

Appendix E
Hydrology Memorandum and Low Impact
Development Plan

MEMORANDUM

To: City of Gardena
From: Thomas Kim, P.E.
Kimley-Horn and Associates, Inc.
Date: March 10, 2022
Subject: U-Haul Gardena – Hydrology Memorandum

To whom this may concern:

This memorandum serves as a drainage summary for the U-Haul Gardena Site Improvements project located at 14206 Van Ness Avenue, Gardena, California 90249. The project is located at the existing U-Haul self-storage facility that is owned by Arec 11 LLC and U-Haul Real Estate Co. The site is currently being utilized as an existing U-Haul self-storage facility and parking lot. There are three existing buildings on-site (1 vacant, 2 self-storage/office facilities). As part of the proposed improvements, all 3 existing buildings will be demolished and replaced with 2 proposed buildings (1 self-storage facility, 1 showroom/office facility). Existing and proposed land use is commercial. The proposed disturbed areas and drainage areas are shown in Attachment 1a of the Project's Stormwater Quality Management Plan (SWQMP).

A PDP LID report for this project has been prepared to address stormwater quality. Stormwater from the proposed disturbed areas is expected to be collected in localized catch basins that will connect to the Modular Wetlands System BMPs. Overall, post-development drainage patterns will remain the same as existing drainage patterns. The percent of impervious cover for the proposed site will decrease from the existing condition. Based on these conditions, peak flows for the project will not increase.

Sincerely,

Thomas Kim, P.E.

KIMLEY-HORN AND ASSOCIATES, INC.



Peak Flow Hydrologic Analysis

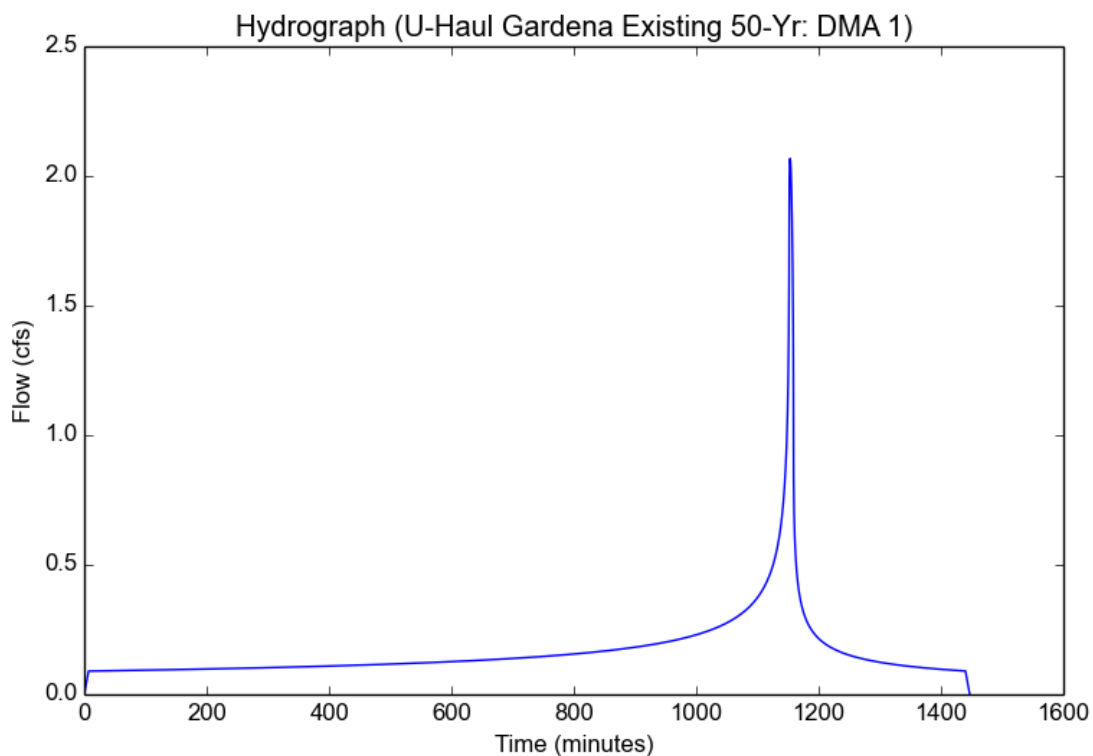
File location: C:/Users/thomas.kim/Desktop/U-Haul Gardena Existing 50-Yr - DMA 1.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	U-Haul Gardena Existing 50-Yr
Subarea ID	DMA 1
Area (ac)	0.82
Flow Path Length (ft)	362.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	5.5
Percent Impervious	1.0
Soil Type	9
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.5
Peak Intensity (in/hr)	2.8015
Undeveloped Runoff Coefficient (Cu)	0.8632
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	2.0675
Burned Peak Flow Rate (cfs)	2.0675
24-Hr Clear Runoff Volume (ac-ft)	0.3355
24-Hr Clear Runoff Volume (cu-ft)	14612.409



Peak Flow Hydrologic Analysis

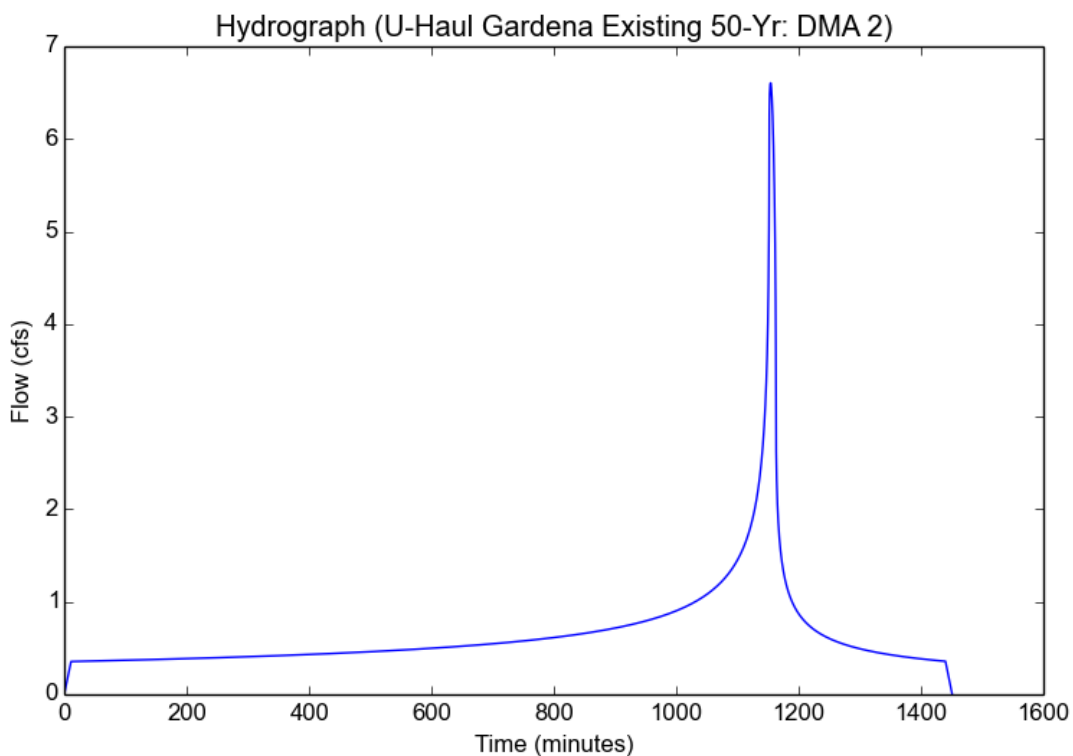
File location: C:/Users/thomas.kim/Desktop/U-Haul Gardena Existing 50-Yr - DMA 2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	U-Haul Gardena Existing 50-Yr
Subarea ID	DMA 2
Area (ac)	3.24
Flow Path Length (ft)	866.0
Flow Path Slope (vft/hft)	0.006
50-yr Rainfall Depth (in)	5.5
Percent Impervious	1.0
Soil Type	9
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.5
Peak Intensity (in/hr)	2.2653
Undeveloped Runoff Coefficient (Cu)	0.805
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	6.6056
Burned Peak Flow Rate (cfs)	6.6056
24-Hr Clear Runoff Volume (ac-ft)	1.3255
24-Hr Clear Runoff Volume (cu-ft)	57736.888



Peak Flow Hydrologic Analysis

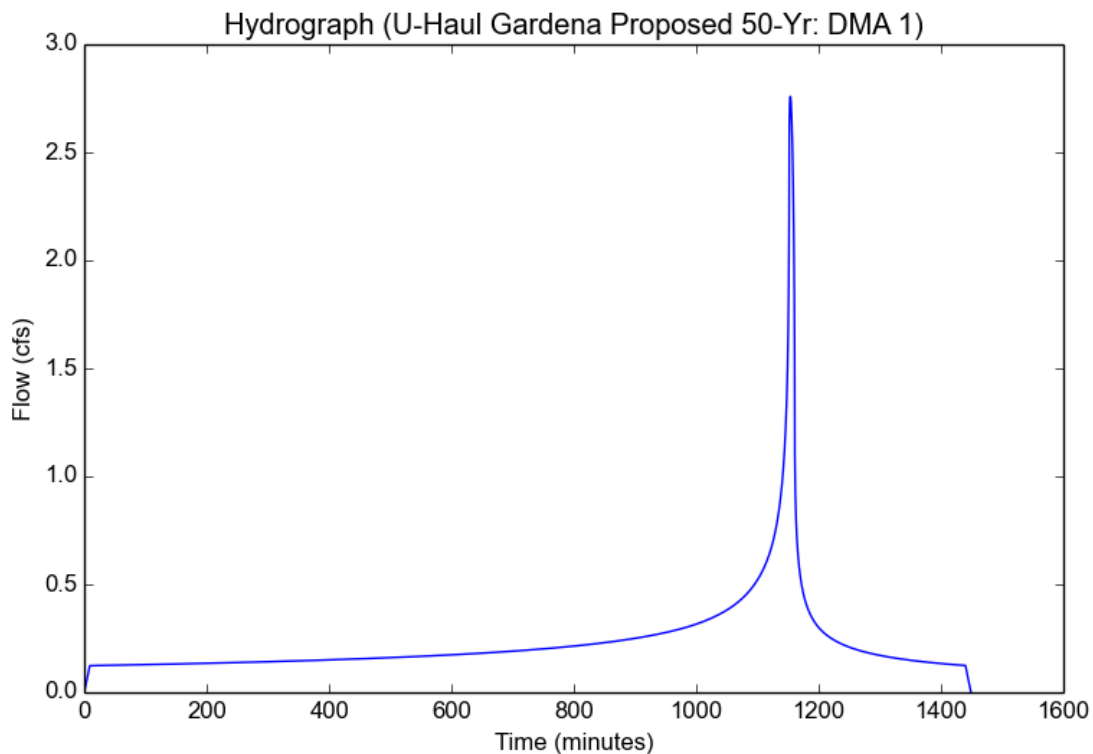
File location: C:/Users/thomas.kim/Desktop/U-Haul Gardena Proposed 50-Yr - DMA 1.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	U-Haul Gardena Proposed 50-Yr
Subarea ID	DMA 1
Area (ac)	1.24
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.9
Soil Type	9
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.5
Peak Intensity (in/hr)	2.4894
Undeveloped Runoff Coefficient (Cu)	0.8369
Developed Runoff Coefficient (Cd)	0.8937
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	2.7587
Burned Peak Flow Rate (cfs)	2.7587
24-Hr Clear Runoff Volume (ac-ft)	0.4679
24-Hr Clear Runoff Volume (cu-ft)	20379.5644



Peak Flow Hydrologic Analysis

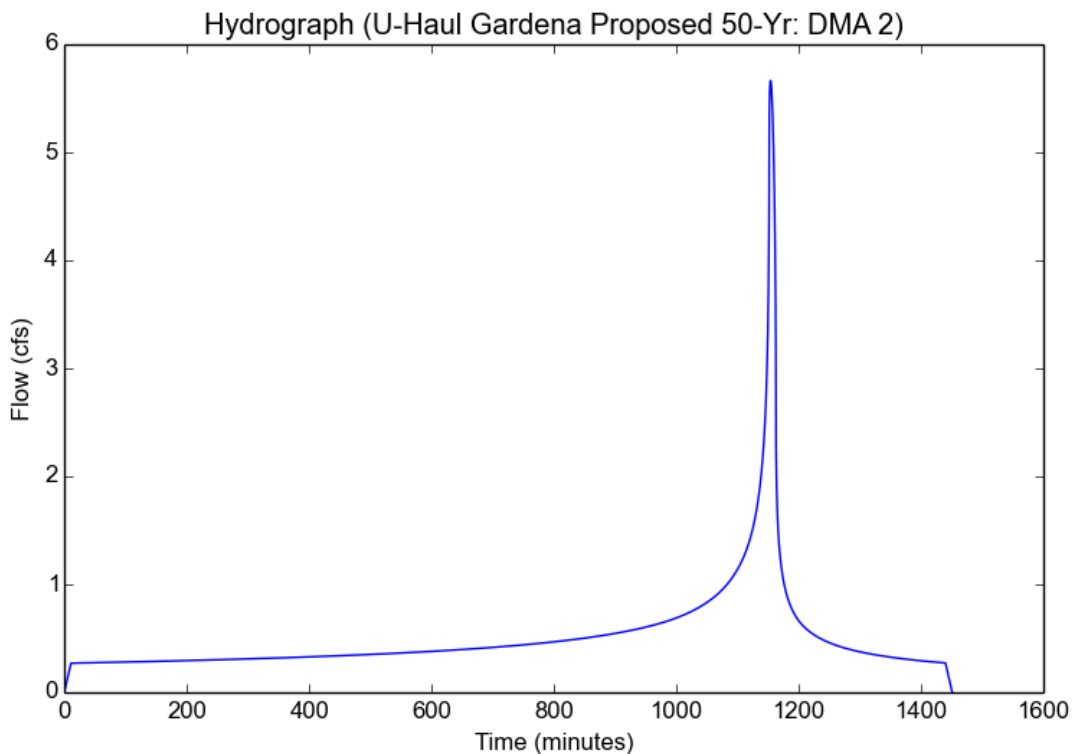
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Version: HydroCalc 1.0.3

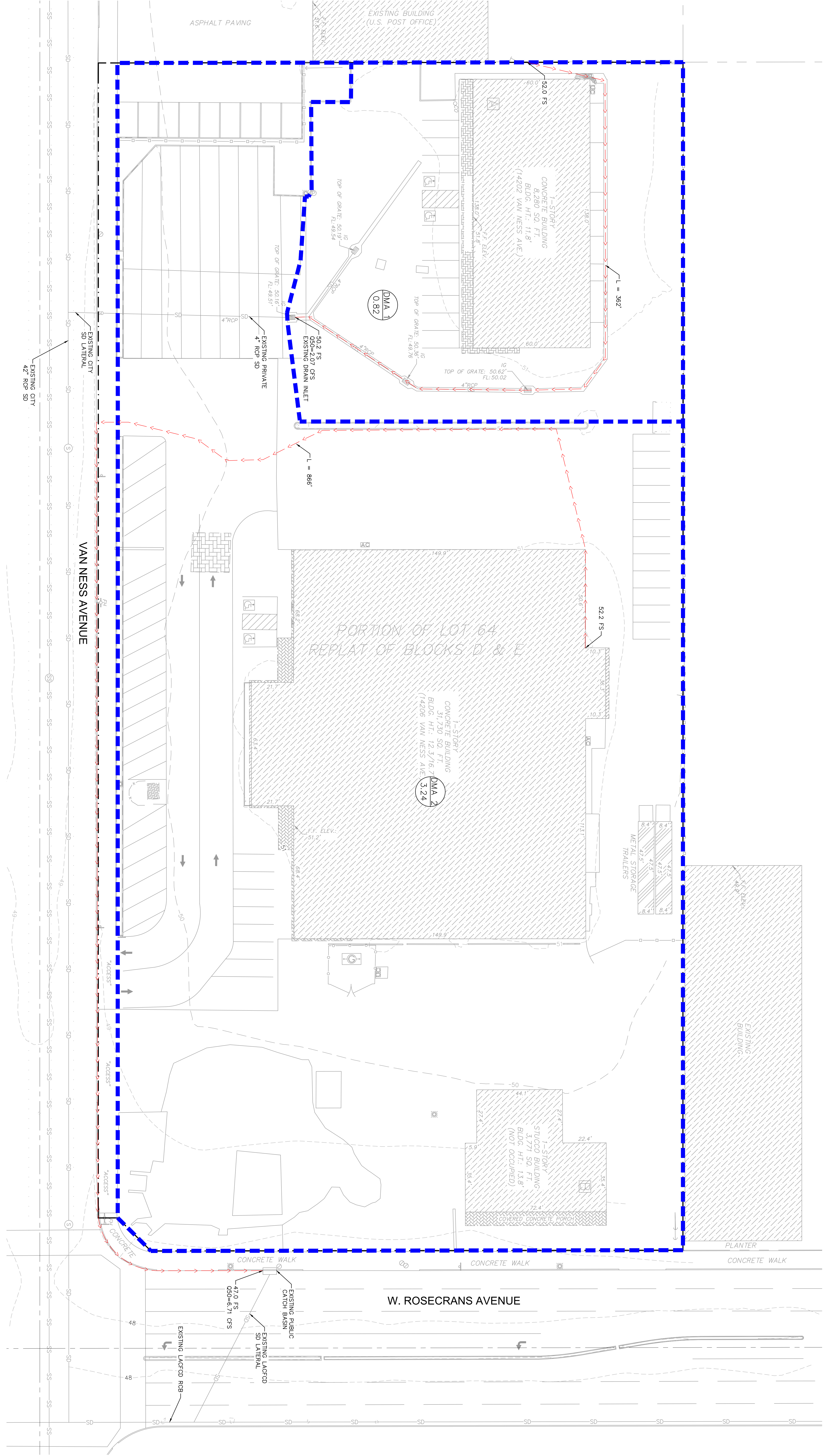
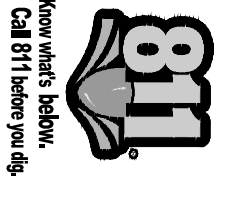
Input Parameters

Project Name	U-Haul Gardena Proposed 50-Yr
Subarea ID	DMA 2
Area (ac)	2.82
Flow Path Length (ft)	739.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.86
Soil Type	9
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

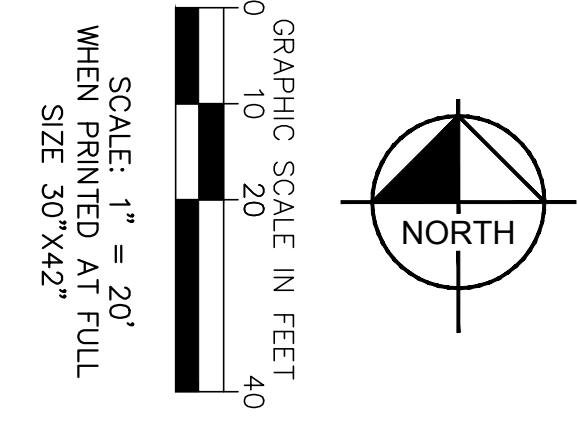
Modeled (50-yr) Rainfall Depth (in)	5.5
Peak Intensity (in/hr)	2.2653
Undeveloped Runoff Coefficient (Cu)	0.805
Developed Runoff Coefficient (Cd)	0.8867
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	5.6644
Burned Peak Flow Rate (cfs)	5.6644
24-Hr Clear Runoff Volume (ac-ft)	1.028
24-Hr Clear Runoff Volume (cu-ft)	44779.5717





LEGEND

- | | | | |
|--|-------------------------|--|-------------------------|
| | PROPERTY LINE | | HIGH POINT |
| | STREET CENTERLINE | | TOP OF CURB |
| | DMA LIMIT | | FINISHED SURFACE |
| | PROPOSED CONTOURS | | FLOWLINE |
| | EXISTING CONTOURS | | EXISTING GRADE |
| | PROPOSED RIDGE | | PROPOSED GRADE |
| | FLOW PATH | | PROPOSED SLOPE |
| | PROPOSED STORM DRAIN | | PROPOSED LANDSCAPE AREA |
| | EXISTING STORM DRAIN | | PROPOSED ASPHALT |
| | EXISTING SANITARY SEWER | | |
| | FLOW LINE | | |
| | DMA NAME | | |
| | DMA AREA (IN ACRES) | | |



14206 VAN NESS AVENUE
 PREPARED FOR
 U-HAUL
 CITY OF GARDENA CA

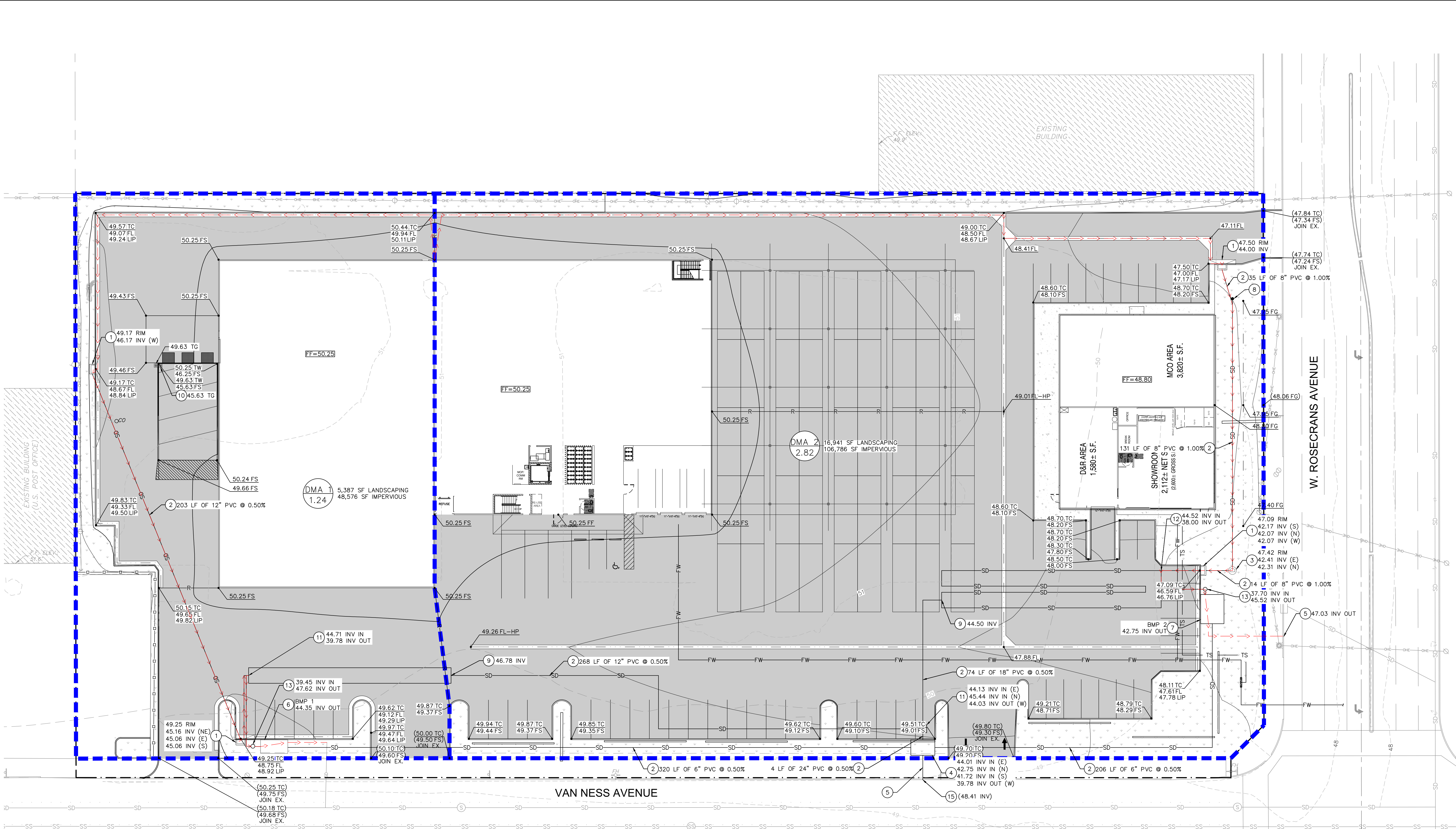
**EXISTING HYDROLOGY
 EXHIBIT**

KHA PROJECT
 194333003
 DATE
 8/20/2021
 SCALE AS SHOWN
 DESIGNED BY AZ
 DRAWN BY TK
 CHECKED BY JG

Kimley-Horn
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No.	REVISIONS	DATE	BY

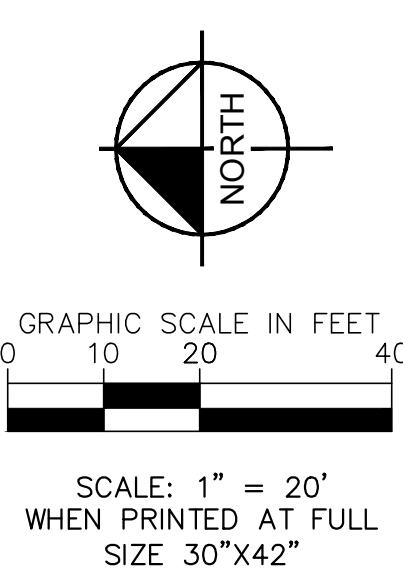
Plotted By: Kim, Thomas Sheet: Layout Sheet, March 10, 2022, 03:34:43pm K:\ORA_DEV\U-Haul\XXXXXXX - Gardena\CADD\Exhibits\BMP Exhibit.dwg
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LEGEND

	PROPERTY LINE		HIGH POINT
	STREET CENTERLINE		TOP OF CURB
	DMA LIMIT		FINISHED SURFACE
	PROPOSED CONTOURS		FLOWLINE
	EXISTING CONTOURS		EXISTING GRADE
	PROPOSED RIDGE		PROPOSED GRADE
	FLOW PATH		PROPOSED SLOPE
	PROPOSED STORM DRAIN		PROPOSED LANDSCAPE AREA
	EXISTING STORM DRAIN		PROPOSED ASPHALT
	EXISTING SANITARY SEWER		
	FLOW LINE		
	DMA NAME		
	DMA AREA (IN ACRES)		

- DRAINAGE NOTES**
- INSTALL CURB OPENING CATCH BASIN.
 - INSTALL HDPE STORM DRAIN LINE. SIZE PER PLAN.
 - INSTALL 48" STORM DRAIN MANHOLE.
 - PROPOSED SUMP PUMP STATION.
 - INSTALL PARKWAY OVERFLOW DRAIN.
 - PROPOSED BIOCLEAN WETLAND MOD (WETLANDMOD-6-13-5'-0"-V).
 - PROPOSED BIOCLEAN WETLAND MOD (WETLANDMOD-11-14-5'-0"-V).
 - PROPOSED STORM DRAIN CLEANOUT.
 - PROPOSED OVERFLOW OUTLET.
 - PROPOSED SUMP PUMP TO OUTLET TRUCK DOCK RUNOFF INTO BUBBLE UP BOX AND SPILL ONTO GRADE.
 - PROPOSED CMP STORMWATER DETENTION TANK (96" DIA. X 104' LONG).
 - PROPOSED CMP STORMWATER DETENTION TANK (96" DIA. X 113' LONG, 2 TYP.).
 - PROPOSED WETLAND MOD FEED PUMP STATION.
 - PROPOSED CISTERN OVERFLOW WEIR STRUCTURE.
 - PROPOSED PARKWAY OUTFALL INTO EXISTING PUBLIC CURB AND GUTTER.



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PROFESSIONAL SEAL
 CIVIL
 STATE OF CALIFORNIA
 No. 50376

PROJECT INFORMATION

KHA PROJECT	194333003
DATE	8/20/2021
SCALE AS SHOWN	AZ
DESIGNED BY	TK
DRAWN BY	JK
CHECKED BY	JG

14206 VAN NESS AVENUE
 PREPARED FOR
U-HAUL
 CITY OF GARDENA

BMP EXHIBIT

REVISIONS

No.	DATE	BY

SHEET NUMBER
1

Low Impact Development Plan (LID Plan)

Project Name:

**U-Haul Gardena
14206 Van Ness Avenue
Gardena, CA 90249**

Prepared for:

**Amerco Real Estate Company
2727 N. Central Avenue
Phoenix, AZ 85004
(602) 263-6502**

Prepared by:

**Kimley-Horn & Associates, Inc.
1100 W. Town and Country, Suite 700
Orange, CA 92868
(714) 786-6297**

Date Prepared: August 25, 2021

Date Revised: March 10, 2022

Project Owner's Certification

I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathered the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner's Name:	Douglas Brumfield		
Owner's Title:	Marketing Company President		
Company:	Amerco Real Estate Company		
Address:	2727 N. Central Avenue, Phoenix, AZ 85004		
Email:	douglas_brumfield@uhaul.com		
Telephone No:	(424) 329-5295		
Signature:		Date:	

Preparer (Engineer) Certification


Engineer's Name:	Thomas Kim		
Engineer's Title:	Civil Engineer		
Company:	Kimley-Horn & Associates, Inc.		
Address:	1100 W. Town and Country Road, Suite 700		
Email:	thomas.kim@kimley-horn.com		
Telephone No:	(714) 786-6297		
<p>I hereby certify that this Low Impact Development Plan is in compliance with, and meets the requirements set forth in, Order No. R4-2012-0175, of the Los Angeles Regional Water Quality Control Board.</p>			
Engineer's Signature		Date	4/21/2022
Place Stamp Here			

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Attachments

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1. PROJECT DESCRIPTION

1.1. PROJECT CATEGORY

Category	YES	NO
1. Development ^a of a new project equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious area ^b	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Development ^a of a new industrial park with 10,000 square feet or more of surface area ^c	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Development ^a of a new commercial mall with 10,000 square feet or more surface area ^c	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Development ^a of a new retail gasoline outlet with 5,000 square feet or more of surface area ^c	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Development ^a of a new restaurant (SIC 5812) with 5,000 square feet or more of surface area ^c	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Development ^a of a new parking lot with either 5,000 ft ² or more of impervious area ^b or with 25 or more parking spaces	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Development ^a of a new automotive service facility (SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) with 5,000 square feet or more of surface area ^c	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Projects located in or directly adjacent to, or discharging directly to a Significant Ecological Area (SEA), ^d where the development will: a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and b. Create 2,500 square feet or more of impervious area ^b	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Redevelopment ^e of 5,000 square feet or more in one of the categories listed above If yes, list redevelopment category here: Parking lot	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Redevelopment ^e of 10,000 square feet or more to a Single Family Home, without a change in landuse.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a Development includes any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in land disturbance.
- b Surfaces that do not allow stormwater runoff to percolate into the ground. Typical impervious surfaces include: concrete, asphalt, roofing materials, etc.
- c The surface area is the total footprint of an area. Not to include the cumulative area above or below the ground surface.
- d An area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and would be disturbed or degraded by human activities and developments. Also, an area designated by the City as approved by the Regional Water Quality Control Board.
- e Land-disturbing activities that result in the creation, addition, or replacement of a certain amount of impervious surface area on an already developed site. If the activity results in an alteration to more than 50% of the impervious surface area on the already developed site and the existing site was not subject to post-construction storm water quality control requirements, then the entire site must be mitigated.

1.2. PROJECT DESCRIPTION

Total Project Area (ft²): 176,935 SF

Total Project Area (Ac): 4.06 Acres

EXISTING CONDITIONS

Condition	Area (ft ²)	Percentage (%)
Pervious Area:	7,804	4.4%
Impervious Area:	169,131	95.6%

PROPOSED CONDITIONS

Condition	Area (ft ²)	Percentage (%)
Pervious Area:	22,328	12.6%
Impervious Area:	154,607	87.4%

SITE CHARACTERISTICS

<p>DRAINAGE PATTERNS/CONNECTIONS</p>	<p>Existing:</p> <p>Runoff within the northern portion of the existing site drains through several existing concrete valley gutters that flow into grate inlets that routes stormwater through an underground storm drain system that ultimately outfalls into a public storm drain main within Van Ness Avenue.</p> <p>Runoff within the southern portion of the existing site sheet flows into existing public curb and gutter systems along Van Ness Avenue and W. Rosecrans Avenue, where it will ultimately outfall via pump into a public storm drain system.</p> <hr/> <p>Proposed:</p> <p>Runoff within the northern portion of the site will sheet flow into 2 proposed catch basins, where the proposed underground stormwater system will carry the runoff into underground stormwater treatment, detention system, and sump pump and ultimately outfall through a proposed parkway drain into the public curb and gutter along Van Ness Avenue.</p> <p>Runoff within the southern portion of the site will sheet flow into proposed concrete valley gutters, where they will carry runoff into proposed catch basins, where the proposed underground stormwater system will carry the runoff into underground stormwater treatment, detention system, and sump pump and ultimately outfall through a</p>
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Low Impact Development Plan (LID Plan)
U-Haul Gardena

	proposed parkway drain into the public curb and gutter along Van Ness Avenue.
<p>NARRATIVE PROJECT DESCRIPTION:</p>	<p>The site is currently being utilized as an existing U-Haul self-storage facility and parking lot. There are three existing buildings on-site (1 vacant, 2 self-storage/office facilities). As part of the proposed improvements, all 3 existing buildings will be demolished and replaced with 2 proposed buildings (1 self-storage facility, 1 showroom/office facility). Existing and proposed land use is commercial. There are no existing flood or storm drain capacity issues that will be exacerbated by the proposed project.</p> <p>APPENDIX G – CEQA GUIDELINES STATEMENTS</p> <p>Project does not violate any water quality standards or waste discharge requirements, or substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume of groundwater table level. Existing drainage patterns are not significantly altered as part of the proposed improvements such that substantial erosion or runoff increases/changes would result as part of such improvements. No polluted runoff or excess runoff will be generated as part of this project. Water quality will not be substantially degraded. No housing is proposed as part of this project, and project does not fall within a 100-year flood hazard area. There is no significant risk of inundation by seiche, tsunami, mudflow, or risk of loss, injury, or death from failure of levee or dam.</p> <p>LA County Q Allowable</p> <p>As project does not tie into any LA County owned stormwater utilities, it is assumed that project is not subject to LA County’s Qallowable processes. Q-Allowable requirements will be confirmed as part of final engineering.</p>

<p>OFFSITE RUNON</p>	<p>N/A; no offsite run-on in both existing and proposed conditions.</p>
<p>UTILITY AND INFRASTRUCTURE INFORMATION</p>	<p>Existing underground stormwater system and overhead electrical lines present on-site. Proposed buildings will require roof drains, and electrical, sewer, water, and telecommunications connections. No stormwater infiltration BMPs proposed. Detention pipes and treatment BMPs will not conflict with existing or proposed utility structures.</p>
<p>SIGNIFICANT ECOLOGICAL AREAS (SEAs)</p>	<p>No known SEAs.</p>

1.3. HYDROMODIFICATION ANALYSIS

DOES THE PROPOSED PROJECT FALL INTO ONE OF THE FOLLOWING CATEGORIES? CHECK YES/NO.	YES	NO
1. <i>Project is a redevelopment that decreases the effective impervious area compared to the pre-project conditions.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Describe: Pervious ratio is increasing as a result of the proposed improvements.		
2. <i>Project is a redevelopment that increases the infiltration capacity of pervious areas compared to the pre-project conditions.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Describe: Project scope does not increase infiltration capacity of pervious areas.		
3. <i>Project discharges directly or via a storm drain to a sump, lake, area under tidal influence, into a waterway that has a 100-year peak flow (Q_{100}) of 25,000 cfs or more.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Describe: Project ultimately drains via engineered stormwater infrastructure within Van Ness Avenue and W. Rosecrans Avenue into the Dominguez Channel, where runoff ultimately outfalls into the Los Angeles Harbor.		
4. <i>Project discharges directly or via a storm drain into concrete or otherwise engineered (not natural) channels (e.g., channelized or armored with rip rap, shotcrete, etc.), which, in turn, discharge into receiving water that is not susceptible to hydromodification impacts.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Describe: Project ultimately drains via engineered stormwater infrastructure within Van Ness Avenue and W. Rosecrans Avenue into the Dominguez Channel.		

HYDROMODIFICATION ANALYSIS

Project is exempt from Hydromodification Control Measures.

1.4. PROPERTY OWNERSHIP/MANAGEMENT

APN 4061-028-051 (Owned by Arc 11 LLC)

APN 4061-028-033 (Owned by U-Haul Real Estate Co.)

APN 4061-028-023 (Owned by U-Haul Real Estate Co.)

Currently, U-Haul operates on project property through a lease agreement. No infrastructure transfers to public agencies are expected to be required.

2. BEST MANAGEMENT PRACTICES (BMPs)

2.1. SITE DESIGN

85 TH PERCENTILE, 24-HOUR STORM DEPTH	0.95 in.
SITE DESIGN	Given subsurface soil conditions, infiltration has been determined to be infeasible. Project landscaping will not utilize grey water. Irrigation system will stub directly from domestic water main. Project will treat 150% of the SWQDv on-site. Project landscaping will not utilize grey water. Irrigation system will stub directly from domestic water main. Project is hydromodification exempt. Given these details, a treatment BMP has been determined to be the most appropriate BMP solution.

BMP LIST

DMA DESIGNATION	SQUARE FOOTAGE (SF)	ACREAGE (Ac)	STORM WATER QUALITY DESIGN VOLUME (SWQDv, CF)	ADJUSTED DESIGN VOLUME (CF) (1.5xSWQDv)	STORM WATER QUALITY DESIGN FLOWRATE (SWQDQ, CFS)	BMP TYPE	BMP SIZE PROVIDED (CF)	GPS COORDINATES
DMA 1	53,963	1.24	3,478	5,217	0.26	Wetland Mod + Underground Storage	5,217	33°54'13"N 118°19'03"W
DMA 2	122,972	2.84	7,623	11,435	0.52	Wetland Mod + Underground Storage	11,500	33°54'08"N 118°19'03"W

2.2. BMP SELECTION

2.2.1. INFILTRATION BMPs

NAME	INCLUDED
Bioretention without underdrains	<input type="checkbox"/>
Infiltration Trench	<input type="checkbox"/>
Infiltration Basin	<input type="checkbox"/>
Drywell	<input type="checkbox"/>
Proprietary Subsurface Infiltration Gallery	<input type="checkbox"/>
Permeable Pavement (concrete, asphalt, pavers)	<input type="checkbox"/>
Other:	<input type="checkbox"/>
Other:	<input type="checkbox"/>

DESCRIPTION	N/A – Given subsurface soil conditions, infiltration has been determined to be infeasible. Geotechnical consultant encountered clayey soils in the upper 5 feet of their boring. Given the Geotech’s experience with similar soils, it would be reasonable to assume a design infiltration rate ranging between 0.0 to 0.3 inches per hour. This is well below what is feasible for design. Geotechnical report will be prepared and available for final engineering. Infiltration will be implemented to the maximum extent feasible. This will be determined as part of final design.
CALCULATIONS	N/A

2.2.2. RAINWATER HARVEST AND USE BMPs

NAME	INCLUDED
Above-ground cisterns and basins	<input type="checkbox"/>
Underground detention	<input type="checkbox"/>
Other:	<input type="checkbox"/>
Other:	<input type="checkbox"/>
Other:	<input type="checkbox"/>

DESCRIPTION	Project landscaping will not utilize grey water. Irrigation system will stub directly from domestic water main. Harvest and use will be implemented to the maximum extent feasible. This will be determined as part of final design.
CALCULATIONS	N/A

2.2.3. ALTERNATIVE COMPLIANCE BMPs

BIOFILTRATION BMPs

(If Infiltration BMPs and Rainwater Harvest and Use BMPs are Infeasible)

NAME	INCLUDED
Bioretention with underdrains (i.e. planter box, rain garden, etc.)	<input type="checkbox"/>
Constructed Wetland	<input type="checkbox"/>
Vegetated Swale	<input type="checkbox"/>
Vegetated Filter Strip	<input type="checkbox"/>
Tree-Well Filter	<input type="checkbox"/>
Other: Proprietary Biotreatment	<input checked="" type="checkbox"/>
Other:	<input type="checkbox"/>

DESCRIPTION	N/A; Project will treat 150% of the SWQDv on-site. WetlandMod systems were selected based on required treatment volumes per Hydrocalc calculations. As there is insufficient above-ground landscaping for an above-ground treatment BMP, an underground treatment system is required.
CALCULATIONS	N/A

Low Impact Development Plan (LID Plan)
U-Haul Gardena

OFFSITE BMPs

(If Infiltration BMPs, Rainwater Harvest and Use BMPs, and Biofiltration BMPs are Infeasible)

NAME	INCLUDED
Offsite Infiltration	<input type="checkbox"/>
Ground Water Replenishment Projects	<input type="checkbox"/>
Offsite Project - Retrofit Existing Development	<input type="checkbox"/>
Regional Storm Water Mitigation Program	<input type="checkbox"/>
Other:	<input type="checkbox"/>
Other:	<input type="checkbox"/>

DESCRIPTION	N/A; No feasible offsite location available to provide BMP that would sufficiently treat the SWQDv.
CALCULATIONS	N/A

2.2.4. TREATMENT CONTROL BMPs

NAME	INCLUDED
Media Filter	<input type="checkbox"/>
Filter Insert	<input type="checkbox"/>
CDS Unit	<input type="checkbox"/>
Other:	<input type="checkbox"/>
Other:	<input type="checkbox"/>

DESCRIPTION	

2.2.5. HYDROMODIFICATION CONTROL BMPs

NAME	INCLUDED
Infiltration System	<input type="checkbox"/>
Above-ground Cistern	<input type="checkbox"/>
Above-ground Basin	<input type="checkbox"/>
Underground Detention	<input type="checkbox"/>
Other:	<input type="checkbox"/>
Other:	<input type="checkbox"/>

DESCRIPTION	N/A – Project is hydromodification exempt.
CALCULATIONS	N/A

2.2.6. NON-STRUCTURAL SOURCE CONTROL BMPs

NAME	CHECK ONE	
	Included	Not Applicable
Education for Property Owners, Tenants and Occupants	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Activity Restrictions	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Common Area Landscape Management	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Common Area Litter Control	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Housekeeping of Loading Docks	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Common Area Catch Basin Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Street Sweeping Private Streets and Parking Lots	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2.2.7. STRUCTURAL SOURCE CONTROL BMPs

NAME	CHECK ONE	
	Included	Not Applicable
Provide storm drain system stenciling and signage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Design and construct outdoor material storage areas to reduce pollution introduction	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Design and construct trash and waste storage areas to reduce pollution introduction	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Protect slopes and channels and provide energy dissipation	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Loading docks	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Maintenance bays	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vehicle wash areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Outdoor processing areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Equipment wash areas/racks	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Fueling areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hillside landscaping	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Attachment A

Calculations

Peak Flow Hydrologic Analysis

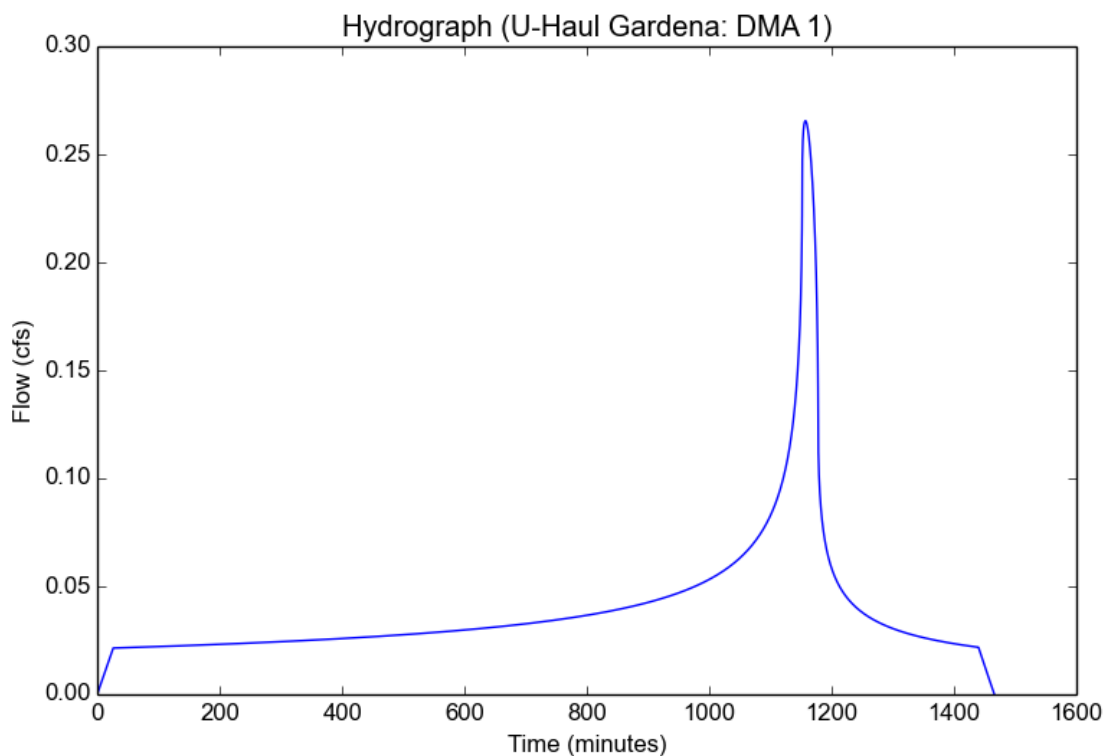
File location: K:/ORA_LDEV/U-Haul/XXXXXXXX - Gardena/Reports/LID/Calculations/Hydrocalc/U-Haul Gardena - DMA 1.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	U-Haul Gardena
Subarea ID	DMA 1
Area (ac)	1.24
Flow Path Length (ft)	492.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.95
Percent Impervious	0.9
Soil Type	9
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.95
Peak Intensity (in/hr)	0.2612
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	0.2655
Burned Peak Flow Rate (cfs)	0.2655
24-Hr Clear Runoff Volume (ac-ft)	0.0798
24-Hr Clear Runoff Volume (cu-ft)	3477.4859



Peak Flow Hydrologic Analysis

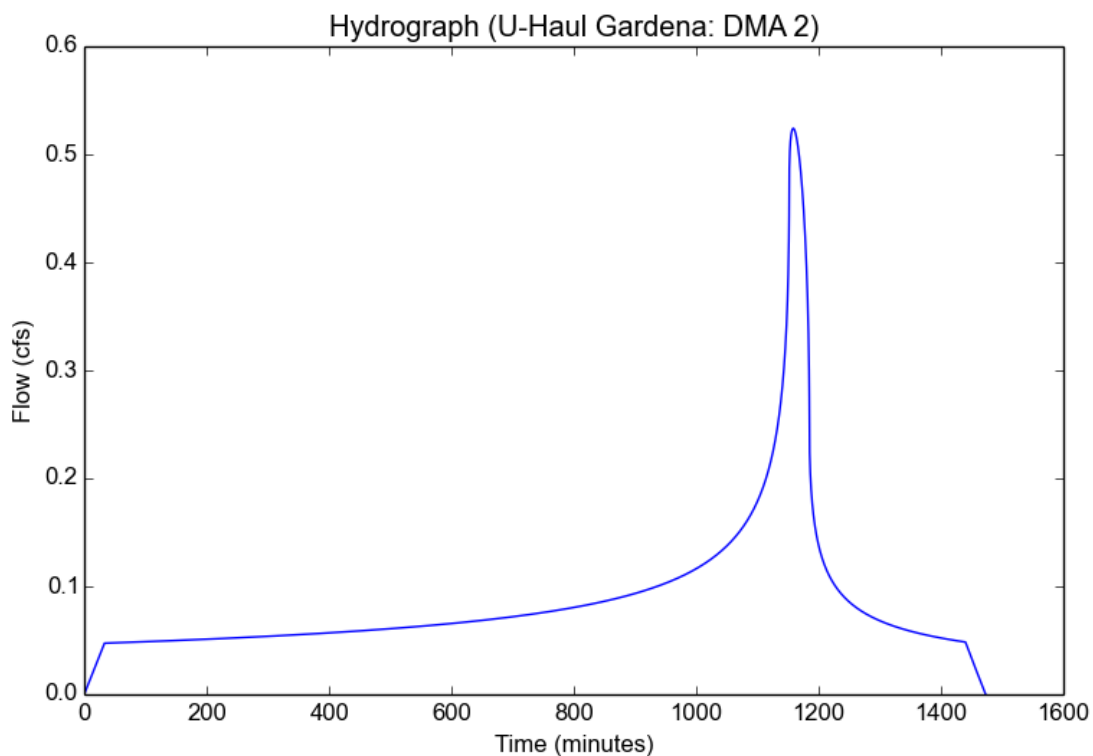
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	U-Haul Gardena
Subarea ID	DMA 2
Area (ac)	2.84
Flow Path Length (ft)	700.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.95
Percent Impervious	0.863
Soil Type	9
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.95
Peak Intensity (in/hr)	0.2335
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.7904
Time of Concentration (min)	33.0
Clear Peak Flow Rate (cfs)	0.5241
Burned Peak Flow Rate (cfs)	0.5241
24-Hr Clear Runoff Volume (ac-ft)	0.1762
24-Hr Clear Runoff Volume (cu-ft)	7677.104



STORM WATER COLLECTION AND TREATMENT SYSTEM

14206 Van Ness Ave, Gardena, CA - 5,217 cu ft & 11,435 cu ft

SPECIFICATION FOR CISTERN SYSTEM

THIS DOCUMENT WILL GOVERN THE FURNISHING AND INSTALLATION OF ALUMINIZED CORRUGATED METAL PIPE CISTERNS FOR UNDERGROUND WATER STORAGE FOR NOMINAL DIAMETERS 72" (750MM) THROUGH 120" (3000MM).

THE MANUFACTURER OF THE CISTERN SYSTEM SHALL BE ONE THAT HAS REGULARLY BEEN ENGAGED IN THE ENGINEERING DESIGN AND PRODUCTION OF THESE SYSTEMS AND WHICH HAS A HISTORY OF SUCCESSFUL PRODUCTION, ACCEPTABLE TO THE ENGINEER OF RECORD (EOR). IN ACCORDANCE WITH THE DRAWINGS, THE CISTERN SYSTEM SHALL BE SUPPLIED BY: SANTA FE WINWATER COMPANY, 10244 FREEMAN AVE, SANTA FE SPRINGS, CA 90670.
TEL: 1-562-777-9724

SAMPLING, TESTING, AND INSPECTION OF MATERIALS USED FOR MANUFACTURING OF THE CISTERN SYSTEM SHALL BE IN ACCORDANCE WITH APPLICABLE ASTM SPECIFICATIONS. ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES UNLESS OTHERWISE NOTED.

THE CISTERN SHALL BE CAPABLE OF INSTALLATION IN SOIL WITH A pH RANGE OF 5 TO 9. FOR SOIL pH OUTSIDE THE RANGE OF 5 TO 9, CONSULT WITH SPECIFYING ENGINEER PRIOR TO ORDERING TO DETERMINE IF ADDITIONAL CISTERN COATING SYSTEM NEED BE CONSIDERED.

THE HYDRAULIC SYSTEM SHALL BE PRE-ASSEMBLED AND TESTED AT FACTORY PRIOR TO SHIPMENT. INSPECTION AND TESTING PROTOCOLS SHALL BE DECIDED BY THE SPECIFYING ENGINEER ACCORDING TO SYSTEM REQUIREMENTS. A COPY OF THE TEST REPORT MUST BE PROVIDED TO THE ENGINEER OF RECORD IF REQUESTED.

UPON REQUEST, THE CISTERN SYSTEM INLETS SHALL BE EQUIPPED WITH AN INLET CALMING DEVICE TO ALLOW INTRODUCTION OF WATER TO THE TANK WITH LITTLE TO NO TURBULENCE.

THE CISTERN SYSTEM SHALL BE FITTED WITH A MIN. 4" OUTLET OR PERFORATED MANHOLE COVERS FOR VENTING, DEPENDANT UPON SITE CONDITIONS AND DIRECTION BY SPECIFYING ENGINEER. OVERFLOW PIPE SHALL BE PROVIDED UPON REQUEST BY SPECIFYING ENGINEER.

SYSTEM TO MEET AASHTO HS20/HS25 LIVE LOADING, PER AASHTO LRFD SECTION 12.

ACCESS COVERS SHALL BE A MINIMUM OF 24-INCH DIAMETER TO PROVIDE ADEQUATE INSPECTION AND MAINTENANCE WITHOUT RESTRICTIONS AND OBSTRUCTIONS TO ENTRY INTO INTERIOR OF THE CISTERN. COVERS SHALL BE WATERTIGHT, DO NOT SLIDE, ROTATE, OR FLIP OPEN AND ARE CAPABLE OF SUPPORTING DESIGN LOADS.

PRIOR TO SHIPMENT, CISTERN SYSTEM MAY BE INSPECTED AT FACTORY BY OWNER'S AUTHORIZED REPRESENTATIVE UPON REQUEST.

INSTALLATION

THE CONTRACTOR SHALL FOLLOW OCCUPATIONAL SAFETY AND HEALTH ASSOCIATION (OSHA) GUIDELINES FOR SAFE PRACTICES IN EXECUTING THE INSTALLATION PROCESS IN ACCORDANCE WITH THE MANUFACTURER/SUPPLIER INSTALLATION RECOMMENDATIONS.

A NON-WOVEN GEOTEXTILE FILTER FABRIC IS RECOMMENDED TO BE INSTALLED IN EXCAVATION, OR OTHER MEASURES SHOULD BE TAKEN, TO PREVENT NATIVE SOIL FROM MIGRATING INTO THE INITIAL BACKFILL MATERIAL, WHEN REQUIRED BY THE GEOTECHNICAL ENGINEER OR E.O.R.

TRENCH BOTTOM (FOUNDATION) WITH UNSTABLE OR UNYIELDING MATERIAL SHALL BE EXCAVATED TO A DEPTH DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE MATERIAL. FOR UNSTABLE MATERIALS, GEOTEXTILE MAY BE USED TO STABILIZE THE TRENCH BOTTOM, IF DIRECTED BY THE ENGINEER.

SUITABLE BEDDING MATERIAL SHALL BE CLASS I OR II, AS SPECIFIED BY ASTM D2321. MINIMUM BEDDING THICKNESS SHALL BE 4" (100 mm) AS MEASURED FROM OUTER PIPE DIAMETER.

INITIAL BACKFILL MATERIAL SHALL BE CLASS I OR II, AS SPECIFIED BY ASTM D2321. COMPACTION AND BACKFILL LIFTS SHALL BE IN ACCORDANCE WITH ASTM D2321. INITIAL BACKFILL SHALL EXTEND TO NOT LESS THAN 6" (150 mm) ABOVE THE TOP OF THE CISTERN.

MINIMUM COVER FOR UP TO H-25 TRAFFIC APPLICATIONS:
- 12" FOR PIPE DIAMETER UP TO 72" DIAMETER
- 18" FOR DIAMETER OVER 72".

MINIMUM COVER SHALL BE MEASURED FROM THE TOP OF THE PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO THE TOP OF RIGID PAVEMENT. ADDITIONAL COVER MAY BE REQUIRED FOR CONSTRUCTION LOADS, FOR VEHICLES OVER 75T (68 metric tons) OR TO PREVENT FLOATATION.

FINAL BACKFILL MATERIAL SHALL BE SUITABLE MATERIALS AS DIRECTED BY THE ENGINEER OR AS INDICATED BY MANUFACTURER. FOR AREAS SUBJECTED TO HEAVY TRAFFIC LOADING, A HIGHER DEGREE OF COMPACTION IS NECESSARY AND A SEPARATION LAYER OF NON-WOVEN GEOTEXTILE MAY BE REQUIRED. COMPACTION LEVELS AND/OR GEOTEXTILE MAY BE SPECIFIED AT THE DISCRETION OF THE DESIGN ENGINEER OR MANUFACTURER'S REPRESENTATIVE.

CONSULT THE INSTALLATION MANUAL FOR ADDITIONAL INFORMATION.

GENERAL NOTES

PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR TO REVIEW MANUFACTURER'S INSTALLATION GUIDE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND/OR PROJECT ENGINEER TO ENSURE THAT ALL QUESTIONS ABOUT INSTALLATION ARE ADDRESSED PRIOR TO APPROVAL OF SYSTEM. ALL DETAILS FOR INSTALLATION ARE LOCATED IN THIS DRAWING PACKAGE, OR UPON REQUEST TO PIPING MANUFACTURER. ANY QUESTIONS CONCERNING THESE STANDARD DETAILS CAN BE ADDRESSED BY THE CISTERN MANUFACTURER'S REPRESENTATIVE PRIOR TO APPROVAL.

ALL ELEVATIONS, DIMENSIONS AND LOCATIONS OF RISERS AND INLETS SHALL BE VERIFIED BY THE ENGINEER OF RECORD.

PRIOR TO INSTALLATION OF THE SYSTEM, A PRE-CONSTRUCTION MEETING SHALL BE CONDUCTED. THOSE REQUIRED TO ATTEND ARE THE SUPPLIER OF THE SYSTEM, THE GENERAL CONTRACTOR, SUB-CONTRACTORS AND THE ENGINEER.

CONTRACTOR(S) SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY TO INSTALL THE CISTERN SYSTEM, APPURTENANCES AND INCIDENTALS IN ACCORDANCE WITH THE DRAWINGS AND AS SPECIFIED HEREIN.

A STORM WATER TREATMENT DEVICE UPSTREAM OF THE CISTERN SYSTEM IS RECOMMENDED AS THE APPROPRIATE MEANS OF PRETREATING TO EXTEND THE MAINTENANCE INTERVAL ON THE SYSTEM AND REDUCE LIFE CYCLE COSTS. BOTH ENGINEERED SOLUTIONS SHALL BE PROVIDED BY A SINGLE SUPPLIER/MANUFACTURER.

PRIOR TO SYSTEM START UP, ANY ACCUMULATED WATER AND DEBRIS SHALL BE REMOVED FROM THE CISTERN TANK(S) AND ANY ACCOMPANYING TREATMENT SYSTEMS AND PUMP VAULTS.

BELOW GRADE SYSTEM MARKING TAPE, IF REQUIRED BY LOCAL ORDINANCE, CAN BE SUPPLIED UPON REQUEST. CONTACT SFWW WITH REQUIREMENT DETAILS.

STORMWATER MANAGEMENT SYSTEM AS SHOWN ON THESE SHEETS SHALL BE SUPPLIED BY SANTA FE WINWATER COMPANY AS A COMPLETE SYSTEM. SUBSTITUTION OR OMISSION OF ANY COMPONENTS MAY VOID WARRANTY.



10244 Freeman Ave, Santa Fe Springs, CA 90670
562-777-9724 / www.santafewinwater.com

PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SANTA FE WINWATER COMPANY . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SANTA FE WINWATER COMPANY IS PROHIBITED.		NAME	DATE	TITLE: 14206 Van Ness Av, Gardena, CA Stormwater Management System 5217 & 11435 Cu Ft
	DRAWN	CKL	3/3/22	
	CHECKED	MDF	3/3/22	
	ENG APPR.	CKL	3/3/22	SIZE B
	REV			SHEET 1 OF 11

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NOTES:

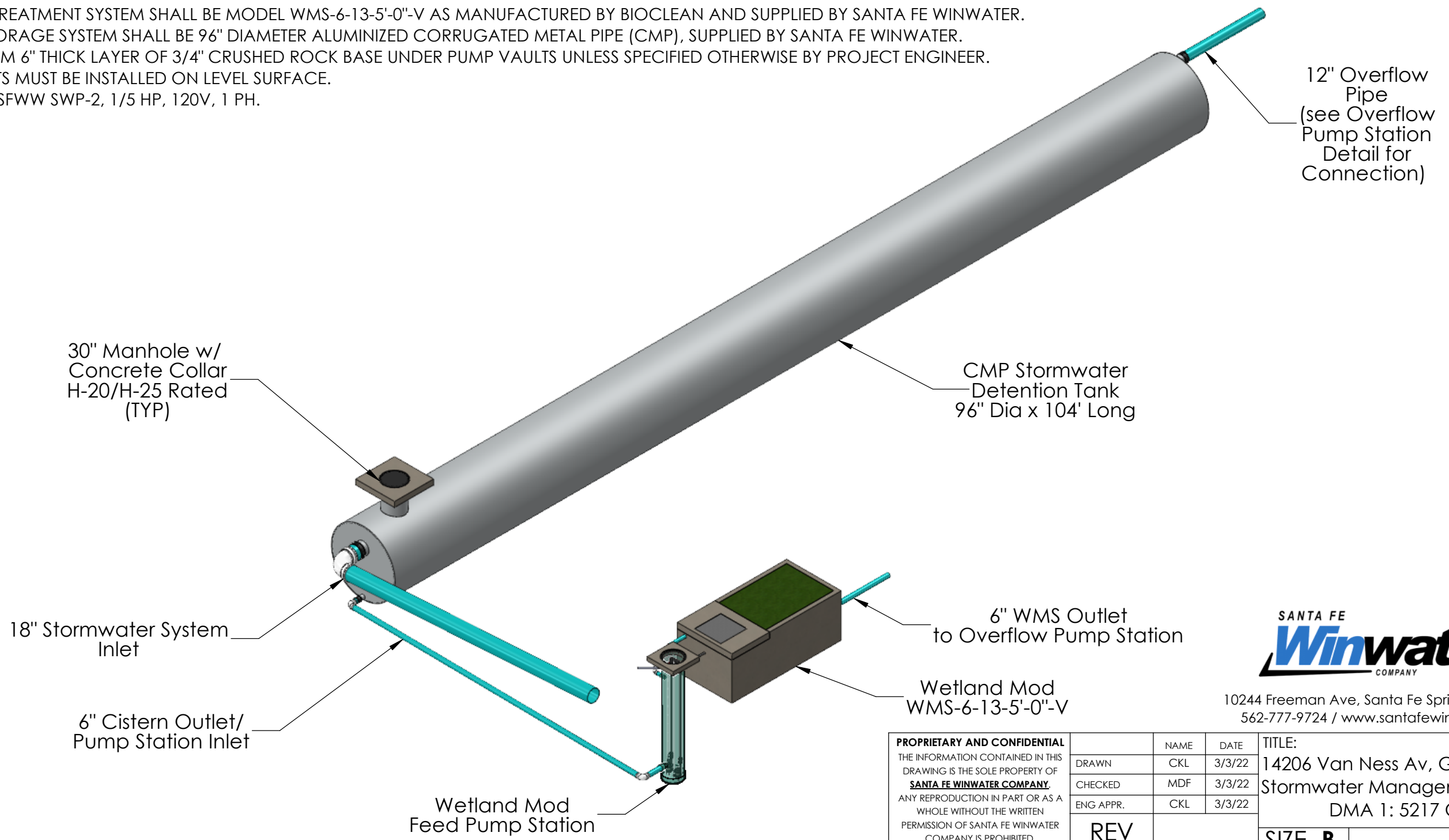
1. ALL DIMENSIONS AND ELEVATIONS SHOWN ARE NOMINAL DIMENSIONS. IT IS THE RESPONSIBILITY OF THE ON-SITE CONTRACTOR OR CUSTOMER TO VERIFY THE ACCURACY OF ANY CRITICAL DIMENSIONS OR ELEVATIONS PRIOR TO SETTING OR INSTALLING ANY EQUIPMENT.
2. ALL MATERIALS SHOWN ON THIS SHEET WILL BE SUPPLIED BY SANTA FE WINWATER COMPANY AS A COMPLETE SYSTEM. ANY OMISSIONS OR SUBSTITUTIONS MAY VOID WARRANTY.
3. VAULTS AND CISTERNS SHALL BE DELIVERED TO THE SITE AFTER EXCAVATIONS ARE COMPLETE AND SHORED. THE CONTRACTOR SHALL SUPPLY A CRANE OF SUFFICIENT SIZE TO HANDLE ALL PIECES SAFELY.
4. UPON ESTABLISHMENT OF PRIOR AGREEMENT, SANTA FE WINWATER COMPANY WILL PROVIDE A REPRESENTATIVE FOR TECHNICAL ASSISTANCE ON THE DAY OF INSTALLATION.
5. THE CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION. SANTA FE WINWATER COMPANY WILL NOT INSTALL ANY OF THE COMPONENTS.
6. MOUNT PUMP CONTROLLER IN LOCATION SPECIFIED BY OWNER. FOR LOCATIONS GREATER THAN 15 FEET FROM VAULT, CONSULT WITH SFWW TO DETERMINE NEED FOR ADDITIONAL CABLE AND/OR EQUIPMENT.
7. ALL COMPONENTS PROVIDED BY SANTA FE WINWATER SHALL BE SUITABLE FOR USE WITH OPERATIONAL AND ENVIRONMENTAL CONDITIONS. EQUIPMENT DOCUMENTATION SHALL BE PROVIDED FOR REVIEW UPON ACCEPTANCE OF PURCHASE ORDER.
8. ALL STRUCTURES TO BE H-20/H-25 TRAFFIC RATED FOR PARKING LOT SPEEDS.
9. CONFIGURATION OF VAULTS MAY VARY DEPENDANT UPON FINAL CIVIL DESIGN. CONFIRM PIPE INVERTS AND OVERALL VAULT DEPTH PRIOR TO ORDERING.
10. WETLAND MOD TREATMENT SYSTEM SHALL BE MODEL WMS-6-13-5'-0"-V AS MANUFACTURED BY BIOCLEAN AND SUPPLIED BY SANTA FE WINWATER.
11. STORMWATER STORAGE SYSTEM SHALL BE 96" DIAMETER ALUMINIZED CORRUGATED METAL PIPE (CMP), SUPPLIED BY SANTA FE WINWATER.
12. PROVIDE MINIMUM 6" THICK LAYER OF 3/4" CRUSHED ROCK BASE UNDER PUMP VAULTS UNLESS SPECIFIED OTHERWISE BY PROJECT ENGINEER. PUMP VAULT UNITS MUST BE INSTALLED ON LEVEL SURFACE.
13. PUMPS SHALL BE SFWW SWP-2, 1/5 HP, 120V, 1 PH.

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	DRAWN	CKL	3/3/22	14206 Van Ness Av, Gardena, CA Stormwater Management System DMA 1: 5217 Cu Ft
	CHECKED	MDF	3/3/22	
	ENG APPR.	CKL	3/3/22	
	REV			SIZE B
				SHEET 2 OF 11

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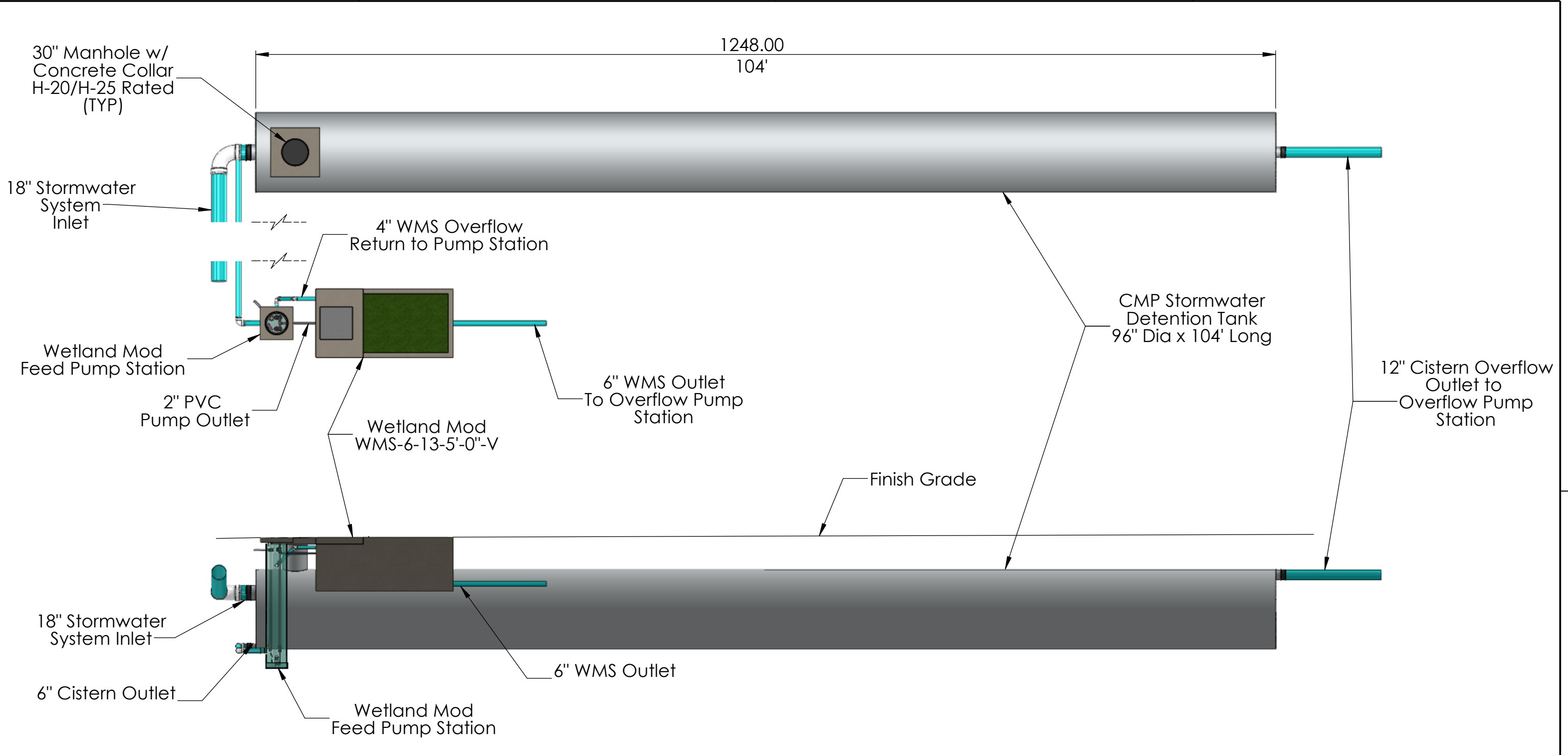
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1248.00
104'

30" Manhole w/
Concrete Collar
H-20/H-25 Rated
(TYP)

18" Stormwater
System
Inlet

4" WMS Overflow
Return to Pump Station

Wetland Mod
Feed Pump Station

2" PVC
Pump Outlet

Wetland Mod
WMS-6-13-5'-0"-V

6" WMS Outlet
To Overflow Pump
Station

CMP Stormwater
Detention Tank
96" Dia x 104' Long

Finish Grade

12" Cistern Overflow
Outlet to
Overflow Pump
Station

18" Stormwater
System Inlet

6" Cistern Outlet

Wetland Mod
Feed Pump Station

6" WMS Outlet

- NOTES:
1. SEE CIVIL SHEETS TO CONFIRM LOCATIONS AND ELEVATIONS OF STORMWATER SYSTEM COMPONENTS AND PIPE CONNECTIONS.
 2. FLEXIBLE WATERTIGHT COUPLINGS WITH STAINLESS STEEL CLAMPS SHALL BE PROVIDED AT ALL CONNECTIONS BETWEEN CISTERNS AND ADJOINING PIPING.
 3. PIPING BETWEEN SYSTEM COMPONENTS SHALL BE PVC SDR35 PIPE UNLESS OTHERWISE NOTED.
 4. PROVIDE MINIMUM 12" COVER FROM TOP OF CISTERNS TO BOTTOM OF ASPHALT CEMENT OR TOP OF CONCRETE CEMENT.



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	DRAWN	CKL	3/3/22	14206 Van Ness Av, Gardena, CA
	CHECKED	MDF	3/3/22	Stormwater Management System
	ENG APPR.	CKL	3/3/22	DMA 1: 5217 Cu Ft
REV				SIZE B
				SHEET 3 OF 11

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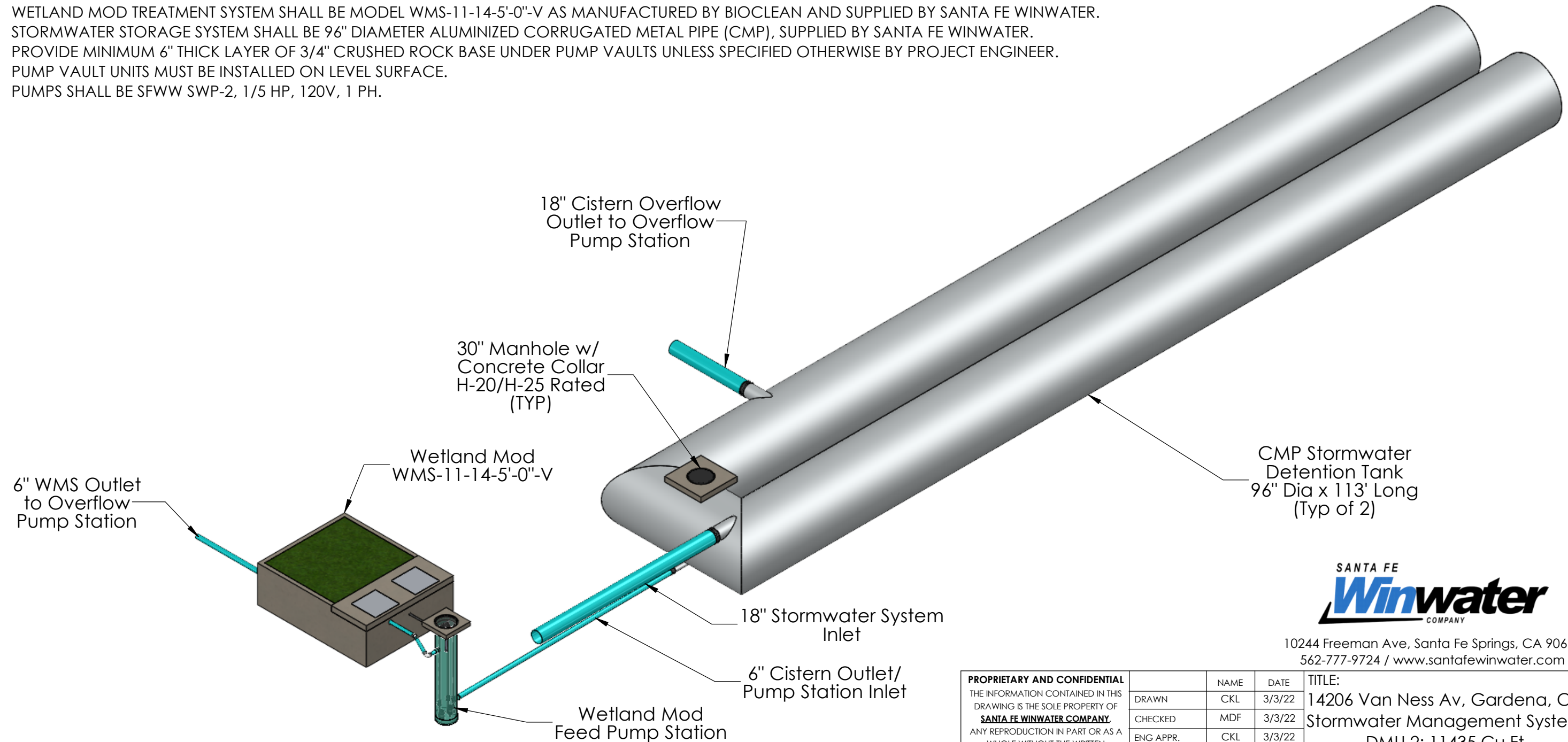
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NOTES:

1. ALL DIMENSIONS AND ELEVATIONS SHOWN ARE NOMINAL DIMENSIONS. IT IS THE RESPONSIBILITY OF THE ON-SITE CONTRACTOR OR CUSTOMER TO VERIFY THE ACCURACY OF ANY CRITICAL DIMENSIONS OR ELEVATIONS PRIOR TO SETTING OR INSTALLING ANY EQUIPMENT.
2. ALL MATERIALS SHOWN ON THIS SHEET WILL BE SUPPLIED BY SANTA FE WINWATER COMPANY AS A COMPLETE SYSTEM. ANY OMISSIONS OR SUBSTITUTIONS MAY VOID WARRANTY.
3. VAULTS AND CISTERNS SHALL BE DELIVERED TO THE SITE AFTER EXCAVATIONS ARE COMPLETE AND SHORED. THE CONTRACTOR SHALL SUPPLY A CRANE OF SUFFICIENT SIZE TO HANDLE ALL PIECES SAFELY.
4. UPON ESTABLISHMENT OF PRIOR AGREEMENT, SANTA FE WINWATER COMPANY WILL PROVIDE A REPRESENTATIVE FOR TECHNICAL ASSISTANCE ON THE DAY OF INSTALLATION.
5. THE CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION. SANTA FE WINWATER COMPANY WILL NOT INSTALL ANY OF THE COMPONENTS.
6. MOUNT PUMP CONTROLLER IN LOCATION SPECIFIED BY OWNER. FOR LOCATIONS GREATER THAN 15 FEET FROM VAULT, CONSULT WITH SFWW TO DETERMINE NEED FOR ADDITIONAL CABLE AND/OR EQUIPMENT.
7. ALL COMPONENTS PROVIDED BY SANTA FE WINWATER SHALL BE SUITABLE FOR USE WITH OPERATIONAL AND ENVIRONMENTAL CONDITIONS. EQUIPMENT DOCUMENTATION SHALL BE PROVIDED FOR REVIEW UPON ACCEPTANCE OF PURCHASE ORDER.
8. ALL STRUCTURES TO BE H-20/H-25 TRAFFIC RATED FOR PARKING LOT SPEEDS.
9. CONFIGURATION OF VAULTS MAY VARY DEPENDANT UPON FINAL CIVIL DESIGN. CONFIRM PIPE INVERTS AND OVERALL VAULT DEPTH PRIOR TO ORDERING.
10. WETLAND MOD TREATMENT SYSTEM SHALL BE MODEL WMS-11-14-5'-0"-V AS MANUFACTURED BY BIOCLEAN AND SUPPLIED BY SANTA FE WINWATER.
11. STORMWATER STORAGE SYSTEM SHALL BE 96" DIAMETER ALUMINIZED CORRUGATED METAL PIPE (CMP), SUPPLIED BY SANTA FE WINWATER.
12. PROVIDE MINIMUM 6" THICK LAYER OF 3/4" CRUSHED ROCK BASE UNDER PUMP VAULTS UNLESS SPECIFIED OTHERWISE BY PROJECT ENGINEER. PUMP VAULT UNITS MUST BE INSTALLED ON LEVEL SURFACE.
13. PUMPS SHALL BE SFWW SWP-2, 1/5 HP, 120V, 1 PH.



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	DRAWN	CKL	3/3/22	14206 Van Ness Av, Gardena, CA
	CHECKED	MDF	3/3/22	Stormwater Management System
	ENG APPR.	CKL	3/3/22	DMU 2: 11435 Cu Ft
	REV			SIZE B
				SHEET 4 OF 11

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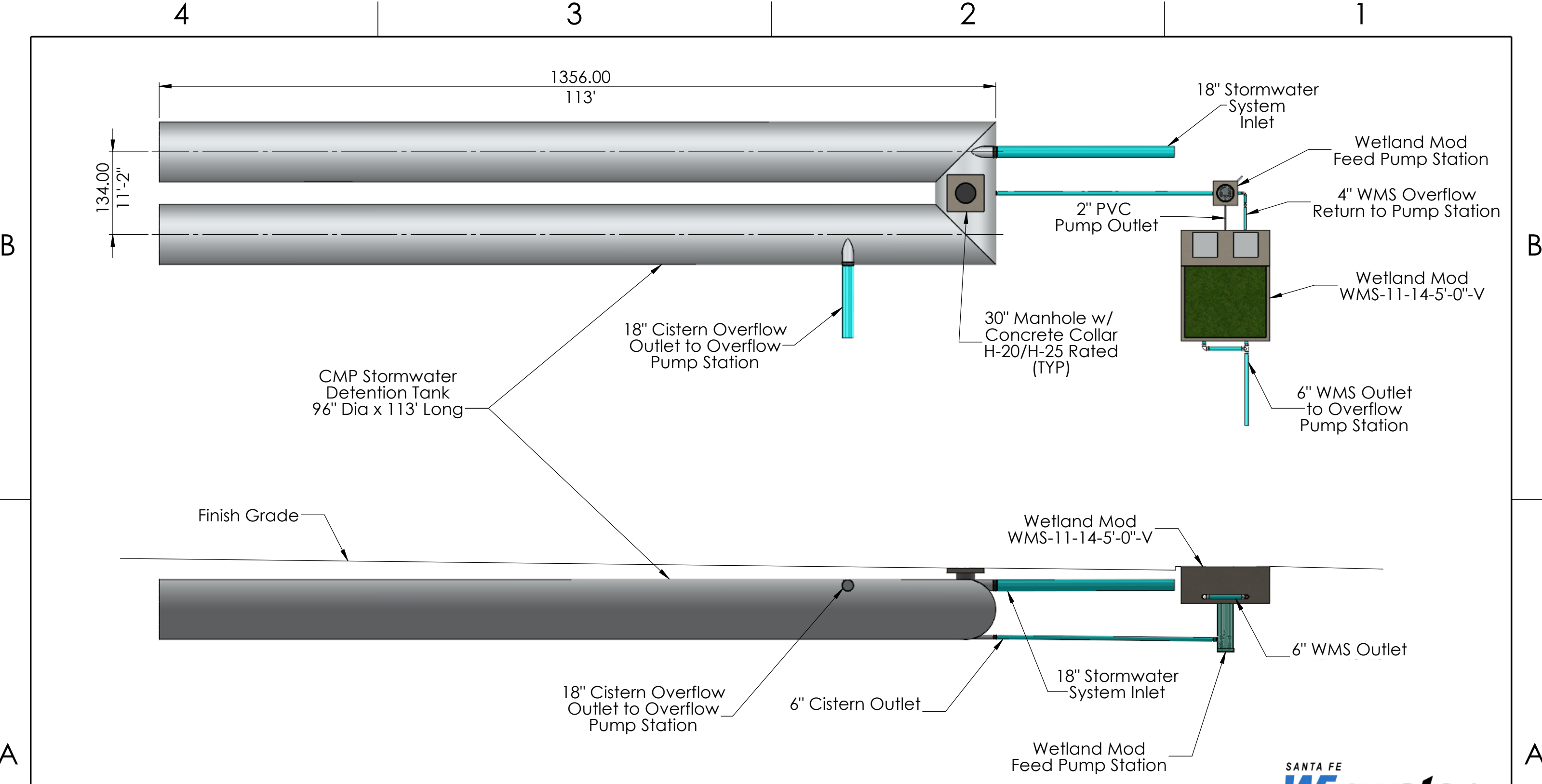
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- NOTES:
1. SEE CIVIL SHEETS TO CONFIRM LOCATIONS AND ELEVATIONS OF STORMWATER SYSTEM COMPONENTS AND PIPE CONNECTIONS.
 2. FLEXIBLE WATERTIGHT COUPLINGS WITH STAINLESS STEEL CLAMPS SHALL BE PROVIDED AT ALL CONNECTIONS BETWEEN CISTERNS AND ADJOINING PIPING.
 3. PIPING BETWEEN SYSTEM COMPONENTS SHALL BE PVC SDR35 PIPE UNLESS OTHERWISE NOTED.
 4. PROVIDE MINIMUM 12" COVER FROM TOP OF CISTERNS TO BOTTOM OF ASPHALT CEMENT OR TOP OF CONCRETE CEMENT.


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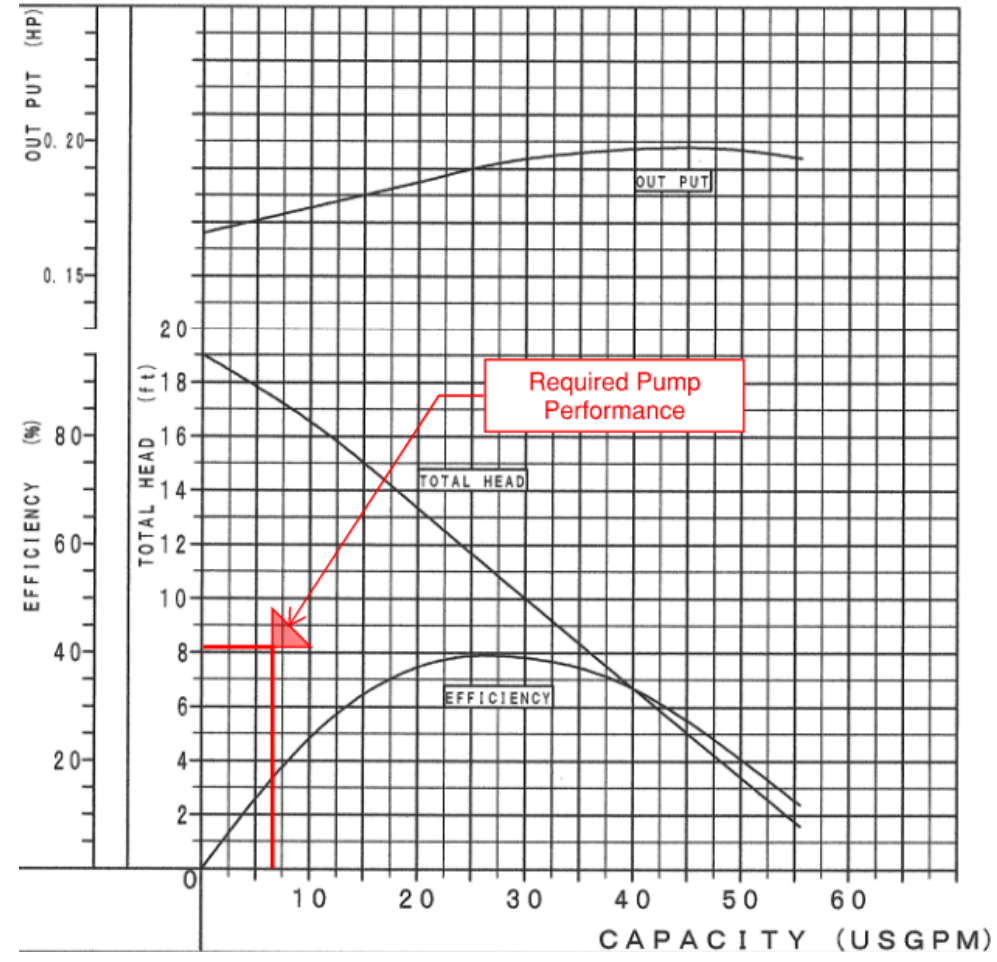
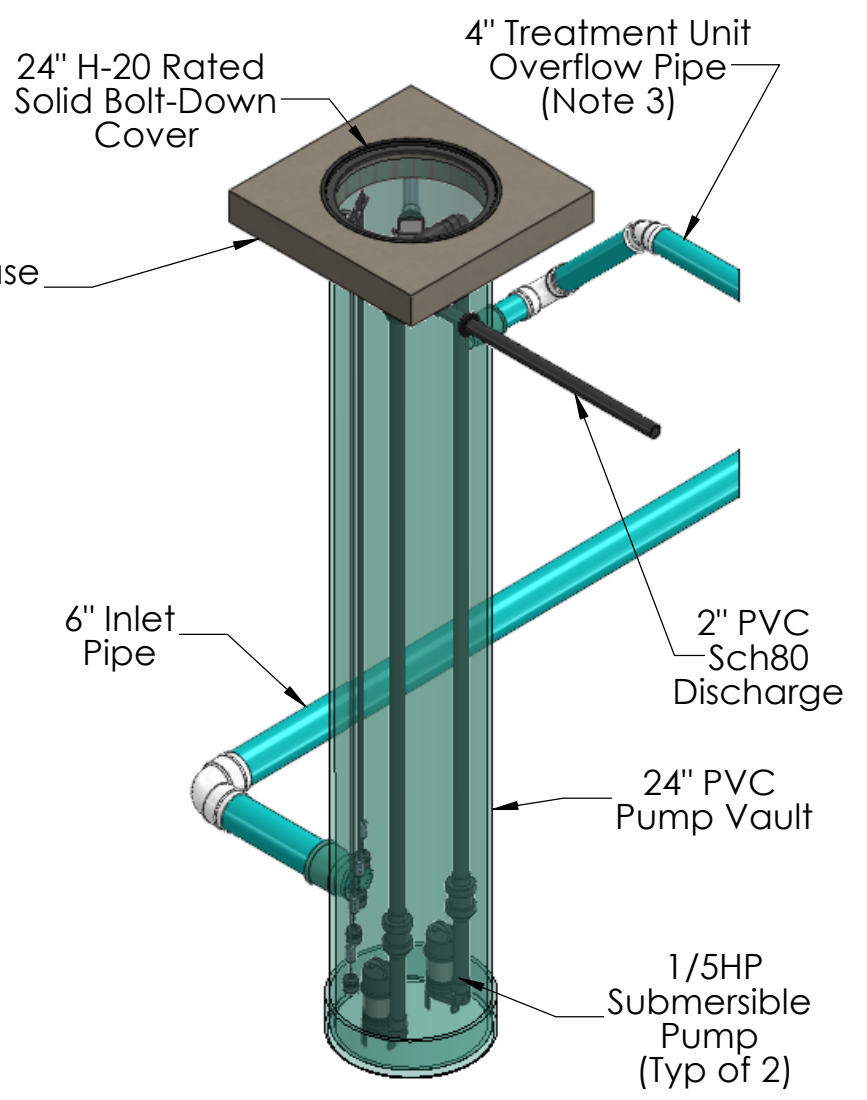
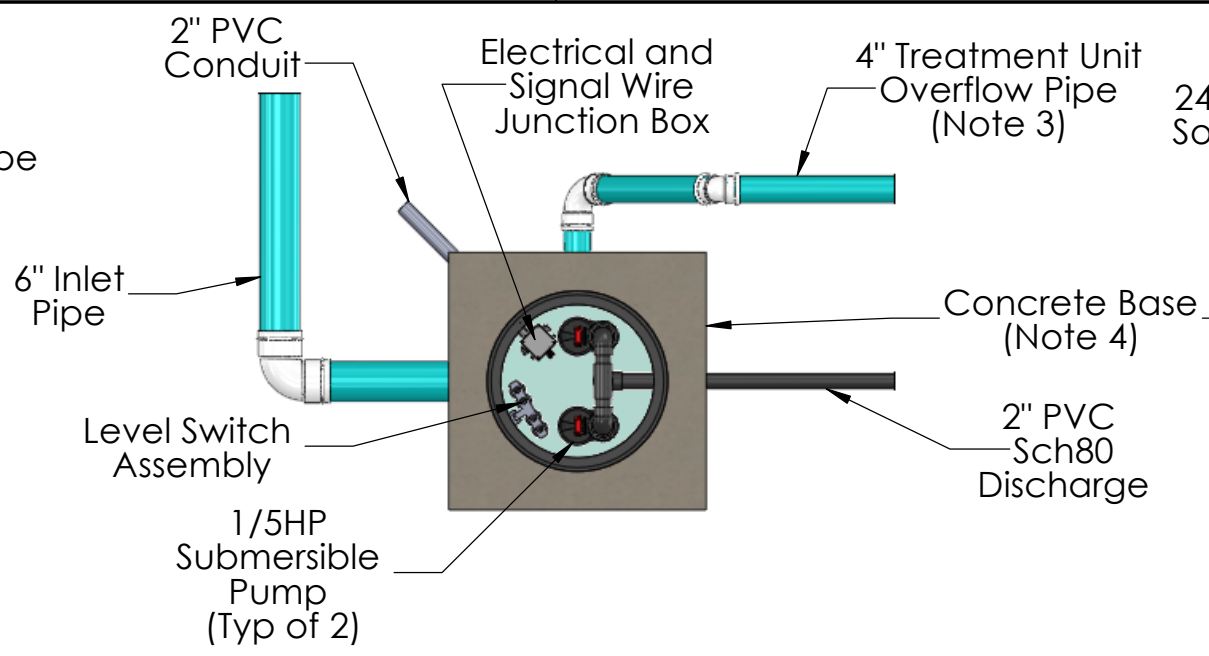
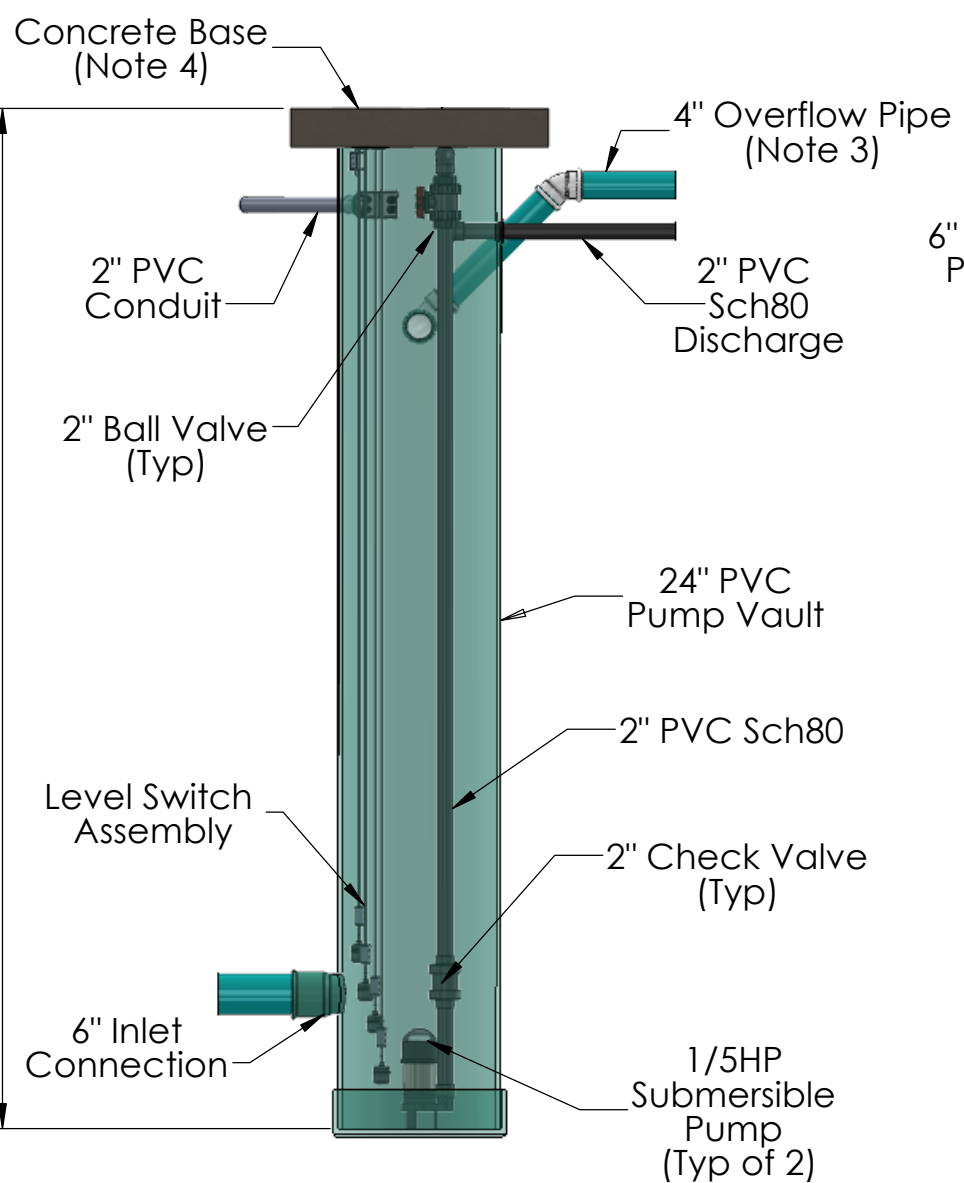
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	DRAWN	CKL	3/3/22	14206 Van Ness Av, Gardena, CA
	CHECKED	MDF	3/3/22	Stormwater Management System
	ENG APPR.	CKL	3/3/22	DMU 2: 11435 Cu Ft
	REV			SIZE B
				SHEET 5 OF 11

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- NOTES:
- All materials shown on this sheet shall be supplied by Santa Fe WinWater Company, Santa Fe Springs, CA, except where noted. Pumps shall be SFWW SWP-2, 115v, 3A. Substitution of any component may void warranty.
 - Locate Pump Controller as required for site conditions or Owner direction. Route power and signal cable conduit to vault from controller accordingly. Connections shall be provided by Contractor.
 - Route 2" pump system outlet and 4" Overflow pipe as shown on Civil Sheets.
 - Contractor to provide concrete collar around manhole cover suitable for surface loading conditions.
 - Anti-Floatation flange to be provided on pump vault where required for groundwater conditions.
 - Pump performance requirements based on 96 hour drawdown of 5217 cu ft = 6.8 gpm.

Headloss Calculations		
Fitting	Qty / Length	Headloss
Pipe (2")	13.5	0.02'
Check Valve	1	0.02'
90 Elbow	2	0.01'
Tee	1	0.02'
Exit	1	0.01'
Elevation Head		8.0'
Total Headloss @ 6.8 gpm		8.08'



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NAME	DATE	TITLE:
DRAWN	CKL 3/3/22	14206 Van Ness Av, Gardena, CA Stormwater Management System DMU 1 Feed Pump Station
CHECKED	MDF 3/3/22	
ENG APPR.	CKL 3/3/22	
REV		SIZE B

SHEET 6 OF 11

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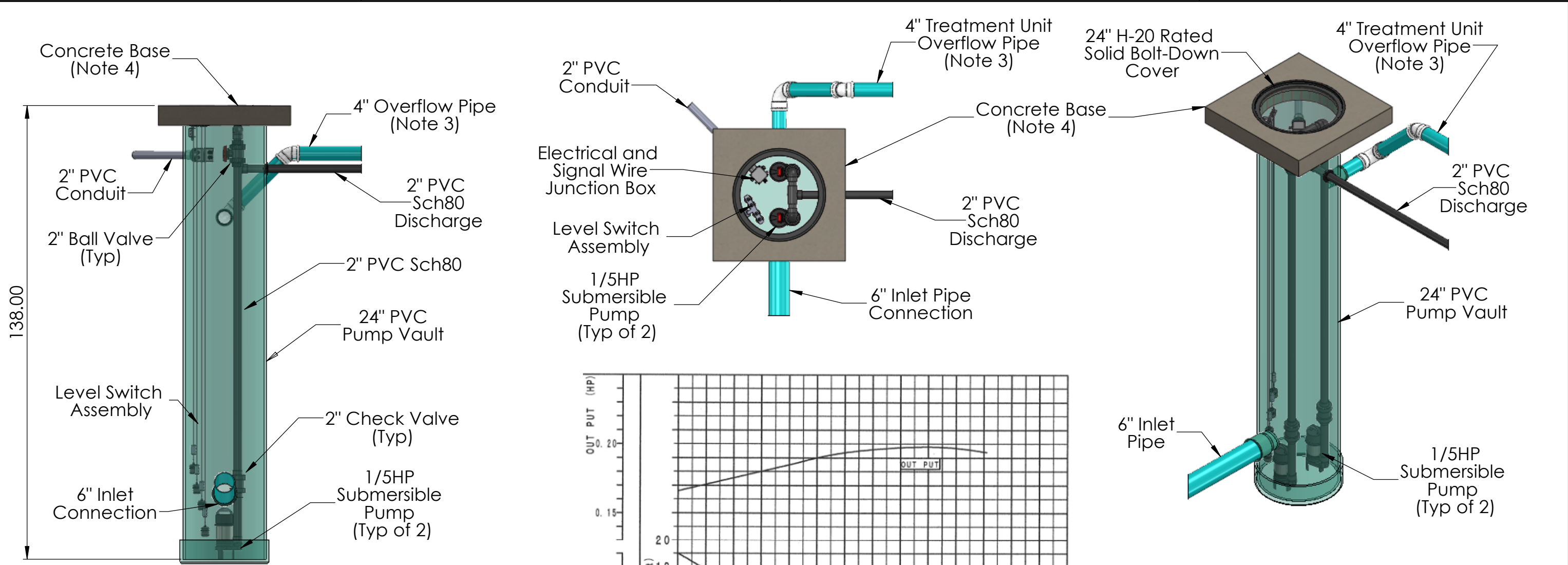
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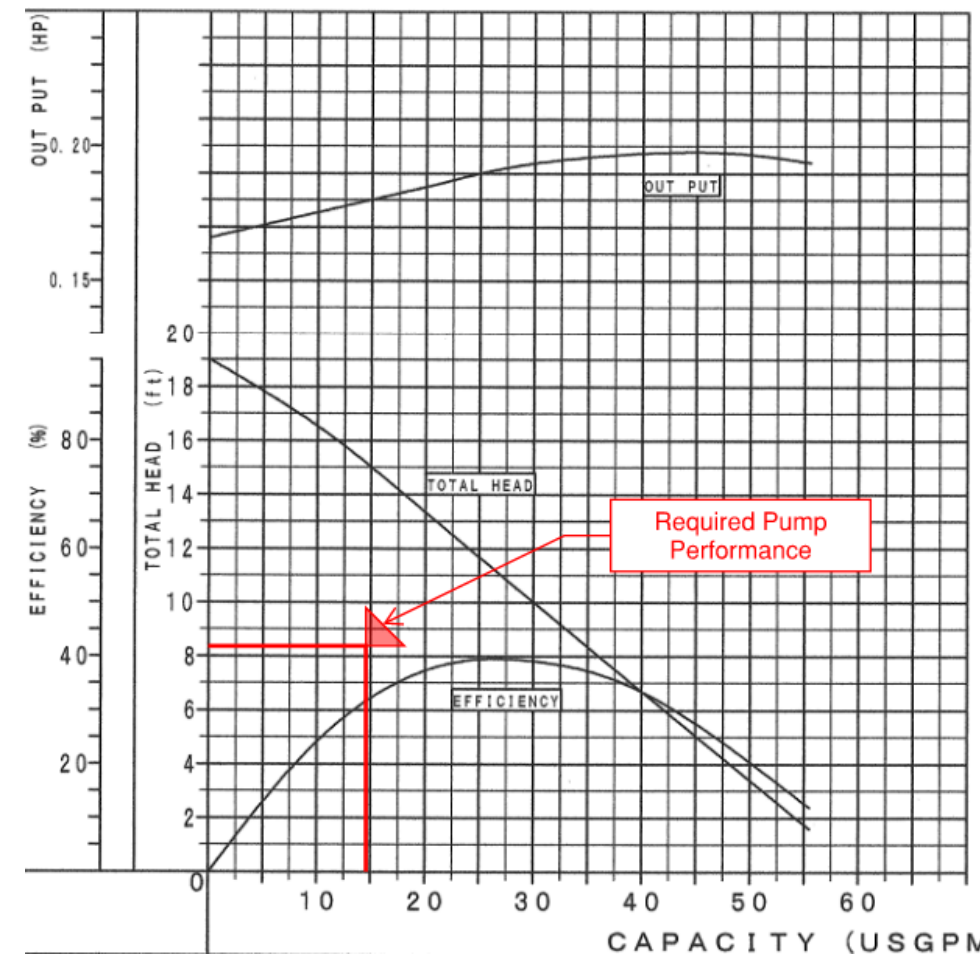
1

B

B



- NOTES:
- All materials shown on this sheet shall be supplied by Santa Fe WinWater Company, Santa Fe Springs, CA, except where noted. Pumps shall be SFWW SWP-2, 115v, 3A. Substitution of any component may void warranty.
 - Locate Pump Controller as required for site conditions or Owner direction. Route power and signal cable conduit to vault from controller accordingly. Connections shall be provided by Contractor.
 - Route 2" pump system outlet and 4" Overflow pipe as shown on Civil Sheets.
 - Contractor to provide concrete collar around manhole cover suitable for surface loading conditions.
 - Anti-Floatation flange to be provided on pump vault where required for groundwater conditions.
 - Pump performance requirements based on 96 hour drawdown of 11435 cu ft = 14.9 gpm.



Headloss Calculations		
Fitting	Qty / Length	Headloss
Pipe (2")	13.5	0.09'
Check Valve	1	0.10'
90 Elbow	2	0.06'
Tee	1	0.07'
Exit	1	0.04'
Elevation Head		8.00'
Total Headloss @ 14.9 gpm		8.36'



10244 Freeman Ave, Santa Fe Springs, CA 90670
562-777-9724 / www.santafewinwater.com

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REV	NAME	DATE	TITLE:
	CKL	3/3/22	14206 Van Ness Av, Gardena, CA
	MDF	3/3/22	Stormwater Management System
	CKL	3/3/22	DMU 2 Feed Pump Station
			SIZE B
			SHEET 7 OF 11

4

3

2

1

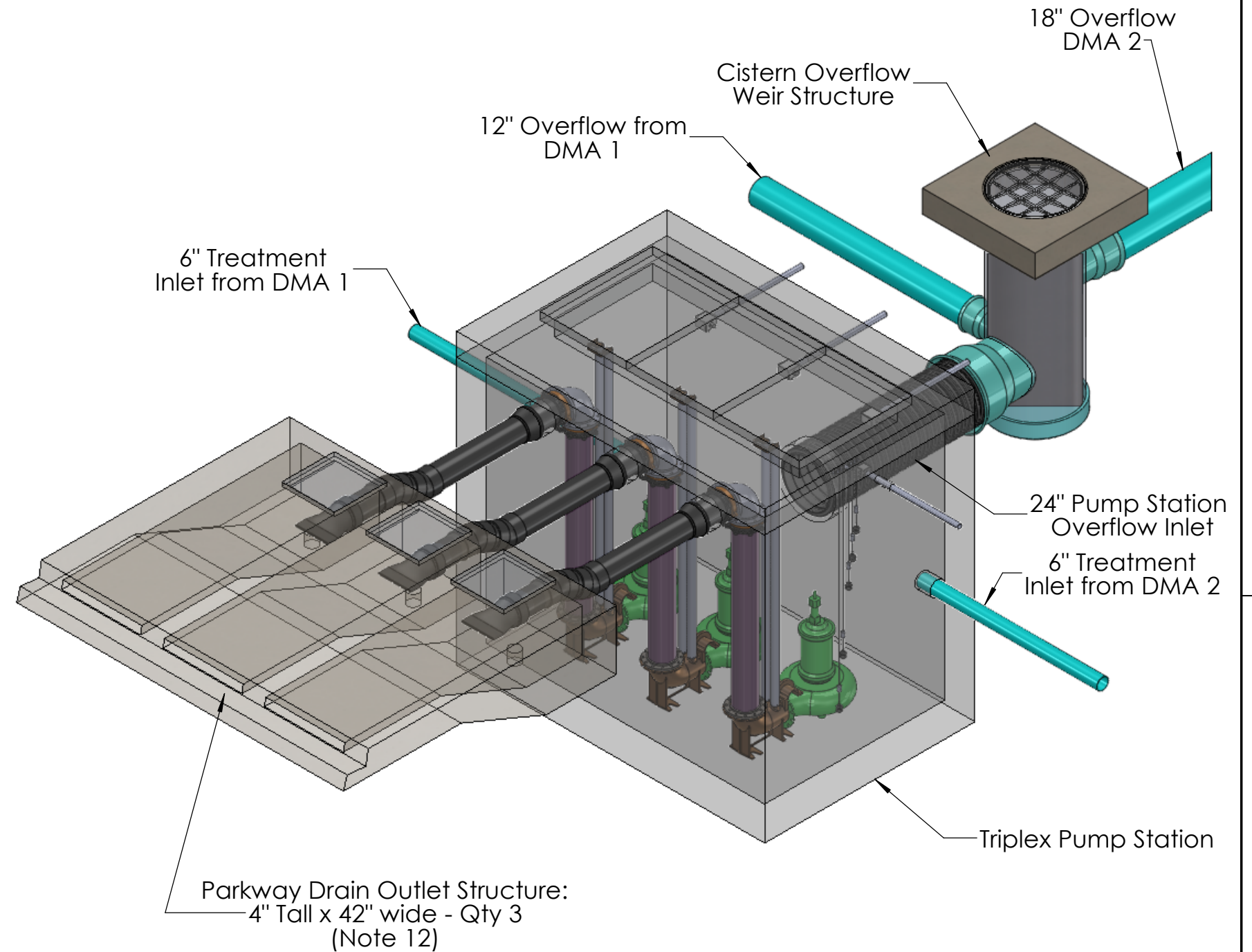
A

A

GARDENA U-HAUL STORMWATER PUMP STATION

NOTES:

1. ALL DIMENSIONS AND ELEVATIONS SHOWN ARE NOMINAL DIMENSIONS. IT IS THE RESPONSIBILITY OF THE ON-SITE CONTRACTOR OR CUSTOMER TO VERIFY THE ACCURACY OF ANY CRITICAL DIMENSIONS OR ELEVATIONS PRIOR TO ORDERING, SETTING AND INSTALLING ANY EQUIPMENT.
2. ALL MATERIALS SHOWN ON THESE SHEETS SHALL BE SUPPLIED BY SANTA FE WINWATER COMPANY AS A COMPLETE SYSTEM, EXCEPT WHERE NOTED "BY OTHERS". ANY EXCLUSIONS OR SUBSTITUTIONS MAY VOID WARRANTY.
3. SYSTEM COMPONENTS SHALL BE DELIVERED TO THE SITE AFTER EXCAVATIONS HAVE BEEN EXCAVATED AND SHORED. THE CONTRACTOR SHALL SUPPLY A CRANE OF SUFFICIENT SIZE TO LOWER ALL PIECES INTO THE HOLE SAFELY. THE CONTRACTOR SHALL INSTALL ALL COMPONENTS.
4. UPON ESTABLISHMENT OF PRIOR AGREEMENT, SANTA FE WINWATER COMPANY WILL PROVIDE A REPRESENTATIVE FOR TECHNICAL ASSISTANCE ON THE DAY OF INSTALLATION TO ANSWER ANY QUESTIONS THAT MAY ARISE.
5. TRIPLEX PUMPS TO BE SFWW 7365N-861-1J-30N, 10HP, 870rpm, 3PH, 460V, 15.1A, INVERTER DUTY, 8" DISCHARGE.
6. PUMP CONTROLLER (STAINLESS STEEL, NEMA 4X) TO BE SFWW HTRT-33-10-SFT-SS4, 480VAC, 32A MAX.
7. MOUNT PUMP CONTROLLER IN LOCATION SPECIFIED BY OWNER. FOR LOCATIONS GREATER THAN 40 FEET FROM VAULT, CONSULT WITH SFWW TO DETERMINE NEED FOR ADDITIONAL CABLE AND/OR EQUIPMENT.
8. ALL COMPONENTS PROVIDED BY SANTA FE WINWATER SHALL BE SUITABLE FOR USE WITH OPERATIONAL AND ENVIRONMENTAL CONDITIONS. EQUIPMENT DOCUMENTATION SHALL BE PROVIDED FOR REVIEW UPON ACCEPTANCE OF PURCHASE ORDER.
9. ALL STRUCTURES TO BE H-20/H-25 TRAFFIC RATED FOR PARKING LOT SPEEDS.
10. APPROPRIATE SIZED KWIK-SEAL OR CAST-IN SEAL SHALL BE USED FOR PLASTIC OR METAL PIPE PENETRATIONS INTO VAULTS. CONCRETE PIPE PENETRATIONS SHALL BE GROUTED.
11. PARKWAY DRAIN SHALL BE CONSTRUCTED BY CONTRACTOR AND FOLLOW CITY OR COUNTY DETAILS OF CONSTRUCTION FOR DECK THICKNESS, REBAR PLACEMENT, STEEL LIP PLACEMENT, ETC. STRUCTURE SHALL BE CAST IN PLACE BY CONTRACTOR. DETAILED DESIGN DRAWINGS TO BE PROVIDED UPON ORDER.
12. CONFIGURATION OF VAULTS MAY VARY DEPENDANT UPON FINAL CIVIL DESIGN. CONFIRM PIPE INVERTS AND OVERALL VAULT DEPTH PRIOR TO ORDERING.
13. PROVIDE MINIMUM 6" THICK LAYER OF 3/4" CRUSHED ROCK BASE UNDER PUMP VAULTS UNLESS SPECIFIED OTHERWISE BY PROJECT ENGINEER. PUMP VAULT UNITS MUST BE INSTALLED ON LEVEL SURFACE.



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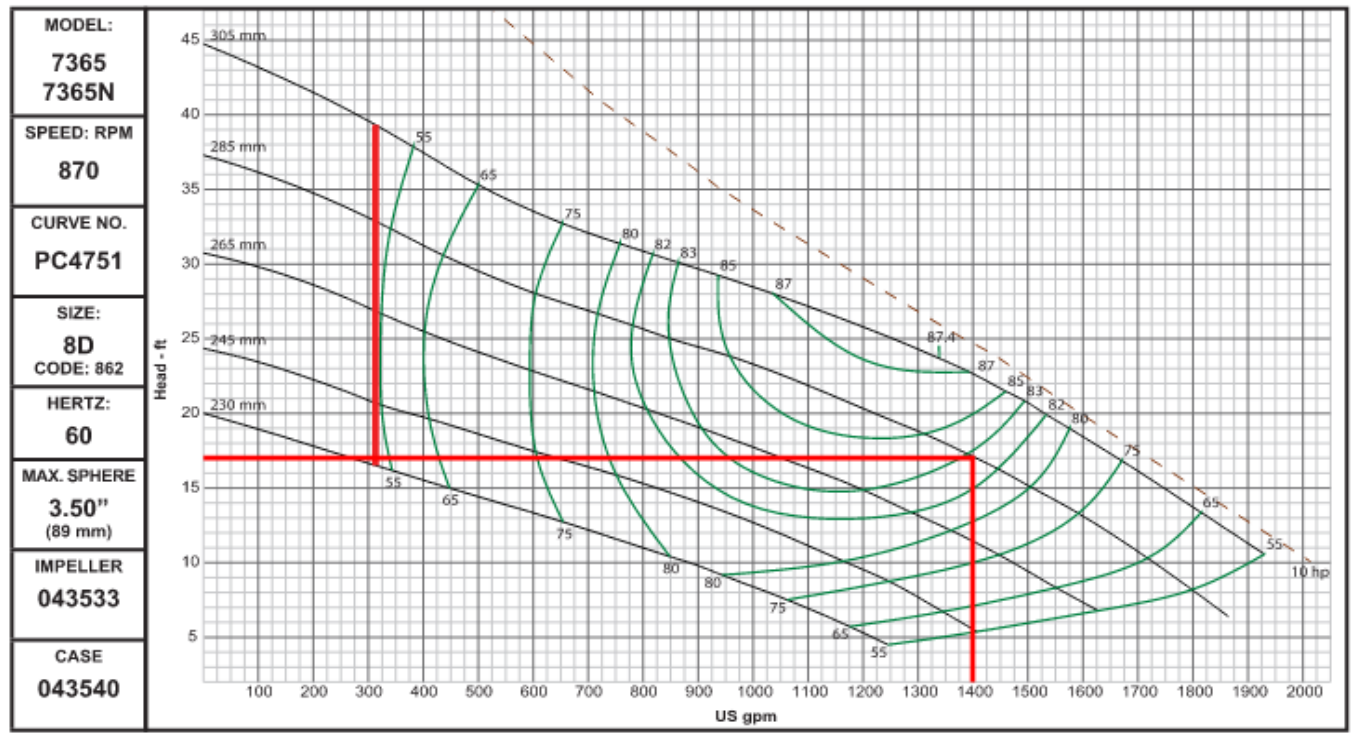
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SANTA FE WINWATER COMPANY . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SANTA FE WINWATER COMPANY IS PROHIBITED.		NAME	DATE	TITLE: Gardena U-Haul Stormwater Overflow and Treatment Pump Station 4,207 gpm (9.375 cfs)
	DRAWN	CKL	3/3/22	
	CHECKED	MDF	3/3/22	
	ENG APPR.	CKL	3/3/22	
	REV			SIZE B
				SHEET 8 OF 11

4

3

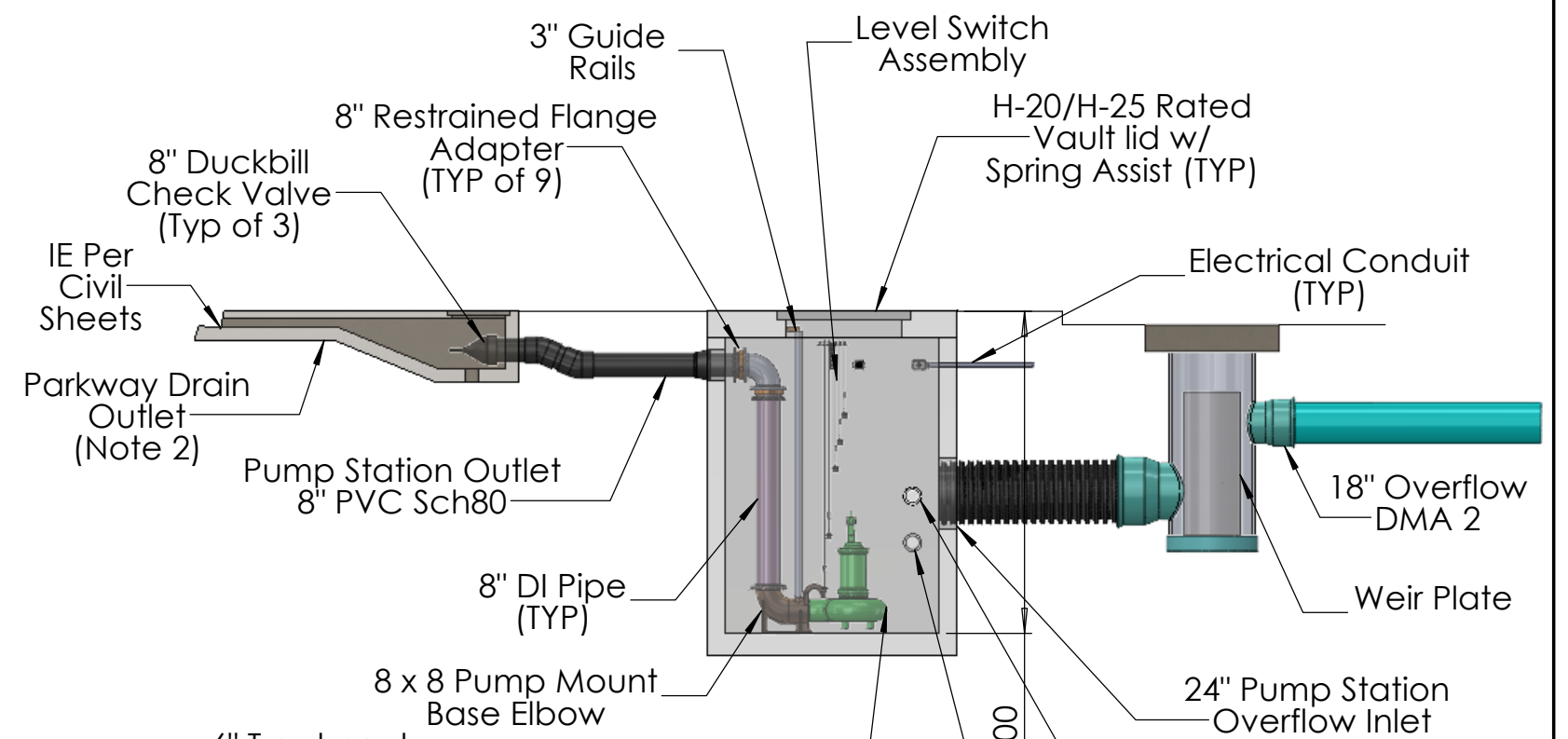
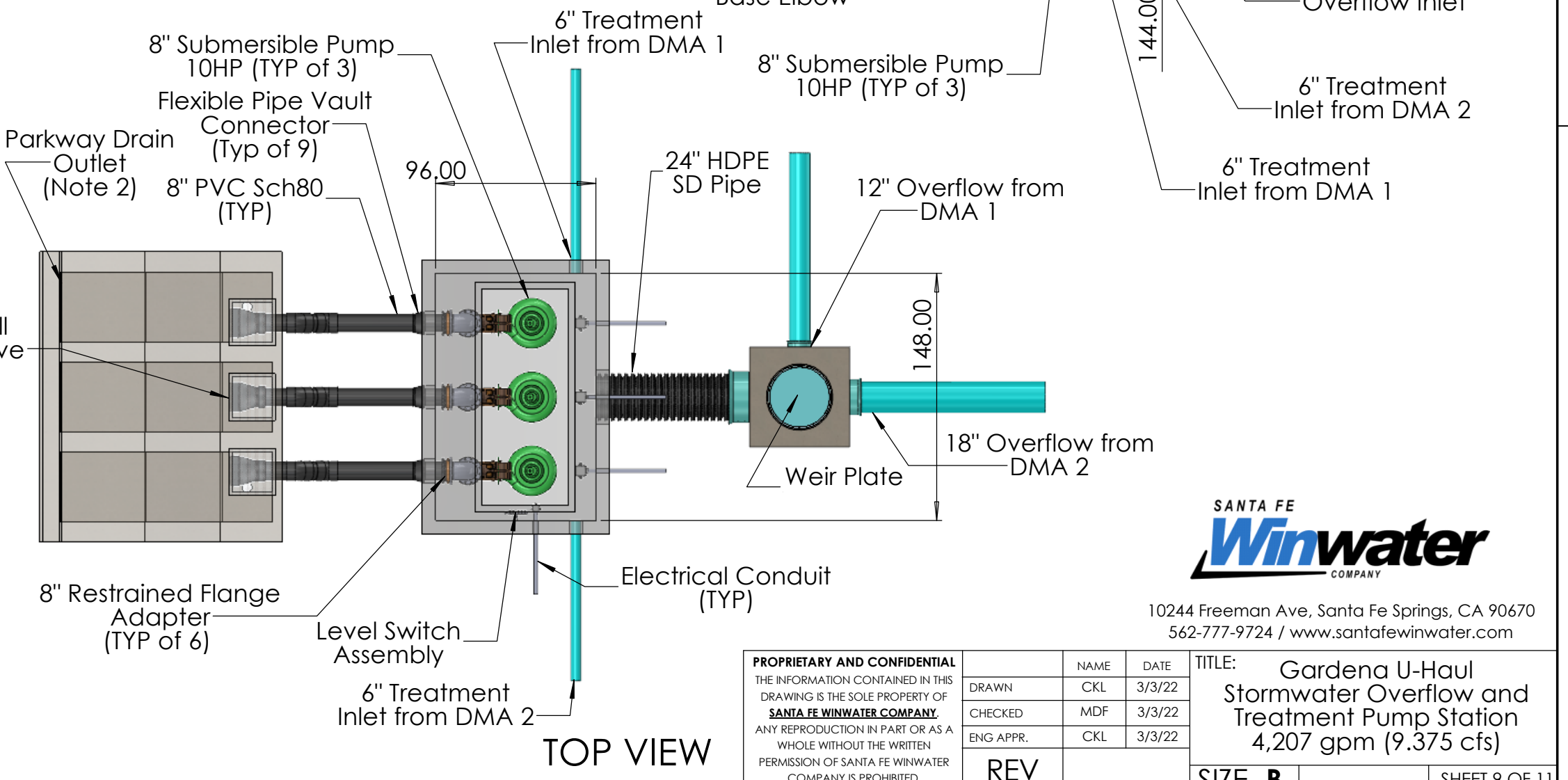
2

1



Headloss Calculations		
Fitting	Qty / Length (ft)	Headloss (ft w.c.)
Pipe (8")	18'	0.38
Check Valve	1	1.90
90 Elbow	2	1.06
22.5 Elbow	2	0.60
Exit	1	3.01
Elevation Head		10
Total Headloss @ 1402 gpm		16.95' w.c.

- NOTES:
1. Pump Controller (not shown) to be mounted in the field at a location determined by the Contractor or Owner. For distances greater than 15' from Pump Station, contact SFWW to determine additional power and level switch cable required.
 2. Parkway drain shall be constructed by Contractor and follow city or county details of construction. Structure shall be cast-in-place by Contractor. Detailed design drawings shall be supplied upon order.



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	DRAWN	CKL 3/3/22	
	CHECKED	MDF 3/3/22	
	ENG APPR.	CKL 3/3/22	REV
SIZE B			SHEET 9 OF 11

4

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1

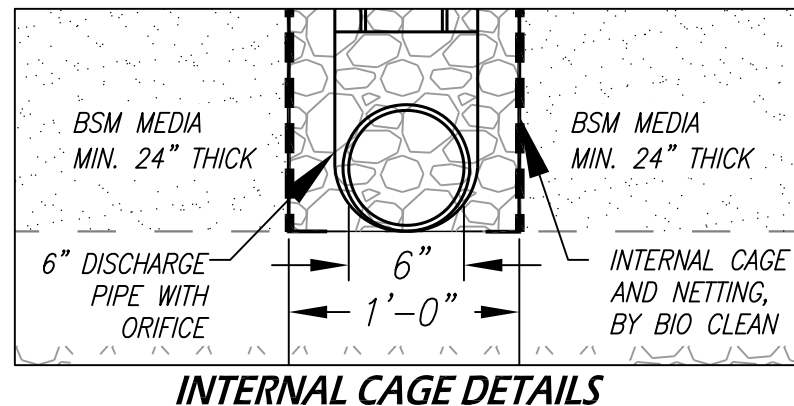
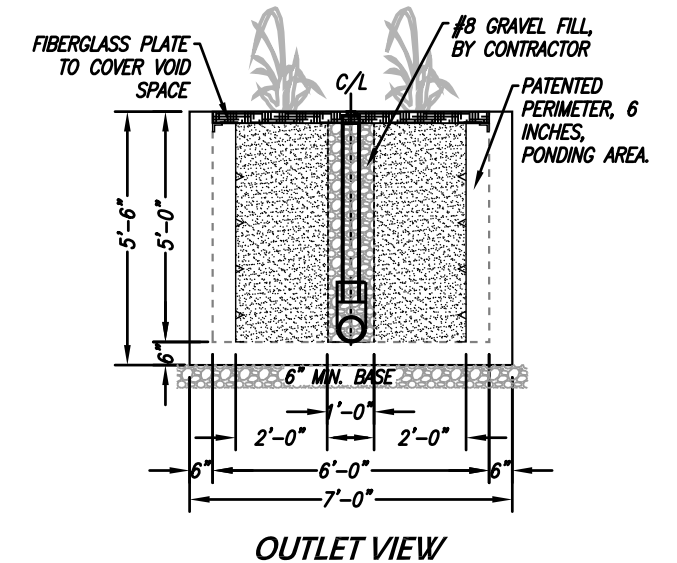
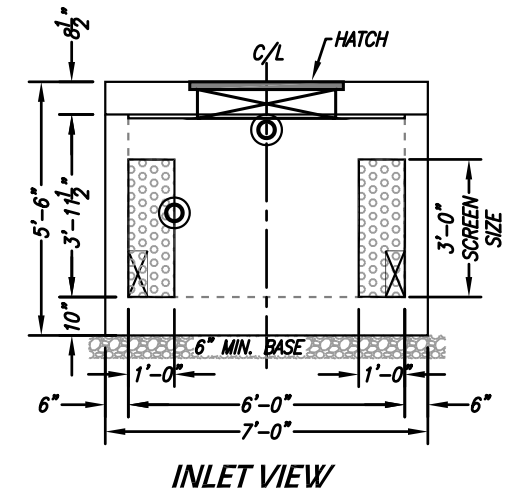
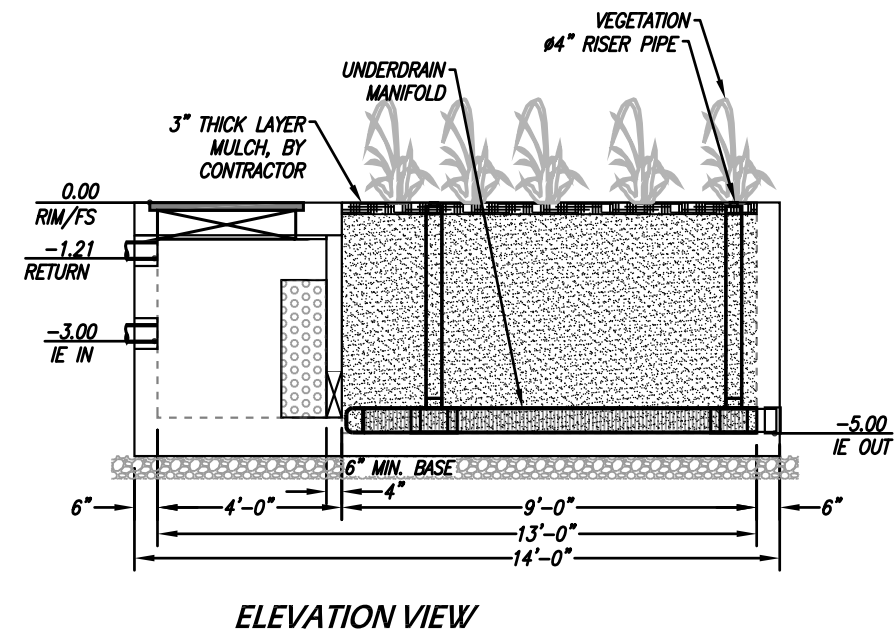
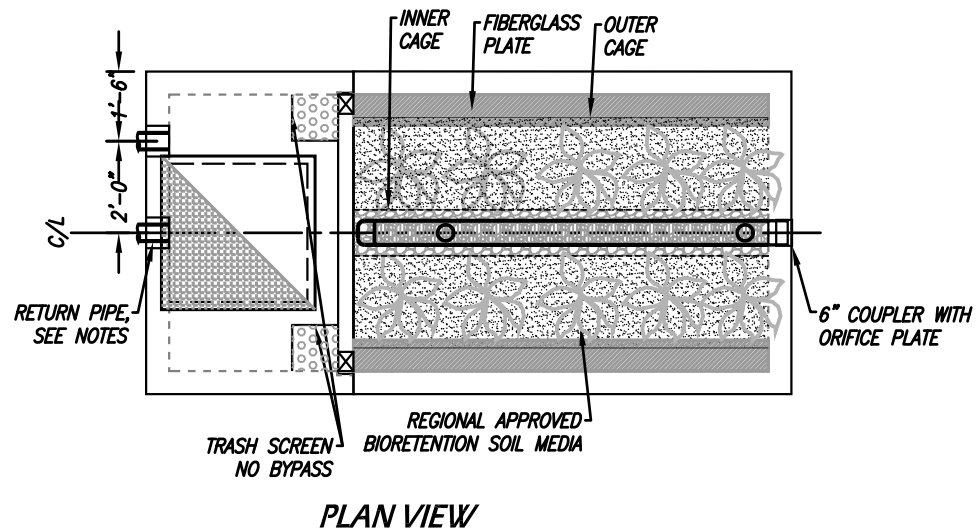
SITE SPECIFIC DATA			
PROJECT ID	14541.00		
PROJECT NAME	U-HAUL GARDENA		
PROJECT LOCATION	GARDENA, CA		
STRUCTURE ID	DMA 1		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
5217	---		
TREATMENT HGL AVAILABLE (FT)	---		
PEAK BYPASS REQUIRED (CFS) - IF APPLICABLE	OFFLINE		
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE	-3.00	PVC	4"
RETURN PIPE	-1.21	PVC	4"
OUTLET PIPE	-5.00	PVC-SDR35	6"
	PRETREATMENT	BIOFILTRATION	N/A
RIM ELEVATION	0.00	0.00	N/A
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	N/A
FRAME & COVER	36" X 36"	N/A	N/A
LA COUNTY MEDIA MIX VOLUME (CY)	5.63		
GRAVEL LAYER WITHIN MEDIA CHAMBER (CY)	1.10		
ORIFICE DIAMETER (IN)	Ø0.56"		
NOTES: PRELIMINARY, 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.
- ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURER'S STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
- CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
- CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
- DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

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



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

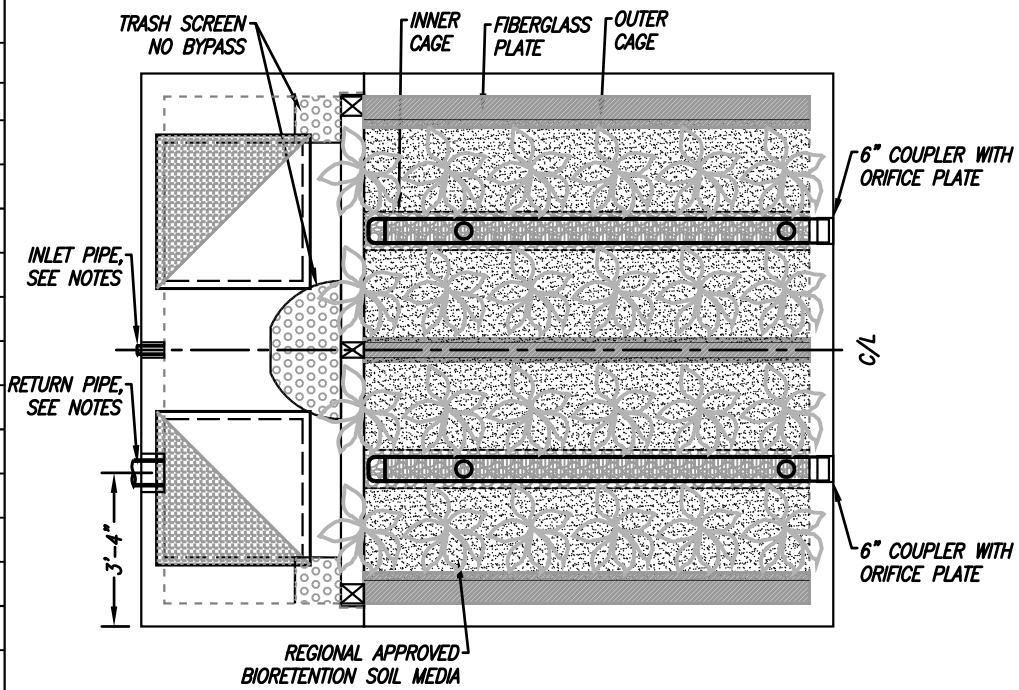
PROPRIETARY AND CONFIDENTIAL: THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MODULAR WETLANDS SYSTEMS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MODULAR WETLANDS SYSTEMS IS PROHIBITED.



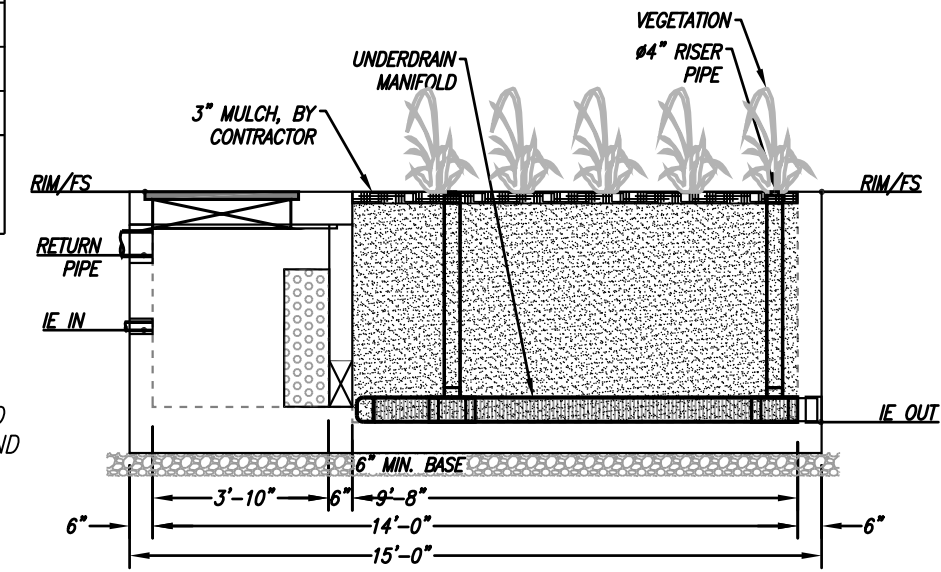
REQUIRED HORIZ. MEDIA THICKNESS (INCHES)	24
TREATMENT VOLUME (CF)	5217
TARGETED DRAINDOWN DURATION (HR)	96
WETLAND MEDIA INFILTRATION RATE (IN/HR)	12
WETLAND MEDIA LOADING RATE (GPM/SF)	OR 0.12
DISCHARGE RATE (CFS)	0.015
REQUIRED TOTAL MEDIA SURFACE AREA (SF)	56.46
PROVIDED TOTAL MEDIA SURFACE AREA (SF)	61.00
NUMBER OF ROW(S)	1

WetlandMOD-6-13-5'-0"-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL SHEET 10 OF 11

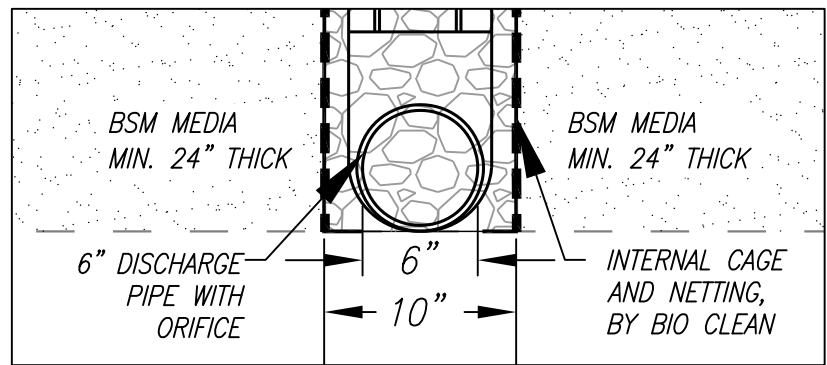
SITE SPECIFIC DATA			
PROJECT ID	14541.00		
PROJECT NAME	U-HAUL GARDENA		
PROJECT LOCATION	GARDENA, CA		
STRUCTURE ID	DMA 2		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
11500	---		
TREATMENT HGL AVAILABLE (FT)	---		
PEAK BYPASS REQUIRED (CFS) - IF APPLICABLE	OFFLINE		
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE	-3.00	N/K	2"
RETURN PIPE	-1.38	N/K	6"
OUTLET PIPE	-5.00	PVC-SDR35	6"
	PRETREATMENT	BIOFILTRATION	N/A
RIM ELEVATION	0.00	0.00	N/A
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	N/A
FRAME & COVER	(2) 36"X36"	N/A	N/A
LA COUNTY MEDIA MIX VOLUME (CY)	12.67		
GRAVEL LAYER WITHIN MEDIA CHAMBER (CY)	2.64		
ORIFICE DIAMETER (IN)	ø0.59"		
NOTES: PRELIMINARY, NOT FOR CONSTRUCTION.			



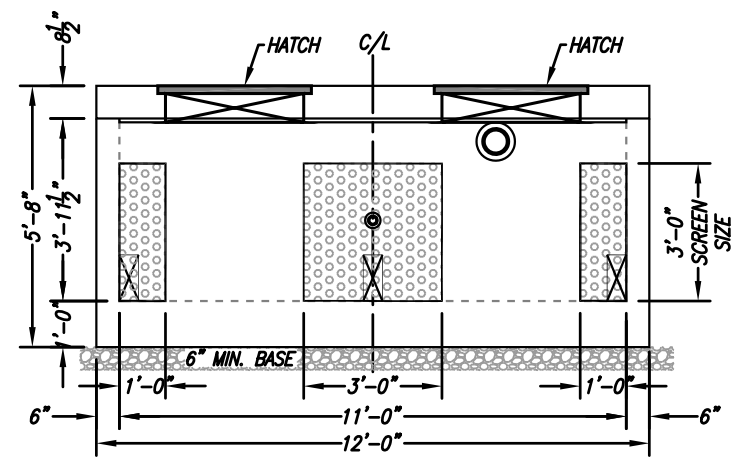
PLAN VIEW



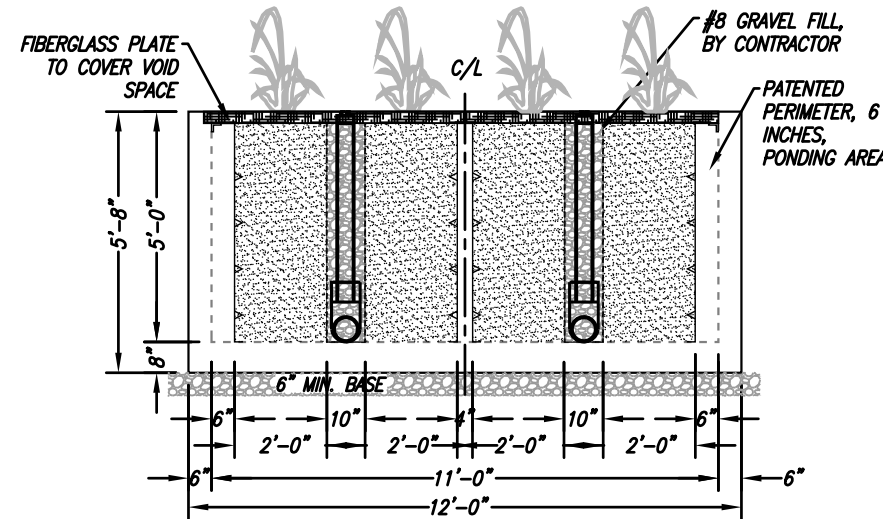
ELEVATION VIEW



INTERNAL CAGE DETAILS



INLET VIEW



OUTLET VIEW

INSTALLATION NOTES

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REQUIRED HORIZ. MEDIA THICKNESS (INCHES)	24
TREATMENT VOLUME (CF)	11500
TARGETED DRAINDOWN DURATION (HR)	96
WETLAND MEDIA INFILTRATION RATE (IN/HR)	12
WETLAND MEDIA LOADING RATE (GPM/SF)	OR 0.12
DISCHARGE RATE (CFS)	0.033
REQUIRED TOTAL MEDIA SURFACE AREA (SF)	124.45
PROVIDED TOTAL MEDIA SURFACE AREA (SF)	65.00
NUMBER OF ROW(S)	2

WetlandMOD-11-14-5'-0"-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL SHEET 11 OF 11

12/20/21CSINGH

Attachment B

Geotechnical Investigation

Attachment C

City Forms

Attachment D

Master Covenant Agreement (MCA)

Attachment E

Operations and Maintenance (O&M) Plan

**U-Haul Gardena
14206 Van Ness Avenue,
Gardena, CA 90249
APN 4061-028-051, 4061-028-033, 4061-028-023**

REQUIRED PERMITS

This section must list any permits required for the implementation, operation, and maintenance of the BMPs. Possible examples are:

- Permits for connection to sanitary sewer
- Permits from California Department of Fish and Game
- Encroachment permits

If no permits are required, a statement to that effect should be made.

RECORDKEEPING

All records must be made available for review upon request.

RESPONSIBLE PARTY

The owner is aware of the maintenance responsibilities of the proposed BMPs. A funding mechanism is in place to maintain the BMPs at the frequency stated in the LID Plan. The contact information for the entity responsible is below:

Name: _____

Company: _____

Title: _____

Address 1: _____

Address 2: _____

Phone Number: _____

Email: _____

BMP Name	BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Non-Structural Source Control BMPs			
Education for Property Owners, Tenants and Occupants	For developments with no Property Owners Association (POA) ¹ or with POAs of less than fifty (50) dwelling units, practical information materials will be provided to the first residents/occupants/tenants on general good housekeeping practices that contribute to protection of storm water quality initially these materials will be provided by the developer. Thereafter such materials will be available through the Permittees' education program. Different materials for residential, office commercial, retail commercial, vehicle-related commercial, and industrial uses will be involved.	Annually	Owner
Activity Restriction	If a POA is formed, conditions, covenants, and restrictions shall be prepared by the developer for the purpose of surface water quality protection. Alternatively, use restrictions may be developed by a building operator through lease terms, etc.	Annually	Owner
Common Area Landscape Management	Ongoing maintenance consistent with County Water Conservation Resolution or city equivalent, plus fertilizer and pesticide usage consistent with County Management Guidelines for Use of Fertilizers and Pesticides (DAMP Appendix F), or city equivalent.	Weekly	Owner

BMP Name	BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Common Area Litter Control	For developments with POAs, the POA will be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. The Associations may contract with their landscape maintenance firms to provide this service during regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations by homeowners or businesses and reporting the violations to the Association for investigation.	Weekly	Owner
Housekeeping of Loading Docks	Loading docks for grocery, drug and discount stores and warehouse type commercial and industrial loading docks must be kept in a clean and orderly condition through a regular program of sweeping and litter control and immediate cleanup of spills and broken containers.	Weekly	Owner
Common Area Catch Basin Inspection	For developments with POAs and privately maintained drainage systems, require the Association to have privately owned catch basins inspected and, if necessary, cleaned prior to the storm season, no later than October 15th each year.	Annually	Owner
Street Sweeping Private Streets and Parking Lots	For developments with POAs and privately owned streets and parking lots, require the streets and parking lots be swept prior to the storm season, no later than October 15 each year.	Annually	Owner

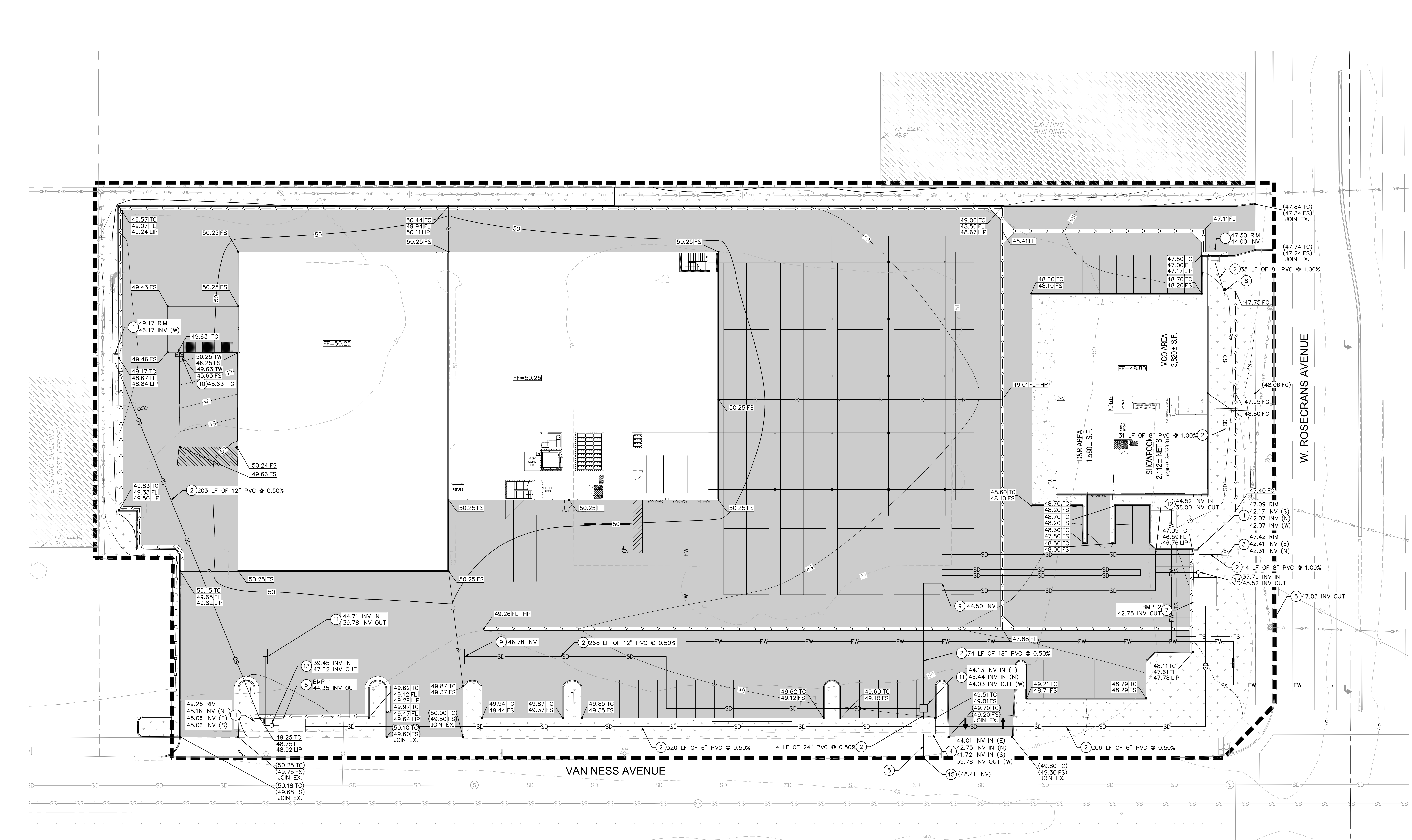
BMP Name	BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Structural Source Control BMPs			
Provide Storm Drain System Stenciling and Signage	Phrase “No Dumping – Drains to Ocean” or equally effective phrase to be stenciled on catch basins to alert the public to the destination of pollutants discharged into stormwater.	Annually	Owner
Design and Construct Trash and Waste Storage Areas to Reduce Pollutant Introduction	Trash container (dumpster) areas to have drainage from adjoining roofs and pavements diverted around the area(s).	Per Design	Owner
Use Efficient Irrigation Systems & Landscape Design	Physical implementation of landscape plan consistent with County Water Conservation Resolution or city equivalent, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.	Annually	Owner
Loading Docks	In designs for maintenance bays and loading docks, containment is encouraged. Preventative measures include overflow containment structures and dead-end sumps. However, in the case of loading docks from grocery stores and warehouse/distribution centers, engineered infiltration systems may be considered.	Per Design	Owner
Treatment Control BMPs			
Bioclean Stormwater Biofiltration System	Units must undergo maintenance per manufacturer’s recommendations. Refer to the manufacturer’s specifications and Appendix 5, maintenance materials for additional maintenance.	Annually	Owner

BMP Name	BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Bioclean Underground Detention System	Units must undergo maintenance per manufacturer's recommendations. Refer to the manufacturer's specifications and Appendix 5, maintenance materials for additional maintenance.	Annually	Owner

Attachment F

Plans

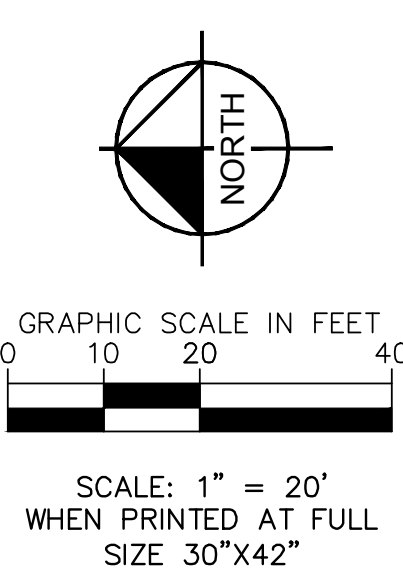
Plotted By: Kim, Thomas Sheet Set: KHA Layout: GRADING PLAN March 09, 2022 07:29:42pm K:\ORA_LDEV\U-Haul\XXXXXXX - Gardena\CADD\Exhibits\Prelim Grading Conceptual Grading Plan.dwg
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LEGEND

	PROPERTY LINE		HIGH POINT
	STREET CENTERLINE		TOP OF CURB
	CIVIL LIMITS OF WORK		FINISHED SURFACE
	PROPOSED CONTOURS		FLOWLINE
	EXISTING CONTOURS		EXISTING GRADE
	PROPOSED RIDGE		PROPOSED GRADE
	FLOWLINE		PROPOSED SLOPE
	PROPOSED STORM DRAIN		PROPOSED LANDSCAPE AREA
	EXISTING STORM DRAIN		PROPOSED ASPHALT
	EXISTING SANITARY SEWER		

- DRAINAGE NOTES**
- 1 INSTALL CURB OPENING CATCH BASIN.
 - 2 INSTALL HDPE STORM DRAIN LINE. SIZE PER PLAN.
 - 3 INSTALL 48" STORM DRAIN MANHOLE.
 - 4 PROPOSED SUMP PUMP STATION.
 - 5 INSTALL PARKWAY OVERFLOW DRAIN.
 - 6 PROPOSED BIOCLEAN WETLAND MOD (WETLANDMOD-6-13-5'-0"-V).
 - 7 PROPOSED BIOCLEAN WETLAND MOD (WETLANDMOD-11-14-5'-0"-V).
 - 8 PROPOSED STORM DRAIN CLEANOUT.
 - 9 PROPOSED OVERFLOW OUTLET.
 - 10 PROPOSED SUMP PUMP TO OUTLET TRUCK DOCK RUNOFF INTO BUBBLE UP BOX AND SPILL ONTO GRADE.
 - 11 PROPOSED CMP STORMWATER DETENTION TANK (96" DIA. X 104' LONG).
 - 12 PROPOSED CMP STORMWATER DETENTION TANK (96" DIA. X 113' LONG, 2 TYP.).
 - 13 PROPOSED WETLAND MOD FEED PUMP STATION.
 - 14 PROPOSED CISTERN OVERFLOW WEIR STRUCTURE.
 - 15 PROPOSED PARKWAY OUTFALL INTO EXISTING PUBLIC CURB AND GUTTER.



14206 VAN NESS AVENUE
 PREPARED FOR
U-HAUL

KHA PROJECT: 194333003
 DATE: 8/20/2021
 SCALE AS SHOWN
 DESIGNED BY: AZ
 DRAWN BY: TK
 CHECKED BY: JG

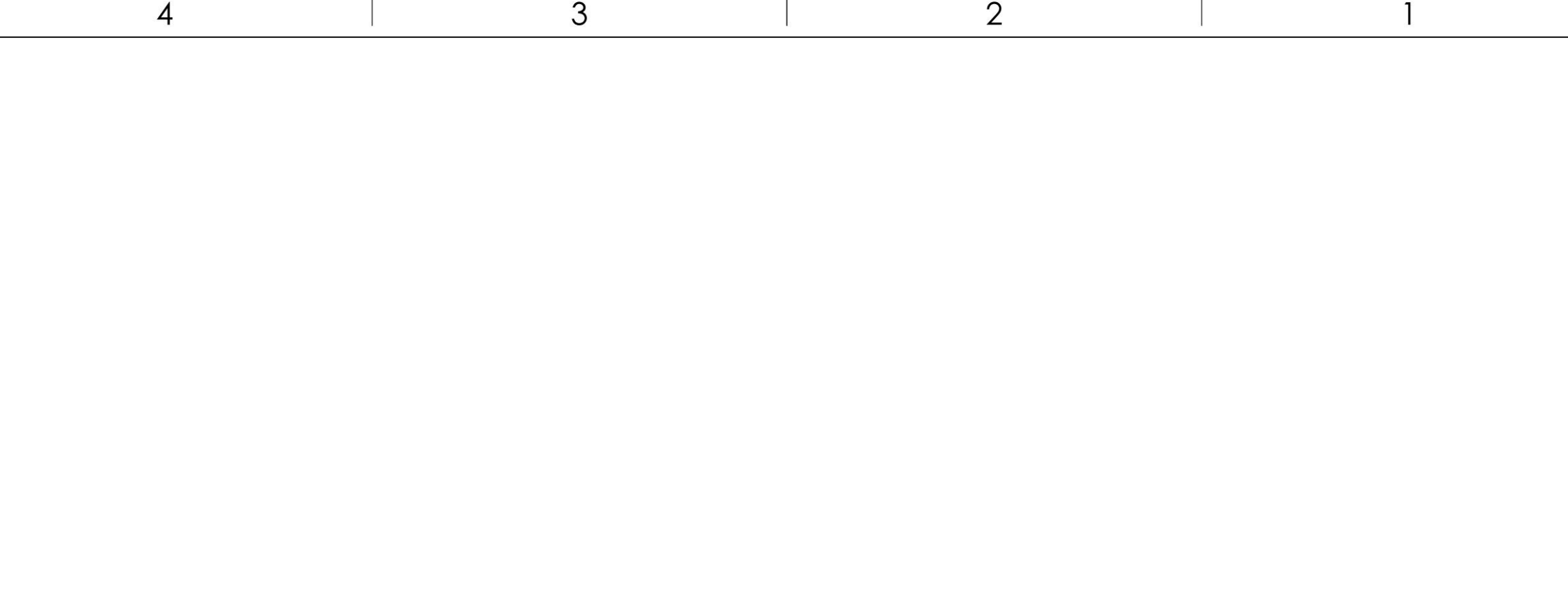
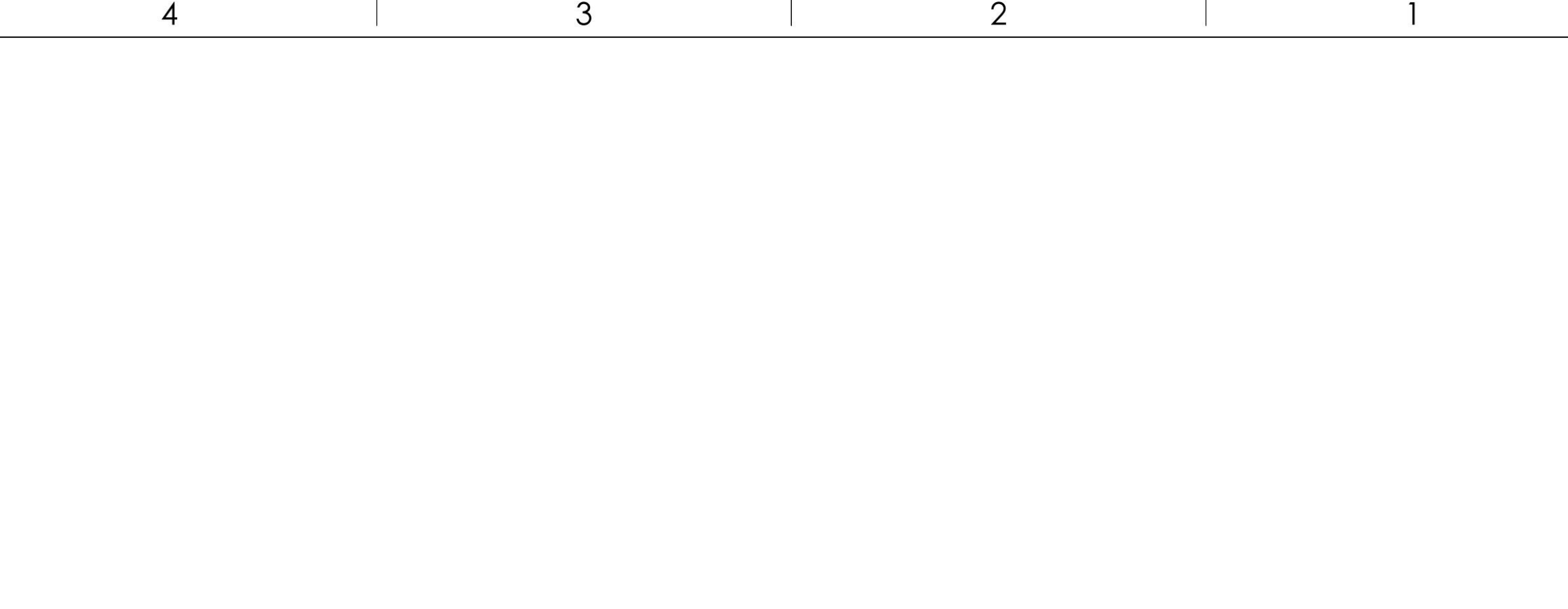
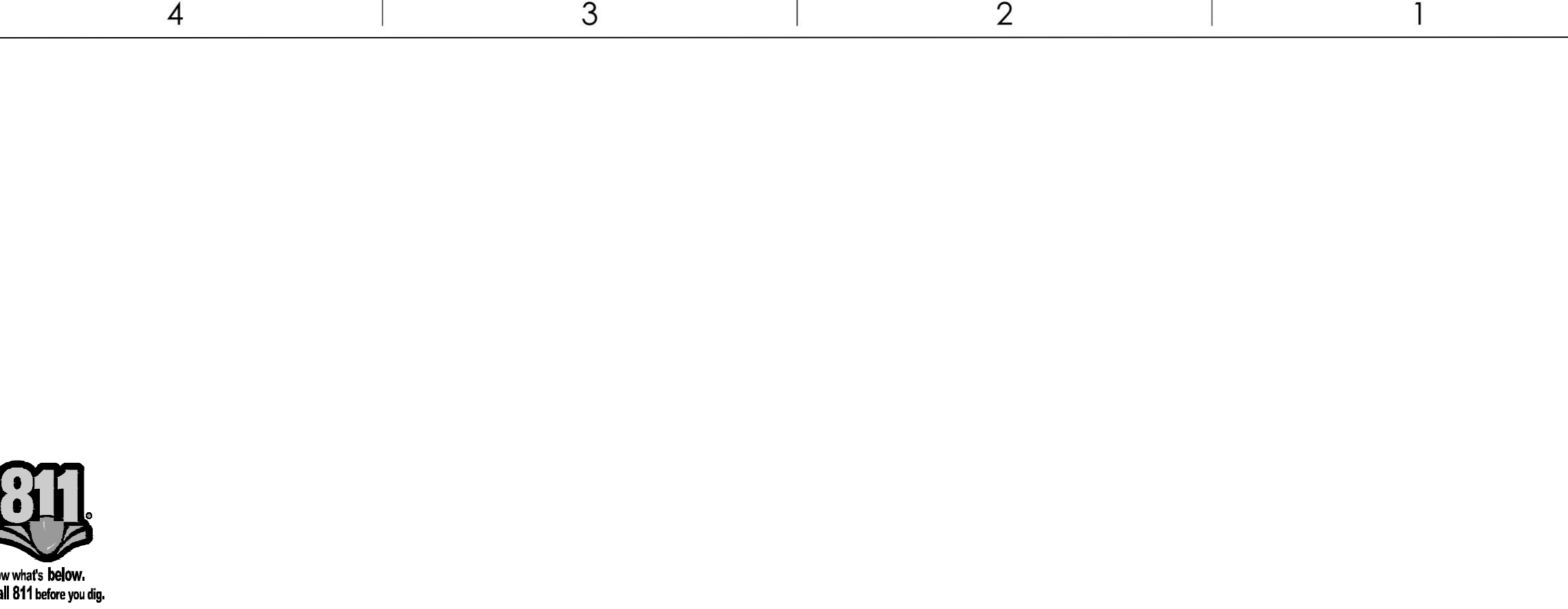
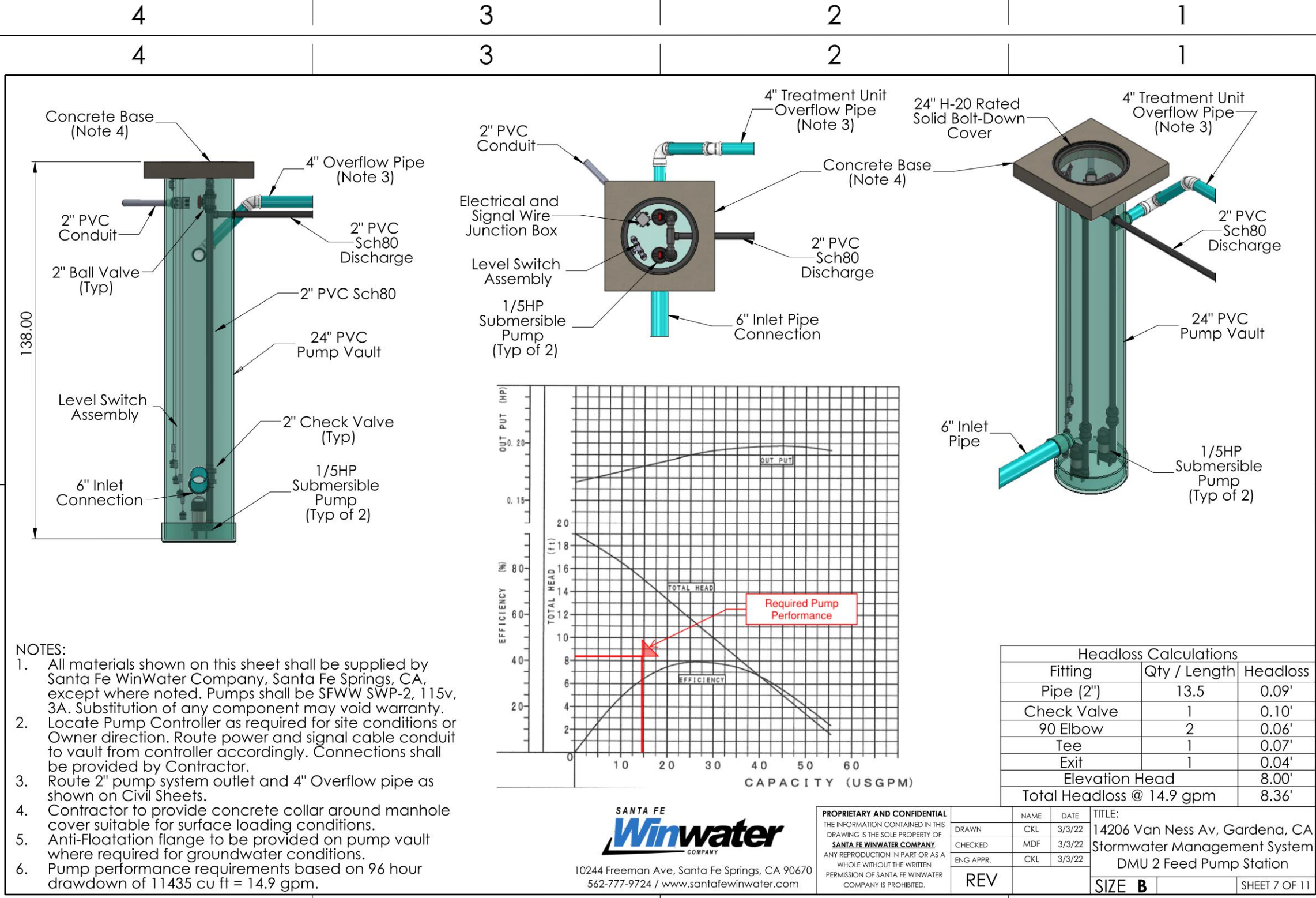
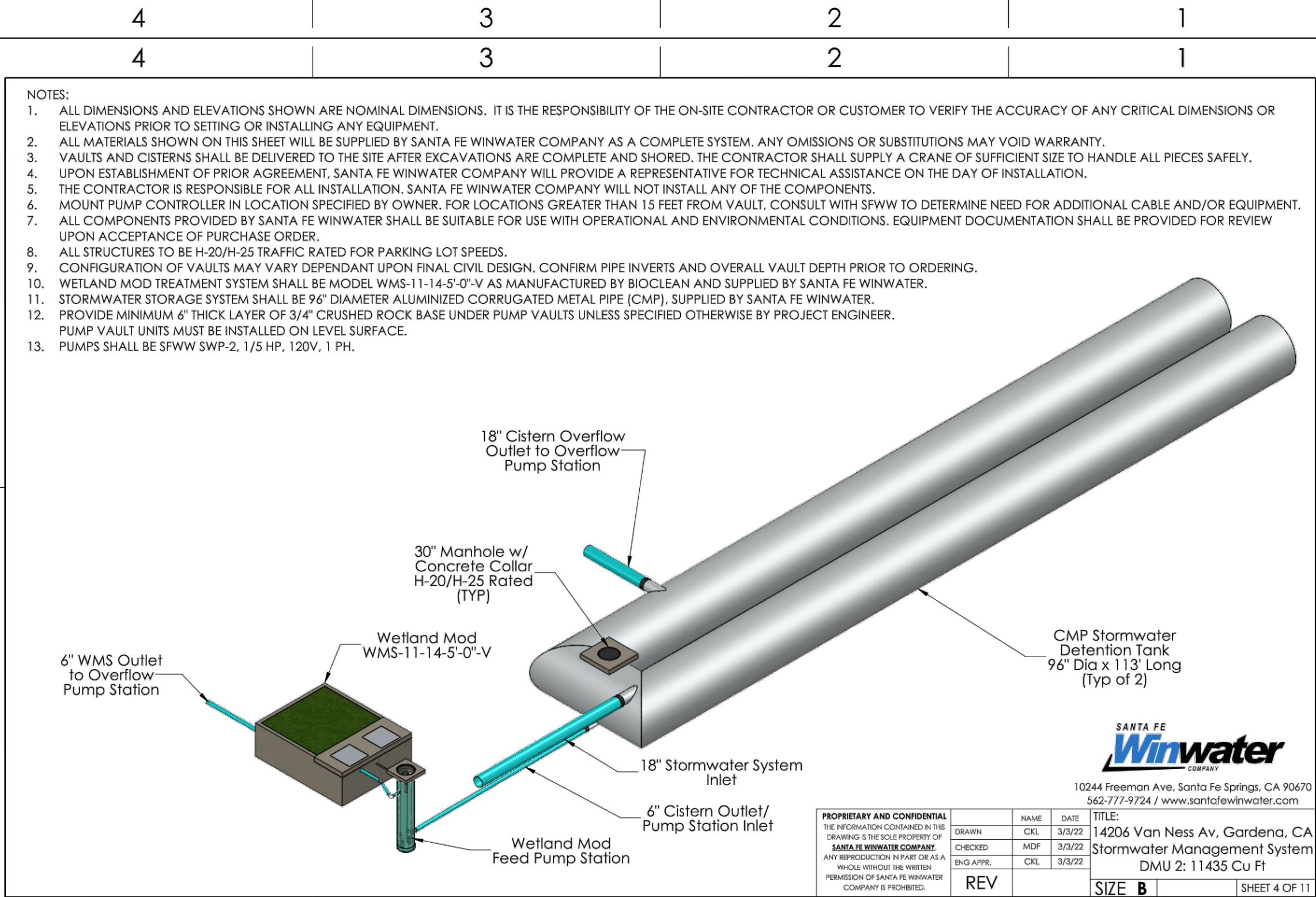
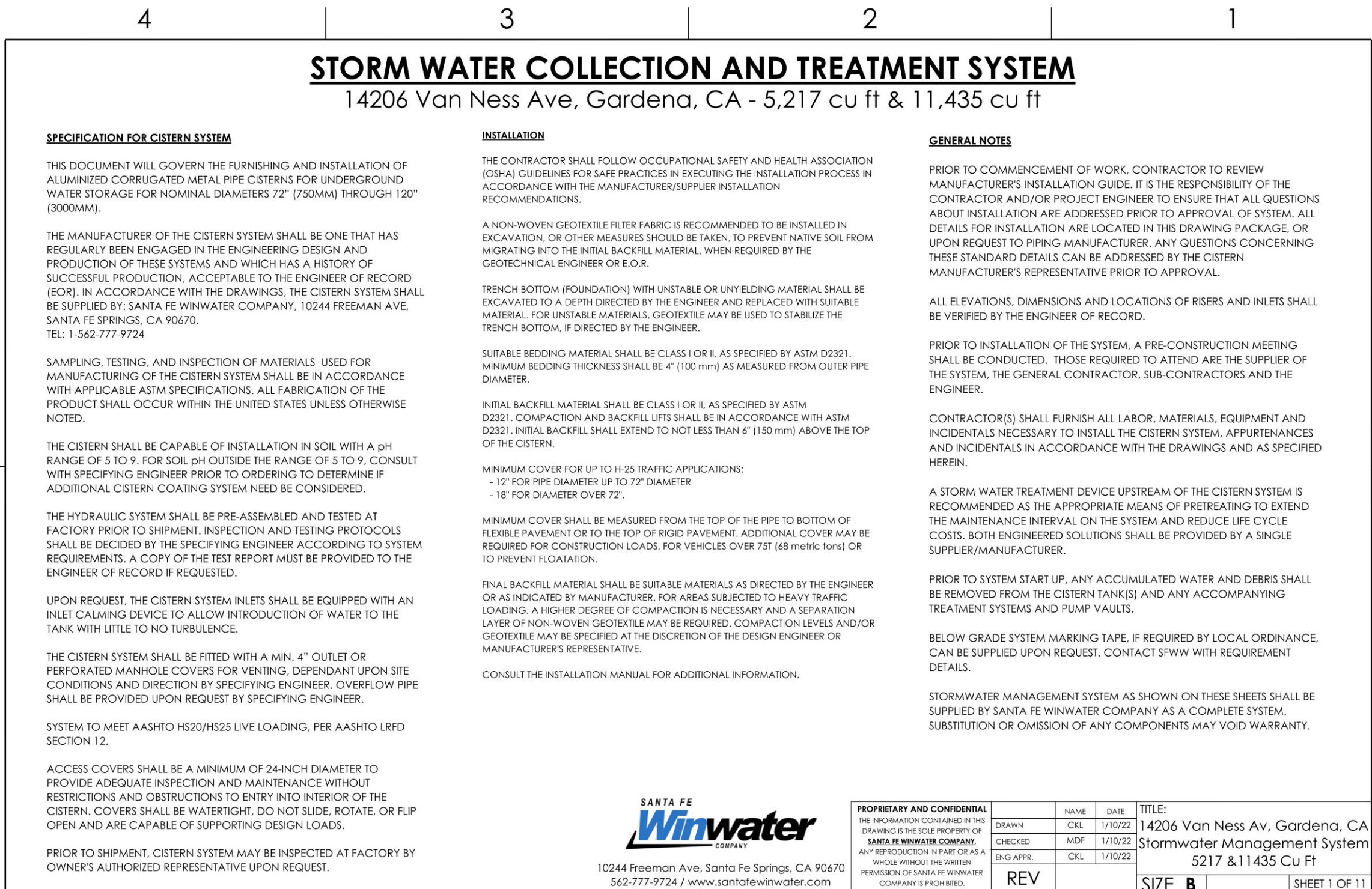
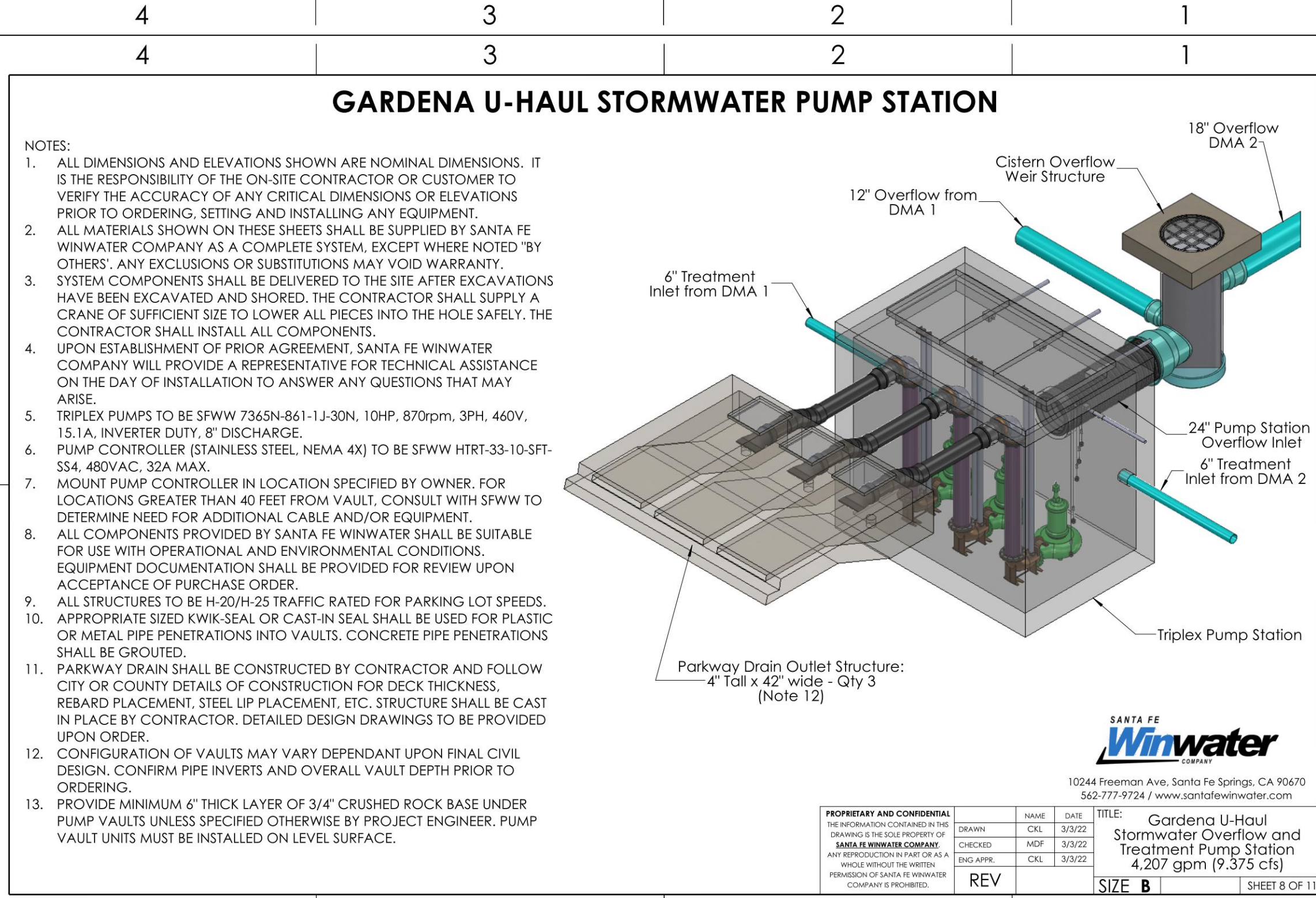
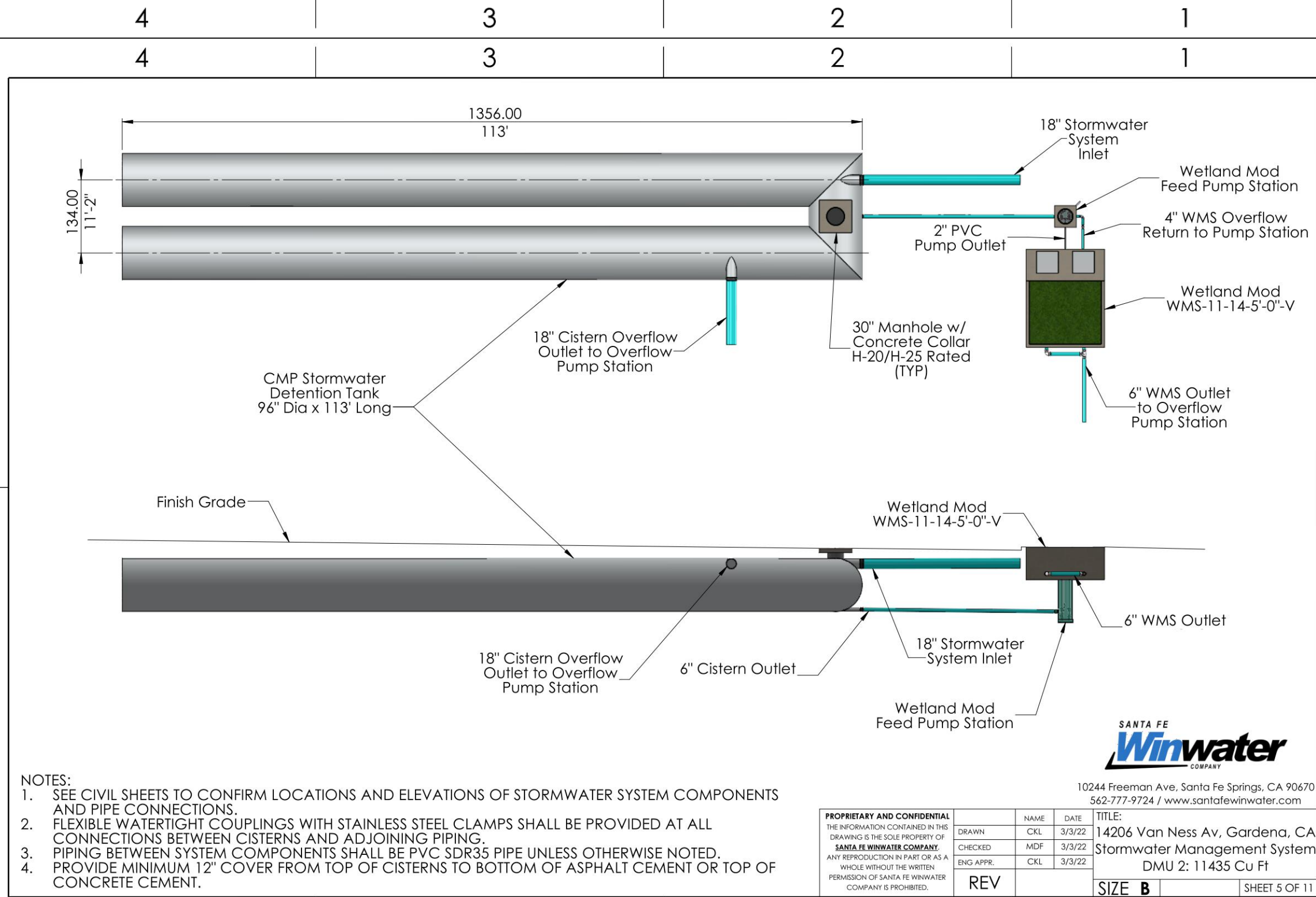
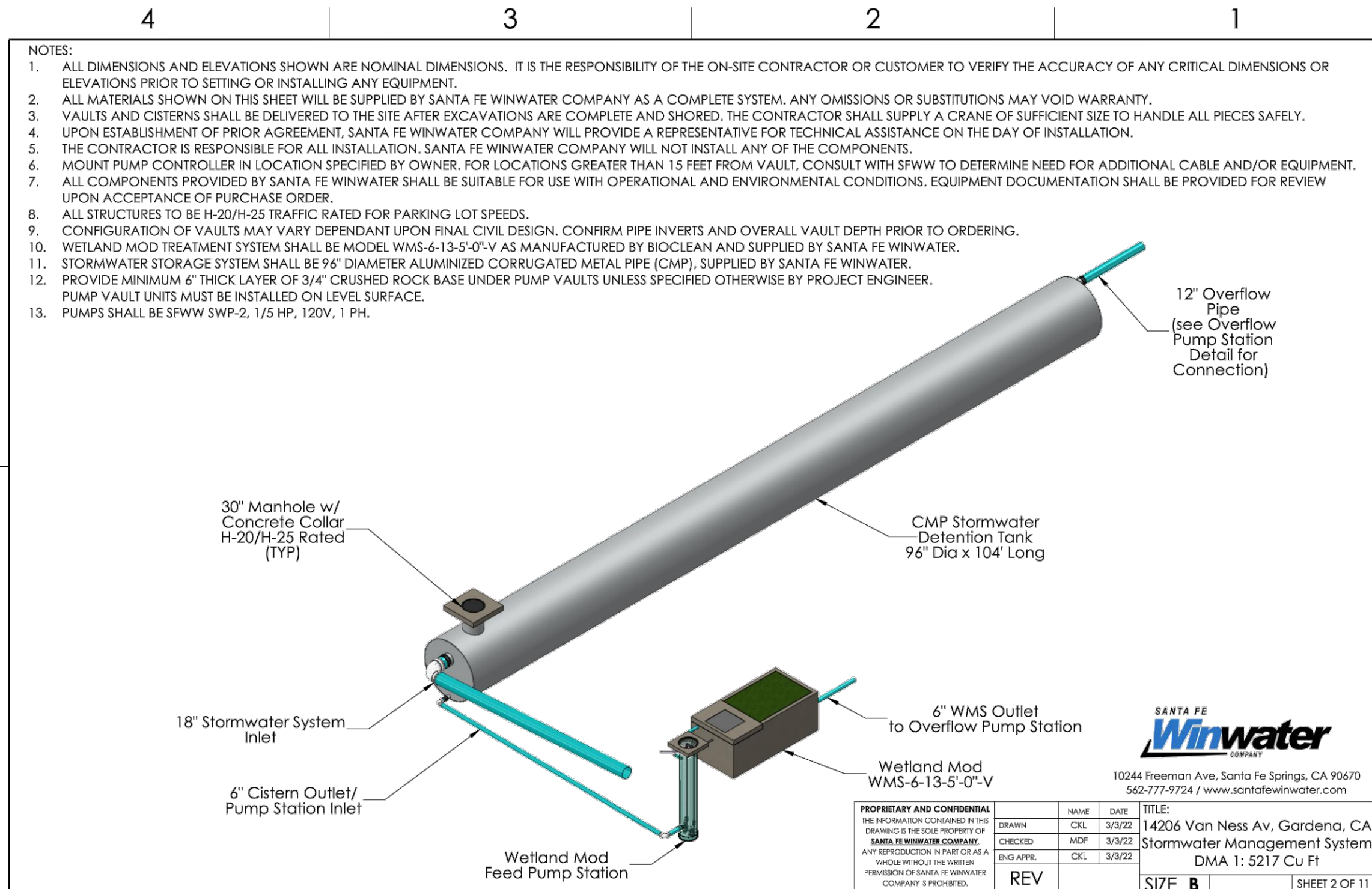
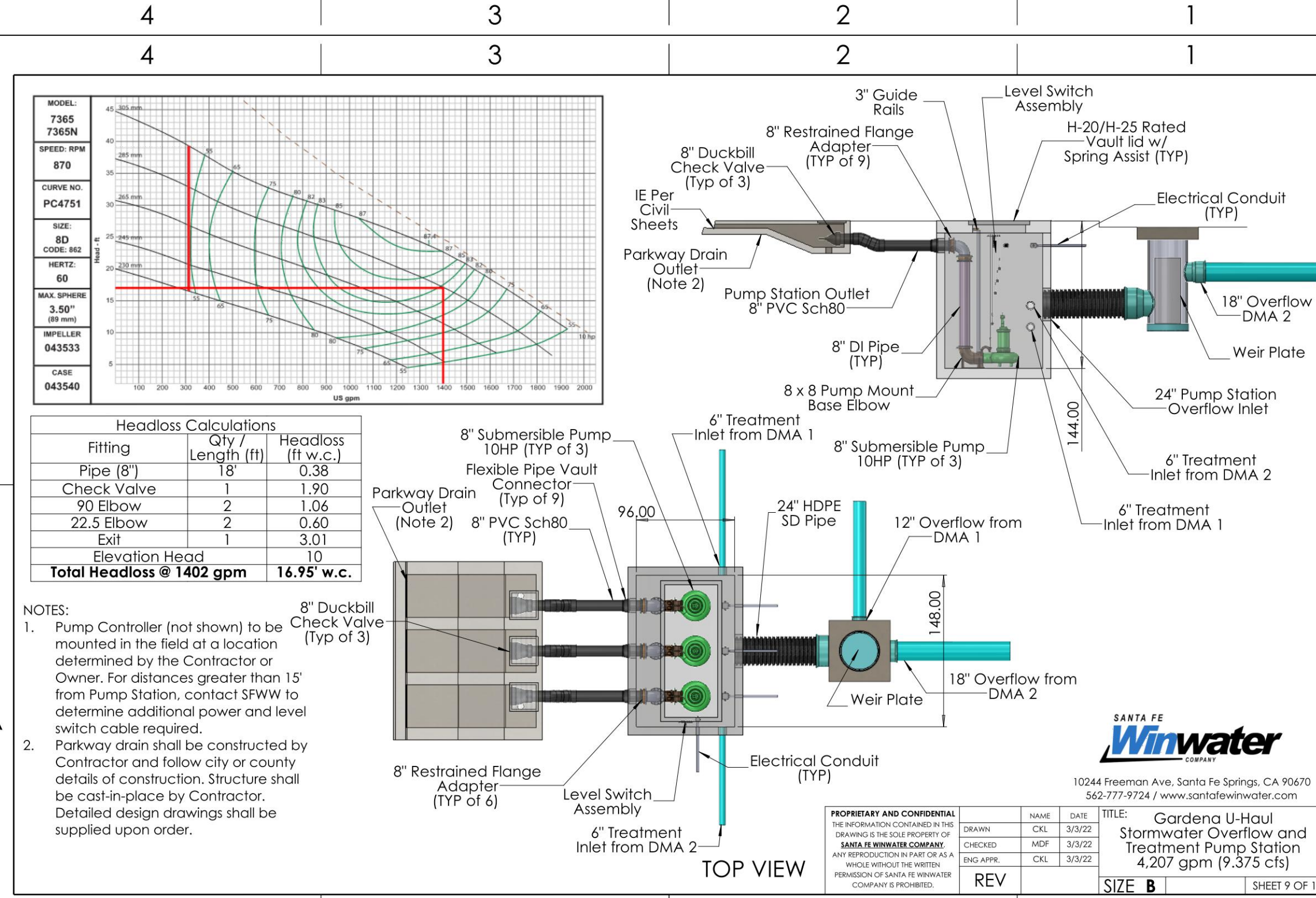
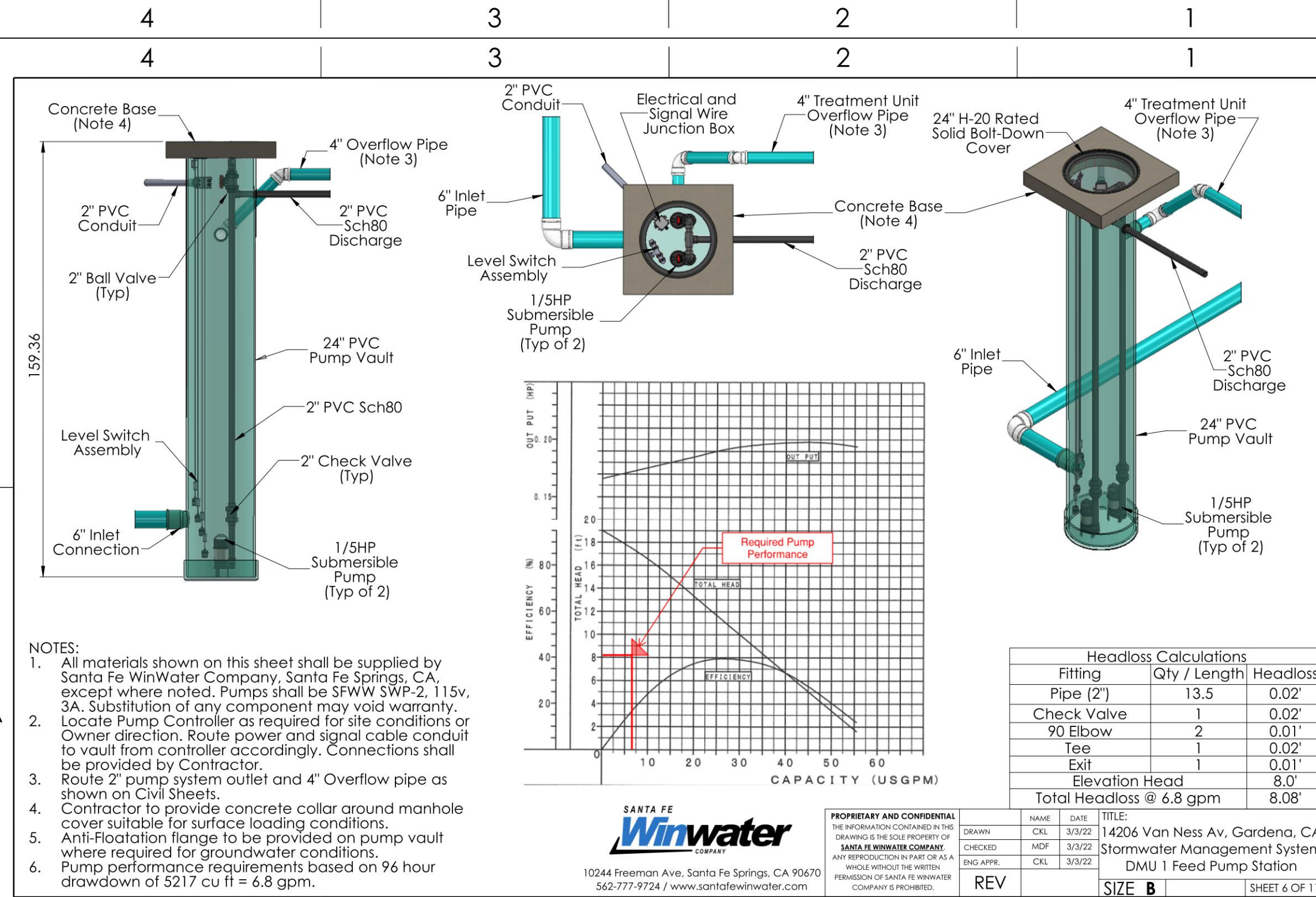
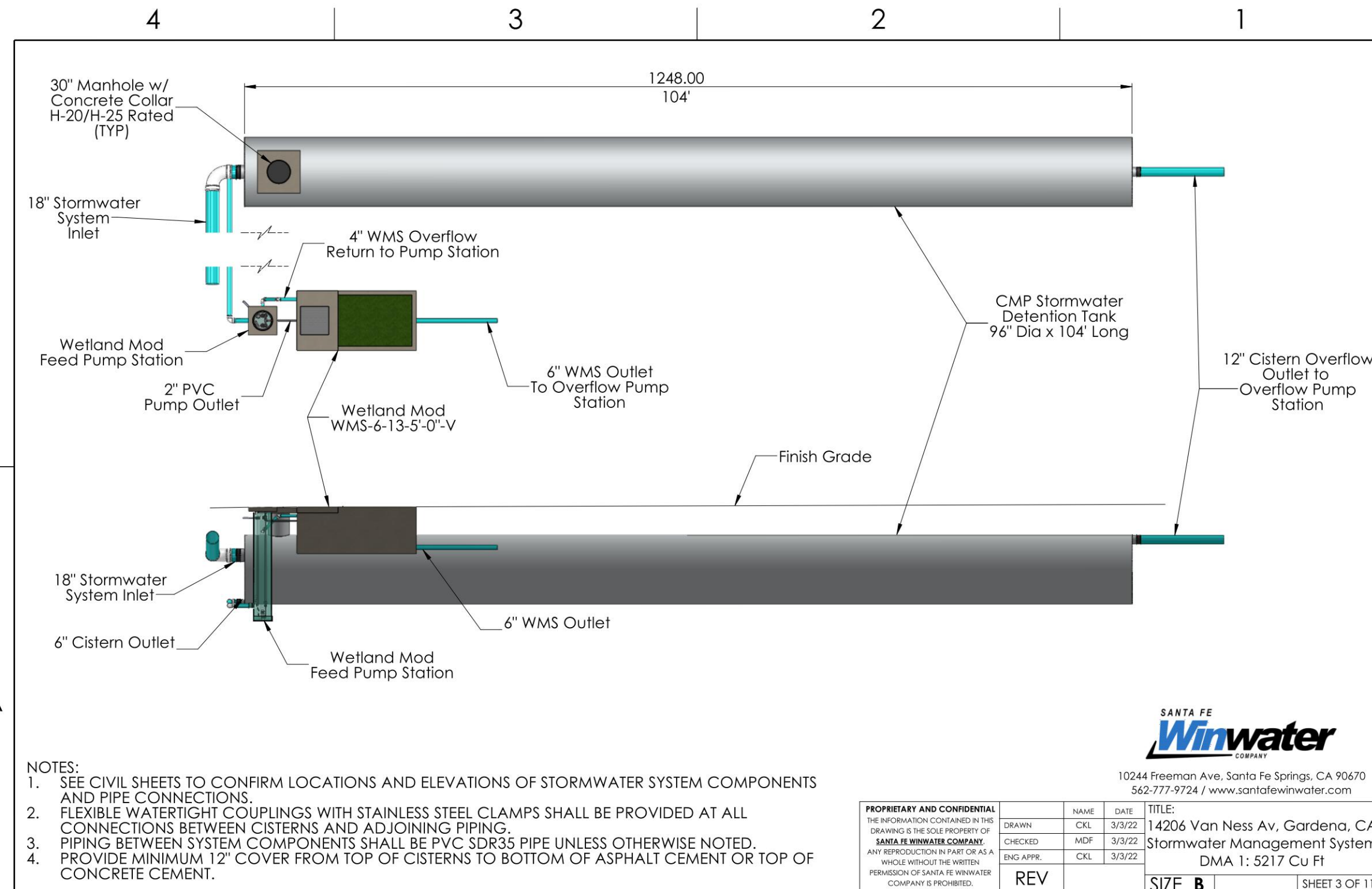
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 PHONE: 714-938-1030 FAX: 714-938-9488
 WWW.KIMLEY-HORN.COM

PRELIMINARY GRADING PLAN

CITY OF GARDENA CA

SHEET NUMBER
C1.0

NO.	REVISIONS	DATE	BY



14206 VAN NESS AVENUE
GRADING DETAILS 1
U-HAUL

Prepared for U-Haul by Kimley-Horn and Associates, Inc.

1100 W. TOWN AND COUNTRY RD, SUITE 700, GRANGE, CA 92626
 PHONE: 714-939-1000 FAX: 714-939-9498
 WWW.KIMLEY-HORN.COM

Kimley-Horn

REGISTERED PROFESSIONAL CIVIL ENGINEER
 STATE OF CALIFORNIA
 NO. 80376

KHA PROJECT: 194-33-003
 DATE: 8/20/2021
 SCALE AS SHOWN
 DESIGNED BY: AZ
 DRAWN BY: TK
 CHECKED BY: JS

CITY OF GARDENA

SHEET NUMBER
C2.0

Plotted By: Kim, Thomas Sheet: KHA_Layout: DETAILS (2) March 09, 2022 07:29:45pm K:\ORA_LDEV\U-Haul\XXXXXXX - Gardena\CADD\Exhibits\Prelim Grading\Conceptual Grading Plan.dwg
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SITE SPECIFIC DATA	
PROJECT ID	14541.00
PROJECT NAME	U-HAUL GARDENA
PROJECT LOCATION	GARDENA, CA
STRUCTURE ID	DMA 2
TREATMENT REQUIRED	---
VOLUME BASED (CF)	11500
FLOW BASED (CFS)	---
TREATMENT HGL AVAILABLE (FT)	---
PEAK BYPASS REQUIRED (CFS) - IF APPLICABLE	OUTLINE
PIPE DIA	12" MATERIAL DIAMETER
INLET PIPE	-3.00 N/A 2"
RETURN PIPE	-1.38 N/A 6"
OUTLET PIPE	-5.00 PVC-SORBS 6"
PRETREATMENT	BIOFILTRATION N/A
RIM ELEVATION	0.00 0.00 N/A
SURFACE LOAD	PEDESTRIAN OPEN PLANTER N/A
FRAME & COVER (C) 36"X36"	N/A
1A COUNTY MEDIA BED VOLUME (CY)	12.87
GRAVEL LAYER WITHIN MEDIA CHAMBER (CY)	2.64
ORIFICE DIAMETER (IN)	#0.59"
NOTES: PRELIMINARY, NOT FOR CONSTRUCTION.	

INTERNAL CAGE DETAILS	
REQUIRED HORIZ. MEDIA THICKNESS (INCHES)	24
TREATMENT VOLUME (CY)	11500
DESIGNED REMEDIATION DURATION (HR)	96
METLANDMEDIA INFILTRATION RATE (IN/HR)	0.12
METLANDMEDIA LOADING RATE (GPM/SF)	0.01
DISCHARGE RATE (CFS)	0.033
REQUIRED TOTAL MEDIA SURFACE AREA (SF)	124.43
PROVIDED TOTAL MEDIA SURFACE AREA (SF)	65.00
NUMBER OF ROWS	2

INSTALLATION NOTES

- CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCENTIVES REQUIRED TO INSTALL AND INITIAL 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 4" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
- ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. PIPES CANNOT INTERSECT BEFORE FLOW. INLET OF OUTLET PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED TIGHT WITH A NON-SHINK GROUT PER MANUFACTURER'S STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
- CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE. GROUT OR SPOUT BRUSHING REQUIRED ON ALL UNITS WITH VEGGATION.
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- GROUT OR SPOUT BRUSHING REQUIRED ON ALL UNITS WITH VEGGATION.

GENERAL NOTES

- MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND QUANTITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, HEIGHTS AND QUANTITIES, PLEASE CONSULT MANUFACTURER.

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Winwater
SANTA FE

Bio Clean
A Forterra Company

WetlandMOD-11-14-5'-0" V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL (SHEET 13 OF 13)

SITE SPECIFIC DATA	
PROJECT ID	14541.00
PROJECT NAME	U-HAUL GARDENA
PROJECT LOCATION	GARDENA, CA
STRUCTURE ID	DMA 1
TREATMENT REQUIRED	---
VOLUME BASED (CF)	5217
FLOW BASED (CFS)	---
TREATMENT HGL AVAILABLE (FT)	---
PEAK BYPASS REQUIRED (CFS) - IF APPLICABLE	OUTLINE
PIPE DIA	12" MATERIAL DIAMETER
INLET PIPE	-3.00 PVC 4"
RETURN PIPE	-1.21 PVC 4"
OUTLET PIPE	-5.00 PVC-SORBS 6"
PRETREATMENT	BIOFILTRATION N/A
RIM ELEVATION	0.00 0.00 N/A
SURFACE LOAD	PEDESTRIAN OPEN PLANTER N/A
FRAME & COVER (C) 36" X 36"	N/A
1A COUNTY MEDIA BED VOLUME (CY)	5.63
GRAVEL LAYER WITHIN MEDIA CHAMBER (CY)	1.10
ORIFICE DIAMETER (IN)	#0.56"
NOTES: PRELIMINARY, NOT FOR CONSTRUCTION.	

INTERNAL CAGE DETAILS	
REQUIRED HORIZ. MEDIA THICKNESS (INCHES)	24
TREATMENT VOLUME (CY)	5217
DESIGNED REMEDIATION DURATION (HR)	96
METLANDMEDIA INFILTRATION RATE (IN/HR)	0.12
METLANDMEDIA LOADING RATE (GPM/SF)	0.01
DISCHARGE RATE (CFS)	0.015
REQUIRED TOTAL MEDIA SURFACE AREA (SF)	56.46
PROVIDED TOTAL MEDIA SURFACE AREA (SF)	67.00
NUMBER OF ROWS	7

INSTALLATION NOTES

- CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCENTIVES REQUIRED TO INSTALL AND INITIAL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURER'S SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
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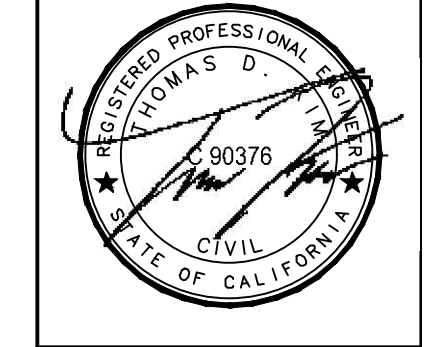
Winwater
SANTA FE

Bio Clean
A Forterra Company

WetlandMOD-6-13-5'-0" V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL (SHEET 13 OF 13)

NO.	REVISIONS	DATE	BY

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KHA PROJECT
194333003
DATE
8/20/2021
SCALE AS SHOWN
DESIGNED BY AZ
DRAWN BY TK
CHECKED BY JG

GRADING DETAILS 2

14206 VAN NESS AVENUE
 PREPARED FOR
 U-HAUL
 CITY OF GARDENA, CA
 SHEET NUMBER
 C3.0



TREES	QTY	BOTANICAL / COMMON NAME	CONT.	WUCOLS
	8	FICUS MICROCARPA NITIDA / INDIAN LABEL FIG	24" BOX	MODERATE
	17	BOTANICAL / COMMON NAME	CONT.	WUCOLS
	17	SYAGRUS ROMANZOFFIANA / QUEEN PALM	14" B.T.H. MIN.	MODERATE
SHRUBS	QTY	BOTANICAL / COMMON NAME	CONT.	WUCOLS
	110	AGAVE ATTENUATA / FOXTAIL AGAVE	5 GAL.	LOW
	33	ECHINOCACTUS GRUSONII / GOLDEN BARREL CACTUS	5 GAL.	VERY LOW
	36	HESPERALOE PARVIFLORA / RED YUCCA	5 GAL.	VERY LOW
	115	MUHLENBERGIA CAPILLARIS / PINK MUHL Y GRASS	5 GAL.	LOW
	59	MUHLENBERGIA DOBIAI / PINE MUHL Y	5 GAL.	LOW
	174	OLEA EUROPAEA / LITTLE OLIVE TM / LITTLE OLIVE OLIVE	5 GAL.	LOW
	20	PHORMIUM TENAX / RADANCE / NEW ZEALAND FLAX	5 GAL.	LOW
	3	PORTULACARIA AFRA / ELEPHANT BUSH	5 GAL.	VERY LOW

GROUND COVERS	QTY	BOTANICAL / COMMON NAME
	9,731 SF	CRUSHED ROCK / 4" DEPTH MIN. COLOR TO BE BAMA CRESTA RUBBLE FROM SOUTHWEST BOULDER AND STONE. SIZE 1" - 3"
	4,550 SF	WOOD BARK MULCH / TRIPLE-SHREDED HARDWOOD MULCH 3" DEPTH MIN.

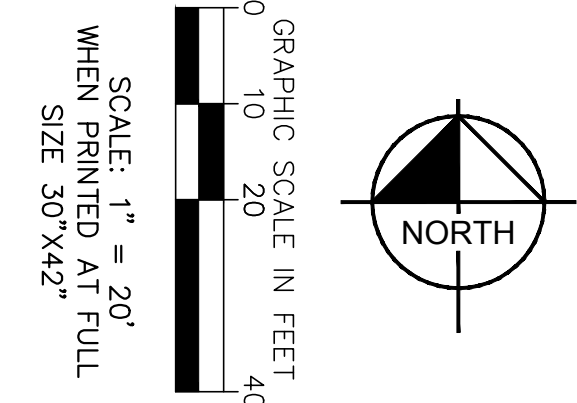
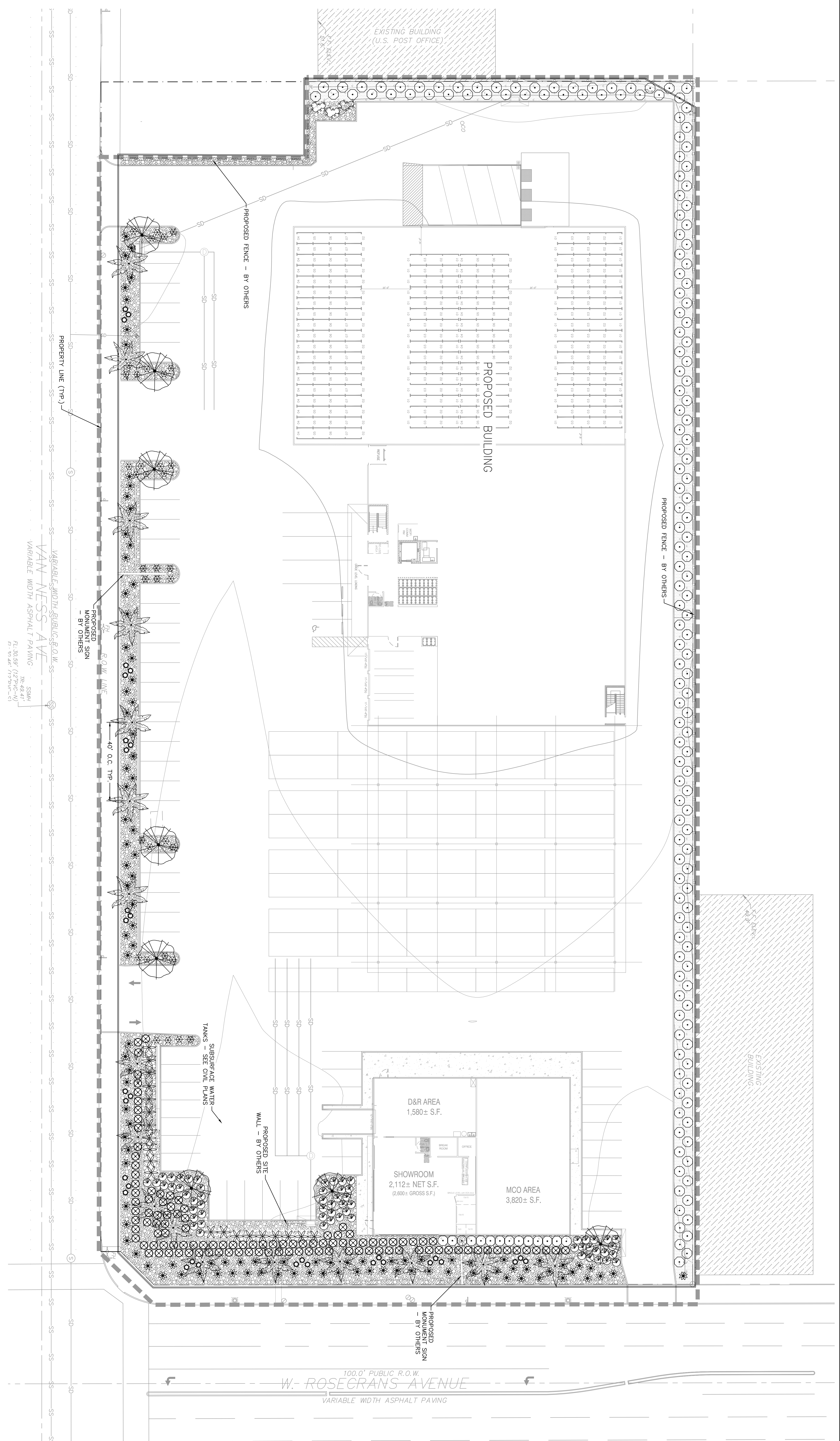
LANDSCAPE NOTE:
 THE SELECTION OF PLANT MATERIAL IS BASED ON CULTURAL, AESTHETIC, AND MAINTENANCE CONSIDERATIONS. ALL PLANTING AREAS SHALL BE PREPARED WITH APPROPRIATE SOIL AMENDMENTS, FERTILIZERS AND APPROPRIATE SUPPLEMENTS BASED UPON A SOIL REPORT FROM AN AGRICULTURAL SUITABILITY SOIL SAMPLE SHIELD THE SOIL FROM THE SUN, EVAPOTRANSPIRATION, AND RUNOFF. ALL SHRUB BEDS SHALL BE MULCHED TO A 3" DEPTH TO HELP CONSERVE WATER. LOWER SOIL TEMPERATURE AND REDUCE WEED GROWTH. THE SHRUBS SHALL BE ALLOWED TO GUIDELINES SET FORTH BY THE CITY OF GARDENA MUNICIPAL CODE.

IRRIGATION NOTE:
 AN AUTOMATIC IRRIGATION SYSTEM SHALL BE INSTALLED TO PROVIDE 100% COVERAGE FOR ALL PLANTING AREAS SHOWN ON THE PLAN. THE WATER SUPPLY FOR THIS SITE IS PROVIDED BY THE CITY OF GARDENA. THE IRRIGATION SYSTEM SHALL BE PROVIDED WITH NO WATER LOSS DUE TO WATER CONTROLLERS, AND OTHER NECESSARY IRRIGATION EQUIPMENT. ALL POINT SOURCE SYSTEMS SHALL BE DESIGNED TO PROVIDE SUFFICIENT WATER TO ALL PLANTING AREAS. THE DESIGN PARAMETERS, ALL IRRIGATION IMPROVEMENTS SHALL FOLLOW THE GUIDELINES SET FORTH BY THE CITY OF GARDENA MUNICIPAL CODE.

I HAVE COMPARED WITH THE CERTIFICATES OF THE ORDINANCE AS 1881 AND APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE LANDSCAPE DESIGN PLAN.

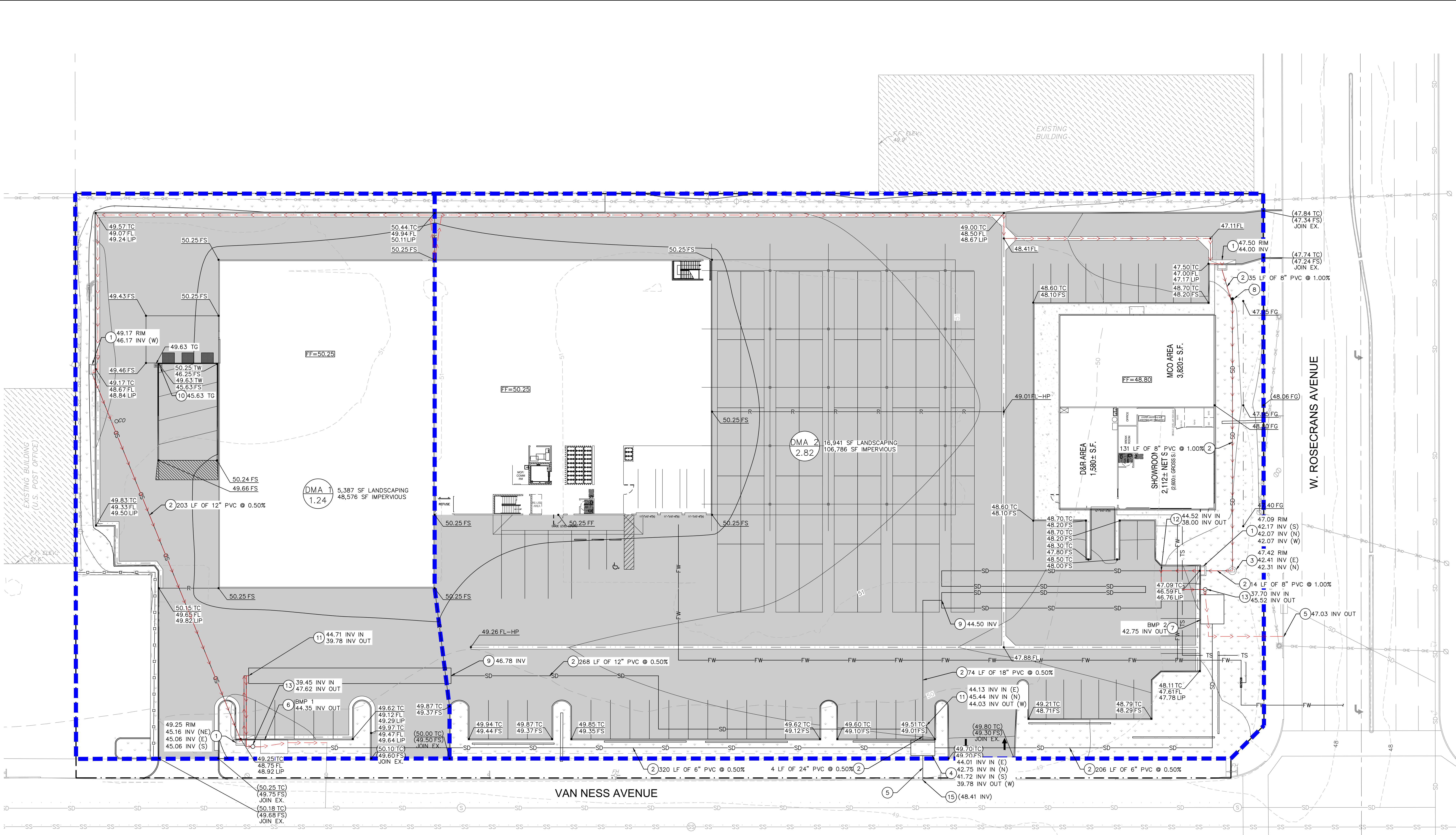
GARDEN ORIENT TREE, LLA 8823

LANDSCAPE REQUIREMENTS	REQUIRED	PROVIDED
1 TREE PER EVERY 10 PARKING SPACES	80 PARKING SPACES / 10 = 8 TREES	8



No.	REVISIONS	DATE	BY

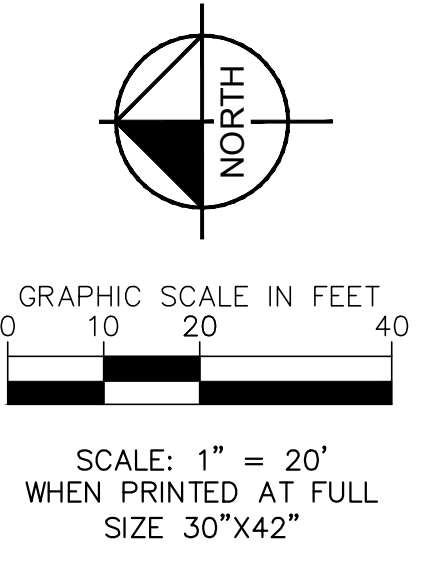
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LEGEND

	PROPERTY LINE		HIGH POINT
	STREET CENTERLINE		TOP OF CURB
	DMA LIMIT		FINISHED SURFACE
	PROPOSED CONTOURS		FLOWLINE
	EXISTING CONTOURS		EXISTING GRADE
	PROPOSED RIDGE		PROPOSED GRADE
	FLOW PATH		PROPOSED SLOPE
	PROPOSED STORM DRAIN		PROPOSED LANDSCAPE AREA
	EXISTING STORM DRAIN		PROPOSED ASPHALT
	EXISTING SANITARY SEWER		
	FLOW LINE		
	DMA NAME		
	DMA AREA (IN ACRES)		

- DRAINAGE NOTES**
- INSTALL CURB OPENING CATCH BASIN.
 - INSTALL HDPE STORM DRAIN LINE. SIZE PER PLAN.
 - INSTALL 48" STORM DRAIN MANHOLE.
 - PROPOSED SUMP PUMP STATION.
 - INSTALL PARKWAY OVERFLOW DRAIN.
 - PROPOSED BIOCLEAN WETLAND MOD (WETLANDMOD-6-13-5'-0"-V).
 - PROPOSED BIOCLEAN WETLAND MOD (WETLANDMOD-11-14-5'-0"-V).
 - PROPOSED STORM DRAIN CLEANOUT.
 - PROPOSED OVERFLOW OUTLET.
 - PROPOSED SUMP PUMP TO OUTLET TRUCK DOCK RUNOFF INTO BUBBLE UP BOX AND SPILL ONTO GRADE.
 - PROPOSED CMP STORMWATER DETENTION TANK (96" DIA. X 104' LONG).
 - PROPOSED CMP STORMWATER DETENTION TANK (96" DIA. X 113' LONG, 2 TYP.).
 - PROPOSED WETLAND MOD FEED PUMP STATION.
 - PROPOSED CISTERN OVERFLOW WEIR STRUCTURE.
 - PROPOSED PARKWAY OUTFALL INTO EXISTING PUBLIC CURB AND GUTTER.



14206 VAN NESS AVENUE
 PREPARED FOR
U-HAUL
 CITY OF GARDENA

BMP EXHIBIT

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REGISTERED PROFESSIONAL ENGINEER
 CIVIL
 STATE OF CALIFORNIA
 LICENSE NO. 50376

NO.	REVISIONS	DATE

KHA PROJECT 194333003
 DATE 8/20/2021
 SCALE AS SHOWN
 DESIGNED BY AZ
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SHEET NUMBER
1