



ATTACHMENT D

MITIGATED NEGATIVE DECLARATION

APPENDIX D1 – PRIORITY DEVELOPMENT PROJECT STORM WATER QUALITY MANAGEMENT PLAN

Appendix D

Priority Development Project Storm Water Quality Management Plan

City of San Marcos

**PRIORITY DEVELOPMENT PROJECT (PDP)
STORM WATER QUALITY MANAGEMENT PLAN (SWQMP)
FOR
COSTCO SAN MARCOS GAS STATION
AMENDMENT TO PERMIT APPLICATION #CUP23-0004**

**150 S. BENT AVENUE
SAN MARCOS, CA**

**ASSESSOR'S PARCEL NUMBER(S):
219-331-43-00**

ENGINEER OF WORK:

MARK K. NERO, RCE 80066, EXP 09/30/2024

PREPARED FOR:

**COSTCO WHOLESALE
999 LAKE DRIVE
ISSAQUAH, WA 98027**

**PDP SWQMP PREPARED BY:
FUSCOE ENGINEERING, INC,
15535 SAND CANYON, SUITE 100
IRVINE, CA 92618
949.474.1960**

**DATE OF SWQMP:
May 19th, 2025**

**PLANS PREPARED BY:
MARK K. NERO, P.E.
FUSCOE ENGINEERING, INC.
15535 SAND CANYON, SUITE 100
IRVINE, CA 92618
949.474.1960**

TABLE OF CONTENTS

Acronym Sheet.....	3
PDP SWQMP Preparer's Certification Page	4
PDP SWQMP Project Owner's Certification Page.....	5
Submittal Record	6
Project Vicinity Map	7
Form I-1 Applicability of Storm Water Best Management Practices (BMP) Requirements	8
Form I-2 Project Type Determination Checklist.....	10
Form I-3B Site Information Checklist For PDPs	12
Form I-4 Source Control BMP Checklist for All Development Projects	23
Form I-5 Site Design BMP Checklist for All Development Projects	25
Form I-6 Summary of PDP Structural BMPs.....	27
Attachment 1: Backup For PDP Pollutant Control BMPs	34
Attachment 1a: DMA Exhibit	
Attachment 1b: Tabular Summary of DMAs and Design Capture Volume Calculations	
Attachment 1c: Harvest and Use Feasibility Screening (when applicable)	
Attachment 1d: Categorization of Infiltration Feasibility Condition (when applicable)	
Attachment 1e: Pollutant Control BMP Design Worksheets / Calculations	
Attachment 2: Backup For PDP Hydromodification Control Measures.....	36
Attachment 2a: Hydromodification Management Exhibit	
Attachment 2b: Management of Critical Coarse Sediment Yield Areas	
Attachment 2c: Geomorphic Assessment of Receiving Channels	
Attachment 2d: Flow Control Facility Design	
Attachment 3: Structural BMP Maintenance Information	38
Attachment 3a: B Structural BMP Maintenance Thresholds and Actions	
Attachment 3b: Draft Maintenance Agreement (when applicable)	
Attachment 4: Copy of Plan Sheets Showing Permanent Storm Water BMPs	40

Acronym Sheet

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
SWQMP	Storm Water Quality Management Plan

PDP SWQMP Preparer's Certification Page

Project Name: COSTCO SAN MARCOS GAS STATION

Permit Application Number: CUP23-0004

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 local City of San Marcos and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) 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 Engineer 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.

Engineer of Work's Signature, PE Number & Expiration Date

MARK K. NERO

Print Name

FUSCOE ENGINEERING, INC.

Company

Date

Engineer's Seal:

PDP SWQMP Project Owner's Certification Page

Project Name: COSTCO SAN MARCOS GAS STATION

Permit Application Number: CUP23-0004

PROJECT OWNER'S CERTIFICATION

This PDP SWQMP has been prepared for Costco by Fuscoe Engineering, Inc. 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 local City of San Marcos and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) 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.

Project Owner's Signature

Print Name

Company

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	7/19/2023	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	Preliminary Design Submittal
2	11/08/2023	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	Updating permit numbers, square footages, labeling of exhibit features.
3	5/14/2024	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	Updating BMP sizing, square footages of DMAs.
4	8/13/2024	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	Reconciling listed square footages and BMP sizing throughout the report.

Project Vicinity Map

Project Name: COSTCO SAN MARCOS GAS STATION

Permit Application Number: CUP23-0004



Form I-1 Applicability of Storm Water Best Management Practices (BMP) Requirements

Form I-1 Applicability of Storm Water Best Management Practices (BMP) Requirements (Storm Water Intake Form for all Development Permit Applications) For detailed information please visit: http://www.san-marcos.net/departments/development-services/stormwater/development-planning		Form I-1 [March 15, 2016]
Project Identification		
Project Name: COSTCO SAN MARCOS GAS STATION		
Description: The project site is located at the northeast corner of West San Marcos Boulevard and South Bent Avenue in the City of San Marcos. In October of 2021, a SWQMP was approved for the redevelopment of a portion of this project site to a Business Costco Center. This SWQMP is prepared for the addition of a gas station at the northeastern corner of the project site. The surrounding land use is primarily industrial and retail.		
Permit Application Number (if applicable): CUP23-0004		Date: August 13, 2024
Project Address: 150 S. Bent Avenue, San Marcos, CA		
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.		
Development projects are defined as construction, rehabilitation, redevelopment, or reconstruction of any public or private 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/stormwater/development-planning		
Please answer each of the following steps below, starting with Step 1 and progressing through each step until reaching "Stop".		
Step	Answer	Progression
Step 1: Based on the above, Is the project a "development project" (See definition above)? See Section 1.3 of the BMP Design Manual for further guidance if necessary.	☒ Yes	Go to Step 2.
	☐ No	Permanent BMP requirements do not apply. No SWQMP will be required. Provide brief discussion below. STOP.
Discussion / justification if the project is <u>not</u> a "development project" (e.g., the project includes <i>only</i> interior remodels within an existing building):		
Step 2: Is the project a Standard Project, Priority Development Project	☐ Standard Project	<u>Only</u> Standard Project requirements apply, including <u>Standard Project SWQMP</u> . STOP.
	☒ PDP	<u>Standard and PDP</u> requirements apply, including <u>PDP SWQMP</u> . Go to Step 3 on the following page.

(PDP), or exception to PDP definitions? To answer this item, complete Form I-2, Project Type Determination. See Section 1.4 of the BMP Design Manual in its entirety for guidance. In addition to Section 1.4, please refer to the City's SWQMP Submittal Requirements form.	☐ Exception to PDP definitions	<u>Standard Project</u> requirements apply, <u>and any additional requirements specific to the type of project</u>. Provide discussion and list any additional requirements below. Prepare <u>Standard Project SWQMP</u>. STOP.
Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:		
Step 3 (PDPs only). Please answer the list of questions in this section to determine if hydromodification requirements apply to the proposed PDP. Does the project:		
Step 3a. Discharge storm water runoff directly to the Pacific Ocean?	☐ Yes	STOP. Hydromodification requirements do not apply.
	☒ No	Continue to Step 3b.
Step 3b. Discharge storm water runoff directly to an enclosed embayment, not within protected areas?	☐ Yes	STOP. Hydromodification requirements do not apply.
	☒ No	Continue to Step 3c.
Step 3c. Discharge storm water runoff directly to a water storage reservoir or lake, below spillway or normal operating level?	☐ Yes	STOP. Hydromodification requirements do not apply.
	☒ No	Continue to Step 3d.
Step 3d. Discharge storm water runoff directly to an area identified in WMAA?	☐ Yes	STOP. Hydromodification requirements do not apply.
	☒ No	Hydromodification requirements apply to the project. Go to Step 4.
Discussion / justification if hydromodification control requirements do <u>not</u> apply:		
Step 4 (PDPs subject to hydromodification control requirements only). Does protection of critical coarse sediment yield areas apply based on review of WMAA Potential Critical Coarse Sediment Yield Area Map? See Section 6.2 of the BMP Design Manual for guidance.	☐ Yes	STOP. Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2).
	☒ No	Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop.

Form I-2 Project Type Determination Checklist

Project Type Determination Checklist		Form I-2 [March 15, 2016]	
Project Information			
Project Name/Description: COSTCO SAN MARCOS GAS STATION			
Permit Application Number (if applicable): CUP23-0004		Date: August 13, 2024	
Project Address: 150 South Bent Avenue, San Marcos, CA			
Project Type Determination: Standard Project or Priority Development Project (PDP)			
The project is (select one): ☐ New Development ☒ Redevelopment			
The total proposed newly created or replaced impervious area is: 84,237 ft ² (1.94) acres			
Is the project in any of the following categories, (a) through (f)?			
Yes ☐	No ☒	(a)	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 ☐	(b)	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 ☐	(c)	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.

Form I-2 Page 2, Form Date: March 15, 2016			
Yes ☐	No ☒	(d)	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 ☐	(e)	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 ☐	(f)	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>
Does the project meet the definition of one or more of the Priority Development Project categories (a) through (f) listed above? ☐ No – the project is <u>not</u> a Priority Development Project (Standard Project). ☒ Yes – the project is a Priority Development Project (PDP).			
The following is for redevelopment PDPs only: The area of existing (pre-project) impervious area at the project site is: 615,067 ft² (A) The total proposed newly created or replaced impervious area is 84,237 ft² (B) Percent impervious surface created or replaced (B/A)*100: 14% The percent impervious surface created or replaced is (select one based on the above calculation): ☒ less than or equal to fifty percent (50%) – only new impervious areas are considered PDP OR ☐ greater than fifty percent (50%) – the entire project site is a PDP			

(B) Includes 1,163 sf of driveway improvements with flows not routed to proposed BMPs.

Form I-3B Site Information Checklist For PDPs

Site Information Checklist For PDPs		Form I-3B (PDPs) [July 19, 2023]
Project Summary Information		
Project Name:	COSTCO SAN MARCOS GAS STATION	
Project Address	150 South Bent Ave San Marcos, CA 92078	
Assessor's Parcel Number(s) (APN(s))	219-331-43-00	
Permit Application Number	CUP23-0004	
Project Hydrologic Unit	Select One: ☐ Santa Margarita 902 ☐ San Luis Rey 903 ☒ Carlsbad 904 ☐ San Dieguito 905 ☐ Penasquitos 906 ☐ San Diego 907 ☐ Pueblo San Diego 908 ☐ Sweetwater 909 ☐ Otay 910 ☐ Tijuana 911	
Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	Carlsbad Hydrologic Unit, San Marcos Hydrologic Area, Richland Hydrologic Sub-Area #904.52	
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	14.12 Acres (615,067 Square Feet)	
Area to be Disturbed by the Project (Project Area)	2.42 Acres (105,319 Square Feet)	
Project Proposed Impervious Area* (subset of Project Area)	1.94 Acres (84,237 Square Feet)	
Project Proposed Pervious Area (subset of Project Area)	0.48 Acres (21,082 Square Feet)	
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.		

*Includes 1,163 sf of driveway improvements with flows not routed to proposed BMPs.

Form I-3B Page 2 of 10, Form Date: March 15, 2016
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 existing site is an impervious parking lot for Costco.
Existing Land Cover Includes (select all that apply): ☐ Vegetative Cover ☐ Non-Vegetated Pervious Areas ☒ Impervious Areas Description / Additional Information: The site is an impervious parking lot with little vegetation.
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:

Form I-3B Page 3 of 10, Form Date: March 15, 2016
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 project site consists of an existing Costco Warehouse and paved parking lot. The site is highly impervious with landscape planter islands scattered throughout the parking lot. Runoff from the northerly portion of the disturbed area generally flows northerly to an existing grate inlet that connects to a 60-inch public storm drain from Linda Vista Drive to S Bent Avenue via an 18-inch storm drain. The southerly portion of the disturbed area flows southerly to an existing grate inlet that connects to a 54-inch public storm drain in S Bent Avenue via a 36-inch storm drain. The site drainage conveyance is urban. There is no offsite runoff.

Form I-3B Page 4 of 10, Form Date: March 15, 2016
Description of Proposed Site Development
Project Description / Proposed Land Use and/or Activities: Proposed improvements include the addition of a gas station, new curb and gutter, new pavement, new driveways, and new striping.
List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features): The impervious features of the project include a proposed gas station with underground gas tanks, in addition to new curb and gutter, new pavement, new driveways, and new striping.
List/describe proposed pervious features of the project (e.g., landscape areas): Proposed pervious areas consist of landscape planter islands.
Does the project include grading and changes to site topography? ☒ Yes ☐ No Description / Additional Information: The new gas station will be placed in the northeasterly portion of the site. The parking lot will be graded to accommodate the change but will mimic existing conditions.

Form I-3B Page 5 of 10, Form Date: March 15, 2016
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: The proposed project improvements include a gas station with underground tanks and parking lot modifications. The proposed drainage pattern will mimic the existing drainage pattern to the maximum extent practical. The new storm drain conveyance system will consist of a storm drain system which will confluence at POC #1 before discharging to an existing public 60-inch storm drain and a storm drain system will confluence at POC #2 before ultimately discharging into an existing public 54-inch storm drain. DMA 1 (1.06 acres) encompasses the northerly drive aisles and the canopy of the proposed gas station. Runoff from the drive aisles sheet flows to a curb opening inlet on the northerly edge of the project site. Roof drains collect flows from the gas station canopy and route flow to BMP 1, a proprietary biofiltration system, via a 12-inch storm drain. All flows from underneath the gas station canopy is collected by a ribbon gutter and grate inlets at the edge of the gas station, then routed to a dual stage water/oil separator and oil stop valve. All flows from DMA 1 are routed to BMP 4, a hydromodification cistern, before discharging to POC #1, in the northeasterly corner of the project site. DMA 2 (0.98 acres) encompasses the central drive aisles and parking areas. Runoff from the drive aisles sheet flows to a curb opening inlet and then routed to BMP 2, a proprietary biofiltration system in the central portion of the project site. All flows from DMA 2 are routed to BMP 5, a hydromodification cistern, before discharging to POC #2. DMA 3 (0.35 acres) encompasses the southerly drive aisles and parking areas. Runoff from the drive aisles sheet flows to a curb opening inlet and then routed to BMP 3, a proprietary biofiltration system in the southerly portion of the project site. All flows from DMA 3 are routed to BMP 5, a hydromodification cistern, before discharging to POC #2. A small portion of the disturbed area to the north and southeast consists of proposed driveways (0.03 acres) and will not be collected and routed for treatment. These areas will continue to sheet flow to their respective streets. The required treatment flowrate totals 0.005 cfs and is offset by the treatment flowrate provided in DMA 3.

Form I-3B Page 6 of 10, Form Date: March 15, 2016

Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply):

- ☒ On-site storm drain inlets
- ☐ Interior floor drains and elevator shaft sump pumps
- ☐ Interior parking garages
- ☐ Need for future indoor & structural pest control
- ☒ Landscape/Outdoor Pesticide Use
- ☐ Pools, spas, ponds, decorative fountains, and other water features
- ☐ Food service
- ☐ Refuse areas
- ☐ Industrial processes
- ☐ Outdoor storage of equipment or materials
- ☐ Vehicle and Equipment Cleaning
- ☐ Vehicle/Equipment Repair and Maintenance
- ☒ Fuel Dispensing Areas
- ☐ Loading Docks
- ☐ Fire Sprinkler Test Water
- ☐ Miscellaneous Drain or Wash Water
- ☒ Plazas, sidewalks, and parking lots

Description / Additional Information:

Form I-3B Page 7 of 10, Form Date: March 15, 2016			
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):			
Storm water is discharged from the site via existing public storm drain that flows south and converges with the San Marcos Creek. San Marcos Creek flows to Lake San Marcos, then the Batiquitos Lagoon which ultimately discharges 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	
Upper San Marcos Creek	Benthic Communities Effect, Bifenthrin, DDE, Indicator Bacteria, Nitrogen, Phosphorous, Pyrethroids, Selenium, Total Dissolved Solids, Toxicity	Nutrients	
Lake San Marcos	Ammonia as Nitrogen, Copper, Nutrients, Phosphorus	None Listed	
Lower San Marcos Creek	Nitrogen, Phosphorus, Selenium, Toxicity	None Listed	
Batiquitos Lagoon	Toxicity	None Listed	
Pacific Ocean, South Carlsbad State Beach	None listed	None Listed	
Identification of Project Site Pollutants* *Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated)			
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	X
Heavy Metals		X	X
Organic Compounds		X	
Trash & Debris		X	

Costco Wholesale – San Marcos Gas – CUP23-0004

Oxygen Demanding Substances		X	
Oil & Grease		X	
Bacteria & Viruses	X		
Pesticides		X	X

Form I-3B Page 8 of 10, Form Date: March 15, 2016
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 to be protected based on WMAA maps If yes, have any of the optional analyses presented in Section 6.2 of the BMP Design Manual been performed? ☐ 6.2.1 Verification of Geomorphic Landscape Units (GLUs) Onsite ☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment ☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite ☐ No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps If optional analyses were performed, what is the final result? ☐ No critical coarse sediment yield areas to be protected based on verification of GLUs onsite ☐ Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 2.b of the SWQMP. ☐ Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit. Discussion / Additional Information:

Form I-3B Page 9 of 10, Form Date: March 15, 2016
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. Two POCs are proposed on site. POC #1 is located at the northeastern discharge points of the site to a 60-inch storm drain. POC #2 is located at the southeastern discharge point of the site at S Bent Avenue to a 54-inch storm drain.
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 geomorphic assessment has been performed, provide title, date, and preparer: Discussion / Additional Information: (optional)

Form I-3B Page 10 of 10, Form Date: March 15, 2016
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.
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.

Form I-4 Source Control BMP Checklist for All Development Projects

Source Control BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects)		Form I-4 [March 15, 2016]	
Project Identification			
Project Name: COSTCO SAN MARCOS GAS STATION			
Permit Application Number CUP23-0004			
Source Control BMPs			
All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement source control BMPs shown in this checklist. Answer each category below pursuant to the following. • "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the Model BMP Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided.			
Source Control Requirement		Applied?	
SC-1 Prevention of Illicit Discharges into the MS4		☒ Yes	☐ No ☐ N/A
Discussion / justification if SC-1 not implemented:			
SC-2 Storm Drain Stenciling or Signage		☒ Yes	☐ No ☐ N/A
Discussion / justification if SC-2 not implemented:			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal		☐ Yes	☐ No ☒ N/A
Discussion / justification if SC-3 not implemented: The project has no outdoor materials storage areas.			
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal		☒ Yes	☐ No ☐ N/A
Discussion / justification if SC-4 not implemented:			

Form I-4 Page 2 of 2, Form Date: March 15, 2016			
Source Control Requirement	Applied?		
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-5 not implemented:			
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below) ☒ On-site storm drain inlets ☐ Interior floor drains and elevator shaft sump pumps ☐ Interior parking garages ☐ Need for future indoor & structural pest control ☒ Landscape/Outdoor Pesticide Use ☐ Pools, spas, ponds, decorative fountains, and other water features ☐ Food service ☐ Refuse areas ☐ Industrial processes ☐ Outdoor storage of equipment or materials ☐ Vehicle and Equipment Cleaning ☐ Vehicle/Equipment Repair and Maintenance ☒ Fuel Dispensing Areas ☐ Loading Docks ☐ Fire Sprinkler Test Water ☐ Miscellaneous Drain or Wash Water ☒ Plazas, sidewalks, and parking lots	☒ Yes ☐ Yes ☐ Yes ☐ Yes ☒ Yes ☐ Yes ☐ Yes ☐ Yes ☐ Yes ☐ Yes ☐ Yes ☒ Yes ☐ Yes ☐ Yes ☐ Yes ☒ Yes	☐ No ☐ No ☐ No ☐ No ☐ No ☐ No ☐ No ☐ No ☐ No ☐ No ☐ No ☐ No ☐ No ☐ No ☐ No ☐ No	☐ N/A ☒ N/A ☒ N/A ☒ N/A ☐ N/A ☒ N/A ☒ N/A ☒ N/A ☒ N/A ☒ N/A ☒ N/A ☐ N/A ☒ N/A ☒ N/A ☒ N/A ☒ N/A ☐ N/A
Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above.			

Form I-5 Site Design BMP Checklist for All Development Projects

Site Design BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects)		Form I-5 [March 15, 2016]	
Project Identification			
Project Name: COSTCO SAN MARCOS GAS STATION			
Permit Application Number CUP23-0004			
Site Design BMPs			
All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement site design BMPs shown in this checklist. Answer each category below pursuant to the following. • "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the Model BMP Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided.			
Site Design Requirement		Applied?	
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features		☐ Yes	☐ No ☒ N/A
Discussion / justification if SD-1 not implemented: The project has no natural drainage pathways or hydrologic features.			
SD-2 Conserve Natural Areas, Soils, and Vegetation		☐ Yes	☐ No ☒ N/A
Discussion / justification if SD-2 not implemented: The project has no existing natural areas to conserve.			
SD-3 Minimize Impervious Area		☒ Yes	☐ No ☐ N/A
Discussion / justification if SD-3 not implemented:			
SD-4 Minimize Soil Compaction		☐ Yes	☒ No ☐ N/A
Discussion / justification if SD-4 not implemented: Existing land use requires soil compaction for automobile use. Proposed project use is the same as existing.			
SD-5 Impervious Area Dispersion		☐ Yes	☒ No ☐ N/A
Discussion / justification if SD-5 not implemented: Impervious area dispersion not feasible due to topography and land use.			

Form I-5 Page 2 of 2, Form Date: March 15, 2016			
Site Design Requirement	Applied?		
SD-6 Runoff Collection	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-6 not implemented: Runoff collection not feasible for this project.			
SD-7 Landscaping with Native or Drought Tolerant Species	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-7 not implemented:			
SD-8 Harvesting and Using Precipitation	☐ Yes	☐ No	☒ N/A
Discussion / justification if SD-8 not implemented:			

Form I-6 Summary of PDP Structural BMPs

Summary of PDP Structural BMPs	Form I-6 (PDPs) [March 15, 2016]
Project Identification	
Project Name: COSTCO SAN MARCOS GAS STATION	
Permit Application Number: CUP23-0004	
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). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s). PDP structural BMPs must be verified by the local jurisdiction at the completion of construction. This may 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 local jurisdiction 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. Since the project falls into the priority development project category, both pollutant control treatment and hydromodification control requirements apply. No major grading is proposed; proposed conditions mimic existing conditions. The project does not accept any offsite runoff. Infiltration was not feasible for the project due to Type C soils, presence of bedrock, and shallow groundwater. Harvest and Use was deemed infeasible for this project since the site is highly impervious and there were insufficient landscape areas to be used for treatment. Considering the site constraints, the selected pollutant control BMPs for this project are proprietary biofiltration (BF-3) and underground storage tanks for hydromodification control. Per the City of San Marcos BMP Design Manual, proprietary BMPs are typically sized as flow-based BMPs. The minimum flow rate calculation for water quality treatment was determined using Worksheet B.6.3 in Attachment 1e of this report. The calculated treatment flowrate was then used to select the appropriately sized model unit. (Continue on page 2 as necessary.)	

Form I-6 Page 2 of 7, Form Date: March 15, 2016
(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)
(Continued from page 1) DMA 1 encompasses the northerly drive aisles and the canopy of the proposed gas station. This area is treated by BMP 1, a proprietary biofiltration system. This BMP is designed for stormwater pollutant control only. All flows from underneath the gas station canopy is collected by a ribbon gutter and grate inlets at the edge of the gas station, then routed to a dual stage water/oil separator and oil stop valve. All flows from DMA 1 are routed to BMP 4, a hydromodification cistern, before discharging to POC #1. DMA 2 encompasses the central drive aisles and parking areas and is routed to BMP 2, a proprietary biofiltration system. BMP 2 is used for stormwater pollutant control, and it will be in series with a hydromodification detention system (BMP 5) before discharging to POC #2. DMA 3 encompasses the southerly drive aisles and parking areas and is routed to BMP 3, a proprietary biofiltration system. BMP 3 is used for stormwater pollutant control, and it will be in series with a hydromodification detention system (BMP 5) before discharging to POC #2. A small portion of the disturbed area to the north and southeast consists of proposed driveways and will not be collected and routed for treatment. This area will continue to sheet flow to their respective streets. The required treatment flowrate is offset by the treatment flowrate provided in DMA 3. See proprietary biofiltration until details for BMPs 1, 2 and 3 on the DMA Exhibit.

Form I-6 Page 3 of 7, Form Date: March 15, 2016	
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. 6, 10, and 12	
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 treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐ Flow-thru treatment control 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) ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment/forebay for another structural BMP ☐ 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)	Mark Nero Fusco Engineering, Inc. 15535 Sand Canyon, Suite 100 Irvine, CA 92618 949.474.1960
Who will be the final owner of this BMP?	Costco Wholesale
Who will maintain this BMP into perpetuity?	Costco Wholesale
What is the funding mechanism for maintenance?	Owner Funded (Costco Wholesale)

Form I-6 Page 4 of 7, Form Date: March 15, 2016	
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. 7, 10, and 12	
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 treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐ Flow-thru treatment control 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) ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment/forebay for another structural BMP ☐ 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)	Mark Nero Fusco Engineering, Inc. 15535 Sand Canyon, Suite 100 Irvine, CA 92618 949.474.1960
Who will be the final owner of this BMP?	Costco Wholesale
Who will maintain this BMP into perpetuity?	Costco Wholesale
What is the funding mechanism for maintenance?	Owner Funded (Costco Wholesale)

Form I-6 Page 5 of 7, Form Date: March 15, 2016	
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. 7, 10, and 12	
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 treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐ Flow-thru treatment control 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) ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment/forebay for another structural BMP ☐ 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)	Mark Nero Fusco Engineering, Inc. 15535 Sand Canyon, Suite 100 Irvine, CA 92618 949.474.1960
Who will be the final owner of this BMP?	Costco Wholesale
Who will maintain this BMP into perpetuity?	Costco Wholesale
What is the funding mechanism for maintenance?	Owner Funded (Costco Wholesale)

Form I-6 Page 6 of 7, Form Date: March 15, 2016	
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. 6, 10, and 11	
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 treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐ Flow-thru treatment control 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) ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☒ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☐ Pollutant control only ☒ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment/forebay for another structural BMP ☐ 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)	Mark Nero Fusco Engineering, Inc. 15535 Sand Canyon, Suite 100 Irvine, CA 92618 949.474.1960
Who will be the final owner of this BMP?	Costco Wholesale
Who will maintain this BMP into perpetuity?	Costco Wholesale
What is the funding mechanism for maintenance?	Owner Funded (Costco Wholesale)

Form I-6 Page 7 of 7, Form Date: March 15, 2016	
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. 7, 10, and 11	
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 treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐ Flow-thru treatment control 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) ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☒ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☐ Pollutant control only ☒ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment/forebay for another structural BMP ☐ 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)	Mark Nero Fuscoe Engineering, Inc. 15535 Sand Canyon, Suite 100 Irvine, CA 92618 949.474.1960
Who will be the final owner of this BMP?	Costco Wholesale
Who will maintain this BMP into perpetuity?	Costco Wholesale
What is the funding mechanism for maintenance?	Owner Funded (Costco Wholesale)

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 the back of this Attachment cover sheet.	☒ Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID 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 I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	☒ Included ☐ Not included because the entire project will use infiltration BMPs
Attachment 1d	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	☒ Included ☐ Not included because the entire project will use harvest and use BMPs
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	☒ Included

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 I-3B)
- ☒ Structural BMPs (identify location, type of BMP, and size/detail)



ATTACHMENT 1B
DMA AND BMP SUMMARY TABLE

COSTCO SAN MARCOS GAS STATION
13-Aug-24
0756-070

COSTCO SAN MARCOS BUSINESS CENTER

SUMMARY TABLE						POLLUTANT CONTROL								
DMA	TOTAL AREA (AC)	TOTAL AREA (SF)	PERVIOUS AREA - LANDSCAPE (SF)	IMPERVIOUS AREA - ROOF, CONCRETE, ASPHALT (SF)	% IMPERVIOUS	WATER QUALITY WEIGHTED AREA (SF)	WEIGHTED C FACTOR	DCV (CF)	TREATED BY (BMP ID)	POLLUTANT CONTROL TYPE	DRAINS TO (POC ID)	MWS TREATMENT FLOWRATE REQUIRED (CFS) ¹	MWS TREATMENT FLOWRATE PROVIDED (CFS)	MWS Model#
1	1.06	46,119	13,355	32,764	71%	30,900	0.67	1,699	BMP 1	MWS (BF-3)	POC 1	0.213	0.237	L-4-19
2	0.98	42,813	6,513	36,300	85%	33,394	0.78	1,837	BMP 2	MWS (BF-3)	POC 2	0.230	0.268	L-4-21
3	0.35	15,224	1,214	14,010	92%	12,788	0.84	703	BMP 3	MWS (BF-3)	POC 2	0.089	0.115	L-4-8
DRIVEWAYS	0.03	1,163	0	1,163	100%	1,047	0.90	58	N/A			0.005*		
TOTAL	2.42	105,319	21,082	84,237		78,129								

¹ Required treatment flow rate was calculated per City of San Marcos BMP Design Manual (February 2016) Worksheet B.6-1: Flow-thru Design Flows.
* Runoff flows totaling 0.005cfs from 1,163 SF of driveway improvements not routed to BMPs. Amount offset in DMA 3 with 0.026 additional capacity.

SUMMARY OF DMA INFORMATION							
# OF DMAs	TOTAL DMA AREA (AC)	TOTAL DMA AREA (SF)	% IMPERVIOUS	AREA WEIGHTED RUNOFF COEFFICIENT	TOTAL DCV (CF)	TOTAL AREA TREATED (AC)	# OF POCs
4	2.42	105,319	80%	0.74	4,239	2.42	2

HYDROMODIFICATION							
DMA ID	BMP ID	DMA AREA (SF)	BMP TYPE	MAINTAINED BY:	REQUIRED HYDROMOD VOLUME (CF)	PROVIDED HYDROMOD VOLUME (CF)	ORIFICE DIAMETER (IN)
1	BMP 4	46,119	HYDROMOD CISTERN	OWNER	4,774	4,800	0.75
2-3	BMP 5	58,037	HYDROMOD CISTERN	OWNER	7,152	7,200	0.75

Attachment 1c

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.3-1. Harvest and Use Feasibility Screening

Harvest and Use Feasibility Screening		Worksheet B.3 1
1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season? ☐ Toilet and urinal flushing ☒ Landscape irrigation ☐ Other: _____		
2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2. Modified ETWU = $ET_{O_{Wet}} \times [(\sum(PF \times HA)/IE) + SLA] \times 0.015$ Modified ETWU = $2.8 \times [(0.1 \times 21,082)/0.90] + 0 \times 0.015$ Modified ETWU = 98 CF		
3. Calculate the DCV using worksheet B-2.1. DCV = 4,297 CF [Provide a results here]		
3a. Is the 36-hour demand greater than or equal to the DCV? Yes / No ⇒ ↓	3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV? Yes / No ⇒ ↓	3c. Is the 36-hour demand less than 0.25DCV? Yes ↓
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	Harvest and use is considered to be infeasible.

Categorization of Infiltration Feasibility Condition		Form 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? Note that it is not necessary to investigate each and every criterion in the worksheet if infiltration is precluded. Instead a letter of justification from a geotechnical professional familiar with the local conditions substantiating any geotechnical issues will be required.			
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 must be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: Our review of Natural Resources Conservation Service (NRCS) Soil Survey Maps (a.k.a. USDA Soil Maps) indicate the near-surface soils at the site consist of "Placentia Sandy Loam." This material is designated as being of the Hydrologic Soils Group "C." Additionally, based on Kleinfelder's recent geotechnical field exploration, the local subsurface conditions at the site consist of fill soils underlain by older alluvial deposits and bedrock of the Santiago Formation. Based on the clayey (fine-grained) soils encountered in the near surface soils, it is Kleinfelder's opinion that an infiltration rate of 0.5 inches per hour is not feasible at this site. 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 must be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
Provide basis: Groundwater was encountered at a depth of approximately 10 to 15 feet below existing grades (bgs) and historically has been as high as 7 feet bgs during prior field explorations in 2001. In accordance with the City of San Marcos BMP Design Manual, a separation of at least 10 feet between the base of an infiltration BMP and the seasonal high groundwater is required. Due to the relatively shallow depth of groundwater, this separation cannot be maintained and the risk of groundwater mounding and it's adverse impact on structures cannot be mitigated to an acceptable level. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Form 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 must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: Groundwater was encountered at a depth of approximately 10 to 15 feet below existing grades (bgs) and historically has been as high as 7 feet bgs during prior field explorations in 2001. In accordance with the City of San Marcos BMP Design Manual, a separation of at least 10 feet between the base of an infiltration BMP and the seasonal high groundwater is required. Given the shallow groundwater, the risk for groundwater contamination would be considered higher at this site. 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 must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: As discussed in Criteria 1, an infiltrate rate greater than 0.5 inches per hour is not considered feasible. However, infiltration is not likely to cause a change of ephemeral streams or discharge of groundwater to surface waters. 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	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 Agency/Jurisdictions to substantiate findings

Form 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 must be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis:

The site conditions as noted in Criteria 1 are not suitable for infiltration rates greater than 0.5 inches per hour. While the definition of "appreciable" is not defined in the City Design Manual, it is Kleinfelder's opinion that due to the fine-grained soils encountered in our field exploration and shallow depth to groundwater, infiltration is not feasible in an "appreciable" rate.

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 must be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
---	--	--	---

Provide basis:

Groundwater was encountered at a depth of approximately 10 to 15 feet below existing grades (bgs) and historically has been as high as 7 feet bgs during prior field explorations in 2001. In accordance with the City of San Marcos BMP Design Manual, a separation of at least 10 feet between the base of an infiltration BMP and the seasonal high groundwater is required. Due to the relatively shallow depth of groundwater, this separation cannot be maintained and the risk of groundwater mounding and its adverse impact on structures cannot be mitigated to an acceptable level.

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.

Form 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 must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: Groundwater was encountered at a depth of approximately 10 to 15 feet below existing grades (bgs) and historically has been as high as 7 feet bgs during prior field explorations in 2001. In accordance with the City of San Marcos BMP Design Manual, a separation of at least 10 feet between the base of an infiltration BMP and the seasonal high groundwater is required. Given the shallow groundwater, the risk for groundwater contamination would be considered higher at this site. 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 must be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: Given the lack of streams/natural drainages, it can be assumed that infiltration would not violate downstream water rights. 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 Infiltration

*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 Agency/Jurisdictions to substantiate findings

County of San Diego Automated Stormwater Pollutant Control Worksheets (Version 1.3)

WELCOME:

Welcome to the County of San Diego Automated Stormwater Pollutant Control Worksheets. Priority Development Projects that are required to satisfy stormwater pollutant control performance standards set forth in the 2013 MS4 Permit may use these automated worksheets to calculate design capture volumes and determine what portion of pollutant control performance standards are satisfied by their project.

INSTRUCTIONS:

General: To use this workbook users must navigate to the appropriate worksheet tabs and populate yellow cells with project specific information. These worksheet tabs are formatted to accommodate calculations for up to 10 drainage areas and associated BMPs. Each drainage area and/or BMP is represented as a discrete column with corresponding user inputs and calculations appearing in the rows below. Please note that projects with more than 10 drainage areas may need to use more than one workbook to accommodate their entire project. Yellow cells represent items that require user input, white cells are locked for editing and are automatically calculated, blue cells are also locked for editing and are automatically populated based on results from previous worksheet tabs, grey cells represent items that typically require user input but may be omitted based on a previous user input, orange cells represent warnings where supplemental information and/or revisions may be required for compliance, and red cells represent errors associated with proposed stormwater pollutant control measures that negatively affect compliance.

Step 1. Navigate to the orange tab at the bottom of the workbook and provide required inputs to determine the structural BMP types that are acceptable for implementation at the project site.

Step 2. Navigate to the blue tab at the bottom of the workbook and provide the required inputs to determine the design capture volume for each PDP drainage area and identify what type of BMP this area drains to. The calculations in this worksheet determine the initial design capture volume and also apply any applicable reductions associated with site design techniques including dispersion to pervious surfaces, incorporation of tree wells, and incorporation of rain barrels. Upon completion of Step 2, applicants must proceed to Step 3 to ensure that appropriate stormwater pollutant control measures are applied to this volume.

Step 3. Examine the green tabs at the bottom of the workbook and identify which of these BMP types are implemented by the PDP. Click the green tab for each of the proposed BMP types and provide the required user inputs to determine the portion of the pollutant control performance standards that are satisfied by the proposed BMP. After providing appropriate inputs users should verify that no red error messages appear at the bottom of their worksheets and, if necessary, refine user inputs until satisfied with the proposed stormwater pollutant control approach. Once satisfied, applicants must proceed to Step 4 to facilitate their project submittal.

Note: Users must ensure that all provided inputs are adequately represented in the accompanying stormwater management plans.

Step 4. Navigate to the purple "Summary" tab at the bottom of this workbook and examine the sheet for warning messages highlighted in red text at the bottom of the worksheet. Once satisfied with the overall results, print the summary sheet and all applicable supporting worksheets in color, 11x17 landscape format and include in Attachment 1a of the SWQMP submittal.

DISCLAIMER:

The County of San Diego has developed this tool in an effort to streamline traditionally complex efforts associated with planning, design, submittal, and review of PDPs that are subject to stormwater pollutant control requirements set forth in the 2013 MS4 Permit. While the calculations performed herein are deemed to be in compliance with Permit requirements, applicants may elect to provide their own calculations. Use of this tool is optional and the County will not be held liable for any errors or other negative impacts associated with its use. In the event that the County performs updates to these worksheets, applicants that have not established reliance on previous versions of the worksheet via discretionary approval may be required to utilize the latest version of the worksheets. A summary of version releases is included below.

QUESTIONS:

-Questions relating to specific projects, submittal requirements, approval process, and/or policy-related issues should be directed your PDS Land Development Project Manager ([link below](#)).

[PDS Land Development Project Manager](#)

-General questions/comments on this worksheet may be directed to Charles Mohrlock in the County of San Diego Watershed Protection Program ([link below](#)).

charles.mohrlock@sdcounty.ca.gov

Automated Worksheet B.3-1: Project-Scale BMP Feasibility Analysis (V1.3)

Category	#	Description	Value	Units
Capture & Use Inputs	0	Design Capture Volume for Entire Project Site	4,297	cubic-feet
	1	Proposed Development Type	Retail	unitless
	2	Number of Residents or Employees at Proposed Development	30	#
	3	Total Planted Area within Development	21,113	sq-ft
	4	Water Use Category for Proposed Planted Areas	Low	unitless
Infiltration Inputs	5	Is Average Site Design Infiltration Rate ≤ 0.500 Inches per Hour?	Yes	yes/no
	6	Is Average Site Design Infiltration Rate ≤ 0.010 Inches per Hour?	Yes	yes/no
	7	Is Infiltration of the Full DCV Anticipated to Produce Negative Impacts?	Yes	yes/no
	8	Is Infiltration of Any Volume Anticipated to Produce Negative Impacts?	Yes	yes/no
Calculations	9	36-Hour Toilet Use Per Resident or Employee	1.40	cubic-feet
	10	Subtotal: Anticipated 36 Hour Toilet Use	42	cubic-feet
	11	Anticipated 1 Acre Landscape Use Over 36 Hours	52.14	cubic-feet
	12	Subtotal: Anticipated Landscape Use Over 36 Hours	25	cubic-feet
	13	Total Anticipated Use Over 36 Hours	67	cubic-feet
	14	Total Anticipated Use / Design Capture Volume	0.02	cubic-feet
	15	Are Full Capture and Use Techniques Feasible for this Project?	No	unitless
	16	Is Full Retention Feasible for this Project?	No	yes/no
	17	Is Partial Retention Feasible for this Project?	No	yes/no
Result	18	Feasibility Category	5	1, 2, 3, 4, 5

Worksheet B.3-1 General Notes:

A. Applicants may use this worksheet to determine the types of structural BMPs that are acceptable for implementation at their project site (as required in Section 5 of the BMPDM). User input should be provided for yellow shaded cells, values for all other cells will be automatically generated. Projects demonstrating feasibility or potential feasibility via this worksheet are encouraged to incorporate capture and use features in their project.

B. Negative impacts associated with retention may include geotechnical, groundwater, water balance, or other issues identified by a geotechnical engineer and substantiated through completion of Form I-8.

C. Feasibility Category 1: Applicant must implement capture & use, retention, and/or infiltration elements for the entire DCV.

D. Feasibility Category 2: Applicant must implement capture & use elements for the entire DCV.

E. Feasibility Category 3: Applicant must implement retention and/or infiltration elements for all DMAs with Design Infiltration Rates greater than 0.50 in/hr.

F. Feasibility Category 4: Applicant must implement standard unlined biofiltration BMPs sized at $\geq 3\%$ of the effective impervious tributary area for all DMAs with Design Infiltration Rates of 0.011 to 0.50 in/hr. Applicants may be permitted to implement lined BMPs, reduced size BMPs, and/or specialized biofiltration BMPs provided additional criteria identified in "Supplemental Retention Criteria for Non-Standard Biofiltration BMPs" are satisfied.

G. Feasibility Category 5: Applicant must implement standard lined biofiltration BMPs sized at $\geq 3\%$ of the effective impervious tributary area for all DMAs with Design Infiltration Rates of 0.010 in/hr or less. Applicants may also be permitted to implement reduced size and/or specialized biofiltration BMPs provided additional criteria identified in "Supplemental Retention Criteria for Non-Standard Biofiltration BMPs" are satisfied.

H. PDPs participating in an offsite alternative compliance program are not held to the feasibility categories presented herein.

Automated Worksheet B.1-1: Calculation of Design Capture Volume (V1.3)

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	Units
Standard Drainage Basin Inputs	0	Drainage Basin ID or Name	1	2	3	Driveways	unitless
	1	Basin Drains to the Following BMP Type	Flow-Thru	Flow-Thru	Flow-Thru	Flow-Thru	unitless
	2	85th Percentile 24-hr Storm Depth	0.66	0.66	0.66	0.66	inches
	3	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	0.000	0.000	0.000	in/hr
	4	Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90)	32,764	36,300	14,010	1,163	sq-ft
	5	Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30)					sq-ft
	6	Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10)	13,355	6,513	1,214	0	sq-ft
	7	Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10)					sq-ft
	8	Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14)					sq-ft
	9	Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23)					sq-ft
	10	Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30)					sq-ft
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	11	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	No	No	No	No	yes/no
	12	Impervious Surfaces Directed to Dispersion Area per SD-B (Ci=0.90)					sq-ft
	13	Semi-Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.30)					sq-ft
	14	Engineered Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.10)					sq-ft
	15	Natural Type A Soil Serving as Dispersion Area per SD-B (Ci=0.10)					sq-ft
	16	Natural Type B Soil Serving as Dispersion Area per SD-B (Ci=0.14)					sq-ft
	17	Natural Type C Soil Serving as Dispersion Area per SD-B (Ci=0.23)					sq-ft
	18	Natural Type D Soil Serving as Dispersion Area per SD-B (Ci=0.30)					sq-ft
	19	Number of Tree Wells Proposed per SD-A					#
	20	Average Mature Tree Canopy Diameter					ft
	21	Number of Rain Barrels Proposed per SD-E					#
	22	Average Rain Barrel Size					gal
Treatment Train Inputs & Calculations	23	Does BMP Overflow to Stormwater Features in <u>Downstream</u> Drainage?	No	No	No	No	unitless
	24	Identify Downstream Drainage Basin Providing Treatment in Series					unitless
	25	Percent of Upstream Flows Directed to Downstream Dispersion Areas					percent
	26	Upstream Impervious Surfaces Directed to Dispersion Area (Ci=0.90)	0	0	0	0	cubic-feet
	27	Upstream Impervious Surfaces Not Directed to Dispersion Area (C=0.90)	0	0	0	0	cubic-feet
Initial Runoff Factor Calculation	28	Total Tributary Area	46,119	42,813	15,224	1,163	sq-ft
	29	Initial Runoff Factor for Standard Drainage Areas	0.67	0.78	0.84	0.90	unitless
	30	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	0.00	0.00	0.00	unitless
	31	Initial Weighted Runoff Factor	0.67	0.78	0.84	0.90	unitless
	32	Initial Design Capture Volume	1,699	1,837	703	58	cubic-feet
Dispersion Area Adjustments	33	Total Impervious Area Dispersed to Pervious Surface	0	0	0	0	sq-ft
	34	Total Pervious Dispersion Area	0	0	0	0	sq-ft
	35	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	n/a	n/a	n/a	ratio
	36	Adjustment Factor for Dispersed & Dispersion Areas	1.00	1.00	1.00	1.00	ratio
	37	Runoff Factor After Dispersion Techniques	0.67	0.78	0.84	0.90	unitless
	38	Design Capture Volume After Dispersion Techniques	1,699	1,837	703	58	cubic-feet
Tree & Barrel Adjustments	39	Total Tree Well Volume Reduction	0	0	0	0	cubic-feet
	40	Total Rain Barrel Volume Reduction	0	0	0	0	cubic-feet
Results	41	Final Adjusted Runoff Factor	0.67	0.78	0.84	0.90	unitless
	42	Final Effective Tributary Area	30,900	33,394	12,788	1,047	sq-ft
	43	Initial Design Capture Volume Retained by Site Design Elements	0	0	0	0	cubic-feet
	44	Final Design Capture Volume Tributary to BMP	1,699	1,837	703	58	cubic-feet

Worksheet B.1-1 General Notes:

A. Applicants may use this worksheet to calculate design capture volumes for up to 10 drainage areas User input must be provided for yellow shaded cells, values for all other cells will be automatically generated, errors/notifications will be highlighted in red and summarized below. Upon completion of this worksheet, proceed to the appropriate BMP Sizing worksheet(s).

Automated Worksheet B.6-1: Sizing Flow-Thru BMPs (V1.3)

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	Units
Flow Thru BMP Inputs	0	Drainage Basin ID or Name	1	2	3	Driveways*	unitless
	1	Final Effective Tributary Area	30,900	33,394	12,788	1,047	sq-ft
	2	Final Adjusted Runoff Factor	0.67	0.78	0.84	0.90	unitless
	3	Final Design Capture Volume Tributary to BMP	1,699	1,837	703	58	cubic-feet
	4	Volume Effectively Retained and/or Biofiltered	0	0	0	0	cubic-feet
	5	Deficit of Effectively Treated Stormwater Requiring Flow-Thru Treatment	-1,699	-1,837	-703	-58	cubic-feet
	6	Maximum Rated Water Quality Flow Rate of Proposed BMP	0.237	0.268	0.115	0.005	CFS
Flow Rate Calculations	7	Adjustment Factor	1.00	1.00	1.00	1.00	unitless
	8	Design Rainfall Intensity for Flow-Thru BMPs	0.20	0.20	0.20	0.20	in/hr
	9	Water Quality Flow Rate Requiring Flow-Thru Treatment	0.142	0.153	0.059	0.005	CFS
Result	10	Is Flow-Thru BMP Adequately Sized?	Yes	Yes	Yes	Yes	unitless

Worksheet B.6-1 General Notes:

A. Applicants may use this worksheet to size flow-thru BMPs (FT-1 through FT-5) for up to 10 basins. Note that applicants proposing flow-thru BMPs must provide supplemental documentation to support the maximum water quality flow rate referenced above, demonstrate medium to high pollutant removal efficiency for project's most significant pollutants of concern, and must also implement an offsite alternative compliance project to offset the deficit of effectively treated stormwater volume. User input must be provided for yellow shaded cells, values for blue cells are automatically populated based on user inputs from previous worksheets, values for all other cells will be automatically generated, errors/notifications will be highlighted in red/orange and summarized below.

* Runoff flows totaling 0.005cfs from 1,163 SF of driveway improvements not routed to BMPs. Amount offset in DMA 3 with 0.026 additional capacity.



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **San Diego County Area, California**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
San Diego County Area, California.....	13
PeA—Placentia sandy loam, 0 to 2 percent slopes, warm MAAT, MLRA 19.....	13
PeC—Placentia sandy loam, 2 to 9 percent slopes, warm MAAT, MLRA 19.....	14
PfA—Placentia sandy loam, thick surface, 0 to 2 percent slopes.....	15
References	18

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

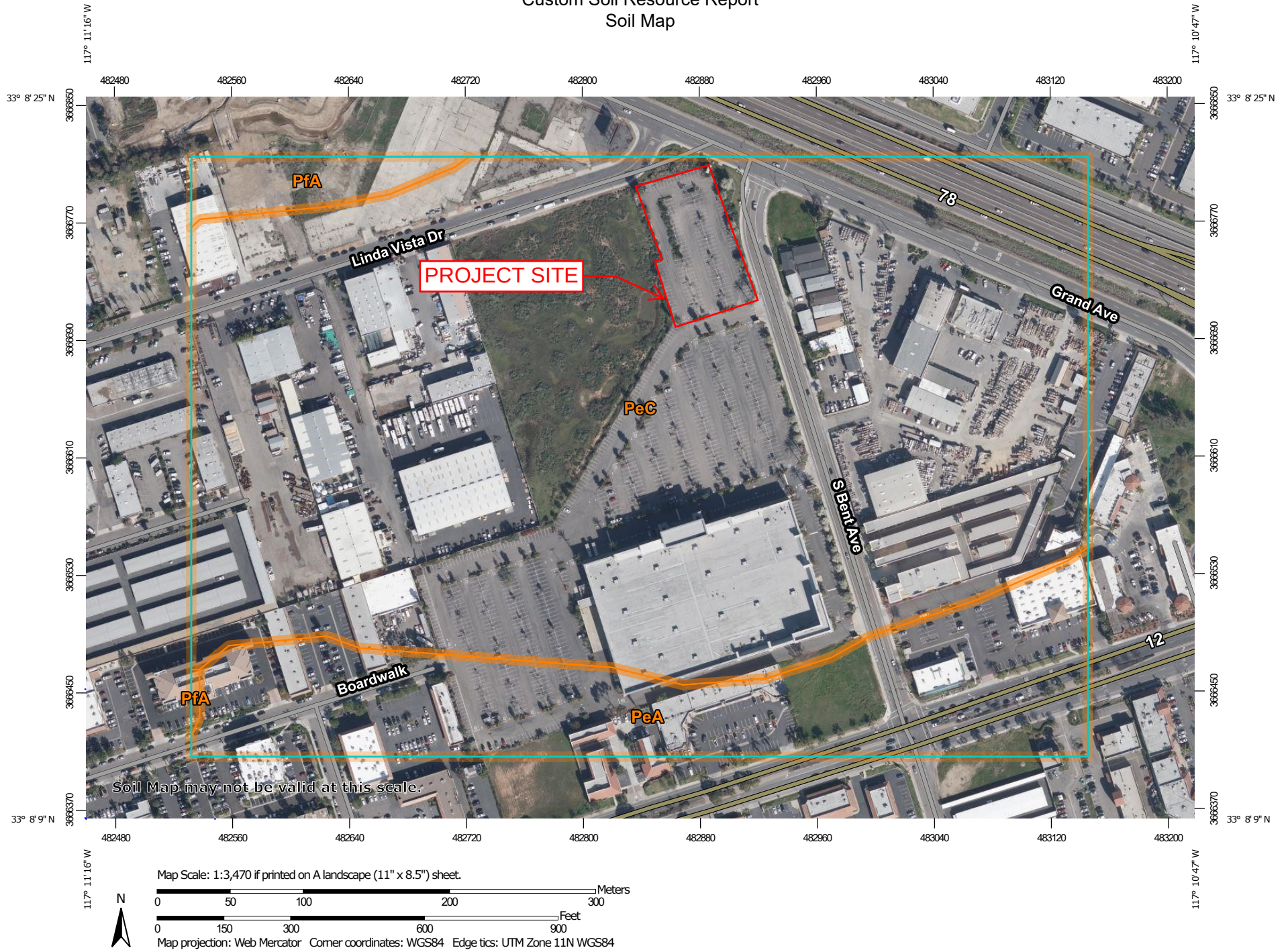
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 15, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 23, 2020—Feb 13, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PeA	Placentia sandy loam, 0 to 2 percent slopes, warm MAAT, MLRA 19	11.6	18.6%
PeC	Placentia sandy loam, 2 to 9 percent slopes, warm MAAT, MLRA 19	49.2	79.0%
PfA	Placentia sandy loam, thick surface, 0 to 2 percent slopes	1.5	2.3%
Totals for Area of Interest		62.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Diego County Area, California

PeA—Placentia sandy loam, 0 to 2 percent slopes, warm MAAT, MLRA 19

Map Unit Setting

National map unit symbol: 2tyyl

Elevation: 200 to 2,520 feet

Mean annual precipitation: 17 to 19 inches

Mean annual air temperature: 63 to 64 degrees F

Frost-free period: 270 to 360 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Placentia and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Placentia

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Alluvium derived from granitoid

Typical profile

H1 - 0 to 13 inches: sandy loam

H2 - 13 to 34 inches: sandy clay

H3 - 34 to 53 inches: sandy clay loam

H4 - 53 to 63 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 25.0

Available water capacity: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 4s

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: C

Ecological site: R019XD061CA

Hydric soil rating: No

Minor Components

Placentia, thick surface

Percent of map unit: 7 percent

Hydric soil rating: No

Ramona

Percent of map unit: 7 percent

Hydric soil rating: No

Typic natrixeralfs, occasionally ponded

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

**PeC—Placentia sandy loam, 2 to 9 percent slopes, warm MAAT, MLRA
19**

Map Unit Setting

National map unit symbol: 2tyyn

Elevation: 150 to 2,950 feet

Mean annual precipitation: 13 to 18 inches

Mean annual air temperature: 62 to 64 degrees F

Frost-free period: 270 to 360 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Placentia and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Placentia

Setting

Landform: Alluvial fans, terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Convex, linear

Parent material: Alluvium derived from granitoid

Typical profile

A1 - 0 to 4 inches: sandy loam

A2 - 4 to 13 inches: sandy loam

Bt1 - 13 to 21 inches: sandy clay

Bt2 - 21 to 34 inches: sandy clay

BC - 34 to 53 inches: sandy clay loam

C - 53 to 63 inches: sandy clay loam

Properties and qualities

Slope: 2 to 9 percent

Custom Soil Resource Report

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water capacity: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R019XD061CA
Hydric soil rating: No

Minor Components

Fallbrook

Percent of map unit: 5 percent
Hydric soil rating: No

Bonsall

Percent of map unit: 5 percent
Hydric soil rating: No

Ramona

Percent of map unit: 4 percent
Hydric soil rating: No

Typic natrixeralfs, occasionally ponded

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

PfA—Placentia sandy loam, thick surface, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hbfm
Elevation: 50 to 2,500 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Placentia and similar soils: 85 percent
Minor components: 11 percent

Custom Soil Resource Report

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Placentia

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 13 inches: sandy loam
H2 - 13 to 34 inches: clay, sandy clay
H2 - 13 to 34 inches: clay loam, sandy clay loam
H3 - 34 to 63 inches:
H3 - 34 to 63 inches:

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D
Ecological site: R019XD061CA
Hydric soil rating: No

Minor Components

Ramona

Percent of map unit: 5 percent
Hydric soil rating: No

Bonsall

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed, ponded

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

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.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management Exhibit (Required)	☒ Included, See Attachment 1a See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	☒ Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination ☐ 6.2.1 Verification of Geomorphic Landscape Units Onsite ☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment ☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (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 applicable because hydromodification BMP will be sealed and underground.

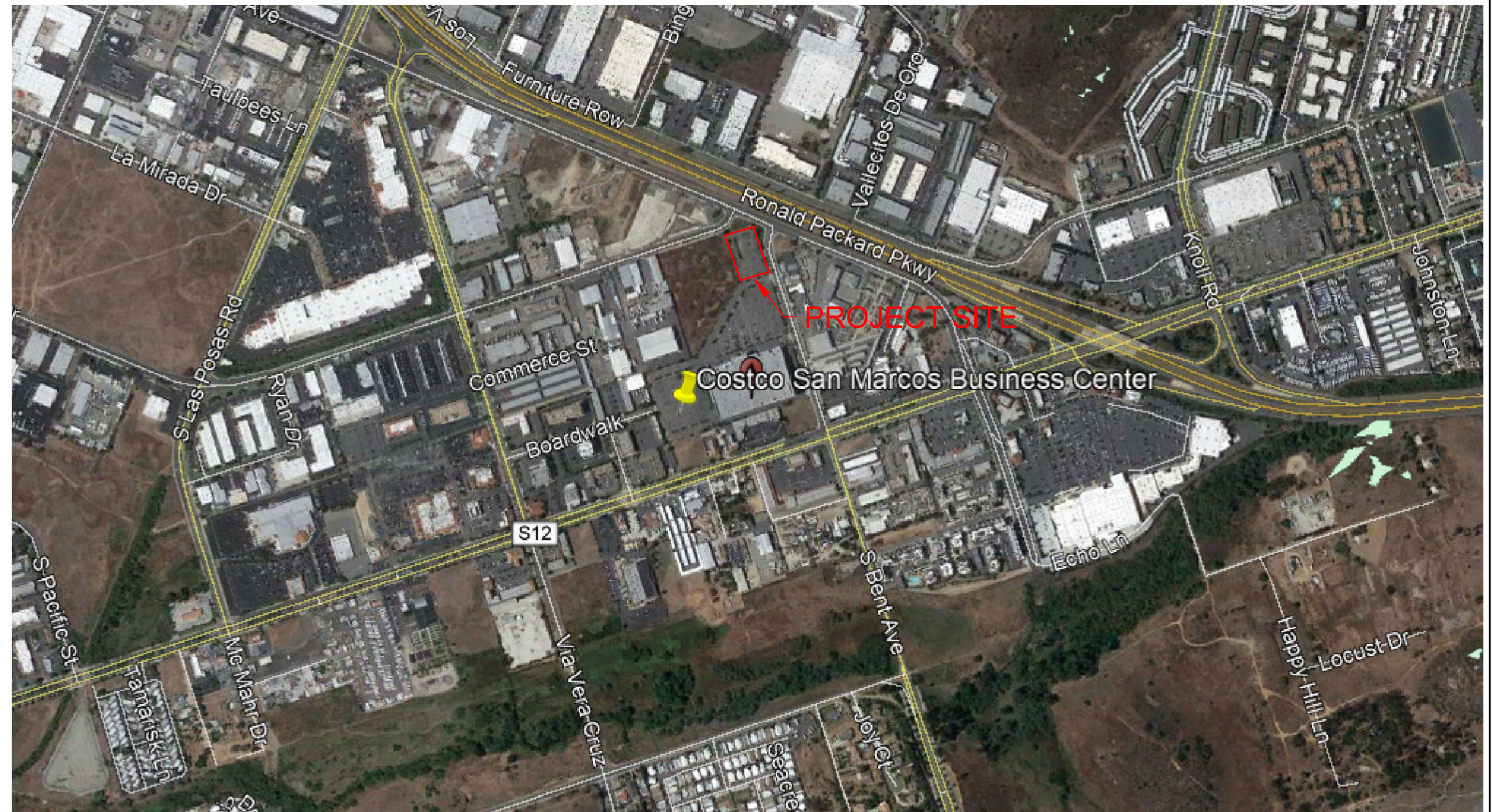
Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:

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)

LEGEND

 CRITICAL COARSE
SEDIMENT YIELD AREAS



COSTCO SAN MARCOS GAS STATION

150 S. BENT AVENUE, SAN MARCOS, CA

ATTACHMENT 2b - CRITICAL COARSE SEDIMENT YIELD AREAS EXHIBIT

BMP Sizing Spreadsheet V3.1

Project Name:	Costco San Marcos - Gas Station
Project Applicant:	Costco
Jurisdiction:	San Marcos
Parcel (APN):	219-331-43-00
Hydrologic Unit:	Carlsbad 904
Rain Gauge:	Oceanside
Total Project Area (sf):	105,319
Channel Susceptibility:	High

BMP Sizing Spreadsheet V3.1			
Project Name:	Costco San Marcos - Gas Station	Hydrologic Unit:	Carlsbad 904
Project Applicant:	Costco	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	105,319
Parcel (APN):	219-331-43-00	Low Flow Threshold:	0.1Q2
BMP Name:	BMP #4	BMP Type:	Cistern
BMP Native Soil Type:	N/A - Impervious Liner	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)
1 - Imp Paving	32,764	C	Flat	Concrete	1.0	0.14	4587
1 - Permeable	13,355	C	Flat	Landscape	0.1	0.14	187
						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	46,119						

Minimum BMP Size	4774
Proposed BMP Size*	4800
Standard Cistern Depth (Overflow Elevation)	3.5 ft
Provided Cistern Depth (Overflow Elevation)	5.7 ft
Minimum Required Cistern Footprint	838 CF

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:	Costco San Marcos - Gas Station	Hydrologic Unit:	Carlsbad 904
Project Applicant:	Costco	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	105,319
Parcel (APN):	219-331-43-00	Low Flow Threshold:	0.1Q2
BMP Name	BMP #4	BMP Type:	Cistern

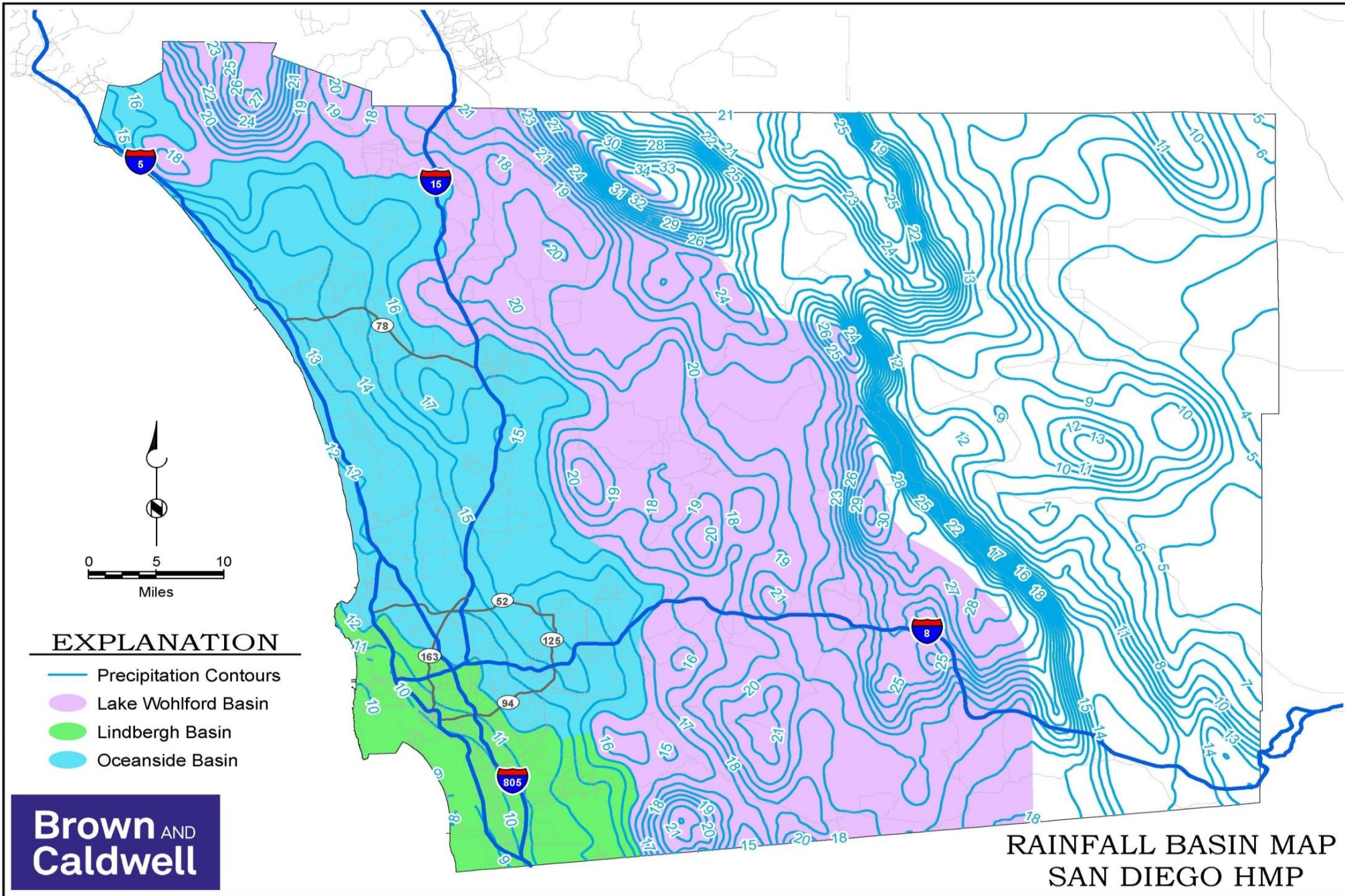
DMA Name	Rain Gauge	Pre-developed Condition		Unit Runoff Ratio (cfs/ac)	DMA Area (ac)	Orifice Flow - %Q ₂ (cfs)	Orifice Area (in ²)
		Soil Type	Slope				
1 - Imp Paving	Oceanside	C	Flat	0.488	0.752	0.037	0.42
1 - Permeable	Oceanside	C	Flat	0.488	0.307	0.015	0.17

5.70	0.052	0.60	0.87
Max Orifice Head (feet)	Max Tot. Allowable Orifice Flow (cfs)	Max Tot. Allowable Orifice Area (in ²)	Max Orifice Diameter (in)

Provide Hand Calc.	0.038	0.44	0.750
Average outflow during surface drawdown (cfs)	Max Orifice Outflow (cfs)	Actual Orifice Area (in ²)	Selected Orifice Diameter (in)

Drawdown (Hrs)	Provide Hand Calculation
----------------	-----------------------------

File Name: P:\Projects\San Diego County\139942 - HMP Implementation Assistance\GIS\HMF GIS\Basins.mxd



BMP Sizing Spreadsheet V3.1

Project Name:	Costco San Marcos - Gas Station
Project Applicant:	Costco
Jurisdiction:	San Marcos
Parcel (APN):	219-331-43-00
Hydrologic Unit:	Carlsbad 904
Rain Gauge:	Oceanside
Total Project Area (sf):	105,319
Channel Susceptibility:	High

BMP Sizing Spreadsheet V3.1			
Project Name:	Costco San Marcos - Gas Station	Hydrologic Unit:	Carlsbad 904
Project Applicant:	Costco	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	105,319
Parcel (APN):	219-331-43-00	Low Flow Threshold:	0.1Q2
BMP Name:	BMP #5	BMP Type:	Cistern
BMP Native Soil Type:	N/A - Impervious Liner	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)
2 - Imp Paving	36,300	C	Flat	Concrete	1.0	0.14	5082
2 - Permeable	6,513	C	Flat	Landscape	0.1	0.14	91
3 - Imp Paving	14,010	C	Flat	Concrete	1.0	0.14	1961
3 - Permeable	1,214	C	Flat	Landscape	0.1	0.14	17
						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	58,037						

Minimum BMP Size	7152
Proposed BMP Size*	7200
Standard Cistern Depth (Overflow Elevation)	3.5 ft
Provided Cistern Depth (Overflow Elevation)	5.7 ft
Minimum Required Cistern Footprint	1255 CF

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 Manu:

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:	Costco San Marcos - Gas Station	Hydrologic Unit:	Carlsbad 904
Project Applicant:	Costco	Rain Gauge:	Oceanside
Jurisdiction:	San Marcos	Total Project Area:	105,319
Parcel (APN):	219-331-43-00	Low Flow Threshold:	0.1Q2
BMP Name	BMP #5	BMP Type:	Cistern

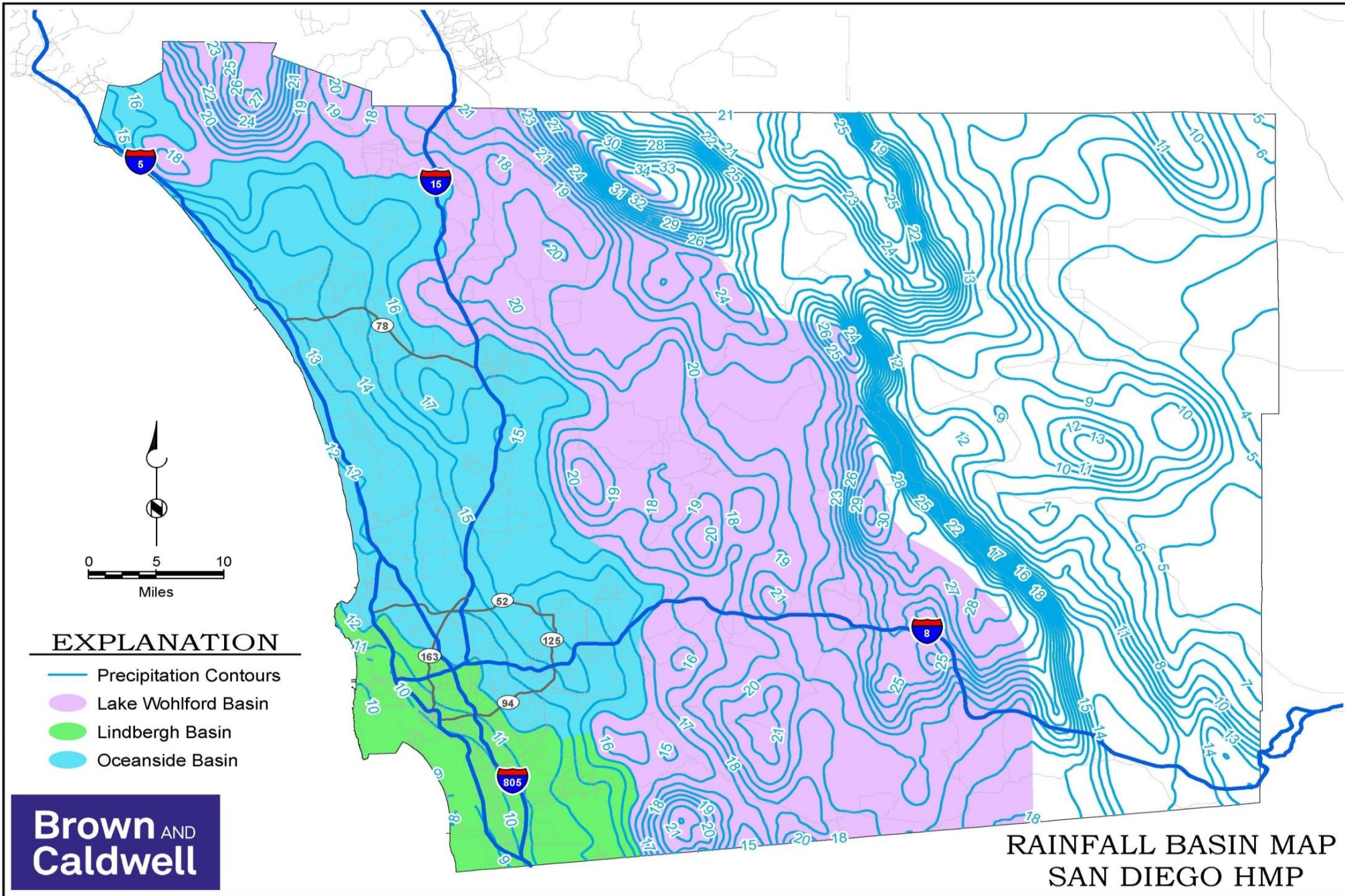
DMA Name	Rain Gauge	Pre-developed Condition		Unit Runoff Ratio (cfs/ac)	DMA Area (ac)	Orifice Flow - %Q ₂ (cfs)	Orifice Area (in ²)
		Soil Type	Slope				
2 - Imp Paving	Oceanside	C	Flat	0.488	0.833	0.041	0.47
2 - Permeable	Oceanside	C	Flat	0.488	0.150	0.007	0.08
3 - Imp Paving	Oceanside	C	Flat	0.488	0.322	0.016	0.18
3 - Permeable	Oceanside	C	Flat	0.488	0.028	0.001	0.02

5.70	0.065	0.75	0.98
Max Orifice Head (feet)	Max Tot. Allowable Orifice Flow (cfs)	Max Tot. Allowable Orifice Area (in ²)	Max Orifice Diameter (in)

Provide Hand Calc.	0.038	0.44	0.750
Average outflow during surface drawdown (cfs)	Max Orifice Outflow (cfs)	Actual Orifice Area (in ²)	Selected Orifice Diameter (in)

Drawdown (Hrs)	Provide Hand Calculation
----------------	--------------------------

File Name: P:\Projects\San Diego County\139942 - HMP Implementation Assistance\GIS\HMF GIS\Basins.mxd



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)	☒ Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Maintenance Agreement (when applicable)	☐ Included ☒ Not Applicable

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 local jurisdiction's standard format (PDP applicant to contact the [City Engineer] to obtain the current maintenance agreement forms).

Modular Wetlands[®] Linear Operations & Maintenance Manual



MODULAR WETLANDS LINEAR OPERATION & MAINTENANCE MANUAL

TABLE OF CONTENTS

Overview	3
Safety Notice & Personal Safety Equipment	4
Modular Wetlands Linear Components List	5
Inspection Summary & Equipment List.....	6
Inspection & Maintenance Notes	7
Inspection Process	7
Maintenance Indicators	9
Maintenance Summary & Equipment List.....	9
Maintenance Instructions.....	11
Replacing Biofiltration Media if Required	14
Replacing Drain Down Filter Media (Only on Older California Models)	16
Notes	17
Inspection Report	18
Cleaning & Maintenance Report	19

OVERVIEW

This operation and maintenance (O&M) manual is for the Modular Wetlands Linear Biofilter (MWL). Please read the instructions and equipment lists closely prior to starting. It is important to follow all necessary safety procedures associated with state and local regulations. Please contact Contech for more information on pre-authorized third-party service providers who can provide inspection and maintenance services in your area. For a list of service providers in your area, please visit www.conteches.com/maintenance.



WARNING

Confined space entry may be required. Contractor to obtain all equipment and training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to always proceed safely.

SAFETY NOTICE & PERSONAL SAFETY EQUIPMENT

Job site safety is a topic and a practice addressed comprehensively by others. The inclusions here are merely reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s), and Service Provider(s). OSHA and Canadian OSH, Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Service Provider's responsibility and outside the scope of Contech Engineered Solutions.



Safety Boots



Gloves



Hard Hat



Eye Protection

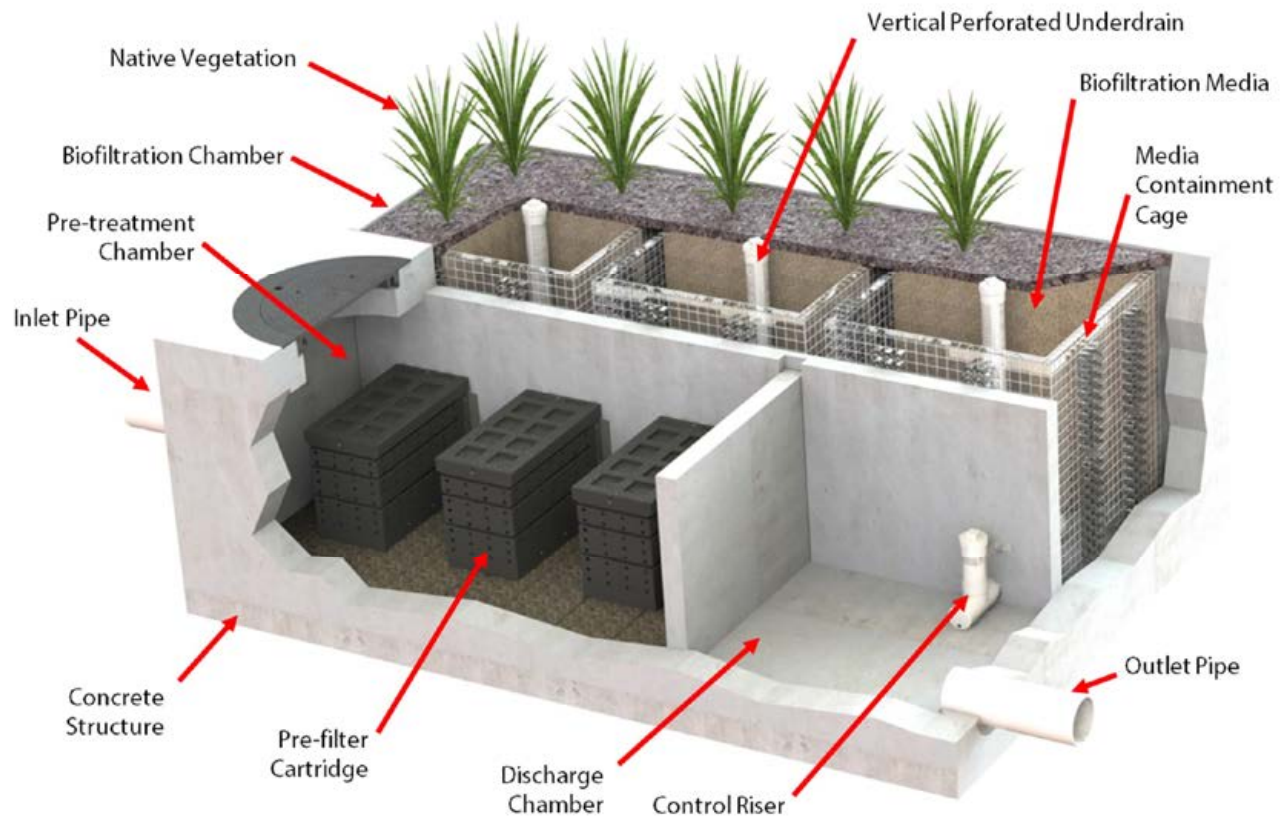


Maintenance and Protection
of Traffic Plan

MODULAR WETLANDS LINEAR COMPONENTS LIST

The MWL system comes in multiple sizes and configurations, including side by side or end to end layouts, both as open planters or underground systems. See shop drawings (plans) for project specific details.

The standard MWL system is comprised of the following components:



INSPECTION SUMMARY & EQUIPMENT LIST

Stormwater regulations require BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess the site-specific loading conditions. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided.

- Inspect pre-treatment, biofiltration, and discharge chambers an average of once every six to twelve months. Varies based on site specific and local conditions.
- Average inspection time is approximately 15 minutes. Always ensure appropriate safety protocol and procedures are followed.

The following is a list of equipment required to allow for simple and effective inspection of the MWL:



Modular Wetlands Linear
Inspection Form



Flashlight



Tape Measure



Access Cover Hook



Ratchet
& 7/16" Socket
(if required for older pre-filter
cartridges that have two
bolts holding the lids on)

INSPECTION & MAINTENANCE NOTES

1. Following maintenance and/or inspection, it is recommended that 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 not require irrigation after initial establishment.

INSPECTION PROCESS

1. Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other information (see inspection form).
2. Observe the inside of the system through the access covers. If minimal light is available and vision into the unit is impaired, utilize a flashlight to see inside the system and all chambers.
3. Look for any out of the ordinary obstructions in the inflow pipe, pre-treatment chamber, biofiltration chamber, discharge chamber or outflow pipe. Write down any observations on the inspection form.
4. Through observation and/or digital photographs, estimate the amount of trash, debris accumulated in the pre-treatment chamber. Utilizing a tape measure or measuring stick, estimate the amount of sediment in this chamber. Record this depth on the inspection form.
5. Through visual observation, inspect the condition of the pre-filter cartridges. Look for excessive build-up of sediment on the cartridges, any build-up on the tops of the cartridges, or clogging of the holes. Record this information on the inspection form. The pre-filter cartridges can be further inspected by removing the cartridge tops and assessing the color of the BioMediaGREEN filter cubes (requires entry into pre-treatment chamber - see notes previous notes regarding confined space entry). Record the color of the material. New material is a light green color. As the media becomes clogged, it will turn darker in color, eventually becoming dark brown or black. The closer to black the media is the higher percentage that the media is exhausted and in need of replacement.



6. The biofiltration chamber is generally maintenance-free due to the system's advanced pre-treatment chamber. For units which have open planters with vegetation, it is recommended that the vegetation be inspected. Look for any plants that are dead or showing signs of disease or other negative stressors. Record the general health of the plants on the inspection form and indicate through visual observation or digital photographs if trimming of the vegetation is required.
7. The discharge chamber houses the control riser (if applicable), drain down filter (only in California - older models), and is connected to the outflow pipe. It is important to check to ensure the orifice is in proper operating condition and free of any obstructions. It is also important to assess the condition of the drain down filter media which utilizes a block form of the BioMediaGREEN. Assess in the same manner as the cubes in the pre-filter cartridge as mentioned above.
8. Finalize the inspection report for analysis by the maintenance manager to determine if maintenance is required.

MAINTENANCE INDICATORS

Based upon the observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components or cartridges.
- Obstructions in the system or its inlet and/or outlet pipes.
- Excessive accumulation of floatables in the pre-treatment chamber in which the length and width of the chamber is fully impacted more than 18".
- Excessive accumulation of sediment in the pre-treatment chamber of more than 6" in depth.
- Excessive accumulation of sediment on the BioMediaGREEN media housed within the pretreatment cartridges. When media is more than 85% clogged, replacement is required. The darker the BioMediaGREEN, the more clogged it is and in need of replacement.
- Excessive accumulation of sediment on the BioMediaGREEN media housed within the drain down filter (California only - older models).
- Overgrown vegetation.

MAINTENANCE SUMMARY & EQUIPMENT LIST

The time has come to maintain your MWL. All necessary pre-maintenance steps must be carried out before maintenance occurs. Once traffic control has been set up per local and state regulations and access covers have been safely opened, the maintenance process can begin. It should be noted that some maintenance activities require confined space entry. All confined space requirements must be strictly followed before entry into the system. In addition, the following is recommended:

- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other info (see maintenance form).
- Set up all appropriate safety and maintenance equipment.
- Ensure traffic control is set up and properly positioned.
- Prepared pre-checks (OSHA, safety, confined space entry) are performed.
 - A gas meter should be used to detect the presence of any hazardous gases prior to entering the system. If hazardous gases are present, do not enter the vault. Following appropriate confined space procedures, take steps such as utilizing a venting system to address the hazard. Once it is determined to be safe, enter the system utilizing appropriate entry equipment such as a ladder and tripod with harness.

The following is a list of equipment required for maintenance of the MWL:



Modular Wetlands Linear
Maintenance Form



Flashlight



Access Cover Hook



Ratchet
& 7/16" Socket
(if required for older pre-filter
cartridges that have two
bolts holding the lids on)



Vacuum Assisted Truck with
Pressure Washer



Replacement
BioMediaGREEN
(If Required)

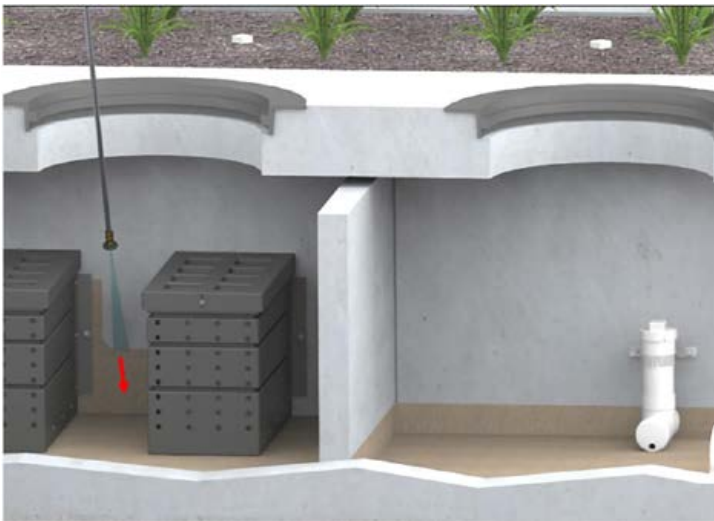
(order BioMediaGREEN from Contech's Maintenance Team members at <https://www.conteches.com/maintenance>)

MAINTENANCE INSTRUCTIONS



1. ACCESS COVER REMOVAL

Upon determining that the vault is safe for entry, remove all access cover(s) and position the vacuum truck accordingly.



2. PRESSURE WASH SYSTEM CHAMBERS

With the pressure washer, spray down pollutants accumulated on the walls and floors of the pre-treatment and discharge chambers. Then wash any accumulated sediment from the pre-filter cartridge(s).



3. VACUUM SYSTEM CHAMBERS

Vacuum out pre-treatment and discharge chambers and remove all accumulated pollutants including trash, debris, and sediments. Be sure to vacuum the pre-treatment floor until the pervious pavers are visible and clean. **(MWL systems outside of California may or may not have pervious pavers on the floor in the pre-treatment chamber)** If pre-filter cartridges require media replacement, proceed to **Step 4**. If not, replace the access cover(s) and proceed to **Step 7**.



4. PRE-FILTER CARTRIDGE LID REMOVAL

After successfully cleaning out the pre-treatment chamber, enter the chamber and remove the lid(s) from the pre-filter cartridge(s) by removing the two thumb screws. (Older pre-filter cartridges have two bolts holding the lids on that require a 7/16" socket to remove)



5. VACUUM EXISTING PRE-FILTER MEDIA

Utilize the vacuum truck hose or hose extension to remove the filter media from each of the individual media cages. Once filter media has been sucked out, use a pressure washer to spray down the inside of the cartridge and its media cages. Remove cleaned media cages and place to the side. Once removed, the vacuum hose can be inserted into the cartridge to vacuum out any remaining material near the bottom of the cartridge.



6. PRE-FILTER MEDIA REPLACEMENT

Reinstall media cages and fill with new media from the manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase. The easiest way to fill the media cages is to utilize a refilling tray that can also be sourced from the manufacturer. Place the refilling tray on top of the cartridge and fill with new bulk media shaking it down into the cages. Using your hands, lightly compact the media into each filter cage. Once the cages are full (each cartridge will hold five heaping 5gal buckets of bulk media), remove the refilling tray and replace the cartridge top, ensuring fasteners are properly tightened.



7. MAINTAINING VEGETATION

In general, the biofiltration chamber is maintenance-free with the exception of maintaining the vegetation. The MWL utilizes vegetation similar to surrounding landscape areas, therefore, trim vegetation to match surrounding vegetation. If any plants have died, replace them with new ones.



8. INSPECT UNDERDRAIN SYSTEM

Each vertical under drain on the biofiltration chamber has a removable threaded cap that can be taken off to check for any blockages or root growth. Once removed, a jetting attachment to the pressure washer can be used to clean out the under drain and orifice riser if needed.

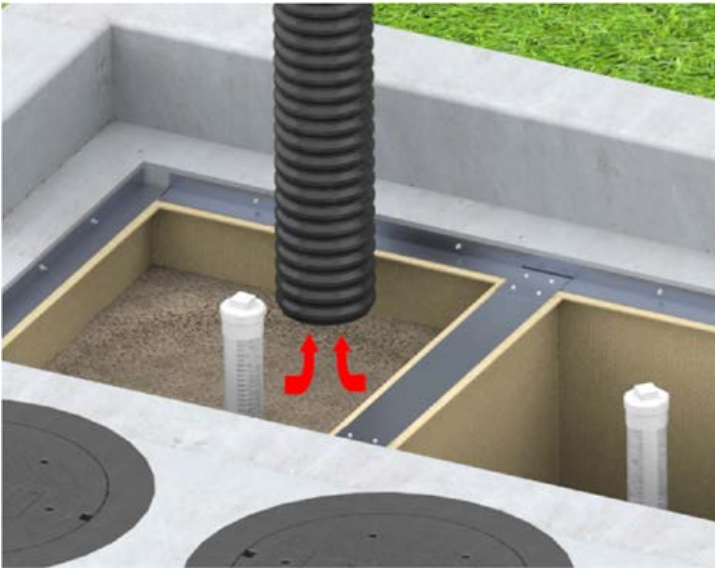


9. REPLACE ACCESS COVERS

Once maintenance is complete, replace all access cover(s)

REPLACING BIOFILTRATION MEDIA IF REQUIRED

As with all biofilter systems, at some point the biofiltration media will need to be replaced, either due to physical clogging or sorptive exhaustion (for dissolved pollutants) of the media ion exchange capacity (to remove dissolved metals and phosphorous). The general life of this media is 10 to 20 years based on site specific conditions and pollutant loading, so replacing the biofiltration media should not be a common occurrence. In the event that the biofiltration media requires replacement, contact one of Contech's Maintenance Team members at <https://www.conteches.com/maintenance> to order new biofiltration media. The quantity of media needed can be determined by providing the model number and unit depth. Media will be provided in super sacks for easy installation. Each sack will weigh between 1,000 and 2,000 lbs. Biofiltration media replacement can be done following the steps below:



1. VACUUM EXISTING BIOFILTRATION MEDIA

Remove the mulch and vegetation to access the biofiltration media, and then position the vacuum truck accordingly. Utilize the vacuum truck to vacuum out all the media. Once all media is removed, use the pressure washer to spray down all the netting and underdrain systems on the inside of the media containment cage. Vacuum out any remaining debris after spraying down netting. Inspect the netting for any damage or holes. If the netting is damaged, it can be repaired or replaced with guidance by the manufacturer.



2. INSTALLING NEW BIOFILTRATION MEDIA

Ensure that the chamber is fully cleaned prior to installation of new media into the media containment cage(s). Media will be provided in super sacks for easy installation. A lifting apparatus (forklift, backhoe, boom truck, or other) is recommended to position the super sack over the biofiltration chamber. Add media in lifts to ensure that the riser pipes remain vertical. Be sure to only fill the media cage(s) up to the same level as the old media.



3. REPLANT VEGETATION

Once the media has been replaced, replant the vegetation and cover biofiltration chamber with approved mulch (if applicable). If the existing vegetation is not being reused, and new vegetation is being planted, you will need to acquire new plant establishment media that will be installed just below the mulch layer at each plant location. (see plan drawings for details). Contact one of Contech's Maintenance Team members at <https://www.conteches.com/maintenance> to order new plant establishment media.

REPLACING DRAIN DOWN FILTER MEDIA (ONLY ON OLDER CALIFORNIA MODELS)

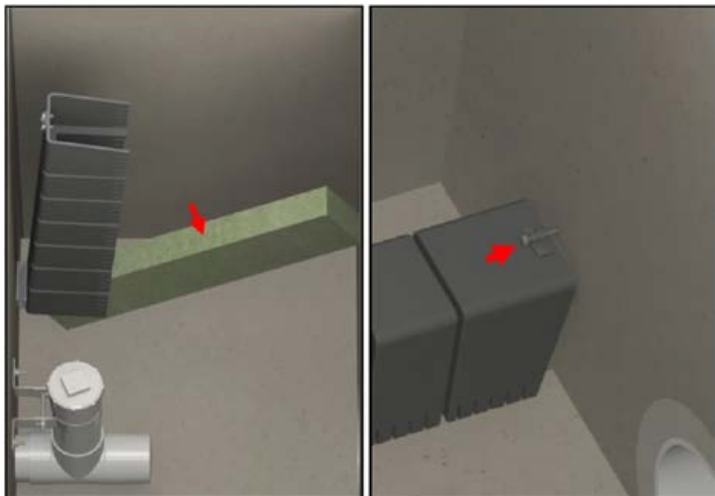
NOTE: The drain down filter is only found on units installed in California prior to 2023

If during inspection it was determined that the drain down filter media requires replacement, contact one of Contech's Maintenance Team members at <https://www.conteches.com/maintenance> to order new media.



1. REMOVE EXISTING DRAIN DOWN MEDIA

Pull knob back to unlock the locking mechanism and lift the drain down filter housing to remove the used BioMediaGREEN filter block.



2. INSTALL NEW DRAIN DOWN MEDIA

Ensure that the chamber and housing are fully cleaned prior to installation of new media, and then insert the new BioMediaGREEN filter block. The media filter block should fit snugly between the chamber walls and be centered under the filter housing. Lower the housing over the filter block and secure the locking mechanism.

[illegible]

Inspection Report Modular Wetlands Linear

Project Name _____		For Office Use Only
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 Linear

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:



CONTECH[®] ENGINEERED SOLUTIONS

© 2024 CONTECH ENGINEERED SOLUTIONS LLC, A QUIKRETE COMPANY

800-338-1122

WWW.CONTECHES.COM

ALL RIGHTS RESERVED. PRINTED IN THE USA.

CONTECH ENGINEERED SOLUTIONS LLC PROVIDES SITE SOLUTIONS FOR THE CIVIL ENGINEERING INDUSTRY. CONTECH'S PORTFOLIO INCLUDES BRIDGES, DRAINAGE, SANITARY SEWER, STORMWATER AND EARTH STABILIZATION PRODUCTS. FOR INFORMATION ON OTHER CONTECH DIVISION OFFERINGS, VISIT CONTECHES.COM OR CALL 800-338-1122.

NOTHING IN THIS CATALOG SHOULD BE CONSTRUED AS A WARRANTY. APPLICATIONS SUGGESTED HEREIN ARE DESCRIBED ONLY TO HELP READERS MAKE THEIR OWN EVALUATIONS AND DECISIONS, AND ARE NEITHER GUARANTEES NOR WARRANTIES OF SUITABILITY FOR ANY APPLICATION. CONTECH MAKES NO WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, RELATED TO THE APPLICATIONS, MATERIALS, COATINGS, OR PRODUCTS DISCUSSED HEREIN. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE ARE DISCLAIMED BY CONTECH. SEE CONTECH'S CONDITIONS OF SALE (AVAILABLE AT WWW.CONTECHES.COM/COS) FOR MORE INFORMATION.

SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

ModWetLinear OM Manual 03/24

GRADING NOTES

1.

Call the assigned City of San Marcos Engineering Inspector 24-hours before commencement of work.
2.

Imported material shall be obtained from a legal site.
3.

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.
4.

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.
5.

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.

6.

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.
7.

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 the premises on Saturday, Sunday, or holidays.
8.

All major slopes shall be shaped and trimmed as shown on the plans and rounded into existing slopes to produce a contoured transition from cut or fill faces to natural ground and abutting 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.
9.

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.
10.

The Engineer-of-Work shall be notified when construction commences.
11.

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.
12.

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.
13.

Minimum 90% compaction is required in all on-site fill areas with a minimum of 95% compaction six inches (6") below finished subgrade in a public street.
14.

Excavations, fills, and obstructions in Public Places shall conform to the requirements of City Ordinance 2022-1521 subject to the approval of the Director.
15.

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.
16.

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.
17.

All work shown on these plans to be completed in accordance with City Grading Ordinance Chapter 17.32.
18.

All grading shall be supervised by an individual appropriately licensed under the Business and Professions Code.
19.

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.
20.

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.
21.

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.
22.

A right-of-way permit will be required for any work within the City right-of-way.
23.

Accessible parking space(s) shall have a maximum slope not exceeding 2% in any direction.

FIRE NOTES

1.

Fire hydrants shall be CLOW Model 850 with Two 4" and One 2.5" port.
2.

The tops and nozzle caps of the fire hydrant shall be color coded per NFPA 291 based on fire flow:
Class AA – Light Blue Point – 150 GPM or greater
Class A – Green Point – 100 to 1499 GPM
Class B – Orange point – 500 to 999 GPM
Class C – Red Point – Less than 500 GPM
3.

Color coding shall be from FSC Coatings, Ametco Silicon Poly Plus.

PRIVATE WATER/SEWER NOTES

1.

Private on-site water lines are permitted and inspected under separate permit and are shown on these plans for informational purposes only.
2.

Private on-site Fire lines are permitted and inspected under separate permit and are shown on these plans for informational purposes only.
3.

Trenching and backfill operation for private fire, water, and sewer lines shall be observed by the Public works inspection for general conformance with the geotechnical specifications. Trenches shall also be subject to inspection by the permitting department for additional requirements.
4.

All fire lines and appurtenances downstream of the FSBP assemblies are private throughout this plan set.

General Notes:

1.

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 to the City of San Marcos Standards.

Flood Zone Statement:

The project is located within Flood Zone X per Flood Insurance Rate Map (FIRM) Number 06073C0793G, dated 5/16/2012 as published by the Federal Emergency Management Agency (FEMA) in accordance with the National Flood Insurance Program.

Flood Zone X are areas of minimal flood hazard, outside the 500-year flood and has been identified in the Community Flood Insurance Study as areas determined to be outside the 0.2% annual chance flood.

CITY OF SAN MARCOS
PRECISE GRADING PLANS FOR
COSTCO GAS STATION



VICINITY MAP
NTS



LOCATION MAP
NTS

SITE ADDRESS AND ASSESSOR PARCEL NUMBERS

142 S. BENT AVENUE
SAN MARCOS, CA 92078

ASSESSOR PARCEL NO(S): 219-331-43-00

OWNER TENANT

LOST CONTINENT, L.P.
609 E BROKAW RD
SAN JOSE, CA 95112
PHONE: 650.766.5191
CONTACT: GARY GRUMANN

COSTCO WHOLESALE
999 LAKE DRIVE
ISSAQUAH, WA 98027
PHONE: 714.978.5023, EXT. 207
CONTACT: MICHAEL OKUMA

STORM WATER SUMMARY

WQID: 9 37C38318
PROJECT AREA: 14.12 ACRES
DISTURBED AREA: 2.42 ACRES
IMPERVIOUS AREA: 1.94 ACRES
PERVIOUS AREA: 0.48 ACRES
STORM WATER DEVELOPMENT PROJECT TYPE: PRIORITY
CITY BMP ID NO: 5075 THRU 5076
FACILITY TYPE: COMMERCIAL/RETAIL
MAINTENANCE AGREEMENT DOC#:

PROPERTY OWNER ENDORSEMENT OF THESE IMPROVEMENTS:

DECLARATION OF RESPONSIBILITY CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR 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: _____
MARK NERO RCE 80066 EXP. 9/30/26

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 BY KLEINFELDER, PROJECT NO. 20210191.001A, BRIAN E. CRYSTAL (GE 2639) DATED OCTOBER 22, 2020.

DATE: _____
BRIAN E. CRYSTAL GE 2639 EXP. _____

BASIS OF BEARING

THE BEARINGS HEREON ARE IN TERMS OF THE CALIFORNIA COORDINATE SYSTEM OF 1983 (OCS-83) ZONE VI, 2017.50 EPOCH, AS SHOWN ON RECORD OF SURVEY 23731, BEARING N53°14'08"E.

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF SAN MARCOS, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 2 OF PARCEL MAP NO. 18636, IN THE CITY OF SAN MARCOS, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, FEBRUARY 12, 2001 AS FILE NO. 2001-0079579, OF OFFICIAL RECORDS.

ENGINEER OF WORK	BENCH MARK
By: FUSCOE ENGINEERING, INC Date: 08/23/2024	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY
Name: MARK NERO	Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ±
R.C.E.: 80066 exp: 9/30/26	NORTH OF INTERSECTION OF VA VERA CRUZ @ LINDA VISTA DR
	Record From: RECORD OF SURVEY 23731
	Elev: 534.42 Datum: NAVD 88

WORK TO BE DONE

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

- 1)

FOR WORK ON PRIVATE PROPERTY, THE COSTCO WAREHOUSE STANDARDS OF DEVELOPMENT & SPECIFICATIONS (LATEST EDITIONS) ARE INCORPORATED HEREIN
- 2)

SAN DIEGO AREA REGIONAL STANDARD DRAWINGS
- 3)

STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ("GREEN BOOK")
- 4)

CITY OF SAN MARCOS GRADING AND EXCAVATION ORDINANCE
- 5)

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARDS PLANS
- 6)

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARD SPECIFICATIONS
- 7)

STATE OF CALIFORNIA TRAFFIC CONTROL MANUAL
- 8)

CITY OF SAN MARCOS SUPPLEMENT TO THE 2015 GREENBOOK ("STANDARD SPECIAL PROVISIONS")

LEGEND

ITEM	SYMBOL
PROPERTY LINE	— — — —
STREET CENTER LINE	— — — —
AC PAVING PARKING STALL	[Solid Gray Box]
AC PAVING DRIVE AISLE	[White Box]
PCC PAVING/WALKWAY	[Stippled Box]
LIMITED USE AREA FOR LINE OF SIGHT	[Diagonal Lines Box]
FIRE LATERAL	— FW — FW
SEWER LATERAL	— SS — SS
STORM DRAIN PIPE	— SD — SD
FLOOD BOUNDARY	— . . . —
WALL	[Thick Solid Line]
FENCE	— X — X —
TRAFFIC LIGHT	[Traffic Light Symbol]
EXISTING WATER	— DW — DW
EXISTING FIRE HYDRANT	— FW — [Hydrant Symbol]
EXISTING SEWER	— SS — SS
EXISTING IRRIGATION WATER	— IW — IW
EXISTING STORM DRAIN	— SD — SD
PROP FW	— FW — FW
PROP SS	— SS — SS
PROP SD	— SD — SD

ABBREVIATIONS

AC	ASPHALT CONCRETE
BLDG	BUILDING
CL	CENTER LINE
EG	EDGE OF GUTTER
EX	EXISTING
FF	FINISHED FLOOR
FS	FINISHED SURFACE
FTG	FOOTING
FW	FIRE WATER
GB	GRADE BREAK
ICV	IRRIGATION CONTROL VALVE
JT	JOINT
MWS	MODULAR WETLAND SYSTEM
PA	PLANTER AREA
PCC	PORTLAND CONCRETE CEMENT
PCR	POINT OF CURB RETURN
PL	PROPERTY LINE
PROP	PROPOSED
ROW	RIGHT OF WAY
SCE	SOUTHERN CALIFORNIA EDISON
SCD	SEWER CLEAN OUT
SD	STORM DRAIN
SS	SEWER LINE
TC	TOP OF CURB
TF	TOP OF FOOTING
TS	TOP OF STEM
TW	TOP OF WALL

SHEET INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	CONSTRUCTION NOTES & QUANTITIES
3-4	DEMOLITION PLAN
5	INDEX MAP
6-7	PRECISE GRADING PLAN
8	SECTIONS & DETAILS
9	DETAILS
10	STORM DRAIN PLAN
11-19	STORM DRAIN DETAILS
20	EROSION CONTROL PLAN
21	LINDA VISTA STRIPING
22	BIKE & PEDESTRIAN PATH STUDY

SOURCE OF AERIAL TOPO

AERIAL SURVEY CONDUCTED BY ROBERT J. LUNG & ASSOCIATES ON JULY 8, 2020

PRELIMINARY HYDROLOGY/HYDRAULIC REPORT

THE HYDROLOGY/HYDRAULIC REPORT WAS PREPARED BY FUSCOE ENGINEERING (08/2023)

BENCHMARK ADJUSTMENT

TO ADJUST FROM NGVD 29 (ROS 13928) TO NAVD 88 (ROS 23731)

NGVD 29 ELEVATION + 2.108 = NAVD 88 ELEVATION
NGVD 29 BENCHMARK OF 543.629 + 2.108 = 545.737 (NAVD 88)

PER CITY OF SAN MARCOS BENCHMARK CONVERSION, DATED SEPTEMBER 21, 2011

CITY OF SAN MARCOS
CONCEPTUAL GRADING PLANS FOR:
COSTCO GAS STATION
TITLE SHEET

PLANNING PROJECT NO.
CUP23-0004

Sheet 1 of 20

VWD NO. 246122

PRIVATE ON-SITE SYSTEMS FOR WATER

1.

WATER LINES SHALL HAVE A MINIMUM COVER OF 42 INCHES. SEWER LINES SHALL HAVE A MINIMUM COVER OF 5 FEET.
2.

CONTRACTOR SHALL NOTIFY THE FOLLOWING AGENCIES 48 HOURS PRIOR TO CONSTRUCTION. A VALID UNDERGROUND SERVICE ALERT TICKET SHALL BE ON FILE.

VALLECITOS WATER DISTRICT

1-760-744-0460

COX COMMUNICATION

1-800-227-2600

SDG&E

1-800-227-2600

AT&T

1-800-227-2600

UNDERGROUND SERVICE ALERT.

811
3.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL SUBSTRUCTURES, WHETHER SHOWN ON THE PLANS OR NOT, AND PROTECT THEM FROM DAMAGE. THE ACTUAL LOCATION AND DEPTH OF ALL EXISTING WATER AND SEWER LINES IS TO BE VERIFIED BY THE CONTRACTOR AND ANY DISCREPANCY IS TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF WORK FOR CORRECTION AND THEN SUBMITTED TO THE DISTRICT FOR APPROVAL.
4.

NEITHER THE ENGINEER, OWNER NOR THE VALLECITOS WATER DISTRICT SHALL BE RESPONSIBLE FOR THE ENFORCEMENT OF SAFETY STANDARDS.
5.

A PRECONSTRUCTION CONFERENCE MEETING SHALL BE HELD A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO CONSTRUCTION.
6.

A SIGNED SET OF PLANS DOES NOT IMPLY THAT CONSTRUCTION MAY BEGIN. THE CONTRACTOR MUST CONTACT THE VALLECITOS WATER DISTRICT ENGINEERING DEPARTMENT TO CONFIRM.
7.

ALL WORK DONE IN OR NEAR VALLECITOS WATER DISTRICT FACILITIES SHALL BE DONE ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS OF THE VALLECITOS WATER DISTRICT.
8.

PRIOR TO CROSSING EXISTING WATER OR SEWER FACILITIES, CONTRACTOR SHALL SUBMIT EQUIPMENT SPECIFICATIONS, WEIGHT AND DEFLECTION CALCULATIONS FOR APPROVAL.
9.

CONTRACTOR SHALL VERIFY AND REQUEST CONSTRUCTION WATER SOURCE AND AVAILABILITY PRIOR TO START OF GRADING.
10.

STATE HEALTH DEPARTMENT REQUIRES CERTIFIED BACKFLOW DEVICES ON ALL HARD PLUMBED CONNECTIONS TO DISTRICT CONSTRUCTION METERS.
11.

ACCESSING OR WORKING WITHIN VALLECITOS WATER DISTRICT EASEMENT REQUIRES INSPECTION.
12.

DISTRICT SHALL ASSIGN AN INSPECTOR FOR GRADING JOBS WHERE DISTRICT FACILITIES ARE IMPACTED.
13.

A BLASTING PLAN SHALL BE SUBMITTED FOR DISTRICT APPROVAL PRIOR TO THE USE OF EXPLOSIVES NEAR DISTRICT FACILITIES.

DEMOLITION REMOVAL NOTES			
NO.	DESCRIPTION	QTY	UNIT
1	PROTECT IN PLACE, ITEM PER PLAN	—	—
2	REMOVE AC PAVEMENT AND AGGREGATE BASE	88,000	SF
3	REMOVE STORM DRAIN PIPE	200	LF
4	REMOVE CONCRETE CURB	3,100	LF
5	REMOVE BOLLARD	2	EA
6	REMOVE CONCRETE DRIVEWAY	1,200	SF
7	REMOVE TREE/LANDSCAPE AND IRRIGATION	—	—
8	REMOVE CART CORRAL	1	EA
9	REMOVE PARKING LOT LIGHT, CONDUITS, CONDUCTORS & FOOTINGS. ENSURE CONTINUITY OF CONDUCTORS FOR PARKING LOT LIGHTS REMAINING TO THE SOUTH. COORDINATE ELECTRICAL CONNECTION FOR REMAINING LIGHT STANDARDS WITH ELECTRICAL PLAN	15	EA
10	SAWCUT	1,400	LF
11	REMOVE DRAINAGE INLET	1	EA
12	SANDBLAST & REMOVE PAVEMENT MARKING	1	LS

PRECISE GRADING NOTES			
NO.	DESCRIPTION	QTY	UNIT
1	CONSTRUCT 3" AC OVER 5" CLASS II BASE PER GEOTECHNICAL RECOMMENDATIONS (PARKING STALL)	5,800	SF
2	CONSTRUCT 5" AC OVER 6.5" CLASS II BASE PER GEOTECHNICAL RECOMMENDATIONS (DRIVE AISLE)	42,000	SF
3	CONSTRUCT 7" PCC PAVEMENT OVER 4" CLASS II BASE PER GEOTECHNICAL RECOMMENDATIONS	33,000	SF
4	CONSTRUCT 4" CURB & GUTTER PER MODIFIED COSTCO STD. DETAIL 08-17, SEE DETAIL 4 ON SHEET 9, JOINTS PER SPPWC 112-2	210	LF
5	CONSTRUCT 6" CURB & GUTTER PER COSTCO STD. DETAIL 08-17, SEE DETAIL 4 ON SHEET 9, JOINTS PER SPPWC 112-2	550	LF
6	CONSTRUCT 6" CURB ONLY PER COSTCO STD. DETAIL 08-17, SEE DETAIL 6 ON SHEET 9, JOINTS PER SPPWC 112-2	1,350	LF
7	CONSTRUCT 0" CURB PER DETAIL 7 ON SHEET 9, JOINTS PER SPPWC 112-2	10	LF
8	CONSTRUCT 0" TO 6" CURB TRANSITION PER DETAIL 8 ON SHEET 9	5	LF
9	CONSTRUCT 4" TO 6" CURB TRANSITION PER DETAIL 9 ON SHEET 9	90	LF
10	CONSTRUCT 24" WIDE CONCRETE CHANNEL PER DETAIL 10 ON SHEET 9	20	LF
11	CONSTRUCT 3" WIDE RIBBON GUTTER PER DETAIL 11 ON SHEET 9	110	LF
12	CONSTRUCT 8" WIDE RIBBON GUTTER PER DETAIL 12 ON SHEET 9	40	LF
13	CONSTRUCT 12" WIDE CONCRETE STRIP PER COSTCO STD. DETAIL 08-18, SEE DETAIL 13 ON SHEET 9	50	LF
14	CONSTRUCT 6" CONCRETE SIDEWALK; THICKNESS, COLOR, TEXTURE, AND SCORING PER COSTCO STD DETAIL 09-11, SEE DETAIL 14 ON SHEET 9	200	SF
15	CONSTRUCT LOCAL DEPRESSION PER CITY OF SAN MARCOS STD. XXXXX	3	EA
16	PROPOSED STALL STRIPING, SIGNAGE, AND PAVEMENT MARKINGS PER ARCHITECT'S PLANS	1	LS
17	INSTALL CART CORRAL PER ARCHITECT'S PLANS	—	—
18	INSTALL BOLLARDS PER ARCHITECT'S PLANS	—	—
19	INSTALL WIRE BARRIER PER ARCHITECT'S PLANS	—	—
20	SAWCUT STRAIGHT AND CLEAN	550	LF
21	CONSTRUCT CONTROLLER ENCLOSER PER ARCHITECT'S PLANS, FOR AN ENLARGED DETAIL OF GRADING AROUND THE ENCLOSURE, SEE DETAIL ON SHEET 8	1	EA
22	CONSTRUCT 0" TO 5" CURB TRANSITION PER DETAIL 22 ON SHEET 9	20	LF
23	CONSTRUCT 5" TO 4" CURB TRANSITION PER DETAIL 23 ON SHEET 9	10	LF
24	CONSTRUCT 4" CURB ONLY PER MODIFIED COSTCO STD. DETAIL 08-17, SEE DETAIL 6 ON SHEET 9, JOINTS PER SPPWC 112-2	50	LF
25	CONSTRUCT 4" CURB ONLY PER COSTCO STD. DETAIL 08-17, SEE DETAIL 6 ON SHEET 9, JOINTS PER SPPWC 112-2	400	LF

STORM DRAIN NOTES			
NO.	DESCRIPTION	QTY	UNIT
30	INSTALL 4" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60	240	LF
31	INSTALL 6" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60	540	LF
32	INSTALL 12" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60	320	LF
33	INSTALL 4" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS	21	EA
34	INSTALL 6" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS	16	EA
35	INSTALL 12" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS	11	EA
36	INSTALL 6" DRAINAGE CLEANOUT STRUCTURE (DCO), SEE DETAIL 36 ON SHEET 12	4	EA
37	CONSTRUCT 24"x24" CATCH BASIN WITH TRAFFIC RATED GRATE, JENSEN DRAIN INLET BOX OR APPROVED EQUAL, SEE DETAIL 37 ON SHEET 12	1	EA
38	CONSTRUCT 36"x36" CATCH BASIN WITH TRAFFIC RATED STEEL PLATE, JENSEN DRAIN INLET BOX OR APPROVED EQUAL, SEE DETAIL 38 ON SHEET 12	1	EA
39	CONSTRUCT CATCH BASIN PER SAN DIEGO REGIONAL STD. DWG. D-02	2	EA
40	INSTALL MODULAR WETLAND SYSTEM PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS & DETAILS ON SHEET 13	3	EA
41	INSTALL OIL/WATER SEPARATOR PER DETAIL 41 ON SHEET 14	1	EA
42	INSTALL 12" NYLOPLAST BASIN RISER FOR AND INSTALL GRATED COVER	—	—
43	INSTALL PUMP AND SUMP STRUCTURE PER DETAIL 43 ON SHEET 15	2	EA
44	CONSTRUCT ADS STORMTECH CHAMBER SYSTEM PER DETAIL 44 ON SHEETS 16-18	6,200	SF
45	INSTALL DVERT PER DETAIL 47 ON SHEET 19	1	EA
46	POINT OF CONNECTION TO GAS STATION CANOPY ROOF DRAIN, SEE TYPICAL SECTION 'B' ON SHEET 14	18	EA
47	INSTALL 8" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60	20	LF
48	INSTALL 8" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS	1	EA
49	CONSTRUCT CONCRETE LUG CONNECTION PER SAN DIEGO REGIONAL STD. DWG. D-63	2	EA

ENGINEER OF WORK

By: EJSOCOE-ENGINEERING, INC Date:08/2024
Name: MARK NERO
R.C.E.: 80066 exp: 9/30/26

BENCH MARK

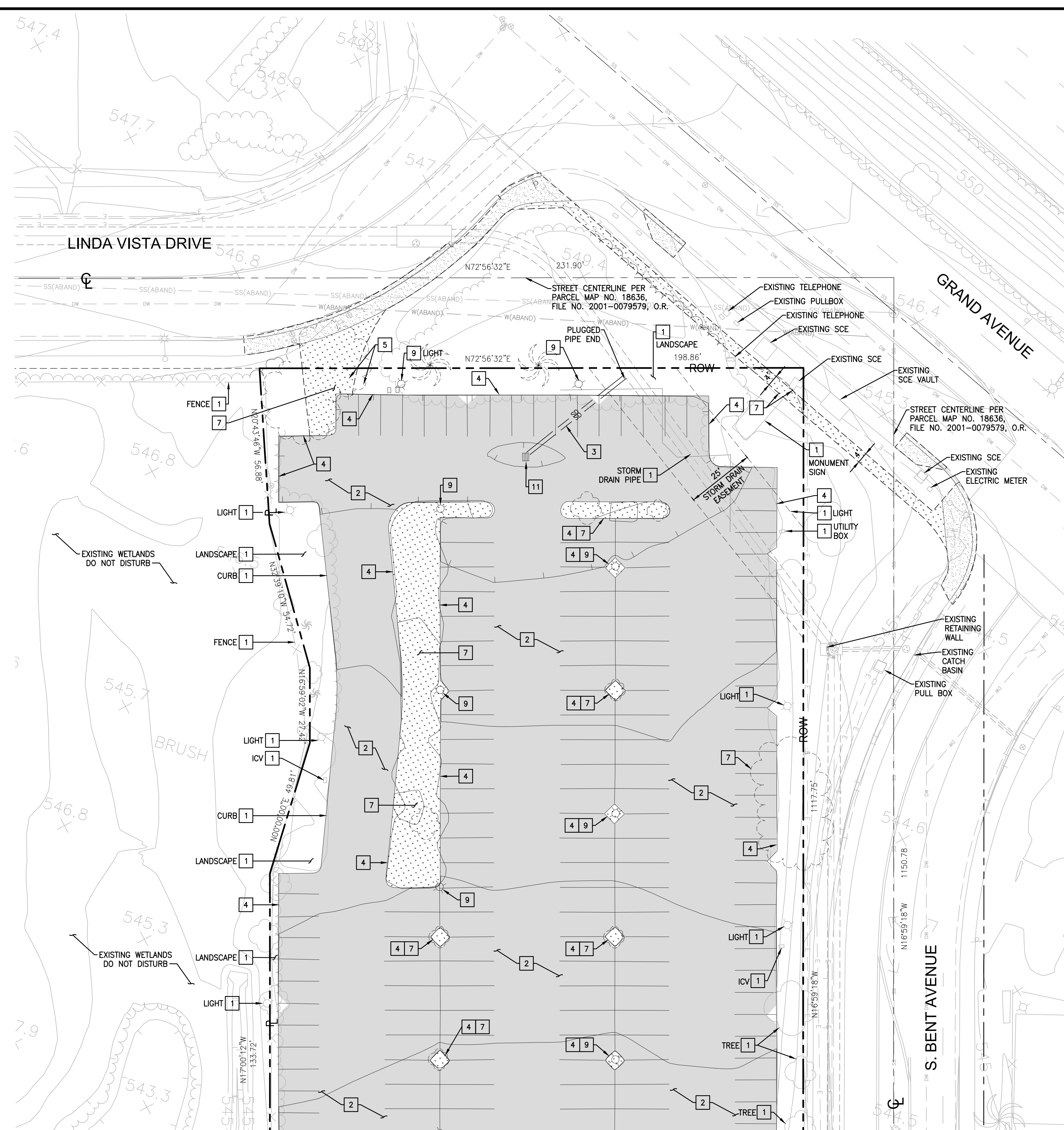
Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY
NVS 15 6-310 2018 CP-023
Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ± NORTH OF INTERSECTION OF VIA VERA CRUZ @ LINDA VISTA DR
Record From: RECORD OF SURVEY 23731
Elev: 534.42 Datum: NAVD 88

CITY OF SAN MARCOS

CONCEPTUAL GRADING PLANS FOR:
COSTCO GAS STATION
CONSTRUCTION NOTES & QUANTITIES

PLANNING PROJECT NO.
CUP23-0004

Sheet 2 of 20



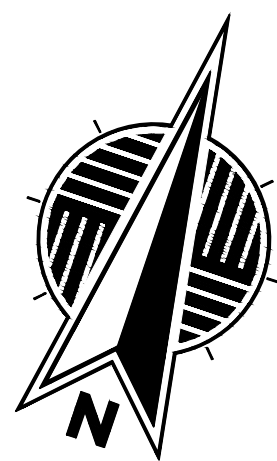
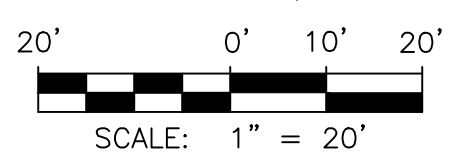
- NOTES:
- IT IS THE CONTRACTORS RESPONSIBILITY TO PROPERLY DISPOSE OF REMOVED ITEMS THAT ARE NOT TO BE REUSED.
 - BUILDING DEMOLITION ITEMS ARE NOT COVERED BY THIS PLAN. SEE ARCHITECTURAL PLAN FOR BUILDING DEMOLITION.
 - SAWCUT ALL LINES CLEAN & STRAIGHT
 - STRIPING IS NOT COVERED BY THIS PLAN, SEE ARCHITECTURAL PLANS FOR PAVEMENT STRIPING, INCLUSIVE OF DEMOLITION AND CONSTRUCTION.
 - PRIOR TO PAVEMENT DEMOLITION, REVIEW ASPHALT PAVEMENT CONSTRUCTION NOTES. CONTRACTOR MAY OPTION TO GRIND AND OVERLAY SOME PAVEMENTS DENOTED AS REMOVALS, SEE CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

- LEGEND
- REMOVE ENTIRE PAVEMENT SECTION
 - REMOVE CONCRETE PAVEMENT
 - REMOVE LANDSCAPE
 - SAWCUT LIMITS

DEMOLITION REMOVAL NOTES	
NO.	DESCRIPTION
1	PROTECT IN PLACE, ITEM PER PLAN
2	REMOVE AC PAVEMENT AND AGGREGATE BASE
3	REMOVE STORM DRAIN PIPE
4	REMOVE CONCRETE CURB
5	REMOVE BOLLARD
7	REMOVE TREE/LANDSCAPE AND IRRIGATION
9	REMOVE PARKING LOT LIGHT, CONDUITS, CONDUCTORS & FOOTINGS. ENSURE CONTINUITY OF CONDUCTORS FOR PARKING LOT LIGHTS REMAINING TO THE SOUTH. COORDINATE ELECTRICAL CONNECTION FOR REMAINING LIGHT STANDARDS WITH ELECTRICAL PLAN
11	REMOVE DRAINAGE INLET

NOTE TO CONTRACTOR:
ALL WORK IN CITY RIGHT-OF-WAY TO BE PERFORMED WITH ROW PERMIT

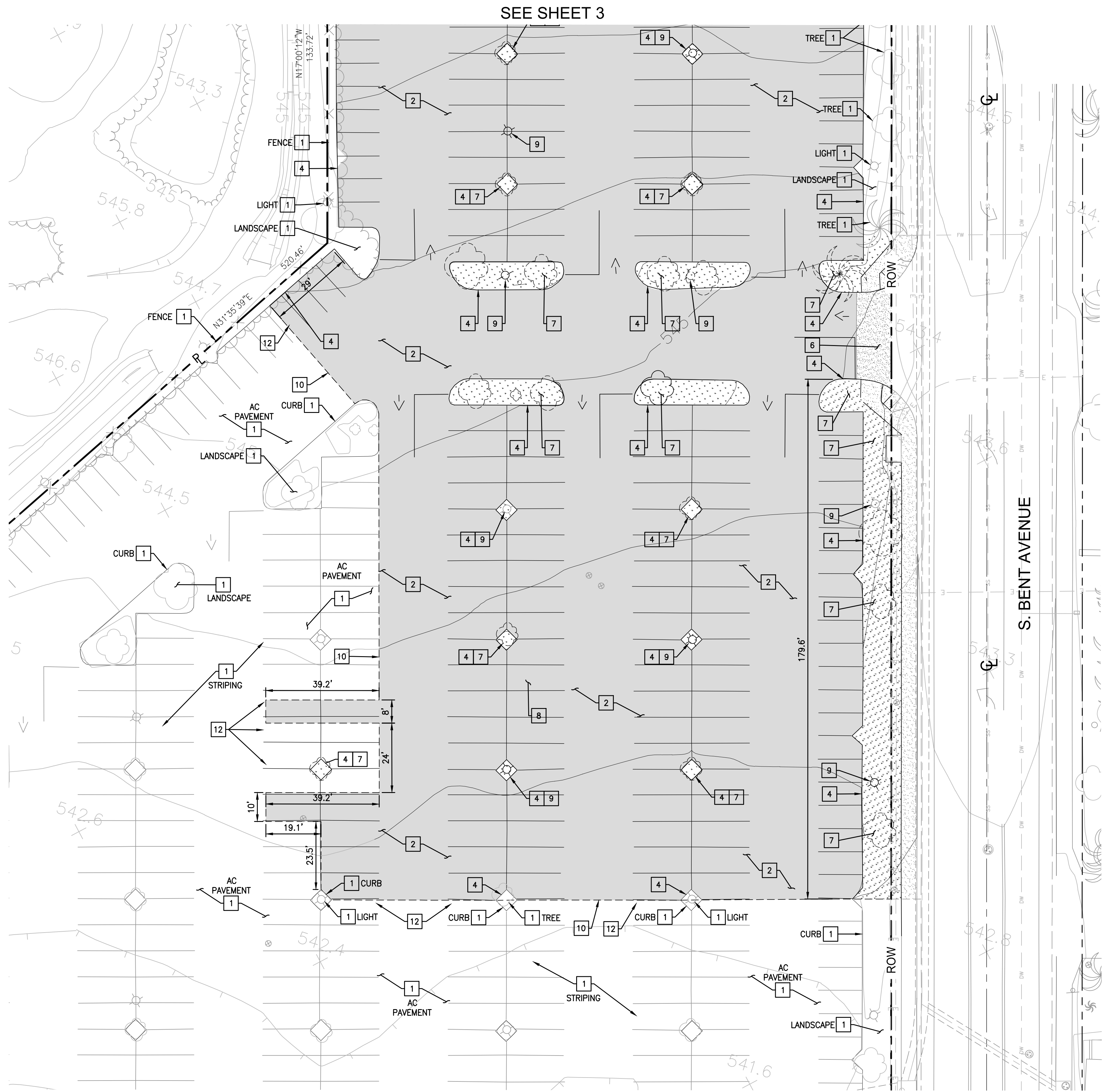
ENGINEER OF WORK AS-BUILT CERTIFICATE		
MARK NERO, PE	RCE 80066	EXP. 9/30/2026
DATE		



SEE SHEET 4

ENGINEER OF WORK	BENCH MARK
By: EUSCOE ENGINEERING, INC Date:08/20/24	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY
Name: MARK NERO	Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ±
R.C.E.: 80066 exp: 9/30/26	Record From: RECORD OF SURVEY 23331
	Elev: 534.42 Datum: NAVD 88

CITY OF SAN MARCOS		PLANNING PROJECT NO. CUP23-0004
CONCEPTUAL GRADING PLANS FOR:		
COSTCO GAS STATION		
DEMOLITION PLAN		Sheet 3 of 20



- NOTES:
- IT IS THE CONTRACTORS RESPONSIBILITY TO PROPERLY DISPOSE OF REMOVED ITEMS THAT ARE NOT TO BE REUSED.
 - BUILDING DEMOLITION ITEMS ARE NOT COVERED BY THIS PLAN. SEE ARCHITECTURAL PLAN FOR BUILDING DEMOLITION.
 - SAWCUT ALL LINES CLEAN & STRAIGHT
 - STRIPING IS NOT COVERED BY THIS PLAN, SEE ARCHITECTURAL PLANS FOR PAVEMENT STRIPING, INCLUSIVE OF DEMOLITION AND CONSTRUCTION.
 - PRIOR TO PAVEMENT DEMOLITION, REVIEW ASPHALT PAVEMENT CONSTRUCTION NOTES. CONTRACTOR MAY OPTION TO GRIND AND OVERLAY SOME PAVEMENTS DENOTED AS REMOVALS, SEE CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

LEGEND

- REMOVE ENTIRE PAVEMENT SECTION
- REMOVE CONCRETE PAVEMENT
- REMOVE LANDSCAPE
- SAWCUT LIMITS

DEMOLITION REMOVAL NOTES

NO.	DESCRIPTION
1	PROTECT IN PLACE, ITEM PER PLAN
2	REMOVE AC PAVEMENT AND AGGREGATE BASE
4	REMOVE CONCRETE CURB
6	REMOVE CONCRETE DRIVEWAY
7	REMOVE TREE/LANDSCAPE AND IRRIGATION
8	REMOVE CART CORRAL
9	REMOVE PARKING LOT LIGHT, CONDUITS, CONDUCTORS & FOOTINGS. ENSURE CONTINUITY OF CONDUCTORS FOR PARKING LOT LIGHTS REMAINING TO THE SOUTH. COORDINATE ELECTRICAL CONNECTION FOR REMAINING LIGHT STANDARDS WITH ELECTRICAL PLAN
10	SAWCUT
12	SANDBLAST & REMOVE PAVEMENT MARKING

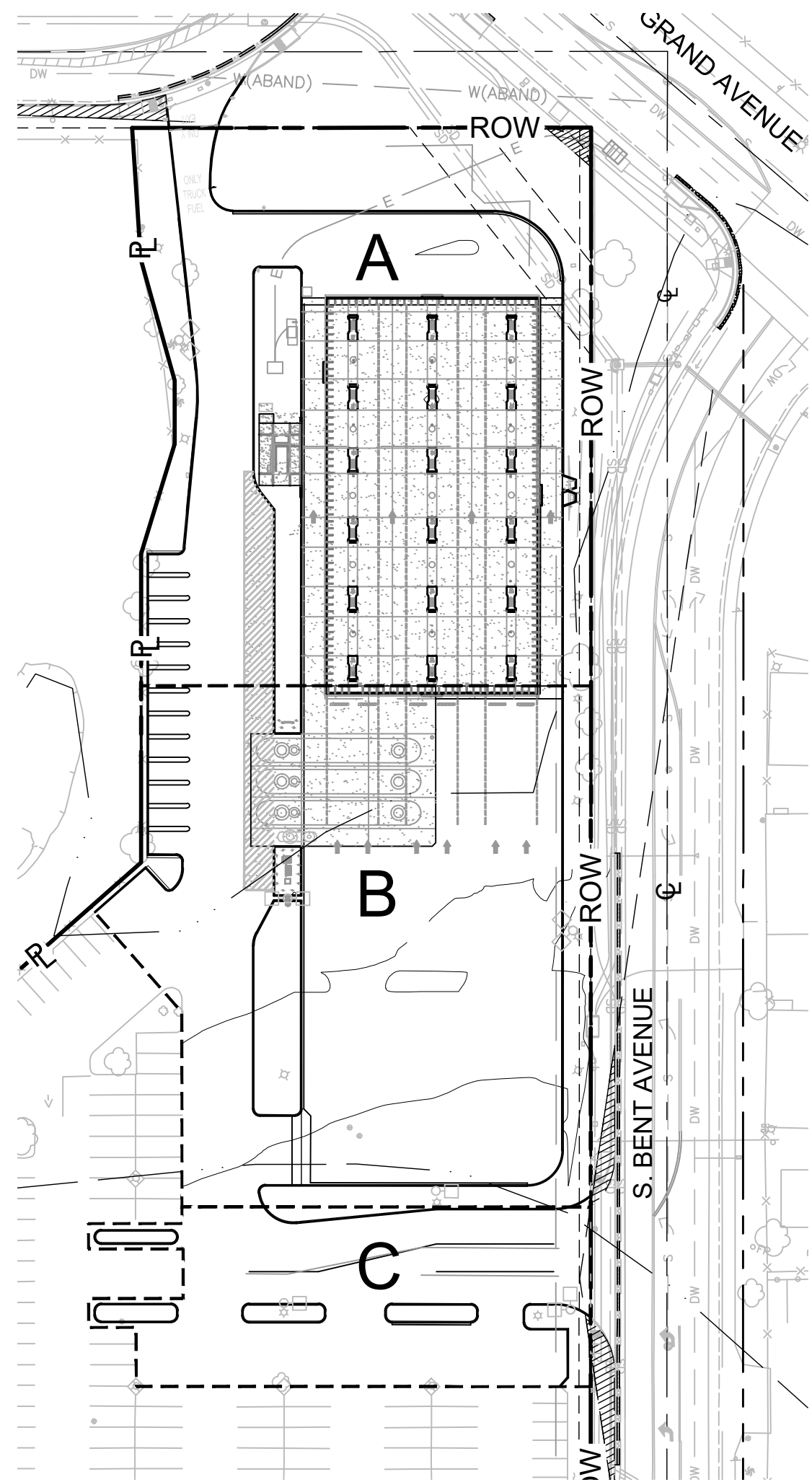
NOTE TO CONTRACTOR:
ALL WORK IN CITY RIGHT-OF-WAY TO
BE PERFORMED WITH ROW PERMIT

ENGINEER OF WORK AS-BUILT CERTIFICATE
MARK NERO, PE RCE 80066 EXP. 9/30/2026
DATE



ENGINEER OF WORK	BENCH MARK
By: EUSCOE ENGINEERING, INC Date:08/20/2024 Name: MARK NERO R.C.E.: 80066 exp: 9/30/26	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY NVS 1 S 6310 2018 CP-023 Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ± NORTH OF INTERSECTION OF VIA VERA CRUZ @ LINDA VISTA DR Record From: RECORD OF SURVEY 23331 Elev: 534.42 Datum: NAVD 88

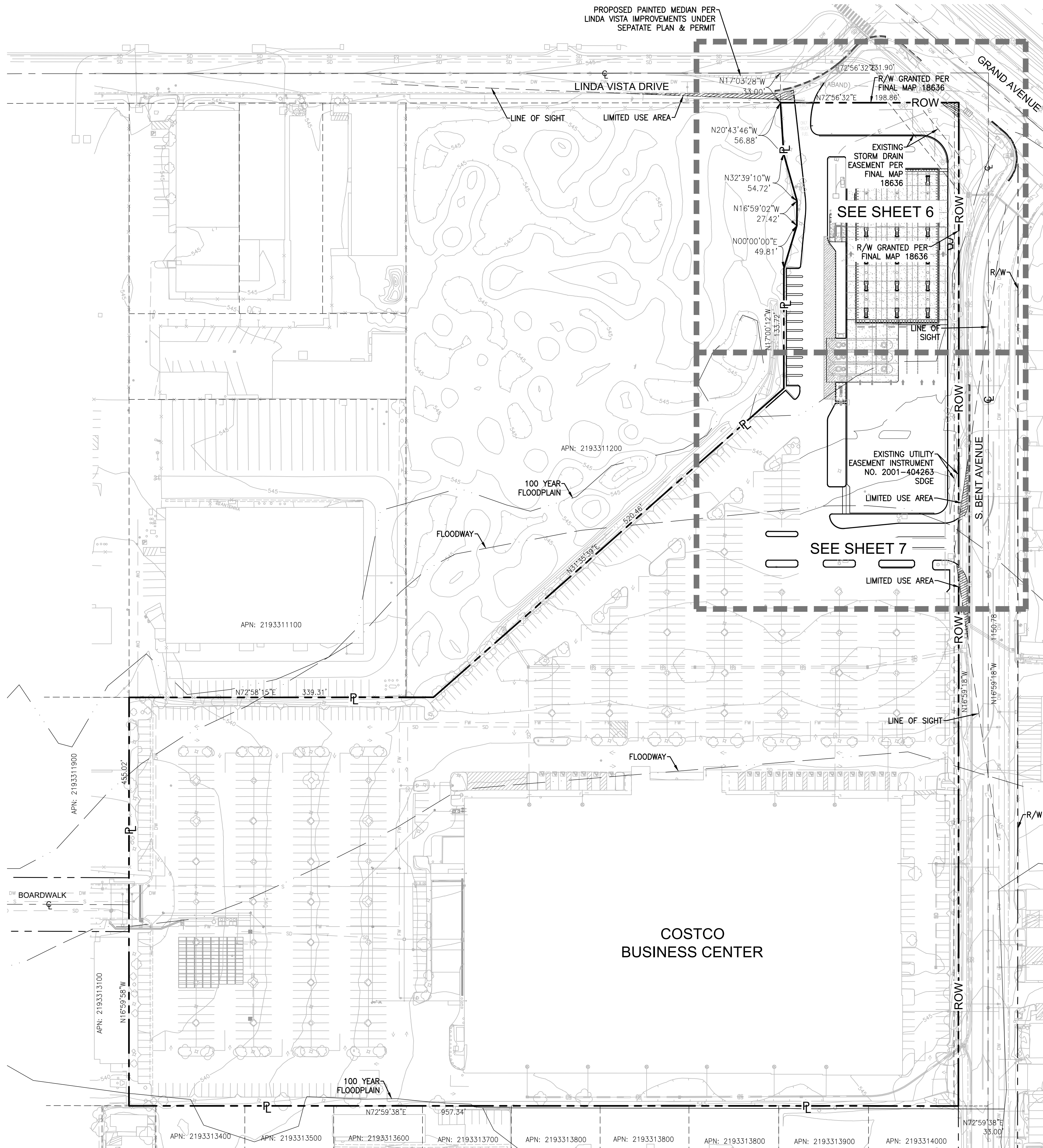
CITY OF SAN MARCOS	PLANNING PROJECT NO.
CONCEPTUAL GRADING PLANS FOR: COSTCO GAS STATION DEMOLITION PLAN	CUP23-0004
	Sheet 4 of 20



PERVIOUS / IMPERVIOUS AREAS

	PERVIOUS	IMPERVIOUS	SUBAREA
A	13,404 SF	32,715 SF	46,119 SF
B	6,415 SF	36,398 SF	42,813 SF
C	1,489 SF	13,735 SF	15,224 SF

	PERVIOUS	IMPERVIOUS
A	29%	71%
B	15%	85%
C	10%	90%



PRIVATE ENGINEER'S NOTICE TO CONTRACTOR(S):

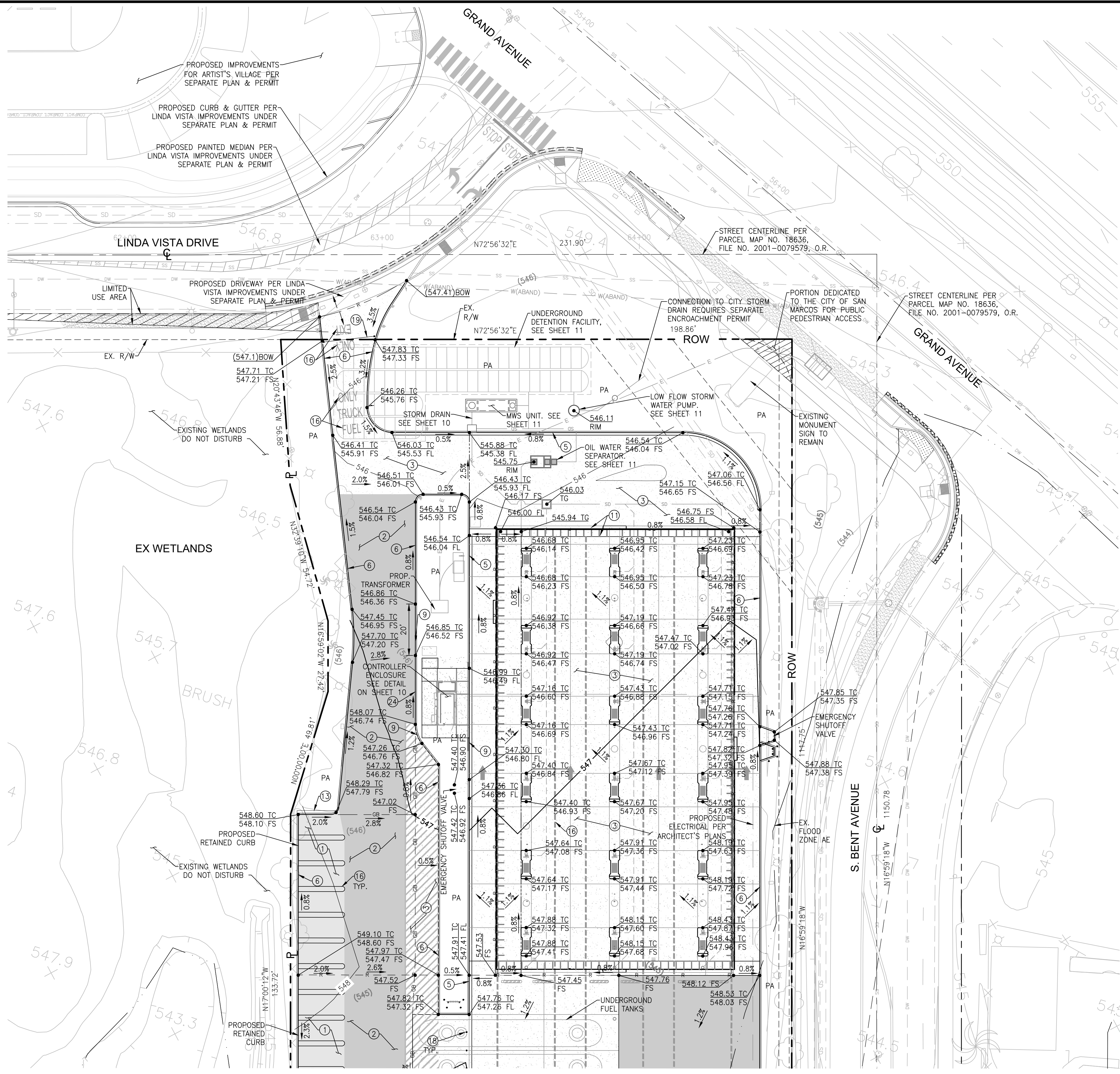
- THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES AND/OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. APPROVAL OF THESE PLANS BY THE CITY OF SAN MARCOS DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OR COMPLETENESS OF THE LOCATION OR THE EXISTENCE OR NON-EXISTENCE OF ANY UTILITY AND/OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THE CONTRACTOR IS REQUIRED TO TAKE ALL DUE PRECAUTIONARY MEANS TO PROTECT THE UTILITIES OF RECORD OR NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
- IT IS REQUESTED THAT THE GRADING CONTRACTOR NOTIFY THIS PRIVATE ENGINEER BY CALLING AT LEAST 48 HOURS BEFORE COMPLETION OF THE GRADING OPERATION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS PRIOR TO COMMENCEMENT OF GRADING OPERATIONS.
- UNAUTHORIZED CHANGES AND USES: THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS AND THE CITY OF SAN MARCOS.
- IF THE PRESENCE OF ASBESTOS CONTAINING MATERIAL (ACM) IS SUSPECTED DUE TO VISUAL INSPECTION ASSOCIATED WITH RENOVATION AND/OR DEMOLITION ACTIVITIES, THE GRADING CONTRACTOR SHALL PERFORM TESTING PRIOR TO SUCH ACTIVITIES. ANY IDENTIFIED ACM MUST BE ADDRESSED APPROPRIATELY AND IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

GRADING NOTES:

- DAMAGE TO EXISTING PROPERTY OUTSIDE OF IMPROVEMENT AREAS ARE TO BE REPAIRED TO THE OWNER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.
- STRIPING AND SIGNING OF THE PARKING LOT PER ARCHITECT'S PLANS.
- ENSURE THAT ALL PROPOSED PAVEMENT JOINS EXISTING PAVEMENT FLUSH WITH NO EXPOSED VERTICAL FACES OR EDGES. CONCRETE GRADE AND SLOPES ARE SUBJECT TO ADA INSPECTION.
- CURB RADIUS ARE 3' AT FACE OF CURB UNLESS NOTED OTHERWISE.
- THE REGULATORY FLOODWAY SHOWN PER LOMR NO:12-09-1029P, DATED MARCH 7, 2013.

ENGINEER OF WORK	BENCH MARK
By: EUSCOE ENGINEERING, INC Date:08/20/2024 Name: MARK NERO R.C.E.: 80066 exp: 9/30/26	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY NVS L.S. 5-310 2018 09-023 Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ± NORTH OF INTERSECTION OF VA VERA CRUZ @ LINDA VISTA DR Record From: RECORD OF SURVEY 23331 Elev: 534.42 Datum: NAVD 88

CITY OF SAN MARCOS	PLANNING PROJECT NO.
CONCEPTUAL GRADING PLANS FOR: COSTCO GAS STATION INDEX MAP	CUP23-0004
	Sheet 5 of 20



- GRADING NOTES:**
- DAMAGE TO EXISTING PROPERTY OUTSIDE OF IMPROVEMENT AREAS ARE TO BE REPAIRED TO THE OWNER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.
 - STRIPING AND SIGNING OF THE PARKING LOT PER ARCHITECT'S PLANS.
 - ENSURE THAT ALL PROPOSED PAVEMENT JOINS EXISTING PAVEMENT FLUSH WITH NO EXPOSED VERTICAL FACES OR EDGES. CONCRETE GRADE AND SLOPES ARE SUBJECT TO ADA INSPECTION.
 - CURB RADIUS ARE 3' AT FACE OF CURB UNLESS NOTED OTHERWISE.
 - THE REGULATORY FLOODWAY SHOWN PER LOMR NO:12-09-1029P, DATED MARCH 7, 2013.

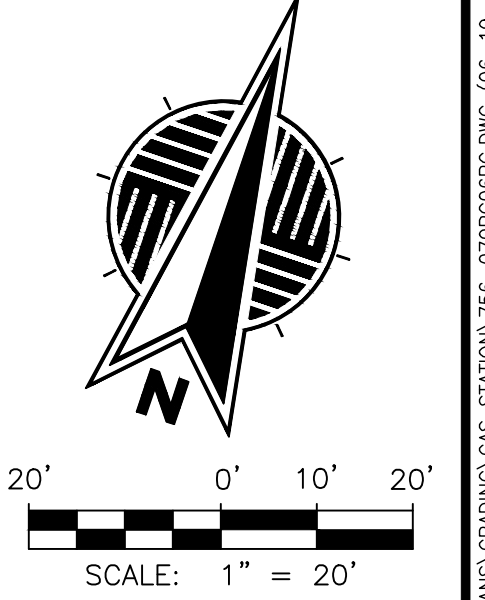
PRECISE GRADING NOTES	
NO.	DESCRIPTION
1	CONSTRUCT 3" AC OVER 5" CLASS II BASE PER GEOTECHNICAL RECOMMENDATIONS (PARKING STALL)
2	CONSTRUCT 5" AC OVER 6.5" CLASS II BASE PER GEOTECHNICAL RECOMMENDATIONS (DRIVE AISLE)
3	CONSTRUCT 7" PCC PAVEMENT OVER 4" CLASS II BASE PER GEOTECHNICAL RECOMMENDATIONS
4	CONSTRUCT 4" CURB & GUTTER PER MODIFIED COSTCO STD. DETAIL 08-17, SEE DETAIL 4 ON SHEET 9, JOINTS PER SPPWC 112-2
5	CONSTRUCT 6" CURB & GUTTER PER COSTCO STD. DETAIL 08-17, SEE DETAIL 4 ON SHEET 9, JOINTS PER SPPWC 112-2
6	CONSTRUCT 6" CURB ONLY PER COSTCO STD. DETAIL 08-17, SEE DETAIL 6 ON SHEET 9, JOINTS PER SPPWC 112-2
7	CONSTRUCT 0" CURB PER DETAIL 7 ON SHEET 9, JOINTS PER SPPWC 112-2
8	CONSTRUCT 0" TO 6" CURB TRANSITION PER DETAIL 8 ON SHEET 9
9	CONSTRUCT 4" TO 6" CURB TRANSITION PER DETAIL 9 ON SHEET 9
10	CONSTRUCT 24" WIDE CONCRETE CHANNEL PER DETAIL 10 ON SHEET 9
11	CONSTRUCT 3" WIDE RIBBON GUTTER PER DETAIL 11 ON SHEET 9
12	CONSTRUCT 8" WIDE RIBBON GUTTER PER DETAIL 12 ON SHEET 9
13	CONSTRUCT 12" WIDE CONCRETE STRIP PER COSTCO STD. DETAIL 08-18, SEE DETAIL 13 ON SHEET 9
14	CONSTRUCT 6" CONCRETE SIDEWALK; THICKNESS, COLOR, TEXTURE, AND SCORING PER COSTCO STD DETAIL 09-11, SEE DETAIL 14 ON SHEET 9
15	CONSTRUCT LOCAL DEPRESSION PER CITY OF SAN MARCOS STD. XXXXXX
16	PROPOSED STALL STRIPING, SIGNAGE, AND PAVEMENT MARKINGS PER ARCHITECT'S PLANS
17	INSTALL CART CORRAL PER ARCHITECT'S PLANS
18	INSTALL BOLLARDS PER ARCHITECT'S PLANS
19	INSTALL WIRE BARRIER PER ARCHITECT'S PLANS
20	SAWCUT STRAIGHT AND CLEAN
21	CONSTRUCT CONTROLLER ENCLOSURE PER ARCHITECT'S PLANS, FOR AN ENLARGED DETAIL OF GRADING AROUND THE ENCLOSURE, SEE DETAIL ON SHEET 8
22	CONSTRUCT 0" TO 5" CURB TRANSITION PER DETAIL 22 ON SHEET 9
23	CONSTRUCT 5" TO 4" CURB TRANSITION PER DETAIL 23 ON SHEET 9
23	CONSTRUCT 4" CURB ONLY PER MODIFIED COSTCO STD. DETAIL 08-17, SEE DETAIL 6 ON SHEET 9, JOINTS PER SPPWC 112-2
24	CONSTRUCT 4" CURB ONLY PER MODIFIED COSTCO STD. DETAIL 08-17, SEE DETAIL 6 ON SHEET 9, JOINTS PER SPPWC 112-2

SEE SHEET 7

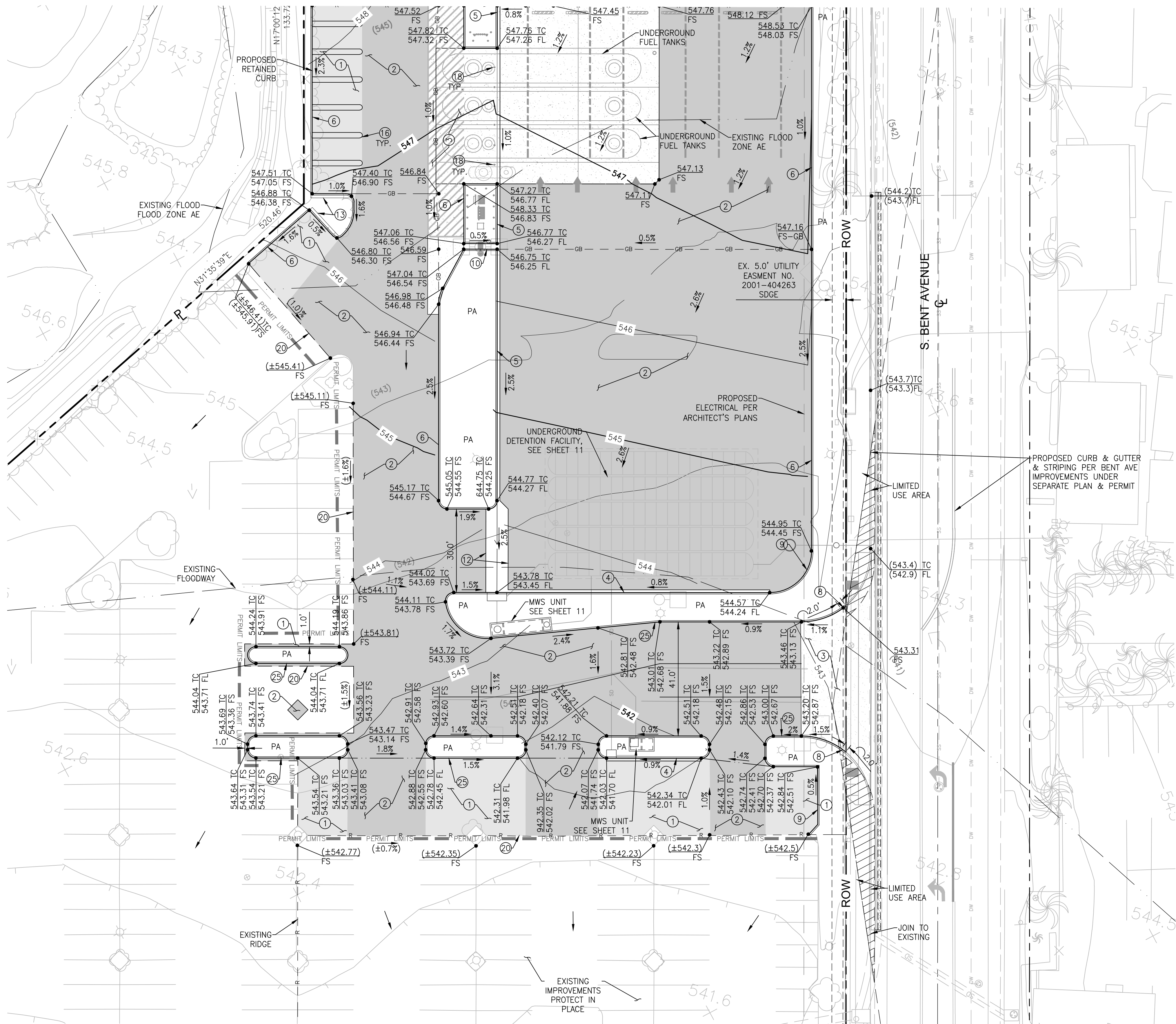
ENGINEER OF WORK		BENCH MARK
By: EUSCOE ENGINEERING, INC Date:08/20/2024		Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY
Name: MARK NERO		Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ± NORTH OF INTERSECTION OF VIA VERA CRUZ @ LINDA VISTA DR
R.C.E.: 80066 exp: 9/30/26		Record From: RECORD OF SURVEY 2331
		Elev: 534.42 Datum: NAVD 88

CITY OF SAN MARCOS		PLANNING PROJECT NO.
CONCEPTUAL GRADING PLANS FOR:		CUP23-0004
COSTCO GAS STATION		
PRECISE GRADING PLAN		Sheet 6 of 20

ENGINEER OF WORK AS-BUILT CERTIFICATE
MARK NERO, PE RCE 80066 EXP. 9/30/2026
DATE



SEE SHEET 6

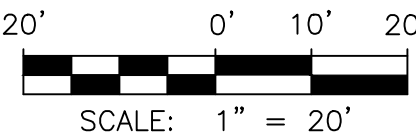
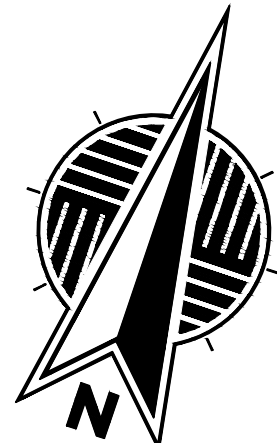


GRADING NOTES:

- DAMAGE TO EXISTING PROPERTY OUTSIDE OF IMPROVEMENT AREAS ARE TO BE REPAIRED TO THE OWNER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.
- STRIPING AND SIGNING OF THE PARKING LOT PER ARCHITECT'S PLANS.
- ENSURE THAT ALL PROPOSED PAVEMENT JOINS EXISTING PAVEMENT FLUSH WITH NO EXPOSED VERTICAL FACES OR EDGES. CONCRETE GRADE AND SLOPES ARE SUBJECT TO ADA INSPECTION.
- CURB RADIUS ARE 3' AT FACE OF CURB UNLESS NOTED OTHERWISE.
- THE REGULATORY FLOODWAY SHOWN PER LOMR NO:12-09-1029P, DATED MARCH 7, 2013.

PRECISE GRADING NOTES

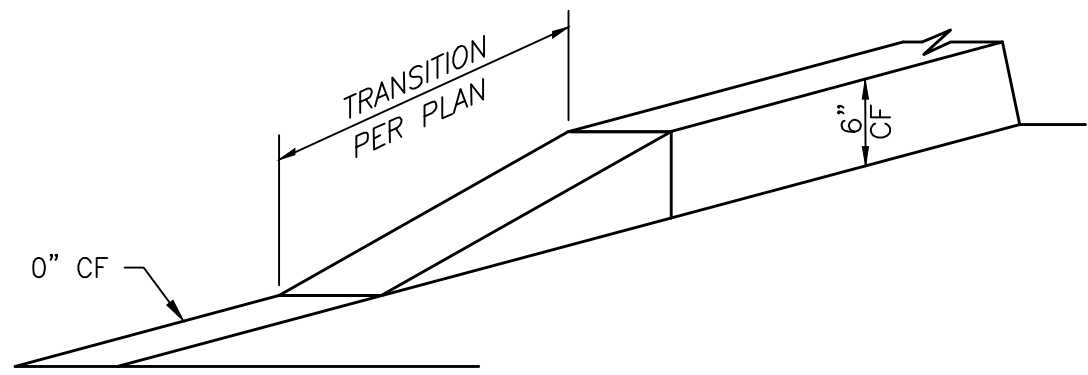
NO.	DESCRIPTION
1	CONSTRUCT 3" AC OVER 5" CLASS II BASE PER GEOTECHNICAL RECOMMENDATIONS (PARKING STALL)
2	CONSTRUCT 5" AC OVER 6.5" CLASS II BASE PER GEOTECHNICAL RECOMMENDATIONS (DRIVE AISLE)
3	CONSTRUCT 7" PCC PAVEMENT OVER 4" CLASS II BASE PER GEOTECHNICAL RECOMMENDATIONS
4	CONSTRUCT 4" CURB & GUTTER PER MODIFIED COSTCO STD. DETAIL 08-17, SEE DETAIL 4 ON SHEET 9, JOINTS PER SPPWC 112-2
5	CONSTRUCT 6" CURB & GUTTER PER COSTCO STD. DETAIL 08-17, SEE DETAIL 4 ON SHEET 9, JOINTS PER SPPWC 112-2
6	CONSTRUCT 6" CURB ONLY PER COSTCO STD. DETAIL 08-17, SEE DETAIL 6 ON SHEET 9, JOINTS PER SPPWC 112-2
7	CONSTRUCT 0" CURB PER DETAIL 7 ON SHEET 9, JOINTS PER SPPWC 112-2
8	CONSTRUCT 0" TO 6" CURB TRANSITION PER DETAIL 8 ON SHEET 9
9	CONSTRUCT 4" TO 6" CURB TRANSITION PER DETAIL 9 ON SHEET 9
10	CONSTRUCT 24" WIDE CONCRETE CHANNEL PER DETAIL 10 ON SHEET 9
11	CONSTRUCT 3" WIDE RIBBON GUTTER PER DETAIL 11 ON SHEET 9
12	CONSTRUCT 8" WIDE RIBBON GUTTER PER DETAIL 12 ON SHEET 9
13	CONSTRUCT 12" WIDE CONCRETE STRIP PER COSTCO STD. DETAIL 08-18, SEE DETAIL 13 ON SHEET 9
14	CONSTRUCT 6" CONCRETE SIDEWALK; THICKNESS, COLOR, TEXTURE, AND SCORING PER COSTCO STD DETAIL 09-11, SEE DETAIL 14 ON SHEET 9
15	CONSTRUCT LOCAL DEPRESSION PER CITY OF SAN MARCOS STD. XXXXXX
16	PROPOSED STALL STRIPING, SIGNAGE, AND PAVEMENT MARKINGS PER ARCHITECT'S PLANS
17	INSTALL CART CORRAL PER ARCHITECT'S PLANS
18	INSTALL BOLLARDS PER ARCHITECT'S PLANS
19	INSTALL WIRE BARRIER PER ARCHITECT'S PLANS
20	SAWCUT STRAIGHT AND CLEAN
21	CONSTRUCT CONTROLLER ENCLOSURE PER ARCHITECT'S PLANS, FOR AN ENLARGED DETAIL OF GRADING AROUND THE ENCLOSURE, SEE DETAIL ON SHEET 8
22	CONSTRUCT 0" TO 5" CURB TRANSITION PER DETAIL 22 ON SHEET 9
23	CONSTRUCT 5" TO 4" CURB TRANSITION PER DETAIL 23 ON SHEET 9
25	CONSTRUCT 4" CURB ONLY PER COSTCO STD. DETAIL 08-17, SEE DETAIL 6 ON SHEET 9, JOINTS PER SPPWC 112-2



ENGINEER OF WORK AS-BUILT CERTIFICATE	
MARK NERO, PE	RCE 80066 EXP. 9/30/2026
DATE	

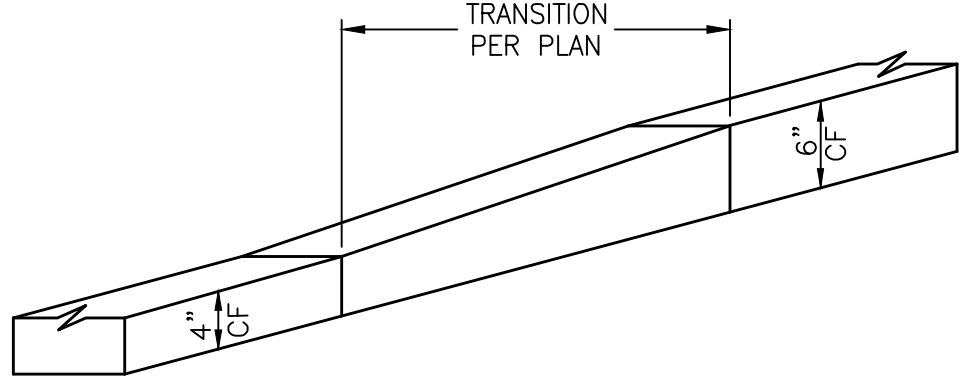
ENGINEER OF WORK	BENCH MARK
By: EUSCOE ENGINEERING, INC Date:08/20/24	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY
Name: MARK NERO	Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ±
R.C.E.: 80066 exp: 9/30/26	NORTH OF INTERSECTION OF VIA VERA CRUZ & LINDA VISTA DR
	Record From: RECORD OF SURVEY 23731
	Elev: 534.42 Datum: NAVD 88

CITY OF SAN MARCOS	PLANNING PROJECT NO.
CONCEPTUAL GRADING PLANS FOR:	CUP23-0004
COSTCO GAS STATION	
PRECISE GRADING PLAN	Sheet 7 of 20



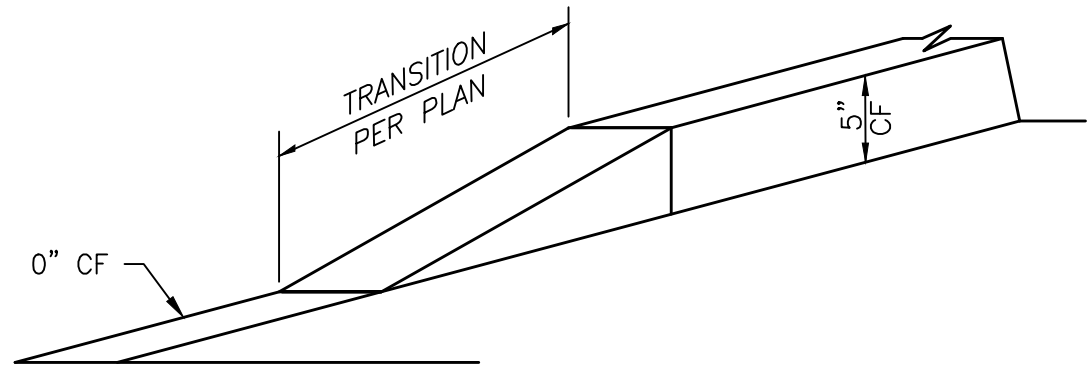
0" TO 6" CURB TRANSITION
NOT TO SCALE

8
—



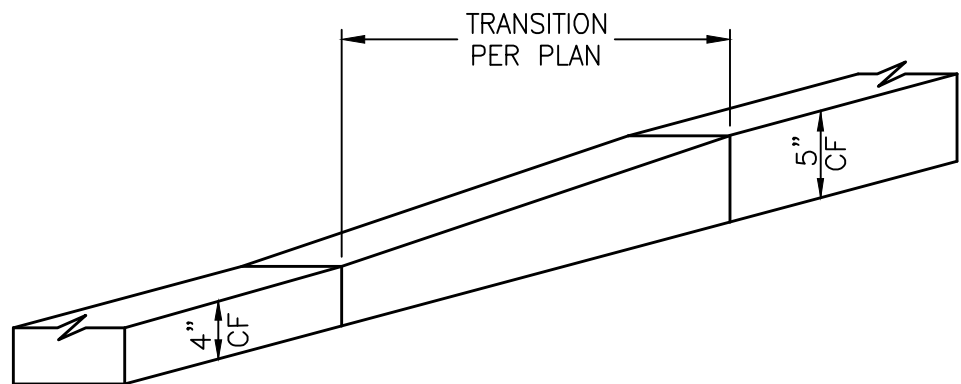
4" TO 6" CURB TRANSITION
NOT TO SCALE

9
—



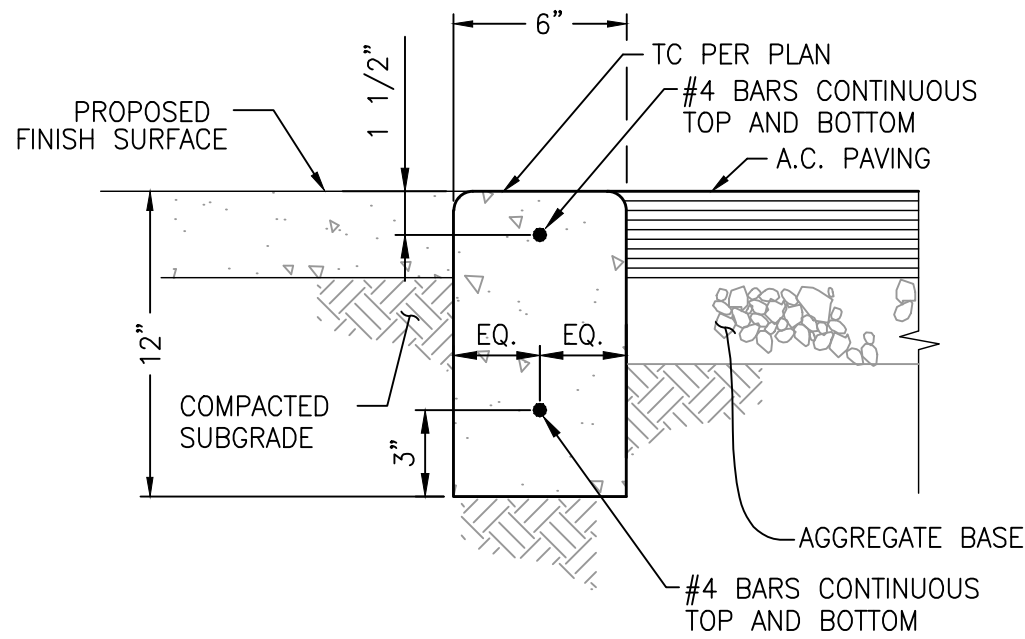
0" TO 5" CURB TRANSITION
NOT TO SCALE

22
—



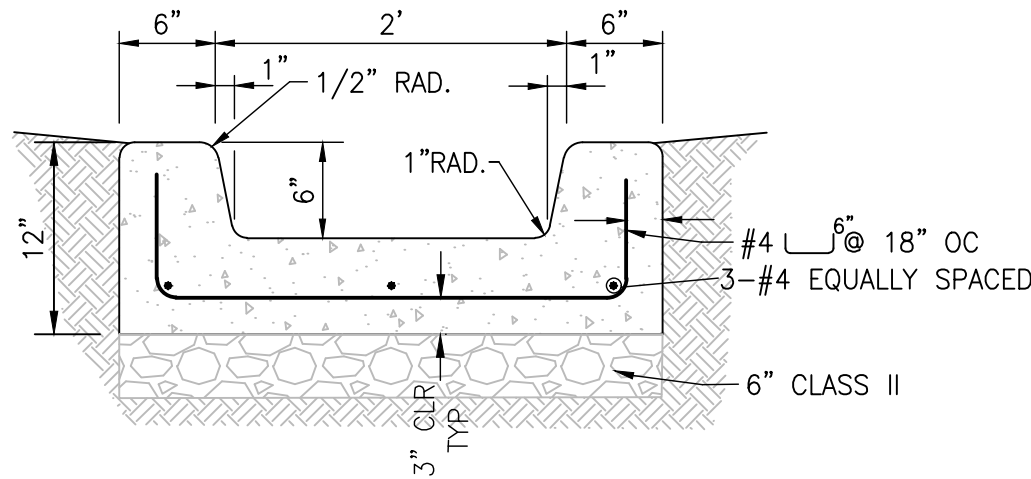
4" TO 5" CURB TRANSITION
NOT TO SCALE

23
—



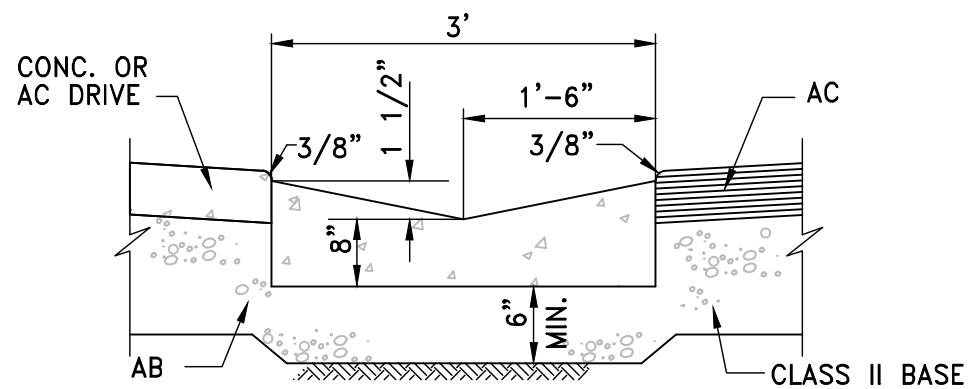
0" CURB FACE
NOT TO SCALE

7
—



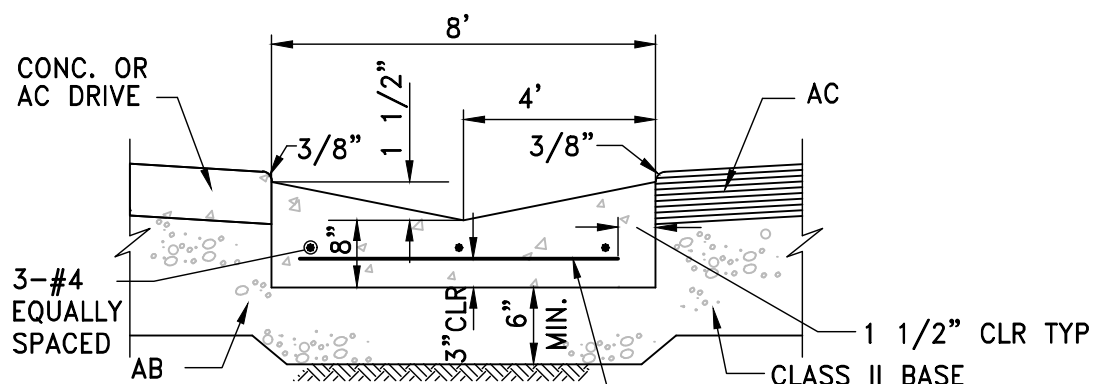
2' WIDE CURB CHANNEL
NOT TO SCALE

10
—



3' WIDE RIBBON GUTTER
NOT TO SCALE

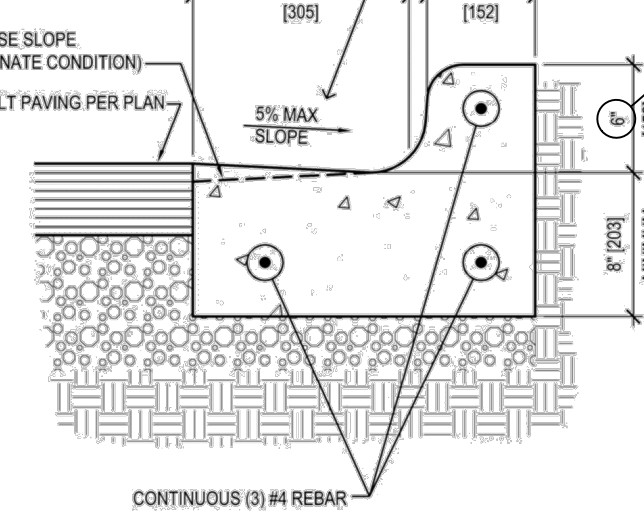
11
—



8' WIDE RIBBON GUTTER
NOT TO SCALE

12
—

NOTE:
WHERE CURB AND GUTTER CROSSES ACCESSIBLE
WALKWAYS OR CROSSWALKS, THE GUTTER PAN
SLOPE SHALL BE MODIFIED TO 2% MAX

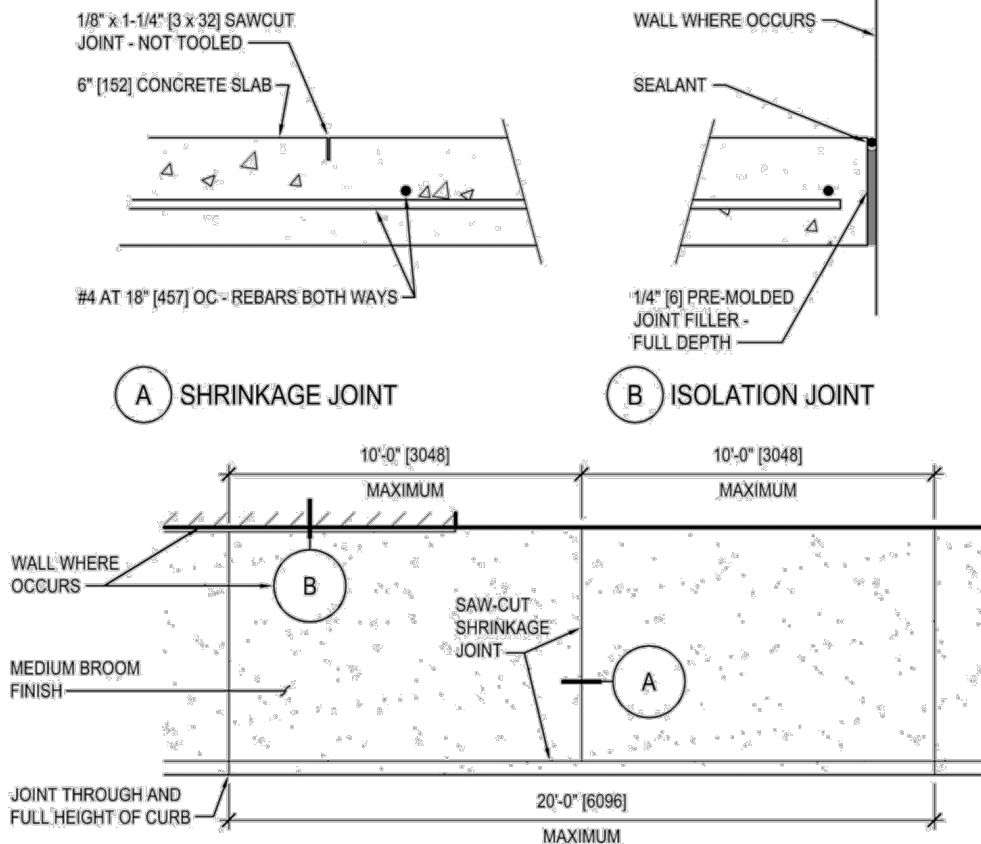


CONCRETE CURB AND GUTTER

COSTCO STD. DETAIL 08_17

NOT TO SCALE

4
—

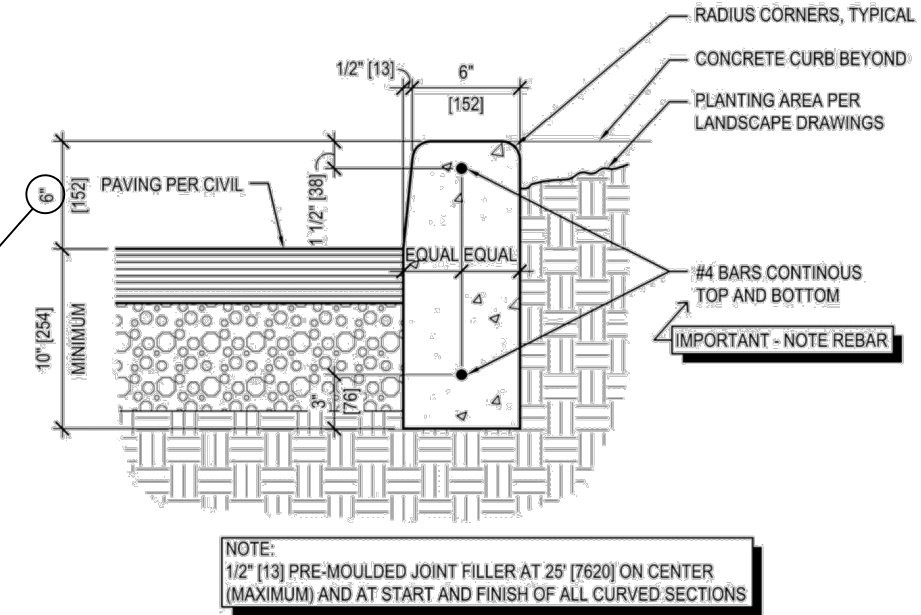


CONCRETE WALKS

COSTCO STD. DETAIL 09_11

NOT TO SCALE

14
—

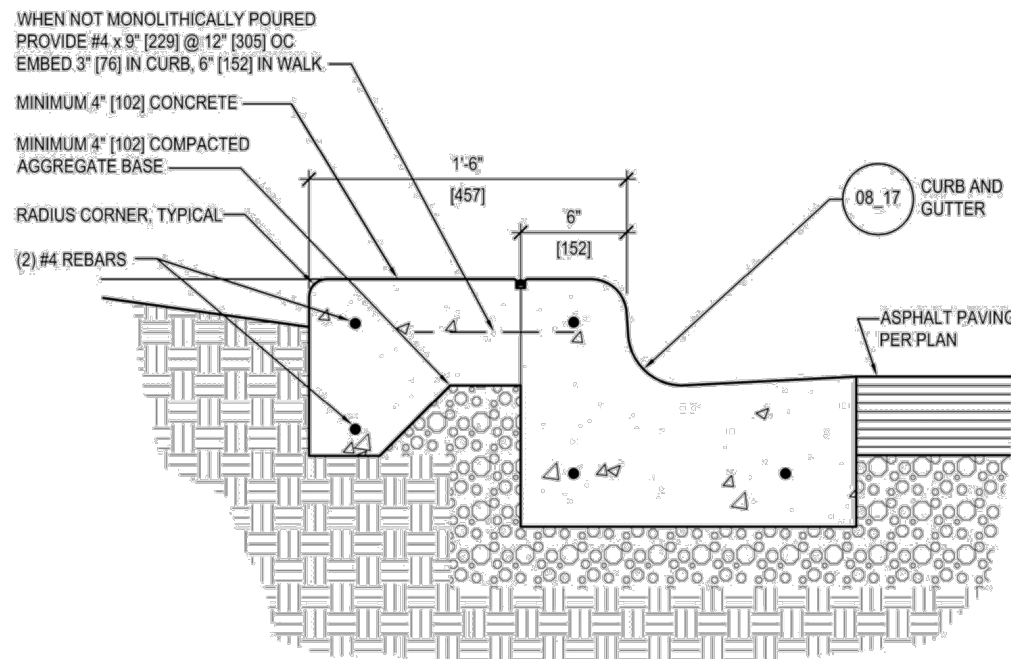


CAST-IN-PLACE CONCRETE CURB

COSTCO STD. DETAIL 09_04

NOT TO SCALE

6
—



CURB AND GUTTER AT ISLAND WALK

COSTCO STD. DETAIL 08_18

NOT TO SCALE

13
—

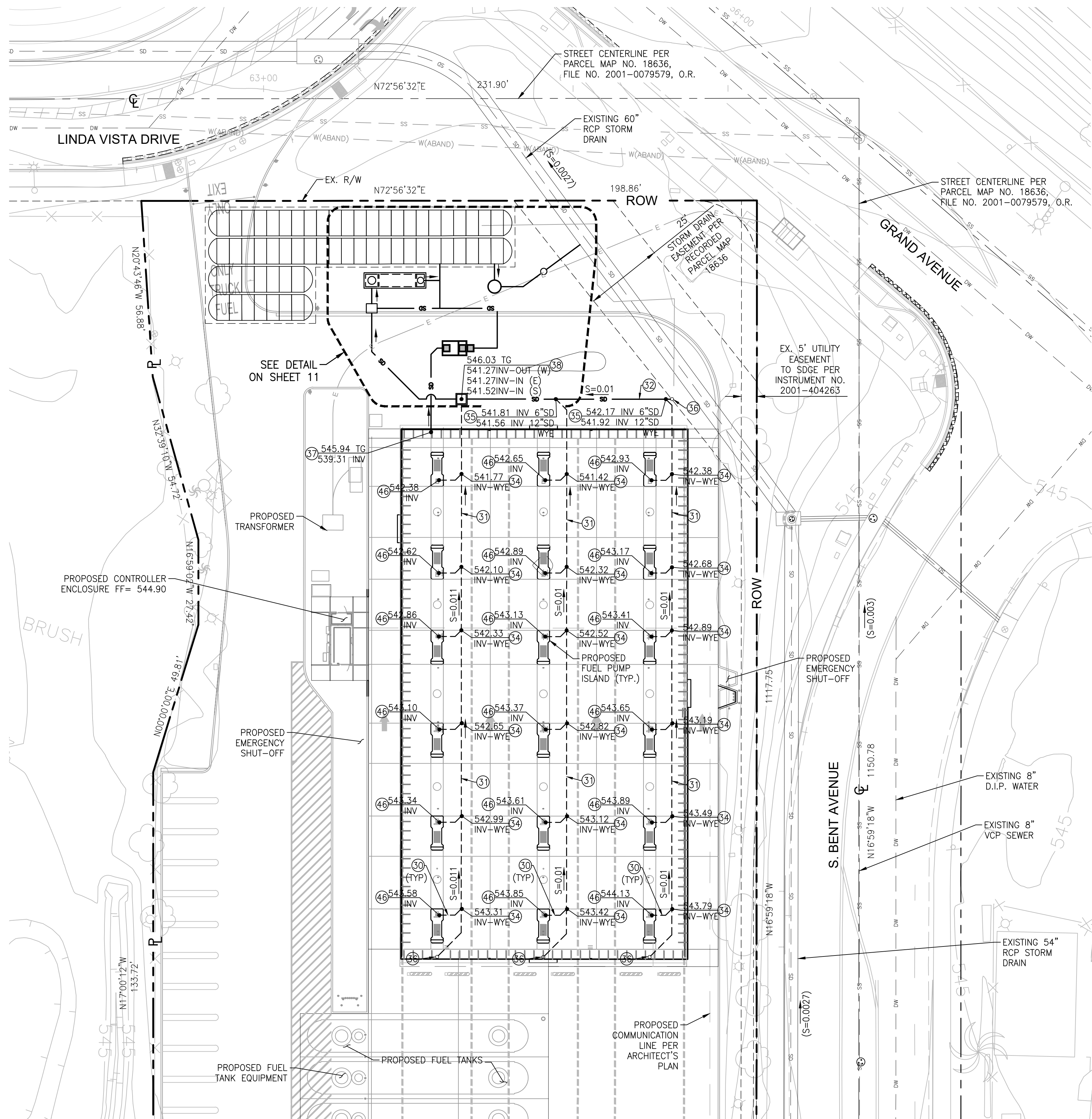
ENGINEER OF WORK AS-BUILT CERTIFICATE

MARK NERO, PE RCE 80066 EXP. 9/30/2026

DATE

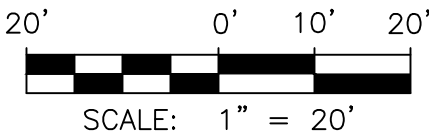
ENGINEER OF WORK	BENCH MARK	CITY OF SAN MARCOS CONCEPTUAL GRADING PLANS FOR: COSTCO GAS STATION DETAILS	PLANNING PROJECT NO. CUP23-0004 Sheet 9 of 20
By: EJSOCOE ENGINEERING, INC Date:08/20/2024	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY		
Name: MARK NERO	Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ±		
R.C.E.: 80066 exp: 9/30/26	North of Intersection of VA VERA CRUZ @ LINDA VISTA DR		
	Record From: RECORD OF SURVEY 237317		

Elev: 534.42 Datum: NAVD 88



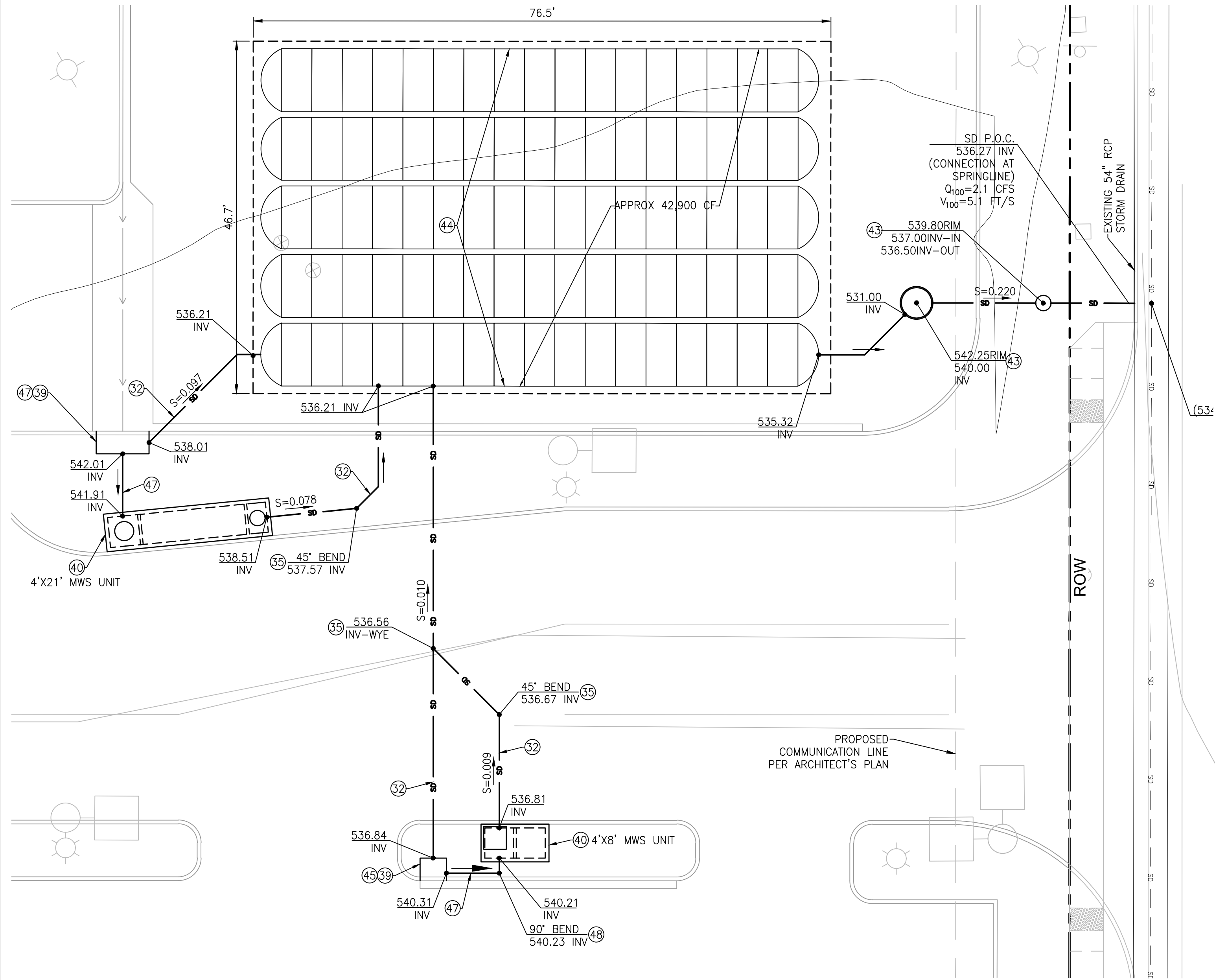
STORM DRAIN NOTES	
NO.	DESCRIPTION
30	INSTALL 4" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60
31	INSTALL 6" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60
32	INSTALL 12" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60
33	INSTALL 4" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS
34	INSTALL 6" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS
35	INSTALL 12" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS
36	INSTALL 6" DRAINAGE CLEANOUT STRUCTURE (DCO), SEE DETAIL 36 ON SHEET 12
37	CONSTRUCT 24"x24" CATCH BASIN WITH TRAFFIC RATED GRATE, JENSEN DRAIN INLET BOX OR APPROVED EQUAL, SEE DETAIL 37 ON SHEET 12
38	CONSTRUCT 36"x36" CATCH BASIN WITH TRAFFIC RATED STEEL PLATE, JENSEN DRAIN INLET BOX OR APPROVED EQUAL, SEE DETAIL 38 ON SHEET 12
39	CONSTRUCT CATCH BASIN PER SAN DIEGO REGIONAL STD. DWG. D-02
40	INSTALL MODULAR WETLAND SYSTEM PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS & DETAILS ON SHEET 13
41	INSTALL OIL/WATER SEPARATOR PER DETAIL 41 ON SHEET 14
42	INSTALL 12" NYLOPLAST BASIN RISER FOR AND INSTALL GRATED COVER
43	INSTALL PUMP AND SUMP STRUCTURE PER DETAIL 43 ON SHEET 15
44	CONSTRUCT ADS STORMTECH CHAMBER SYSTEM PER DETAIL 44 ON SHEETS 16-18
45	INSTALL DVERT PER DETAIL 47 ON SHEET 19
46	POINT OF CONNECTION TO GAS STATION CANOPY ROOF DRAIN, SEE TYPICAL SECTION 'B' ON SHEET 14
47	INSTALL 8" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60
48	INSTALL 8" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS
49	CONSTRUCT CONCRETE LUG CONNECTION PER SAN DIEGO REGIONAL STD. DWG. D-63

SEE SHEET 11

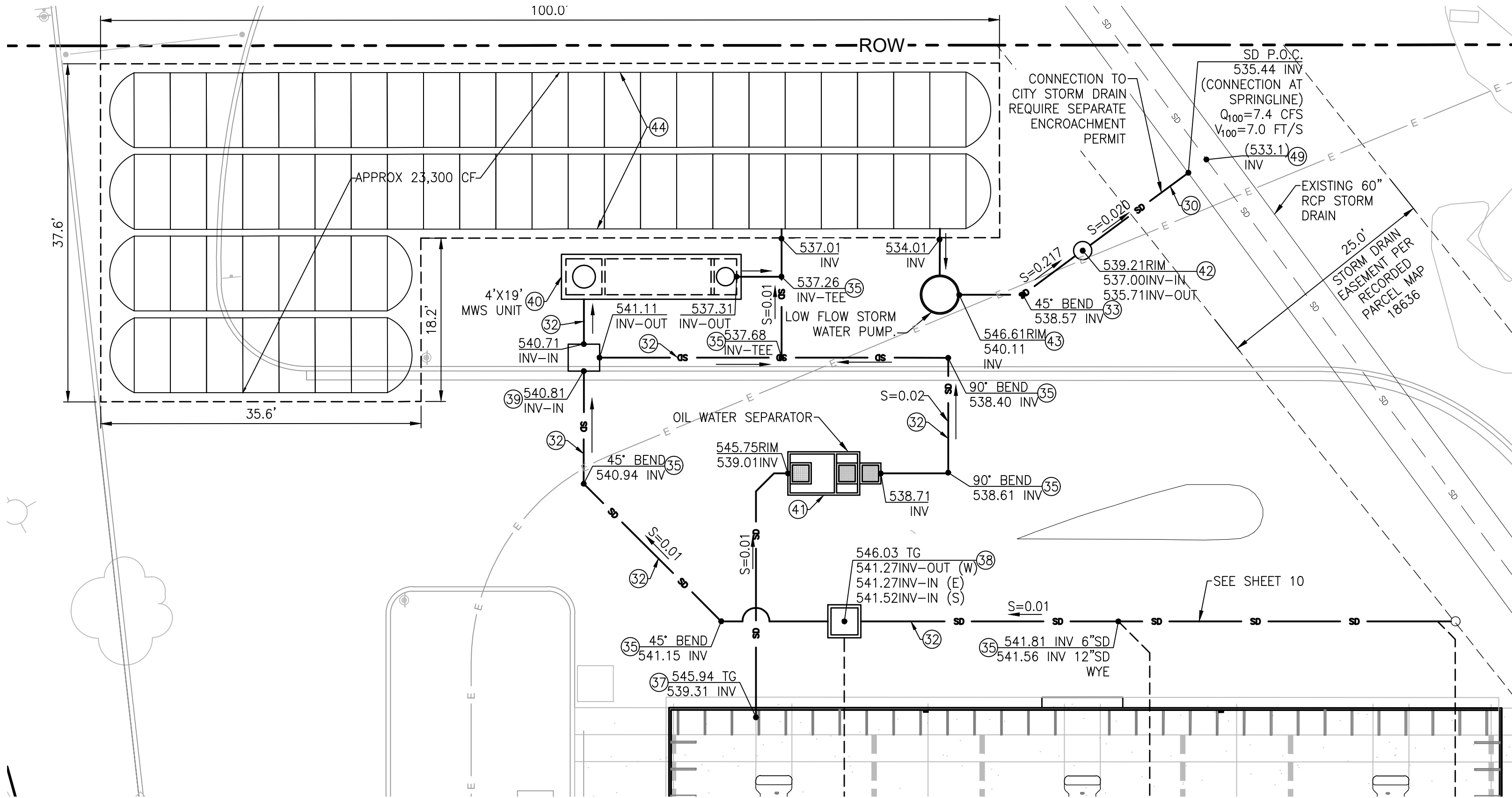


ENGINEER OF WORK		BENCH MARK	
By: EUSCOE ENGINEERING, INC Date:08/20/24		Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY	
Name: MARK NERO		Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ± NORTH OF INTERSECTION OF VA VERA CRUZ @ LINDA VISTA DR	
R.C.E.: 80066 exp: 9/30/26		Record From: RECORD OF SURVEY 23331	
		Elev: 534.42 Datum: NAVD 88	

ENGINEER OF WORK AS-BUILT CERTIFICATE		CITY OF SAN MARCOS	
MARK NERO, PE	RCE 80066 EXP. 9/30/2026	CONCEPTUAL GRADING PLANS FOR:	
DATE		COSTCO GAS STATION	
		STORM DRAIN PLAN	
		PLANNING PROJECT NO.	CUP23-0004
		Sheet 10 of 20	



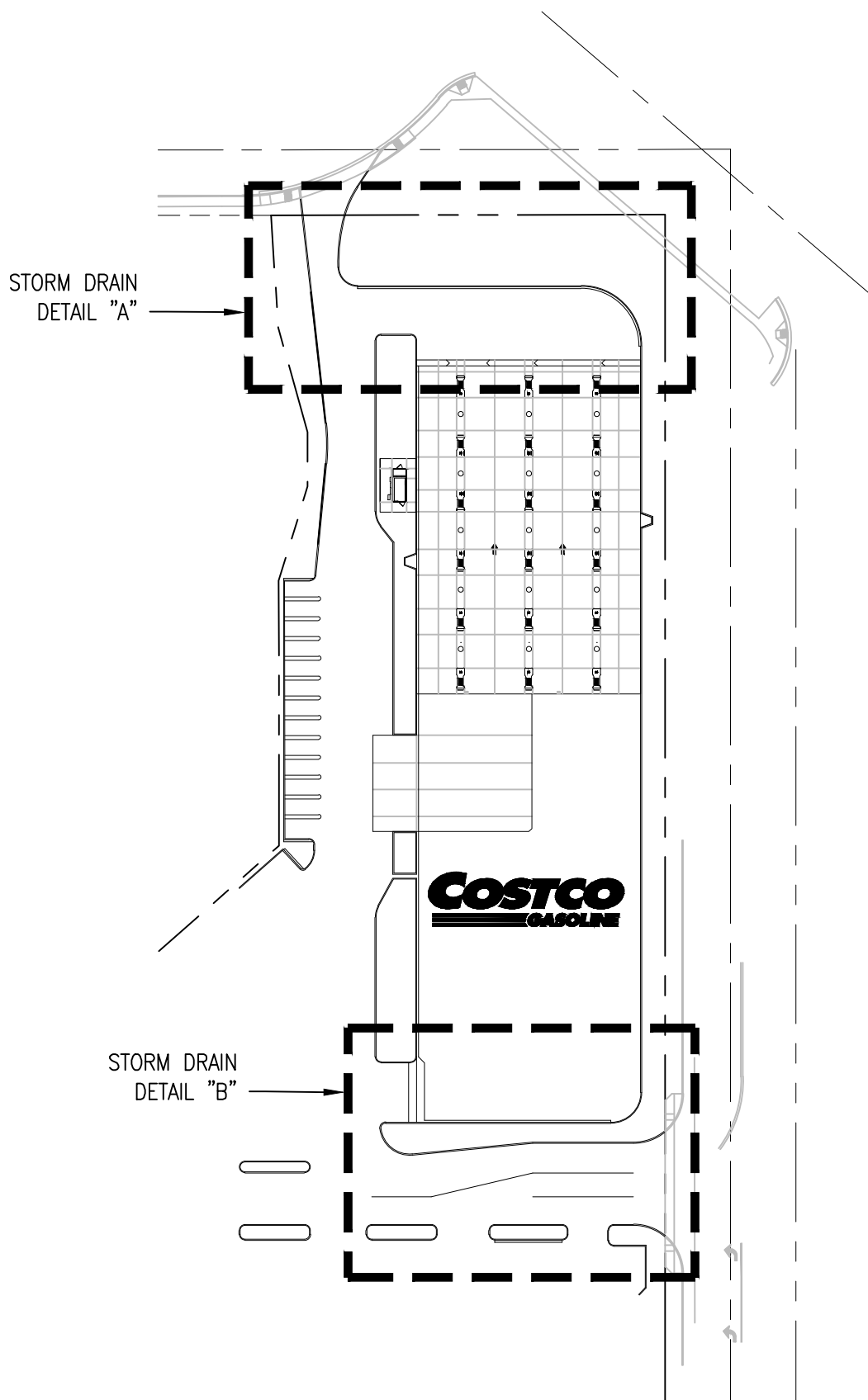
STORM DRAIN DETAIL "B"



STORM DRAIN DETAIL "A"

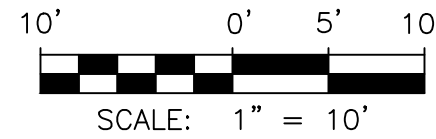
STORM DRAIN NOTES

NO.	DESCRIPTION
30	INSTALL 4" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60
31	INSTALL 6" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60
32	INSTALL 12" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60
33	INSTALL 4" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS
34	INSTALL 6" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS
35	INSTALL 12" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS
36	INSTALL 6" DRAINAGE CLEANOUT STRUCTURE (DCO), SEE DETAIL 36 ON SHEET 12
37	CONSTRUCT 24"x24" CATCH BASIN WITH TRAFFIC RATED GRATE, JENSEN DRAIN INLET BOX OR APPROVED EQUAL, SEE DETAIL 37 ON SHEET 12
38	CONSTRUCT 36"x36" CATCH BASIN WITH TRAFFIC RATED STEEL PLATE, JENSEN DRAIN INLET BOX OR APPROVED EQUAL, SEE DETAIL 38 ON SHEET 12
39	CONSTRUCT CATCH BASIN PER SAN DIEGO REGIONAL STD. DWG. D-02
40	INSTALL MODULAR WETLAND SYSTEM PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS & DETAILS ON SHEET 13
41	INSTALL OIL/WATER SEPARATOR PER DETAIL 41 ON SHEET 14
42	INSTALL 12" NYLOPLAST BASIN RISER FOR AND INSTALL GRATED COVER
43	INSTALL PUMP AND SUMP STRUCTURE PER DETAIL 43 ON SHEET 15
44	CONSTRUCT ADS STORMTECH CHAMBER SYSTEM PER DETAIL 44 ON SHEETS 16-18
45	INSTALL DVERT PER DETAIL 47 ON SHEET 19
46	POINT OF CONNECTION TO GAS STATION CANOPY ROOF DRAIN, SEE TYPICAL SECTION 'B' ON SHEET 14
47	INSTALL 8" PVC (SDR-35) STORM DRAIN LINE, PIPE TRENCH & BEDDING PER SAN DIEGO REGIONAL STD. DWG. D-60
48	INSTALL 8" PVC FITTING (TYPE PER PLAN) PER MANUFACTURER'S STANDARDS AND SPECIFICATIONS
49	CONSTRUCT CONCRETE LUG CONNECTION PER SAN DIEGO REGIONAL STD. DWG. D-63



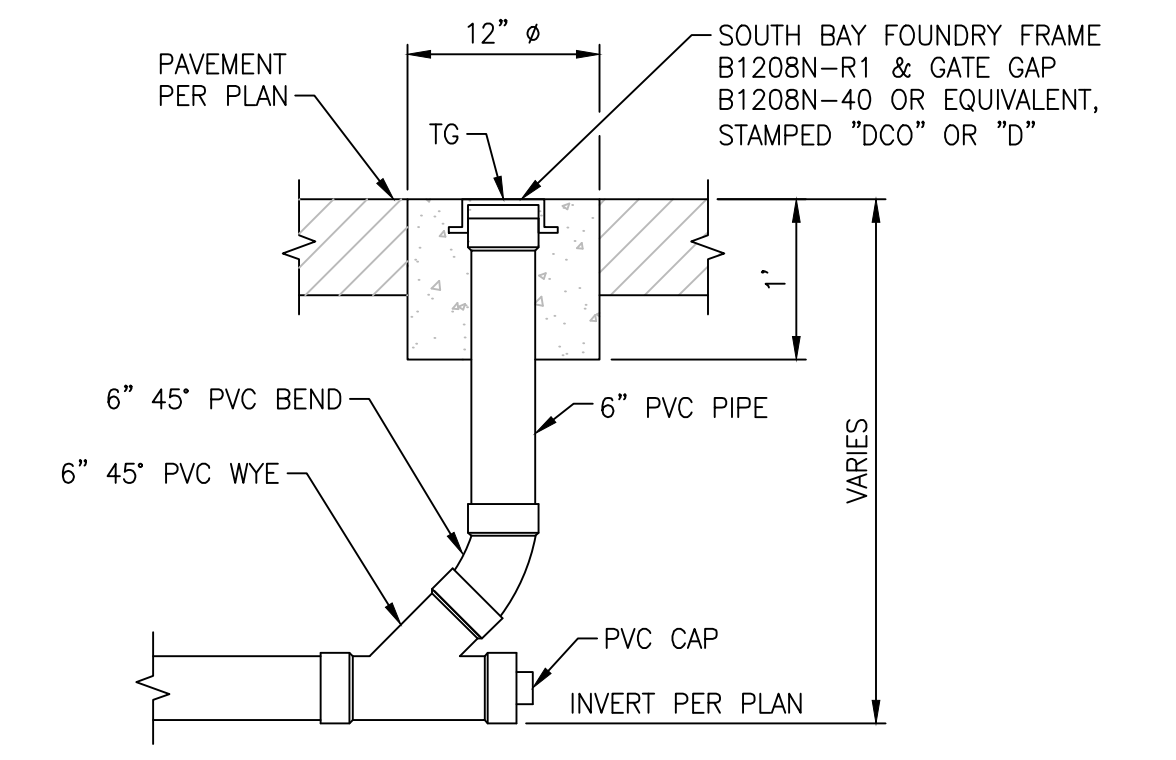
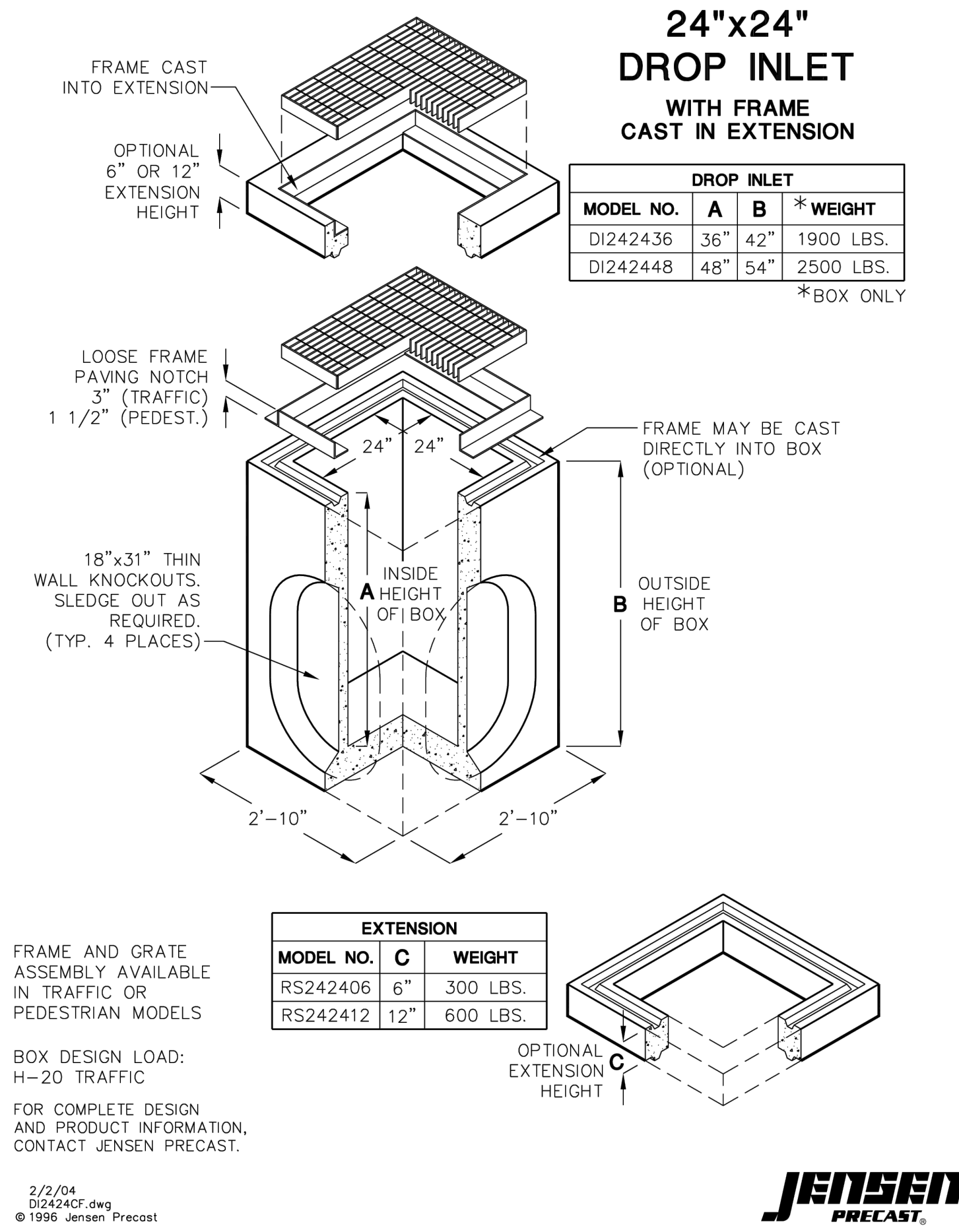
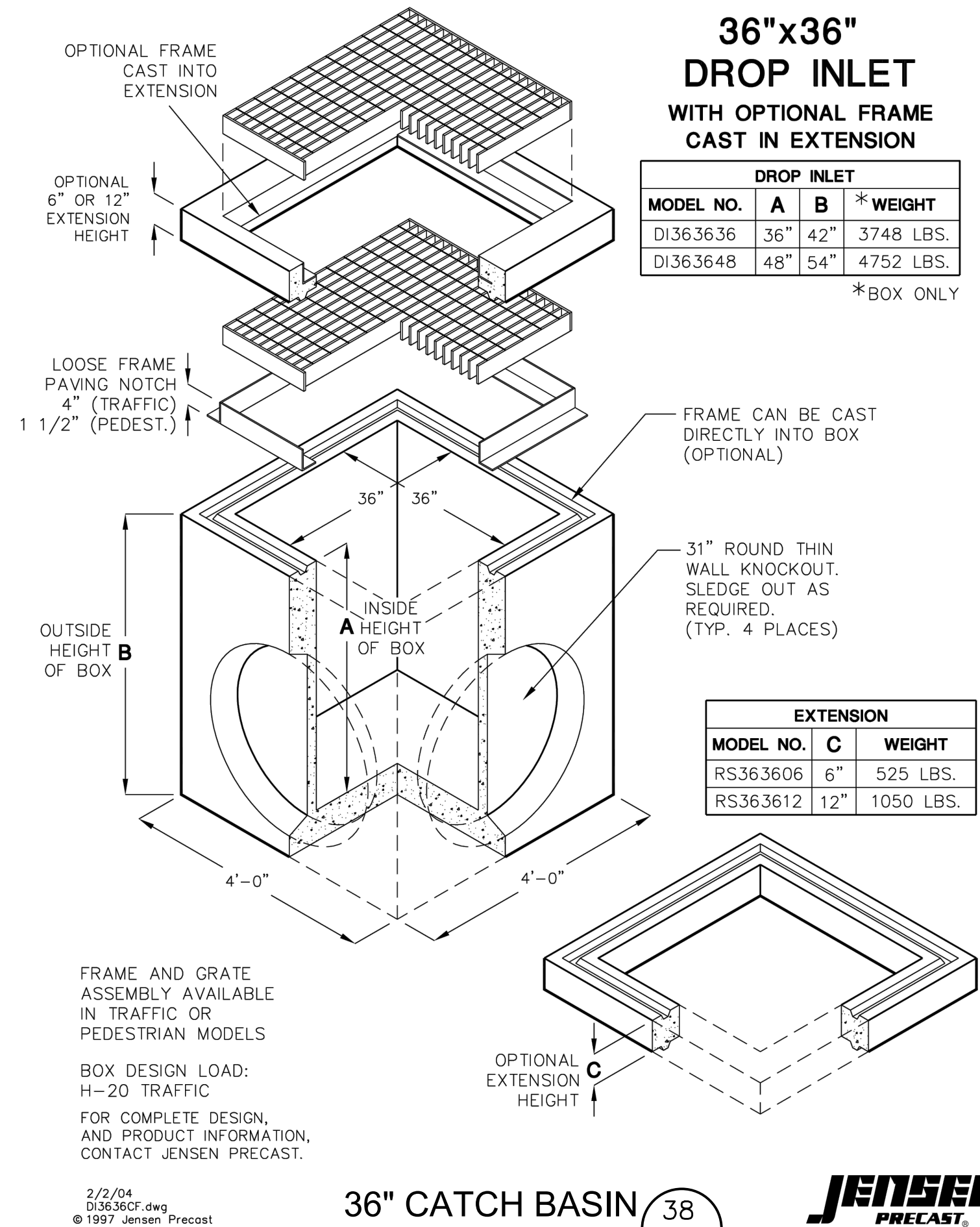
INDEX MAP
NOT TO SCALE

ENGINEER OF WORK AS-BUILT CERTIFICATE		
MARK NERO, PE	RCE 80066	EXP. 9/30/2026
DATE		



ENGINEER OF WORK	BENCH MARK
By: EUSCOE ENGINEERING, INC Date: 08/20/24	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY
Name: MARK NERO	Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ±
R.C.E.: 80066 exp: 9/30/26	NORTH OF INTERSECTION OF VIA VERA CRUZ @ LINDA VISTA DR
	Record From: RECORD OF SURVEY 23731
	Elev.: 534.42 Datum: NAVD 88

CITY OF SAN MARCOS		PLANNING PROJECT NO. CUP23-0004
CONCEPTUAL GRADING PLANS FOR:		
COSTCO GAS STATION		
STORM DRAIN DETAILS		Sheet 11 of 20

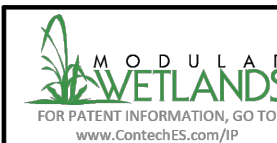
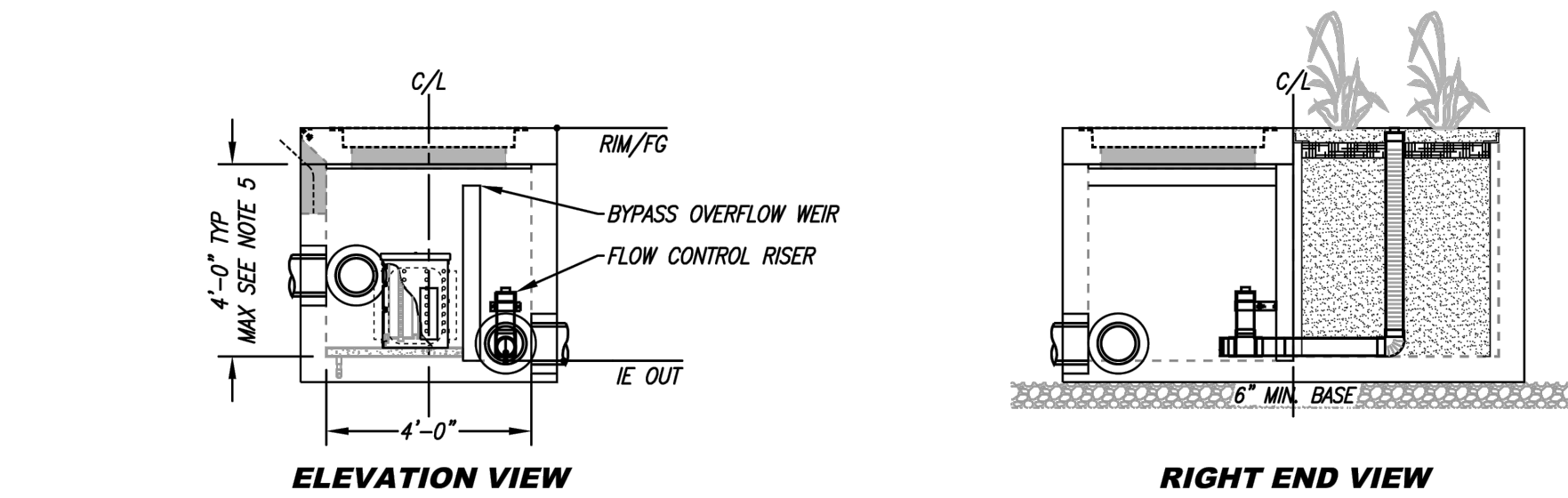
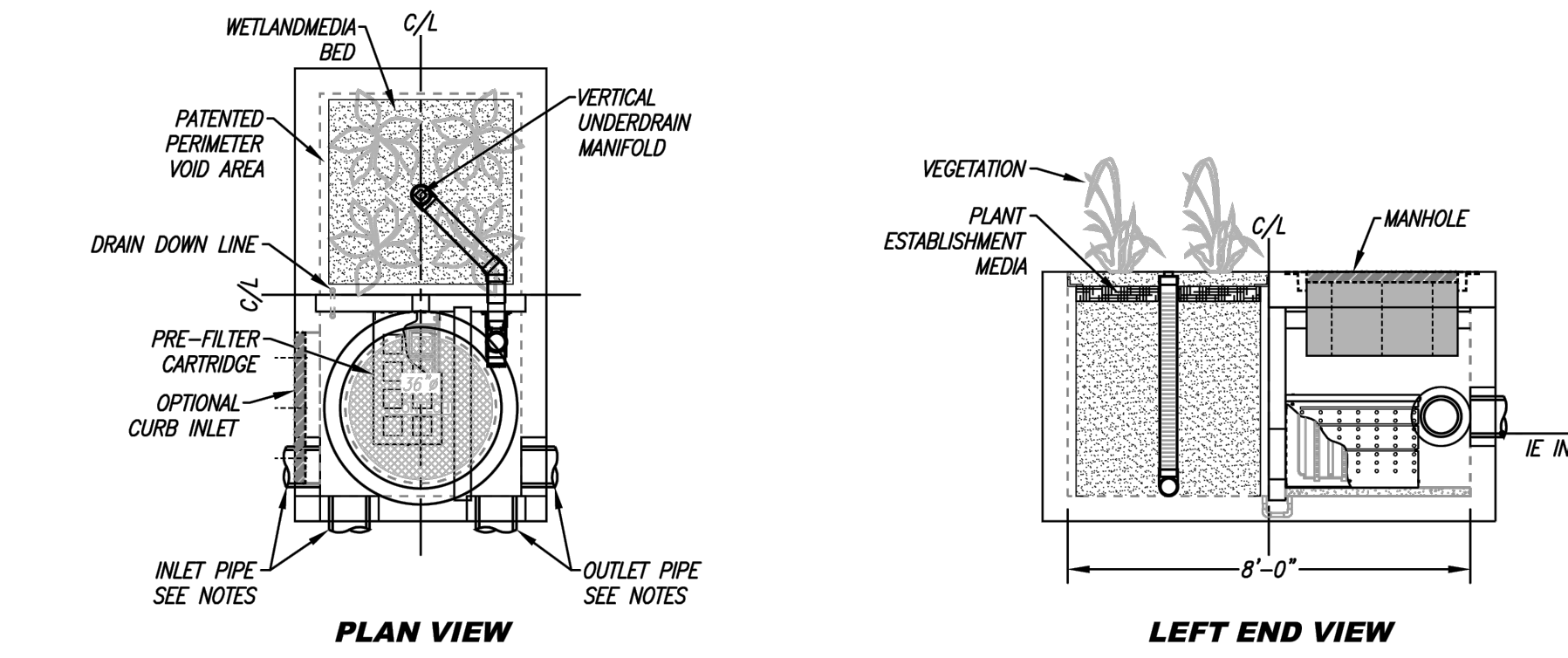


SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
TREATMENT FLOW (CFS)			
PRETREATMENT LOADING RATE (GPM/SF)		2.1 GPM/SF	
WETLAND MEDIA LOADING RATE (GPM/SF)		1.0	
PEAK BYPASS REQUIRED (CFS) - IF APPLICABLE		(CFS)	
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY ONLY - NOT FOR CONSTRUCTION

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 MANUFACTURER'S SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S 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 FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
- CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. 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 PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.
- VERTICAL HEIGHT VARIES BASED ON SITE SPECIFIC REQUIREMENTS.



PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF CONTECH AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF CONTECH.



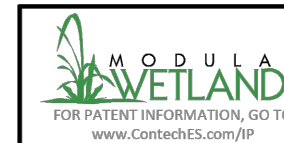
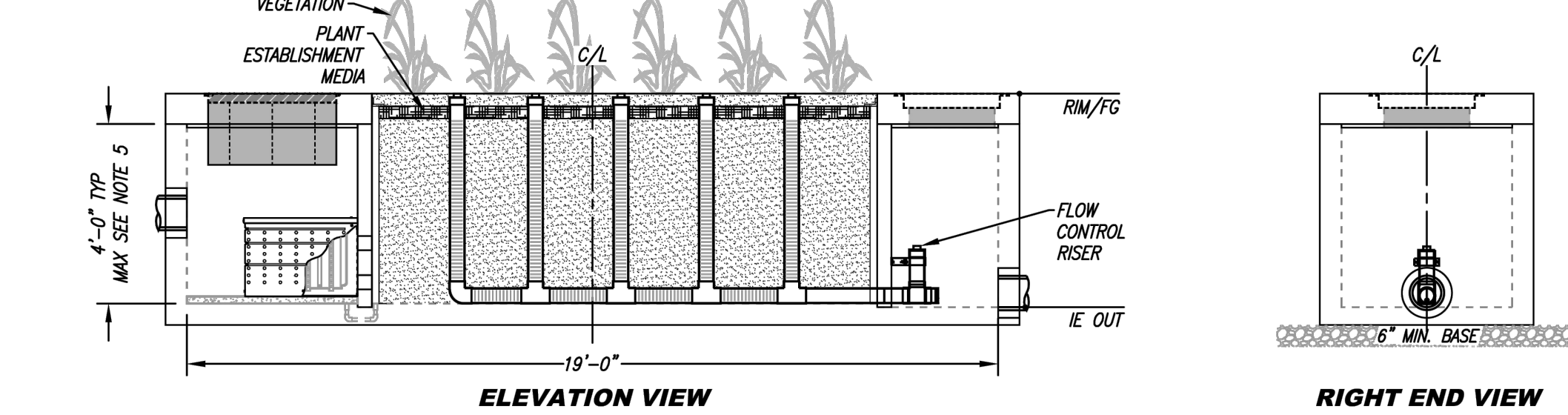
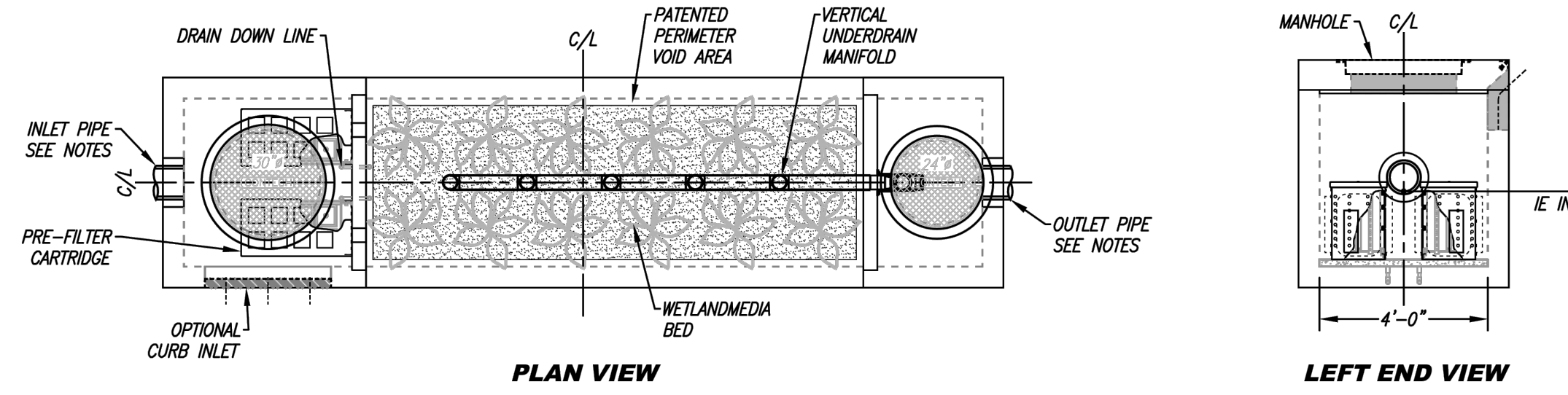
MWS-L-4-8-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
TREATMENT FLOW (CFS)			
PRETREATMENT LOADING RATE (GPM/SF)		2.1 GPM/SF	
WETLAND MEDIA LOADING RATE (GPM/SF)		1.0	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE		(CFS)	
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY ONLY - NOT FOR CONSTRUCTION

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 MANUFACTURER'S SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S 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 FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
- CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. 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 PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.
- VERTICAL HEIGHT VARIES BASED ON SITE SPECIFIC REQUIREMENTS.



PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF CONTECH AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF CONTECH.



MWS-L-4-19-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

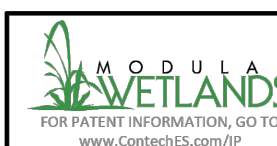
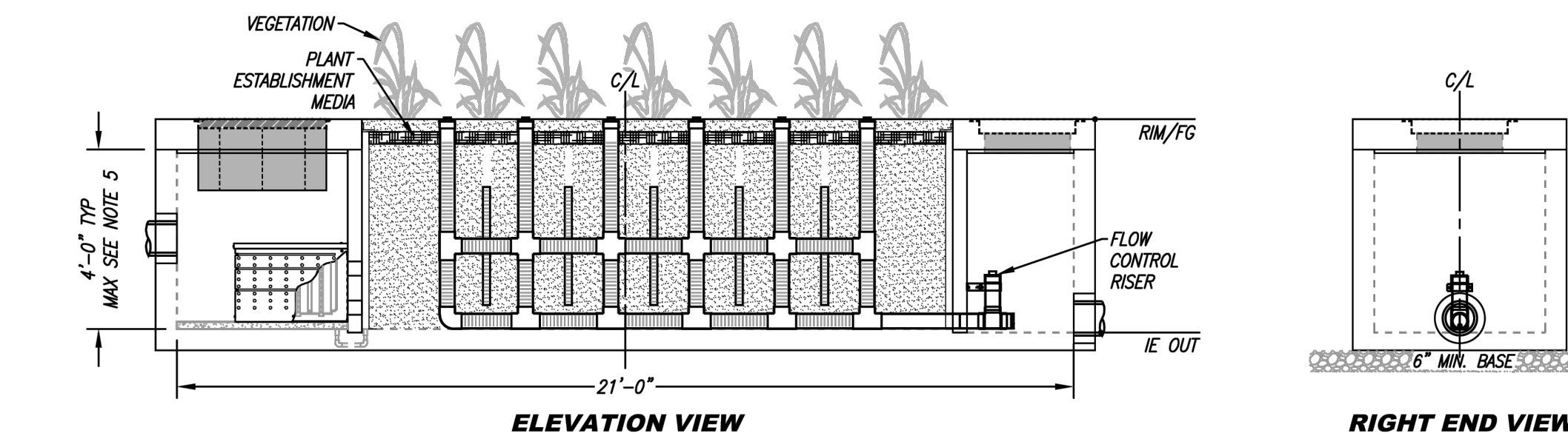
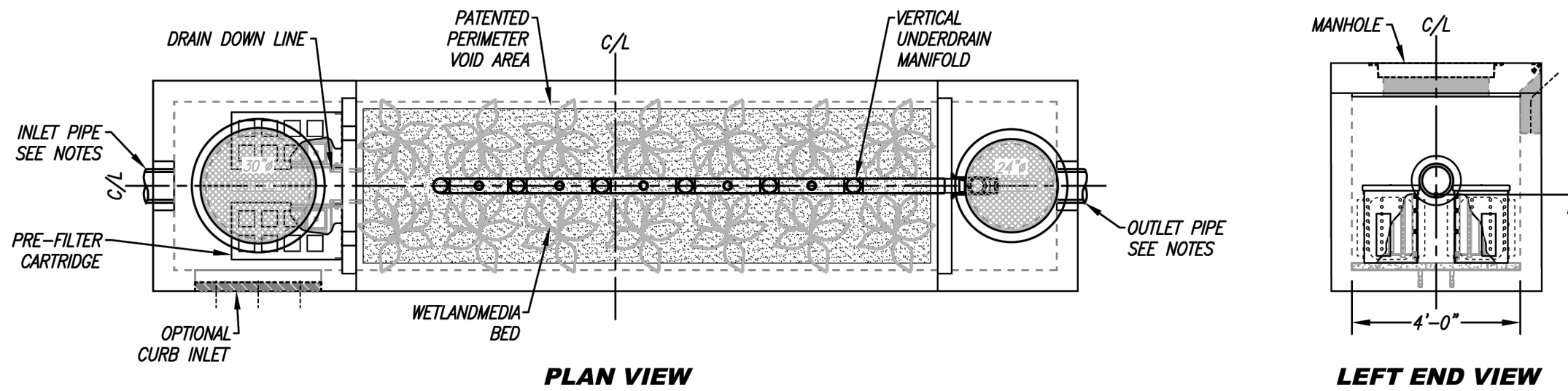
MODULAR WETLAND SYSTEM 40

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
TREATMENT FLOW (CFS)			
PRETREATMENT LOADING RATE (GPM/SF)		2.1 GPM/SF	
WETLAND MEDIA LOADING RATE (GPM/SF)		1.0	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE		(CFS)	
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY ONLY - NOT FOR CONSTRUCTION

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 MANUFACTURER'S SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S 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 FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
- CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. 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 PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.
- VERTICAL HEIGHT VARIES BASED ON SITE SPECIFIC REQUIREMENTS.



PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF CONTECH AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF CONTECH.



MWS-L-4-21-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

ENGINEER OF WORK AS-BUILT CERTIFICATE	
MARK NERO, PE	RCE 80066 EXP. 9/30/2026
DATE	

ENGINEER OF WORK	BENCH MARK
By: EJSOCE ENGINEERING, INC Date: 08/20/2024	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY
Name: MARK NERO	Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ±
R.C.E.: 80066 exp: 9/30/26	NORTH OF INTERSECTION OF VA VERA CRUZ & LINDA VISTA DR
	Record From: RECORD OF SURVEY 23731
	Elev: 534.42 Datum: NAVD 88

CITY OF SAN MARCOS	PLANNING PROJECT NO.
CONCEPTUAL GRADING PLANS FOR:	CUP23-0004
COSTCO GAS STATION	
STORM DRAIN DETAILS	Sheet 13 of 20

STORM WATER PUMP SYSTEM - COSTCO BUSINESS CENTER
SAN MARCOS CA

SCOPE OF SUPPLY:

Furnish and install complete pre-packaged Simplex Lift Station model #PSI-FUS31021 as manufactured by Pacific Southwest Industries (national phone # 800-358-9095)

The pre-packaged Lift Station shall incorporate a quick removal system manufactured by the pump manufacturer. The pump shall be guided to the discharge base elbow by stainless steel guide rails. The rails shall extend from the discharge base elbow to the upper guide bracket mounted on fiberglass channel just below the basin cover. Stainless steel lifting chain or cable shall be supplied and properly installed to remove the pump from the wet well. The internal discharge piping shall be completely pre-plumbed in PVC pipe and extend 12" beyond the wet well side wall for contractor connection to the force main piping. The pump(s) discharge pipe shall have a check and ball valve installed on each discharge line. The Lift Station shall include three liquid level controls on a removable float tree and a control panel suitable for surface mounting. The pump quick removal system and the level sensors shall be housed in a fiberglass wet well (basin) and shall be of sufficient length to maintain the rim of the wet well at grade.

PUMP:

Furnish and install Tsurumi, UZ Series Model 80UZ41.5 submersible pump. The pump shall be capable of delivering 229 GPM at 12.24 Feet TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing 3.15 inch (80 mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)(KW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. A two year warranty "out of the box" shall be standard.

MATERIALS OF CONSTRUCTION:

Construction of major parts of the pumping unit including casing, impeller and discharge elbow shall be manufactured from gray cast iron, ASTM A48 CLASS 35. Internal and external surfaces coming into contact with the pumpage shall be protected by a fused polymer coating. All exposed fasteners shall be stainless steel. All units shall be furnished with a discharge elbow with 150 lb. (10 Kg./Cm2) flat face flange and NPT companion flange. Impellers shall be of the semi-vortex, solids handling design equipped with back pump out vanes and shall be slip fit to the shaft and key driven.

MECHANICAL SEAL:

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber and further protected by an exclusionary oil seal located between the bottom seal faces and the fluid being pumped. The oil chamber shall be fitted with a device that shall provide positive lubrication of the top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Mechanical seals shall be rated to preclude the incursion of water up to 42.6 PSI. (98.4 Ft.). Units shall have silicon carbide mechanical seal faces. Mechanical seal hardware shall be stainless steel.

MOTOR:

The pump motor shall be 2 Hp, 1.5 KW, 480V, 60 Hz, 3 Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at 3.5 full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 15 starts per hour. Motor(s) shall be air filled, copper wound, class B insulated with built in thermal and over amperage protection for each winding. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearing. Motor housing and bearing housing shall be gray cast iron, ASTM A48 CLASS 30. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency.

POWER CABLE AND CABLE ENTRANCE:

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression sealing with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

QUICK REMOVAL SYSTEM:

The pumping unit(s) shall be equipped with quick removal system (QRS). The construction shall be such that the pump(s) will automatically connect to the discharge piping when lowered into place on the discharge connector. There shall be no need for personnel to enter the wet well to accomplish installation or removal of the pump(s). The pumping unit(s) shall be fitted with stainless steel lifting chain(s) of sufficient length and strength to permit the raising and lowering of the unit(s). The chain(s) shall be fastened at the top of the structure near the access opening. All parts of the QRS system including base elbow, sliding guide bracket, and guide support shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. A sliding guide bracket shall be an integral part of the pumping unit and the pump casing shall have a machined connection with a bracket to connect with the discharge connection. Sealing of the pumping unit to the discharge connection shall be accomplished by a single linear downward motion of the pump with the entire weight of the pumping unit guided by a pawl, thereby wedging the pumping unit tightly against the discharge connector. No portion of the pump shall bear directly on the floor of the pump nor shall a rotary motion of the pump be required for sealing. All fasteners coming into contact with the pumpage shall be stainless steel. Two corrosion resistant guide pipes shall be furnished and installed for each pump to permit raising and lowering of the pump. Guide pipes shall be 1.5 inch (40 mm) in diameter and shall be of adequate length to extend from the lower guide holder to the upper guide bar bracket(s) mounted on the access frame.

CONTROL PANEL:

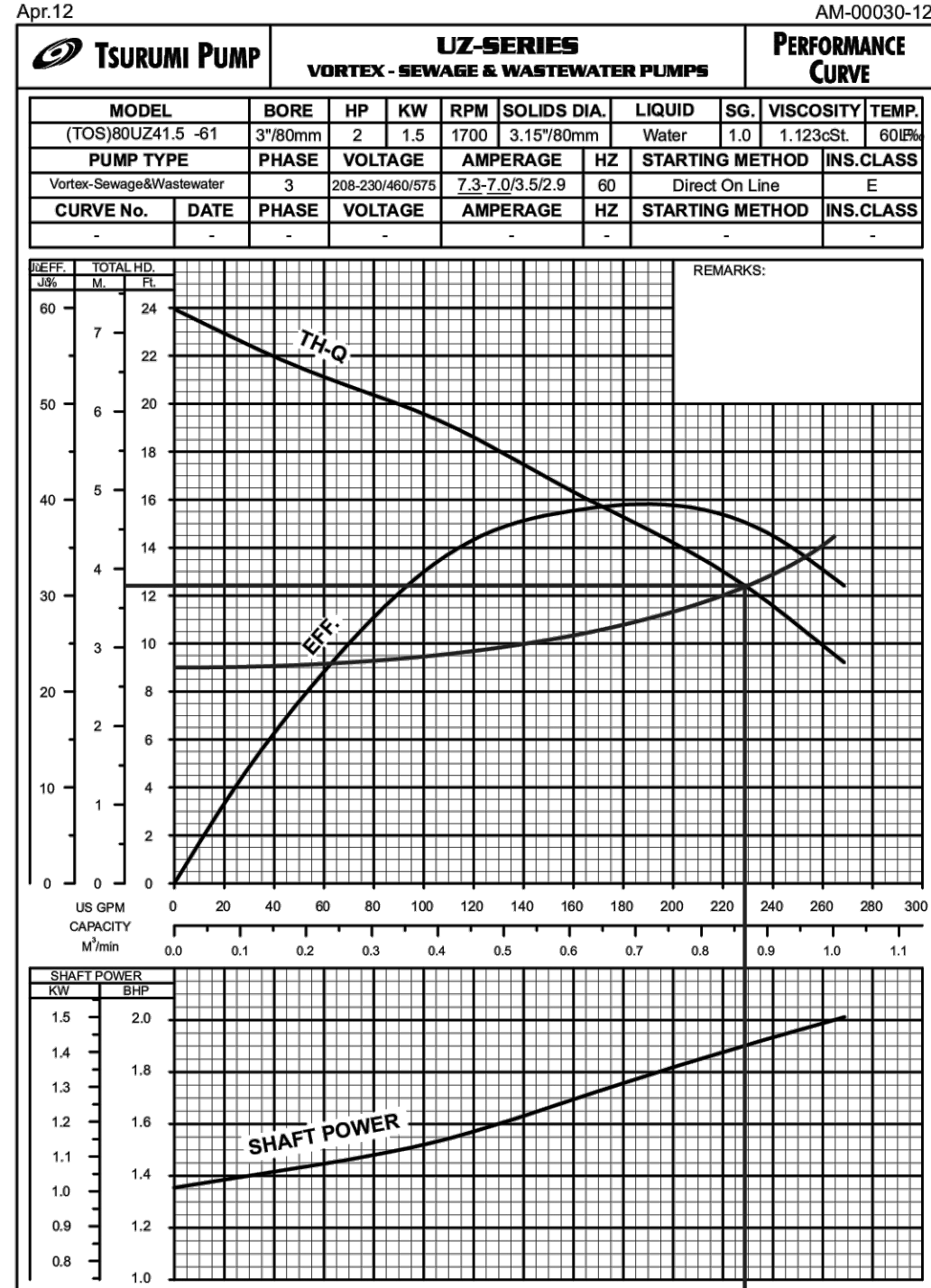
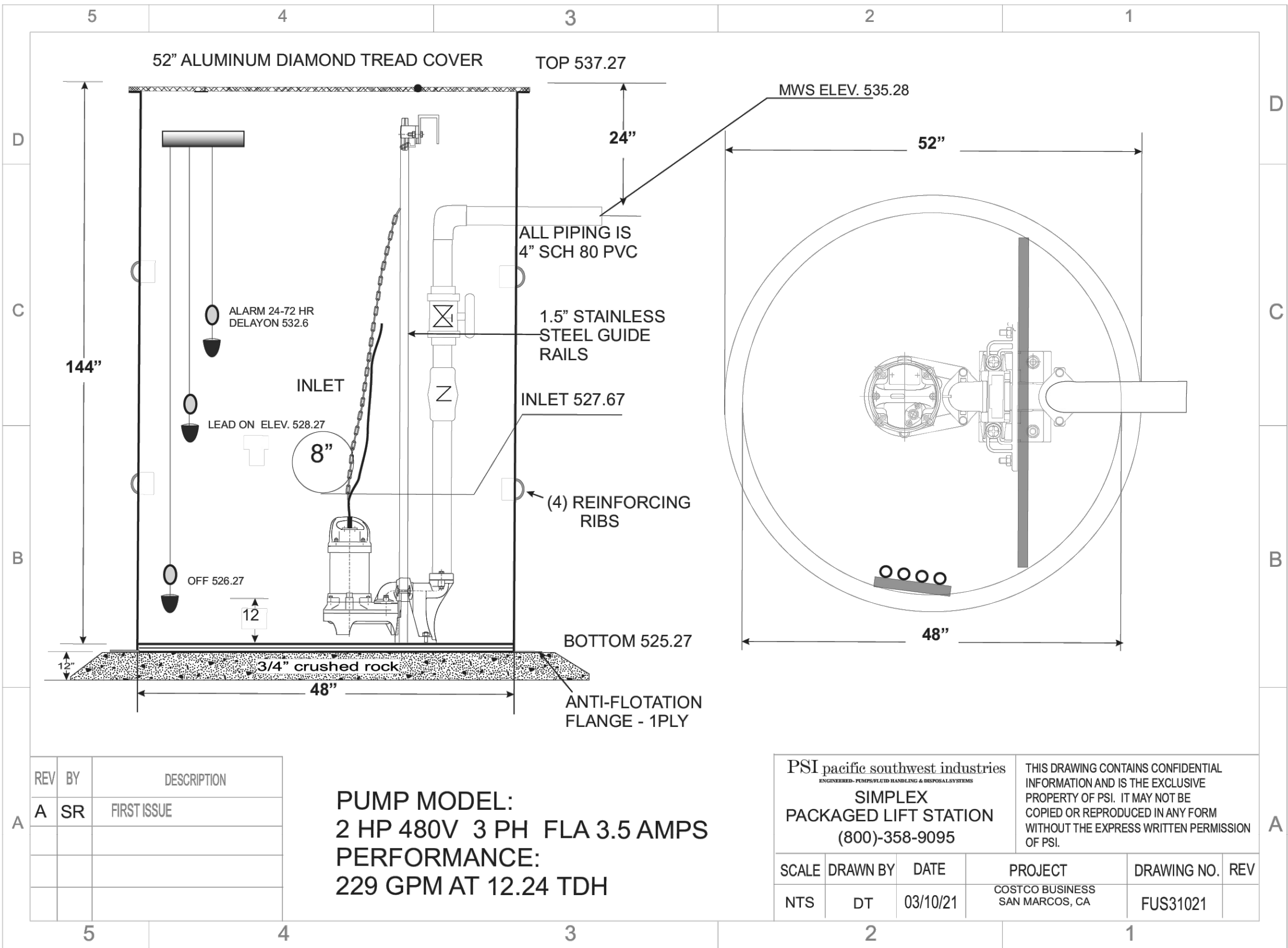
The control panel shall have a NEMA 4X semi dead front enclosure suitable for wall mounting. The outer face of the door shall have only the following: 1 high water alarm light with silence switch, 1 buzzer, and 1 green run lights. The inner workings of the control panel shall have no less than motor circuit protector (overload) that shall be adjustable, motor contactors, HOA selector switches, Smart relay, Elapsed Time Meters, Exercise Timers, circuit breakers, dry contact connection, numbered terminal strip, and shall be listed by U.L. 508.

FIBERGLASS WET WELL:

The fiberglass wet well with an anti-floatation flange shall have a minimum inside diameter of 48 inches and shall be of sufficient length of 144 inches to maintain the rim at grade. The fiberglass wet well shall be manufactured using a process that insures that the bottom of the basin will be fabricated at the same time as the sidewalls, eliminating the possibility of any joints or seams in the wet well in the area of greatest stress concentration. The wet well will be constructed with 1 ply- 3/4" marine plywood encapsulated into the bottom and (4) re-inforcing ribs for added structural support of the tank. The laminate shall have a barcol hardness of at least 90% of the resin manufactures minimum specified hardness for cured resin on both the interior and exterior surfaces. The minimum wall thickness of the wet well shall not be less than 3/16". A steel plate will be encapsulated in the bottom of the wet well to allow the mounting of the polypropylene bottom and the quick removal system. The wet well shall be provided with "uniseal" fittings that can be installed in the field to insure proper elevation of the inlet, vent, and electrical on the side of the wet well.

ALUMINUM DIAMOND TREAD FOOT TRAFFIC COVERS W/HATCH:

The wet well will be covered with a solid 1/4" thick aluminum diamond tread cover suitable for load up to 300 psf. The cover will be solid with no penetrations through it. The cover will be gasketed and bolted to the rim flange of the fiberglass tank using 7/16" stainless steel hex head bolts. No covers using epoxy paint will be acceptable.



STORM LIFT STATION PROFILE & CALCULATIONS			
EQUIVALENT PIPE RUN CALCULATION			
4" SCH 80 PVC PIPE		30.0 FT	
4" PVC SCH 80 90 ELBOW	(3) X 10 FT	30.0 FT	
4" PVC SCH 80 45 BEND	(0) X 5 FT	0.0 FT	
4" PVC SCH 80 TEE	(0) X 22 FT	0.0 FT	
4" CHECK VALVE	(1) X 26 FT	26.0 FT	
4" BALL VALVE	(1) X 2.3 FT	2.3 FT	
TOTAL EQUIVALENT LENGTH		88.3 FT	
FRICITION LOSS PER 100 FT 4" PVC @ 230 GPM 3.65 100/FT			
FRICITION LOSS 88.3/100 X 3.65 FT = 3.23 FT			
STATIC HEAD 9.01 FT			
TOTAL DEVELOPED HEAD 12.24 FT			
PERFORMANCE 229 GPM @ 12.24 TDH THRU 4" PVC LINE			
Hazen-Williams Equation			
Head Loss in Water Pipe			
$f = 0.2083 (100 / c)^{1.852} q^{1.852} / d_h^{4.8655}$			
c = 140 HDPE/PVC			
q = 230 GPM			
d _h = 3.87 for 4" SCH 80			
FRICITION LOSS PER 100 FT			
3.652 FT			

PUMP & SUMP STRUCTURE

43

ENGINEER OF WORK AS-BUILT CERTIFICATE		
MARK NERO, PE	RCE 80066	EXP. 9/30/2026
DATE		

ENGINEER OF WORK	BENCH MARK
By: FUSCOE ENGINEERING, INC Date:08/2024	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY
Name: MARK NERO	Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ±
R.C.E.: 80066 exp: 9/30/26	NORTH OF INTERSECTION OF VA VERA CRUZ @ LINDA VISTA DR
	Record From: RECORD OF SURVEY 23331
	Elev: .534.42 Datum: NAVD 88

CITY OF SAN MARCOS		PLANNING PROJECT NO.
CONCEPTUAL GRADING PLANS FOR:		CUP23-0004
COSTCO GAS STATION		
STORM DRAIN DETAILS		Sheet 15 of 20

PROJECT INFORMATION	
ENGINEERED PRODUCT:	TRAVIS ANTONISSEN 949-237-8866
MANAGER:	TRAVIS ANTONISSEN@ADS-PIPE.COM
ADS SALES REP:	ALLAN WARBRICK 760-330-0746 ALLAN.WARBRICK@ADS-PIPE.COM
PROJECT NO:	S219256



ADVANCED DRAINAGE SYSTEMS, INC.



COSTCO BUSINESS CENTER

SAN MARCOS, CA

MC-4500 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH MC-4500.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
 - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
 - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.85 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 9 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
 - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-4500 CHAMBER SYSTEM

- STORMTECH MC-4500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONESHOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
- INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
- STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
- STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- THE USE OF EQUIPMENT OVER MC-4500 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER TIERED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

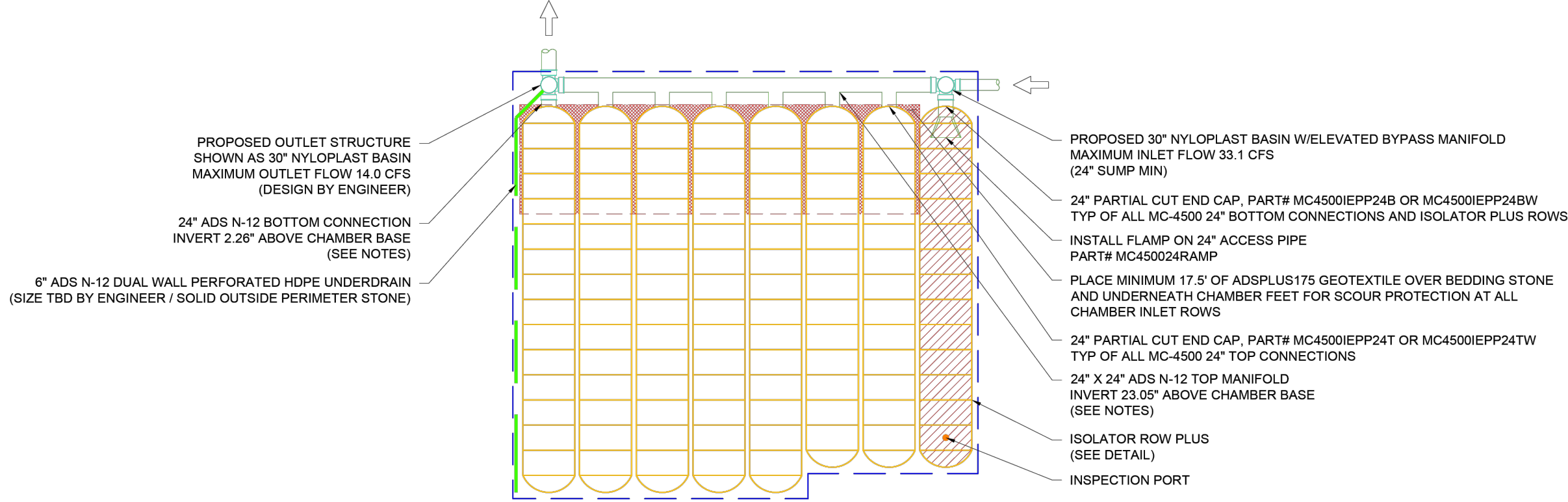
USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

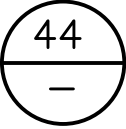
PROPOSED LAYOUT	
109	STORMTECH MC-4500 CHAMBERS
16	STORMTECH MC-4500 END CAPS
12	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
20808	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)
4986	SYSTEM AREA (ft²)
286	SYSTEM PERIMETER (ft)
PROPOSED ELEVATIONS	
540.73	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
536.23	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
535.73	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
535.73	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
535.73	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
534.73	TOP OF STONE
533.73	TOP OF MC-4500 CHAMBER
530.65	24" TOP MANIFOLD INVERT
528.92	24" ISOLATOR ROW PLUS CONNECTION INVERT
528.92	24" BOTTOM CONNECTION INVERT
528.73	BOTTOM OF MC-4500 CHAMBER
527.98	UNDERDRAIN INVERT
527.98	BOTTOM OF STONE

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.



ADS STORMTECH CHAMBER SYSTEM



ENGINEER OF WORK AS-BUILT CERTIFICATE		
MARK NERO, PE	RCE 80066	EXP. 9/30/2026
DATE _____		

ENGINEER OF WORK	BENCH MARK
By: EJSOCOE ENGINEERING, INC Date:08/20/2024	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY
Name: MARK NERO	NVS 13 6-310 2018 CP-023
R.C.E.: 80066 exp: 9/30/26	Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ± NORTH OF INTERSECTION OF WA VERA CRUZ @ LINDA VISTA DR
	Record From: RECORD OF SURVEY 23731
	Elev: 534.42 Datum: NAVD 88

CITY OF SAN MARCOS	
CONCEPTUAL GRADING PLANS FOR:	
COSTCO GAS STATION	
STORM DRAIN DETAILS	

PLANNING PROJECT NO.	CUP23-0004
Sheet	16 of 20

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

PLEASE NOTE:

- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE, "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
- STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
- WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

ADS GEOSYNTHETICS 601T NON-WOVEN GEOTEXTILE ALL AROUND
CLEAN, CRUSHED, ANGULAR STONE IN A & B LAYERS

PAVEMENT LAYER (DESIGNED BY SITE DESIGN ENGINEER)

PERIMETER STONE (SEE NOTE 4)

EXCAVATION WALL (CAN BE SLOPED OR VERTICAL)

12" (300 mm) MIN

MC-4500 END CAP

SUBGRADE SOILS (SEE NOTE 3)

9" (230 mm) MIN

100" (2540 mm)

12" (300 mm) MIN

60" (1524 mm)

12" (300 mm) MIN

24" (600 mm) MIN

7.2' (2.1 m) MAX

**THIS CROSS SECTION DETAIL REPRESENTS MINIMUM REQUIREMENTS FOR INSTALLATION. PLEASE SEE THE LAYOUT SHEET(S) FOR PROJECT SPECIFIC REQUIREMENTS.

DEPTH OF STONE TO BE DETERMINED BY SITE DESIGN ENGINEER 9" (230 mm) MIN

NOTES:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
- MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS"
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

4840 TRUEMAN BLVD
HILLIARD, OH 43026

Stormtech
Corrugated Plastic Chamber Quality
601T Non-Woven Geotextile
60x101 Chamber
800-294-4888 (800-888-2881) | WWW.STORMTECH.COM

4840 TRUEMAN BLVD
HILLIARD, OH 43026

ADS
Advanced Drainage Systems, Inc.
ADVANCED DRAINAGE SYSTEMS, INC.

COSTCO BUSINESS CENTER
SAN MARCOS, CA

DATE: 01-26-21
DRAWN: TSG
PROJECT #: S219266
CHECKED: NAB

DATE: 03-24-2025
DRAWN (DWG):
DESIGNED BY: JES
CHECKED BY: JES
DESIGNED BY: JES
CHECKED BY: JES

4840 TRUEMAN BLVD
HILLIARD, OH 43026

Stormtech
Corrugated Plastic Chamber Quality
601T Non-Woven Geotextile
60x101 Chamber
800-294-4888 (800-888-2881) | WWW.STORMTECH.COM

4840 TRUEMAN BLVD
HILLIARD, OH 43026

ADS
Advanced Drainage Systems, Inc.
ADVANCED DRAINAGE SYSTEMS, INC.

4 SHEET
OF 7

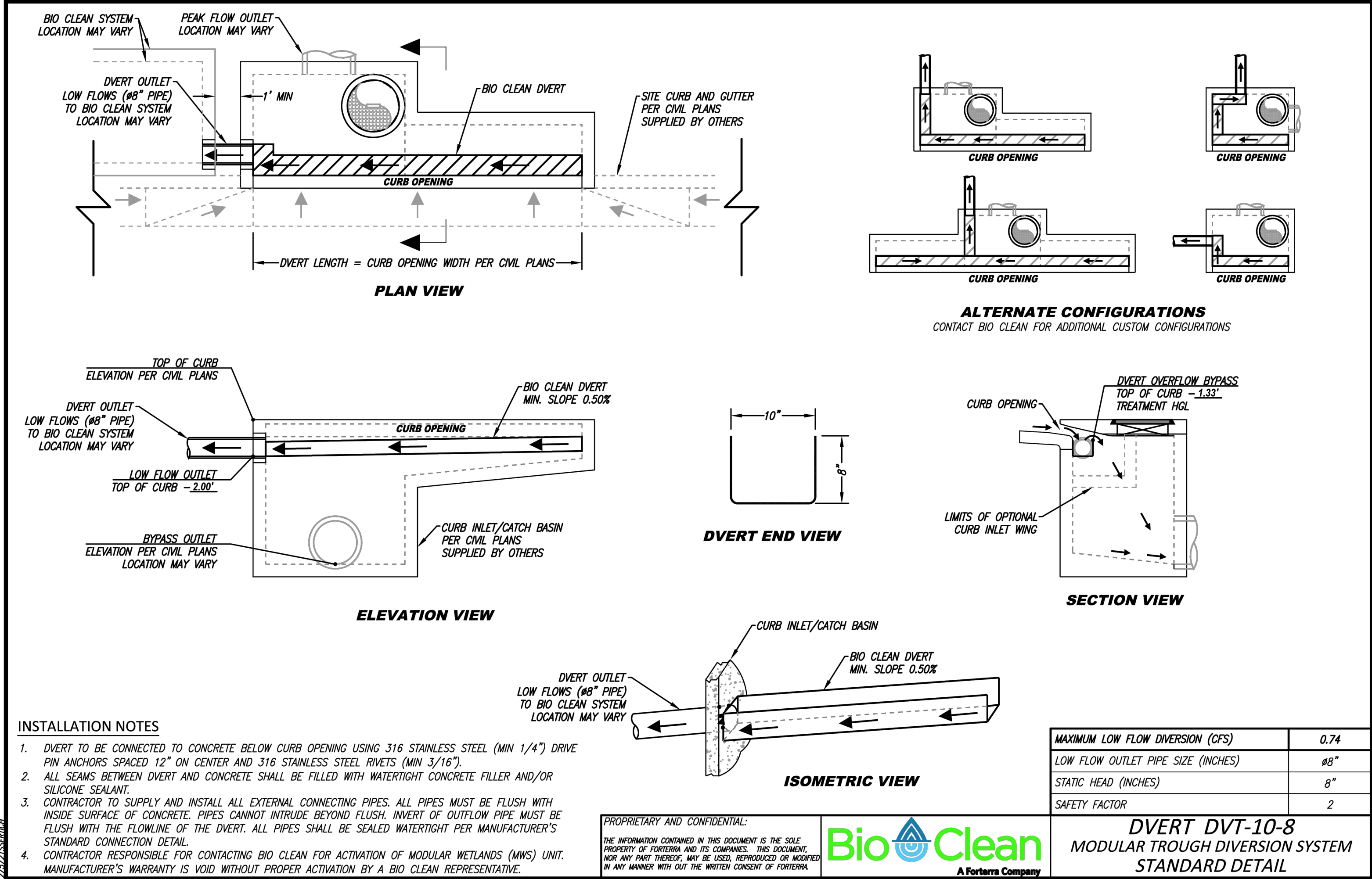
ADS STORMTECH CHAMBER SYSTEM

ENGINEER OF WORK	BENCH MARK
By: EJSOCE ENGINEERING, INC Date:08/2024	Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY
Name: MARK NERO	N/A S 5.310 2018 CP-023
R.C.E.: 80066 exp: 9/30/26	Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ± NORTH OF INTERSECTION OF VA VERA CRUZ @ LINDA VISTA DR
	Record From: RECORD OF SURVEY 23331
	Elev: 534.42 Datum: NAVD 88

ENGINEER OF WORK AS-BUILT CERTIFICATE	
MARK NERO, PE	RCE 80066 EXP. 9/30/2026
DATE	
CITY OF SAN MARCOS	
CONCEPTUAL GRADING PLANS FOR:	
COSTCO GAS STATION	
STORM DRAIN DETAILS	
PLANNING PROJECT NO.	CUP23-0004
Sheet	17 of 20

F:\PROJECTS\758\070\PLANS\GRADING\AS STATION\758-070PG1701.DWG (06-19-25 11:54:50AM) Plotted by: jpegedas





DIVERT DETAIL

45

ENGINEER OF WORK		BENCH MARK		CITY OF SAN MARCOS		PLANNING PROJECT NO. CUP23-0004
By: FUSCOF ENGINEERING, INC Date:08/20/24		Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY		CONCEPTUAL GRADING PLANS FOR:		
Name: MARK NERO		NVS 15 6310 2018 CP-023		COSTCO GAS STATION		
R.C.E.: 80066 exp: 9/30/26		Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ± NORTH OF INTERSECTION OF VIA VERA CRUZ @ LINDA VISTA DR		STORM DRAIN DETAILS		Sheet 19 of 20
		Record From: RECORD OF SURVEY 23731				
		Elev: 534.42 Datum: NAVD 88				

ENGINEER OF WORK AS-BUILT CERTIFICATE		
MARK NERO, PE	RCE 80066	EXP. 9/30/2026
DATE		

POLLUTION PREVENTION NOTES

In order to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) program for construction, construction contractors shall install and maintain appropriate Best Management Practices (BMPs), as shown in the Erosion and Sediment Control Plan, on all construction projects. BMPs shall be installed in accordance with industry recommended standards, and/or in accordance with any General Construction Permit issued by the state for the project to prevent any discharges from the project site or into any storm drain facilities. All sediments, construction materials, debris and wastes, and other pollutants must be retained on site and may not be transported from the site via sheet flow, swales, area drains, natural drainage courses, wind, or vehicle tracking. Under direction of the Engineer of Record, erosion and/or sediment control devices shall be modified as needed as the project progresses to ensure effectiveness.

Erosion and Sediment Control Requirements

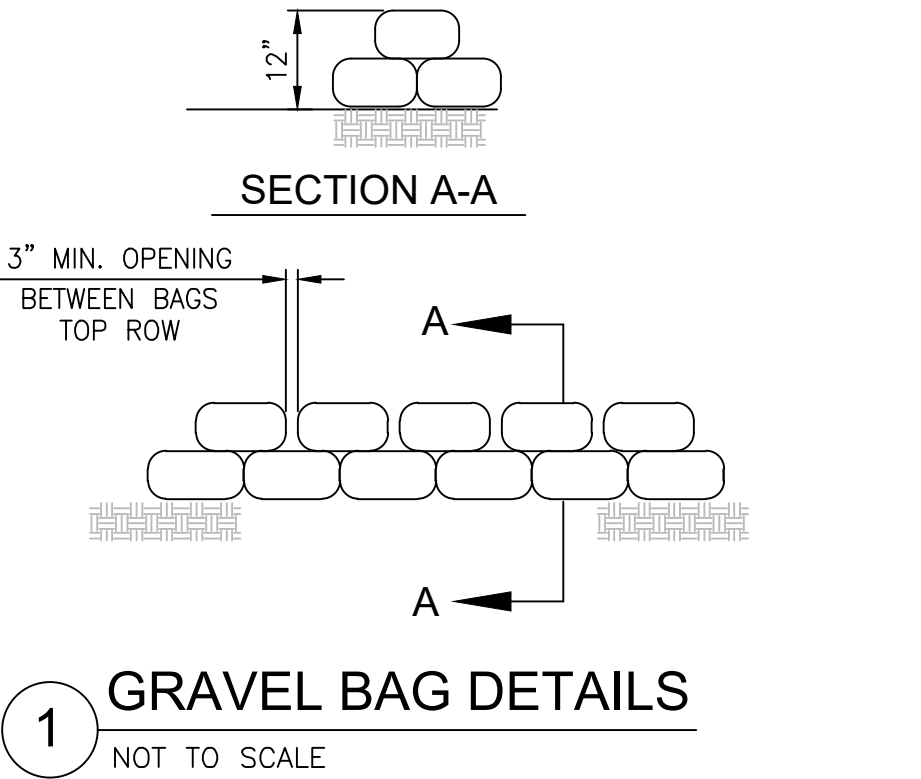
Requirements	SPECIFIED BMPs BMP Detail(s)/ Sheet Number
A. Wind erosion BMPs (dust control) shall be implemented.	WE – 1
B. Sediment control BMPs shall be implemented at the site perimeter, at all operational storm drain inlets and at all non-active slopes.	SE – 1, 2, 3, 4, SE – 6, 7, 8, 10
C. BMPs to control off-site sediment tracking shall be implemented and maintained.	TC – 1, 2
D. Appropriate waste management and material pollution control BMPs shall be implemented to prevent the contamination of stormwater by wastes and construction materials.	WM – 1, 2, 3, 4, 5, 6, 8, 9, 10
E. Appropriate non-stormwater BMPs shall be implemented to prevent the contamination of stormwater from construction activities.	NS – 1, 2, 3, 5, 6, 7 NS – 8, 9, 10, 12, 13
F. Adequate physical or vegetation erosion control BMPs (temporary or permanent) shall be installed and established for all completed slopes. If a selected BMP fails, it must be repaired and improved, or replaced with an acceptable alternate as soon as it is safe to do so. The failure of a BMP may indicate that the BMP, as installed, was not adequate for the circumstances in which it was used. Repairs or replacements must result in a more robust BMP, or additional BMPs should be installed to provide adequate protection.	EC – 1, 3, 7, 9, 11, 15, 16 SE – 1, 2, 3, 4, SE – 6, 7, 8, 10
G. Adequate erosion and sediment controls must be implemented prior to the onset of a storm event for all actively graded areas.	EC – 1, 3, 7, 9, 11, 15, 16 SE – 1, 2, 3, 4, SE – 6, 7, 8, 10
H. A disturbed area that is not completed but that is not being actively graded (non-active area) shall be fully protected from erosion with the referenced temporary and/or permanent BMPs (erosion and sediment control). The ability to deploy standby BMP materials is not sufficient for these areas. Erosion and sediment control BMPs must actually be deployed. This includes all building pads, unfinished roads and slopes.	EC – 1, 3, 7, 9, 11, 15, 16 SE – 1, 2, 3, 4, SE – 6, 7, 8, 10
I. Sufficient materials needed to install referenced standby erosion and sediment control BMPs necessary to completely protect the exposed portions of the site from erosion and to prevent sediment discharges shall be stored on site. Areas that have already been protected from erosion using permanent physical stabilization or established vegetation stabilization BMPs are not considered "exposed" for purposes of this requirement.	EC – 1, 3, 7, 9, 11, 15, 16 SE – 1, 2, 3, 4, SE – 6, 7, 8, 10

NOTE: For Risk Level 2 and 3 sites, there shall be a "Rain Event Action Plan" and the ability to deploy standby erosion and sediment control BMPs as needed to completely protect the exposed portions of the site within 48 hours of a predicted storm event (a predicted storm event is defined as a forecasted 50% chance of rain).

EROSION CONTROL NOTES:

(GRAVEL BAG)

- GENERAL: GRAVELBAG SHALL INCLUDE PROVIDING ALL LABOR, MATERIALS, AND EQUIPMENT TO FABRICATE AND INSTALL GRAVELBAGS AS REQUIRED TO FACILITATE THE CONTROL OF EROSION.
- LOCATION: GRAVELBAGS SHALL BE PLACED PER PLAN, AND IN LOCATIONS SPECIFIED BY THE COUNTY, AND IN LOCATIONS DEEMED NECESSARY BY THE CONTRACTOR.
- FABRICATION: GRAVELBAGS SHALL BE FABRICATED USING FACTORY SEWN OR SEALED BAGS OF WOVEN POLYPROPYLENE, TREATED TO RESIST DEGRADATION BY ULTRAVIOLET LIGHT AND HAVING SUFFICIENT RESISTANCE TO TEARING TO ALLOW RELOCATION OF BAGS WITHIN SIX MONTHS OF INITIAL PLACEMENT WITH A LOSS OF NOT MORE THAN FIVE PERCENT OF THE BAGS.
THE BAGS SHALL BE FILLED WITH SUBROUNDED TO ROUNDED GRAVEL LESS THAN 3/4-INCH IN DIAMETER, WITH LESS THAN FIVE PERCENT OF MATERIAL PASSING A NO. 30 SIEVE. THE FILLED BAGS SHALL HAVE THE OPEN ENDS SECURELY FASTENED PRIOR TO DELIVERY TO THE SITE.
- INSTALLATION: GRAVELBAGS SHALL BE INSTALLED IN A MANNER TO ENTRAP SILT AND MUD, AND TO DIVERT THE FLOW OF WATER. NOTWITHSTANDING THE OTHER REQUIREMENTS OF THIS SPECIFICATION, FAILURE OF THE BAGS TO PERFORM THIS FUNCTION SHALL BE REASON TO REJECT THEIR INSTALLATION.
GRAVELBAGS SHALL BE INSTALLED WITH THE WIDEST FACE AGAINST THE GROUND SURFACE OR THE UNDERLYING COURSE OF BAGS, AND PRESSED IN PLACE TO CONFORM TO THE UNDERLYING SURFACE. THE BAGS SHALL BE PLACED WITH THE TIED ENDS IN THE "UPHILL" OR "UPSTREAM" DIRECTION, BEGINNING AT THE LOWEST OR MOST DOWNSTREAM BAG. TIED ENDS WILL BE TUCKED UNDER BAG. SUBSEQUENT BAGS WITHIN ONE COURSE OF BAGS SHALL BE PLACED SO AS TO REST UPON THE TIED END OF THE PREVIOUSLY PLACED BAG, WITH NOT LESS THAN 10 PERCENT OF THE BAG IN CONTACT WITH THE PREVIOUS BAG, AND NOT MORE THAN 20 PERCENT IN CONTACT.
SUBSEQUENT COURSES OF BAGS SHALL BE PLACED AS DESCRIBED PREVIOUSLY, WITH THE MID-POINT OF THE BAGS STRADDLING THE JOINTS OF BAGS IN THE UNDERLYING ROW.
CONSTRUCTION OF A GRAVELBAG BERM PERPENDICULAR TO THE DIRECTION OF FLOW SHALL INCORPORATE BAGS PLACED IN A "PYRAMID" CONFIGURATION, WITH ALL INDIVIDUAL BAGS ORIENTED PERPENDICULAR TO THE DIRECTION OF FLOW. THE BERM SHALL BE CONSTRUCTED WITH A SPECIFIED NUMBER OF ROWS AT THE BOTTOM (IN CONTACT WITH THE GROUND), WITH SUCCESSIVELY FEWER ROWS IN EACH OVERLYING COURSE. THE UPSTREAM AND DOWNSTREAM FACES OF THE BERM SHALL BE NO STEEPER THAN 1 1/2 FEET HORIZONTAL TO 1 VERTICAL.
DAMAGE WHICH COULD FORESEEABLY BE PREVENTED BY PROPER GRAVELBAG INSTALLATION SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- COMPENSATION: THE PERFORMANCE OF THE REQUIREMENTS OF THIS SECTION SHALL BE COMPENSATED AT THE CONTRACT UNIT PRICES FOR GRAVELBAGS.



CAUTION - NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND / OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CALL USA DIG ALERT AT 811.

NOTES TO CONTRACTOR:

STABILIZED CONSTRUCTION ENTRANCE AND RECYCLING STORAGE AREA SHALL BE DESIGNATED BY SITE SUPERVISOR AND INCLUDED ON THE SWPPP / EROSION CONTROL PLAN. AS SITE CONDITIONS CHANGE, THE SWPPP / EROSION CONTROL PLAN SHALL BE UPDATED TO REFLECT CURRENT CONDITIONS.

IT IS THE CONTRACTOR/SUPERVISOR'S RESPONSIBILITY TO KEEP THE SWPPP MAP CURRENT. BMPs SHOULD BE ADDED, MOVED OR REMOVED BASED ON SITE CONDITIONS. HAND-MARKED ALTERATIONS WITH INITIALS AND DATE ARE AN ACCEPTABLE FORM OF ALTERATION. THE CONTRACTOR MAY BE ASKED AT ANY TIME TO PRODUCE THE SWPPP MAP. FAILURE TO KEEP THE MAP CURRENT COULD RESULT IN A NOTICE OF VIOLATION AND/OR FINE.

CONTRACTOR TO PHASE CONSTRUCTION IN A MANNER THAT ACCESS TO ADJACENT BUILDINGS IS MAINTAINED DURING THE ENTIRE DURATION OF CONSTRUCTION.

BMP TABLE:

SYMBOL		DESCRIPTION
ENTIRE SITE	WE-1	WIND EROSION CONTROLS
	TC-1	CONSTRUCTION ROAD ENTRANCE
	TC-2	CONSTRUCTION ROAD STABILIZATION
	SE-6	SEDIMENT CONTROL
	SE-10	STORM DRAIN INLET PROTECTION

BMP DETAILS CAN BE OBTAINED IN THE SWPPP PREPARED FOR THIS PROJECT BY FUSCOE ENGINEERING OR
<http://www.ocwatersheds.com/documents/bmp/constructionactivities>

CERTIFICATION

I hereby certify that I have read and understand the requirements in the Construction General Permit and that the erosion control plans and BMPs shown hereon are in compliance with these requirements.

Signed by: _____ RCE/ PE Number: _____
In case of an emergency, the responsible person to be contacted shall be:
Name: x Title: x
Company: x 24-Hr. Phone No.: x

NOTES

A standby crew for emergency work shall be available at all times for emergency work during the rainy season (October 15 through April 15), when rain is imminent, necessary materials shall be available on site and stock piled at convenient locations to facilitate rapid construction of temporary devices or to repair any damaged erosion control measures.

Devices shall not be moved or modified without the approval of the City Inspector.

All removable protective devices shown shall be in place at the end of each working day, when the five-day rain probability forecast exceeds 40 percent.

After a rainstorm, all silt and debris shall be removed from check berms and desilting basins. Any graded slope surface protection measures damaged during a rainstorm shall also be immediately repaired.

The faces of cut and fill slopes shall be prepared and maintained to control against erosion. Erosion protection shall consist of effective planting of all slopes in excess of five (5) feet high unless otherwise approved by the City Engineer. Slopes exceeding fifteen (15) feet high may require an adequate sprinkler system, as determined by the City Engineer. The slope protection shall be installed as soon as practicable and prior to calling for final inspection.

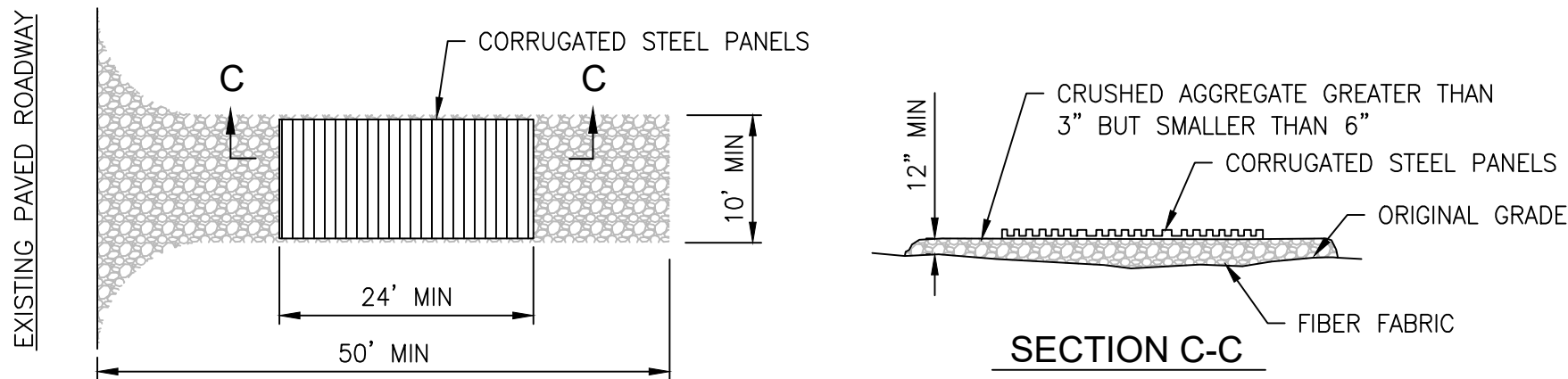
Fill slopes at the tract perimeter must drain away from the top of the slope at the conclusion of each working day.

A guard shall be posted on the site whenever the depth of water in any device exceeds two (2) feet.

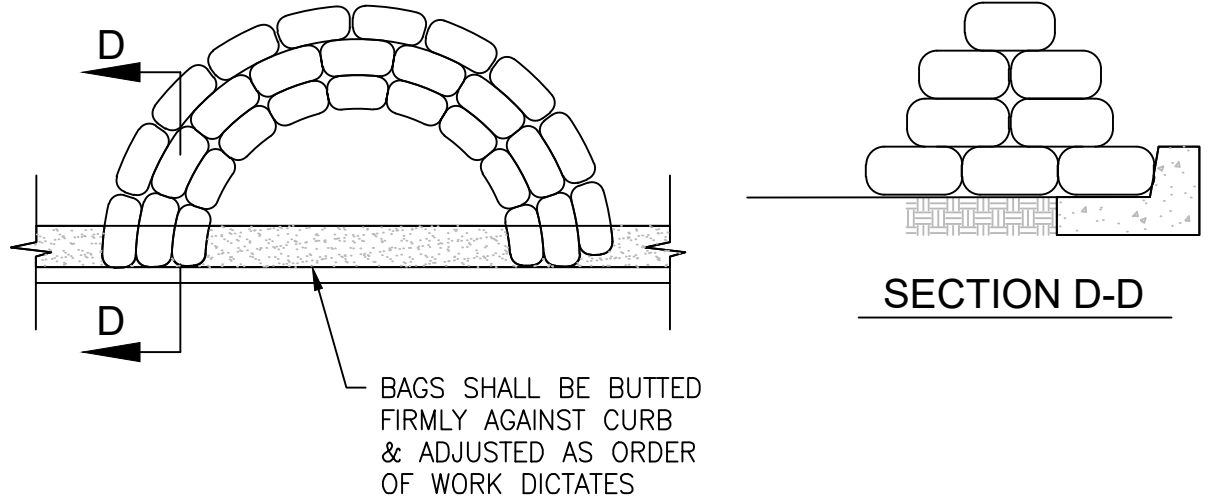
SWPPP LEGEND:

CT	CONSTRUCTION TRAILER
C/C W	CHEMICAL/CONCRETE WASHOUT
P/P W	PAINT/PLASTER WASHOUT
STOCK	SAND/GRAVEL BAG STOCKPILE
STORE	STORAGE AREA
CONST	ACTIVE CONSTRUCTION AREA
DONE	COMPLETED/OCCUPIED AREA
VEH	VEHICLE/STAGING AREA

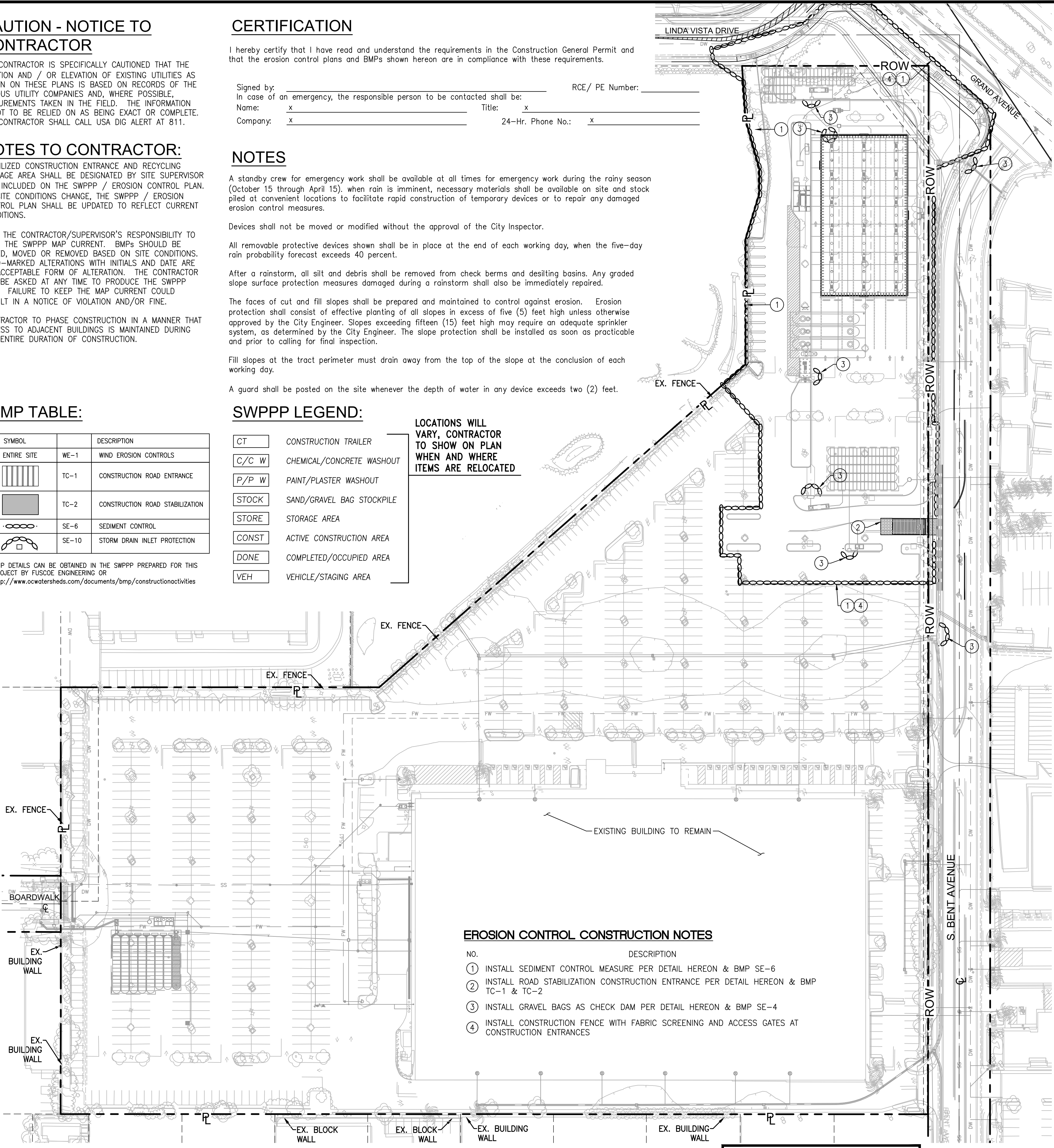
LOCATIONS WILL VARY, CONTRACTOR TO SHOW ON PLAN WHEN AND WHERE ITEMS ARE RELOCATED



STABILIZED CONSTRUCTION ENTRANCE/ EXIT DETAIL



GRAVEL BAG CHECK DAM



EROSION CONTROL CONSTRUCTION NOTES

- | NO. | DESCRIPTION |
|-----|---|
| 1 | INSTALL SEDIMENT CONTROL MEASURE PER DETAIL HEREON & BMP SE-6 |
| 2 | INSTALL ROAD STABILIZATION CONSTRUCTION ENTRANCE PER DETAIL HEREON & BMP TC-1 & TC-2 |
| 3 | INSTALL GRAVEL BAGS AS CHECK DAM PER DETAIL HEREON & BMP SE-4 |
| 4 | INSTALL CONSTRUCTION FENCE WITH FABRIC SCREENING AND ACCESS GATES AT CONSTRUCTION ENTRANCES |

ENGINEER OF WORK AS-BUILT CERTIFICATE
MARK NERO, PE RCE 80066 EXP. 9/30/2026
DATE

ENGINEER OF WORK By: FUSCOE ENGINEERING, INC Date:08/20/2024 Name: MARK NERO R.C.E.: 80066 exp: 9/30/26	BENCH MARK Description: 2" BRASS DISC CITY OF SAN MARCOS SURVEY NVC 1.5 6.510 2018 09-0923 Location: NE CORNER OF CATCH BASIN 8897, ELY SIDE OF VERA CRUZ, 150 ± NORTH OF INTERSECTION OF VA VERA CRUZ @ LINDA VISTA DR Record From: RECORD OF SURVEY 23731 Elev: 534.42 Datum: NAVD 88	CITY OF SAN MARCOS CONCEPTUAL GRADING PLANS FOR: COSTCO GAS STATION EROSION CONTROL PLAN	PLANNING PROJECT NO. CUP23-0004 Sheet 20 of 20
--	--	--	--