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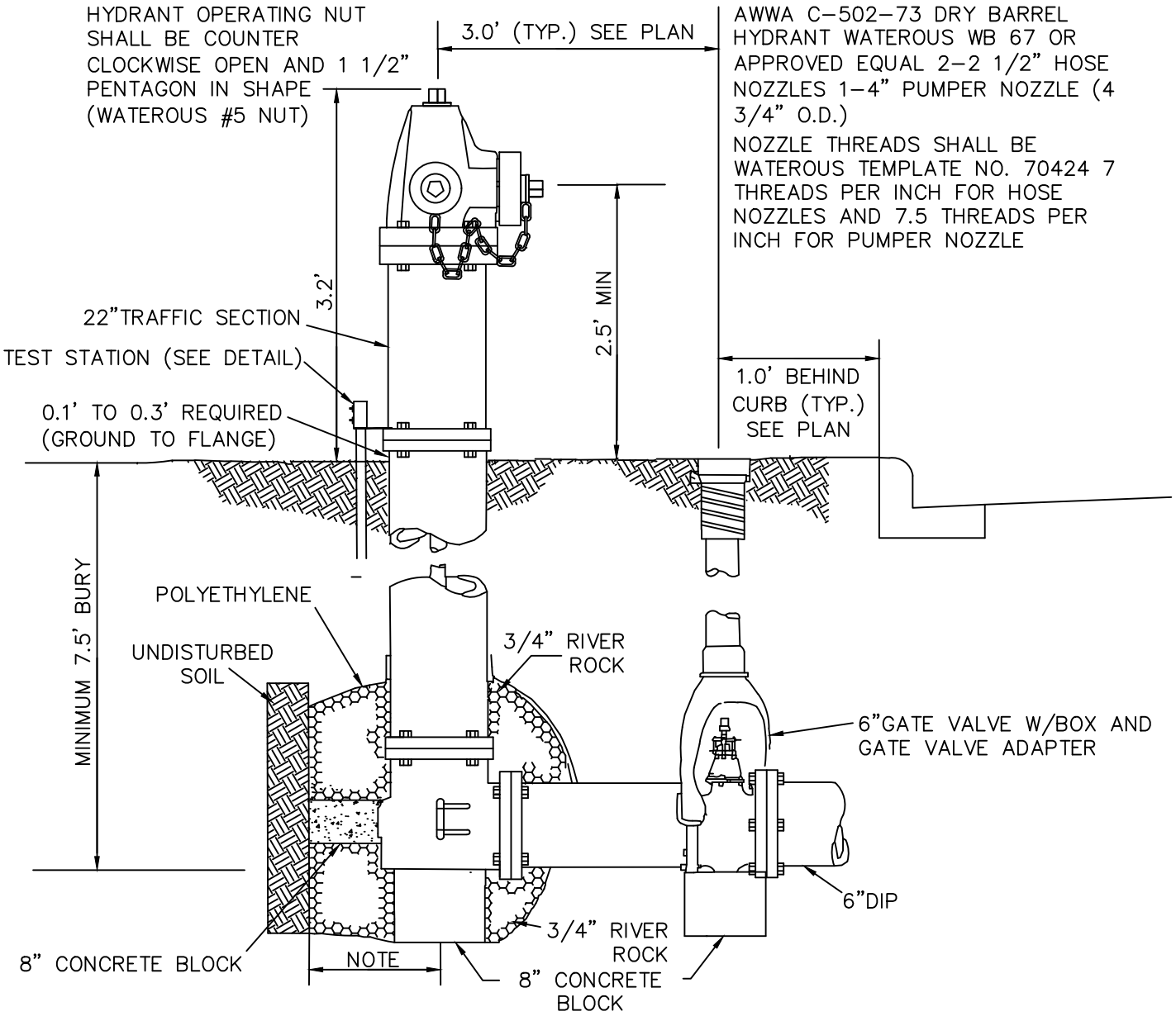

NOTES:

1. IF THIS DIMENSION EXCEEDS 3' THE HYDRANT AND VALVE SHALL BE TIED TO THE WATERMAIN WITH ROD TIES.
2. ROD-TIES AND REACTION BACKING WILL BE REQUIRED ON ALL HYDRANT LEADS CONTAINING SLIP JOINTS
3. TIE ALL JOINTS WITH MEGALUGS

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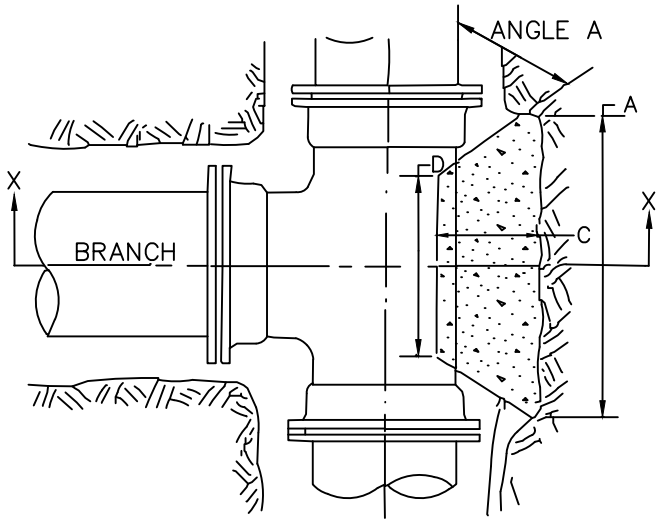
HYDRANT INSTALLATION

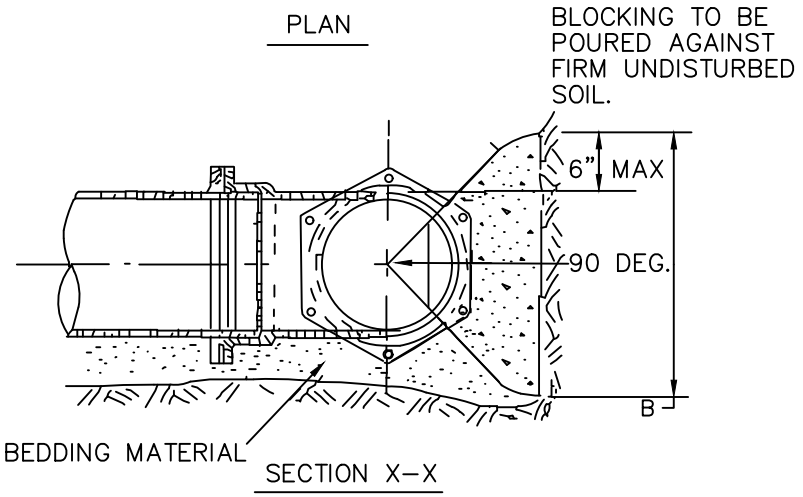
Revised: JANUARY, 2024

Plate NO. 300-1



PLAN

BLOCKING DIMENSIONS				
O.D.	A	B	C	D
6"	1'–3"	1'–6"	SEE NOTE 1.	SEE NOTE 2.
8"	1'–6"	2'–0"		
12"	2'–3"	3'–6"		
16"	3'–2"	4'–0"		



SECTION X–X

1. DIMENSION "C" SHOULD BE LARGE ENOUGH TO MAKE ANGLE "A" EQUAL TO OR LARGER THAN 45 DEG.
2. DIMENSION "D" SHOULD BE AS LARGE AS POSSIBLE BUT CONCRETE SHOULD NOT INTERFERE WITH MECHANICAL JOINTS
3. CONCRETE SHOULD BEAR ON THIS QUADRANT OF PIPE AS A MINIMUM.
4. CONCRETE BLOCKING DIMENSIONS ARE BASED ON A SOIL RESISTANCE OF TWO TONS PER SQ. FT. AND A WATER PRESSURE OF 150 PSI.
5. 5 BAGS OF MIXED CONCRETE TO BE USED AS BLOCKING.
6. REACTION BACKING USING CONCRETE, WOOD, RETAINER GLANDS, ROD TIES, ETC SHALL BE INCLUDED AS A PART OF INSTALLING THE WATERMAIN. NO SEPARATE COMPENSATION SHALL BE MADE.

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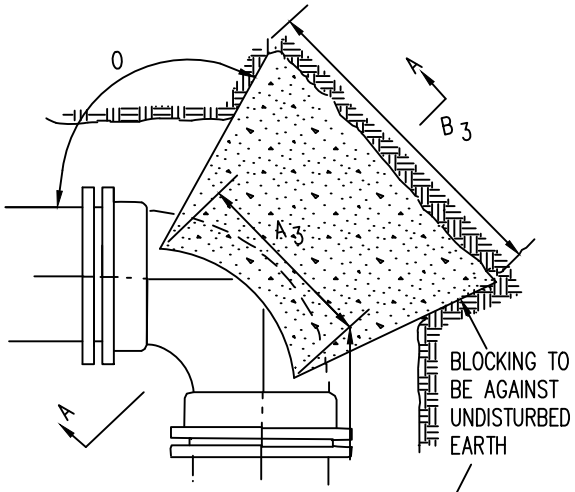
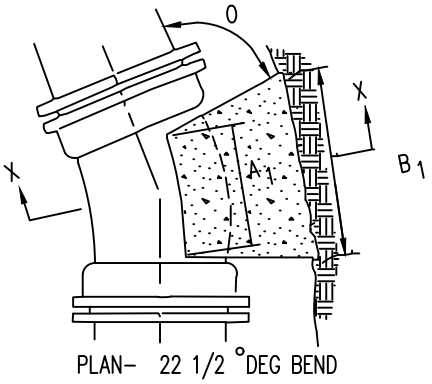
CONCRETE BLOCKING FOR TEES

Revised:
JANUARY, 2024

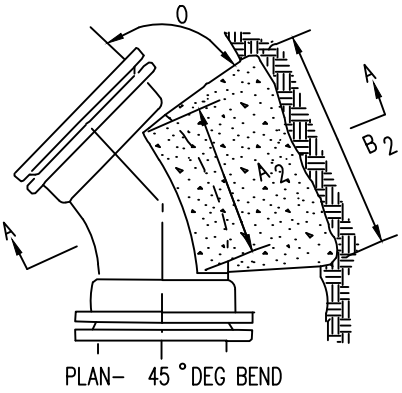
Plate NO.
300-2



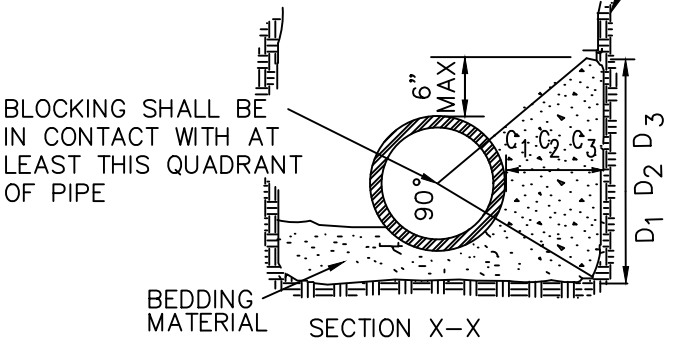
PLAN– 90 DEG BEND



PLAN– 22 1/2 °DEG BEND



PLAN– 45 °DEG BEND



SECTION X–X

BLOCKING DIMENSIONS						
SIZE	22 1/2 DEG		45 DEG		90 DEG	
	B1	D1	B2	D2	B3	D3
6"	1'–0"	1'–0"	1'–0"	1'–0"	1'–8"	1'–3"
8"	1'–0"	1'–0"	1'–6"	1'–4"	2'–0"	1'–6"
12"	1'–6"	1'–4"	2'–0"	2'–0"	3'–0"	2'–8"
16"	2'–0"	1'–8"	3'–0"	2'–6"	4'–0"	3'–10"

NOTES:

1. DIMENSIONS IN TABLE ARE BASED ON WATER PRESSURE OF 150 PSI AND AN EARTH RESISTANCE OF TWO TONS PER SQ. FT.
2. DIMENSION C1, C2, C3, SHOULD BE LARGE ENOUGH TO MAKE ANGLE O EQUAL TO OR LARGER THAN 45 DEG.
3. DIMENSION A1, A2, A3 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH MECHANICAL JOINT BOLTS.
4. SHAPE OF BACK OF CONCRETE BLOCKING MAY VARY AS LONG AS POUR IS AGAINST FIRM UNDISTURBED EARTH.
5. 5 BAG MIX CONCRETE TO BE USED FOR BLOCKING.
6. FOR LOOSE SANDY SOILS INCREASE ALL DIMENSIONS TO 6 INCHES.
7. REACTION BACKING USING CONCRETE, WOOD, RETAINER GLANDS, ROD TIES, ETC SHALL BE INCLUDED AS A PART OF INSTALLING THE WATERMAIN. NO SEPARATE COMPENSATION SHALL BE MADE.

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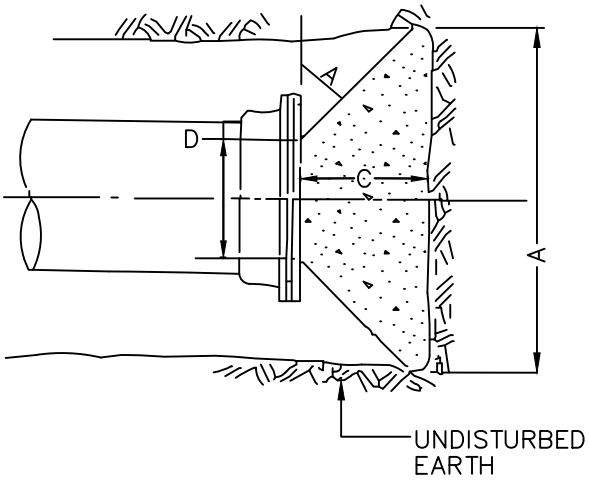
CONCRETE BLOCKING FOR BENDS

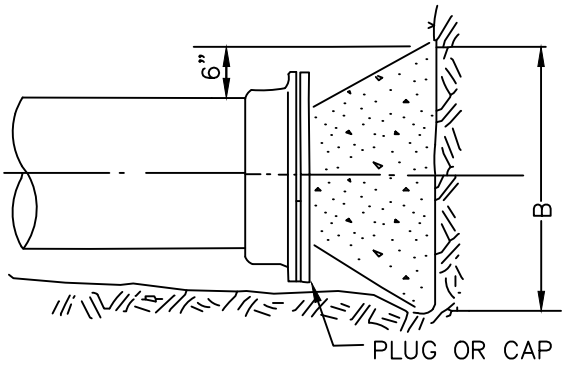
Revised:
JANUARY, 2024

Plate NO.
300-3



PLAN

1. ALL BLOCKING DIMENSIONS ARE BASED ON EARTH RESISTANCE OF TWO TONS PER SQ. FT. AND A WATER PRESSURE OF 150 PSI
2. ALL CONCRETE BLOCKING SHALL BE 5 BAG MIX CONCRETE
3. DIMENSION "C" SHOULD BE LARGE ENOUGH TO MAKE ANGLE "A" LARGER THAN 45 DEG
4. DIMENSION "D" EQUALS APPROX INSIDE DIA LESS TWO INCHES. PREVENT CONCRETE FROM COVERING THE MECHANICAL JOINT BOLTS
5. REACTION BACKING USING CONCRETE, RETAINER GLANDS, ROD TIES, ETC SHALL BE INCLUDED AS A PART OF THE WATERMAIN, NO SEPARATE COMPENSATION SHALL BE MADE.



ELEV–12" AND 16" PIPE

BLOCKING DIMENSIONS				
SIZE	A	B	C	D
4"	14"	12"	14"	12"
6"	20"	12"	20"	12"
8"	26"	16"	26"	12"
10"	30"	20"	30"	12"
12"	30"	24"	30"	12"
16"	40"	32"	40"	16"

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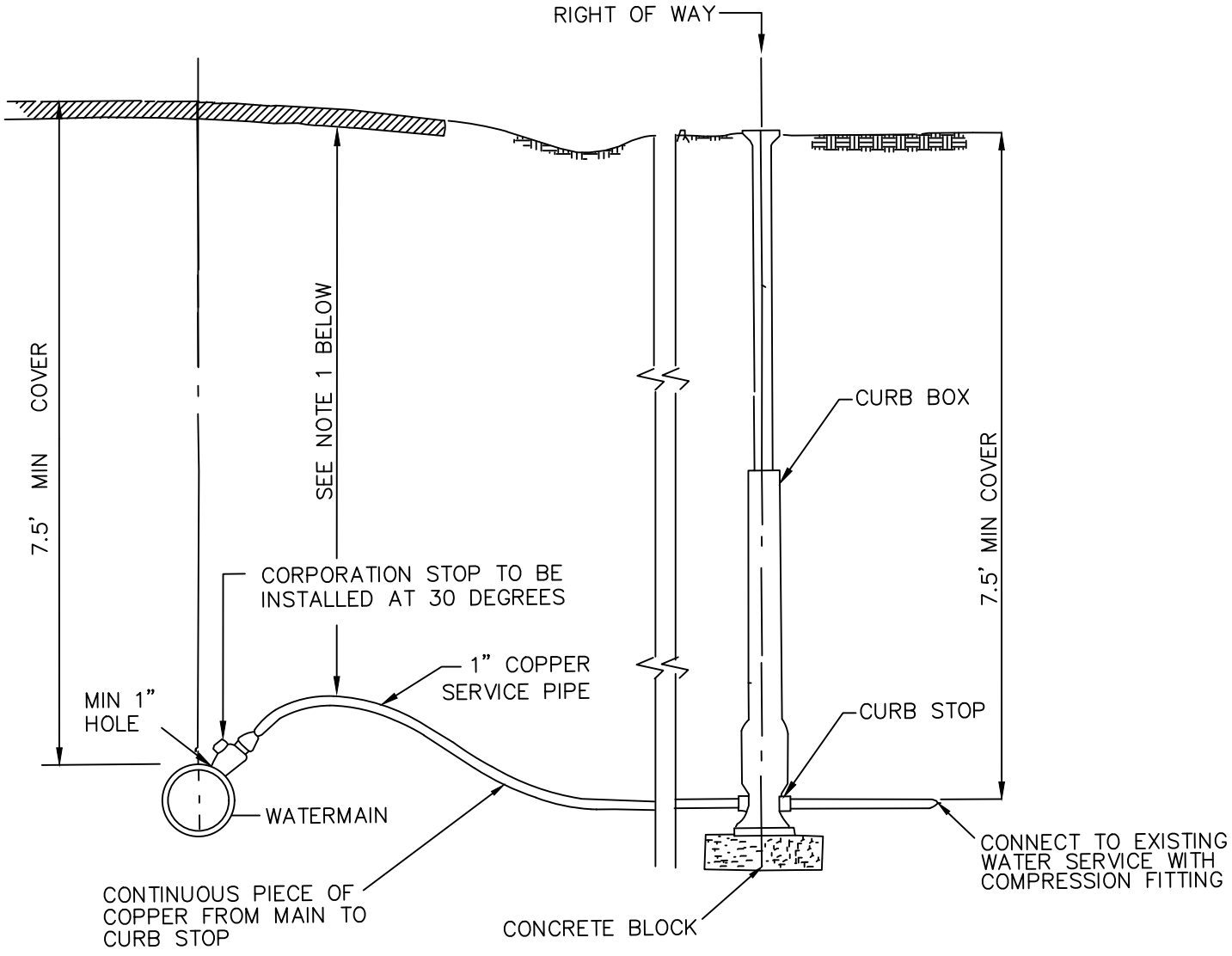
CONCRETE BLOCKING FOR DEAD ENDS

Revised: JANUARY, 2024

Plate NO. 300-4



NOTES:

1. 1' OF SLACK TO ALLOW FOR SETTLEMENT. HORIZONTAL OFFSET MAY HAVE TO BE USED IN SOME PLACES TO INSURE A MINIMUM OF 7.5' COVER OVER SERVICE LINE.
2. BOX MUST BE ADJUSTED SO THAT THE CAP IS NO MORE THAN 2" BELOW FINISHED GRADE. (INCIDENTAL)
3. "A" STYLE TOP HAT CASTING MUST BE FURNISHED AND INSTALLED OVER ALL CURB STOP BOXES THAT ARE LOCATED IN DRIVEWAYS.
4. FOR REPLACEMENT OF EXISTING SERVICE. CONTRACTOR SHALL INSTALL TYPE "K" COPPER OF THE SAME DIAMETER AS EXISTING OR AS DIRECTED BY THE ENGINEER.
5. FOR NEW DEVELOPMENT LOCATE CURB BOXES AS SHOWN IN PLANS. MARK WITH 4X4 POST AT CURB BOX. STUB PIECE OF COPPER WITH PEENED END AFTER CURB STOP

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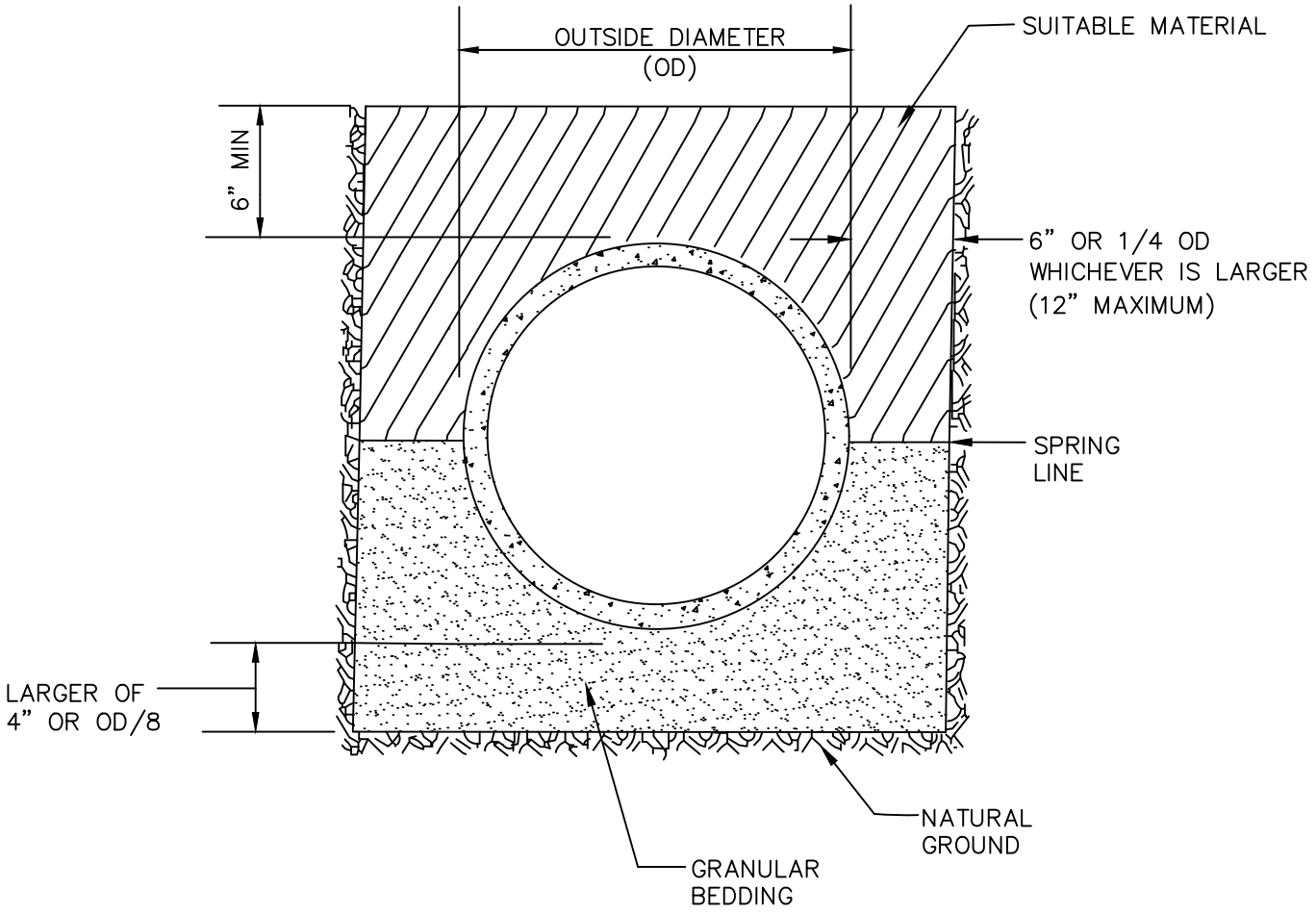
WATER SERVICE CONNECTION

Revised: JANUARY, 2024

Plate NO. 300-5



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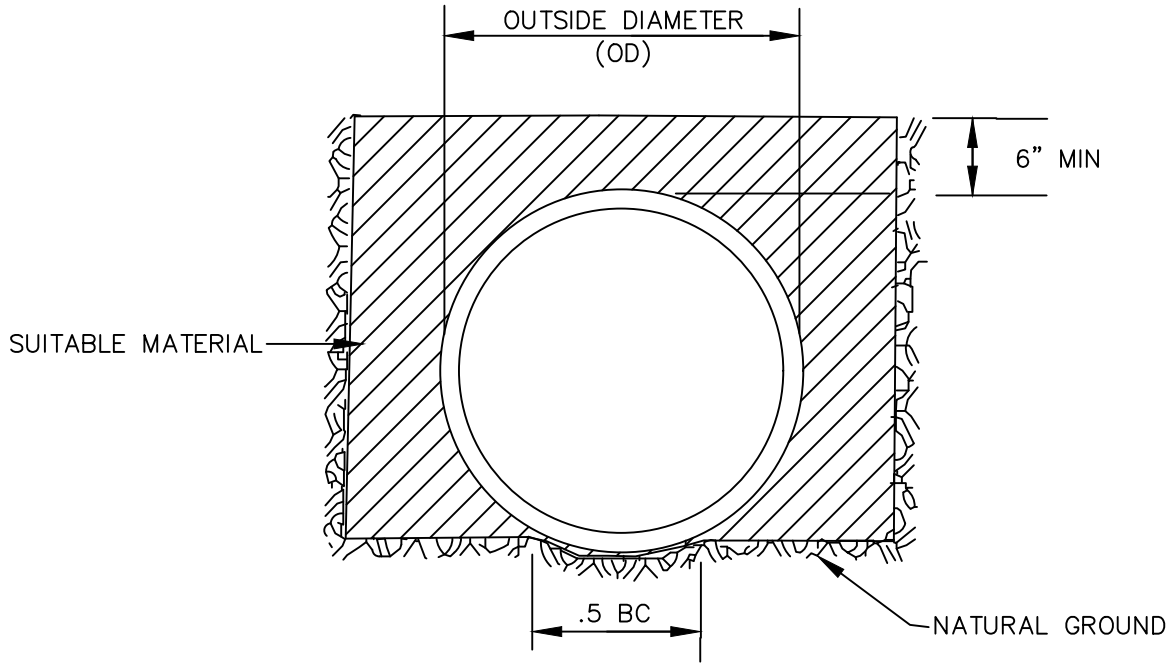
CLASS B
PIPE BEDDING

Revised:
JANUARY, 2024

Plate NO.
300-6



NOTES:

1. THE BOTTOM OF THE TRENCH SHALL BE SHAPED TO FIT THE PIPE BARREL FOR AT LEAST 50% OF THE OUTSIDE DIAMETER. THE REMAINER OF THE PIPE IS SURROUNDED TO A HEIGHT OF AT LEAST 6" ABOVE ITS TOP BY SELECTED FILL MATERIALS PLACED BY HAND TOOLS AND COMPACTED TO COMPLETELY FILL ALL SPACES UNDER AND ADJACENT TO THE PIPE.

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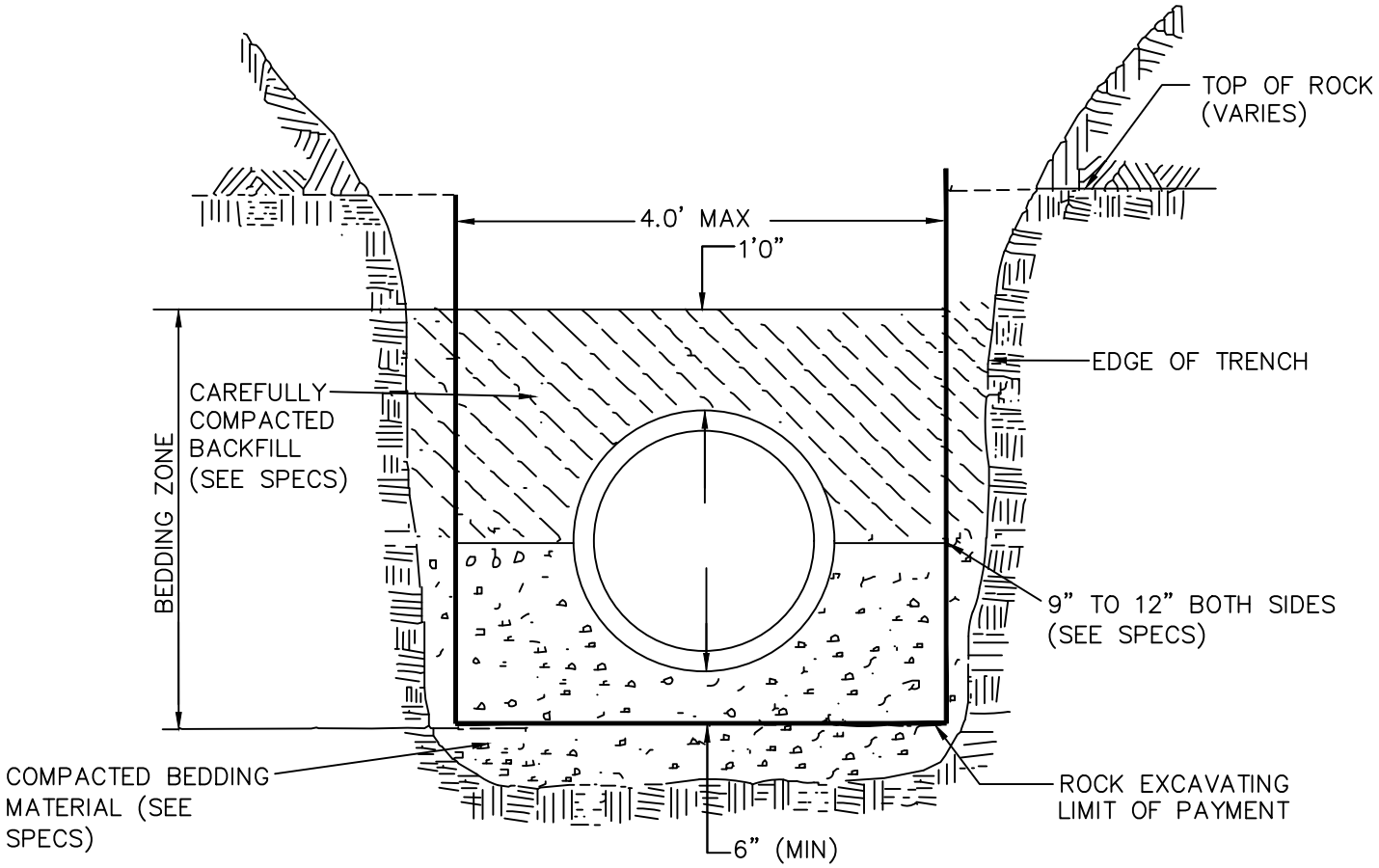
CLASS C PIPE
BEDDING

Revised:
JANUARY, 2024

Plate NO.
300-7



NOTE:

1. REPLACEMENT OF EXCAVATED ROCK SHALL BE WITH SUITABLE GRANULAR BACKFILL MATERIAL

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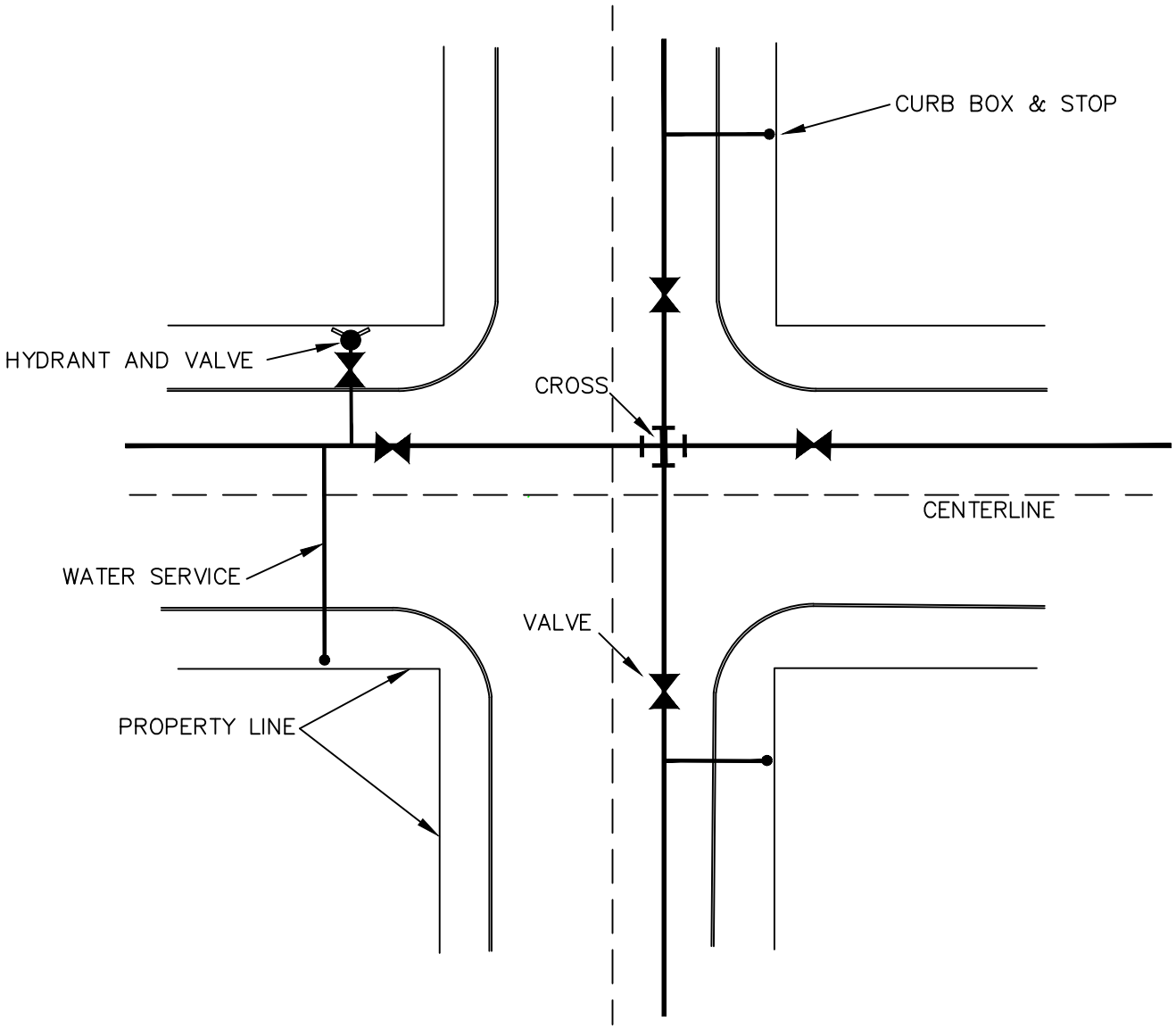
ROCK EXCAVATION DETAIL

Revised:
JANUARY, 2024

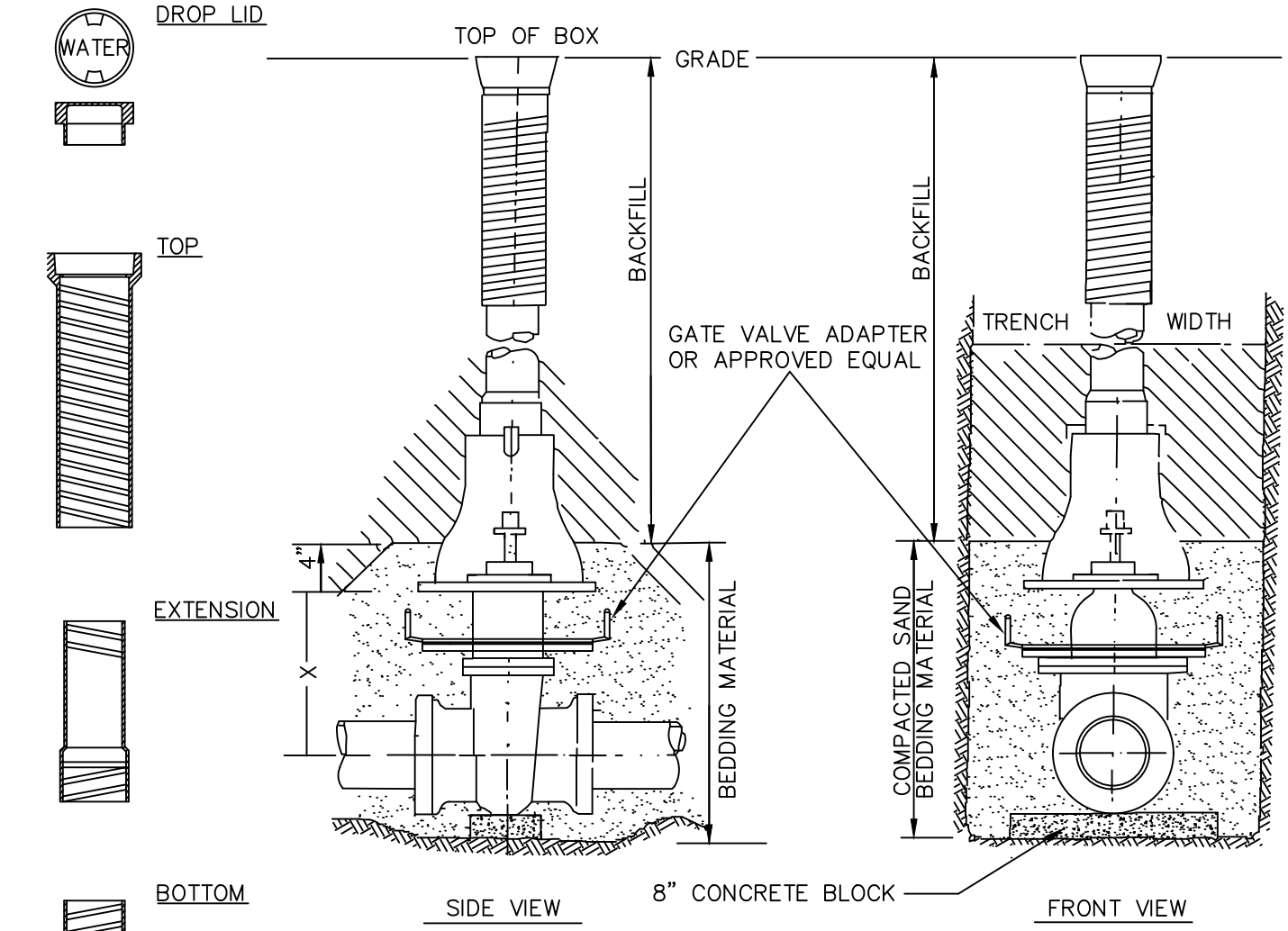
Plate NO.
300-8



NOTES:

1. WATERMAIN SHALL HAVE A MINIMUM OF 10' HORIZONTAL SEPARATION FROM STORM AND SANITARY SEWER.

Since 1857 Hastings MINNESOTA	TYPICAL WATER LAYOUT	Revised: JANUARY, 2024 Plate NO. 300-9



PIPE DIA. INCHES	X=SETTING INCHES
2	6
3	7
4	8
6	12
8	13
12	21
16	30

NOTE:

1. ADJUST TOP OF VALVE BOX TO 3/4" BELOW GRADE. BOX TO BE SET TO PROVIDE 12" OF ADJUSTMENT

Since 1857 Hastings MINNESOTA

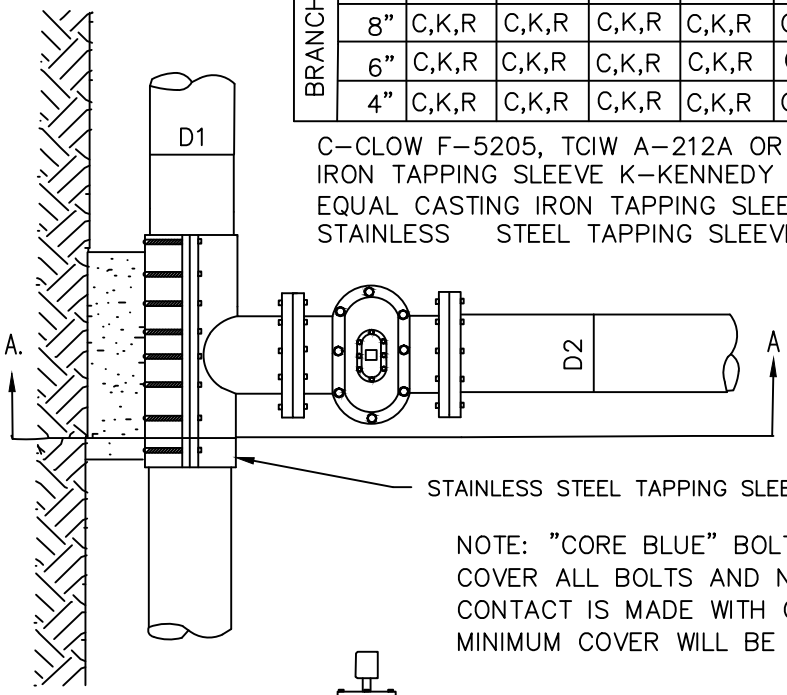
GATE VALVE AND BOX INSTALLATION

Revised: JANUARY, 2024

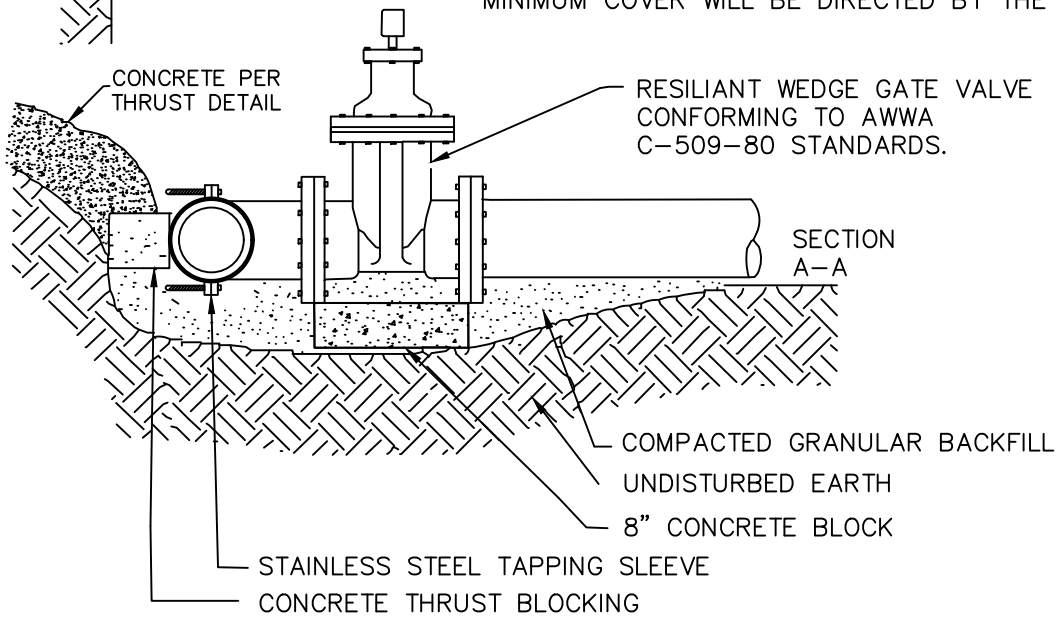
Plate NO. 300-10

BRANCH PIPE "D2"	EXISTING PIPE "D1"						
	18"	16"	14"	12"	10"	8"	6"
12"	C,K,R	C,K,R	C,R	C,R	R	R	R
10"	C,K,R	C,K,R	C,K,R	C,K,R	C,R	R	R
8"	C,K,R	C,K,R	C,K,R	C,K,R	C,K,R	C,R	R
6"	C,K,R	C,K,R	C,K,R	C,K,R	C,K,R	C,K,R	C,R
4"	C,K,R	C,K,R	C,K,R	C,K,R	C,K,R	C,K,R	C,K,R

C–CLOW F–5205, TCIW A–212A OR EQUAL CASTINGS IRON TAPPING SLEEVE K–KENNEDY SQUARE SEAL OR EQUAL CASTING IRON TAPPING SLEEVE R–ROMAC "SST" STAINLESS STEEL TAPPING SLEEVE



NOTE: "CORE BLUE" BOLTS REQUIRED ON ALL BOLTS. COVER ALL BOLTS AND NUTS WITH POLY WHERE CONTACT IS MADE WITH CONCRETE BLOCKING. THE MINIMUM COVER WILL BE DIRECTED BY THE ENGINEER.

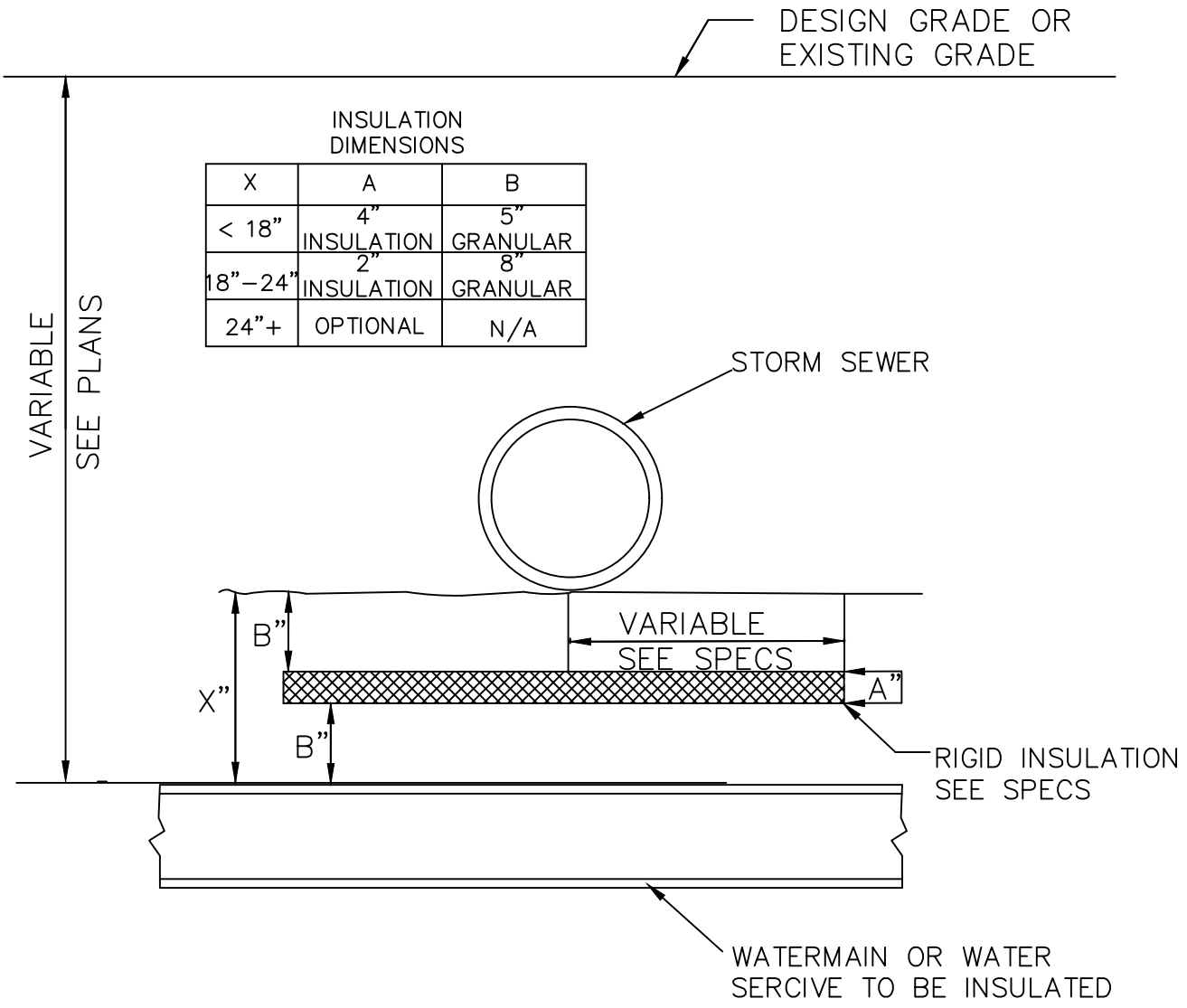


Since 1857 Hastings MINNESOTA

WATERMAIN WET TAP

Revised: JANUARY, 2024

Plate NO. 300-11



NOTE:

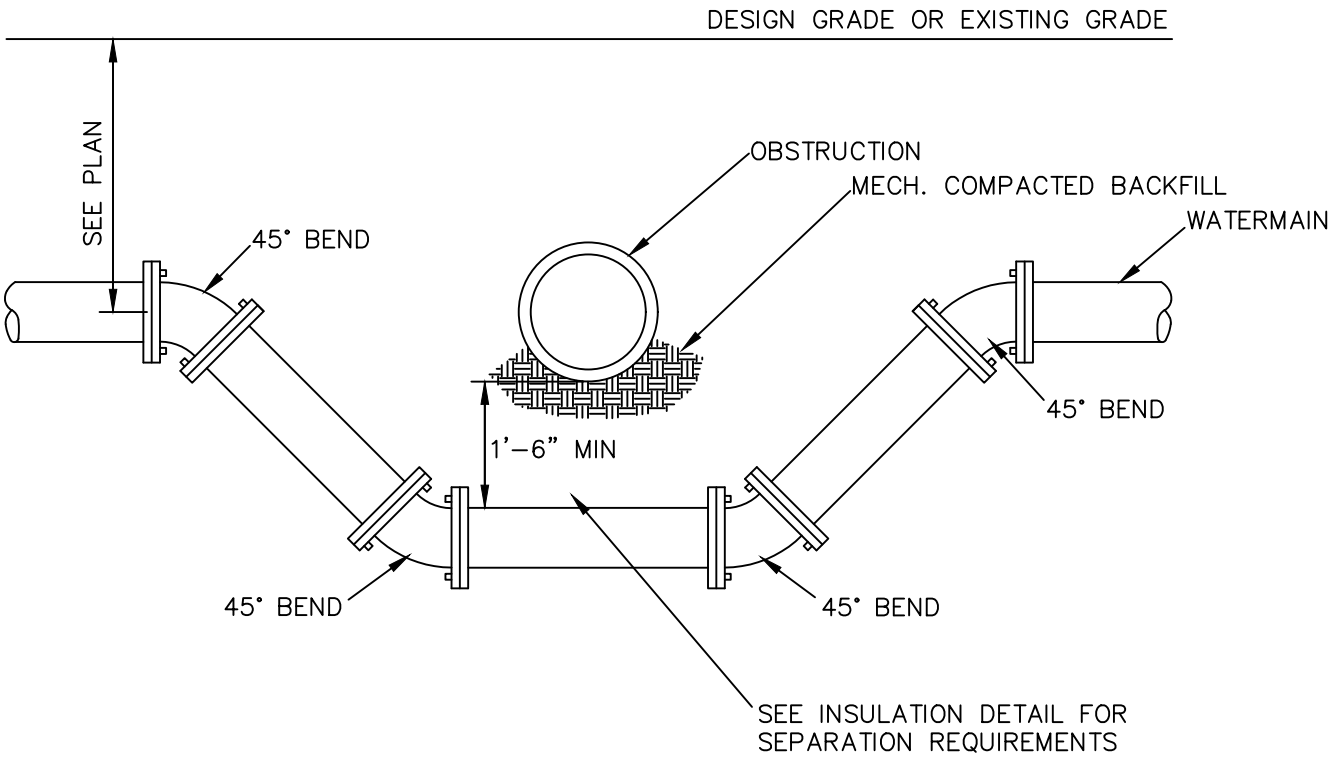
1. COMPACT AREA ABOVE PIPE TO 95% STANDARD PROCTOR DENSITY USE GRANULAR BEDDING MATERIAL FOR BACKFILL MATERIAL BELOW & ABOVE INSULATION MATERIAL

Since 1857 Hastings MINNESOTA

INSULATION DETAIL

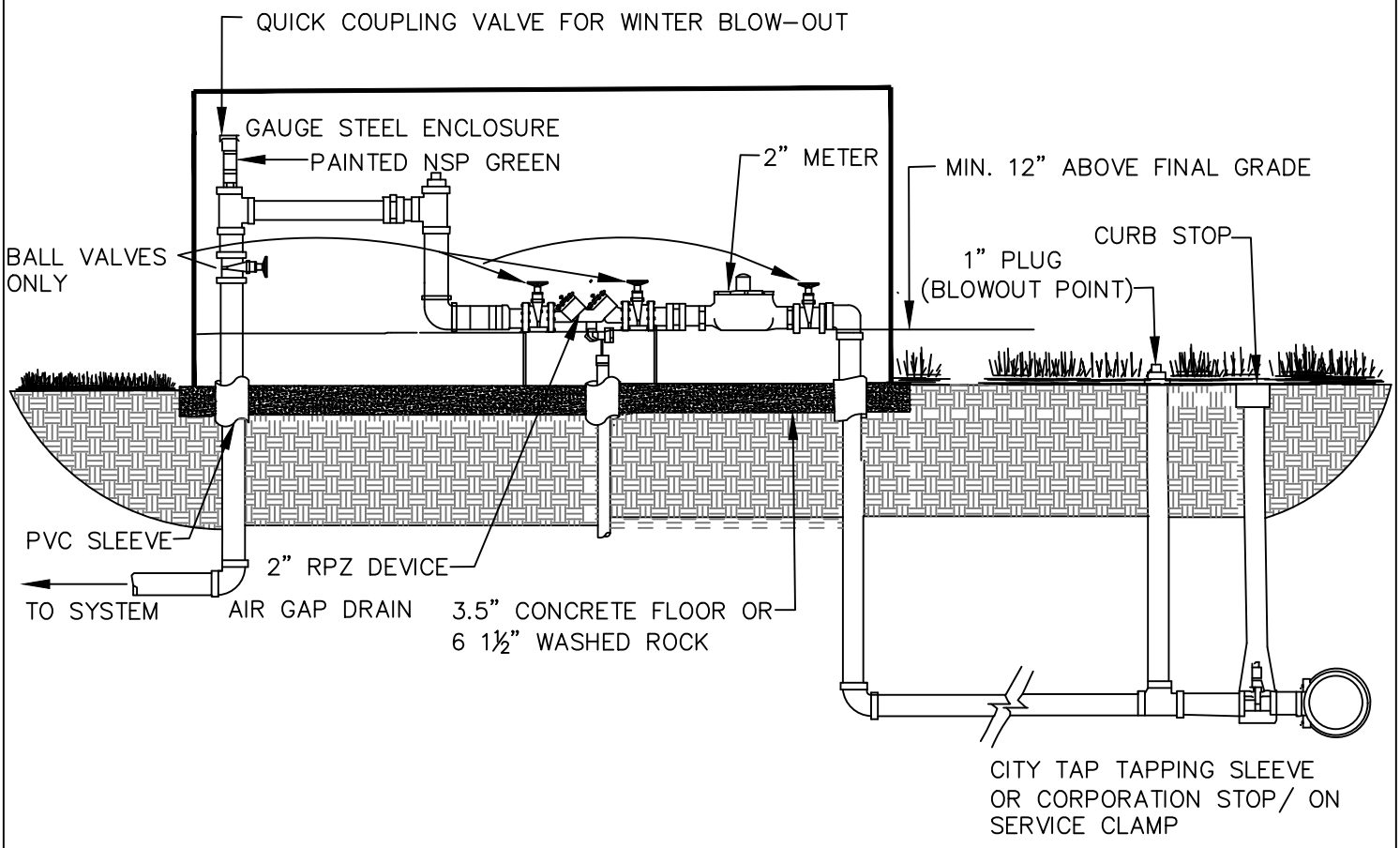
Revised:
JANUARY, 2024

Plate NO.
300-12



NOTES:
1. TIE ALL JOINTS WITH MEGALUGS

Since 1857 Hastings MINNESOTA	WATERMAIN OFFSET	Revised: JANUARY, 2024 Plate NO. 300-13

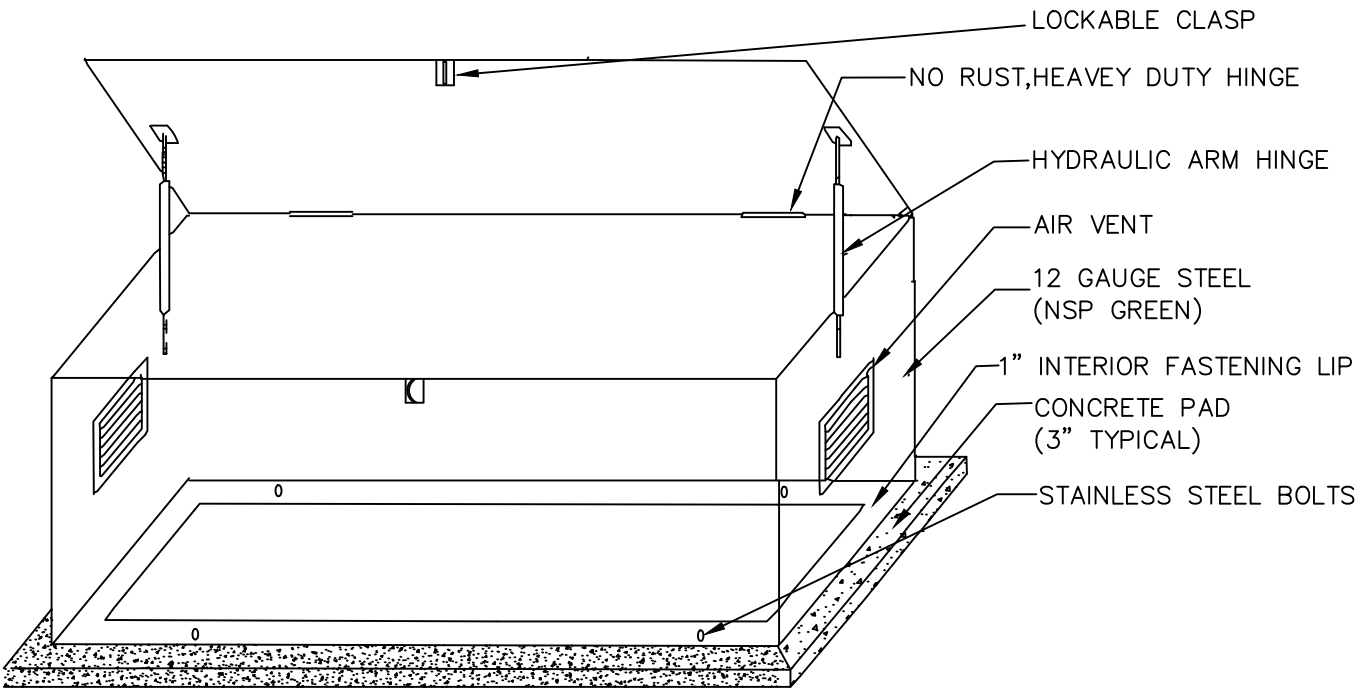


Since 1857 Hastings MINNESOTA

IRRIGATION RPZ AND METER DETAIL

Revised:
JANUARY, 2024

Plate NO.
300-14



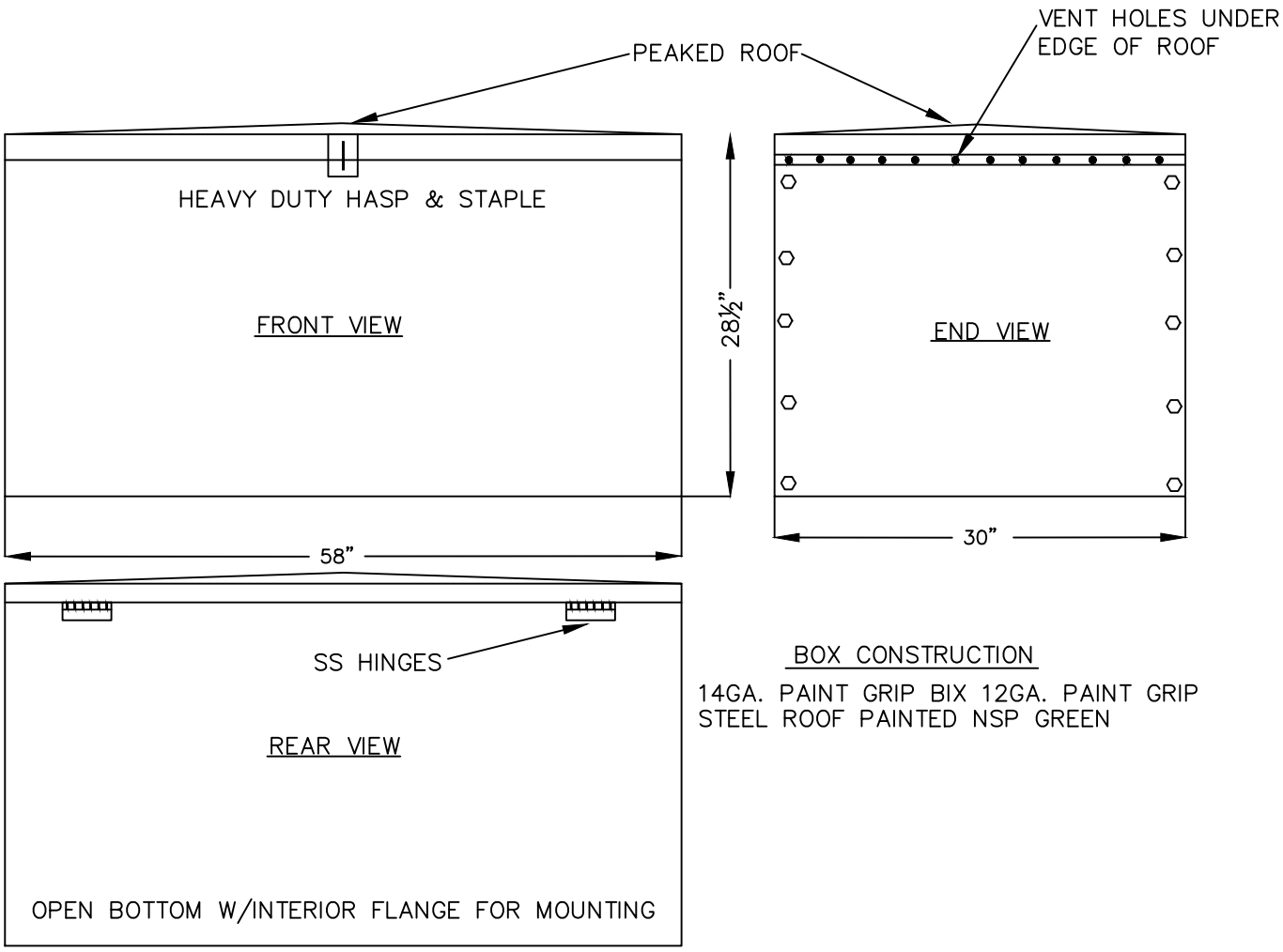
STANDARD 58" BOX
AS MANUFACTURED BY POVOLNY CO.
OR APPROVED EQUAL.

Since 1857 Hastings MINNESOTA

IRRIGATION BOX DETAIL

Revised:
JANUARY, 2024

Plate NO.
300-15



BOX CONSTRUCTION

14GA. PAINT GRIP BIX 12GA. PAINT GRIP STEEL ROOF PAINTED NSP GREEN

GAS SHOCKS INSIDE TO SUPPORT LID WHEN OPENED W/AJUSTABLE BRACKETS WELDED TO FRAME

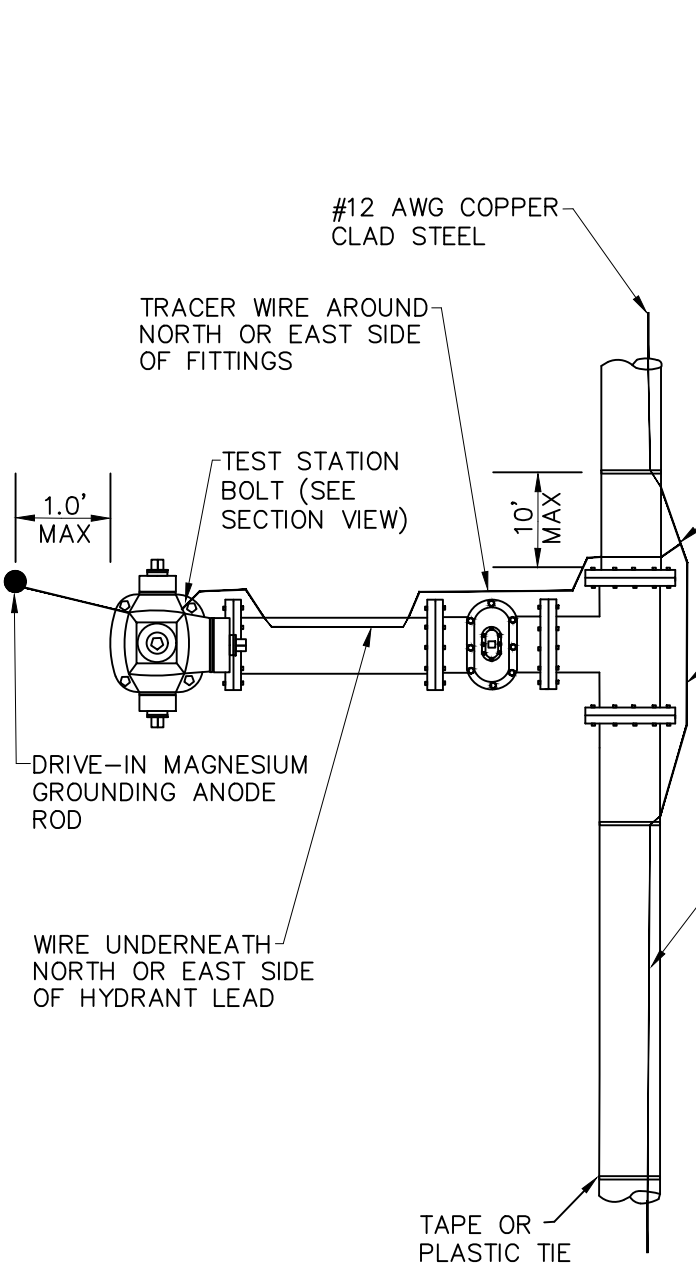
STANDARD 58" BOX AS MANUFACTURED BY POVOLNY COMPANY OR APPROVED EQUAL

Since 1857 Hastings MINNESOTA

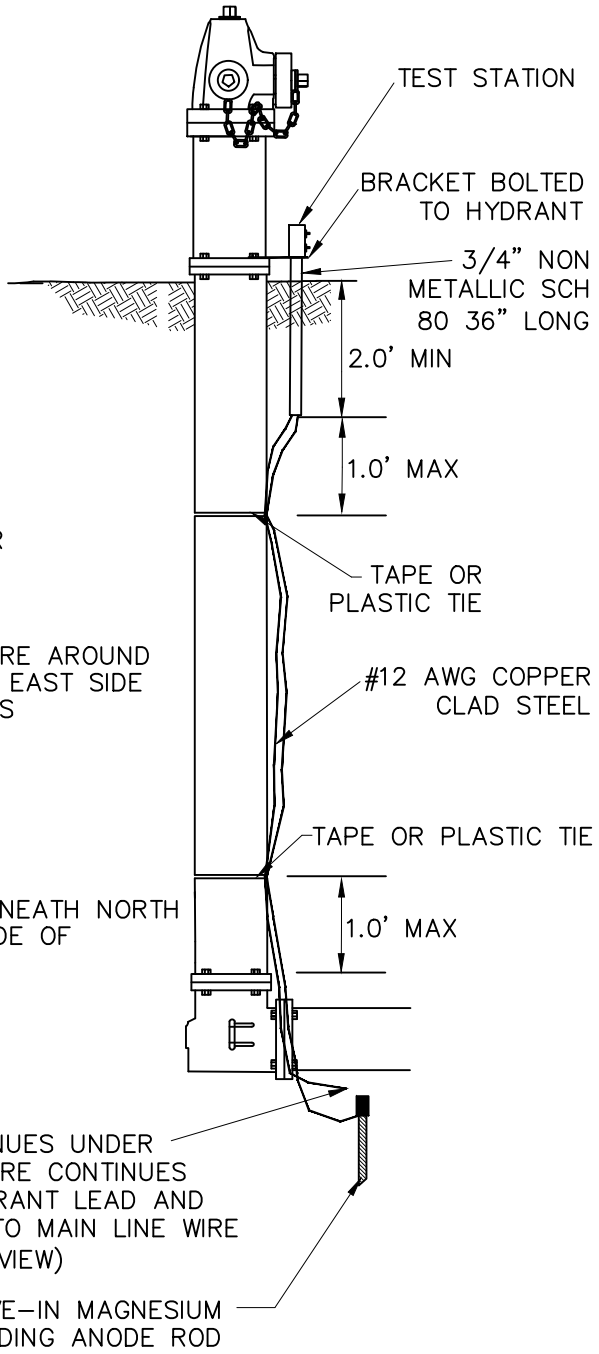
IRRIGATION BOX DETAIL

Revised: JANUARY, 2024

Plate NO. 300-16



HYDRANT – PLAN VIEW
NO SCALE



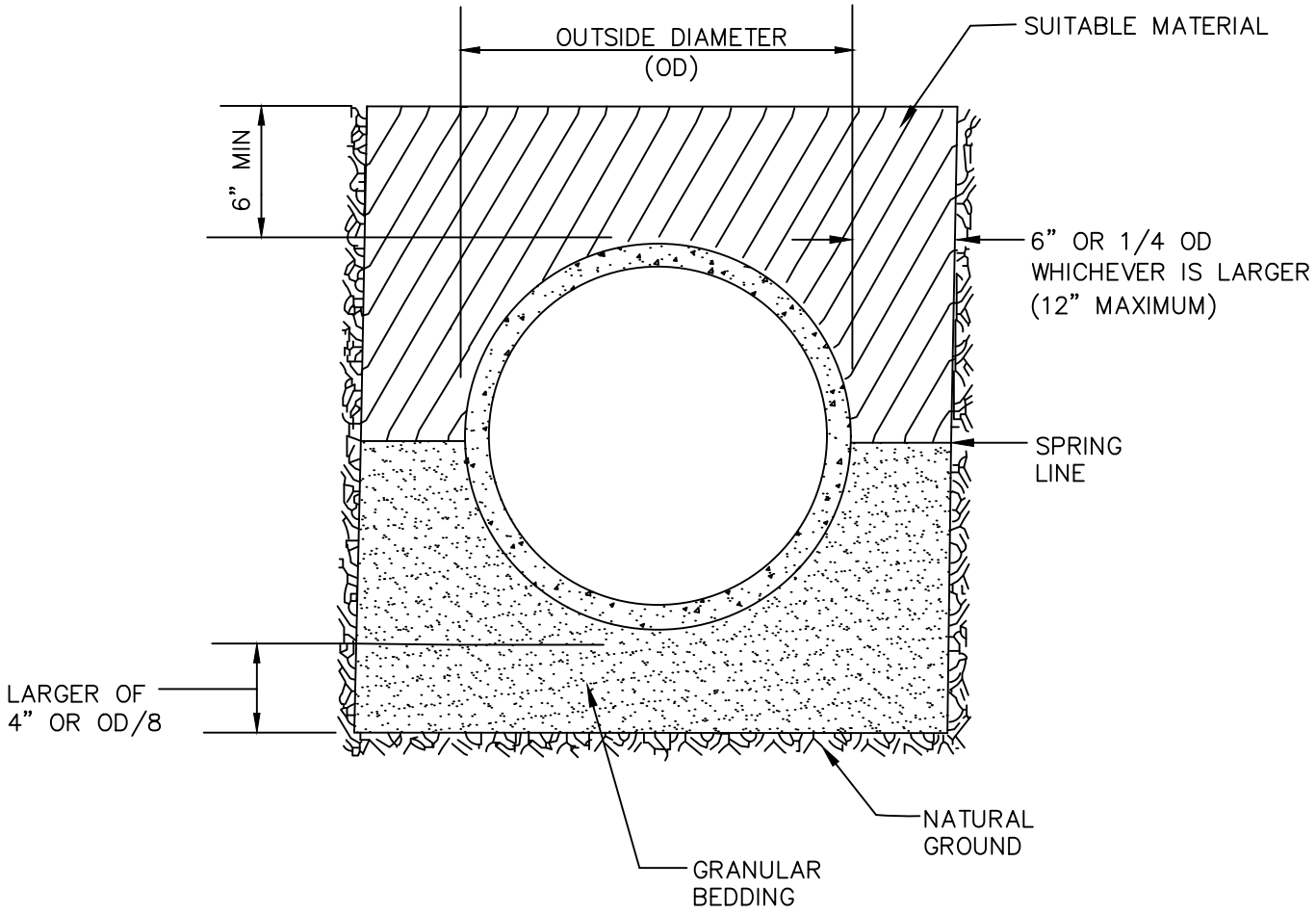
HYDRANT – SECTION VIEW
NO SCALE

Since 1857 Hastings MINNESOTA

HYDRANT TRACER WIRE INSTALLATION

Revised:
JANUARY, 2024

Plate NO.
300-17



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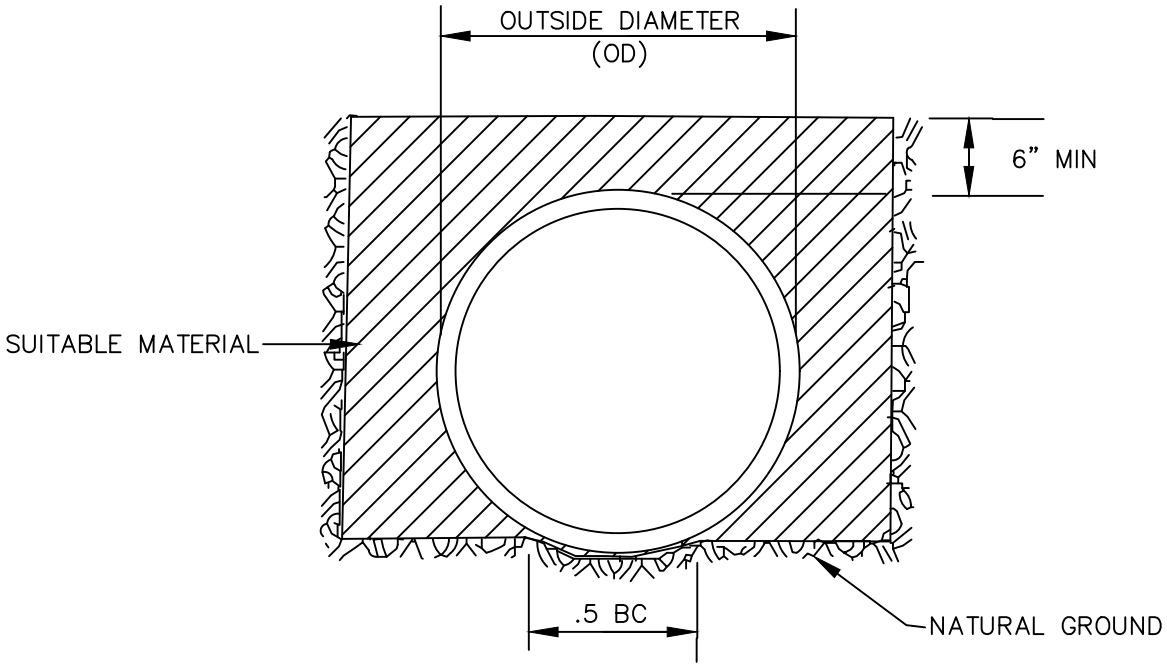
CLASS B
PIPE BEDDING

Revised:
JANUARY, 2024

Plate NO.
400-1



NOTES:

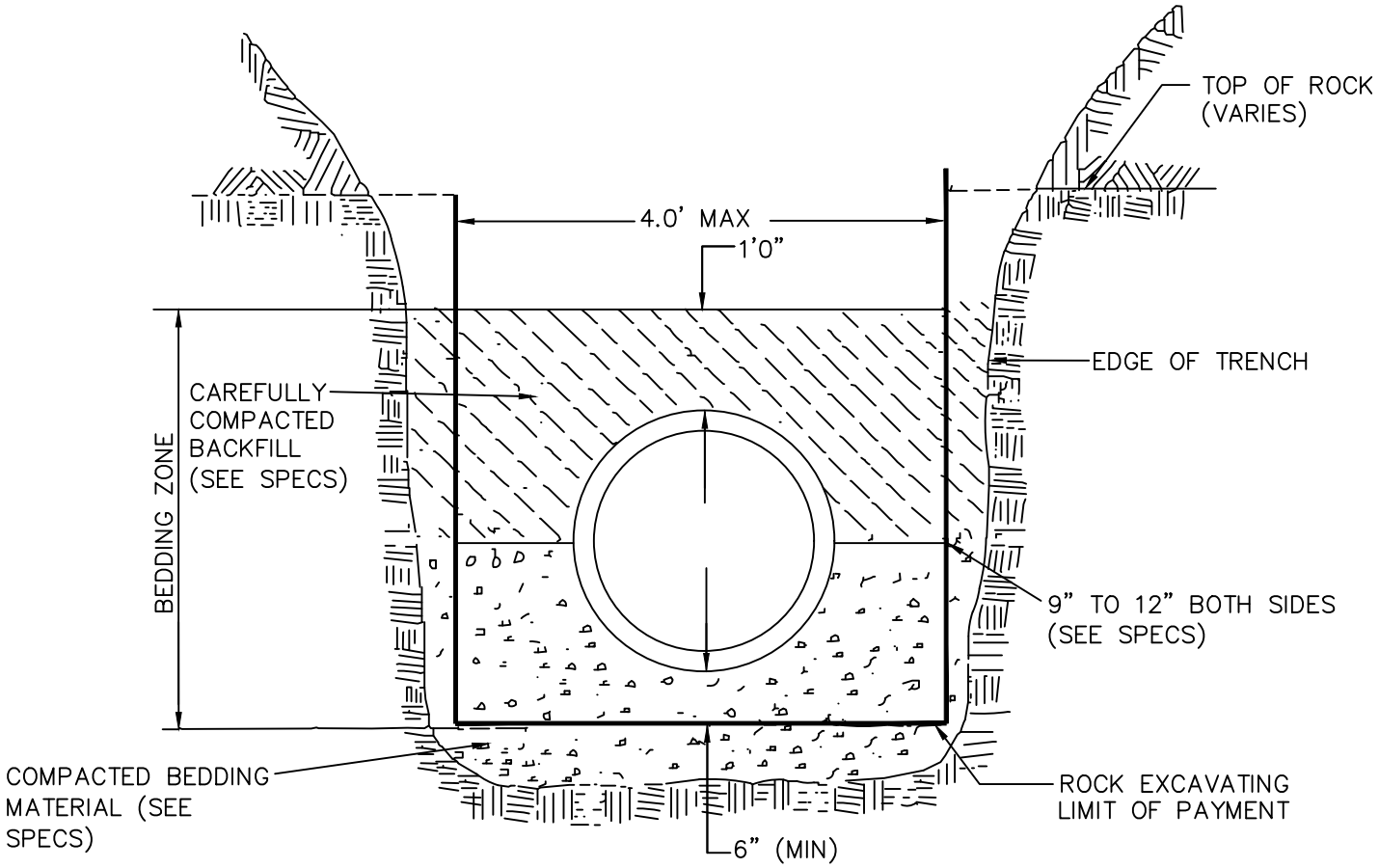
1. THE BOTTOM OF THE TRENCH SHALL BE SHAPED TO FIT THE PIPE BARREL FOR AT LEAST 50% OF THE OUTSIDE DIAMETER. THE REMAINER OF THE PIPE IS SURROUNDED TO A HEIGHT OF AT LEAST 6" ABOVE ITS TOP BY SELECTED FILL MATERIALS PLACED BY HAND TOOLS AND COMPACTED TO COMPLETELY FILL ALL SPACES UNDER AND ADJACENT TO THE PIPE.

Since 1857 Hastings MINNESOTA

CLASS C
PIPE BEDDING

Revised:
JANUARY, 2024

Plate NO.
400-2



NOTE:

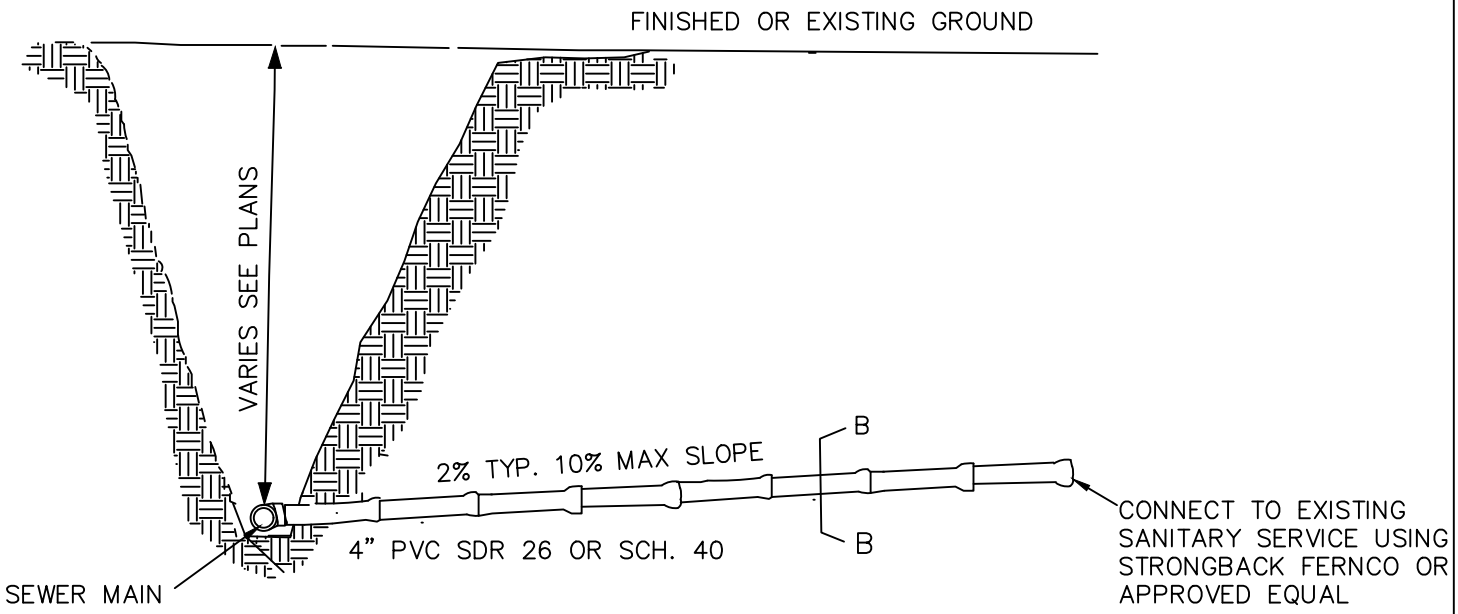
1. REPLACEMENT OF EXCAVATED ROCK SHALL BE WITH SUITABLE GRANULAR BACKFILL MATERIAL

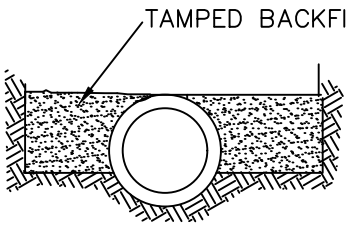
Since 1857 Hastings MINNESOTA

ROCK EXCAVATION DETAIL

Revised:
JANUARY, 2024

Plate NO.
400-3





SECTION B–B

NOTES:

1. SERVICES WILL NORMALLY BE CONSTRUCTED IN A COMMON TRENCH, HOWEVER WHERE CONDITIONS WARRANT AS DIRECTED BY THE ENGINEERING, SERVICES SHALL BE CONSTRUCTED IN SEPARATE TRENCHES,

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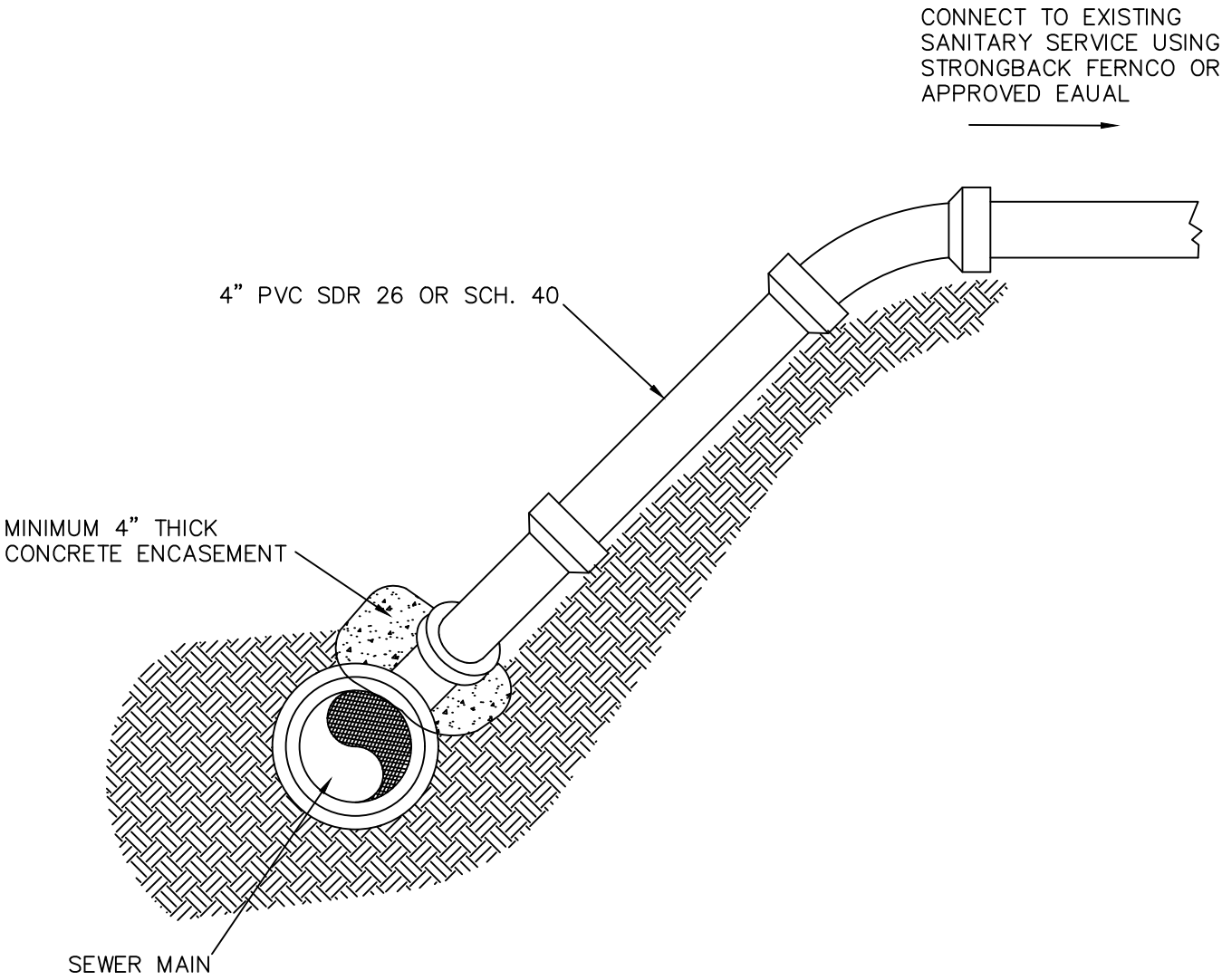
SERVICE CONNECTIONS

Revised:
JANUARY, 2024

Plate NO.
400-4



NOTES:

1. SERVICES WILL NORMALLY BE CONSTRUCTED IN A COMMON TRENCH, HOWEVER WHERE CONDITIONS WARRANT AS DIRECTED BY THE ENGINEERING, SERVICES SHALL BE CONSTRUCTED IN SEPERATE TRENCHES.
2. A RISER IS NEEDED WHEN THE SEWER MAIN IS MORE THAN 14' BELOW FINISHED GROUND.

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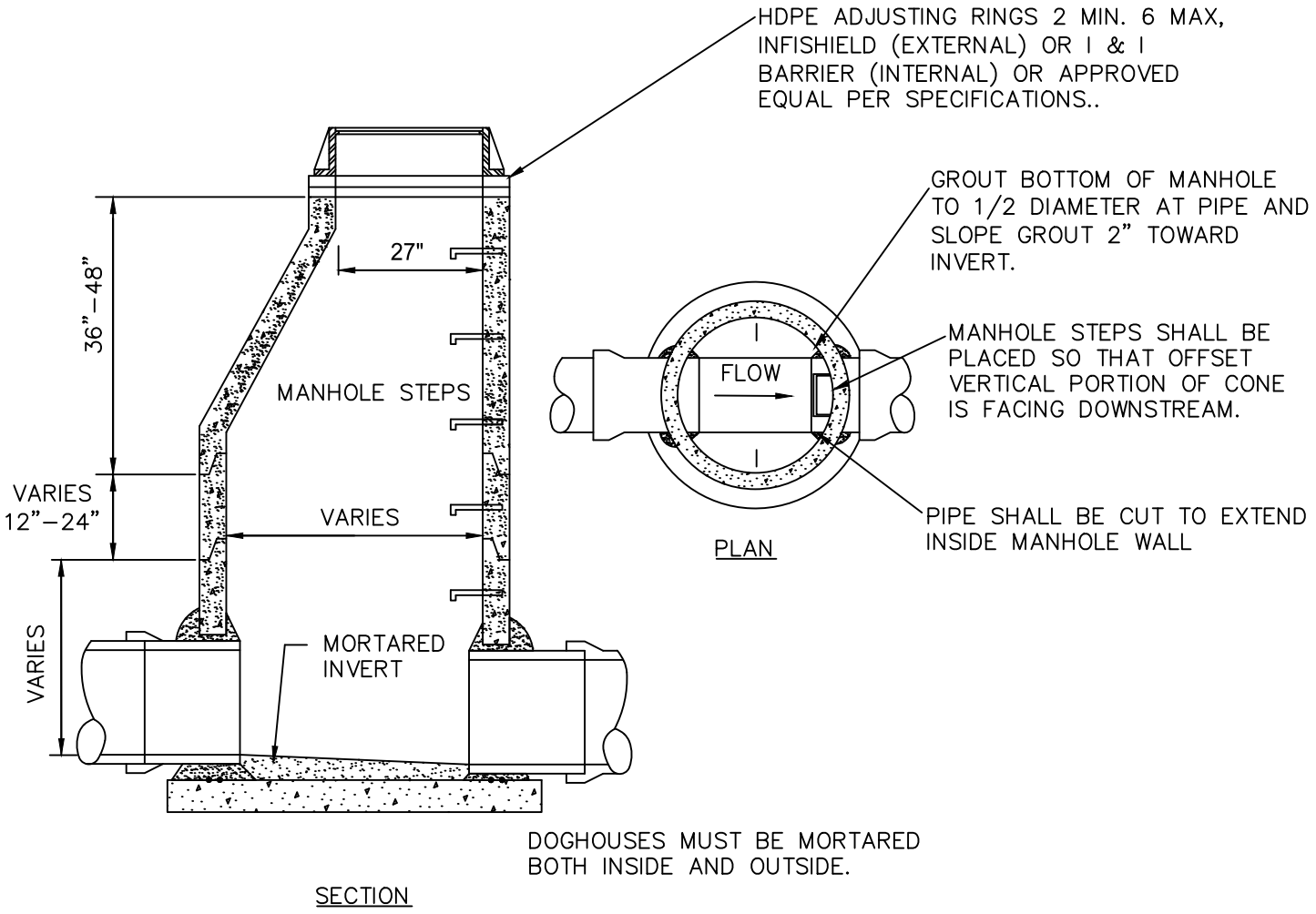
SERVICE RISER

Revised:
JANUARY, 2024

Plate NO.
400-5



NOTES:

1. METAL SEWER CASTING. MANHOLE FRAMES AND COVERS SHALL BE EQUAL TO NEENAH R–1642 FRAME WITH SOLID LID COVER. THE COVER SHALL BE LETTERED "STORM SEWER"
2. PRE–CAST MANHOLE SECTIONS REINFORCED CONCRETE PER ASTM –C476 MIN. 4" THICK WALL
3. FURNISH SECTION WITH O–RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER

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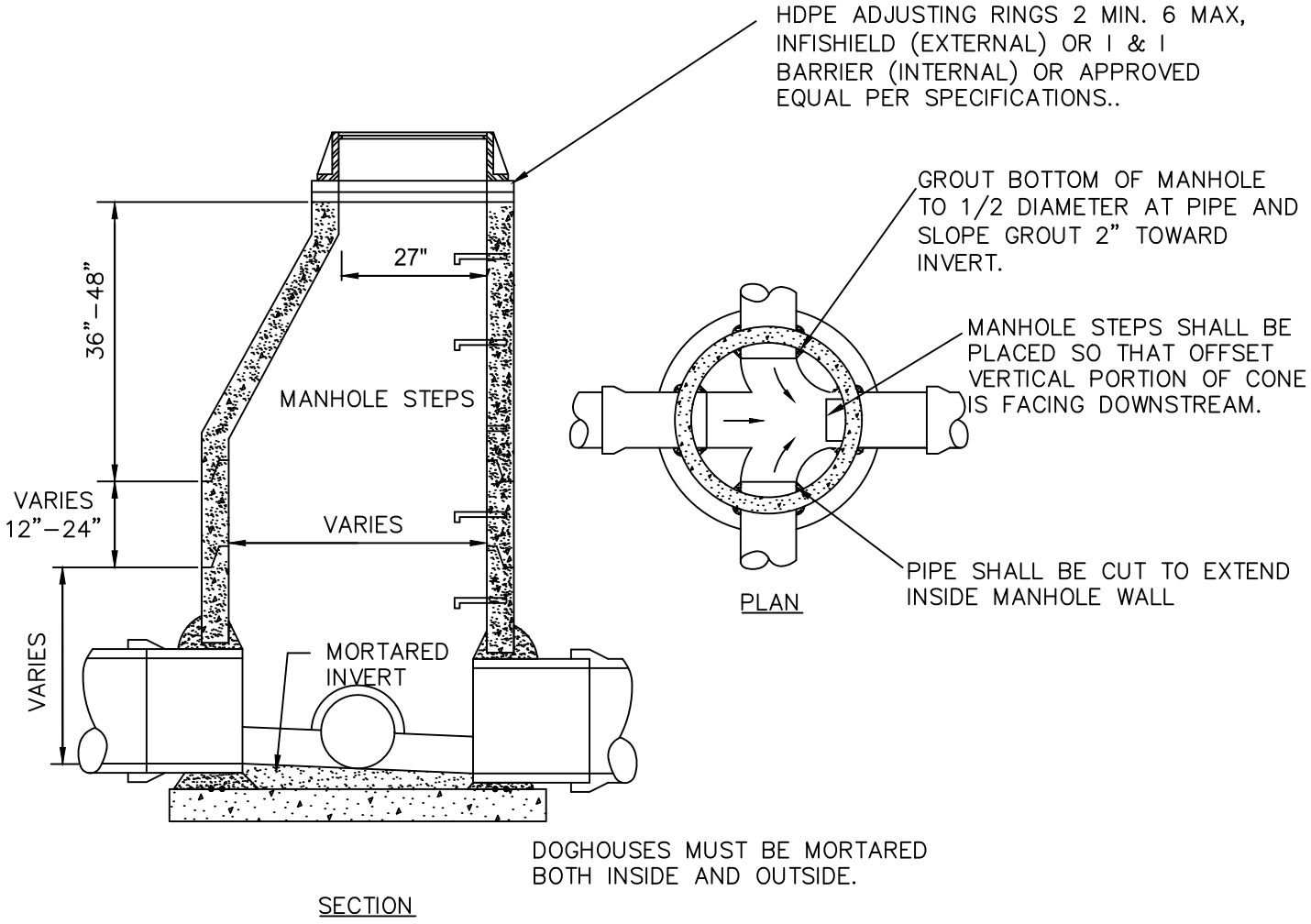
STANDARD STORM MANHOLE

Revised: JANUARY, 2024

Plate NO. 400-6



NOTES:

1. METAL SEWER CASTING. MANHOLE FRAMES AND COVERS SHALL BE EQUAL TO NEENAH R–1642 FRAME WITH SOLID LID COVER. THE COVER SHALL BE LETTERED "STORM SEWER"
2. PRE–CAST MANHOLE SECTIONS REINFORCED CONCRETE PER ASTM –C476 MIN. 4" THICK WALL
3. FURNISH SECTION WITH O–RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER

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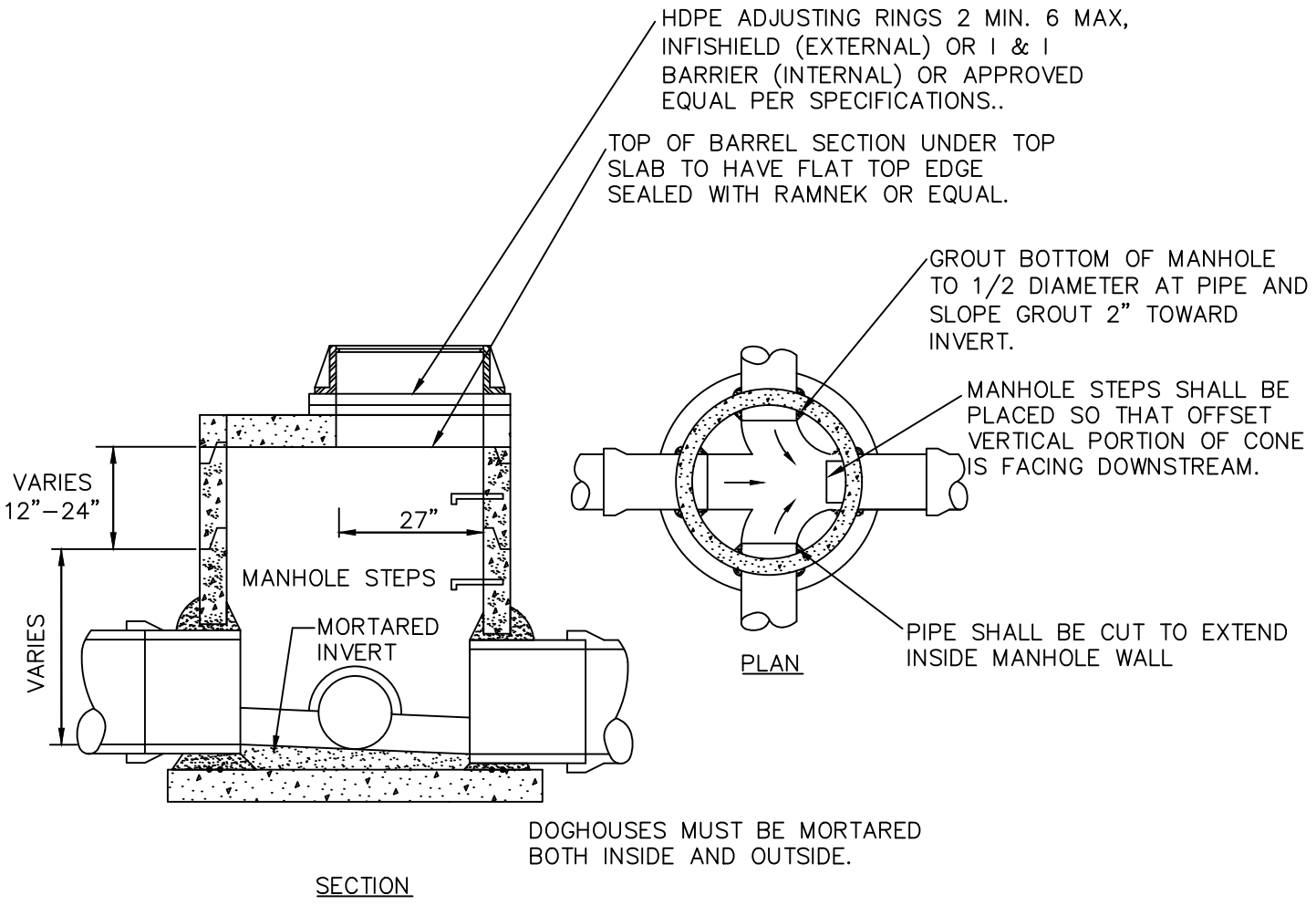
STORM SEWER JUNCTION MANHOLE

Revised: JANUARY, 2024

Plate NO. 400-7



NOTES:

1. SLAB TOP MANHOLES SHALL BE USED WHEN SPECIFIED OR WHEN THE MANHOLE DEPTH IS LESS THAN 8'
2. METAL SEWER CASTING. MANHOLE FRAMES AND COVERS SHALL BE EQUAL TO NEENAH R–1642 FRAME WITH SOLID LID COVER. THE COVER SHALL BE LETTERED "STORM SEWER"
3. PRE–CAST MANHOLE SECTIONS REINFORCED CONCRETE PER ASTM –C476 MIN. 4" THICK WALL
4. FURNISH SECTION WITH O–RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
5. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER

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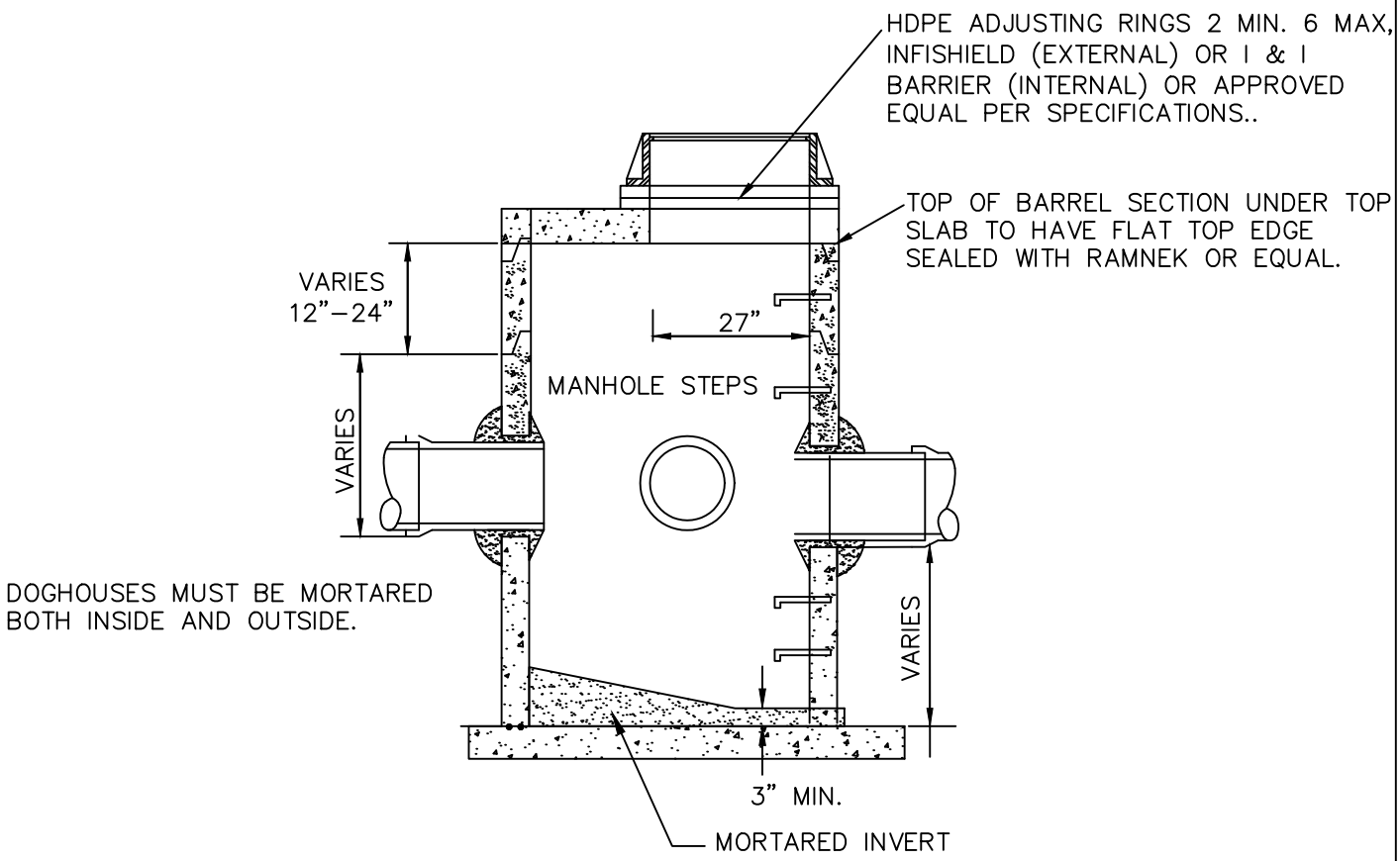
STORM SEWER JUNCTION MANHOLE W/ REINFORCED TOP SLAB

Revised: JANUARY, 2024

Plate NO. 400-8



SECTION

NOTES:

1. METAL SEWER CASTING. MANHOLE FRAMES AND COVERS SHALL BE EQUAL TO NEENAH R–1642 FRAME WITH SOLID LID COVER. THE COVER SHALL BE LETTERED "STORM SEWER"
2. PRE–CAST MANHOLE SECTIONS REINFORCED CONCRETE PER ASTM –C476 MIN. 4" THICK WALL
3. FURNISH SECTION WITH O–RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER

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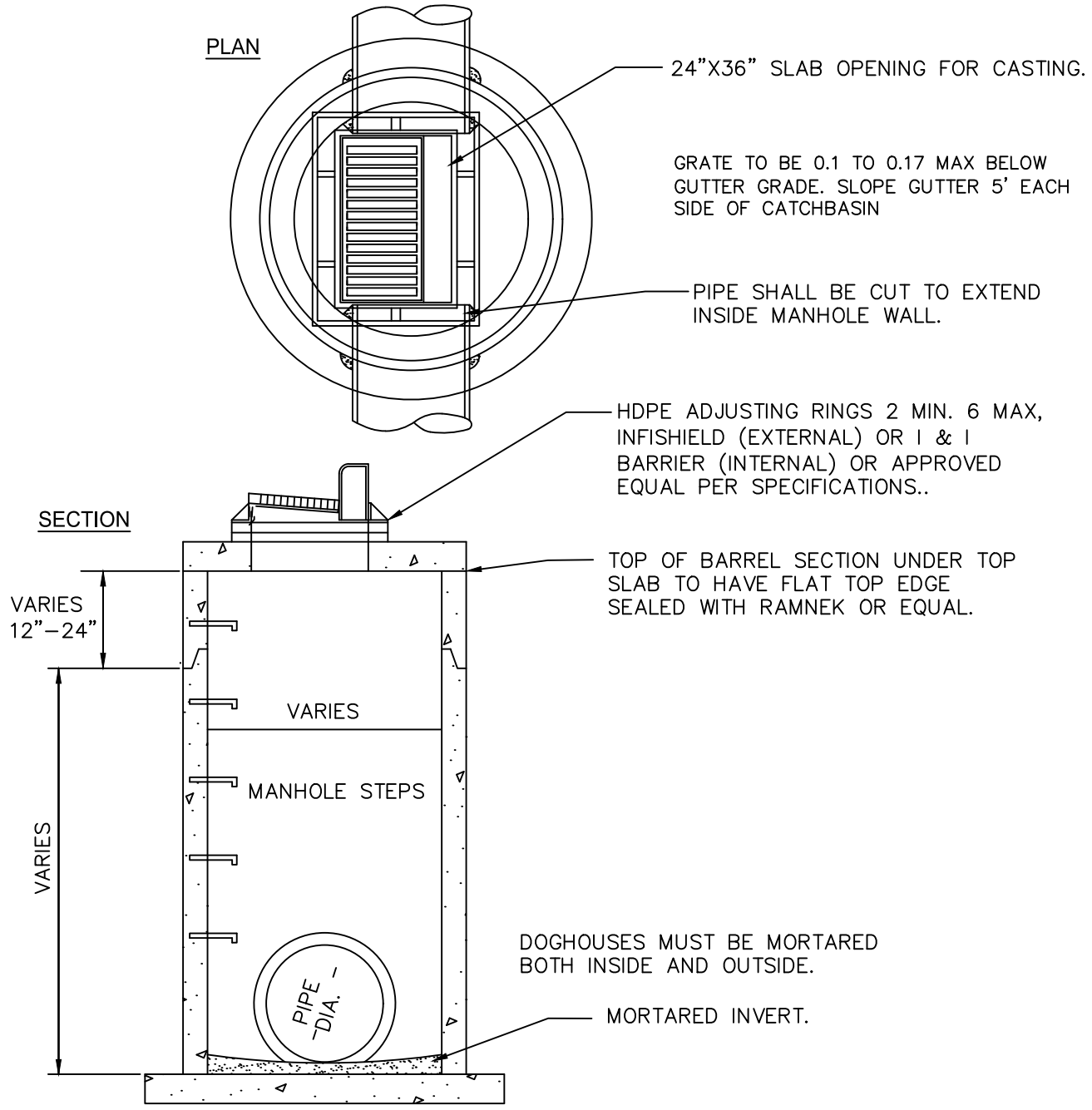
STORM SEWER JUNCTION MANHOLE W/ REINFORCED TOP SLAB & SUMP

Revised:
JANUARY, 2024

Plate NO.
400-9



NOTES:

1. CATCH BASIN CASTING NEENAH R3067 OR EQUAL GRATE SHALL BE HIGH CAPACITY TYPE V
2. PRE–CAST MANHOLE SECTIONS REINFORCED CONCRETE PER ASTM –C476 MIN. 4" THICK WALL
3. FURNISH SECTION WITH O–RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER

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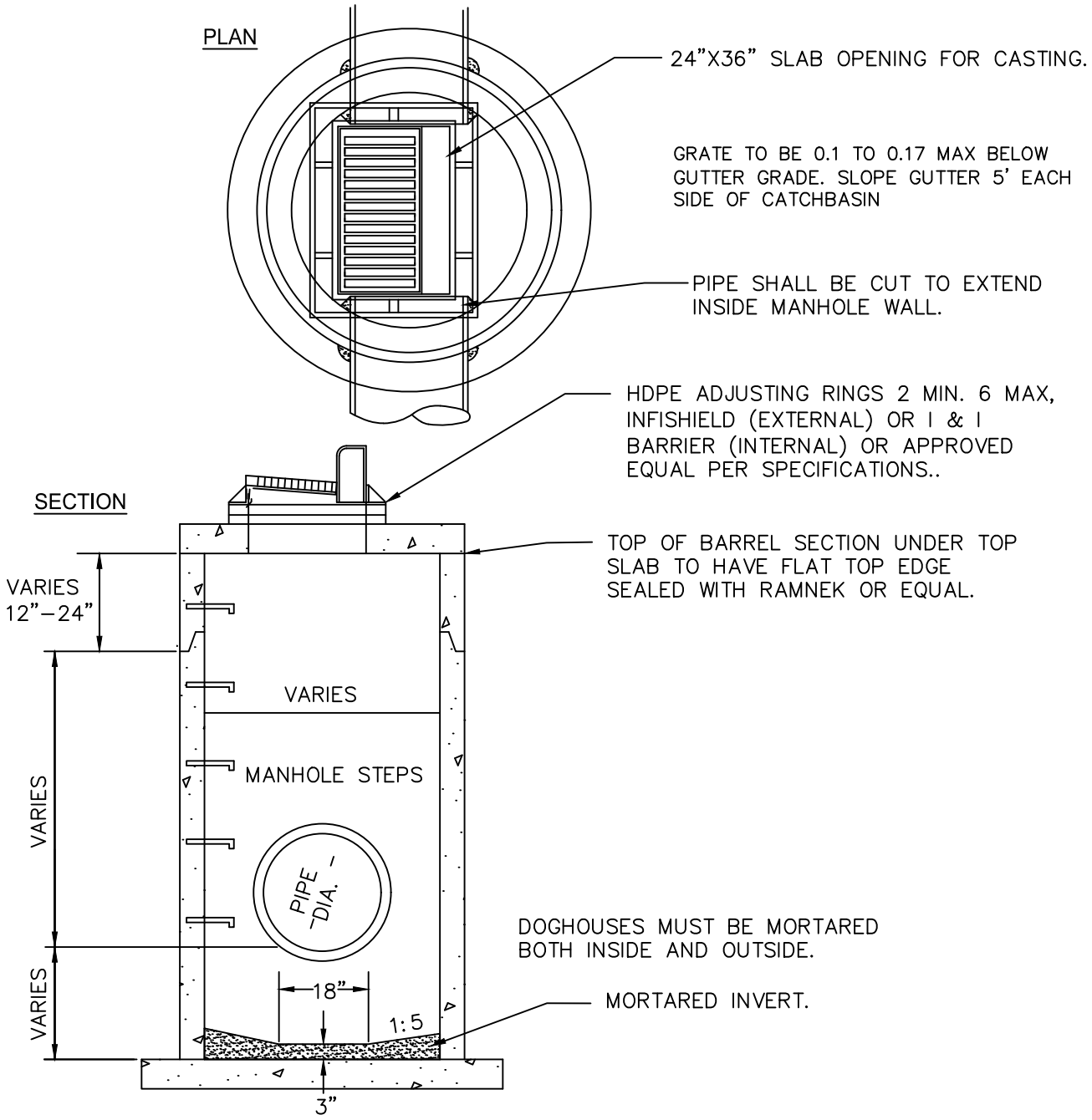
CATCH BASIN MANHOLE

Revised: JANUARY, 2024

Plate NO. 400-10



NOTES:

1. CATCH BASIN CASTING NEENAH R3067 OR EQUAL GRATE SHALL BE HIGH CAPACITY TYPE V
2. PRE–CAST MANHOLE SECTIONS REINFORCED CONCRETE PER ASTM –C476 MIN. 4" THICK WALL
3. FURNISH SECTION WITH O–RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER

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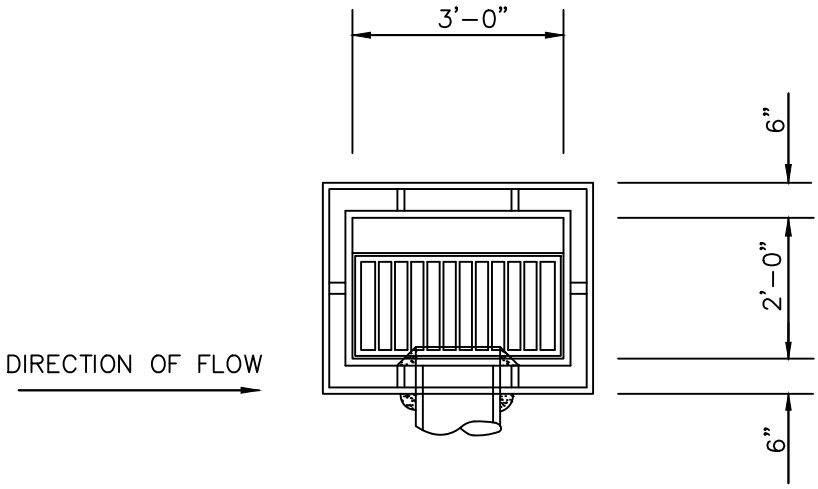
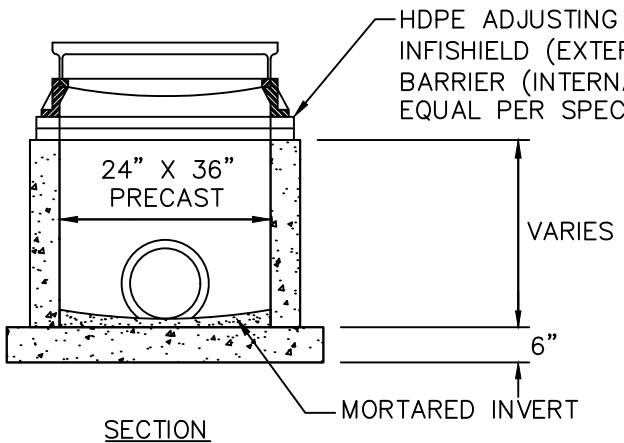
CATCH BASIN MANHOLE W/ SUMP

Revised: JANUARY, 2024

Plate NO. 400-11



PLAN



SECTION

DOGHOUSES SHALL BE MORTARED ON BOTH THE INSIDE AND OUTSIDE.

NOTES:

1. CATCH BASIN CASTING NEENAH R3067 OR EQUAL GRATE SHALL BE HIGH CAPACITY TYPE V
2. PRE-CAST CATCH BASIN SECTIONS REINFORCED CONCRETE PER ASTM -C476 MIN. 4" THICK WALL
3. FURNISH SECTION WITH O-RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER

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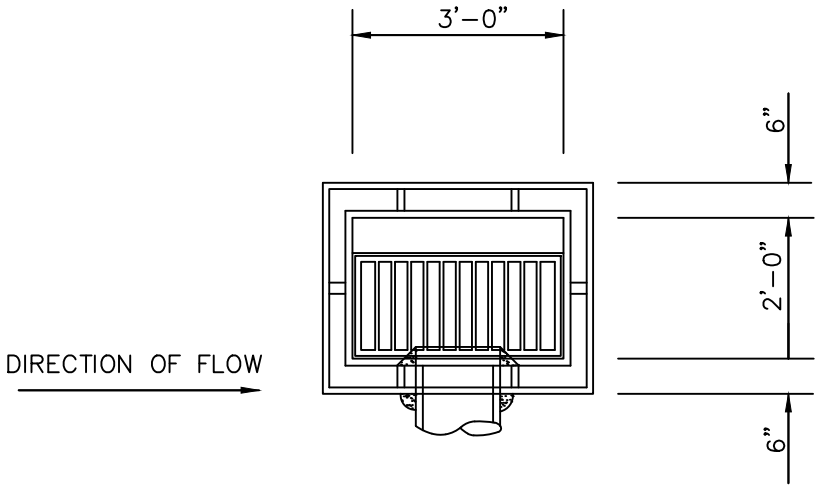
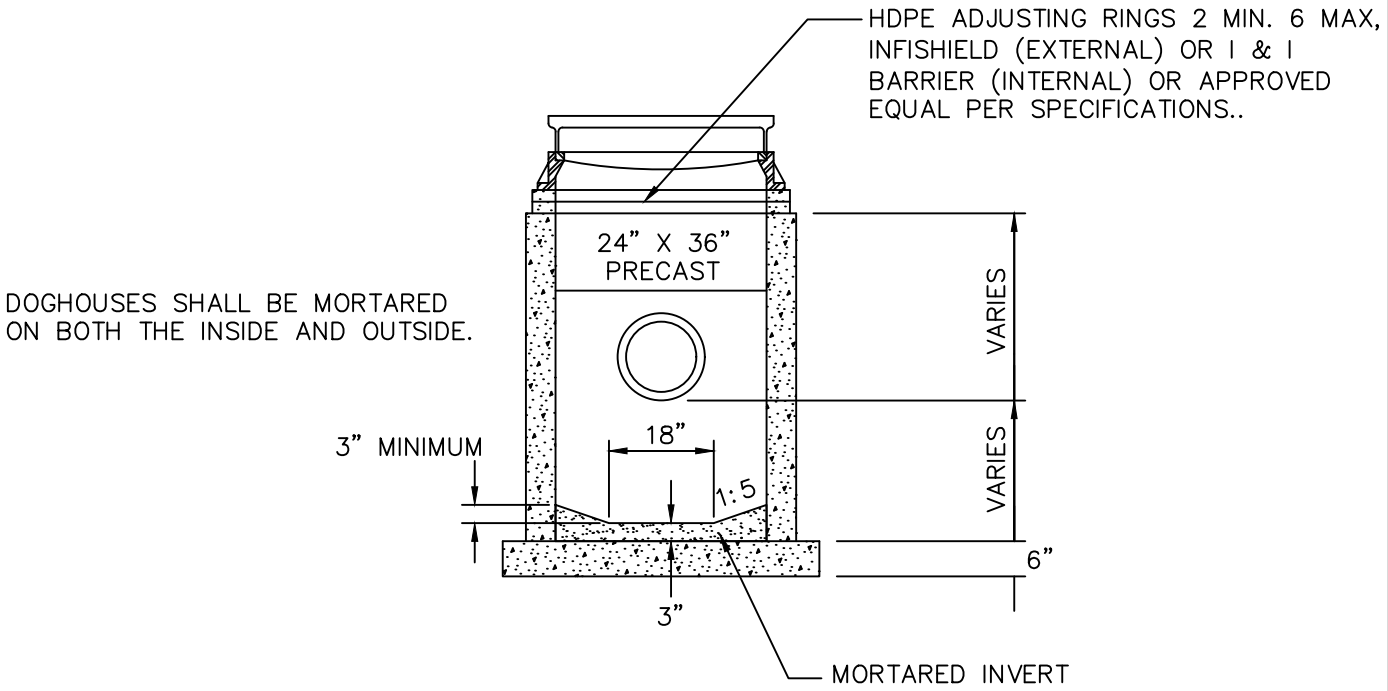
CATCH BASIN

Revised: JANUARY, 2024

Plate NO. 400-12



PLAN



SECTION

NOTES:

1. CATCH BASIN CASTING NEENAH R3067 OR EQUAL GRATE SHALL BE HIGH CAPACITY TYPE V
2. PRE-CAST CATCH BASIN SECTIONS REINFORCED CONCRETE PER ASTM -C476 MIN. 4" THICK WALL
3. FURNISH SECTION WITH O-RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER

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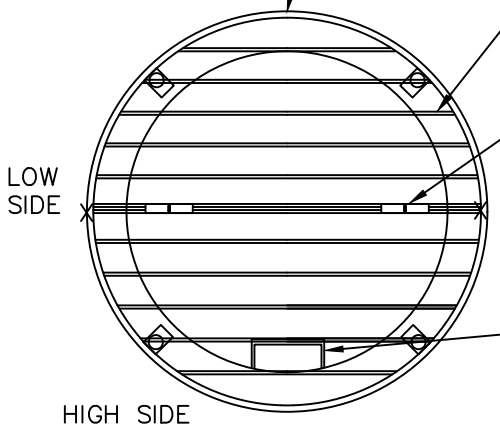
CATCH BASIN
W/ SUMP

Revised:
JANUARY, 2024

Plate NO.
400-13



PROVIDE 4 – 1/2" SS ANCHOR BOLTS FLAT STEEL BATS @ 4" O.C. NO PERPENDICULAR SUPPORT BARS ALLOWED FOR STRUCTURES LESS THAN 84" DIA.

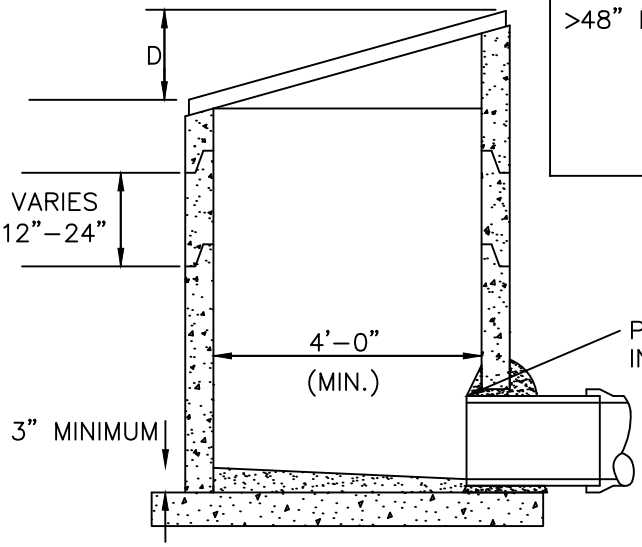
HOT–DIPPED GALVANIZED GRATE IN 2 SECTIONS WITH HEAVY DUTY HINGES ABLE TO SUPPORT 250 LBS/SF AND BE ABLE TO REMOVE ONE SECTION FOR ACCESS TO STEPS BY REMOVING NUTS FROM TWO ANCHOR BOLTS. SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW PRIOR TO FABRICATION.

MANHOLE STEPS SHALL BE PLACED SO THAT LOCATION IS PERPENDICULAR TO THE BARS.

GRATE DETAIL

DIAMETER	TOP OF STRUCTURE SLOPE (D)
48" DIA.	9", 12", OR 18"
>48" DIA.	12" OR 24"

SEE STORM SEWER SCHEDULE FOR SPECIFIC STRUCTURE.



PIPE SHALL BE CUT TO EXTEND INSIDE MANHOLE WALL.

DOGHOUSES MUST BE MORTARED BOTH INSIDE AND OUTSIDE.

MORTARED INVERT

SECTION

NOTES:

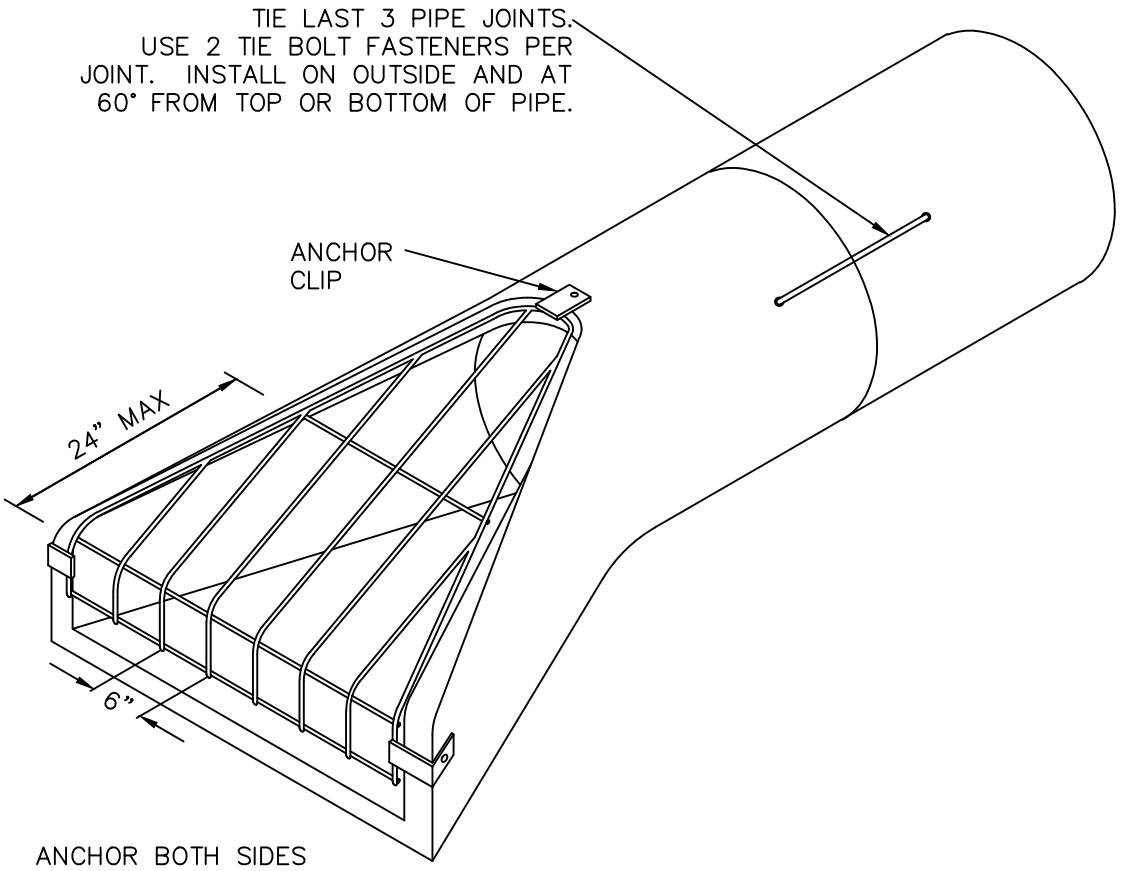
1. PRE–CAST MANHOLE SECTIONS REINFORCED CONCRETE PER ASTM –C476 MIN. 4" THICK WALL
2. FURNISH SECTION WITH O–RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
3. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER

Since 1857 Hastings MINNESOTA

OVERFLOW STRUCTURE W/ TRASH GUARD

Revised: JANUARY, 2024

Plate NO. 400-14



ISOMETRIC

NOTES:

1. SEE TRASH GUARD DETAIL FOR SIZING
2. SEE RIP RAP DETAIL FOR RIP RAP PLACEMENT
3. PROVIDE 3 ANCHOR CLIPS TO FASTEN TRASH GUARD TO FLARED END SECTION. HOT DIP GALVANIZE AFTER FABRICATION.

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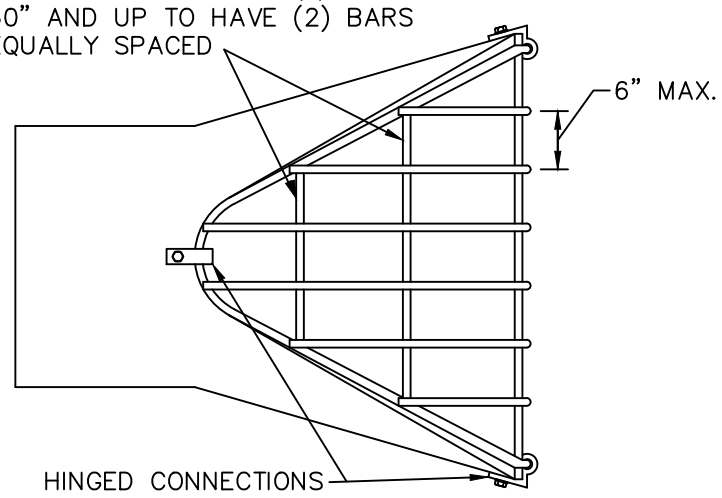
FLARED END SECTION W/ TRASH GUARD

Revised:
JANUARY, 2024

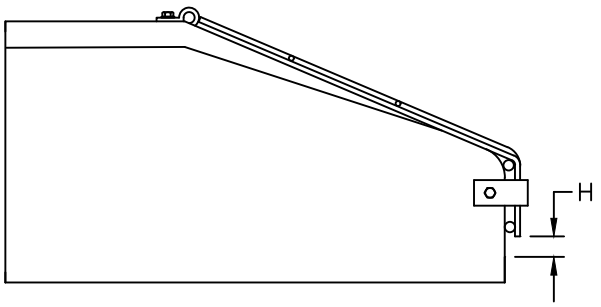
Plate NO.
400-15

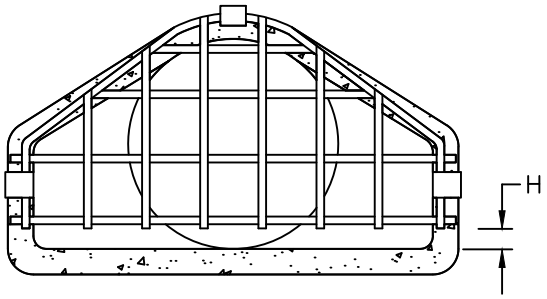
ALL GUARDS TO HAVE (1) CROSS BAR, 60" AND UP TO HAVE (2) BARS EQUALLY SPACED



1. BARS & PLATES ARE HOT-ROLLED STEEL
2. BARS, PLATES & PIPE ARE GALVANIZED
3. BOLTS ARE GALVANIZED
4. PROVIDE GAP (H) AT BOTTOM OF TRASH GUARD TO ALLOW DEBRIS TO PASS THROUGH GAP SHALL BE: BAR SIZES

SIZE OF PIPE	H
12" to 18"	4"
21" to 42"	6"
48" to 72"	12"





BAR SIZES									
STANDARD DESIGN					HEAVY DESIGN				
	PIPE SIZE	HOLE DIA. REQ'D	BOLT DIA.	BAR SIZE		PIPE SIZE	HOLE DIA. REQ'D	BOLT DIA.	BAR SIZE
ROUND	12"–24"	3/4"	5/8"	5/8"	ROUND	12"–18"	3/4"	5/8"	3/4"
	27"–48"	7/8"	3/4"	3/4"		21"–42"	7/8"	3/4"	1"
	54"–90"	1 1/8"	1"	1"		48"–90"	1 1/8"	1"	1 1/4"
ARCH	22"–29"	3/4"	5/8"	5/8"	ARCH	22"	3/4"	5/8"	3/4"
	36"–59"	7/8"	3/4"	3/4"		29"–59"	7/8"	3/4"	1"
	65"–88"	1 1/8"	1"	1"		65"–88"	1 1/8"	1"	1 1/4"
BOLT LENGTH = PIPE WALL THICKNESS + 2 1/2"									

NOTES:

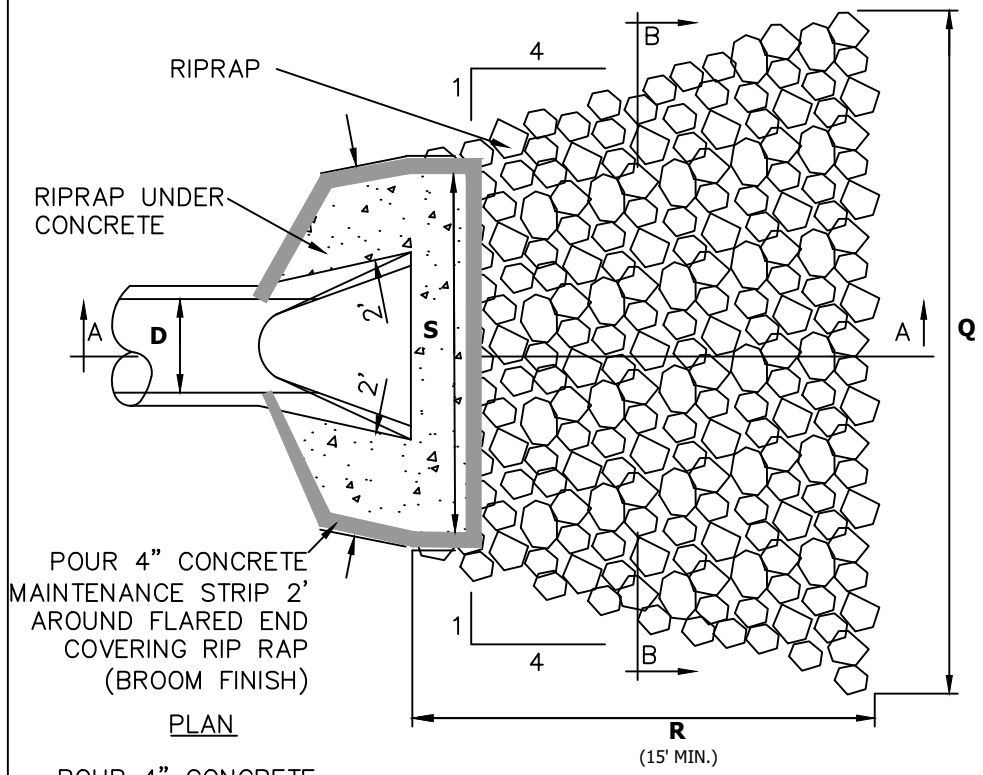
1. HOT DIP GALVANIZED PER ASTM A153 OR MN/DOT 3392
2. INSTALL TRASH GUARD ON ALL FLARED END SECTIONS WHERE WATER ENTERS THE PIPE
3. INSTALL TRASH GUARD ON ALL FLARED END SECTIONS GREATER THAN 24" WHERE WATER EXITS THE PIPE

Since 1857 Hastings MINNESOTA

FLARED END TRASH GUARD

Revised: JANUARY, 2024

Plate NO. 400-16



PLAN

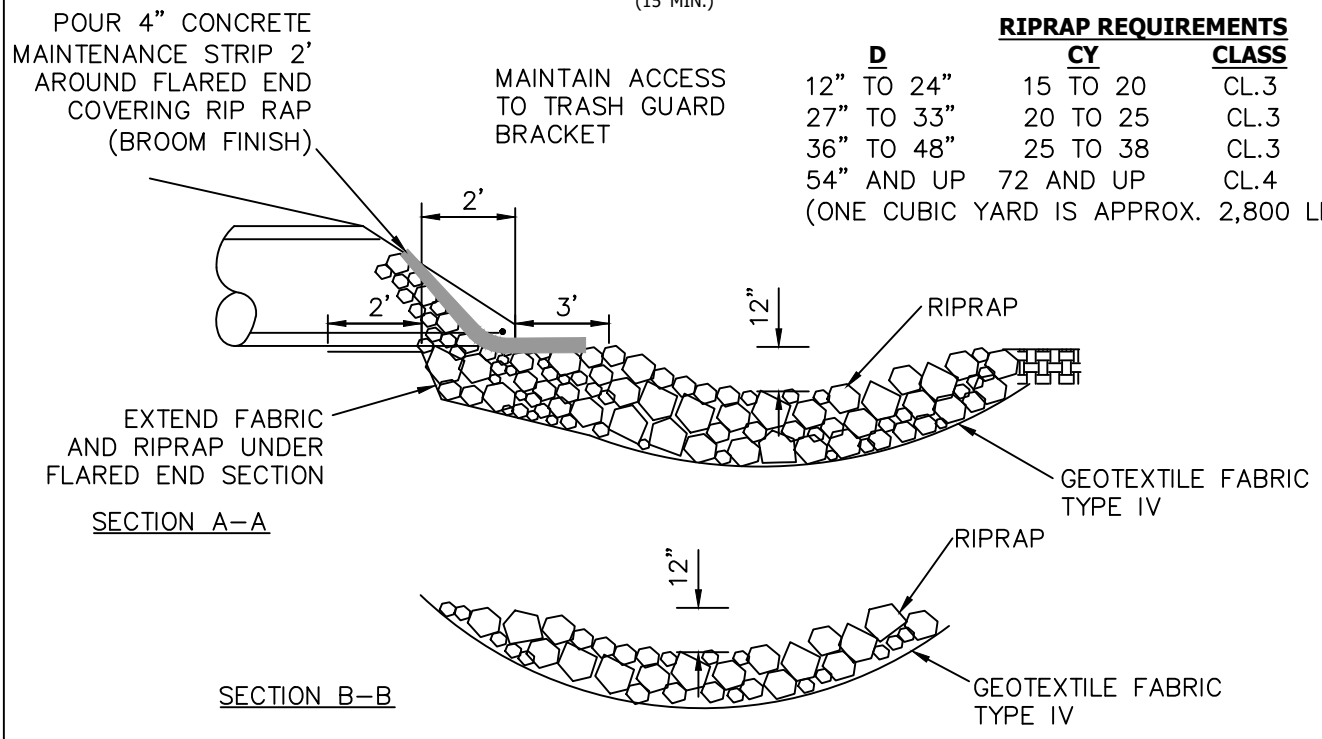
RIPRAP AREA SIZES

D	Q	R	S
12"	11'	15'	7'
24"	15'	15'	9'
36"	19'	15'	11'
48"	20'	16'	12'
54"	25'	22'	13'

RIPRAP REQUIREMENTS

D	CY	CLASS	DEPTH
12" TO 24"	15 TO 20	CL.3	3'
27" TO 33"	20 TO 25	CL.3	3'
36" TO 48"	25 TO 38	CL.3	3'
54" AND UP	72 AND UP	CL.4	4'

(ONE CUBIC YARD IS APPROX. 2,800 LBS.)



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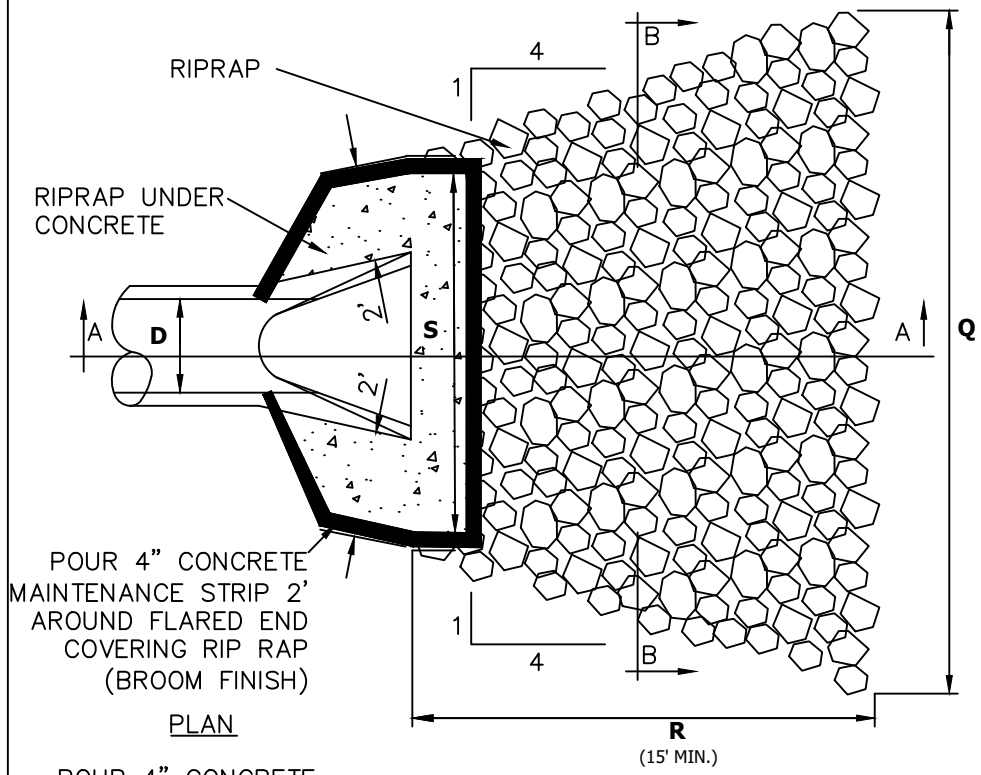
RIPRAP INSTALLATION

Revised: JANUARY, 2024

Plate NO. 400-17



PLAN

RIPRAP AREA SIZES

D	Q	R	S
12"	11'	15'	7'
24"	15'	15'	9'
36"	19'	15'	11'
48"	20'	16'	12'
54"	25'	22'	13'

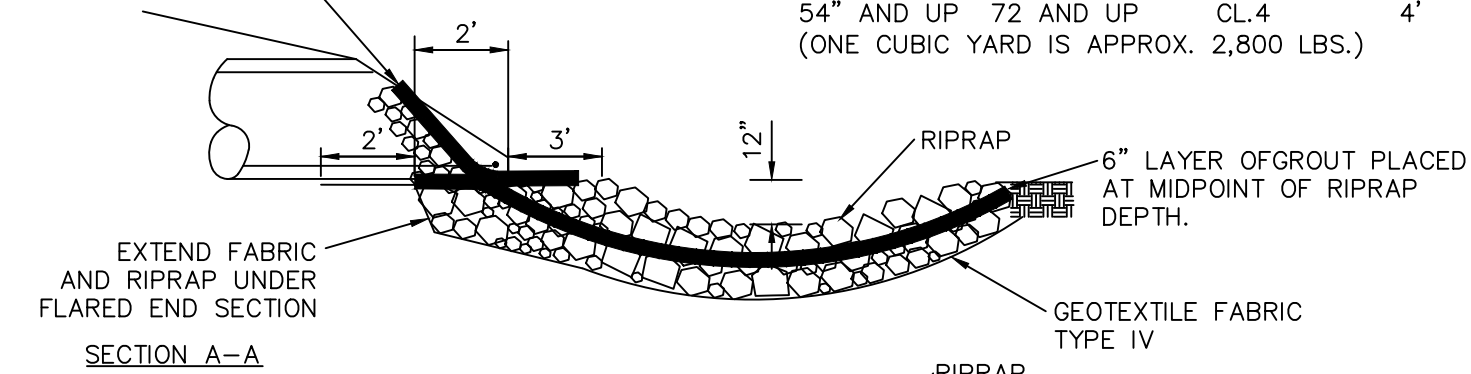
POUR 4" CONCRETE MAINTENANCE STRIP 2' AROUND FLARED END COVERING RIP RAP (BROOM FINISH)

MAINTAIN ACCESS TO TRASH GUARD BRACKET

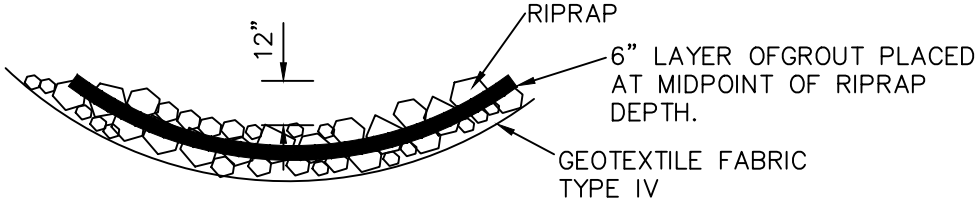
RIPRAP REQUIREMENTS

D	CY	CLASS	DEPTH
12" TO 24"	15 TO 20	CL.3	3'
27" TO 33"	20 TO 25	CL.3	3'
36" TO 48"	25 TO 38	CL.3	3'
54" AND UP	72 AND UP	CL.4	4'

(ONE CUBIC YARD IS APPROX. 2,800 LBS.)



SECTION A–A



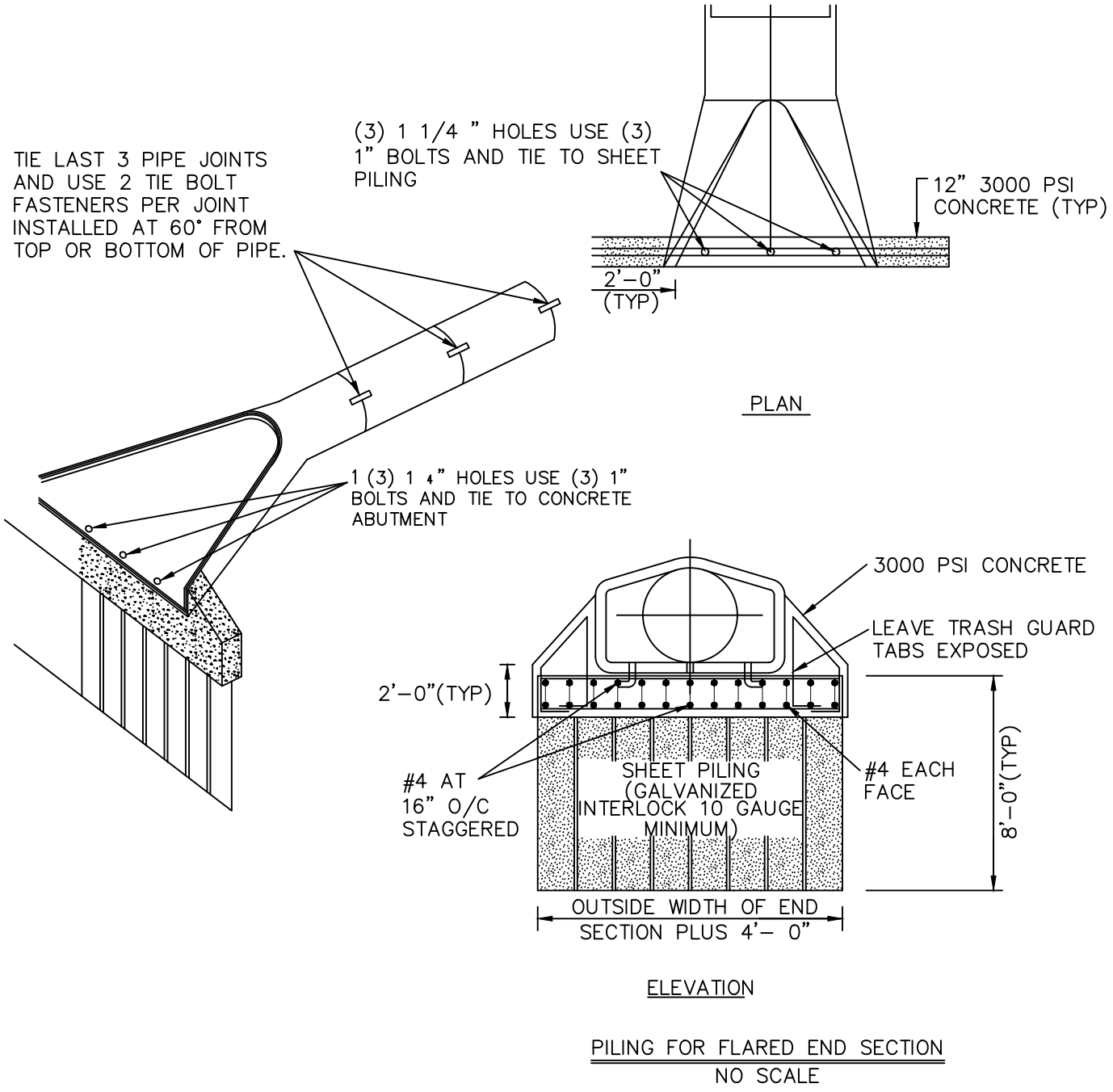
SECTION B–B

Since 1857 Hastings MINNESOTA

GROUTED RIPRAP INSTALLATION

Revised: JANUARY, 2024

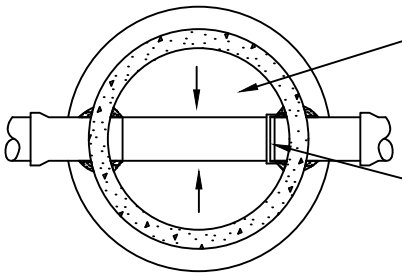
Plate NO. 400-18



PILING FOR FLARED END SECTION
NO SCALE

NOTE:
1. THIS DRAWING IS TYPICAL FOR ALL FLARED END SECTIONS 42 INCHES IN DIAMETER OR LARGER. ALL TRASH GUARDS WILL BE GALVANIZED.

Since 1857 Hastings MINNESOTA	42" + FES SHEET PILING	Revised: JANUARY, 2024 Plate NO. 400-19



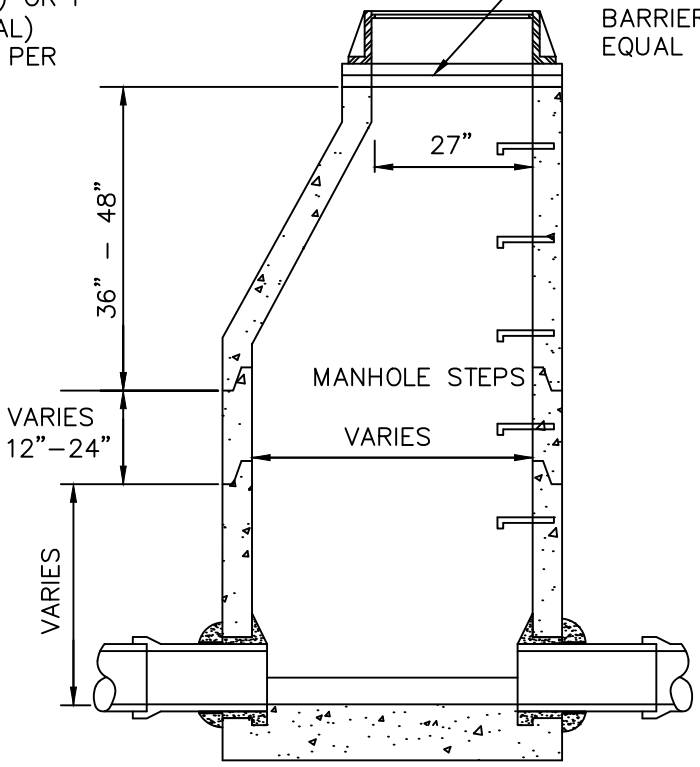
PRECAST INVERT MUST BE 1/2 DIAMETER OF THE PIPE AND BENCHES SLOPED 2" TOWARD THE INVERT.

MANHOLE STEPS SHALL BE PLACED SO THAT OFFSET VERTICAL PORTION OF CONE IS FACING DOWNSTREAM.

PLAN

INFISHIELD (EXTERNAL) OR I & I BARRIER (INTERNAL) OR APPROVED EQUAL PER SPECIFICATIONS.

HDPE ADJUSTING RINGS 2 MIN. 6 MAX, INFISHIELD (EXTERNAL) OR I & I BARRIER (INTERNAL) OR APPROVED EQUAL PER SPECIFICATIONS..



SECTION

NOTES:

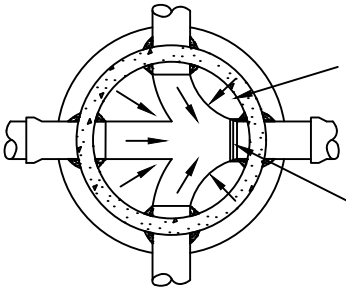
1. METAL SEWER CASTING. MANHOLE FRAMES AND COVERS SHALL BE EQUAL TO NEENAH R–1642 FRAME WITH SOLID LID COVER. THE COVER SHALL BE LETTERED "SANITARY SEWER"
2. PRE–CAST MANHOLE SECTIONS REINFORCED CONCRETE PER ASTM –C476 MIN. 4" THICK WALL
3. FURNISH SECTION WITH O–RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER
5. ALL DOG HOUSES SHALL BE MORTARED ON THE INSIDE
6. ALL PIPES SHALL BE CUT TO EXTEND INSIDE MANHOLE WALL AND HAVE A WATER TIGHT SEAL.

Since 1857 Hastings MINNESOTA

SANITARY MANHOLE

Revised:
JANUARY, 2024

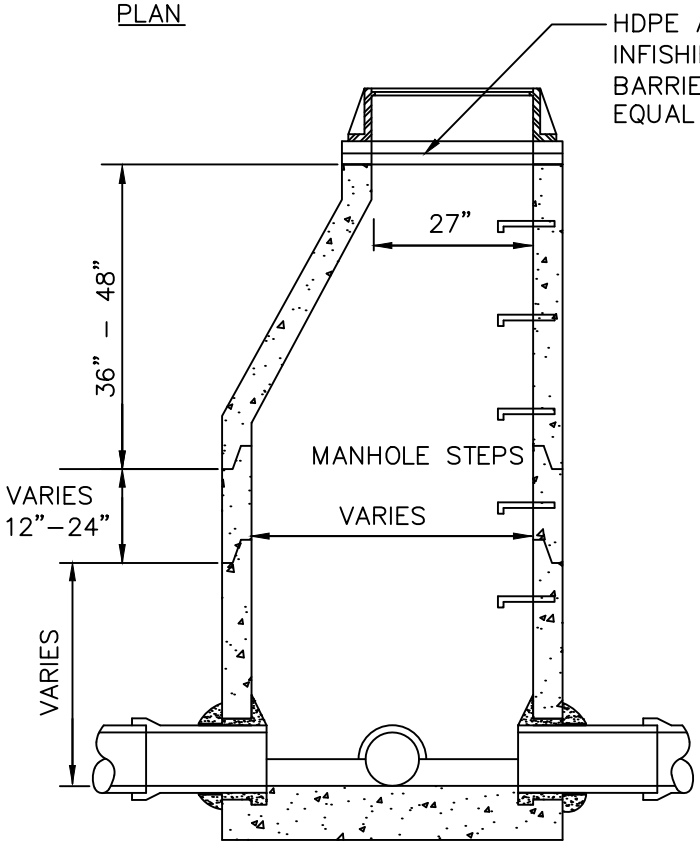
Plate NO.
400-20



PRECAST INVERT MUST BE 1/2 DIAMETER OF PIPE AND BENCHES SHOULD BE SLOPED 2" TOWARD INVERT.

MANHOLE STEPS SHALL BE PLACED SO THAT OFFSET VERTICAL PORTION OF CONE IS FACING DOWNSTREAM.

PLAN



SECTION

NOTES:

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6. ALL DOG HOUSES SHALL BE MORTARED ON THE INSIDE
7. ALL PIPES SHALL BE CUT TO EXTEND INSIDE MANHOLE WALL AND HAVE A WATER TIGHT SEAL.

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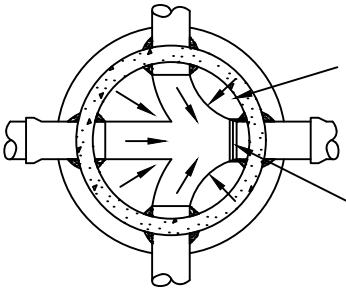
SANITARY JUNCTION MANHOLE

Revised:
JANUARY, 2024

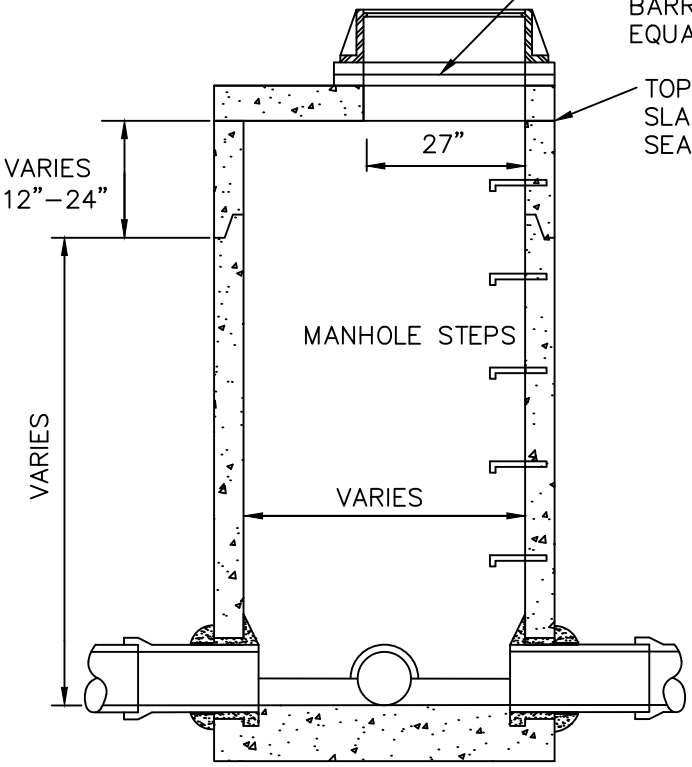
Plate NO.
400-21



PRECAST INVERT MUST BE 1/2 DIAMETER OF PIPE AND BENCHES SHOULD BE SLOPED 2" TOWARD INVERT.

MANHOLE STEPS SHALL BE PLACED SO THAT OFFSET VERTICAL PORTION OF CONE IS FACING DOWNSTREAM.

PLAN



SECTION

NOTES:

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3. FURNISH SECTION WITH O–RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER
5. ALL DOG HOUSES SHALL BE MORTARED ON THE INSIDE
6. ALL PIPES SHALL BE CUT TO EXTEND INSIDE MANHOLE WALL AND HAVE A WATER TIGHT SEAL.

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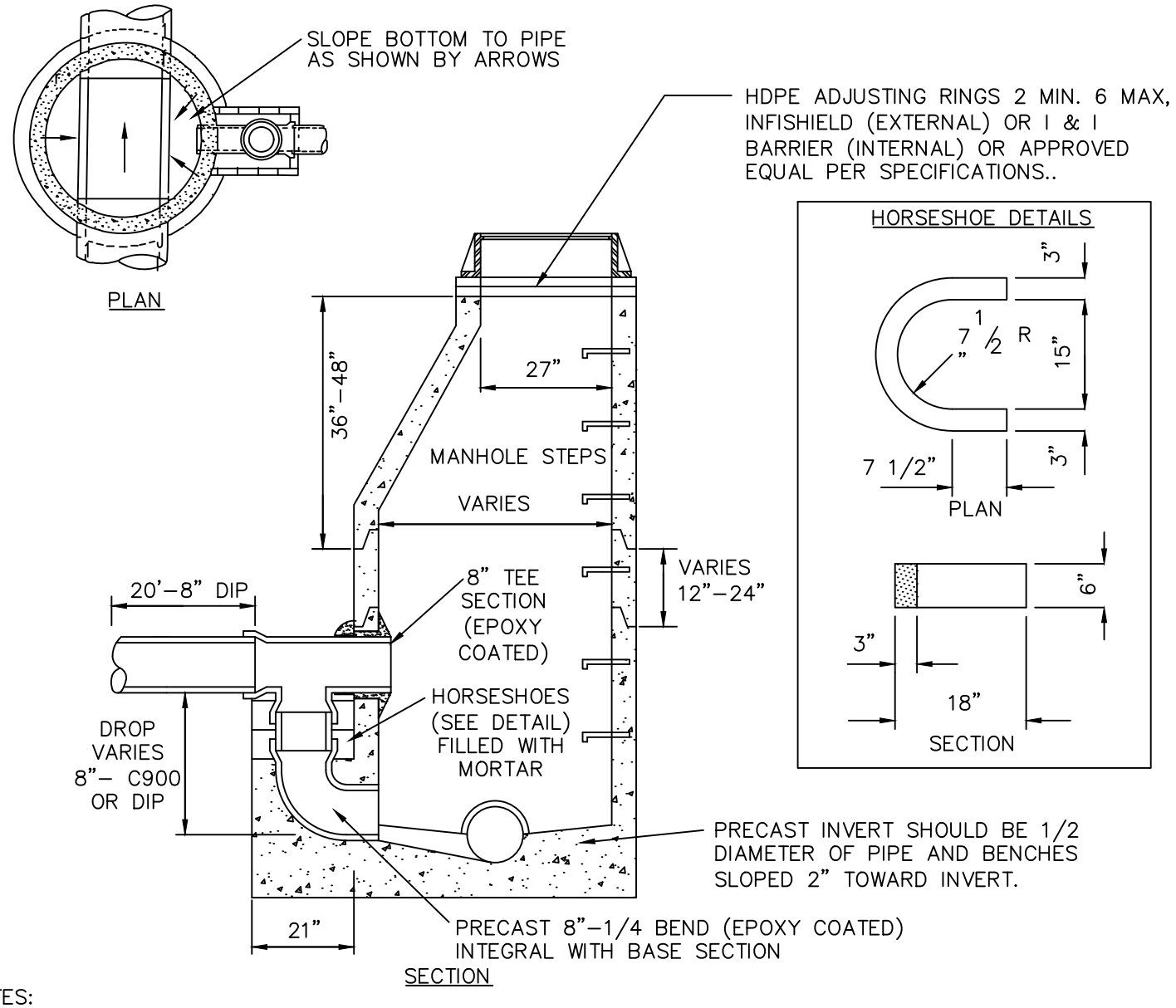
SANITARY SEWER JUNCTION MANHOLE W/ REINFORCED TOP SLAB

Revised:
JANUARY, 2024

Plate NO.
400-22



NOTES:

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2. PRE–CAST MANHOLE SECTIONS REINFORCED CONCRETE PER ASTM –C476 MIN. 4" THICK WALL
3. FURNISH SECTION WITH O–RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER
5. ALL DOG HOUSES SHALL BE MORTARED ON THE INSIDE
6. ALL PIPES SHALL BE CUT TO EXTEND INSIDE MANHOLE WALL AND HAVE A WATER TIGHT SEAL.

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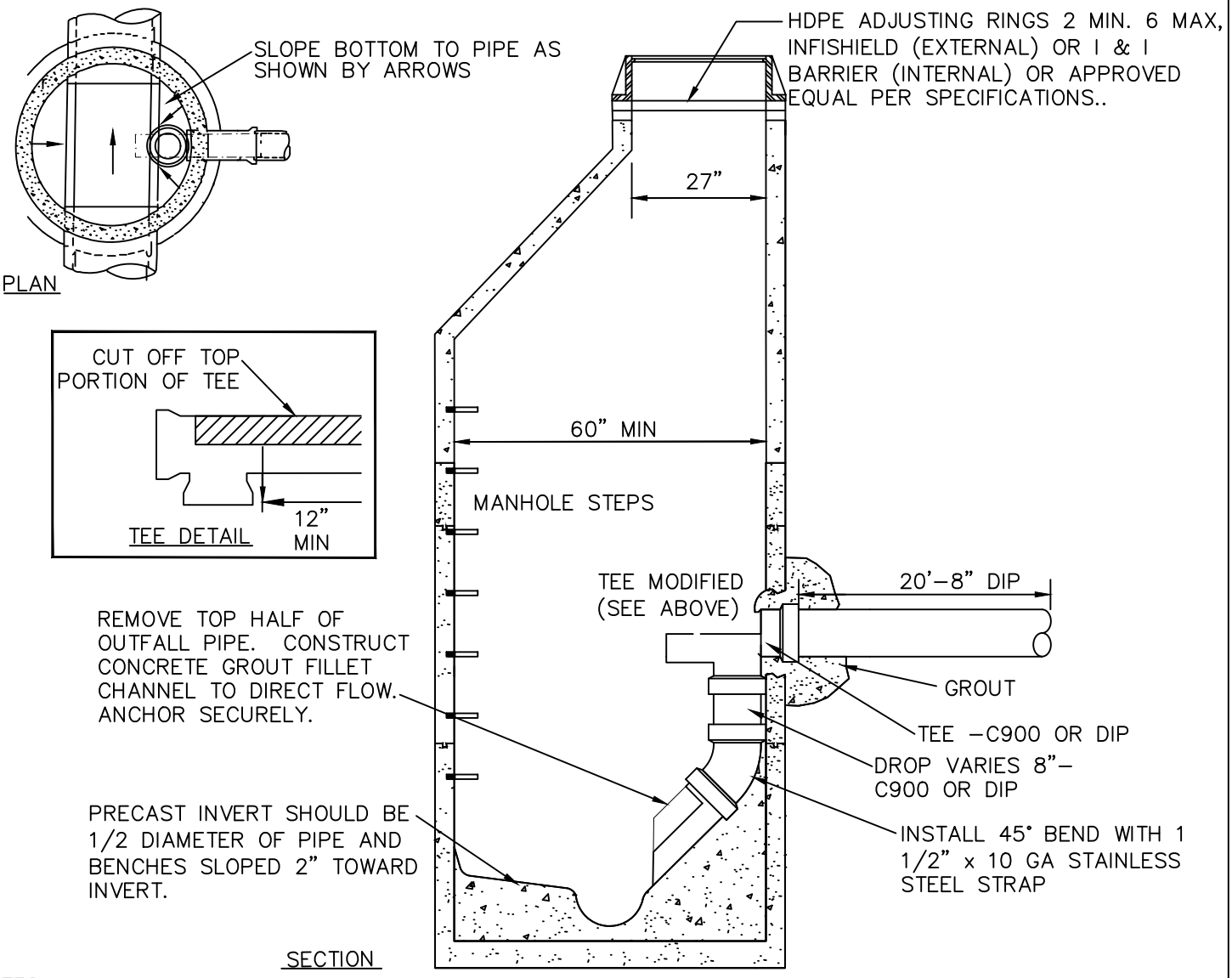
SANITARY SEWER OUTSIDE DROP INLET MANHOLE

Revised: JANUARY, 2024

Plate NO. 400-23



NOTES:

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3. FURNISH SECTION WITH O-RING GASKETS AND LUBRICANT, EXCEPT AS OTHERWISE SPECIFIED
4. AIR ENTRAINED UNDERGROUND UTILITY MORTAR USED FOR GROUTING SHALL BE APPROVED BY ENGINEER
6. HOLE FOR TEE SHALL BE 4" LARGER THAN PIPE SIZE TO ALLOW BELL TO BE POSITIONED INSIDE MANHOLE
7. ALL DOG HOUSES SHALL BE MORTARED ON THE INSIDE
8. ALL PIPES SHALL BE CUT TO EXTEND INSIDE MANHOLE WALL AND HAVE A WATER TIGHT SEAL
9. USE STAINLESS STEEL PIPE BRACKET (MIN. 2 REQUIRED, 5' SPACING)

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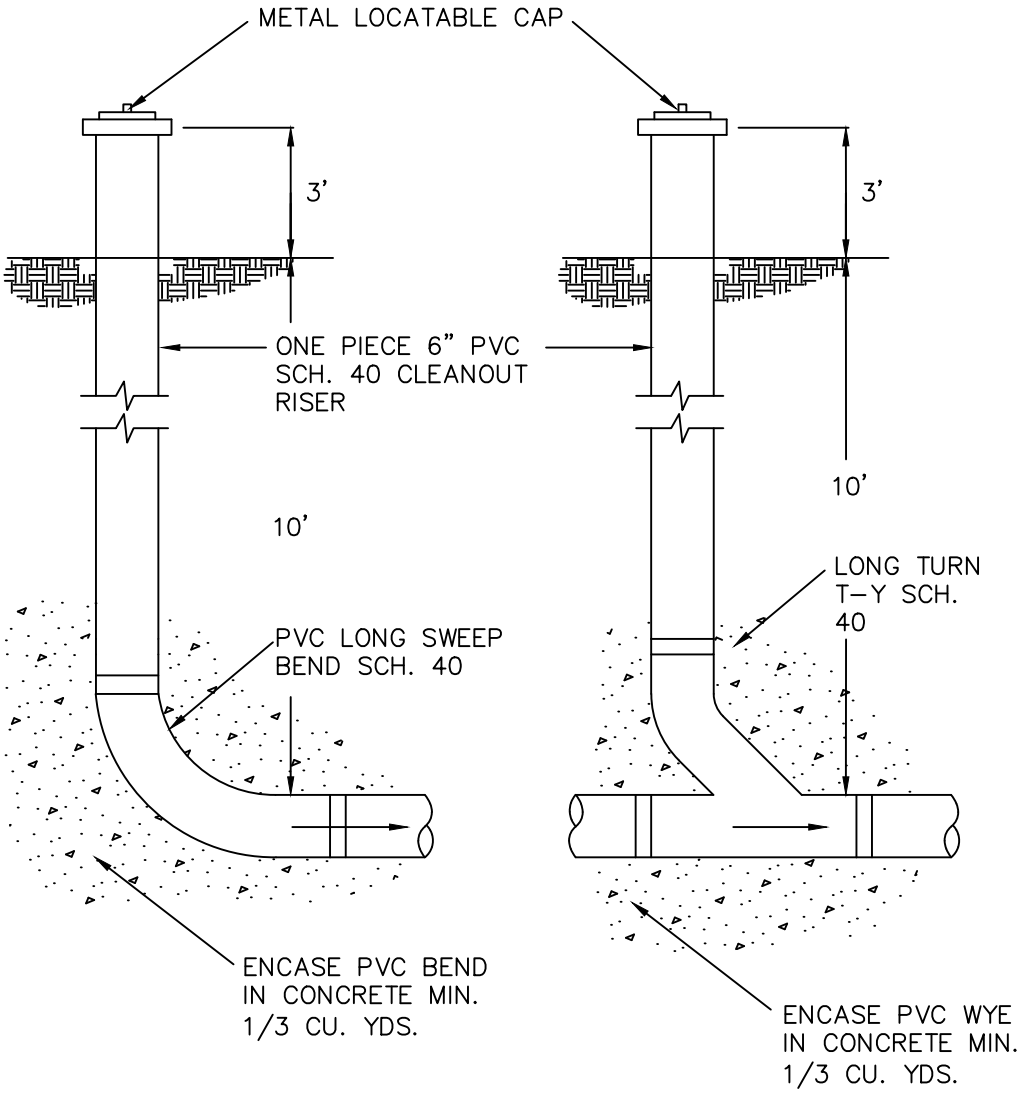
SANITARY SEWER INSIDE DROP INLET MANHOLE

Revised: JANUARY, 2024

Plate NO. 400-24



END OF LINE CLEANOUT

IN LINE CLEANOUT

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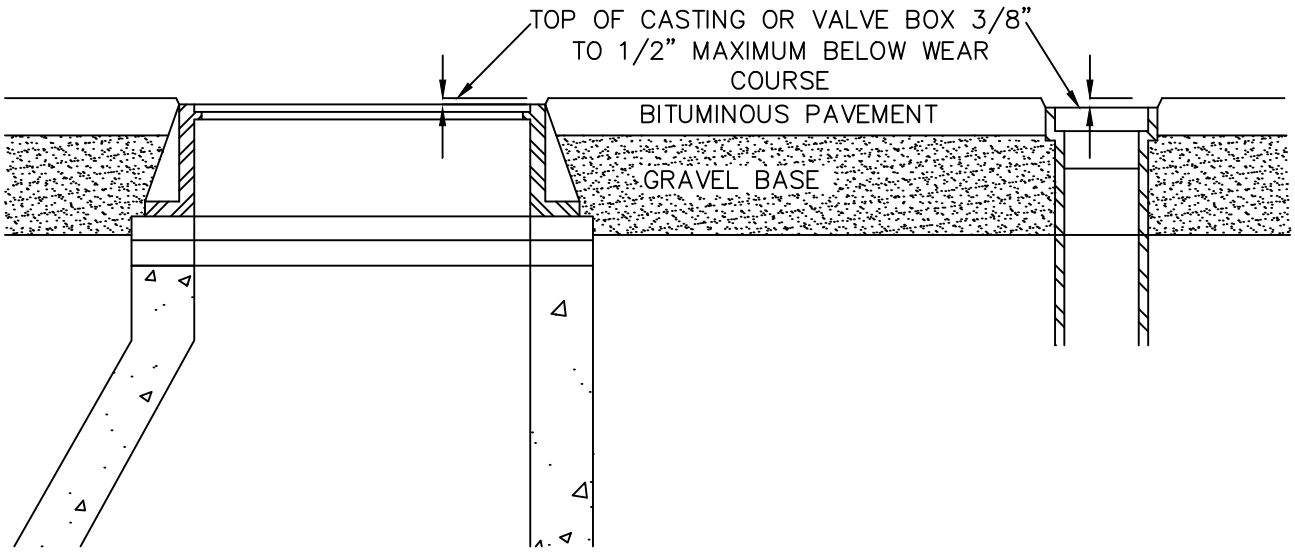
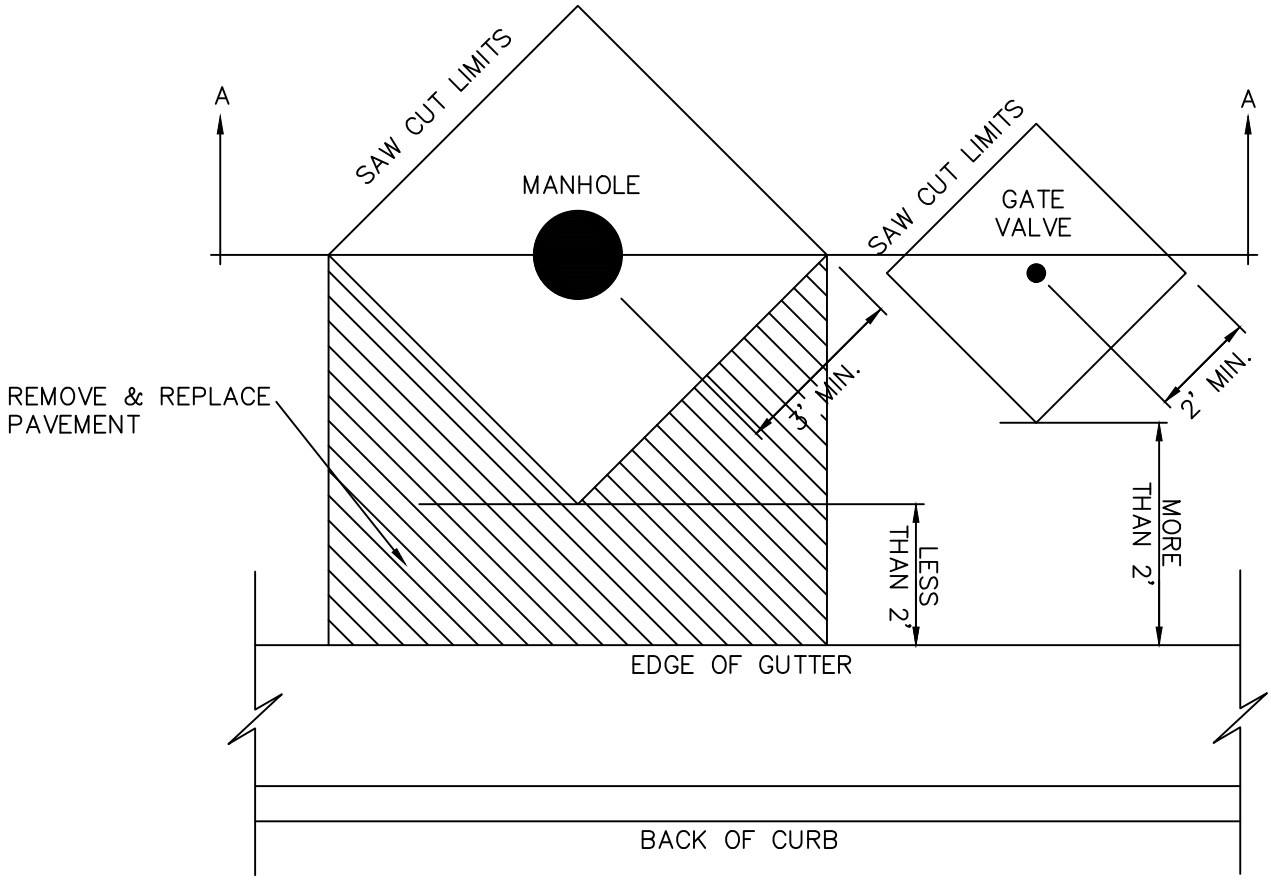
PVC SERVICE LINE CLEANOUTS

Revised:
JANUARY, 2024

Plate NO.
400-25





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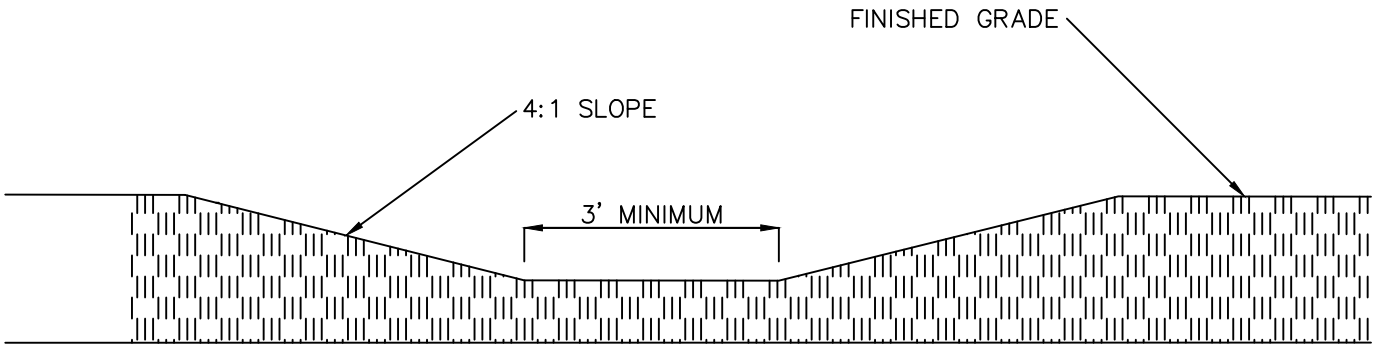
MANHOLE & GATE VALVE ADJUSTMENT

Revised: JANUARY, 2024

Plate NO. 400-26



NOTES:

1. EMERGENCY OVERFLOWS, WHICH DRAIN OVER VEGETATED AREAS, SHALL BE LINED WITH GEOTEXTILE EROSION CONTROL MATTING SUCH AS: ENKAMAT, TENSAR, LAN LOCK, OR APPROVED EQUAL.
2. AFTER THE OVERFLOW AREA IS FINE GRADED IT SHALL BE SODDED TO MATCH THE SPECIFIED OVERFLOW ELEVATION AND IS TO BE PROTECTED TO WITH A TEMPORARY FENCE, WHICH SHALL DELINEATE THE EASEMENT LIMITS AND PROTECT THE FINISHED OVERFLOW SWALE FROM DISTURBANCE BY ADJACENT HOME CONSTRUCTION AND LOT GRADING.
3. EMERGENCY OVERFLOWS WILL HAVE A MINIMUM 3' FLAT BOTTOM WITH 4:1 SLOPES (PLEASE REFER TO YOUR DRAINAGE CALCULATIONS TO FLOW PATH WIDTHS IN EXCESS OF 3'). PLEASE CHECK THAT ALL NECESSARY FLOW PATHS ARE INCLUDED WITHIN EASEMENTS OF SUFFICIENT SIZE AND WIDTHS.
4. ABUTTING STRUCTURE "LOWEST" OPENINGS SHALL BE AT LEAST 24" ABOVE THE 100-YEAR OVERFLOW PROFILE (HWL) OF THE EMERGENCY SWALE.
5. THERE SHALL BE AT LEAST A 15' SEPARATION FROM THE OVERFLOW SWALE DRAINAGE EASEMENT TO ANY LIVABLE STRUCTURE.

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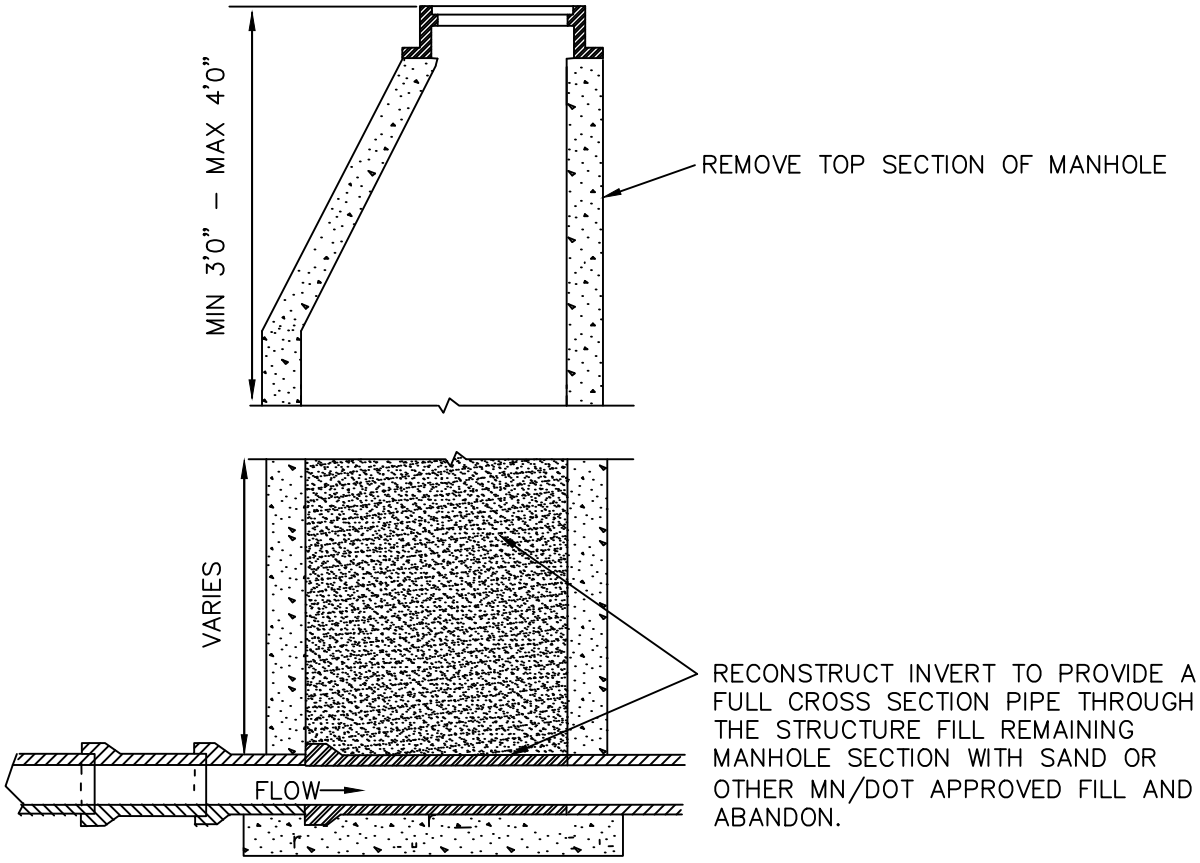
EMERGENCY OVERFLOW SWALE

Revised: JANUARY, 2024

Plate NO. 400-27



SECTION

NOTE:
1. VERIFY THE MATERIAL USED IN BUILDING THE STRUCTURE PRIOR TO REMOVING TOP SECTION.

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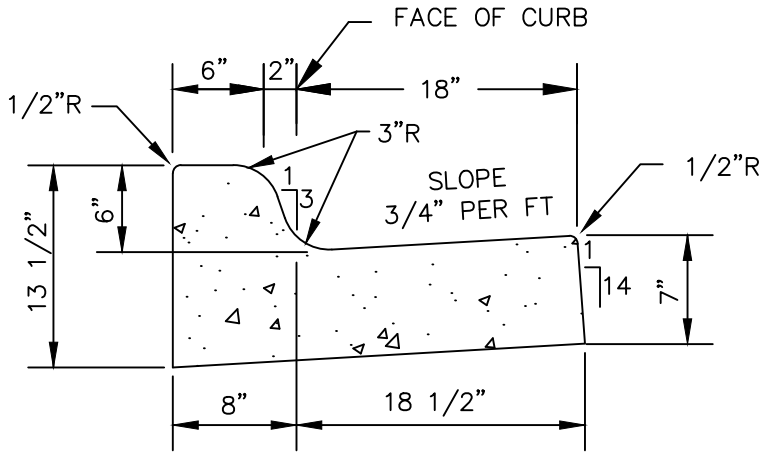
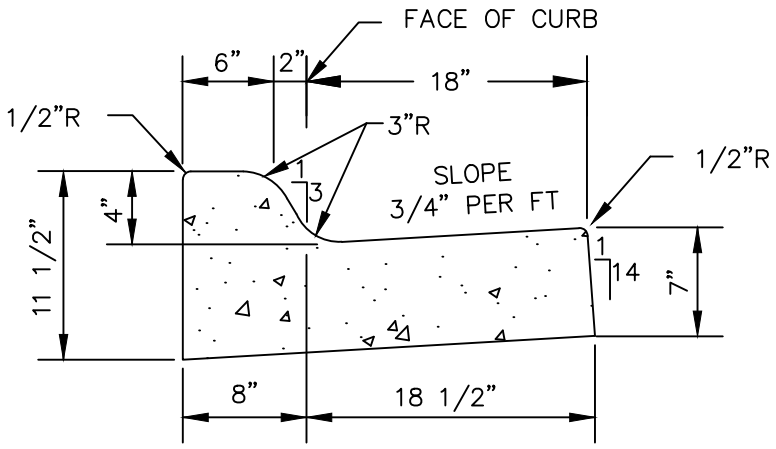
MANHOLE ABANDONMENT

Revised: JANUARY, 2024

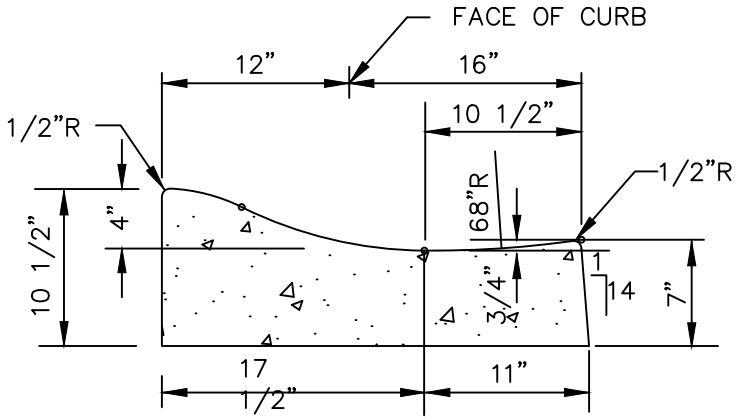
Plate NO. 400-28



MODIFIED
MNDOT B618

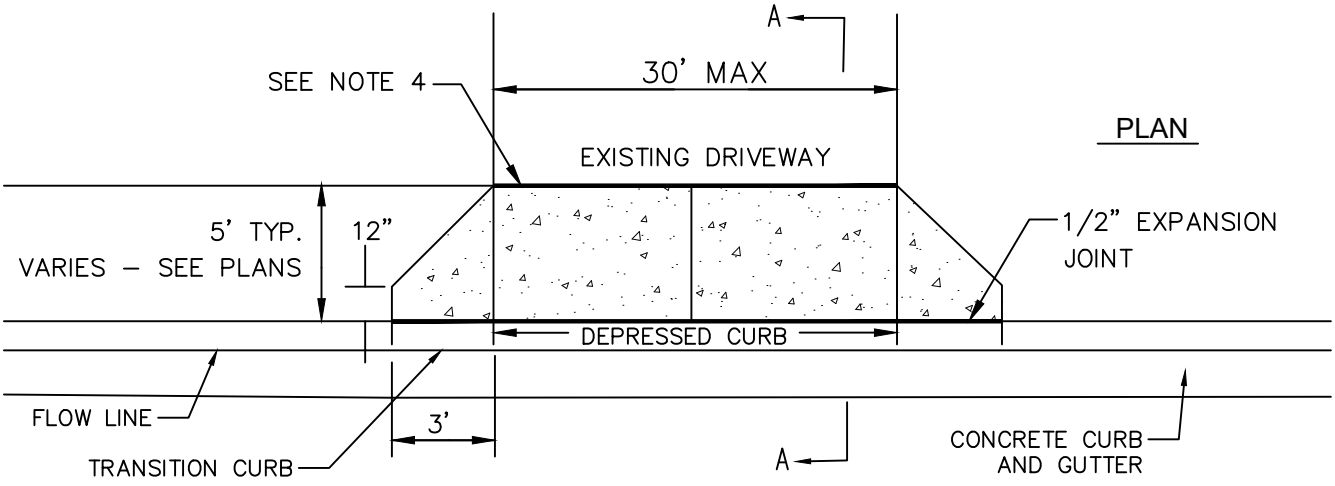


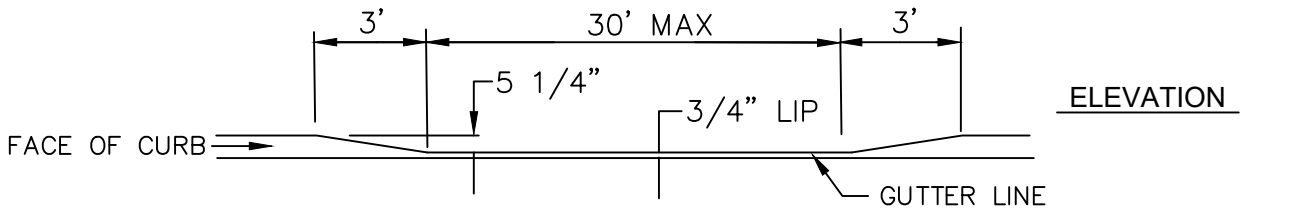
MODIFIED
MNDOT B418

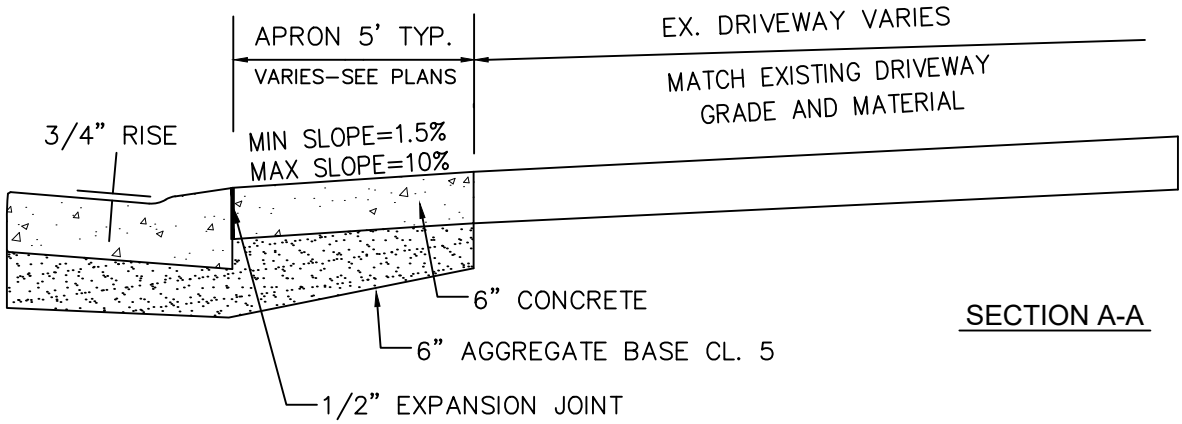


SURMOUNTABLE D428
MODIFIED

Since 1857 Hastings MINNESOTA	CONCRETE CURB & GUTTER	Revised: JANUARY, 2024 Plate NO. 600-1







NOTES:

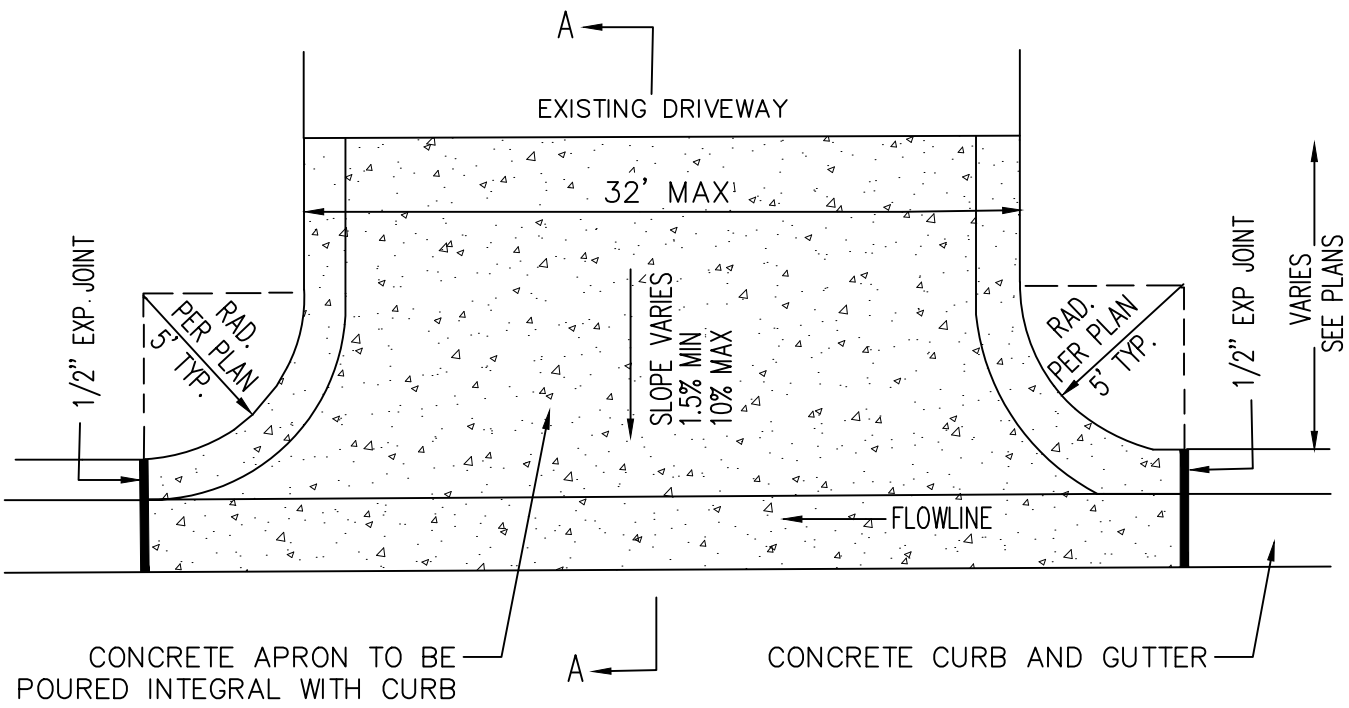
1. IF NO WALK/TRAIL PRESENT, EX. DRIVEWAY SECTION TO MATCH AT BACK OF APRON.
2. APRON IS 5' (TYP.)
3. PANEL WIDTH SHALL NOT EXCEED 10' WITHOUT CONTRACTION JOINT
4. CONTRACTOR TO VERIFY IF EXISTING CONCRETE DRIVEWAY CONDITION WARRANTS EXPANSION JOINT AT TIE IN INTERFACE WITH NEW CONCRETE. (I.E. JOINT SPACING NOT ADEQUATE, EXISTING CRACKS, OR EXISTING JOINTS DON'T LINE UP WITH NEW JOINTS)

Since 1857 Hastings MINNESOTA

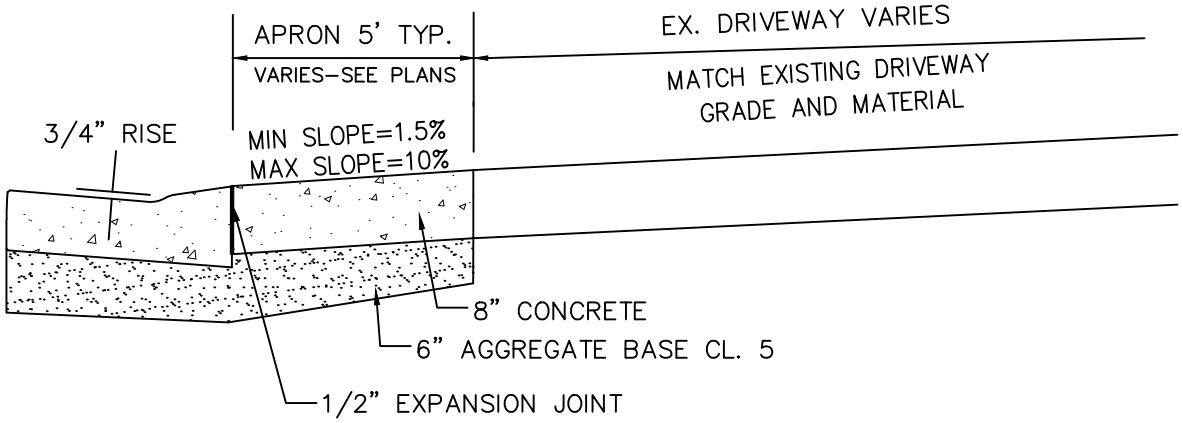
RESIDENTIAL DRIVEWAY APRON

Revised:
JANUARY, 2024

Plate NO.
600-2



PLAN



SECTION A-A

NOTES:

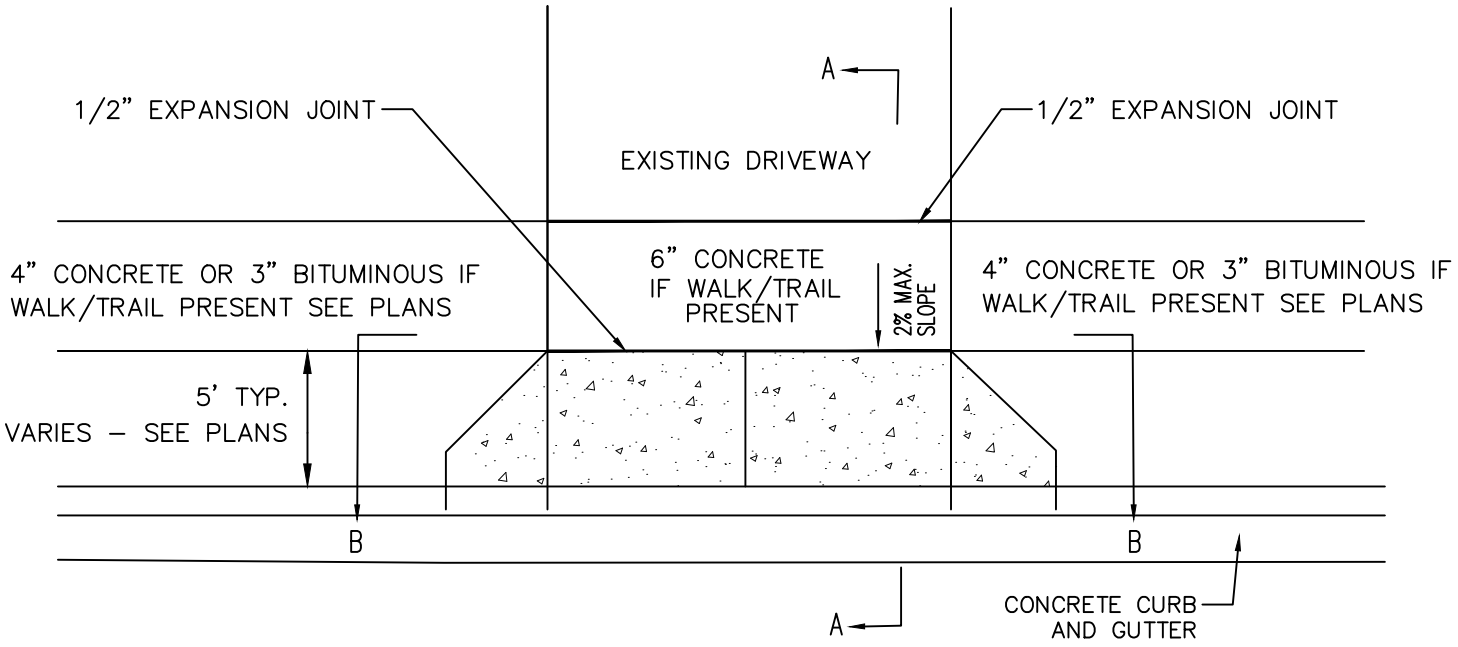
1. IF NO WALK/TRAIL PRESENT, EX. DRIVEWAY SECTION TO MATCH AT BACK OF APRON.
2. IF WALK/TRAIL PRESENT, 8" CONCRETE SHALL BE POURED WITHIN DRIVEWAY
3. PANEL WIDTH SHALL NOT EXCEED 10' WITHOUT CONTRACTION JOINT
4. CONTRACTOR TO VERIFY IF EXISTING CONCRETE DRIVEWAY CONDITION WARRANTS EXPANSION JOINT AT TIE IN INTERFACE WITH NEW CONCRETE. (I.E. JOINT SPACING NOT ADEQUATE, EXISTING CRACKS, OR EXISTING JOINTS DON'T LINE UP WITH NEW JOINTS)

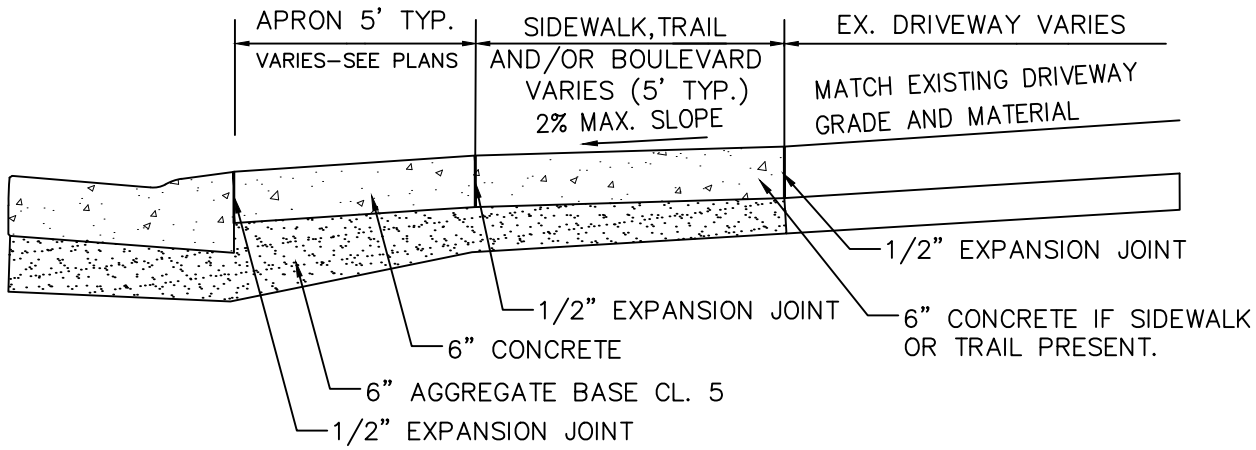
Since 1857 Hastings MINNESOTA

COMMERCIAL DRIVEWAY APRON

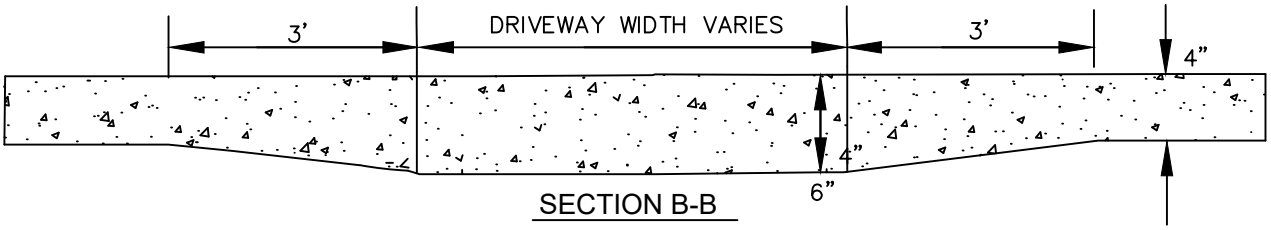
Revised: JANUARY, 2024

Plate NO. 600-3





SECTION A-A



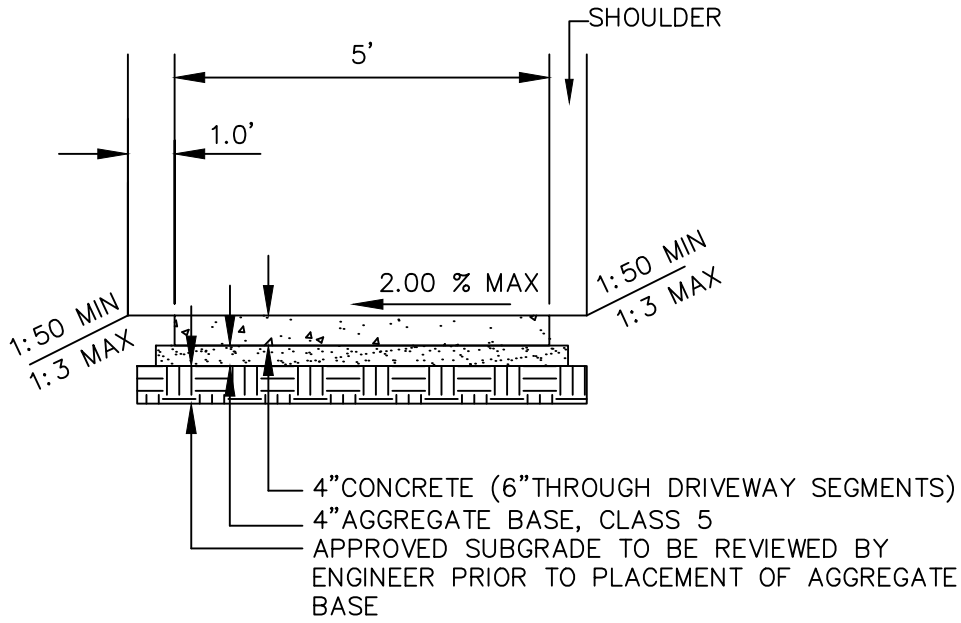
SECTION B-B

Since 1857 Hastings MINNESOTA

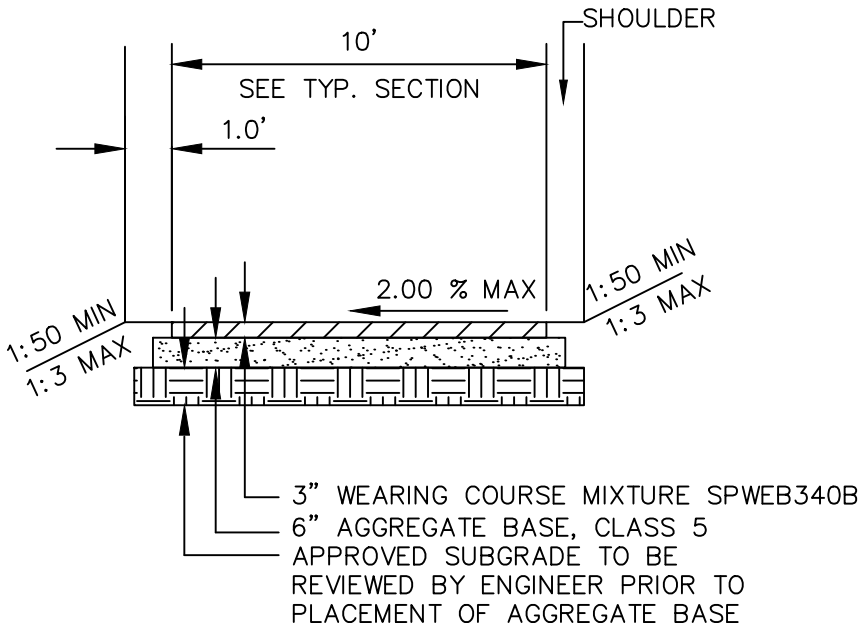
TRYPICAL RESIDENTIAL DRIVEWAY WITH SIDEWALK OR TRAIL

Revised:
JANUARY, 2024

Plate NO.
600-4



CONCRETE SIDEWALK



BITUMINOUS TRAIL

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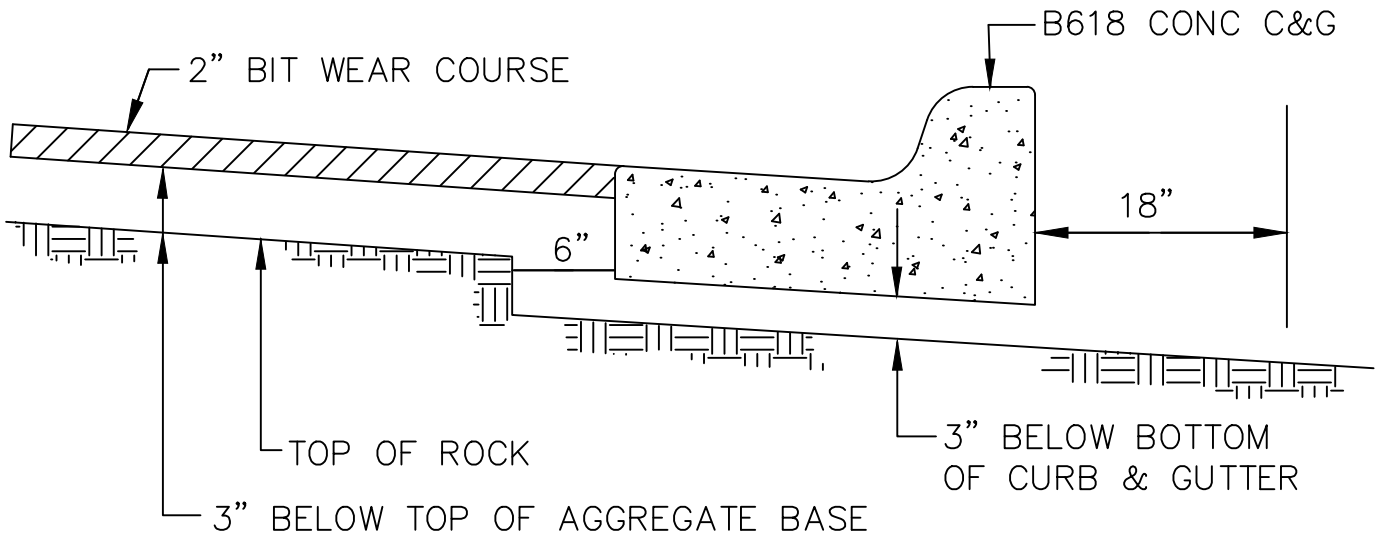
TYPICAL SECTION FOR SIDEWALK & BITUMINOUS TRAIL

Revised:
JANUARY, 2024

Plate NO.
600-5



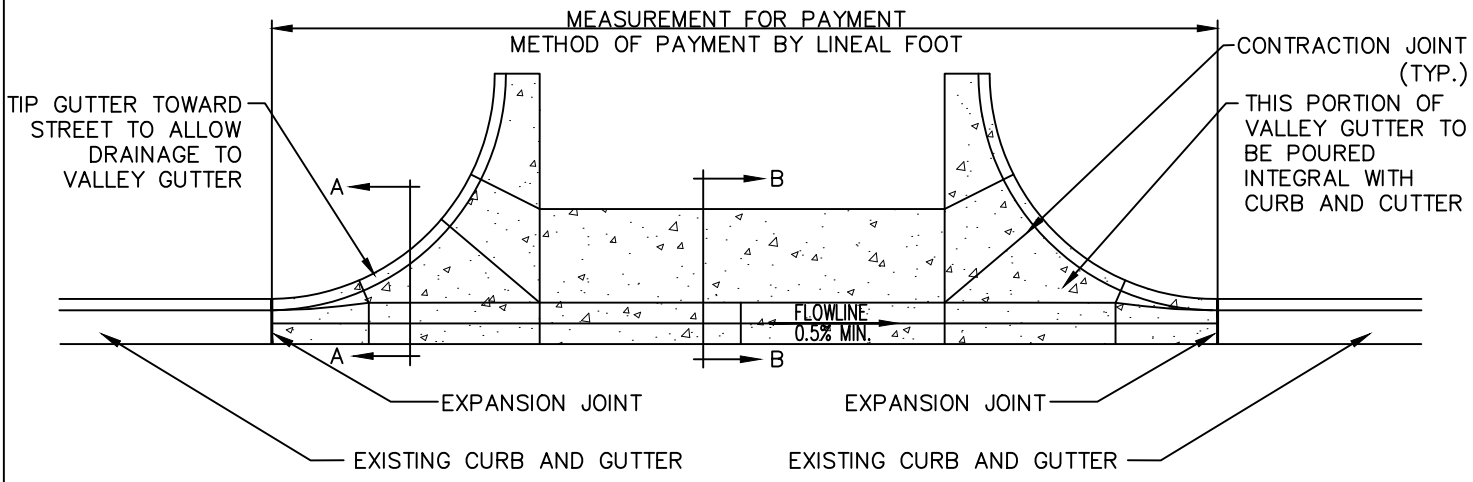
NOTE: GRANULAR BEDDING UNDER CURB INCLUDED IN THE COST BID FOR ROCK EXCAVATION UNLESS SPECIFIED OTHERWISE

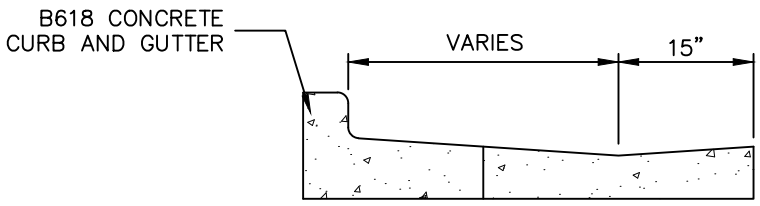
Since 1857 Hastings MINNESOTA

ROCK EXCAVATION LIMITS FOR
STREET & CONC. C&G CONSTRTUCTION

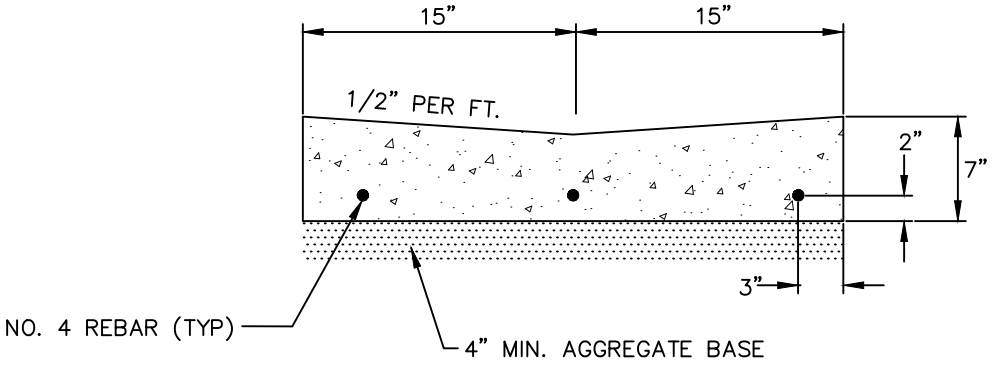
Revised:
JANUARY, 2024

Plate NO.
600-6





SECTION A–A THRU B618
CURB AND GUTTER



SECTION B–B
THRU CONCRETE GUTTER

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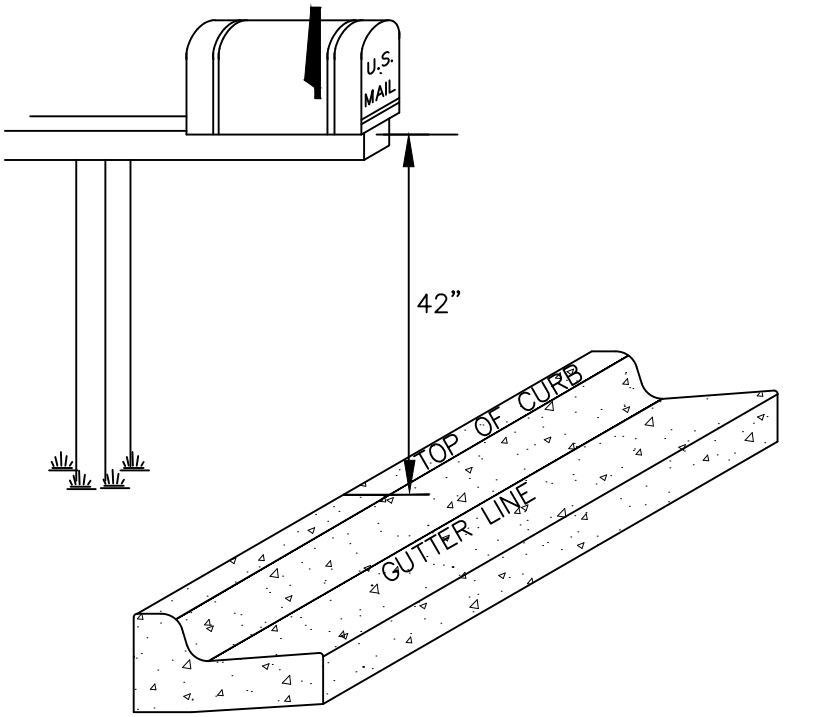
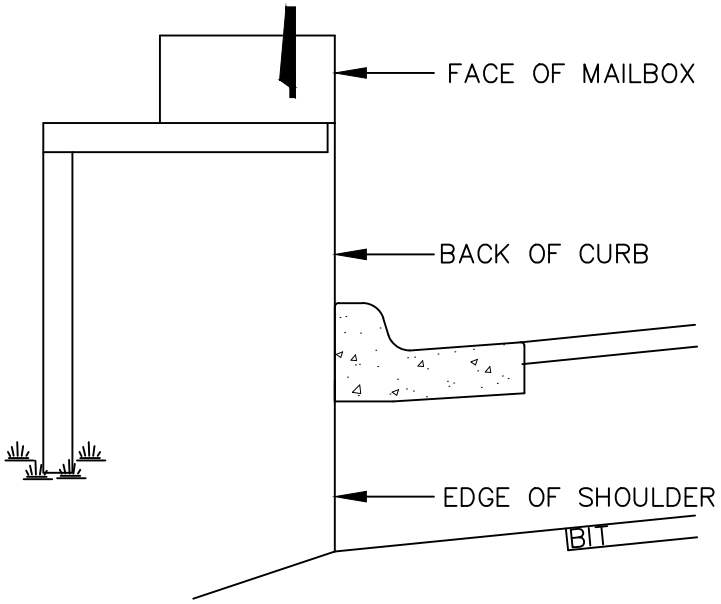
CONCRETE VALLEY GUTTER

Revised:
JANUARY, 2024

Plate NO.
600-7





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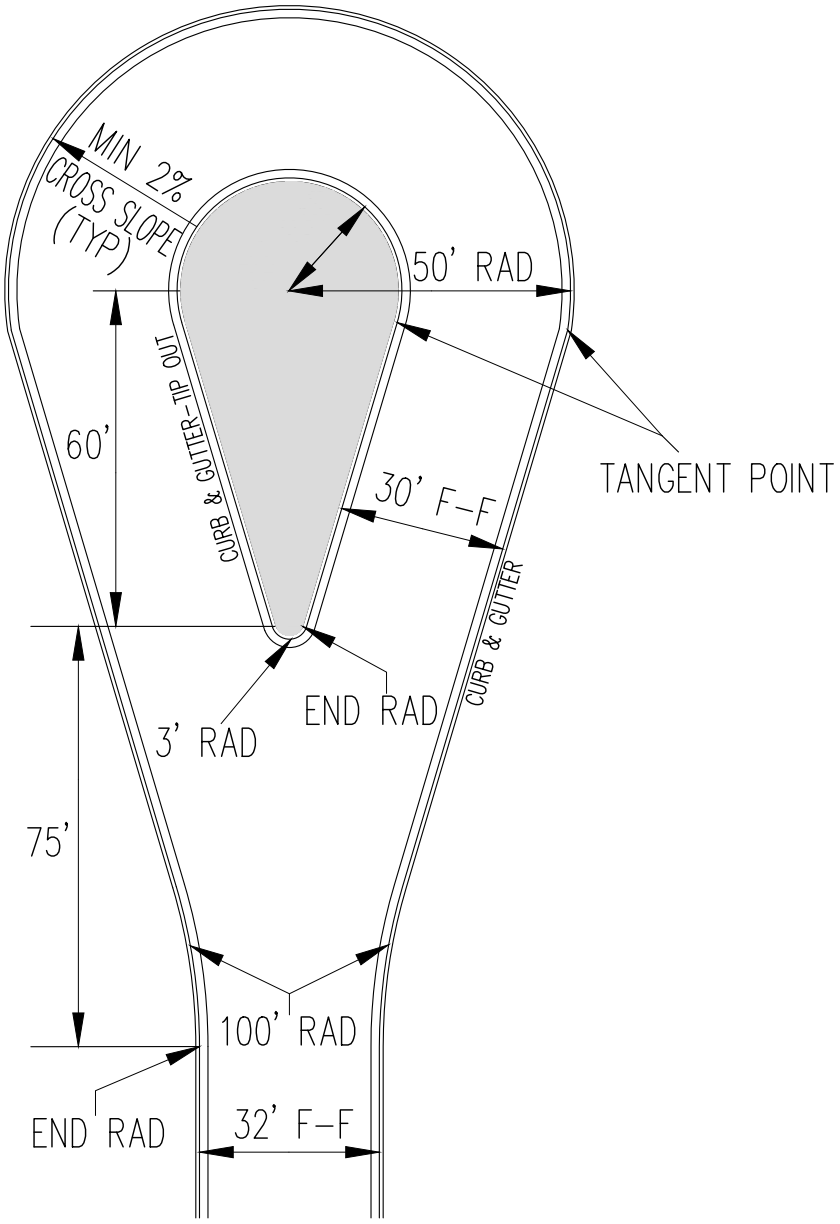
MAILBOX INSTALLATION

Revised:
JANUARY, 2024

Plate NO.
600-8



NOTES:

1. MAXIMUM LENGTH OF 500 FT ALONG CL FROM INTERSECTION TO END OF ROW
2. LANDSCAPED ISLAND TO BE MAINTAINED BY NEIGHBORHOOD/ASSOCIATION

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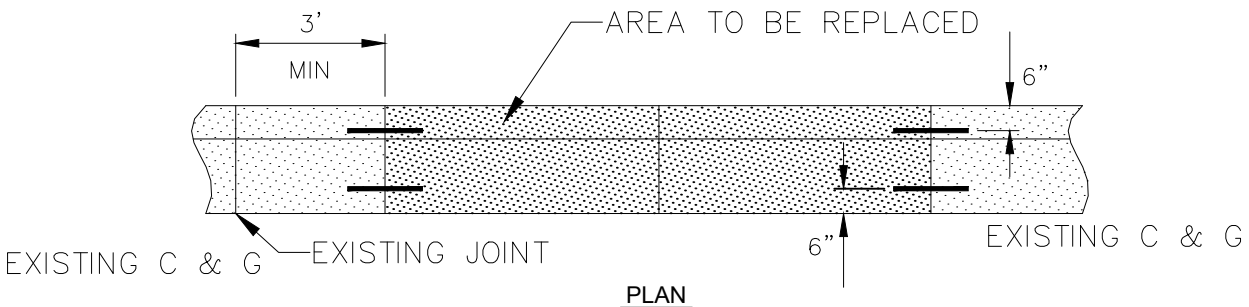
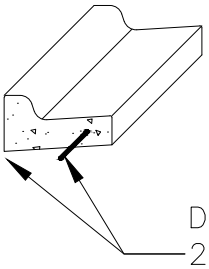
STANDARD CUL DE SAC WITH CENTER ISLAND

Revised: JANUARY, 2024

Plate NO. 600-9



PLAN



DRILL AND HAMMER
2 NO. 4 X 18" EPOXY
COATED BARS

SECTION

1. DEFINE REMOVAL AREA AT EXISTING JOINT OR, IF NECESSARY, SAW FULL DEPTH OF GUTTER AND AS MUCH OF CURB AS POSSIBLE.
2. SLIP-FORM INSTALLATION REQUIRED FOR LENGTHS GREATER THAN 100'
3. AS REQUIRED, PLACE 4" OF CLASS 5 AGGREGATE BASE. COMPACT WITH A HAND OPERATED VIBRATORY COMPACTOR.
4. RESTORE JOINTS BY HAND TOOLING TO MATCH EXISTING PATTERN.
5. CURB THAT IS CURED BEYOND HARDNESS, EITHER POURED EARLIER IN THE SAME DAY OR POURED PREVIOUSLY AS PART OF THE SAME PROJECT SHALL BE CONSIDERED EXISTING CURB AND THEREFORE SHALL ADHERE TO THE DOWEL REQUIREMENTS ABOVE

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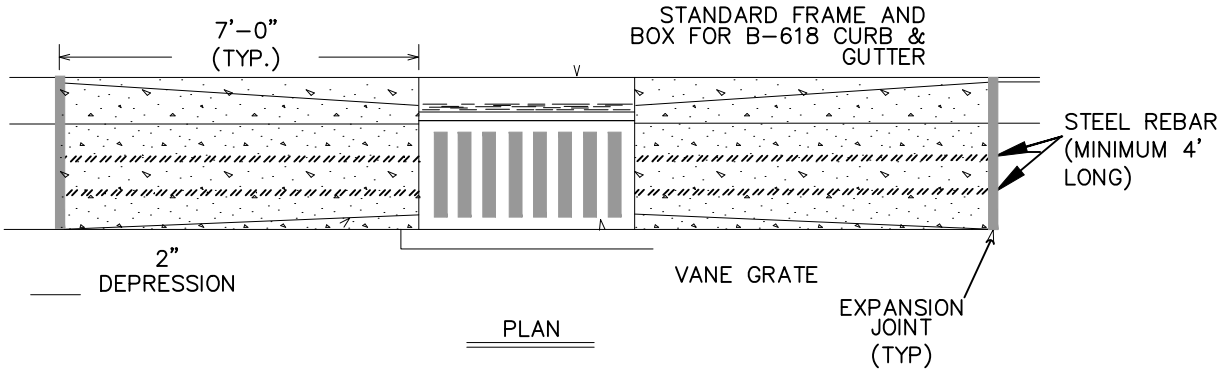
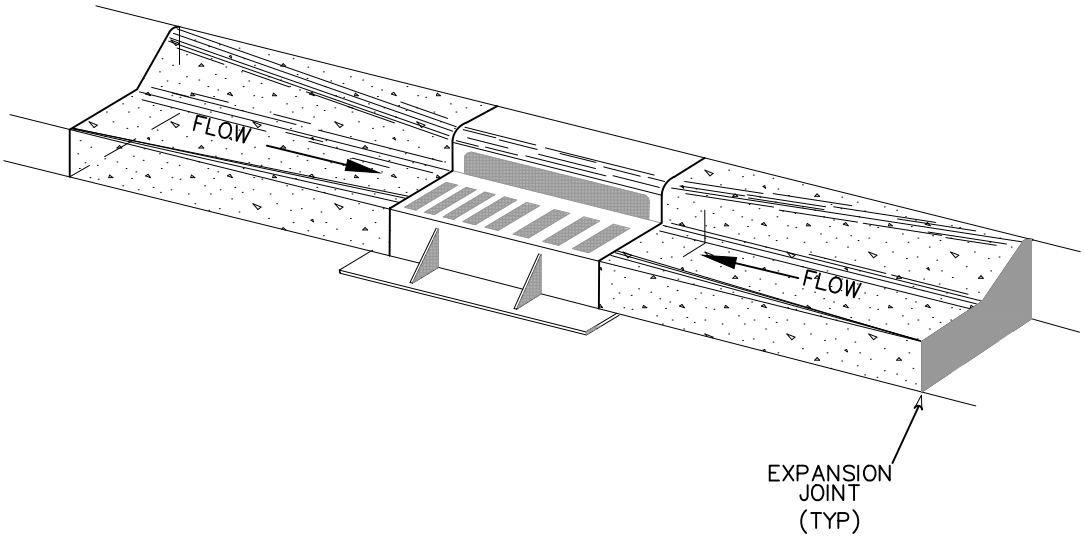
REMOVE & REPLACE OR CONNECTION TO EXISTING CURB PANEL

Revised:
JANUARY, 2024

Plate NO.
600-10



PLAN



NO SCALE

NOTES:

1. MODIFIED "S" CURB AND GUTTER TO BE FORMED INTO B618 TYPE CURB AT CATCH BASIN CASTING

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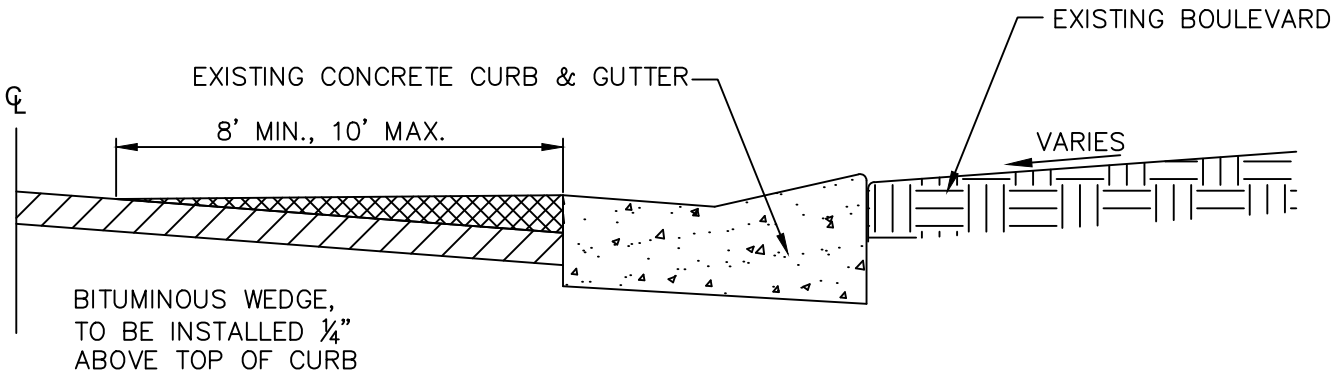
CURB AND GUTTER AT CATCH BASIN

Revised:
JANUARY, 2024

Plate NO.
600-11



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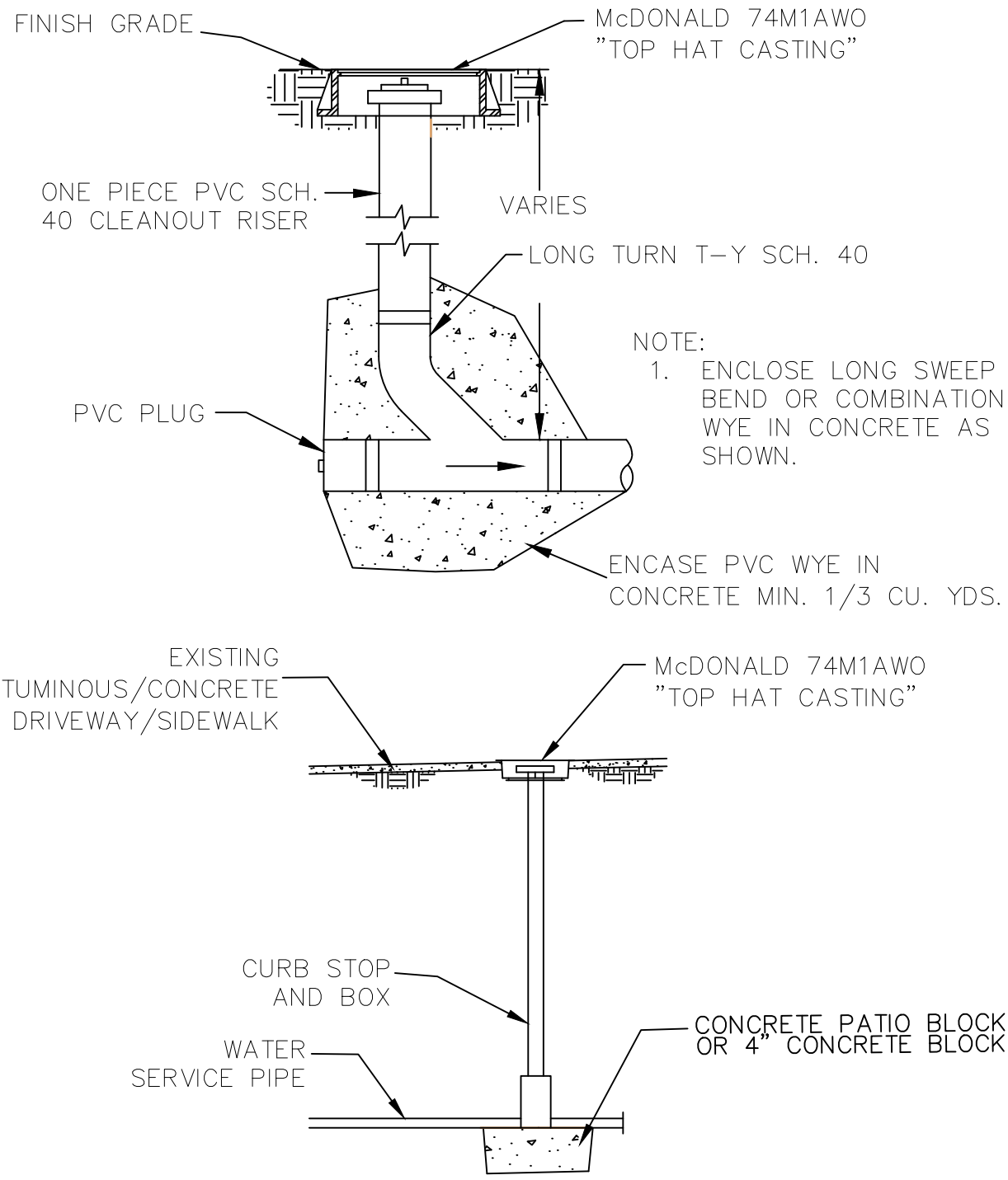
CONCRETE CURB PROTECTION

Revised:
JANUARY, 2024

Plate NO.
600-12



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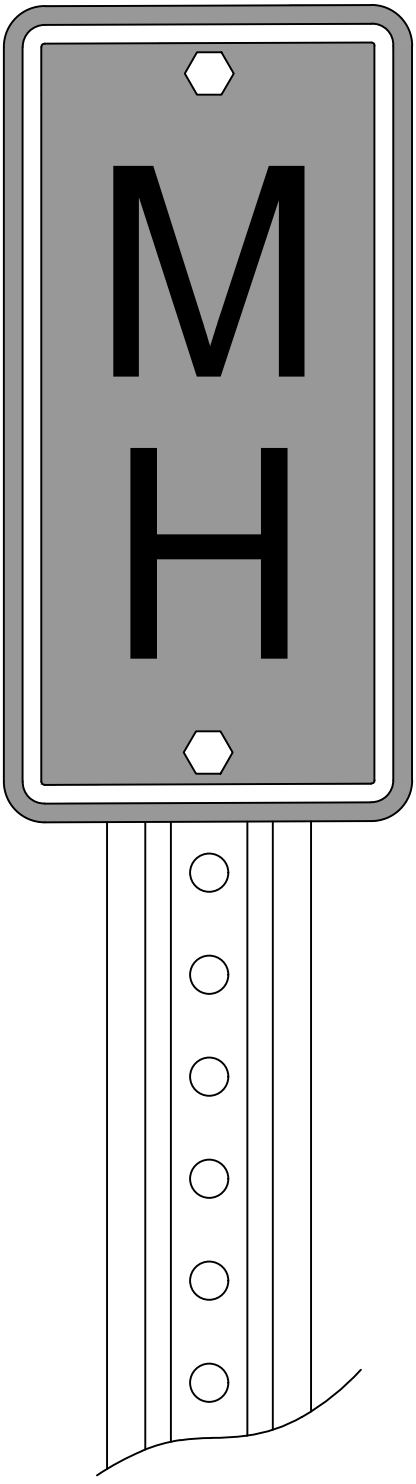
CURB BOX & CLEANOUT PROTECTION IN DRIVEWAY

Revised:
JANUARY, 2024

Plate NO.
600-13



NOTES:

1. LETTERS ON SIGN VARY DEPENDING ON UTILITY SIGN IS INSTALLED ADJACENT TO (SEE SPECIFICATIONS).

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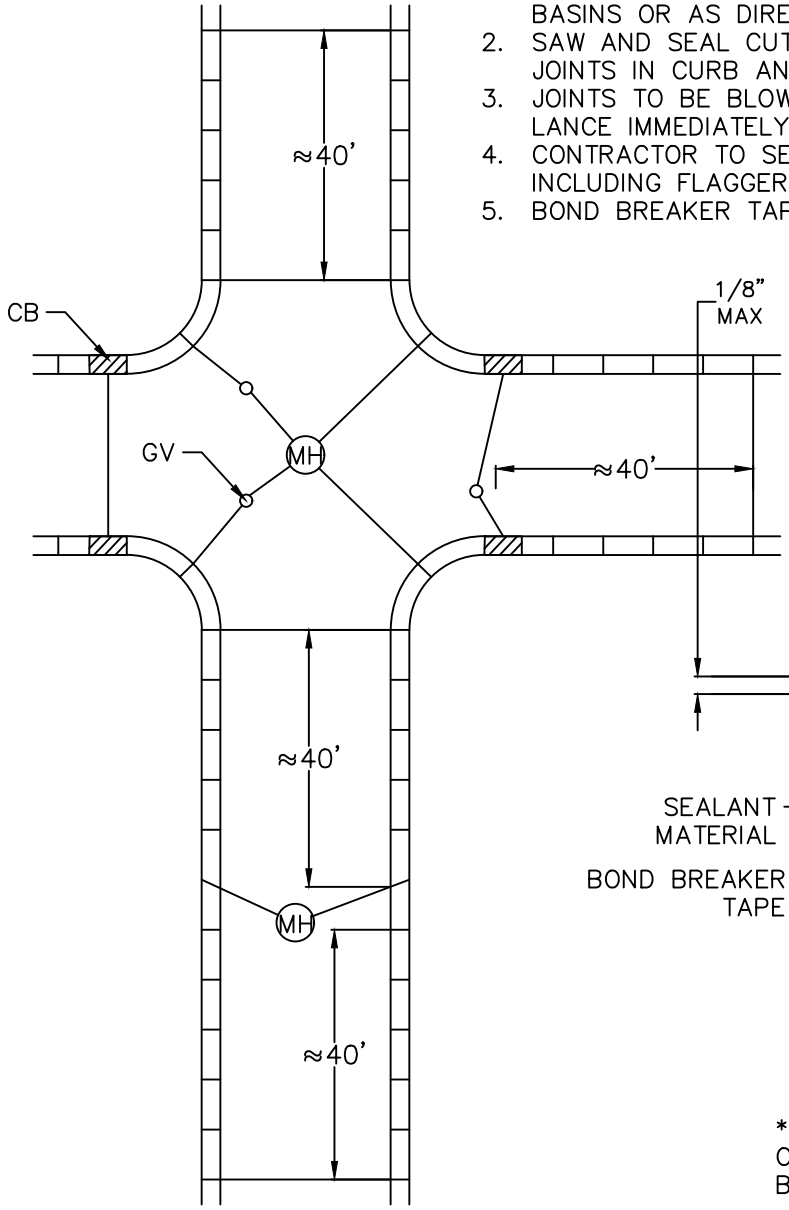
STRUCTURE MARKER SIGN

Revised:
JANUARY, 2024

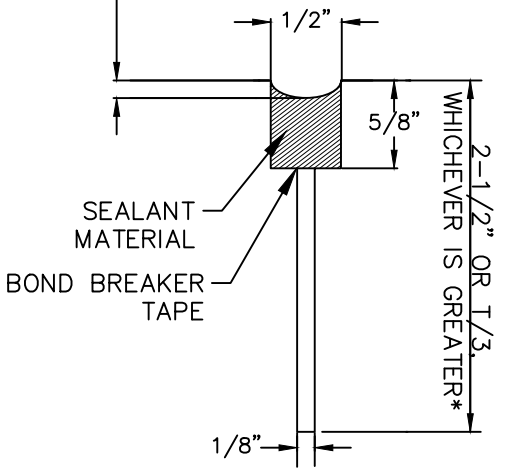
Plate NO.
600-14

NOTES:

1. SAW AND SEAL LOCATIONS SHALL BE AT 40' +/− SPACING AND AT MANHOLES, GATE VALVES, AND CATCH BASINS OR AS DIRECTED BY ENGINEER.
2. SAW AND SEAL CUT SHALL BE STRAIGHT AND MATCH JOINTS IN CURB AND GUTTER.
3. JOINTS TO BE BLOWN CLEAN AND DRIED WITH A HEAT LANCE IMMEDIATELY BEFORE SEALING.
4. CONTRACTOR TO SETUP AND MAINTAIN TRAFFIC CONTROL, INCLUDING FLAGGERS, IN ACCORDANCE WITH MMUTCD.
5. BOND BREAKER TAPE IS OPTIONAL.



PLAN VIEW



*T=TOTAL THICKNESS OF OVERLAY OR NEW BITUMINOUS, IN INCHES

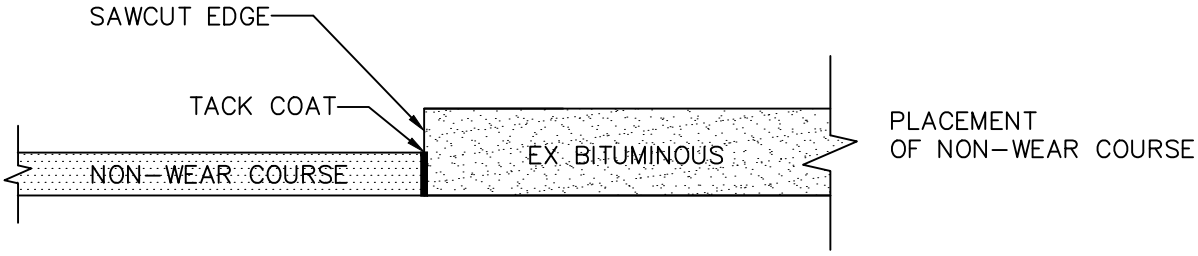
TYPICAL JOINT SECTION

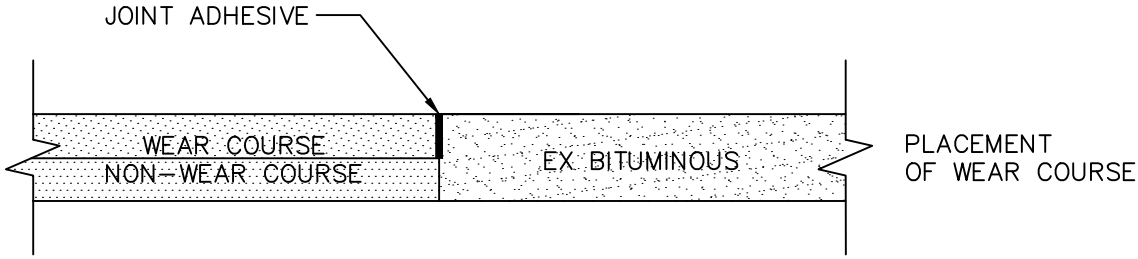
Since 1857 Hastings MINNESOTA

BITUMINOUS SAW AND SEAL

Revised: JANUARY, 2024

Plate NO. 700-1





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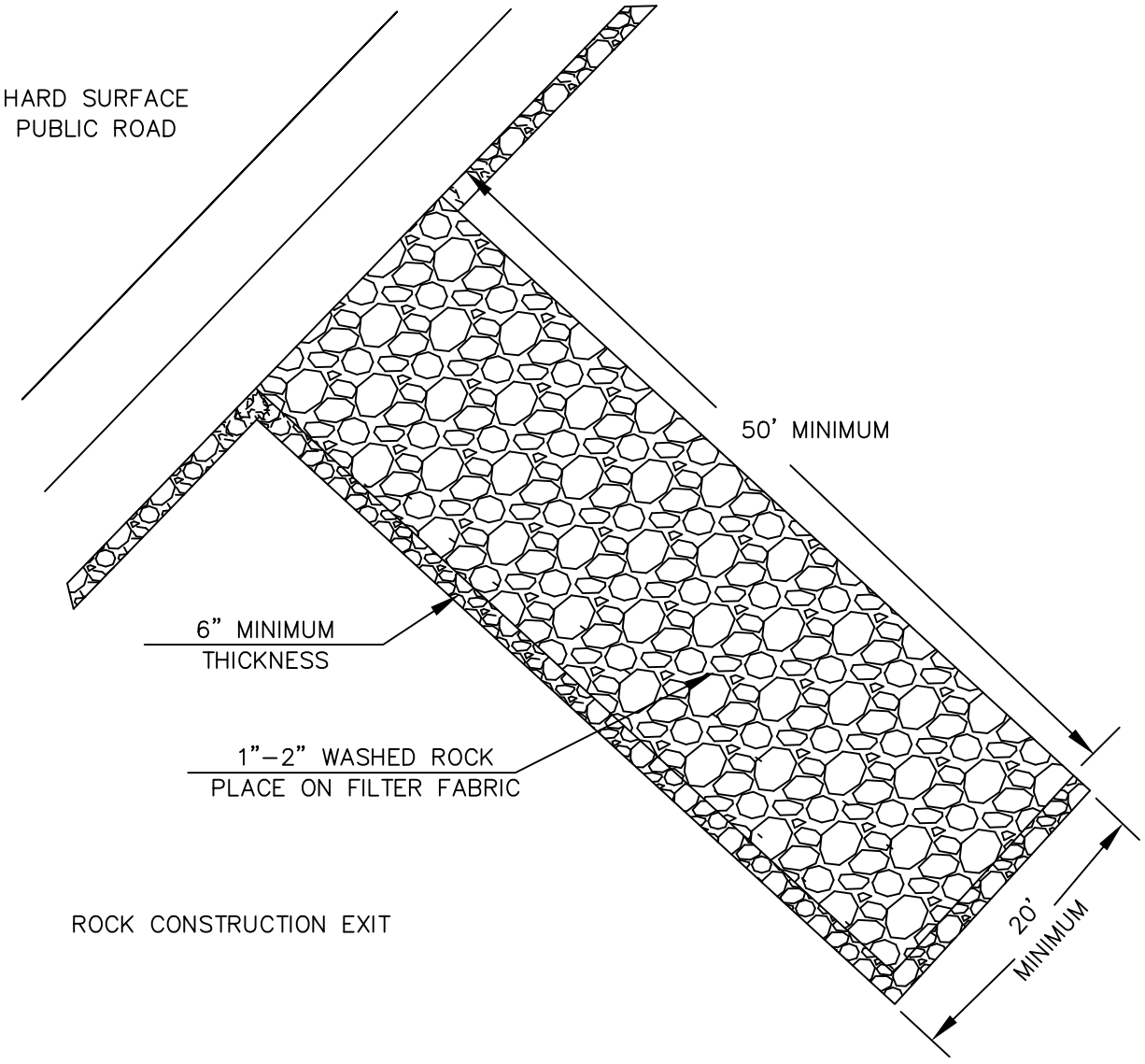
EXISTING PAVEMENT JOINT

Revised:
JANUARY, 2024

Plate NO.
700-2



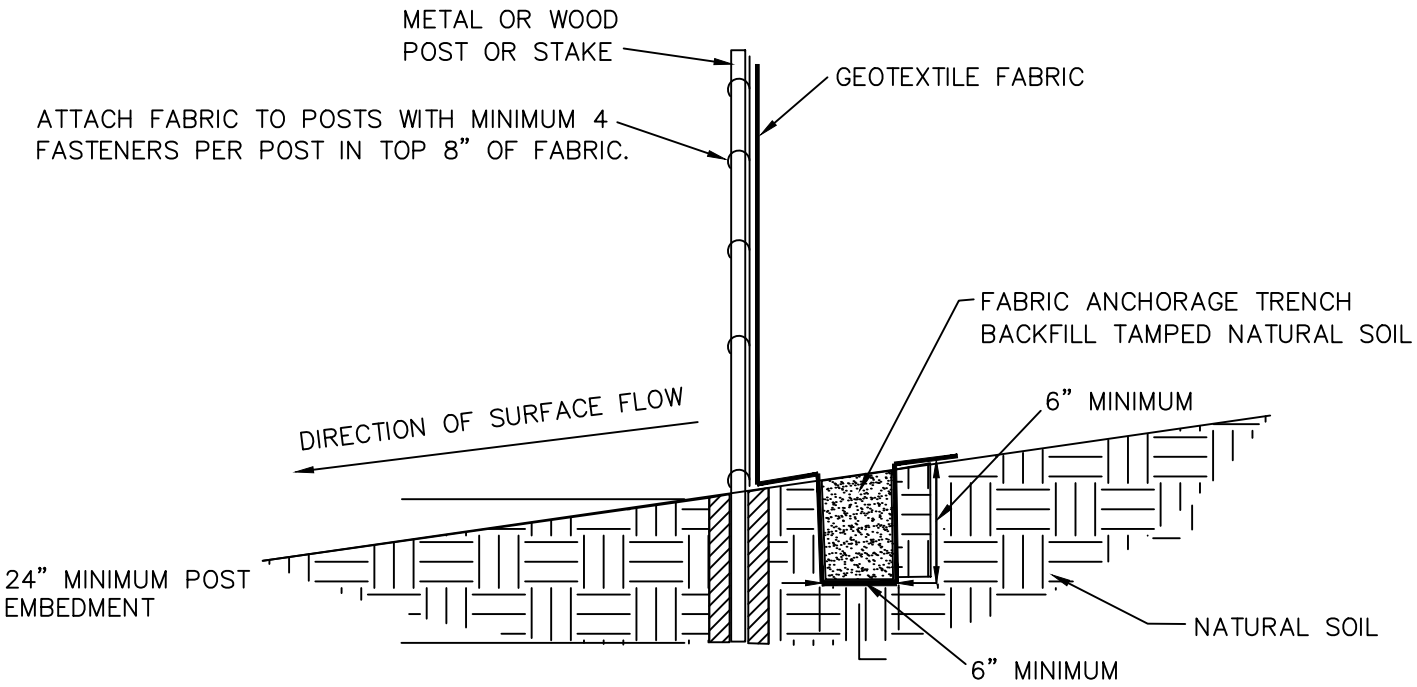
ROCK CONSTRUCTION EXIT

Since 1857 Hastings MINNESOTA

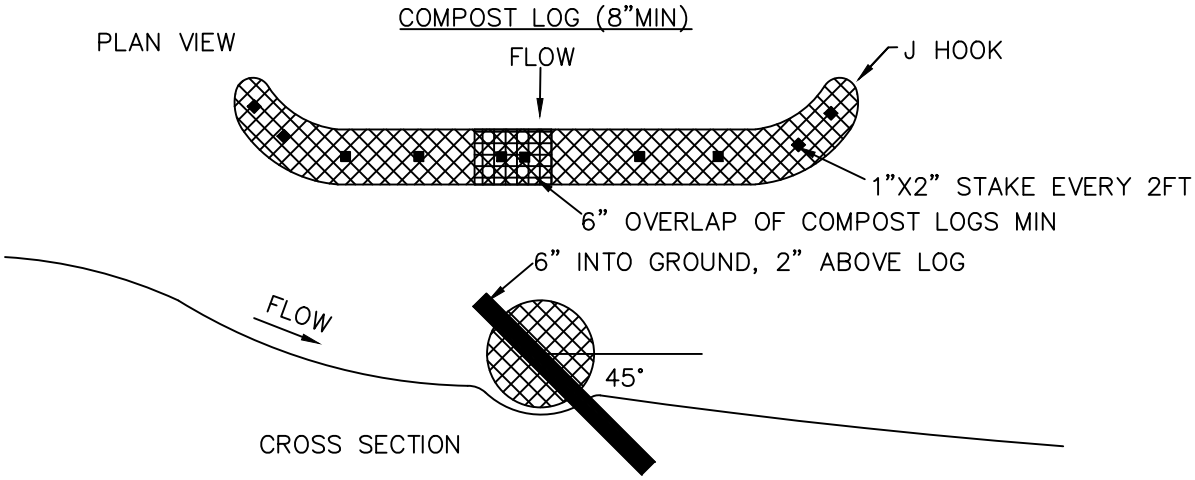
ROCK CONSTRUCTION EXIT

Revised:
JANUARY, 2024

Plate NO.
1500-1



SILT FENCE



NOTES:

1. MAINTAIN AND CLEAN DEVICES WHEN SILT BUILDS UP TO HALF THE HEIGHT OF THE SEDIMENT CONTROL
2. AFTER "SLICING" IN THE FABRIC AND BEFORE INSTALLATION OF STEEL POSTS, DRIVE INSTALLATION EQUIPMENT OVER THE "SLICE" WHILE FABRIC IS LAYING ON THE GROUND. THEN INSTALL STEEL POSTS AND PULL UP FABRIC TO ATTACH AT A UNIFORM HEIGHT
3. NO STAKING IS REQUIRED IF WEIGHT OF COMPOST LOGS ARE SUFFICIENT TO KEEP IT IN PLACE

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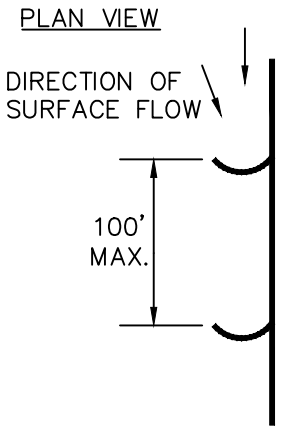
SEDIMENT CONTROL

Revised:
JANUARY, 2024

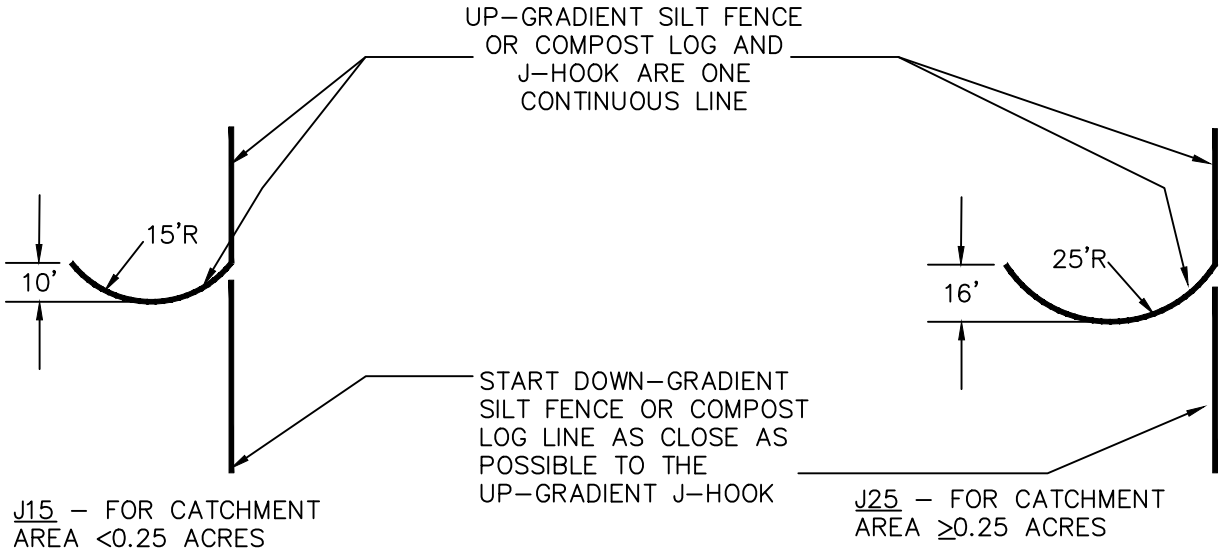
Plate NO.
1500-2

I. SPACING REQUIREMENTS

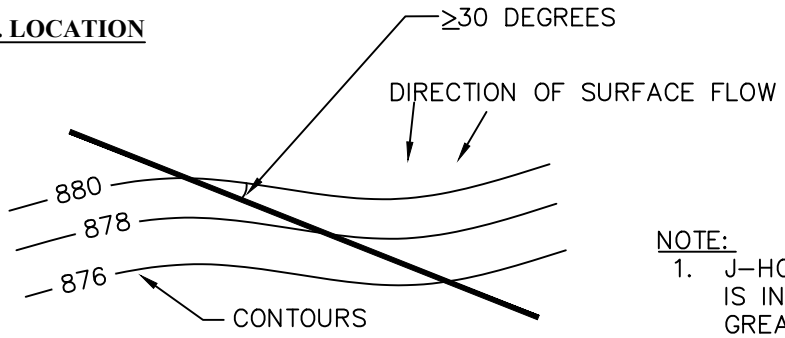
NOTE:
1. SPACING DISTANCES WILL VARY, BUT ARE NOT TO EXCEED 100 FEET.



II. SIZING REQUIREMENTS: J15, J25



III. LOCATION



NOTE:
1. J-HOOKS SHALL BE USED WHEN THE SILT FENCE IS INSTALLED AT AN ANGLE OF 30 DEGREES OR GREATER FROM PARALLEL TO THE CONTOURS.

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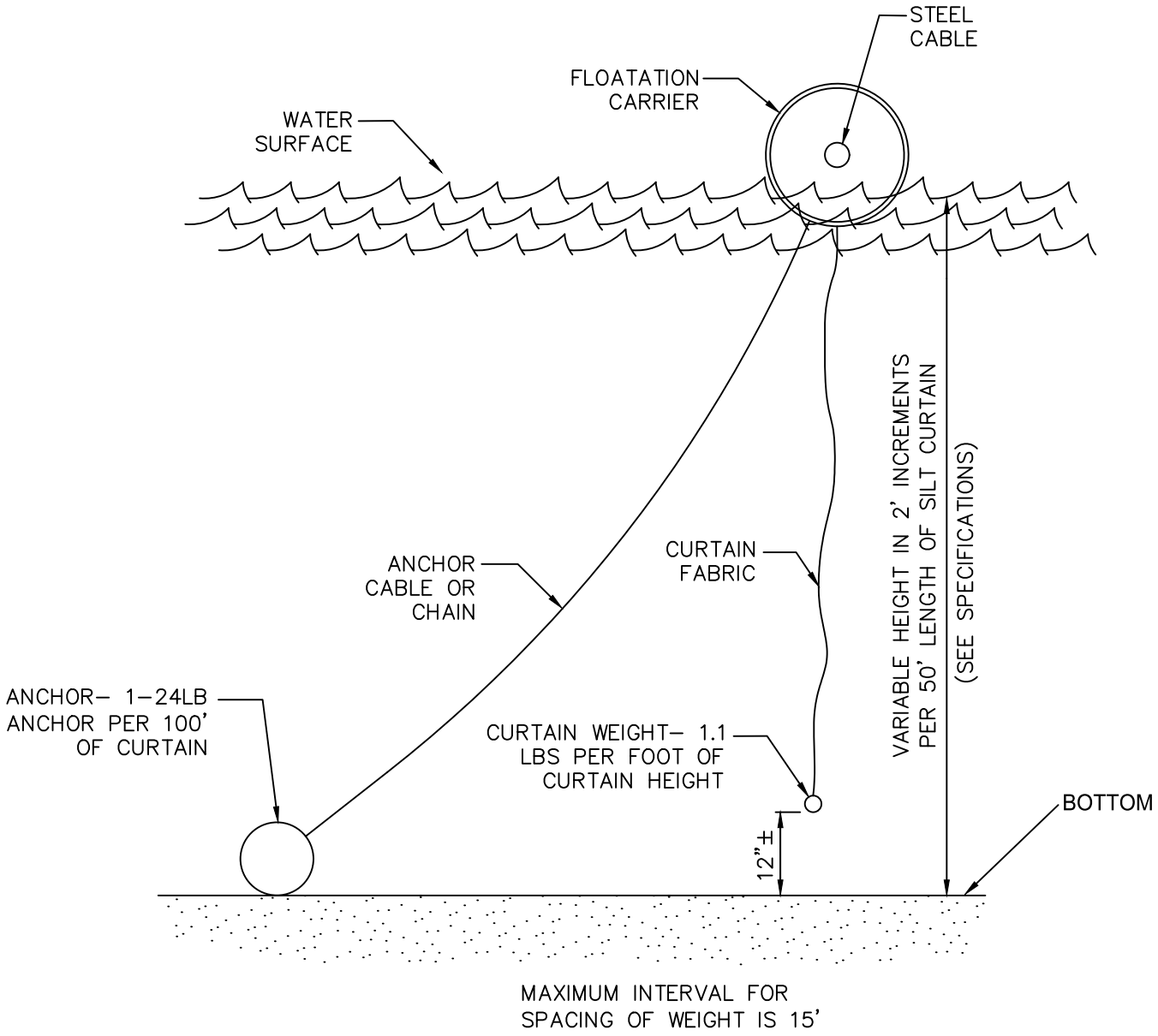
SEDIMENT CONTROL
J-HOOK

Revised:
JANUARY, 2024

Plate NO.
1500-3



NOTES:

1. DOUBLE SILT CURTAINS SHOULD BE SPACED 10' APART.
2. CURTAIN LENGTH TO MATCH BOTTOM PROFILE AS CLOSELY AS POSSIBLE.

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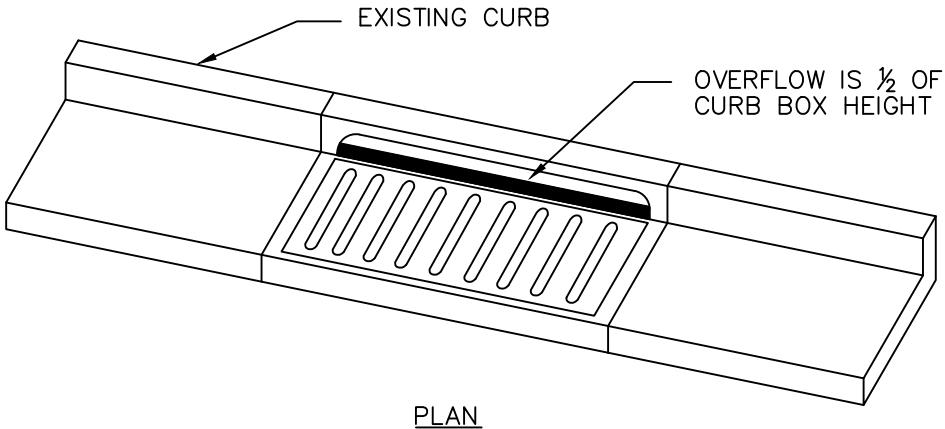
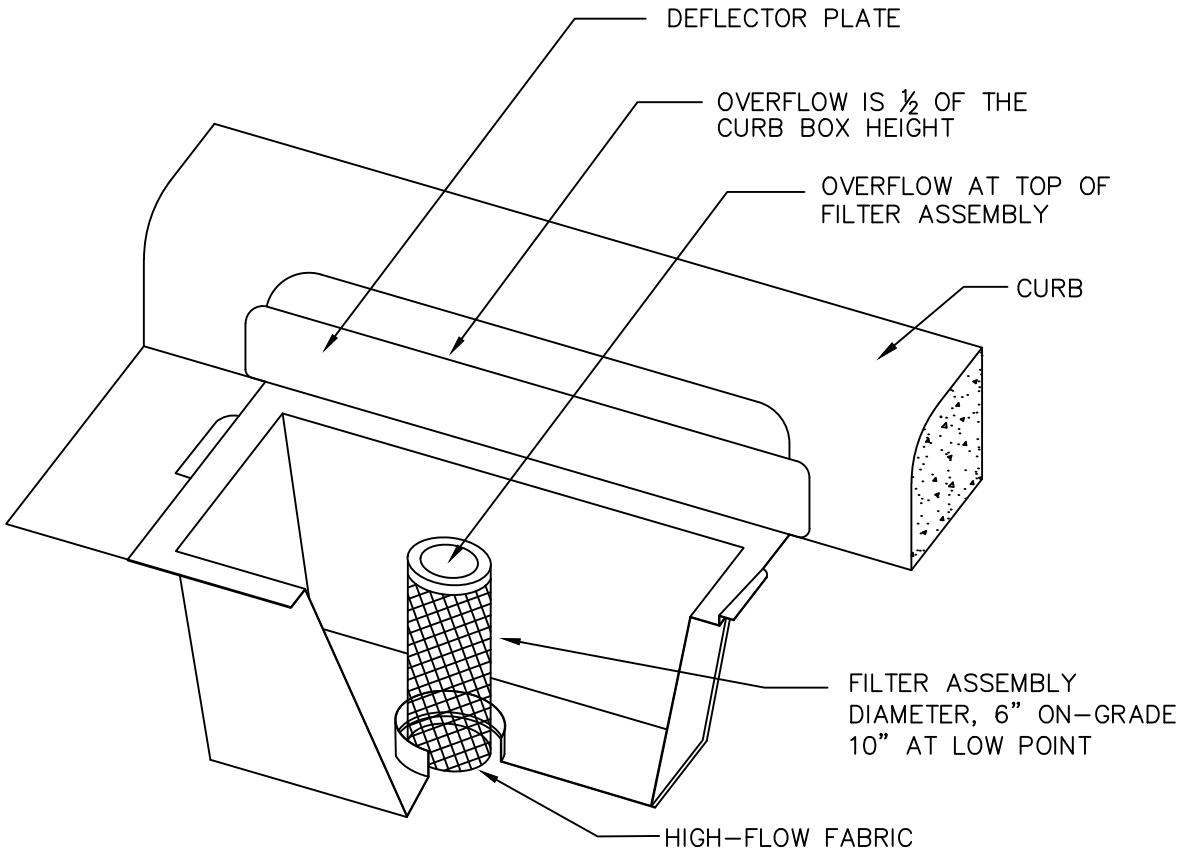
FLOATING SILT CURTAIN

Revised: JANUARY, 2024

Plate NO. 1500-4



PLAN



NOTES:

1. WIMCO ROAD DRAIN CG-23* HIGH FLOWINLET PROTECTION CURB AND GUTTER MODEL OR CITY APPROVED EQUAL SHALL BE USED.

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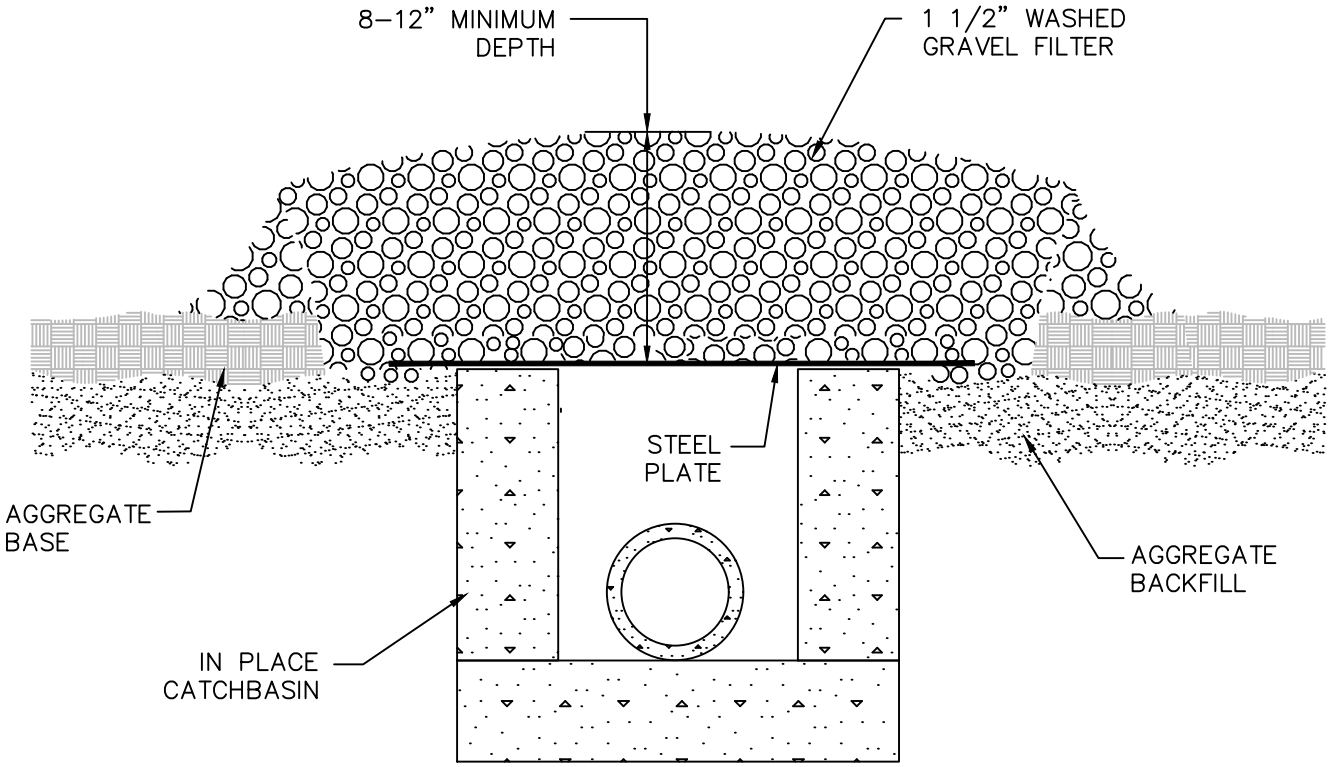
INLET PROTECTION

Revised: JANUARY, 2024

Plate NO. 1500-5

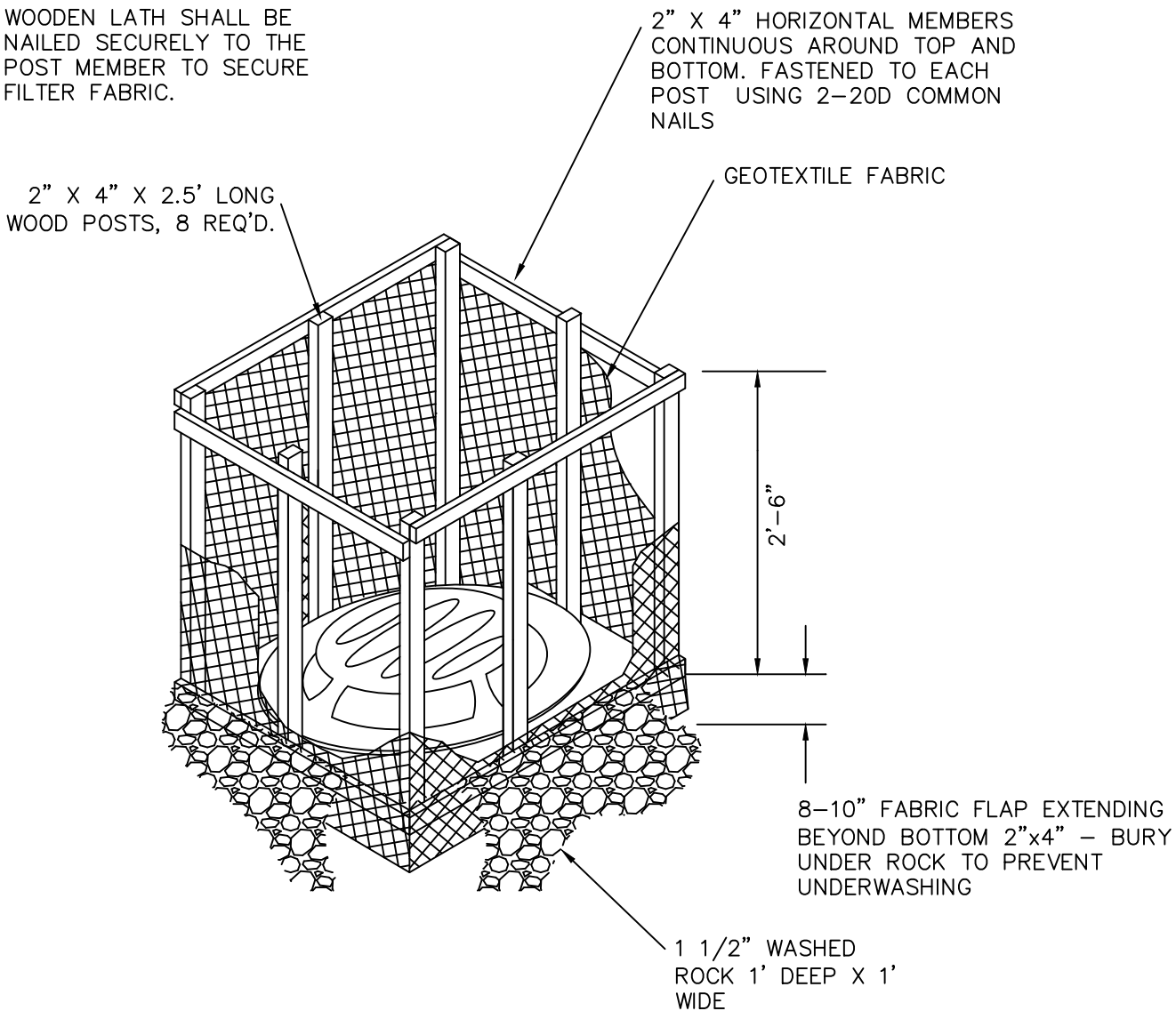


Since 1857 Hastings MINNESOTA

INLET PROTECTION ROCK FILTER FOR CATCH BASIN DURING ROAD CONSTRUCTION

Revised:
JANUARY, 2024

Plate NO.
1500-6



NOTES:

1. CONTRACTOR SHALL CONSTRUCT SILT BOX TO FIT AROUND THE INLET STRUCTURE WITH 6" MINIMUM CLEARANCE TO EDGES OF STRUCTURE. SILT BOX TO BE PLACED ON AN EVEN SURFACE 6" BELOW STRUCTURE OPENING. TOP OF SILT BOX TO EXTEND 18" MINIMUM ABOVE EXISTING GRADE.
2. WOODEN LATH SHALL BE NAILED SECURELY TO THE POST MEMBER TO SECURE FILTER FABRIC.

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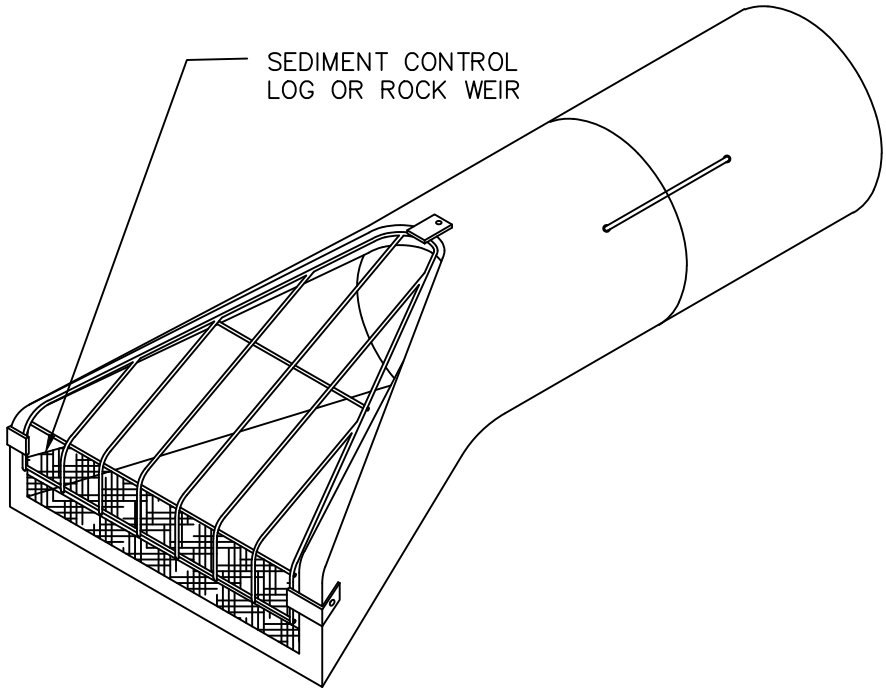
INLET PROTECTION SILT BOX FOR BEEHIVE CASTING

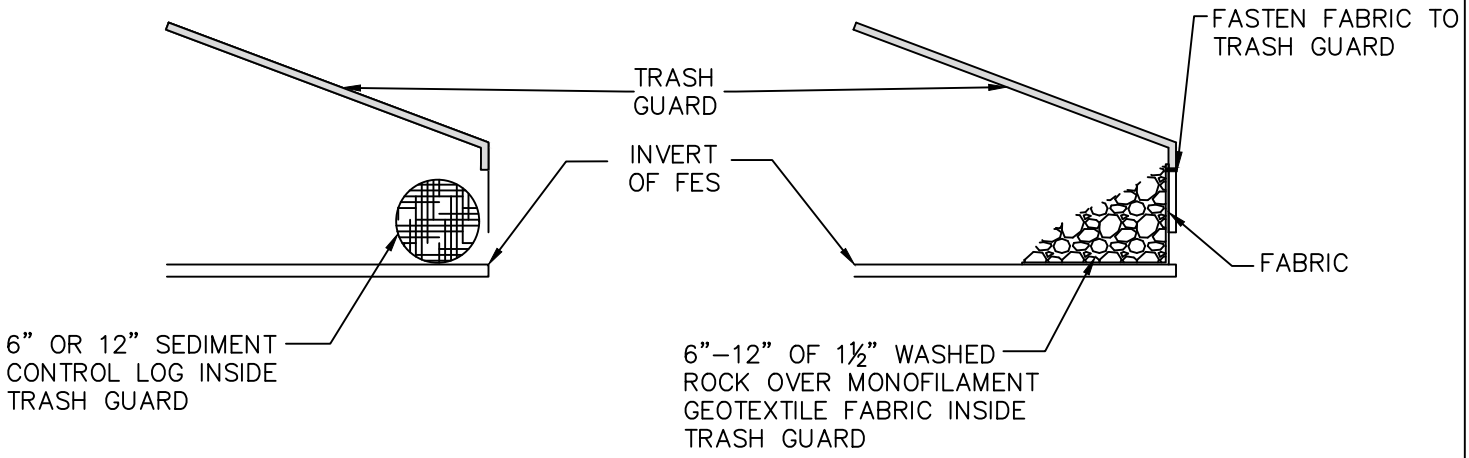
Revised: JANUARY, 2024

Plate NO. 1500-7



SEDIMENT CONTROL LOG WEIR

ROCK WEIR



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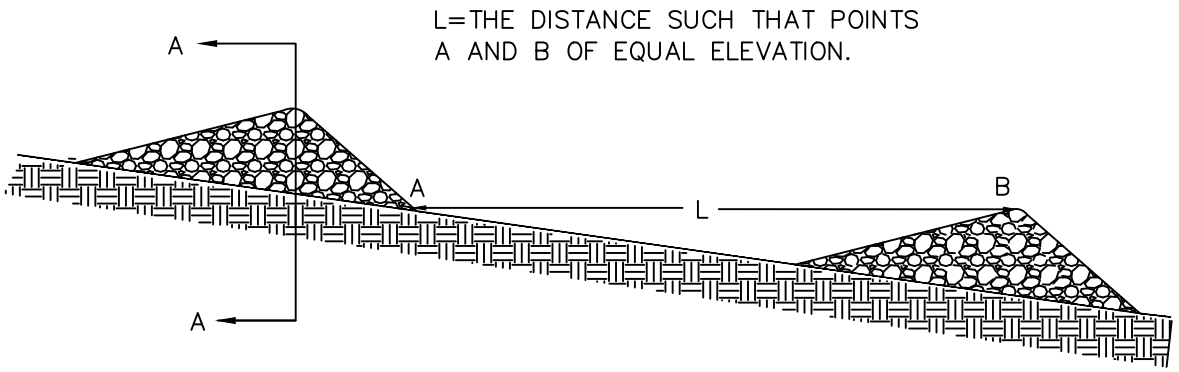
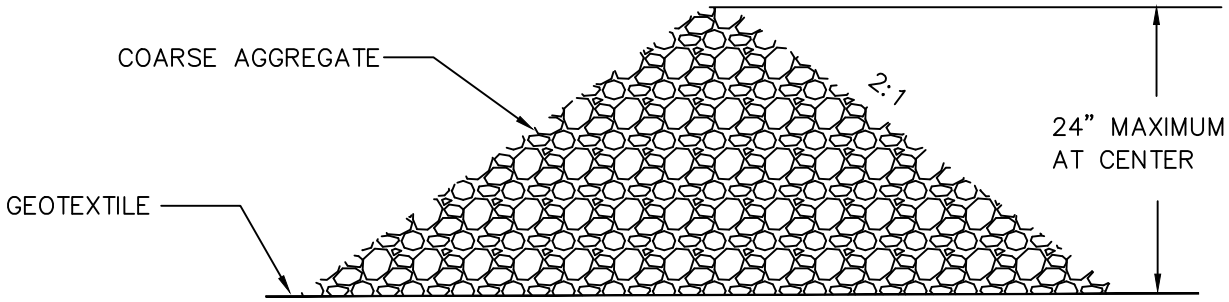
PIPE CHECK - SEDIMENT CONTROL LOG WEIR OR ROCK WEIR

Revised:
JANUARY, 2024

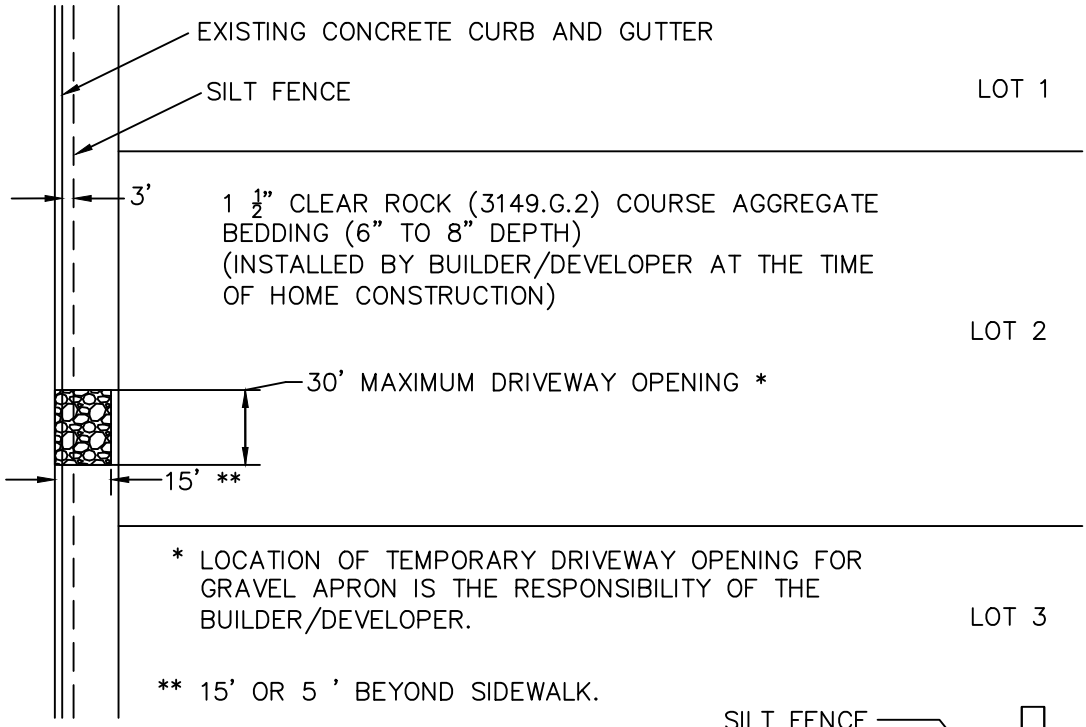
Plate NO.
1500-8

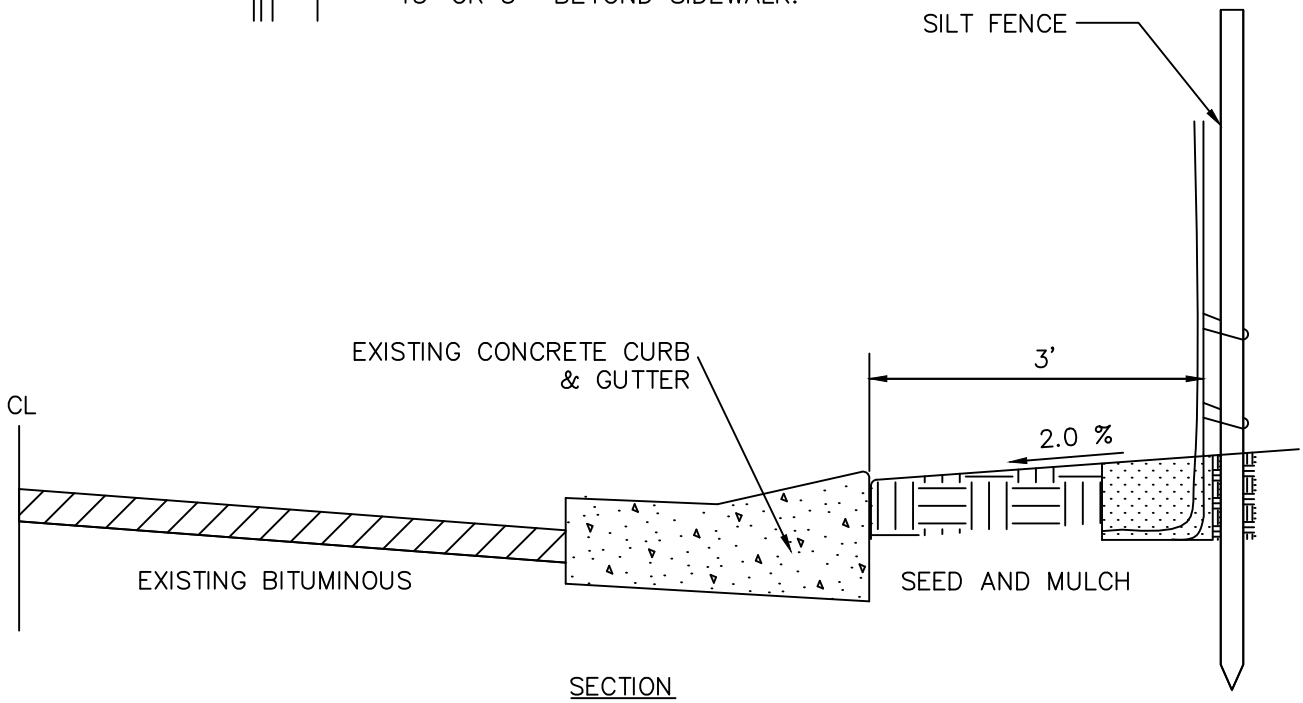




SECTION A–A

Since 1857 Hastings MINNESOTA	SEDIMENT CONTROL ROCK DAM	Revised: JANUARY, 2024 Plate NO. 1500-9





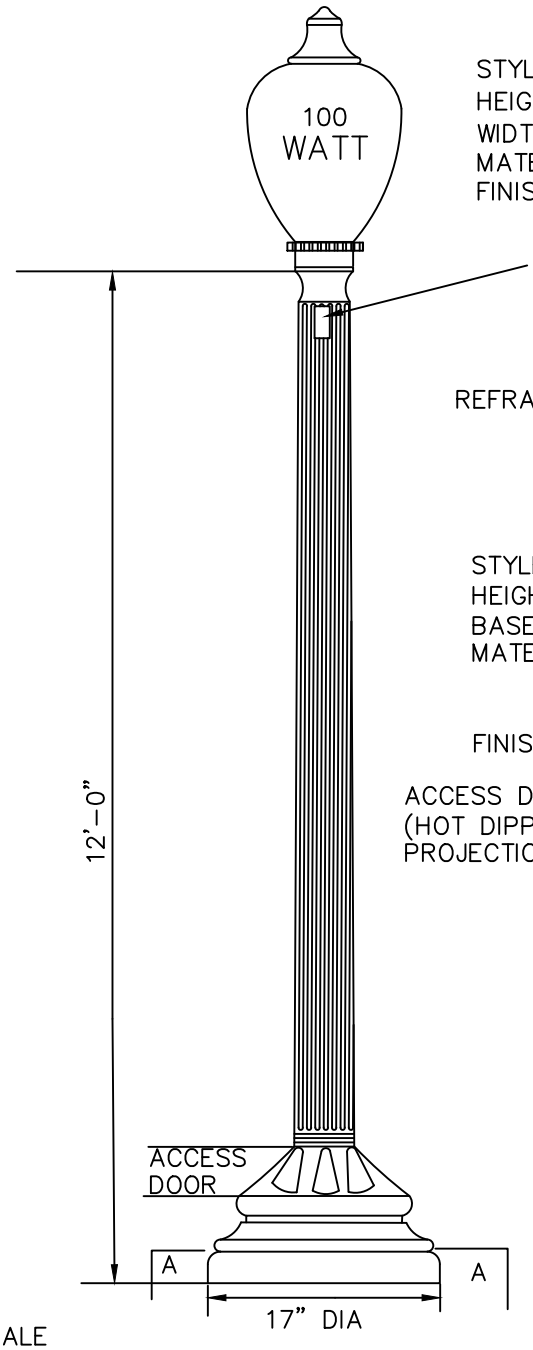
SECTION

Since 1857 Hastings MINNESOTA

CONCRETE CURB PROTECTION FOR NEW DEVELOPMENT

Revised:
JANUARY, 2024

Plate NO.
1500-10



NO SCALE

LANTERN SPECIFICATION

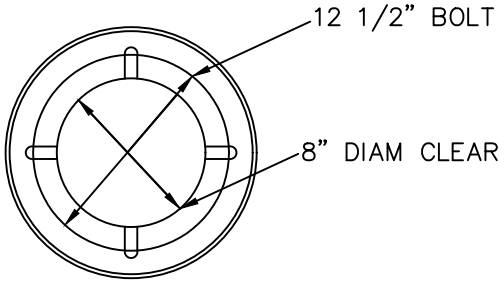
STYLE VILLA ------"U" FITTER
HEIGHT----------32"
WIDTH----------16 1/2"
MATERIAL----------CAST ALUMINUM
FINISH----------PRIME PAINTED

REFRACTOR (1)-TYPE II HOLOPHONE 4682-OBR

LAMP POST SPECIFICATION

STYLE----------VILLA 12 PEDESTRAIN
HEIGHT----------12'-0"
BASE----------17" DIAMETER
MATERIAL----------1 PIECE HEAVY WALL CAST IRON
PER ASTMA 48-83 CLASS 30
FINISH----------PRIME PAINTED

ACCESS DOOR IN BASE ANCHOR BOLTS 3/4"X24"+3" HOOK (HOT DIPPED GALVANIZED OR STAINLESS STEEL) BOLT PROJECTION 3 INCHES



SECTION "A-A"

Since 1857 Hastings MINNESOTA

SINGLE LIGHT POST

Revised:
JANUARY, 2024

Plate NO.
1600-1