

**PRELIMINARY
STORMWATER CONTROL PLAN
for
SLATTEN RANCH – SUBDIVISION 9645**

JANUARY 2024

Meadow Creek Group, Inc.
1500 Willow Pass Court,
Concord, CA 94520

prepared by:

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Exhibit 1 – Vicinity Map
Exhibit 2 – Existing Conditions
Exhibit 3 – Proposed Conditions
Attachment 1 – IMP Sizing Calculation (Treatment & Flow)
Attachment 2 – Stormwater Management Plan
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Attachment 4 – USDA NRCS Web Soil Survey

This Stormwater Control Plan was prepared using the template dated February 2023.

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	Slatten Ranch
Application Submittal Date	January 2024
Project Location	Slatten Ranch Road at Wicklow Way APN: 056-120-098
Name of Developer	Meadow Creek Group, Inc.
Project Phase No.	N/A
Project Type and Description	Townhome style residential with 17 buildings to contain 129 Condominium units.
Project Watershed	San Joaquin River
Total Project Site Area (acres)	6.41 Acres
Total Area of Land Disturbed (acres)	6.41 Acres
Total New Impervious Surface Area (sq. ft.)	4.91 Acres
Total Replaced Impervious Surface Area	0 Acres
Total Pre-Project Impervious Surface Area	0 Acres
Total Post-Project Impervious Surface Area	4.91 Acres
50% Rule[*]	Does Not Apply
Project Density	20.1 DU/AC (multi-family)
Applicable Special Project Categories	Not Applicable
Percent LID and non-LID treatment	100% LID
HM Compliance [†]	Applies

[*50% rule applies if:

Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area]

[†HM required (unless project meets one of the exemptions on *Guidebook* p. 9) if:

(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre]

II. SETTING

II.A. Project Location and Description

The Slatten Ranch Project is located at the intersection of Slatten Ranch Road and Wicklow Way in the City of Antioch, Contra Costa County, CA. The project site is bordered to the north by existing farmland and the undeveloped Connemara Road right of way, to the east by Empire Avenue, to the south by Wicklow Way, and to the west by Slatten Ranch Road. See Exhibit 1 for the project Vicinity Map.

The site proposes to construct 17 buildings consisting of a total of 129 townhome style condominium units.

II.B. Existing Site Features and Conditions

This 6.41-acre project is currently a vacant, rough graded site with 100% pervious surface. See Exhibit 2 for the existing site conditions.

There are existing City owned storm drain facilities bordering the site to the east, south, and west within the public streets. Within the project boundary, there are 2 existing field inlets connecting to the public storm drain system. One is located on the northwest corner of the site and the other is located on the south side of the site. There is an existing City owned drainage ditch within the Connemara Road right of way and it extends into the project private development parcel. The ditch collects runoff from the western half of Empire Avenue. This existing ditch will be re-shaped to be wholly contained within the Connemara Road right of way limits and outside of the project private development parcel.

The Slatten Ranch project site is part of the moderate climate of the San Francisco Bay Area Region. Annual temperature patterns are typical of coastal areas. The mean annual precipitation on site is 12.5 inches, based on The Mean Seasonal Isohyets Map by Contra Costa County Flood Control and Water Conservation District. Precipitation is evenly distributed throughout the fall, winter and spring, but is very low in the summer. Moisture occurring in the summer is generally from the coastal fog.

The site is relatively flat with the land sloping approximately 0.3% from the southeast corner to the northwest corner, where it is collected by an existing field inlet. The project site is classified as Hydrologic Soil Group C, as documented by the USDA Natural Resources Conservation Service Web Soil Survey (see documentation in Attachment 4). The site is underlain by about 6-8 feet of fills. The upper 2-3 feet of surficial fills are very dry, loose, and weak, while the below surficial fills consist of stiff to hard clays and occasional medium-dense to dense sands. Groundwater was not encountered during the geotechnical field investigation. Fluctuations in ground water levels occur due to many factors including change in seasons, variation in rainfall, water pumping in nearby wells, water recharging from the nearby creek channel, and other factors.

II.C. Opportunities and Constraints for Stormwater Control

Stormwater constraints include:

- Low Soil Permeability: The soil on the project site is designated as hydrologic soil group C, indicating low infiltration.
- Rain Cycle: Opportunities for storage and reuse are hindered by the rain cycle of the Bay Area. The time periods between the rain season and the dry season are long enough to make storage of rain water for reuse infeasible.

Stormwater opportunities include:

- *Landscaping*: The proposed project will utilize disconnected impervious areas and landscape features including a bioretention area to treat and manage stormwater. Condominium building grading and drainage will ensure areas of landscaping are maximized to minimize runoff and impervious areas are directed to the treatment areas.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization Of Site Layout

III.A.1. Limitation of development envelope

The project will take advantage of a compact site design within the areas being developed. The site design will allow space for a bioretention area.

III.A.2. Preservation of natural drainage features

The project site grading will maintain the existing drainage pattern of the site, discharging runoff to the existing storm drain system located in the northwest corner of the site.

III.A.3. Setbacks from creeks, wetlands, and riparian habitats

There are no creeks, wetlands, or riparian habitats adjacent to the site.

III.A.4. Minimization of imperviousness

Private street widths have been reduced to the minimum dimensions allowed for fire, utility separation, and pedestrian safety. The townhome buildings have maximized the ratio of livable space to building footprint.

III.A.5. Use of drainage as a design element

The design of the project is influenced by the need for drainage. The bioretention area is designed to be integrated into the landscape design and at the low end of the project site.

III.B. Use of Permeable Pavements

Due to the relatively low permeability of the underlying soils at the site, the use of permeable pavement is not feasible at the project site.

III.C. Dispersal of Runoff to Pervious Areas

The project site will be entirely piped and runoff will drain towards the street and conveyed to the bioretention area.

III.D. Bioretention or other Integrated Management Practices

The runoff from the landscaped areas, concrete walks, roofs, and roadway will be directed towards an on-site bioretention area located on the northern side of the site. A low flow pump is required to direct the runoff into the bioretention area. The stormwater control design has been fully coordinated with the site plan, grading plan, and landscape plan.

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

Table 2. Drainage Management Areas

<i>DMA Name</i>	<i>Area (SF)</i>	<i>Surface Type/Description</i>	<i>DMA Type/Drains to</i>
DMA 1	279,039	Concrete or Asphalt, Roof, Landscape	Drains to IMP 1

IV.A.2. Drainage Management Area Descriptions

DMA 1, totaling 279,039 square feet, drains the concrete/asphalt, roof, and landscape areas of the site to the bioretention area located on the northern side of the site.

IV.B. Integrated Management Practice Descriptions

The Slatten Ranch project consists of 1 integrated management practice (IMP) that provides treatment for the DMA 1 on-site stormwater runoff. IMP 1 is located on the northern side of the site and detains runoff from multiple surface types that include concrete or asphalt, roof, and landscaping. There are storm drain detention pipes located below the bioretention area to meet the hydromodification requirements for the site. See Figure 3.

The project utilizes the low impact development design guide in the Stormwater C.3 Guidebook to meet both treatment and flow-control requirements and comply with the Municipal Regional Stormwater Permit (MRP) and the Contra Costa Clean Water Program. For detailed locations of the DMA and IMP areas, please refer to Attachment 2. Refer to Attachment 1 for the IMP sizing calculations. Other IMP options are not sustainable for this project.

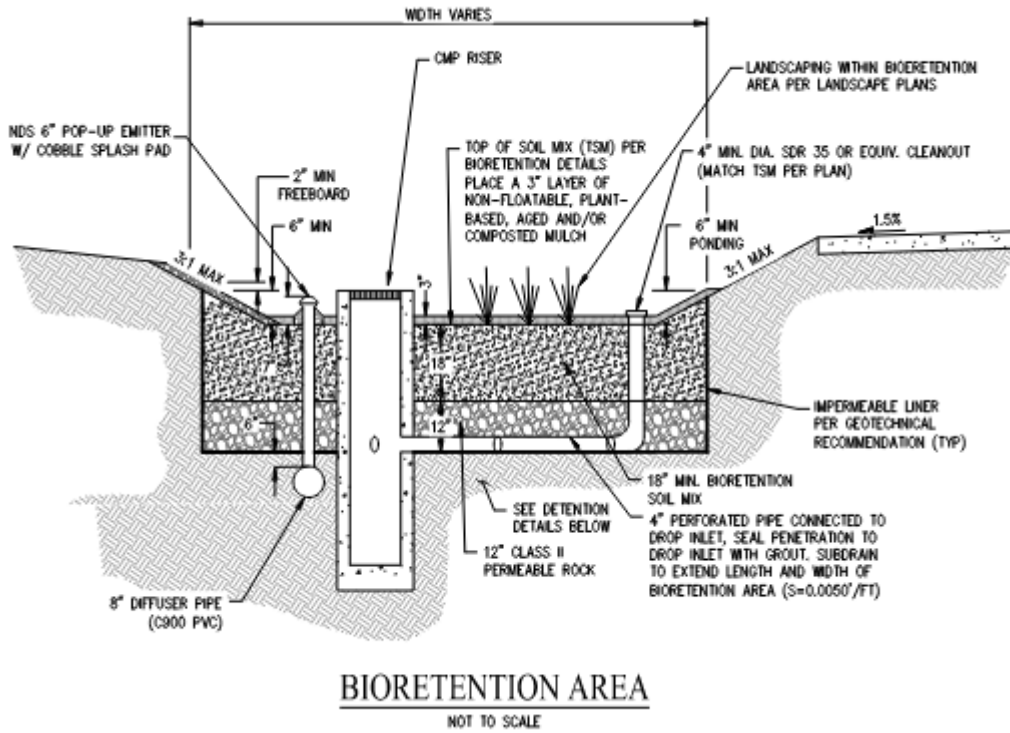


Figure 1: Bioretention Cross-Section for IMP 1 (Schematic)

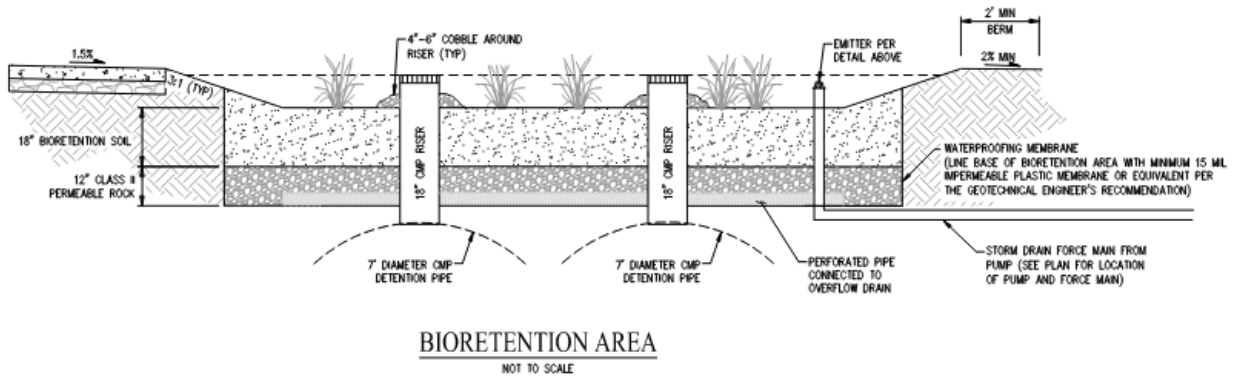


Figure 2: Detention Below IMP 1 Bioretention Area Cross-Section (Schematic)

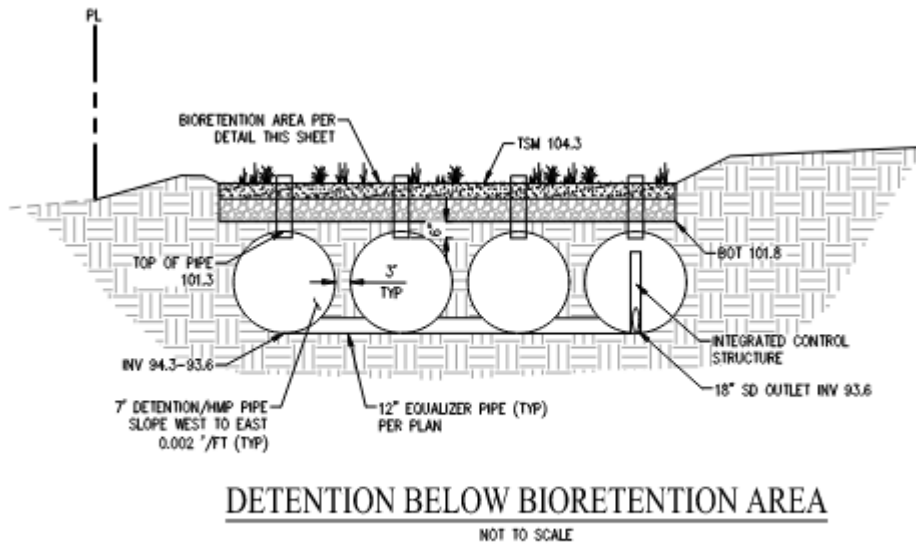


Figure 3: Detention Below IMP 1 Bioretention Area Cross-Section Detail (Schematic)

IV.C. II.C. Tabulation and Sizing Calculations

See Attachment 1, IMP Sizing Calculator Output.

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

Potential sources of stormwater pollutants for the Project include:

- The dumping of pollutants into the storm drain system
- Pesticides for indoor pest control
- Pesticides, herbicides, and fertilizer for landscape maintenance
- Nutrients from the waste of household pets
- Grease, Oil, and heavy metals due to vehicles

V.B. Source Control Table

Table 3. Source Controls

<i>Potential source of runoff pollutants</i>	<i>Permanent source control BMPs</i>	<i>Operational source control BMPs</i>
On-site dumping into storm drain system	All storm drain inlets will be marked with the words “No Dumping in the Drains!”	Residents will be provided with pollution prevention information. These markings will be repainted/replaced when needed. Storm drain inlets and pipes that connect to IMPs will be maintained per the Projects Operations and Maintenance Plan.
Indoor Pest Control		Residents will be provided with Integrated Pest Management information.
Landscape	The landscape will minimize the use of fertilizers, herbicides, and pesticides. It will decrease runoff and promote infiltration. The landscape will use plants that are suitable for the site’s soil and weather conditions, as well as, choosing pest-resistant plants along hardscape where possible.	
Roofing, Gutters & Trim	The buildings roofing, gutters, and trimmings will not use copper or other unprotected metals to prevent leach into the stormwater.	
Fire Sprinkler Test	A means to drain water from a fire sprinkler test will be provided to the sanitary sewer system.	

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

When constructing the drainage inlets, the contractor will attach the “no dumping” inlet marker to each inlet. The design of the low flow pump vault will include a sediment sump which will be implemented during construction for a source control BMP.

VI. STORMWATER FACILITY MAINTENANCE

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

All stormwater management facilities in this stormwater control plan will be the responsibility of the owners (Meadow Creek Group, Inc.) to manage and maintain. Upon completion, the management of stormwater facilities will transfer to the future homeowners’ association (HOA). It will be the duty of Meadow Creek Group, Inc. to provide a comprehensive Stormwater Control Operations and Maintenance Plan (O&M Plan) to the HOA.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

As stated, the O&M Plan will provide a full listing of operations and maintenance requirements. This will include monitoring and maintenance associated with the IMPs and the low flow stormwater pump. For proper maintenance of the stormwater management facilities, the management will have regular inspections of physical features including inlet, outlet, and pump structures. They will monitor water drawdown rates, verifying proper infiltration through the bioretention’s soil. When necessary, the bioretention mulch will need to be leveled or replaced, the medium will need to be reconditioned or replaced and the underdrains will need clearing of debris. A regular inspection of the vegetation may necessitate pruning, replanting, or control over undesired invasive species.

VII. CONSTRUCTION PLAN C.3 CHECKLIST

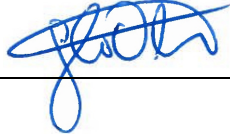
The construction plan checklist will be completed when approved project improvement plans are available.

Table 4. Construction Plan C.3 Checklist

<i>Stormwater Control Plan Page #</i>	<i>BMP Description</i>	<i>See Plan Sheet #s</i>
17 & 18	IMP 1 Bioretention	8 & 9

VIII. CERTIFICATIONS

The selection, sizing, and preliminary design of stormwater treatment and other control measures within this plan meet the requirements of Regional Water Quality Control Board Order R2-2015-0049.



By _____

Angelo Obertello

Print Name

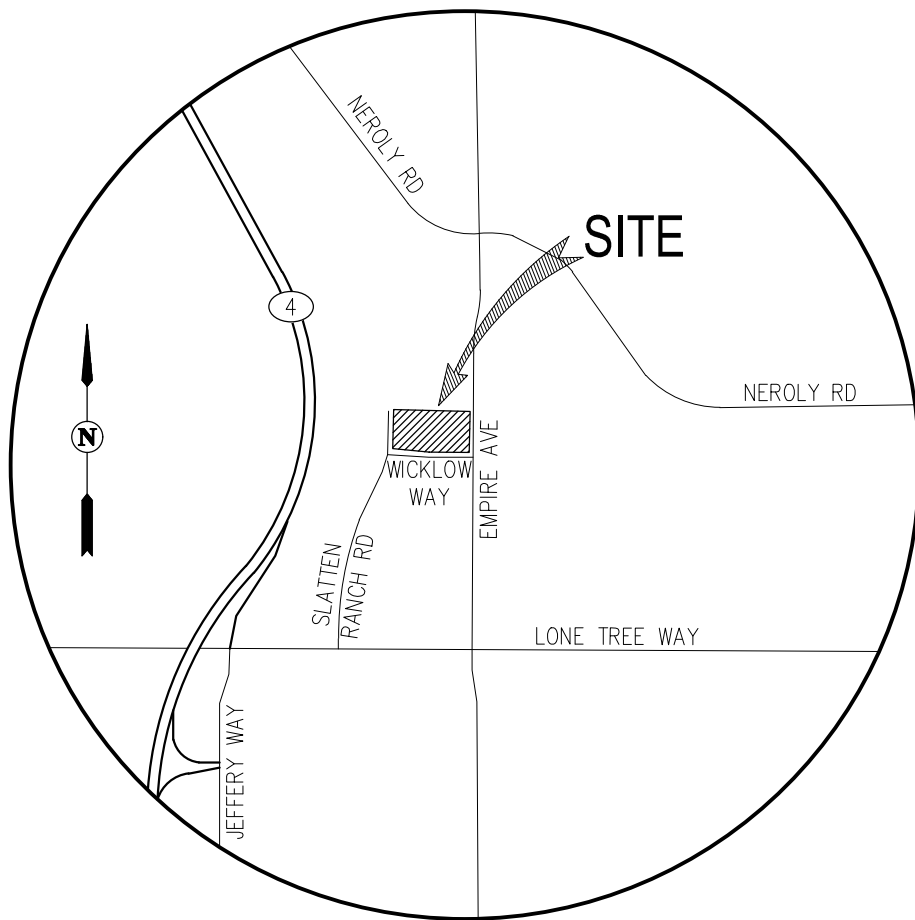


EXHIBIT 1

VICINITY MAP

CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA

DATE: JANUARY 11, 2024 NOT TO SCALE



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LEGEND

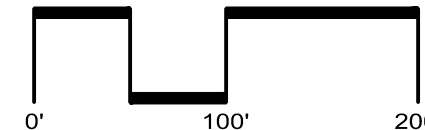
-  PROJECT BOUNDARY
-  EX 18" SD
- EXISTING STORM DRAIN PIPE

EXISTING SURFACE COVER	
DESCRIPTION	AREA (SF) ±
LANDSCAPE	279,039
IMPERVIOUS ASPHALT/CONCRETE	0
TOTAL	279,039

EXHIBIT 2
EXISTING CONDITIONS

CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA

SCALE: 1"=100' DATE: JANUARY 11, 2024



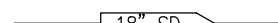

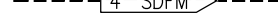


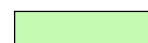





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LEGEND

-  PROJECT BOUNDARY
-  DMA BOUNDARY
-  18" SD PROPOSED STORM DRAIN PIPE
-  4" SDFM PROPOSED STORM DRAIN FORCE MAIN
-  EX 18" SD EXISTING STORM DRAIN PIPE
-  LOW-FLOW STORMWATER PUMP MANHOLE
-  PROPOSED DETENTION PIPES
-  LANDSCAPE
-  ROOF
-  IMPERVIOUS ASPHALT OR CONCRETE
-  BIORETENTION AREA

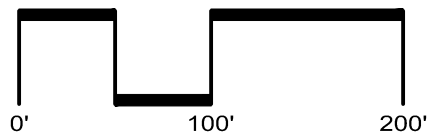
TREATED SURFACE COVER	
DESCRIPTION	AREA (SF) ±
LANDSCAPE	55,666
IMPERVIOUS ROOF	96,425
IMPERVIOUS ASPHALT/CONCRETE	117,276
BIORETENTION AREA	9,672
TOTAL	279,039

EXHIBIT 3

PROPOSED CONDITIONS

CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA

SCALE: 1"=100' DATE: JANUARY 11, 2024



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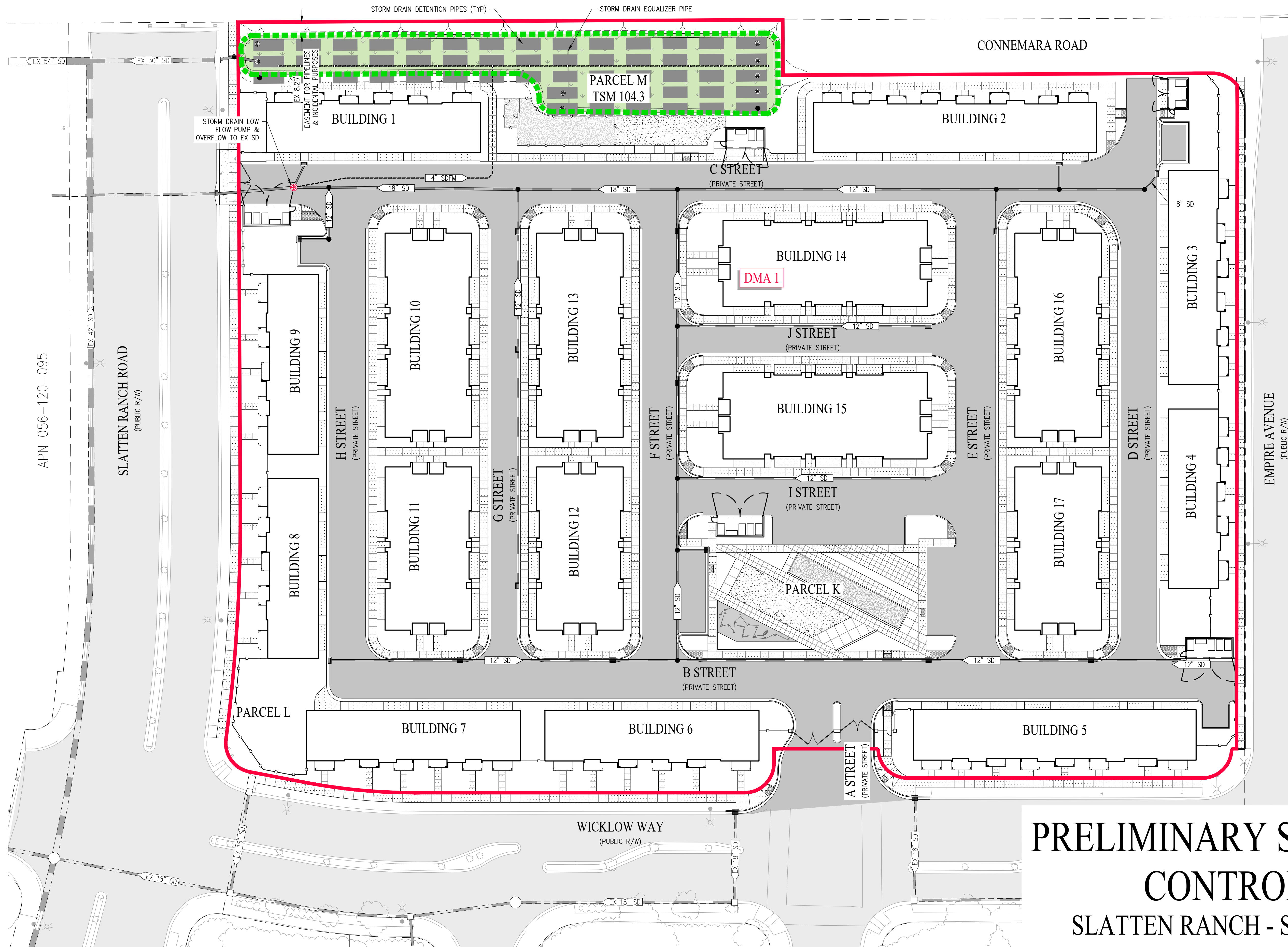
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Project Name: Slatten Ranch
Project Type: Treatment and Flow Control
APN: 056-120-098
Drainage Area: 279,039
Mean Annual Precipitation: 12.5

IV. Areas Draining to IMPs

IMP Name: IMP1
IMP Type: Bioretention + Vault
Soil Group: IMP1

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
					IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA 1A	96,425	Conventional Roof	1.00	96,425				
DMA 1B	117,276	Concrete or Asphalt	1.00	117,276				
DMA 1C	55,666	Landscape	0.50	27,833				
Total				241,534				
				Area Volume	0.040	1.000	9,661	9,672
					0.152	1.282	47,079	47,451
							Maximum Underdrain Flow (cfs)	0.19
							Orifice Diameter (in)	2.01



LEGEND

- DMA BOUNDARY
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN FORCE MAIN
- EXISTING STORM DRAIN
- PROPOSED BIORETENTION
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- LOW-FLOW STORMWATER PUMP MANHOLE

PRELIMINARY STORMWATER CONTROL PLAN

SLATTEN RANCH - SUBDIVISION 9645

CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA
 SCALE: 1" = 30' DATE: JANUARY 11, 2024

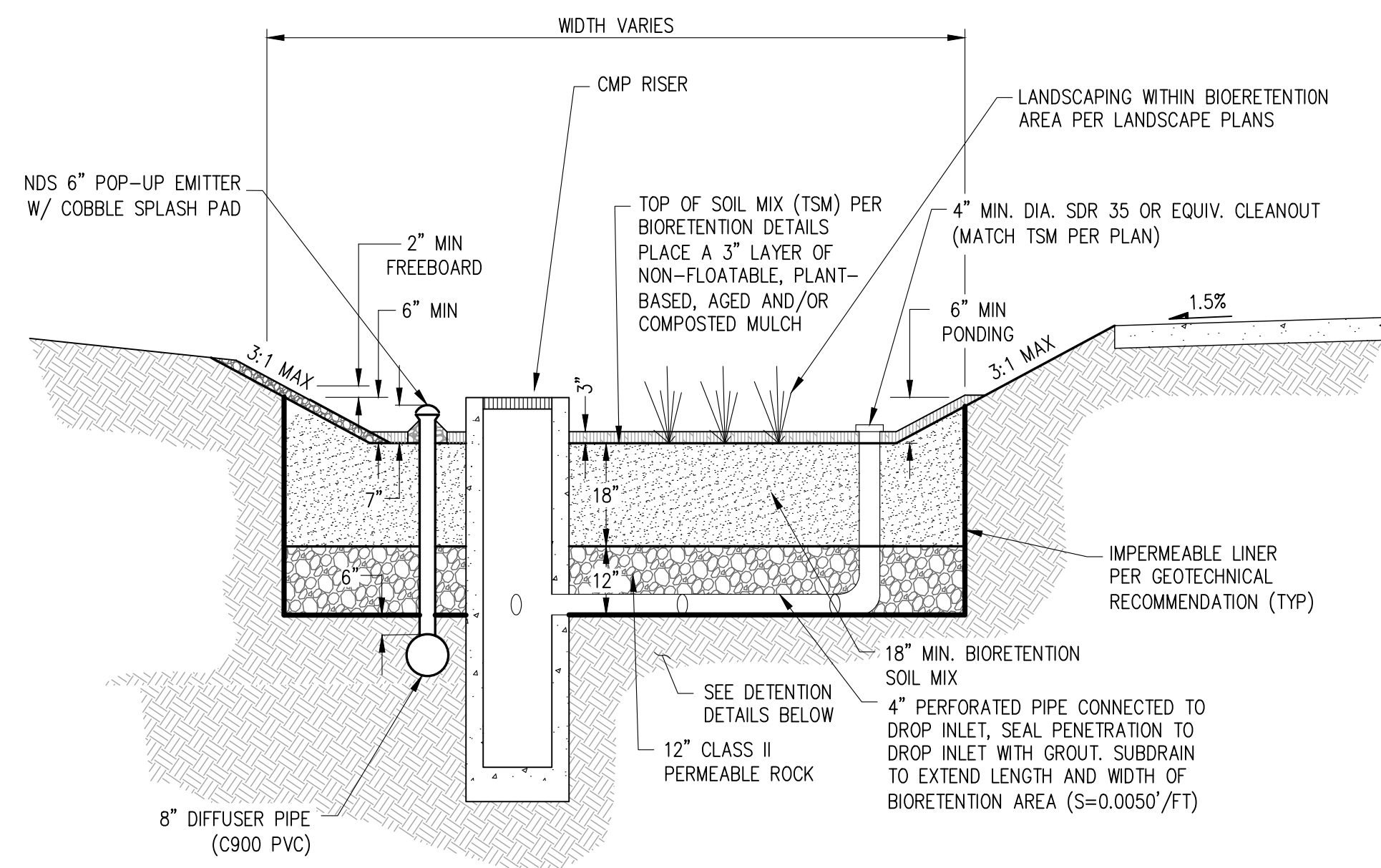
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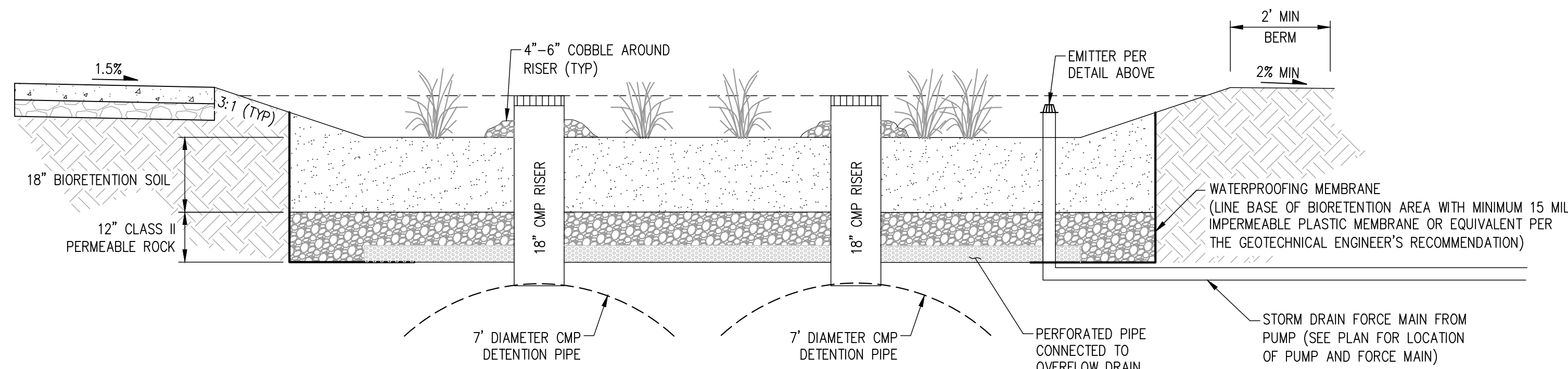
SHEET NO.
8
 OF 13 SHEETS

JOB NO.: 3476-000

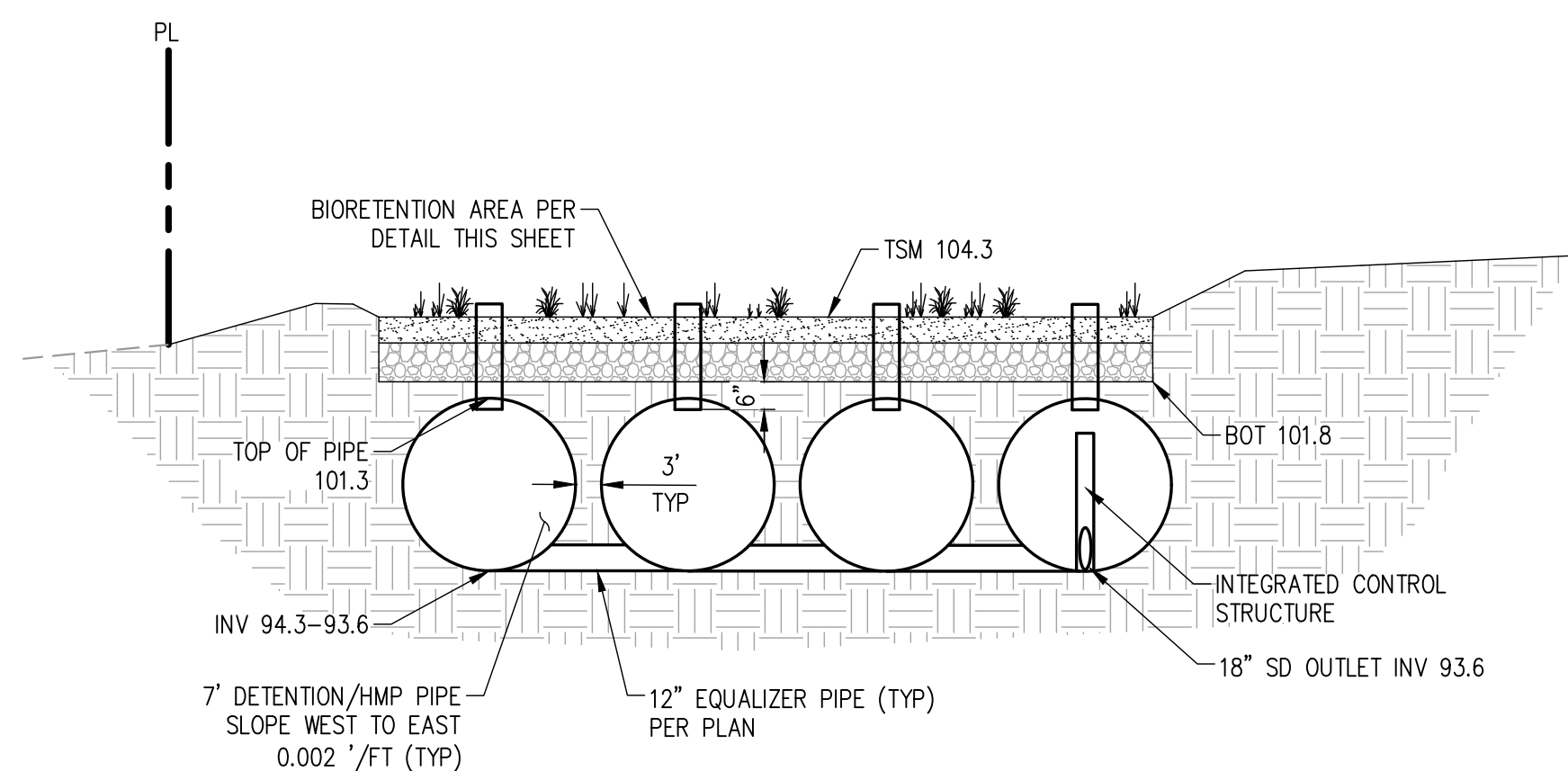
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BIORETENTION AREA
NOT TO SCALE



BIORETENTION AREA
NOT TO SCALE



DETENTION BELOW BIORETENTION AREA
NOT TO SCALE

Project Name: Slatten Ranch
Project Type: Treatment and Flow Control
APN: 056-120-098
Drainage Area: 279,039
Mean Annual Precipitation: 12.5

IV. Areas Draining to IMPs

IMP Name: IMP1
IMP Type: Bioretention + Vault
Soil Group: IMP1

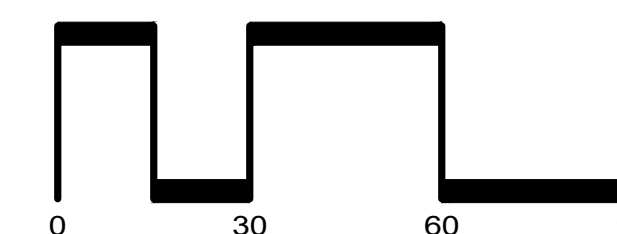
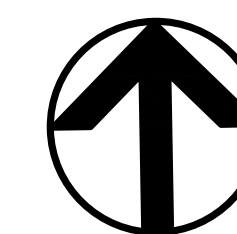
DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume	
DMA 1A	96,425	Conventional Roof	1.00	96,425	0.040	1.000	9,660	9,672	
DMA 1B	117,276	Concrete or Asphalt	1.00	117,276					
DMA 1C	55,666	Landscape	0.50	27,801					
Total				241,502	Area Volume	0.152	47,072	47,451	
								Maximum Underdrain Flow (cfs)	0.19
								Orifice Diameter (in)	2.01

IMP CALCULATOR OUTPUT

STORMWATER DETAILS
SLATTEN RANCH - SUBDIVISION 9645

CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA

SCALE: 1" = 30' DATE: JANUARY 11, 2024



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9
OF 13 SHEETS

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