

Western Johnston High Service Tank

Johnston, Rhode Island
 Pare Project No. 14256.32

Owner



PROVIDENCE WATER

PROVIDENCE WATER SUPPLY BOARD
 125 DUPONT DRIVE
 PROVIDENCE, RI 02907

Civil Engineer

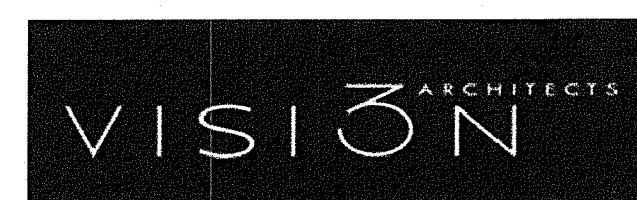


PARE

PARE CORPORATION
 ENGINEERS - SCIENTISTS - PLANNERS

8 BLACKSTONE VALLEY PLACE LINCOLN, RI 02885 401-334-4100
 10 LINCOLN ROAD, SUITE 210 FORTSMITH, RI 02885 401-334-4100
 14 BOBAMA ROAD, SUITE 208 HOUSTON, RI 02886 413-507-3465

Architect



VISION 3 ARCHITECTS
 225 CHAPMAN STREET
 PROVIDENCE, RI 02905

Mechanical Engineer



CREATIVE ENVIRONMENT CORP.
 195 FRANCES AVE BLDG. #2
 CRANSTON, RI 02910

Electrical Engineer



Electrical, Instrumentation
 & Control Systems Design

5 Medallion Center, Greeley Street, Merrimack, NH 03054
 Phone: 603/429-3313 Fax: 603/429-3466



Locus Plan
 SCALE: 1"=300'

Index of Drawings

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2	C0.1	GENERAL NOTES AND LEGEND
3	C1.0	EXISTING CONDITIONS PLAN
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RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS AS
 SPECIFIED IN THE LETTER OF APPROVAL
 DATED: JAN 26 2023 FILE #: 22-0197
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Shane Patrick Driscoll

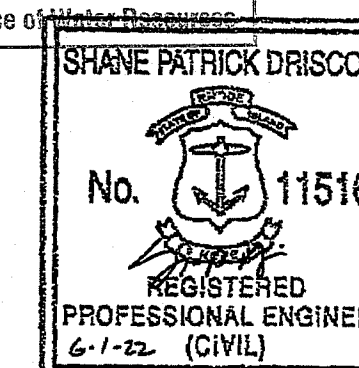
June 2022
 PERMITTING SET

RI Environmental Management
 JUN 03 2022
 Office of Water Resources

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM

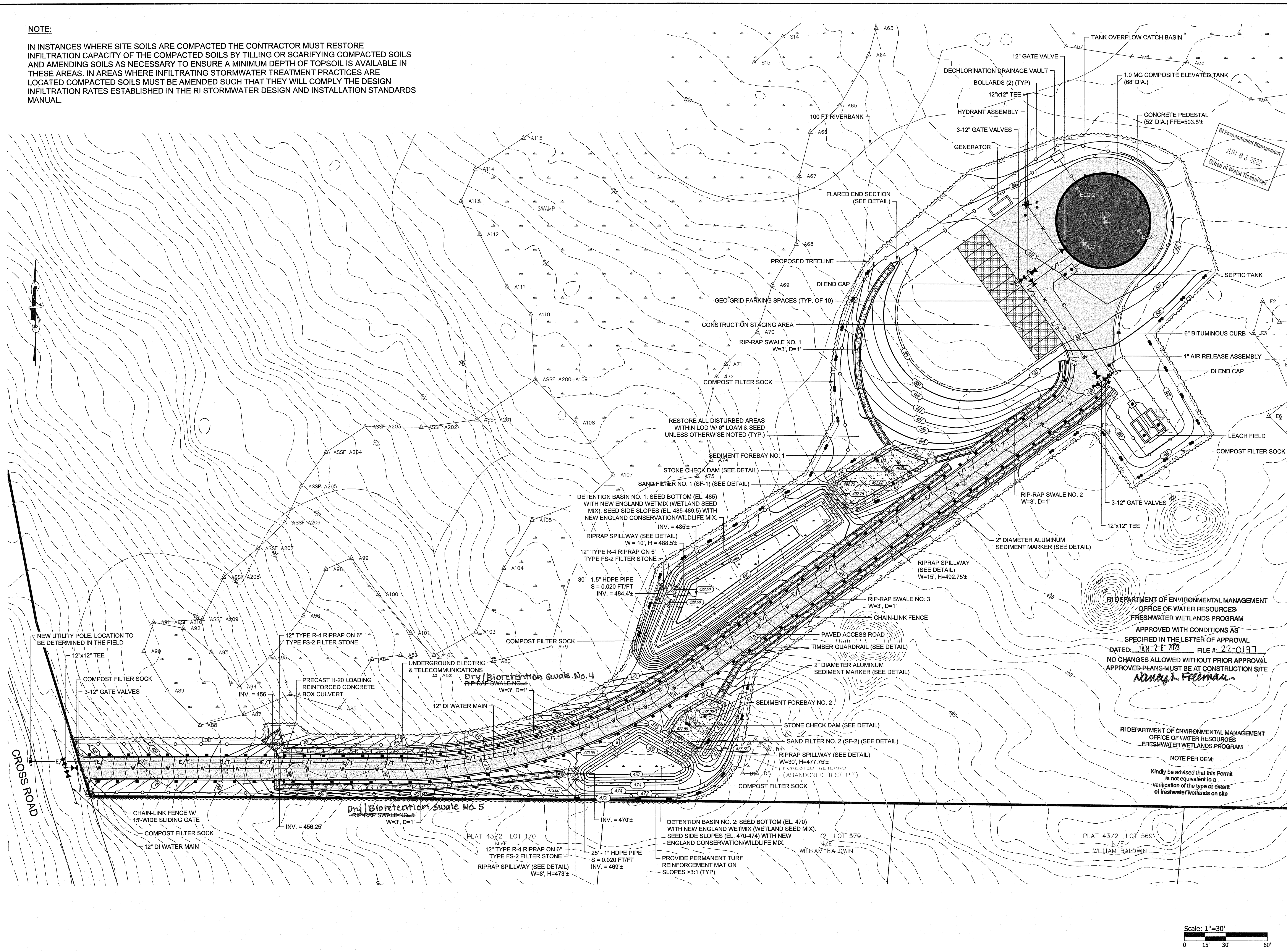
NOTE PER DEM:

Kindly be advised that this Permit
 is not equivalent to a
 verification of the type or extent
 of freshwater wetlands on site



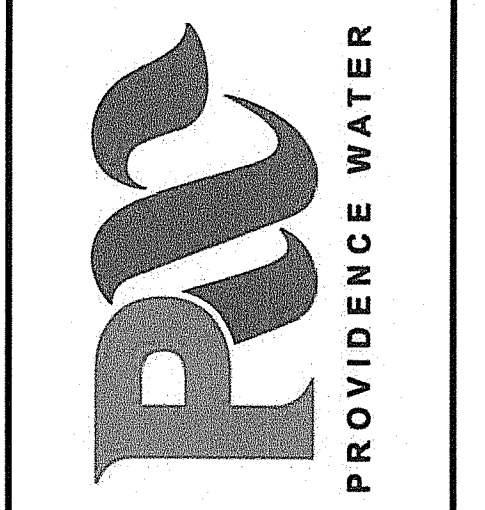
NOTE:

IN INSTANCES WHERE SITE SOILS ARE COMPACTED THE CONTRACTOR MUST RESTORE INFILTRATION CAPACITY OF THE COMPACTED SOILS BY TILLING OR SCARIFYING COMPACTED SOILS AND AMENDING SOILS AS NECESSARY TO ENSURE A MINIMUM DEPTH OF TOPSOIL IS AVAILABLE IN THESE AREAS. IN AREAS WHERE INFILTRATING STORMWATER TREATMENT PRACTICES ARE LOCATED COMPACTED SOILS MUST BE AMENDED SUCH THAT THEY WILL COMPLY THE DESIGN INFILTRATION RATES ESTABLISHED IN THE RI STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL.



SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING

WESTERN JOHNSTON
PINE HILL TANK
Johnston, Rhode Island



SHANE PATRICK DRISCOLL
No. 11516
REGISTERED PROFESSIONAL ENGINEER
6-1-22 (CIVIL)

REVISIONS:

NO.	DESCRIPTION

PROJECT NO.: 14256.32
DATE: JUNE 2022
SCALE: 1" = 30'
DESIGNED BY: MGM
CHECKED BY: NPM
DRAWN BY: AWB
APPROVED BY: SPD
DRAWING TITLE: SITE PLAN

DRAWING NO.: C3.0
SHEET NO. 5 OF 11

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Nancy J. Freeman

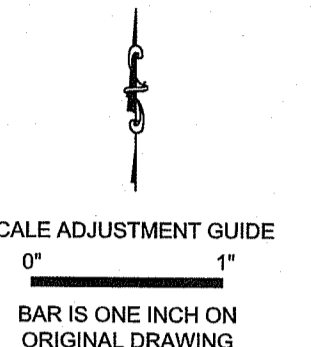
RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Scale: 1"=30'
0 15' 30' 60'

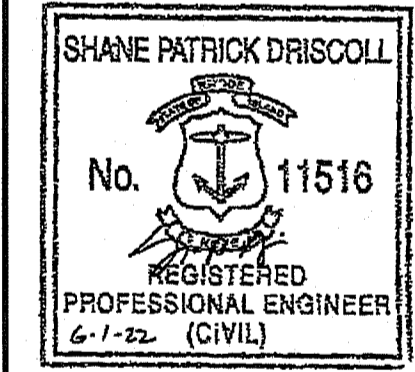
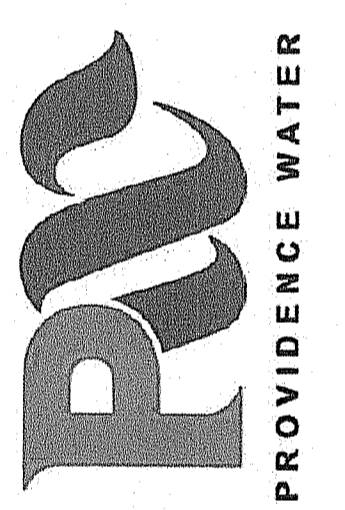
Z:\JOBS\14_JOBS\14256.32 PRO\WATER-JOHNSTON TANK-RIDGWS-TANKSITE PLAN.DWG



RI Environmental Management
 JUN 03 2022
 Office of Water Resources



WESTERN JOHNSTON
 PINE HILL TANK
 Johnston, Rhode Island



REVISIONS:

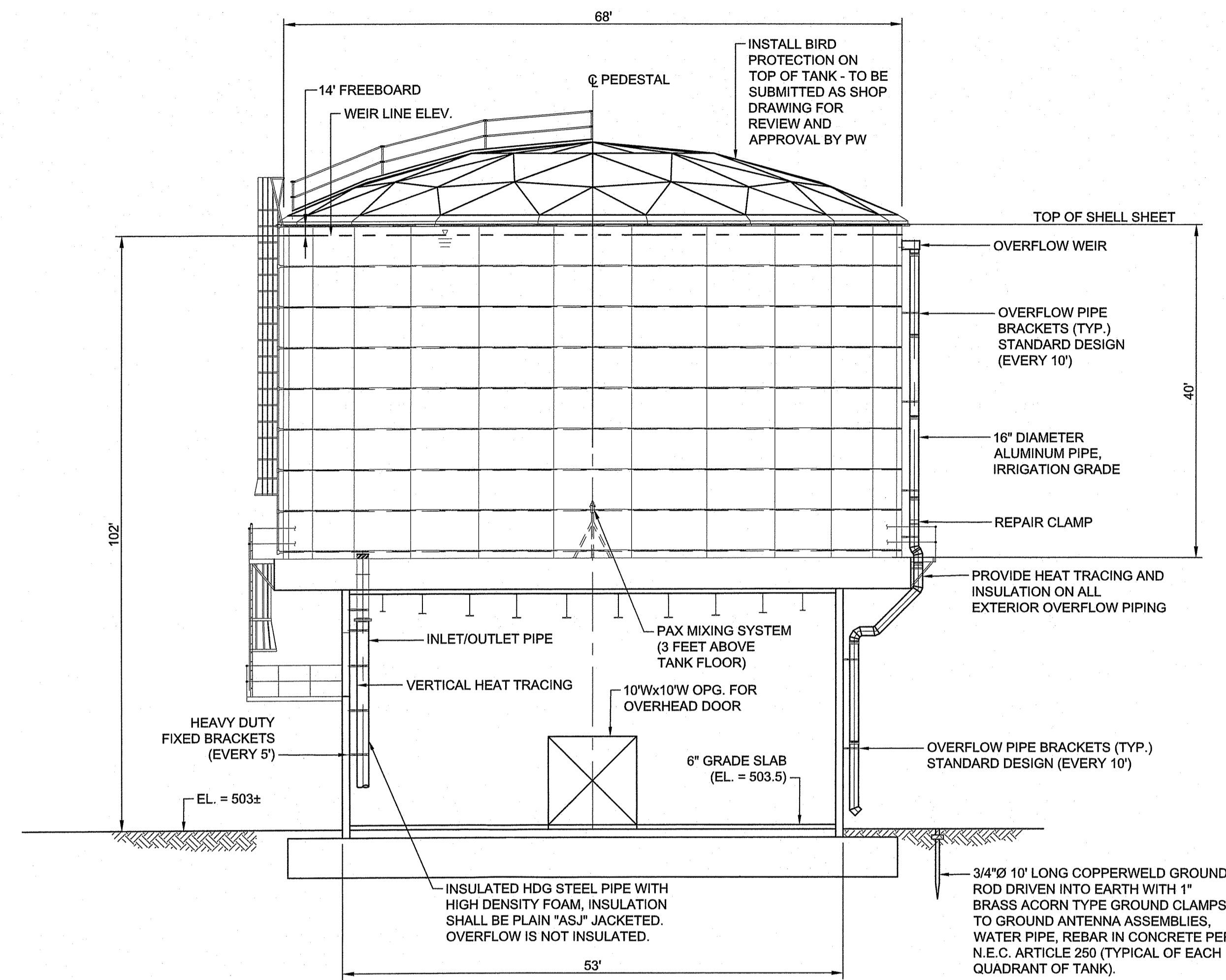
NO.	DESCRIPTION

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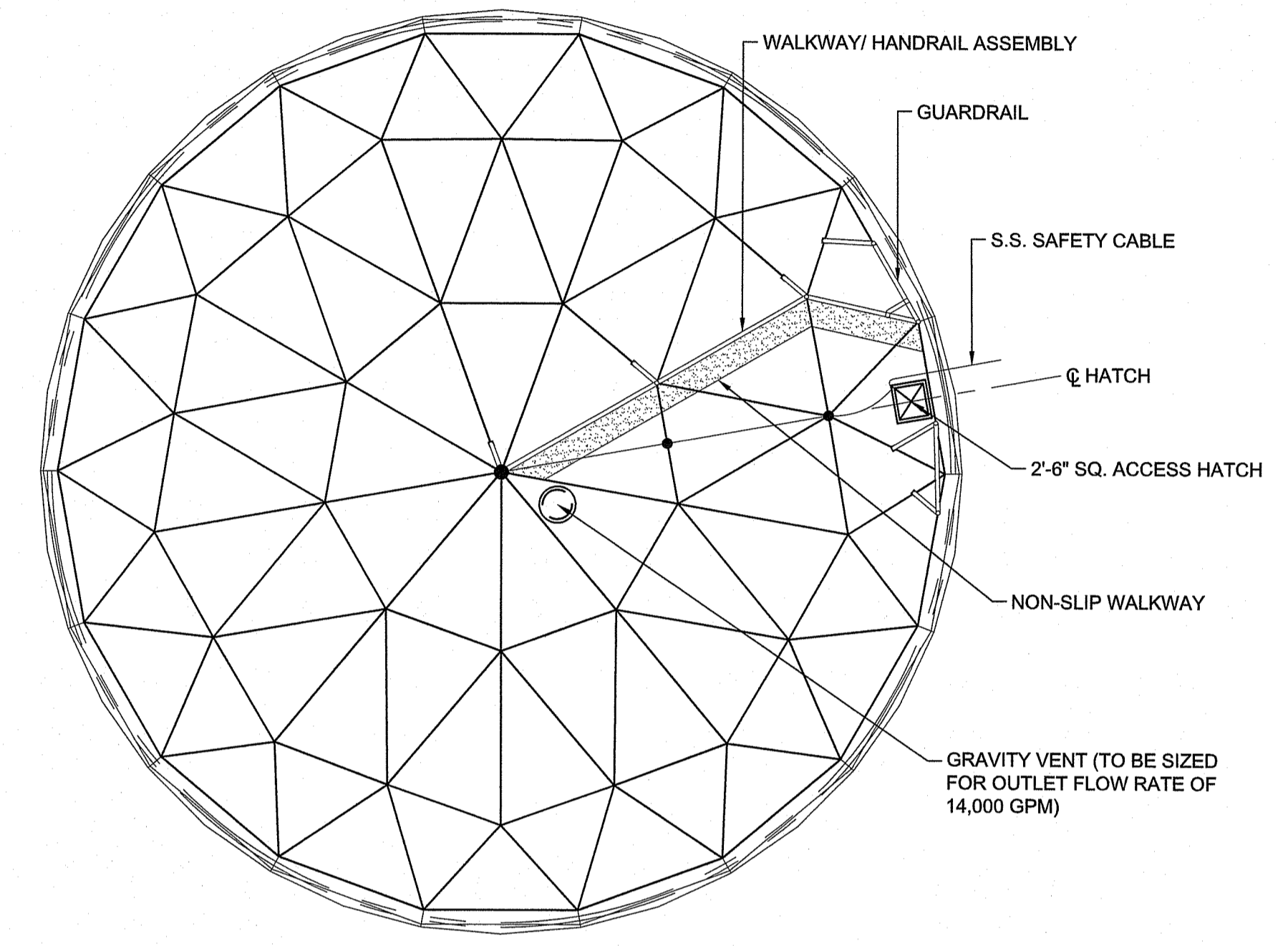
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PROJECT NO.: 14256.32
 DATE: JUNE 2022
 SCALE: AS NOTED
 DESIGNED BY: MGM
 CHECKED BY: NPM
 DRAWN BY: AWB
 APPROVED BY: SPD
 DRAWING TITLE:
 COMPOSITE GLASS
 FUSED TANK ELEVATION
 AND SECTION
 DRAWING NO.:
 C4.0
 SHEET NO. 6 OF 11

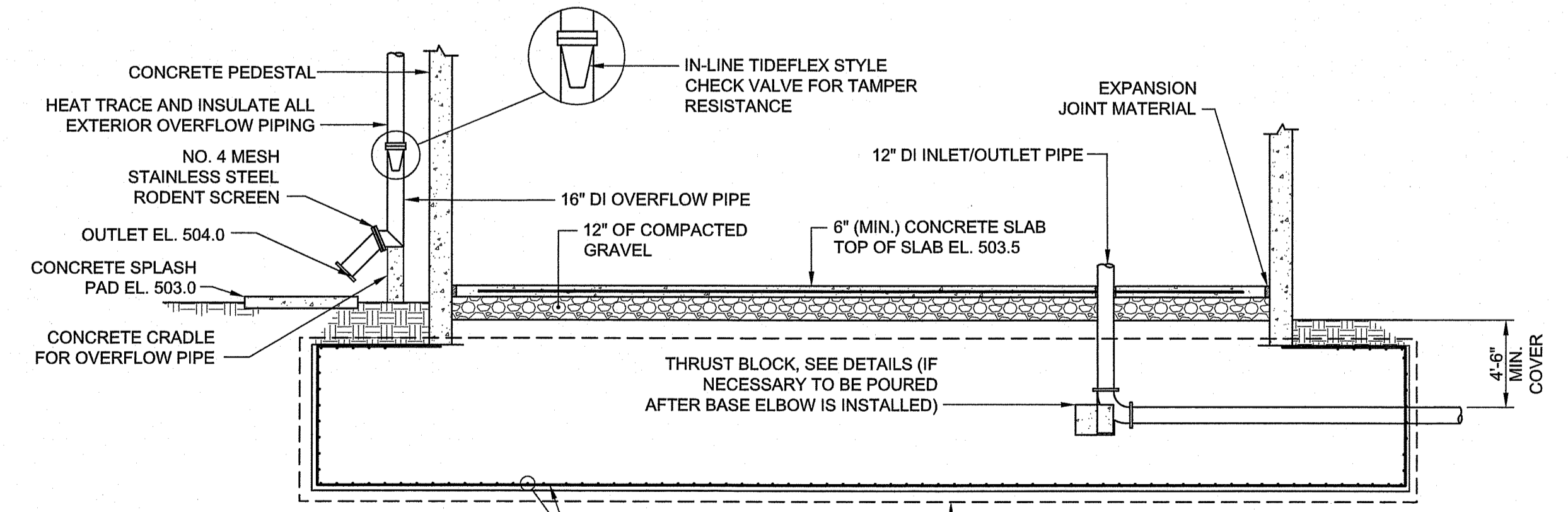
Z:\JOBS\14 JOBS\14256.32 PROVWATER-JOHNSTON TANK-RIDWGS\TANK\COMPOSITE GLASS FUSED TANK.DWG



ELEVATION
 NOT TO SCALE



PLAN
 SCALE: 3/32"=1'-0"



FOUNDATION ELEVATION
 NOT TO SCALE

RI Environmental Management
JUN 03 2022
Office of Water Resources

SCALE ADJUSTMENT GUIDE
OF
1
BAR IS ONE INCH ON ORIGINAL DRAWING

WESTERN JOHNSTON
PINE HILL TANK
Johnston, Rhode Island

PROVIDENCE WATER

SHANE PATRICK DRISCOLL
No. 11516
REGISTERED PROFESSIONAL ENGINEER
(CIVIL)

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DRAWING TITLE:
DETAILS 3
DRAWING NO.:
C5.3
SHEET NO. 9 OF 11

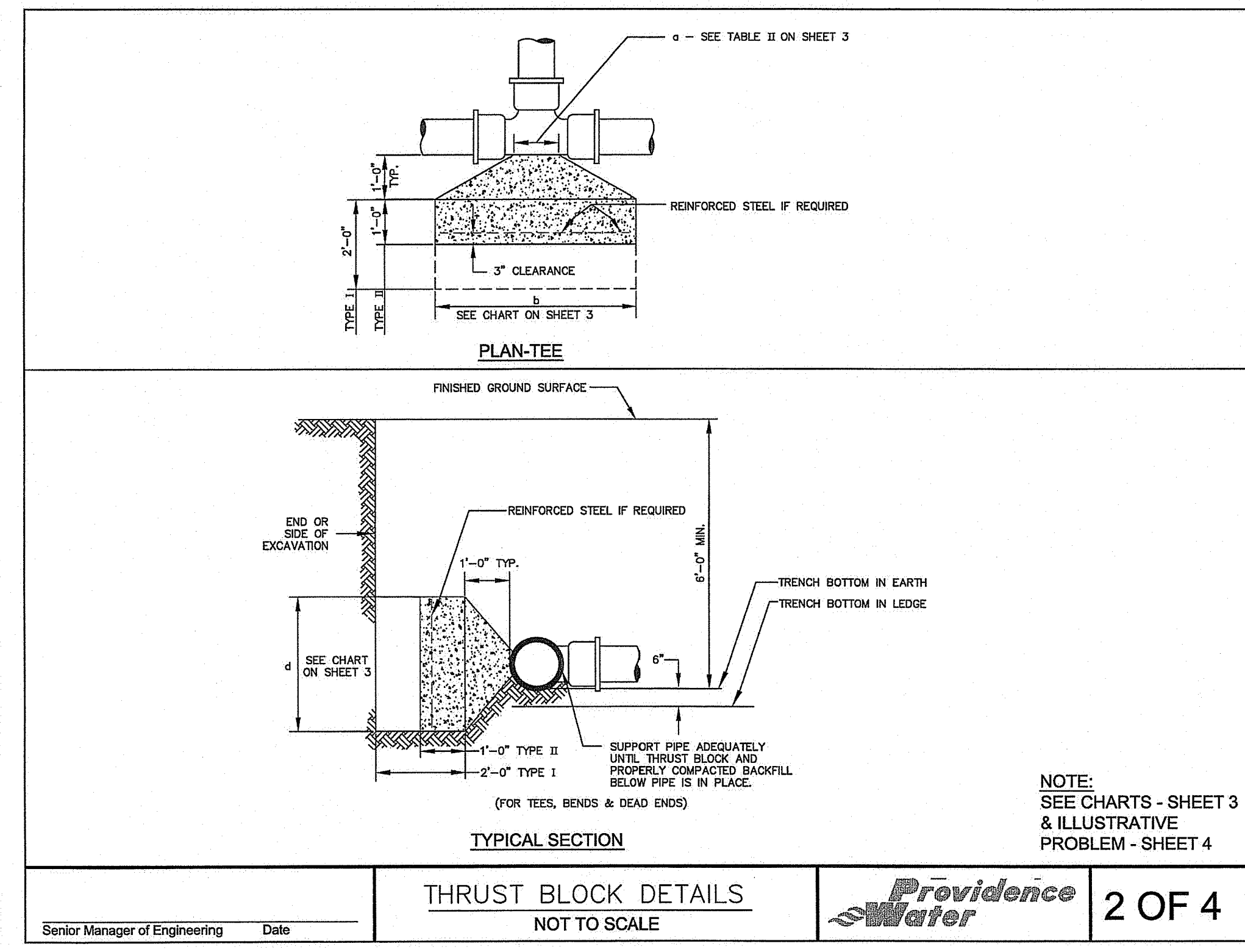
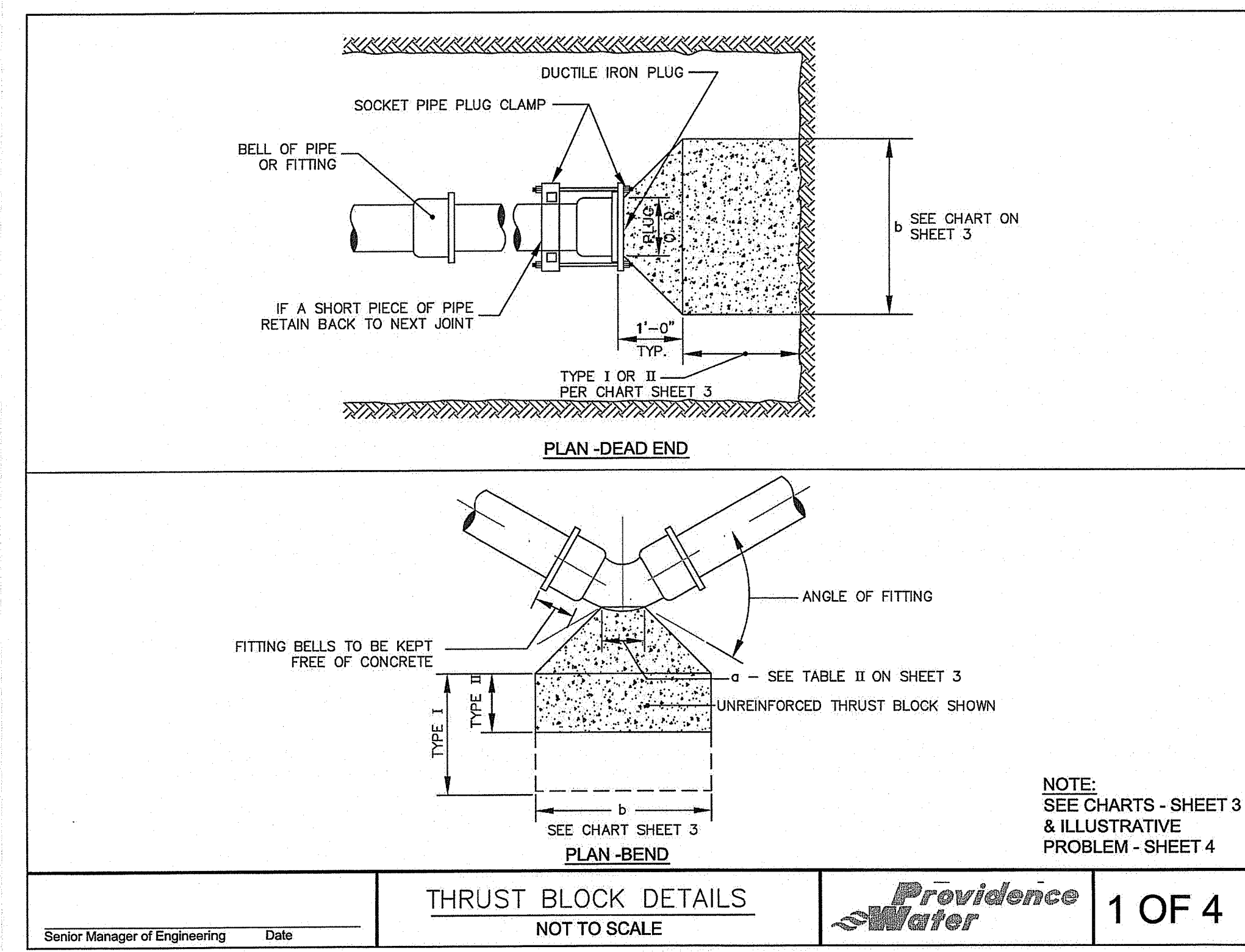


TABLE I - THRUST - KIPS (WATER PRESSURE = 200 P.S.I.)

PIPE DIAMETER INCHES	6	8	10	12	16	20	24	30	36	42
DEAD ENDS AND TEES	5.8	10	15.8	22.6	40.2	62.8	90.4	141.0	203.6	277.0
90°	7.9	14.2	22.4	35.0	56.8	88.8	127.7	199.0	288.0	392.0
67 1/2°	-	11.1	17.6	25.1	44.7	70.0	100.2	157.0	228.0	308.0
59 1/4°	-	-	14.9	21.2	37.9	59.2	85.1	130.0	192.0	261.0
45°	-	-	-	17.3	30.8	48.1	69.0	108.0	166.0	212.0
33 3/4°	-	-	-	13.1	23.3	36.5	52.5	82.0	118.0	161.0
22 1/2°	-	-	-	8.8	15.7	24.5	35.2	55.0	79.5	106.0

TABLE II - "a" DIMENSION - FEET

PIPE DIAMETER - INCHES	90° FITTING	OTHERS
6, 8, 10 & 12	1-6	1-0
16 & 20	2-9	1-6
24" - 30"	3-0	2-0

CHART FOR DETERMINING REQUIRED CONCRETE THRUST BLOCK DIMENSIONS AND REINFORCING

THRUST BLOCK TABLES
NOT TO SCALE

Providence Water

3 OF 4

NOTES:

ALL FITTINGS SHALL BE ANCHORED BY MECHANICAL MEANS OR BY CONCRETE THRUST BLOCKS, OR BOTH, IF REQUIRED BY THE BOSTON WATER AND SEWER COMMISSION OR AS NOTED ON THE CONTRACT PLANS. ALL EXPOSED METAL SHALL BE PAINTED OR COATED. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRESS OF 3,000 P.S.I. AT 28 DAYS. REINFORCING STEEL SHALL BE A.S.T.M. A615 GRADE 40. WATER PRESSURE IN TABLE I INCLUDES WATER HAMMER ALLOWANCE.

THE ACTUAL METHOD OF RESTRAINT MUST BE DETERMINED BY ACTUAL FIELD CONDITIONS. THESE ARE TYPICAL INSTALLATIONS TO BE USED AS A GUIDE TO THE DESIGNER. FINAL DESIGNS ARE SUBJECT TO REVIEW BY BOSTON WATER AND SEWER COMMISSION.

ILLUSTRATED PROBLEM

DESIGN A THRUST BLOCK FOR A 67-1/2° BEND, A 24-INCH DIAMETER WATER MAIN, CARRYING A MAXIMUM PRESSURE OF 200 P.S.I. SOIL CLASSIFIED AS A WELL GRADED COMPACT COARSE SAND AND GRAVEL.

SOLUTION

- ENTER TABLE I AT 24-INCH PIPE DIAMETER - GO VERTICALLY DOWN COLUMN UNTIL OPPOSITE 67-1/2° ANGLE FITTING. READ THRUST = 100.2 KIPS.
- SEE CHART IMMEDIATELY BELOW TABLE I - SELECT SOIL TYPE CURVE REFLECTING ACTUAL SOIL CLASSIFICATION. TYPE B FOR THIS PROBLEM.
- ENTER CHART AT THRUST TO BE RESISTED AND GO VERTICALLY TO SOIL TYPE CURVE SELECTED IN 2 ABOVE - SEE CHART AND FOLLOW ILLUSTRATIVE PROBLEM ARROW LINE FROM 100.2 KIP THRUST TO SOIL TYPE B CURVE.
- FROM THIS INTERSECTION GO HORIZONTALLY FOLLOWING ARROW LINE TO INTERSECTION WITH REQUIRED THRUST BLOCK BEARING AREA IN SQUARE FEET - 40 SQUARE FEET MINIMUM IS REQUIRED TO RESIST THRUST.
- CONTINUE HORIZONTALLY TO "THRUST BLOCK DIMENSIONS" COLUMN AND SELECT DIMENSIONS "b" AND "d" IMMEDIATELY ABOVE HORIZONTAL ARROW LINE PROJECTION 7'-0" SQUARE THRUST BLOCK REQUIRED FOR THIS PROBLEM.
- CONTINUE HORIZONTALLY TO "REINFORCING STEEL - EACH WAY" COLUMN, NOTING COLUMNS FURTHER CLASSIFICATION BY SOIL TYPE AND FOOTING TYPE (SEE "THRUST BLOCK DETAIL", FOR TYPE I AND TYPE II REQUIREMENTS.) TWO SOLUTIONS TO ILLUSTRATIVE PROBLEM ARE ACCEPTABLE: SOLUTION 1 - TYPE I THRUST BLOCK AND SOIL TYPE B INDICATE NO REINFORCEMENT REQUIRED. SOLUTION 2 - TYPE II THRUST BLOCK AND SOIL TYPE B INDICATES #5 @ 12 EACH WAY REQUIRED.

THRUST BLOCK NOTES
NOT TO SCALE

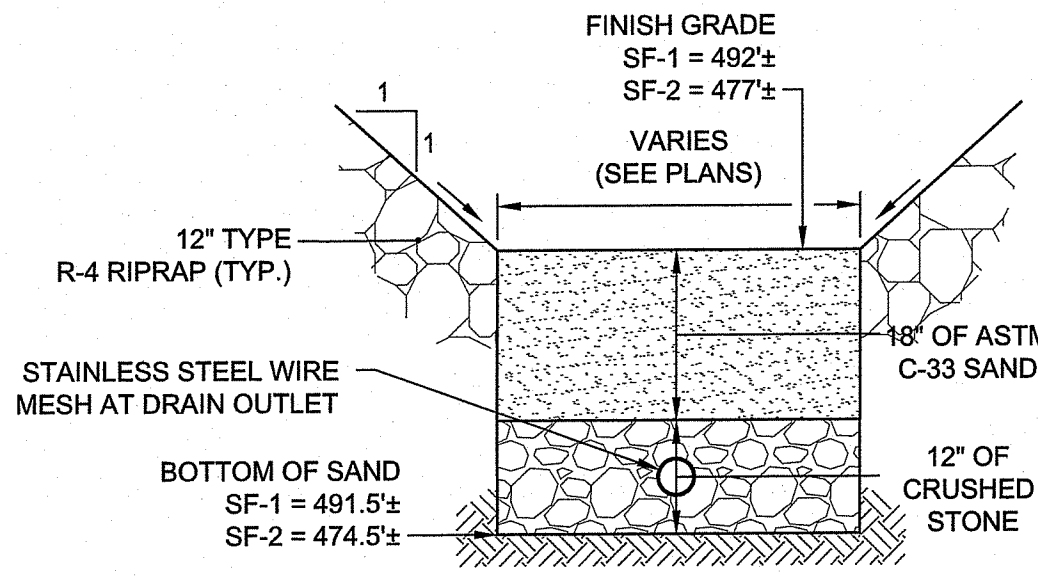
Providence Water

4 OF 4

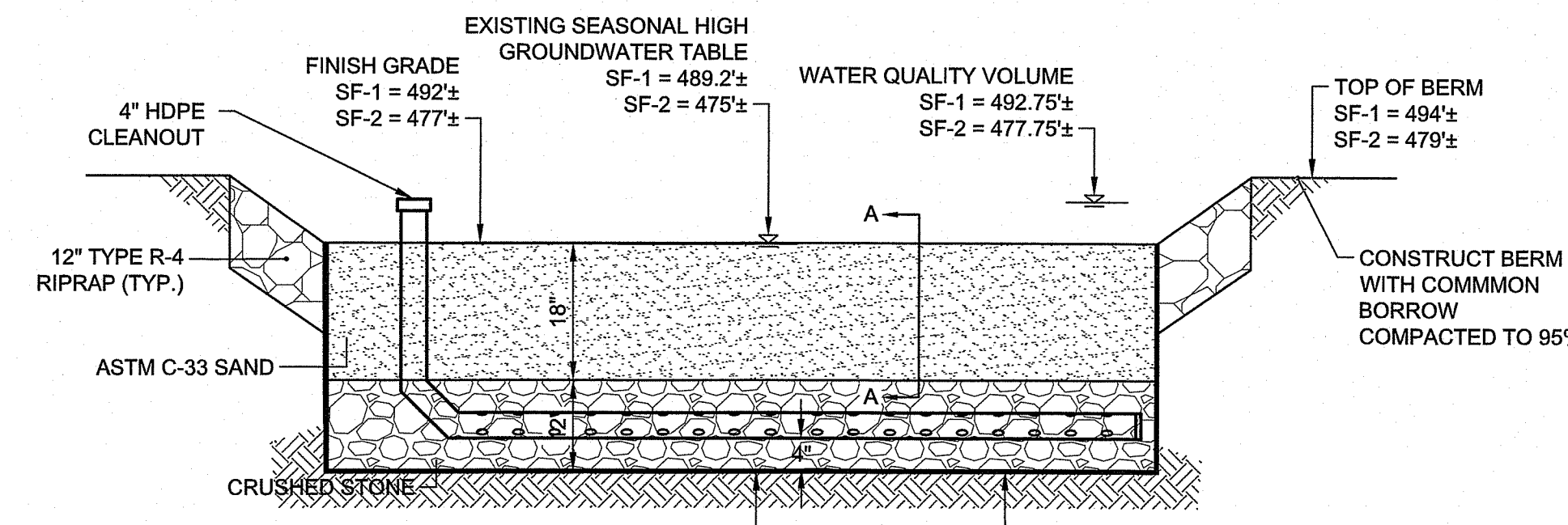
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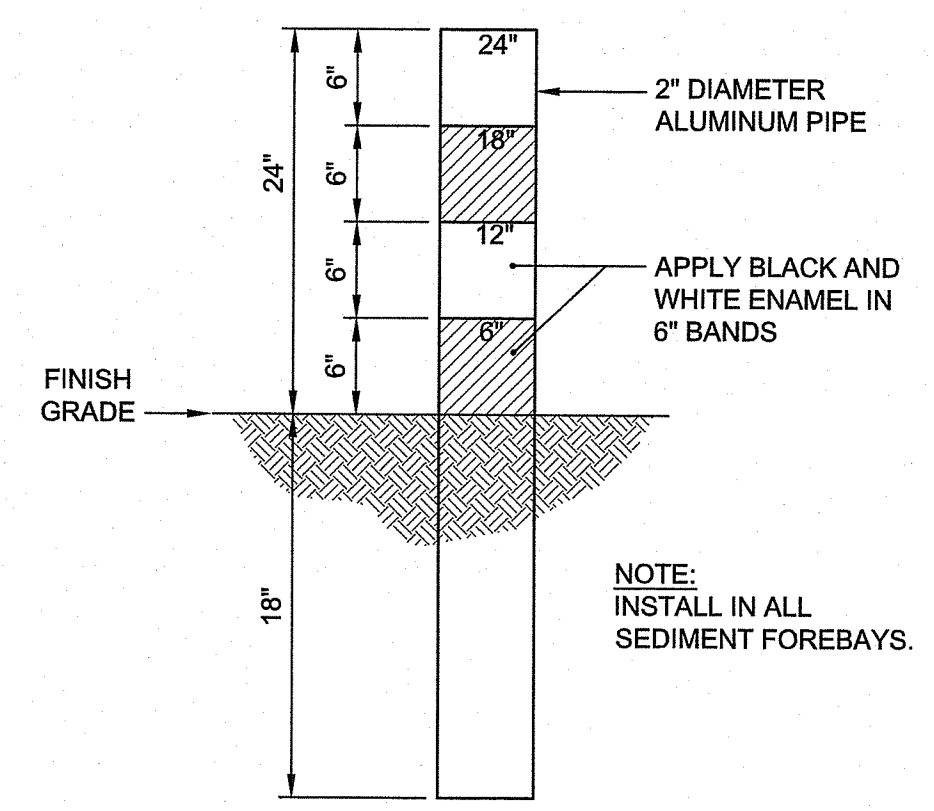
RI Department of Environmental Management
Office of Water Resources
JUN 23 2022



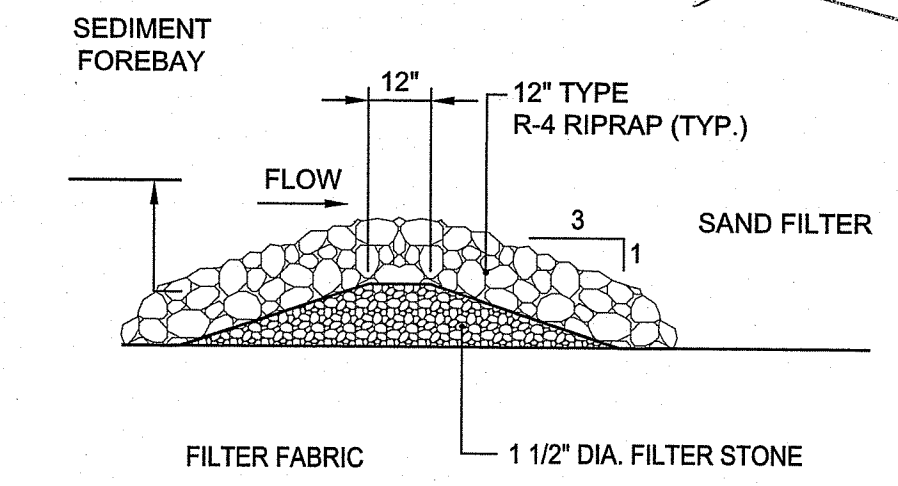
SECTION A-A



SAND FILTER DETAIL
NOT TO SCALE

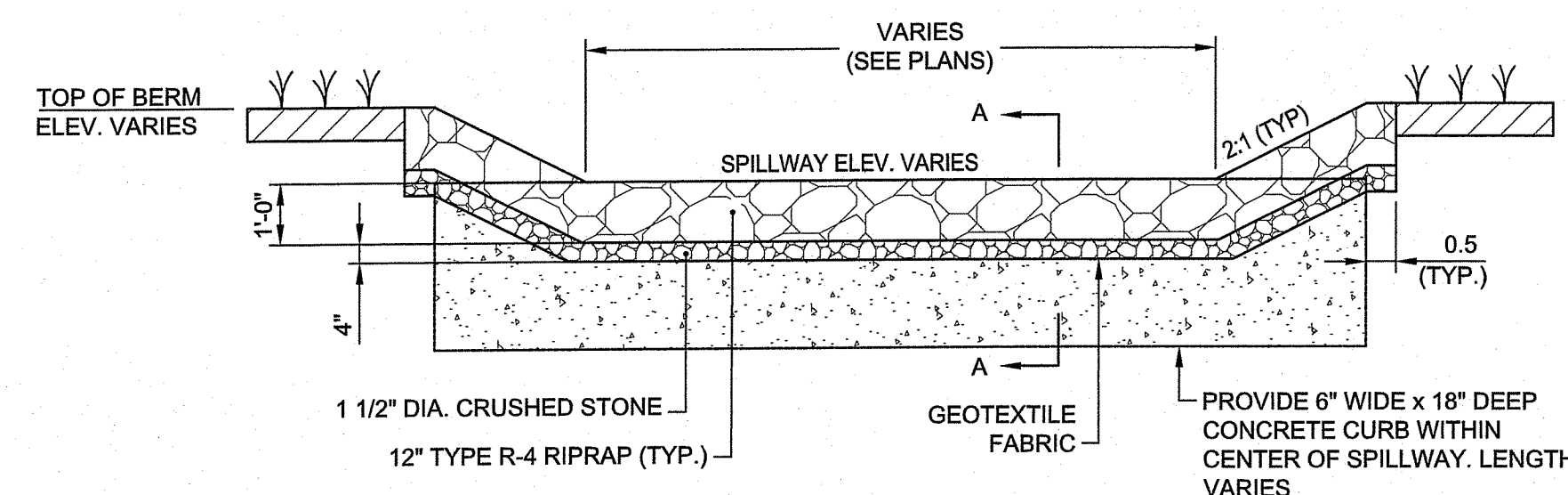


SEDIMENT MARKER DETAIL
NOT TO SCALE

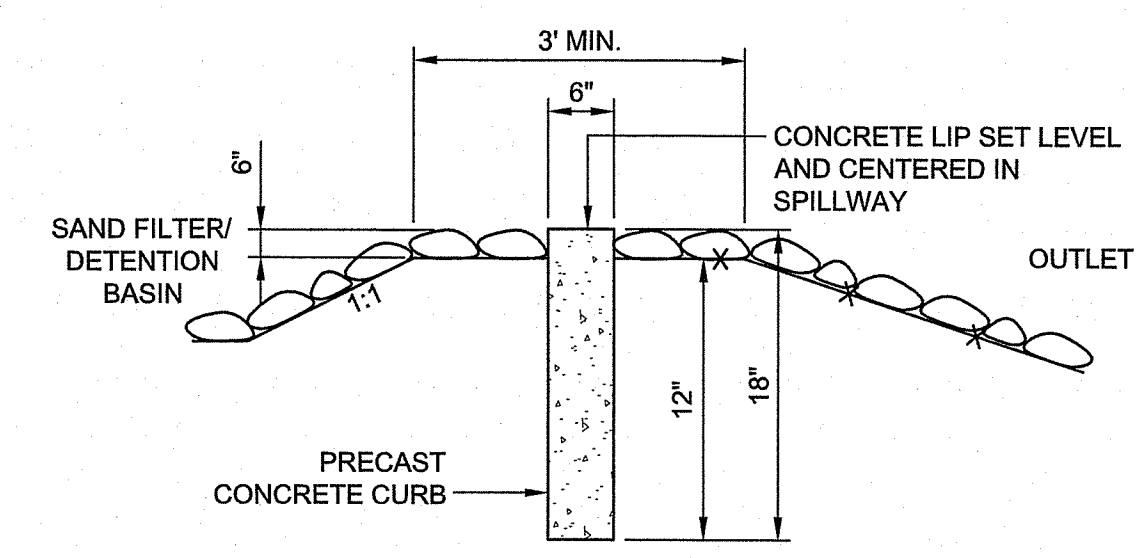


SEDIMENT FOREBAY CHECK DAM DETAIL
NOT TO SCALE

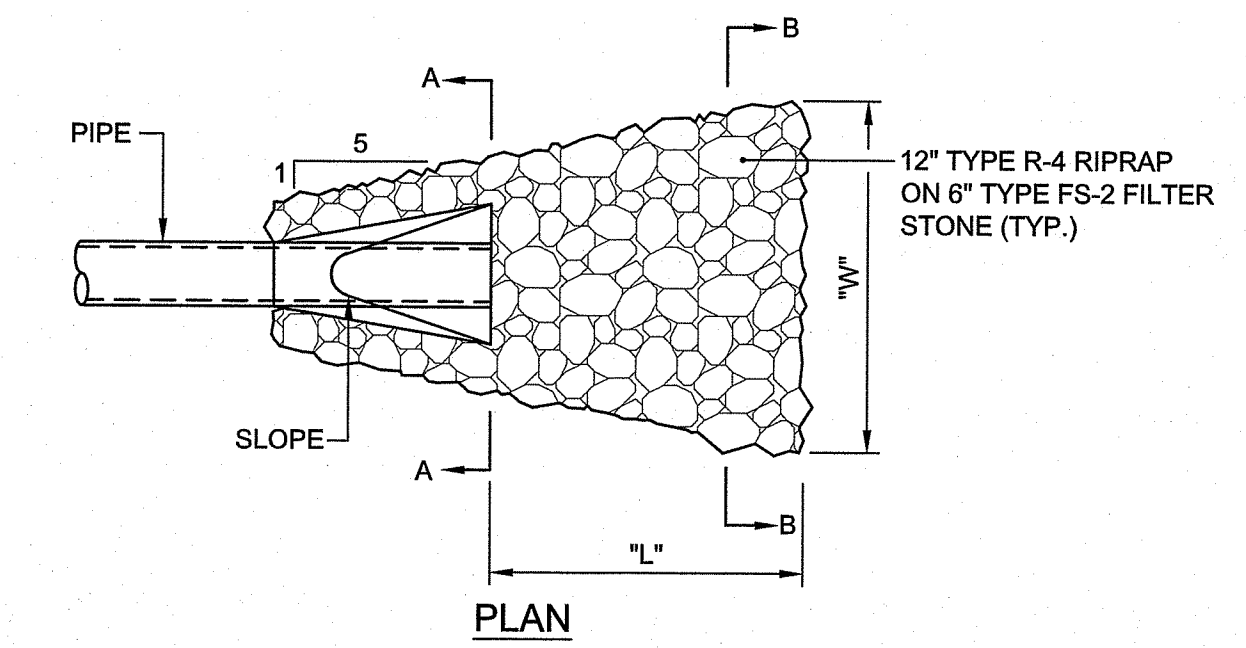
SCALE ADJUSTMENT GUIDE
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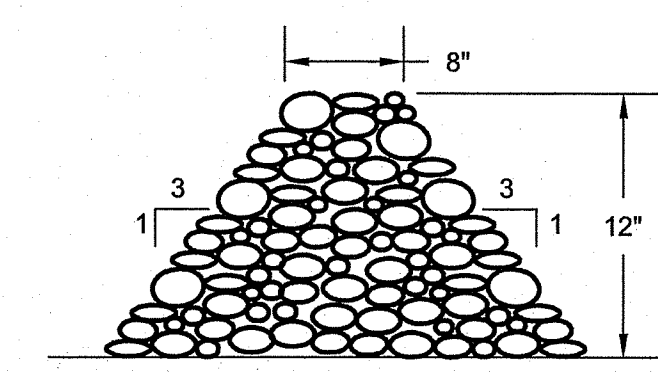
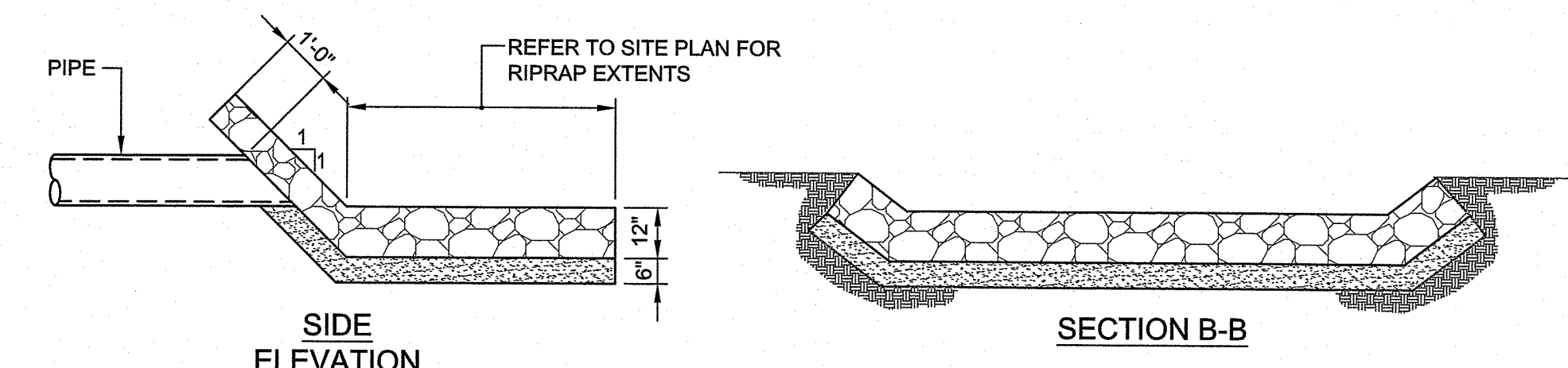
RIPRAP SPILLWAY DETAIL
NOT TO SCALE



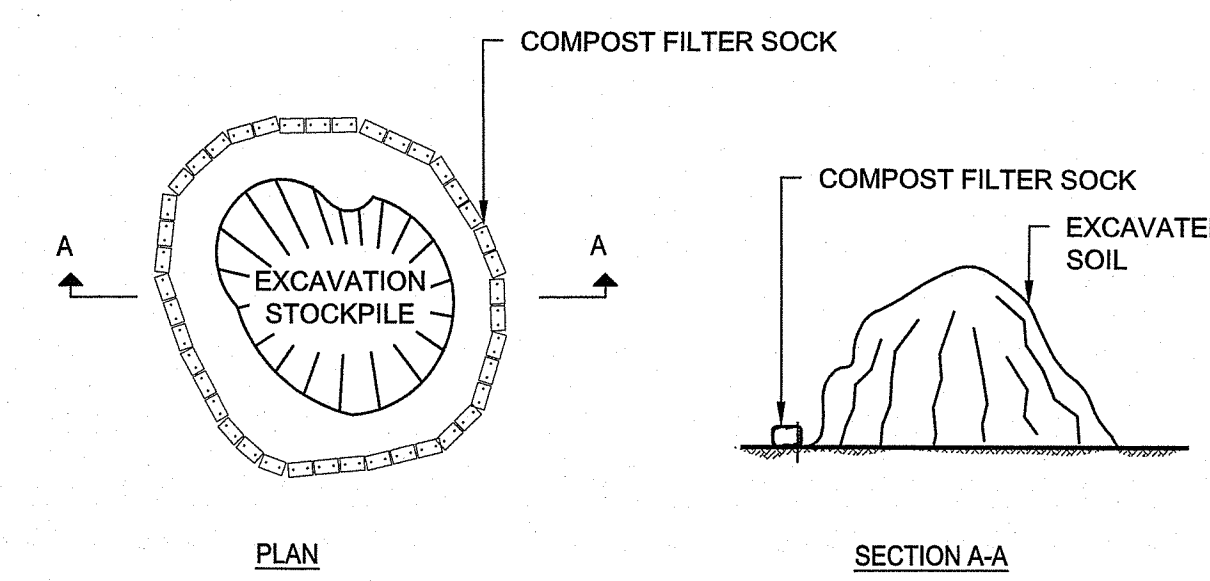
SECTION A-A
NOTE: CONTRACTOR SHALL FILL VOIDS BETWEEN CURB SECTIONS WITH MORTAR



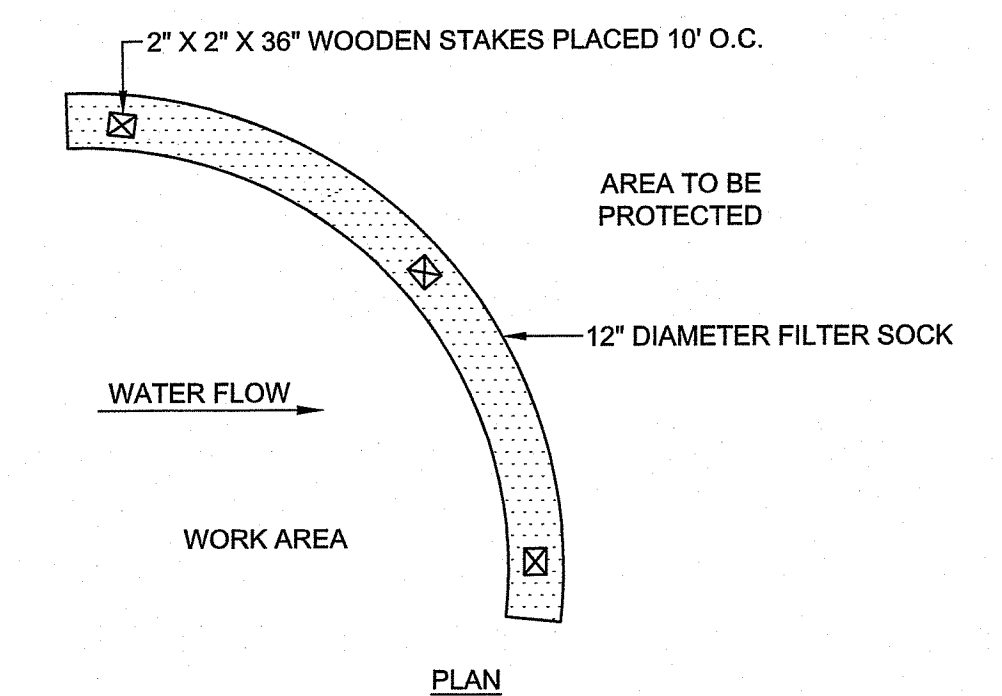
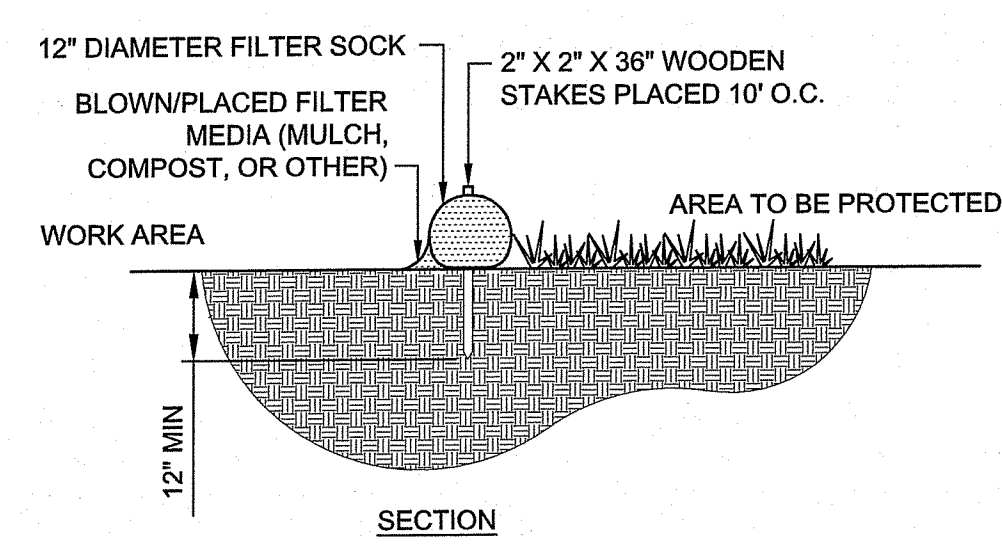
RIPRAP LEVEL SPREADER DETAIL
NOT TO SCALE



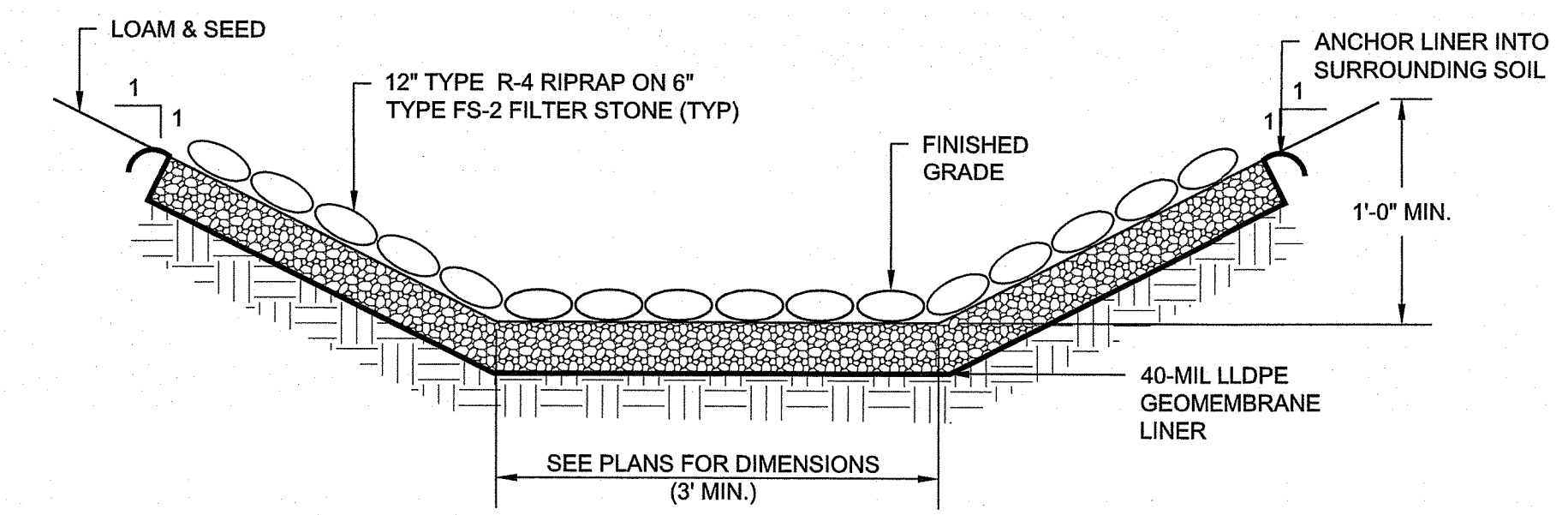
CRUSHED STONE BERM FOR LOW FLOW ORIFACES
NOT TO SCALE



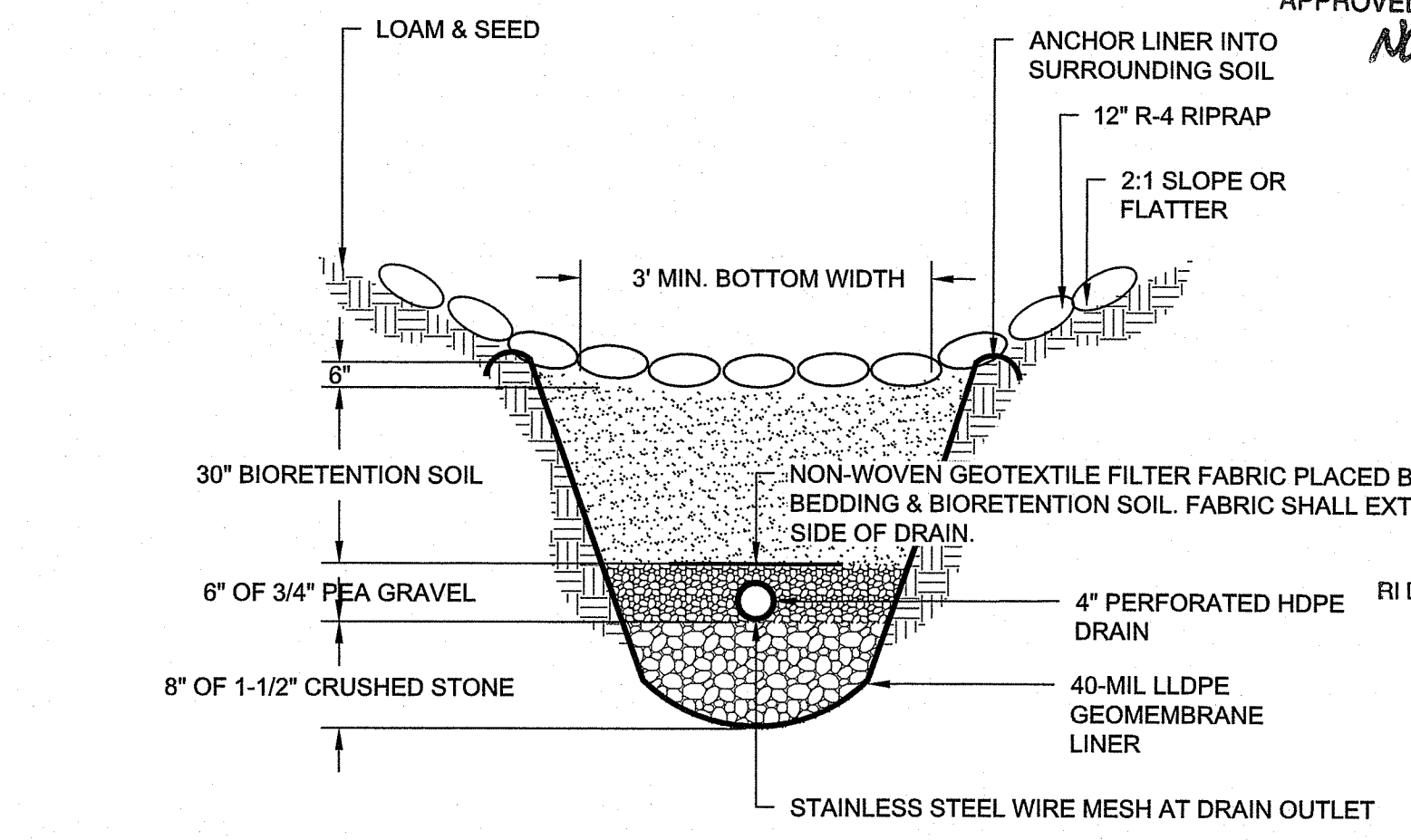
SOIL STOCKPILE
NOT TO SCALE



FILTER SOCK SEDIMENTATION CONTROLS
NOT TO SCALE



NOTE:
1. MINIMUM LONGITUDINAL SLOPE IS 0.01FT/FT.
RIPRAP AND BYPASS SWALE DETAIL
NOT TO SCALE



BIORETENTION SOIL: 65-68% SAND, 8-12% SILT, 0-2% CLAY, 23-25% ORGANIC MATTER (USDA LOAMY SAND OR SANDY LOAM)
DRY SWALE WITH SUBDRAIN
NOT TO SCALE

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WESTERN JOHNSTON HSA EXPANSION
CONTRACT 1 - PINE HILL TANK

Johnston, Rhode Island

REVISIONS:

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DATE: JANUARY 2023
SCALE: AS NOTED
DESIGNED BY: MGM
CHECKED BY: SPD
DRAWN BY: MGM
APPROVED BY: SPD
DRAWING TITLE:

DETAILS 6
DRAWING NO.: C7.6
SHEET NO. 11 OF 11