

Addendum to GSI Typical Details

June 2023

This is an addendum to the Green Stormwater Infrastructure Typical Details Version 2.0. A previous version of this Addendum was released in December 2020. Replacement and pilot details are presented on the following pages in PDF form. Updates have been made to the CAD versions in the .zip file on the [GSI Resource Directory](#).

The following list of details are being replaced:

F-2 Stormwater Trench Cross Section

Updated in December 2020 to reflect latest recommended liner configurations. Added a section showing a fully lined trench extending into cartway.

C-2 Green City Inlet

Update released in January 2020. Removed trash guard due to updated inlet protection requirements in specifications.

C-5 Trench Drain

In December 2020, added standardized curb opening and modified channel configuration for better runoff capture and maintainability. Updated in 2023 with precast concrete curb opening top rather than cast iron.

C-10 Water Level Control Structure

In December 2020, enlarged box to allow greater maintenance access and constructability.

C-14, C-15, and C-16 Domed Risers

Updated in 2022 to remove mulch layer over stormwater soil and call out solid cap at Domed Riser Standpipe sump.

C-23 Geomembrane Pipe Penetration

Update in June 2023 to clarify that solid (not perforated) pipe is used at penetration.

C-33 and C-34 Energy Dissipaters

Update released in December 2020. Refined and developed specific options for a variety of SMPs/scenarios: Endwall, trench drain/curb cut, bumpout, and planter.

C-41 and C-42 Ornamental Fencing

Update released in January 2020. Edited to match common manufacturer standard.

C-43 and C-42 Split Rail Fence

Update released in January 2020. Changes to clarify installation and stability of posts and rails.

The following pilot details are to be used where relevant with the understanding that they are being refined:

P-1 Bumpout Curb

Developed in 2020 to ensure curb structural stability and allow sufficient stormwater soil depth within bumpouts. Updated version developed in 2022, removing 2A stone support under curb and replacing the curb with support (L-shaped curb) on the cartway side with a deep curb matching the footway side for consistency in bid item and construction methods. Version with 10"x16" concrete curb support may still be used on an individual project basis (request from PWD if needed).

P-2 Batten Bar - Geomembrane Attachment to Concrete

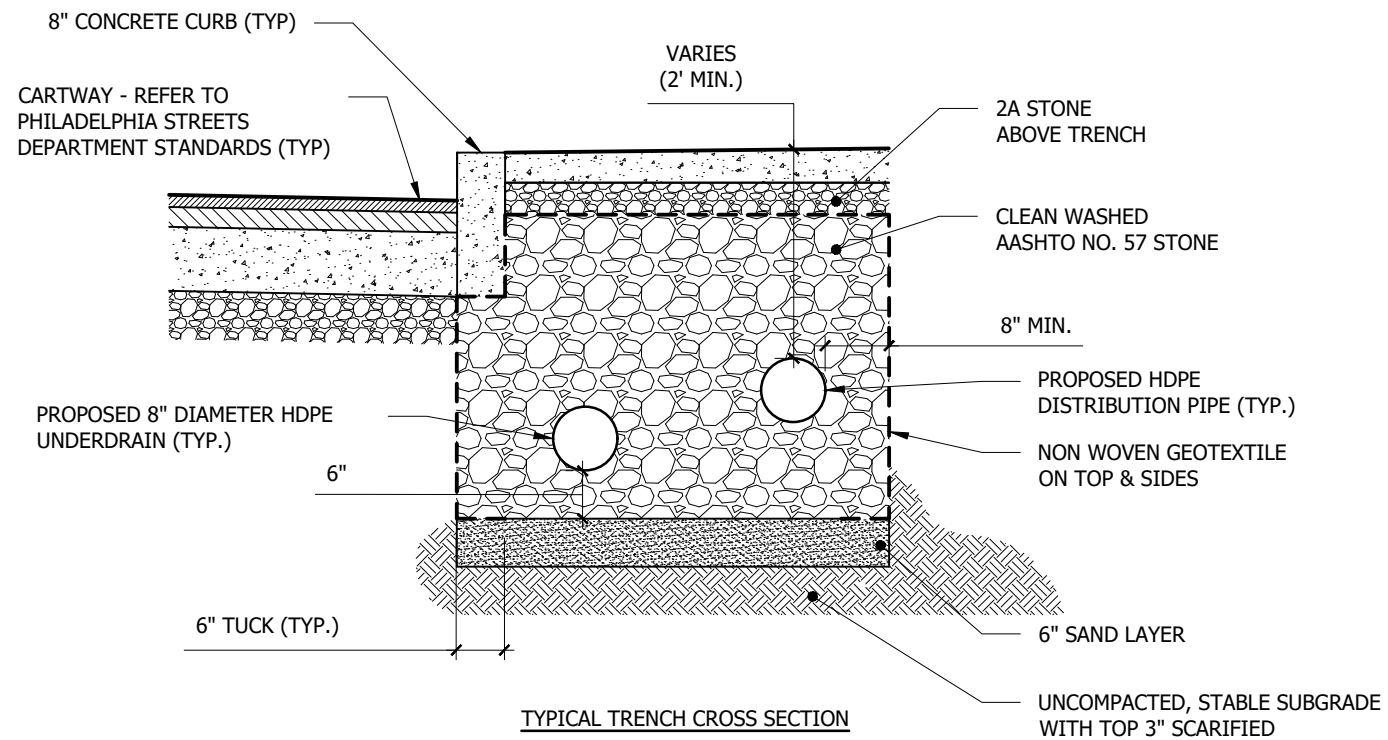
Developed in 2020 for attaching impermeable geomembrane liner to concrete structures.

P-3 Alternative Geomembrane Pipe Penetration at Inlet

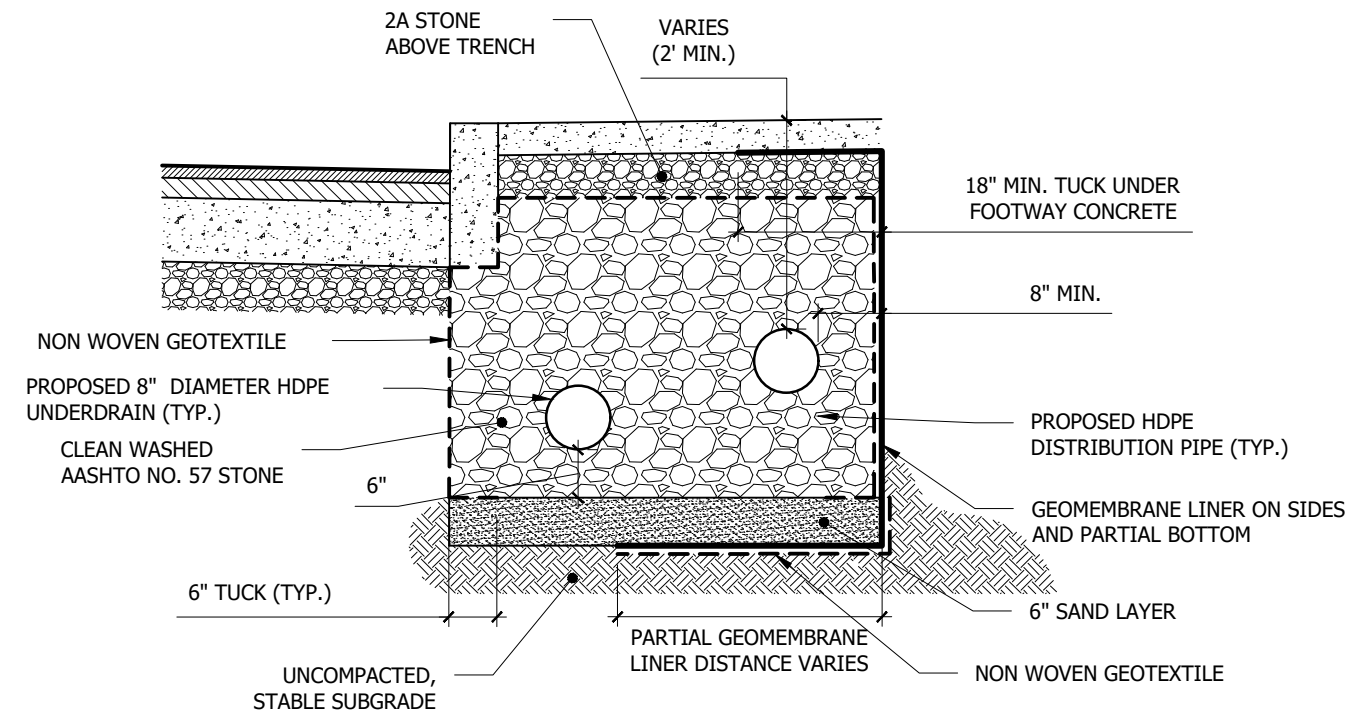
Developed in 2022 to give contractors the option of using batten bar attachment to concrete inlet catch basin as an alternative to boot seals at geomembrane liner pipe penetrations.

P-4 Check Dam

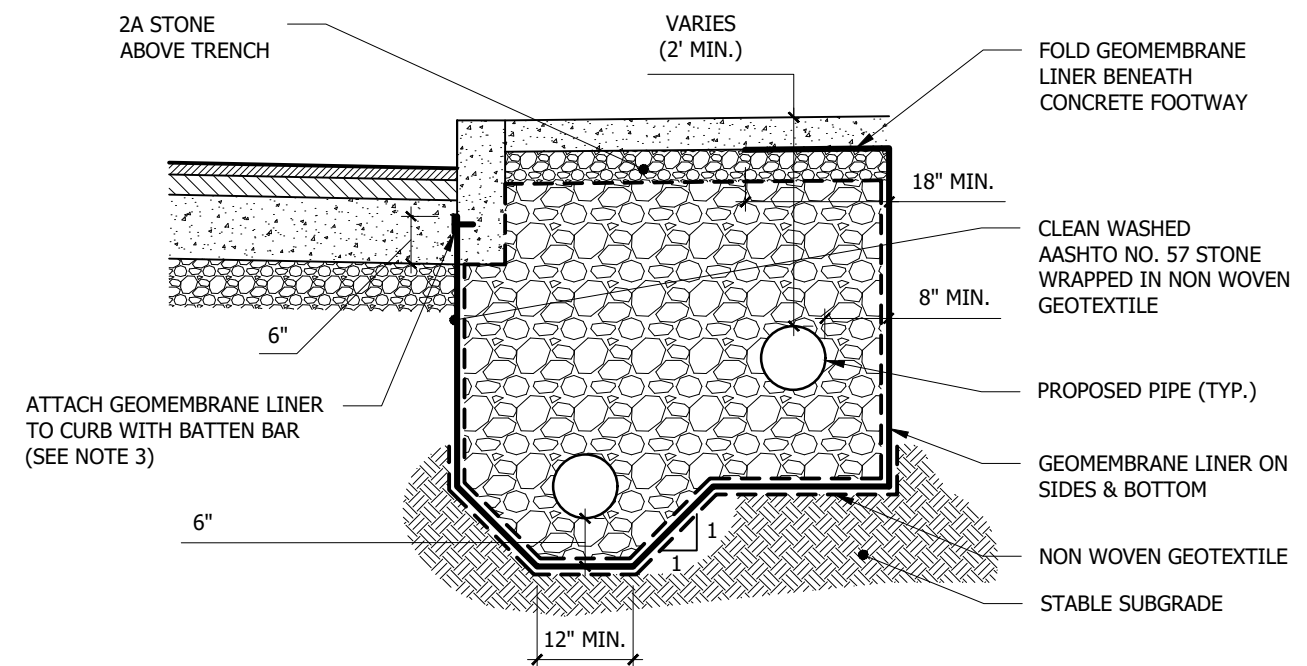
Developed in 2021 to standardize design of check dams in bumpouts.



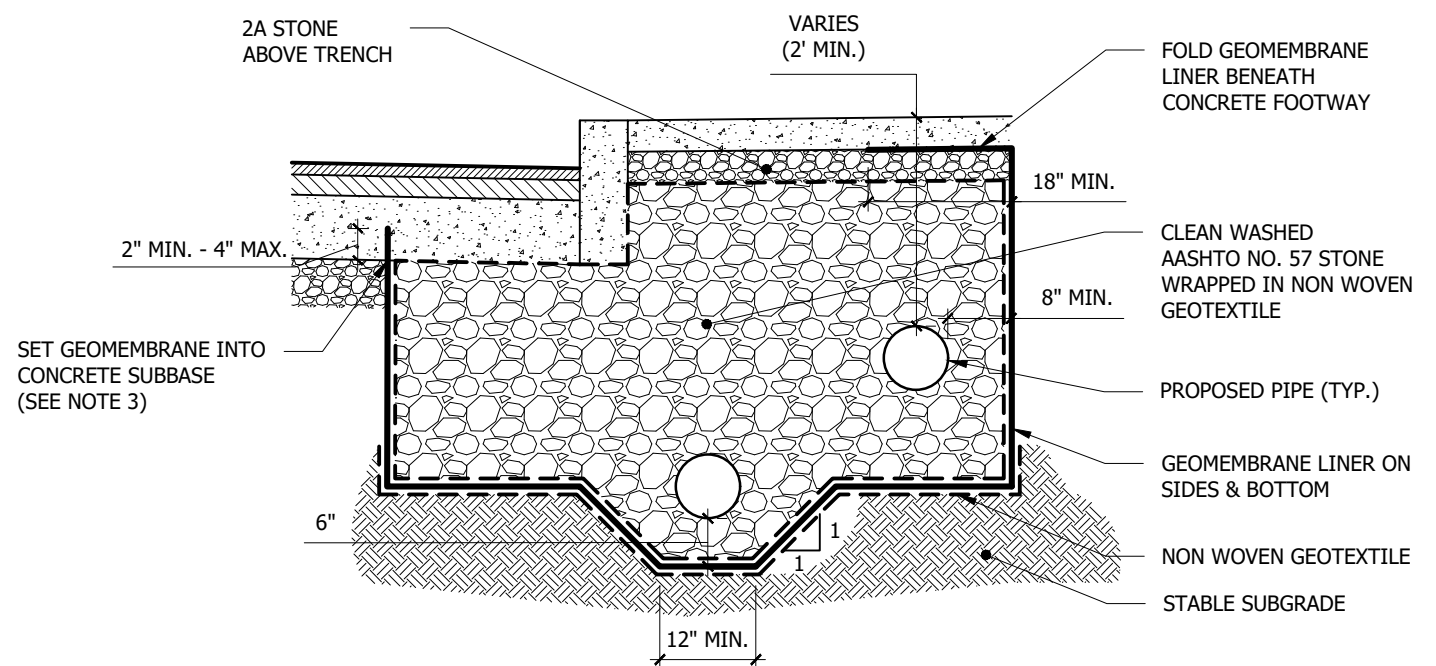
TYPICAL TRENCH CROSS SECTION



TYPICAL PARTIALLY LINED TRENCH CROSS SECTION



TYPICAL FULLY LINED TRENCH UNDER FOOTWAY



TYPICAL FULLY LINED TRENCH UNDER CARTWAY AND FOOTWAY

NOTES TO DESIGNER:

1. THE CROSS SECTIONS ABOVE ARE INTENDED AS AN EXAMPLE. THEY MAY BE MODIFIED AND USED FOR SECTIONS ON PLANS.
2. AVOID PLACING GEOMEMBRANE LINER DIRECTLY UNDER CURB, AS IT PREVENTS THE USE OF PINS USED IN FORMING THE CURB.
3. IN THE FULLY LINED EXAMPLES ABOVE, SYSTEM OVERFLOW ELEVATION IS SHOWN ABOVE CONCRETE ROAD SUBBASE/BOTTOM OF CURB, MAKING IT NECESSARY TO SET LINER IN THE CONCRETE OR ATTACH TO CURB WITH A BATTEN BAR. WHERE CONCRETE SUBBASE/BOTTOM OF CURB IS AT LEAST 6" ABOVE SYSTEM OVERFLOW ELEVATION, LINER MAY BE TUCKED BELOW SUBBASE INSTEAD.
4. SAND MAY BE USED INSTEAD OF GEOTEXTILE UNDER FULLY LINED TRENCHES IF EXISTING SUBGRADE PRESENTS A HIGH RISK OF PUNCTURING GEOMEMBRANE.
5. GEOTEXTILE MAY BE USED INSTEAD OF SAND FOR PARTIALLY LINED TRENCHES THAT ARE UNLIKELY TO FUNCTION AS INFILTRATION SYSTEMS.



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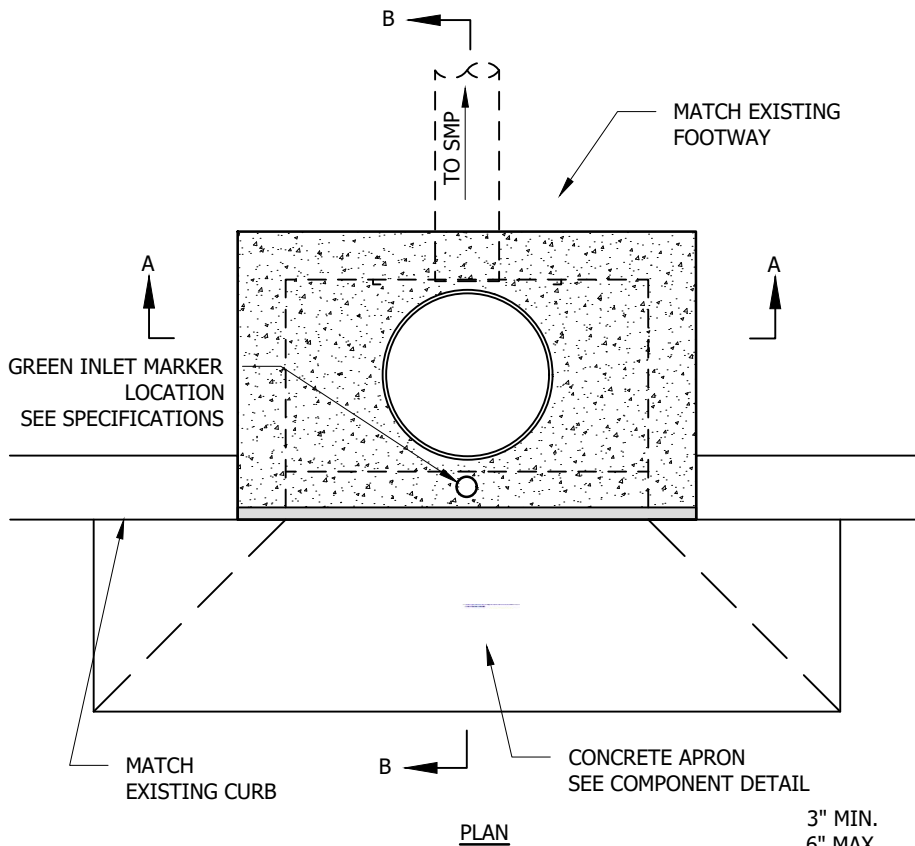
STORMWATER TRENCH CROSS SECTION

VS.	DATE	INITIALS	REASON
1	06/09/2017	MJD	ADDED PARTIALLY LINED TRENCH SECTION
2	06/01/2018	MJD/DJM	CONVERTED TO FUNCTIONAL DETAIL, ADDED GEOTEXTILE AND SAND TO PROTECT GEOMEMBRANE LINER
3	12/04/2020	DJM	UPDATED GEOMEMBRANE LINER STANDARDS, ADDED FULLY LINED UNDER CARTWAY AND FOOTWAY SECTION

SCALE: N.T.S.

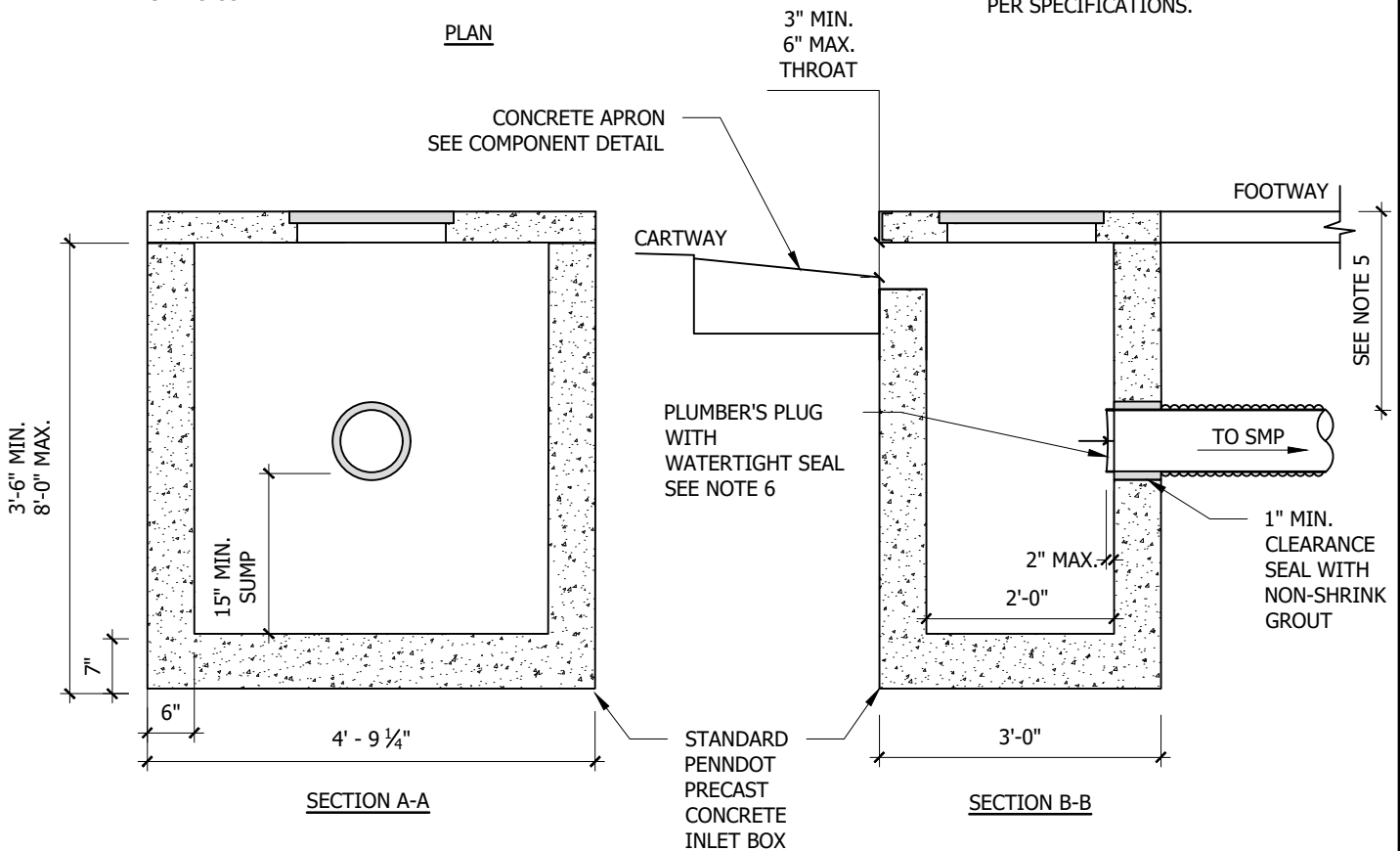
DRAWING NUMBER:

F-2



NOTES:

1. LOCATE PIPE OPENINGS TO PROVIDE MIN. 4" OF CONCRETE BETWEEN TOP OF INLET BOX AND TOP OF PIPE OPENING (PENNDOT RC-46M).
2. OPEN MOUTH AT CURB FORMED IN TOP OF INLET BOX.
3. MODIFIED PWD CITY INLET TOP SLAB. OUTER DIMENSIONS REDUCED TO MATCH PENNDOT BOX.
4. FOOTWAY AND CARTWAY RESTORATION HAS BEEN DRAWN FOR REFERENCE PURPOSES ONLY. PAVEMENT RESTORATION QUANTITIES AND DESIGN MUST CONFORM TO CURRENT PHILADELPHIA STREETS DEPARTMENT STANDARDS FOR CITY STREETS AND PENNDOT STANDARDS FOR STATE ROUTES.
5. MIN. COVER FOR THERMOPLASTIC PIPE IN ROW IS 2'.
6. PLUMBERS PLUG TO MAINTAIN WATERTIGHT SEAL UNTIL CONSTRUCTION IS COMPLETE. PLUG TO BE REMOVED AT DIRECTION OF PWD. PLUG NOT TO EXTEND MORE THAN 2" OUT FROM INLET WALL.
7. ALL JOINTS, ADJUSTMENTS, AND PIPE CONNECTIONS MUST BE WATERTIGHT.
8. INSTALL PERMANENT INLET PROTECTION PER SPECIFICATIONS.



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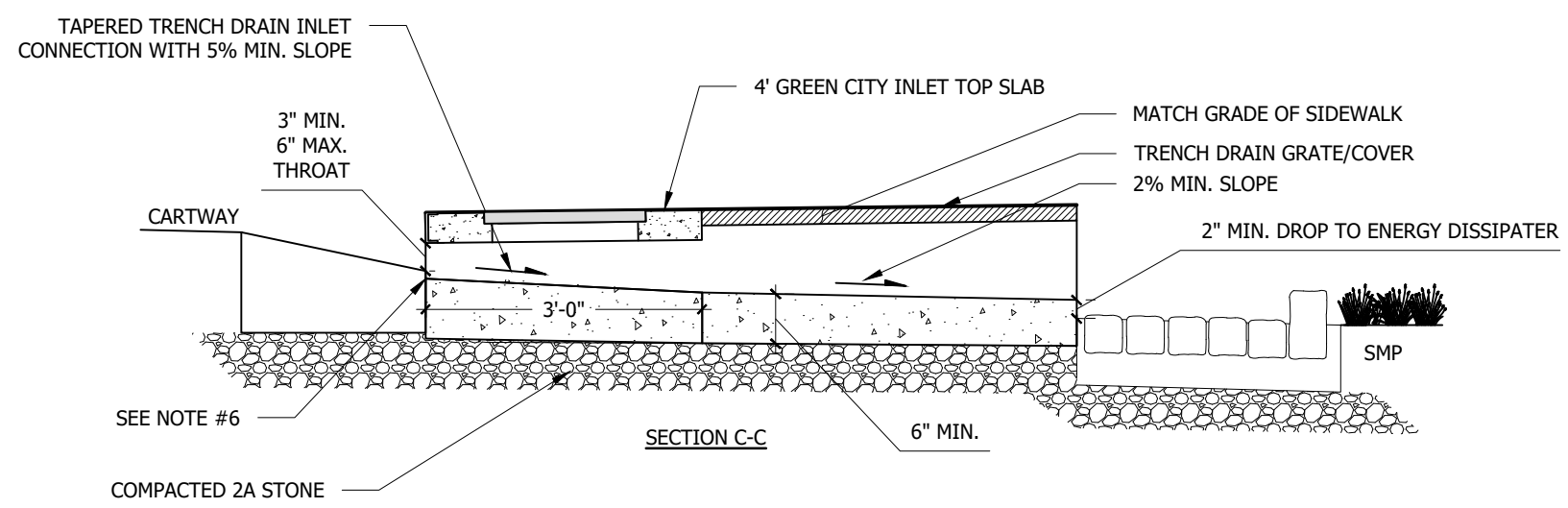
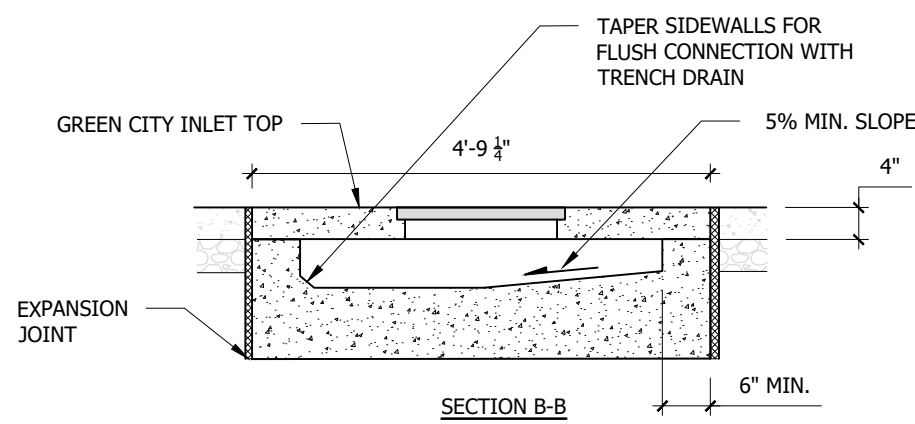
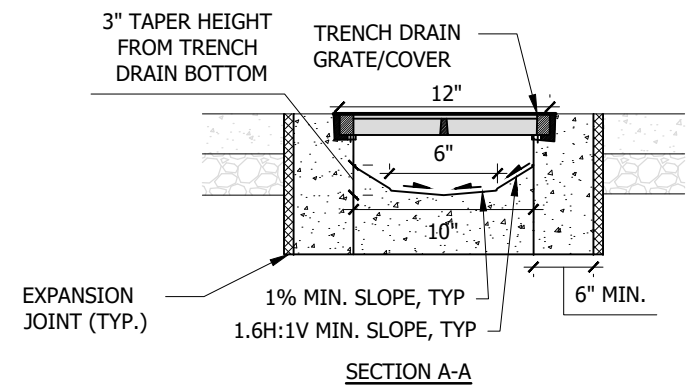
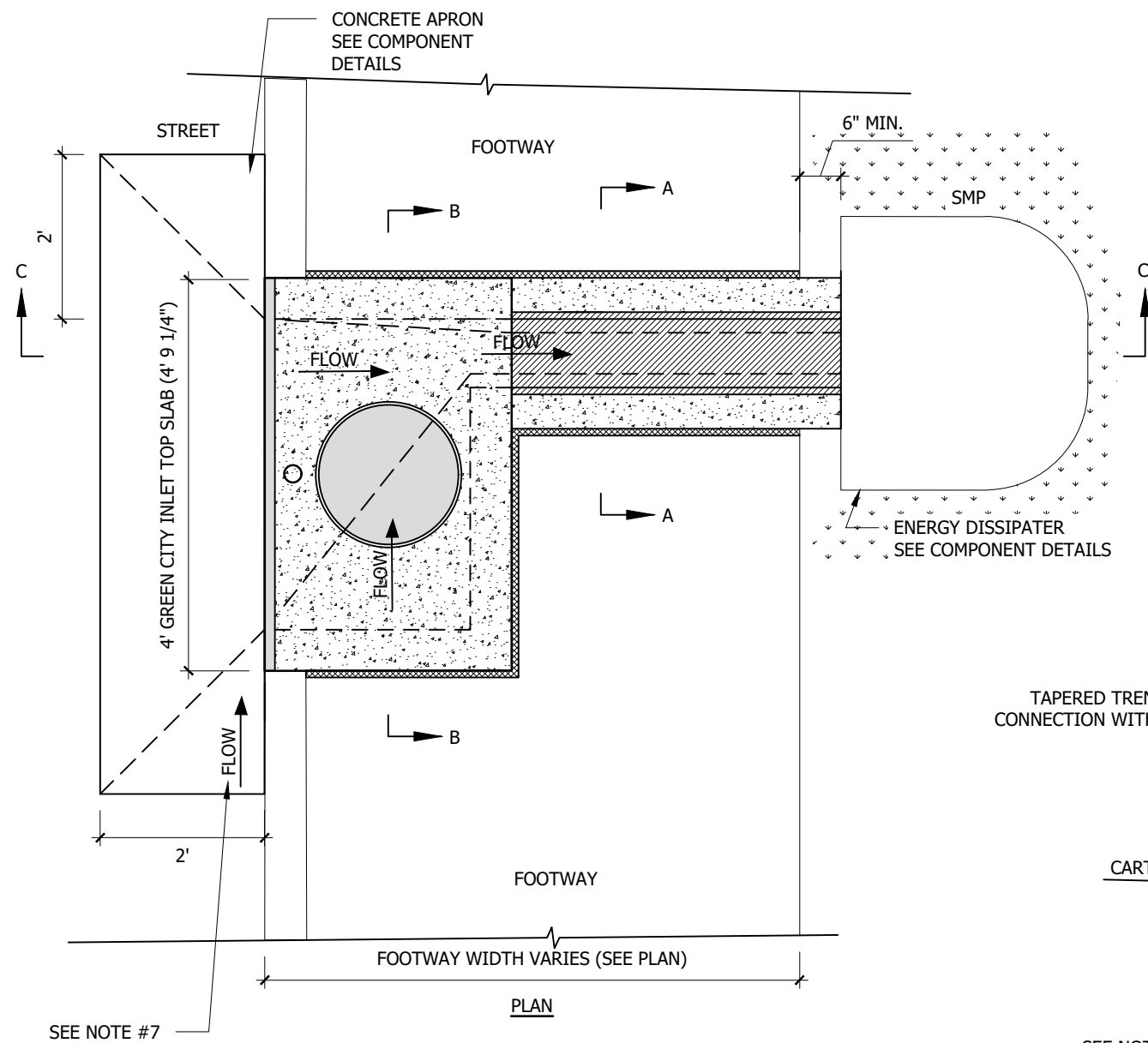
GREEN CITY INLET

VS.	DATE	INITIALS	REASON
1	06/09/2017	DJM	
2	06/01/2018	ANJ/DJM	ADDED MARKER, CLARIFIED OPEN MOUTH FORMATION
3	01/30/2020	DJM	REMOVED TRASHGUARD, ADDED INLET PROTECTION NOTE

SCALE: N.T.S.

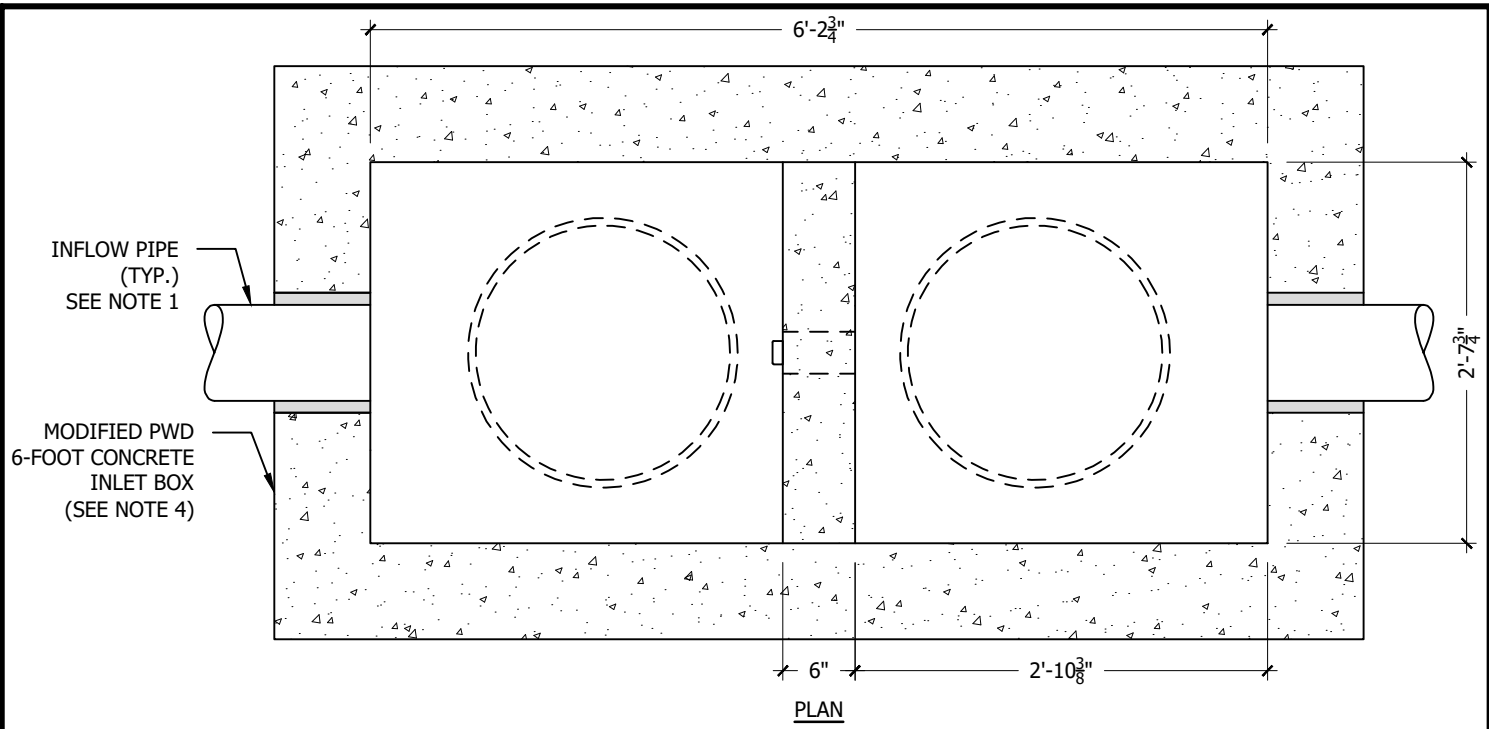
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C-2

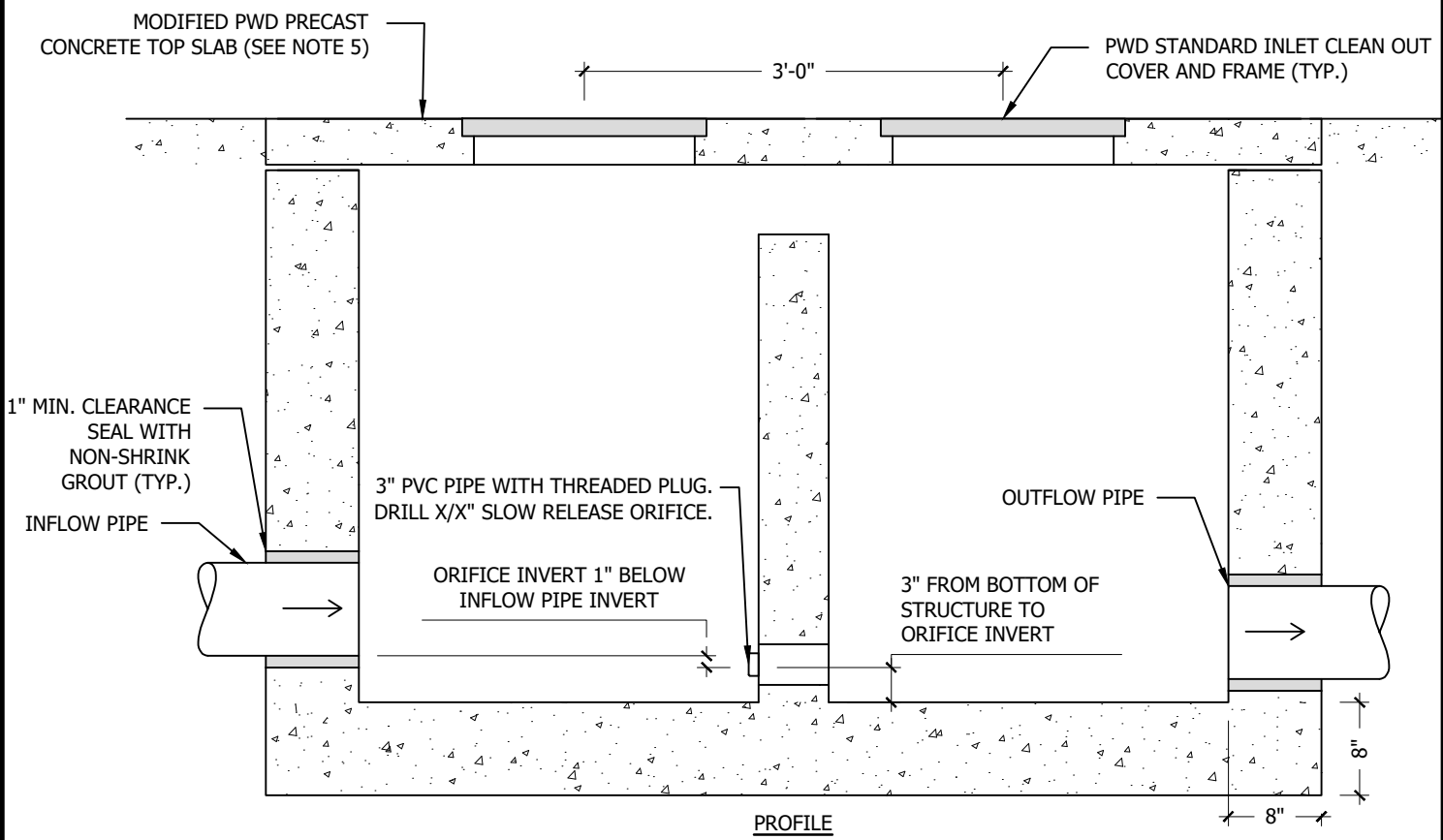


- NOTES:**
1. TRENCH DRAIN FRAME AND GRATE/COVER MUST BE HEEL SAFE, ADA COMPLIANT, BOLTED, AND CAPABLE OF H-20 LOADING.
 2. 4' GREEN CITY INLET TOP SLAB MUST BE USED AS COVER OVER TAPERED INLET OPENING.
 3. ALL CONCRETE MUST BE 3500 PSI MINIMUM.
 4. ANCHOR FRAME INTO CONCRETE PER MANUFACTURER'S REQUIREMENTS.
 5. TRENCH DRAIN AND INLET BOTTOM MUST BE CAST-IN-PLACE AND HAVE POSITIVE DRAINAGE TO STORMWATER SYSTEM.
 6. WHERE SLOPES AND GRADES ALLOW, INCLUDE 1" - 3" DROP FROM CONCRETE APRON TO INLET OPENING.
 7. MIRROR DETAIL AS NEEDED TO MATCH GUTTER FLOW DIRECTION.

TRENCH DRAIN			
VS.	DATE	INITIALS	REASON
1	09/01/2016	ANJ/DJM	
2	06/01/2018	MJD/DJM	EXTENDED 6" PAST SIDEWALK, UPDATED CURB APRON
3	12/10/2020	DJM	UPDATED CURB OPENING, CHANNEL, ENERGY DISSIPATER
4	06/30/2023	VJF/DJM	CHANGED TO 4' CITY INLET TOP SLAB OVER CURB OPENING



PLAN



PROFILE

NOTES:

1. SEE PLANS FOR PIPE MATERIALS, INVERT ELEVATIONS, AND ORIENTATION.
2. SEE PLANS FOR STRUCTURE COVER AND TOP OF WEIR ELEVATIONS.
3. ALL JOINTS, ADJUSTMENTS, AND PIPE CONNECTIONS MUST BE WATERTIGHT.
4. PWD 6' INLET BOX WITH WEIR WALL ADDED, NO TRAP.
5. PWD CITY INLET TOP SLAB WITH OUTER DIMENSIONS TO MATCH BOX WITHOUT RISER, TWO CLEAN OUTS, AND NO CURB NOSING.

NOTES TO DESIGNER:

1. SPECIFY SLOW RELEASE ORIFICE DIAMETER.
2. CONSIDER MINIMUM DISTANCE BETWEEN TOP OF WEIR WALL AND BOTTOM OF COVER.



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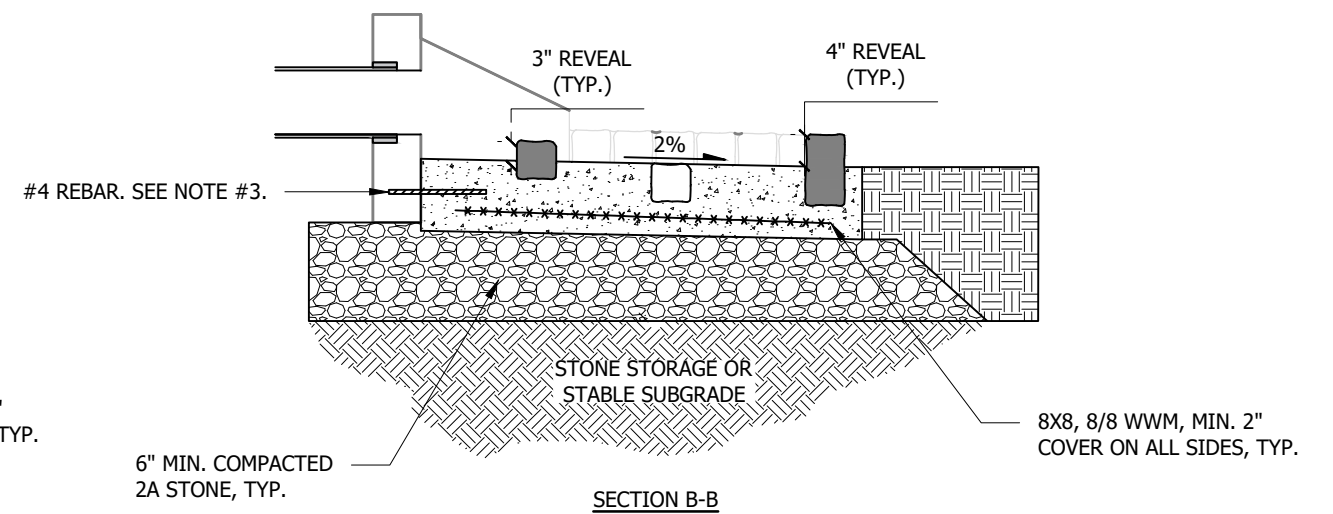
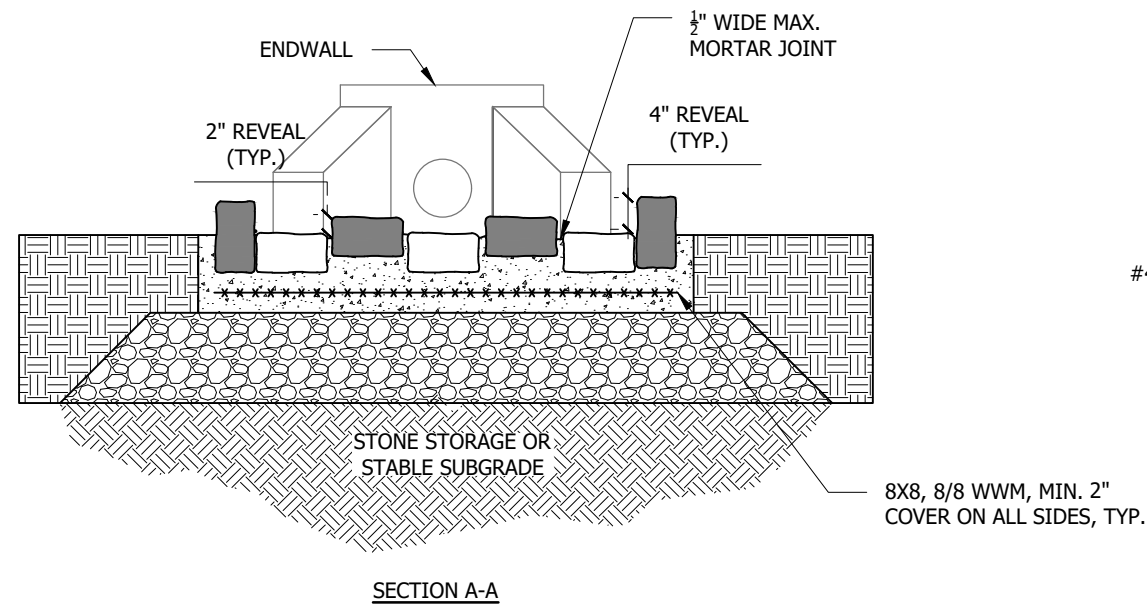
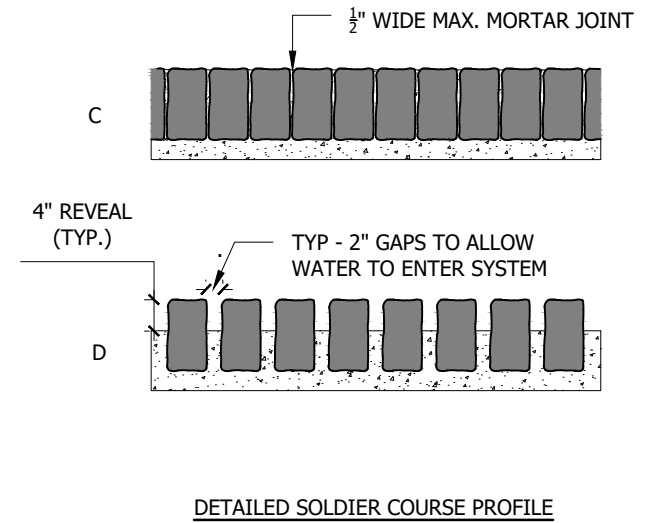
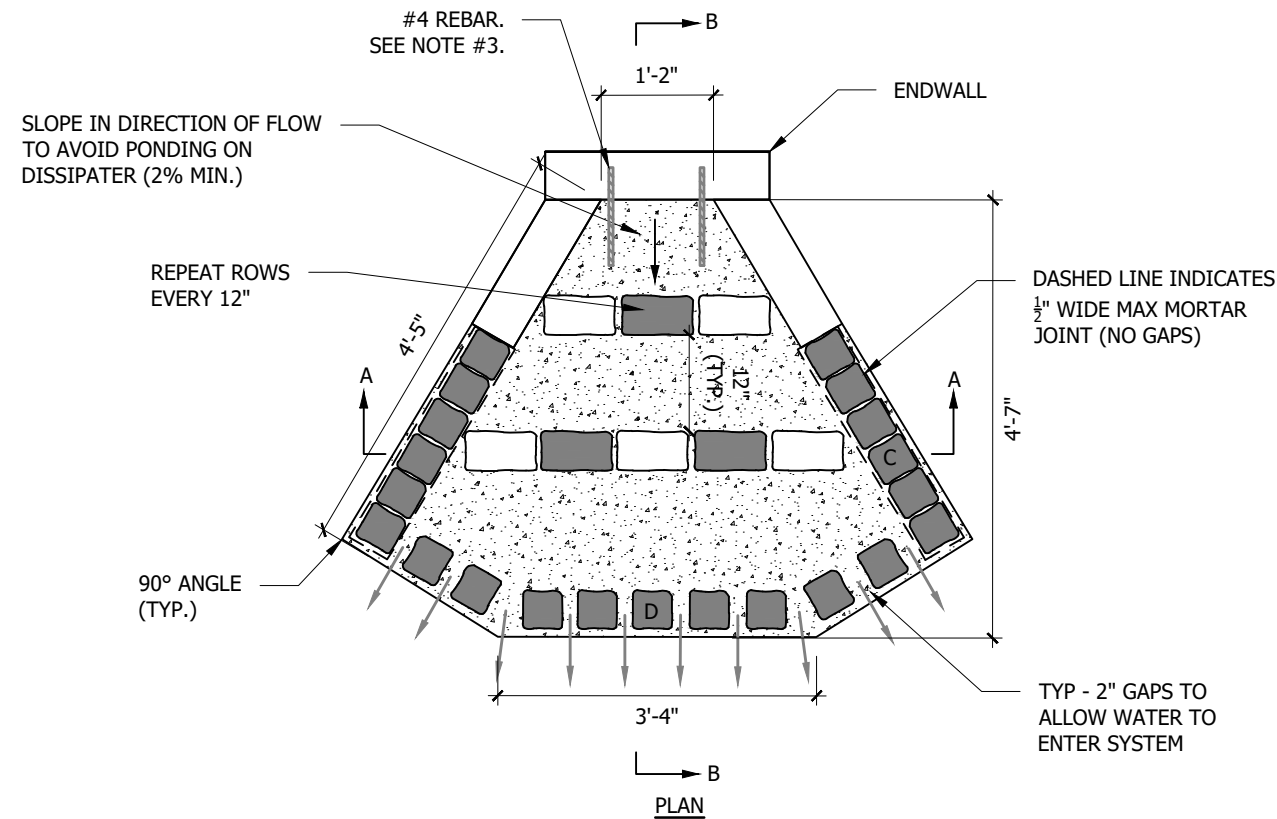
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WATER LEVEL CONTROL STRUCTURE

VS.	DATE	INITIALS	REASON
1	06/09/2017	MJD	UPDATED BOX, WEIR, FRAME AND GRATE
2	06/01/2018	ANJ	ADDED NOTE 3
3	12/10/2020	DJM	CHANGED TO 6' BOX

SCALE: N.T.S.

DRAWING NUMBER:
C-10



NOTES:

- BELGIAN BLOCKS SHALL BE ARRANGED IN PATTERN THAT PREVENTS LINEAR FLOW PATHS THROUGH THE ENERGY DISSIPATER.
- PIN CONCRETE DISSIPATER SLAB 4" INTO HEADWALL WITH 12" LONG, #4 REBAR AS SHOWN. DRILL HOLES IN HEADWALL AND SET WITH EPOXY. SEAL JOINT BETWEEN HEADWALL AND DISSIPATER SLAB WITH CAULK.
- UPON COMPLETION, SLOPES/ELEVATIONS MUST ALLOW POSITIVE DRAINAGE INTO SYSTEM WITH NO STANDING WATER ON DISSIPATER.
- ALL BLOCKS SHOWN IN GRAY ARE RAISED AND BLOCKS SHOWN IN WHITE ARE FLUSH WITH CONCRETE.

NOTE TO DESIGNER:

- MIN. 2" DROP FROM INVERT OF PIPE ELEVATION TO TOP OF SOIL ELEVATION.



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ENDWALL ENERGY DISSIPATER

VS.	DATE	INITIALS
1	07/31/2020	TJL/VJF

REASON

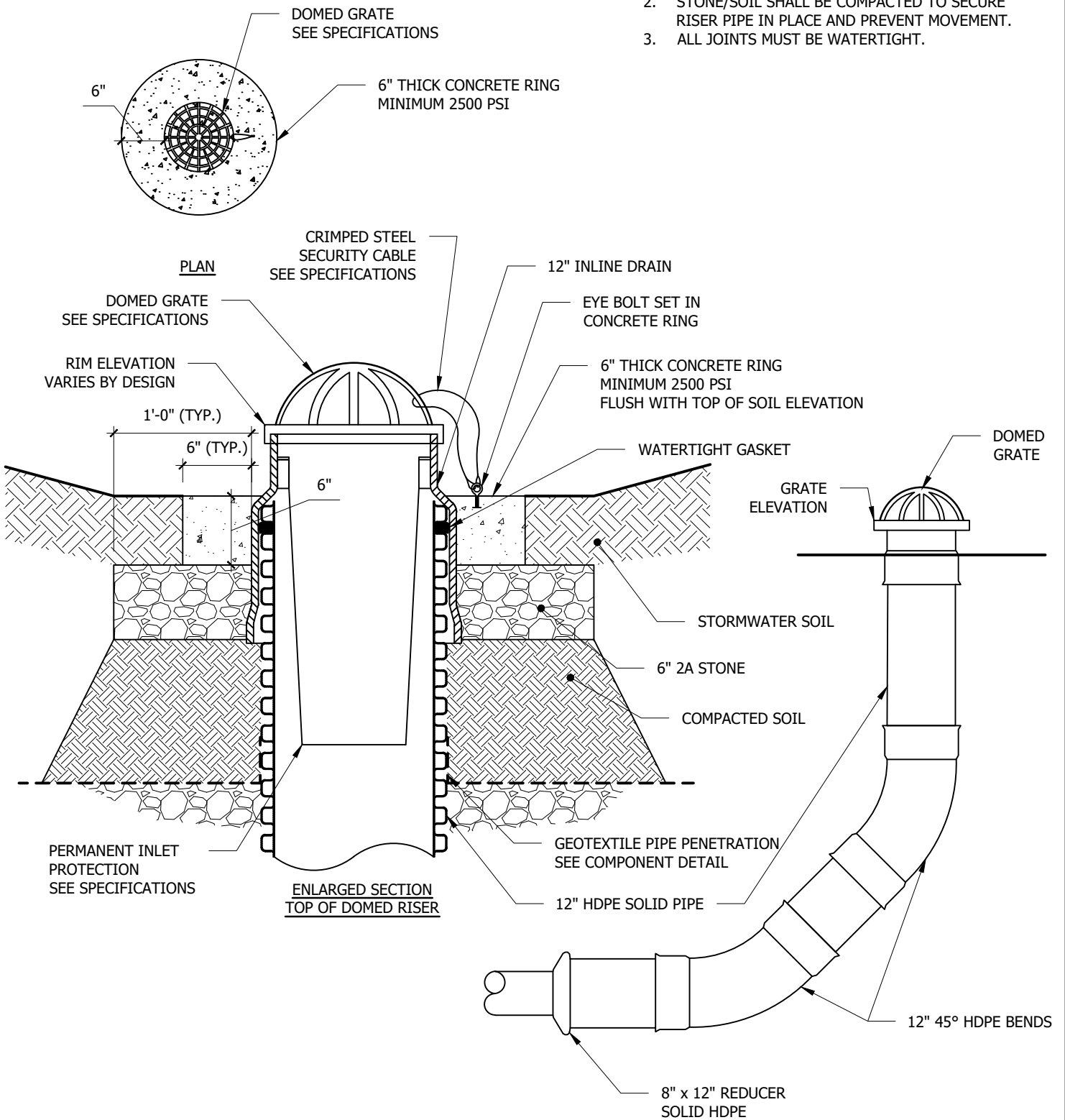
SCALE: N.T.S.

DRAWING NUMBER:

C-33a

NOTES:

1. RISER AND DISTRIBUTION PIPE SIZES MAY VARY BASED ON PROJECT SPECIFIC DESIGN. MINIMUM DIAMETERS SHOWN HERE.
2. STONE/SOIL SHALL BE COMPACTED TO SECURE RISER PIPE IN PLACE AND PREVENT MOVEMENT.
3. ALL JOINTS MUST BE WATERTIGHT.



SECTION

NOTE TO DESIGNER:

1. DISTANCE FROM TOP OF SOIL TO RIM ELEVATION SHOULD BE MAXIMIZED, 3" MINIMUM.



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DOMED RISER

VS.	DATE	INITIALS	REASON
1	09/01/2016		
2	06/01/2018	ANJ	REVISED TO MORE ACCURATELY MATCH SPECIFICATIONS
2	01/27/2022	DJM	REMOVED MULCH LAYER

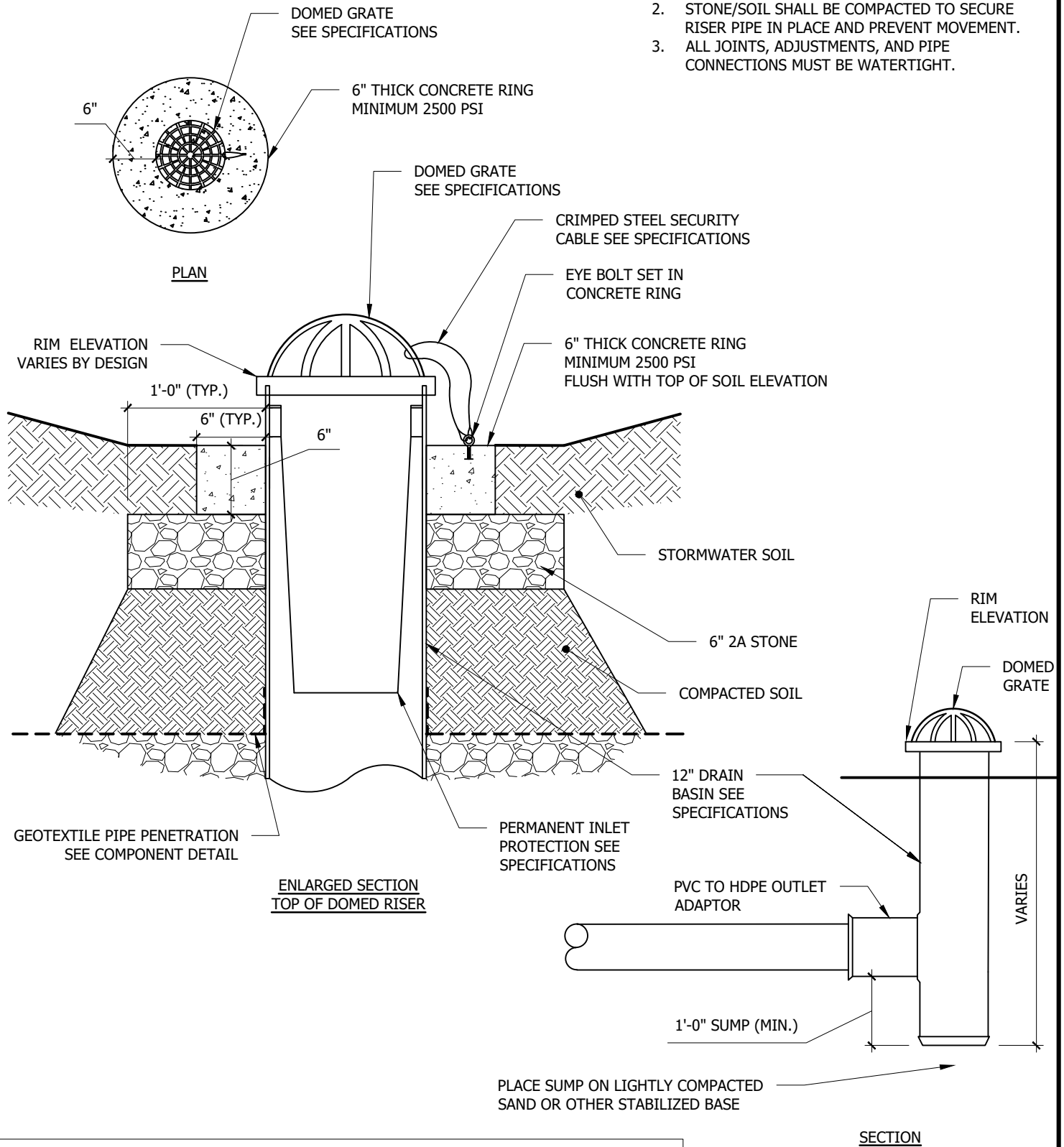
SCALE: N.T.S.

DRAWING NUMBER:

C-14

NOTES:

1. RISER AND DISTRIBUTION PIPE SIZES MAY VARY BASED ON PROJECT SPECIFIC DESIGN. MINIMUM DIAMETERS SHOWN HERE.
2. STONE/SOIL SHALL BE COMPACTED TO SECURE RISER PIPE IN PLACE AND PREVENT MOVEMENT.
3. ALL JOINTS, ADJUSTMENTS, AND PIPE CONNECTIONS MUST BE WATERTIGHT.



NOTES TO DESIGNER:

1. DISTANCE FROM TOP OF SOIL TO RIM ELEVATION SHOULD BE MAXIMIZED. 3" MINIMUM.
2. 4' MAX DIFFERENCE BETWEEN RIM ELEVATION AND INVERT ELEVATION.



DOMED RISER WITH SUMP

SCALE: N.T.S.

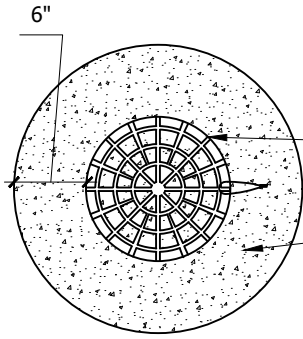
VS.	DATE	INITIALS	REASON
1	09/01/2016		
2	06/01/2018	ANJ	REVISED TO MORE ACCURATELY MATCH SPECIFICATIONS
3	01/27/2022	DJM	REMOVED MULCH LAYER

DRAWING NUMBER:

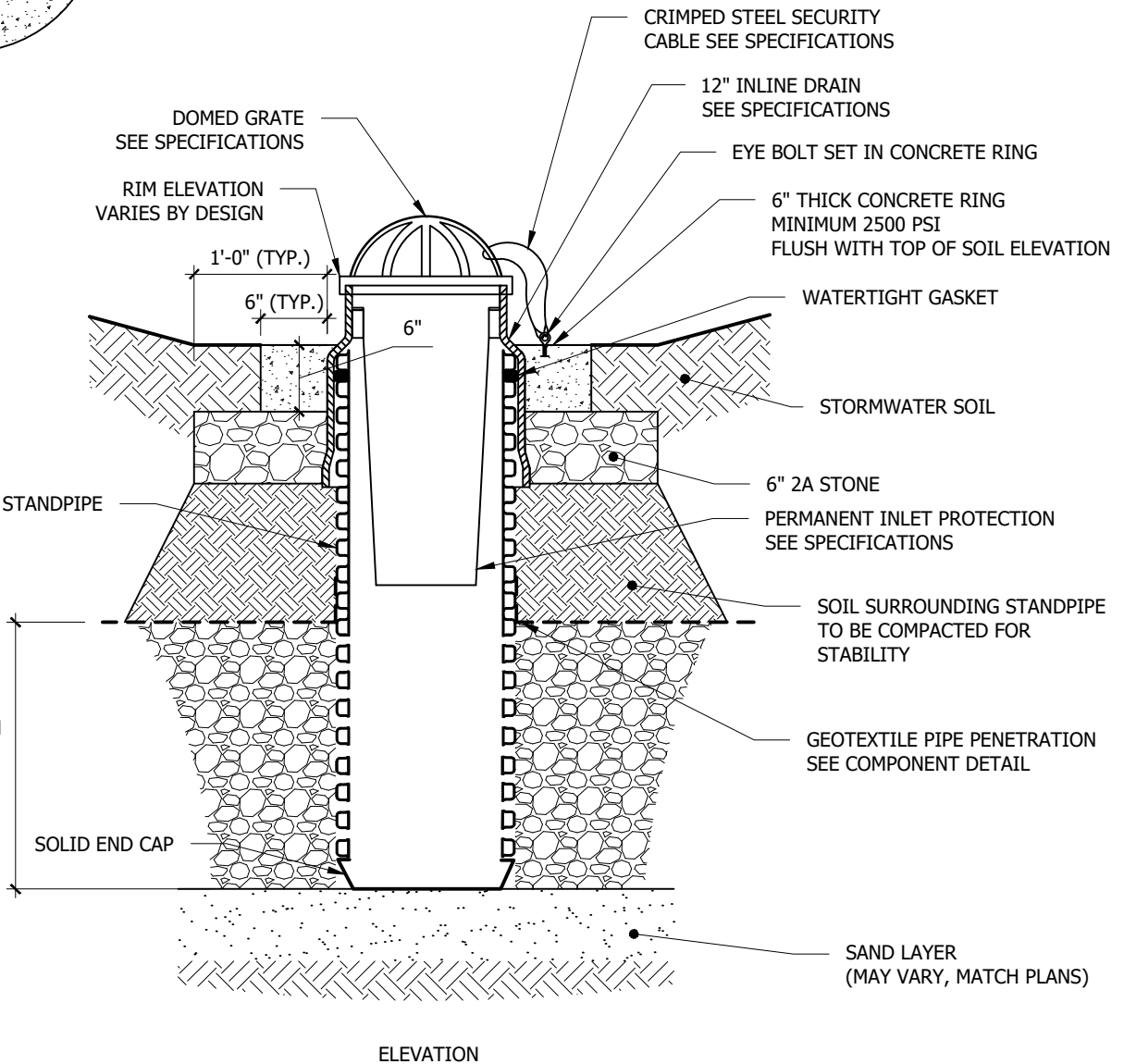
C-15

NOTES:

1. SECTION OF STANDPIPE WITHIN #57 STONE TRENCH MUST BE PERFORATED. PERFORATIONS SHALL BE 0.5" DIAMETER, 2" O/C DRILLED RADIALLY, AND OFFSET 1" EVERY OTHER ROW.
2. STONE/SOIL SHALL BE COMPACTED TO SECURE STANDPIPE IN PLACE AND PREVENT MOVEMENT.
3. ALL JOINTS MUST BE WATERTIGHT.



PLAN



ELEVATION

NOTES TO DESIGNER:

1. IF THERE IS A DISTRIBUTION PIPE IN THE AREA, CONNECT TO IT WITH ANOTHER DOMED RISER TYPE.
2. FOR LARGER SYSTEMS, EVALUATE CAPACITY FOR FLOW THROUGH STANDPIPE.
3. DISTANCE FROM TOP OF SOIL TO RIM ELEVATION SHOULD BE MAXIMIZED. 3" MINIMUM.



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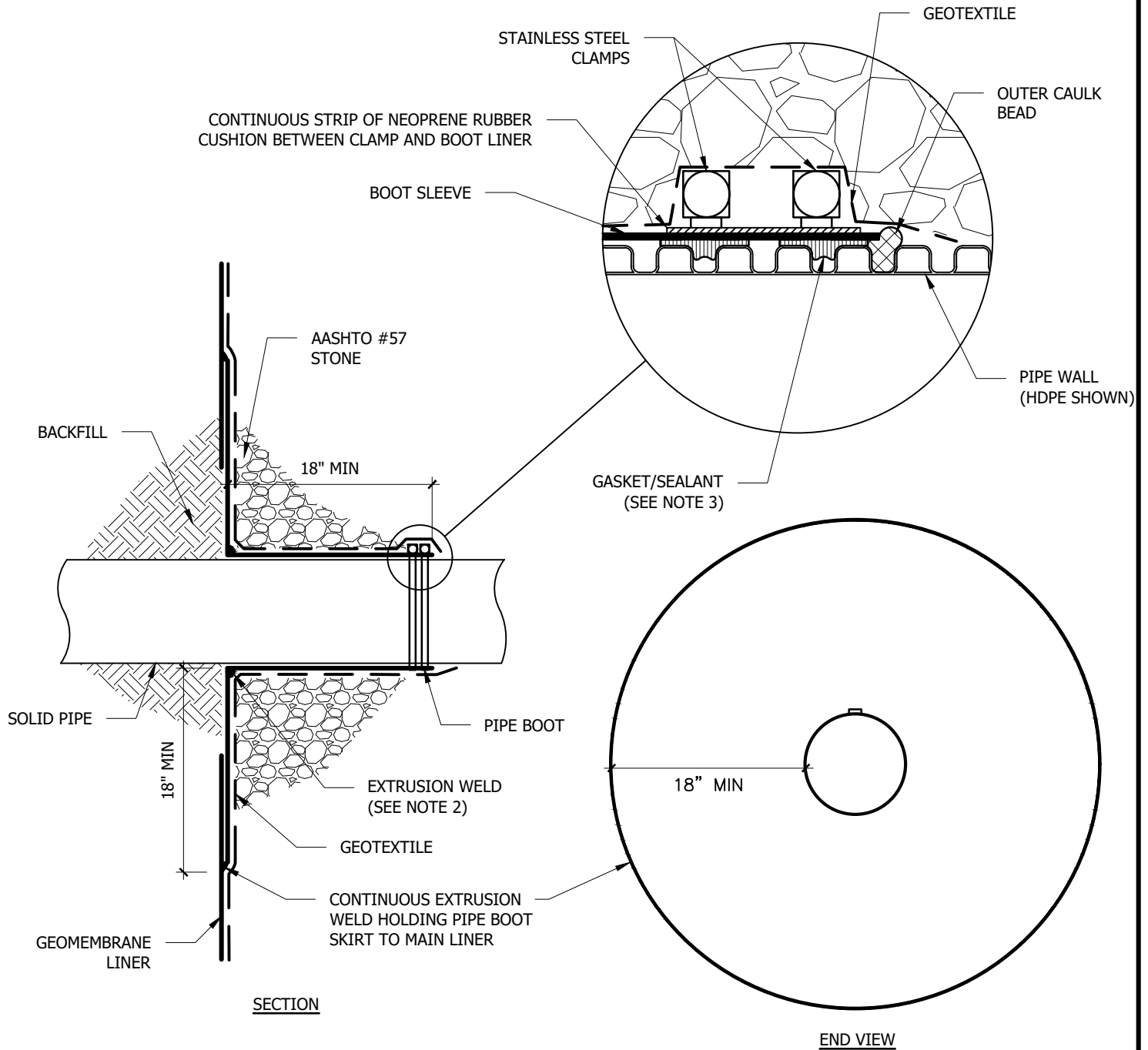
DOMED RISER STANDPIPE

VS.	DATE	INITIALS	REASON
1	09/01/2016		
2	06/01/2018	DJM	FORMERLY STONE CHIMNEY
2	01/27/2022	DJM	REMOVED MULCH LAYER, CLARIFIED END CAP

SCALE: N.T.S.

DRAWING NUMBER:

C-16



NOTES:

1. THIS DETAIL APPLIES TO ALL PIPE PENETRATIONS THROUGH GEOMEMBRANE LINER. SEE PLANS FOR LOCATION, PIPE SIZE, PIPE MATERIAL, AND PIPE ANGLE.
2. WELD CONNECTING PIPE BOOT TO SKIRT NOT NECESSARY IF PREFABRICATED.
3. FOR CORRUGATED PIPE, INSERT PIPE ADAPTERS TO CREATE SMOOTH SURFACE FOR CLAMPS.



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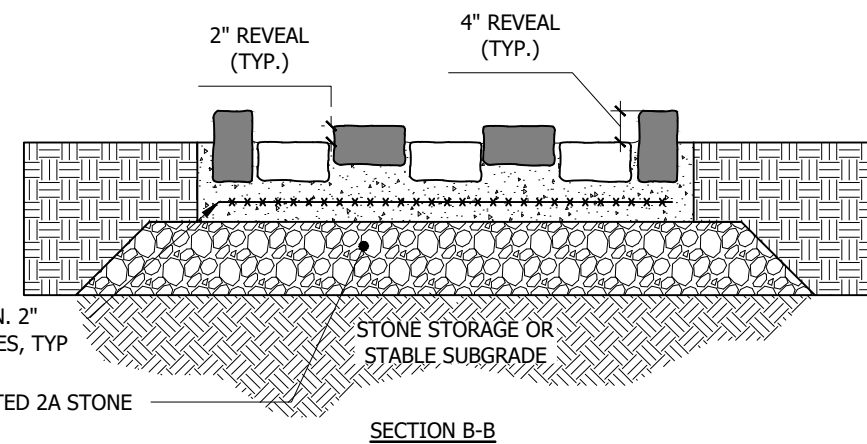
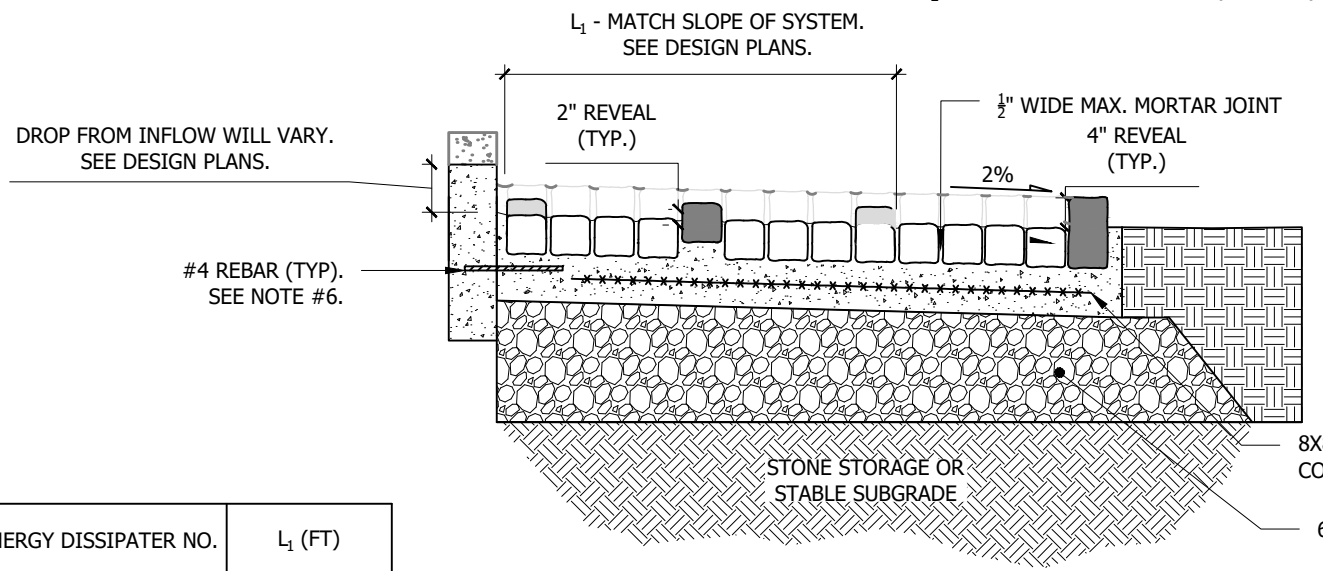
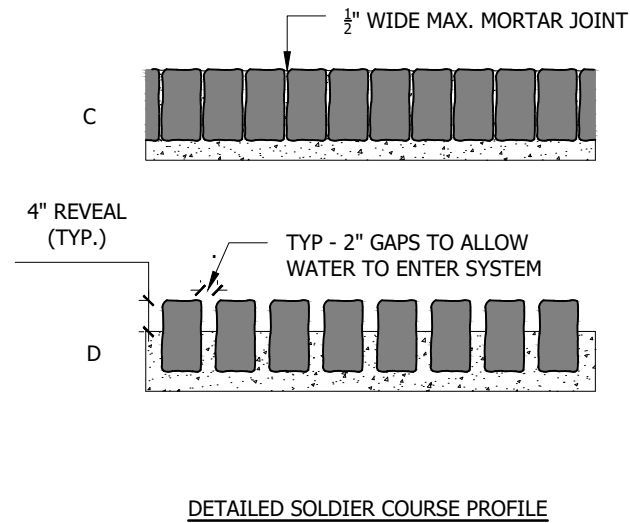
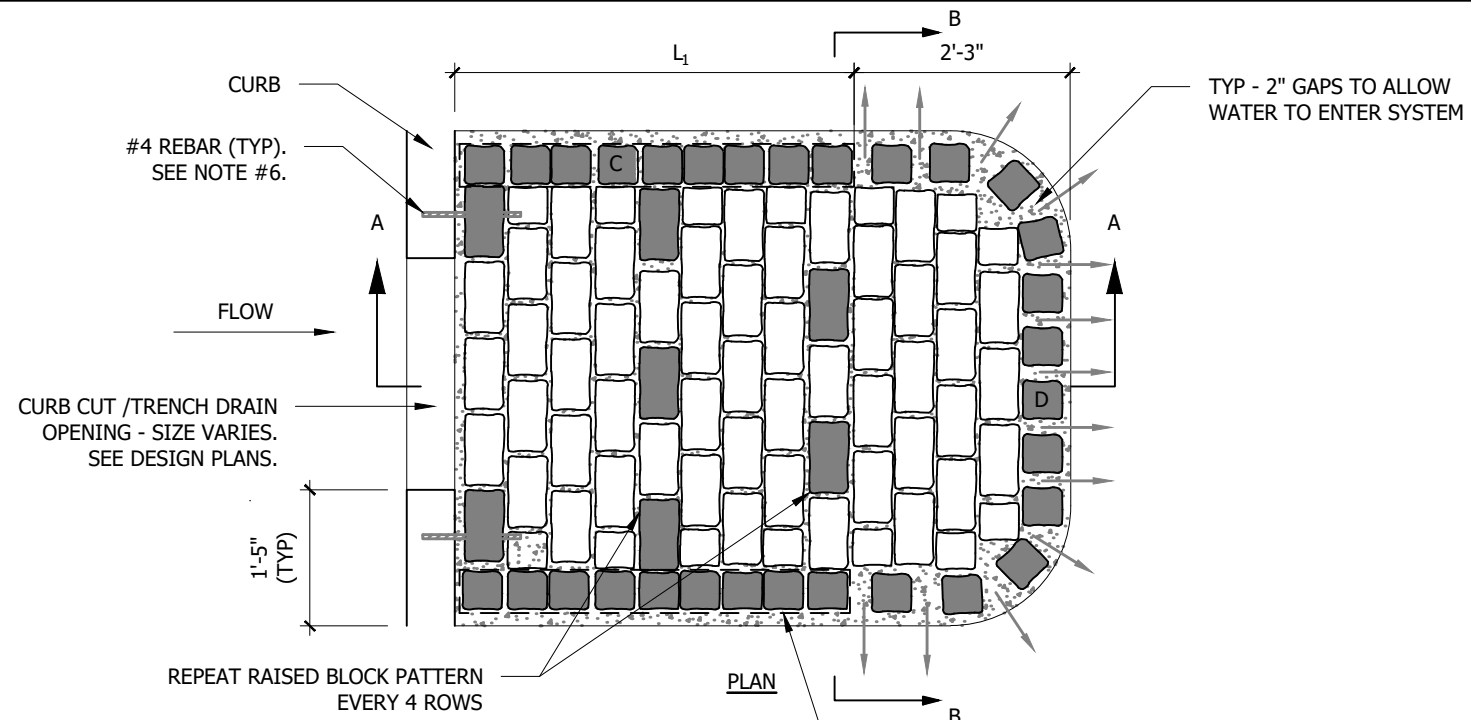
GEOMEMBRANE PIPE PENETRATION

VS.	DATE	INITIALS	REASON
1	06/01/2018	ANJ/DJM	
2	06/30/2023	DJM	CLARIFIED THAT PIPE AT PENETRATION IS SOLID

SCALE: N.T.S.

DRAWING NUMBER:

C-23



ENERGY DISSIPATER NO.	L ₁ (FT)

NOTES:

- MORTARED JOINTS SHALL BE A CONCAVE TOOLED JOINT SET NO MORE THAN 1/4" BELOW FINISHED SURFACE.
- 5" x 5" x 9" (NOM.) BLOCK DIMENSIONS.
- MINIMUM BLOCK LENGTHS MUST NOT BE LESS THAN 4".
- ALL BLOCKS SHOWN IN GRAY ARE RAISED AND BLOCKS SHOWN IN WHITE ARE FLUSH WITH CONCRETE.
- PIN CONCRETE DISSIPATER SLAB 4" INTO CURB WITH 12" LONG #4 REBAR ON BOTH SIDES OF CURB CUT/TRENCH DRAIN OPENING AS SHOWN IN PLAN VIEW. DRILL HOLES IN CURB AND SET WITH EPOXY. SEAL JOINT BETWEEN CURB AND DISSIPATER SLAB WITH CAULK.
- UPON COMPLETION, SLOPES/ELEVATIONS MUST ALLOW POSITIVE DRAINAGE INTO SYSTEM WITH NO STANDING WATER ON DISSIPATER.

NOTE TO DESIGNER:

- LIST THE CHANGE IN ELEVATION FROM INFLOW TO DISSIPATER ON PLAN. 2" MINIMUM DROP.
- WHEN ESTABLISHING THE SOIL ELEVATION, ENSURE THE TOP OF THE RAISED BLOCKS WHERE WATER ENTERS THE SYSTEM ARE LOWER THAN THE INFLOW ELEVATION TO AVOID BYPASS IF GAPS BECOME BLOCKED.



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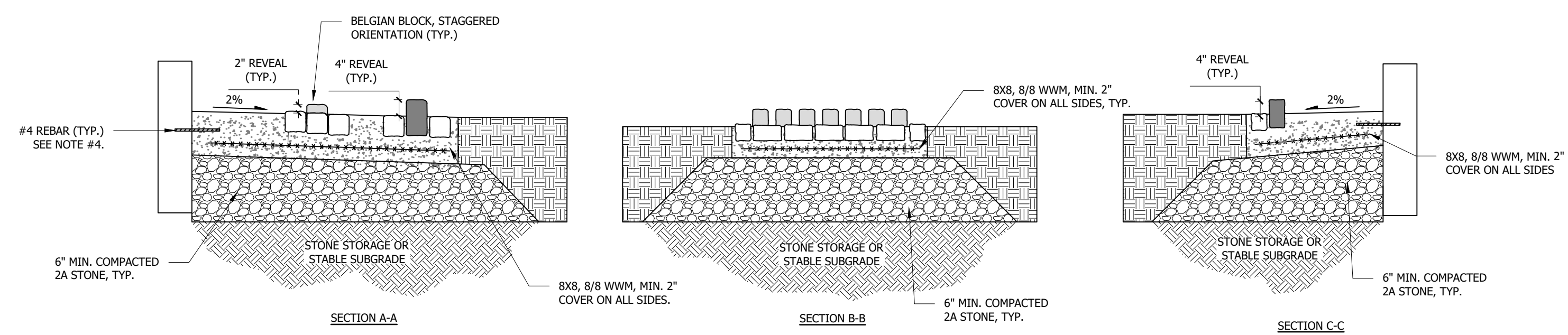
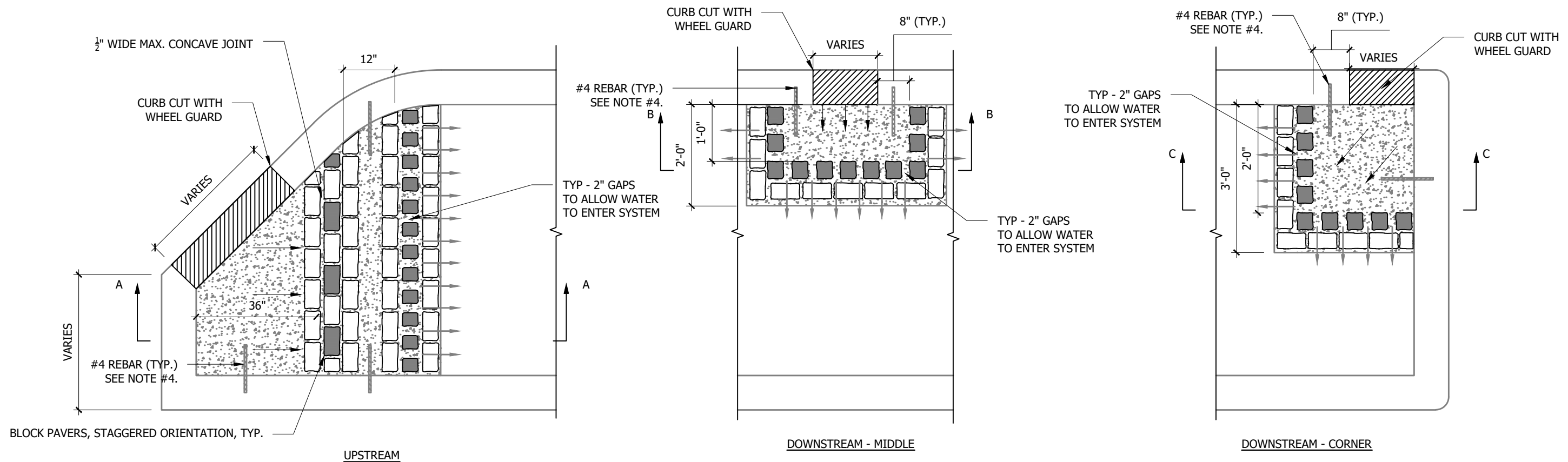
CURB CUT/TRENCH DRAIN ENERGY DISSIPATER

VS.	DATE	INITIALS	REASON
1	08/14/2020	TJL/DJM	

SCALE: N.T.S.

DRAWING NUMBER:

C-33b



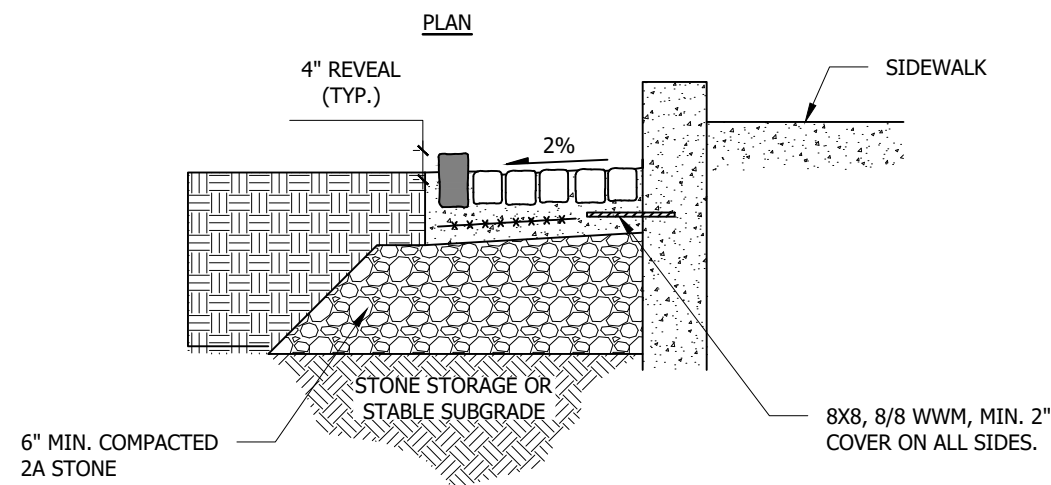
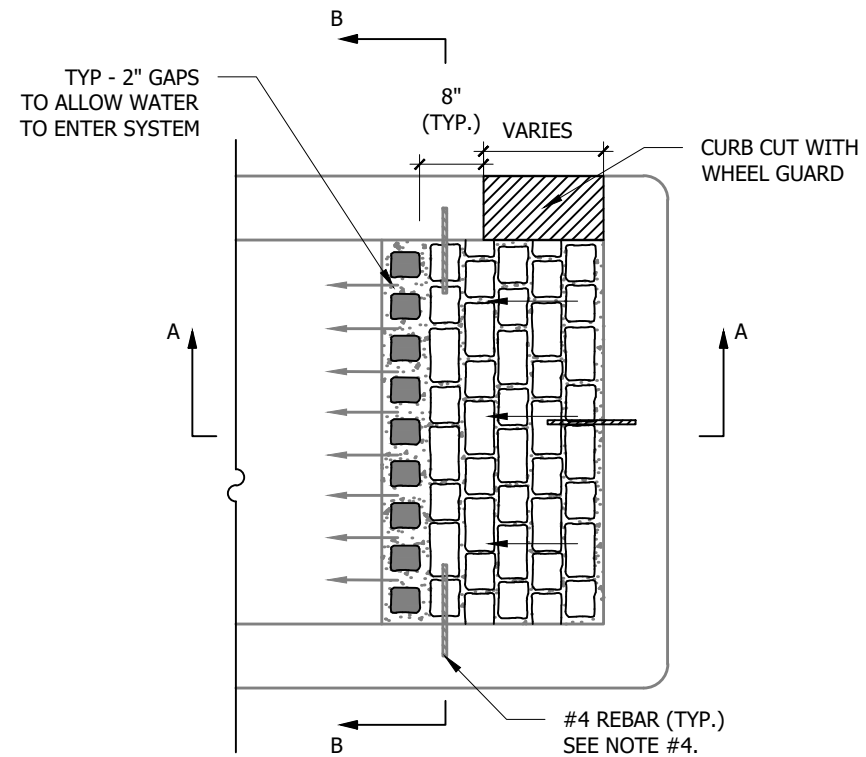
NOTE TO DESIGNER:

1. WHEN ESTABLISHING THE SOIL ELEVATION, ENSURE THE TOP OF THE RAISED BLOCKS WHERE WATER ENTERS THE SYSTEM ARE LOWER THAN THE INFLOW ELEVATION TO AVOID BYPASS IF GAPS BECOME BLOCKED.
2. DELETE OPTIONS/CONFIGURATIONS THAT ARE NOT USED (E.G. DOWNSTREAM VIEWS)
3. SEPARATE BID ITEMS FOR UPSTREAM AND DOWNSTREAM DISSIPATERS.

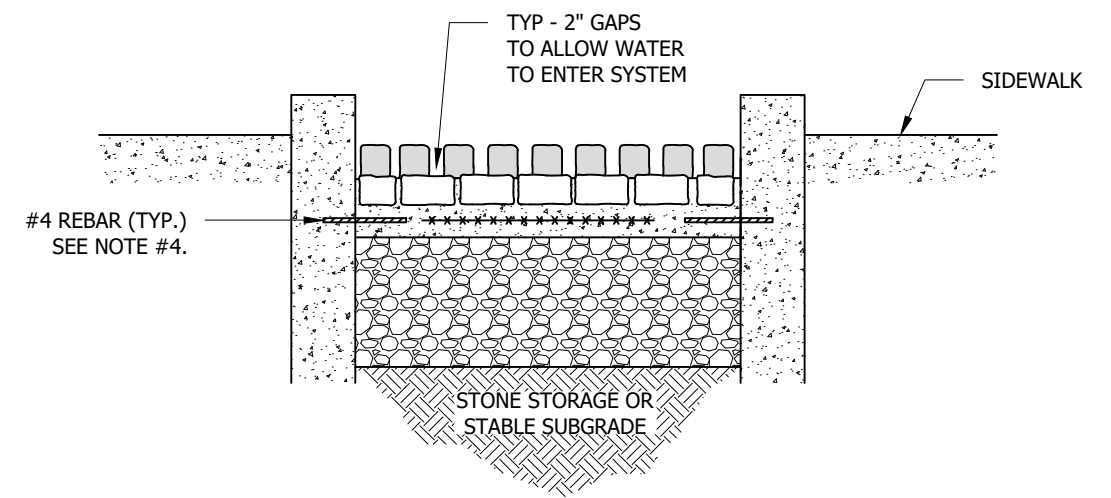
NOTES:

1. MORTARED JOINTS SHALL BE A CONCAVE TOOLED JOINT SET NO MORE THAN $\frac{1}{4}$ " BELOW FINISHED SURFACE.
2. 5" x 5" x 9" (NOM.) BLOCK DIMENSIONS.
3. MINIMUM BLOCK LENGTHS MUST NOT BE LESS THAN 4".
4. PIN CONCRETE DISSIPATER SLAB 4" INTO CURB WITH 12" LONG, #4 REBAR AS SHOWN. DRILL HOLES IN CURB AND SET WITH EPOXY. SEAL JOINT BETWEEN CURB AND DISSIPATER SLAB WITH CAULK.
5. ALL BLOCKS SHOWN IN GRAY ARE RAISED AND BLOCKS SHOWN IN WHITE ARE FLUSH WITH CONCRETE.
6. UPON COMPLETION, SLOPES/ELEVATIONS MUST ALLOW POSITIVE DRAINAGE INTO SYSTEM WITH NO STANDING WATER ON DISSIPATER.

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			VS. DATE INITIALS 1 07/31/2020 TJL/DJM	REASON	DRAWING NUMBER: C-33c



SECTION A-A



SECTION B-B

NOTES:

1. MORTARED JOINTS SHALL BE A CONCAVE TOOLED JOINT SET NO MORE THAN 1/4" BELOW FINISHED SURFACE.
2. 5" x 5" x 9" (NOM.) BLOCK DIMENSIONS.
3. MINIMUM BLOCK LENGTHS MUST NOT BE LESS THAN 4".
4. PIN CONCRETE DISSIPATER SLAB 4" INTO CURB WITH 12" LONG, #4 REBAR AS SHOWN. DRILL HOLES IN CURB AND SET WITH EPOXY. SEAL JOINT BETWEEN CURB AND DISSIPATER SLAB WITH CAULK.
5. ALL BLOCKS SHOWN IN GRAY ARE RAISED AND BLOCKS SHOWN IN WHITE ARE FLUSH WITH CONCRETE.
6. UPON COMPLETION, SLOPES/ELEVATIONS MUST ALLOW POSITIVE DRAINAGE INTO SYSTEM WITH NO STANDING WATER ON DISSIPATER.

NOTE TO DESIGNER:

1. WHEN ESTABLISHING THE SOIL ELEVATION, ENSURE THE TOP OF THE RAISED BLOCKS WHERE WATER ENTERS THE SYSTEM ARE LOWER THAN THE INFLOW ELEVATION TO AVOID BYPASS IF GAPS BECOME BLOCKED.



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PLANTER ENERGY DISSIPATER

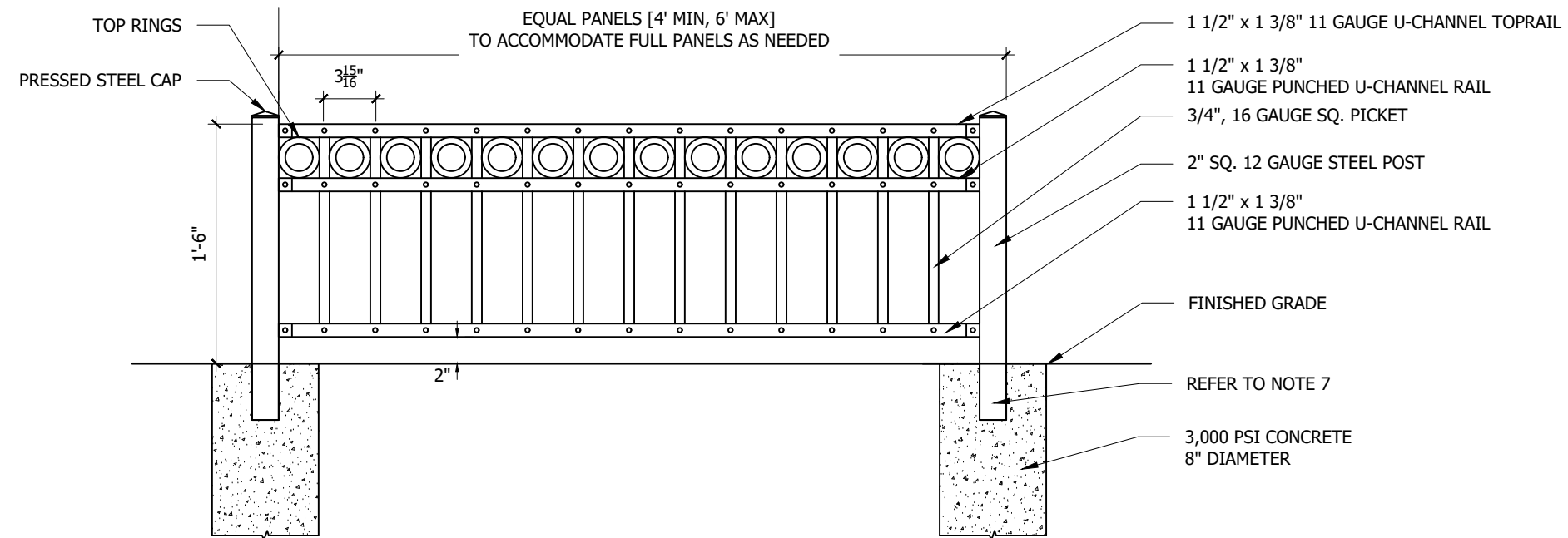
VS.	DATE	INITIALS
1	07/31/2020	TJL/VJF

REASON

SCALE: N.T.S.

DRAWING NUMBER:

C-33d



NOTES

1. FIELD MEASUREMENTS MUST BE TAKEN PRIOR TO FABRICATION.
2. ALL STEEL TO BE PER ASTM A653, 45,000 PSI WITH A G90 GALVANIZED FINISH.
3. ALL CONNECTIONS TO BE MADE WITH INDUSTRIAL DRIVE RIVETS HAVING 1100 LB HOLDING POWER AND 1500 LB. SHEAR STRENGTH.
4. COATING SHALL BE A 3 STAGE PRETREATMENT WITH A MAR RESISTANT 4 MIL POLYESTER POWDER PRIMER AND FINISH WITH 20 YEAR WARRANTY. THE TOP COAT SHALL BE BLACK.
5. RAILS TO FOLLOW LINE OF GRADE.
6. FENCE PRODUCT SHALL BE NORTHEAST FENCE: IRON WORKS, INC. WESTMORELAND II, OR APPROVED EQUAL.
7. FOR LESS THAN 10" THICK CURB USE PLATE ANCHOR METHOD. FOR 10" THICK OR GREATER CURB USE CORE DRILL METHOD. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS.

NOTE TO DESIGNER:

1. CALLOUT ORNAMENTAL FENCE HEIGHT ON PLANS.



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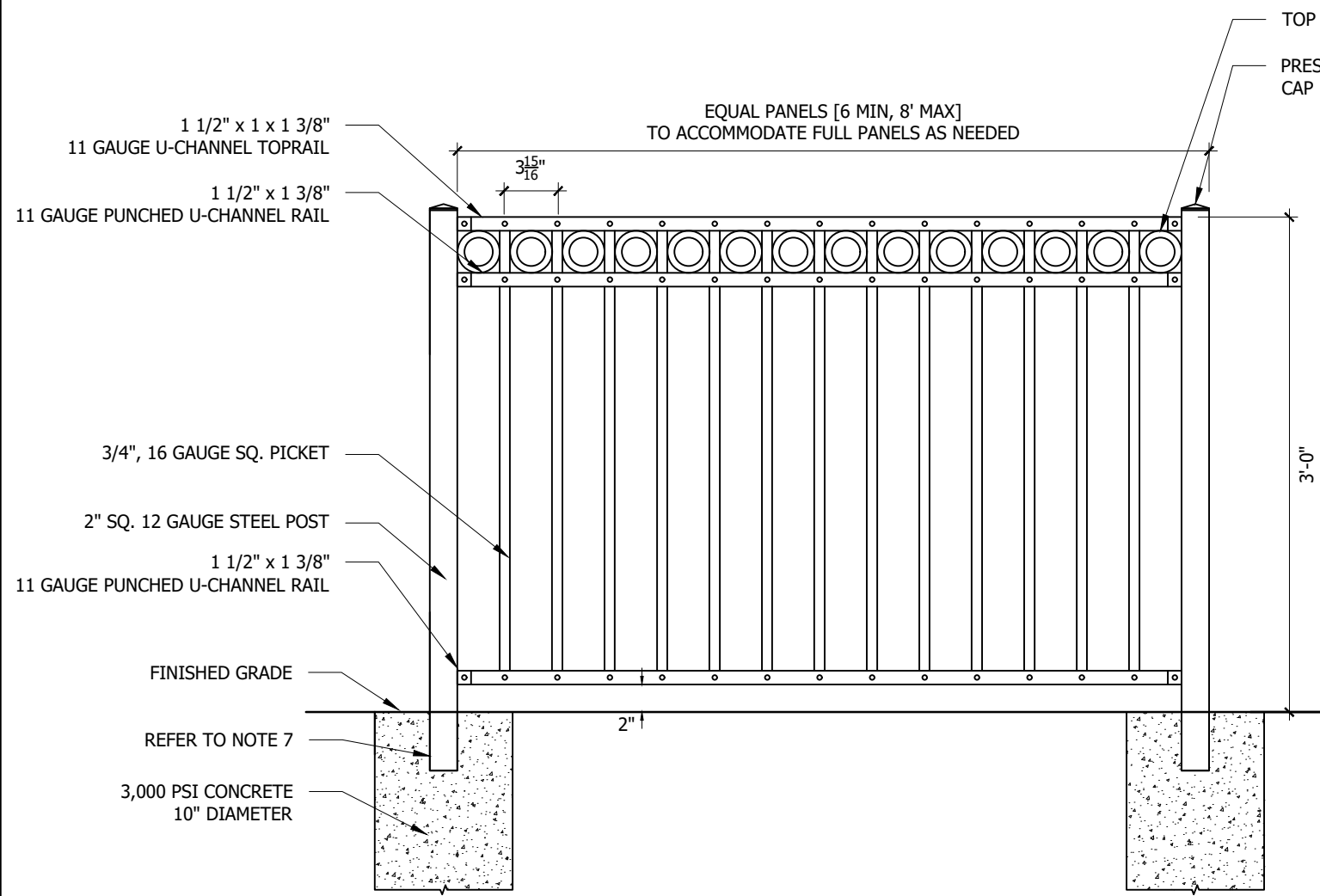
ORNAMENTAL FENCING 18 INCH

VS.	DATE	INITIALS	REASON
1	09/01/2016		
2	06/01/2018	TJL	UPDATED TO 18 INCH AND 36 INCH OPTIONS
3	03/07/2019	VJF	UPDATED TO STANDARD WESTMORELAND II DESIGN
4	01/07/2020	TJL	REVISED DIMENSIONS TO MATCH WESTMORELAND II DESIGN

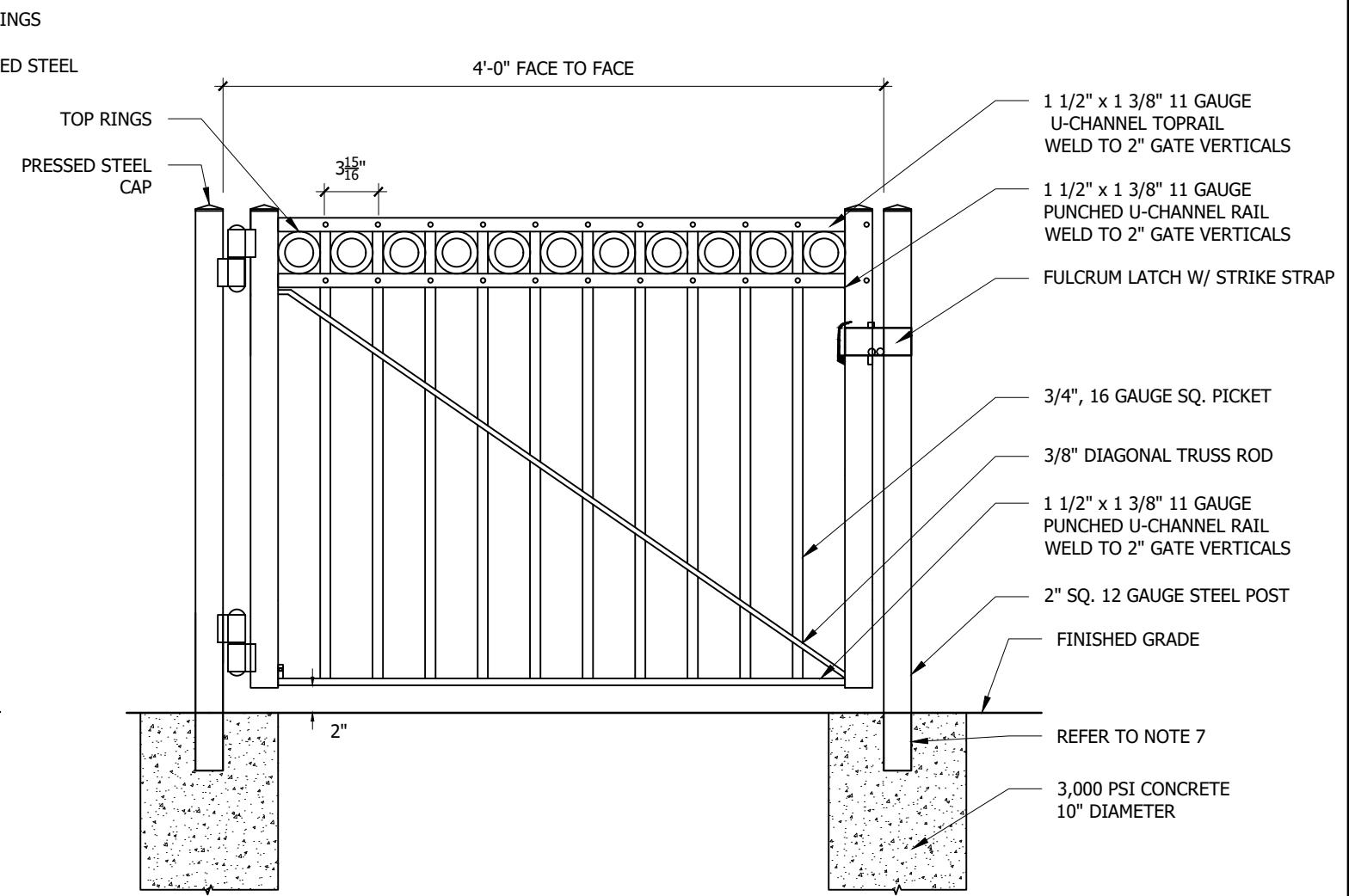
SCALE: N.T.S

DRAWING NUMBER:

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TYPICAL FENCE



GATE

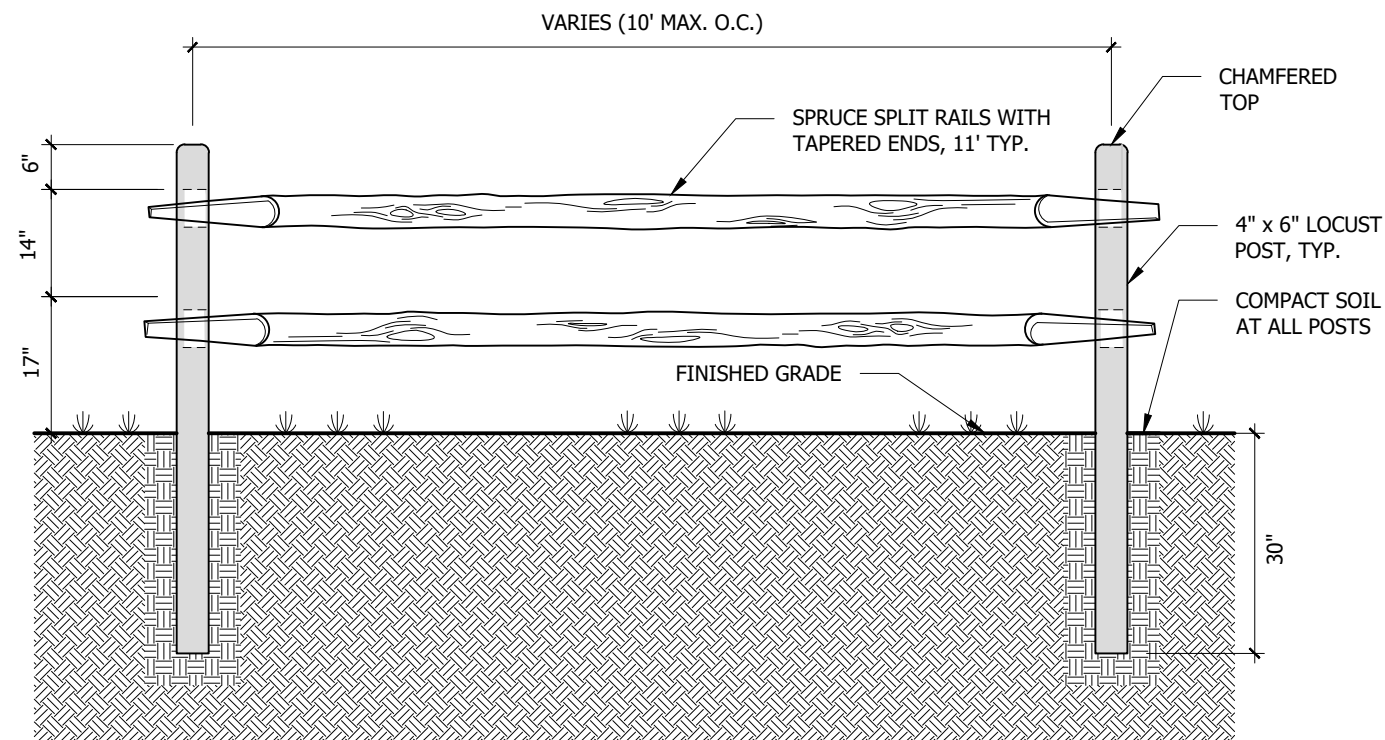
NOTES

1. FIELD MEASUREMENTS MUST BE TAKEN PRIOR TO FABRICATION.
2. ALL STEEL TO BE PER ASTM A653, 45,000 PSI WITH A G90 GALVANIZED FINISH.
3. ALL CONNECTIONS TO BE MADE WITH INDUSTRIAL DRIVE RIVETS HAVING 1100 LB HOLDING POWER AND 1500 LB. SHEAR STRENGTH.
4. COATING SHALL BE A 3 STAGE PRETREATMENT WITH A MAR RESISTANT 4 MIL POLYESTER POWDER PRIMER AND FINISH WITH 20 YEAR WARRANTY. THE TOP COAT SHALL BE BLACK.
5. RAILS TO FOLLOW LINE OF GRADE.
6. FENCE PRODUCT SHALL BE NORTHEAST FENCE: IRON WORKS, INC. WESTMORELAND II, OR APPROVED EQUAL.
7. FOR LESS THAN 10" THICK CURB USE PLATE ANCHOR METHOD. FOR 10" THICK OR GREATER CURB USE CORE DRILL METHOD. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS.

NOTE TO DESIGNER:
1. CALLOUT ORNAMENTAL FENCE HEIGHT ON PLANS.

ORNAMENTAL FENCING 36 INCH			
VS.	DATE	INITIALS	REASON
1	09/01/2016		
2	06/01/2018	TJL	UPDATED TO 18 INCH AND 36 INCH OPTIONS
3	03/07/2019	VJF	UPDATED TO STANDARD WESTMORELAND II DESIGN
4	01/07/2020	TJL	REVISED DIMENSIONS TO MATCH WESTMORELAND II DESIGN

SCALE: N.T.S.
DRAWING NUMBER: C-42



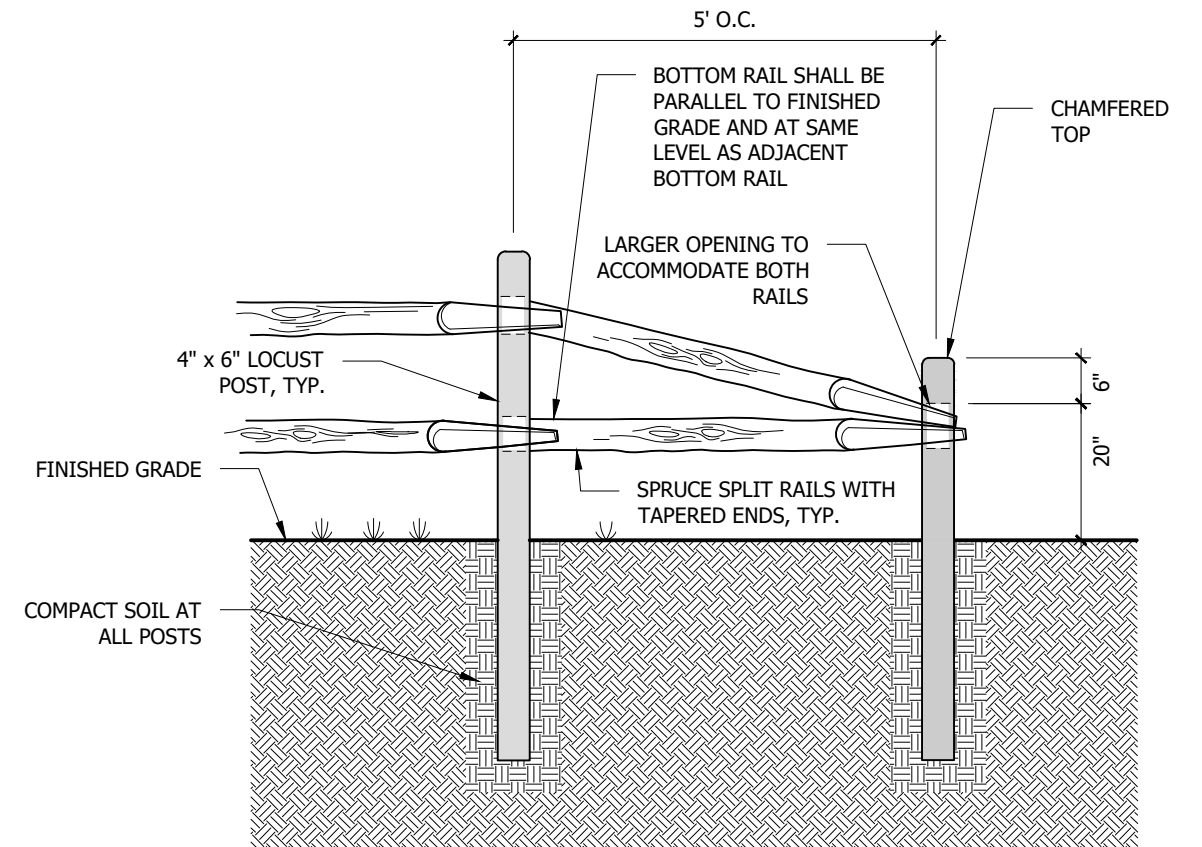
TYPICAL FENCE

NOTES:

1. DECK SCREWS SHALL BE USED TO TIE FASTEN RAILS TOGETHER AT POINT OF INTERSECTION AT POSTS. EACH RAIL MUST OVERLAP EACH OTHER BY 3" TO ENSURE STABILITY.
2. END SECTION TO BE INCLUDED WHERE NOTED ON DRAWINGS.
3. ALL POSTS MUST BE SQUARE AND LEVEL.
4. CORNER POSTS MUST HAVE 36" DEEP CONCRETE FOOTERS.
5. REFER TO DESIGN PLANS TO ENSURE SUBSURFACE INFRASTRUCTURE IS NOT IN CONFLICT DURING INSTALLATION.
6. WHEN POSSIBLE, ALIGN POSTS SUCH THAT FENCE ORIENTATION IS STRAIGHT OR PERPENDICULAR FOR STABILITY.

NOTE TO DESIGNER:

1. SPECIFY 2 OR 3 RAIL FENCE ON PLANS.



FENCE END

NOTES:

1. THIS END TREATMENT SHOULD ONLY BE USED WHERE NOTED ON PLAN



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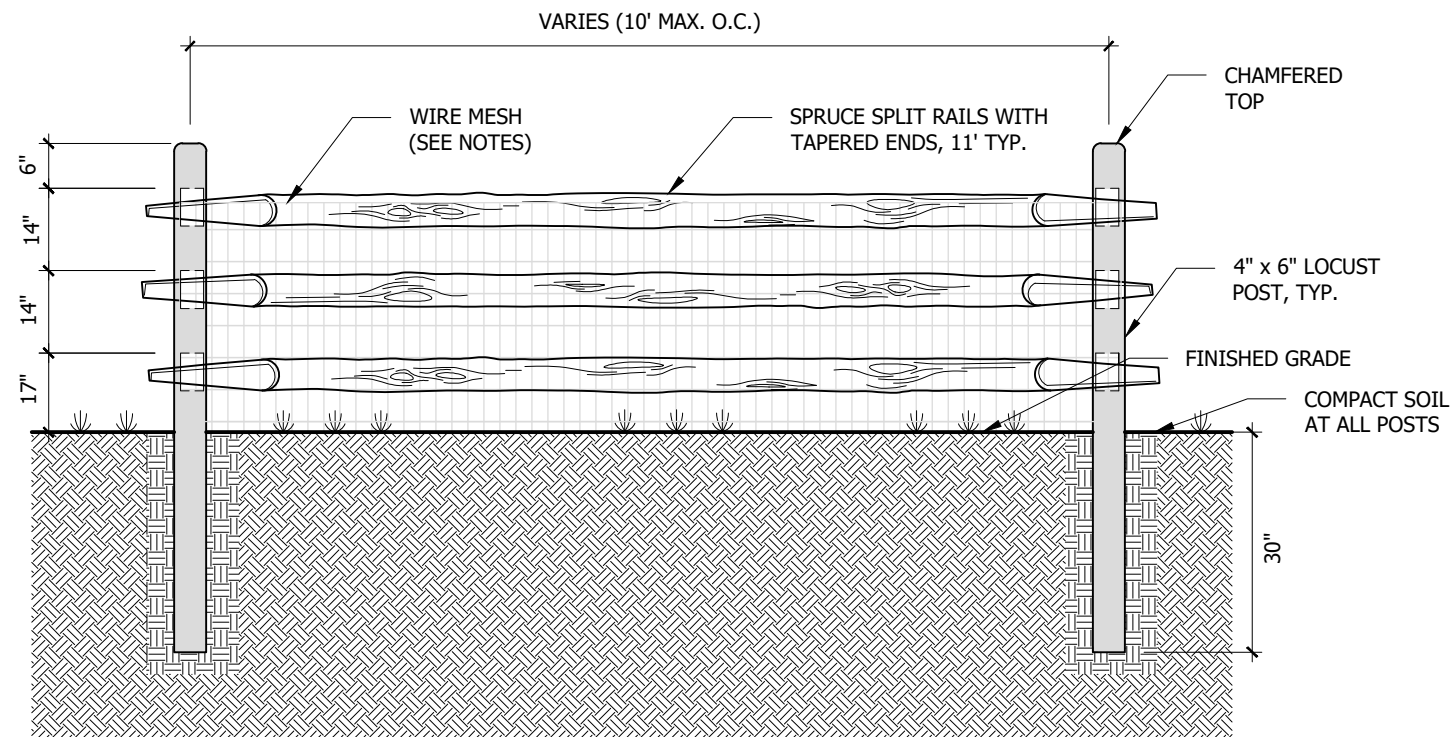
SPLIT RAIL FENCE 2 RAILS

VS.	DATE	INITIALS	REASON
1	06/01/2018	TJL	UPDATE WITH TWO STYLES: 2 RAIL AND 3 RAIL. CHANGE TO WOODEN POSTS.
1	10/24/2019	TJL	CLARIFY INSTALLATION AND STABILITY OF POSTS AND RAILS.

SCALE: N.T.S.

DRAWING NUMBER:

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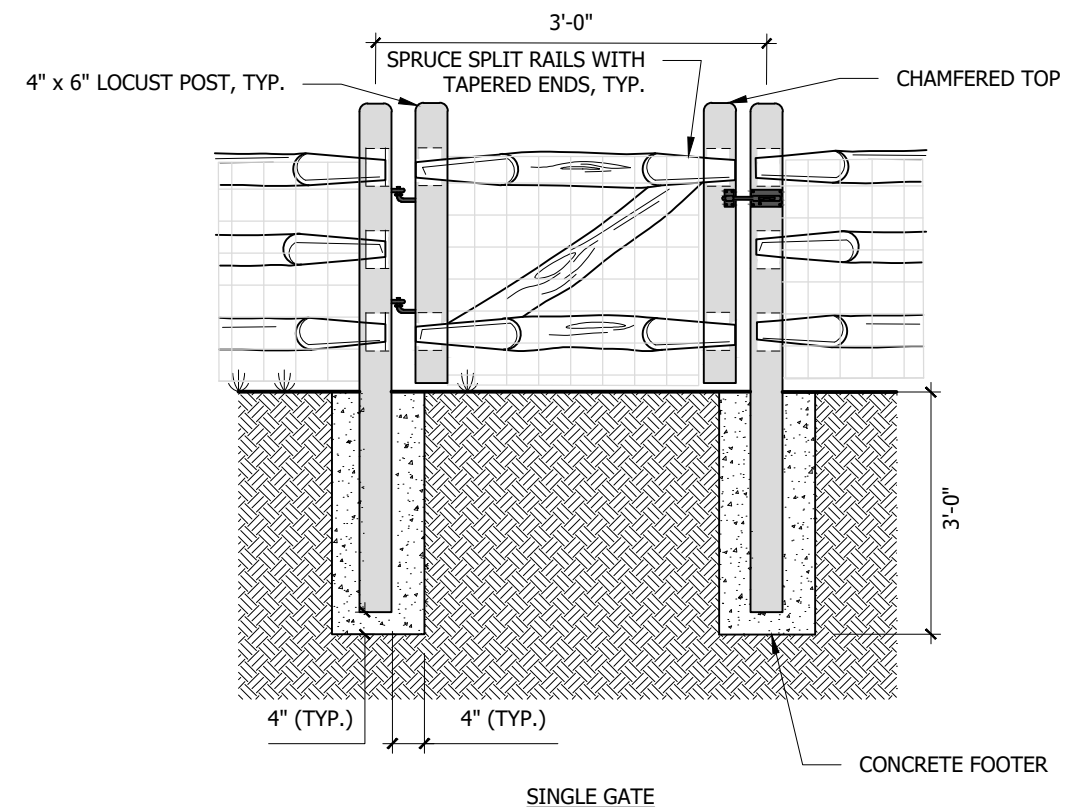
TYPICAL FENCE

NOTES:

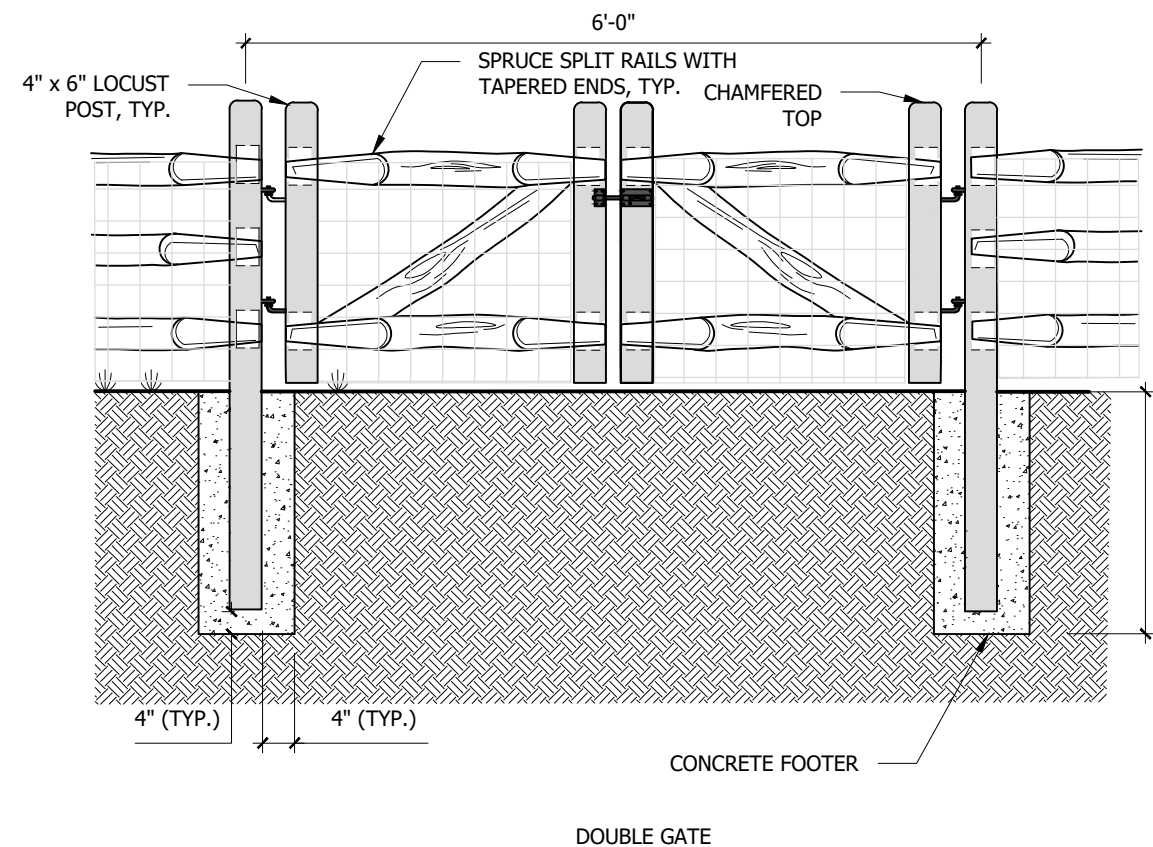
1. WIRE MESH SHALL BE GALVANIZED IRON, VINYL COATED IRON, STAINLESS STEEL OR APPROVED EQUIVALENT. WIRE MESH SHALL BE WELDED WITH 2"X4" MESH OPENING.
2. WIRE MESH SHALL BE SECURED TO FENCE POSTS AND/OR RAILS USING STEEL U-NAILS, OR APPROVED EQUIVALENT.
3. WIRE MESH MAY NOT BE NEEDED IN ALL APPLICATIONS.
4. WIRE MESH TO BE USED WHEN 3 RAIL OPTION IS SELECTED.
5. DECK SCREWS SHALL BE USED TO FASTEN RAILS TOGETHER AT POINT OF INTERSECTION AT POSTS. EACH RAIL MUST OVERLAP EACH OTHER BY 3" MIN. TO ENSURE STABILITY.
6. GATE TO BE INCLUDED WHERE NOTED ON THE DRAWINGS.
7. ALL POSTS MUST BE SQUARE AND LEVEL.
8. CORNER POSTS MUST HAVE 36" DEEP CONCRETE FOOTERS.
9. REFER TO DESIGN PLANS TO ENSURE SUBSURFACE INFRASTRUCTURE IS NOT IN CONFLICT DURING INSTALLATION.
10. WHEN POSSIBLE, ALIGN POSTS SUCH THAT FENCE ORIENTATION IS STRAIGHT OR PERPENDICULAR FOR STABILITY.

NOTES TO DESIGNER:

1. WIRE MESH MAY NOT BE NEEDED IN ALL APPLICATIONS.. TO BE USED TO KEEP PEOPLE, ANIMALS, AND OBJECTS OUT OF GSI SYSTEM IN BUSY AREAS.
2. SPECIFY 2 OR 3 RAIL FENCE ON PLANS.
3. SPECIFY SINGLE OR DOUBLE GATE ON PLANS



SINGLE GATE



DOUBLE GATE



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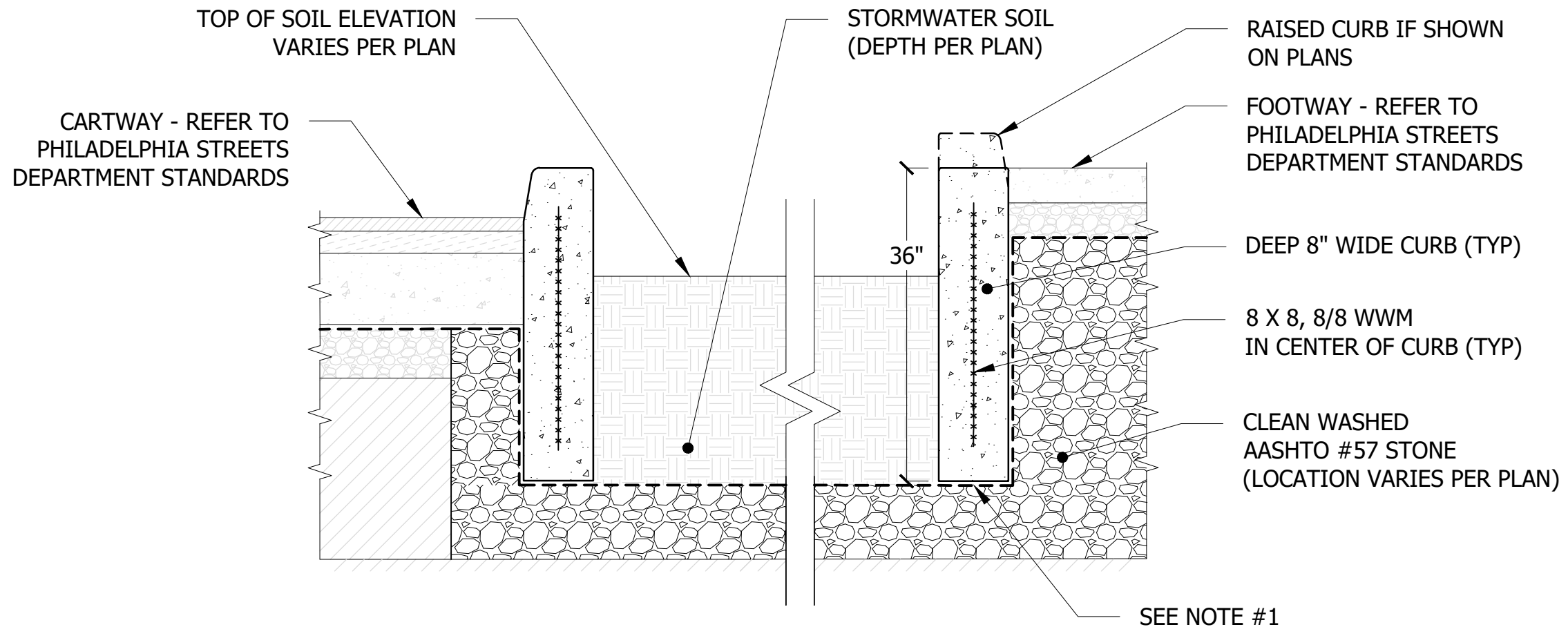
SPLIT RAIL FENCE 3 RAILS

VS.	DATE	INITIALS	REASON
1	06/01/2018	TJL	UPDATE WITH TWO STYLES: 2 RAIL AND 3 RAIL. CHANGE TO WOODEN POSTS.
1	10/24/2019	TJL	CLARIFY INSTALLATION AND STABILITY OF POSTS AND RAILS.

SCALE: N.T.S.

DRAWING NUMBER:

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NOTES:

1. BOTTOM OF DEEP CURB MAY BE ABOVE OR BELOW BOTTOM OF SOIL ELEVATION DEPENDING ON FOOTWAY AND SOIL ELEVATIONS. IF BELOW, EXTEND CURB INTO AASHTO #57 STONE. IF ABOVE, SUPPORT WITH STABLE AASHTO #57 STONE.
2. CONCRETE USED FOR DEEP CURB MUST MATCH PHILADELPHIA STREETS DEPARTMENT STANDARDS FOR CONCRETE CURB.
3. SET CONTROL JOINTS EVERY 10' PER PHILADELPHIA STREETS DEPARTMENT STANDARDS. PLACE EXPANSION JOINTS EVERY 60'. EXPANSION JOINTS SHOULD BE LOCATED ON SHORT ENDS OF BUMPOUT WHEREVER POSSIBLE TO ENHANCE CURB STABILITY.
4. THIS DETAIL FOCUSES ON THE CONSTRUCTION AND SUPPORT FOR DEEP CURBS. SEE PLANS FOR OTHER INFORMATION SUCH AS BUMPOUT WIDTH, TOP AND BOTTOM OF SOIL ELEVATIONS, AND AASHTO #57 STONE CONFIGURATION.



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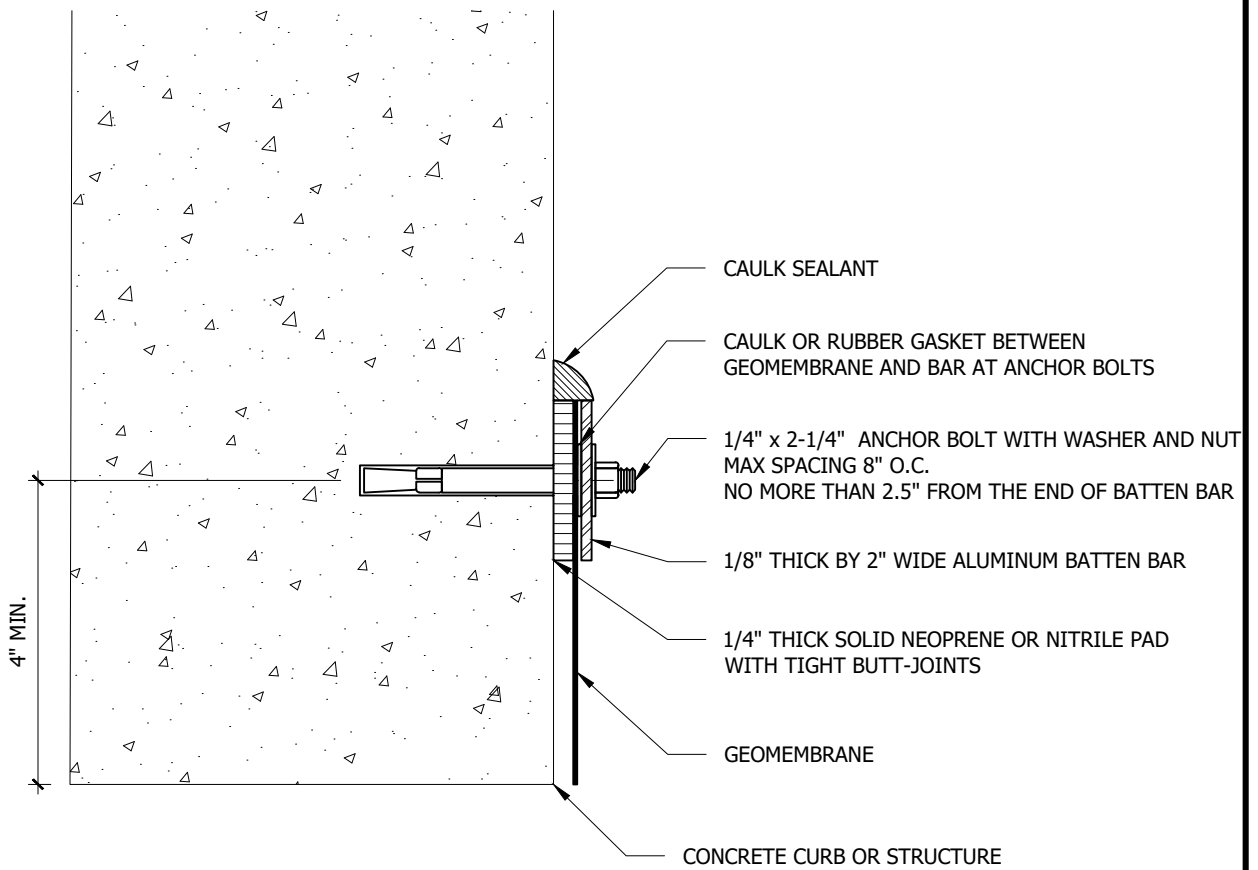
DEEP CONCRETE CURB FOR BUMPOUT

VS.	DATE	INITIALS	REASON
1	12/4/2020	NJP/DJM	
2	03/30/2022	DJM	REMOVED 2A STONE UNDER CURB, MATCHED CARTWAY SIDE DESIGN TO FOOTWAY SIDE

SCALE: N.T.S.

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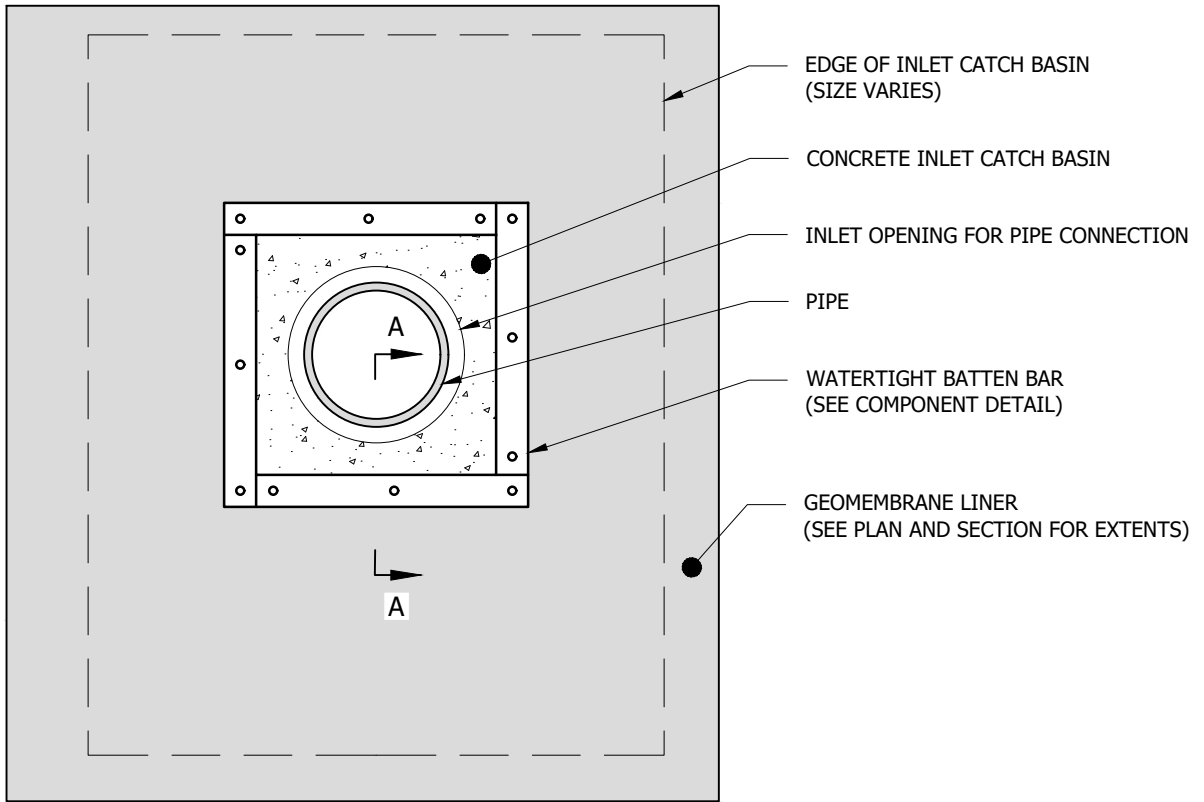
BATTEN BAR - GEOMEMBRANE ATTACHMENT TO CONCRETE

VS.	DATE	INITIALS	REASON
1	12/10/2020	DJM	

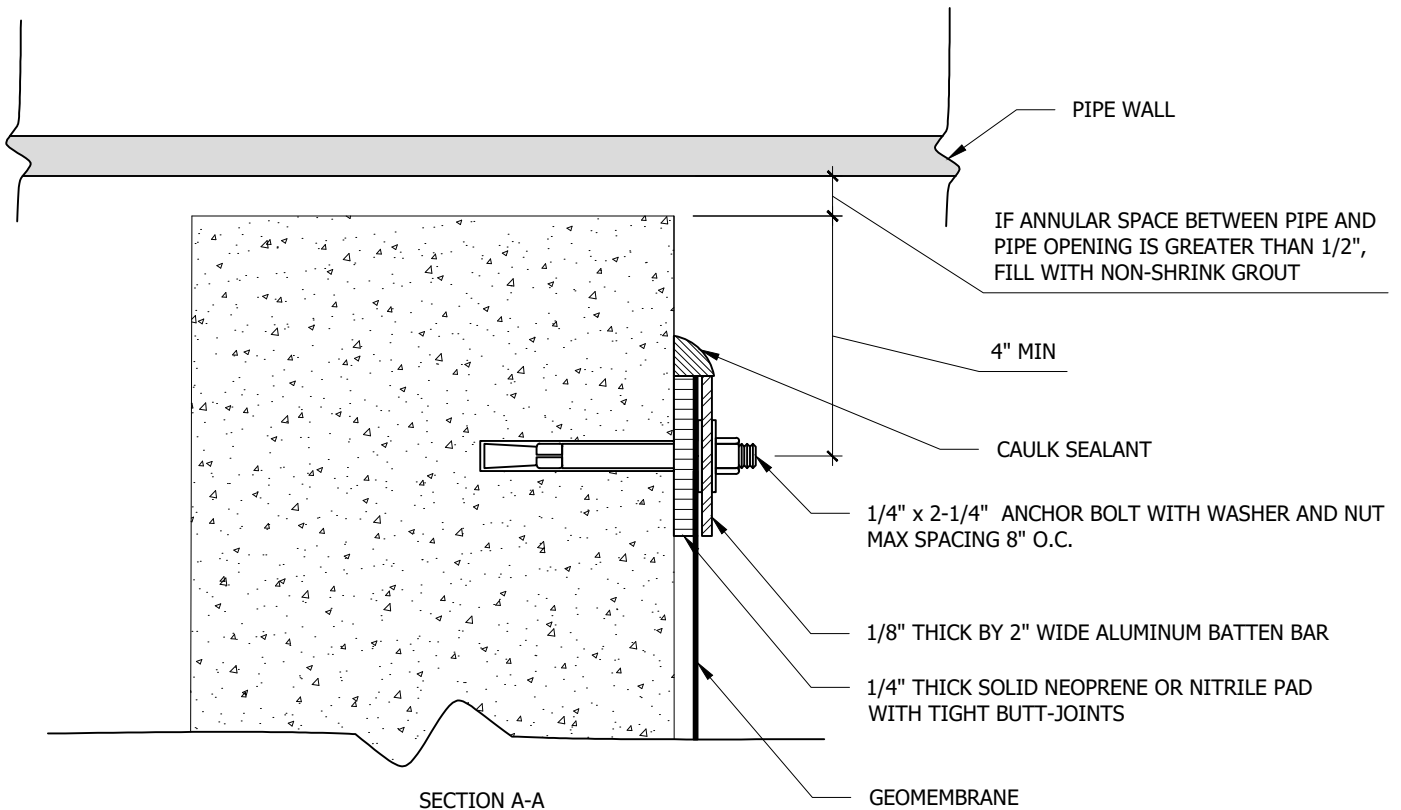
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ELEVATION VIEW OF INLET



SECTION A-A



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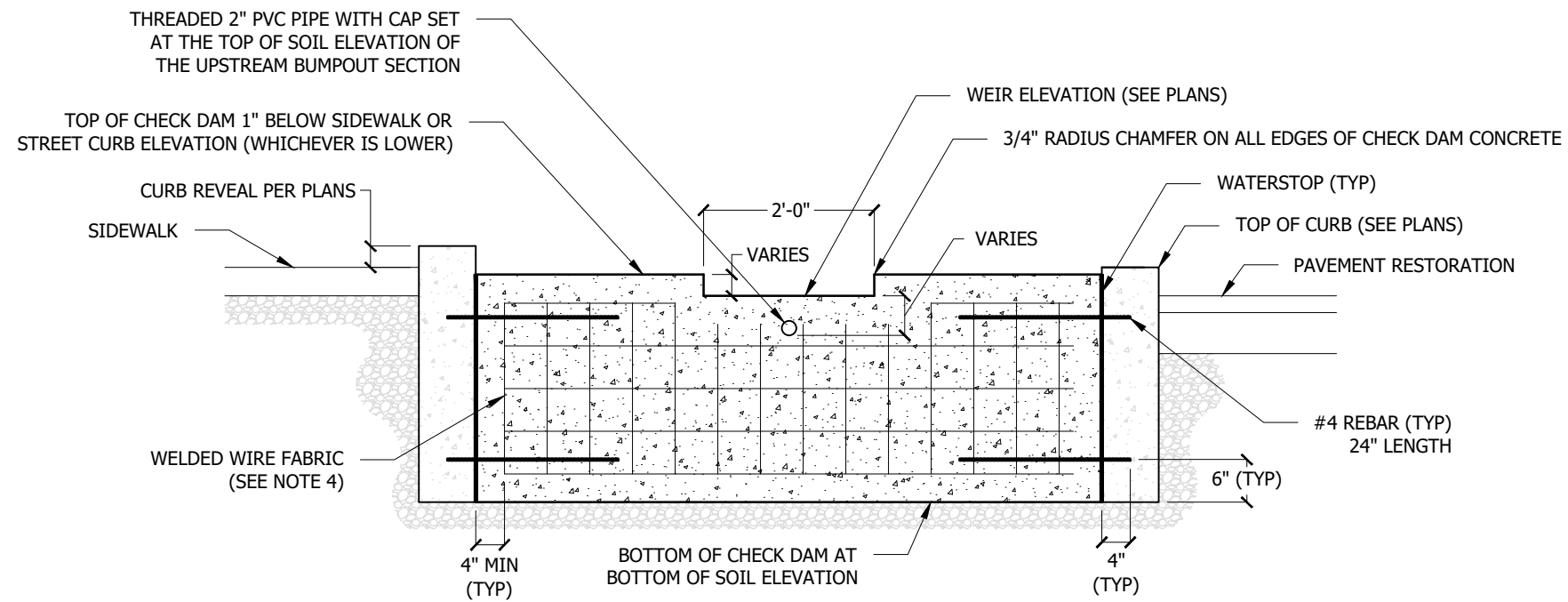
ALTERNATIVE GEOMEMBRANE PIPE PENETRATION AT INLET

VS.	DATE	INITIALS	REASON
1	05/31/2022	DJM	

SCALE: N.T.S.

DRAWING NUMBER:

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NOTES:

1. WIDTH OF CHECK DAM TO BE 6".
2. SUPPORT CHECK DAM WITH MIN. 6" STABLE 2A OR AASHTO #57 STONE (SEE PLANS).
3. CONCRETE USED FOR CHECK DAM MUST MATCH PHILADELPHIA STREETS DEPARTMENT STANDARDS FOR CONCRETE CURB.
4. 6x6-W2.0xW2.0 WELDED WIRE FABRIC REINFORCEMENT SET IN MIDDLE OF CHECK DAM.



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CHECK DAM

VS.	DATE	INITIALS	REASON
1	10/12/2021	PO/DJM	

SCALE: N.T.S.

DRAWING NUMBER:

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