGER
(760)-745-8118
MLEVIN@EXCELENGINEERING.NET

DATE: 3-4-2026
MICHAEL D. LEVIN, MANAGER, MDLV INVESTMENTS

EARTHWORK SCHEDULE

CUT: 10 CY
FILL: 671 CY
IMPORT: 661 CY

SHEET INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GRADING PLAN
3	EROSION CONTROL PLAN

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR SHEETS 1 THRU 3 OF THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THIS PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN MARCOS IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME AS ENGINEER OF WORK OF MY RESPONSIBILITIES FOR THE PROJECT DESIGN.

DATE: 3/4/2026
ANDREW J. VAN LOY RCE 64573 EXP. 06/30/27

GEOTECHNICAL ENGINEER CERTIFICATE

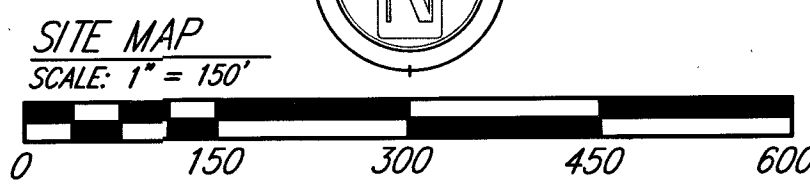
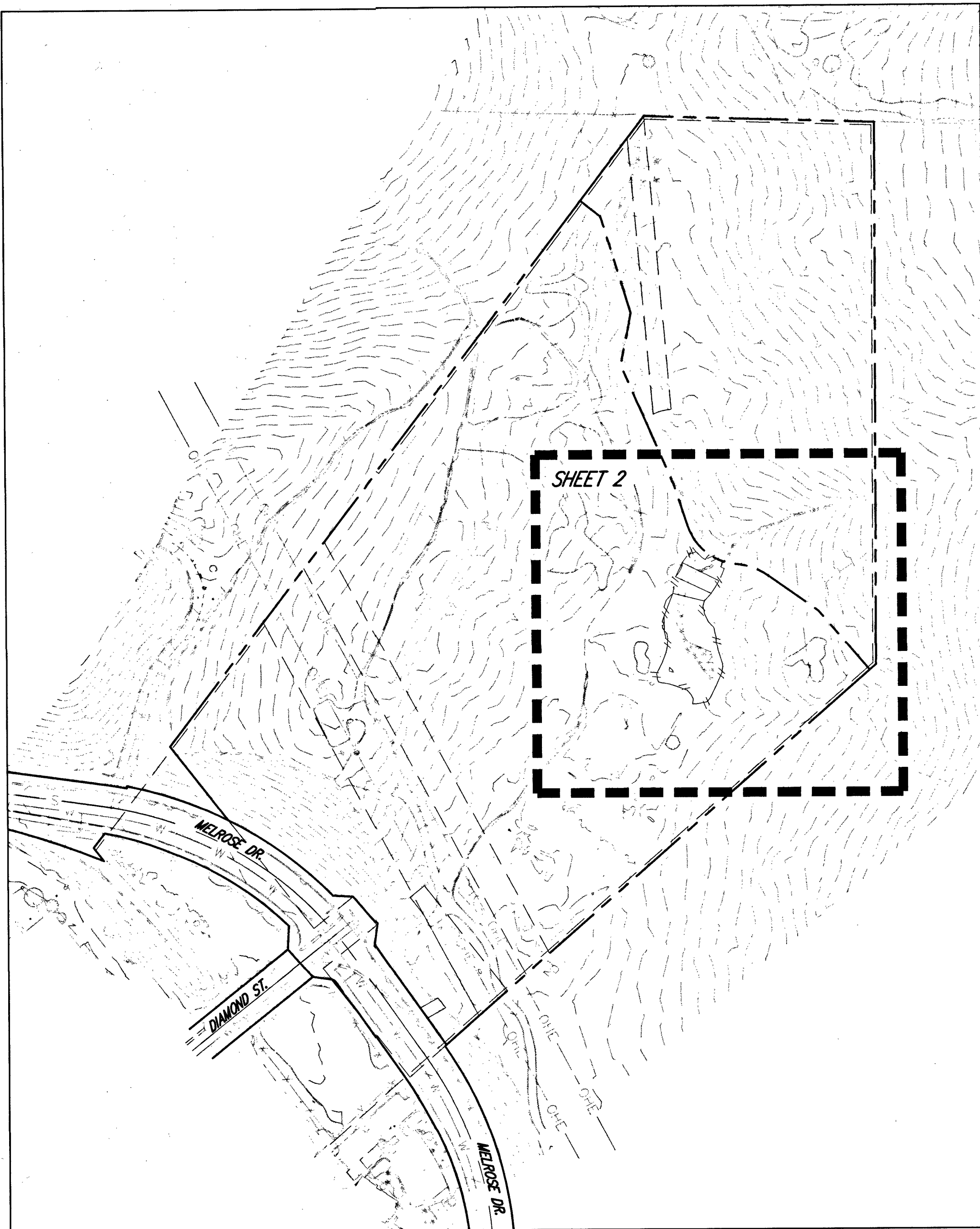
THESE PLANS HAVE BEEN REVIEWED BY THE UNDERSIGNED RELATIVE TO GEOTECHNICAL ASPECTS OF THE PLANS AND HAVE BEEN FOUND TO BE IN CONFORMANCE WITH INTENTIONS OF THE FINDINGS AND RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT ENTITLED: "GEOTECHNICAL INVESTIGATION, MELROSE INDUSTRIAL SITE, SAN MARCOS, CALIFORNIA". PREPARED JUNE 24, 2021, BY GEOCON INCORPORATED. PROJECT NO. G2520-42-02.

DATE: 3/5/2026
RUPERT S. ADAMS CEG 2561 EXP. 04/30/26

DATE: 3/5/2026
RODNEY C. MIKESSELL RGE 2533 EXP. 06/30/26

CITY APPROVED CHANGES				
Δ NO.	DESCRIPTION	AFFECTED SHEETS	EOW APP'D	APP'D BY

CITY OF SAN MARCOS
JURISDICTIONAL WATER FILL GRADING PLANS FOR
PARCEL 1 OF PM 22146 / APN 223-341-17



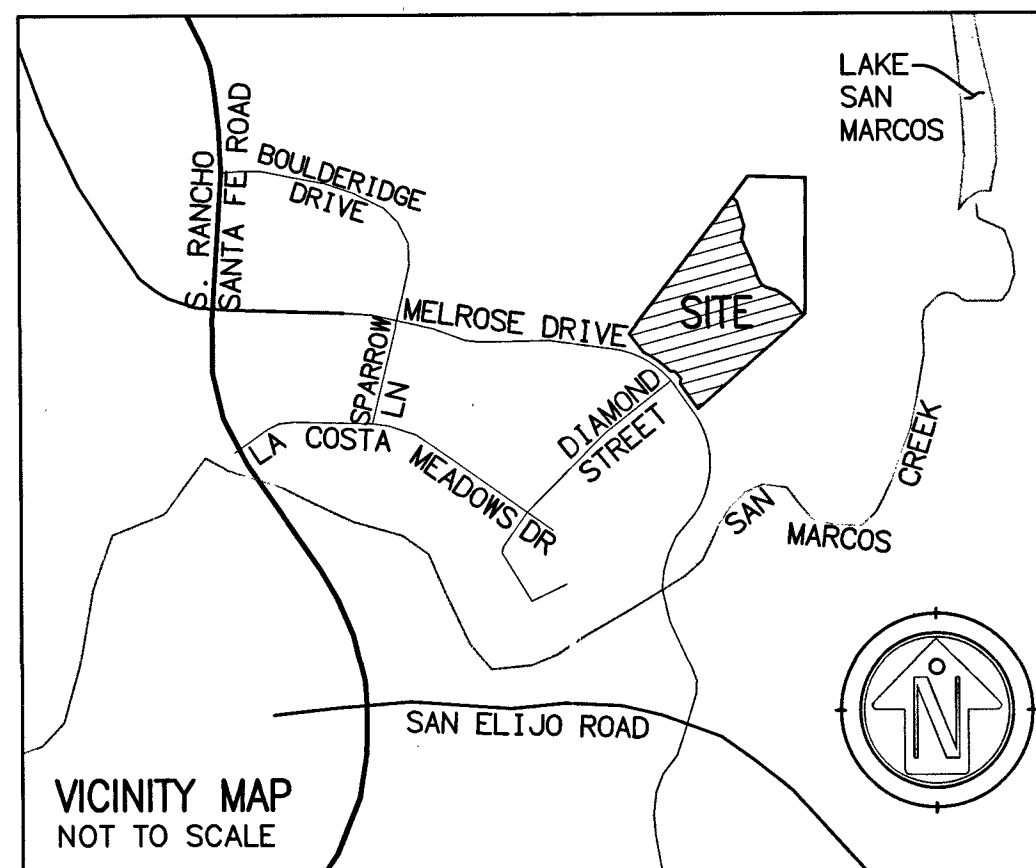
WORK TO BE DONE

THE IMPROVEMENTS CONSISTS OF THE FOLLOWING WORK TO BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING DOCUMENTS:

- SAN DIEGO AREA REGIONAL STANDARD DRAWINGS
- STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ("GREEN BOOK")
- CITY OF SAN MARCOS SUPPLEMENT TO THE GREENBOOK ("STANDARD SPECIAL PROVISIONS")
- CITY OF SAN MARCOS MUNICIPAL CODE
- STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARDS PLANS
- STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARD SPECIFICATIONS
- STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL TO MUTCD
- VALLECITOS WATER DISTRICT STANDARD DRAWINGS AND SPECIFICATIONS
- CITY OF SAN MARCOS BMP DESIGN MANUAL

LEGEND

ITEM	SYMBOL
PROPERTY LINE	---
RIGHT OF WAY LINE	---
EASEMENT LINE	---
EXISTING MAJOR CONTOUR	---(+55)---
EXISTING MINOR CONTOUR	---
PROPOSED MAJOR CONTOUR	---455---
PROPOSED MINOR CONTOUR	---453---
DAYLIGHT LINE/LIMITS OF GRADING	---//---//---
EXISTING VEGETATION	---[Pattern]---
U.S. ARMY CORPS OF ENGINEERS JURISDICTIONAL DRAINAGE AREA	---[Pattern]---
PROPOSED FILL SLOPE	---[Symbol]---
PROPOSED CUT SLOPE	---[Symbol]---



HYDROLOGY / HYDRAULIC REPORT

A COPY OF THE HYDROLOGY / HYDRAULIC STUDY FOR THIS PROJECT IS ON FILE WITH THE CITY OF SAN MARCOS ENGINEERING DIVISION. THE REPORT IS TITLED "DRAINAGE MEMORANDUM FOR THE U.S. ARMY CORPS OF ENGINEERS JURISDICTIONAL WATER FILL GRADING PLANS, APN 223-341-17, MELROSE DRIVE AND DIAMOND STREET, SAN MARCOS, CA 92078" DATED: JANUARY 20, 2026 & PREPARED BY EXCEL ENGINEERING, JOB FILE NUMBER: 25-037.

SOILS REPORT

THE SOILS REPORT FOR THIS PROJECT IS ENTITLED: "GEOTECHNICAL INVESTIGATION, MELROSE INDUSTRIAL SITE, SAN MARCOS, CALIFORNIA". PREPARED JUNE 24, 2021, BY GEOCON INCORPORATED. PROJECT NO. G2520-42-02.

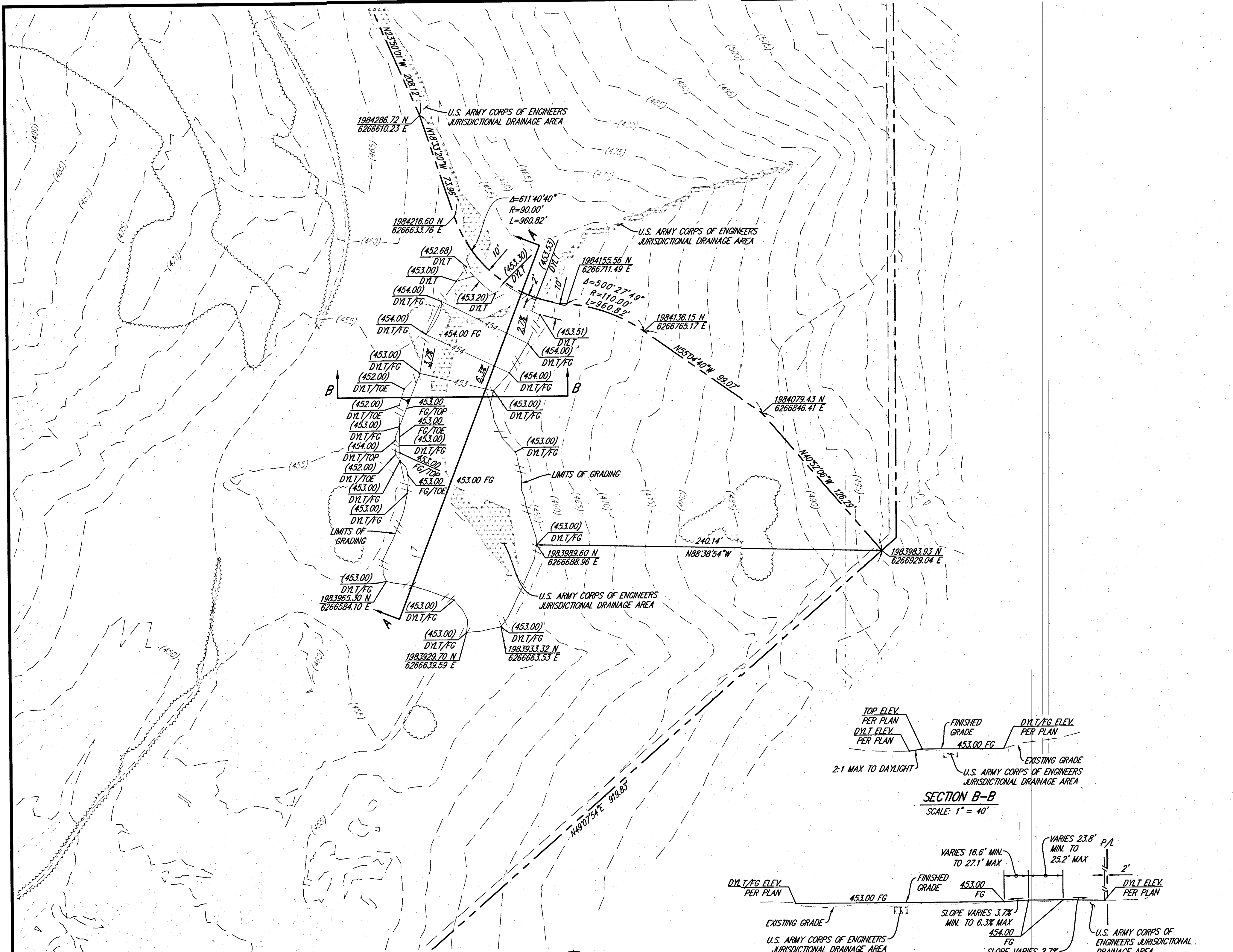
U.S. ARMY CORPS OF ENGINEERS NOTE:

THE WORK PRESENTED ON THESE PLANS MUST COMPLY WITH THE DEPARTMENT OF THE ARMY NATIONWIDE PERMIT, PERMIT NUMBER: SPL-2022-00040-SAS, LETTER DATED SEPTEMBER 18, 2024.

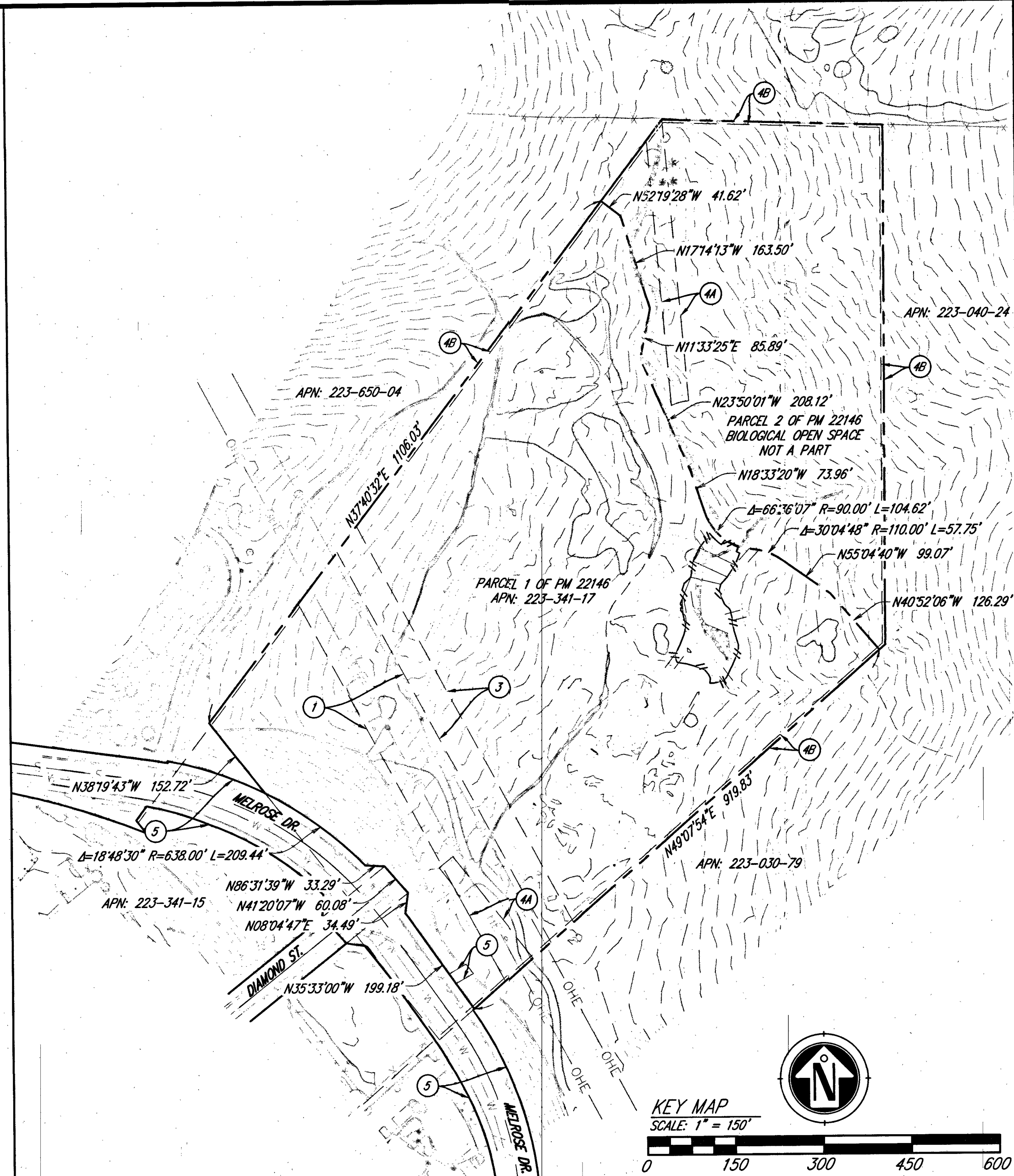
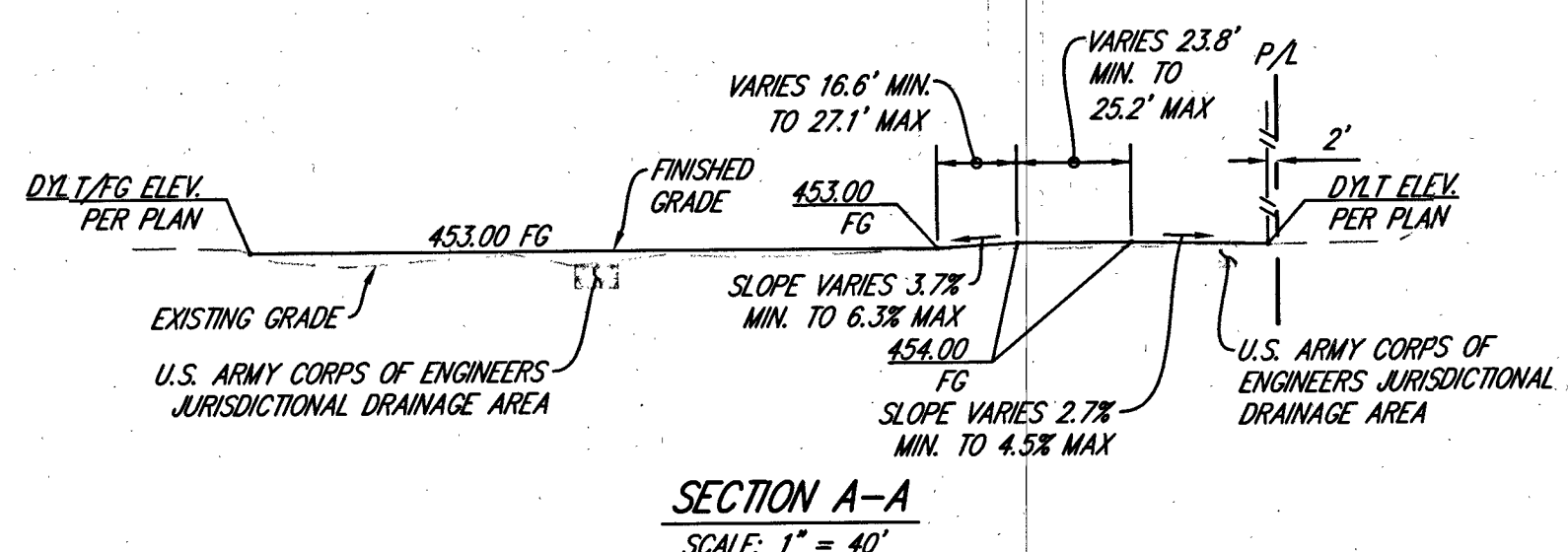
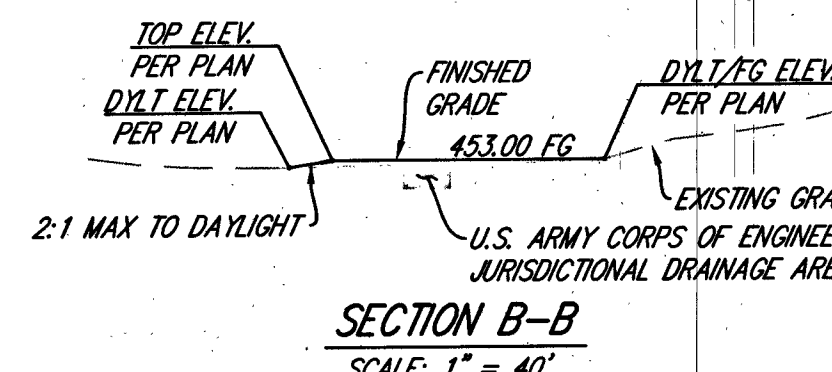
INSPECTED AND RECOMMENDED FOR ACCEPTANCE	APPROVED AS RECORD PLAN	
	ISAAC ETCHAMENDY 81294 9/30/2027	DATE: _____
Engineering Inspector	Date	

CITY OF SAN MARCOS		City Drawing No.
TITLE SHEET FOR: JURISDICTIONAL WATER FILL GRADING PLANS PARCEL 1 OF PM 22146 / APN 223-341-17		GP26-00001
		Sheet 1 of 3

EXCEL
ENGINEERING
LAND PLANNING • ENGINEERING • SURVEYING
440 STATE PLACE, ESCROW, CA 92029
PH (760) 745-8118 FX (760) 745-1880

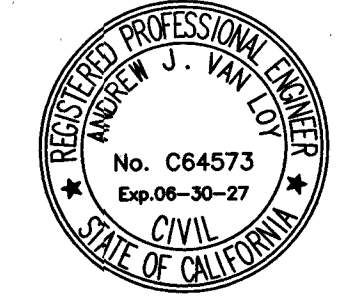


TOTAL DISTURBED AREA = 17,412 SF (0.40 ACRES)
 TOTAL EXISTING USAGE JURISDICTIONAL DRAINAGE AREA = 9,347 SF (0.21 ACRES)
 DISTURBED USAGE JURISDICTIONAL DRAINAGE AREA = 2,997 SF (0.07 ACRES)



LIST OF EASEMENTS & ENCUMBRANCES			
EASEMENT/ENCUMBRANCE TYPE	GRANTEE	RECORDED DOCUMENT NO.	RECORDATION DATE
1 PUBLIC UTILITIES, INGRESS AND EGRESS	SAN DIEGO GAS AND ELECTRIC COMPANY	INST. NO. 53881 IN BOOK 1073, PG. 448 O.R.	OCTOBER 14, 1940
2 PUBLIC UTILITIES, INGRESS AND EGRESS, IRRIGATION LINES, ROADS	SAN DIEGO GAS AND ELECTRIC COMPANY	INST. NO. 62310 IN BOOK 6088, PG. 245 O.R.	MAY 4, 1956
3 PUBLIC UTILITIES, INGRESS AND EGRESS	SAN DIEGO GAS AND ELECTRIC COMPANY	INST. NO. 192240 O.R.	OCTOBER 22, 1965
4 DRAINAGE EASEMENT		MAP NO. 12781 AS FILE NO. 91-0078072	FEBRUARY 21, 1991
5 5' PRIVATE DRAINAGE EASEMENT		MAP NO. 12781 AS FILE NO. 91-0078072	FEBRUARY 21, 1991
6 PUBLIC STREET AND DRAINAGE	CITY OF SAN MARCOS	INST. NO. 2004-0999808 O.R.	OCTOBER 21, 2004

*THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION



CITY APPROVED CHANGES				
Δ NO.	DESCRIPTION	AFFECTED SHEETS	EOW APP'D	APP'D BY

ENGINEER OF WORK
 By: Andrew J. Van Loy
 R.C.E.: 64573 exp.: 06/30/2027
 Date: 3/14/2026

RECOMMENDED FOR APPROVAL
 By: Kyrenne Chua, Principal Civil Engineer
 R.C.E.: 91911 exp.: 3/31/2027
 Date: 3/10/26

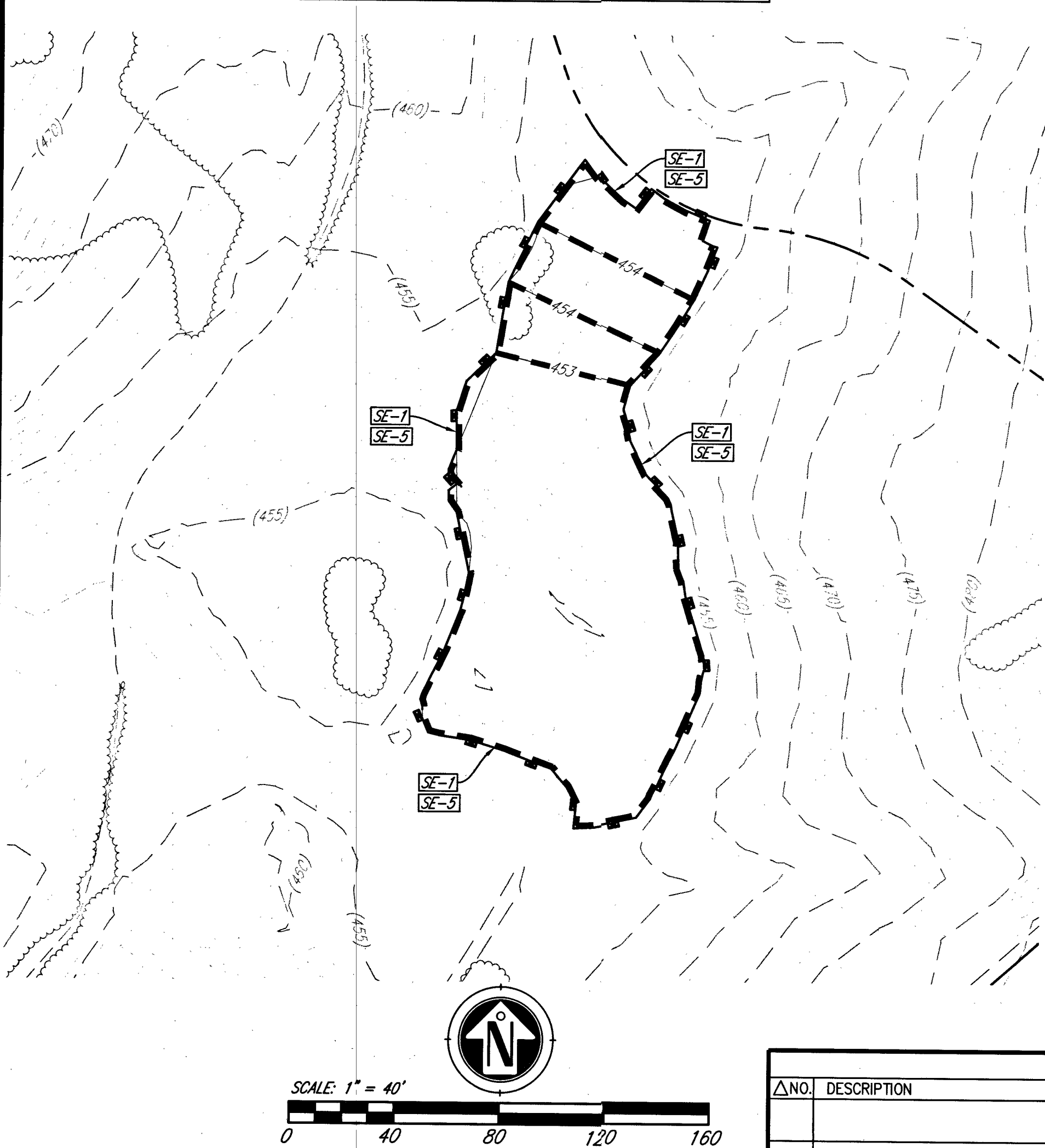
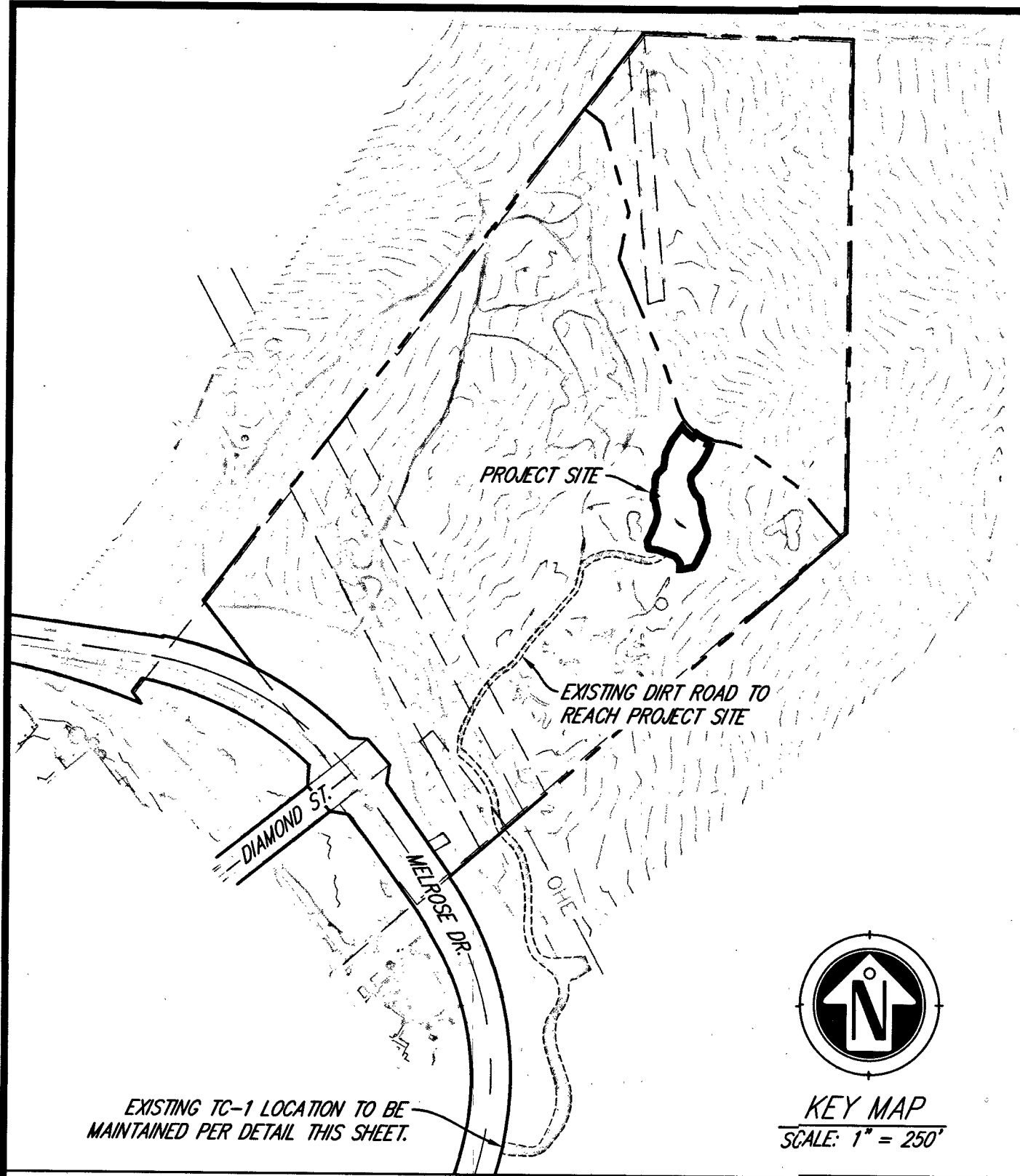
APPROVED FOR CONSTRUCTION
 By: Isaac Etchamendy, City Engineer
 R.C.E.: 81294 exp.: 9/30/2027
 Date: 3/9/26

ENGINEER OF WORK AS-BUILT CERTIFICATE
 ANDREW J. VAN LOY RCE 64573 EXP. 06/30/2027
 DATE: _____

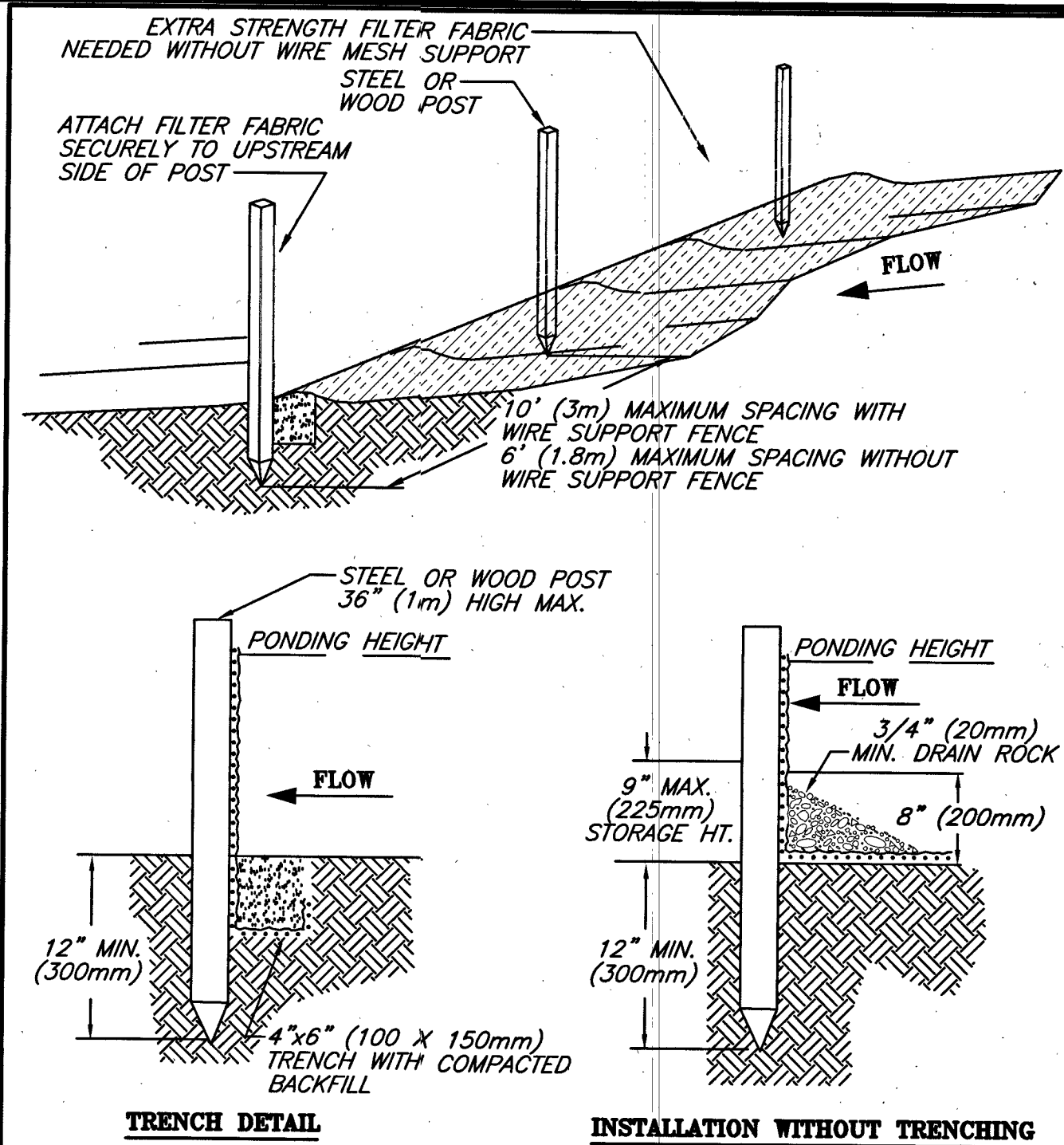
INSPECTED AND RECOMMENDED FOR ACCEPTANCE
 Engineering Inspector _____ Date _____

CITY OF SAN MARCOS
 GRADING PLAN FOR:
JURISDICTIONAL WATER FILL GRADING PLANS
PARCEL 1 OF PM 22146 / APN 223-341-17

City Drawing No. **GP26-00001**
 Sheet 2 of 3



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140 STATE PLACE, ESCONDO, CA 92029
PH (760) 745-8118 FX (760) 745-1820



TRENCH DETAIL

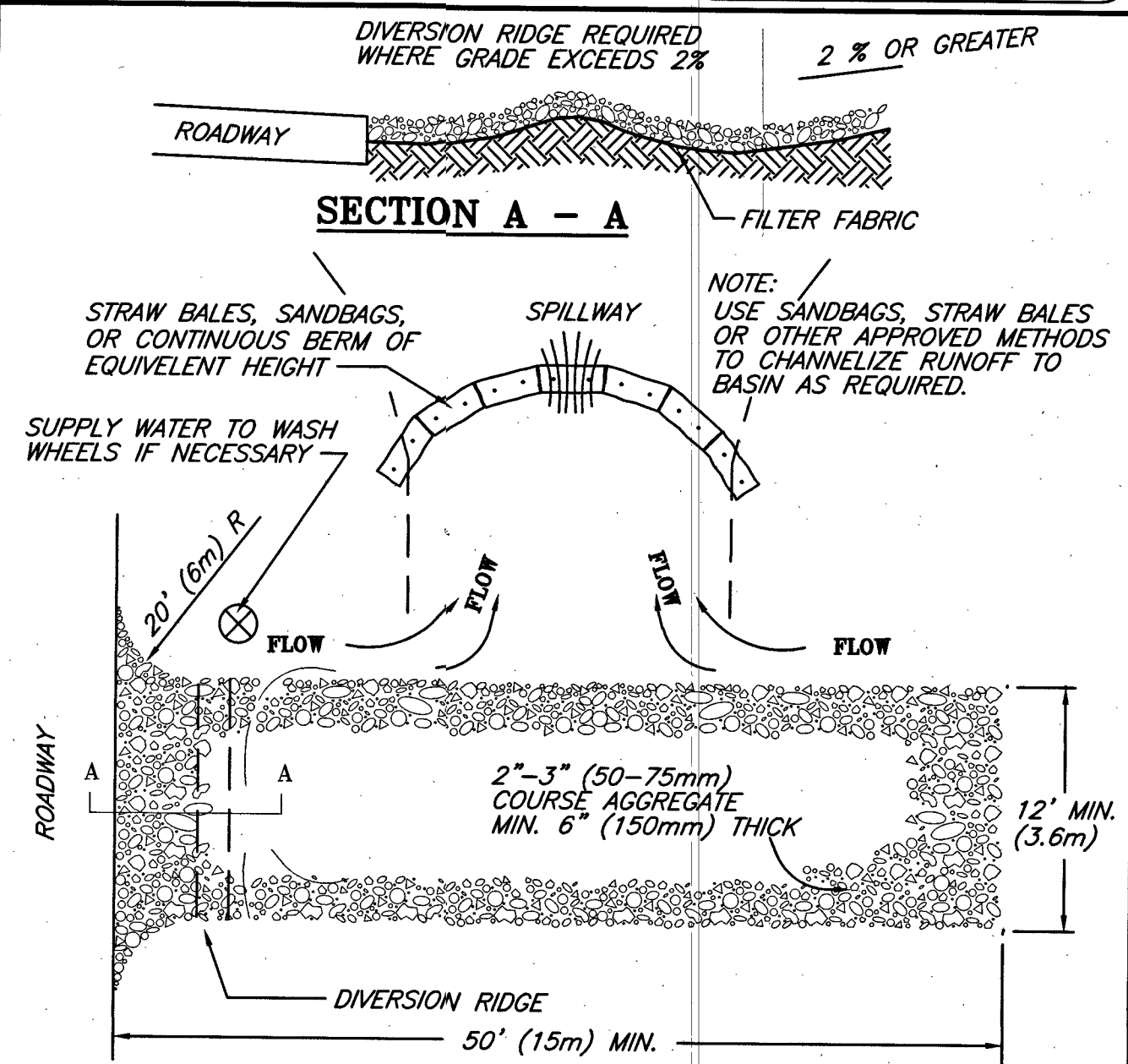
INSTALLATION WITHOUT TRENCHING

NOT TO SCALE

SILT FENCE

NOTES:

- SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
- INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" (225mm) MAXIMUM RECOMMENDED STORAGE HEIGHT.
- REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE TO SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.



PLAN

NOTES:

- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
- WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT

TEMPORARY EROSION CONTROL (PLANTING AND IRRIGATION)

- ALL PERMANENT AND TEMPORARY EROSION CONTROL PLANTING AND IRRIGATION SHALL BE INSTALLED AND MAINTAINED AS REQUIRED IN SECTION 212 OF THE STANDARD SPECIFICATIONS AND THE FOLLOWING.
 - ALL SLOPES THAT ARE GRADED 6:1 (HORIZONTAL TO VERTICAL) OR STEEPER WHEN THAT ARE:
 - THREE FEET OR MORE IN HEIGHT AND ADJACENT TO A PUBLIC WALL OR STREET,
 - ALL SLOPES 4 FEET MORE IN HEIGHT.
 - AREAS GRADED FLATTER THAN 6:1 WHEN ANY OF THE FOLLOWING CONDITIONS EXIST:
 - NOT SCHEDULED FOR IMPROVEMENTS (CONSTRUCTION OR GENERAL LANDSCAPING) WITHIN 60 DAYS OF ROUGH GRADING.
 - IDENTIFIED BY THE PARKS AND RECREATION DIRECTOR AS HIGHLY VISIBLE TO THE PUBLIC, HAVE ANY SPECIAL CONDITION IDENTIFIED BY THE CITY ENGINEER THAT WARRANTS IMMEDIATE TREATMENT.
- HYDROSEEDING AREAS SHALL BE IRRIGATED IN ACCORDANCE WITH THE FOLLOWING CRITERIA:
 - ALL SLOPES THAT ARE GRADED 6:1 OR STEEPER THAT ARE:
 - THREE TO EIGHT FEET IN HEIGHT SHALL BE IRRIGATED BY HAND WATERING FROM QUICK COUPLERS/HOSE BIDS OR A CONVENTIONAL SYSTEM OF LOW PRECIPITATION SPRINKLER HEADS PROVIDING 100% COVERAGE
 - GREATER THAN 8 FEET IN HEIGHT SHALL BE WATERED BY A CONVENTIONAL SYSTEM OF LOW PRECIPITATION SPRINKLER HEADS PROVIDING 100% COVERAGE
 - AREAS SLOPED LESS THAN 6:1 SHALL BE IRRIGATED AS APPROVED BY THE CITY ENGINEER, PRIOR TO THE HYDROSEEDING. THE DEVELOPER SHALL SUBMIT A PROPOSED SCHEME TO PROVIDE IRRIGATION TO THE CITY ENGINEER. THE PROPOSAL SHALL BE SPECIFIC REGARDING THE NUMBERS, TYPES AND COSTS OF THE ELEMENTS OF THE PROPOSED SYSTEM.
 - IRRIGATION SHALL MAINTAIN THE MOISTURE LEVEL OF THE SOIL AT THE OPTIMUM LEVEL FOR THE GROWTH OF THE HYDROSEED GROWTH.
- HYDROSEEDING MIX SHALL CONSIST OF THE FOLLOWING:
 - SEED MIX SHALL CONSIST OF ALL OF THE FOLLOWING:
 - 20 lbs PER ACRE OF ROSE CLOVER
 - 20 lbs PER ACRE OF ZORRO FESCUE
 - 3 lbs PER ACRE OF E. SCHOON C.A. CALIFORNICA
 - 4 lbs PER ACRE OF ACHILLEA MILLEFOLIA
 - 3 lbs PER ACRE OF ALYSSUM (CARPET OF SNOW)
 - 1/2 lb PER ACRE OF DIMORPHOLLOCA
 - ITEMS c,d,e, and f OF THIS SUBSECTION MAY BE OMITTED ON LOCATIONS WHERE THE AREA BEING HYDROSEEDING IS NOT VISIBLE FROM EITHER THE PUBLIC STREET RESIDENTIAL STRUCTURES
 - ITEM 1.1 OF THIS SUBSECTION MUST BE INOCULATED WITH A NITROGEN FIXING BACTERIA AND APPLIED DRY EITHER BY DRILLING OR BROADCASTING BEFORE HYDROSEEDING
 - ALL SEED MATERIALS SHALL BE TRANSPORTED TO THE JOBSITE IN UNOPENED CONTAINERS WITH THE CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE CERTIFICATION TAG ATTACHED TO, OR PRINTED ON SAID CONTAINERS
 - NON-PHYTO-TOXIC WETTING AGENTS MAY BE ADDED TO THE HYDROSEED SLURRY AT THE DISCRETION OF THE CONTRACTOR
- TYPE 1 MULCH APPLIED AT THE RATE OF NO LESS THAN 2000 LBS PER ACRE. TYPE 6 MULCH (STRAW) MAY BE SUBSTITUTED, ALL OR PART, FOR HYDRAULICALLY APPLIED FIBER MATERIAL. WHEN STRAW IS USED IT MUST BE ANCHORED TO THE SLOPE BY MECHANICALLY PUNCHING NO LESS THAN 50% OF THE STRAW INTO THE SOIL.
- FERTILIZER CONSISTING OF AMMONIUM PHOSPHATE SULFATE, 16-20-0, WITH 15% SULPHUR APPLIED AT THE RATE OF 500 LBS PER ACRE.

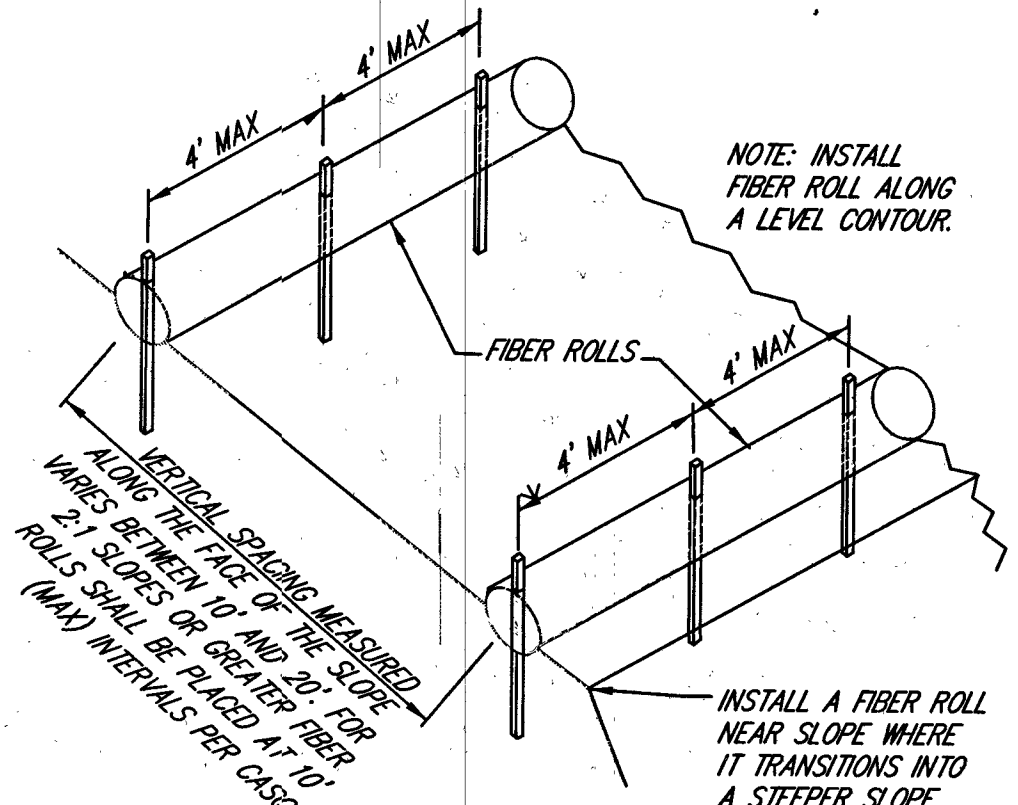
ENGINEER OF WORK	
By: Andrew J. Van Loy	R.C.E.: 64573 exp.: 06/30/2027
Date: 3/4/2026	
RECOMMENDED FOR APPROVAL	
By: Kyrenne Chua, Principal Civil Engineer	R.C.E.: 91911 exp.: 3/31/2027
Date: 3/6/26	
APPROVED FOR CONSTRUCTION	
By: Isaac Etchamendy, City Engineer	R.C.E.: 81294 exp.: 9/30/2027
Date: 3/9/26	
BENCH MARK	
SURVEY MONUMENT 42, 1/2" X 18 REBAR WITH PLASTIC CAP MARKED "WITNESS PT. 15 4088" IN PLASTIC PANEL. LOCATED FROM INTERSECTION OF DIAMOND ST. AND LA COSTA MEADOWS DR., PROCEED NORTHERLY APPROX. 0.1 MILE ON DIAMOND ST. TO END OF PAVEMENT, GO ALONG DIRT ROAD APPROX. 0.1 MILE AT FORK, TURN LEFT AND PROCEED APPROX. 500 FEET. ELEVATION: (517.53 NAVD 88)	

EROSION CONTROL LEGEND (CASQA)

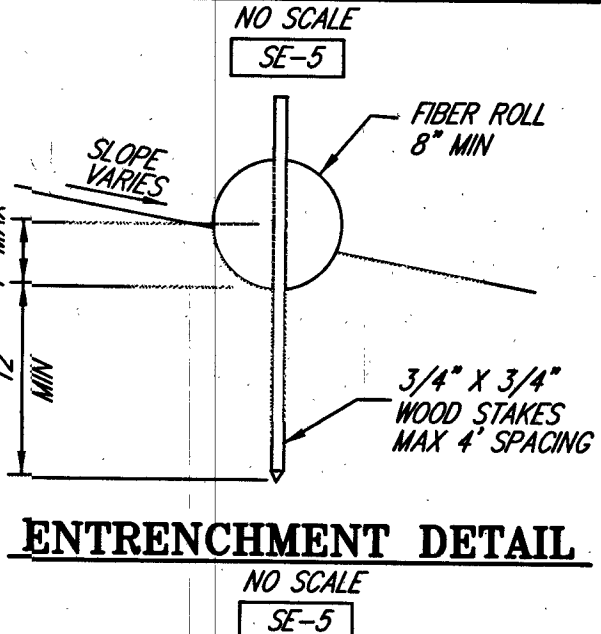
BMP	TITLE	SYMBOL	QUANTITY
SE-1	SILT FENCE		650 LF
SE-5	FIBER ROLL		850 LF
TC-1	STABILIZED CONSTRUCTION ENTRANCE/EXIT		600 SF

EROSION CONTROL NOTES

- IN CASE EMERGENCY WORK IS REQUIRED, CONTACT JEFF JENCO AT PHONE NO. 760-802-8549. AVAILABLE 24-HR.
- EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ON SITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY EROSION CONTROL DEVICES WHEN RAIN IS IMMINENT.
- EROSION CONTROL DEVICES SHOWN ON PLANS SHALL NOT BE MOVED OR MODIFIED WITHOUT THE APPROVAL OF THE ENGINEERING INSPECTOR.
- THE CONTRACTOR SHALL RESTORE ALL EROSION CONTROL DEVICES TO WORKING ORDER, INCLUDING SILT AND OTHER DEBRIS REMOVAL, TO THE SATISFACTION OF THE ENGINEERING INSPECTOR AFTER EACH RUN-OFF PRODUCING RAINFALL.
- THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL MEASURES AS MAY BE REQUIRED BY THE ENGINEERING INSPECTOR DUE TO UNCOMPLETED GRADING OPERATIONS OR UNFORESEEN CIRCUMSTANCES WHICH MAY ARISE.
- THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATERS CREATE A HAZARDOUS CONDITION.
- ALL EROSION CONTROL MEASURES PROVIDED PER THE APPROVED GRADING PLAN AND/OR SWPPP SHALL BE INCORPORATED HEREON.
- GRADED AREAS AROUND THE PROJECT PERIMETER MUST DRAIN AWAY FROM THE FACE OF SLOPE AT THE CONCLUSION OF EACH WORKING DAY.
- ALL REMOVABLE PROTECTIVE EROSION CONTROL DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE FIVE-DAY RAIN PROBABILITY FORECAST EXCEEDS 40%.
- ALL GRAVEL BAGS SHALL BE BURLAP TYPE WITH 3/4" INCH MINIMUM AGGREGATE.
- SHOULD GERMINATION OF HYDROSEEDS SLOPES FAIL TO PROVIDE EFFECTIVE COVERAGE (90%) OF GRADED SLOPES PRIOR TO NOVEMBER 15, THE SLOPES SHALL BE STABILIZED BY PUNCH STRAW.
- FOR PROJECTS COVERED BY STATE SWPPP/MDID, IN ACCORDANCE WITH THE CONSTRUCTIONS ORDER ISSUED BY THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, THE CONTRACTOR'S QUALIFIED SWPPP PRACTITIONER (QSP) SHALL UPDATE AND MAINTAIN THE WATER POLLUTION CONTROL (WPC) PLAN TO ADDRESS UPDATED SITE CONDITIONS OF THE PROJECT.
- THE UPDATED WPC PLAN AND UPDATED SWPPP SHALL BE KEPT ON THE PROJECT SITE AND MADE AVAILABLE TO THE CITY INSPECTOR.
- ADDITIONAL CONSTRUCTIONS BMP'S BEYOND THE ORIGINAL APPROVED SWPPP SHALL BE PROVIDED BY THE CONTRACTOR TO ADDRESS THE SITE CONDITIONS NOT ANTICIPATED. THE QSP SHALL REPORT BMP DEFICIENCIES TO THE CITY INSPECTOR.
- THE QSP SHALL OBTAIN APPROVAL FROM THE CONTRACTOR'S QUALIFIED SWPPP DESIGNER/DEVELOPER FOR ANY CHANGES TO THE WPC.



TYPICAL FIBER ROLL INSTALLATION



ENTRENCHMENT DETAIL

ENGINEER OF WORK AS-BUILT CERTIFICATE	
ANDREW J. VAN LOY	RCE 64573 EXP. 06/30/2027
Date:	

INSPECTED AND RECOMMENDED FOR ACCEPTANCE	
Engineering Inspector	Date

CITY OF SAN MARCOS
EROSION CONTROL PLAN FOR:
JURISDICTIONAL WATER FILL GRADING PLANS
PARCEL 1 OF PM 22146 / APN 223-341-17

City Drawing No.
GP28-00001
Sheet 3 of 3

ATTACHMENT 4

H.6.3 Encroachment Allowance for Regional PCCSYA WMAA Map

When an applicant uses the regional PCCSYA map from WMAA to define onsite CCSYAs an encroachment allowance of up to 5% within each POC drainage boundary is allowed.

The following provides the supporting rational for 5% encroachment:

- Step 1. S_p has to be greater than 0.5, based on current understanding of risks to receiving waters arising from changes in sediment production (SCCWRP Technical Report 605, 2010).
- Step 2. Estimated S_p (Equation H.8.11) $= 0.7 * SY_{RUSLE} + 0.3 * SY_{NHD} = 0.7 * 0.42 + 0.3 * 1 = 0.59$
 - a. Based on RUSLE analysis conducted during Regional WMAA the GLUs mapped as PCCSYAs contribute 42% of the bed sediment yield (i.e. $SY_{RUSLE} = 0.42$)
 - b. Disturbance to NHDPlus channels are protected through 401 water quality certifications issued by the RWQCB, so it is assumed that $SY_{NHD} = 1$
- Step 3. Dividing the S_p estimate from Step 2 by the required S_p in Step 1 provides the factor of safety that is currently implicit in the regional WMAA PCCSYA map $= 0.59/0.5 = 1.18$ or 18% factor of safety
- Step 4. The remaining factor of safety after accounting for the proposed encroachment of 5% $= 18\% - 5\% = 13\%$

H.7 DOWNSTREAM SYSTEM SENSITIVITY TO COARSE SEDIMENT

If an applicant has identified onsite and/or upstream PCCSYAs and elects to perform additional optional analyses to refine the PCCSYA designation, the guidance presented below should be followed. Protection of critical coarse sediment yield areas is a necessary element of hydromodification management because coarse sediment supply is as much an issue for causing erosive conditions to receiving streams as are accelerated flows. However, not all downstream systems warrant preservation of coarse sediment supply nor all source areas need to be protected. The following guidance shall be used to refine PCCSYA designations:

- Depositional Analysis (Appendix H.7.1)
- Threshold Channel Analysis (Appendix H.7.2)
- Coarse Sediment Source Area Verification (Appendix H.7.3)

H.7.1 Depositional Analysis

Areas identified as PCCSYAs may be removed from consideration if it is demonstrated that these sources are deposited into existing systems prior to reaching the first downstream unlined water of the state. Systems resulting in deposition may include existing natural sinks, existing structural BMPs,

Appendix H: Guidance for Investigation Potential Critical Coarse Sediment Yield Areas

existing hardened MS4 systems, or other existing similar features. Applicants electing to perform depositional analysis to refine PCCSYA mapping must meet the following criteria to qualify for exemption from CCSYA designation:

- The existing hardened MS4 system that is being analyzed should be upstream of the first downstream unlined waters of the state; **and**
- The peak velocity from the discrete 2-year, 24-hour runoff event for the existing hardened MS4 system that is being analyzed is less than three feet per second.

The three feet per second criteria is consistent with the recommended minimum velocity for storm and sanitary sewers in ASCE Manual of Engineering Practice No. 37 (ASCE, 1970).

In limited scenarios, applicant may have the option to establish site specific minimum self-cleansing velocity using Equation H.7-1 or other appropriate equations instead of using the default three feet per second criteria. This site specific analysis must be documented in the SWQMP and the City Engineer has the discretion to request additional analysis prior to approving a site specific minimum self-cleansing velocity. If an applicant chooses to establish a site specific minimum self-cleansing velocity for refinement, then the applicant must design any new bypass hardened conveyance systems proposed by the project to meet the site specific criteria.

Equation H.7-1: Minimum Self Cleansing Velocity

$$V = \frac{1.486}{n} R^{1/6} [B(s_g - 1)D_g]^{1/2}$$

Where:

V = minimum self-cleansing velocity (ft/sec)

R = hydraulic radius (ft)

n = Manning's roughness coefficient (unitless)

B = constant equal to 0.04 for clean granular particles (unitless)

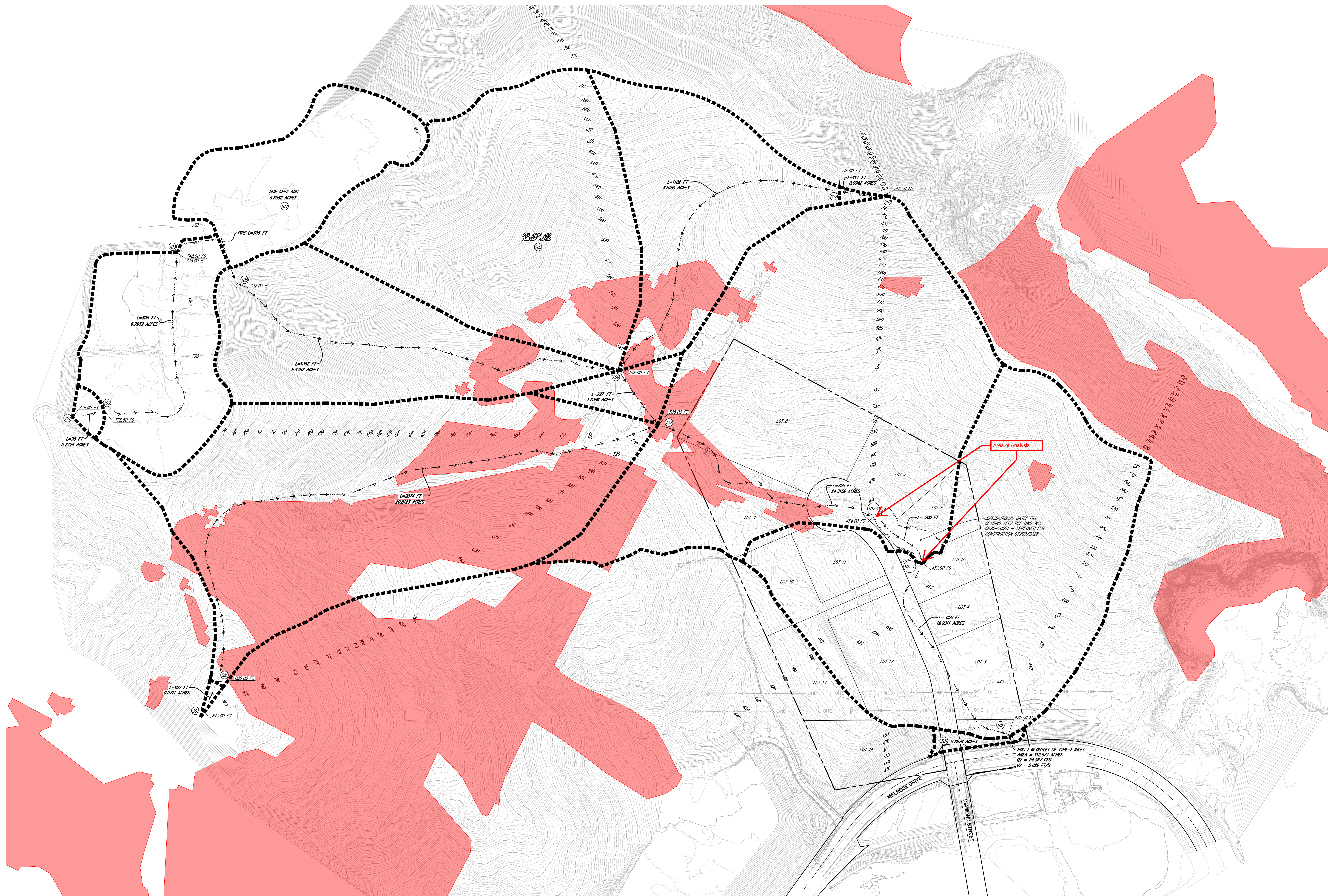
sg = specific gravity of sediment particle (unitless): Use 2.65

Dg = sediment particle diameter (inches): Use 0.20 in

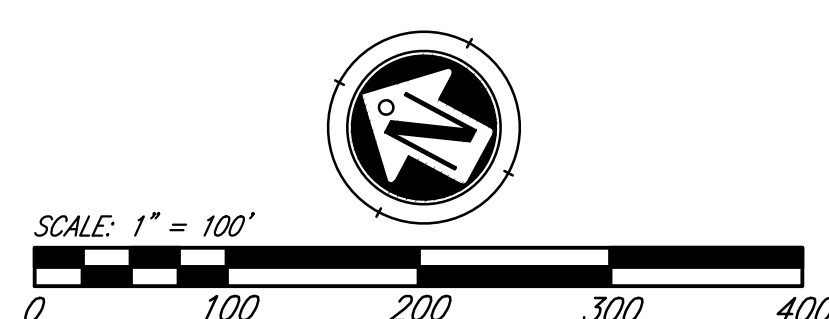
H.7.2 Threshold Channel Analysis

A threshold channel is a stream channel in which channel boundary material has no significant movement during the design flow. If there is no movement of bed load in the stream channel, then it is

ATTACHMENT 5



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LEGEND-ABBREVIATIONS:

- INDICATES TRIBUTARY AREA BOUNDARY
- FLOW LINE
- L = 66 FT FLOW DISTANCE
- ⊙ NODE NUMBER (REFERENCED IN COMPUTER PRINT OUT)
- 3.69 ACRES TOTAL AREA IN SUB TRIBUTARY AREA
- POENTIAL CRITICAL SOURCE AREA
- SEDIMENT YIELD AREAS

**PRE-DEVELOPMENT
HYDROLOGY MAP FOR:
TENTATIVE PARCEL MAP FOR
APNs 223-341-03 THROUGH 15 & 16**

ATTACHMENT 6

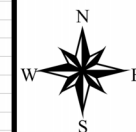
County of San Diego Hydrology Manual



Rainfall Isoplethals

2 Year Rainfall Event - 6 Hours

----- Isopleth (inches)

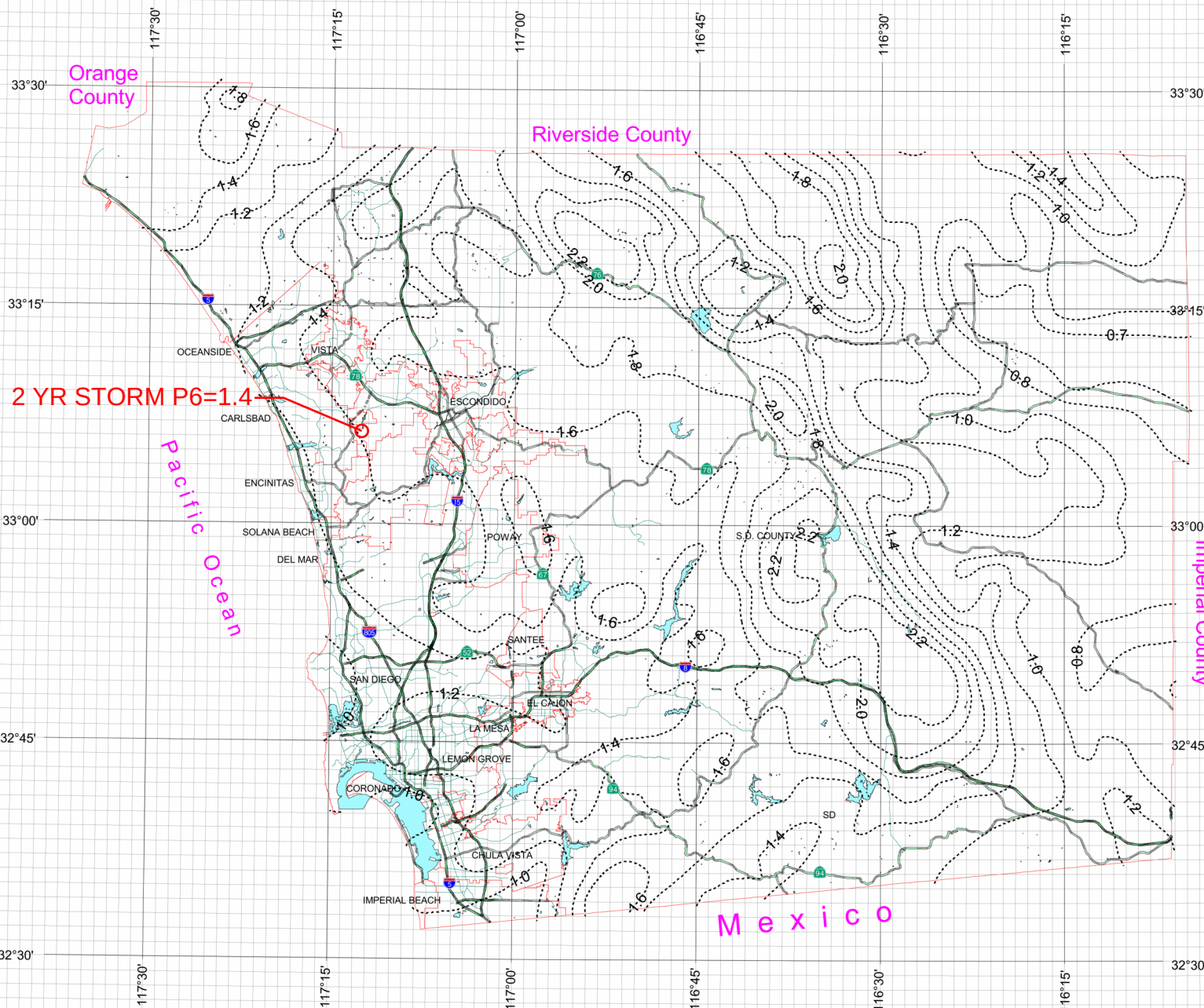


3 0 3 Miles

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County of San Diego Hydrology Manual

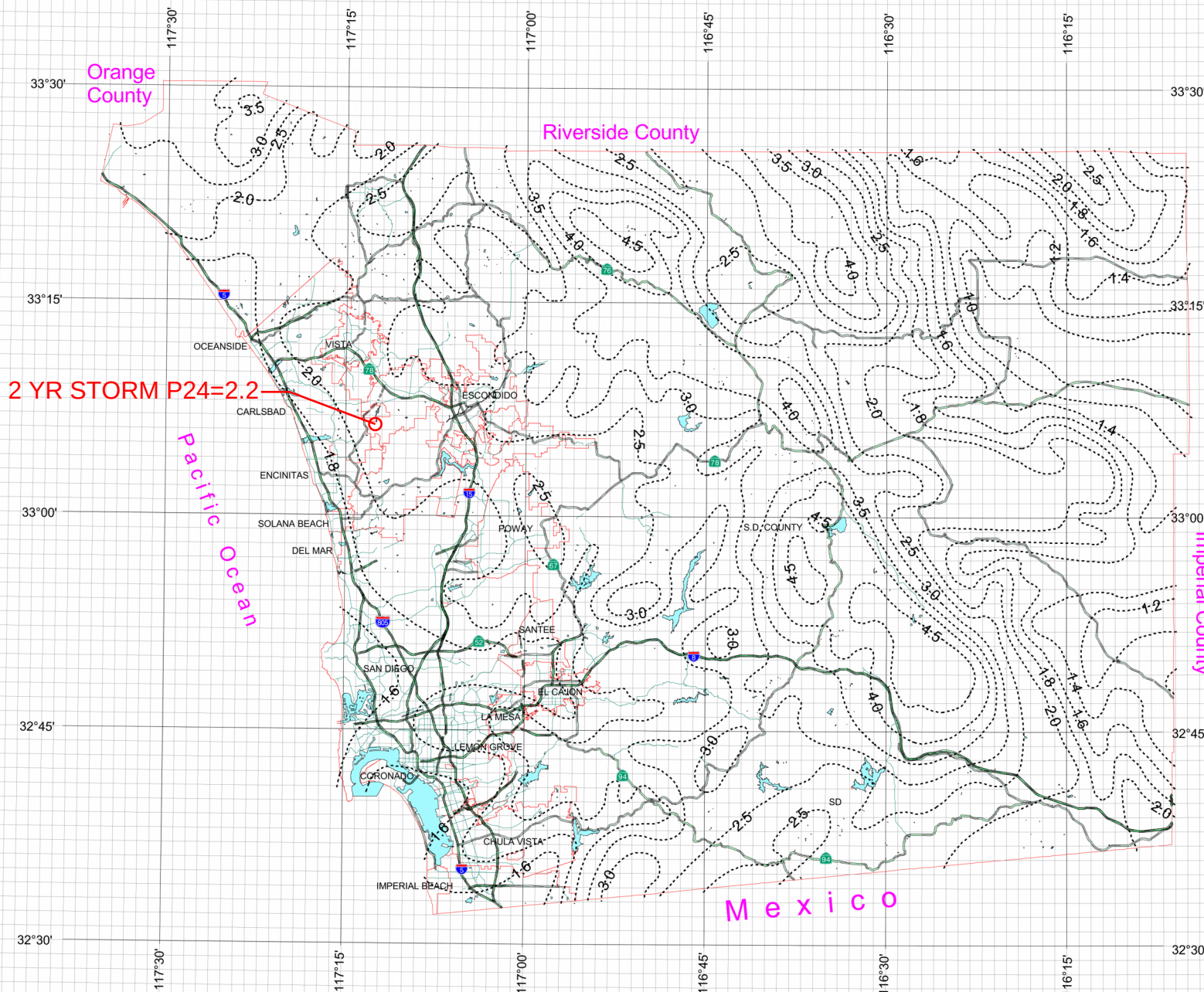


Rainfall Isoplethals

2 Year Rainfall Event - 24 Hours

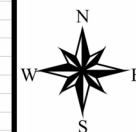
----- Isopleth (inches)

2 YR STORM P24=2.2



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3 0 3 Miles

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```

1
2 San Diego County Rational Hydrology Program
3
4 CIVILCADD/CIVILDESIGN Engineering Software, (c)1991-2019 Version 9.1
5
6 Rational method hydrology program based on
7 San Diego County Flood Control Division 2003 hydrology manual
8 Rational Hydrology Study Date: 03/11/26
9 -----
10 PRE-DEVELOPMENT
11 POC-1
12 2 YR STORM
13
14 -----
15 ***** Hydrology Study Control Information *****
16 -----
17
18
19
20 Program License Serial Number 6332
21
22 -----
23 Rational hydrology study storm event year is 2.0
24 English (in-lb) input data Units used
25
26 Map data precipitation entered:
27 6 hour, precipitation(inches) = 1.400
28 24 hour precipitation(inches) = 2.200
29 P6/P24 = 63.6%
30 San Diego hydrology manual 'C' values used
31
32
33 +-----+
34 Process from Point/Station 101.000 to Point/Station 102.000
35 **** INITIAL AREA EVALUATION ****
36 -----
37 Decimal fraction soil group A = 0.000
38 Decimal fraction soil group B = 0.000
39 Decimal fraction soil group C = 0.000
40 Decimal fraction soil group D = 1.000
41 [MEDIUM DENSITY RESIDENTIAL ]
42 (4.3 DU/A or Less )
43 Impervious value, Ai = 0.300
44 Sub-Area C Value = 0.520
45 Initial subarea total flow distance = 98.000 (Ft.)
46 Highest elevation = 776.000 (Ft.)
47 Lowest elevation = 775.500 (Ft.)
48 Elevation difference = 0.500 (Ft.) Slope = 0.510 %
49 INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
50 The maximum overland flow distance is 50.00 (Ft)
51 for the top area slope value of 0.51 %, in a development type of
52 4.3 DU/A or Less
53 In Accordance With Figure 3-3
54 Initial Area Time of Concentration = 9.24 minutes
55  $TC = [1.8 * (1.1 - C) * distance(Ft.)^{.5} / (% slope^{(1/3)})]$ 
56  $TC = [1.8 * (1.1 - 0.5200) * (50.000^{.5}) / (0.510^{(1/3)})] = 9.24$ 
57 The initial area total distance of 98.00 (Ft.) entered leaves a
58 remaining distance of 48.00 (Ft.)
59 Using Figure 3-4, the travel time for this distance is 1.17 minutes
60 for a distance of 48.00 (Ft.) and a slope of 0.51 %
61 with an elevation difference of 0.24 (Ft.) from the end of the top area
62  $Tt = [11.9 * length(Mi)^3 / (elevation change(Ft.))]^{.385} * 60 (min/hr)$ 
63 = 1.174 Minutes
64  $Tt = [(11.9 * 0.0091^3) / (0.24)]^{.385} = 1.17$ 
65 Total initial area Ti = 9.24 minutes from Figure 3-3 formula plus
66 1.17 minutes from the Figure 3-4 formula = 10.41 minutes
67 Rainfall intensity (I) = 2.298 (In/Hr) for a 2.0 year storm
68 Effective runoff coefficient used for area (Q=KCIA) is C = 0.520
69 Subarea runoff = 0.325 (CFS)

```

```

70 Total initial stream area = 0.272 (Ac.)
71
72
73 ++++++
74 Process from Point/Station 102.000 to Point/Station 103.000
75 **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
76
77 -----
78 Estimated mean flow rate at midpoint of channel = 3.774 (CFS)
79 Depth of flow = 0.187 (Ft.), Average velocity = 4.301 (Ft/s)
80 ***** Irregular Channel Data *****
81 -----
82 Information entered for subchannel number 1 :
83 Point number 'X' coordinate 'Y' coordinate
84 1 0.00 0.50
85 2 25.00 0.00
86 3 25.10 0.50
87 4 30.00 0.51
88 Manning's 'N' friction factor = 0.013
89 -----
90 Sub-Channel flow = 3.774 (CFS)
91 ' ' flow top width = 9.385 (Ft.)
92 ' ' velocity = 4.302 (Ft/s)
93 ' ' area = 0.877 (Sq.Ft)
94 ' ' Froude number = 2.479
95
96 Upstream point elevation = 775.500 (Ft.)
97 Downstream point elevation = 748.000 (Ft.)
98 Flow length = 806.000 (Ft.)
99 Travel time = 3.12 min.
100 Time of concentration = 13.54 min.
101 Depth of flow = 0.187 (Ft.)
102 Average velocity = 4.301 (Ft/s)
103 Total irregular channel flow = 3.774 (CFS)
104 Irregular channel normal depth above invert elev. = 0.187 (Ft.)
105 Average velocity of channel(s) = 4.301 (Ft/s)
106 Adding area flow to channel
107 Rainfall intensity (I) = 1.940 (In/Hr) for a 2.0 year storm
108 Decimal fraction soil group A = 0.000
109 Decimal fraction soil group B = 0.000
110 Decimal fraction soil group C = 0.000
111 Decimal fraction soil group D = 1.000
112 [MEDIUM DENSITY RESIDENTIAL ]
113 (4.3 DU/A or Less )
114 Impervious value, Ai = 0.300
115 Sub-Area C Value = 0.520
116 Rainfall intensity = 1.940 (In/Hr) for a 2.0 year storm
117 Effective runoff coefficient used for total area
118 (Q=KCIA) is C = 0.520 CA = 3.675
119 Subarea runoff = 6.806 (CFS) for 6.796 (Ac.)
120 Total runoff = 7.131 (CFS) Total area = 7.068 (Ac.)
121 Depth of flow = 0.237 (Ft.), Average velocity = 5.043 (Ft/s)
122
123 ++++++
124 Process from Point/Station 104.000 to Point/Station 104.000
125 **** SUBAREA FLOW ADDITION ****
126
127 -----
128 Rainfall intensity (I) = 1.940 (In/Hr) for a 2.0 year storm
129 Decimal fraction soil group A = 0.000
130 Decimal fraction soil group B = 0.000
131 Decimal fraction soil group C = 0.000
132 Decimal fraction soil group D = 1.000
133 [MEDIUM DENSITY RESIDENTIAL ]
134 (4.3 DU/A or Less )
135 Impervious value, Ai = 0.300
136 Sub-Area C Value = 0.520
137 Time of concentration = 13.54 min.
138 Rainfall intensity = 1.940 (In/Hr) for a 2.0 year storm
139 Effective runoff coefficient used for total area

```

```

139      (Q=KCIA) is C = 0.520   CA =      6.694
140      Subarea runoff =      5.858(CFS) for      5.806(Ac.)
141      Total runoff =      12.989(CFS)   Total area =      12.874(Ac.)
142
143
144      ++++++
145      Process from Point/Station      104.000 to Point/Station      105.000
146      **** PIPEFLOW TRAVEL TIME (Program estimated size) ****
147
148      Upstream point/station elevation =      738.000(Ft.)
149      Downstream point/station elevation =      732.000(Ft.)
150      Pipe length =      305.00(Ft.) Slope =      0.0197   Manning's N = 0.013
151      No. of pipes = 1   Required pipe flow =      12.989(CFS)
152      Nearest computed pipe diameter =      18.00(In.)
153      Calculated individual pipe flow =      12.989(CFS)
154      Normal flow depth in pipe =      13.13(In.)
155      Flow top width inside pipe =      16.00(In.)
156      Critical Depth =      16.21(In.)
157      Pipe flow velocity =      9.41(Ft/s)
158      Travel time through pipe =      0.54 min.
159      Time of concentration (TC) =      14.08 min.
160
161
162      ++++++
163      Process from Point/Station      105.000 to Point/Station      106.000
164      **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
165
166      Estimated mean flow rate at midpoint of channel =      14.563(CFS)
167      Depth of flow =      0.246(Ft.), Average velocity =      5.568(Ft/s)
168      ***** Irregular Channel Data *****
169
170      -----
171      Information entered for subchannel number 1 :
172      Point number      'X' coordinate      'Y' coordinate
173      1                  0.00                  18.00
174      2                  45.00                  0.00
175      3                  55.00                  0.00
176      4                  100.00                 18.00
177      Manning's 'N' friction factor =      0.040
178
179      -----
180      Sub-Channel flow =      14.563(CFS)
181      '      '      flow top width =      11.232(Ft.)
182      '      '      velocity=      5.568(Ft/s)
183      '      '      area =      2.615(Sq.Ft)
184      '      '      Froude number =      2.034
185
186      Upstream point elevation =      732.000(Ft.)
187      Downstream point elevation =      516.000(Ft.)
188      Flow length =      1362.000(Ft.)
189      Travel time =      4.08 min.
190      Time of concentration =      18.15 min.
191      Depth of flow =      0.246(Ft.)
192      Average velocity =      5.568(Ft/s)
193      Total irregular channel flow =      14.563(CFS)
194      Irregular channel normal depth above invert elev. =      0.246(Ft.)
195      Average velocity of channel(s) =      5.568(Ft/s)
196      Adding area flow to channel
197      Rainfall intensity (I) =      1.606(In/Hr) for a      2.0 year storm
198      Decimal fraction soil group A = 0.000
199      Decimal fraction soil group B = 0.000
200      Decimal fraction soil group C = 0.000
201      Decimal fraction soil group D = 1.000
202      [UNDISTURBED NATURAL TERRAIN      ]
203      (Permanent Open Space      )
204      Impervious value, Ai = 0.000
205      Sub-Area C Value = 0.350
206      Rainfall intensity =      1.606(In/Hr) for a      2.0 year storm
207      Effective runoff coefficient used for total area
208      (Q=KCIA) is C = 0.448   CA =      10.012
209      Subarea runoff =      3.087(CFS) for      9.478(Ac.)

```



```

208 Total runoff =      16.076(CFS) Total area =      22.352(Ac.)
209 Depth of flow =    0.261(Ft.), Average velocity =    5.776(Ft/s)
210
211
212 ++++++
213 Process from Point/Station      106.000 to Point/Station      106.000
214 **** CONFLUENCE OF MINOR STREAMS ****
215
216 -----
217 Along Main Stream number: 1 in normal stream number 1
218 Stream flow area =      22.352(Ac.)
219 Runoff from this stream =      16.076(CFS)
220 Time of concentration =    18.15 min.
221 Rainfall intensity =      1.606(In/Hr)
222
223 ++++++
224 Process from Point/Station      201.000 to Point/Station      202.000
225 **** INITIAL AREA EVALUATION ****
226
227 -----
228 Decimal fraction soil group A = 0.000
229 Decimal fraction soil group B = 0.000
230 Decimal fraction soil group C = 0.000
231 Decimal fraction soil group D = 1.000
232 [UNDISTURBED NATURAL TERRAIN
233 (Permanent Open Space )
234 Impervious value, Ai = 0.000
235 Sub-Area C Value = 0.350
236 Initial subarea total flow distance = 117.000(Ft.)
237 Highest elevation = 748.000(Ft.)
238 Lowest elevation = 716.000(Ft.)
239 Elevation difference = 32.000(Ft.) Slope = 27.350 %
240 INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
241 The maximum overland flow distance is 100.00 (Ft)
242 for the top area slope value of 27.35 %, in a development type of
243 Permanent Open Space
244 In Accordance With Figure 3-3
245 Initial Area Time of Concentration = 4.48 minutes
246 TC = [1.8*(1.1-C)*distance(Ft.)^.5]/(% slope^(1/3)]
247 TC = [1.8*(1.1-0.3500)*( 100.000^.5)/( 27.350^(1/3)]= 4.48
248 The initial area total distance of 117.00 (Ft.) entered leaves a
249 remaining distance of 17.00 (Ft.)
250 Using Figure 3-4, the travel time for this distance is 0.11 minutes
251 for a distance of 17.00 (Ft.) and a slope of 27.35 %
252 with an elevation difference of 4.65(Ft.) from the end of the top area
253 Tt = [11.9*length(Mi)^3]/(elevation change(Ft.))]^.385 *60(min/hr)
254 = 0.114 Minutes
255 Tt=[(11.9*0.0032^3)/( 4.65)]^.385= 0.11
256 Total initial area Ti = 4.48 minutes from Figure 3-3 formula plus
257 0.11 minutes from the Figure 3-4 formula = 4.59 minutes
258 Calculated TC of 4.595 minutes is less than 5 minutes,
259 resetting TC to 5.0 minutes for rainfall intensity calculations
260 Rainfall intensity (I) = 3.689(In/Hr) for a 2.0 year storm
261 Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
262 Subarea runoff = 0.121(CFS)
263 Total initial stream area = 0.094(Ac.)
264
265 ++++++
266 Process from Point/Station      202.000 to Point/Station      106.000
267 **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
268
269 -----
270 Estimated mean flow rate at midpoint of channel = 3.658(CFS)
271 Depth of flow = 0.104(Ft.), Average velocity = 3.431(Ft/s)
272 ***** Irregular Channel Data *****
273 -----
274 Information entered for subchannel number 1 :
275 Point number 'X' coordinate 'Y' coordinate
276 1 0.00 18.00
277 2 45.00 0.00

```

```

277      3      55.00      0.00
278      4      100.00     18.00
279 Manning's 'N' friction factor = 0.040
280 -----
281 Sub-Channel flow = 3.658 (CFS)
282 ' ' flow top width = 10.520 (Ft.)
283 ' ' velocity = 3.431 (Ft/s)
284 ' ' area = 1.066 (Sq.Ft)
285 ' ' Froude number = 1.900
286
287 Upstream point elevation = 716.000 (Ft.)
288 Downstream point elevation = 516.000 (Ft.)
289 Flow length = 1102.000 (Ft.)
290 Travel time = 5.35 min.
291 Time of concentration = 9.95 min.
292 Depth of flow = 0.104 (Ft.)
293 Average velocity = 3.431 (Ft/s)
294 Total irregular channel flow = 3.658 (CFS)
295 Irregular channel normal depth above invert elev. = 0.104 (Ft.)
296 Average velocity of channel(s) = 3.431 (Ft/s)
297 Adding area flow to channel
298 Rainfall intensity (I) = 2.367 (In/Hr) for a 2.0 year storm
299 Decimal fraction soil group A = 0.000
300 Decimal fraction soil group B = 0.000
301 Decimal fraction soil group C = 0.000
302 Decimal fraction soil group D = 1.000
303 [UNDISTURBED NATURAL TERRAIN ]
304 (Permanent Open Space )
305 Impervious value, Ai = 0.000
306 Sub-Area C Value = 0.350
307 Rainfall intensity = 2.367 (In/Hr) for a 2.0 year storm
308 Effective runoff coefficient used for total area
309 (Q=KCIA) is C = 0.350 CA = 3.014
310 Subarea runoff = 7.013 (CFS) for 8.518 (Ac.)
311 Total runoff = 7.134 (CFS) Total area = 8.612 (Ac.)
312 Depth of flow = 0.155 (Ft.), Average velocity = 4.437 (Ft/s)
313
314
315 ++++++
316 Process from Point/Station 203.000 to Point/Station 203.000
317 **** SUBAREA FLOW ADDITION ****
318
319 Rainfall intensity (I) = 2.367 (In/Hr) for a 2.0 year storm
320 Decimal fraction soil group A = 0.000
321 Decimal fraction soil group B = 0.000
322 Decimal fraction soil group C = 0.000
323 Decimal fraction soil group D = 1.000
324 [UNDISTURBED NATURAL TERRAIN ]
325 (Permanent Open Space )
326 Impervious value, Ai = 0.000
327 Sub-Area C Value = 0.350
328 Time of concentration = 9.95 min.
329 Rainfall intensity = 2.367 (In/Hr) for a 2.0 year storm
330 Effective runoff coefficient used for total area
331 (Q=KCIA) is C = 0.350 CA = 8.389
332 Subarea runoff = 12.721 (CFS) for 15.356 (Ac.)
333 Total runoff = 19.856 (CFS) Total area = 23.968 (Ac.)
334
335
336 ++++++
337 Process from Point/Station 106.000 to Point/Station 106.000
338 **** CONFLUENCE OF MINOR STREAMS ****
339
340 Along Main Stream number: 1 in normal stream number 2
341 Stream flow area = 23.968 (Ac.)
342 Runoff from this stream = 19.856 (CFS)
343 Time of concentration = 9.95 min.
344 Rainfall intensity = 2.367 (In/Hr)
345 Summary of stream data:

```

```

346
347 Stream      Flow rate      TC      Rainfall Intensity
348   No.      (CFS)      (min)      (In/Hr)
349
350
351 1          16.076      18.15      1.606
352 2          19.856      9.95      2.367
353 Qmax(1) =
354     1.000 *      1.000 *      16.076) +
355     0.678 *      1.000 *      19.856) + =      29.546
356 Qmax(2) =
357     1.000 *      0.548 *      16.076) +
358     1.000 *      1.000 *      19.856) + =      28.664
359
360 Total of 2 streams to confluence:
361 Flow rates before confluence point:
362     16.076      19.856
363 Maximum flow rates at confluence using above data:
364     29.546      28.664
365 Area of streams before confluence:
366     22.352      23.968
367 Results of confluence:
368 Total flow rate =      29.546 (CFS)
369 Time of concentration =      18.154 min.
370 Effective stream area after confluence =      46.320 (Ac.)
371
372
373 ++++++
374 Process from Point/Station      106.000 to Point/Station      107.000
375 **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
376
377 -----
378 Estimated mean flow rate at midpoint of channel =      29.595 (CFS)
379 Depth of flow =      0.531 (Ft.), Average velocity =      4.925 (Ft/s)
380 ***** Irregular Channel Data *****
381
382 -----
383 Information entered for subchannel number 1 :
384 Point number      'X' coordinate      'Y' coordinate
385 1          0.00      18.00
386 2          45.00      0.00
387 3          55.00      0.00
388 4          100.00      18.00
389 Manning's 'N' friction factor =      0.040
390
391 -----
392 Sub-Channel flow =      29.595 (CFS)
393 '      '      flow top width =      12.653 (Ft.)
394 '      '      velocity =      4.925 (Ft/s)
395 '      '      area =      6.009 (Sq.Ft)
396 '      '      Froude number =      1.259
397
398 Upstream point elevation =      516.000 (Ft.)
399 Downstream point elevation =      505.000 (Ft.)
400 Flow length =      227.000 (Ft.)
401 Travel time =      0.77 min.
402 Time of concentration =      18.92 min.
403 Depth of flow =      0.531 (Ft.)
404 Average velocity =      4.925 (Ft/s)
405 Total irregular channel flow =      29.595 (CFS)
406 Irregular channel normal depth above invert elev. =      0.531 (Ft.)
407 Average velocity of channel(s) =      4.925 (Ft/s)
408 Adding area flow to channel
409 Rainfall intensity (I) =      1.563 (In/Hr) for a      2.0 year storm
410 Decimal fraction soil group A = 0.000
411 Decimal fraction soil group B = 0.000
412 Decimal fraction soil group C = 0.000
413 Decimal fraction soil group D = 1.000
414 [UNDISTURBED NATURAL TERRAIN      ]
415 (Permanent Open Space      )
416 Impervious value, Ai = 0.000
417 Sub-Area C Value = 0.350

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415 The area added to the existing stream causes a
416 a lower flow rate of Q = 29.444(CFS)
417 therefore the upstream flow rate of Q = 29.546(CFS) is being used
418 Rainfall intensity = 1.563(In/Hr) for a 2.0 year storm
419 Effective runoff coefficient used for total area
420 (Q=KCIA) is C = 0.396 CA = 18.834
421 Subarea runoff = 0.000(CFS) for 1.239(Ac.)
422 Total runoff = 29.546(CFS) Total area = 47.559(Ac.)
423 Depth of flow = 0.530(Ft.), Average velocity = 4.922(Ft/s)
424
425
426 ++++++
427 Process from Point/Station 107.000 to Point/Station 107.000
428 **** CONFLUENCE OF MINOR STREAMS ****
429
430 Along Main Stream number: 1 in normal stream number 1
431 Stream flow area = 47.559(Ac.)
432 Runoff from this stream = 29.546(CFS)
433 Time of concentration = 18.92 min.
434 Rainfall intensity = 1.563(In/Hr)
435
436
437 ++++++
438 Process from Point/Station 301.000 to Point/Station 302.000
439 **** INITIAL AREA EVALUATION ****
440
441 Decimal fraction soil group A = 0.000
442 Decimal fraction soil group B = 0.000
443 Decimal fraction soil group C = 0.000
444 Decimal fraction soil group D = 1.000
445 [UNDISTURBED NATURAL TERRAIN ]
446 (Permanent Open Space )
447 Impervious value, Ai = 0.000
448 Sub-Area C Value = 0.350
449 Initial subarea total flow distance = 102.000(Ft.)
450 Highest elevation = 810.000(Ft.)
451 Lowest elevation = 808.000(Ft.)
452 Elevation difference = 2.000(Ft.) Slope = 1.961 %
453 INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
454 The maximum overland flow distance is 85.00 (Ft)
455 for the top area slope value of 1.96 %, in a development type of
456 Permanent Open Space
457 In Accordance With Figure 3-3
458 Initial Area Time of Concentration = 9.94 minutes
459 TC = [1.8*(1.1-C)*distance(Ft.)^0.5]/(% slope^(1/3))
460 TC = [1.8*(1.1-0.3500)*( 85.000^0.5)/( 1.961^(1/3))]= 9.94
461 The initial area total distance of 102.00 (Ft.) entered leaves a
462 remaining distance of 17.00 (Ft.)
463 Using Figure 3-4, the travel time for this distance is 0.31 minutes
464 for a distance of 17.00 (Ft.) and a slope of 1.96 %
465 with an elevation difference of 0.33(Ft.) from the end of the top area
466 Tt = [11.9*length(Mi)^3]/(elevation change(Ft.))^0.385 *60(min/hr)
467 = 0.314 Minutes
468 Tt=[(11.9*0.0032^3)/( 0.33)]^0.385= 0.31
469 Total initial area Ti = 9.94 minutes from Figure 3-3 formula plus
470 0.31 minutes from the Figure 3-4 formula = 10.26 minutes
471 Rainfall intensity (I) = 2.320(In/Hr) for a 2.0 year storm
472 Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
473 Subarea runoff = 0.058(CFS)
474 Total initial stream area = 0.071(Ac.)
475
476
477 ++++++
478 Process from Point/Station 302.000 to Point/Station 107.000
479 **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
480
481 Estimated mean flow rate at midpoint of channel = 5.704(CFS)
482 Depth of flow = 0.145(Ft.), Average velocity = 3.809(Ft/s)
483 ***** Irregular Channel Data *****

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484 -----
485 Information entered for subchannel number 1 :
486 Point number      'X' coordinate      'Y' coordinate
487     1              0.00              18.00
488     2              45.00              0.00
489     3              55.00              0.00
490     4             100.00              18.00
491 Manning's 'N' friction factor =    0.040
492 -----
493 Sub-Channel flow =    5.704 (CFS)
494 '      ' flow top width =    10.723 (Ft.)
495 '      ' velocity =    3.809 (Ft/s)
496 '      ' area =    1.497 (Sq.Ft)
497 '      ' Froude number =    1.796
498
499 Upstream point elevation =    808.000 (Ft.)
500 Downstream point elevation =    505.000 (Ft.)
501 Flow length =    2074.000 (Ft.)
502 Travel time =    9.08 min.
503 Time of concentration =    19.33 min.
504 Depth of flow =    0.145 (Ft.)
505 Average velocity =    3.809 (Ft/s)
506 Total irregular channel flow =    5.704 (CFS)
507 Irregular channel normal depth above invert elev. =    0.145 (Ft.)
508 Average velocity of channel(s) =    3.809 (Ft/s)
509 Adding area flow to channel
510 Rainfall intensity (I) =    1.542 (In/Hr) for a    2.0 year storm
511 Decimal fraction soil group A =    0.000
512 Decimal fraction soil group B =    0.000
513 Decimal fraction soil group C =    0.000
514 Decimal fraction soil group D =    1.000
515 [UNDISTURBED NATURAL TERRAIN
516 (Permanent Open Space )
517 Impervious value, Ai =    0.000
518 Sub-Area C Value =    0.350
519 Rainfall intensity =    1.542 (In/Hr) for a    2.0 year storm
520 Effective runoff coefficient used for total area
521 (Q=KCIA) is C =    0.350 CA =    7.309
522 Subarea runoff =    11.212 (CFS) for    20.812 (Ac.)
523 Total runoff =    11.269 (CFS) Total area =    20.883 (Ac.)
524 Depth of flow =    0.217 (Ft.), Average velocity =    4.931 (Ft/s)
525
526
527 +-----+
528 Process from Point/Station    107.000 to Point/Station    107.000
529 **** CONFLUENCE OF MINOR STREAMS ****
530
531 -----
532 Along Main Stream number: 1 in normal stream number 2
533 Stream flow area =    20.883 (Ac.)
534 Runoff from this stream =    11.269 (CFS)
535 Time of concentration =    19.33 min.
536 Rainfall intensity =    1.542 (In/Hr)
537 Summary of stream data:
538
539 Stream    Flow rate    TC    Rainfall Intensity
540 No.        (CFS)        (min)        (In/Hr)
541
542 1         29.546        18.92        1.563
543 2         11.269        19.33        1.542
544 Qmax(1) =
545 1.000 *    1.000 *    29.546) +
546 1.000 *    0.979 *    11.269) + =    40.575
547 Qmax(2) =
548 0.986 *    1.000 *    29.546) +
549 1.000 *    1.000 *    11.269) + =    40.408
550
551 Total of 2 streams to confluence:
552 Flow rates before confluence point:

```

```

553         29.546         11.269
554 Maximum flow rates at confluence using above data:
555         40.575         40.408
556 Area of streams before confluence:
557         47.559         20.883
558 Results of confluence:
559 Total flow rate =         40.575 (CFS)
560 Time of concentration =         18.922 min.
561 Effective stream area after confluence =         68.442 (Ac.)
562
563
564 ++++++
565 Process from Point/Station         107.000 to Point/Station         107.500
566 **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
567
568 -----
569 Estimated mean flow rate at midpoint of channel =         45.746 (CFS)
570 Depth of flow =         0.619 (Ft.), Average velocity =         6.395 (Ft/s)
571 ***** Irregular Channel Data *****
572 -----
573 Information entered for subchannel number 1 :
574 Point number      'X' coordinate      'Y' coordinate
575         1             0.00             18.00
576         2             45.00             0.00
577         3             55.00             0.00
578         4            100.00             18.00
579 Manning's 'N' friction factor =         0.040
580 -----
581 Sub-Channel flow =         45.746 (CFS)
582 '      '      flow top width =         13.097 (Ft.)
583 '      '      velocity=         6.395 (Ft/s)
584 '      '      area =         7.153 (Sq.Ft)
585 '      '      Froude number =         1.525
586
587 Upstream point elevation =         505.000 (Ft.)
588 Downstream point elevation =         454.000 (Ft.)
589 Flow length =         750.000 (Ft.)
590 Travel time =         1.95 min.
591 Time of concentration =         20.88 min.
592 Depth of flow =         0.619 (Ft.)
593 Average velocity =         6.395 (Ft/s)
594 Total irregular channel flow =         45.746 (CFS)
595 Irregular channel normal depth above invert elev. =         0.619 (Ft.)
596 Average velocity of channel(s) =         6.395 (Ft/s)
597 Adding area flow to channel
598 Rainfall intensity (I) =         1.467 (In/Hr) for a         2.0 year storm
599 Decimal fraction soil group A = 0.000
600 Decimal fraction soil group B = 0.000
601 Decimal fraction soil group C = 0.000
602 Decimal fraction soil group D = 1.000
603 [UNDISTURBED NATURAL TERRAIN          ]
604 (Permanent Open Space      )
605 Impervious value, Ai = 0.000
606 Sub-Area C Value = 0.350
607 Rainfall intensity =         1.467 (In/Hr) for a         2.0 year storm
608 Effective runoff coefficient used for total area
609 (Q=KCIA) is C = 0.374 CA =         34.654
610 Subarea runoff =         10.272 (CFS) for         24.316 (Ac.)
611 Total runoff =         50.848 (CFS) Total area =         92.758 (Ac.)
612 Depth of flow =         0.659 (Ft.), Average velocity =         6.630 (Ft/s)
613
614 ++++++
615 Process from Point/Station         107.500 to Point/Station         107.500
616 **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
617
618 -----
619 Depth of flow =         0.443 (Ft.), Average velocity =         1.512 (Ft/s)
620 ***** Irregular Channel Data *****
621 -----
622 Information entered for subchannel number 1 :

```

Area of
Analysis


```

622 Point number      'X' coordinate      'Y' coordinate
623     1              0.00              5.00
624     2             10.00              0.00
625     3             85.00              0.00
626     4             95.00              5.00
627 Manning's 'N' friction factor = 0.040
628 -----
629 Sub-Channel flow = 50.848 (CFS)
630 ' ' flow top width = 76.772 (Ft.)
631 ' ' velocity= 1.512 (Ft/s)
632 ' ' area = 33.624 (Sq.Ft)
633 ' ' Froude number = 0.403
634
635 Upstream point elevation = 454.000 (Ft.)
636 Downstream point elevation = 453.000 (Ft.)
637 Flow length = 200.000 (Ft.)
638 Travel time = 2.20 min.
639 Time of concentration = 23.08 min.
640 Depth of flow = 0.443 (Ft.)
641 Average velocity = 1.512 (Ft/s)
642 Total irregular channel flow = 50.848 (CFS)
643 Irregular channel normal depth above invert elev. = 0.443 (Ft.)
644 Average velocity of channel(s) = 1.512 (Ft/s)
645
646
647 +-----+
648 Process from Point/Station 107.500 to Point/Station 108.000
649 **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
650
651 -----
652 Estimated mean flow rate at midpoint of channel = 52.672 (CFS)
653 Depth of flow = 0.767 (Ft.), Average velocity = 5.766 (Ft/s)
654 ***** Irregular Channel Data *****
655 -----
656 Information entered for subchannel number 1 :
657 Point number      'X' coordinate      'Y' coordinate
658     1              0.00              18.00
659     2             45.00              0.00
660     3             55.00              0.00
661     4            100.00             18.00
662 Manning's 'N' friction factor = 0.040
663 -----
664 Sub-Channel flow = 52.672 (CFS)
665 ' ' flow top width = 13.833 (Ft.)
666 ' ' velocity= 5.766 (Ft/s)
667 ' ' area = 9.136 (Sq.Ft)
668 ' ' Froude number = 1.250
669
670 Upstream point elevation = 453.000 (Ft.)
671 Downstream point elevation = 425.000 (Ft.)
672 Flow length = 650.000 (Ft.)
673 Travel time = 1.88 min.
674 Time of concentration = 24.96 min.
675 Depth of flow = 0.767 (Ft.)
676 Average velocity = 5.766 (Ft/s)
677 Total irregular channel flow = 52.672 (CFS)
678 Irregular channel normal depth above invert elev. = 0.767 (Ft.)
679 Average velocity of channel(s) = 5.766 (Ft/s)
680 Adding area flow to channel
681 Rainfall intensity (I) = 1.308 (In/Hr) for a 2.0 year storm
682 Decimal fraction soil group A = 0.000
683 Decimal fraction soil group B = 0.000
684 Decimal fraction soil group C = 0.000
685 Decimal fraction soil group D = 1.000
686 [UNDISTURBED NATURAL TERRAIN ]
687 (Permanent Open Space )
688 Impervious value, Ai = 0.000
689 Sub-Area C Value = 0.350
690 Rainfall intensity = 1.308 (In/Hr) for a 2.0 year storm
691 Effective runoff coefficient used for total area

```

Area of
Analysis

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691      (Q=KCIA) is C = 0.369   CA =      41.630
692      Subarea runoff =      3.588 (CFS) for      19.931 (Ac.)
693      Total runoff =      54.436 (CFS)   Total area =      112.689 (Ac.)
694      Depth of flow =      0.781 (Ft.), Average velocity =      5.829 (Ft/s)
695
696
697      ++++++
698      Process from Point/Station      501.000 to Point/Station      108.000
699      **** SUBAREA FLOW ADDITION ****
700
701      Rainfall intensity (I) =      1.308 (In/Hr) for a      2.0 year storm
702      Decimal fraction soil group A = 0.000
703      Decimal fraction soil group B = 0.000
704      Decimal fraction soil group C = 0.000
705      Decimal fraction soil group D = 1.000
706      [UNDISTURBED NATURAL TERRAIN      ]
707      (Permanent Open Space      )
708      Impervious value, Ai = 0.000
709      Sub-Area C Value = 0.350
710      Time of concentration =      24.96 min.
711      Rainfall intensity =      1.308 (In/Hr) for a      2.0 year storm
712      Effective runoff coefficient used for total area
713      (Q=KCIA) is C = 0.369   CA =      41.731
714      Subarea runoff =      0.132 (CFS) for      0.288 (Ac.)
715      Total runoff =      54.567 (CFS)   Total area =      112.977 (Ac.)
716      End of computations, total study area =      112.977 (Ac.)
717
718
719

```

Attachment 2D:

Flow Control Facility Design

BMP Sizing Spreadsheet V3.1

Project Name:	Ascend Town Homes
Project Applicant:	Mike Levin
Jurisdiction:	San Marcos
Parcel (APN):	223-341-17
Hydrologic Unit:	Carlsbad
Rain Gauge:	Oceanside
Total Project Area (sf):	657,033
Channel Susceptibility:	High

BMP Sizing Spreadsheet V3.1			
Project Name:	Ascend Town Homes	Hydrologic Unit:	Carlsbad
Project Applicant:	Mike Levin	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	657,033
Parcel (APN):	223-341-17	Low Flow Threshold:	0.1Q2
BMP Name:	BMP-1	BMP Type:	Biofiltration
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.025

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Surface Area	Surface Area (SF)
imp paving	25,526	D	Flat	Concrete	1.0	0.07	1787
permeable	16,320	D	Flat	Landscape	0.1	0.07	114
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	41,846					0	0
						Minimum BMP Size	1901
						Proposed BMP Size*	1915

* Assumes standard configuration

Surface Ponding Depth	6.00	in
Bioretention Soil Media Depth	18.00	in
Filter Coarse	6.00	in
Gravel Storage Layer Depth	12	in
Underdrain Offset	3.0	in

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual.

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.

Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.1			
Project Name:	Ascend Town Homes	Hydrologic Unit:	Carlsbad
Project Applicant:	Mike Levin	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	657,033
Parcel (APN):	223-341-17	Low Flow Threshold:	0.1Q2
BMP Name:	BMP-2.1 - BIOSWALE	BMP Type:	Biofiltration
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.025

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Surface Area	Surface Area (SF)
imp paving	30,550	D	Flat	Concrete	1.0	0.07	2139
permeable	16,450	D	Flat	Landscape	0.1	0.07	115
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	47,000					0	0
						Minimum BMP Size	2254
						Proposed BMP Size*	2260

* Assumes standard configuration

Surface Ponding Depth	6.00	in
Bioretention Soil Media Depth	18.00	in
Filter Coarse	6.00	in
Gravel Storage Layer Depth	12	in
Underdrain Offset	3.0	in

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual.

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

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Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.1			
Project Name:	Ascend Town Homes	Hydrologic Unit:	Carlsbad
Project Applicant:	Mike Levin	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	657,033
Parcel (APN):	223-341-17	Low Flow Threshold:	0.1Q2
BMP Name:	BMP-2 BASIN	BMP Type:	Biofiltration
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.025

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Surface Area	Surface Area (SF)
imp paving	192,845	D	Flat	Concrete	1.0	0.07	13499
permeable	150,840	D	Flat	Landscape	0.1	0.07	1056
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	343,685					0	0
						Minimum BMP Size	14555
						Proposed BMP Size*	8052

* Assumes standard configuration

Surface Ponding Depth	6.00	in
Bioretention Soil Media Depth	18.00	in
Filter Coarse	6.00	in
Gravel Storage Layer Depth	12	in
Underdrain Offset	3.0	in

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual.

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.

Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.1			
Project Name:	Ascend Town Homes	Hydrologic Unit:	Carlsbad
Project Applicant:	Mike Levin	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	657,033
Parcel (APN):	223-341-17	Low Flow Threshold:	0.1Q2
BMP Name:	BMP-2.2 TANKS	BMP Type:	Cistern
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	NA

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Volume	Volume (CF)
permeable	343,685	D	Flat	Landscape	0.1	0.12	4124
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	343,685					Minimum BMP Size	4124
						Proposed BMP Size*	11136
Standard Cistern Depth (Overflow Elevation)						3.5	ft
Provided Cistern Depth (Overflow Elevation)						3.5	ft
Minimum Required Cistern Footprint)						1178	CF

* Assumes standard configuration

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual.

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.

Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.1			
Project Name:	Ascend Town Homes	Hydrologic Unit:	Carlsbad
Project Applicant:	Mike Levin	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	657,033
Parcel (APN):	223-341-17	Low Flow Threshold:	0.1Q2
BMP Name:	BMP-3	BMP Type:	Biofiltration
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.025

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Surface Area	Surface Area (SF)
imp paving	42,251	D	Flat	Concrete	1.0	0.07	2958
permeable	22,750	D	Flat	Landscape	0.1	0.07	159
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	65,001					0	0
						Minimum BMP Size	3117
						Proposed BMP Size*	5518

* Assumes standard configuration

Surface Ponding Depth	6.00	in
Bioretention Soil Media Depth	18.00	in
Filter Coarse	6.00	in
Gravel Storage Layer Depth	12	in
Underdrain Offset	3.0	in

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual.

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.

Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.1			
Project Name:	Ascend Town Homes	Hydrologic Unit:	Carlsbad
Project Applicant:	Mike Levin	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	657,033
Parcel (APN):	223-341-17	Low Flow Threshold:	0.1Q2
BMP Name:	BMP-4	BMP Type:	Cistern
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	NA

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Volume	Volume (CF)
imp paving	15,396	D	Flat	Concrete	1.0	0.12	1848
permeable	9,437	D	Flat	Landscape	0.1	0.12	113
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	24,833						
						Minimum BMP Size	1961
						Proposed BMP Size*	1998
Standard Cistern Depth (Overflow Elevation)						3.5	ft
Provided Cistern Depth (Overflow Elevation)						3.5	ft
Minimum Required Cistern Footprint)						560	CF

* Assumes standard configuration

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual.

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.

Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.1			
Project Name:	Ascend Town Homes	Hydrologic Unit:	Carlsbad
Project Applicant:	Mike Levin	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	657,033
Parcel (APN):	223-341-17	Low Flow Threshold:	0.1Q2
BMP Name:	BMP-5	BMP Type:	Biofiltration
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.025

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Surface Area	Surface Area (SF)
imp paving	23,264	D	Flat	Concrete	1.0	0.07	1628
permeable	12,526	D	Flat	Landscape	0.1	0.07	88
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	35,790					0	0
						Minimum BMP Size	1716
						Proposed BMP Size*	2409

* Assumes standard configuration

Surface Ponding Depth	6.00	in
Bioretention Soil Media Depth	18.00	in
Filter Coarse	6.00	in
Gravel Storage Layer Depth	12	in
Underdrain Offset	3.0	in

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual.

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.

Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.1			
Project Name:	Ascend Town Homes	Hydrologic Unit:	Carlsbad
Project Applicant:	Mike Levin	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	657,033
Parcel (APN):	223-341-17	Low Flow Threshold:	0.1Q2
BMP Name	BMP-5	BMP Type:	Biofiltration

[illegible]

3.25	0.047	0.72	0.96
Max Orifice Head (feet)	Max Tot. Allowable Orifice Flow (cfs)	Max Tot. Allowable Orifice Area (in²)	Max Orifice Diameter (in)

0.028	0.029	0.44	0.750
Average outflow during surface drawdown	Max Orifice Outflow	Actual Orifice Area	Selected Orifice Diameter
(cfs)	(cfs)	(in ²)	(in)

Drawdown (Hrs)	12.1
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BMP Sizing Spreadsheet V3.1			
Project Name:	Ascend Town Homes	Hydrologic Unit:	Carlsbad
Project Applicant:	Mike Levin	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	657,033
Parcel (APN):	223-341-17	Low Flow Threshold:	0.1Q2
BMP Name:	BMP-6	BMP Type:	Biofiltration
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.025

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Surface Area	Surface Area (SF)
imp paving	50,309	D	Flat	Concrete	1.0	0.07	3522
permeable	27,090	D	Flat	Landscape	0.1	0.07	190
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	77,399					0	0
						Minimum BMP Size	3711
						Proposed BMP Size*	5344

* Assumes standard configuration

Surface Ponding Depth	6.00	in
Bioretention Soil Media Depth	18.00	in
Filter Coarse	6.00	in
Gravel Storage Layer Depth	12	in
Underdrain Offset	3.0	in

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual.

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.

Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.1			
Project Name:	Ascend Town Homes	Hydrologic Unit:	Carlsbad
Project Applicant:	Mike Levin	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	657,033
Parcel (APN):	223-341-17	Low Flow Threshold:	0.1Q2
BMP Name	BMP-6	BMP Type:	Biofiltration

[illegible]

3.25	0.101	1.55	1.41
Max Orifice Head (feet)	Max Tot. Allowable Orifice Flow (cfs)	Max Tot. Allowable Orifice Area (in²)	Max Orifice Diameter (in)

0.049	0.051	0.79	1.000
Average outflow during surface drawdown	Max Orifice Outflow	Actual Orifice Area	Selected Orifice Diameter
(cfs)	(cfs)	(in ²)	(in)

Drawdown (Hrs)	15.1
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File Name: P:\Projects\San Diego County\139942 - HMP Implementation Assistance\GIS\HMF GIS\Basins.mxd

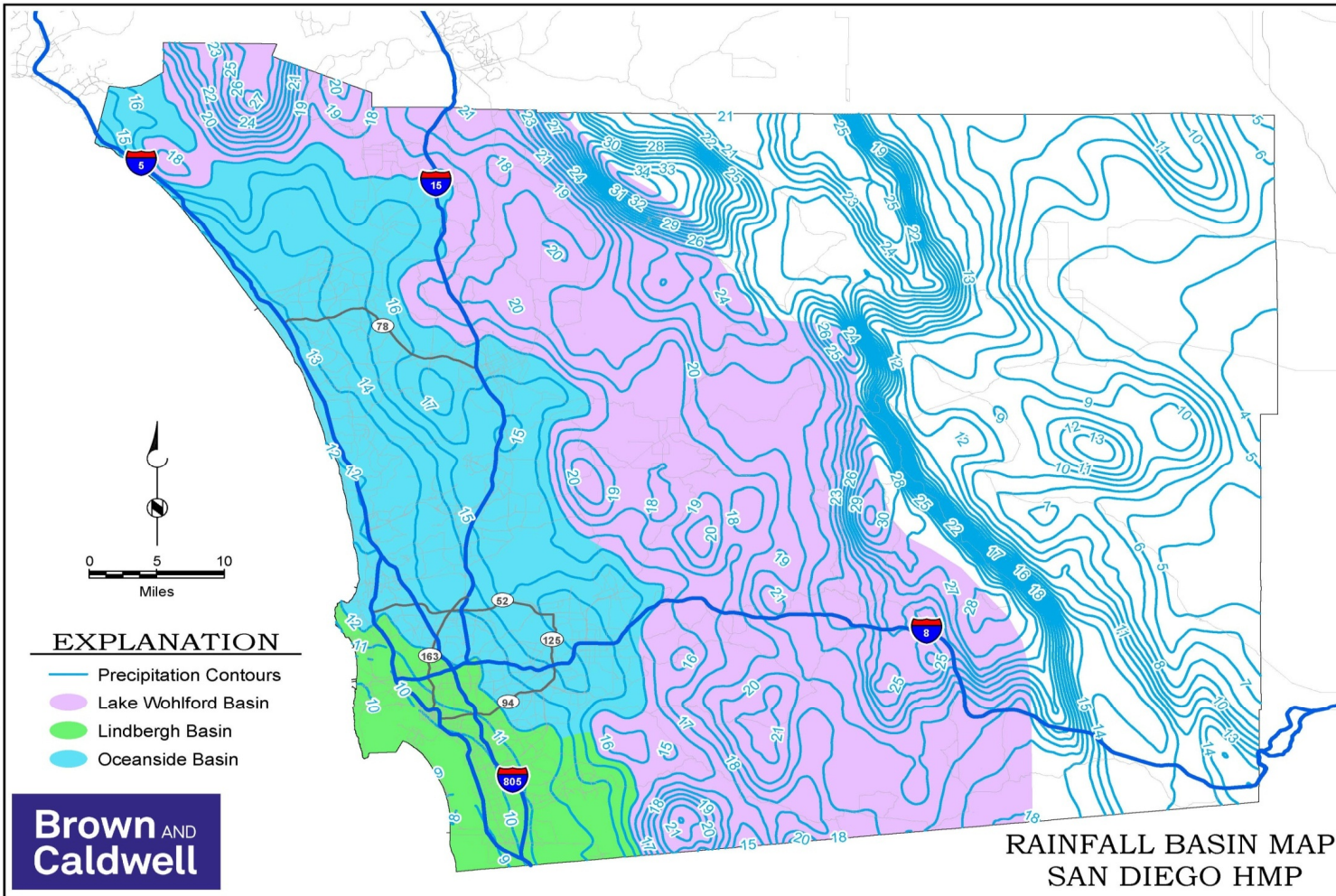


Table G.2-3: Sizing Factors for Hydromodification Flow Control Infiltration BMPs Designed Using Sizing Factor Method

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A
0.1Q2	A	Flat	Lindbergh	0.055
0.1Q2	A	Moderate	Lindbergh	0.055
0.1Q2	A	Steep	Lindbergh	0.055
0.1Q2	B	Flat	Lindbergh	0.045
0.1Q2	B	Moderate	Lindbergh	0.045
0.1Q2	B	Steep	Lindbergh	0.045
0.1Q2	C	Flat	Lindbergh	0.035
0.1Q2	C	Moderate	Lindbergh	0.035
0.1Q2	C	Steep	Lindbergh	0.035
0.1Q2	D	Flat	Lindbergh	0.03
0.1Q2	D	Moderate	Lindbergh	0.03
0.1Q2	D	Steep	Lindbergh	0.03
0.1Q2	A	Flat	Oceanside	0.06
0.1Q2	A	Moderate	Oceanside	0.06
0.1Q2	A	Steep	Oceanside	0.06
0.1Q2	B	Flat	Oceanside	0.05
0.1Q2	B	Moderate	Oceanside	0.05
0.1Q2	B	Steep	Oceanside	0.05
0.1Q2	C	Flat	Oceanside	0.05
0.1Q2	C	Moderate	Oceanside	0.05
0.1Q2	C	Steep	Oceanside	0.045
0.1Q2	D	Flat	Oceanside	0.035
0.1Q2	D	Moderate	Oceanside	0.035
0.1Q2	D	Steep	Oceanside	0.035
0.1Q2	A	Flat	Lake Wohlford	0.085
0.1Q2	A	Moderate	Lake Wohlford	0.085
0.1Q2	A	Steep	Lake Wohlford	0.085
0.1Q2	B	Flat	Lake Wohlford	0.07

0.1Q2	B	Moderate	Lake Wohlford	0.07
0.1Q2	B	Steep	Lake Wohlford	0.07
0.1Q2	C	Flat	Lake Wohlford	0.055
0.1Q2	C	Moderate	Lake Wohlford	0.055
0.1Q2	C	Steep	Lake Wohlford	0.055
0.1Q2	D	Flat	Lake Wohlford	0.04
0.1Q2	D	Moderate	Lake Wohlford	0.04
0.1Q2	D	Steep	Lake Wohlford	0.04

Table G.2-4: Sizing Factors for Hydromodification Flow Control Biofiltration with Partial Retention Designed Using Sizing Factor Method					
Lower Flow Threshold	Soil Group	Slope	below low orifice inv	Rain Gauge	A
0.1Q2	A	Flat	18	Lindbergh	0.08
0.1Q2	A	Moderate	18	Lindbergh	0.08
0.1Q2	A	Steep	18	Lindbergh	0.08
0.1Q2	B	Flat	18	Lindbergh	0.065
0.1Q2	B	Moderate	18	Lindbergh	0.065
0.1Q2	B	Steep	18	Lindbergh	0.06
0.1Q2	C	Flat	6	Lindbergh	0.05
0.1Q2	C	Moderate	6	Lindbergh	0.05
0.1Q2	C	Steep	6	Lindbergh	0.05
0.1Q2	D	Flat	3	Lindbergh	0.05
0.1Q2	D	Moderate	3	Lindbergh	0.05
0.1Q2	D	Steep	3	Lindbergh	0.05
0.1Q2	A	Flat	18	Oceanside	0.08
0.1Q2	A	Moderate	18	Oceanside	0.075
0.1Q2	A	Steep	18	Oceanside	0.075
0.1Q2	B	Flat	18	Oceanside	0.07
0.1Q2	B	Moderate	18	Oceanside	0.07
0.1Q2	B	Steep	18	Oceanside	0.07
0.1Q2	C	Flat	6	Oceanside	0.07
0.1Q2	C	Moderate	6	Oceanside	0.07

0.1Q ₂	C	Steep	6	Oceanside	0.07
0.1Q ₂	D	Flat	3	Oceanside	0.07
0.1Q ₂	D	Moderate	3	Oceanside	0.07
0.1Q ₂	D	Steep	3	Oceanside	0.07
0.1Q ₂	A	Flat	18	Lake Wohlford	0.11
0.1Q ₂	A	Moderate	18	Lake Wohlford	0.11
0.1Q ₂	A	Steep	18	Lake Wohlford	0.105
0.1Q ₂	B	Flat	18	Lake Wohlford	0.09
0.1Q ₂	B	Moderate	18	Lake Wohlford	0.085
0.1Q ₂	B	Steep	18	Lake Wohlford	0.085
0.1Q ₂	C	Flat	6	Lake Wohlford	0.065
0.1Q ₂	C	Moderate	6	Lake Wohlford	0.065
0.1Q ₂	C	Steep	6	Lake Wohlford	0.065
0.1Q ₂	D	Flat	3	Lake Wohlford	0.06
0.1Q ₂	D	Moderate	3	Lake Wohlford	0.06
0.1Q ₂	D	Steep	3	Lake Wohlford	0.06

Table G.2-5: Sizing Factors for Hydromodification Flow Control Biofiltration BMPs Designed Using Sizing Factor Method				
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A
0.1Q ₂	A	Flat	Lindbergh	0.32
0.1Q ₂	A	Moderate	Lindbergh	0.3
0.1Q ₂	A	Steep	Lindbergh	0.285
0.1Q ₂	B	Flat	Lindbergh	0.105
0.1Q ₂	B	Moderate	Lindbergh	0.1
0.1Q ₂	B	Steep	Lindbergh	0.095
0.1Q ₂	C	Flat	Lindbergh	0.055
0.1Q ₂	C	Moderate	Lindbergh	0.05
0.1Q ₂	C	Steep	Lindbergh	0.05
0.1Q ₂	D	Flat	Lindbergh	0.05
0.1Q ₂	D	Moderate	Lindbergh	0.05
0.1Q ₂	D	Steep	Lindbergh	0.05
0.1Q ₂	A	Flat	Oceanside	0.15
0.1Q ₂	A	Moderate	Oceanside	0.14
0.1Q ₂	A	Steep	Oceanside	0.135

0.1Q2	B	Flat	Oceanside	0.085
0.1Q2	B	Moderate	Oceanside	0.085
0.1Q2	B	Steep	Oceanside	0.085
0.1Q2	C	Flat	Oceanside	0.075
0.1Q2	C	Moderate	Oceanside	0.075
0.1Q2	C	Steep	Oceanside	0.075
0.1Q2	D	Flat	Oceanside	0.07
0.1Q2	D	Moderate	Oceanside	0.07
0.1Q2	D	Steep	Oceanside	0.07
0.1Q2	A	Flat	Lake Wohlford	0.285
0.1Q2	A	Moderate	Lake Wohlford	0.275
0.1Q2	A	Steep	Lake Wohlford	0.27
0.1Q2	B	Flat	Lake Wohlford	0.15
0.1Q2	B	Moderate	Lake Wohlford	0.145
0.1Q2	B	Steep	Lake Wohlford	0.145
0.1Q2	C	Flat	Lake Wohlford	0.07
0.1Q2	C	Moderate	Lake Wohlford	0.07
0.1Q2	C	Steep	Lake Wohlford	0.07
0.1Q2	D	Flat	Lake Wohlford	0.06
0.1Q2	D	Moderate	Lake Wohlford	0.06
0.1Q2	D	Steep	Lake Wohlford	0.06

Table G.2-6: Sizing Factors for Hydromodification Flow Control Cistern Facilities Designed Using Sizing Factor Method

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	V
0.1Q2	A	Flat	Lindbergh	0.54
0.1Q2	A	Moderate	Lindbergh	0.51
0.1Q2	A	Steep	Lindbergh	0.49
0.1Q2	B	Flat	Lindbergh	0.19
0.1Q2	B	Moderate	Lindbergh	0.18
0.1Q2	B	Steep	Lindbergh	0.18
0.1Q2	C	Flat	Lindbergh	0.11
0.1Q2	C	Moderate	Lindbergh	0.11
0.1Q2	C	Steep	Lindbergh	0.11
0.1Q2	D	Flat	Lindbergh	0.09

0.1Q2	D	Moderate	Lindbergh	0.09
0.1Q2	D	Steep	Lindbergh	0.09
0.1Q2	A	Flat	Oceanside	0.26
0.1Q2	A	Moderate	Oceanside	0.25
0.1Q2	A	Steep	Oceanside	0.25
0.1Q2	B	Flat	Oceanside	0.16
0.1Q2	B	Moderate	Oceanside	0.16
0.1Q2	B	Steep	Oceanside	0.16
0.1Q2	C	Flat	Oceanside	0.14
0.1Q2	C	Moderate	Oceanside	0.14
0.1Q2	C	Steep	Oceanside	0.14
0.1Q2	D	Flat	Oceanside	0.12
0.1Q2	D	Moderate	Oceanside	0.12
0.1Q2	D	Steep	Oceanside	0.12
0.1Q2	A	Flat	Lake Wohlford	0.53
0.1Q2	A	Moderate	Lake Wohlford	0.49
0.1Q2	A	Steep	Lake Wohlford	0.49
0.1Q2	B	Flat	Lake Wohlford	0.28
0.1Q2	B	Moderate	Lake Wohlford	0.28
0.1Q2	B	Steep	Lake Wohlford	0.28
0.1Q2	C	Flat	Lake Wohlford	0.14
0.1Q2	C	Moderate	Lake Wohlford	0.14
0.1Q2	C	Steep	Lake Wohlford	0.14
0.1Q2	D	Flat	Lake Wohlford	0.12
0.1Q2	D	Moderate	Lake Wohlford	0.12
0.1Q2	D	Steep	Lake Wohlford	0.12

ATTACHMENT 3
Structural BMP Maintenance Information

This is the cover sheet for Attachment 3.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required) See Structural BMP Maintenance Information Checklist on the next page.	☒ Included
Attachment 3b	1. Draft Maintenance Agreement during final engineering review 2. Executed Maintenance Agreement for As-Built	☐ Included ☒ Not included, project is in design/ planning/CEQA level submittal

Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

☒ **Preliminary Design / Planning / CEQA level submittal:**

Attachment 3a must identify:

☒ Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

☐ **Final Design level submittal:**

Attachment 3a must identify:

- ☐ Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
- ☐ How to access the structural BMP(s) to inspect and perform maintenance
- ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐ Recommended equipment to perform maintenance
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the City's standard format (PDP applicant to contact the Land Development Division to obtain the current maintenance agreement forms).

☐ **As-Built submittal:**

Attachment 3b: Must be a copy of the executed and recorded maintenance agreement.

BF-1

Biofiltration

BMP MAINTENANCE FACT SHEET FOR STRUCTURAL BMP BF-1 BIOFILTRATION

Biofiltration facilities are vegetated surface water systems that filter water through vegetation, and soil or engineered media prior to discharge via underdrain or overflow to the downstream conveyance system. Biofiltration facilities have limited or no infiltration. They are typically designed to provide enough hydraulic head to move flows through the underdrain connection to the storm drain system. Typical biofiltration components include:

- Inflow distribution mechanisms (e.g., perimeter flow spreader or filter strips)
- Energy dissipation mechanism for concentrated inflows (e.g., splash blocks or riprap)
- Shallow surface ponding for captured flows
- Side slope and basin bottom vegetation selected based on climate and ponding depth
- Non-floating mulch layer
- Media layer (planting mix or engineered media) capable of supporting vegetation growth
- Filter course layer consisting of aggregate to prevent the migration of fines into uncompacted native soils or the aggregate storage layer
- Aggregate storage layer with underdrain(s)
- Impermeable liner or uncompacted native soils at the bottom of the facility
- Overflow structure

Normal Expected Maintenance

Biofiltration requires routine maintenance to: remove accumulated materials such as sediment, trash or debris; maintain vegetation health; maintain infiltration capacity of the media layer; replenish mulch; and maintain integrity of side slopes, inlets, energy dissipators, and outlets. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure

If any of the following scenarios are observed, the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance, increased inspection and maintenance, BMP replacement, or a different BMP type will be required.

- The BMP is not drained between storm events. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.
- Sediment, trash, or debris accumulation greater than 25% of the surface ponding volume within one month. This means the load from the tributary drainage area is too high, reducing BMP function or clogging the BMP. This would require pretreatment measures within the tributary area draining to the BMP to intercept the materials. Pretreatment components, especially for sediment, will extend the life of components that are more expensive to replace such as media, filter course, and aggregate layers.
- Erosion due to concentrated storm water runoff flow that is not readily corrected by adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.

BF-1

Biofiltration

Other Special Considerations

Biofiltration is a vegetated structural BMP. Vegetated structural BMPs that are constructed in the vicinity of, or connected to, an existing jurisdictional water or wetland could inadvertently result in creation of expanded waters or wetlands. As such, vegetated structural BMPs have the potential to come under the jurisdiction of the United States Army Corps of Engineers, SDRWQCB, California Department of Fish and Wildlife, or the United States Fish and Wildlife Service. This could result in the need for specific resource agency permits and costly mitigation to perform maintenance of the structural BMP. Along with proper placement of a structural BMP, routine maintenance is key to preventing this scenario.

BF-1

Biofiltration

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION

The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.

Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.

Threshold/Indicator	Maintenance Action	Typical Maintenance Frequency
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation or compaction of the media layer.	- Inspect monthly. If the BMP is 25% full* or more in one month, increase inspection frequency to monthly plus after every 0.1-inch or larger storm event. - Remove any accumulated materials found at each inspection.
Obstructed inlet or outlet structure	Clear blockage.	- Inspect monthly and after every 0.5-inch or larger storm event. - Remove any accumulated materials found at each inspection.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable	- Inspect annually. - Maintenance when needed.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.	- Inspect monthly. - Maintenance when needed.
Dead or diseased vegetation	Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans.	- Inspect monthly. - Maintenance when needed.
Overgrown vegetation	Mow or trim as appropriate.	- Inspect monthly. - Maintenance when needed.
2/3 of mulch has decomposed, or mulch has been removed	Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches.	- Inspect monthly. - Replenish mulch annually, or more frequently when needed based on inspection.

*"25% full" is defined as $\frac{1}{4}$ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

BF-1

Biofiltration

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION (Continued from previous page)		
Threshold/Indicator	Maintenance Action	Typical Maintenance Frequency
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.	• Inspect monthly. • Maintenance when needed.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.	• Inspect after every 0.5-inch or larger storm event. If erosion due to storm water flow has been observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.
Standing water in BMP for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils.	• Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed.
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology	If mosquitos/larvae are observed: first, immediately remove any standing water by dispersing to nearby landscaping; second, make corrective measures as applicable to restore BMP drainage to prevent standing water. If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.	• Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed.
Underdrain clogged	Clear blockage.	• Inspect if standing water is observed for longer than 24-96 hours following a storm event. • Maintenance when needed.

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References

- American Mosquito Control Association.
<http://www.mosquito.org/>
- California Storm Water Quality Association (CASQA). 2003. Municipal BMP Handbook.
<https://www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook>
- County of San Diego. 2014. Low Impact Development Handbook.
<http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html>
- San Diego County Copermittees. 2016. Model BMP Design Manual, Appendix E, Fact Sheet BF-1.
http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=250&Itemid=220

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-1
Permit No.:	APN(s): 223-341-17	
Property / Development Name:		Responsible Party Name and Phone Number:
Property Address of BMP:		Responsible Party Address:

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan ☐ If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

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Date:	Inspector:	BMP ID No.: BMP-1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-2
Permit No.:	APN(s): 223-341-17	
Property / Development Name:		Responsible Party Name and Phone Number:
Property Address of BMP:		Responsible Party Address:

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-2
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-2
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan ☐ If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-2
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-2
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-2.1
Permit No.:	APN(s): 223-341-17	
Property / Development Name:		Responsible Party Name and Phone Number:
Property Address of BMP:		Responsible Party Address:

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-2.1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-2.1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan ☐ If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-2.1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-2.1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-3
Permit No.:	APN(s): 223-341-17	
Property / Development Name:		Responsible Party Name and Phone Number:
Property Address of BMP:		Responsible Party Address:

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-3
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-3
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan ☐ If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-3
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-3
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-4.1
Permit No.:	APN(s): 223-341-17	
Property / Development Name:		Responsible Party Name and Phone Number:
Property Address of BMP:		Responsible Party Address:

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

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Date:	Inspector:	BMP ID No.: BMP-4.1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-4.1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan ☐ If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.: BMP-4.1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-4.1
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-5
Permit No.:	APN(s): 223-341-17	
Property / Development Name:		Responsible Party Name and Phone Number:
Property Address of BMP:		Responsible Party Address:

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-5
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-5
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan ☐ If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction ☐ Other / Comments:		

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-5
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-5
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-6
Permit No.:	APN(s): 223-341-17	
Property / Development Name:		Responsible Party Name and Phone Number:
Property Address of BMP:		Responsible Party Address:

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-6
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-6
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan ☐ If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction ☐ Other / Comments:		

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-6
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.: BMP-6
Permit No.:	APN(s): 223-341-17	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

MAINTENANCE

MWS – Linear

Hybrid Stormwater Filtration System



MAINTENANCE –

Maintenance Summary –

- Clean screening filter device a least twice per year (*15 minute service time*).
- Clean separation (sediment) chamber once a year (*30 minute service time*).
- Evaluate and replace primary filtration media (BioMediaGREEN blocks) as needed. Typically replacement occurs once every 12 to 18 months (*60 minute service time*).
- Evaluate condition of wetland media. Replacement of media occurs once every 5 to 20 years (*4 hours*).
- Replace drain down filter media (*BioMediaGREEN block*) once every year (*5 minute service time*).
- Trim vegetation as needed (*15 minute service time*).

Maintenance Procedures –

A. Every installed MWS – Linear unit is to be maintained by the Supplier, or a Supplier approved contractor. The cost of this service varies among providers.

B. The MWS – Linear is a multi-stage self-contained treatment train. Each stage protects subsequent stages from clogging. These stages include: screening, separation, primary filtration, and biological remediation. The biological remediation stage contains plants and therefore requires ongoing landscape maintenance, similar to that of other landscaped areas.

1. Screening is provided by Bio Clean Catch Basin Insert Filters. This screening filter has a capacity of 2 or 4 cubic feet (curb type and grate type respectively). This filter targets gross solids, including litter, and sediments greater than 200 microns. **It is recommended that this screening filter be cleaned at least two times per year.** Cleaning of this device is relatively inexpensive. *This procedure takes approximately 15 minutes.*

2. Separation is provided by a 3' x 3' settling chamber. This chamber has a capacity of approximately 21 cubic feet. This chamber targets smaller sediments, larger TSS, and particulate metals and nutrients. This chamber protects the following filtration stages from premature clogging. **It is recommended that this separation chamber be cleaned out once a year.** This procedure can be performed with a standard vac truck. *This procedure takes approximately 30 minutes.*

3. Primary filtration is provided by a horizontal flow perimeter filter utilizing BioMediaGREEN. The perimeter filter has a default media surface area of 28 square feet. This surface area can also be doubled to 56 square feet, upon request, by a simple physical modification to the media blocks. The greater the surface area, the longer the media will maintain appropriate flow rates before clogging. This perimeter filter and the revolutionary BioMediaGREEN media targets fine TSS, dissolved metals, nutrients, and bacteria. **It is recommended that the filter media be evaluated once per year and recharged if necessary.** Media life depends on local loading conditions and can easily be replaced and disposed of without any equipment. *Replacement of media takes approximately 60 minutes.*

4. Biological remediation (natural filtration) is provided by a 4th generation enhanced sub-surface flow vegetated gravel wetland. This natural filter is 14 feet long and contains 248 cubic feet of filter media and plant material. It targets the finest TSS, nutrients, dissolved metals, and bacteria. This filter provides the final polishing step of treatment. If prior treatment stages are properly maintained, the life of this media can be more than 5 years. **It is recommended the wetland and its plants be inspected once a year.** Replacement of the rock media may be needed as soon as five years or as long as 20 years. *Inspection takes approximately 15 minutes. Replacement of rock media takes approximately 4 hours and requires a vac truck.*

5. A drain down filter, similar in function to the perimeter filter is located in the discharge chamber. This filter allows standing water to be drained and filtered out

of the separation chamber. This addresses any vector issues, by eliminating all standing water within this system. **It is recommended the media of the drain down filter be replaced one a year.** *Replacement of media takes approximately 5 minutes and is performed without any equipment.*

The MWS – Linear catch basin filter, separation chamber, and wetland filter are designed to allow for the use of vacuum removal of captured materials in the filter screens and sediment and wetland chambers, serviceable by centrifugal compressor vacuum units without causing damage to the filter or during normal cleaning and maintenance. Filters can be cleaned and vacuumed from the standard manhole access or at grade.

Maintenance Notes:

1. Modular Wetland Systems, Inc. recommends the **catch basin filter** be inspected and cleaned a minimum of once every six months and replacement of hydrocarbon booms once a year. The procedure is easily done with the use of any standard vacuum truck.
 - o Remove grate or manhole to gain access to catch basin filter insert. Remove the deflector shield (grate type only) with the hydrocarbon boom attached. Where possible the maintenance should be performed from the ground surface. Note: entry into an underground stormwater vault such as an inlet vault requires certification in confined space training.
 - o Remove all trash, debris, organics, and sediments collected by the inlet filter insert. Removal of the trash and debris can be done manually or with the use of a vacuum truck. The hose of the vacuum truck will not damage the screen of the filter.
 - o Evaluation of the hydrocarbon boom shall be performed at each cleaning. If the boom is filled with hydrocarbons and oils it should be replaced. Attach new boom to basket with plastic ties through pre-drilled holes in basket. Place the deflector shield (grate type only) back into the filter.

- o Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
 - o The hydrocarbon boom may be classified as hazardous material and will have to be picked up and disposed of as hazardous waste. Hazardous material can only be handled by a certified hazardous waste trained person (minimum 24-hour hazwoper).
- 2. Modular Wetland Systems, Inc. recommends the **separation chamber** be inspected and cleaned a minimum of once a year. The procedure is easily done with the use of any standard vacuum truck. Remove grate or manhole, remove catch basin filter, spray down pollutants accumulated on fiberglass media panels (do not spray media directly, doing so can damage the media), vacuum out separation chamber, replace catch basin filter, replace grate or manhole cover.
- 3. Modular Wetland Systems, Inc. recommends the **perimeter filter's** media be inspected and cleaned a minimum of once a year. The procedure will require prior maintenance of separation chamber. Remove grate, remove catch basin filter, enter separation chamber, unlatch top and bottom of each media protection panel, remove media protection panels to expose media, power wash surface, evaluate media condition, replace if necessary. New media blocks can be ordered from Modular Wetland Systems, Inc. Replace media protection panels, replace catch basin filter, replace grate or manhole cover.
- 4. Modular Wetland Systems, Inc. recommends the **drain down filter** be inspected and maintained a minimum of once a year. Open hatch of discharge chamber, enter chamber, unlatch fiberglass cover, remove media block, replace with new block, replace and latch cover. Exit chamber, close and lock down the hatch.
- 5. Modular Wetland Systems, Inc. recommends the **wetland filter** and its plants/vegetation be inspected and maintained a minimum of once a year. It is also recommended that the plants receive the same care as other landscaped areas.

Note: No fertilizer is to be used on this area.

6. Following maintenance and/or inspection, the maintenance operator shall prepare a maintenance/inspection record. The record shall include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanism. .
7. The owner shall retain the maintenance/inspection record for a minimum of five years from the date of maintenance. These records shall be made available to the governing municipality for inspection upon request at any time.
8. Any person performing maintenance activities must have completed a minimum of OSHA 24-hour hazardous waste worker (hazwoper) training.
9. Remove access manhole lid or grate to gain access to filter screens and sediment chambers. Where possible the maintenance should be performed from the ground surface. Note: entry into an underground stormwater vault such as an inlet vault requires certification in confined space training.
10. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
11. The hydrocarbon boom is classified as hazardous material and will have to be picked up and disposed of as hazardous waste. Hazardous material can only be handled by a certified hazardous waste trained person (minimum 24-hour hazwoper).

Maintenance Sequence



Service Crews Arrive On Site And Remove Access Manhole To Perform Maintenance Service.



Assess Condition and Pollutant Loading. A Few Gallons Of Water Are Sprayed Into Sediment Chamber To Allow Sediment To Be Vacuumed.



Catch Basin Filters Are Completely Vacuumed Free Of All Pollutants.



Cleaned Catch Basin Filters Are Removed Through Access Manhole To Allow For Unimpeded Access To Sediment Chamber.



Sediment Chamber Is Vacuumed Clean Of All Accumulated Sediment And Associated Pollutants.



Filter Media Shields Are Removed To Expose BioMediaGREEN Filter Media To Be Cleaned Or Replaced.



Exposed Filter Media Will Be Evaluated For Clogging And Loading Condition.



Media To Be Power Washed To Reveal Extent Of Clogging. If Only Surface Is Clogged, Media Can Be Re-Used Once. If Clogged Replace With New Media Blocks. Remove and Replace.



Washed Or New Media Is Now Ready For Use. If Media Was Replaced, Old Media Will Need To Be Properly Disposed Of Properly.



Replace Media Filter Panels And Lock Into Position.



Replace Catch Basin Filters.



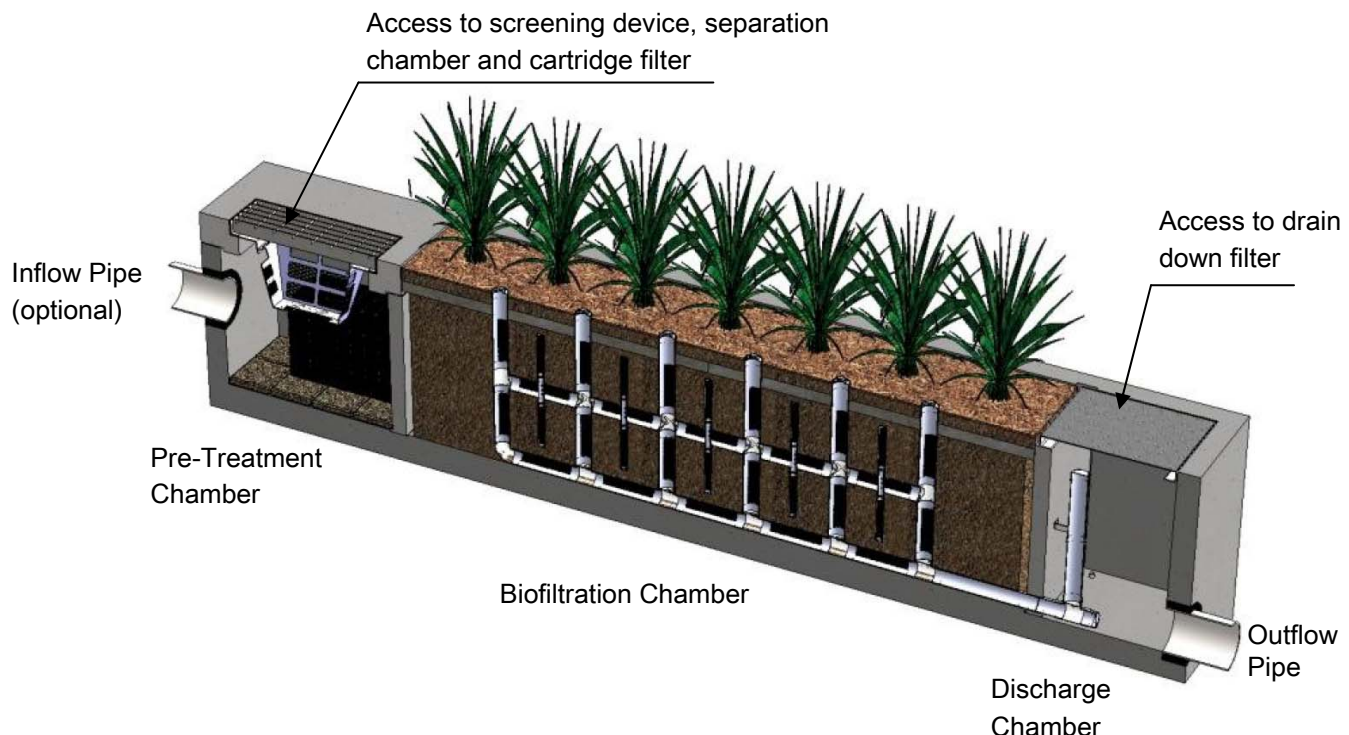
Replace Access Manhole. Check Plants For Growth, Trim If Necessary. Service Is Complete. Total Service Time = 45 Minutes.

Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- o Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
 - *(5 minute average service time).*
- o Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
 - *(10 minute average service time).*
- o Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
 - *(10-15 minute per cartridge average service time).*
- o Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
 - *(5 minute average service time).*
- o Trim Vegetation – average maintenance interval is 6 to 12 months.
 - *(Service time varies).*

System Diagram



Maintenance Procedures

Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre-Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck. The hose of the vacuum truck will not damage the screening device.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.



Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into chambers may require confined space training based on state and local regulations.
5. No fertilizer shall be used in the Biofiltration Chamber.
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

Maintenance Procedure Illustration

Screening Device

The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.



Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.



Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.



Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.



Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.





Inspection Form



Modular Wetland System, Inc.

P. 760.433-7640

F. 760-433-3176

E. Info@modularwetlands.com

www.modularwetlands.com



Inspection Report Modular Wetlands System



Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____

Phone () -

Inspector Name _____

Date ____ / ____ / ____ Time ____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____

Additional Notes _____

For Office Use Only

(Reviewed By)

(Date)
Office personnel to complete section to the left.

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	Yes	No	Comments
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:	Yes	No	Comments
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:	Yes	No	Comments
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	Yes	No
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: _____



Maintenance Report



Modular Wetland System, Inc.

P. 760.433-7640

F. 760-433-3176

E. Info@modularwetlands.com

www.modularwetlands.com



Cleaning and Maintenance Report Modular Wetlands System



Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____

Phone () -

Inspector Name _____

Date ____ / ____ / ____ Time ____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint

☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____

Additional Notes _____

For Office Use Only

(Reviewed By)

(Date)
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat:	MWS Catch Basins						
	Long:							
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:



Inspection Report Modular Wetlands System



Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____

Phone () -

Inspector Name _____

Date ____ / ____ / ____ Time ____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____

Additional Notes _____

For Office Use Only

(Reviewed By)

(Date)
Office personnel to complete section to the left.

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	Yes	No	Comments
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	Yes	No
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: _____



Cleaning and Maintenance Report Modular Wetlands System



Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____

Phone () -

Inspector Name _____

Date ____ / ____ / ____ Time ____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint

☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____

Additional Notes _____

For Office Use Only

(Reviewed By)

(Date)
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
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	Long:							
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

RECORDING REQUESTED BY:
THE CITY OF SAN MARCOS
AND WHEN RECORDED MAIL TO:

City of San Marcos
Development Services Department
Land Development Division
1 Civic Center Drive
San Marcos, California 92069

The recordation of this document is a benefit to the City.

(THIS SPACE FOR RECORDER'S USE ONLY)

STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT AND EASEMENT

This agreement is made by and between the City of San Marcos, a municipal corporation [City] and _____, [Property Owner] the owner of property more particularly described as _____ [legal description] in the City of San Marcos, County of San Diego, State of California.

A. Property Owner is required pursuant to the City of San Marcos Municipal Code, Section 14.15, and the City's current local Water Management and Discharge Control Maintenance Agreement [Maintenance Agreement], for the installation and maintenance of Permanent Stormwater Best Management Practices [Permanent Stormwater BMP's], prior to the issuance of permits. Permanent Stormwater BMPs shall include all constructed elements described in the approved project's SWQMP Storm Water Quality Management Plan (SWQMP) and construction plan (e.g., Low Impact Development, Source Control, Site Design, and Treatment Control). The Maintenance Agreement is intended to ensure the installation and maintenance of Permanent Stormwater BMP's, as identified in Attachment A and described in Attachment B (attached hereto), and as also described in the project's SWQMP, approved on _____, and Plan File/Drawing No(s). _____.

B. Property Owner wishes to obtain an engineering and/or building permit according to Plan File/Drawing No(s). _____.

NOW, THEREFORE, the parties agree as follows:

1. Property Owner shall prepare, if qualified, or shall have prepared, an approved Operation and Maintenance Plan [OMP] for Permanent Stormwater BMP's (Attachment B), to ensure the implementation thereof consistent with the intent of the San Diego Regional Water Quality Control Board permit requirements, and satisfactory to the City, as it relates to Plan File/Drawing No(s). _____.
2. Property Owner shall install, maintain, and repair or replace, all Permanent Stormwater BMPs within their property, according to Attachment A & Attachment B.
3. The Property Owner shall maintain annual records into perpetuity identifying the installation, maintenance, and repair or replacement, of any, and all, Permanent Stormwater BMPs, identified in Attachment A & Attachment B and Plan File/Drawing No(s). _____. These records shall be made available to the City for inspection upon request at any time.
4. Property owner is required to submit annually, by October 1, to the City, Attachment A & Attachment B, as proof of meeting the obligations set forth herein, for all the Permanent Stormwater BMPs as described in Attachment A & Attachment B.
4. Additional supplemental information, as it relates to the project's SWQMP, can be found within Master File # _____, located within the Engineering Division at City Hall.
5. By this Agreement, Property Owner hereby grants the City an easement giving the City the right, but not the obligation, to enter onto the Property (and any necessary adjacent land needed for access) to inspect, install, repair or replace, and maintain the BMPs, as required per the project's SWQMP and Plan File/Drawing No(s). _____. The City shall have the right, but not the obligation, to maintain all Permanent Stormwater BMPs to the satisfaction of the City Engineer. The cost for any such inspection, installation, repair or replacement, and or maintenance incurred by the City will be the responsibility of the Property Owner and the Property and may constitute a lien upon the property until paid. Any unpaid amounts shall accrue interest at the rate of ten percent (10%) per year; any payments shall be applied first to accrued interest and then to the outstanding principal amount.

6. This Maintenance Agreement shall become effective upon execution of this document by all parties named hereon, and the obligations hereunder shall constitute a covenant and equitable servitude running with the land, and shall be binding upon Property Owner and his/her/their successors in interest.

Executed by the City of San Marcos and by Property Owner in San Marcos, California.

NOTE: NOTARY ACKNOWLEDGMENTS FOR ALL SIGNATURES MUST BE ATTACHED

(Signature)

(Date)

(Print Name & Title)

APPROVED By: _____
(City Engineer)

(Date)

ATTACHMENT 4
Copy of Plan Sheets Showing Permanent Storm Water BMPs

This is the cover sheet for Attachment 4.

[USE CITY'S BMP TEMPLATE SHEET]

Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

- ☒ Structural BMP(s) with ID numbers matching Form J-6 Summary of PDP Structural BMPs
- ☒ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
- ☒ Details and specifications for construction of structural BMP(s)
- ☒ Signage indicating the location and boundary of structural BMP(s) as required by the City Engineer
- ☒ How to access the structural BMP(s) to inspect and perform maintenance
- ☒ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☒ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☒ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☒ Recommended equipment to perform maintenance
- ☒ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
- ☒ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
- ☒ All BMPs must be fully dimensioned on the plans
- ☒ When proprietary BMPs are used, site-specific cross section with outflow, inflow, and model number shall be provided. Photocopies of general brochures are not acceptable.

ASCEND CONDOMINIUM

AT THE CITY OF SAN MARCOS

TENTATIVE MAP FOR CONDOMINIUM PURPOSES
FOR A TOTAL OF 147 RESIDENTIAL AIRSPACE UNITS

APN
223-341-17

LEGAL DESCRIPTION

PARCEL 1 OF PM 22146

SOURCE OF TOPOGRAPHY

THE EXISTING TOPOGRAPHY SHOWN HEREON IS A COMBINATION OF THE FIELD TOPOGRAPHIC SURVEY CONDUCTED BY REPRESENTATIVES OF EXCEL ENGINEERING ON JULY 15, 2020 & AS-GRADED DESIGN PER ROUGH GRADING PLANS DWG NO. GP22-00018.

UTILITIES

FIRE	SAN MARCOS FIRE PROTECTION DISTRICT
SCHOOL	SAN MARCOS UNIFIED SCHOOL DISTRICT
SEWER	VALLECITOS WATER DISTRICT
WATER	VALLECITOS WATER DISTRICT
TELEPHONE	COX COMMUNICATIONS
GAS	SAN DIEGO GAS & ELECTRIC
ELECTRIC	SAN DIEGO GAS & ELECTRIC

EXISTING EASEMENTS

SEE SHEETS 2 & 3 FOR DESCRIPTIONS & LOCATIONS.

PROPERTY ADDRESS

DIAMOND STREET
SAN MARCOS, CA 92078

EXISTING ZONING

LIGHT INDUSTRIAL (L-I) ZONE

PROPOSED ZONING

SP

LAND AREA

GROSS = 729,676.23 SQ FT / 16.7511 ACRES
NET = 702,084.77 SQ FT / 16.1176 ACRES

FLOOD ZONE DESIGNATION

FLOOD ZONE INFORMATION PER THE FEDERAL EMERGENCY MANAGEMENT AGENCY WEBSITE. THIS SITE IS PART OF FEMA FLOOD PANEL NO. 06073 C1052G, EFFECTIVE DATE: MAY 16, 2012. SUBJECT PROPERTY IS IN ZONE X - AREA OF MINIMAL FLOOD HAZARD.

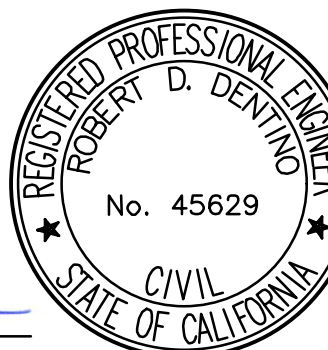
MAP PREPARED BY:

EXCEL ENGINEERING
440 STATE PLACE
ESCONDIDO, CA 92029
PHONE (760) 745-8118
FAX (760) 745-1890

ENGINEER OF WORK

EXCEL ENGINEERING
440 STATE PLACE
ESCONDIDO, CA 92029
PHONE (760) 745-8118
FAX (760) 745-1890

ROBERT D. DENTINO, R.G.E. NO. 45629



CONDOMINIUM STATEMENT

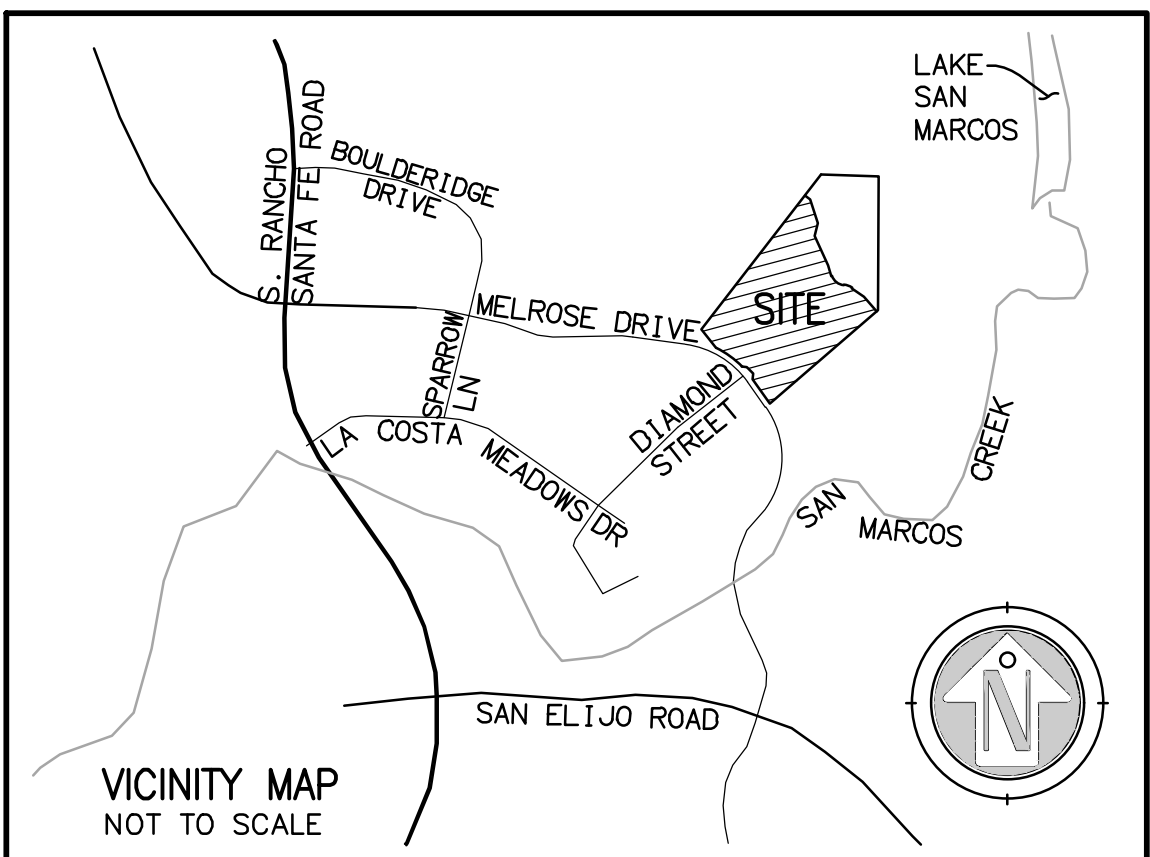
THIS TENTATIVE MAP PROPOSES 1 LOT WITH 147 RESIDENTIAL AIR SPACE CONDOMINIUMS.

OWNER'S CERTIFICATE

WE HEREBY CERTIFY THAT WE ARE THE RECORD OWNER OF THE PROPERTIES SHOWN ON THIS TENTATIVE SUBDIVISION MAP AND THAT SAID MAP SHOWS OUR ENTIRE CONTIGUOUS OWNERSHIP. WE UNDERSTAND THAT THE PROPERTY IS CONSIDERED CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS OR RAILROAD RIGHTS OF WAY.

BY:

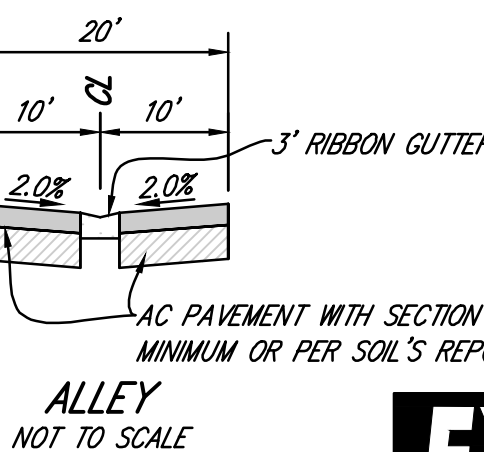
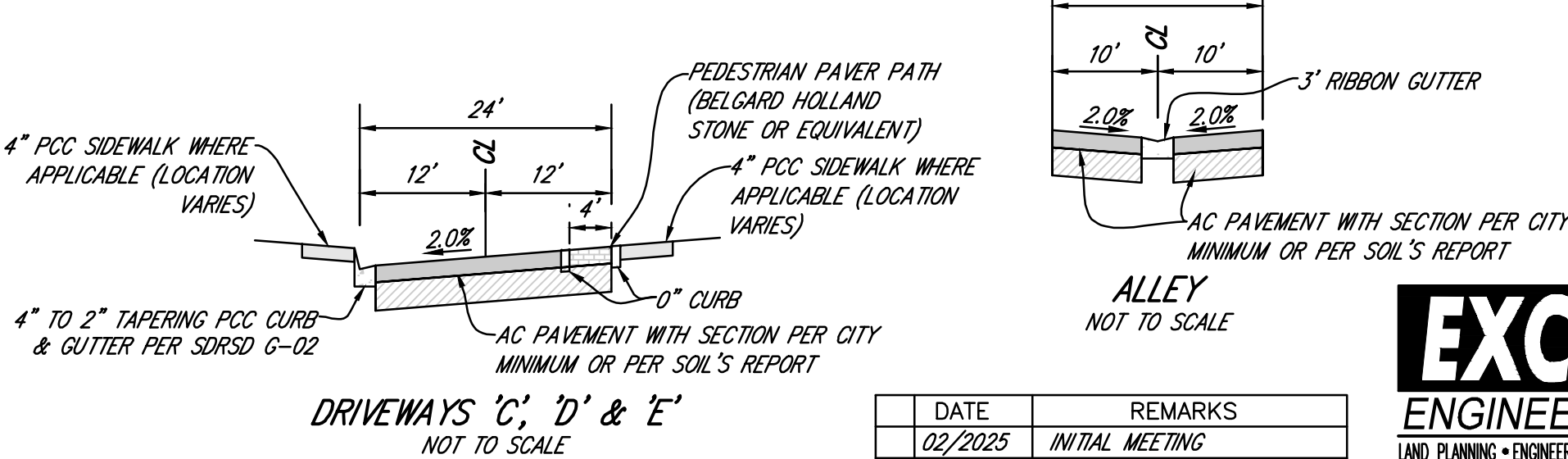
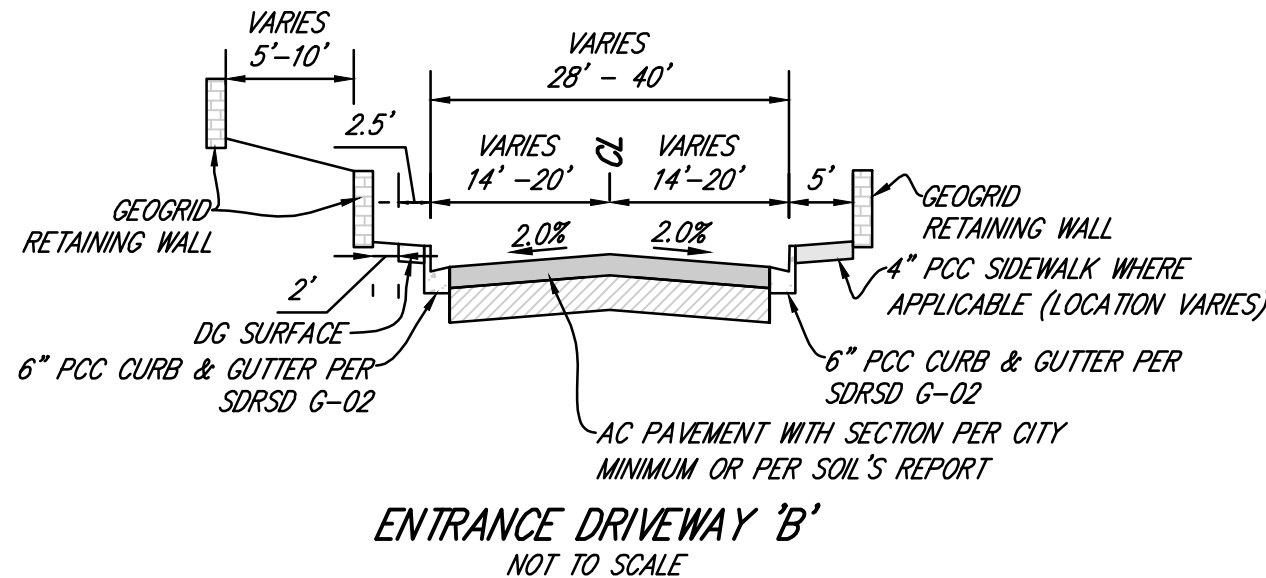
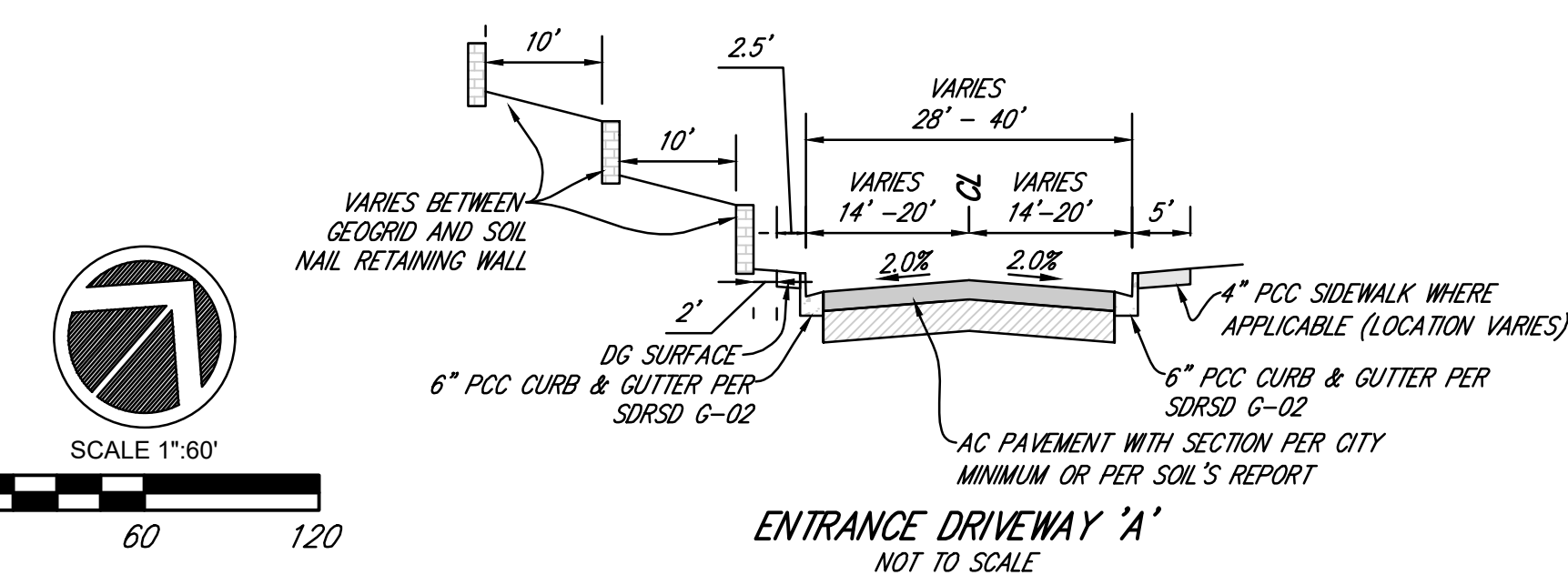
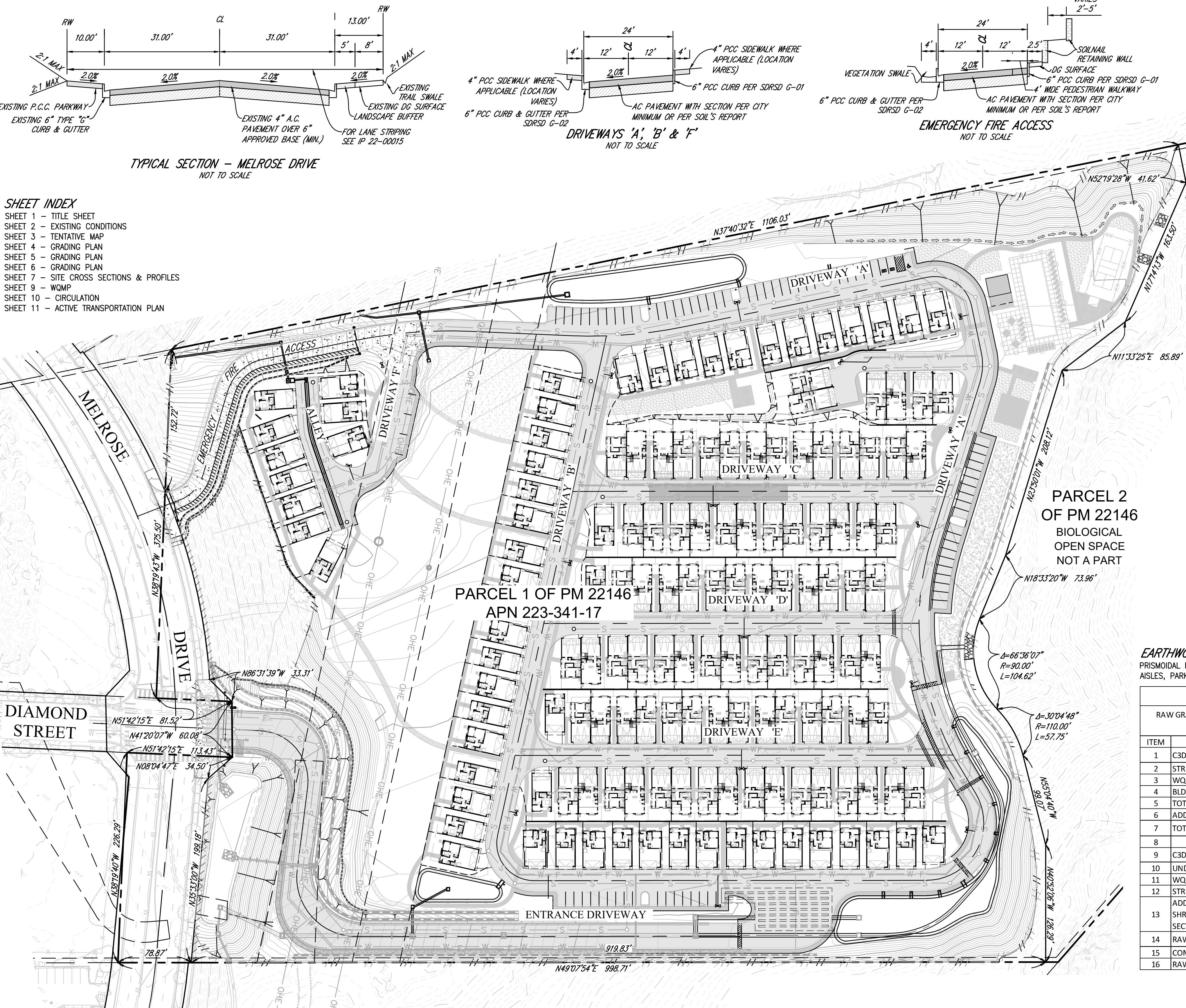
M.D.V. LLC
MICHAEL D. LEVIN, MANAGER



EARTHWORK QUANTITIES

PRISMOIDAL METHOD OF EARTHWORK VOLUME CALCULATIONS WAS USED IN THIS ESTIMATE. SECTIONS OF DRIVE AISLES, PARKING AREAS, WATER QUALITY BASINS & OTHER ITEMS WERE ALSO CONSIDERED IN THE PROCESS.

19089 ASCEND CONDO EARTHWORK VOLUME (9/9/2025)				
RAW GRADING VOLUME WERE CALCULATED BY USING THE PRISMOIDAL METHOD BETWEEN THE PROPOSED GRADING DESIGN & THE EXISTING TOPOGRAPHY.				
ITEM	DESCRIPTION	AREA/VOL	SECTION	VOLUME (CY)
1	C3D CUT			128,287.69
2	STREET SECTIONS (THOSE NOT INCLUDED IN ITEM 1)	78,734.88	0.75	2,187.08
3	WQ BASIN	12,409.38	5.00	2,298.03
4	BLDG FOUNDATION & UTILITIES SPOILS (100 CY/BLDG)	100.00	103.00	10,300.00
5	TOTAL RAW CUT			143,072.80
6	ADDITIONAL AVAILABLE MATERIALS DUE TO BULKING			20,124.37
7	TOTAL ON-SITE MATERIALS AVAILABLE FOR FILL			163,197.17
8				
9	C3D FILL			201,937.02
10	UNDERGROUND STORAGE (48" PIPE)	12.57	-800.00	-372.34
11	WQ BASIN	13,249.02	-5.00	-2,453.52
12	STREET SECTIONS	72,966.08	-0.75	-2,026.84
13	ADDITIONAL FILL DUE TO REMEDIAL GRADING 12.5% SHRINKAGE (SURFICIAL / TOP SOILS SEE SOILS REPORT SECTION 4.1-4.4 & 7.4 TABLE 7.7)	164,520.91	0.125	20,565.11
14	RAW FILL VOLUME			217,649.44
15	COMMON EXCAVATION/EMBANKMENT			163,197.17
16	RAW IMPORT CY			54,452.26



SHEET 1 OF 11 SHEETS

TITLE SHEET

ASCEND
CONDOMINIUM

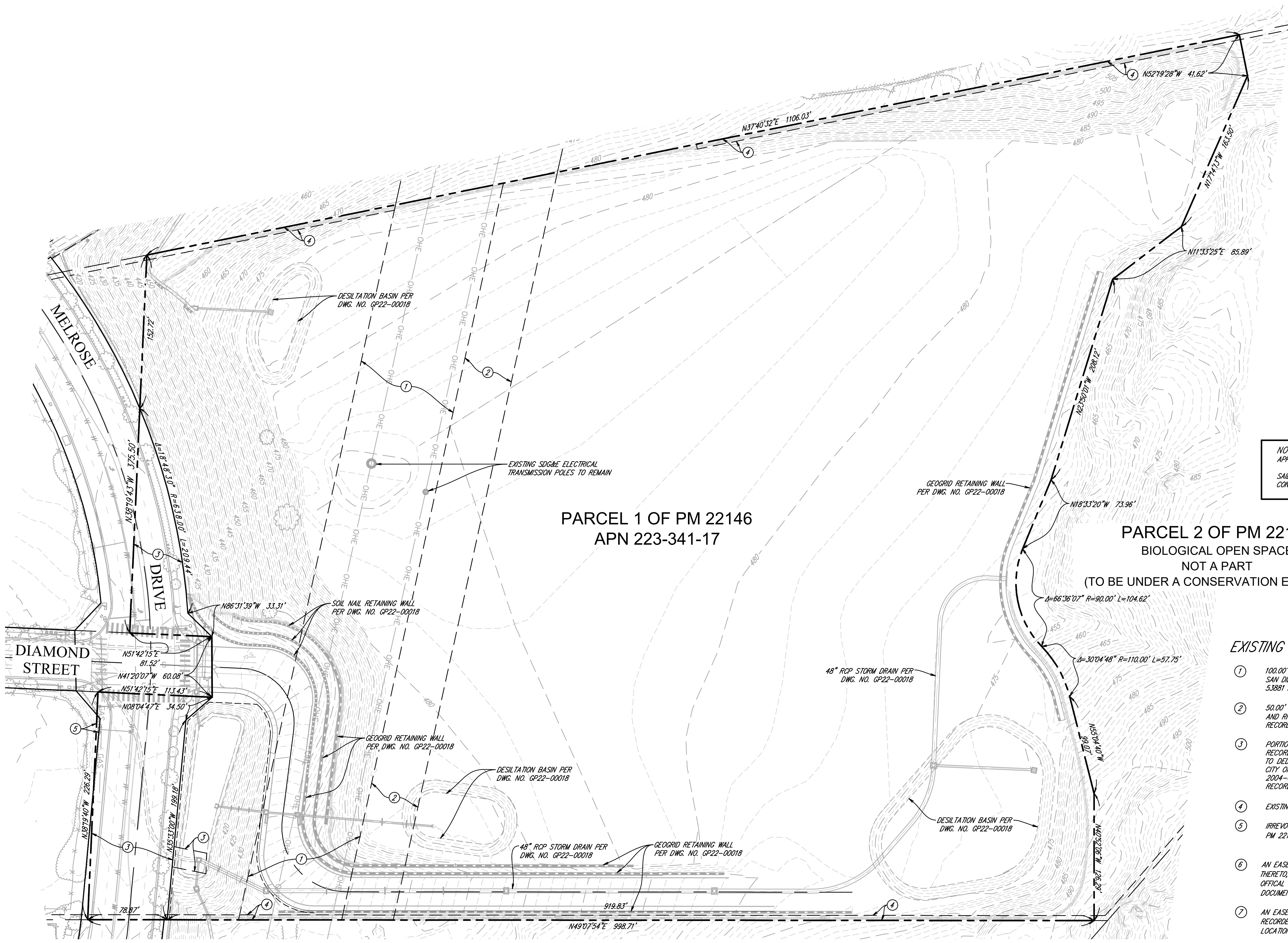
APN 223-341-17

DIAMOND STREET, SAN MARCOS CA 92078

EXCEL
ENGINEERING
LAND PLANNING • ENGINEERING • SURVEYING
440 STATE PLACE, ESCONDIDO, CA 92029
PH (760) 745-8118 FX (760) 745-1890

DATE	REMARKS
02/2025	INITIAL MEETING

K:\25125037\Engineering\SDP\Sheets - SDP\25037 TM EXISTING CONDITION.dwg 3/19/2026 10:24 AM ORIGINAL PLOT SIZE: MODEL LIMITS



NOTE: THE EXISTING CONDITIONS SHOWN HEREON IS BASED ON THE PREVIOUSLY APPROVED ROUGH GRADING PLAN - CITY OF SAN MARCOS DWG. NO. GP22-00018. SAID RGP IS EXPIRED AND WILL BE REVISED AND REPROCESSED TO REFLECT THE CONDITIONS SHOWN WITHIN THIS APPLICATION.

DIAMOND STREET

PARCEL 1 OF PM 22146
APN 223-341-17

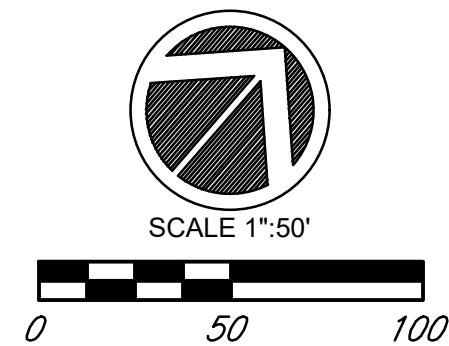
PARCEL 2 OF PM 22146
BIOLOGICAL OPEN SPACE
NOT A PART
(TO BE UNDER A CONSERVATION EASEMENT)

EXISTING EASEMENTS

- 100.00' EASEMENT FOR PUBLIC UTILITIES, INGRESS AND EGRESS AND RIGHTS INCIDENTAL THERETO, GRANTED TO SAN DIEGO GAS & ELECTRIC COMPANY IN THE DOCUMENT RECORDED OCTOBER 14, 1940 AS INSTRUMENT NO. 53881 IN BOOK 1073, PAGE 448 OF OFFICIAL RECORDS.
- 50.00' EASEMENT FOR PUBLIC UTILITIES, INGRESS, EGRESS, TOGETHER WITH THE RIGHT TO TRIM AND TOP TREES AND RIGHTS INCIDENTAL THERETO, GRANTED TO SAN DIEGO GAS & ELECTRIC COMPANY IN THE DOCUMENT RECORDED OCTOBER 22, 1965 AS INSTRUMENT NO. 192240 OF OFFICIAL RECORDS.
- PORTION OF THE DRAINAGE EASEMENT RESERVED ON MAP 10750, ALSO SHOWN ON MAP 12781 AND RECORDED AUGUST 10, 1987 AS FILE NO. 1987-448829 OF OFFICIAL RECORDS AND A IRREVOCABLE OFFER TO DEDICATE A PORTION OF SAID LAND FOR PUBLIC STREET AND DRAINAGE PURPOSES IN FAVOR OF THE CITY OF SAN MARCOS, IN THE DOCUMENT RECORDED OCTOBER 21, 2004 AS INSTRUMENT NO. 2004-0999808 OF OFFICIAL RECORDS. SAID OFFER WAS ACCEPTED FOR PUBLIC USE BY RESOLUTION RECORDED MAY 13, 2005 AS INSTRUMENT NO. 2005-0407862 OF OFFICIAL RECORDS.
- EXISTING 5' PRIVATE DRAINAGE EASEMENT PER MAP 12781.
- IRREVOCABLE OFFER OF DEDICATION TO THE CITY OF SAN MARCOS OF A PORTION OF MELROSE DRIVE PER PM 22146.
- AN EASEMENT FOR INGRESS, EGRESS, PUBLIC UTILITIES, IRRIGATION LINES, ROADS AND RIGHTS INCIDENTAL THERETO, IN THE DOCUMENT RECORDED MAY 4, 1956 AS INSTRUMENT NO. 62310 IN BOOK 6088, PAGE 245 OF OFFICIAL RECORDS. (SURVEYOR'S NOTE: THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM THE DOCUMENT.)
- AN EASEMENT FOR INGRESS, EGRESS, PUBLIC UTILITIES, IRRIGATION LINES, ROADS AND INCIDENTAL PURPOSES, RECORDED OCTOBER 23, 1957 AS BOOK 6804, PAGE 379 OF OFFICIAL RECORDS. (SURVEYOR'S NOTE: THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.)

LEGEND

PROJECT BOUNDARY	---	EXIST. PCC BROW DITCH	→ → → →
RIGHT OF WAY	-RW-	EXIST. FLOW LINE	→ → → →
EXIST. MAJOR CONTOUR	-100-	EXIST. FIRE HYDRANT	⊕
EXIST. MINOR CONTOUR	-50-	EXIST. STREET/PARKING LIGHT	⊙
EXIST. GEOGRID TYPE RETAINING	W	EXIST. STORM DRAIN	—
EXIST. WATER MAIN	S	EXIST. INLETS/CLEANOUTS	⊥
EXIST. SEWER MAIN	F	EXIST. PCC CURB	—
EXIST. FIRE LINE	F	EXIST. PCC CURB & GUTTER	—



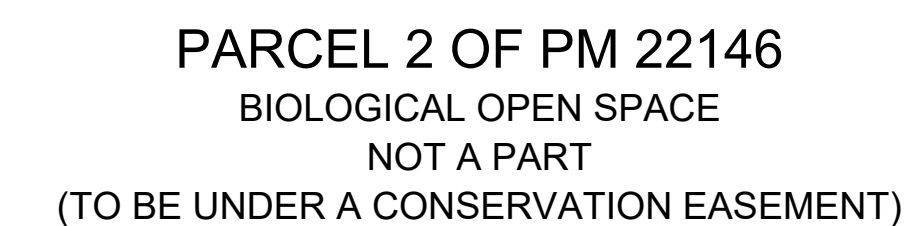
DATE	REMARKS
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SHEET 2 OF 11 SHEETS
EXISTING CONDITIONS

ASCEND
CONDOMINIUM
APN 223-341-17
DIAMOND STREET, SAN MARCOS CA 92078

CONDOMINIUM STATEMENT
THIS TENTATIVE MAP PROPOSES 1 LOT WITH 147 RESIDENTIAL AIR SPACE CONDOMINIUMS.



- ⑦ 100.00' EASEMENT FOR PUBLIC UTILITIES, INGRESS AND EGRESS AND RIGHTS INCIDENTAL THERETO, GRANTED TO SAN DIEGO GAS & ELECTRIC COMPANY IN THE DOCUMENT RECORDED OCTOBER 14, 1940 AS INSTRUMENT NO. 53891 IN BOOK 1073, PAGE 448 OF OFFICIAL RECORDS.
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- ③ PORTION OF THE DRAINAGE EASEMENT RESERVED ON MAP 10750, ALSO SHOWN ON MAP 12781, WAS RECORDED AUGUST 06, 1984 AS FILE NO. 987-44825 OF OFFICIAL RECORDS AND A PREVIOUSLY MADE OFFER DEDICATED A PORTION OF SAID LAND FOR PUBLIC STREET AND DRAINAGE PURPOSES IN FAVOR OF THE CITY OF SAN MARCOS, IN THE DOCUMENT RECORDED OCTOBER 21, 2004 AS INSTRUMENT NO. 2004-099808 OF OFFICIAL RECORDS, SAID OFFER WAS ACCEPTED FOR PUBLIC USE BY RESOLUTION RECORDED MAY 13, 2005 AS INSTRUMENT NO. 2005-0407862 OF OFFICIAL RECORDS.
- ④ EXISTING 5' PRIVATE DRAINAGE EASEMENT PER MAP 12781.
- ⑤ RIGHT OF WAY DEDICATION TO THE CITY OF SAN MARCOS OF A PORTION OF MELROSE DRIVE PER PM 21246.

APN 223-341-17
DIAMOND STREET, SAN MARCOS CA 92078

	DATE	REMARKS
	02/2025	INITIAL MEETING



K:\251250337\Engineering\SDP\Sheets - SDP\250337 TM GRADING PLAN.dwg 3/19/2026 10:25 AM ORIGINAL PLOT SIZE:

CONSTRUCTION NOTES

SURFACE IMPROVEMENTS

- SD-01 AC PAVEMENT (DRIVE AISLE)
- SD-02 PCC PAVEMENT
- SD-03 DECORATIVE PAVERS/ENHANCED PAVING
- SD-04 6" PCC CURB
- SD-05 6" PCC CURB & GUTTER
- SD-06 3' WIDE PCC RIBBON GUTTER
- SD-07 RETAINING WALL SOILNAIL
- SD-08 RETAINING WALL CMU
- SD-09 SPLASH WALL
- SD-10 PEDESTRIAN PAVR PATH UTILITY IMPROVEMENTS

- UT-01 8" FIRELINE MAIN
- UT-02 4" WATER DOMESTIC LINE
- UT-03 FIRE HYDRANT
- UT-04 8" SEWER LINE
- UT-05 2" SERVICE W/ 2" METER (DOMESTIC)
- UT-06 2" SERVICE W/ 1 1/2" METER (IRRIGATION)
- UT-07 SEWER MANHOLE/SEWER CLEANOUT
- UT-08 RPDA

STORM DRAIN/WATER QUALITY IMPROVEMENTS

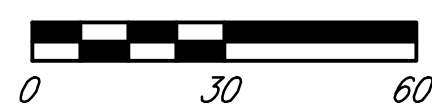
- SD-01 PCC BROW DITCH
- SD-02 STORM DRAIN INLET/CURB INLET
- SD-03 STORM DRAIN BOX/CLEANOUT
- SD-04 12" STORM DRAIN PIPE
- SD-05 18" STORM DRAIN PIPE
- SD-06 24" STORM DRAIN PIPE
- SD-07 48" RELOCATED STORM DRAIN PIPE
- SD-08 48" SD DETENTION PIPE
- SD-09 STORM DRAIN HEADWALL OUTLET
- SD-10 MODULAR WETLANDS STRUCTURE
- SD-11 TRENCH DRAIN
- SD-12 D-25 SIDEWALK UNDERDRAIN OUTLET
- SD-13 RIPRAP
- SD-14 VEGETATION SWALE
- SD-15 CURB CUT

LEGEND

- PROJECT BOUNDARY
- PROPERTY LINE
- RIGHT OF WAY
- EXIST MAJOR CONTOUR
- EXIST MINOR CONTOUR
- PROPOSE MAJOR CONTOUR
- PROPOSE MINOR CONTOUR
- GEOGRID TYPE RETAINING
- NEW WATER MAIN
- NEW SEWER MAIN
- FLOW LINE
- PCC BROW DITCH
- EXIST. FIRE LINE
- FIRE HYDRANT
- STORM DRAIN INLETS/CLEANOUTS
- PCC CURB
- PCC CURB & GUTTER
- ADA RAMP
- CURB CUT
- PEDESTRIAN PAVR PATH (BELGARD HOLLAND STONE OR EQUIVALENT)
- PEDESTRIAN WALKWAY STRIPING



SCALE 1"=30'



MATCH LINE - SEE SHEET 5 FOR CONTINUATION

MATCH LINE - SEE SHEET 5 FOR CONTINUATION



SHEET 4 OF 11 SHEETS
GRADING PLAN

ASCEND CONDOMINIUM

APN 223-341-17
DIAMOND STREET, SAN MARCOS CA 92078

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ENGINEERING

LAND PLANNING • ENGINEERING • SURVEYING
440 STATE PLACE, ESCONDIDO, CA 92029
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DATE	REMARKS
02/2025	INITIAL MEETING

CONSTRUCTION NOTES
SURFACE IMPROVEMENTS

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SI-02 PCC PAVEMENT
SI-03 DECORATIVE PAVERS/ENHANCED PAVING
SI-04 6" PCC CURB
SI-05 6" PCC CURB & GUTTER
SI-06 3" WIDE PCC RIBBON GUTTER
SI-07 RETAINING WALL SOILNAIL
SI-08 RETAINING WALL CMU
SI-09 SPLASH WALL
SI-10 PEDESTRIAN PAVR PATH

UTILITY IMPROVEMENTS

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UT-02 4" WATER DOMESTIC LINE
UT-03 FIRE HYDRANT
UT-04 8" SEWER LINE
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UT-08 RPDA

STORM DRAIN/WATER QUALITY IMPROVEMENTS

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SD-09 STORM DRAIN HEADWALL OUTLET
SD-10 MODULAR WETLANDS STRUCTURE
SD-11 TRENCH DRAIN
SD-12 D-25 SIDEWALK UNDERDRAIN OUTLET
SD-13 RIPRAP
SD-14 VEGETATION SWALE
SD-15 CURB CUT

LEGEND

PROJECT BOUNDARY	---
PROPERTY LINE	-PL-
RIGHT OF WAY	-RW-
EXIST MAJOR CONTOUR	---100---
EXIST MINOR CONTOUR	---
PROPOSE MAJOR CONTOUR	---100---
PROPOSE MINOR CONTOUR	---
GEOGRID TYPE RETAINING	---
NEW WATER MAIN	W-W
NEW SEWER MAIN	S-S
FLOW LINE	---
PCC BROW DITCH	→→→→
EXIST. FIRE LINE	F-F
FIRE HYDRANT	⊗
STORM DRAIN INLETS/CLEANOUTS	□ □
PCC CURB	---
PCC CURB & GUTTER	---
ADA RAMP	---
CURB CUT	---
PEDESTRIAN PAVR PATH (BELGARD HOLLAND STONE OR EQUIVALENT)	---

SHEET 5 OF 11 SHEETS
GRADING PLAN

ASCEND
CONDOMINIUM

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DIAMOND STREET, SAN MARCOS CA 92078

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DATE	REMARKS
02/2025	INITIAL MEETING

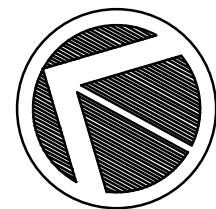


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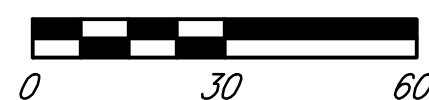


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SCALE 1"=30'



CONSTRUCTION NOTES

SURFACE IMPROVEMENTS

- SI-01 AC PAVEMENT (DRIVE AISLE)
- SI-02 PCC PAVEMENT
- SI-03 DECORATIVE PAVERS/ENHANCED PAVING
- SI-04 6" PCC CURB
- SI-05 6" PCC CURB & GUTTER
- SI-06 3' WIDE PCC RIBBON GUTTER
- SI-07 RETAINING WALL SOILNAIL
- SI-08 RETAINING WALL CMU
- SI-09 SPLASH WALL
- SI-10 PEDESTRIAN PAVER PATH

UTILITY IMPROVEMENTS

- UT-01 8" FIRELINE MAIN
- UT-02 4" WATER DOMESTIC LINE
- UT-03 FIRE HYDRANT
- UT-04 8" SEWER LINE
- UT-05 2" SERVICE W/ 2" METER (DOMESTIC)
- UT-06 2" SERVICE W/ 1 1/2" METER (IRRIGATION)
- UT-07 SEWER MANHOLE/SEWER CLEANOUT
- UT-08 RPDA

STORM DRAIN/WATER QUALITY IMPROVEMENTS

- SD-01 PCC BROW DITCH
- SD-02 STORM DRAIN INLET/CURB INLET
- SD-03 STORM DRAIN BOX/CLEANOUT
- SD-04 12" STORM DRAIN PIPE
- SD-05 18" STORM DRAIN PIPE
- SD-06 24" STORM DRAIN PIPE
- SD-07 48" RELOCATED STORM DRAIN PIPE
- SD-08 48" SD DETENTION PIPE
- SD-09 STORM DRAIN HEADWALL OUTLET
- SD-10 MODULAR WETLANDS STRUCTURE
- SD-11 TRENCH DRAIN
- SD-12 0-25 SIDEWALK UNDERDRAIN OUTLET
- SD-13 RIPRAP
- SD-14 VEGETATION SWALE
- SD-15 CURB CUT

LEGEND

PROJECT BOUNDARY	---
PROPERTY LINE	---PL---
RIGHT OF WAY	---RW---
EXIST MAJOR CONTOUR	---100---
EXIST MINOR CONTOUR	---100---
PROPOSE MAJOR CONTOUR	---100---
PROPOSE MINOR CONTOUR	---100---
GEOGRID TYPE RETAINING	---
NEW WATER MAIN	W W
NEW SEWER MAIN	S S
FLOW LINE	---
PCC BROW DITCH	---
EXIST. FIRE LINE	F F
FIRE HYDRANT	---
STORM DRAIN INLETS/CLEANOUTS	---
PCC CURB	---
PCC CURB & GUTTER	---
ADA RAMP	---
CURB CUT	---
PEDESTRIAN PAVER PATH (BELGARD HOLLAND STONE OR EQUIVALENT)	---

SHEET 6 OF 11 SHEETS

GRADING PLAN

ASCEND
CONDOMINIUM

APN 223-341-17

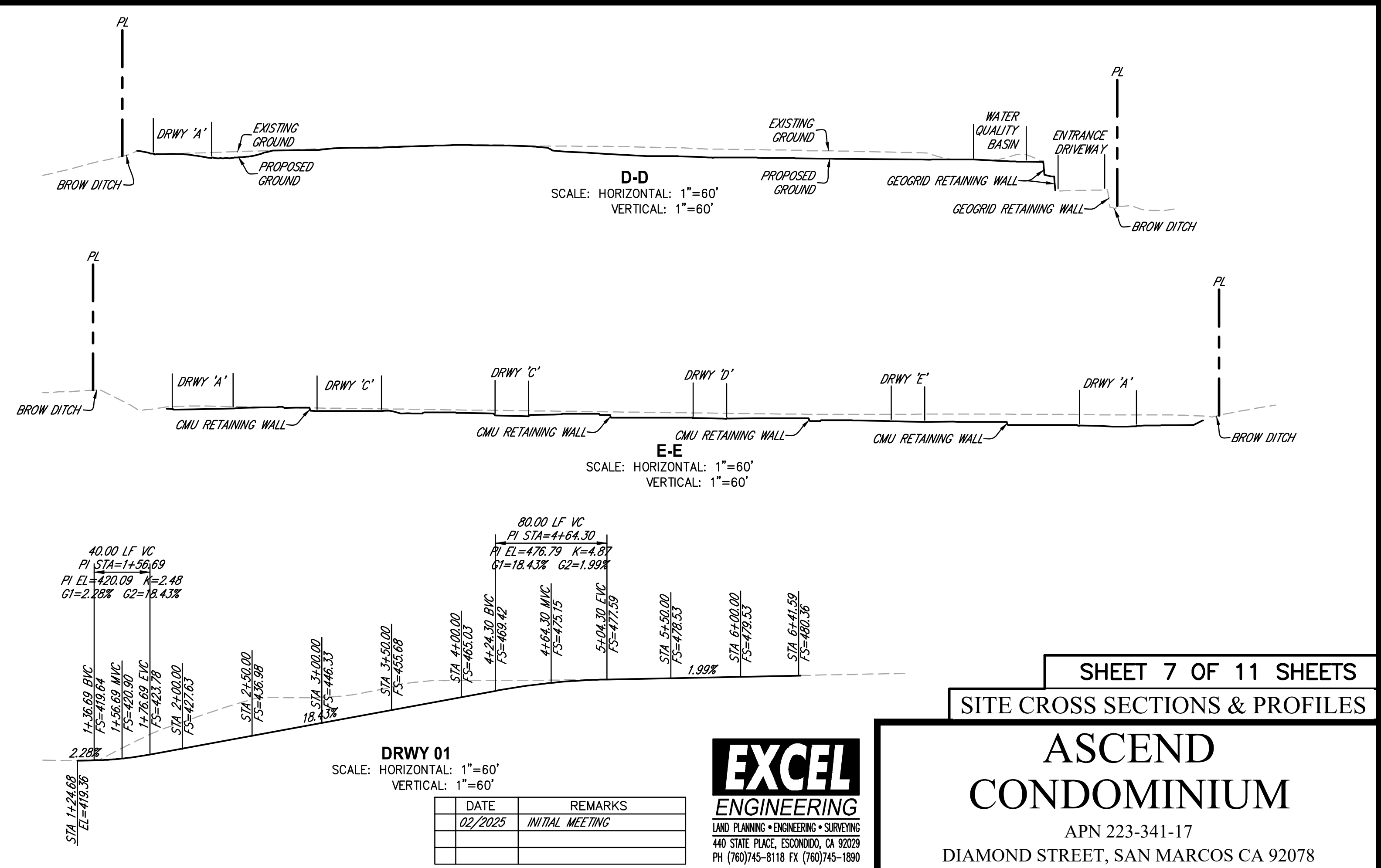
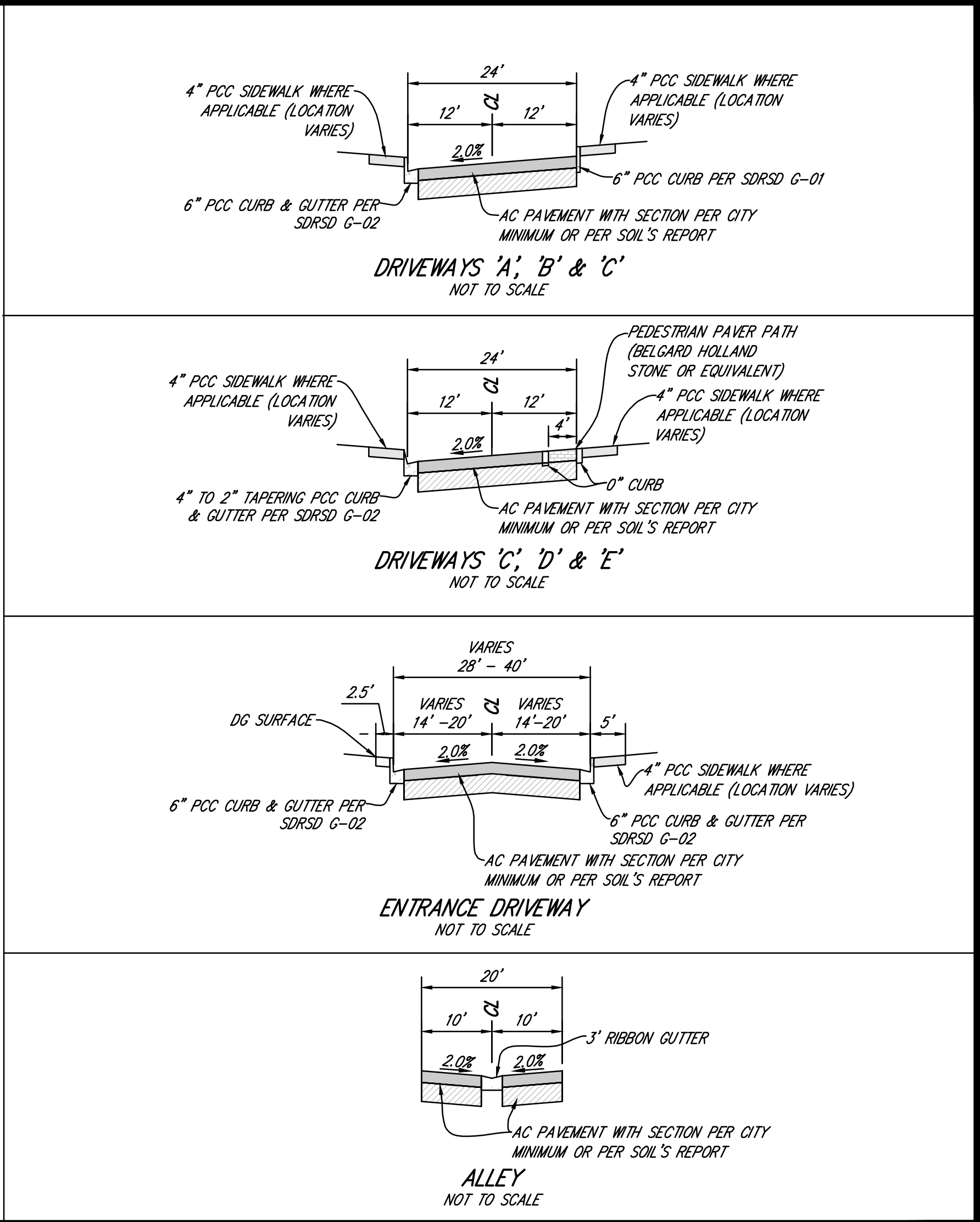
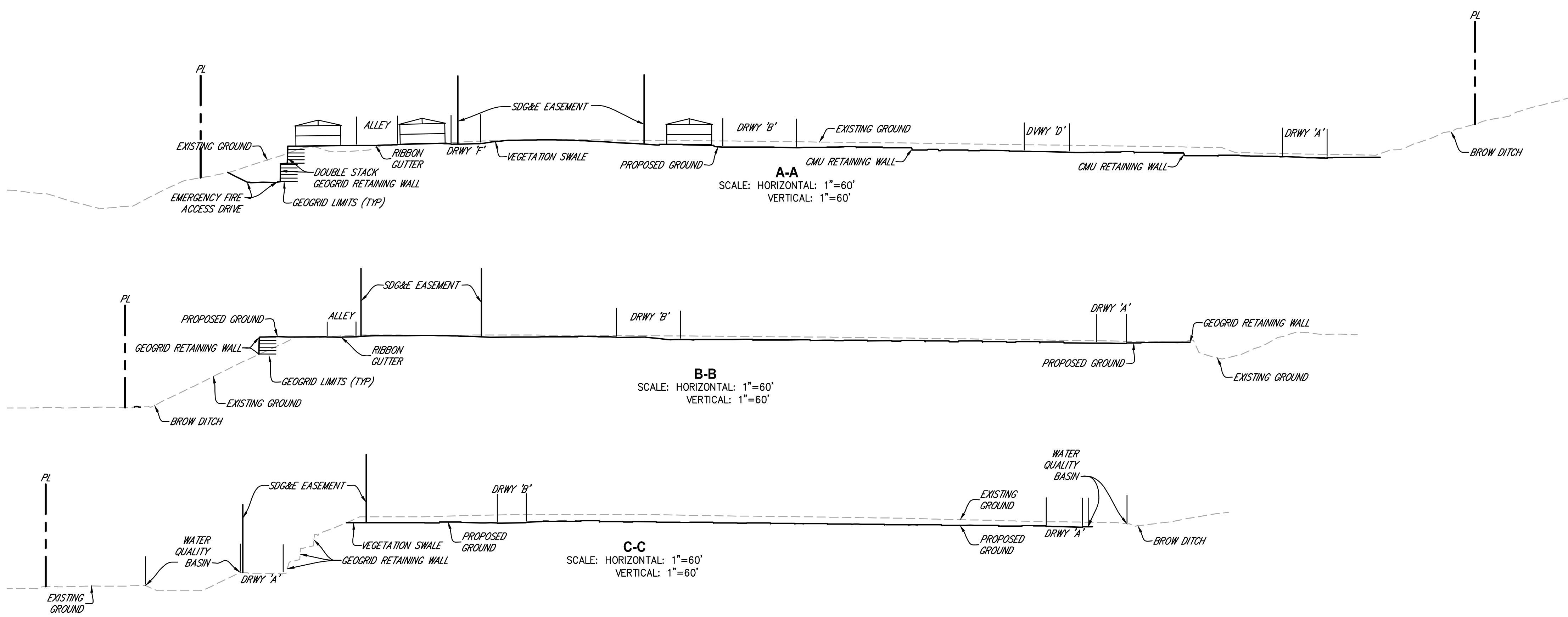
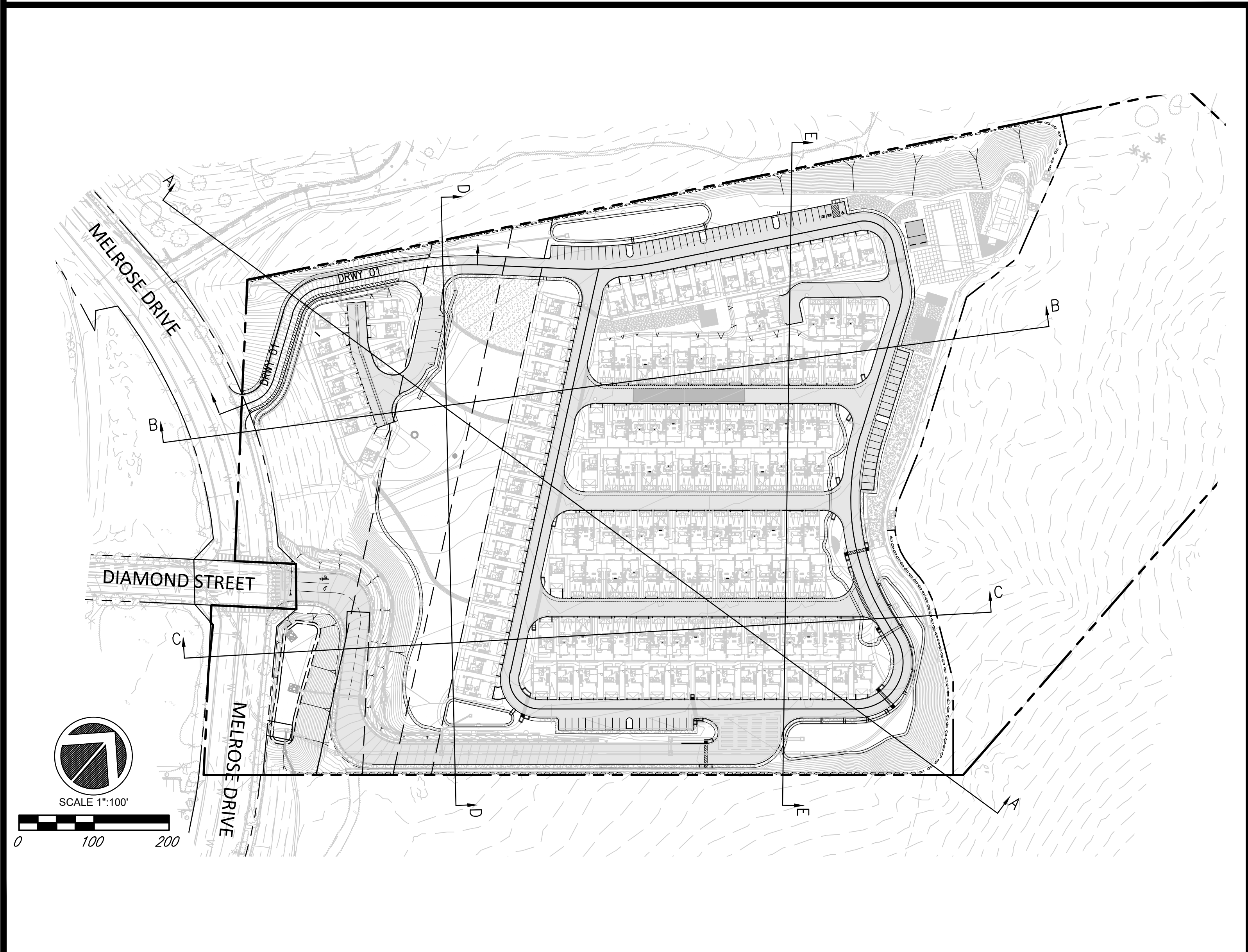
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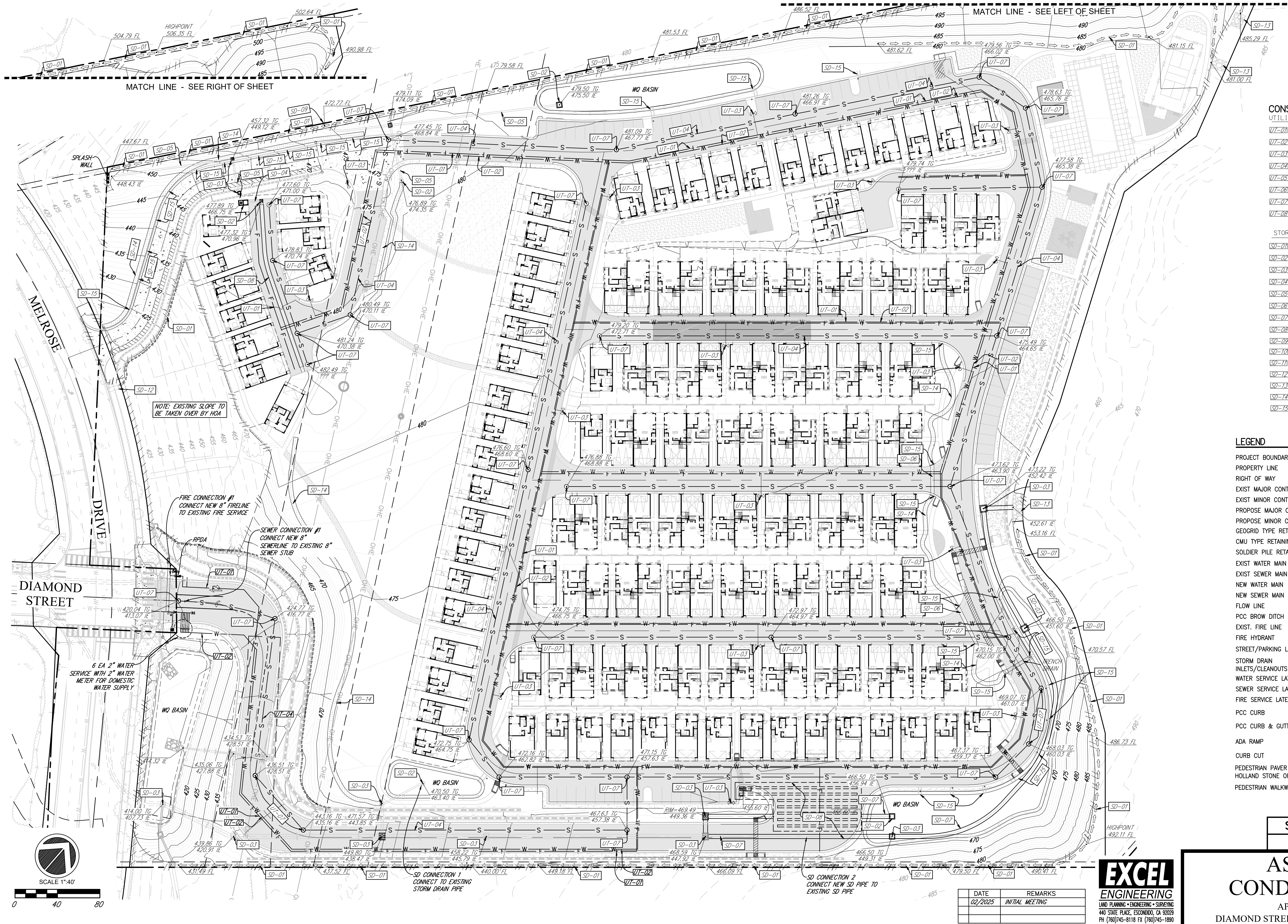
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V:\25125037\Engineering\SDP\Sheets - SDP\25037 7M SECTIONS PROFILES.dwg 3/19/2026 10:28 AM ORIGINAL PLOT SIZE: 1/4"=125' (25037) Engineering\SDP\Sheets - SDP\25037 7M SECTIONS PROFILES.dwg 3/19/2026 10:28 AM ORIGINAL PLOT SIZE: 1/4"=125' (25037)





CONSTRUCTION NOTES

UTILITY IMPROVEMENTS

- UT-01 8" FIRELINE MAIN
- UT-02 4" WATER DOMESTIC LINE
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- SD-14 VEGETATION SWALE
- SD-15 CURB CUT

LEGEND

- PROJECT BOUNDARY
- PROPERTY LINE
- RIGHT OF WAY
- EXIST MAJOR CONTOUR
- EXIST MINOR CONTOUR
- PROPOSE MAJOR CONTOUR
- PROPOSE MINOR CONTOUR
- GEOGRID TYPE RETAINING
- CMU TYPE RETAINING
- SOLDIER PILE RETAINING WALL
- EXIST WATER MAIN
- EXIST SEWER MAIN
- NEW WATER MAIN
- NEW SEWER MAIN
- FLOW LINE
- PCC BROW DITCH
- EXIST. FIRE LINE
- FIRE HYDRANT
- STREET/PARKING LIGHT
- STORM DRAIN
- INLETS/CLEANOUTS
- WATER SERVICE LATERAL
- SEWER SERVICE LATERAL
- FIRE SERVICE LATERAL
- PCC CURB
- PCC CURB & GUTTER
- ADA RAMP
- CURB CUT
- PEDESTRIAN PAVER PATH (BELGARD HOLLAND STONE OR EQUIVALENT)
- PEDESTRIAN WALKWAY STRIPING

SHEET 8 OF 11 SHEETS

UTILITIES

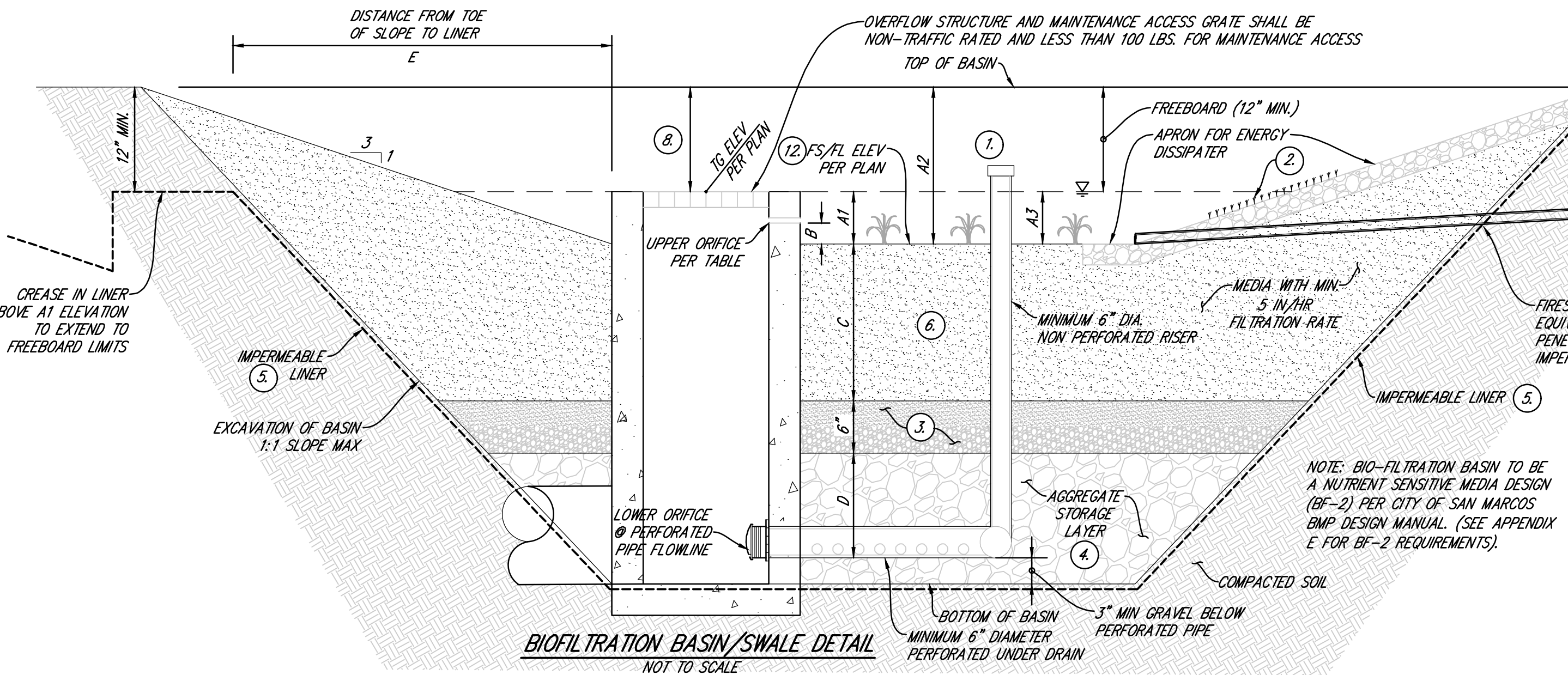
ASCEND
CONDOMINIUM

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DATE	REMARKS
02/2025	INITIAL MEETING

V:\25\25037\Engineering\SDP\Sheets - SDP\25037 TM UTILITIES.dwg 3/19/2026 10:28 AM ORIGINAL PLOT SIZE: 11" x 17"



STRUCTURAL BMP SUMMARY TABLE															
DMA NAME	DMA TYPE	BMP NAME	TYPE OF BMP	EFFECTIVE AREA (SQFT)	A1 (INCH) TOP OF GRADE	A2 (INCH) TOP OF BASIN	A3 (INCH) PONDING	B (INCH) UPPER ORIFICE	C (INCH) MEDIA	D (INCH) GRAVEL	E (FEET) OFFSET	BOX RISER OVERFLOW STRUCTURE SIZE (INCHES)	ORIFICE DIAMETER		IMPERMEABLE LINER ?
													UPPER (INCH)	LOWER (INCH)	
DMA-1	DRAINS TO BMP-1	BMP-1	BIOFILTRATION	1915	6	18	6	-	18	12	4.50	36X36	-	0.75	YES
DMA-2	DRAINS TO BMP-2	BMP-2	BIOFILTRATION	8052	6	18	6	-	18	12	4.50	48X48	-	2.00	YES
DMA-2.1	DRAINS TO BMP-2.1	BMP-2.1	BIO-SWALE	2260	6	18	6	-	18	12	4.50	24X24	-	0.75	YES
DMA-3	DRAINS TO BMP-3	BMP-3	BIOFILTRATION	5518	6	18	6	3	18	12	4.50	24X24	(3) 1"x18"	1.00	YES
DMA-4	DRAINS TO BMP-4.1	BMP-4.1	MODULAR WETLAND	1290 CF	-	-	-	-	-	-	-	-	-	0.50	-
DMA-5	DRAINS TO BMP-5	BMP-5	BIO-SWALE	2409	6	18	6	-	18	12	4.50	24X24	-	0.75	YES
DMA-6	DRAINS TO BMP-6	BMP-6	BIOFILTRATION	5344	12	30	6	6	18	12	7.50	48X48	(4) 1"x18"	1.00	YES

BMP NAME	TYPE OF BMP	PIPE DIAMETER (FT)	STORAGE VOLUME (CF)	LOWER ORIFICE DIAMETER (INCH)
BMP-2.2	DEFLECTION PIPES	4	11136	2.00
BMP-4	DEFLECTION PIPES	4	1998	0.50

WATER QUALITY BASIN INSTALLATION NOTES:

- AN UNDERDRAIN CLEANOUT WITH A MINIMUM 6-INCH DIAMETER AND LOCKABLE CAP IS PLACED EVERY 250 TO 300 FEET AS REQUIRED BASED ON UNDERDRAIN LENGTH. THE TOP OF CLEANOUT ELEVATION TO EXTEND 3" ABOVE A-3 DIMENSION.
- VEGETATION USED SHOULD BE SUITABLE FOR THE CLIMATE PER LANDSCAPE PLANS AND SHOULD CONFORM TO THE REQUIREMENTS IN APPENDIX E.26 OF THE CITY'S BMP MANUAL.
- FILTER COARSE IS A MINIMUM OF 6 INCHES PROVIDED IN TWO SEPARATE 3 INCH LAYERS. THE TOP LAYER SHALL BE MADE OF ASTM C33 CHOKER SAND AND THE BOTTOM LAYER BE OF ASTM NO. 8 AGGREGATE. MARKERS STAKES SHALL BE USED TO ENSURE UNIFORM LIFT THICKNESS.
- AASHTO NO. 57 STONE OR CLASS 2 PERMEABLE PER CAL TRANS SPECIFICATION 68-2.02(3) IS RECOMMENDED FOR THE AGGREGATE STORAGE LAYER. WASHED, OPEN-GRADED CRUSHED ROCK MAY BE USED, HOWEVER, A 4 INCH MINIMUM WASHED PEA GRAVEL FILTER COURSE LAYER AT THE TOP OF THE CRUSHED ROCK IS REQUIRED.
- IMPERMEABLE LINER SHALL BE INSTALLED WHEN THE BIOFILTRATION BASIN IS WITHIN 10 FEET OF RETAINING WALLS OR BUILDING FOUNDATIONS, OR AS RECOMMENDED BY THE SOILS ENGINEER, OR REQUIRED BY THESE PLANS. IMPERMEABLE LINER SHALL BE 30 MIL THICK (PER COUNTY OF SAN DIEGO GREEN STREETS DESIGN STANDARD DRAWING GS-3.00 AND COUNTY GREEN STREETS SUPPLEMENT TO CAL TRANS SPECIFICATIONS 20-11.08B) CONFIGURED TO ENTIRELY ENCOMPASS THE SIDES OF THE WATER QUALITY BASIN.
- BIOFILTRATION SOIL MEDIA LAYER (BSM) SHALL CONSIST OF 60% TO 80% BY VOLUME SAND, UP TO 20% BY VOLUME TOPSOIL, AND UP 20% BY VOLUME COMPOST (PER CITY OF SAN MARCOS BMP DESIGN MANUAL SECTION F.3).
- THE AGGREGATE STORAGE LAYER SHALL BE COMPACTED IN ACCORDANCE WITH SOILS ENGINEER'S RECOMMENDATIONS.
- OVERFLOW STRUCTURE TO HAVE A MINIMUM OF 12 INCHES OF FREEBOARD.
- ALL LINER INSTALLATIONS, FIELD WELDING OF SEAMS, AND OBSERVATION OF SOIL MIX PLACEMENT SHALL REQUIRE SPECIAL INSPECTION BY THE PROJECT GEOTECHNICAL ENGINEER OR OTHER QUALIFIED PERSON. A LETTER CERTIFYING PROPER INSTALLATION SHALL BE PROVIDED TO THE ENGINEER OF RECORD TO ACCEPTANCE OF THE FACILITIES.
- SPECIAL INSPECTION SHALL BE REQUIRED FOR CONSTRUCTION OF ALL BIOFILTRATION BASINS. INSPECTION SHALL BE PERFORMED BY A QUALIFIED INDIVIDUAL (SUCH AS: ENGINEER OF RECORD, QSD). INSPECTION SHALL INCLUDE:
 - VERIFICATION OF OVERALL DIMENSIONS PRIOR TO PLACEMENT OF MATERIALS;
 - PLACEMENT OF THE LINER, IF REQUIRED; AND SEAMS OR PENETRATIONS
 - PLACEMENT OF THE GRAVEL, FILTER MATERIALS, AND FILTER MEDIA;
 - ALL INLET AND OUTLET STRUCTURES INCLUDING UNDERDRAINS, IF REQUIRED;
 - CONTRACTOR SHALL TAKE PICTURES AT EACH STAGE OF INSTALLATION AND SUBMITTED TO ENGINEER FOR VERIFICATION OF INSTALL.
- INSPECTOR SHALL BE GIVEN A MINIMUM OF 48 HOURS PRIOR TO INSPECTION. UPON COMPLETION THE INSPECTOR SHALL PROVIDE A CERTIFICATION TO THE ENGINEER OF WORK.
- PROPOSED MATERIALS, SUCH AS AGGREGATE, FILTER MATERIAL, AND FILTER MEDIA SHALL BE SUBMITTED TO THE ENGINEER OF WORK FOR APPROVAL.
- THE FINISHED SURFACE OF BIOFILTRATION BASINS SHALL BE FLAT AND THE FINISHED SURFACE/FLOWLINE OF BIO-SWALES SHALL BE 2% MAX SLOPE IN THE LONGITUDINAL DIRECTION.



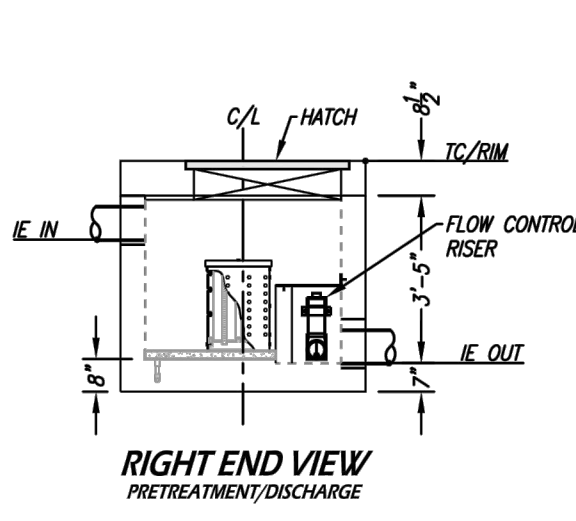
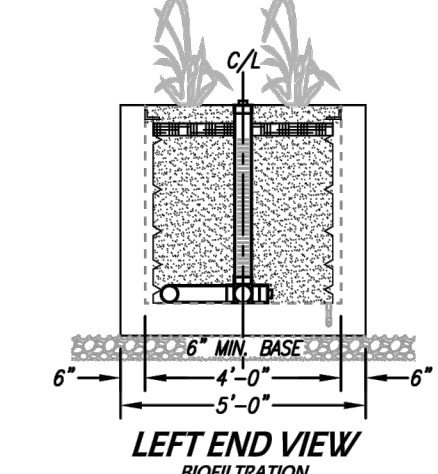
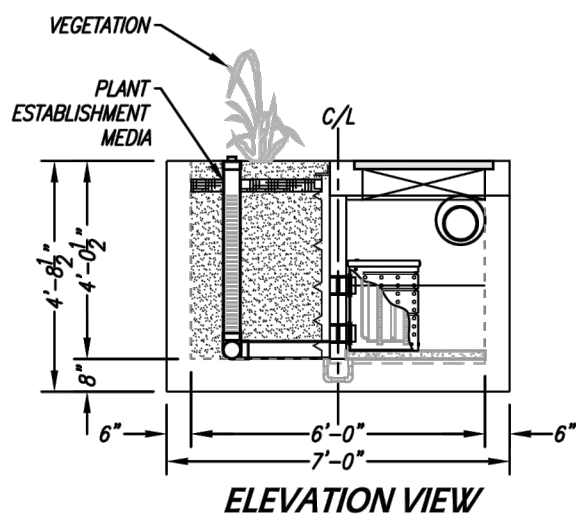
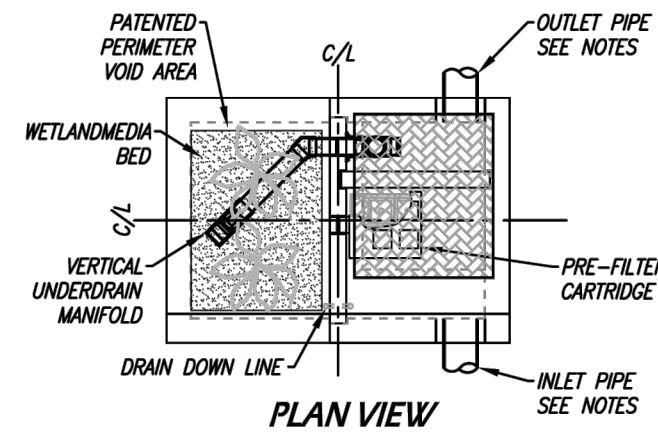
SITE SPECIFIC DATA			
PROJECT NAME	Ascend Townhomes		
PROJECT LOCATION	San Marcos, CA		
STRUCTURE ID	BMP-4.1		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
1,290	N/A		
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) - IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
PRETREATMENT		BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	30" x 36"	N/A	N/A
WETLANDMEDIA VOLUME (CY)			1.48
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø 0.5"
MAXIMUM PICK WEIGHT (LBS)			TBD
NOTES:			

INSTALLATION NOTES

- CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
- UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
- ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
- CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
- CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
- DROP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

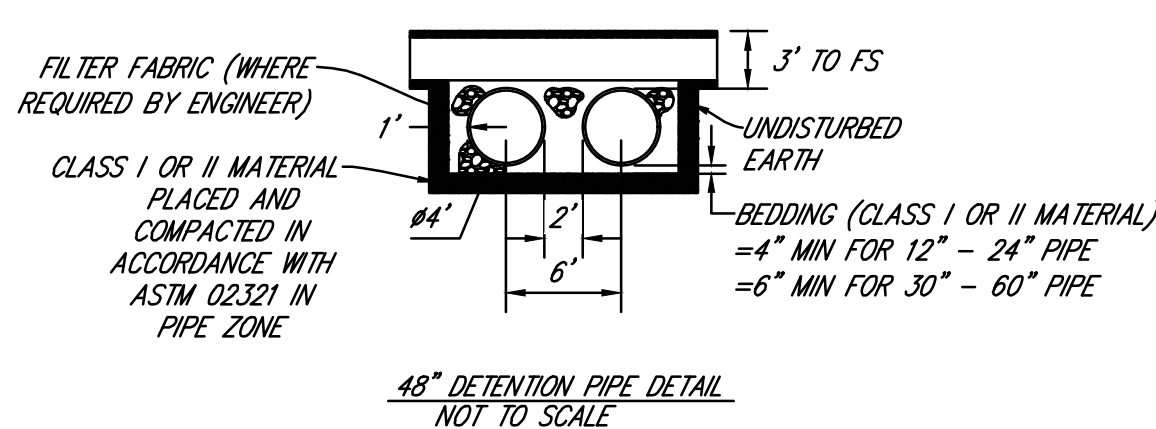
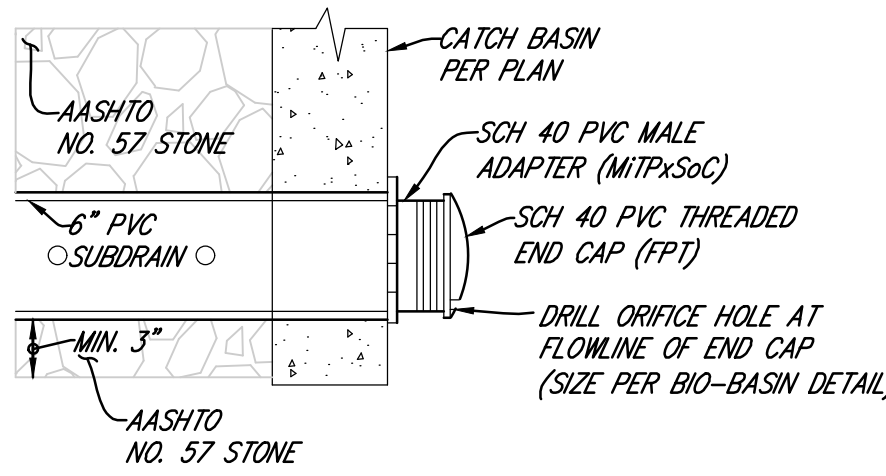
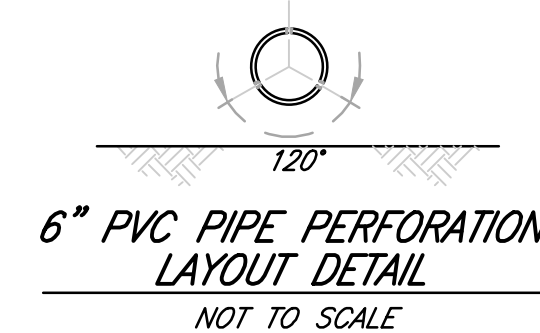
GENERAL NOTES

- MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.



TREATMENT Volume (CF)	1,290
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MWS-L-4-6-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL



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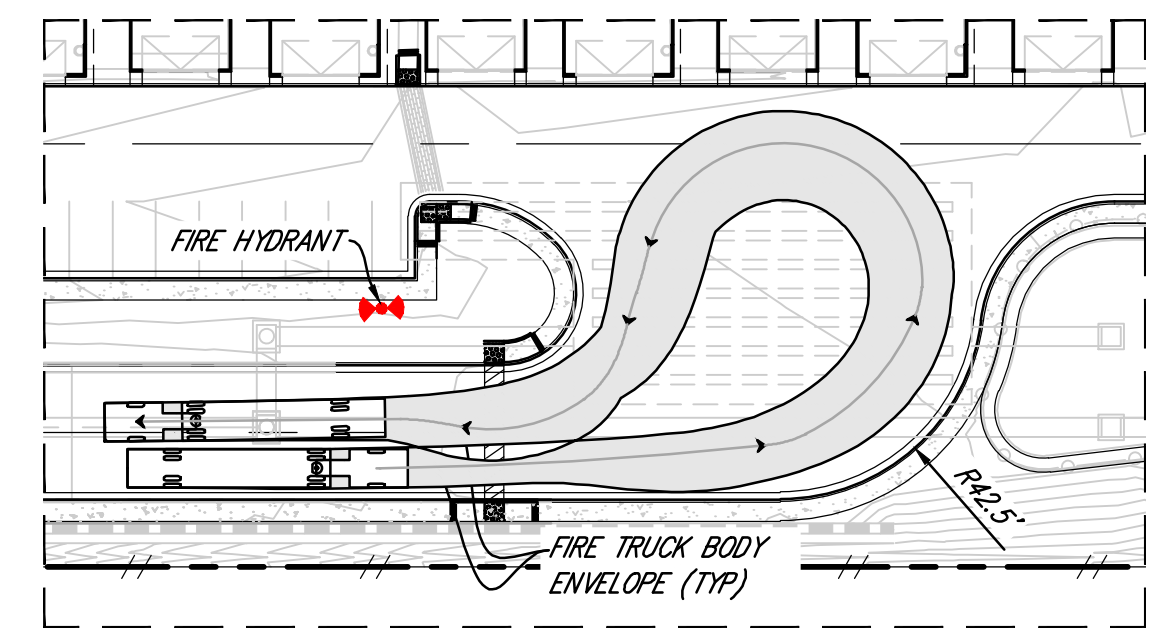
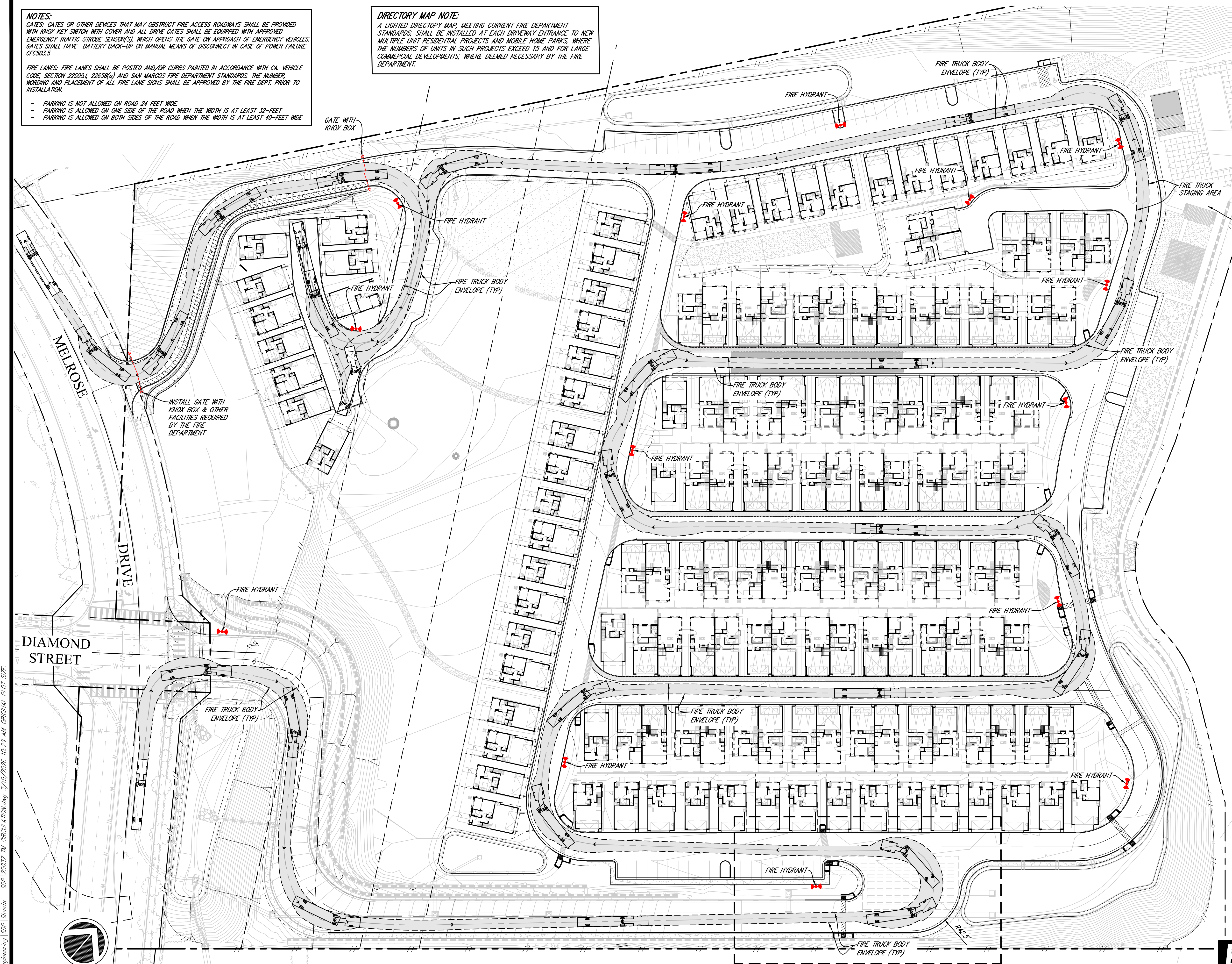
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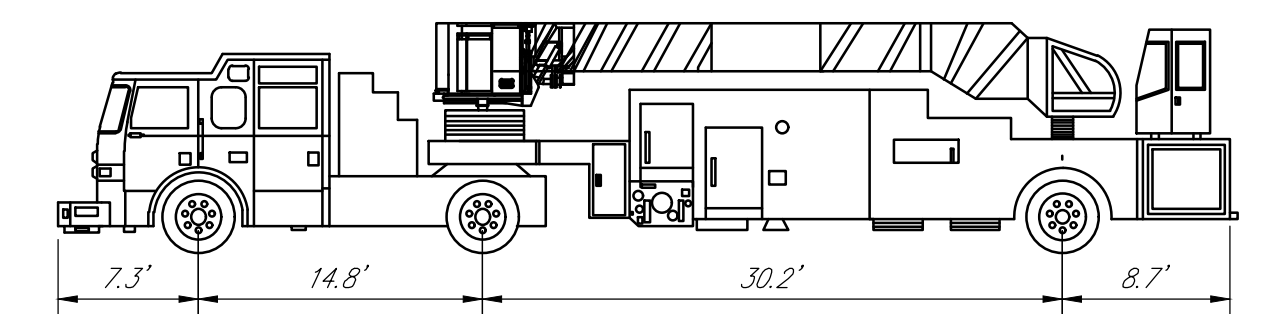
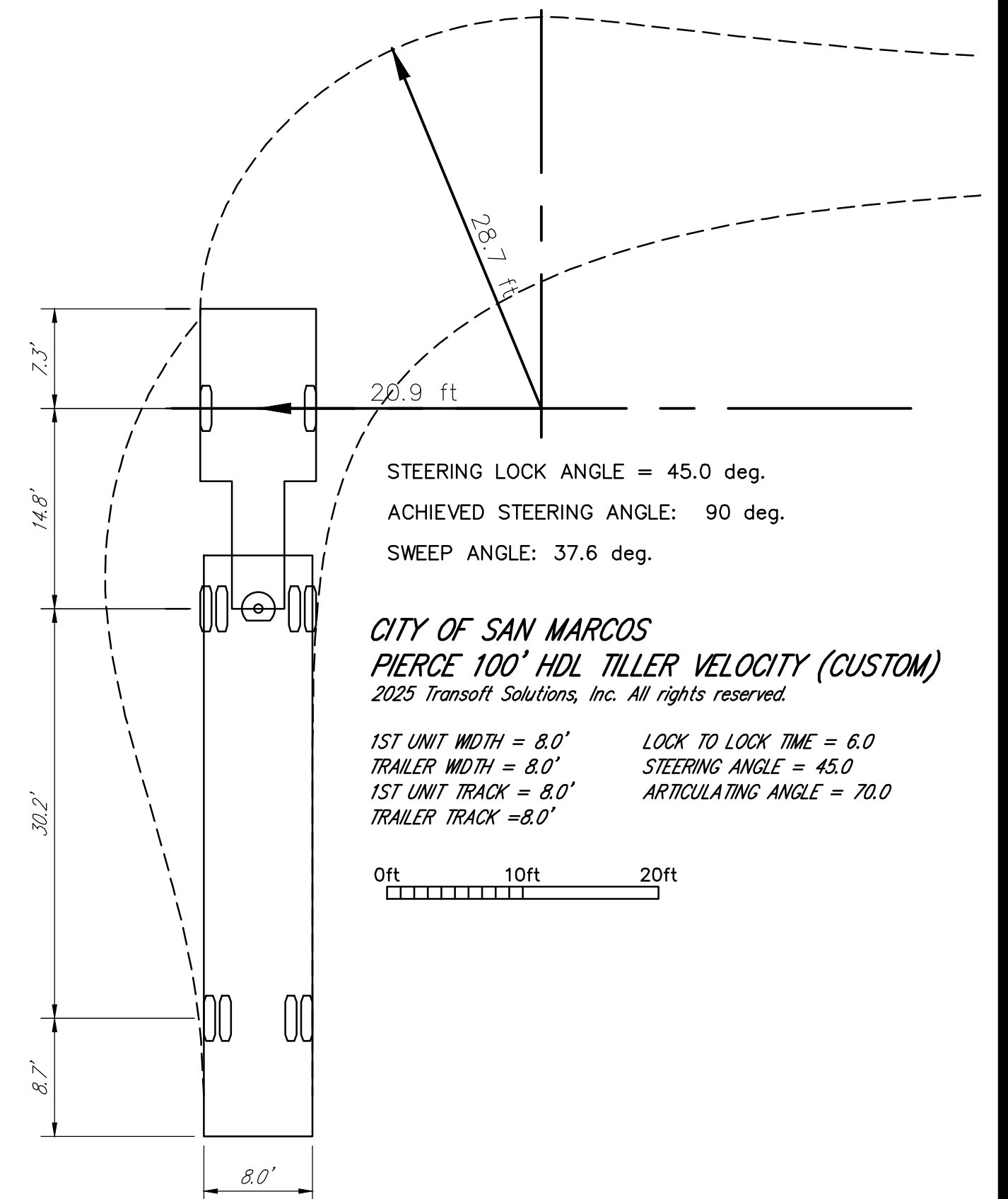
SHEET 9 OF 11 SHEETS
WQMP

NOTES:
GATES: GATES OR OTHER DEVICES THAT MAY OBSTRUCT FIRE ACCESS ROADWAYS SHALL BE PROVIDED WITH KNOX KEY SWITCH WITH COVER AND ALL DRIVE GATES SHALL BE EQUIPPED WITH APPROVED EMERGENCY TRAFFIC STROBE SENSOR(S), WHICH OPENS THE GATE ON APPROACH OF EMERGENCY VEHICLES. GATES SHALL HAVE BATTERY BACK-UP OR MANUAL MEANS OF DISCONNECT IN CASE OF POWER FAILURE. CFS03.5
FIRE LANES: FIRE LANES SHALL BE POSTED AND/OR CURBS PAINTED IN ACCORDANCE WITH CA. VEHICLE CODE, SECTION 22500.1, 22658(c) AND SAN MARCOS FIRE DEPARTMENT STANDARDS. THE NUMBER, WORDING AND PLACEMENT OF ALL FIRE LANE SIGNS SHALL BE APPROVED BY THE FIRE DEPT. PRIOR TO INSTALLATION.
- PARKING IS NOT ALLOWED ON ROAD 24 FEET WIDE.
- PARKING IS ALLOWED ON ONE SIDE OF THE ROAD WHEN THE WIDTH IS AT LEAST 32- FEET
- PARKING IS ALLOWED ON BOTH SIDES OF THE ROAD WHEN THE WIDTH IS AT LEAST 40- FEET WIDE

DIRECTORY MAP NOTE:
A LIGHTED DIRECTORY MAP, MEETING CURRENT FIRE DEPARTMENT STANDARDS, SHALL BE INSTALLED AT EACH DRIVEWAY ENTRANCE TO NEW MULTIPLE UNIT RESIDENTIAL PROJECTS AND MOBILE HOME PARKS, WHERE THE NUMBERS OF UNITS IN SUCH PROJECTS EXCEED 15 AND FOR LARGE COMMERCIAL DEVELOPMENTS, WHERE DEEMED NECESSARY BY THE FIRE DEPARTMENT.



NOTE:
THE WIDENED ENTRANCE IS INTENDED TO BE A FIRE TURN AROUND, MEETING THE STANDARD REQUIREMENTS.



EMERGENCY VEHICLE USED IN THE SIMULATION
NOT TO SCALE

SHEET 10 OF 11 SHEETS
CIRCULATION

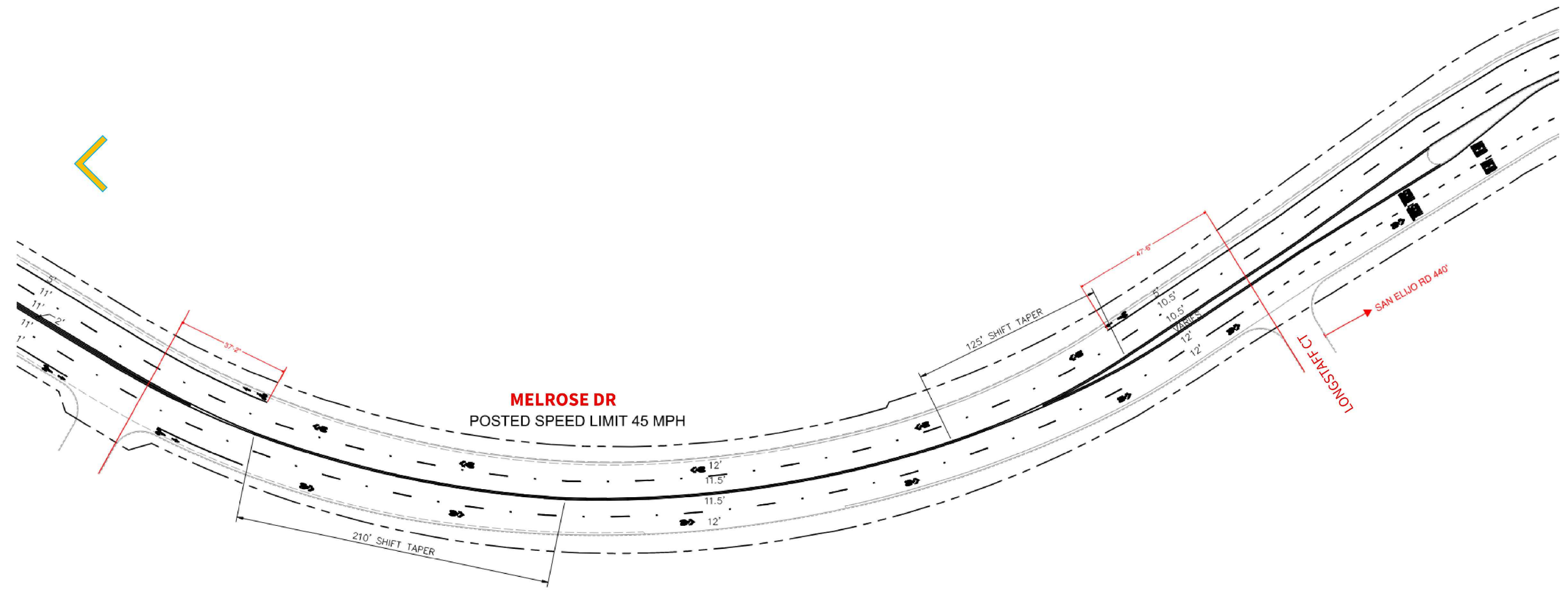
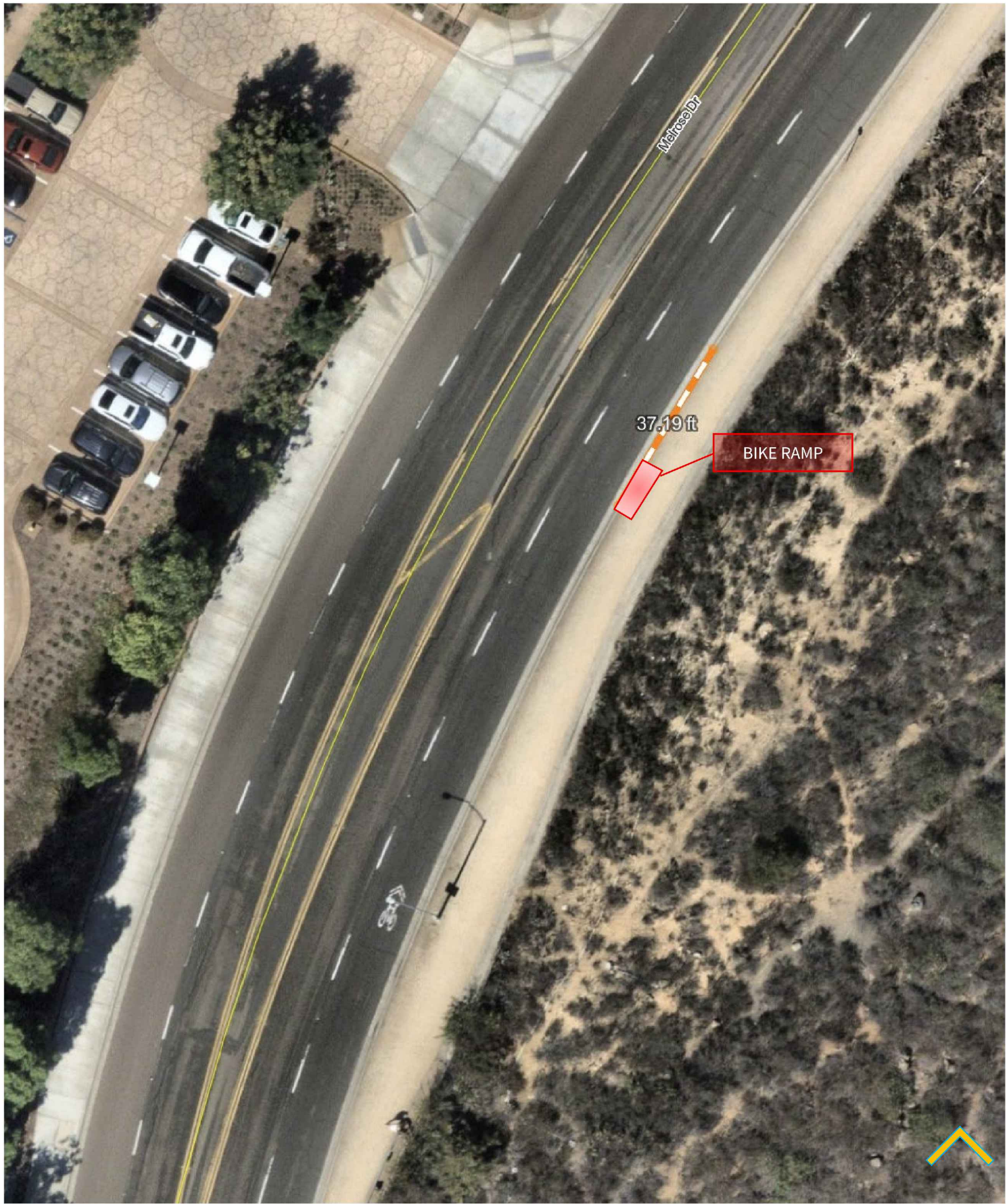
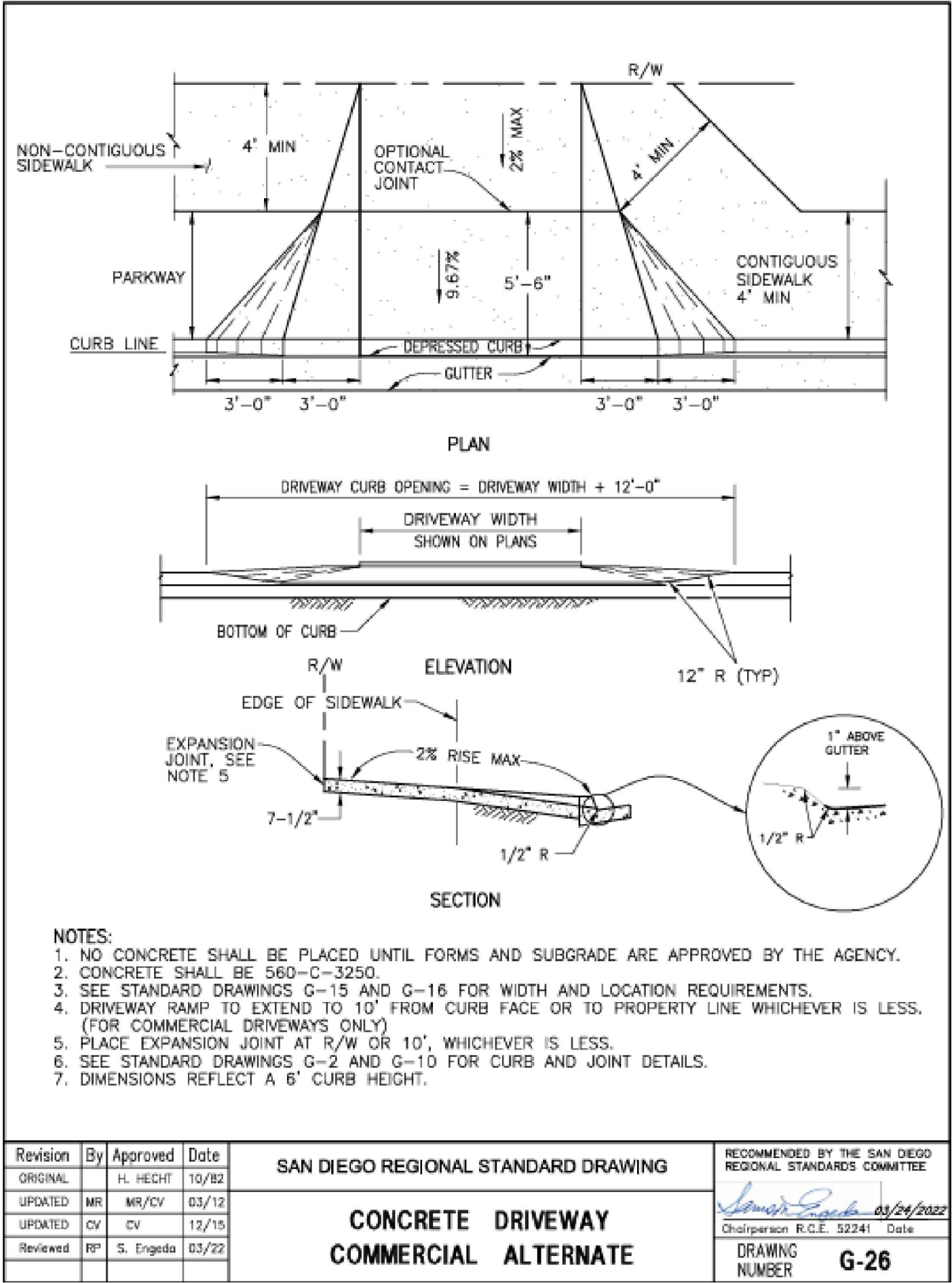
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K:\25\250337\Engineering\SDP\Sheets - SDP\250337 TM CIRCULATION.dwg 3/19/2026 10:29 AM ORIGINAL PLOT SIZE:



NOTE: THE FINAL REQUIREMENTS FOR CONSTRUCTION OF THE ATP IMPROVEMENTS SHALL BE DOCUMENTED IN THE CONDITIONS OF APPROVAL.

FINAL LOCATION OF THE ATP IMPROVEMENTS WILL BE SHOWN IN THE CONSTRUCTION DOCUMENTS.

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SHEET 11 OF 11 SHEETS
ACTIVE TRANSPORTATION PLAN

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