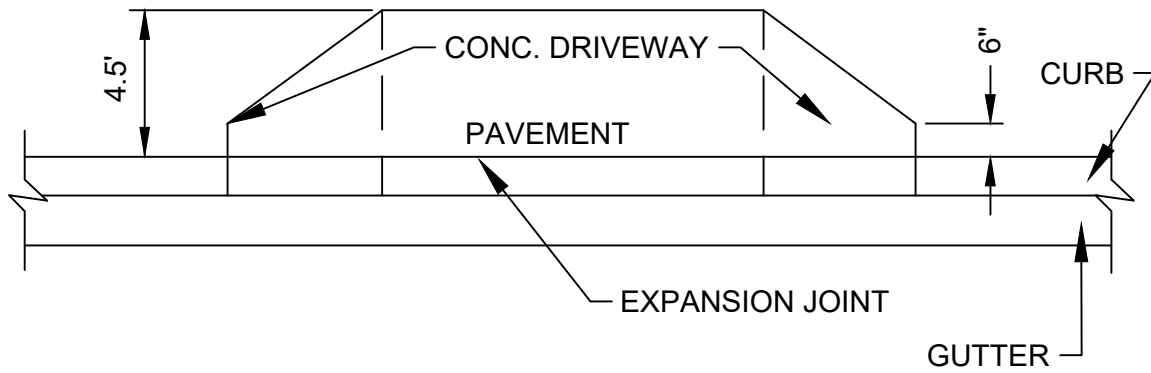


INDEX TO STANDARD DETAILS

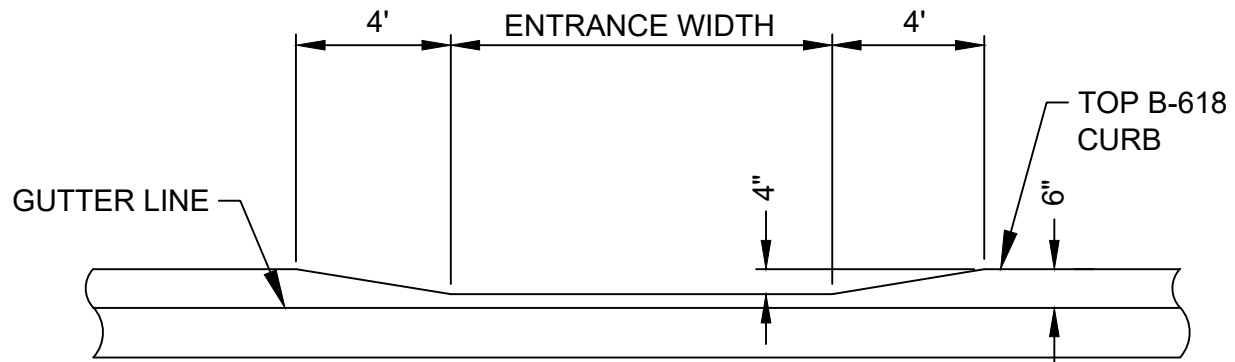
<u>STANDARD PLATE NO.</u>	<u>DESCRIPTION</u>
1100	DRIVEWAY DETAIL 1
1110	DRIVEWAY DETAIL 2
1200	TYPICAL INTERSECTION DETAIL
1210	TYPICAL CUL-DE-SAC DETAIL
1220	OFFSET CUL-DE-SAC DETAIL
1230	TYPICAL STREET DETAIL
1240	BITUMINOUS ROAD PAVEMENT DETAIL
1300	CONCRETE SIDEWALK DETAIL
1310	CONCRETE BORDER DETAIL
1320	BITUMINOUS PAVEMENT TRAIL DETAIL
1400	"B612" TYPE CONCRETE CURB AND GUTTER DETAIL
1410	"B618" TYPE CONCRETE CURB AND GUTTER DETAIL
1420	SURMOUNTABLE CONCRETE CURB AND GUTTER DETAILS
1430	CONCRETE VALLEY GUTTER DETAIL
1440	CONCRETE CURB CUT DETAIL
2100	SANITARY DROP MANHOLE (OUTSIDE) DETAIL
2110	SANITARY DROP MANHOLE (INSIDE) DETAIL
2120	SANITARY MANHOLE ECCENTRIC DETAIL
2130	SANITARY MANHOLE CONCENTRIC DETAIL
2140	TEE SECTION SANITARY MANHOLE DETAIL
2150	SANITARY AIR RELEASE VALVE MANHOLE DETAIL
2200	CATCH BASIN DETAIL
2210	CATCH BASIN DETAIL
2220	CATCH BASIN DETAIL
2230	CATCH BASIN DETAIL
2240	CATCH BASIN DETAIL
2250	HIGH CAPACITY CATCH BASIN DETAIL
2300	STORM SEWER MANHOLE STANDARD DETAIL
2310	STORM SEWER MANHOLE DETAIL
2320	STORM SEWER MANHOLE DETAIL
2330	STORM SEWER MANHOLE DETAIL
2340	EXISTING MANHOLE ADJUSTMENT
2350	RAIN GARDEN FILTRATION BASIN DETAIL
2400	CONCRETE SUPPORT SADDLE DETAIL
2410	SERVICE TEE CONNECTION
2420	SANITARY SEWER SERVICE RISER
2430	SANITARY SEWER SERVICE DETAIL
2440	CONCRETE FLARED END APRON DETAIL
2450	RIPRAP AT R.C.P. APRON DETAIL

STANDARD DETAILS CONTINUED

<u>STANDARD PLATE NO.</u>	<u>DESCRIPTION</u>
3100	HYDRANT DETAIL
3110	HYDRANT DETAIL
3120	GATE VALVE AND BOX INSTALLATION
3130	WATERMAIN SERVICE CONNECTION
3140	WATERMAIN CROSSING
3150	LOWER EXISTING WATERMAIN
3160	WATERMAIN INSULATION
3170	CONCRETE THRUST BLOCK DETAILS
4100	CATCH BASIN EROSION CONTROL DETAIL 1
4110	CATCH BASIN EROSION CONTROL DETAIL 2
4120	ROCK CONSTRUCTION ENTRANCE DETAIL
4130	SILT FENCE DETAIL
4140	EROSION CONTROL DETAIL
4150	SILT FENCE - HEAVY DUTY DETAIL



PLAN



ELEVATION

CURB DETAIL AT DRIVEWAYS



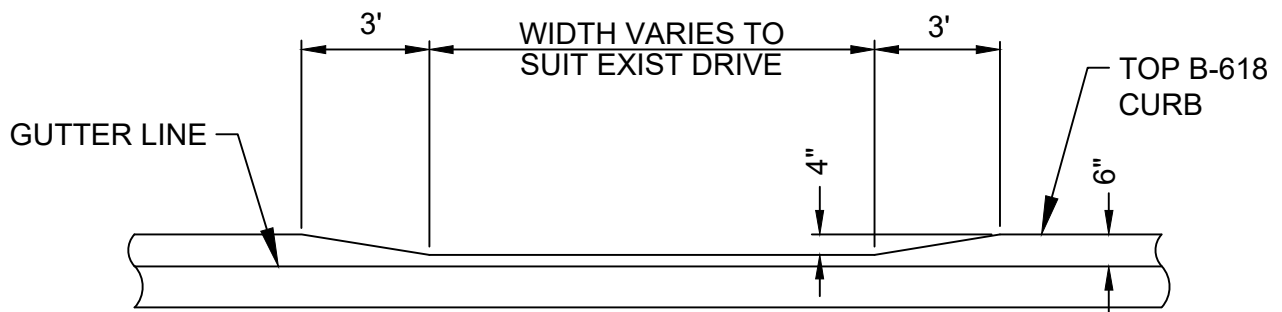
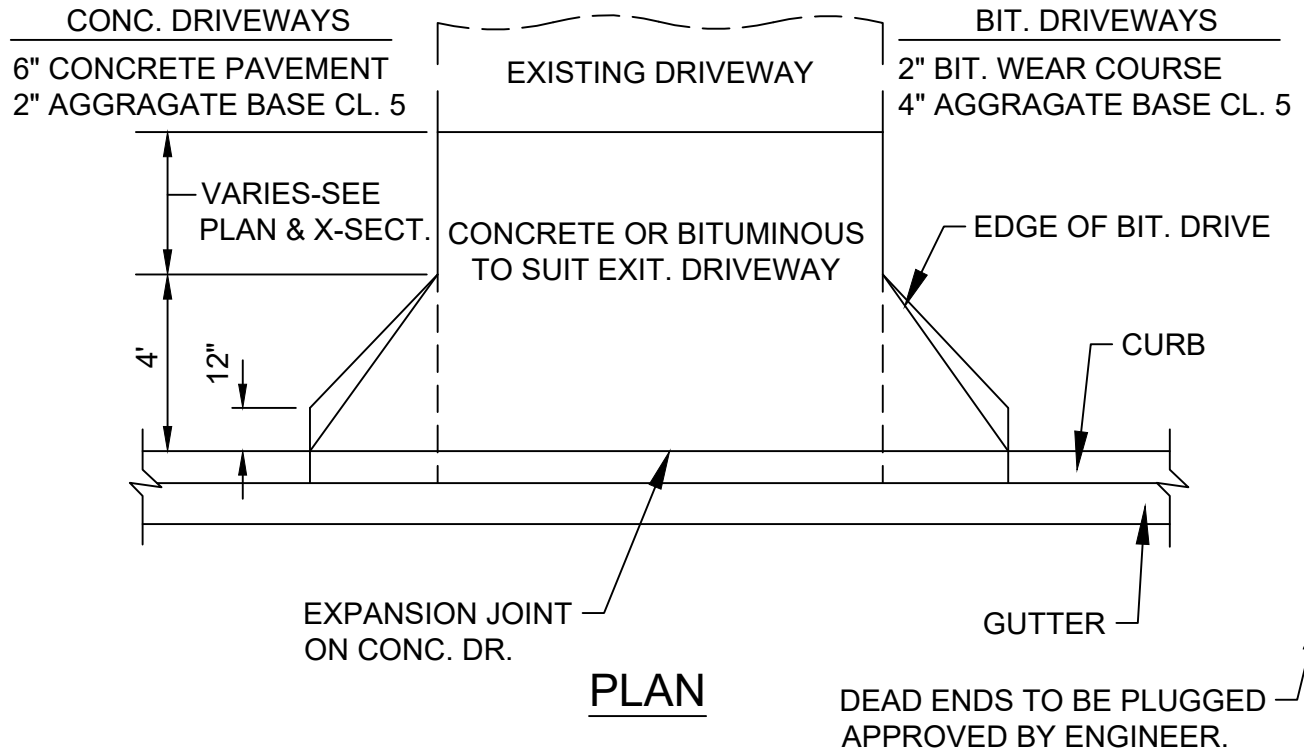
DRIVEWAY
DETAIL 1

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1100



ELEVATION

DRIVEWAY DETAILS



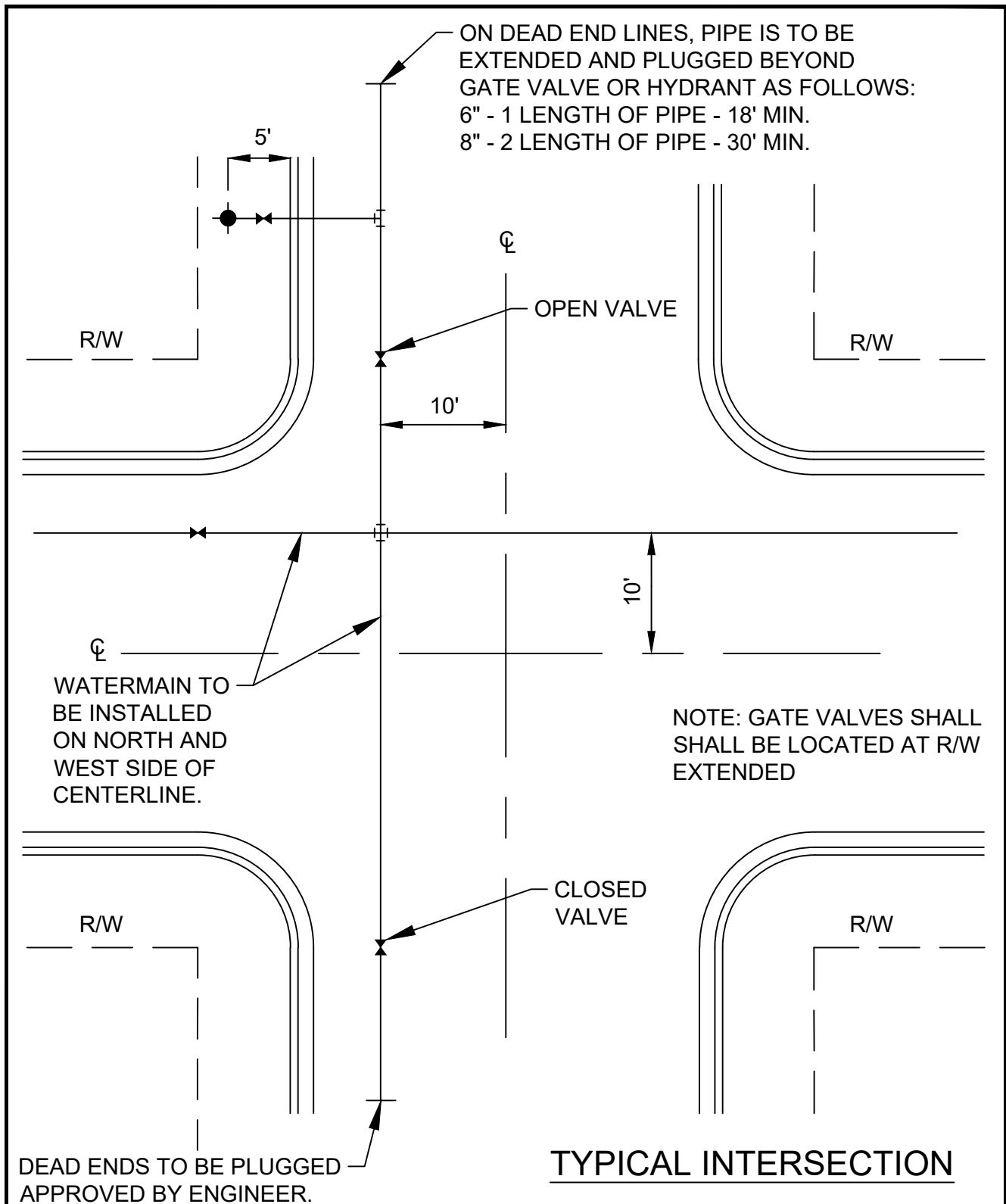
DRIVEWAY
DETAIL 2

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1110



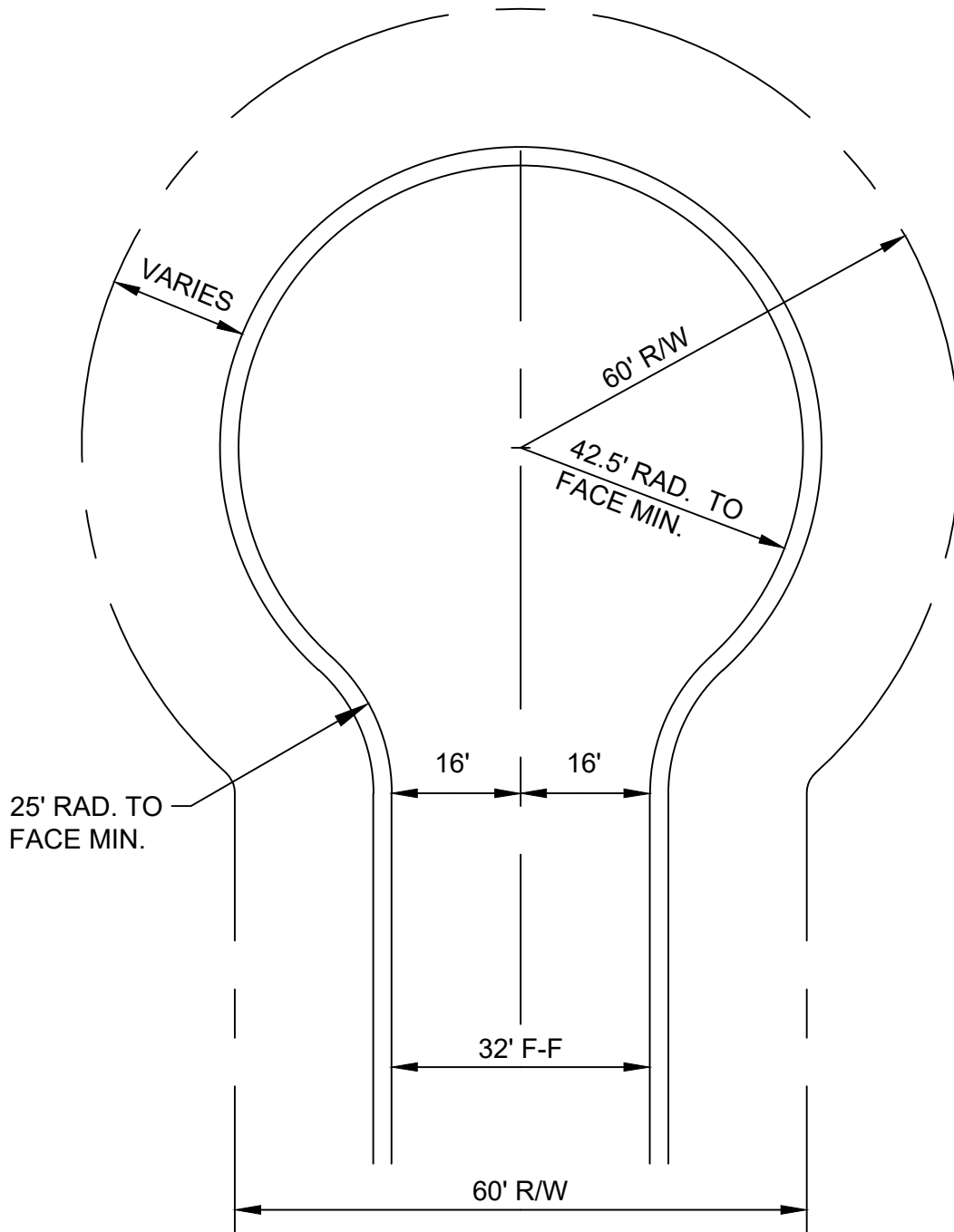
TYPICAL INTERSECTION DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1200



TYPICAL CUL-DE-SAC



TYPICAL
CUL-DE-SAC
DETAIL

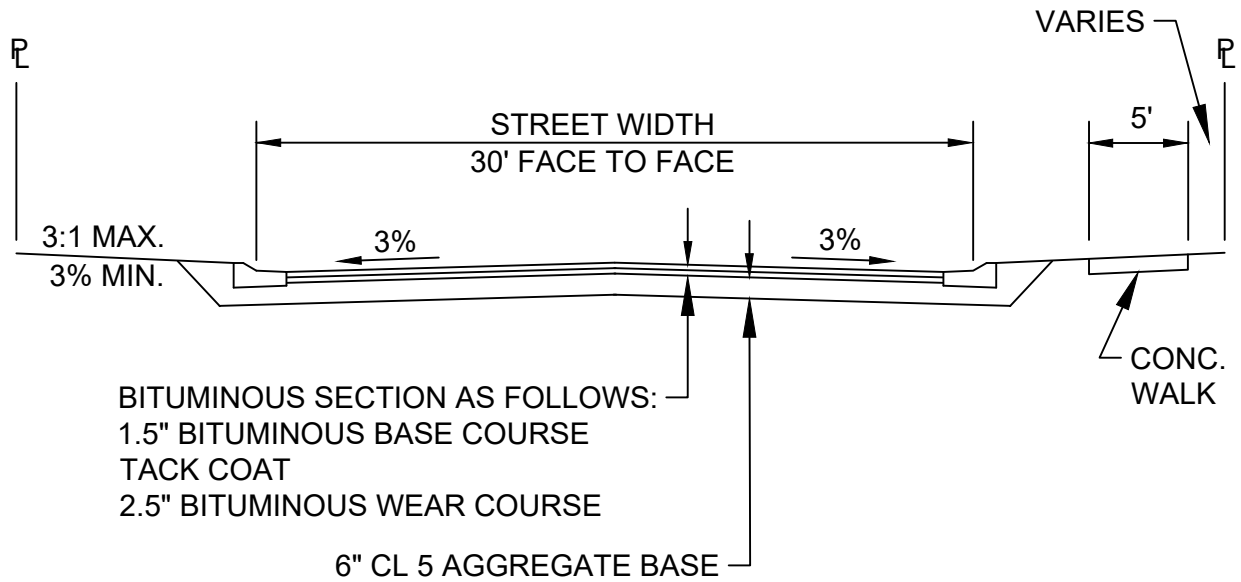
DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1210





*SUBGRADE MUST BE WITHIN + OR - .10' AND BE APPROVED BY ENGINEER.

*SIDEWALK SECTION IS 4" OF GRANULAR & 4" OF CONCRETE

NOTE: SEE PROJECT PLANS AND SPECS FOR STREET WIDTH, CURB TYPE, AND STREET SECTION.

TYPICAL STREET DETAIL



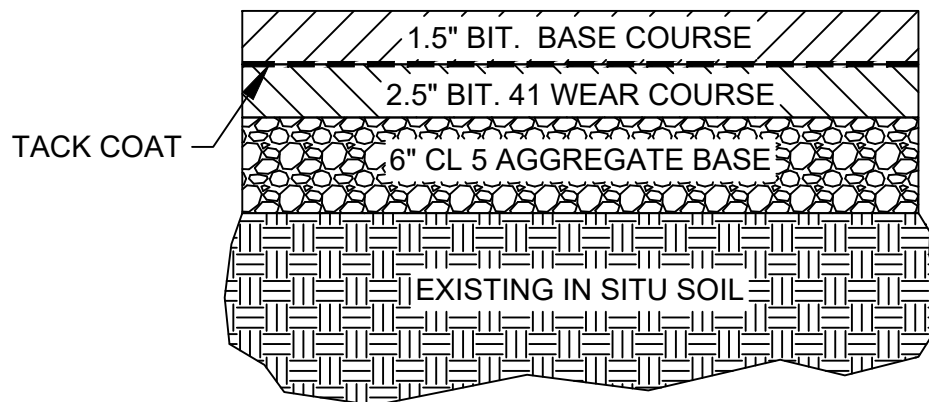
TYPICAL STREET DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1230



* SUBGRADE MUST BE WITHIN +
OR - 0.10 ' AND BE APPROVED
BY ENGINEER.

BITUMINOUS PAVEMENT DETAIL



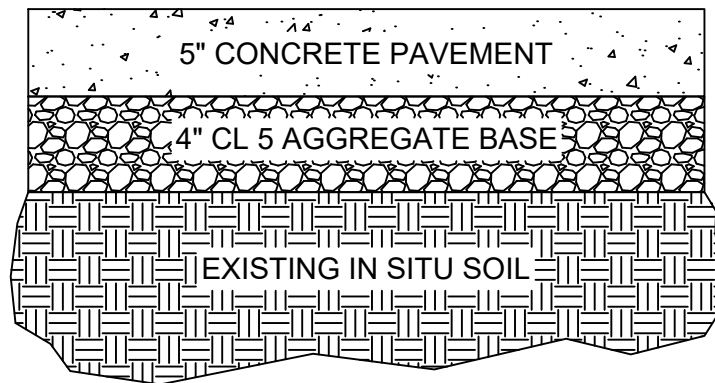
BITUMINOUS ROAD PAVEMENT DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1240



* SUBGRADE MUST BE WITHIN + OR - 0.10 '
AND BE APPROVED BY ENGINEER.

CONCRETE SIDEWALK PAVEMENT DETAIL



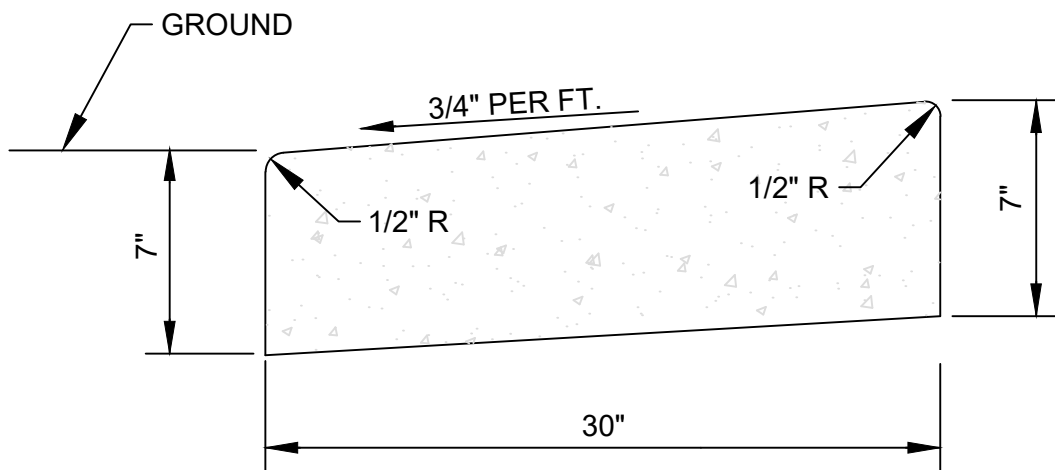
CONCRETE SIDEWALK PAVEMENT DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1300



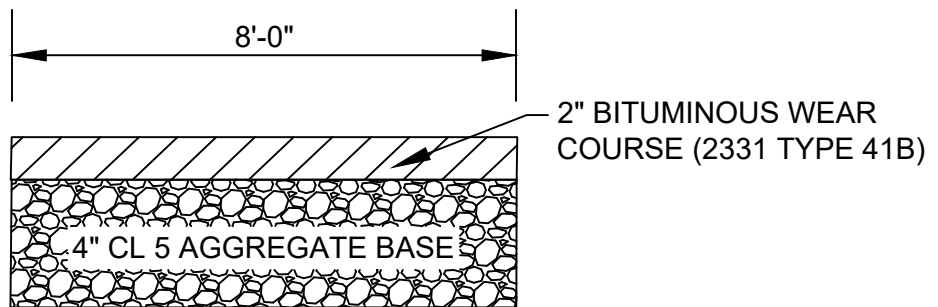
CONCRETE BOARDER DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1310



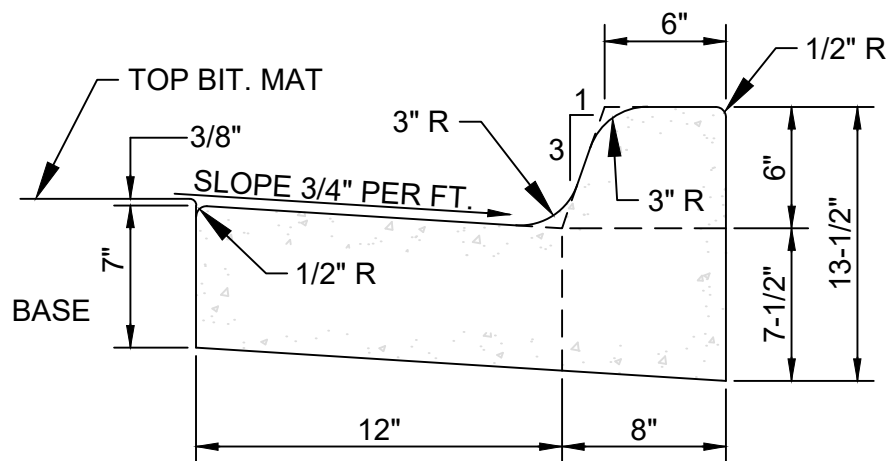
BITUMINOUS PAVEMENT TRAIL DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1320



STANDARD GUTTER



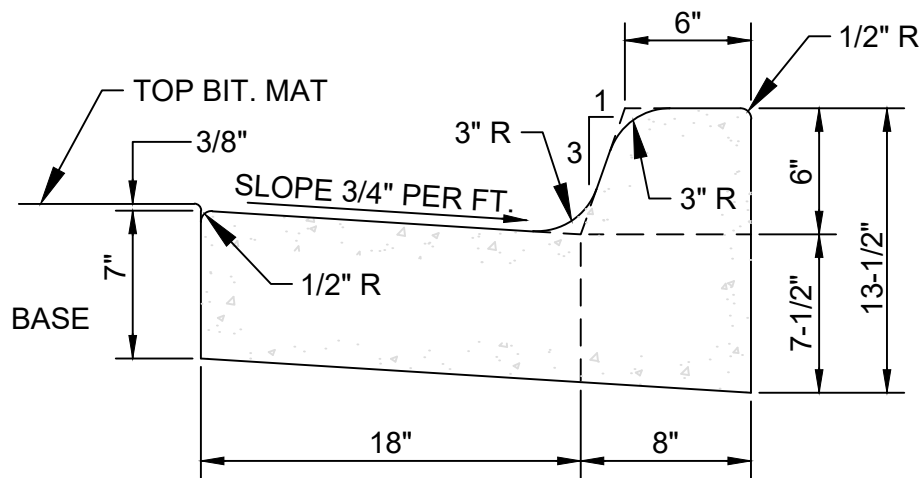
"B612" TYPE
CONCRETE CURB &
GUTTER DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1400



STANDARD GUTTER



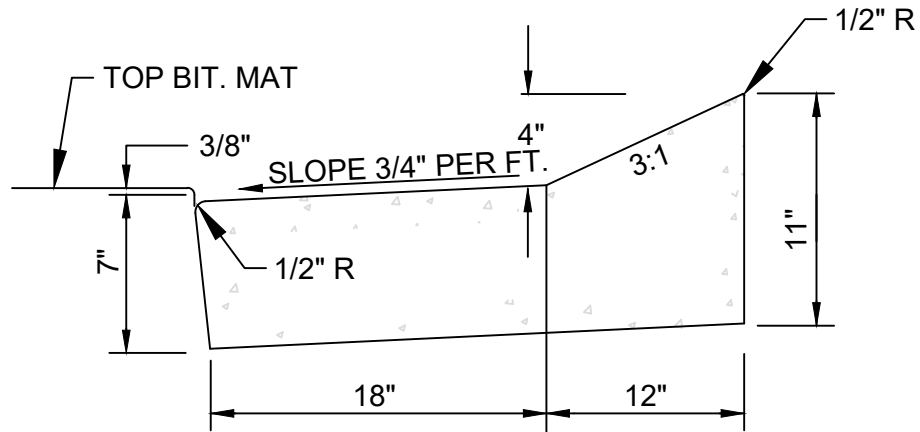
"B618" TYPE
CONCRETE CURB &
GUTTER DETAIL

DATE OF
REVISION

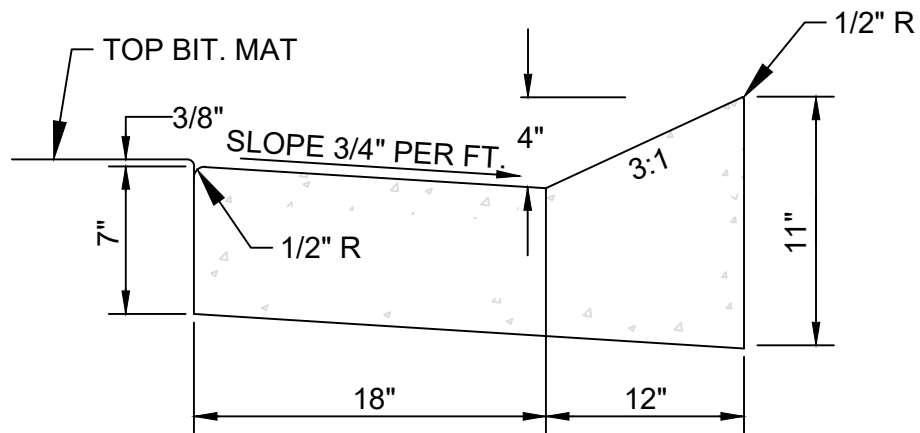
FEBURARY
2023

STANDARD
PLATE NO.

1410



"D" TYPE OUTFALL



"D" TYPE 418



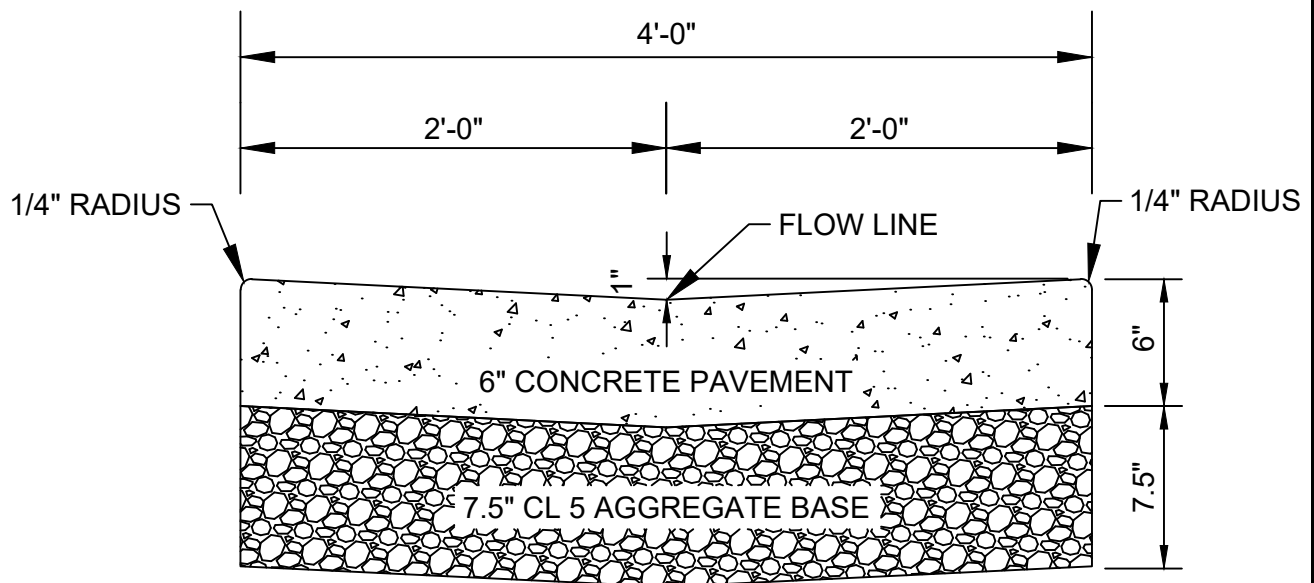
SURMOUNTABLE CONCRETE CURB & GUTTER DETAILS

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1420



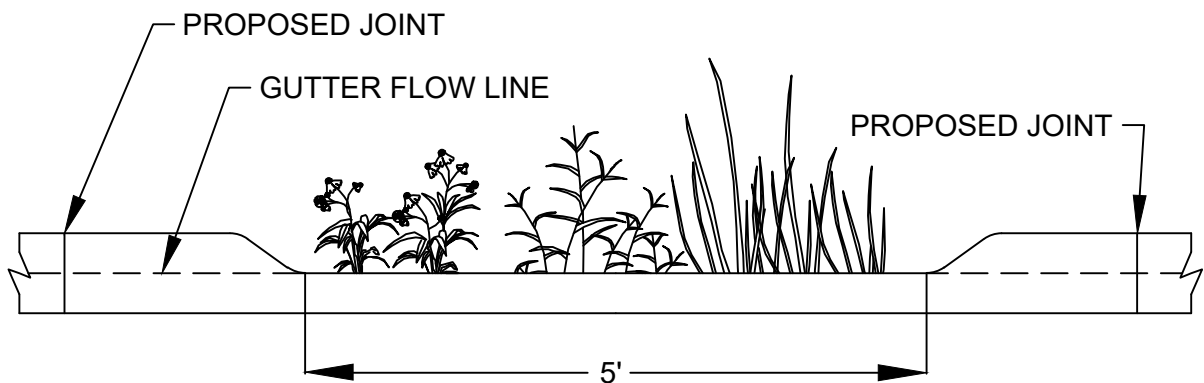
CONCRETE VALLEY GUTTER DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

1430



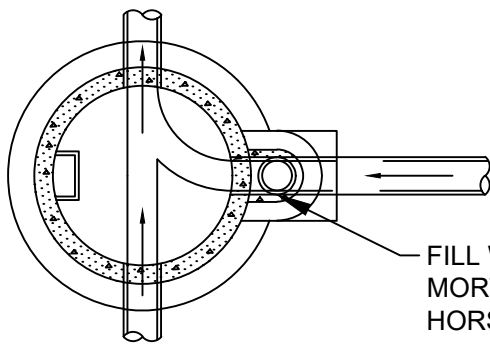
CONCRETE CURB CUT DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

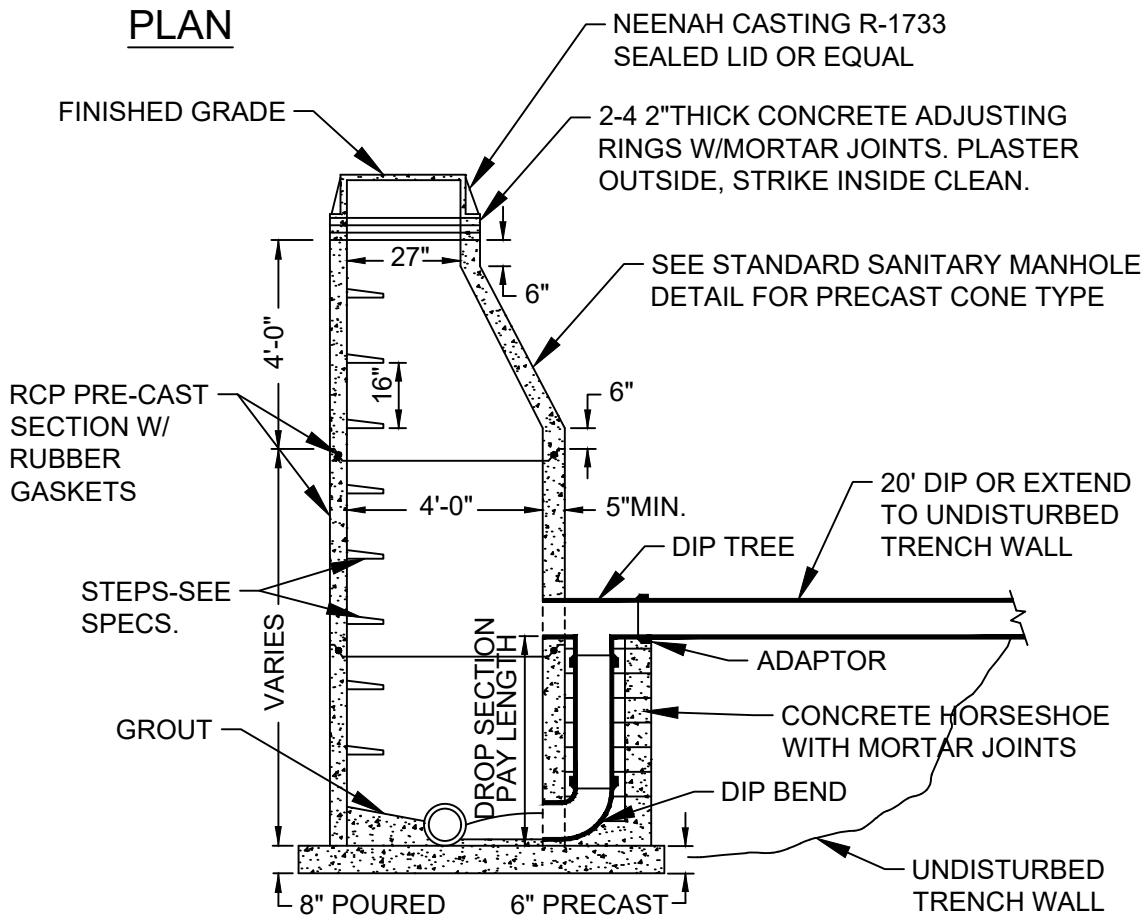
1440



PLAN

INSTALL EXTERNAL SEALING
SYSTEM MANUFACTURED BY
INFI-SHIELD. DISTRIBUTED
BY ESS BROS. & SONS INC.

FILL WITH CONCRETE
MORTAR BETWEEN
HORSESHOES & PIPE.



SECTION

NOTE: ALL DROP SECTIONS SHALL BE
8" DIAM. UNLESS OTHERWISE NOTED.



**SANITARY DROP
MANHOLE
(OUTSIDE) DETAIL**

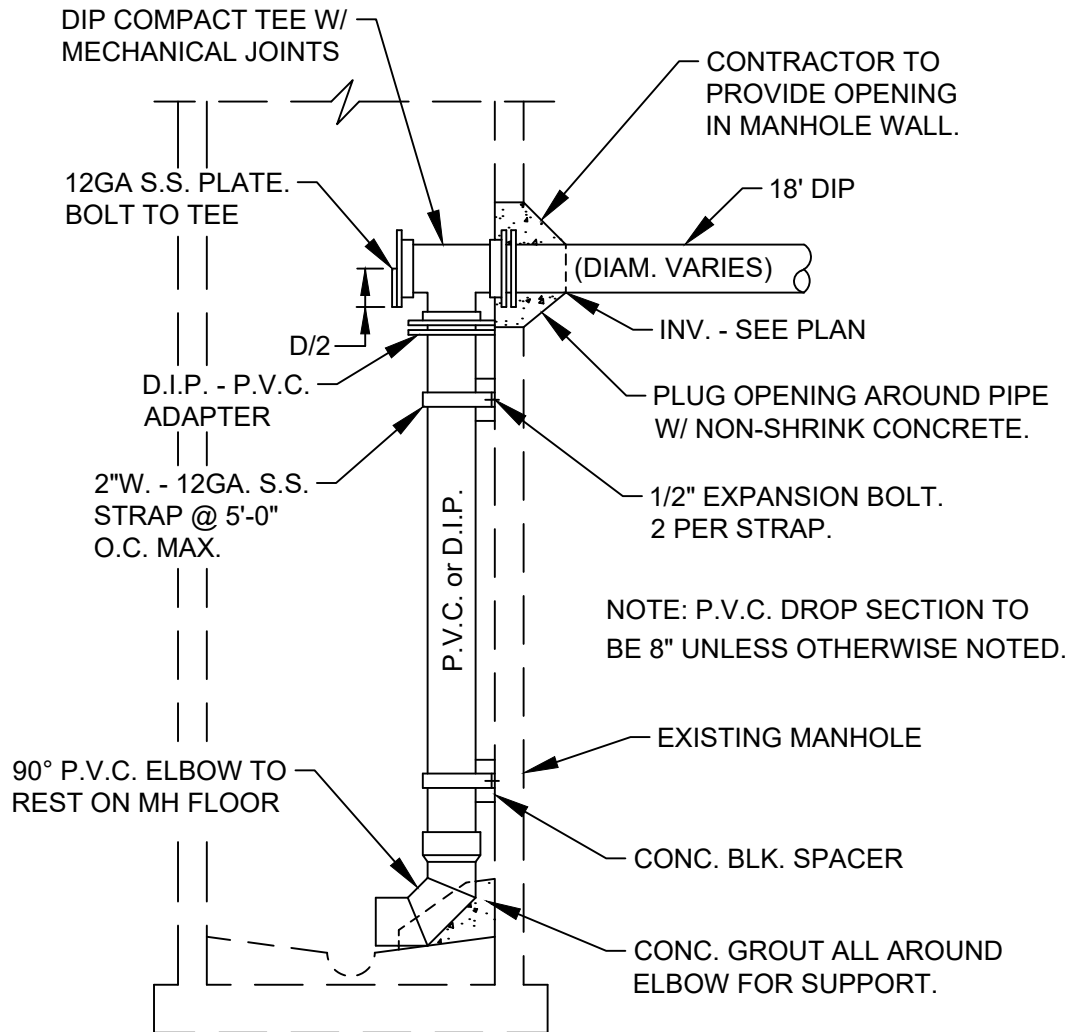
DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2100

INSTALL EXTERNAL SEALING
SYSTEM MANUFACTURED BY
INFI-SHIELD. DISTRIBUTED
BY ESS BROS. & SONS INC.



P.V.C. or D.I.P. INSIDE DROP SECTION
(EXISTING SANITARY MANHOLE)



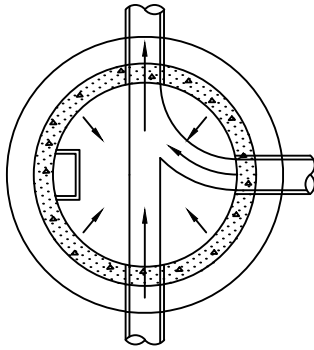
**SANITARY DROP
MANHOLE
(INSIDE) DETAIL**

DATE OF
REVISION

FEBURARY
2023

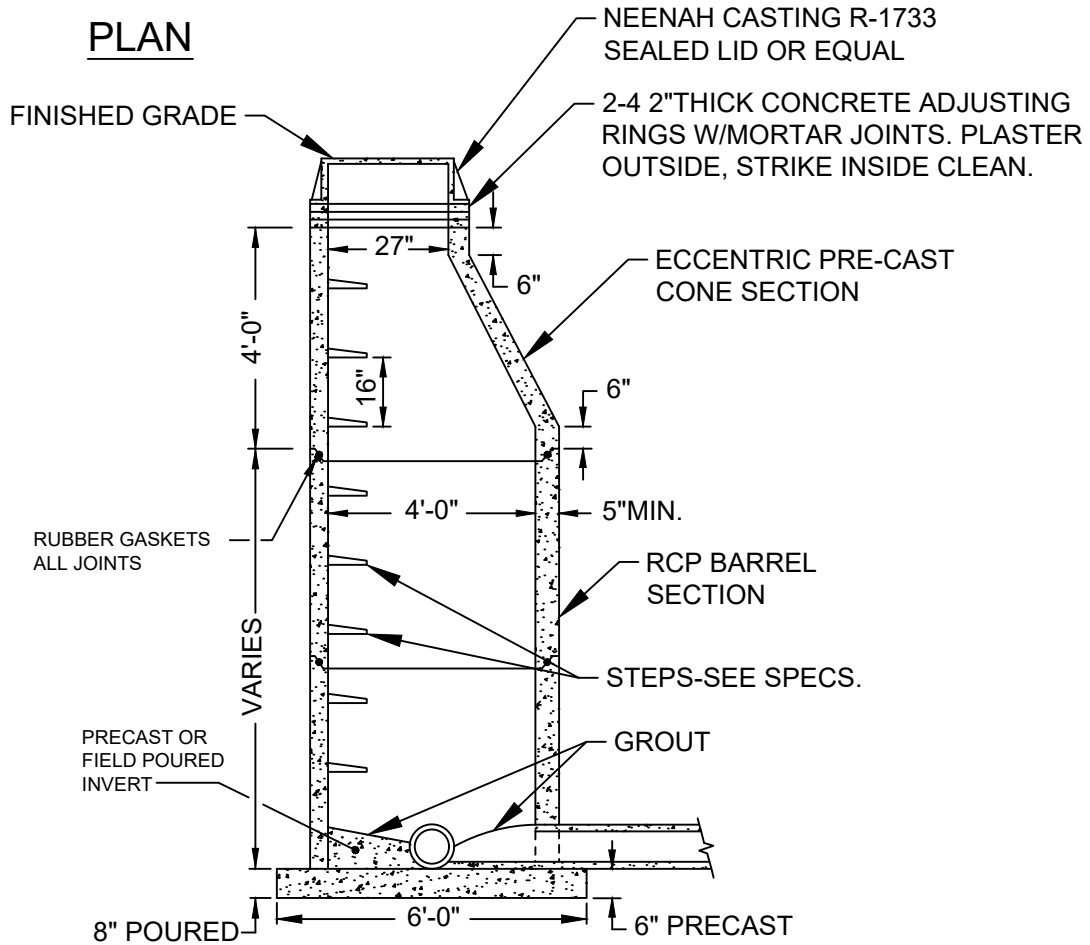
STANDARD
PLATE NO.

2110



PLAN

INSTALL EXTERNAL SEALING
SYSTEM MANUFACTURED BY
INFI-SHIELD. DISTRIBUTED
BY ESS BROS. & SONS INC.



SECTION



**SANITARY
MANHOLE
ECCENTRIC
DETAIL**

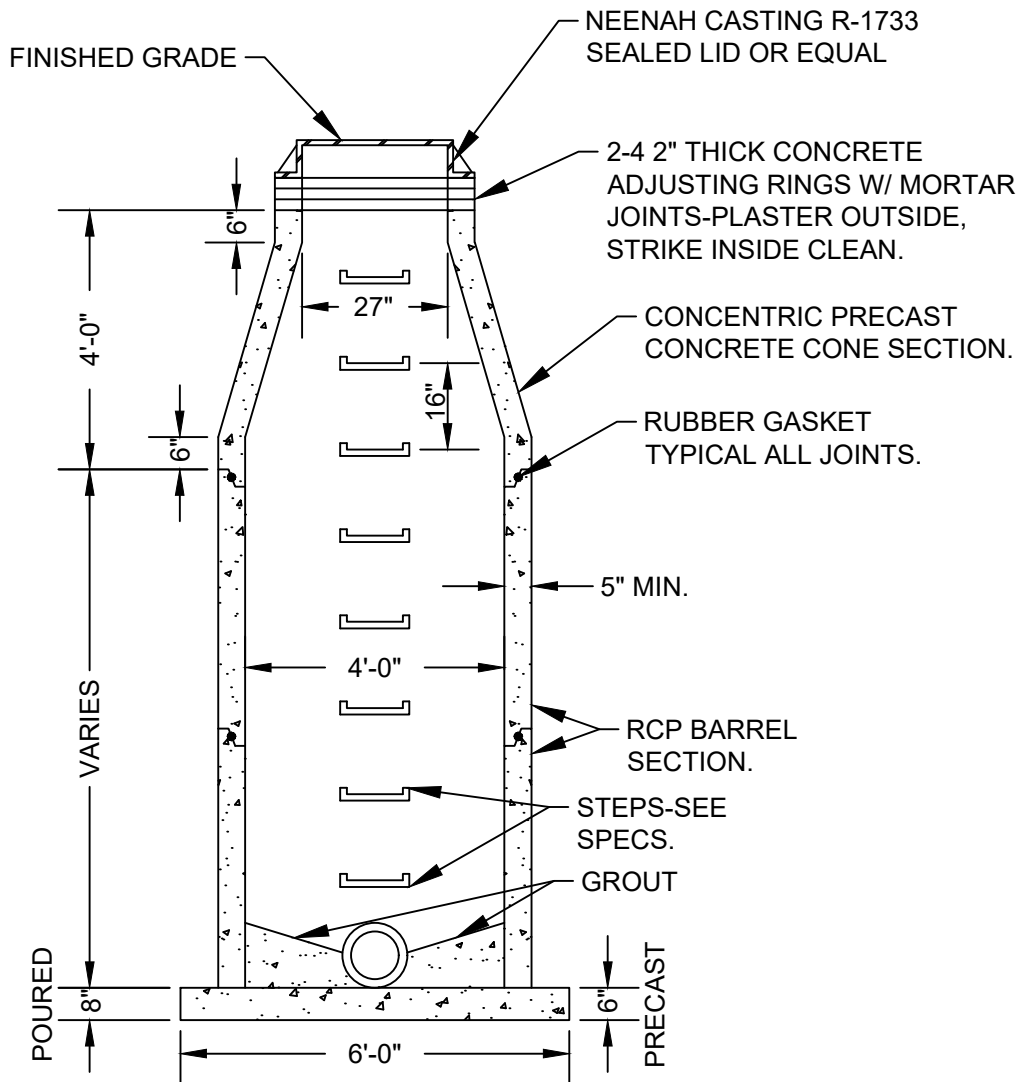
DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2120

INSTALL EXTERNAL SEALING
SYSTEM MANUFACTURED BY
INFI-SHIELD. DISTRIBUTED
BY ESS BROS. & SONS INC.



SECTION



SANITARY MANHOLE CONCENTRIC DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2130

BY ESS BROS. & SONS INC.

FINISHED GRADE

NEENAH CASTING R-1733
SEALED LID OR EQUAL

2-4 2" THICK CONCRETE
ADJUSTING RINGS W/ MORTAR
JOINTS. PLASTER OUTSIDE,
STRIKE INSIDE CLEAN

27"

6"

SEE "STANDARD SANITARY
MANHOLE" DETAIL FOR
PRECAST CONE TYPE.

6"

4'-0"

5" MIN.

STEPS-SEE SPECS.

12"

ECCENTRIC PRE-CAST
CONC. SECTIONS W/
RUBBER GASKETS

DIAMETER
VARIABLE

LOCATION OF BEND
WHEN OUTSIDE DROP
IS REQUIRED.

12"

6"

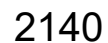
4'-10"

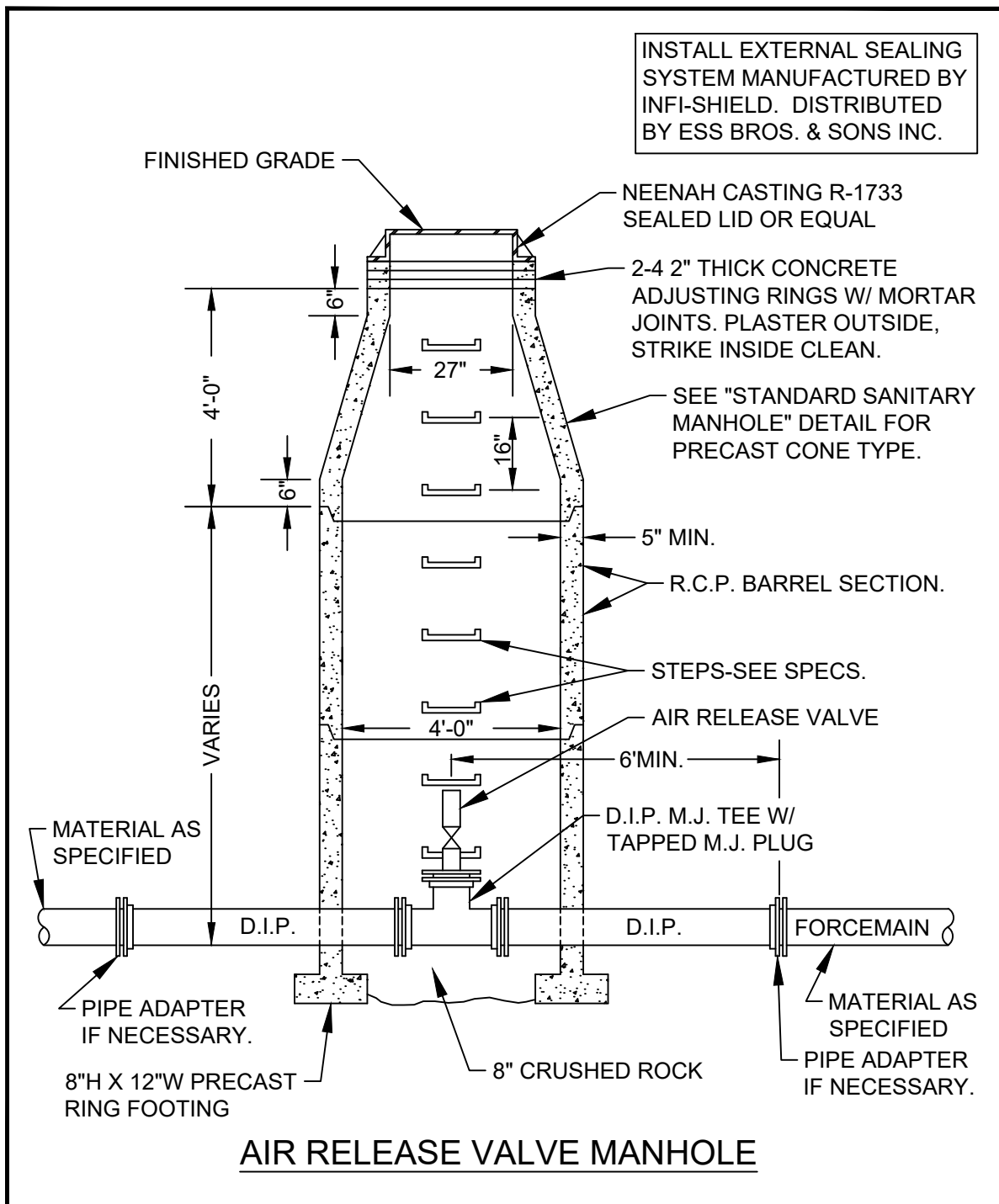
1-CU.YD. CONCRETE

VARIES

4'-0"

TEE SECTION MANHOLE (FOR 36" PIPE AND SMALLER)





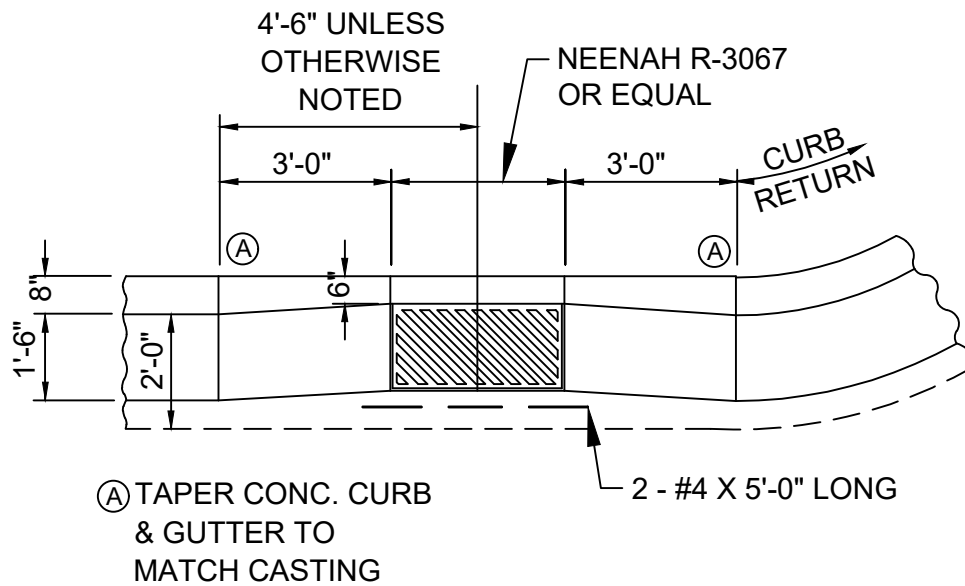
SANITARY AIR RELEASE VALVE MANHOLE DETAIL

DATE OF
REVISION

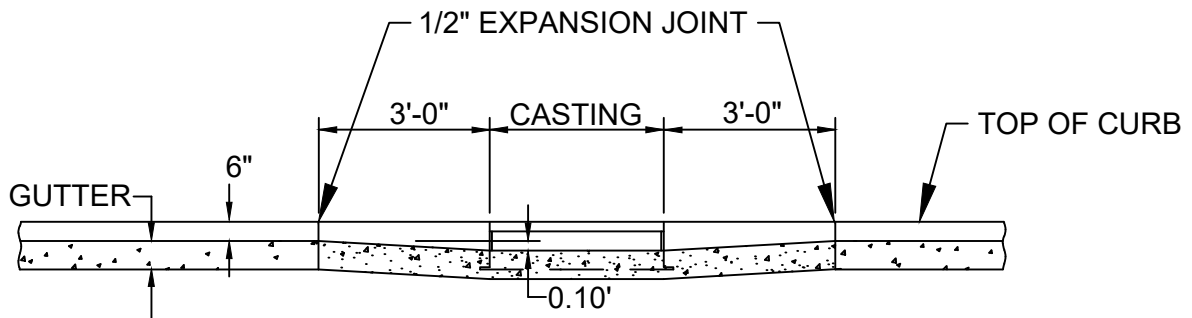
FEBURARY
2023

STANDARD
PLATE NO.

2150



PLAN



SECTION

* INSTALL EXTERNAL SEALING SYSTEM MANUFACTURED BY INFI-SHIELD. DISTRIBUTED BY ESS BROS. & SONS INC.

CATCH BASIN INSTALLATION

FOR B-618 AND B-624 C. & G.



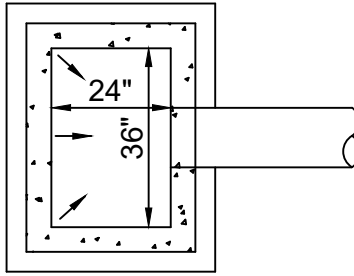
CATCH BASIN DETAIL

DATE OF
REVISION

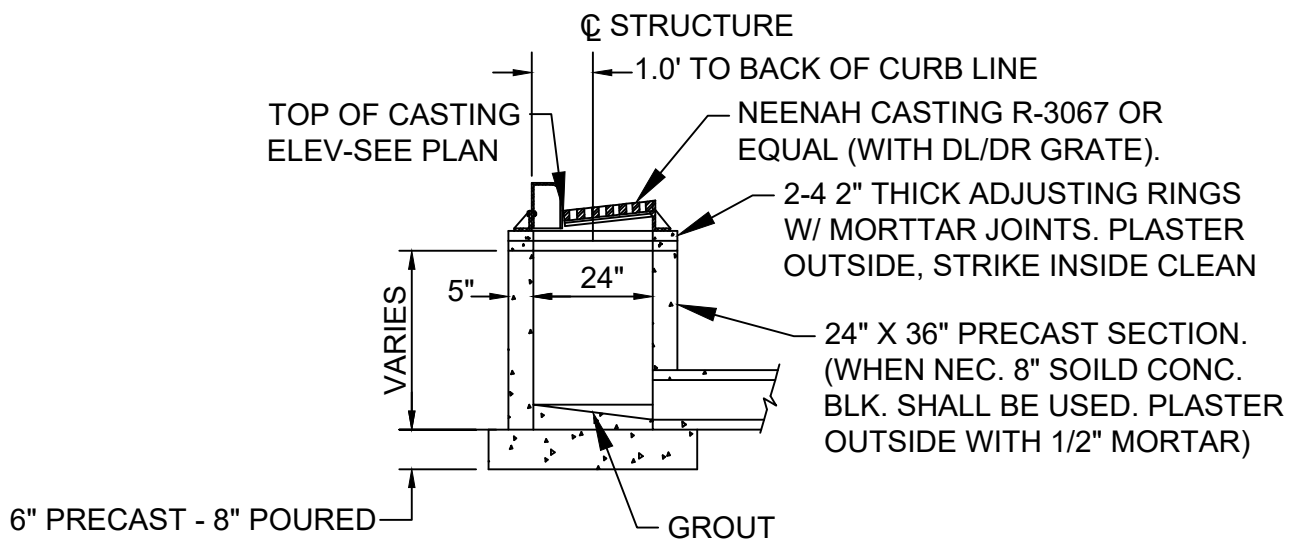
FEBURARY
2023

STANDARD
PLATE NO.

2210



PLAN



SECTION

* INSTALL EXTERNAL SEALING SYSTEM MANUFACTURED BY INFI-SHIELD. DISTRIBUTED BY ESS BROS. & SONS INC.

TYPE "X" CATCH BASIN (RECTANGULAR)



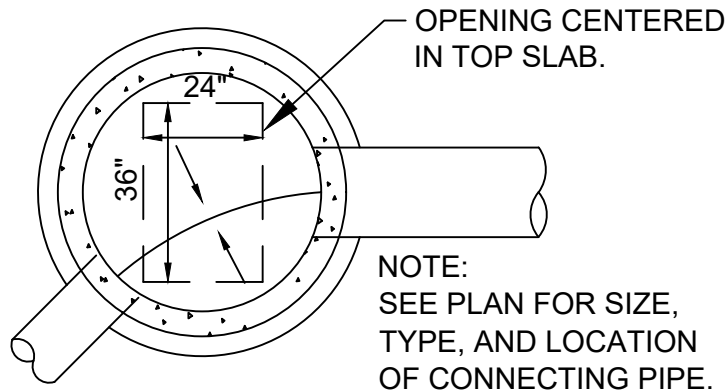
CATCH BASIN DETAIL

DATE OF
REVISION

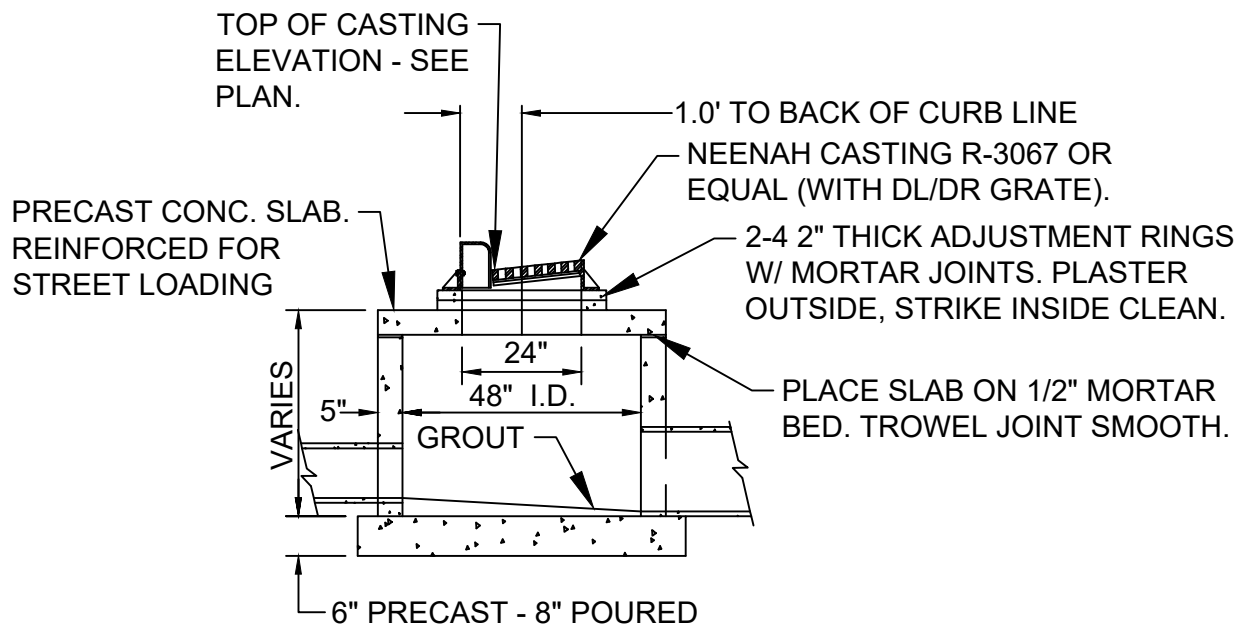
FEBURARY
2023

STANDARD
PLATE NO.

2220



PLAN



SECTION

* INSTALL EXTERNAL SEALING SYSTEM MANUFACTURED BY INFI-SHIELD. DISTRIBUTED BY ESS BROS. & SONS INC.

TYPE "Y" CATCH BASIN (RECTANGULAR CASTING)



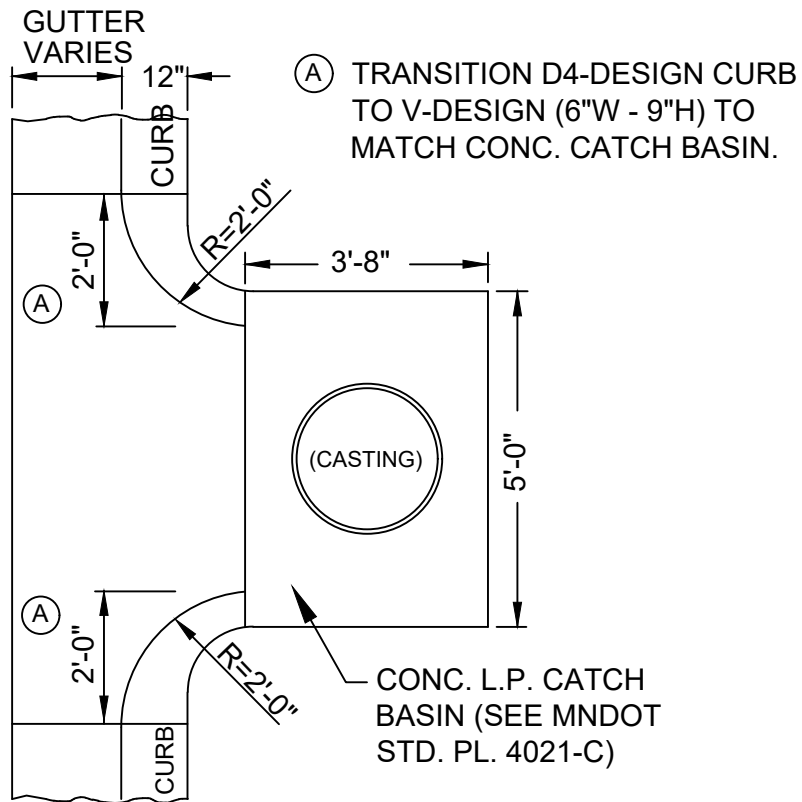
CATCH BASIN DETAIL

DATE OF
REVISION

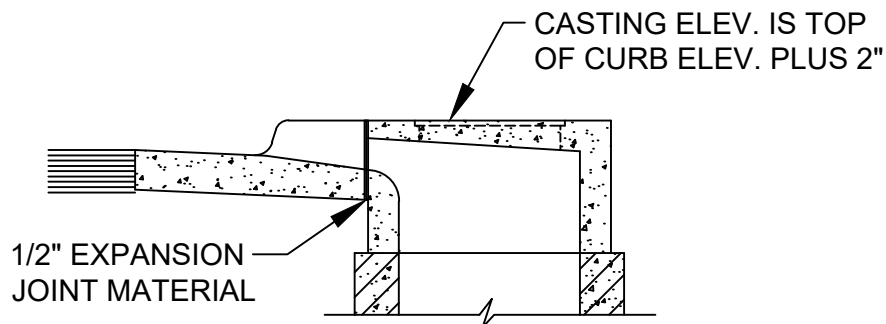
FEBURARY
2023

STANDARD
PLATE NO.

2230



PLAN



SECTION

* INSTALL EXTERNAL SEALING SYSTEM MANUFACTURED BY INFI-SHIELD. DISTRIBUTED BY ESS BROS. & SONS INC.

CONCRETE L.P. CATCH BASIN INSTALLATION



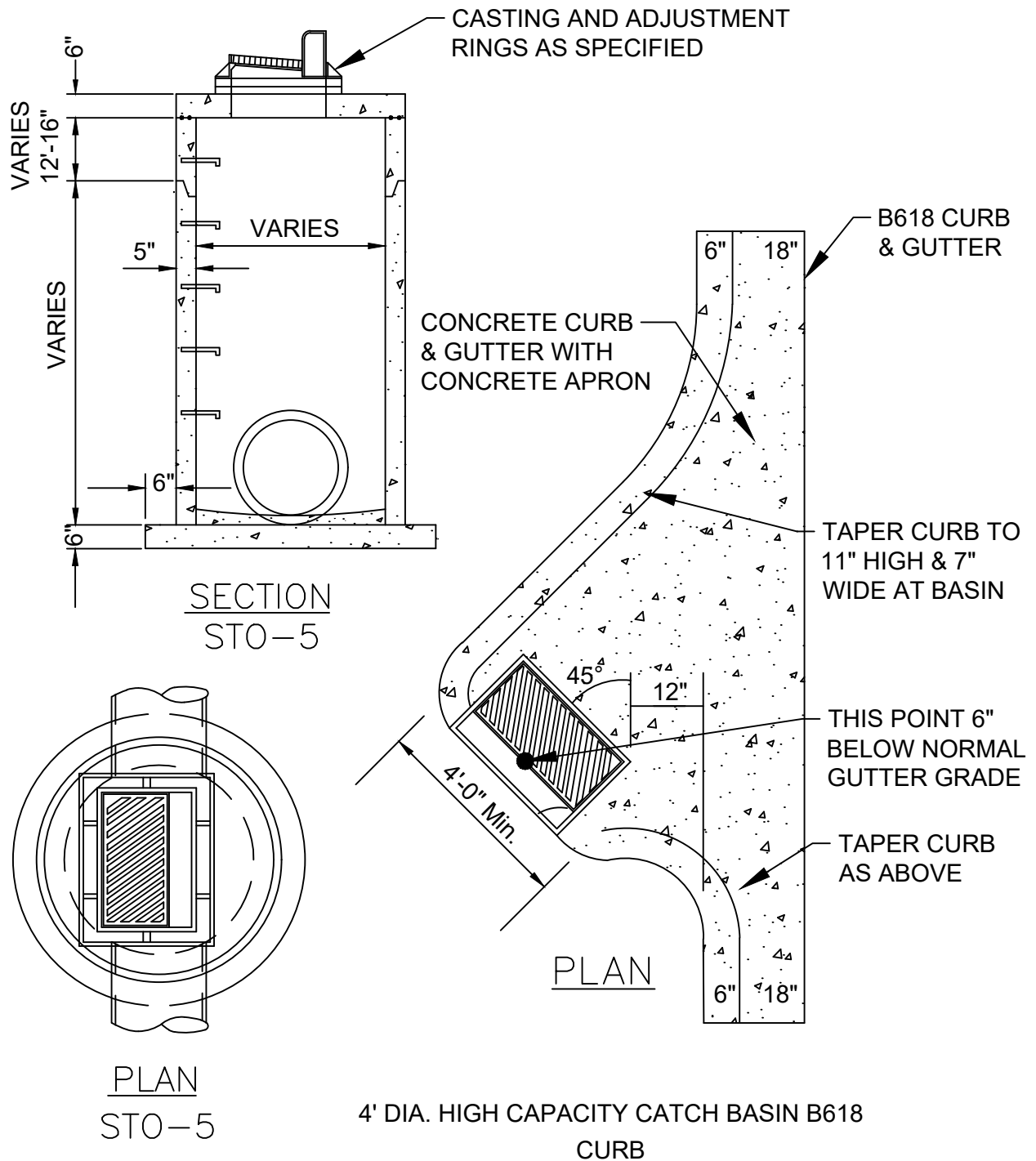
CATCH BASIN DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2240



HIGH CAPACITY CATCH BASIN DETAIL

DATE OF
REVISION

FEBURARY
2023

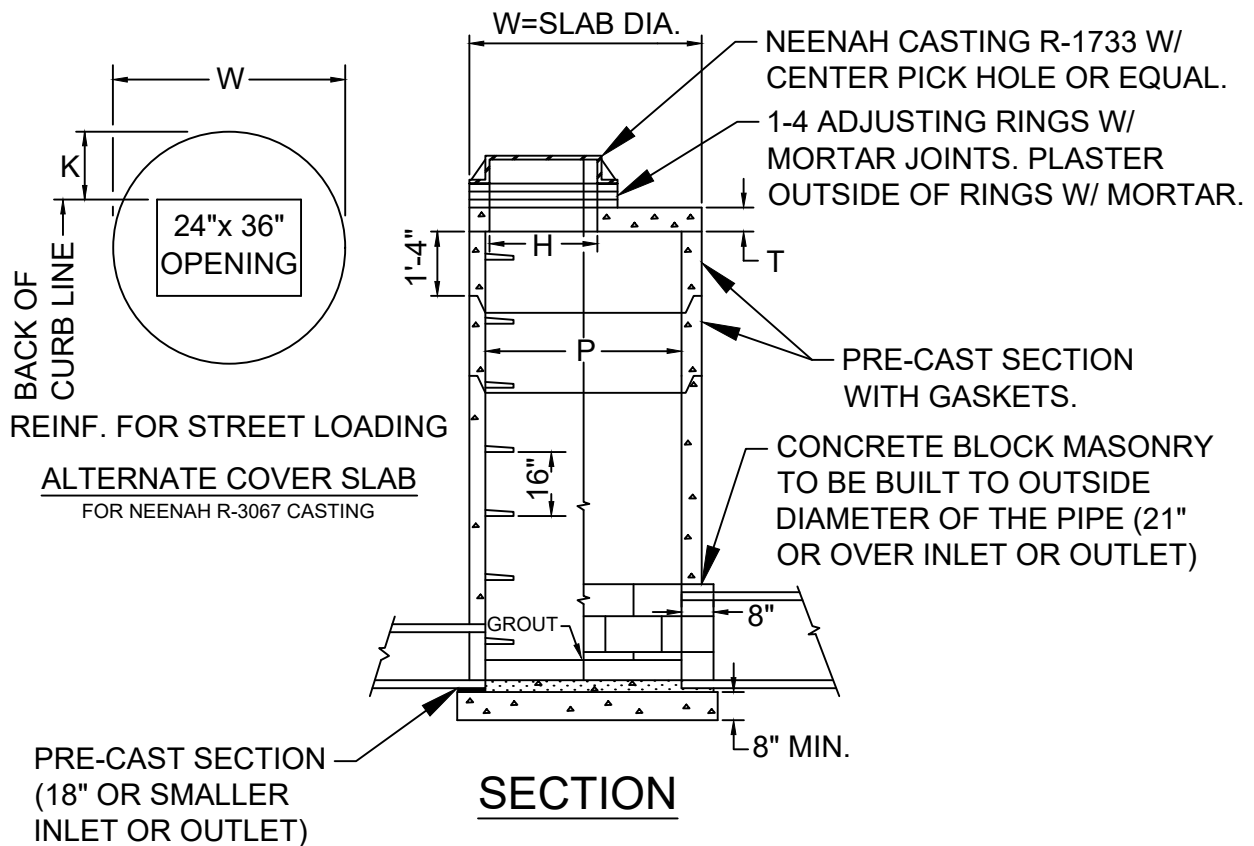
STANDARD
PLATE NO.

2250

* INSTALL EXTERNAL SEALING SYSTEM MANUFACTURED
BY INFI-SHIELD. DISTRIBUTED BY ESS BROS. & SONS INC.

STRUCTURE SCHEDULE

DIMENSIONS	MANHOLE TYPE											
	B	B-I	C	C-I	D	D-I	E	E-I	F	F-I	G	G-I
P	48"	48"	60"	60"	72"	72"	84"	84"	96"	96"	102"	102"
K	6"	11"	7"	18"	8"	25"	9"	32"	9"	38.5"	9"	41.5"
T	6"	6"	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"
W	58"	58"	72"	72"	86"	86"	100"	100"	113"	113"	119"	119"
H	TO SUIT CASTING DIMENSIONS											
OPENING	ECC.CON.	ECC.CON.	ECC.CON.	ECC.CON.	ECC.CON.	ECC.CON.	ECC.CON.	ECC.CON.	ECC.CON.	ECC.CON.	ECC.CON.	ECC.CON.



STORM SEWER M.H. TYPE "B"(B-I) THRU "G"(G-I)



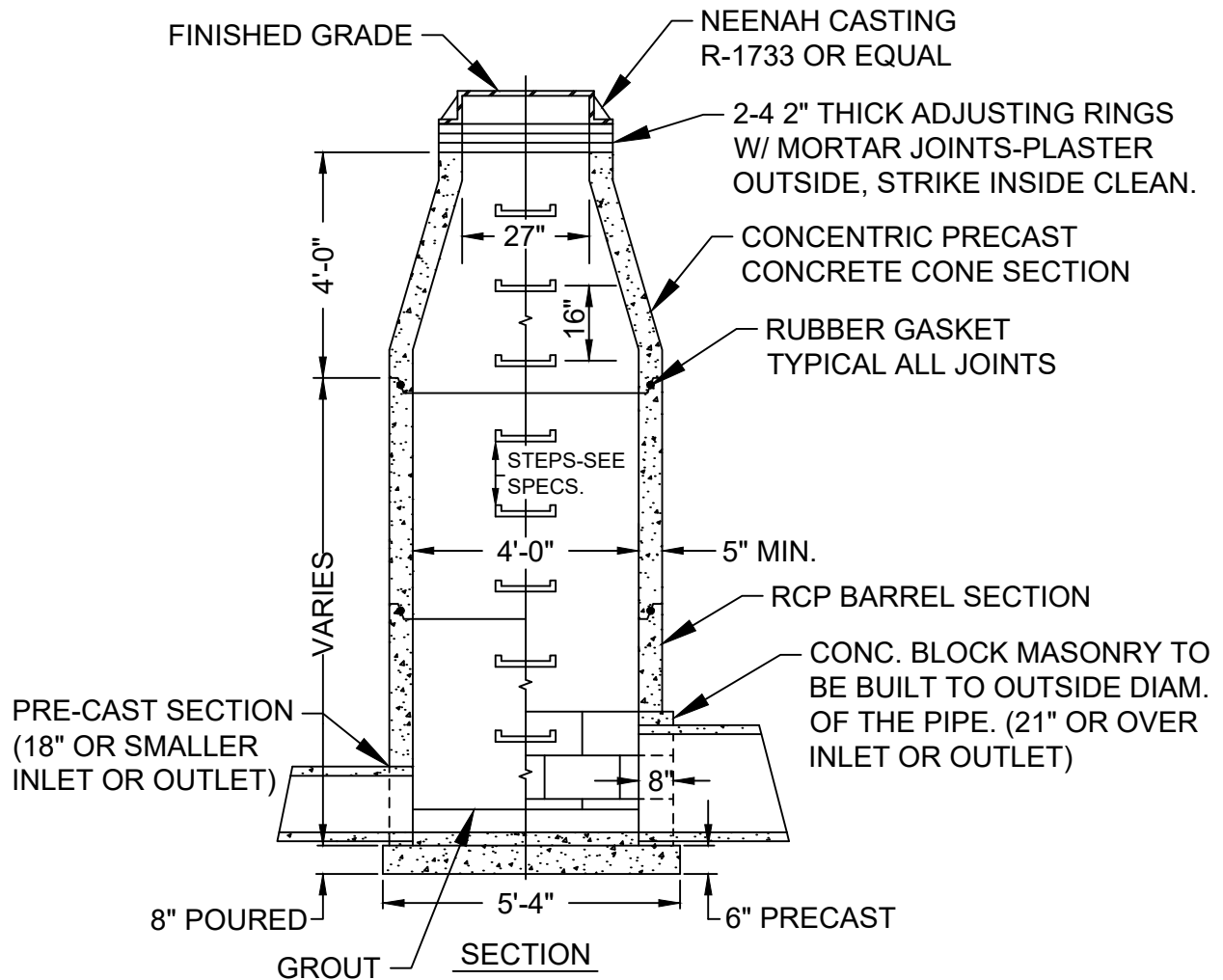
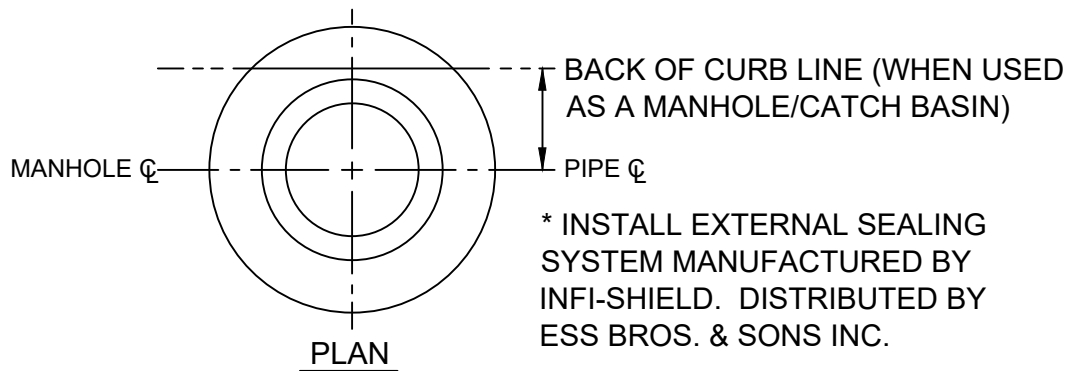
**STORM SEWER
MANHOLE
STANDARD DETAIL**

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2300



TYPE "A" MANHOLE
(CONCENTRIC)



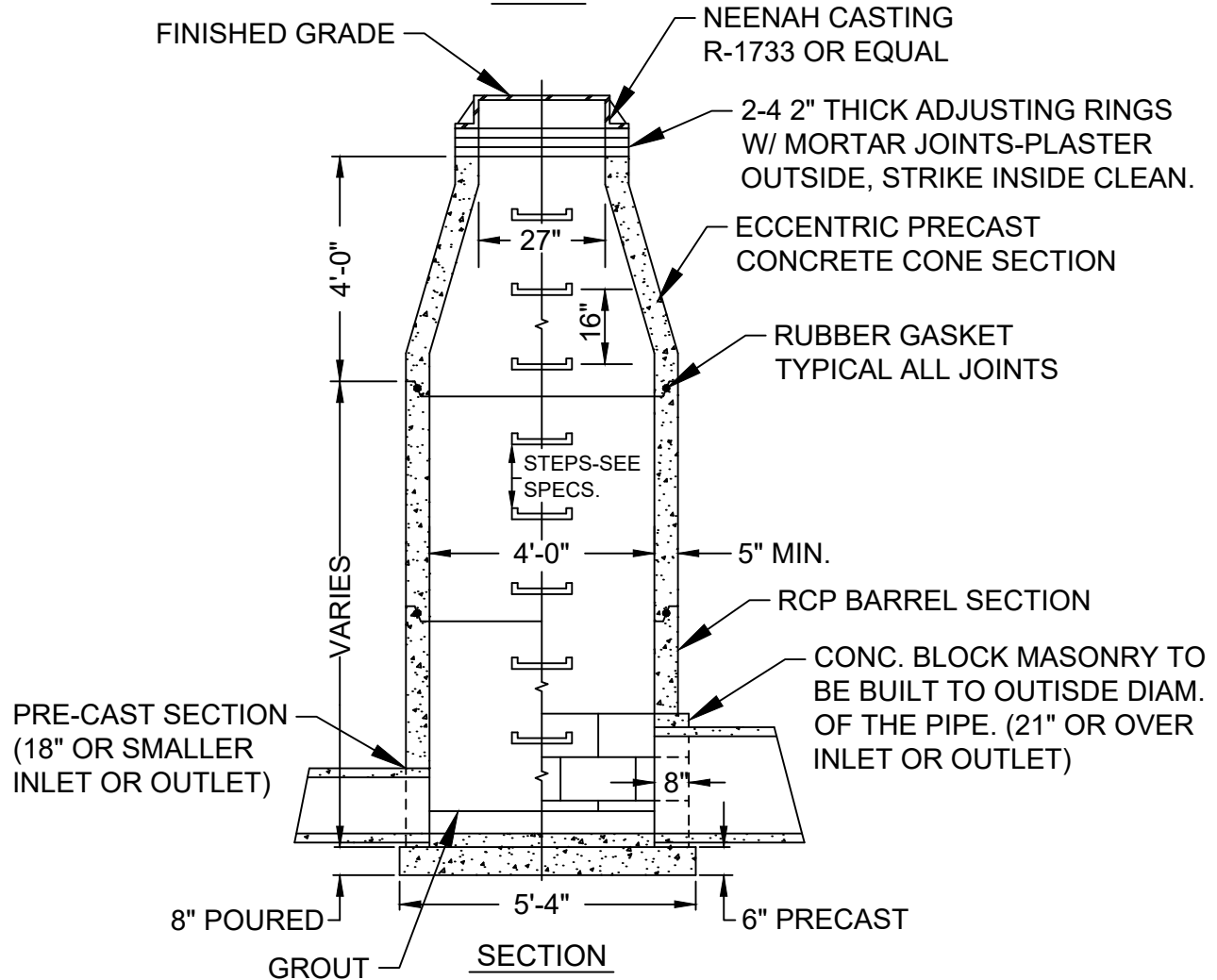
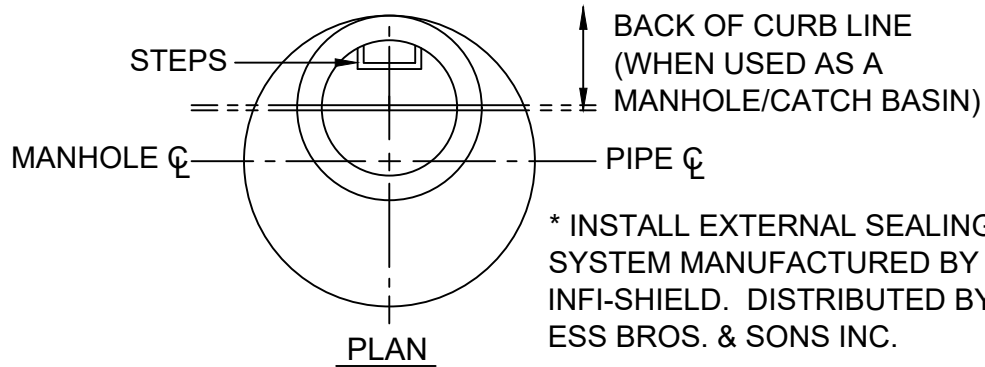
STORM SEWER MANHOLE DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2310



TYPE "A" MANHOLE
(ECCENTRIC)



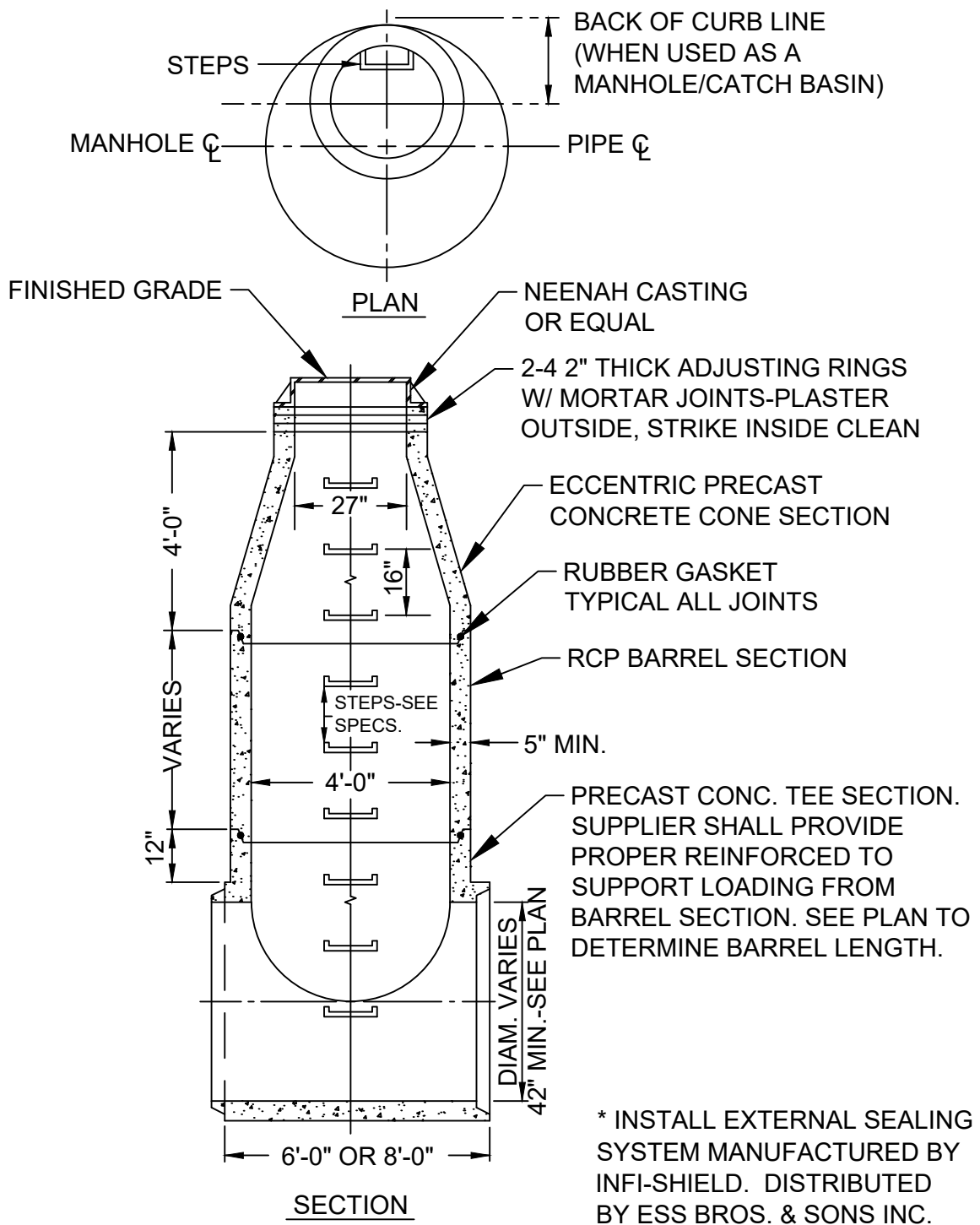
**STORM SEWER
MANHOLE
DETAIL**

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2320



TEE SECTION MANHOLE TYPE "J"



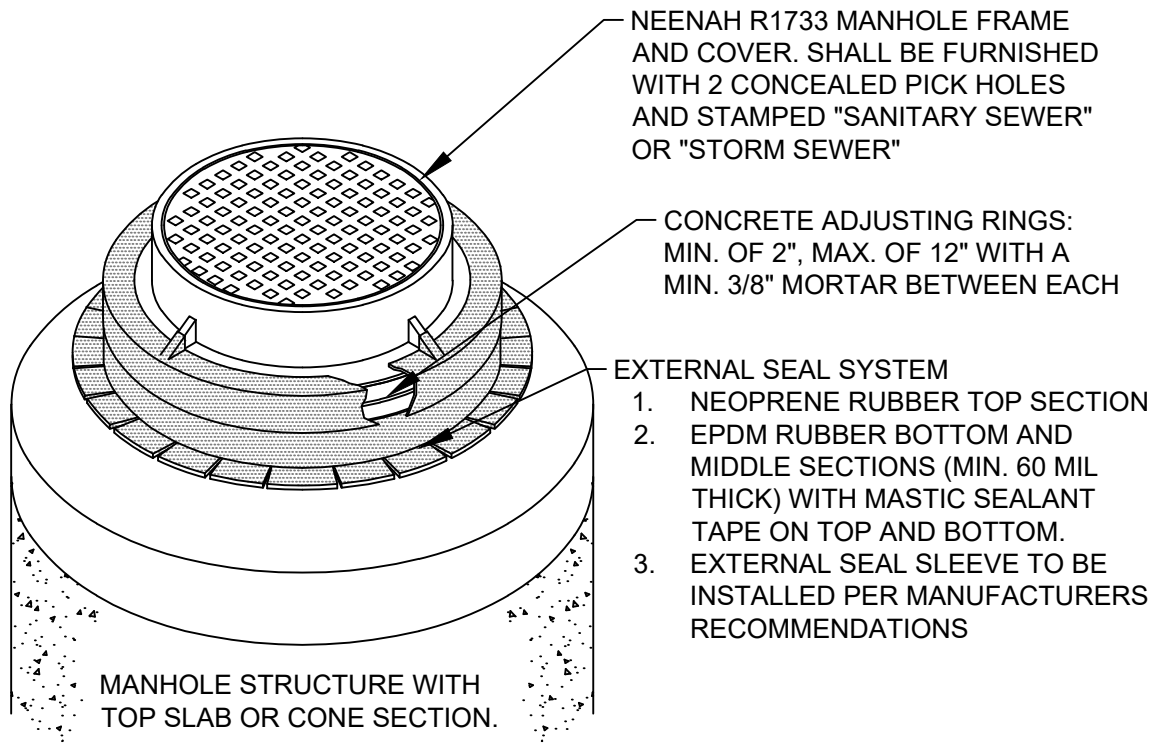
STORM SEWER MANHOLE DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2330



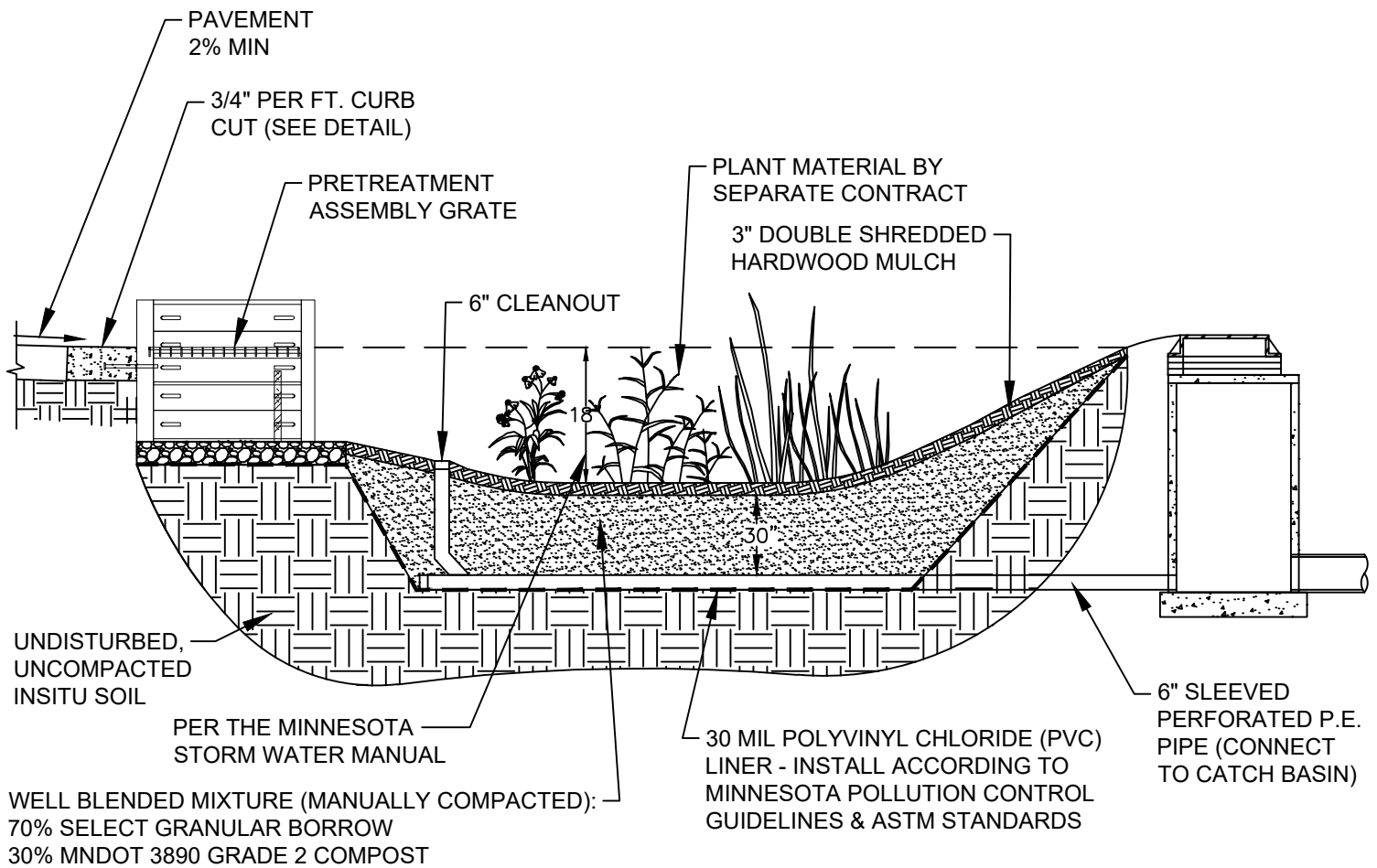
EXISTING MANHOLE ADJUSTMENT

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2340



RAIN GARDEN FILTRATION BASIN CROSS-SECTION

NOT TO SCALE



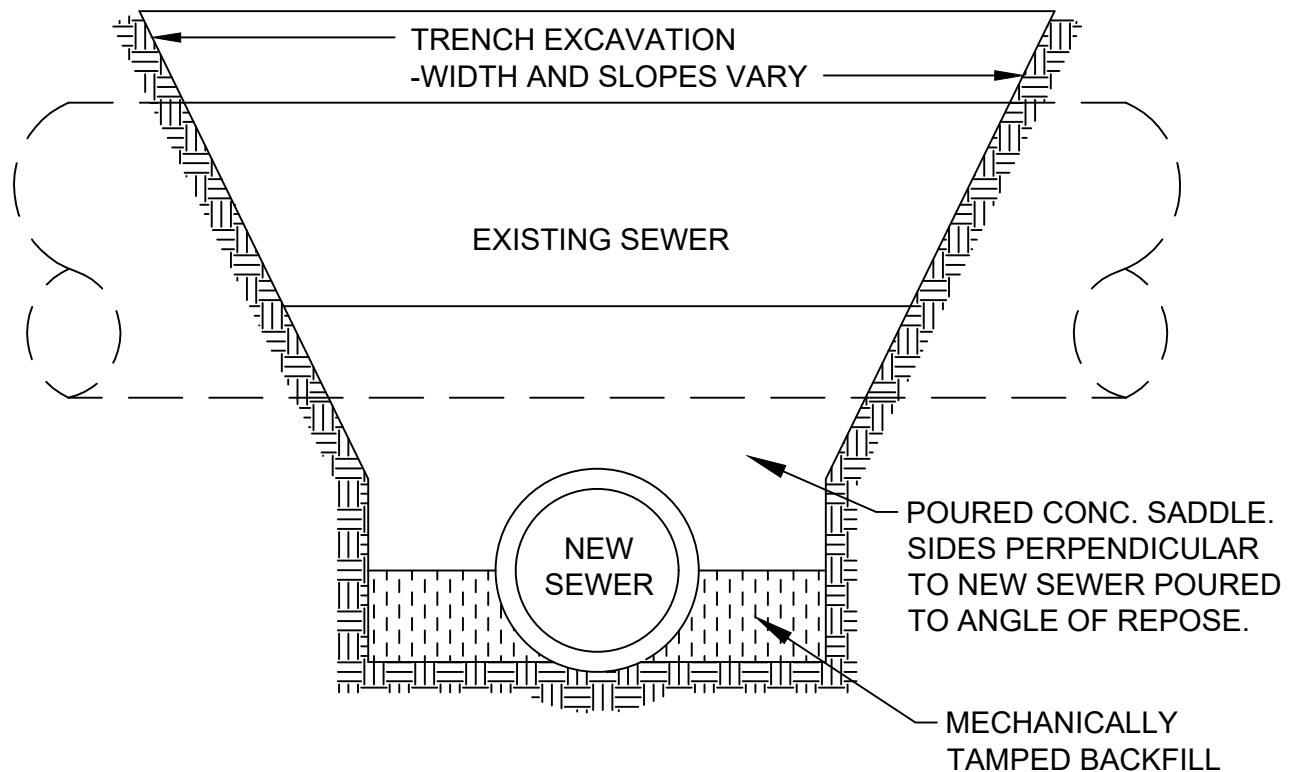
RAIN GARDEN FILTRATION BASIN DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2350



CONCRETE SUPPORT SADDLE



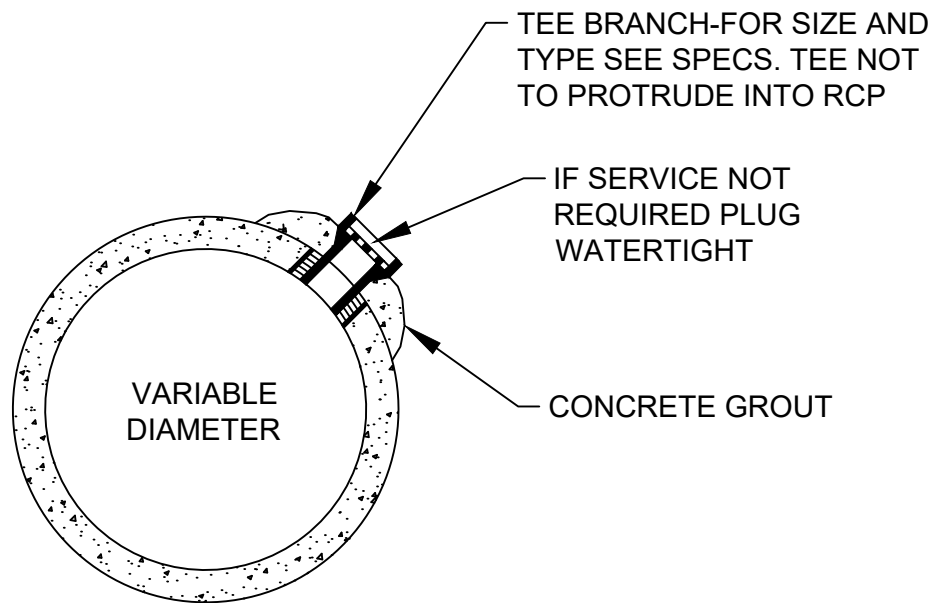
CONCRETE SUPPORT SADDLE DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2400



NOTE: CORE HOLE IN R.C.P. FOR TEE BRANCH.
SEAL VOID AROUND TEE W/PREFORMED
RUBBER GASKET OR NON-SHRINK GROUT.

SERVICE TEE CONNECTION (FOR R.C.P. SANITARY SEWER)



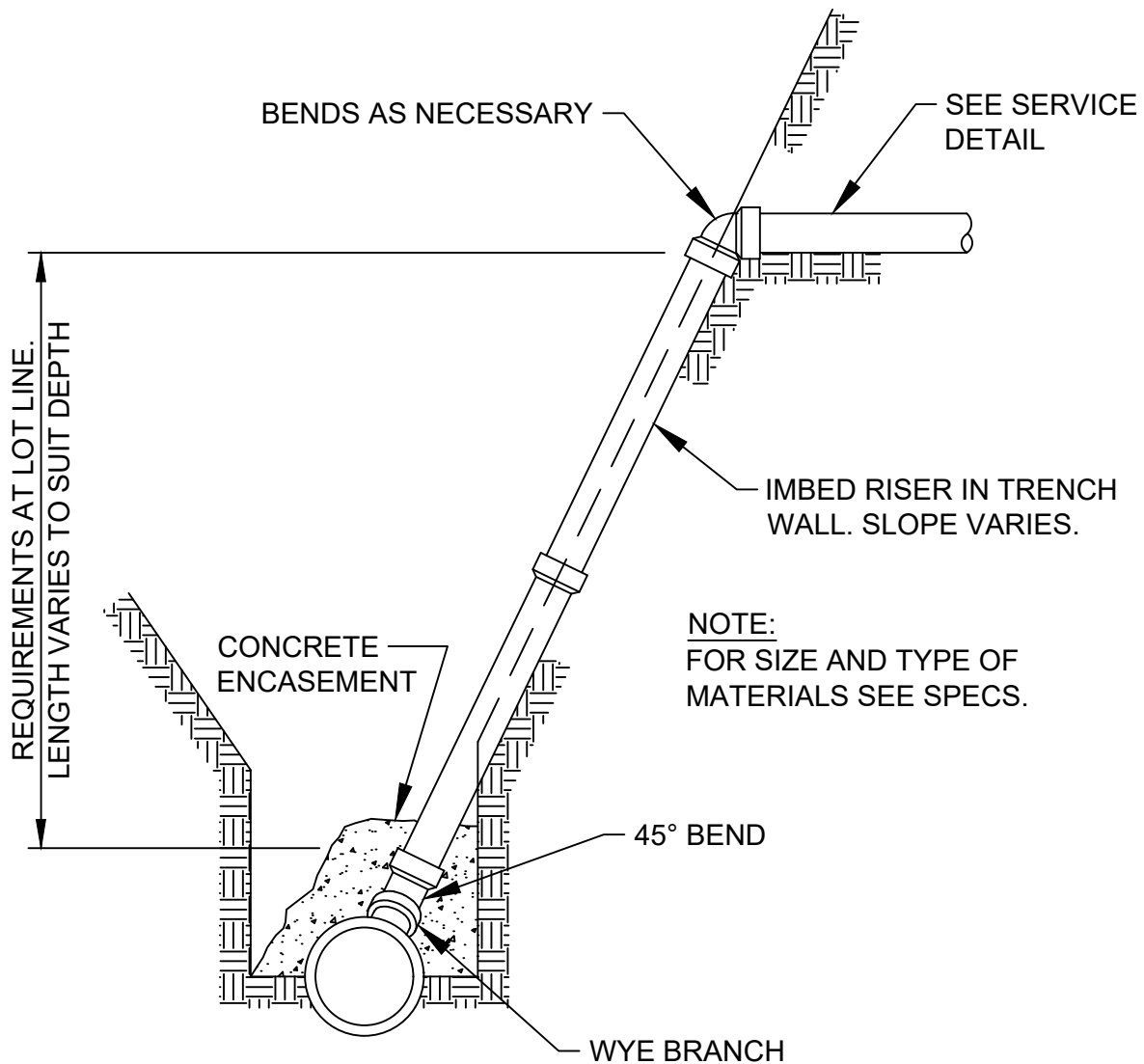
SERVICE TEE CONNECTION

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2410



SANITARY SEWER SERVICE RISER



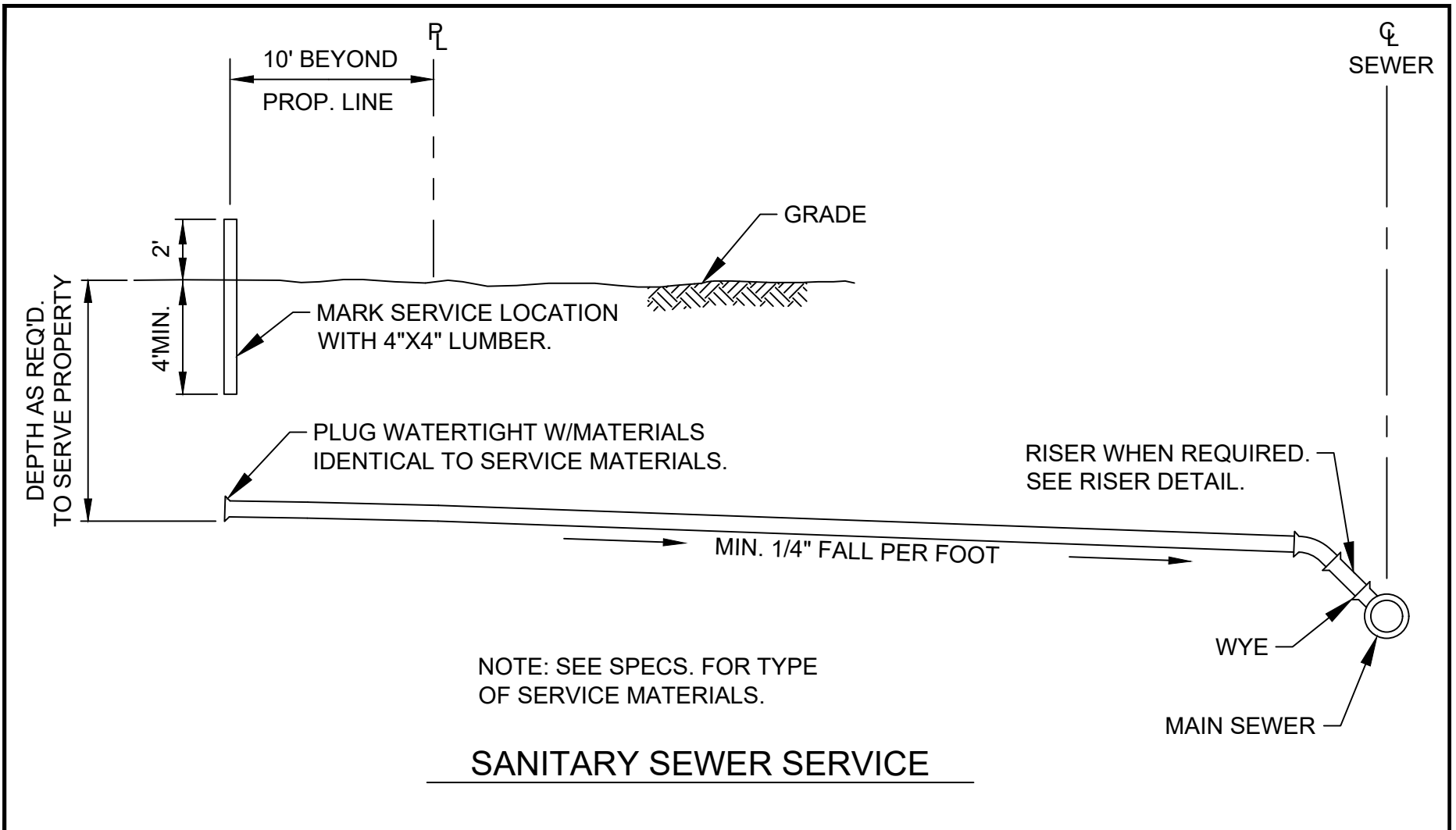
SANITARY SEWER SERVICE RISER

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

2420



SANITARY SEWER SERVICE DETAIL

DATE OF
REVISION

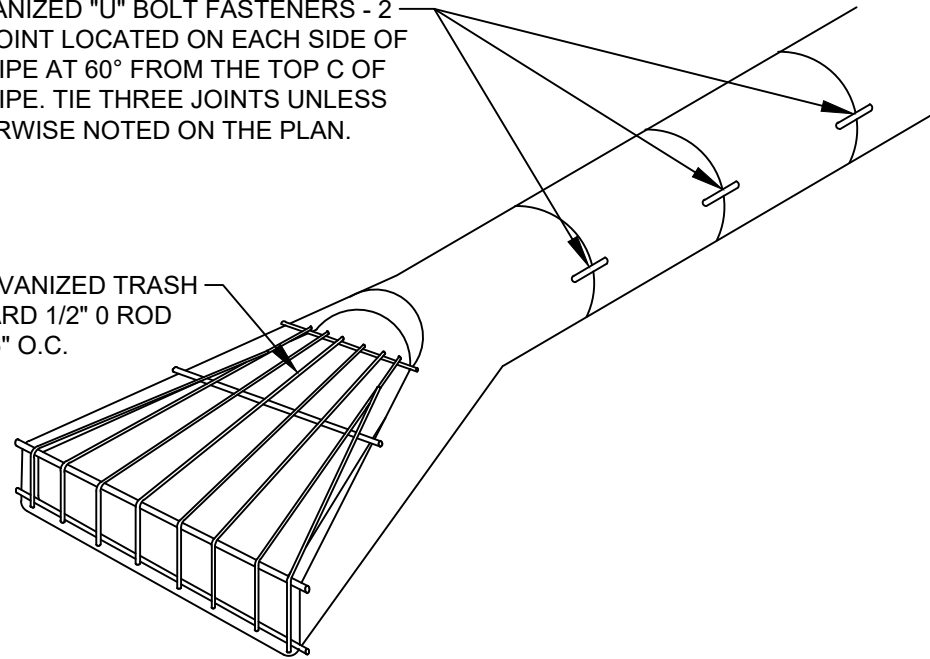
FEBURARY
2023

STANDARD
PLATE NO.

2430

GALVANIZED "U" BOLT FASTENERS - 2
PER JOINT LOCATED ON EACH SIDE OF
THE PIPE AT 60° FROM THE TOP C OF
THE PIPE. TIE THREE JOINTS UNLESS
OTHERWISE NOTED ON THE PLAN.

GALVANIZED TRASH
GUARD 1/2" Ø ROD
AT 6" O.C.



SEE DETAIL FOR RIPRAP
AT R.C.P. APRONS.

"U" BOLT REQUIREMENTS		
PIPE SIZE	BOLT DIA.	WIDTH
21" & LESS	1/2"	24"
24" TO 36"	5/8"	24"
42" TO 54"	3/4"	24"
60" & GREATER	1"	24"

CONCRETE FLARED END APRON



CONCRETE FLARED END APRON DETAIL

DATE OF
REVISION

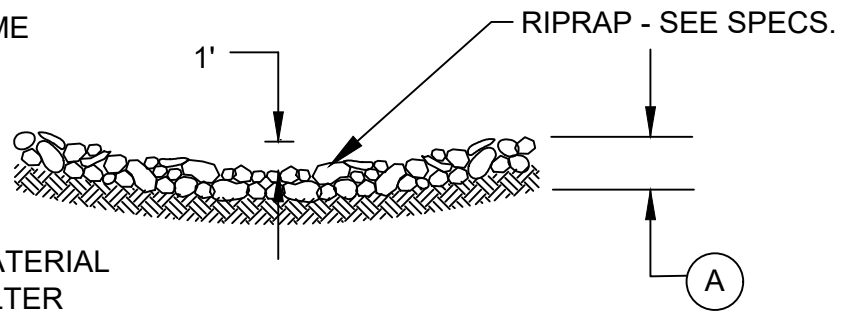
FEBURARY
2023

STANDARD
PLATE NO.

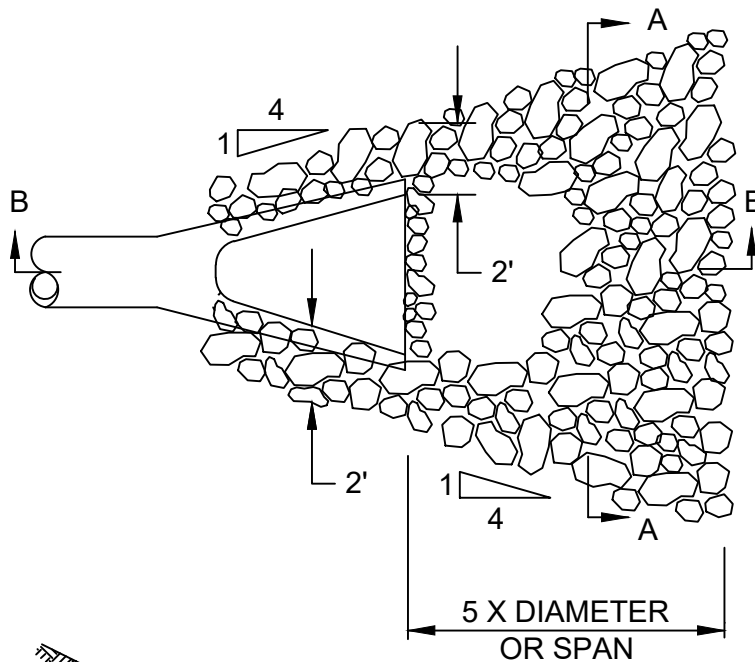
2440

- (A) SEE MNDOT STANDARD
PLATE 3133C FOR
DEPTH AND VOLUME
OF RIPRAP REQ'D.

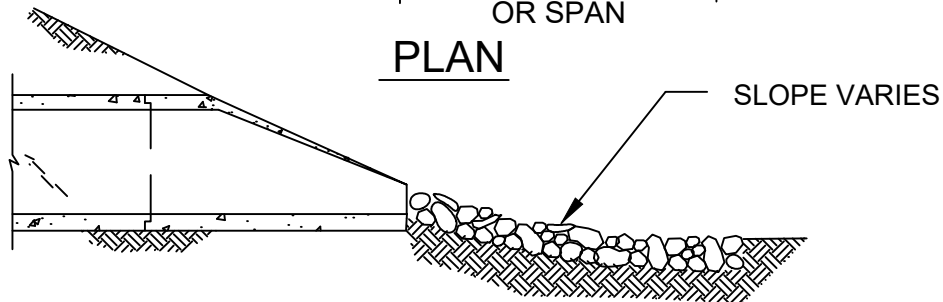
GEOTEXTILE FABRIC MATERIAL
SHALL BE USED FOR FILTER
BLANKET.



SEC. A-A



PLAN



SEC. B-B

RIPRAP AT R.C.P. APRONS



RIPRAP AT R.C.P.
APRON DETAIL

DATE OF
REVISION

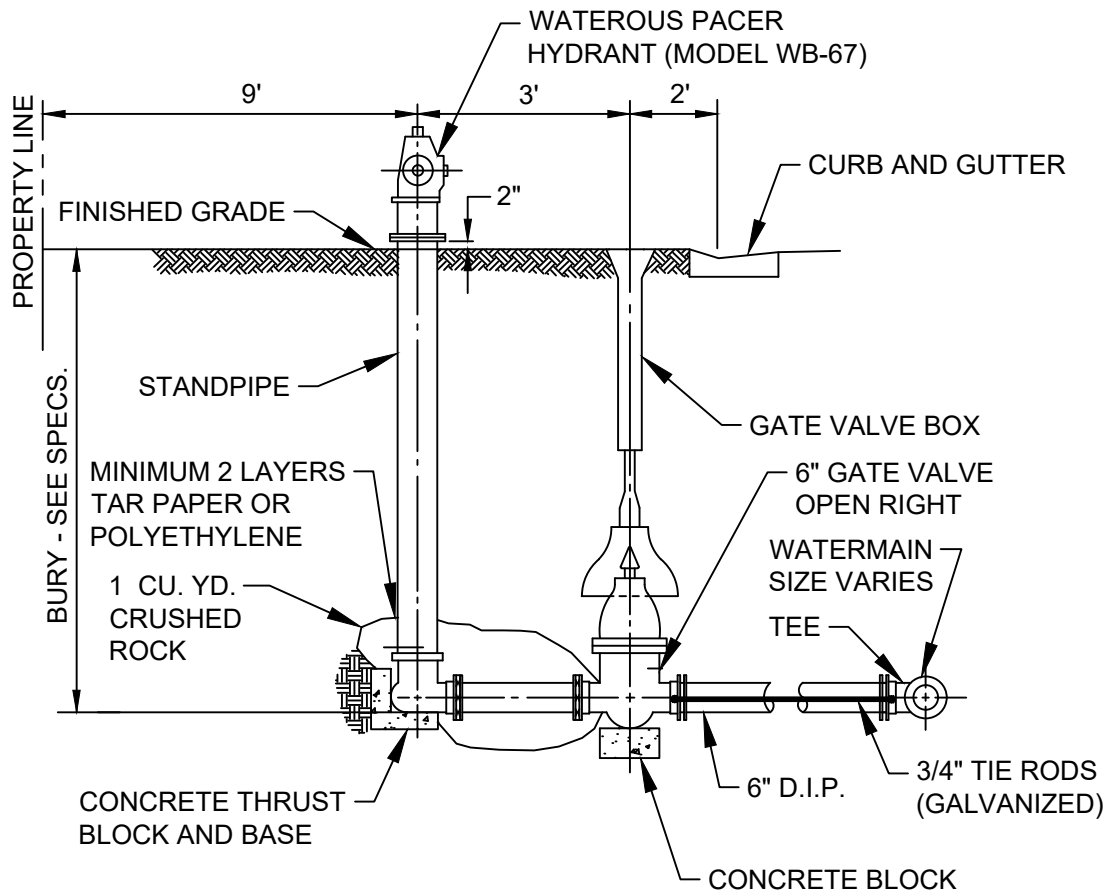
FEBURARY
2023

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PLATE NO.

2450

GEOTEXTILE FABRIC MATERIAL
SHALL BE USED FOR FILTER
BLANKET.

ALL GATE VALVES SHALL OPEN RIGHT



HYDRANT (& GATE VALVE) INSTALLATION



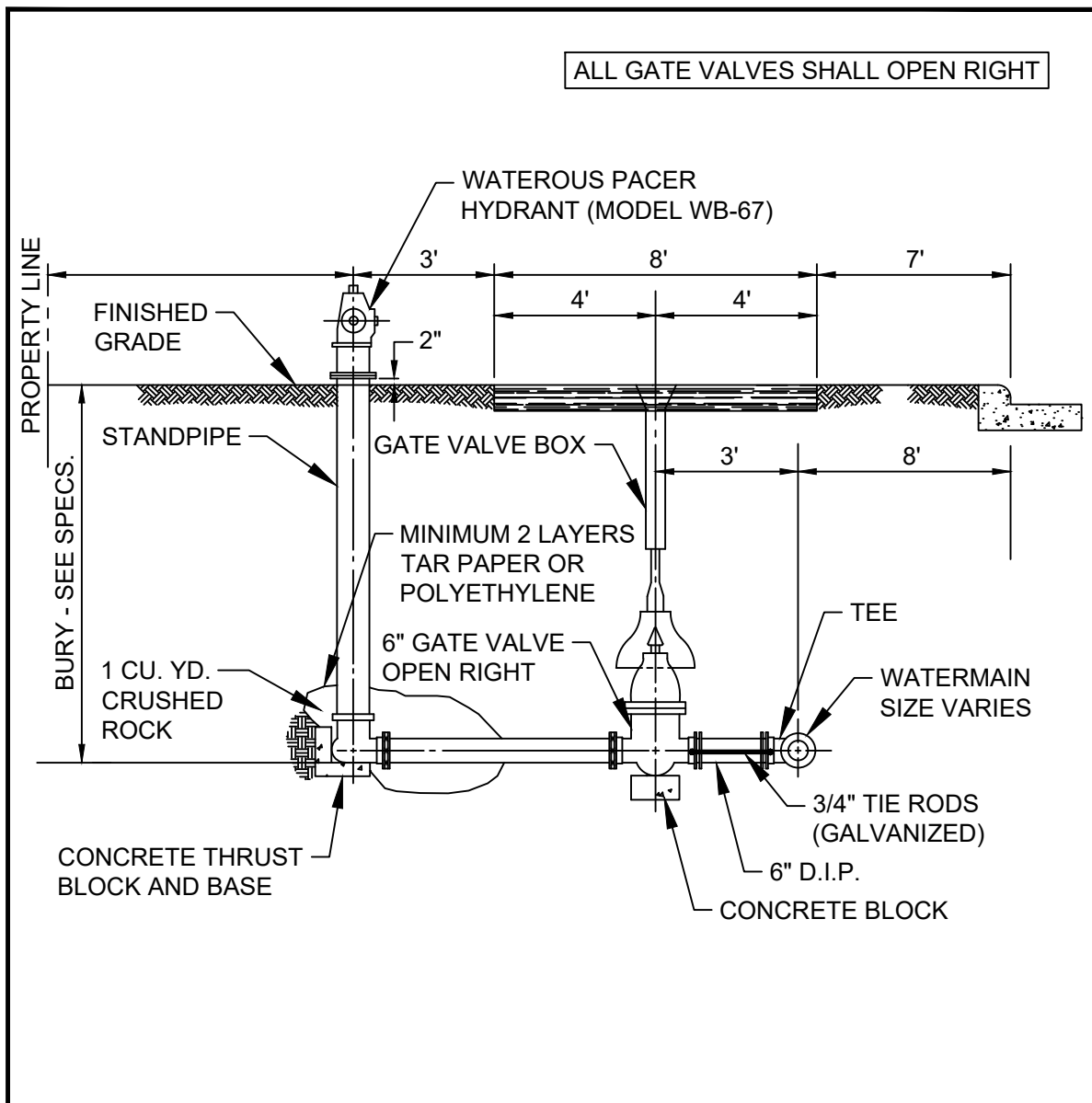
HYDRANT DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

3100



HYDRANT (& GATE VALVE) INSTALLATION



HYDRANT DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

3110



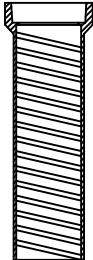
DROP LID

Tyler No. 6860
Mueller No. H-10361
Bibby-Ste-Croix No. B-5160

ALL GATE VALVES SHALL OPEN RIGHT



7.5' MINIMUM COVER
REQUIRED OVER TOP
OF WATER MAIN.



TOP

Tyler No. 6860 26"
Mueller No. H-10361 26"
Bibby-Ste-Croix No. VB502 27"

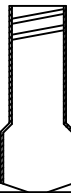
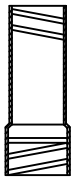
ADJUST TOP TO 1/2"
BELOW GRADE. BOX
TO BE SET TO PROVIDE
12" OF ADJUSTMENT.

EXTENSION

Tyler No. 58 14"
No. 59 18"
No. 60 24"
Mueller No. 58 14"
No. 59 20"
Bibby-Ste-Croix
VB520 No. 57 9"
VB521 No. 58 14"
VB522 No. 59 20"
VB523 No. 60 26"

Tyler No. 6860
Mueller No. H-10357
Bibby-Ste-Croix B-5001

Gate valve box, screw type,
3 piece, 5 1/4" shaft,
size G box, 7'-6" extended,
#6 round base

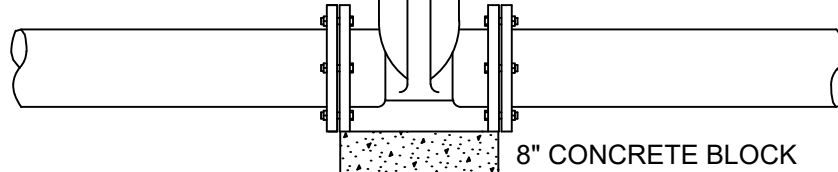
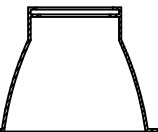


BOTTOM

Tyler No. 6860 65"
Mueller No. H-10361 65"
Bibby-Ste-Croix No. VB516 60"

VALVE TO OPEN RIGHT
(CLOCKWISE).

BASE



GATE VALVE AND BOX INSTALLATION



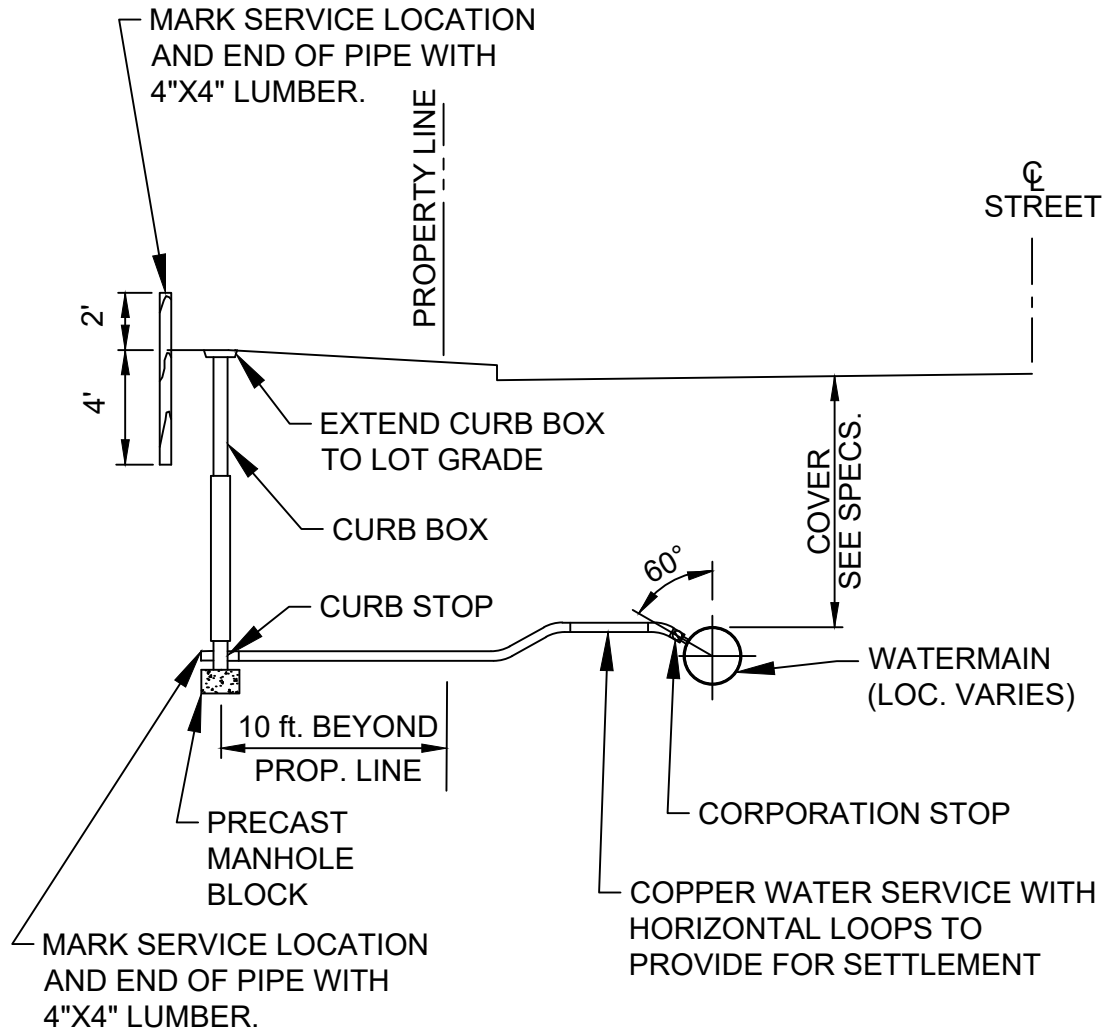
GATE VALVE AND BOX INSTALLATION

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

3120



NOTES:

1. SEE SPECS FOR SIZE & TYPE OF MATERIALS.
2. MAINTAIN 18" VERTICAL & 24" HORIZONTAL SEPARATION BETWEEN SEWER & WATER SERVICE LINES.

WATER SERVICE CONNECTION



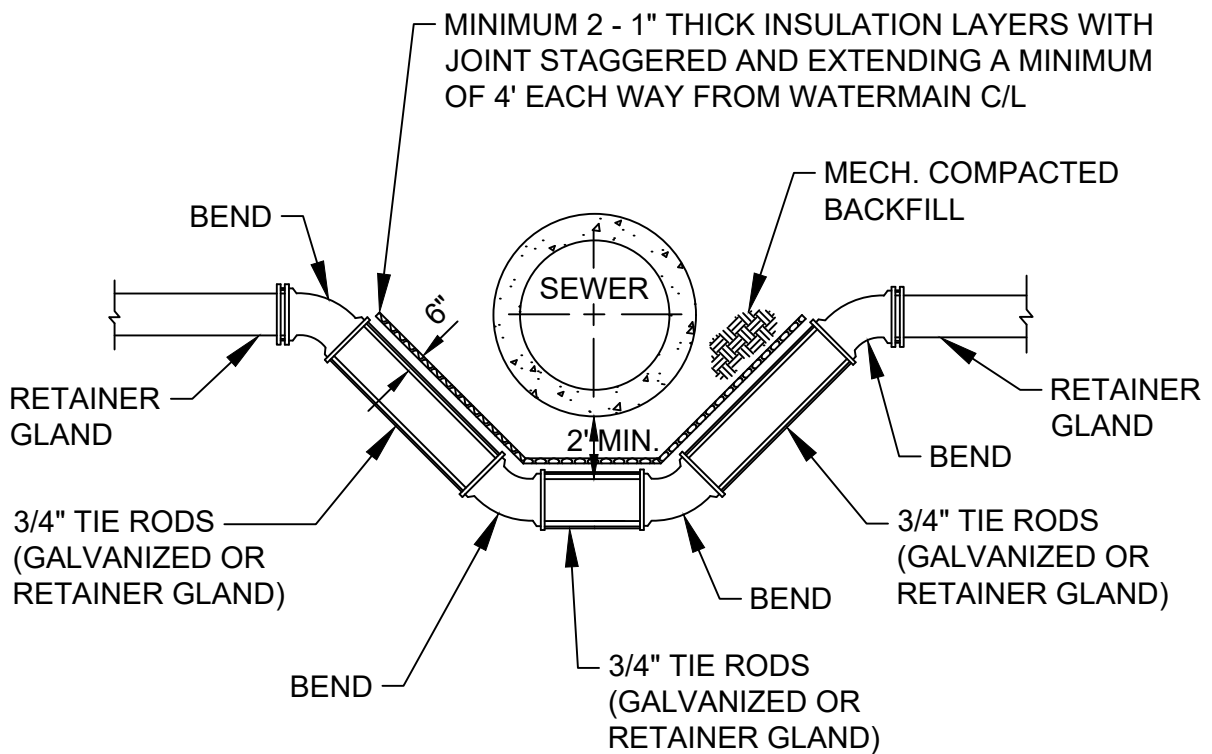
WATERMAIN SERVICE CONNECTION

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

3130



WATERMAIN CROSSING



WATERMAIN CROSSING

DATE OF
REVISION

FEBURARY
2023

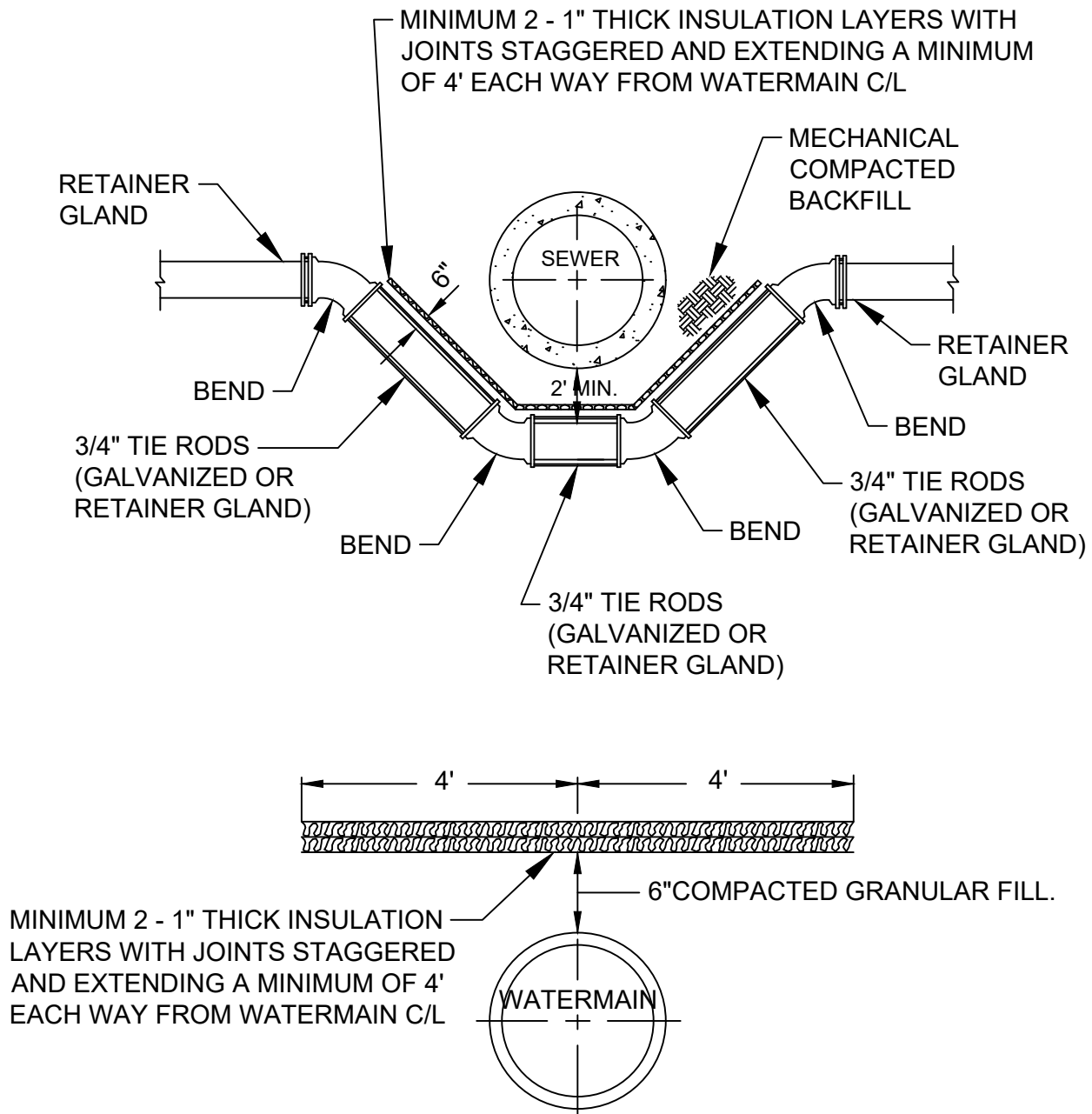
STANDARD
PLATE NO.

3140



The logo for Stillwater, Minnesota, features the word "Stillwater" in a large, elegant, blackletter-style font. Below the name is a decorative, flowing banner that curves under the text. Underneath the banner, the words "THE BIRTHPLACE OF MINNESOTA" are written in a smaller, bold, sans-serif, all-caps font.

3150



WATERMAIN INSULATION



**WATERMAIN
INSULATION**

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

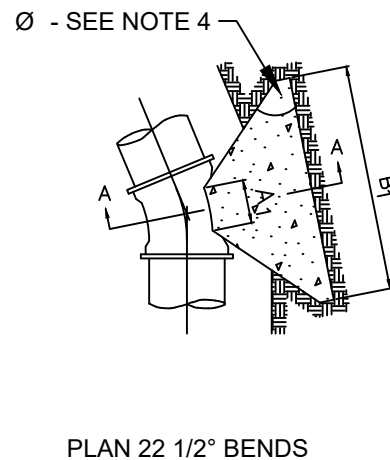
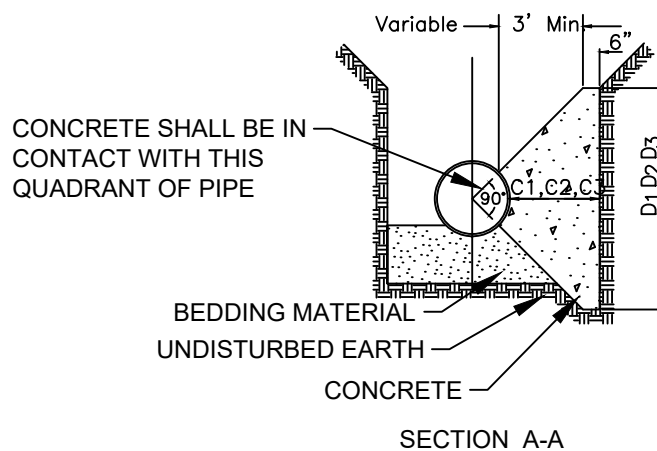
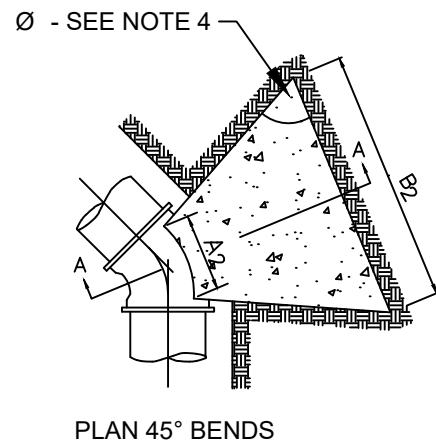
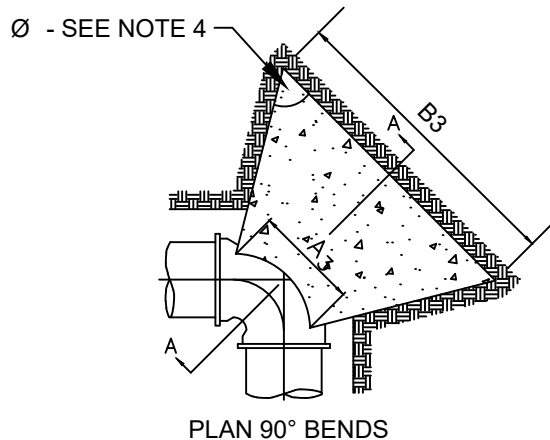
3160

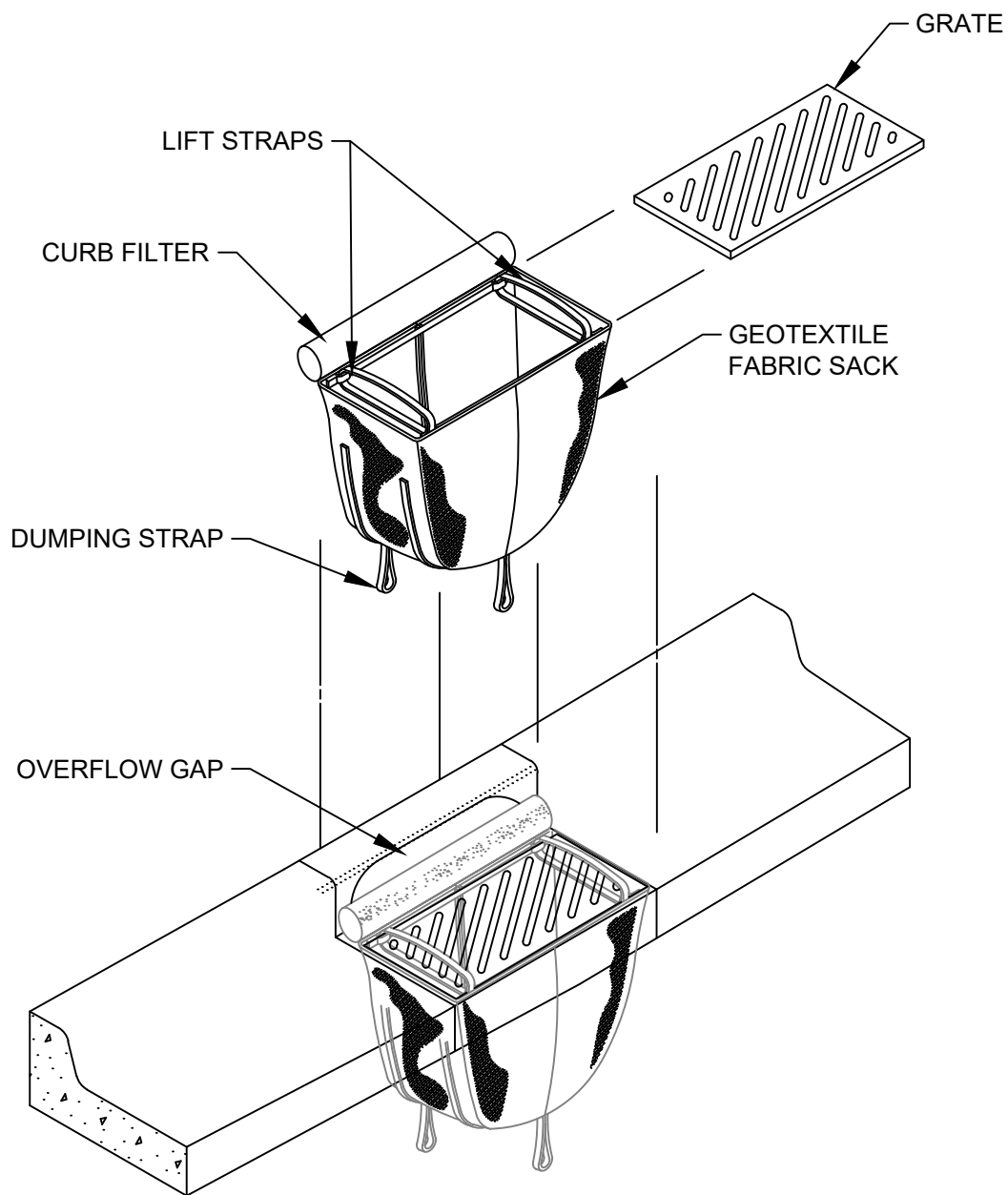
NOTES:

1. SHAPE OF BACK OF BUTTRESS MAY VARY AS LONG AS POURED AGAINST FIRM UNDISTURBED EARTH.
2. DIMENSION C1,C2,C3 SHOULD BE LARGE ENOUGH TO MAKE ANGLE \emptyset EQUAL TO OR LARGER THAN 45° .
3. DIMENSION A1,A2,A3 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH MJ BOLTS.
4. $\emptyset = 45^{\circ}$ MINIMUM.
5. PLACE POLYETHYLENE BETWEEN CONCRETE & PIPE.

BUTTRESS DIMENSIONS

PIPE SIZE	22 1/2° BEND		45° BEND		90° BEND	
	B1	D1	B2	D2	B3	D3
6"	1'-5"	1'-5"	1'-5"	1'-5"	2'-1"	1'-6"
8"	1'-5"	1'-5"	2'-1"	1'-6"	2'-8"	2'-0"
12"	1'-10"	1'-10"	3'-4"	2'-0"	4'-9"	2'-6"
16"	3'-0"	2'-0"	3'-10"	3'-0"	6'-2"	3'-6"
20"	3'-6"	2'-8"	5'-6"	3'-4"	8'-4"	4'-0"
24"	4'-4"	3'-0"	6'-10"	3'-10"	9'-8"	5'-0"
30"	-	-	9'-3"	6'-0"	17'-0"	6'-0"





* INSTALL CATCH BASIN INLET PROTECTION
DEVICE MANUFACTURED BY DANDY
PRODUCTS OR APPROVED EQUAL.



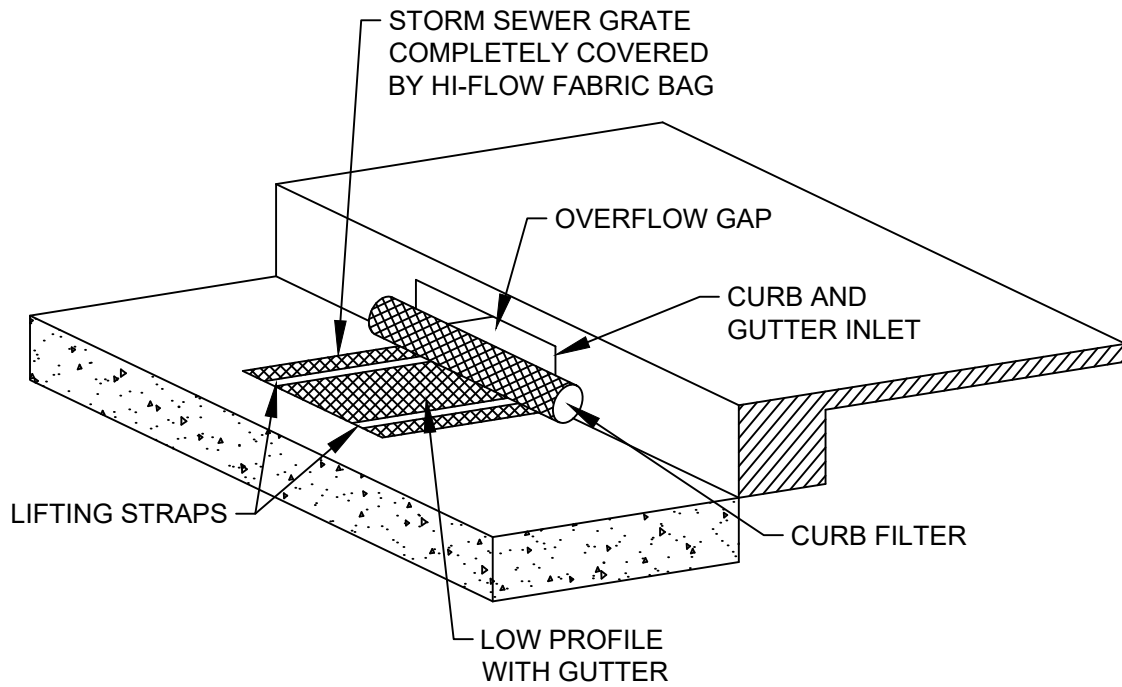
CATCH BASIN EROSION CONTROL DETAIL 1

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

4100



* INSTALL CATCH BASIN INLET PROTECTION
DEVICE MANUFACTURED BY DANDY
PRODUCTS OR APPROVED EQUAL.



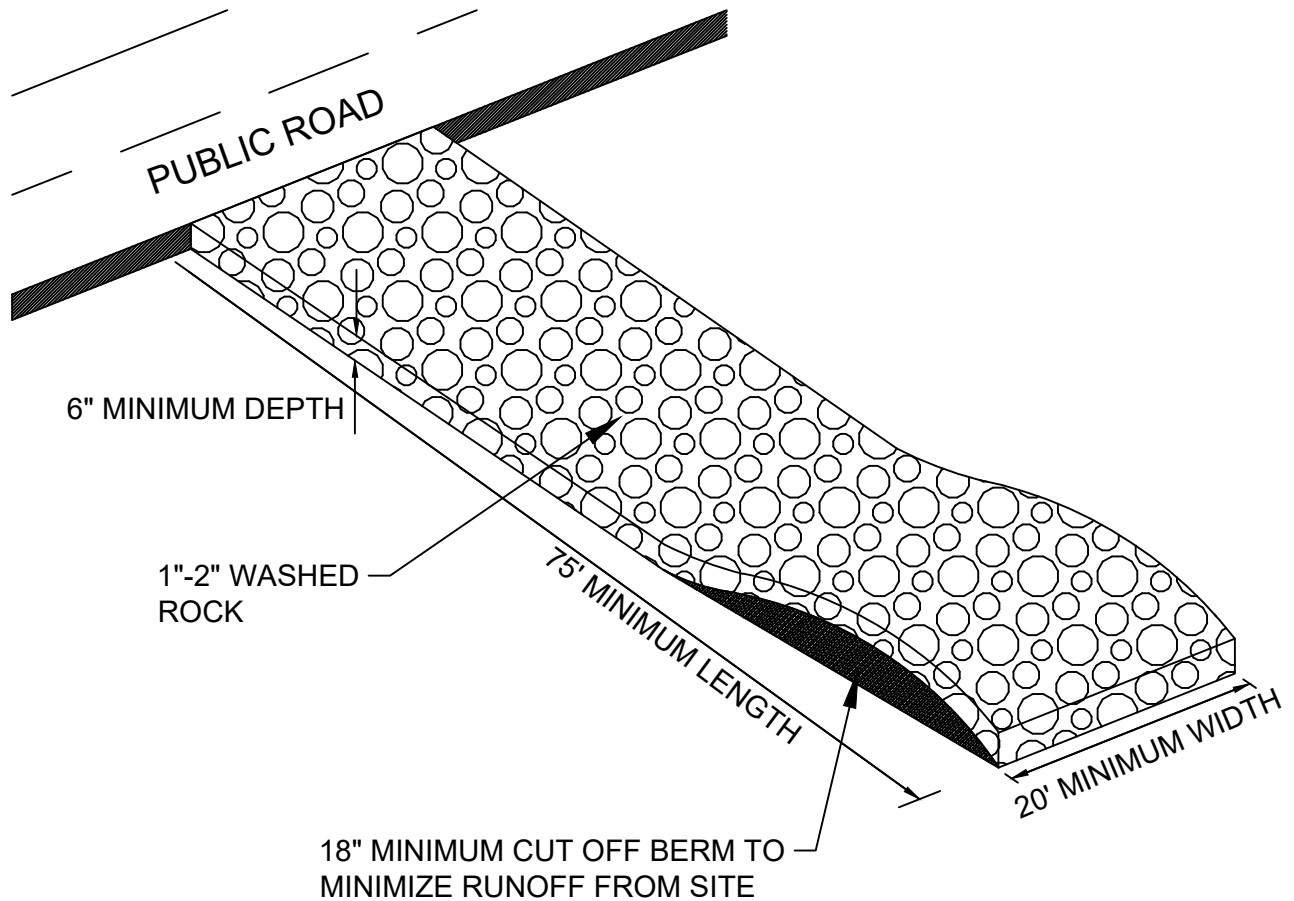
CATCH BASIN EROSION CONTROL DETAIL 2

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

4110



*FILTER FABRIC SHALL BE PLACED UNDER ROCK TO STOP MUD MIGRATION THROUGH ROCK.



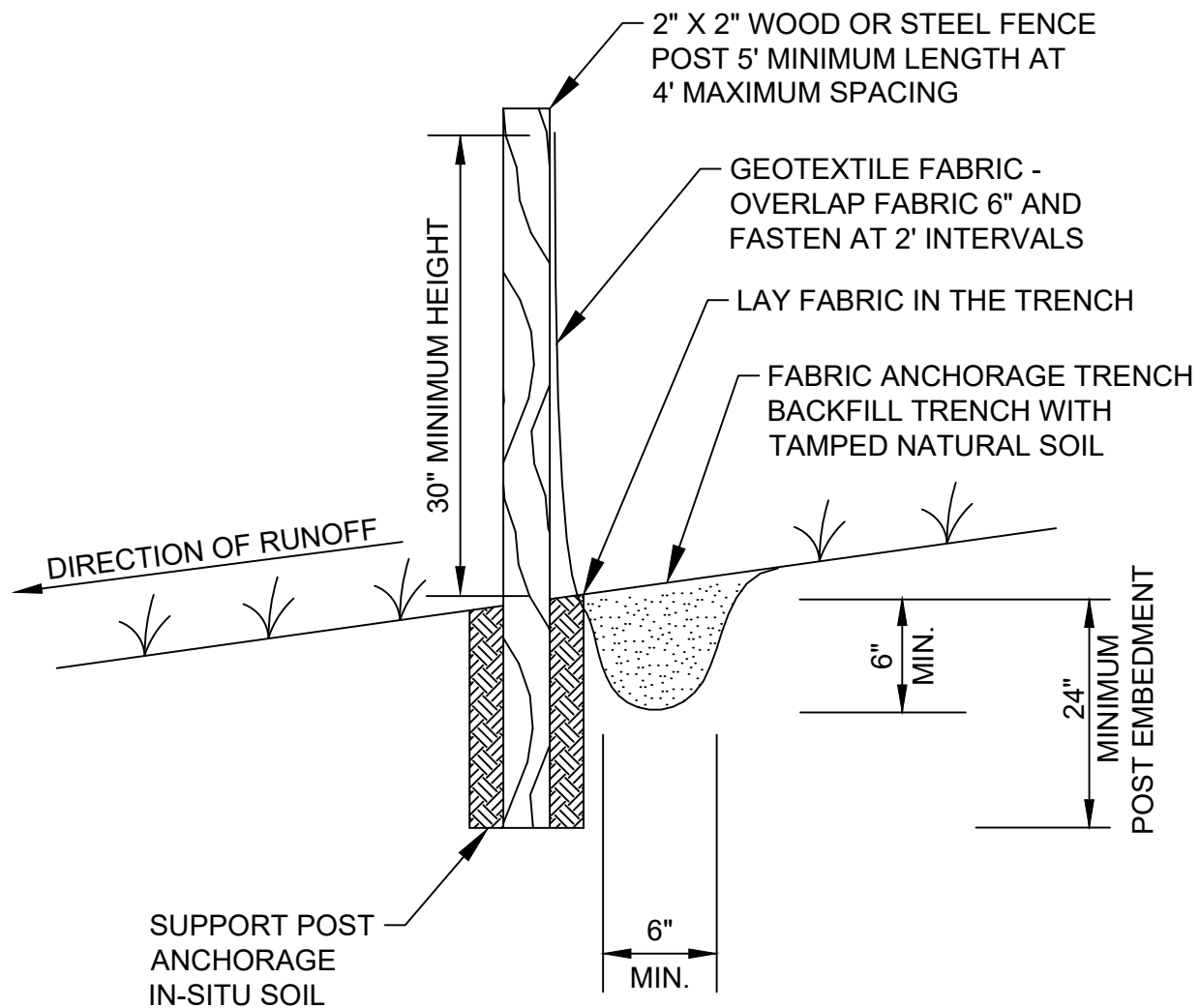
ROCK CONSTRUCTION ENTRANCE DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

4120



NOTE:
ATTACH FABRIC TO SUPPORT POSTS WITH LATH AND STAPLES



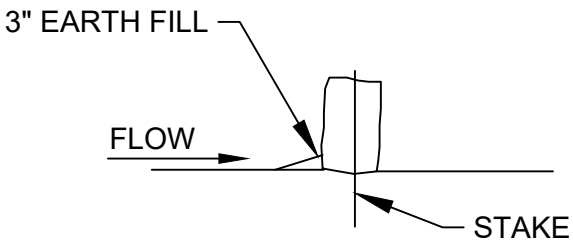
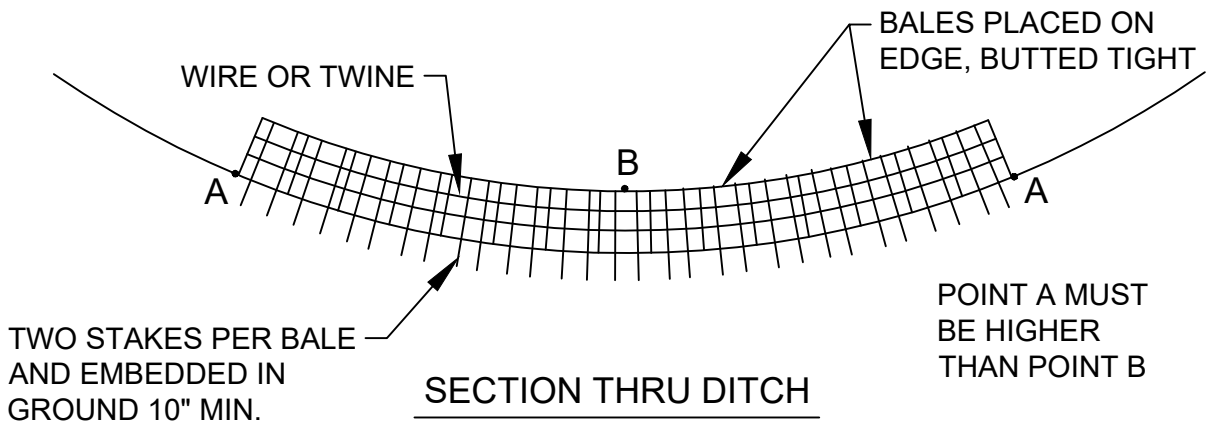
SILT FENCE DETAIL

DATE OF
REVISION

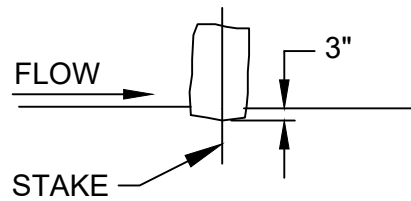
FEBURARY
2023

STANDARD
PLATE NO.

4130



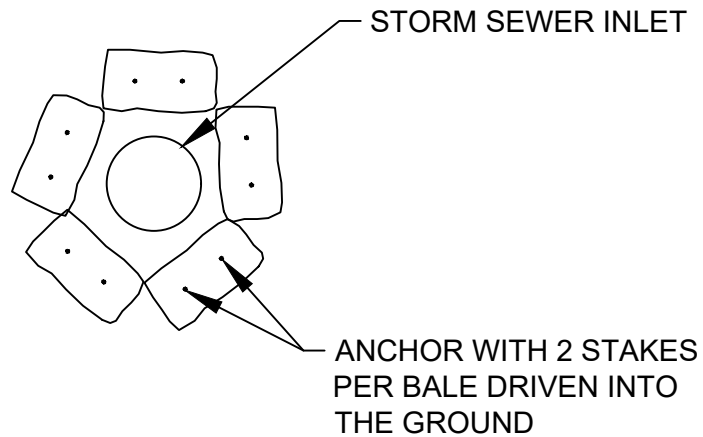
OPTION 1



OPTION 2

SECTIONS

HAY OR STRAW BALE DITCH CHECK



STORM SEWER INLET PROTECTION



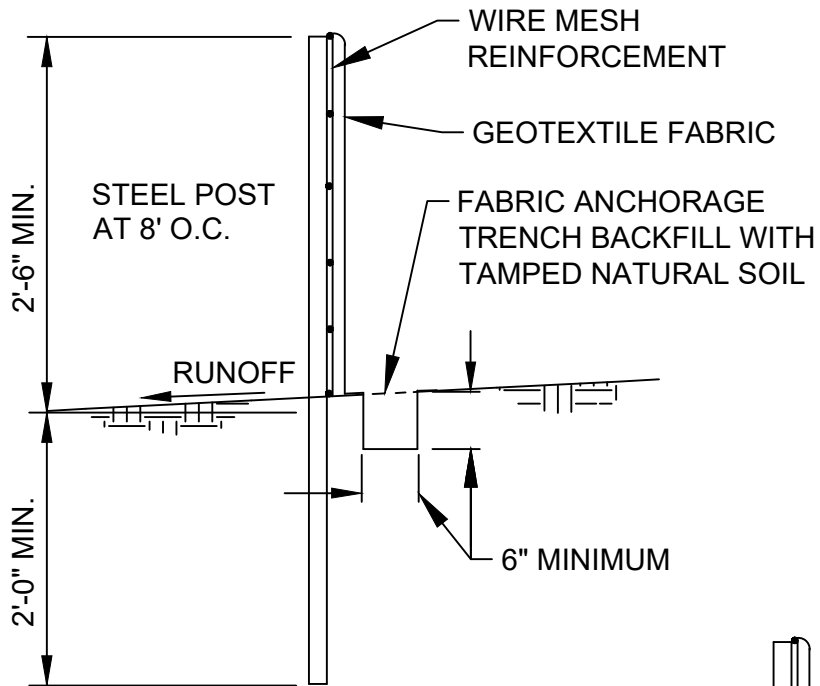
EROSION CONTROL
DETAIL

DATE OF
REVISION

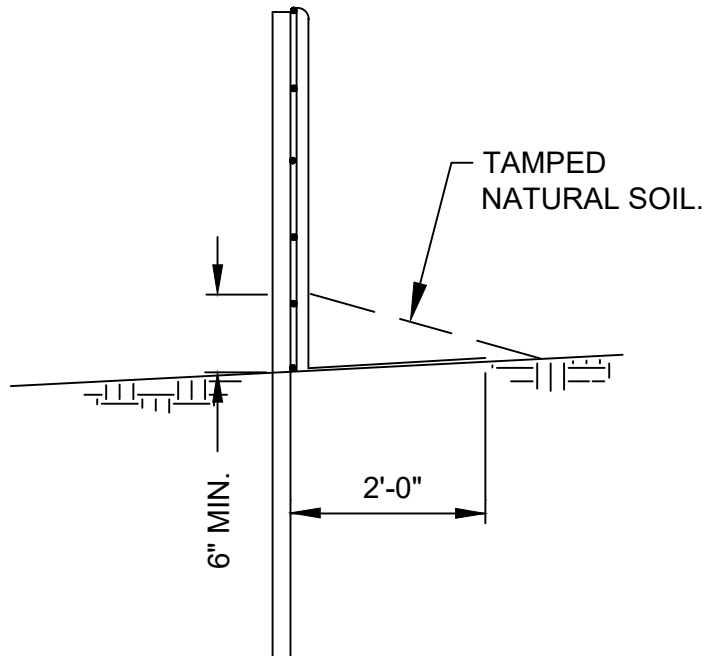
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STANDARD
PLATE NO.

4140



OPTION 1



OPTION 2



SILT FENCE - HEAVY DUTY DETAIL

DATE OF
REVISION

FEBURARY
2023

STANDARD
PLATE NO.

4150