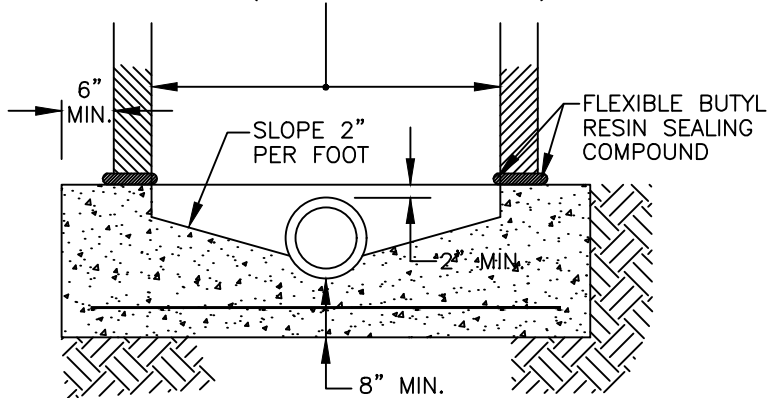


4'-0" DIA. (PIPE 18" AND SMALLER)
 5'-0" DIA. (PIPE 21" THROUGH 27")
 6'-0" DIA. (PIPE 30" THROUGH 33")



NOTES:

1. JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND GROUTED WITH NON-SHRINK GROUT INSIDE AND OUTSIDE.
2. SQUARE BASES ARE ACCEPTABLE.
3. FOR PIPE LARGER THAN 36", OR WHERE CONDITIONS SUCH AS MULTIPLE PIPES WARRANT, A CONCRETE BOX BASE WILL BE REQUIRED. (SEE CDOT STANDARD DRAWING M-604-20)



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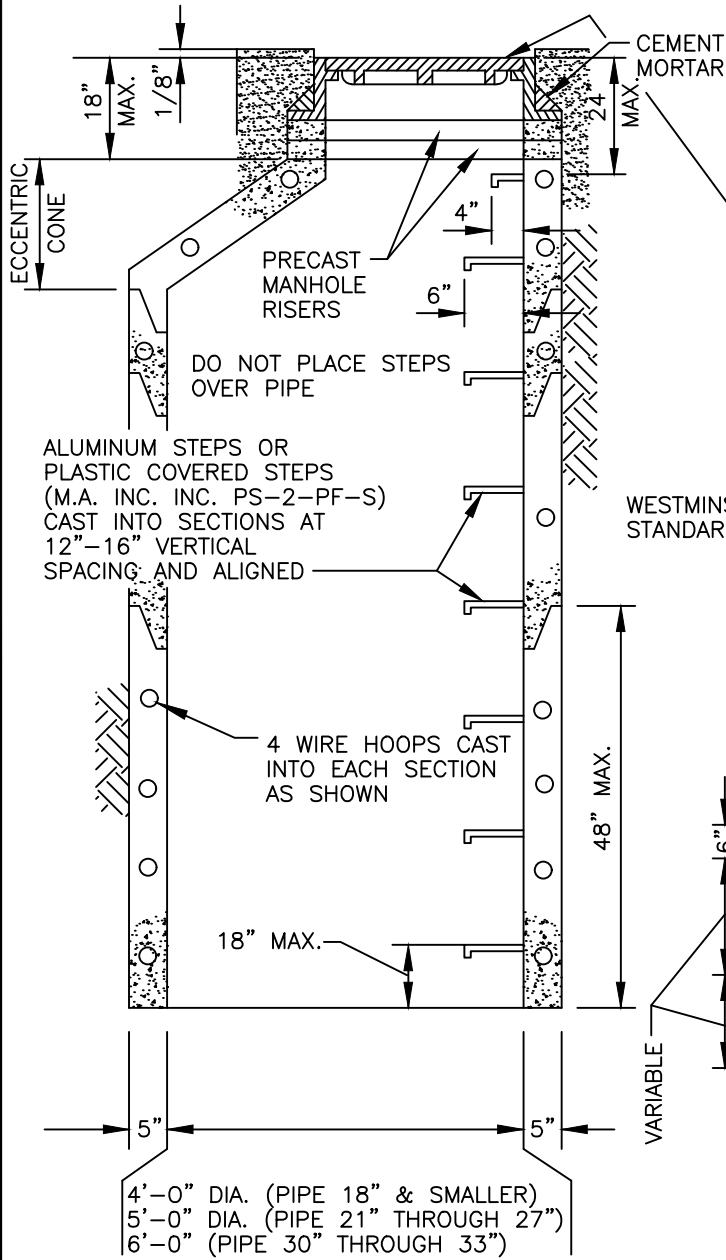
STANDARD MANHOLE BASE

DATE: JUNE 2019

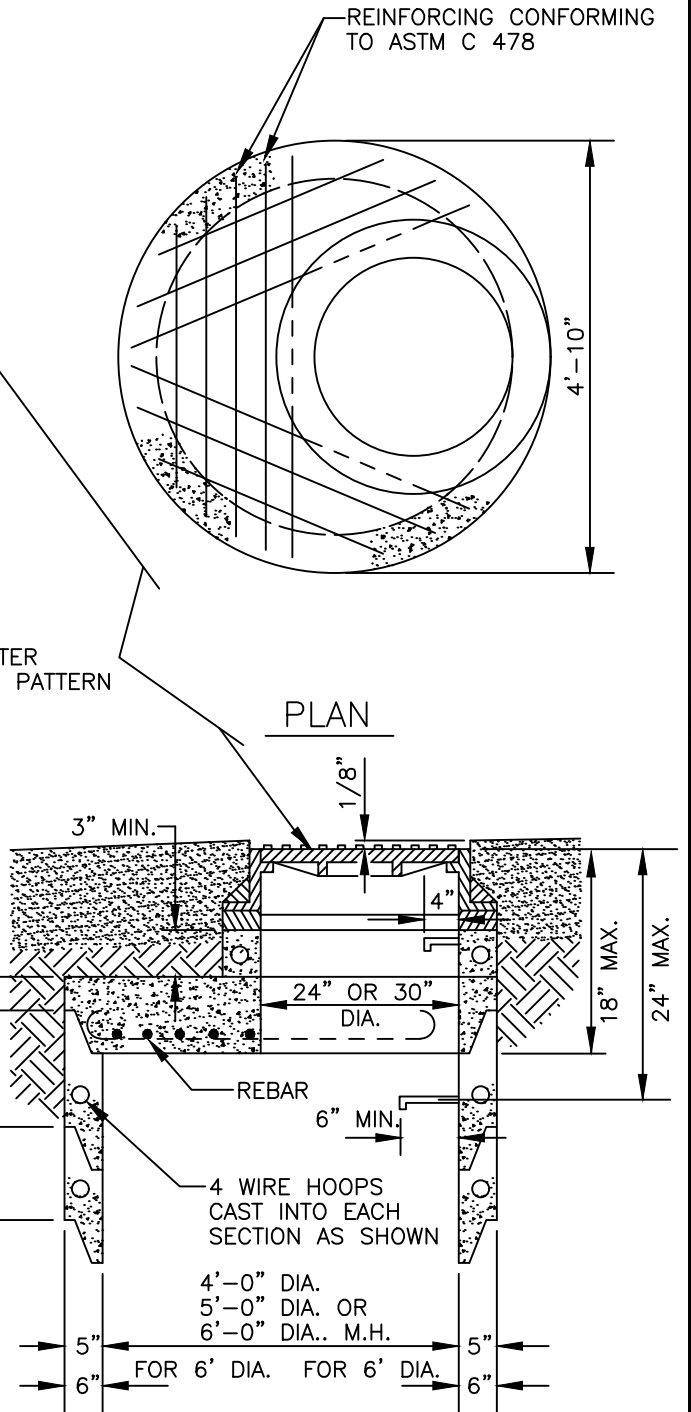
SHEET ST 1

NOTES:

1. ALL JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND PLASTERED WITH MORTAR 5/8" THICK AND EXTENDING 4" EACH SIDE OF JOINT INSIDE AND OUTSIDE.
2. MORTAR ON RISER RINGS IS ACCEPTABLE.
3. MANHOLES INSTALLED OUTSIDE OF STREET RIGHT-OF-WAY SHALL HAVE LOCKING COVERS.
4. "SEWER" TO BE IMPRINTED ON COVER.
5. FOR PIPE LARGER THAN 36" OR WHERE CONDITIONS SUCH AS MULTIPLE PIPES WARRANT, A CONCRETE BOX BASE WILL BE REQUIRED. (SEE CDOT STANDARD DRAWING M-604-20)



TYPICAL MANHOLE SECTION WITH ECCENTRIC CONE



ALTERNATE FLAT TOP (FOR SHALLOW MANHOLES ONLY)



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MANHOLE BARRELS AND ALTERNATE TOPS

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SHEET ST 2

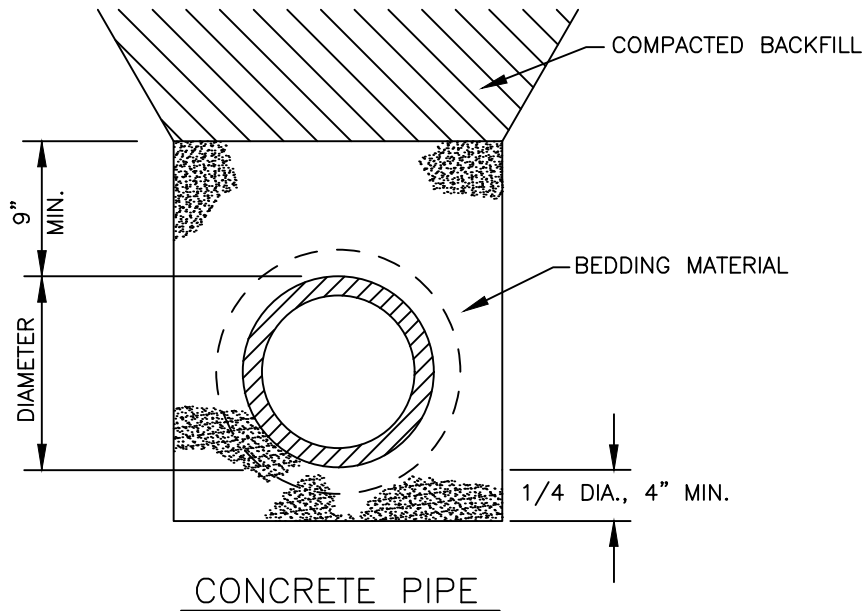


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THIS SHEET INTENTIONALLY LEFT BLANK

DATE: JUNE 2019

SHEET ST 3



NOTES:

1. THIS DETAIL IS TO BE USED UNDER NORMAL CONDITIONS. WHERE EXCESSIVE GROUND WATER IS PRESENT AN ALTERNATE DESIGN WILL BE REQUIRED.



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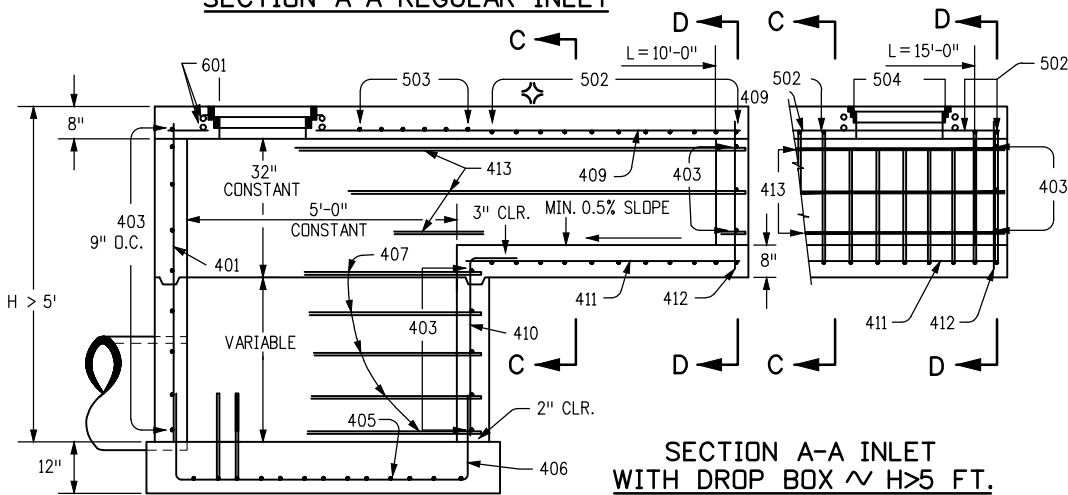
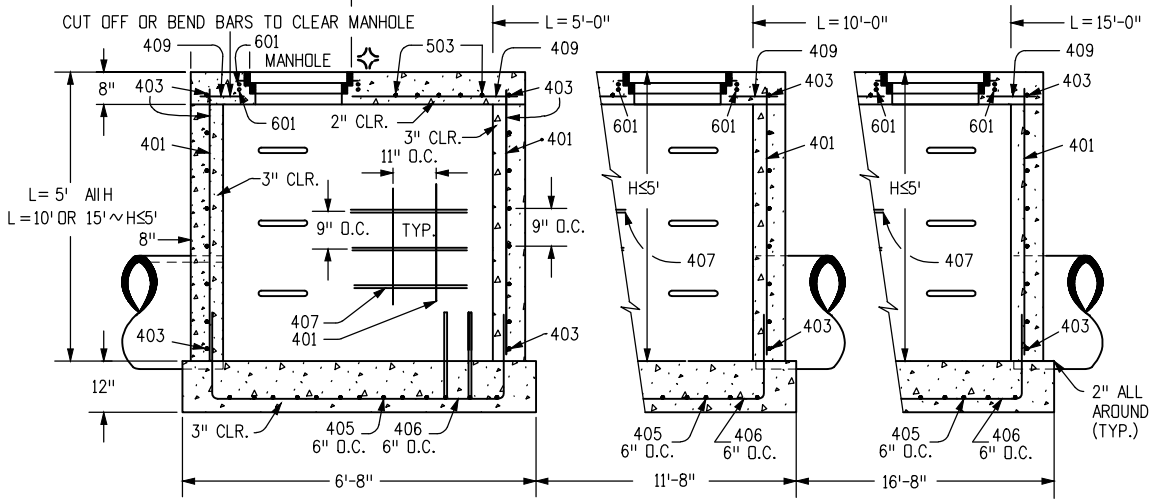
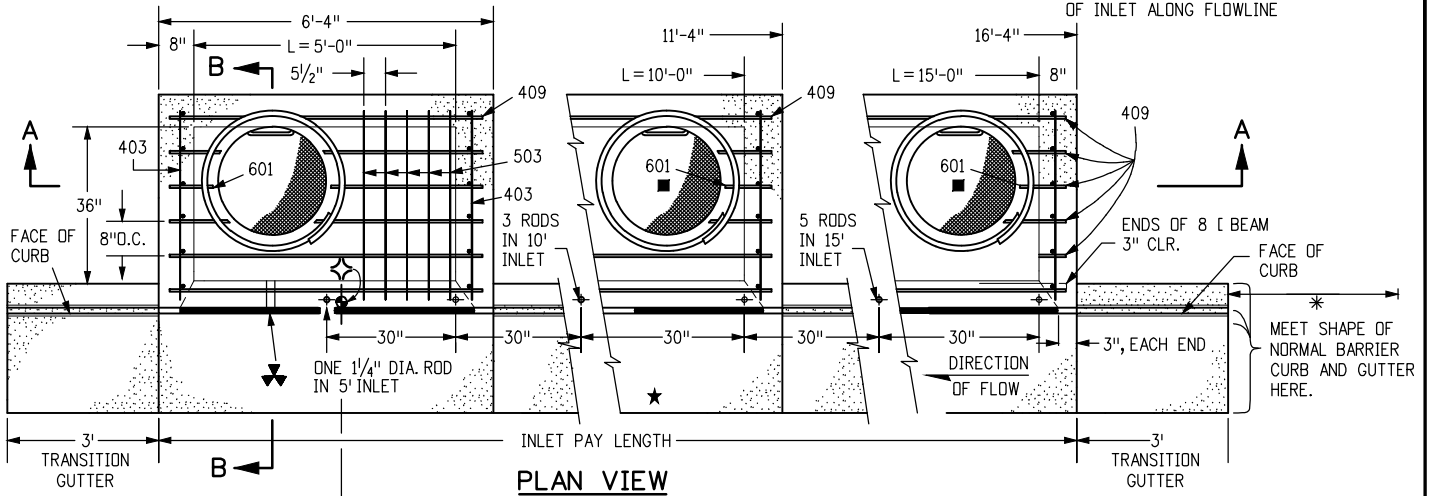
TYPICAL PIPE BEDDING

DATE: JUNE 2019

SHEET ST 4

★ FOR LENGTH (L) 10 FT. OR MORE, PROVIDE MAINTENANCE ACCESS AT BOTH ENDS WITH AN ADDITIONAL MANHOLE RING AND COVER. CUT REINFORCEMENT BAR ACCORDINGLY.

☆ STATION POINT AT MIDPOINT OF INLET ALONG FLOWLINE



SHEET 1 OF 4

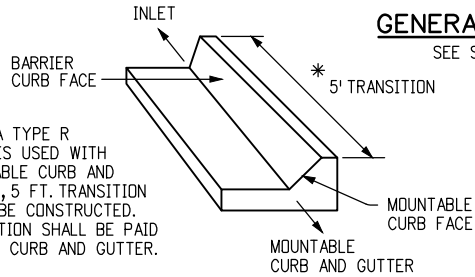


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CURB INLET TYPE R

DATE: JUNE 2019

SHEET ST 5

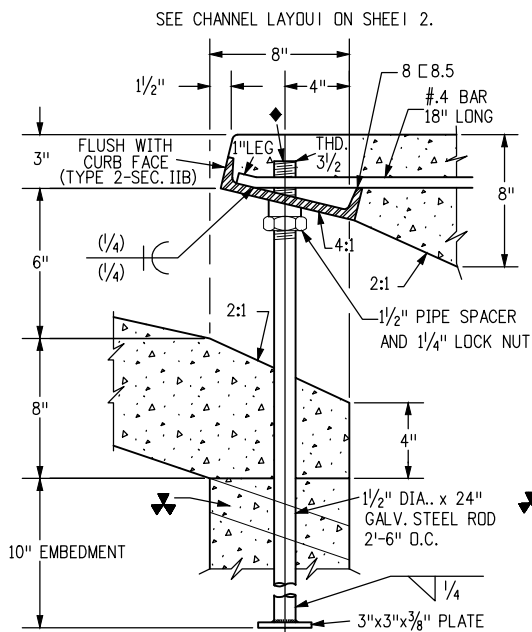


GENERAL NOTES:
SEE SHEET 2.

* WHEN A TYPE R INLET IS USED WITH MOUNTABLE CURB AND GUTTER, 5 FT. TRANSITION SHALL BE CONSTRUCTED. TRANSITION SHALL BE PAID FOR AS CURB AND GUTTER.

TRANSITION CURB

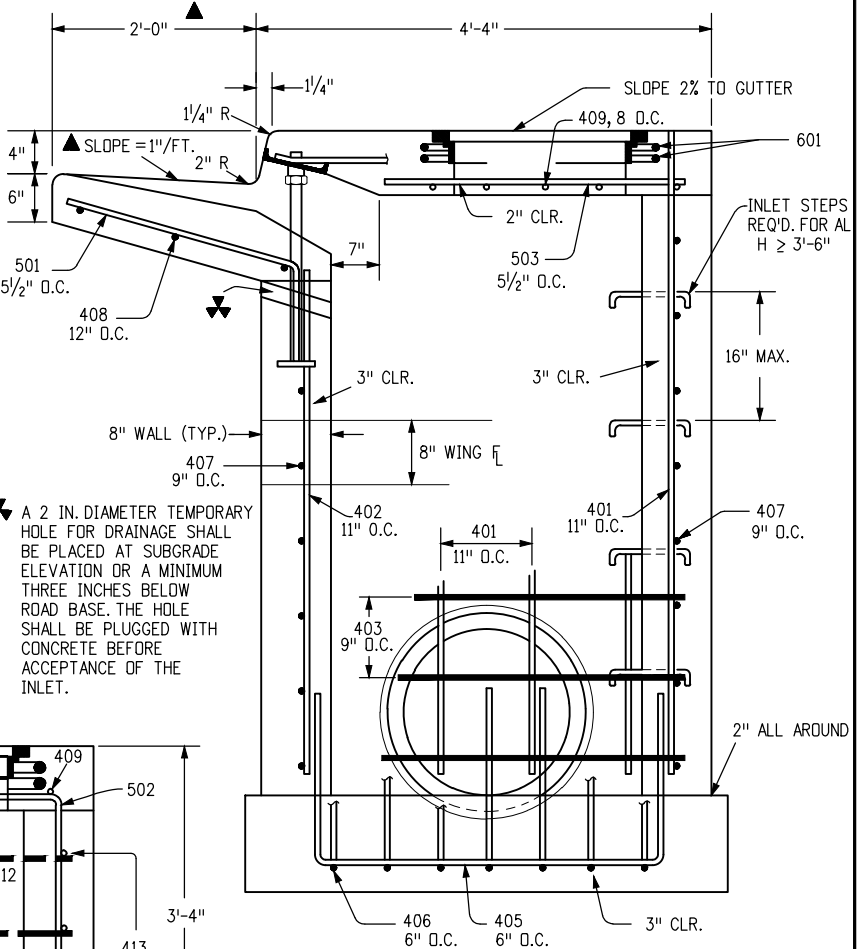
▲ - FOR A 1'-0" PAN SLOPE 2" PER FT.



CURB FACE ASSEMBLY

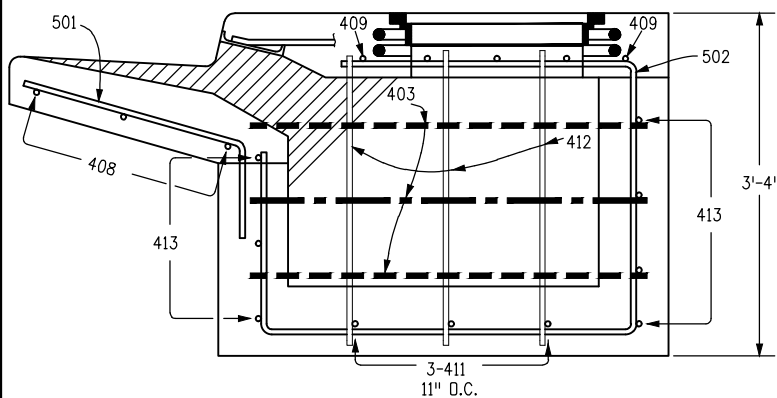
◆ PLACE ENTIRE ASSEMBLY BEFORE POURING CONCRETE.

▲ A 2 IN. DIAMETER TEMPORARY HOLE FOR DRAINAGE SHALL BE PLACED AT SUBGRADE ELEVATION OR A MINIMUM THREE INCHES BELOW ROAD BASE. THE HOLE SHALL BE PLUGGED WITH CONCRETE BEFORE ACCEPTANCE OF THE INLET.



**SECTION B-B
END VIEW**

NOTE: MANHOLE RING AND COVER, STATION POINT AND OUTFLOW PIPE SHALL BE LOCATED AT THE SAME END OF THE INLET.



SECTIONS C-C & D-D (DOTTFD BARS ARE IN SECTION D-D)



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TYPE R INLET

DATE: JUNE 2019

SHEET ST 6

MARK	BAR # OR SIZE	O.C. SPACING	TYPE	ALL INLETS				INLETS: H ≤ 5 FT.				INLETS: H > 5 FT.			
				L = 5 FT.		L = 10 FT.		L = 15 FT.		L = 10 FT.		L = 15 FT.			
				NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH		
401	4	11"	II	15	*	21	*	26	*	11	*	11	*		
402	4	11"	II	7	*	13	*	18	*	7	*	7	*		
403	4	9"	II	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"		
405	4	6"	VI	11	6'-10"	21	6'-10"	31	6'-10"	11	6'-10"	11	6'-10"		
406	4	6"	VIII	7	8'-10"	7	13'-10"	7	18'-10"	7	8'-10"	7	8'-10"		
407	4	9"	II	*	5'-10"	*	10'-10"	*	15'-10"	*	5'-10"	*	5'-10"		
408	4	12"	II	3	6'-10"	3	11'-10"	3	16'-0"	3	11'-10"	3	16'-0"		
409	4	8"	II	6	5'-10"	6	10'-10"	6	15'-10"	6	10'-10"	6	15'-10"		
410	4	11"	VII	*	*	*	*	*	*	3	*	3	*		
411	4	11"	II	*	*	*	*	*	*	3	5'-2"	3	10'-2"		
412	4	11"	II	*	*	*	*	*	*	3	2'-9"	3	2'-9"		
413	4	9"	II	*	*	*	*	*	*	7	10'-10"	7	15'-10"		
501	5	5 1/2"	IV	11	3'-4"	22	3'-4"	33	3'-4"	22	3'-4"	33	3'-4"		
502	5	5 1/2"	III	*	*	*	*	*	*	11	11'-5"	17	11'-5"		
503	5	5 1/2"	II	5	3'-6"	16	3'-6"	27	3'-6"	6	3'-6"	6	3'-6"		
504	5	5 1/2"	IX	*	*	*	*	*	*	*	*	5	8'-4"		
601	6	2 1/2"	V	2	8'-10"	2	8'-10"	2	8'-10"	2	8'-10"	4	8'-10"		
8E8.5				1	5'-10"	1	10'-10"	1	15'-10"	1	10'-10"	1	15'-10"		
				2 BARS, 1 RODS		4 BARS, 3 RODS		8 BARS, 5 RODS		4 BARS, 3 RODS		8 BARS, 5 RODS			

* VARIABLE REFER TO TABLE TWO.

■ INCLUDE #4, 18 IN. BARS (SEE CHANNEL LAYOUT).

REGULAR INLETS

DROP BOX INLETS

TABLE ONE ~ BAR LIST FOR CURB INLETS, TYPE "R"

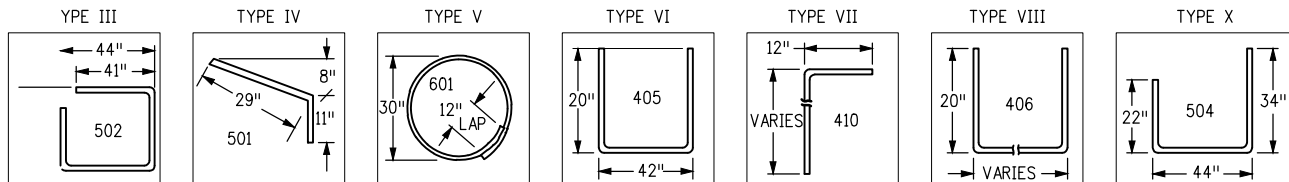
"H"	LENGTH			NO. REQ'D.		NO. REQ'D.		L = 5 FT.		L = 10 FT.		L = 15 FT.	
				REGULAR		DROP BOX		CONC. CU. YDS.	STEEL LBS.	CONC. CU. YDS.	STEEL LBS.	CONC. CU. YDS.	STEEL LBS.
	401	402	410	403	407	403	407						
3'-0"	2'-8"	1'-8"		10	7			3.2	285	5.3	497	7.4	706
3'-6"	3'-2"	2'-2"		10	7			3.4	305	5.7	528	7.9	747
4'-0"	3'-8"	2'-8"		12	9			3.7	326	6.0	559	8.4	786
4'-6"	4'-2"	3'-2"		12	9			3.9	334	6.4	571	8.8	803
5'-0"	4'-8"	3'-8"		14	11			4.1	354	6.7	602	9.3	844
5'-6"	5'-2"	4'-2"	3'-5"	16	13	15	6	4.4	375	6.0	607	7.4	850
6'-0"	5'-8"	4'-8"	3'-11"	16	13	16	6	4.6	382	6.2	616	7.6	860
6'-6"	6'-2"	5'-2"	4'-5"	18	15	18	8	4.8	402	6.4	637	7.8	880
7'-0"	6'-8"	5'-8"	4'-11"	20	17	19	10	5.0	423	6.6	654	8.0	897
7'-6"	7'-2"	6'-2"	5'-5"	20	17	20	10	5.3	430	6.9	664	8.3	907
8'-0"	7'-8"	6'-8"	5'-11"	22	19	22	12	5.5	451	7.1	684	8.5	927
8'-6"	8'-2"	7'-2"	6'-5"	24	21	23	14	5.7	471	7.3	702	8.7	944
9'-0"	8'-8"	7'-8"	6'-11"	24	21	24	14	6.0	479	7.6	711	9.0	954
9'-6"	9'-2"	8'-2"	7'-5"	26	23	26	16	6.2	499	7.8	732	9.2	974
10'-0"	9'-8"	8'-8"	7'-11"	28	25	27	18	6.4	520	8.0	749	9.4	992
10'-6"	10'-2"	9'-2"	8'-5"	28	25	28	18	6.7	527	8.3	759	9.7	1001
11'-0"	10'-8"	9'-8"	8'-11"	30	27	30	20	6.9	547	8.5	779	9.9	1022

NOTE: FOR L = 5', L = 10' AND L = 15'

REGULAR INLETS: TOTAL QUANTITIES NEEDED ARE OUTSIDE OF THE HEAVY BLACK LINE.
 DROP BOX INLETS: TOTAL QUANTITIES NEEDED ARE INSIDE OF THE HEAVY BLACK LINE.

STEEL WEIGHTS DO NOT INCLUDE STRUCTURAL STEEL.

TABLE TWO ~ BARS AND QUANTITIES VARIABLE WITH "H"



BAR BENDING DIAGRAMS ~ (DIMENSIONS ARE OUT-TO-OUT OF BAR)

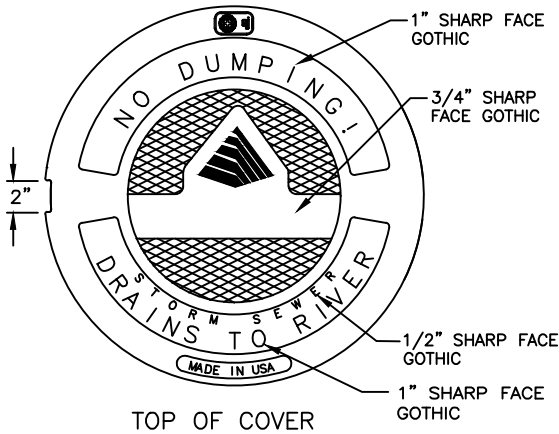


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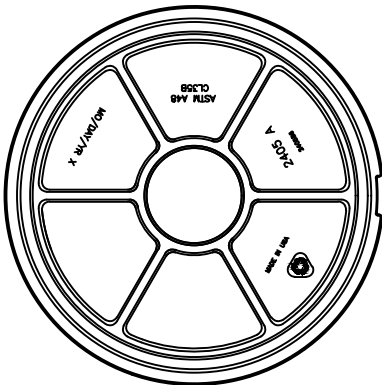
TYPE R INLET

GENERAL NOTES:

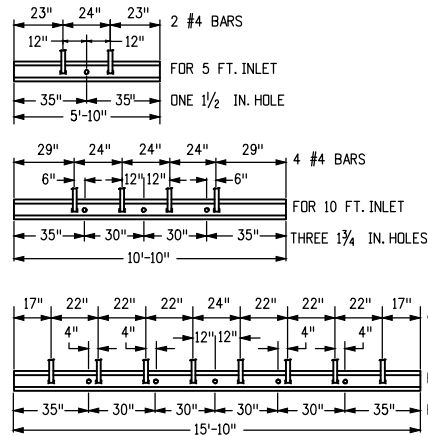
1. CONCRETE SHALL BE CLASS B. INLET MAY BE CAST-IN-PLACE OR PRECAST.
2. CONCRETE WALLS SHALL BE FORMED ON BOTH SIDES AND SHALL BE 8 IN. THICK.
3. INLET STEPS SHALL BE IN CONFORMANCE WITH AASHTO M 199.
4. CURB FACE ASSEMBLY SHALL BE GALVANIZED AFTER WELDING.
5. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4 IN. CURB AND GUTTER CORNERS SHALL BE FINISHED TO MATCH THE EXISTING CURB AND GUTTER BEYOND THE TRANSITION GUTTER.
6. REINFORCING BARS SHALL BE DEFORMED AND SHALL HAVE A 2 IN. MINIMUM CLEARANCE. ALL REINFORCING BARS SHALL BE EPOXY COATED.
7. DIMENSIONS AND WEIGHTS OF TYPICAL MANHOLE RING AND COVER ARE NOMINAL.
8. MATERIAL FOR MANHOLE RINGS AND COVERS SHALL BE GRAY OR DUCTILE CAST IRON IN ACCORDANCE WITH SUBSECTION 712.06.
9. SINCE PIPE ENTRIES INTO THE INLET ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK. QUANTITIES INCLUDE VOLUMES OCCUPIED BY PIPES.
10. STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
11. ALL MANHOLE COVERS SHALL BE CAST WITH A "NO DUMPING DRAINS TO STREAM" MESSAGE AND A FISH SYMBOL. THE SURFACE OF THE MANHOLE COVER SHALL HAVE A NON-SLIP PATTERN.



TOP OF COVER

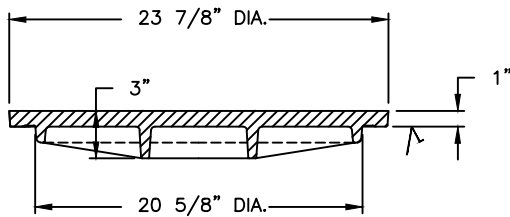
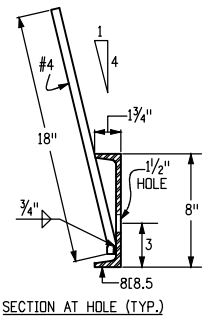


BOTTOM OF COVER

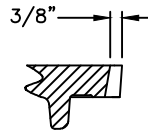


CHANNEL LAYOUT DETAILS

SEE CURB FACE ASSEMBLY ON SHEET 1.



SECTION OF COVER



PICKSLOT DETAIL

MATERIALS: GRAY IRON (CL35B)
 LOAD RATING: HS-20
 DESIGN LOAD: HEAVY DUTY (40,000-100,000 LBS)
 ESTIMATED WEIGHT: 148 LBS
 ASTM A48

✓ MACHINED SURFACE
 EAST JORDAN IRON WORKS #2405A
 PRODUCT #240586

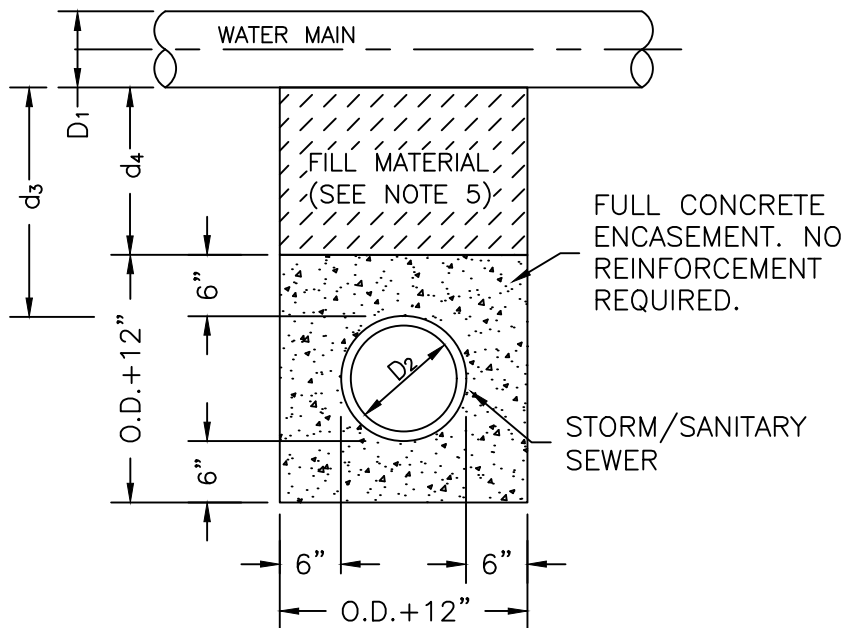


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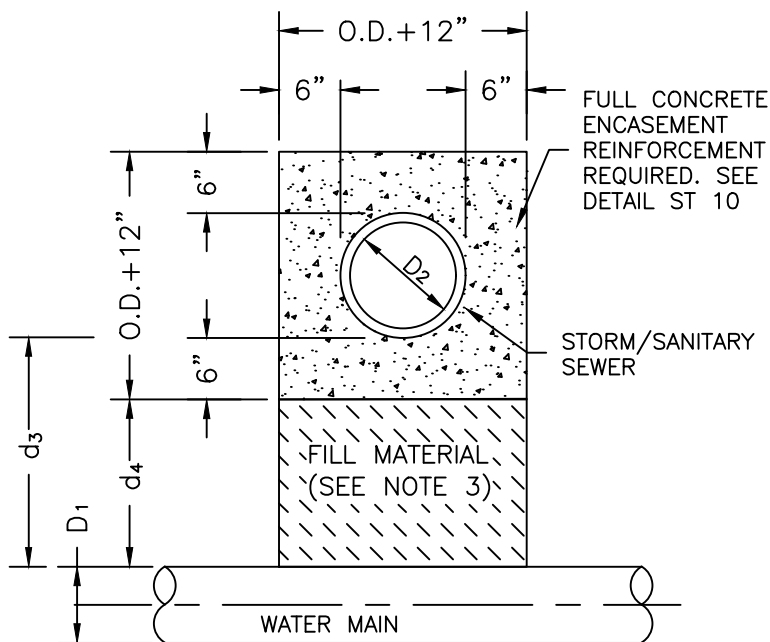
TYPE R INLET AND MANHOLE COVER DETAIL

DATE: JUNE 2019

SHEET ST 8



STORM OR SANITARY SEWER CROSSING UNDER WATER MAIN
 IF $d_3 > 18"$ AN ENCASEMENT IS NOT REQUIRED



STORM OR SANITARY SEWER CROSSING OVER TOP OF WATER MAIN
 REINFORCED ENCASEMENT REQUIRED REGARDLESS OF DIMENSION d_3

NOTES:

1. CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING.
2. LENGTH OF ENCASEMENT SHALL EXTEND AT LEAST 9- FEET EACH SIDE OF WATER MAIN.
3. FILLER MATERIAL BETWEEN CONDUITS TO BE APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF $d_4 \leq 6"$. COMPACTED BACKFILL, IF $d_4 > 6"$.
4. SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASEMENT
5. A REINFORCED ENCASEMENT IS REQUIRED FOR ALL CONDUITS CROSSING OVER WATERMAINS BUT ENCASEMENTS ARE NOT REQUIRED TO BE REINFORCED IF CROSSING UNDER WATERMAINS.

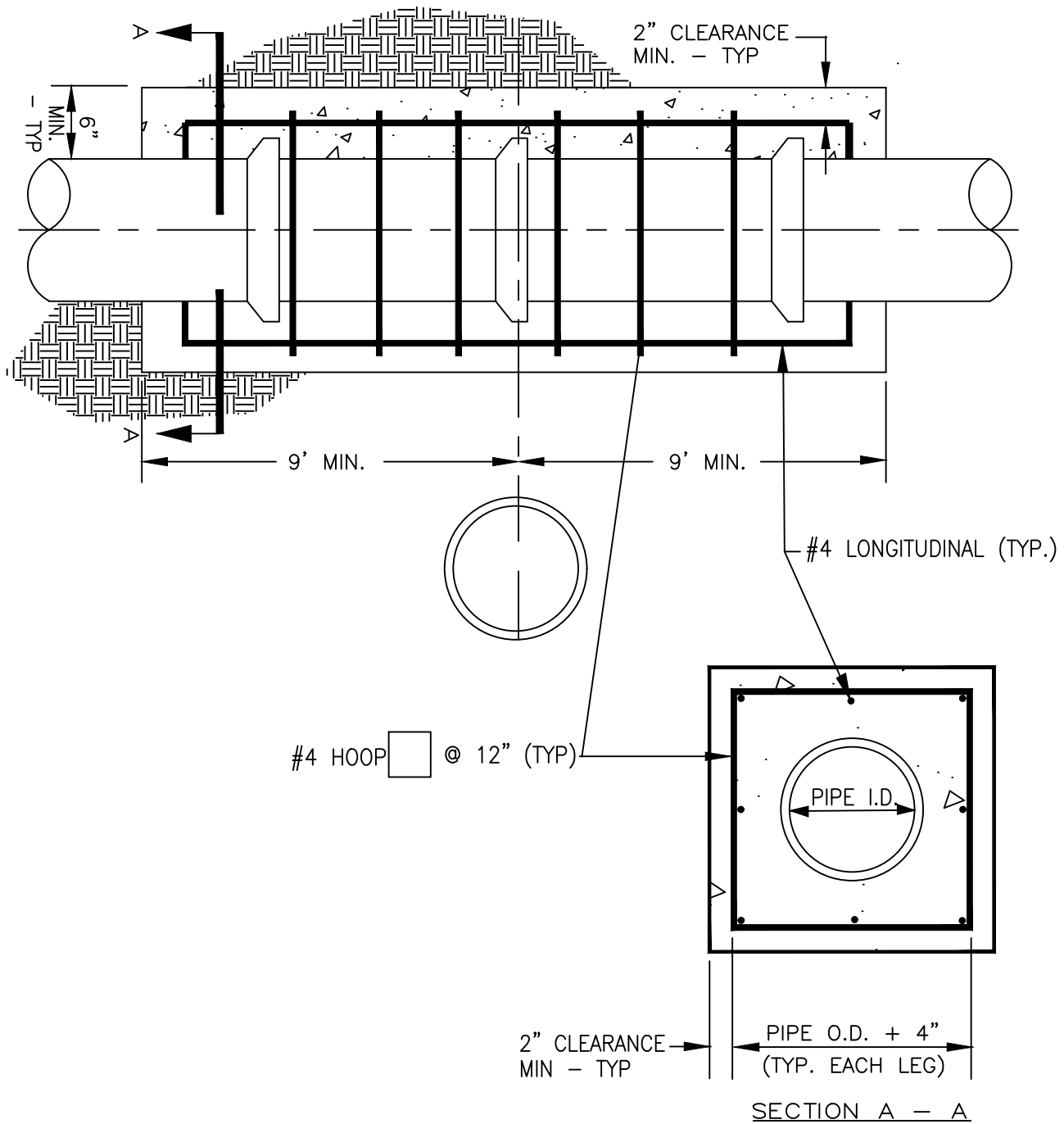


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ENCASEMENT FOR CONDUIT CROSSINGS

DATE: JUNE 2019

SHEET ST 9



PIPE I.D.	NO. OF LONGITUDINAL BARS & LOCATION	
6" TO 8"	4 - #4 BARS	1 EACH CORNER
10" TO 18"	8 - #4 BARS	3 EACH SIDE
21" TO 33"	12 - #4 BARS	4 EACH SIDE
36"	16 - #4 BARS	5 EACH SIDE



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CONCRETE ENCASEMENT
 REINFORCEMENT DETAIL

DATE: JUNE 2019

SHEET ST 10