

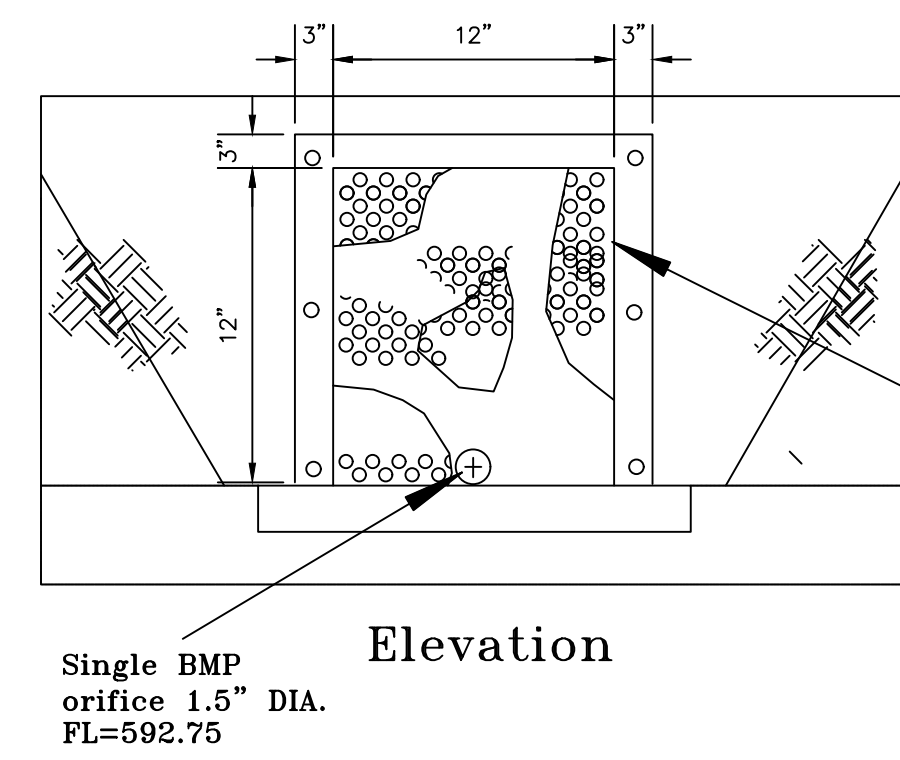
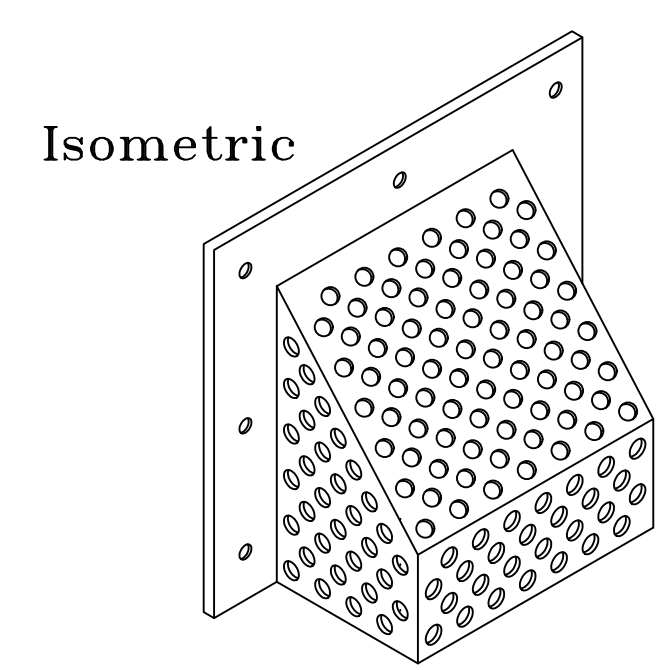
***BIORETENTION AREA CAN NOT BE STARTED UNTIL THE UPSTREAM AREA IS SUBSTANTIALLY VEGETATED**

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS.

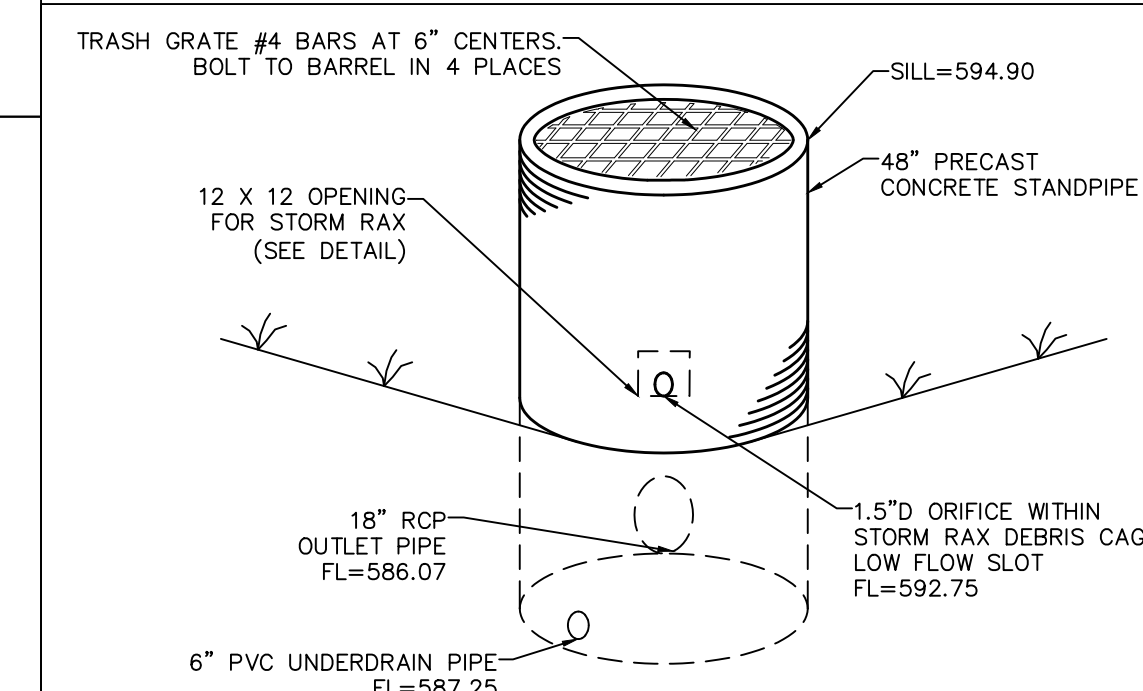
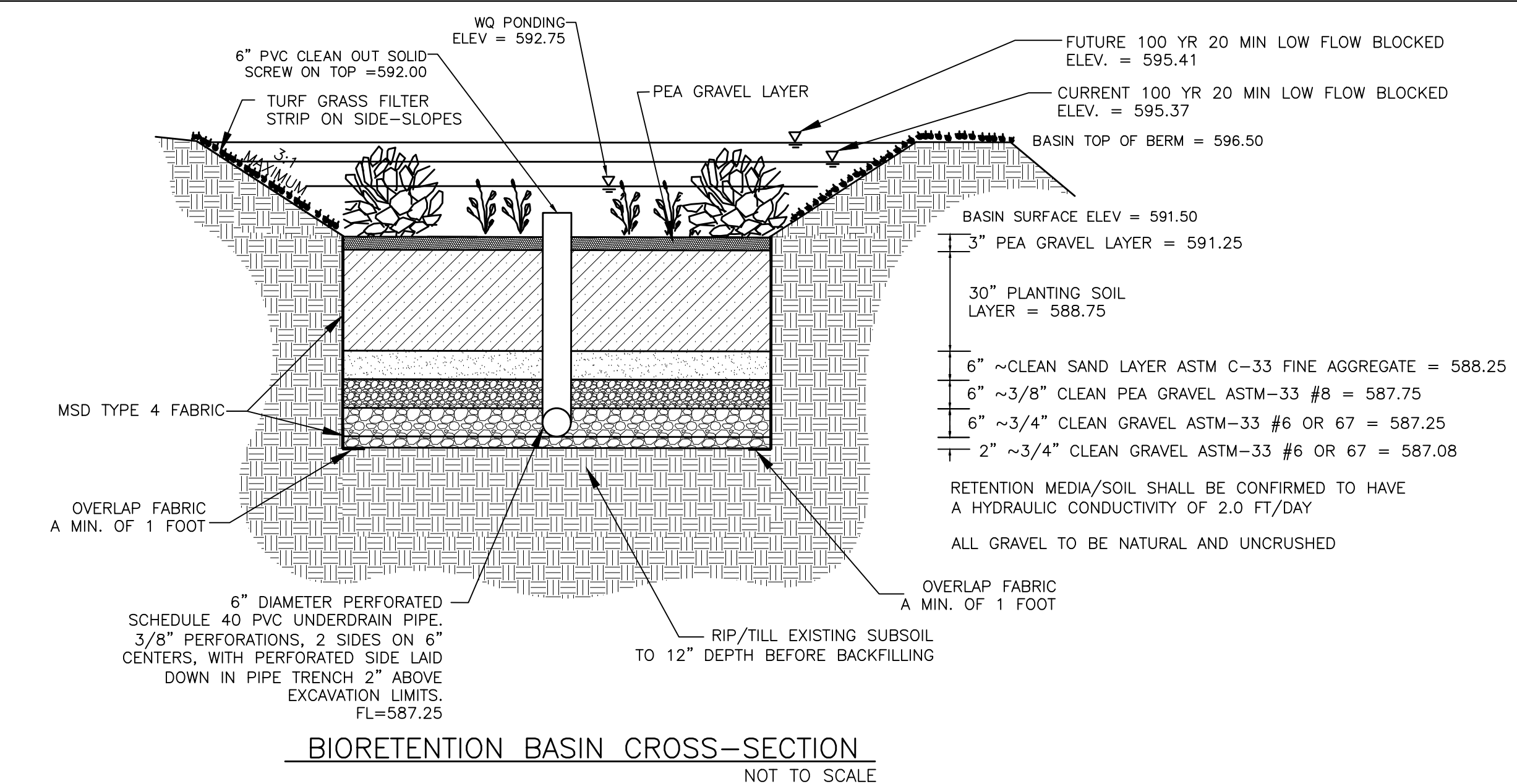
Planting Soil Specifications:

PARAMETER	VALUE
pH Range	5.2 to 8.0
Organic Matter	1.5 to 5.0%
Magnesium	35 lbs. per acre minimum
Phosphorus (P ₂ O ₅)	75 lbs. per acre minimum
Potassium (K ₂ O)	85 lbs. per acre minimum
Soluble Salts	≤ 500 PPM

Sandy Loam or Loamy Sand (should contain a minimum of 60 percent sand, by volume). The clay content for these soils should be less than 10 percent by volume. The soils shall be free of stones, stumps, roots, or other woody material over 1 inch in diameter. Brush or seeds from noxious weeds should not be present in the soil. Placement of the planting soil should be in lifts of 12 to 18 inches and be loosely compacted. (Rubber-Wheeled Heavy Equipment and mechanical tamping devices are not recommended for compaction).

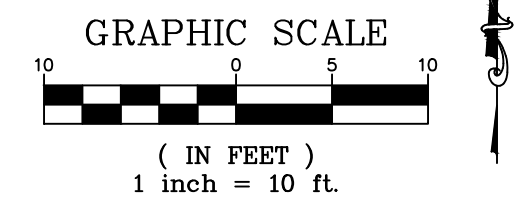
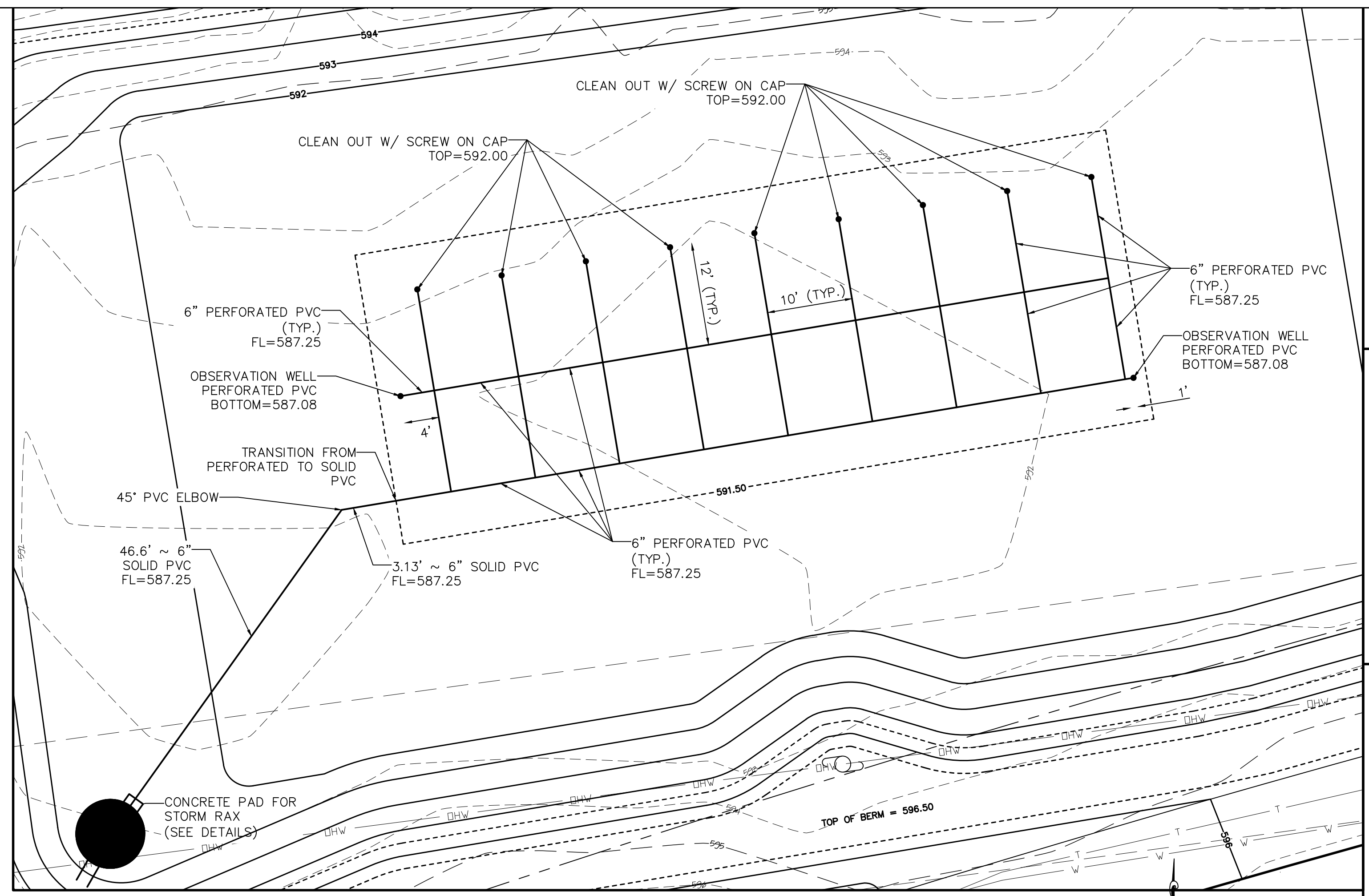


STORM RAX BMP DEBRIS CAGE OS 2A DRY/BIORETENTION DETENTION BASIN A1
N.T.S.



BASIN OVERFLOW STRUCTURE 100 DETAIL
NOT TO SCALE

RETENTION MEDIA/SOIL SHALL BE CONFIRMED TO HAVE A HYDRAULIC CONDUCTIVITY OF 2.0 FT/DAY	ALL GRAVEL TO BE NATURAL AND UNCRUSHED
CURRENT CONDITIONS	
2 YR 20 MINUTE HIGHWATER	= 592.80
15 YR 20 MINUTE HIGHWATER	= 593.15
25 YR 20 MINUTE HIGHWATER	= 593.33
100 YR 20 MINUTE HIGHWATER	= 593.51
100 YR 20 MINUTE (LFB) HIGHWATER	= 595.37
FUTURE CONDITIONS	
2 YR 20 MINUTE HIGHWATER	= 592.90
15 YR 20 MINUTE HIGHWATER	= 593.29
25 YR 20 MINUTE HIGHWATER	= 593.49
100 YR 20 MINUTE HIGHWATER	= 593.68
100 YR 20 MINUTE (LFB) HIGHWATER	= 595.41



BIORETENTION UNDERDRAIN SITE PLAN

SAND SPECIFICATIONS:

Washed ASTM C33 Fine Aggregate Concrete Sand is utilized for stormwater management applications. In addition to the ASTM C-33 specification, sand must meet ALL of the following conditions:

- Sand must meet gradation requirements for ASTM C-33 Fine Aggregate Concrete Sand. AASHTO M-6 gradation is also applicable. (Known as Natural washed concrete sand)
- Sand must be silicabased...no limestone based products may be used. If the material is white or gray in color it is probably not acceptable.
- Sand must be clean. Natural, unwashed sand deposits may not be used. Likewise, sand that has been contaminated by improper storage or installation practices will be rejected.
- Manufactured sand or stone dust is not acceptable under any circumstances.

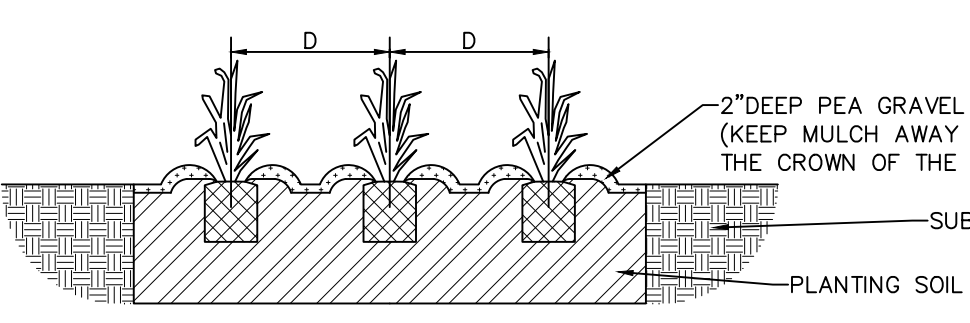
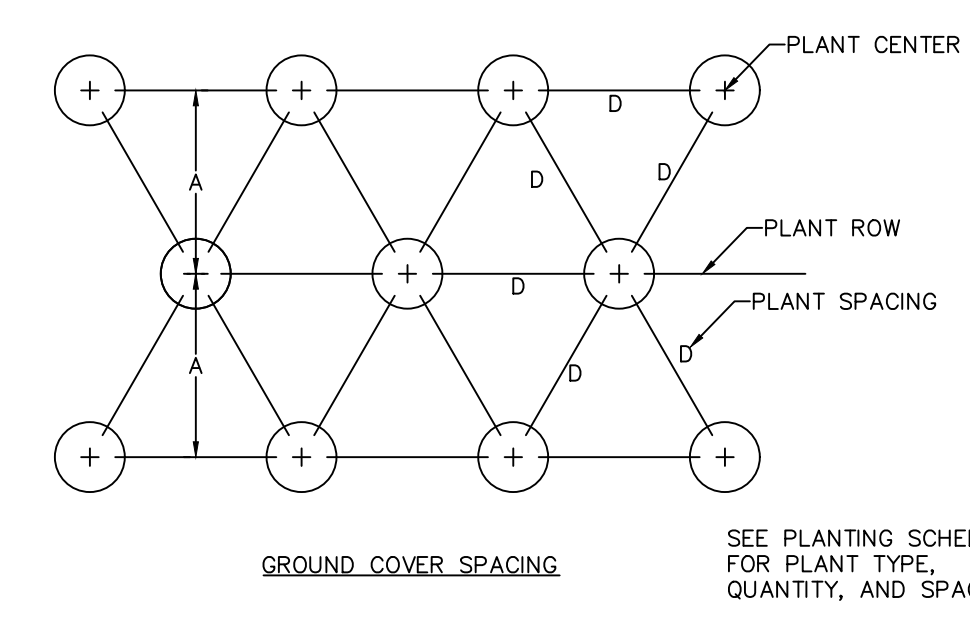
Sand Gradations per ASTM C-33 Sieve Specifications	Percent Passing
9.5-mm (3/8-in.)	100
4.75-mm (No. 4)	95 to 100
2.36-mm (No. 8)	80 to 100
1.18-mm (No. 16)	50 to 85
600-um (No. 30)	25 to 60
300-um (No. 50)	5 to 30
150-um (No. 100)	0 to 10

ITEM	LATIN NAME	COMMON NAME	TOTAL NUMBER	SPACING
A	Carex grayi	Bur sedge	35	60"
B	Carex vulpinoidea	Fox sedge	35	60"
C	Ratibida pinnata	Yellow/Grey coneflower	35	60"
D	Carex praegracilis	Tallway sedge	35	60"

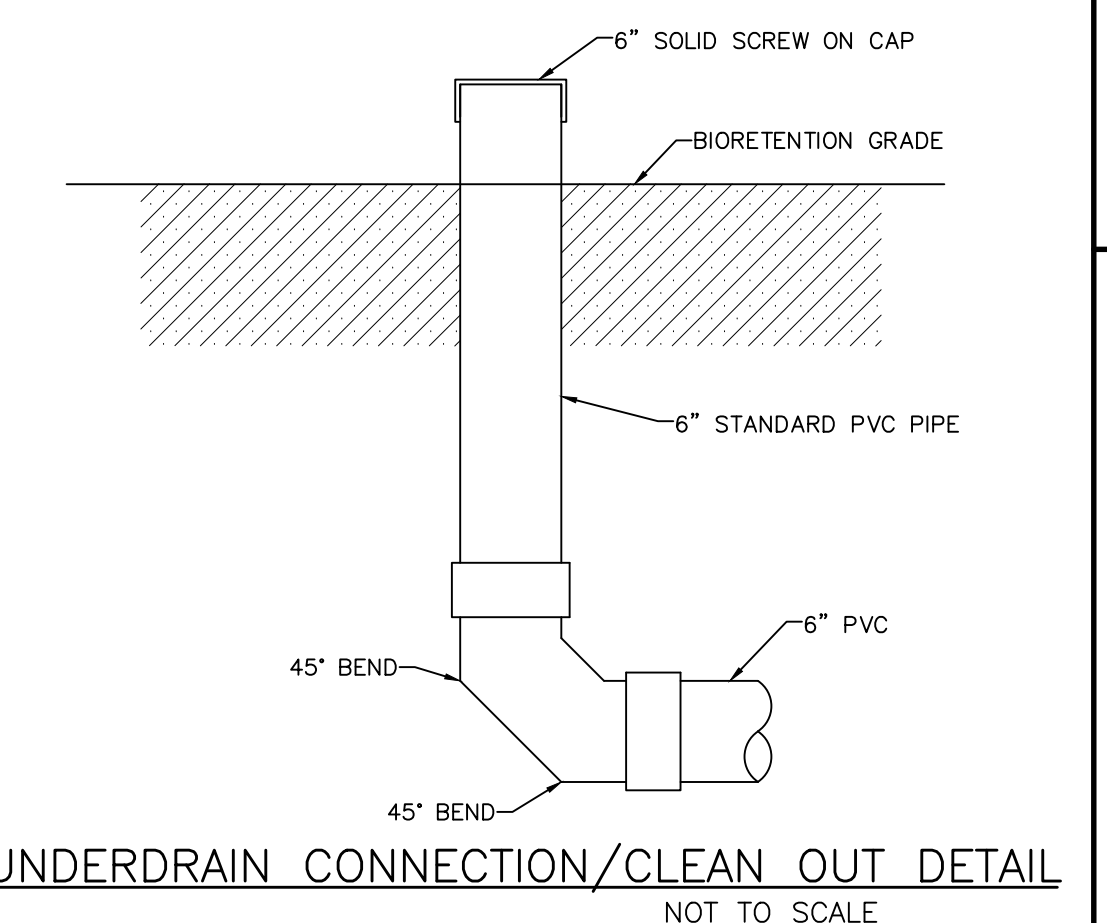
NOTE: PROPOSED PLUG SIZE SHOULD BE 4.5" X 5" (QUART) OR LARGER.

PLANTING SCHEDULE BIORETENTION BASIN

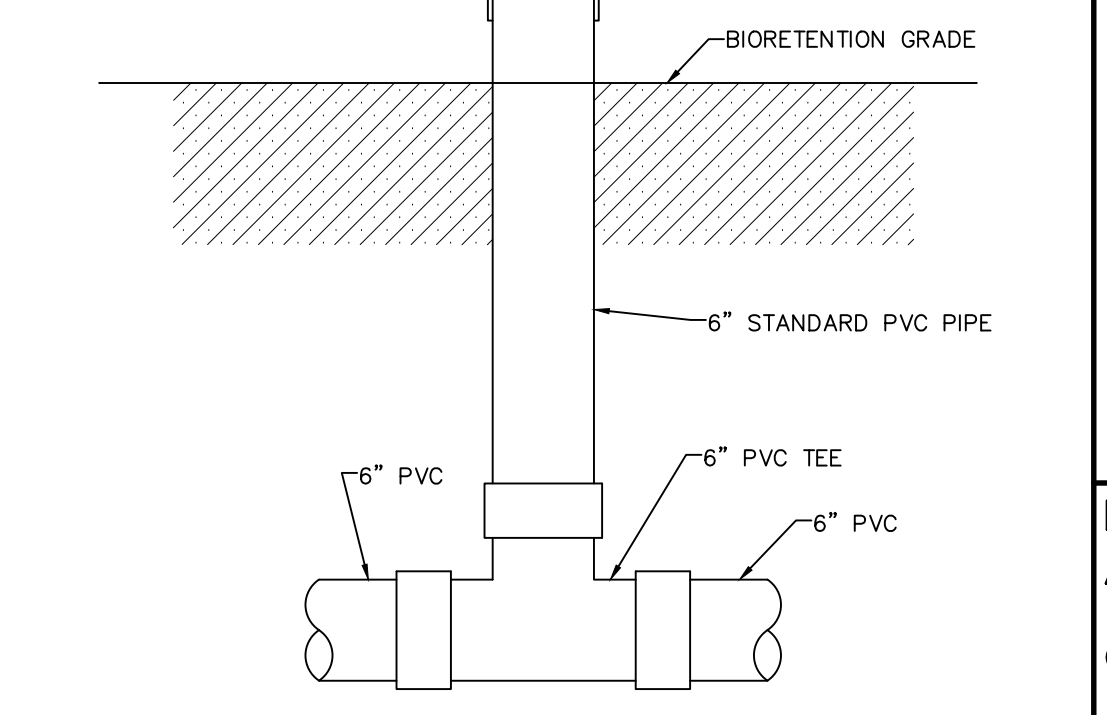
PLANT SPACING 'D'	ROW SPACING 'A'	NUMBER OF PLANTS/SQFT
60"	52.0"	0.045
30"	26.0"	0.160
24"	20.8"	0.25
18"	15.6"	0.45
15"	13.0"	0.64
12"	10.4"	1.00
10"	8.66"	1.44
8"	6.93"	2.25



PLANT SPACING GUIDE
NOT TO SCALE



UNDERDRAIN CONNECTION/CLEAN OUT DETAIL
NOT TO SCALE

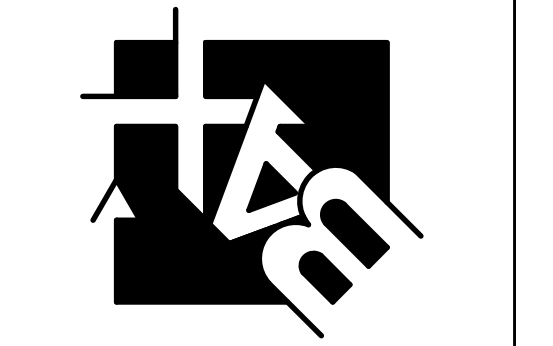


UNDERDRAIN CONNECTION/ CLEAN OUT DETAIL
NOT TO SCALE

ENGINEERS SEAL DOES NOT APPLY TO DETAILS ON THIS SHEET

PROJECT TITLE:
CHILDREN'S LIGHTHOUSE
EARLY LEARNING CENTER
2570 SOMMERS ROAD
OFALLON, MISSOURI 63368

ENGINEERING PLANNING SURVEYING
221 Point West Blvd.
St. Charles, MO 63301
636-928-5552
FAX 636-928-1718



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I hereby specify that the documents intended to be authorized by my seal are limited to this sheet, and I hereby disclaim any responsibility for all other Drawings, Specifications, Estimates, Reports or other documents or instruments relating to or intended to be used for any part or parts of the architectural or engineering project or survey.



CLIFFORD L. HEITMANN
CIVIL ENGINEER
E29817
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REVISIONS

NO.	DATE	DESCRIPTION
11-3-23		city, county, dcsd & pswd2 comments

Developer / Owner:
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P+Z No. # 23-004744
Approval Date: July 6, 2023

City No. #

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Box Project # 03-12478E Issue Date: 9/21/2023

DETENTION AND WATER QUALITY DETAILS