THE CITY OF
COLUMBUS
MICHAEL B. COLEMAN, MAYOR

DEPARTMENT OF
PUBLIC UTILITIES

Division of Sewerage and Drainage

Standard Construction Drawings

March 2016

Standard Construction Drawing Index

City of Columbus, Ohio

Department of Public Utilities

Sewerage and Drainage Division

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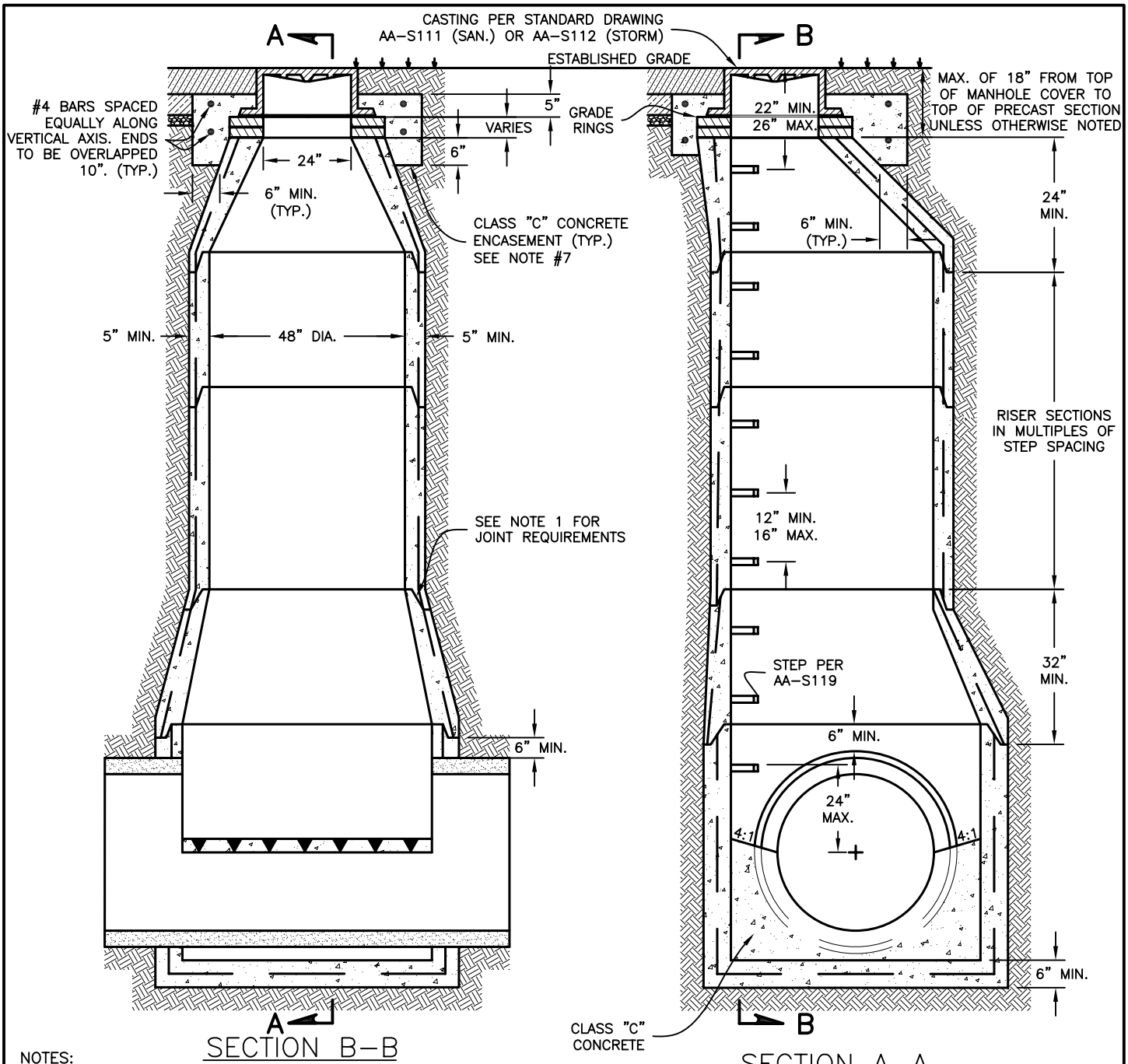

SECTION B–B

SECTION A–A

NOTES:

1. JOINTS AND CONNECTIONS SHALL BE PER 604.06.
2. PRECAST MANHOLES SHALL BE N ACCORDANCE WITH ASTM C–478.
3. PRECAST WALLS SHALL HAVE A MIN. THICKNESS OF 5" AND BE SUFFICIENTLY REINFORCED TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.
4. FINISH MANHOLE CHANNEL ACCORDING TO STANDARD DRAWING AA–S117.
5. SEE TABLE FOR MANHOLE BASE DIAMETER.
6. MANHOLES MUST BE SET ON FOUNDATION OF CRUSHED #57 LIMESTONE, 6" MIN. THICKNESS.
7. ONLY SANITARY MANHOLES IN IMPERVIOUS AREAS SHALL REQUIRE A CONCRETE COLLAR, UNLESS OTHERWISE SPECIFIED. SANITARY MANHOLES LOCATED WITHIN PERVIOUS AREAS SHALL REQUIRE A FLEXIBLE CHIMNEY SEAL.

MANHOLE BASE I.D. (INCHES)	MAXIMUM PIPE O.D.	
	STRAIGHT PIPE (INCHES)	RIGHT ANGLE (INCHES)
48	31	25
60	42	32
72	51	38
84	–	44
96	–	50

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPE "C" MANHOLE

STANDARD DRAWING
AA–S102

REVISED 12/6/13

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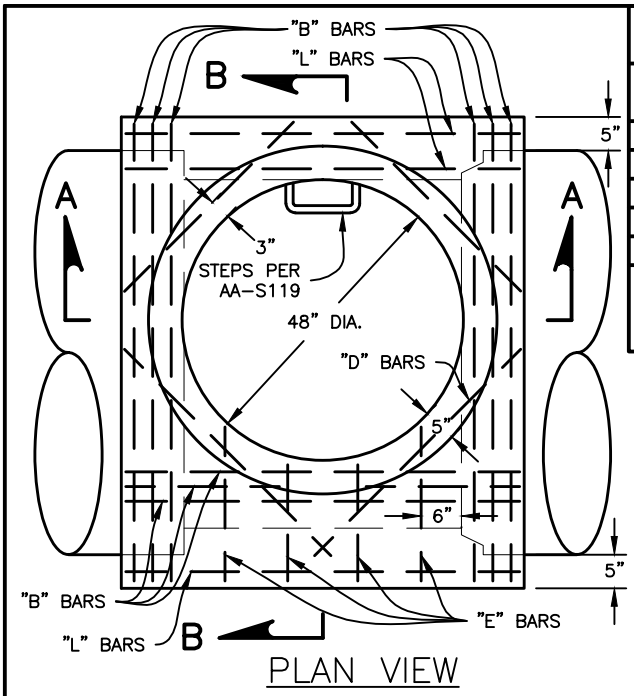


PLAN VIEW

REINFORCING STEEL LIST

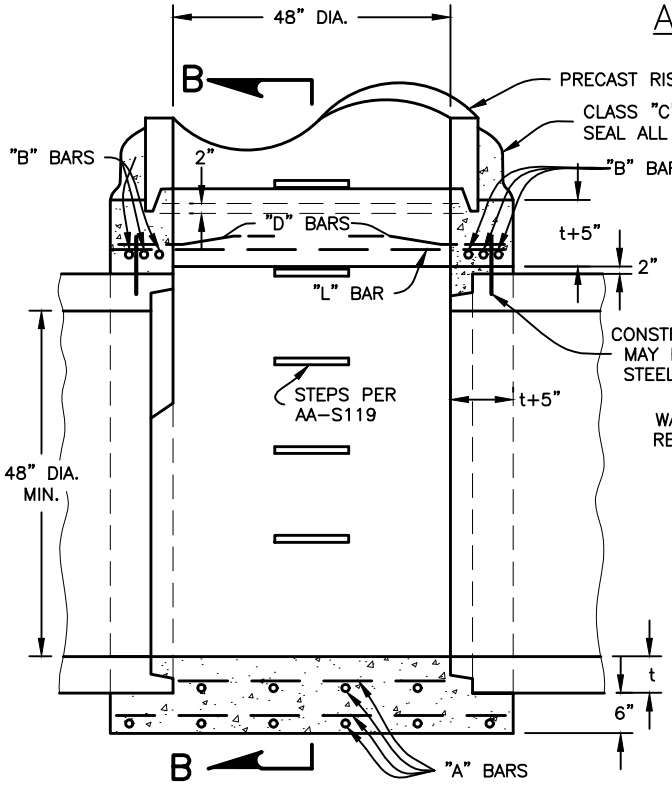
BAR	SPACING	BAR SIZES FOR SEWERS		
		48" ≈ 60"	66" ≈ 78"	84" ≈ 96"
A	12" ON CENTER BOTH WAYS	#5	#6	#7
B	3" ON CENTER BOTH WAYS			
L	AS SHOWN			
D	AS SHOWN	#5	#5	#5
E	12" ON CENTER			

INCLUDED FOR ESTIMATING PURPOSES ONLY. THE COST OF FURNISHING AND PLACING ALL REINFORCEMENT STEEL SHALL BE INCLUDED IN ITEM 604 FOR PAYMENT.

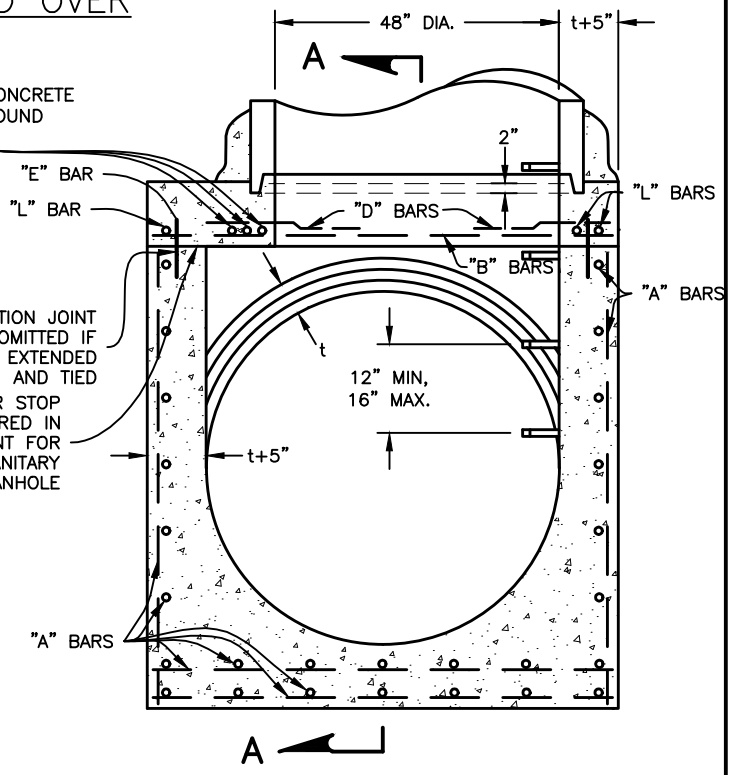
NOTES:

1. STEPS SHALL COMPLY WITH THE REQUIREMENTS SET FORTH ON CMS 711.31 AND STANDARD DRAWING AA-S119.
2. t = WALL THICKNESS OF INTERCEPTING SEWER.
3. ALL REINFORCING STEEL SHALL MEET CMS 709.2 SPECIFICATIONS.
4. 2" MINIMUM COVER ON ALL REINFORCEMENT STEEL.
5. NO STEPS TO BE INSTALLED BELOW PIPE SPRING LINE.
6. PRECAST MANHOLES SHALL BE IN ACCORDANCE WITH ASTM C478.

FOR SEWERS 48" DIAMETER AND OVER



SECTION A-A



SECTION B-B

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPE "E" MANHOLE

STANDARD DRAWING
AA-S104

REVISED 8/8/14

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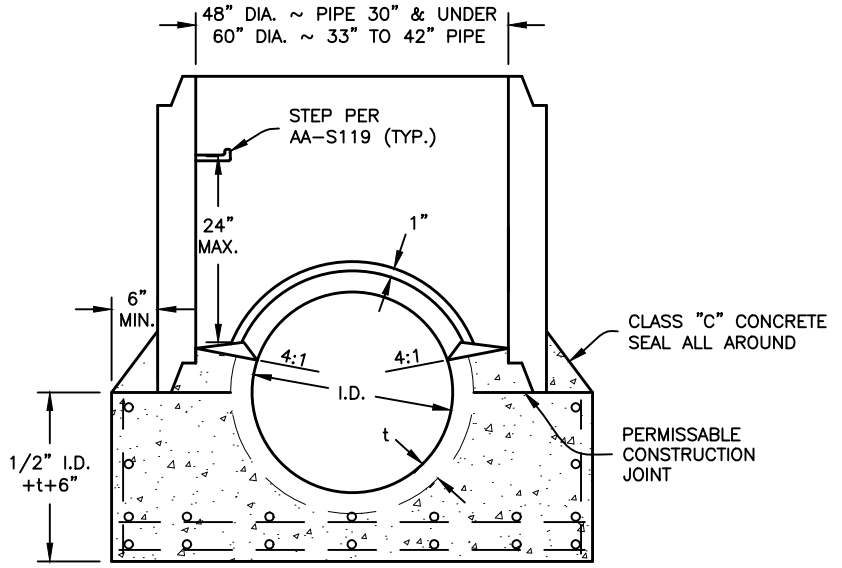
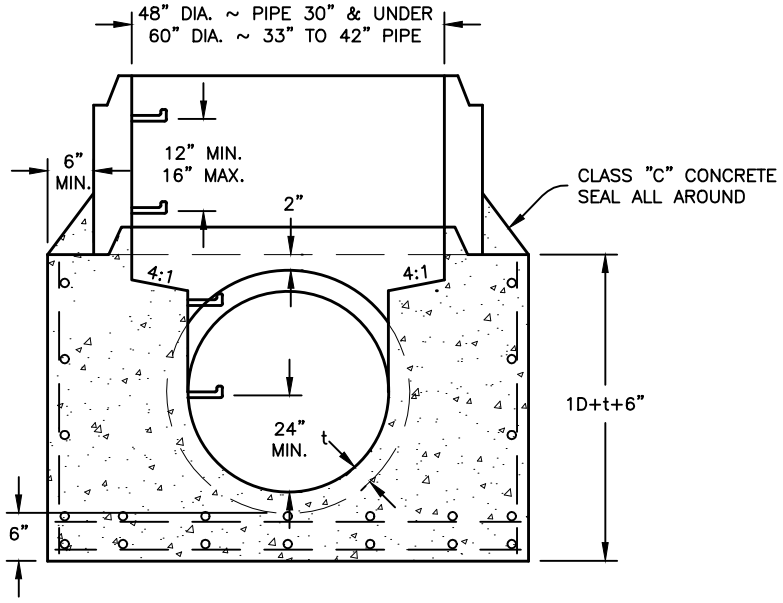




FOR SEWERS 42" DIA. & UNDER

NOTES:

1. CONCRETE FOR THE BASES SHALL BE CLASS "C" OR MEET THE REQUIREMENTS OF CMS 706.13. THE BASES SHALL BE PRECAST OR CAST-IN-PLACE.
2. PRECAST MANHOLES SHALL BE IN ACCORDANCE WITH ASTM C478. PRECAST BASES ON SEWERS 42" AND UNDER SHALL HAVE SUFFICIENT STEEL REINFORCEMENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE TO THE BASE.
3. STEPS SHALL COMPLY WITH REQUIREMENTS SET FORTH ON CMS 711.31 AND STANDARD DRAWING AA-S119.
4. t = WALL THICKNESS OF INTERCEPTING SEWER.
4. ALL REINFORCING STEEL SHALL MEET CMS 709.2 SPECIFICATIONS.
5. 2" MINIMUM COVER ON ALL REINFORCEMENT STEEL.
6. NO STEPS TO BE INSTALLED BELOW PIPE SPRING LINE.

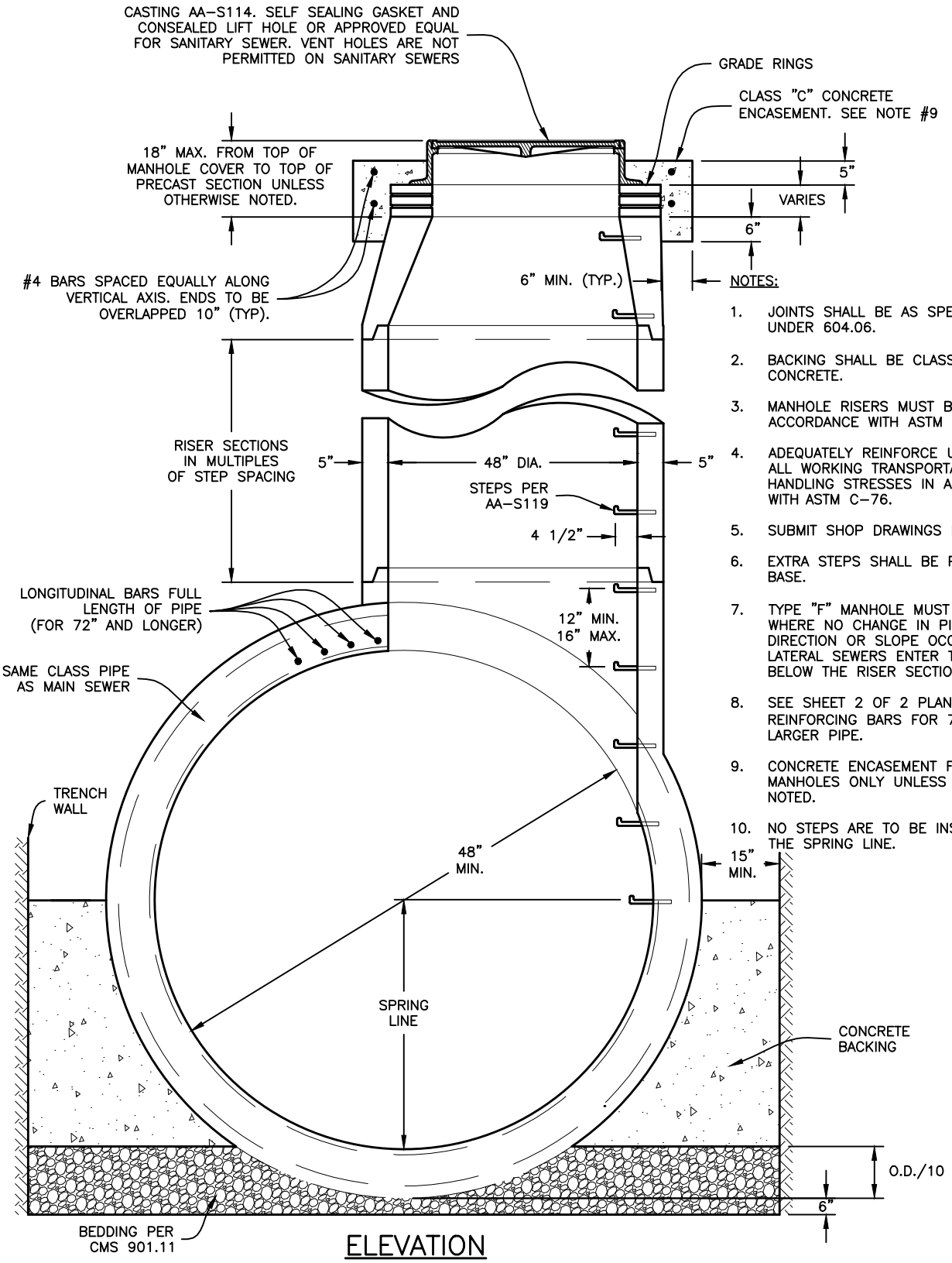
CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPE "E" MANHOLE

STANDARD DRAWING
AA-S104

REVISED 8/8/14



ELEVATION

NOTES:

1. JOINTS SHALL BE AS SPECIFIED UNDER 604.06.
2. BACKING SHALL BE CLASS "A" CONCRETE.
3. MANHOLE RISERS MUST BE IN ACCORDANCE WITH ASTM C–478.
4. ADEQUATELY REINFORCE UNIT TO RESIST ALL WORKING TRANSPORTATION & HANDLING STRESSES IN ACCORDANCE WITH ASTM C–76.
5. SUBMIT SHOP DRAWINGS FOR APPROVAL.
6. EXTRA STEPS SHALL BE PROVIDED FOR BASE.
7. TYPE "F" MANHOLE MUST BE USED WHERE NO CHANGE IN PIPE SIZE, DIRECTION OR SLOPE OCCURS, AND NO LATERAL SEWERS ENTER THE MANHOLE BELOW THE RISER SECTION.
8. SEE SHEET 2 OF 2 PLAN VIEW OF REINFORCING BARS FOR 72"ø AND LARGER PIPE.
9. CONCRETE ENCASEMENT FOR SANITARY MANHOLES ONLY UNLESS OTHERWISE NOTED.
10. NO STEPS ARE TO BE INSTALLED BELOW THE SPRING LINE.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPE "F" MANHOLE

STANDARD DRAWING
AA–S105

REVISED 7/9/12

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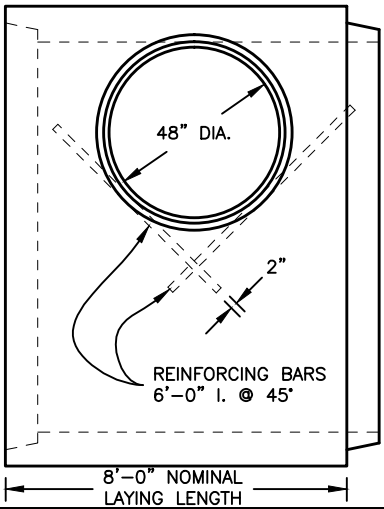


PLAN

(REINFORCING BARS FOR 72"ø AND LARGER PIPE.)

FOR ELEVATION VIEW

TABLE 1

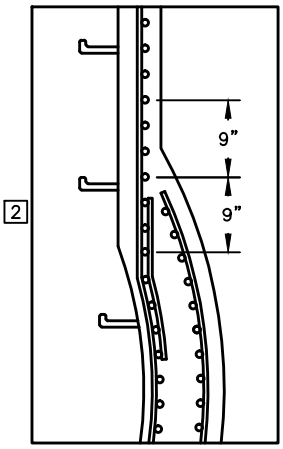
D-LOAD	1000			1350			2000			3000		
DIA.	LONGITUDINAL BARS			LONGITUDINAL BARS			LONGITUDINAL BARS			LONGITUDINAL BARS		
	SIZE	LENGTH	NO. REQ'D.	SIZE	LENGTH	NO. REQ'D.	SIZE	LENGTH	NO. REQ'D.	SIZE	LENGTH	NO. REQ'D.
72"	#5	7'-5"	4	#5	7'-5"	4	#5	7'-5"	4	#5	7'-5"	4
78"	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4
84"	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4
90"	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4
96"	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4
102"	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4
108"	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4	#6	7'-5"	4
114"	#5	7'-5"	6	#5	7'-5"	6	#5	7'-5"	6	#5	7'-5"	6
120"	#7	7'-5"	4	#7	7'-5"	4	#7	7'-5"	4	#7	7'-5"	4
126"	#7	7'-5"	4	#7	7'-5"	4	#7	7'-5"	4	#7	7'-5"	4
132"	#7	7'-5"	4	#7	7'-5"	4	#7	7'-5"	4	#7	7'-5"	4
144"	#7	7'-5"	4	#7	7'-5"	4	#7	7'-5"	4	#7	7'-5"	4

FOR PLAN VIEW

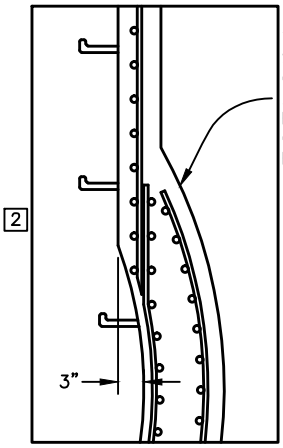
TABLE 2

D-LOAD	1000		1350		2000		3000	
DIA.	DIAG. BARS		DIAG. BARS		DIAG. BARS		DIAG. BARS	
	SIZE	NO. [3] REQ'D.	SIZE	NO. [3] REQ'D.	SIZE	NO. [3] REQ'D.	SIZE	NO. [3] REQ'D.
72"	#5	2	#5	2	#5	4	#5	4
78"	#5	2	#5	2	#5	4	#6	4
84"	#5	2	#4	4	#5	4	#6	4
90"	#5	2	#4	4	#5	4	#6	4
96"	#5	2	#4	4	#5	4	#7	4
102"	#4	4	#5	4	#6	4	#7	4
108"	#4	4	#5	4	#6	4	#7	4
114"	#4	4	#5	4	#6	4	#7	4
120"	#5	4	#5	4	#6	4	#6	6
126"	#5	4	#5	4	#6	4	#6	6
132"	#5	4	#5	4	#7	4	#7	6
144"	#5	4	#6	4	#7	4	#7	6

CASTING DETAILS



INTEGRALLY CAST



PLANT FABRICATED

LEGEND

[1] IF REQUIRED BY CONDUIT SPECIFICATION SEE SHEET 1 OF 2.

[2] ON ALL SIZES EXCEPT 48".

[3] ONE-HALF OF THE REQUIRED NUMBER TO EACH SIDE OF HOLE.

NOTES:

1. #3 x 18" REINFORCEMENT BAR TO SPLICE CAGES. BEND TO SUIT. MINIMUM OF EIGHT PLACES REQUIRED.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPE "F" MANHOLE

STANDARD DRAWING
AA-S105

REVISED 7/9/12

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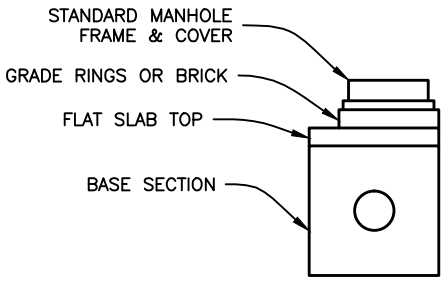

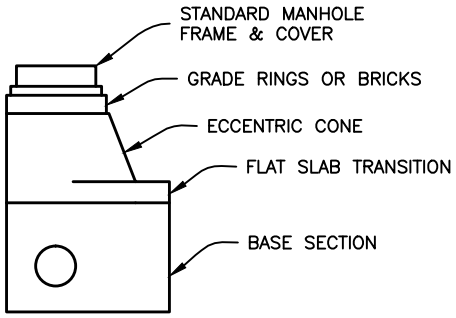

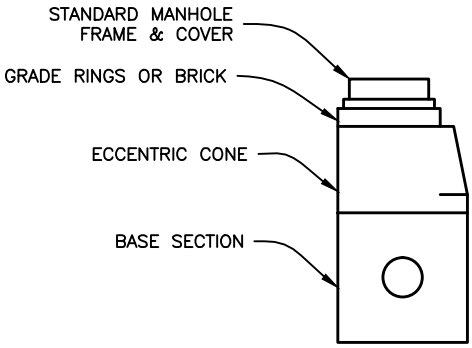

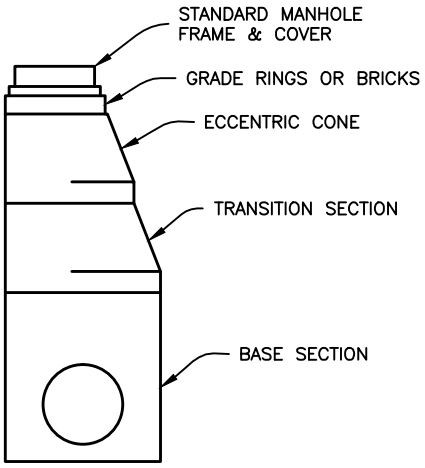

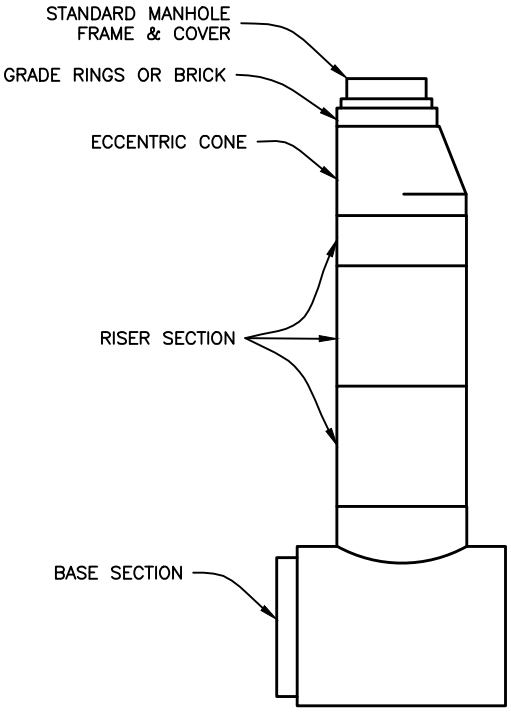

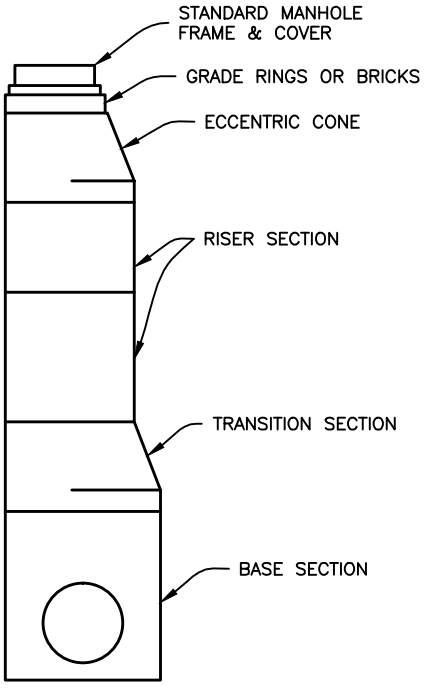

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPICAL ASSEMBLY COMBINATIONS FOR PRECAST MANHOLES

STANDARD DRAWING
AA–S106

REVISED 7/9/12

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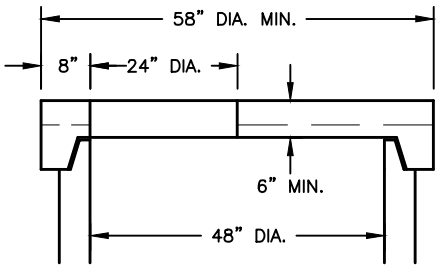
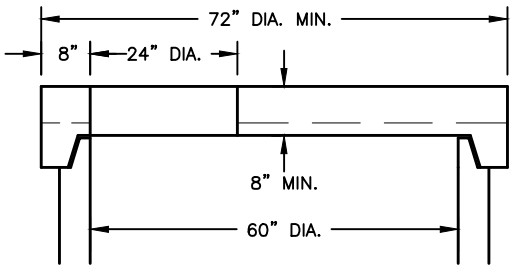
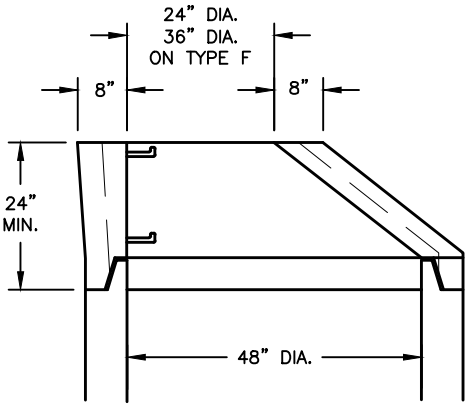


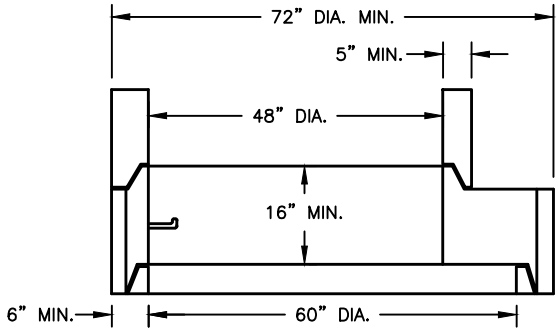
FLAT SLAB TOP
(48" RISERS)



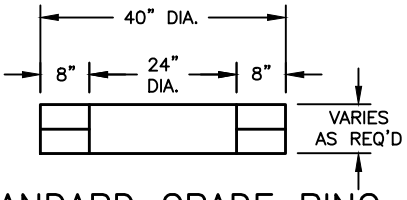
FLAT SLAB TOP
(60" RISERS)



ECCENTRIC CONE TOP
(48" RISERS)



FLAT SLAB TRANSITION
(60" TO 48")



STANDARD GRADE RING

NOTE:
ALL PRE-CAST MANHOLE SECTIONS SHALL BE IN ACCORDANCE WITH ASTM C478.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

MISCELLANEOUS ITEMS
PRECAST MANHOLES

STANDARD DRAWING
AA-S107

REVISED 7/9/12

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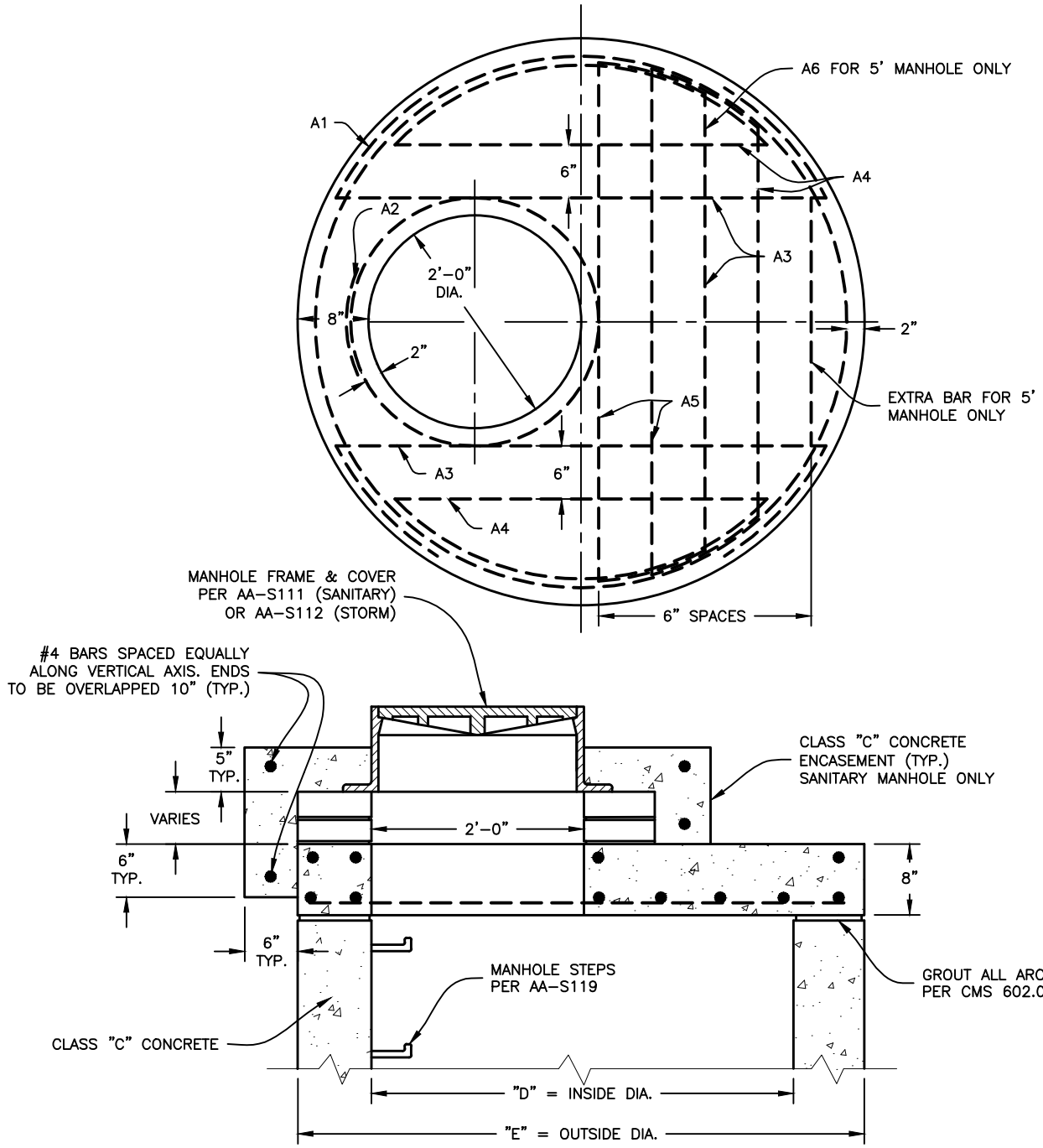

NOTES:

1. 2" MIN. COVER ON ALL REINFORCEMENT STEEL.
2. ALL REINFORCING STEEL SHALL MEET CMS 709.2 SPECIFICATIONS.

DIMENSIONS AND QUANTITIES FOR TOP SLAB

M.H. DIA. "D"	M.H. DIA. "E"	#4 STEEL REINFORCEMENT BARS														WEIGHT STEEL LBS.	APPROXIMATE CONCRETE VOLUME CU. YD.
		A1			A2			A3		A4		A5		A6			
		NO.	LENGTH	RADIUS	NO.	LENGTH	RADIUS	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH		
4'-0"	4'-10"	2	17'-5"	2'-3"	2	9'-0"	1'-2"	3	5'-11"	3	5'-3"	2	6'-6"			66	0.38
5'-0"	6'-0"	2	20'-6"	2'-10"	2	9'-0"	1'-2"	3	7'-2"	3	6'-8"	2	7'-8"	1	7'-6"	82	0.63

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CAST-IN-PLACE CONCRETE TOP SLAB FOR SHALLOW MANHOLES

STANDARD DRAWING
AA-S108

REVISED 7/9/12

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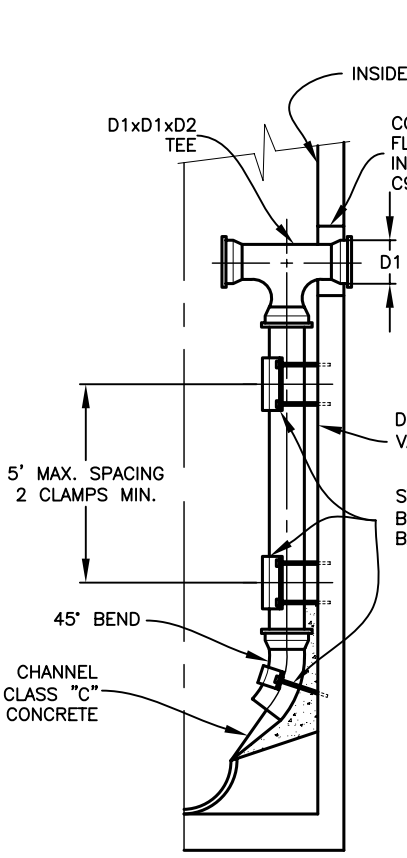
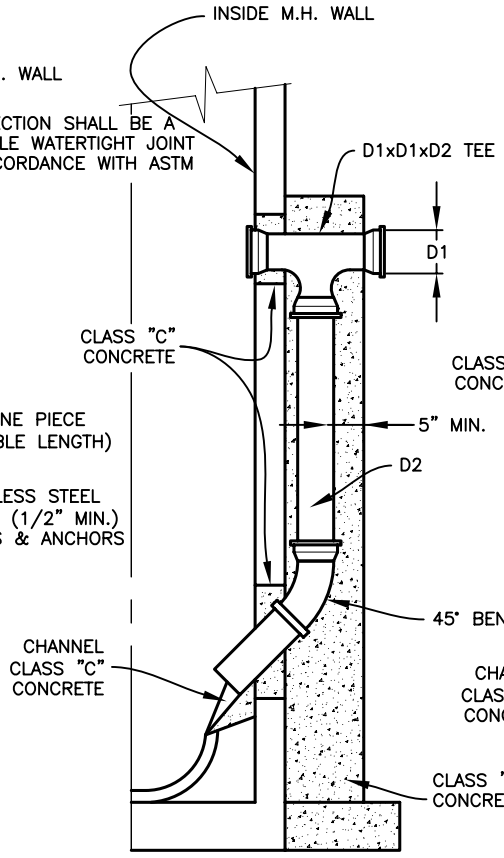
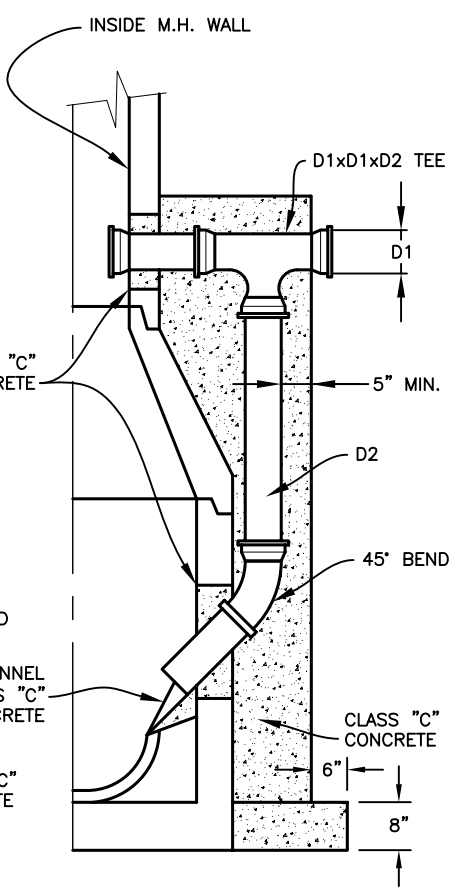


INSIDE DROP
(HALF SECTION)



OUTSIDE DROP
(HALF SECTION)



OUTSIDE DROP
(HALF SECTION)

NOTES:

1. DROP IS REQUIRED WHEN INVERT DIFFERENTIAL IS 24 INCHES OR GREATER.
2. HEIGHT OF DROP PIPE IS TO BE SHOWN ON THE PLANS OR WILL BE DETERMINED AT THE TIME OF CONSTRUCTION.
3. ALL WORK AND MATERIALS REQUIRED TO CONSTRUCT THE INSIDE OR OUTSIDE DROP SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 604, OR ITEM 901.
4. UNLESS OTHERWISE REQUIRED BY THE PLANS AN OUTSIDE DROP WILL BE CONSTRUCTED ON NEW MANHOLES.
5. MATERIALS FOR THE TEE, DROP PIPE AND BEND SHALL BE OF ONE TYPE AND BE ONE OF THE FOLLOWING; INSIDE DROP: CAST–IRON OR PVC. OUTSIDE DROP: CAST IRON, VCP, OR PVC.
6. OUTSIDE DROP PIPES REQUIRE A 5" THICK (MINIMUM) CLASS "C" CONCRETE ENCASEMENT ON THREE SIDES OF PIPE AND SHALL BE TIED TO MANHOLE WALL WITH 5/8" STAINLESS STEEL–"U" RODS x 5" LONG @ 12".
7. INSIDE DROP MAY BE USED ON NEW CONSTRUCTION PROVIDED THAT 60" BASE AND RISER SECTIONS ARE USED.

PIPE DIAMETER	
D1	D2
8"	8"
10"	8"
12"	8"
15"	10"
18"	10"
21"	12"
24"	12"

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

INSIDE DROP & OUTSIDE DROP PIPE FOR MANHOLES

STANDARD DRAWING
AA–S110

REVISED 9/20/12

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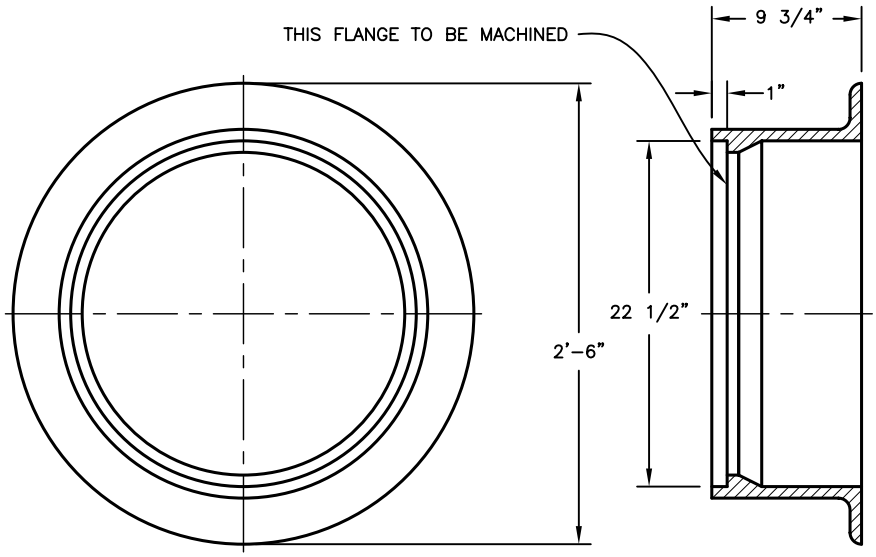
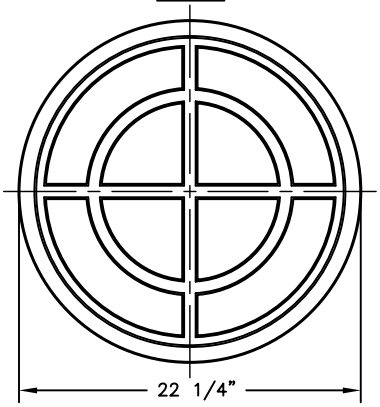


PLAN

SECTION

TOP



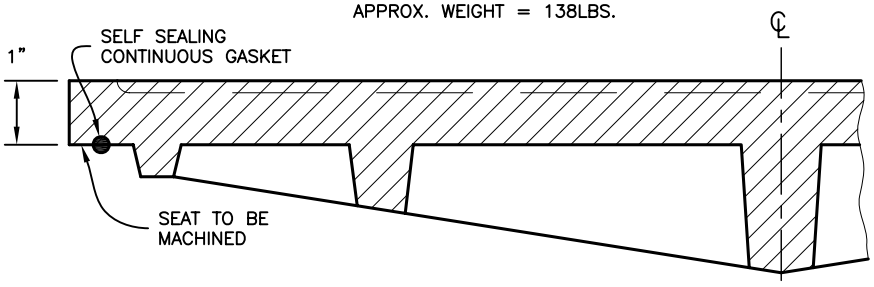
BOTTOM

LID

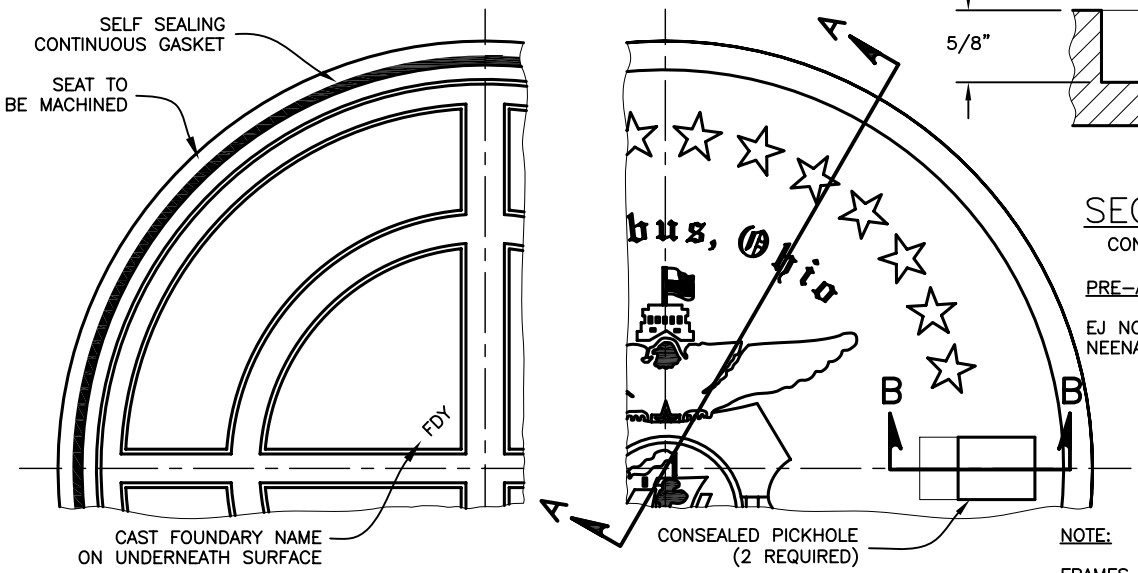
APPROX. WEIGHT = 126 LBS.

GROUND RIM

APPROX. WEIGHT = 138LBS.



SECTION A–A



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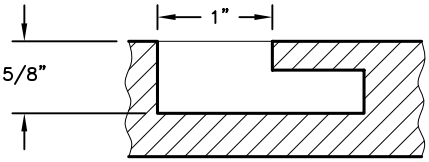


SECTION B–B

CONCEALED PICKHOLE

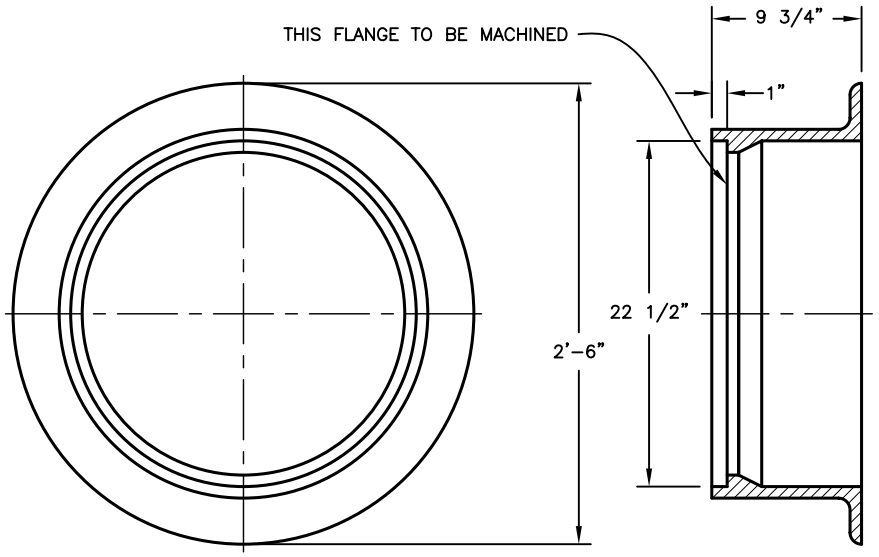
PRE–APPROVED CASTINGS:

EJ NO. – 1660A3GS, 1661Z1
NEENAH NO. – 1762 WITH T–SEAL

NOTE:

FRAMES, GRATES, AND COVERS SHALL MEET THE REQUIREMENTS OF 604.02 AND AASHTO M306

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	STANDARD DIMENSIONS FOR MANHOLE FRAME & COVER CASTING (SANITARY SEWERS)	STANDARD DRAWING AA–S111
SSES MANAGER		REVISED 12/6/13
		PAGE 1 / 1

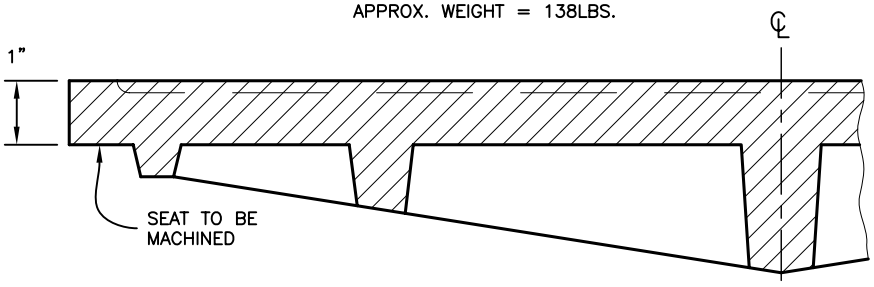


PLAN

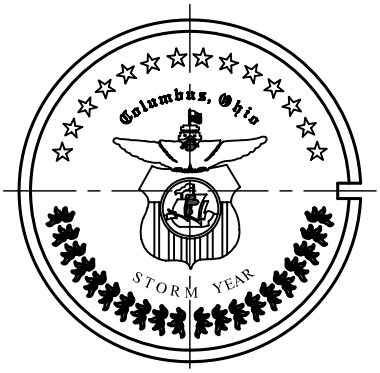
SECTION

GROUND RIM

APPROX. WEIGHT = 138LBS.



SECTION A–A



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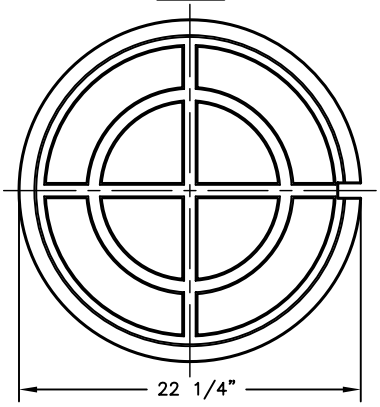


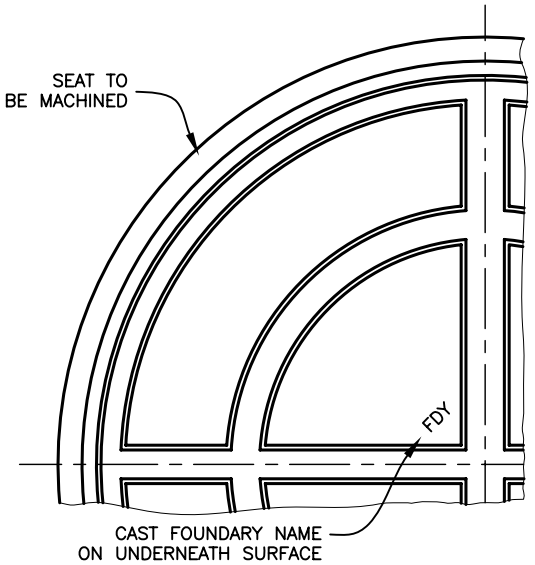
BOTTOM

LID

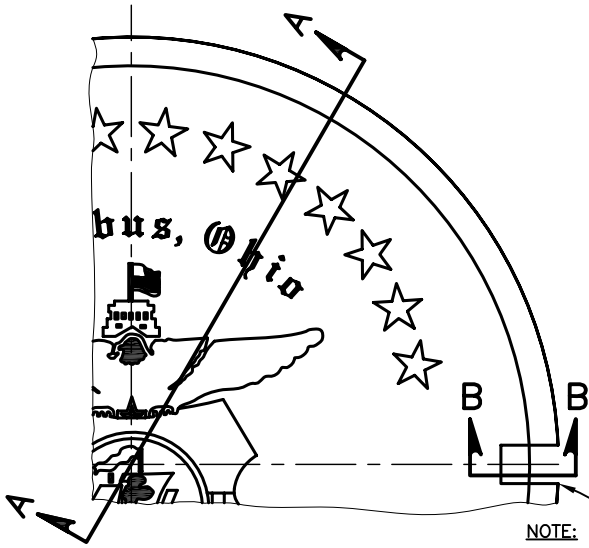
APPROX. WEIGHT = 126 LBS.

PRE–APPROVED CASTINGS:

EJ NO. – 1660A3, 1661Z1
NEENAH NO. – 1762



BOTTOM



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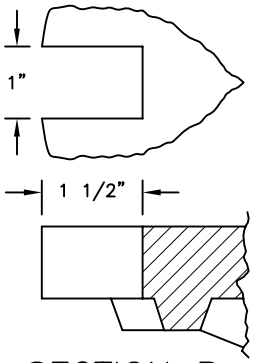


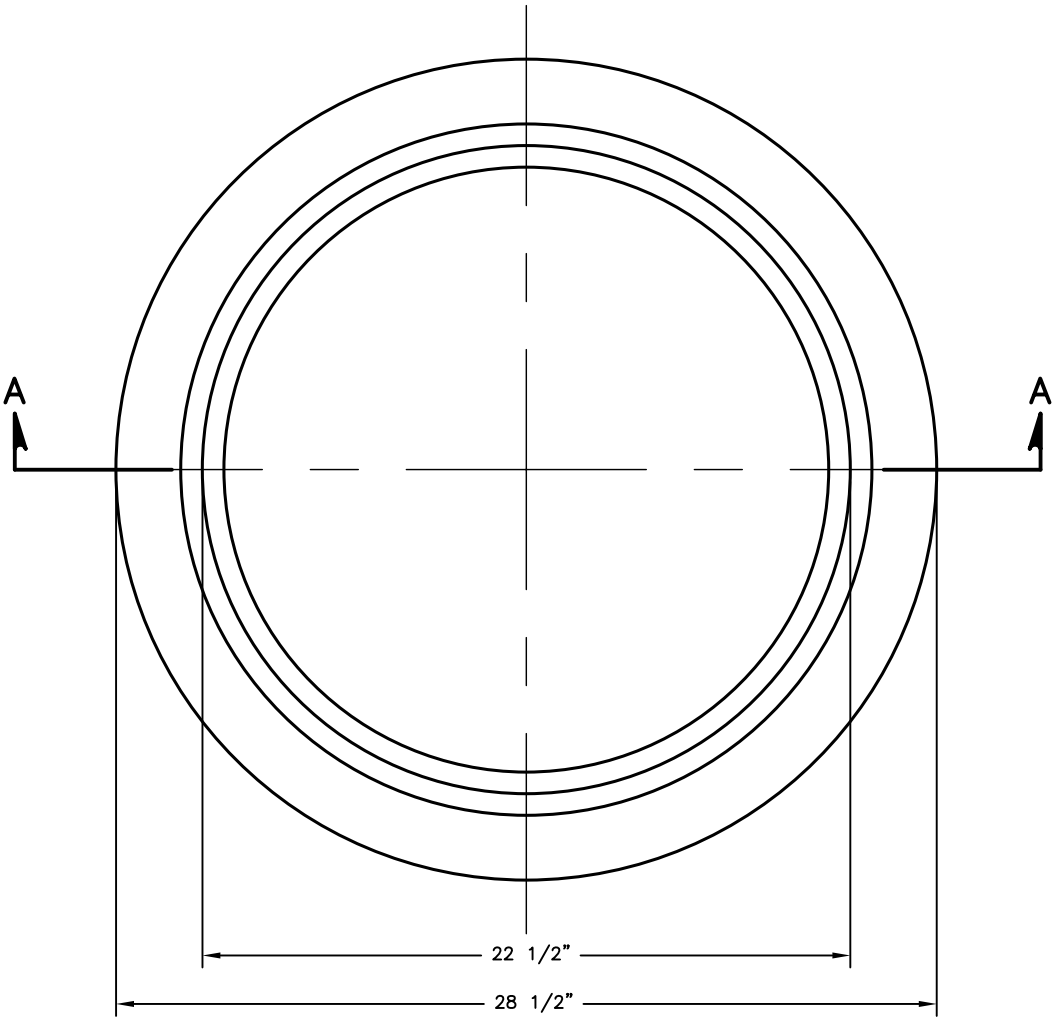
SECTION B–B

PICKHOLE

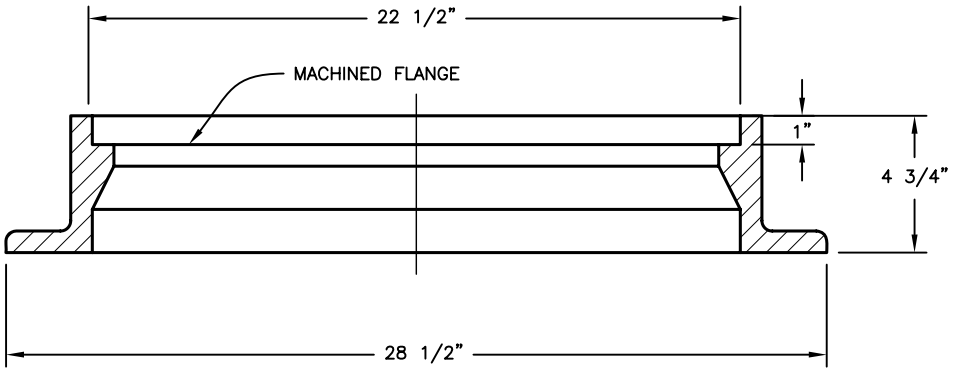
NOTE:

FRAMES, GRATES, AND COVERS SHALL MEET THE REQUIREMENTS OF 604.02 AND AASHTO M306

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE SSES MANAGER	STANDARD DIMENSIONS FOR MANHOLE FRAME & COVER CASTING (STORM SEWERS)	STANDARD DRAWING AA–S112 REVISED 12/6/13 PAGE 1 / 1



PLAN



SECTION A–A

APPROX. WEIGHT 125 LBS.

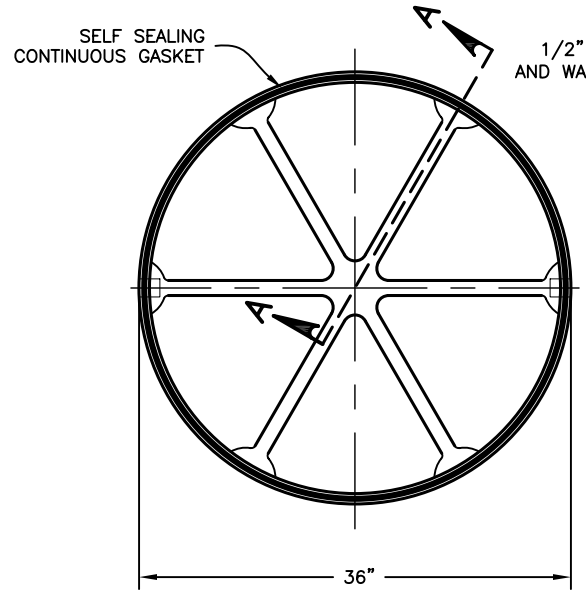
NOTES:

1. SHALL ONLY BE USED IF APPROVED BY ENGINEER.
2. FRAMES, GRATES, AND COVERS SHALL MEET REQUIREMENTS OF 604.02 & AASHTO M306.

PRE–APPROVED CASTINGS:

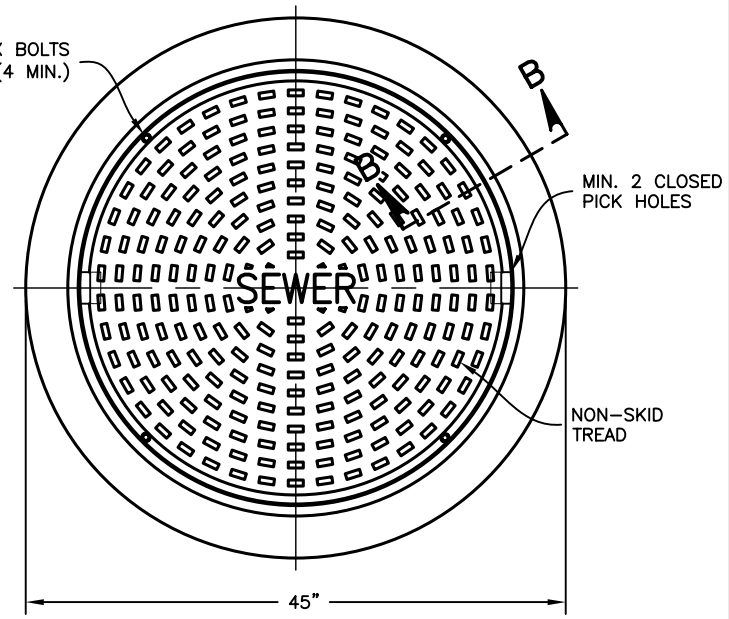
EJ NO. – 1660Z
NEENAH NO. – 1762–A

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	STANDARD DIMENSIONS FOR MODIFIED HEIGHT MANHOLE FRAME GROUND RIM	STANDARD DRAWING AA–S113
SSES MANAGER		REVISED 12/6/13
		PAGE 1 / 1

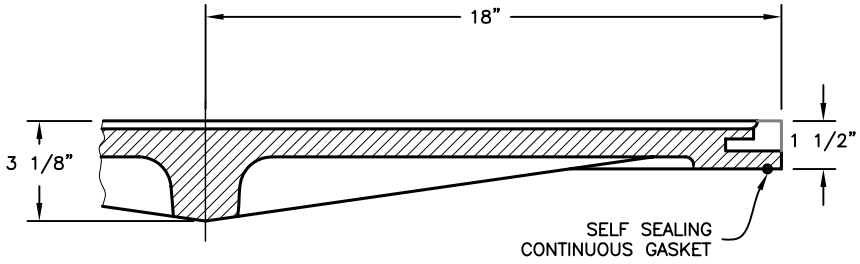


BOTTOM VIEW – LID

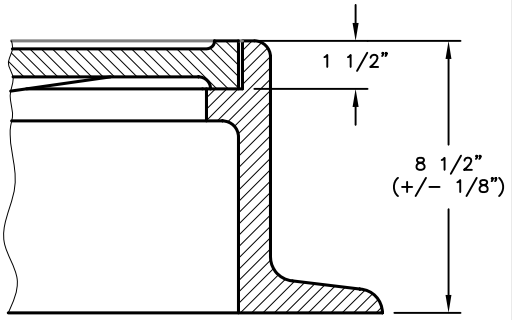
APPROX. WEIGHT = 720LBS.
(SEE SHEET 2 OF 2
FOR ALTERNATE DESIGN)



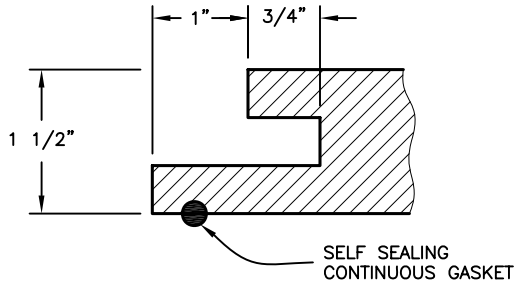
TOP VIEW OF ASSEMBLY



SECTION A–A



SECTION B–B



PICK HOLE DETAIL

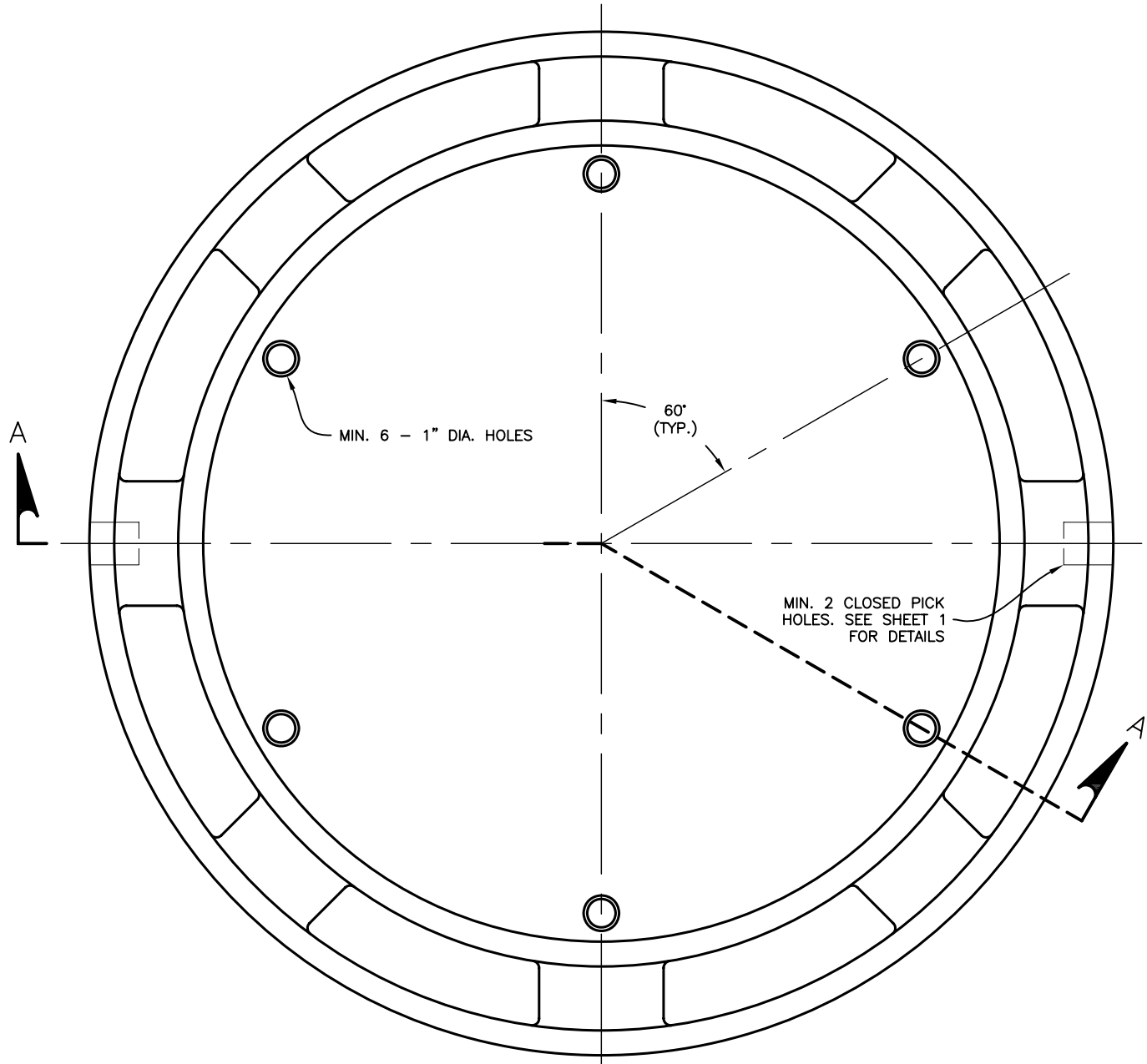
PRE–APPROVED CASTINGS:

EJ NO. – 1585AVHGS, 1585Z1
NEENAH NO. – 1752

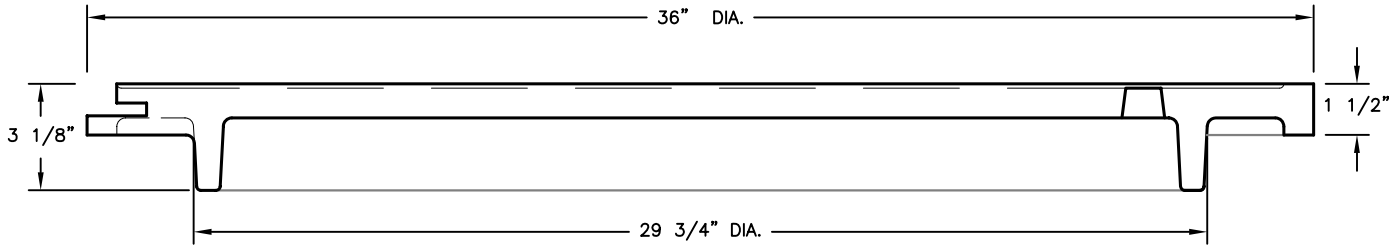
NOTES:

1. FRAMES, GRATES, AND COVERS SHALL MEET THE REQUIREMENTS OF 604.02 AND AASHTO M 306.
2. APPROXIMATE WEIGHT = 240LBS.

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	STANDARD DIMENSIONS FOR 36" MANHOLE FRAME & COVER CASTINGS (SANITARY)	STANDARD DRAWING AA–S114
SSES MANAGER		REVISED 12/6/13
		PAGE 1 / 2



BOTTOM VIEW



SECTION A–A

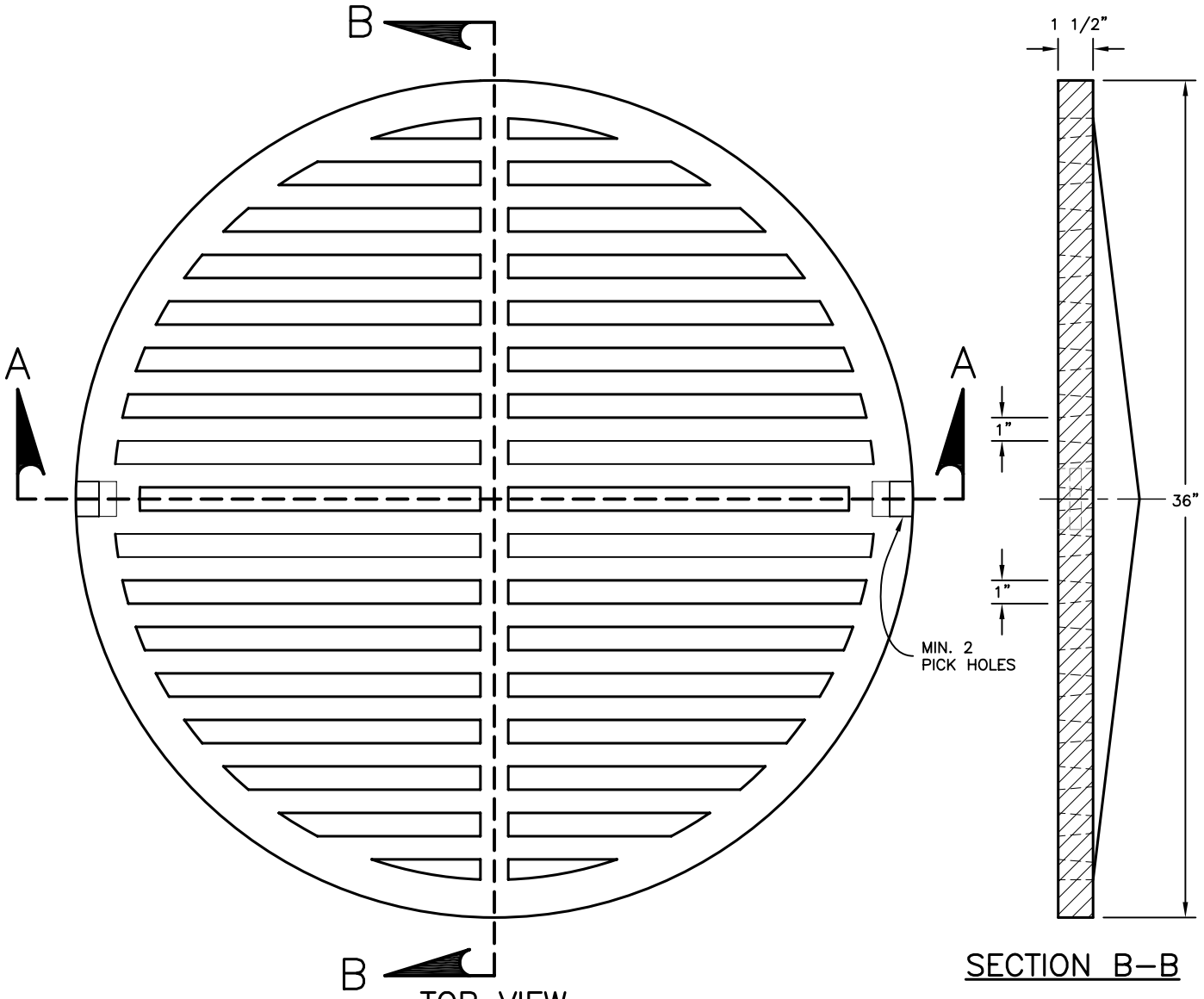
NOTES:

1. FRAMES, GRATES, AND COVERS SHALL MEET THE REQUIREMENTS OF 604.02 AND AASHTO M 306.
2. APPROXIMATE WEIGHT = 238LBS.

PRE–APPROVED CASTINGS:

EJ NO. – 1585BVH
NEENAH NO. – 1752

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	36" MANHOLE COVER (STORM)	STANDARD DRAWING AA–S114
SSES MANAGER		REVISED 12/6/13
		PAGE 2/2



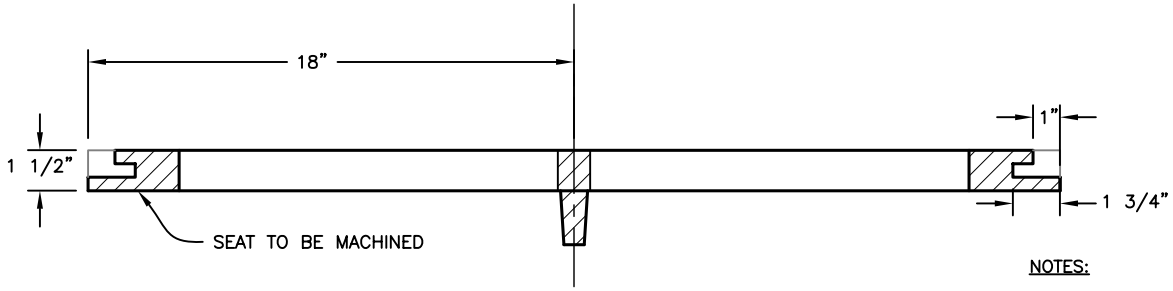
TOP VIEW

(APPROX. WEIGHT = 162LBS.)

SECTION B–B

PRE–APPROVED CASTINGS:

EJ NO. – 1585M
NEENAH NO. – 2251

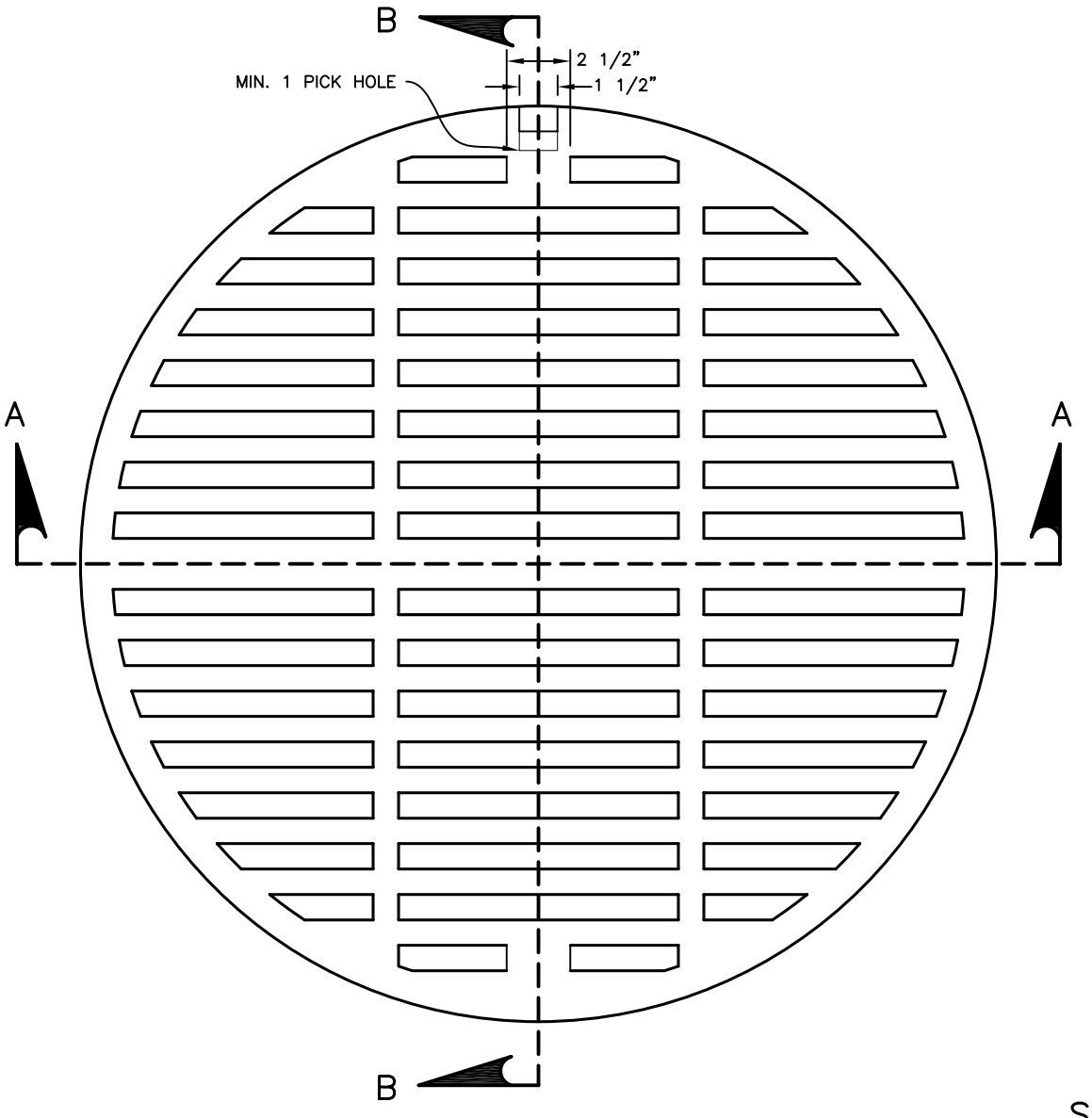


SECTION A–A

NOTES:

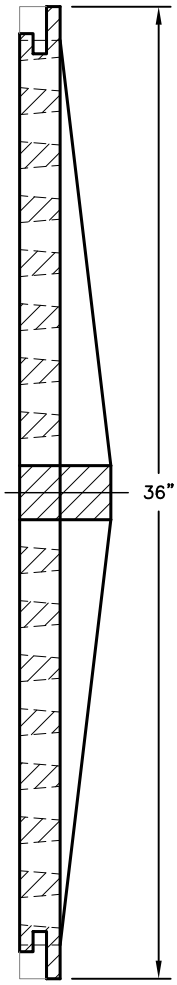
1. STD. FRAME AS DETAILED ON AA–S114 TO BE USED.
2. GRATE SHALL MEET THE REQUIREMENTS OF 604.02 AND AASHTO M306.

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	GRATED 36" STORM MANHOLE LID (LIGHT DUTY)	STANDARD DRAWING AA–S115
SSES MANAGER		REVISED 12/6/13
		PAGE 1 / 1



TOP VIEW

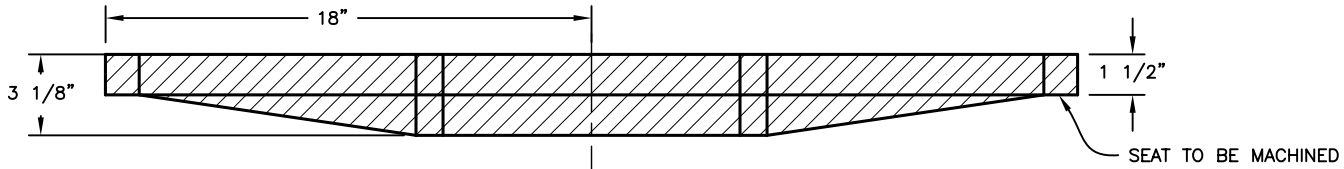
(APPROX. WEIGHT = 227LBS.)



SECTION B–B

PRE–APPROVED CASTINGS:

EJ NO. – 1585M
NEENAH NO. – 2251

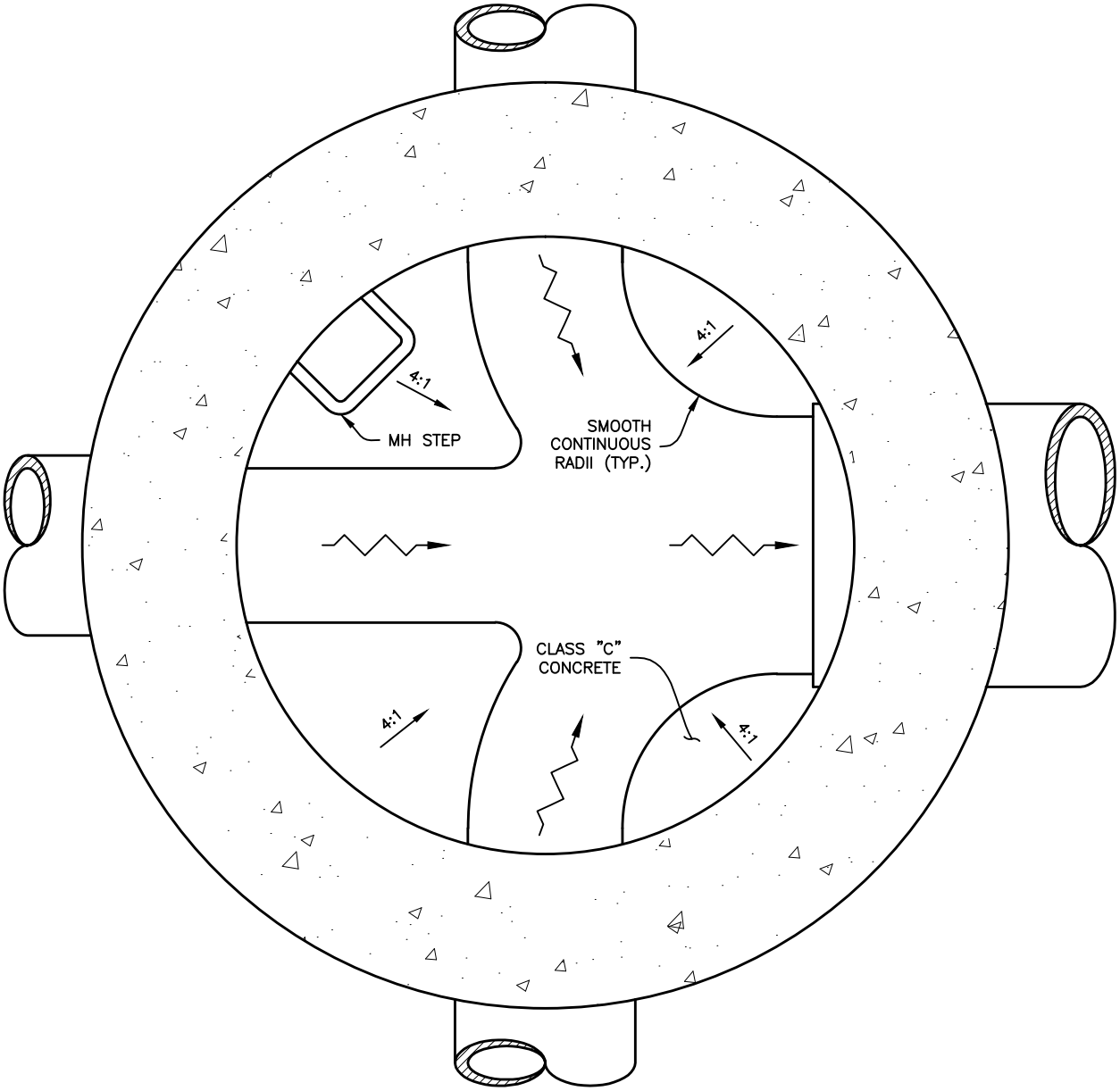


SECTION A–A

NOTES:

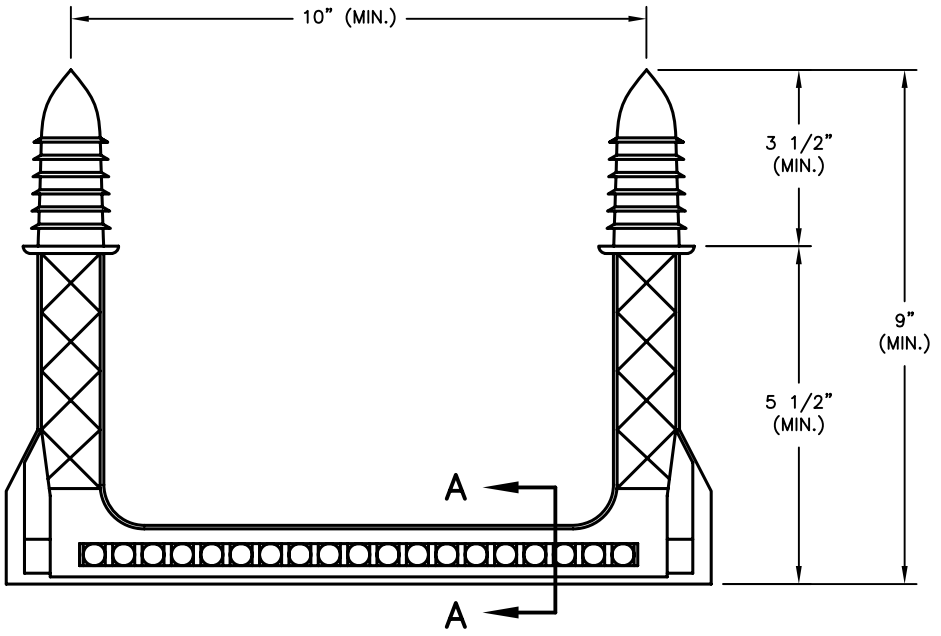
1. USE STANDARD FRAME AS DETAILED ON AA–S114.
2. GRATE SHALL MEET REQUIREMENTS OF 604.02 AND AASHTO M306.

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE SSES MANAGER	GRATED 36" STORM MANHOLE LID (HEAVY DUTY)	STANDARD DRAWING AA–S116 REVISED 12/6/13 PAGE 1 / 1

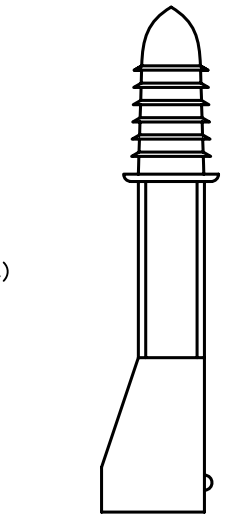


SECTION SHOWING METHOD OF TURNING SIDE DRAINS

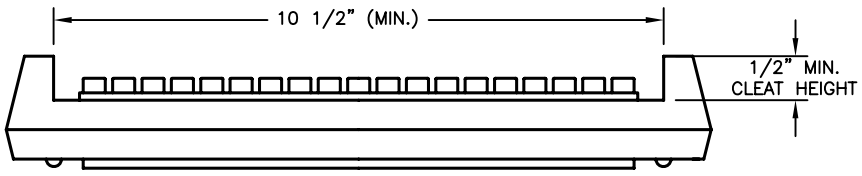
CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	PRECAST MANHOLE BASE CHANNEL DETAIL	STANDARD DRAWING AA–S117
SSES MANAGER		REVISED 7/9/12
		PAGE 1 / 1



TOP VIEW



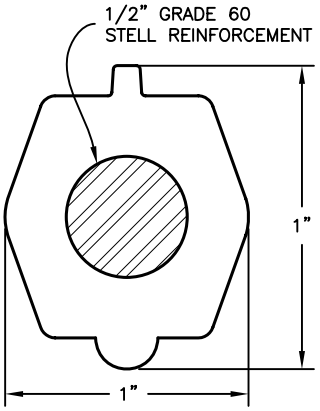
SIDE VIEW



FRONT VIEW

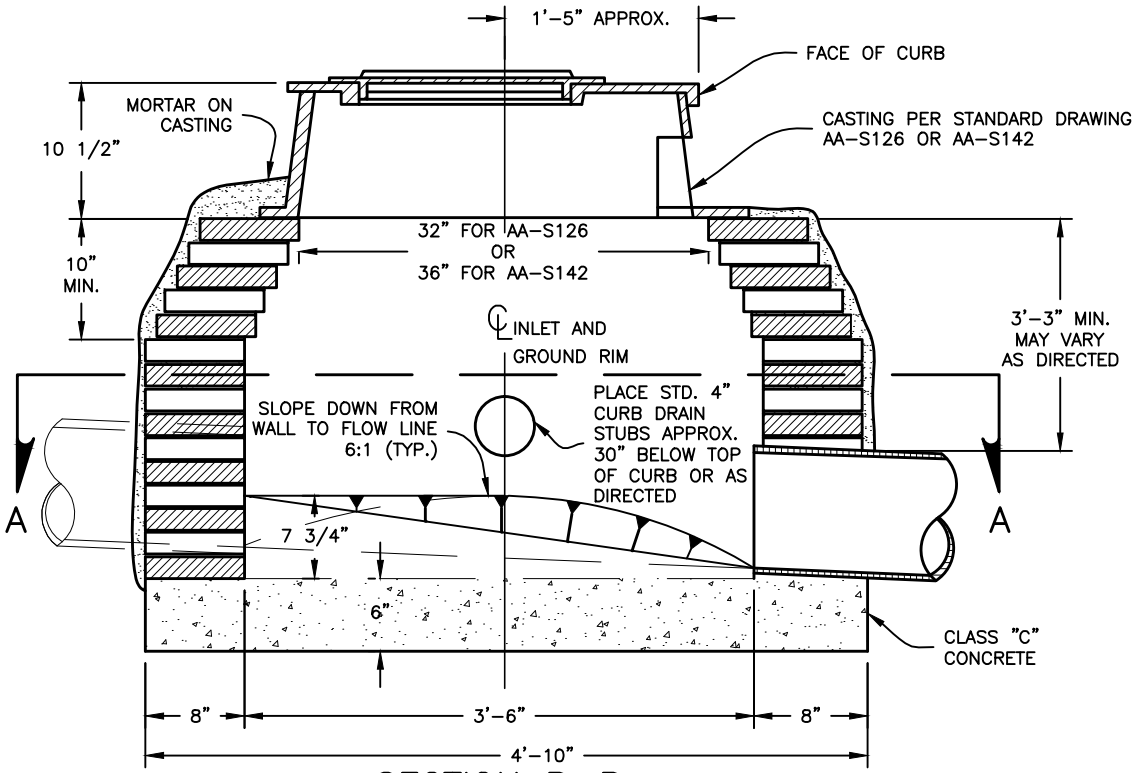
NOTES:

1. STEPS SHALL MEET THE REQUIREMENTS OF ASTM C478, AND SHALL BE INSTALLED WITH A UNIFORM VERTICAL SPACING OF 12" TO 16"
2. STEPS INSTALLED IN EXISTING STRUCTURES SHALL BE SET IN A QUICK SETTING NON-SHRINK EPOXY.
3. STEPS SHALL CONFORM TO MATERIAL REQUIREMENTS OF CMS 711.31. ALL STEPS SHALL HAVE A DEPRESSED TREAD OR 1/2" MINIMUM CLEAT HEIGHT AT THE ENDS.
4. THE ENGINEER MAY REQUIRE THE CONTRACTOR TO TEST LOAD A MAXIMUM OF ONE STEP PER STRUCTURE PER ASTM C478. IF THE SELECTED STEP FAILS THE ASTM TEST, THE REMAINING STEPS IN THAT STRUCTURE SHALL ALSO BE TESTED. ALL STEPS NOT PASSING THE ASTM TEST SHALL BE REMOVED. ALL NEW STEPS SHALL BE TESTED PER ASTM C478. THE COST OF TESTING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SAID STRUCTURE.

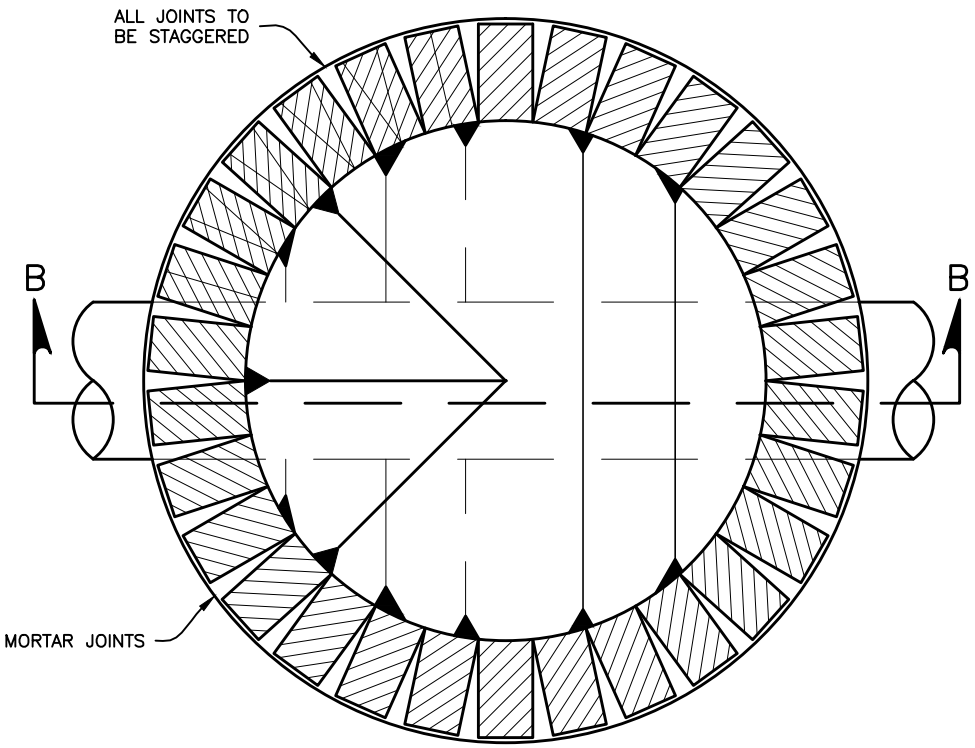


SECTION A-A

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	MANHOLE STEP	STANDARD DRAWING AA-S119
SSES MANAGER		REVISED 8/8/14
		PAGE 1 / 1



SECTION B–B



SECTION A–A

NOTES:

1. PIPES DRAINING INTO INLET SHALL BE PLACED 2" ABOVE ELEVATION OF OUTLET PIPE.
2. MAXIMUM SIZE OF PIPE TO BE USED WITH INLET WILL BE 24".
3. OUTLET PIPE TO BE PLACED AT FRONT OR BACK OF INLET.
4. IF PIPE IS PLACED UNDER PAVEMENT AND THE COVER FROM TOP OF PIPE TO BOTTOM OF PAVEMENT IS 30" OR LESS, CLASS "A" CONCRETE ENCASEMENT WILL BE REQUIRED. PER CMS 901.12.
5. INLETS SHALL BE BUILT OF BRICK, PRECAST SOLID CONCRETE BLOCKS, CAST IN PLACE CONCRETE OR PRE–CAST CONCRETE.
6. PRE–CAST WALLS SHALL HAVE A MIN. THICKNESS OF 5" AND BE SUFFICIENTLY REINFORCED TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.
7. PRECAST INLETS SHALL BE IN ACCORDANCE WITH ASTM C913.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CURB INLET

STANDARD DRAWING
AA–S120

REVISED 7/9/12

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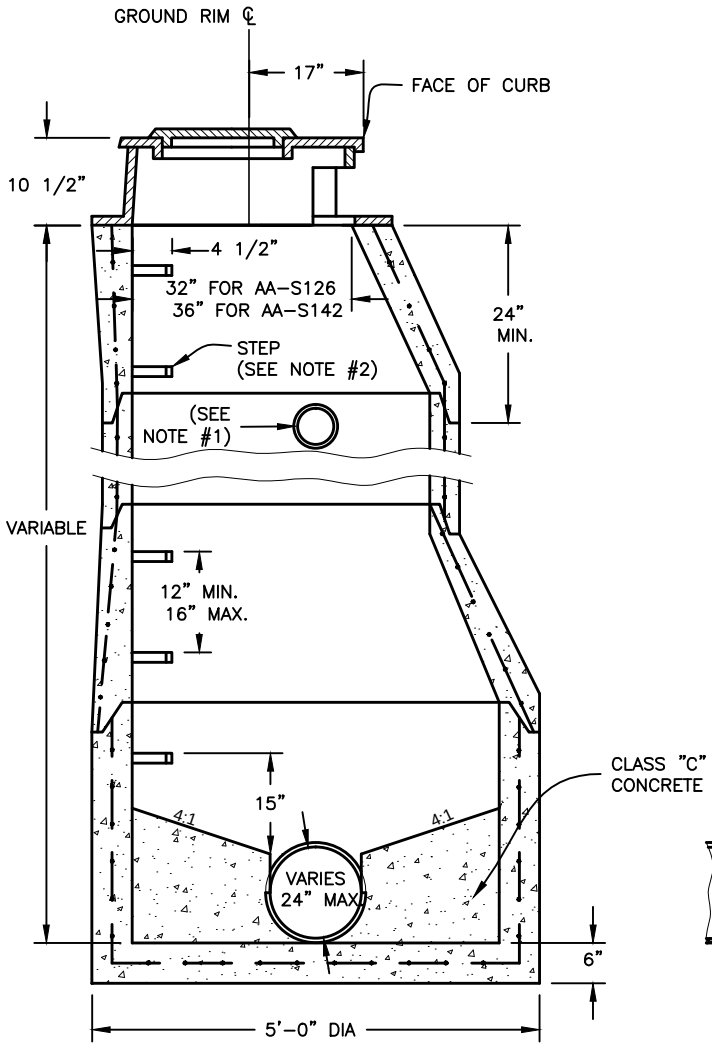

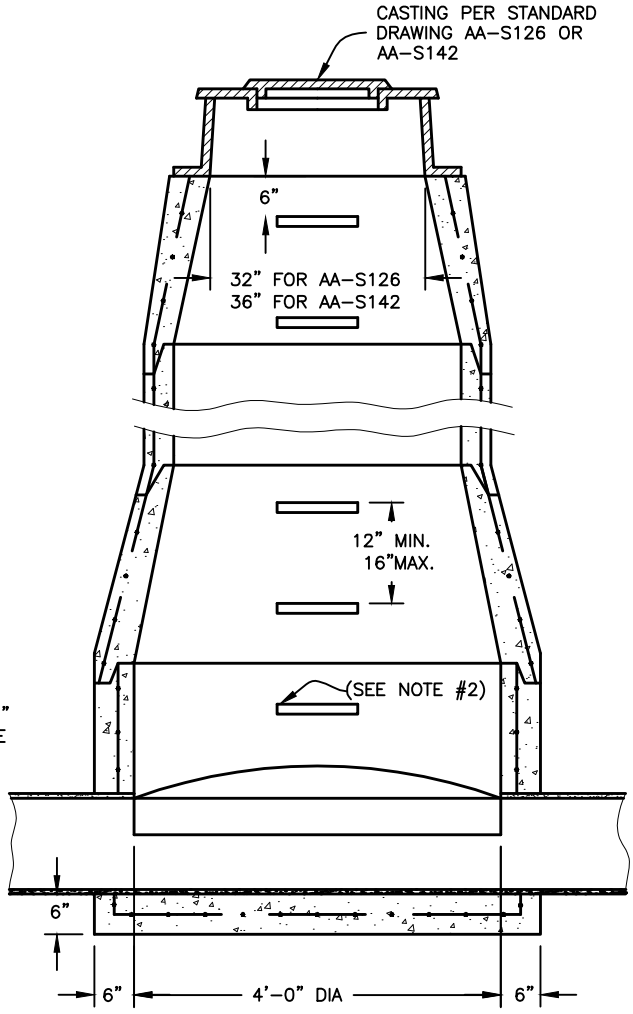

NOTES:

1. PLACE STANDARD 4" CURB DRAIN STUBS 30" BELOW THE TOP OF THE CURB OR AS DIRECTED.
2. INSTALL STANDARD STEPS PER AA-S119.
3. PRE-CAST WALLS SHALL HAVE A 5" MIN. THICKNESS & BE SUFFICIENTLY REINFORCED TO PERMIT SHIPPING & HANDLING WITHOUT DAMAGE.
4. MANHOLE SHALL BE IN ACCORDANCE WITH ASTM C478.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CURB INLET MANHOLE

STANDARD DRAWING
AA-S121

REVISED 7/9/12

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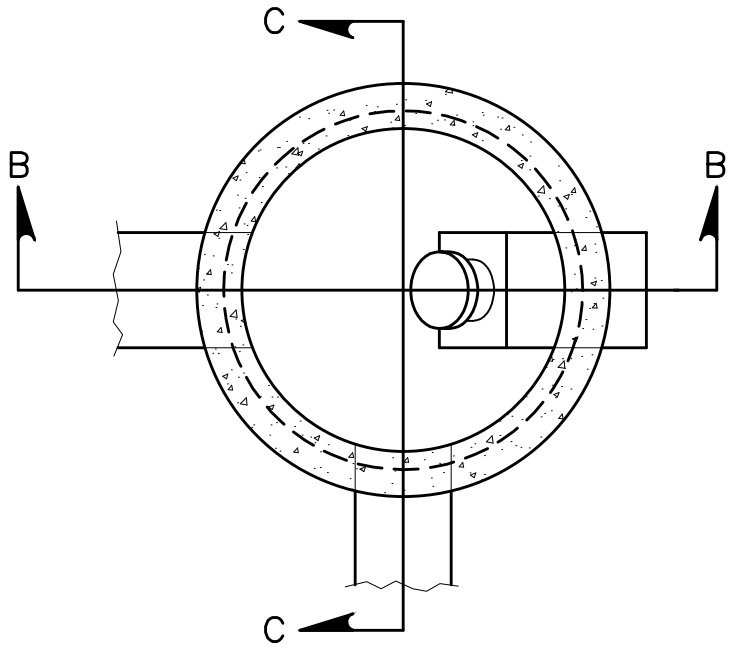
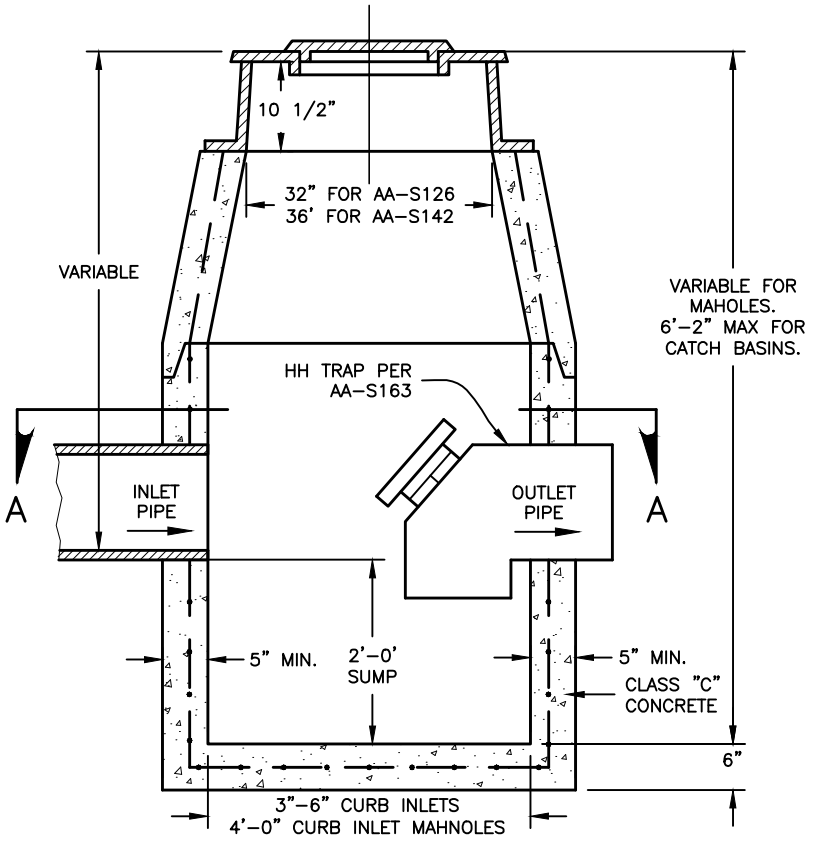


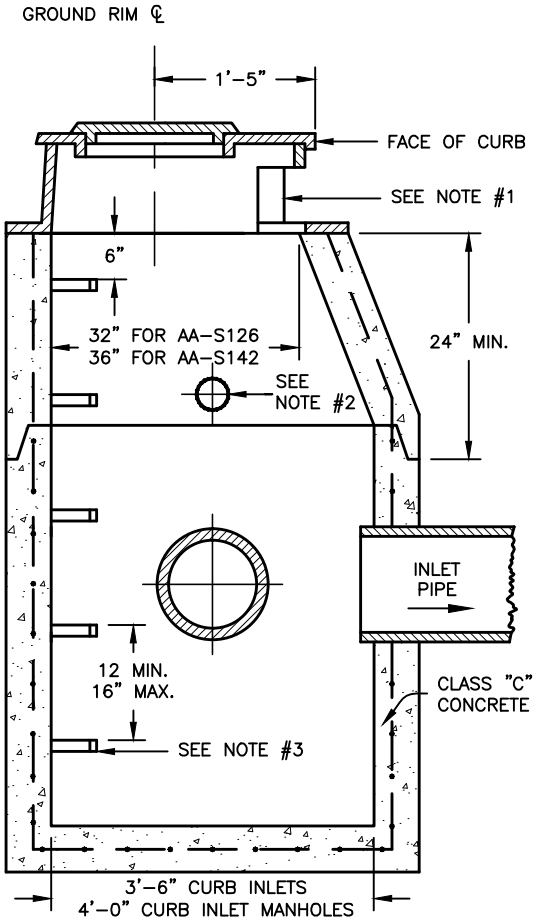
SECTION PLAN A–A

NOTES:

1. CURB INLET CASTING PER STANDARD DRAWING AA–S126, OR AA–S142.
2. PLACE STANDARD 4" CURB DRAIN STUBS 30" BELOW THE TOP OF THE CURB OR AS DIRECTED.
3. INSTALL STANDARD STEPS PER AA–S119.
4. MANHOLE SHALL BE IN ACCORDANCE WITH ASTM C478.
5. PRECAST WALLS SHALL HAVE A 5" MIN. THICKNESS AND BE SUFFICIENTLY REINFORCED TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.

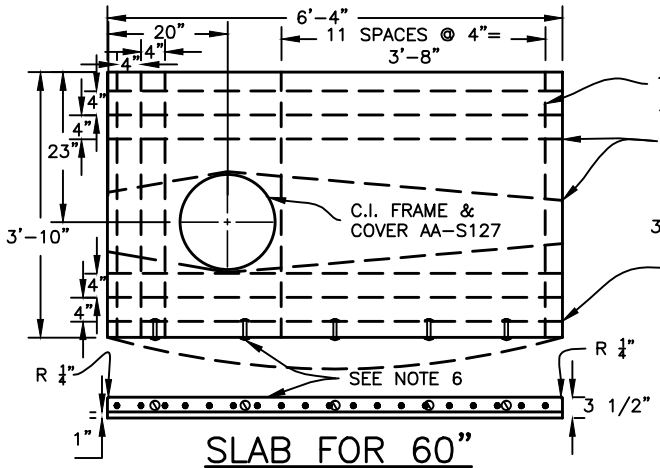


SECTION PLAN B–B

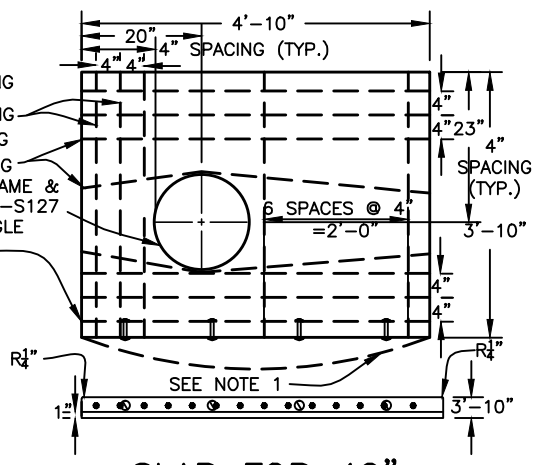


SECTION PLAN C–C

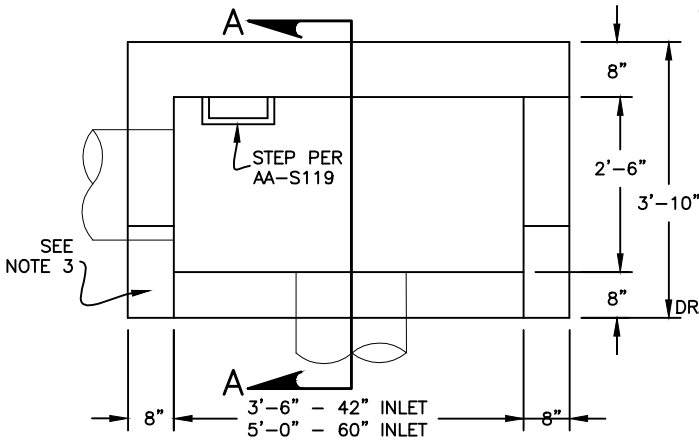
CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	CURB INLET & CURB INLET MANHOLE WITH H–H TRAP (COMBINED SEWERS)	STANDARD DRAWING AA–S122
SSES MANAGER		REVISED 7/9/12
		PAGE 1 / 1



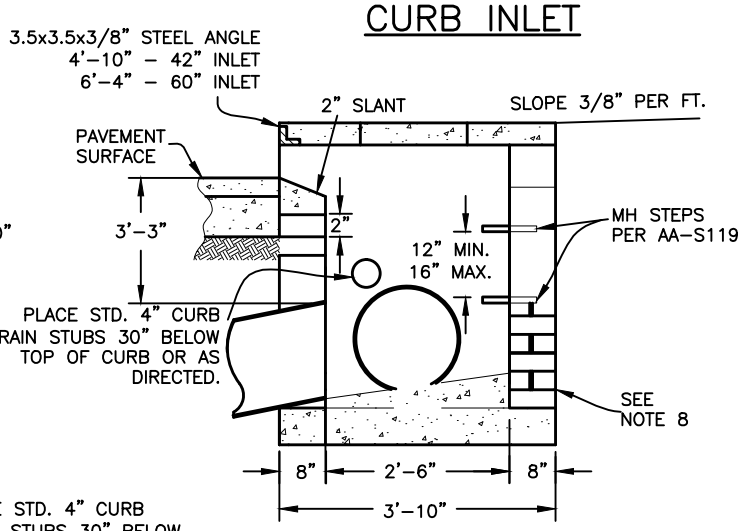
SLAB FOR 60" CURB INLET



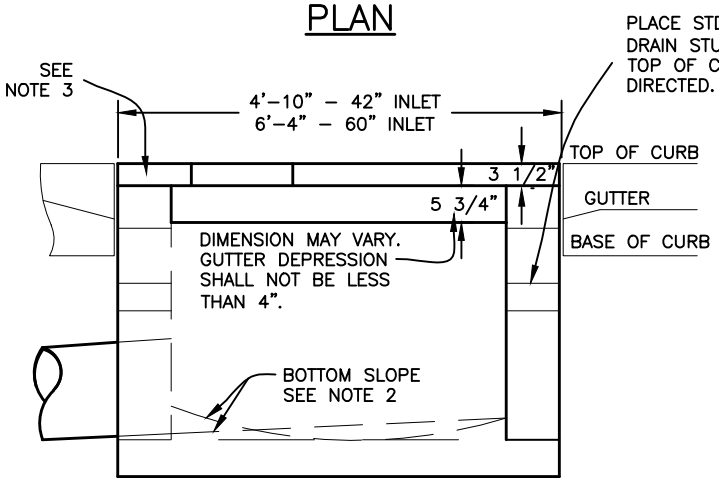
SLAB FOR 42" CURB INLET



PLAN



SECTION A-A



ELEVATION

NOTES:

1. WHERE INLET IS TO BE LOCATED WITHIN LIMITS OF CURVED CURB, IF ORDERED, THE SLAB EDGE OF CURB LINE SHALL BE BUILT TO CONFORM TO THE REQUIRED RADIUS.
2. THE INLET BOTTOM SHALL BE SHAPED TO PROVIDE MINIMUM SLOPE OF 2" TO OUTLET PIPE, THE CROSS SECTIONAL FORM OF BOTTOM AND AS DIRECTED.
3. IN BRICK WALL CONSTRUCTION, SUITABLE CONCRETE OR STONE BLOCKS NOT LESS THAN 8"x8"x16" IN SIZE SHALL BE USED AT CORNERS ABUTTING CURB.
4. OUTLET PIPE MAY BE LOCATED IN END OR SIDEWALL. THE OUTLET SHALL BE DIRECTED TOWARD THE CENTER OF THE BASIN.
5. IN EXISTING PAVEMENTS ON AREAS APPROX. 12'x4' FOR 60" INLETS, AND 10'x4' FOR 42" INLETS, OR AS OTHERWISE ORDERED SHALL BE CUT OUT SO THAT REPAVING MAY BE SHAPED TO MEET THE DEPRESSED LIP OF THE INLET OPENING AS DIRECTED.
6. FOR ANCHORS USE 6"x3/8" BOLTS OR #3 REBAR 10" LONG WITH 2" 90° BENDS WITH ONE END WELDED TO INSIDE FACE OF ANGLE IN APPROVED MANNER.
7. WHEN USED IN CONJUNCTION WITH CURB OPENING EXTENSION (AA-S124) TOP FINISHED SURFACE OF INLET WALL TO BE BUILT AT LOWER LEVEL AS DIRECTED.
8. CONSTRUCT WALLS OF CLASS "C" CONCRETE OR BRICK. IF WALLS ARE CONSTRUCTED OF BRICK, SEE CMS 602.03.
9. PRECAST UNITS SHALL BE IN ACCORDANCE WITH ASTM C913 AND HAVE A MINIMUM THICKNESS OF 6". THEY SHALL BE REINFORCED SUFFICIENTLY TO BE SHIPPED AND HANDLED WITHOUT DAMAGE.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

42" AND 60" CURB INLETS

STANDARD DRAWING
AA-S123

REVISED 8/8/14

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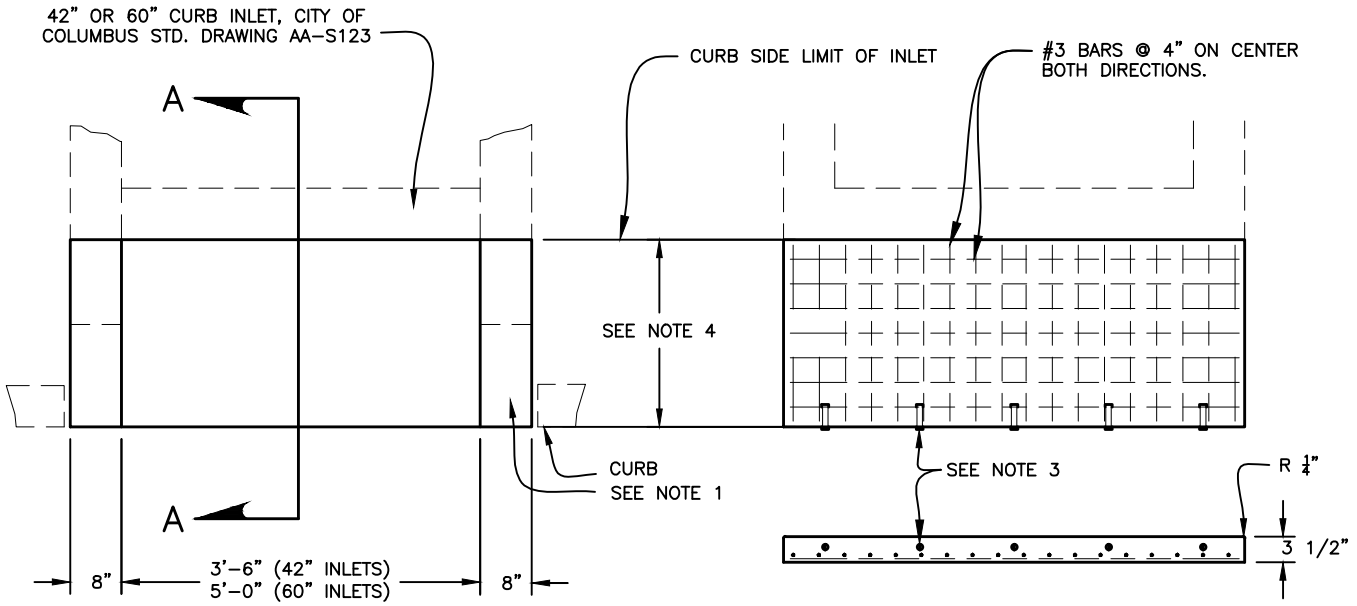
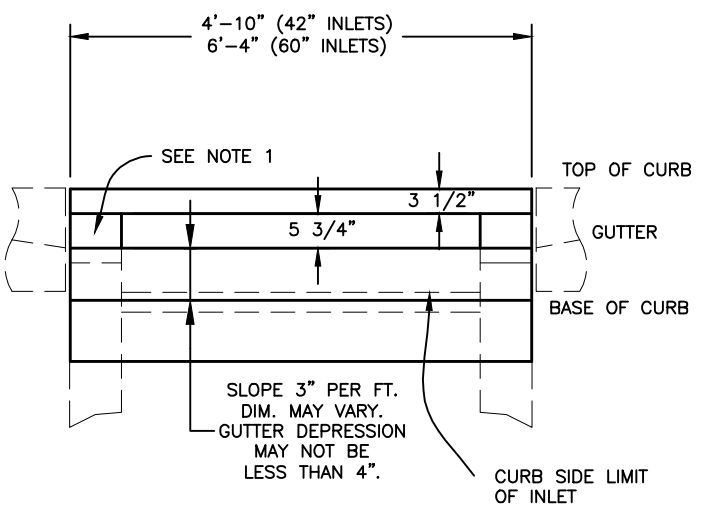
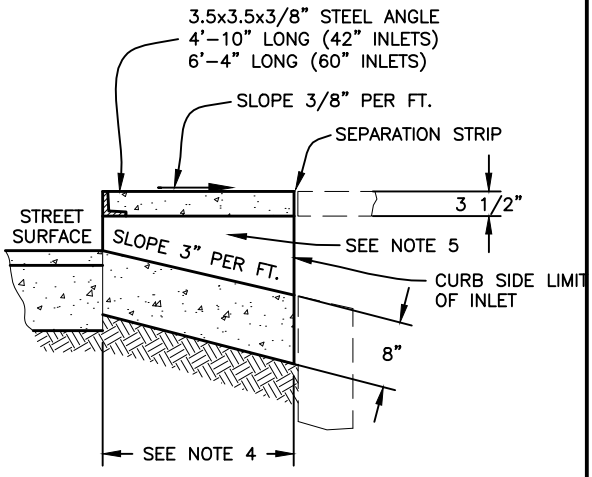


PLAN
(COVER SLAB REMOVED)

REINFORCING STEEL DETAIL



ELEVATION



SECTION A-A

NOTES:

1. IN BRICK WALL CONSTRUCTION, SUITABLE CONCRETE OR STONE BLOCKS NOT LESS THAN 8"x8"x16" IN SIZE SHALL BE USED AT CORNERS ABUTTING CURB.
2. IN EXISTING PAVEMENTS ON AREAS APPROX. 12'x4' FOR 60" INLETS, AND 10'x4' FOR 42" INLETS, OR AS OTHERWISE ORDERED SHALL BE CUT OUT SO THAT REPAVING MAY BE SHAPED TO MEET THE DEPRESSED LIP OF THE INLET OPENING AS DIRECTED.
3. FOR ANCHORS USE 6"x3/8" BOLTS OR #3 REBAR 10" LONG WITH 2" 90° BENDS WITH ONE END WELDED TO INSIDE FACE OF ANGLE IN APPROVED MANNER WITH A MIN. 1 1/4" COVER.
4. THIS DIMENSION TO BE AS SPECIFIED ON PLANS.
5. END WALLS TO BE BRICK OR CONCRETE.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CURB OPENING EXTENSION FOR 42' OR 60' CURB INLETS

STANDARD DRAWING
AA-S124

REVISED 7/9/12

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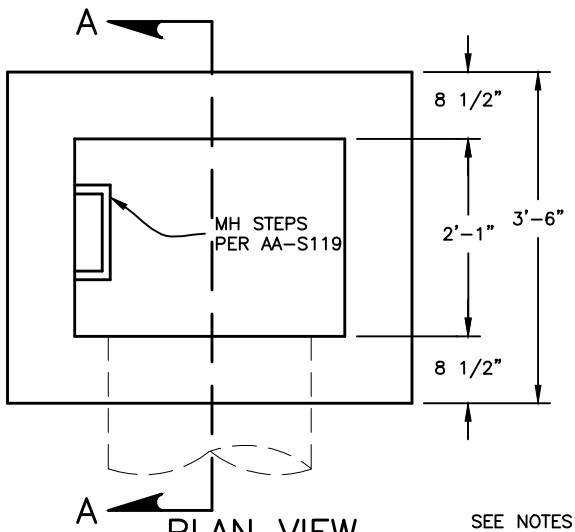
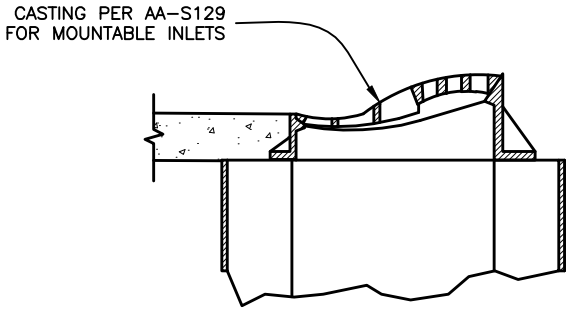
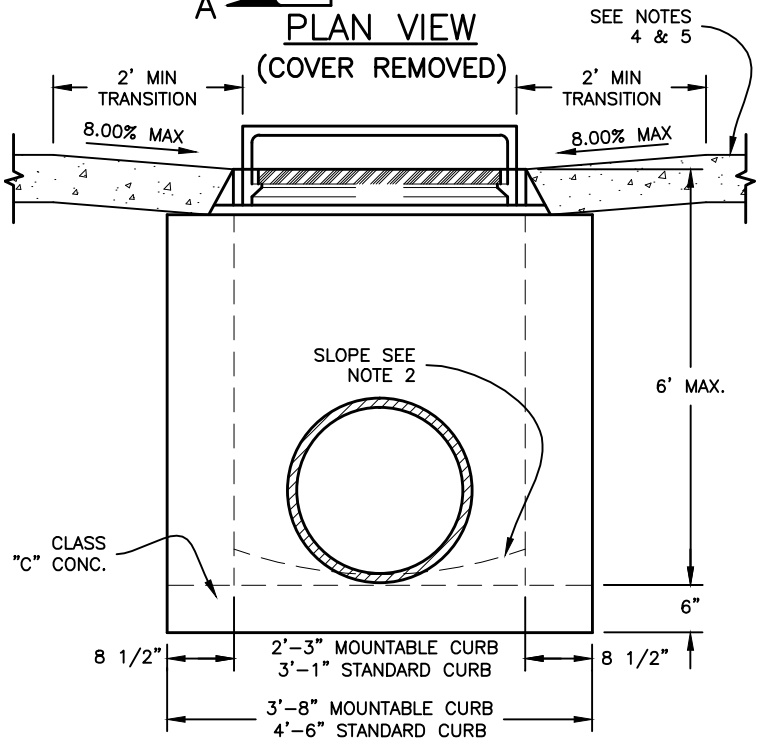


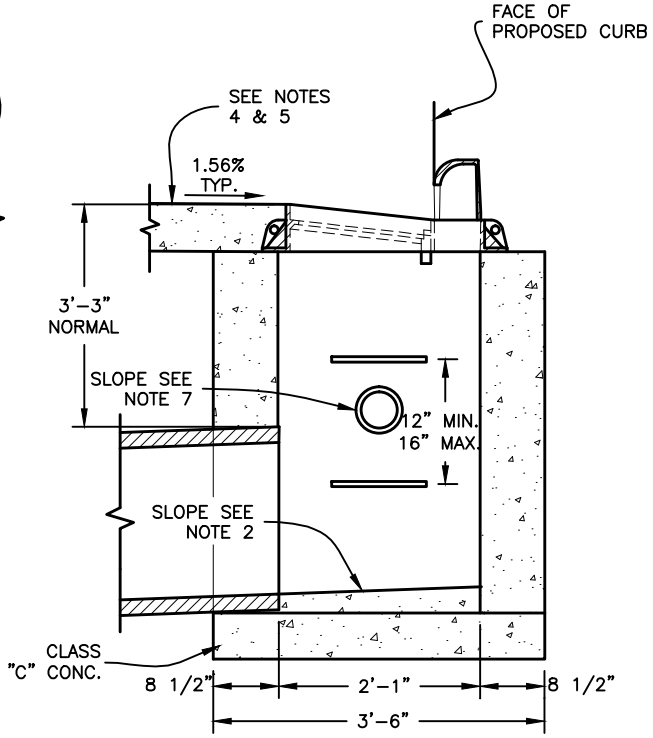
PLAN VIEW
(COVER REMOVED)



MOUNTABLE INLET



ELEVATION



SECTION A-A

NOTES:

1. PRECAST STRUCTURES SHALL BE IN ACCORDANCE WITH ASTM C913, HAVE A MIN. 6" THICKNESS, AND BE SUFFICIENTLY REINFORCED FOR SHIPPING AND HANDLING. ALL CONCRETE SHALL BE CLASS "C".
2. THE INLET BOTTOM SHALL BE SHAPED TO PROVIDE A MINIMUM SLOPE OF 2" TO OUTLET PIPE. THE CROSS SECTIONAL FORM AND LONGITUDINAL SLOPE SHALL BE ADAPTED TO LOCATION OF OUTLET PIPE AS DIRECTED.
3. OUTLET PIPE MAY BE LOCATED IN FRONT OR BACK AND SHALL BE DIRECTED TOWARDS CENTER OF INLET.
4. THE EXISTING GUTTER WITHIN THE AREA AROUND INLET WHERE CUT OUT, SHALL BE REPLACED WITH CLASS "C" CONC. OR ASPHALT CONC. PAVING AS ORDERED.
5. BACKFILLING WITHIN PROPOSED PAVED AREAS SHALL BE IN ACCORDANCE WITH ITEM 912.
6. STRUCTURES SHALL BE CAST IN PLACE CONCRETE, CLASS "C", OR PRECAST CONCRETE.
7. PLACE 4" CURB DRAIN STUBS 30" BELOW TOP OF CURB OR AS DIRECTED.
8. MAXIMUM PIPE DIAMETERS ARE 18" INTO SIDE WALLS AND 24" INTO FRONT OR BACKWALLS.
9. MOUNTABLE INLETS DO NOT REQUIRE MANHOLE STEPS.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

STANDARD CURB AND GUTTER INLET

STANDARD DRAWING
AA-S125A

REVISED 8/8/14

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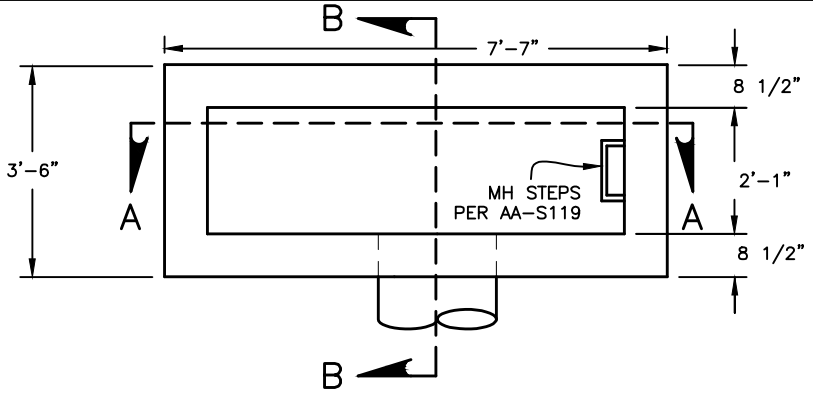
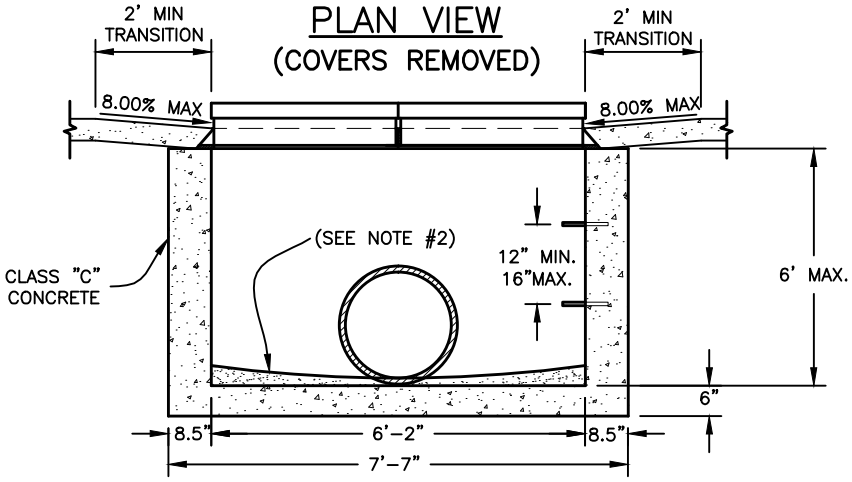
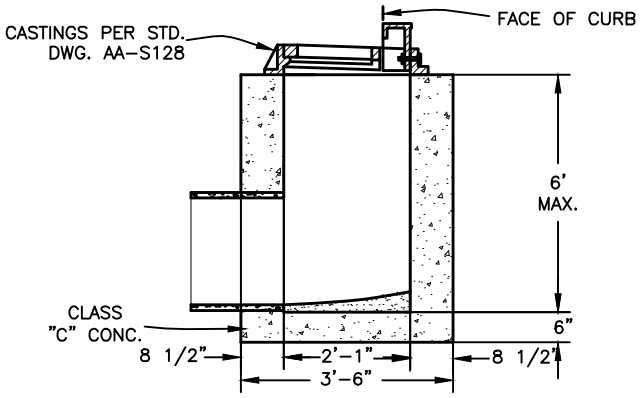


PLAN VIEW
(COVERS REMOVED)



SECTION A-A



SECTION B-B

NOTES:

1. PRECAST UNITS SHALL BE IN ACCORDANCE WITH ASTM C913, HAVE A MIN. 6" THICKNESS, AND BE SUFFICIENTLY REINFORCED FOR SHIPPING AND HANDLING.
2. THE INLET BOTTOM SHALL BE SHAPED TO PROVIDE A MINIMUM SLOPE OF 2" TO OUTLET PIPE. THE CROSS SECTIONAL FORM AND LONGITUDINAL SLOPE SHALL BE ADAPTED TO LOCATION OF OUTLET PIPE AS DIRECTED.
3. OUTLET PIPE MAY BE LOCATED IN FRONT OR BACK AND SHALL BE DIRECTED TOWARDS CENTER OF INLET.
4. THE EXISTING GUTTER WITHIN THE AREA AROUND INLET WHERE CUT OUT, SHALL BE REPLACED WITH CLASS "C" CONC. OR ASPHALT CONC. PAVING AS ORDERED.
5. BACKFILLING WITHIN PROPOSED PAVED AREAS SHALL BE IN ACCORDANCE WITH ITEM 912.
6. STRUCTURES SHALL BE CAST IN PLACE CONCRETE, CLASS "C", OR PRECAST CONCRETE.
7. PLACE 4" CURB DRAIN STUBS 30" BELOW TOP OF CURB OR AS DIRECTED.
8. MAXIMUM PIPE DIAMETERS ARE 18" INTO SIDE WALLS AND 48" INTO FRONT OR BACKWALLS.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

DOUBLE CURB AND GUTTER INLET

STANDARD DRAWING
AA-S125B

REVISED 8/8/14

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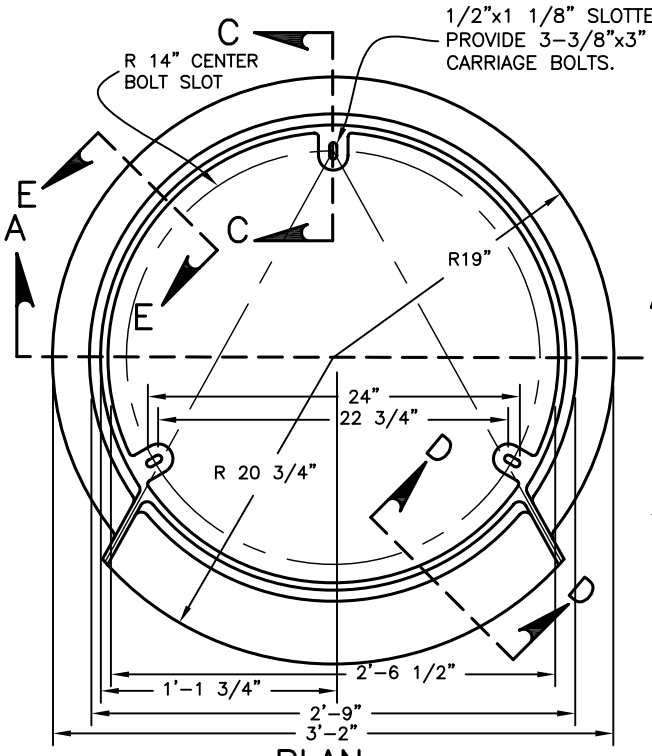
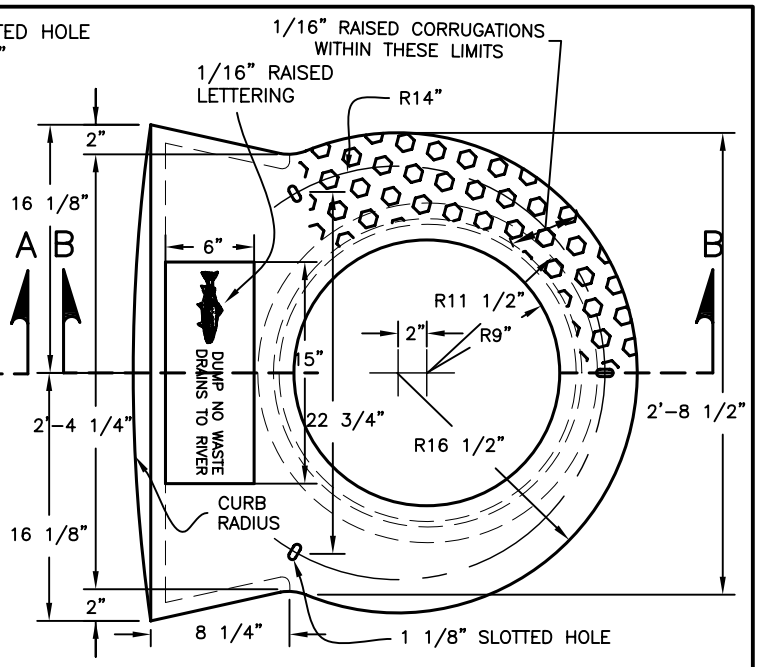
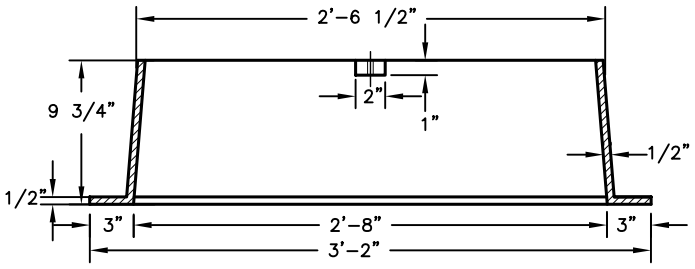


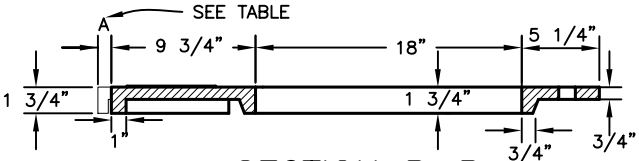
PLAN



PLAN



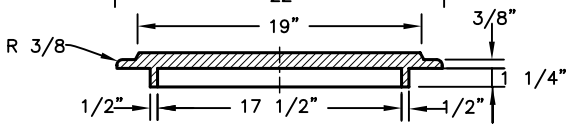
SECTION A-A



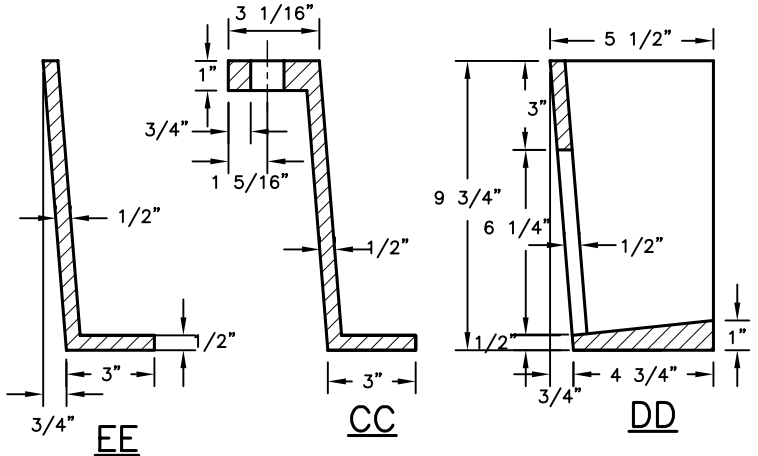
SECTION B-B

APPROX. WEIGHTS

FRAME = 214LBS.
TOP = 163LBS.
LID = 50LBS.



LID



SECTIONS

NOTES:

1. FRAMES, GRATES, AND COVERS SHALL MEET REQUIREMENTS OF 604.02.
2. FOUNDRY NAME SHALL BE CAST ON THE UNEXPOSED SURFACE OF ALL CASTINGS.

PRE-APPROVED CASTINGS:

EJ NO. – 7530
NEENAH NO. – 3256

DIMENSION "A" TABLE	
CURB	"A"
STRAIGHT	0.00"
20' RAD.	0.54"
8' RAD.	1.36"

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CASTINGS FOR CURB INLETS

STANDARD DRAWING
AA-S126

REVISED 12/6/13

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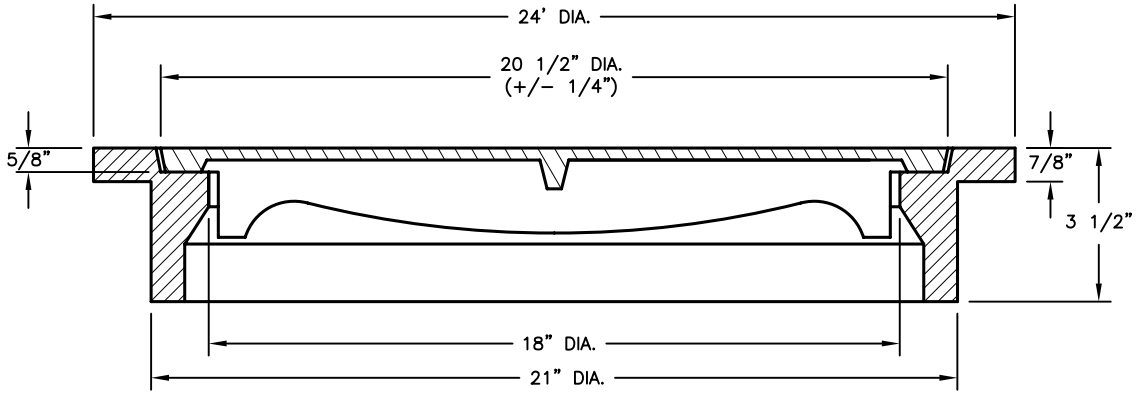
PLAN



SECTION A–A

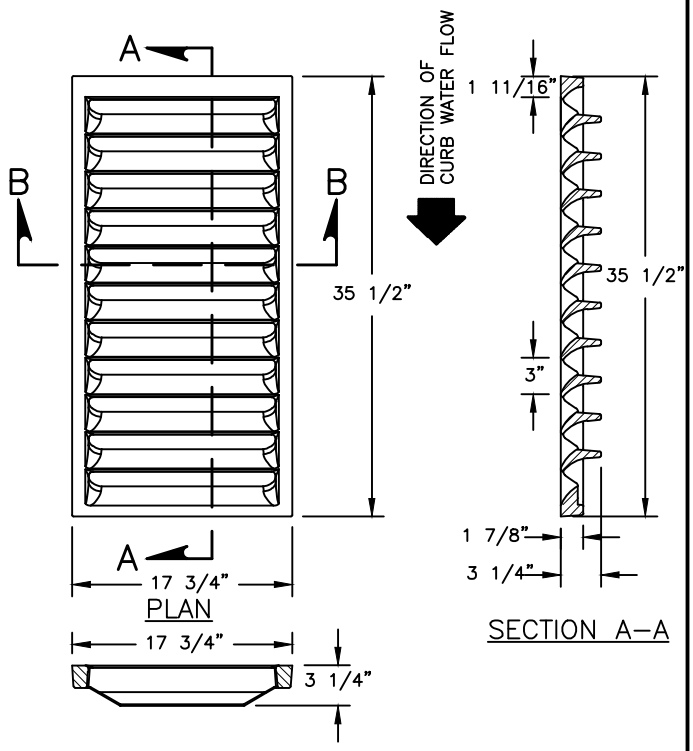
PRE–APPROVED CASTINGS:

EJ NO. – 3015
NEENAH NO. – 6012

NOTES:

1. SHALL MEET REQUIREMENTS OF 604.02.
2. APPROXIMATE WEIGHTS: FRAME = 61LBS.
   LID = 37LBS.

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	FRAME AND COVER FOR 48" CATCH BASIN & 42" & 60" CURB INLETS	STANDARD DRAWING AA–S127
SSES MANAGER		REVISED 12/6/13
		PAGE 1 / 1



PLAN

SECTION A–A

SECTION B–B

CURB GRATING

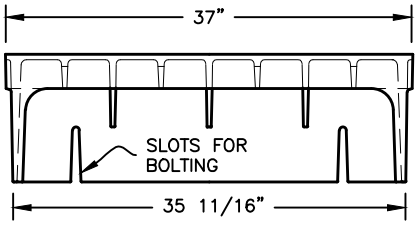
APPROX. WEIGHT = 138LBS.

PRE–APPROVED CASTINGS:

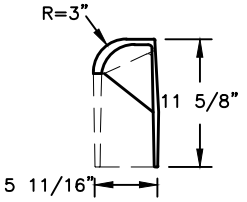
EJ NO. – 7030 WITH Z1 FRAME, M4 GRATE & T6 BACK

NEENAH NO. – 3067–V OR (R–32900022 TYPE "N" SQUARE BACK)

TOP



ELEVATION



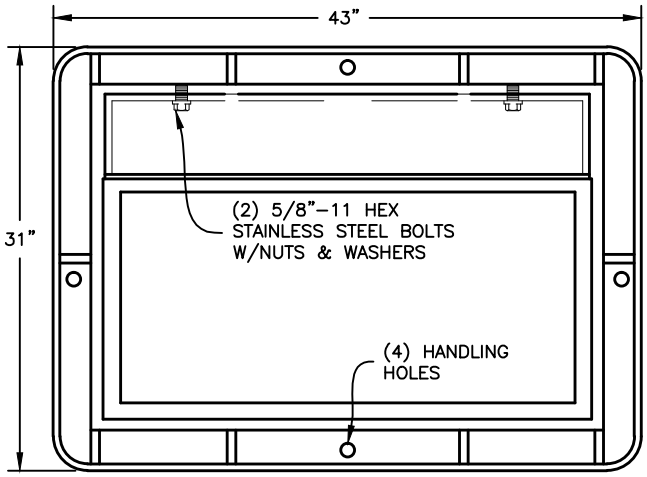
SECTION

STANDARD CATCH BASIN ADJUSTABLE BACK

APPROX. WEIGHT = 79LBS.

NOTE:

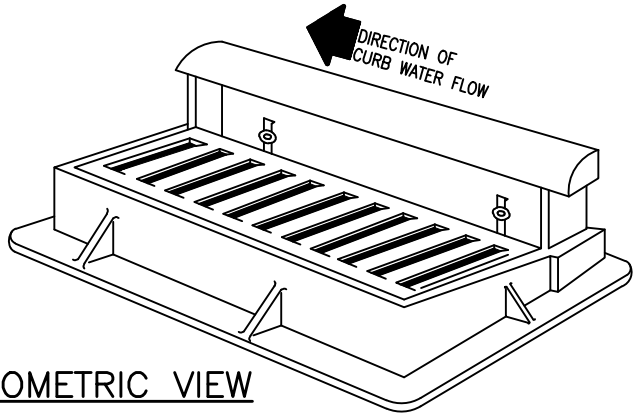
1. CURB ADJUSTMENT 6" TO 11".
2. FOR GRANITE OR OTHER SQUARE CURB SECTIONS A SQUARE BACK CASTING WITH AN ENVIRONMENTAL NOTICE OR MOUNT PLATE SHALL BE USED.



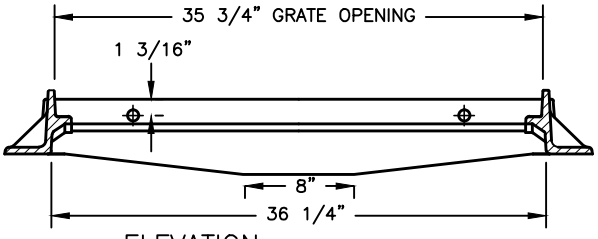
PLAN

NOTE:

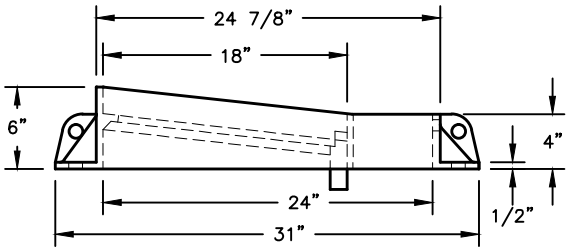
1. FRAMES, GRATES AND COVERS, SHALL MEET REQUIREMENTS OF 604.02 & AASHTO M306



ISOMETRIC VIEW



ELEVATION



SIDE

FRAME ASSEMBLY W/ADUST. BACK

APPROX. WEIGHT = 198LBS. (FRAME ONLY)

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

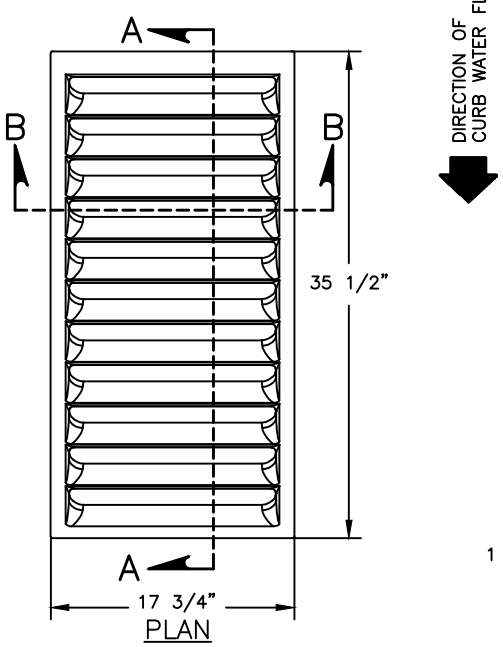
SSES MANAGER

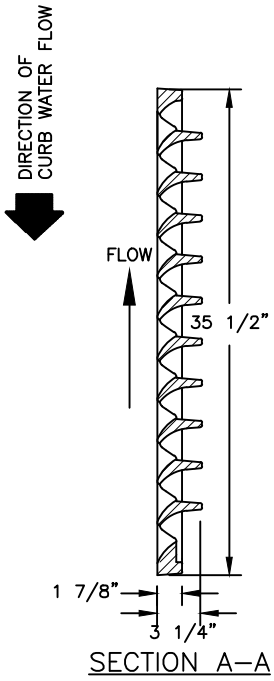
CAST IRON FRAME AND GRATE FOR CURB & GUTTER INLET (HEAVY DUTY)

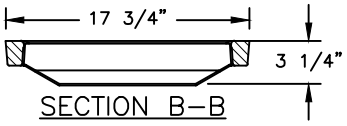
STANDARD DRAWING
AA–S128

REVISED 8/8/14

PAGE 1 2







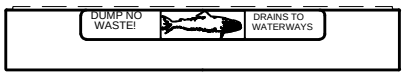
CURB GRATING

APPROX. WEIGHT = 138LBS.

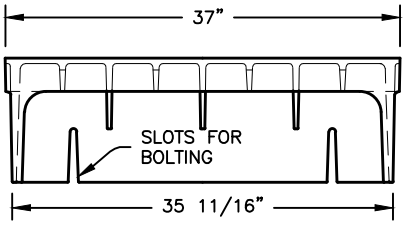
PRE–APPROVED CASTINGS:

EJ NO. – 7031, 7032 WITH Z1 FRAME, M4 GRATE & T6 BACK

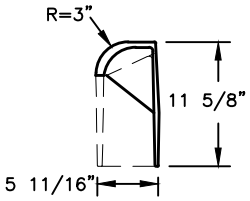
NEENAH NO. – 3295–2 WITH TYPE V GRATE OR
(R–32900022 TYPE "N" SQUARE BACK)



TOP



ELEVATION

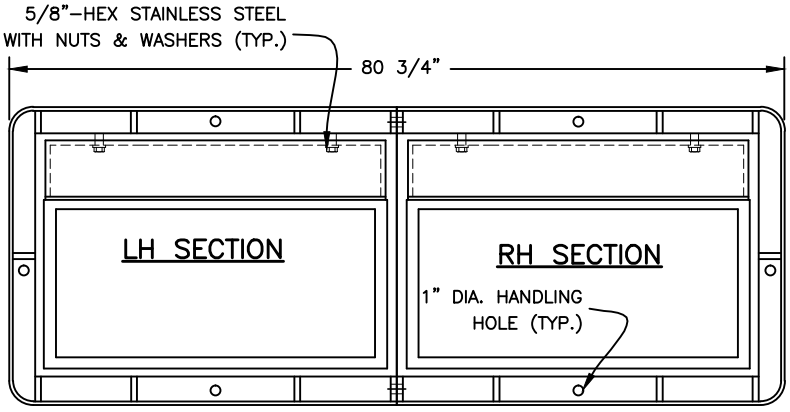


SECTION

STANDARD CATCH BASIN ADJUSTABLE BACK

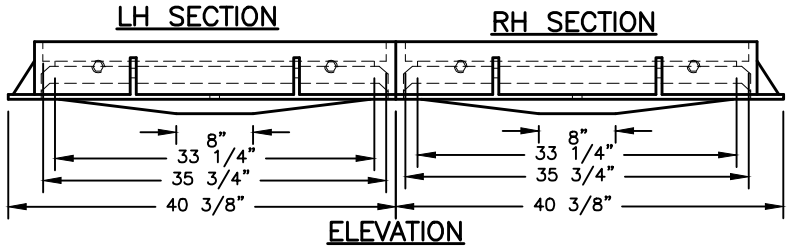
APPROX. WEIGHT = 79LBS.

NOTE:
1. CURB ADJUSTMENT 6" TO 11".
2. FOR GRANITE OR OTHER SQUARE CURB SECTIONS A SQUARE BACK CASTING WITH AN ENVIRONMENTAL NOTICE OR MOUNT PLATE SHALL BE USED.

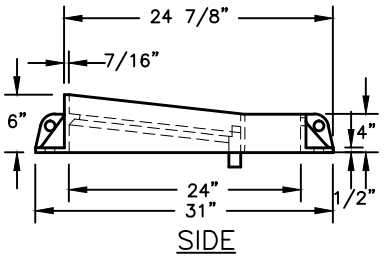


PLAN

NOTES:
1. FRAMES, GRATES & COVERS, SHALL MEET REQUIREMENTS OF 604.02 & AASHTO M306.
2. SEE SHEETS AA–S125A, B, AND C FOR MULTIPLE CATCH BASIN CONFIGURATIONS.
3. LEFT, RIGHT, & CENTER FRAME SECTIONS PROVIDED BY MANUFACTURER.

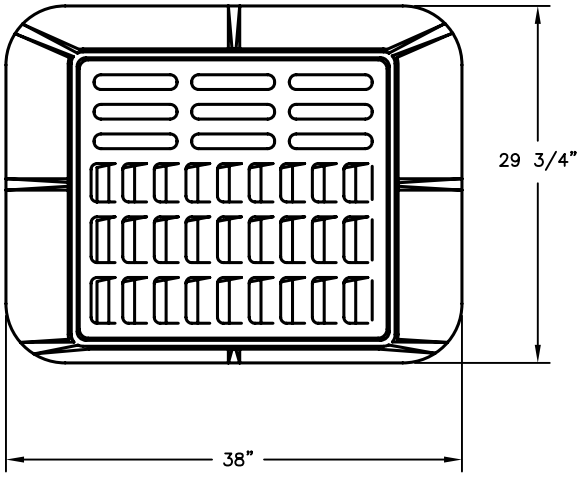


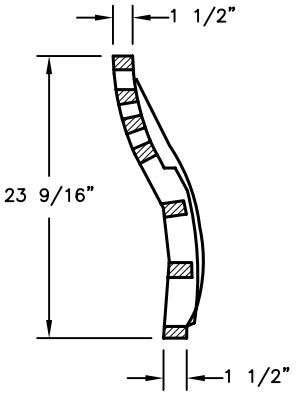
ELEVATION
DOUBLE SECTION



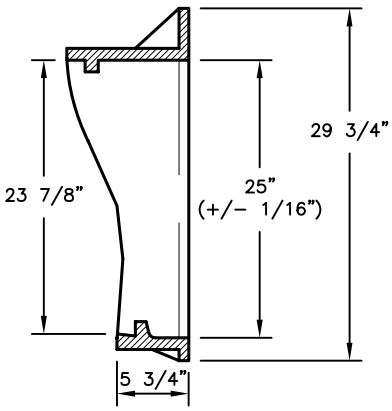
SIDE

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	CAST IRON FRAME AND GRATE FOR CURB & GUTTER INLET (HEAVY DUTY)	STANDARD DRAWING AA–S128
SSES MANAGER		REVISED 8/8/14
		PAGE 2 / 2





GRATE



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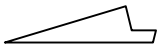
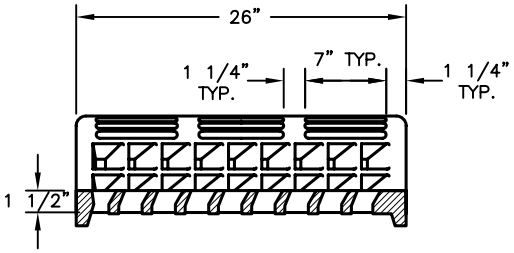
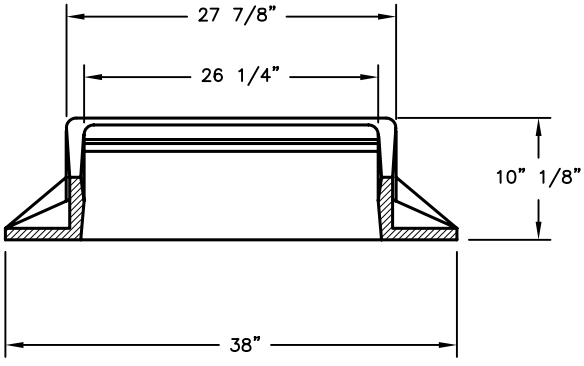




GRATE

PRE-APPROVED CASTINGS:

EJ NO. – 7495Z FRAME AND 7495 LH/RH GRATES
NEENAH NO. – 3501 TR & TL



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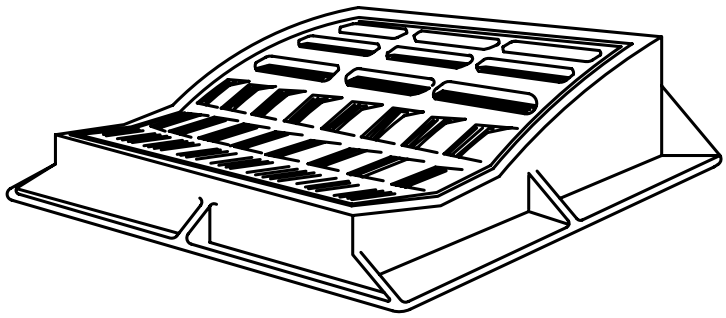
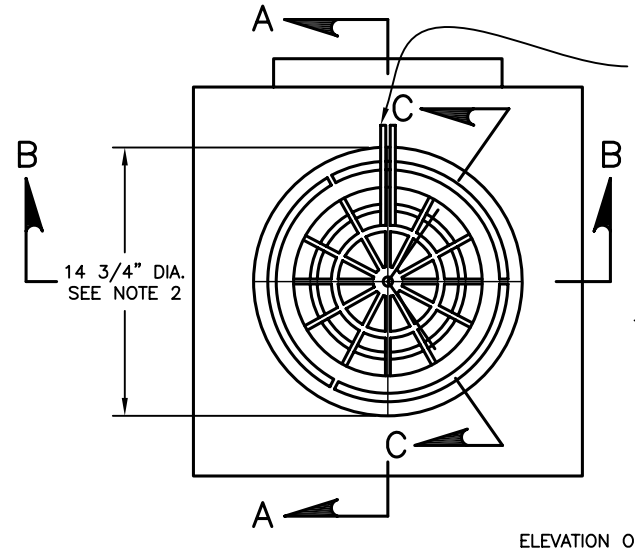


ISOMETRIC VIEW

NOTES:

1. APPROX. WEIGHT – GRATE 155 LBS., FRAME 230 LBS.
2. FRAMES, GRATES, AND COVERS SHALL MEET REQUIREMENTS OF 604.02 AND AASHTO M306.

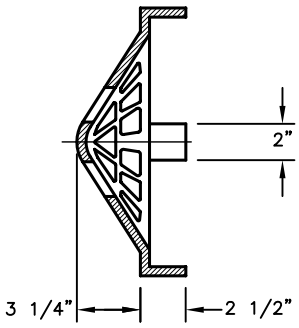
CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	CAST IRON FRAME AND GRATE FOR CURB & GUTTER INLET (MOUNTABLE CURB)	STANDARD DRAWING AA–S129
SSES MANAGER		REVISED 12/6/13
		PAGE 1 / 1



3/8" DIA. STAINLESS STEEL ANCHOR ROD 24" LONG BENT AROUND GRATE AS SHOWN & ANCHORED INTO THE CONCRETE CASING

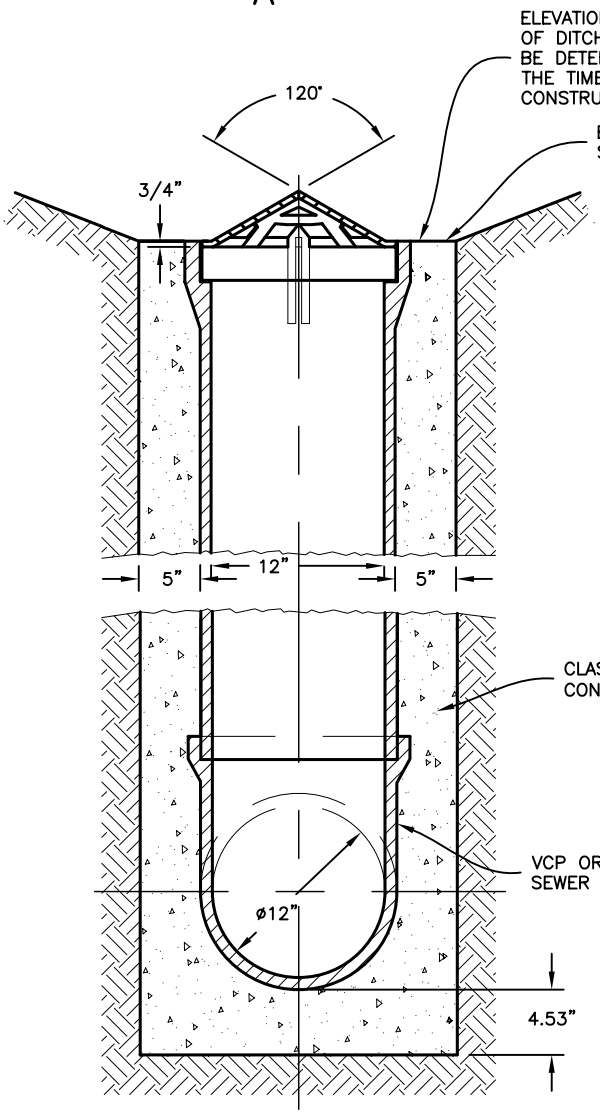
PRE-APPROVED CASTINGS:

EJ NO. – 6495
NEENAH NO. – 4351-B

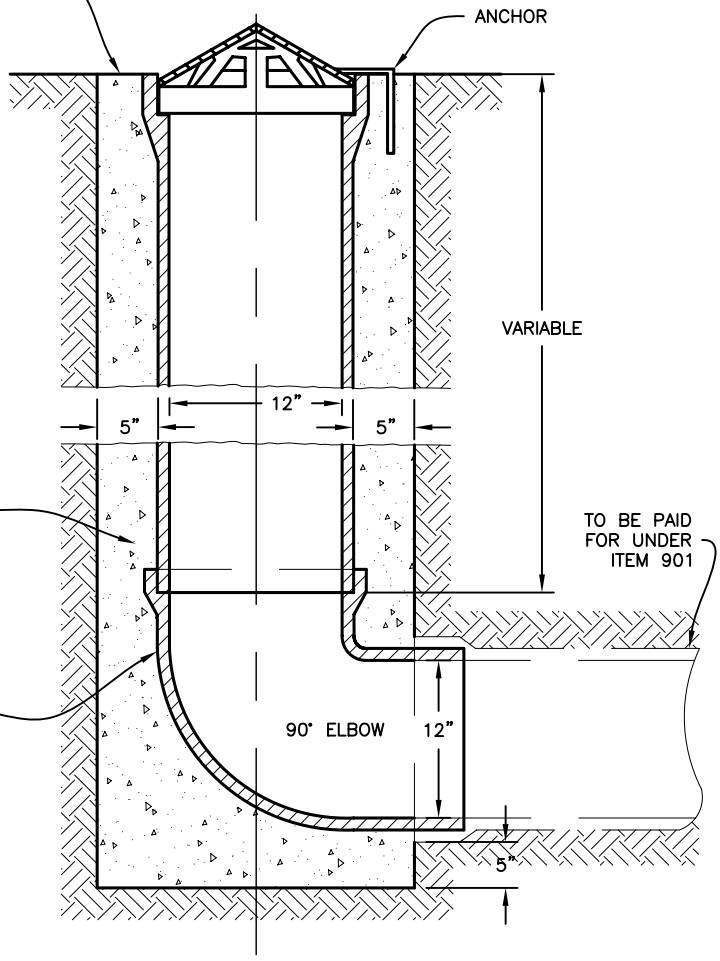


SECTION C–C

NOTES:
1. FRAMES, GRATES, AND COVERS SHALL MEET REQUIREMENTS OF 604.02.
2. DIMENSION MAY VARY TO FIT BELL END OF PIPE. WEIGHT: 22± LBS.



SECTION B–B



SECTION A–A

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CATCH BASIN 12" DIAMETER

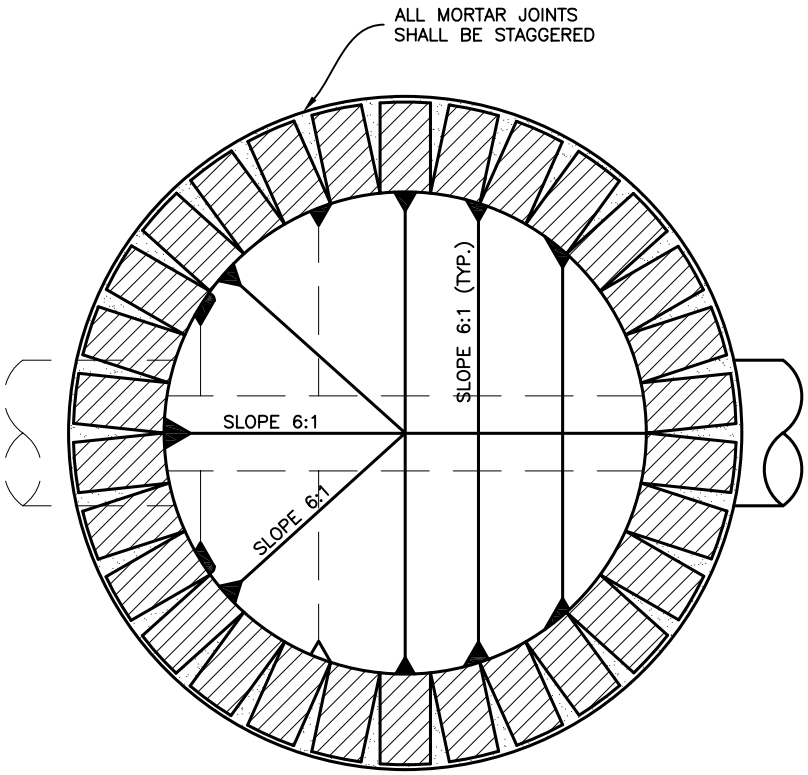
STANDARD DRAWING
AA-S130

REVISED 12/6/13

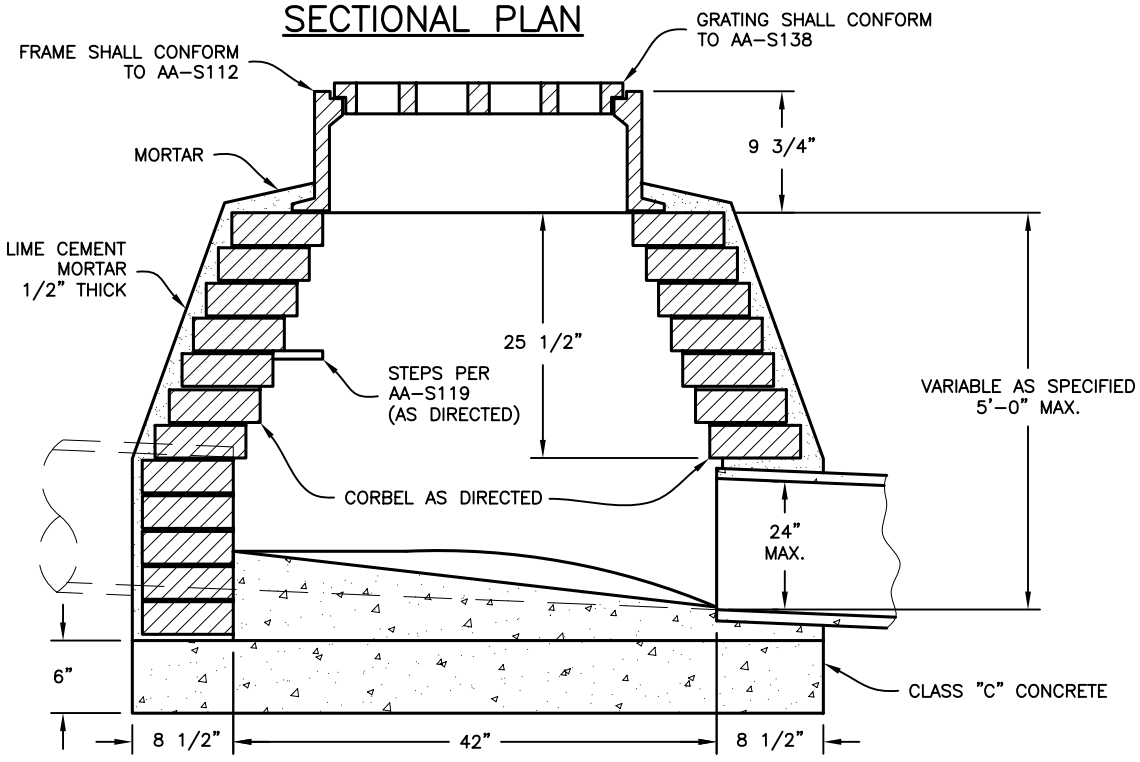
PAGE 1 / 1

NOTES:

1. PIPES DRAINING INTO THE INLET SHALL BE PLACED 2"± ABOVE ELEVATION OF OUTLET PIPE.
2. MAXIMUM SIZE PIPE WITH 42"ø BASIN IS 24".
3. INLETS SHALL BE BUILT OF BRICK, PRECAST SOLID CONCRETE BLOCKS, CAST IN PLACE CONCRETE, OR PRE CAST CONCRETE.
4. PRECAST BASINS MUST BE 48" DIAMETER.
5. PRECAST UNITS SHALL HAVE MEET THE REQUIREMENTS OF ASTM C478 AND SHALL HAVE A MINIMUM WALL THICKNESS OF 5" AND BE REINFORCED SUFFICIENTLY TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.
6. CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH 604.06.

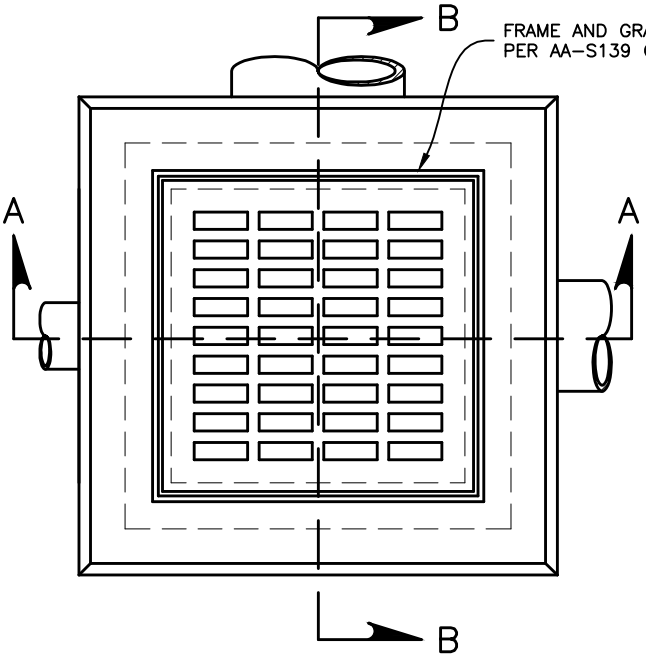


SECTIONAL PLAN

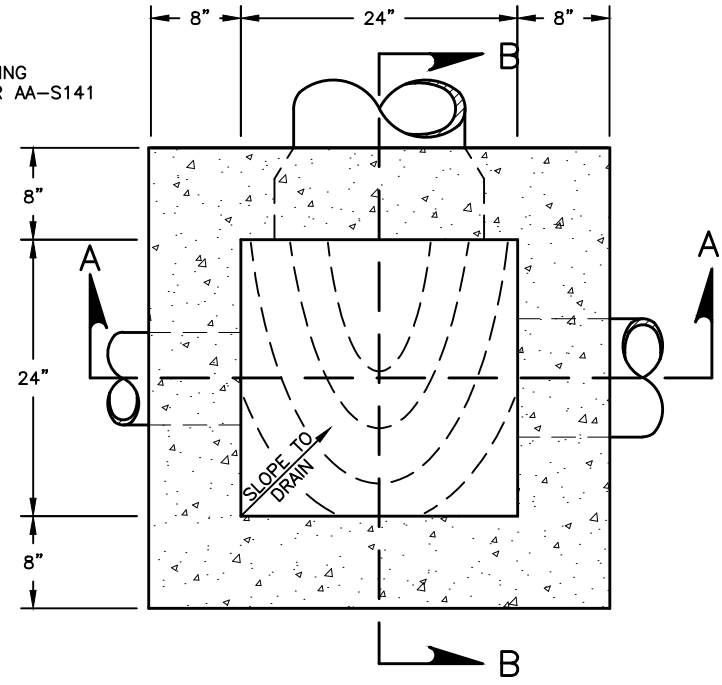


SECTIONAL ELEVATION

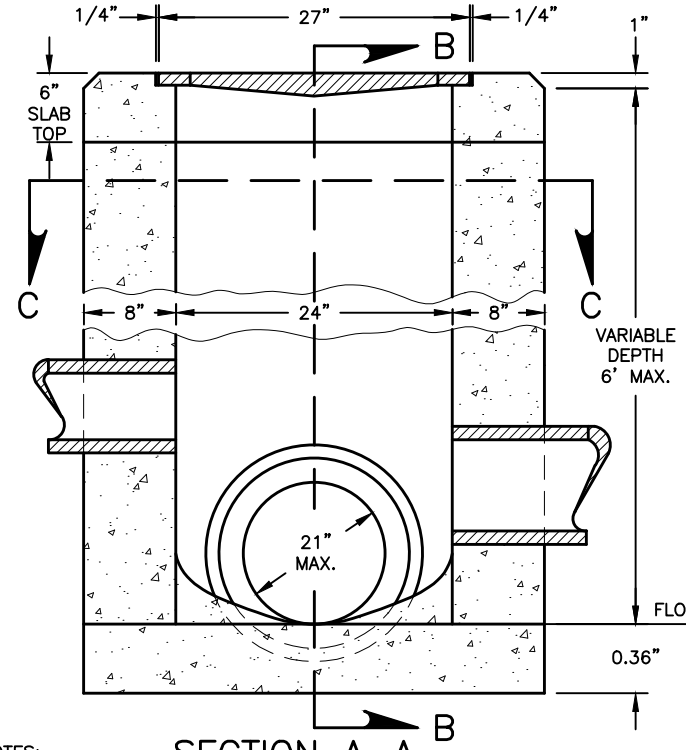
CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	CATCH BASIN 42" DIAMETER	STANDARD DRAWING AA–S132
SSES MANAGER		REVISED 10/30/12
		PAGE 1 / 1



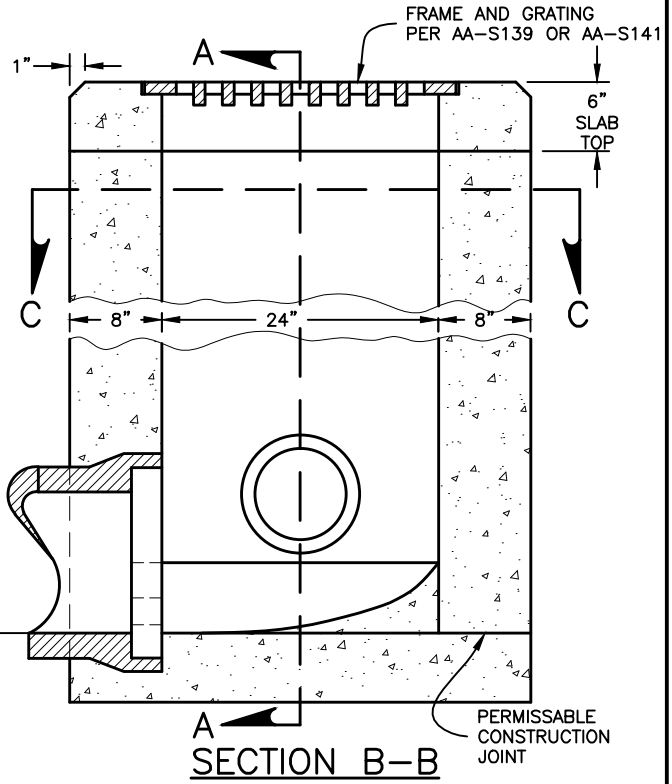
GRATE-PLAN VIEW



SECTION C-C



SECTION A-A



SECTION B-B

NOTES:

1. WALLS: CAST-IN-PLACE UNITS SHALL HAVE A NOMINAL THICKNESS OF 8" AND MIN. THICKNESS OF 6". PRECAST UNITS SHALL BE IN ACCORDANCE WITH ASTM C913, SHALL HAVE A MIN. WALL THICKNESS OF 6" AND SHALL BE REINFORCED SUFFICIENTLY TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.

2. CONCRETE: CAST-IN-PLACE CONC. IS TO BE CLASS "C". PRECAST CONC. SHALL MEET REQUIREMENTS OF CMS 706.13 AND BE MARKED WITH CATCH BASIN NUMBER.

3. PRECAST BASE: IF A PRECAST BASE IS USED IT SHALL BE PLACED DEEP ENOUGH SO THAT THE TOP 6" CAN BE ADJUSTED TO PROVIDE THE GRATE ELEVATION SPECIFIED IN PLANS OR TO ALLOW POSITIVE DRAINAGE.

4. MINIMUM DEPTH: MINIMUM DEPTH OF AA-S133A SHALL BE THE OUTSIDE DIA. (O.D.) OF THE OUTLET PIPE PLUS 4".

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

STANDARD CATCH BASIN (21" DIAMETER AND SMALLER PIPE)

STANDARD DRAWING
AA-S133A

REVISED 8/8/14

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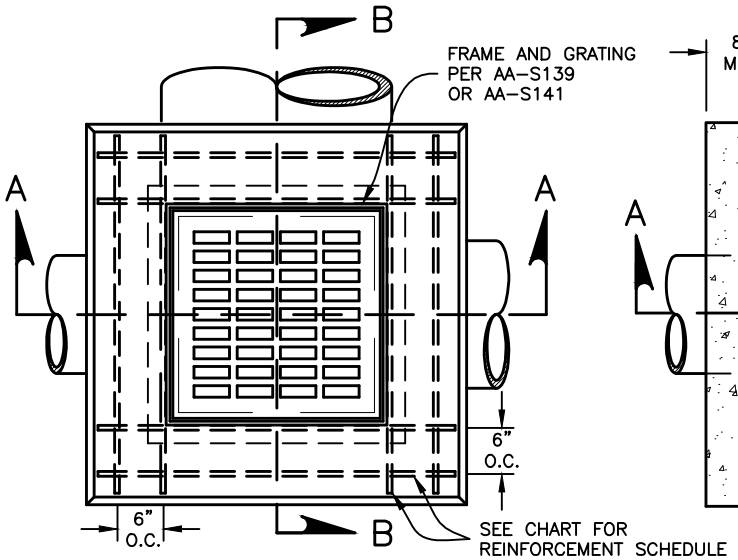
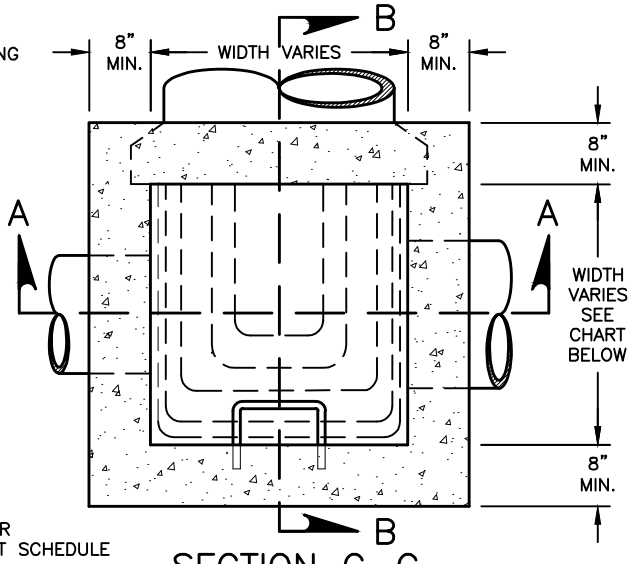
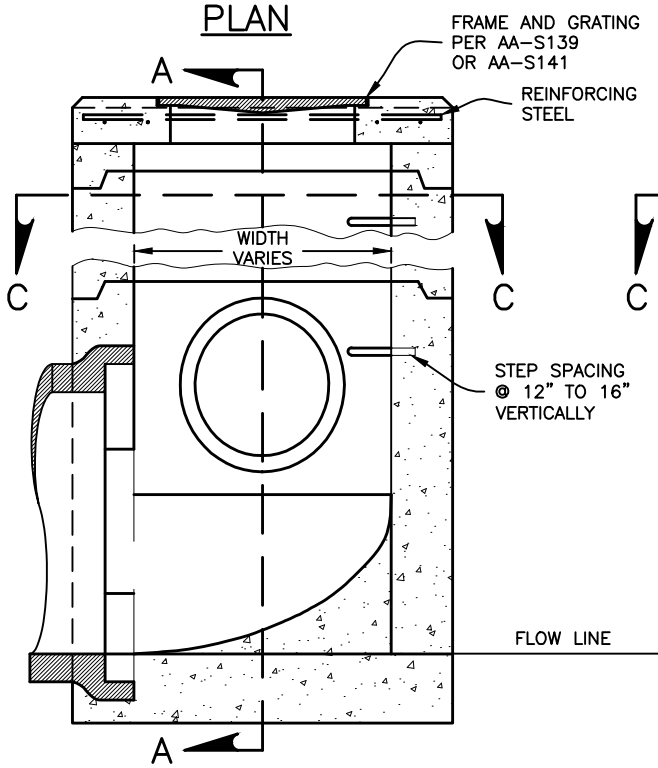


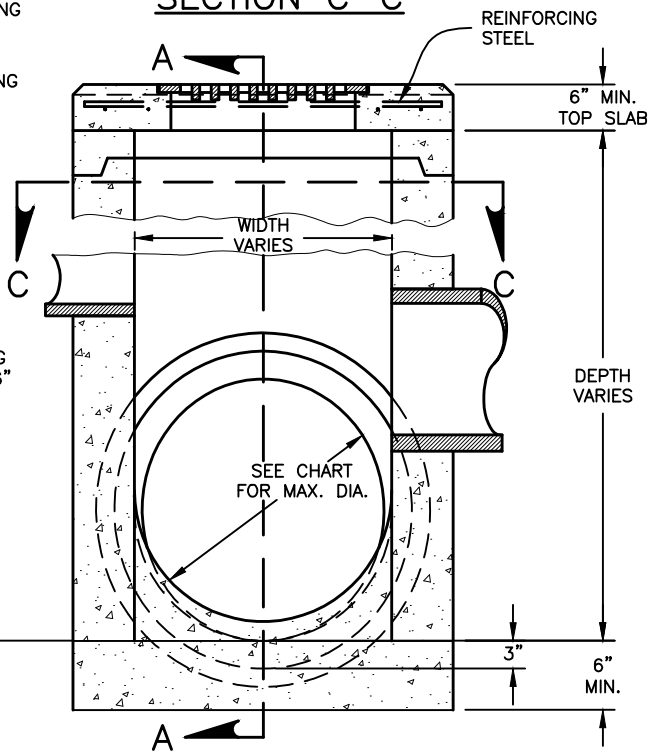
PLAN



SECTION C-C



SECTION B-B



SECTION A-A

NOTES:

1. WALLS: CAST-IN-PLACE UNITS HAVE A NOMINAL THICKNESS OF 8" AND MIN. THICKNESS OF 6". PRECAST UNITS SHALL BE IN ACCORDANCE WITH ASTM C913, SHALL HAVE A MIN. THICKNESS OF 6" AND BE REINFORCED SUFFICIENTLY TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE. PRECAST TOPS SHALL HAVE MIN. 6" THICKNESS.
2. CONCRETE: CAST-IN-PLACE CONC. IS TO BE CLASS "C". PRECAST CONC. SHALL MEET REQUIREMENTS OF CMS 706.13 AND BE MARKED WITH CATCH BASIN NUMBER.
3. PRECAST BASE: IF A PRECAST BASE IS USED IT SHALL BE PLACED DEEP ENOUGH SO THAT THE TOP 6" CAN BE ADJUSTED TO PROVIDE THE GRATE ELEVATION SPECIFIED IN PLANS OR TO ALLOW POSITIVE DRAINAGE.
4. MINIMUM DEPTH: MINIMUM DEPTH OF AA-S133B SHALL BE THE OUTSIDE DIA. (O.D.) OF THE OUTLET PIPE PLUS 4".
5. STEPS: STEPS SHALL BE PROVIDED WHERE DEPTH EXCEEDS 6' AND SHALL MEET REQUIREMENTS OF AA-S119.
6. INLETS OVER 12' DEPTH: PRECAST OR CAST-IN-PLACE SHALL BE REINFORCED WITH #4 BARS ON 12" CENTERS. VERTICAL & HORIZONTAL 6. BARS SHALL HAVE 2" CLEARANCE FROM INSIDE WALL FACE.
7. REINFORCEMENT: TOP REINFORCING BARS SHALL BE ON 6" CENTERS. (SEE REINF. CHART).

WIDTH	MAX. PIPE SIZE
3 FEET	12" TO 33"
4 FEET	36" TO 42"

SLAB REINFORCEMENT	
WIDTH	#4 BARS
3 FEET	8
4 FEET	12

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

STANDARD CATCH BASIN (24" TO 42" PIPE)

STANDARD DRAWING
AA-S133B

REVISED 8/8/14

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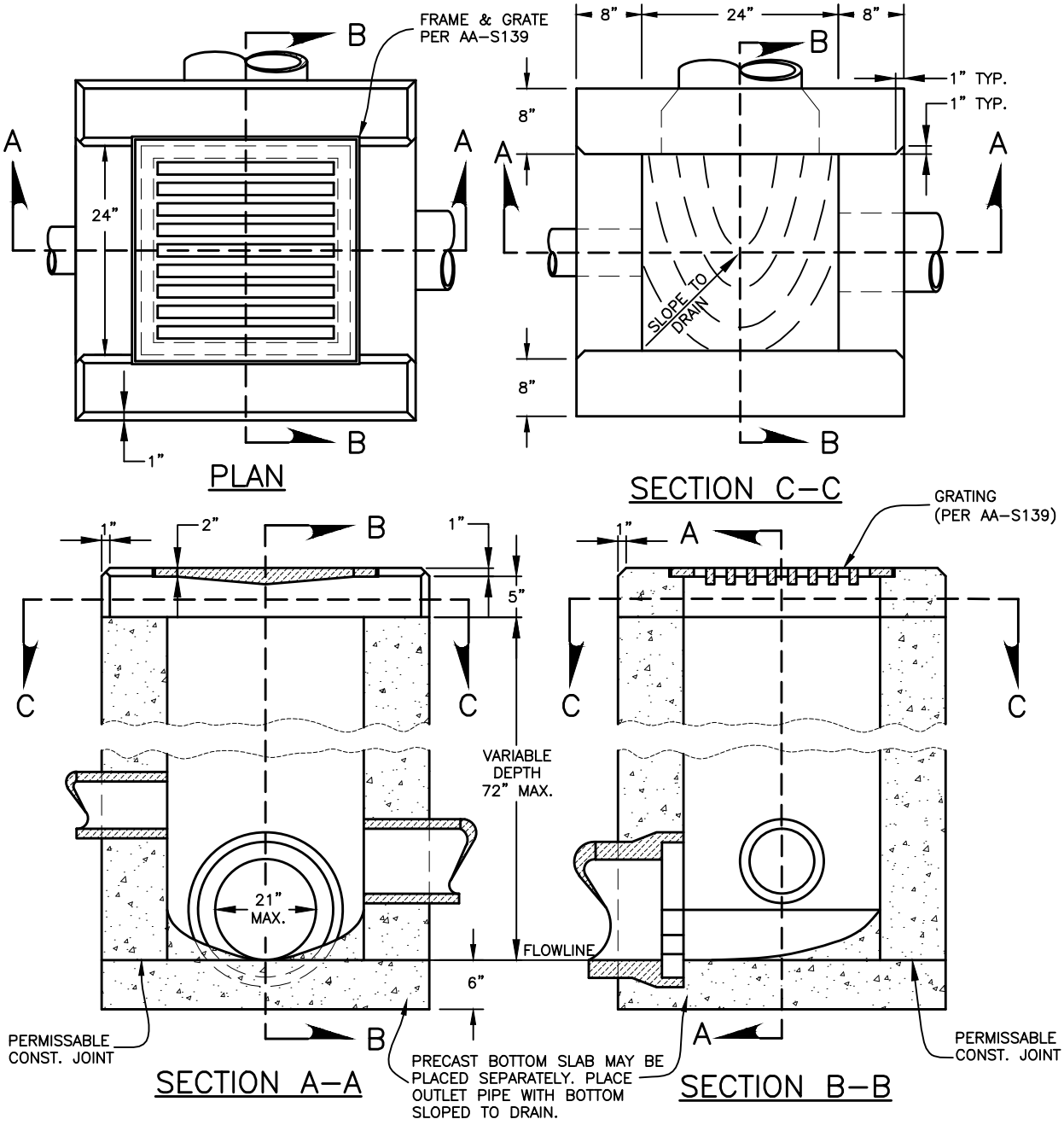


NOTES:

1. WALLS: CAST–IN–PLACE UNITS SHALL HAVE A NOMINAL THICKNESS OF 8" AND MIN. THICKNESS OF 6". PRECAST UNITS SHALL BE IN ACCORDANCE WITH ASTM C913 AND SHALL BE REINFORCED SUFFICIENTLY TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.

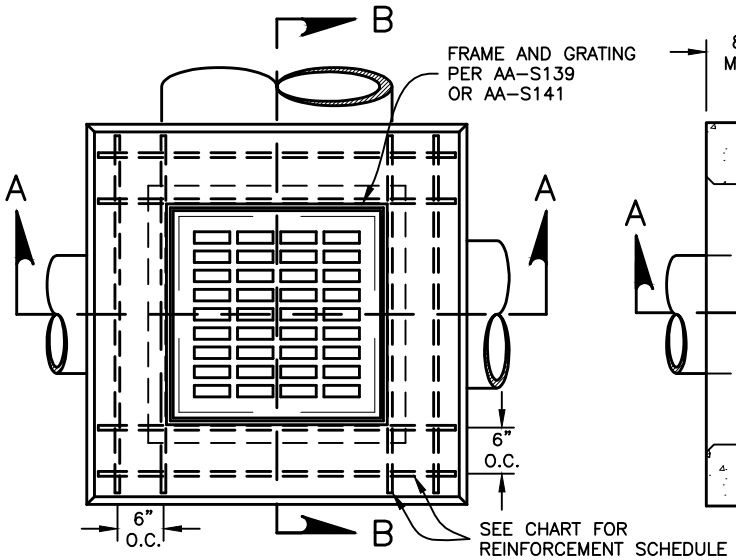
2. CONCRETE: CAST–IN–PLACE UNITS SHALL USE CLASS "C" CONC. PRECAST UNITS SHALL ADHERE TO 706.13.

3. PRECAST BASE: IF A PRECAST BASE IS USED IT SHALL BE PLACED DEEP ENOUGH SO THAT THE TOP 6" CAN BE ADJUSTED TO PROVIDE THE GRATE ELEVATION SPECIFIED IN PLANS OR TO ALLOW POSITIVE DRAINAGE.

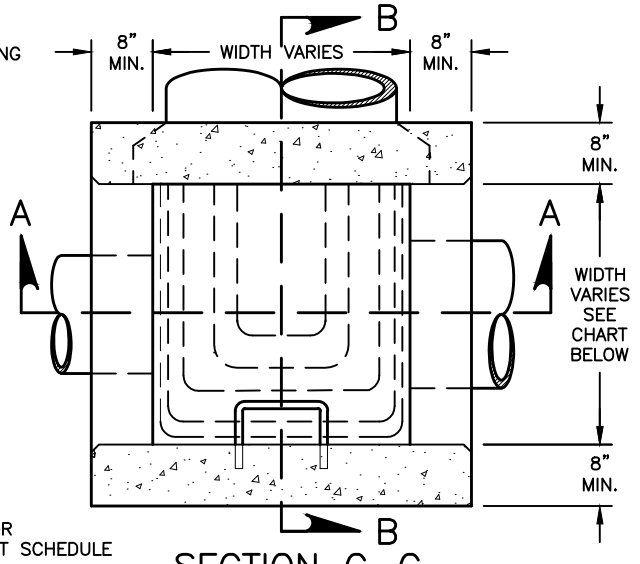
4. MINIMUM DEPTH: MINIMUM DEPTH OF AA–S134A SHALL BE THE OUTSIDE DIA. (O.D.) OF THE OUTLET PIPE PLUS 4".

5. SIDE INLETS: SHALL BE ON BOTH SIDES OF CB IN SAGS & ON UPSTREAM SIDE ONLY WHEN DITCH HAS CONTINUOUS DOWN GRADE PAST THE CATCHBASIN. FLOWLINE SHALL BE 4" TO 6" BELOW NORMAL DITCH RETURNING TO NORMAL 10' TO 15' EACH SIDE OF INLET.

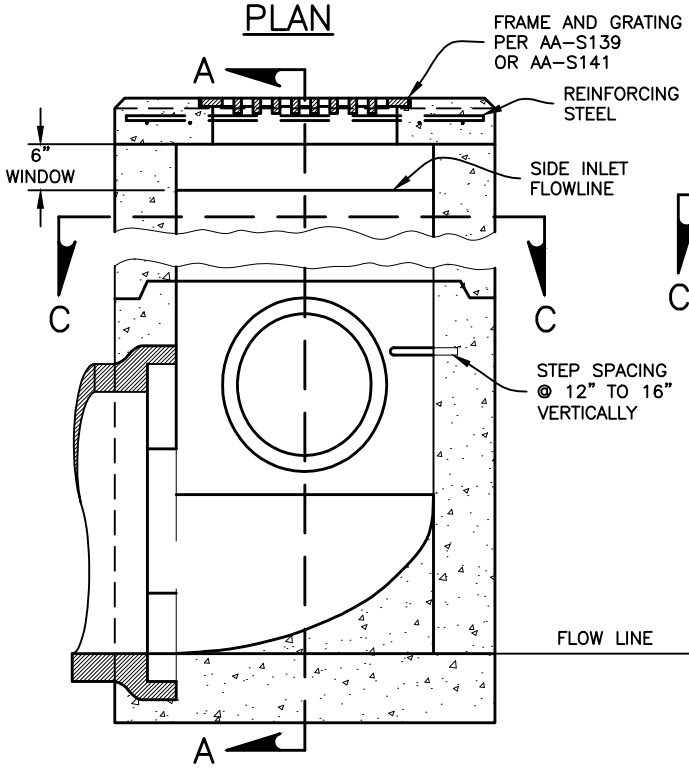
CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	STANDARD CATCH BASIN (24" SIDE INLETS)	STD. DWG. AA–S134A
John G Jenson SSES MANAGER		REVISED 8/8/14
		PAGE 1 / 1



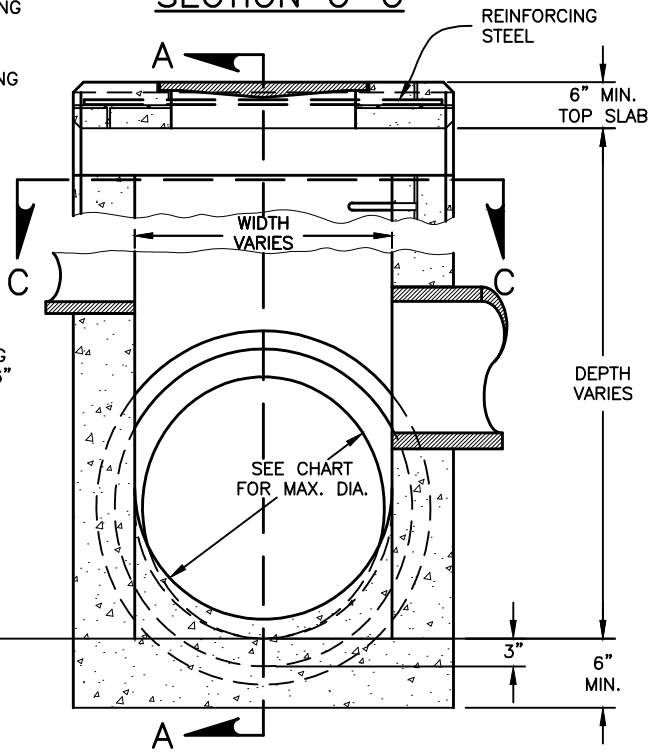
PLAN



SECTION C-C



SECTION B-B



SECTION A-A

NOTES:

1. WALLS: CAST-IN-PLACE UNITS HAVE A NOMINAL THICKNESS OF 8" AND MIN. THICKNESS OF 6". PRECAST UNITS SHALL BE IN ACCORDANCE WITH ASTM C913, SHALL HAVE A MIN. THICKNESS OF 6" AND BE REINFORCED SUFFICIENTLY TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE. PRECAST TOPS SHALL HAVE MIN. 6" THICKNESS.

2. CONCRETE: CAST-IN-PLACE CONC. IS TO BE CLASS "C". PRECAST CONC. SHALL MEET REQUIREMENTS OF CMS 706.13 AND BE MARKED WITH CATCH BASIN NUMBER.

3. PRECAST BASE: IF A PRECAST BASE IS USED IT SHALL BE PLACED DEEP ENOUGH SO THAT THE TOP 6" CAN BE ADJUSTED TO PROVIDE THE GRATE ELEVATION SPECIFIED IN PLANS OR TO ALLOW POSITIVE DRAINAGE.

4. MINIMUM DEPTH: MINIMUM DEPTH OF AA-S134B SHALL BE THE OUTSIDE DIA. (O.D.) OF THE OUTLET PIPE PLUS 4".

5. STEPS: STEPS SHALL BE PROVIDED WHERE DEPTH EXCEEDS 6' AND SHALL MEET REQUIREMENTS OF AA-S119.

6. INLETS OVER 12' DEPTH: PRECAST OR CAST-IN-PLACE SHALL BE REINFORCED WITH #4 BARS ON 12" CENTERS. VERTICAL & HORIZONTAL 6. BARS SHALL HAVE 2" CLEARANCE FROM INSIDE WALL FACE.

7. REINFORCEMENT: TOP REINFORCING BARS SHALL BE ON 6" CENTERS. (SEE REINF. CHART).

WIDTH	MAX. PIPE SIZE
3 FEET	12" TO 33"
4 FEET	36" TO 42"

SLAB REINFORCEMENT	
WIDTH	#4 BARS
3 FEET	8
4 FEET	12

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

STANDARD CATCH BASIN (24" TO 42" PIPE) WITH SIDE INLETS

STANDARD DRAWING
AA-S134B

REVISED 8/8/14

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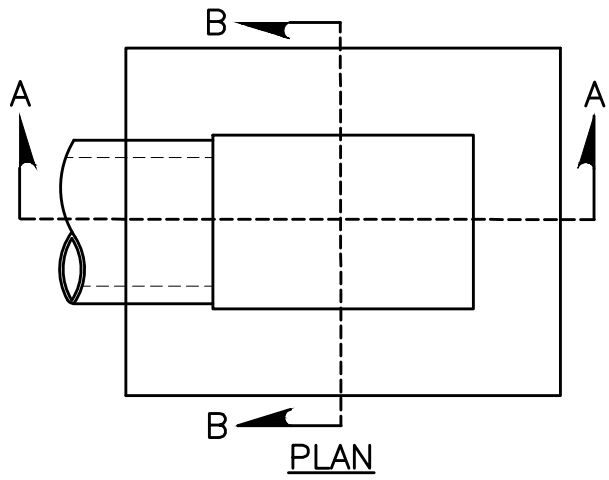
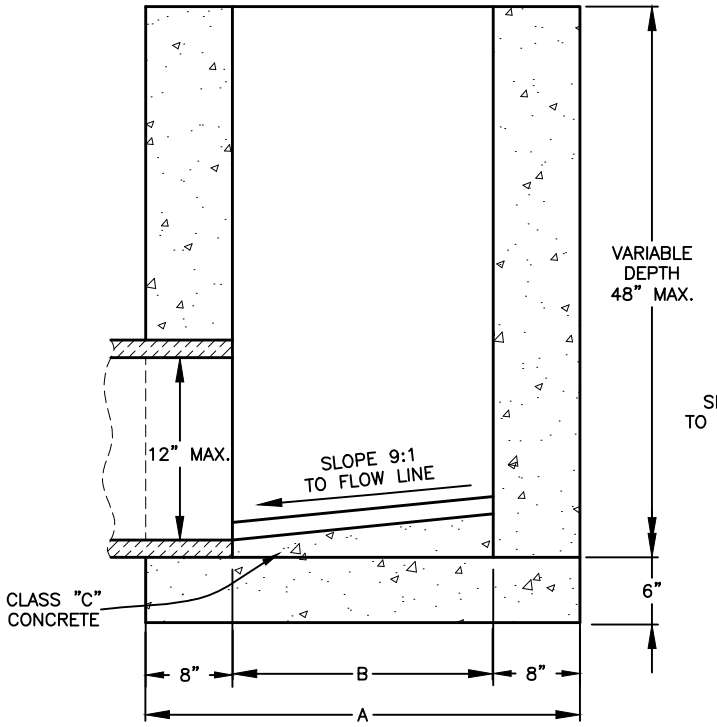
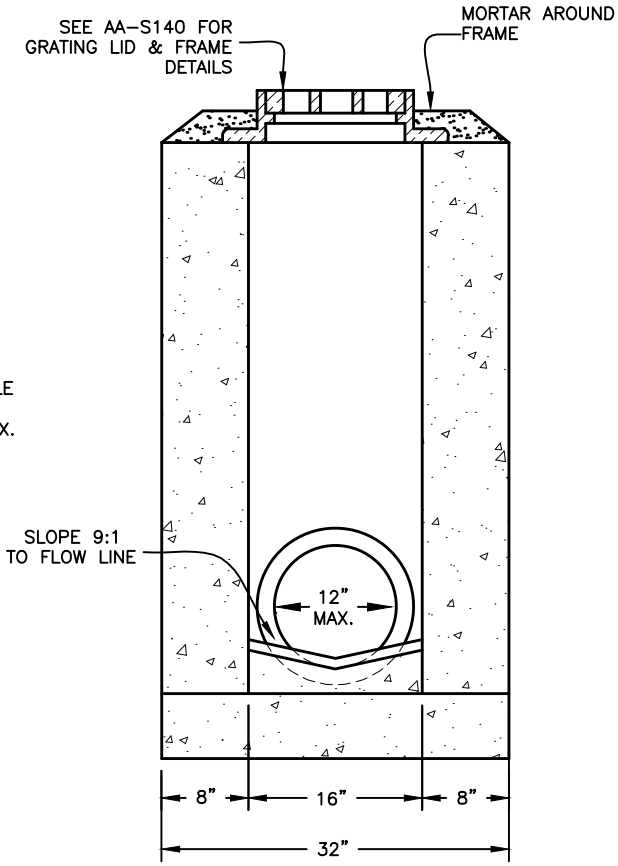


PLAN

TYPE OF STRUCTURE	A	B
STRUCTURE FOR SINGLE TRACK FRAME	40	24
STRUCTURE FOR DOUBLE TRACK FRAME	64	48



SECTION A–A



SECTION B–B

NOTE:

1. OUTLET PIPE MAY BE LOCATED IN END OR SIDE WALL. IN EITHER CASE OUTLET PIPE TO BE DIRECTED TOWARDS CENTER OF BASIN.
2. ALL CONCRETE SHALL BE CLASS "C".
3. PRECAST UNITS SHALL BE IN ACCORDANCE WITH ASTM C913, HAVE A MINIMUM THICKNESS OF 6" AND BE REINFORCED SUFFICIENTLY TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

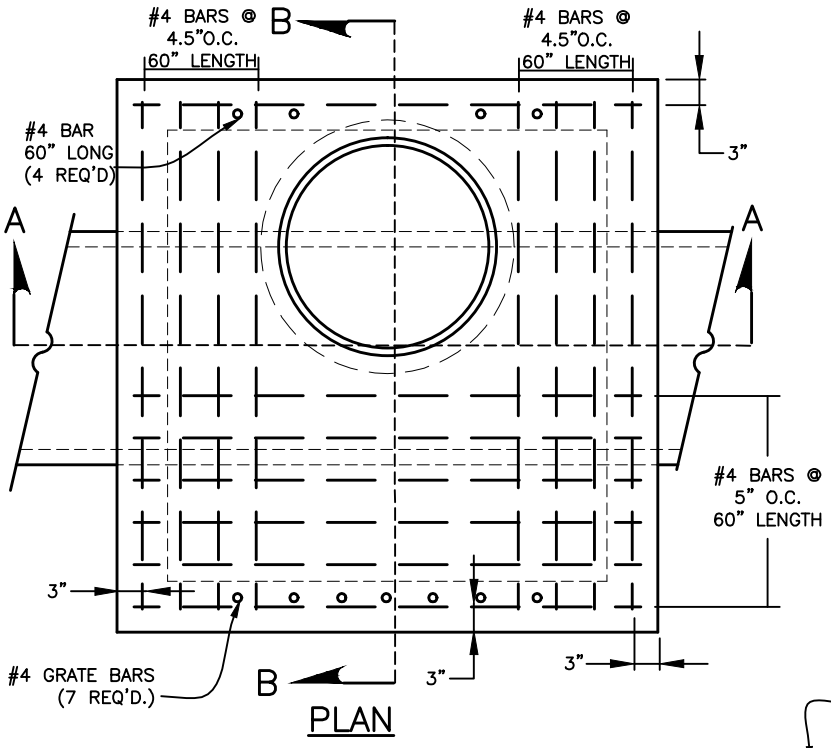
SSES MANAGER

PRECAST RECTANGULAR CATCH BASIN

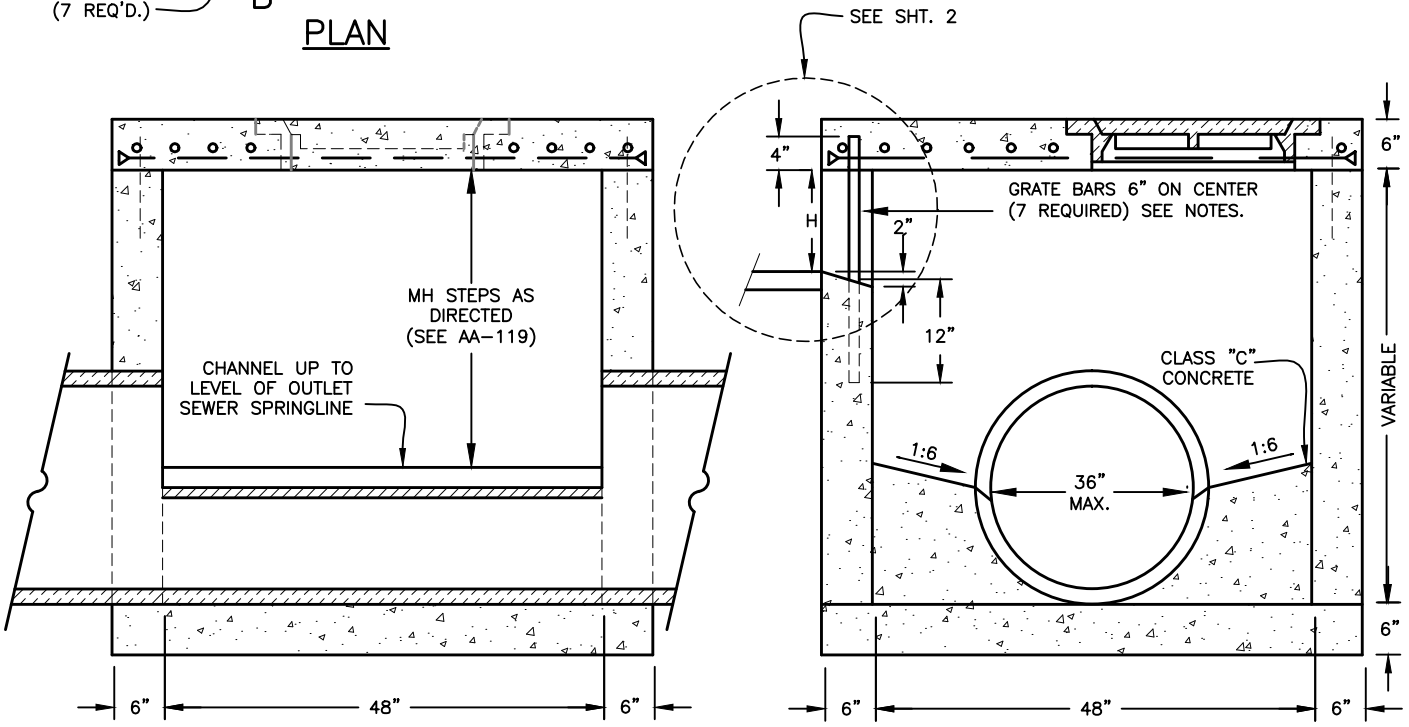
STD. DWG.
AA–S135

REVISED 8/8/14

PAGE 1 1



PLAN



SECTION A–A

SECTION B–B

NOTE:

1. VALUE OF "H" TO RANGE FROM 12" UPWARDS AS SITUATION REQUIRES. THE GRATE BARS ARE TO BE SEATED SECURELY IN WALL BY EMBEDMENT TO EXTENT AS SHOWN OR BY FABRICATION AND ATTACHMENT IN AN APPROVED MANNER. GRATE BAR MATERIAL SHALL BE WROUGHT IRON GALVINIZED.

2. PRECAST UNITS SHALL BE CLASS "C" CONCRETE AND HAVE A MINIMUM THICKNESS OF 6". PRECAST UNTIS SHALL BE IN ACCORDANCE WITH ASTM C913 AND SHALL BE REINFORCED SUFFICIENTLY TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

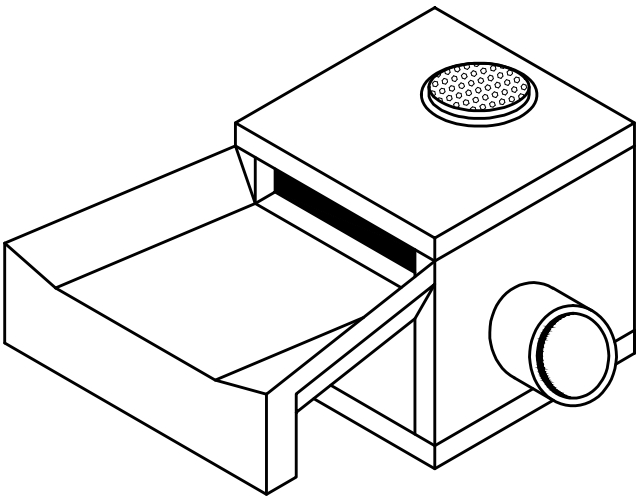
SSES MANAGER

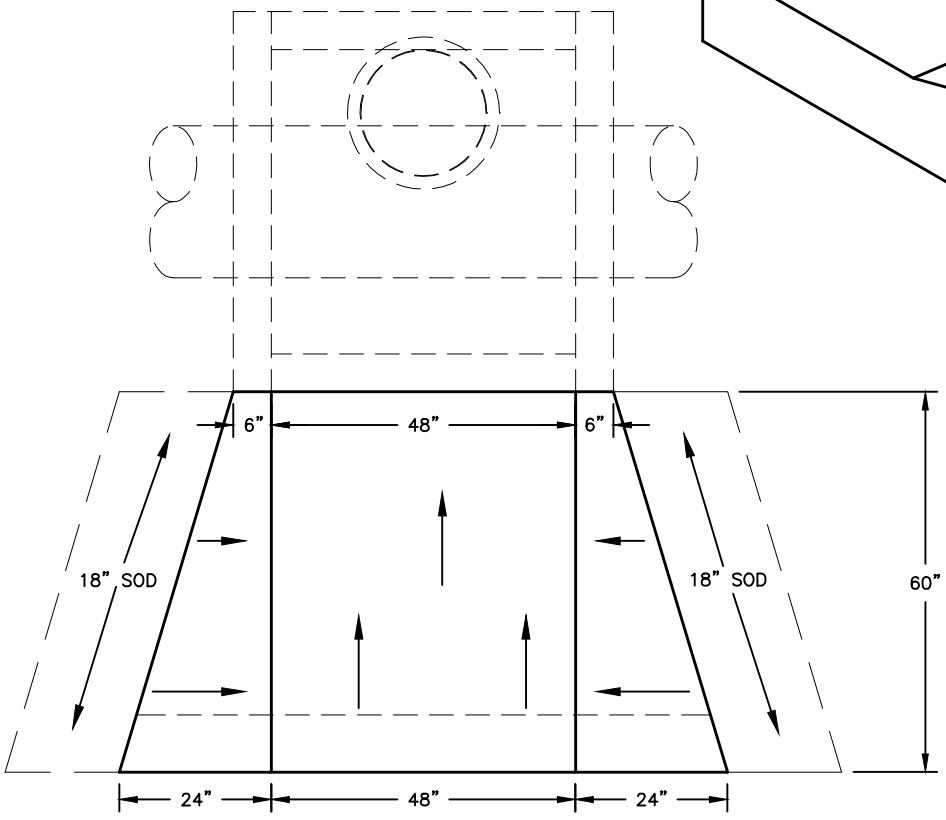
RECTANGULAR CONCRETE CATCH BASIN 48" INLET

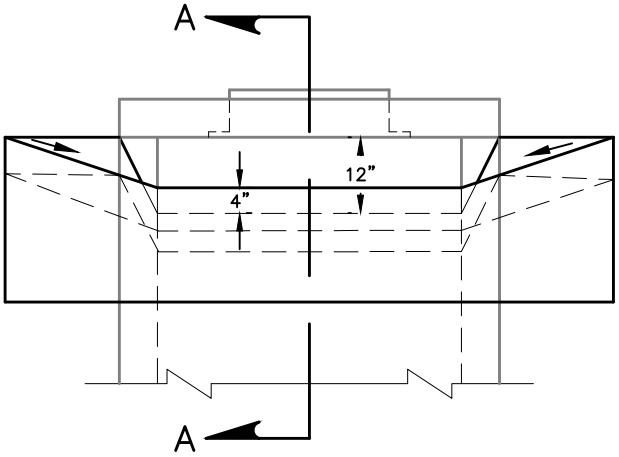
STD. DWG.
AA-S136

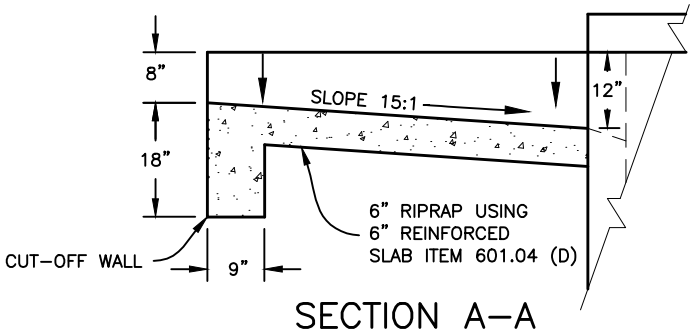
REVISED 8/8/14

PAGE 1 2





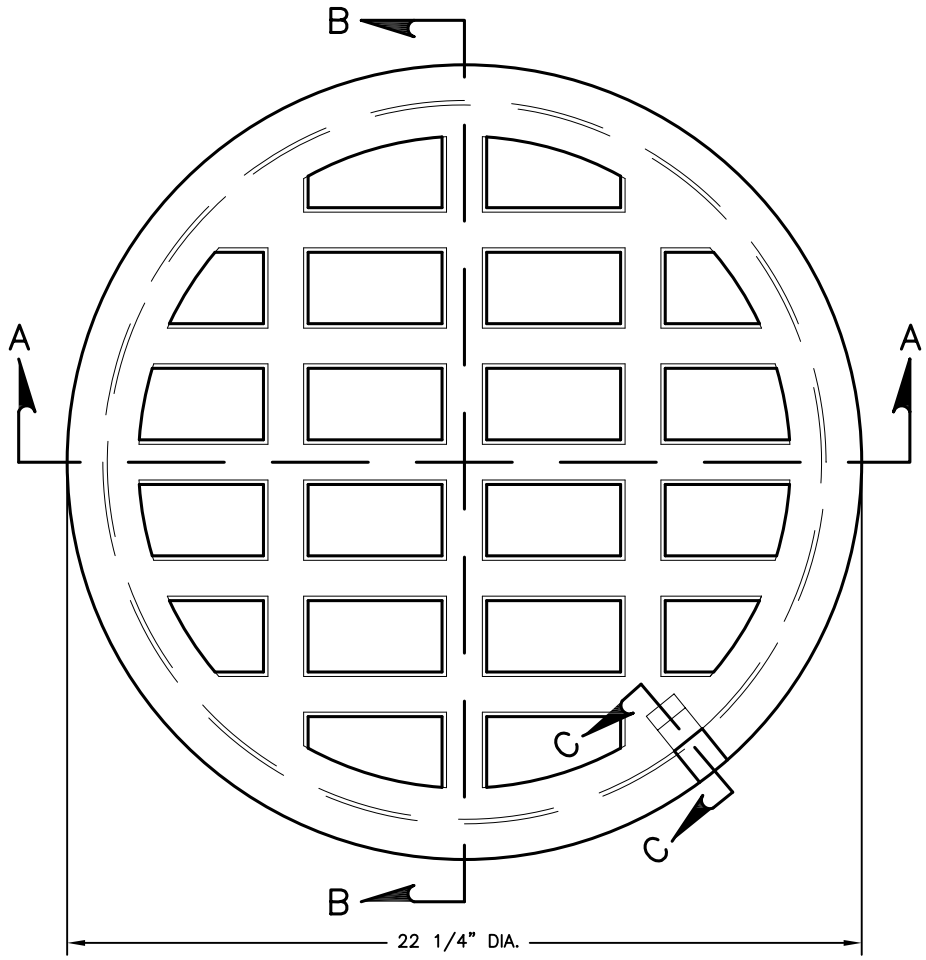




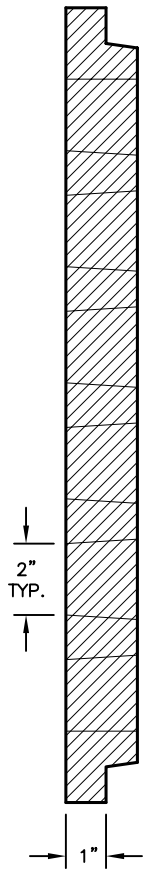
SECTION A–A

NOTE:
PAVE AREA ADJACENT TO INTAKE OPENING AND SHAPE AND SLOPE AS DIRECTED.
COST TO BE INCLUDED IN PRICE BID FOR CATCH BASIN.

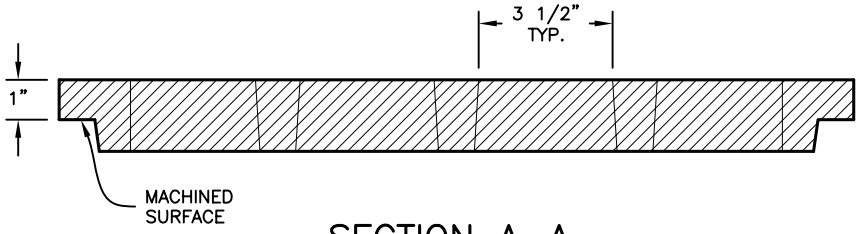
CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	CATCH BASIN 48" INLET	STANDARD DRAWING AA–S136
John G Jenson SSES MANAGER		REVISED 8/8/14
		PAGE 2 / 2



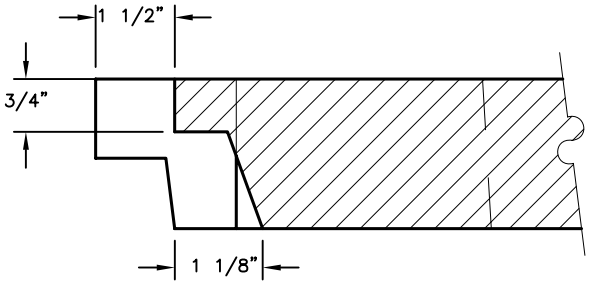
PLAN



SECTION B–B



SECTION A–A



SECTION C–C

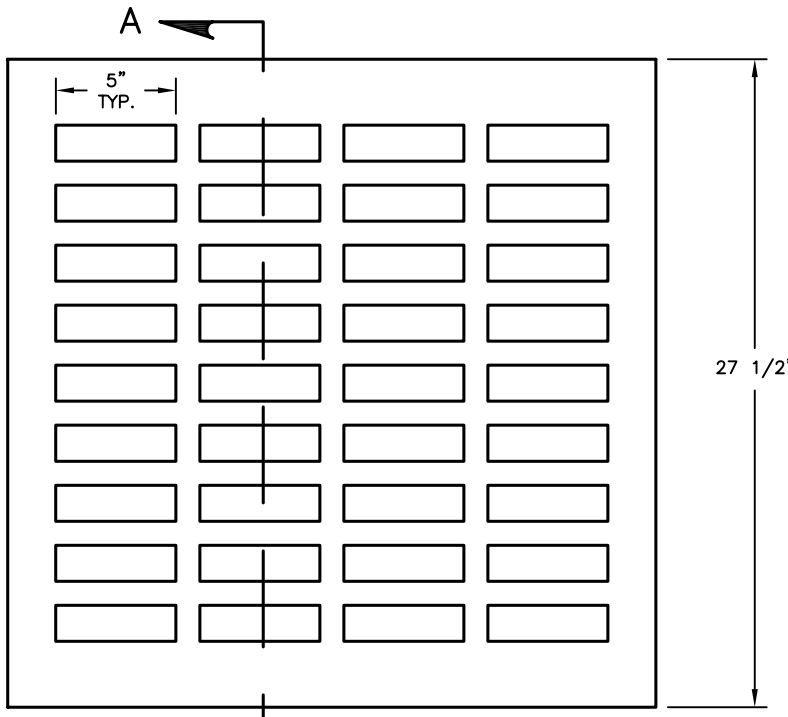
NOTES:

1. FRAMES, GRATES, AND COVERS SHALL MEET REQUIREMENTS OF 604.02 & AASHTO M306.
2. APPROXIMATE WEIGHT = 105 LBS.

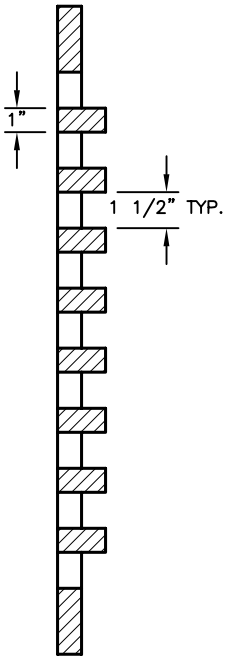
PRE–APPROVED CASTINGS:

EJ NO. – 1660M
NEENAH NO. – 2435

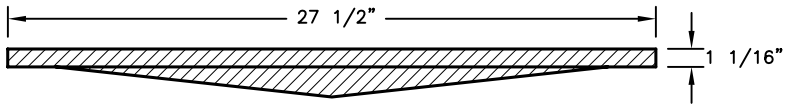
CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	GRATING FOR 24" & 42" DIAMETER CATCH BASINS	STANDARD DRAWING AA–S138
SSES MANAGER		REVISED 12/6/13
		PAGE 1 / 1



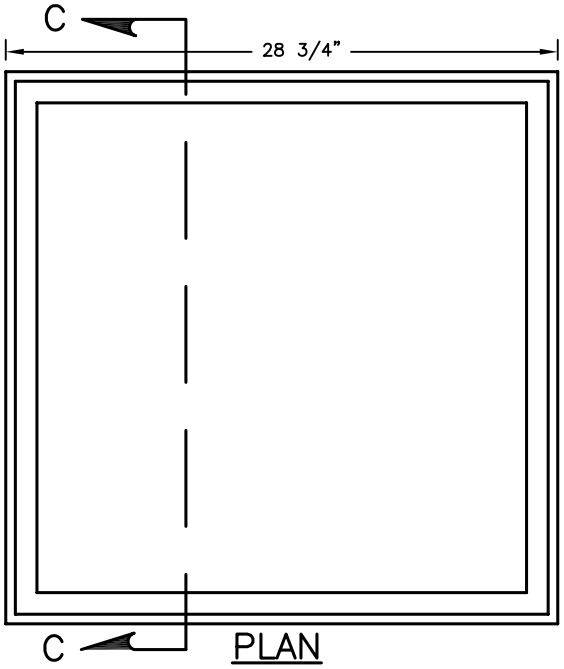
PLAN



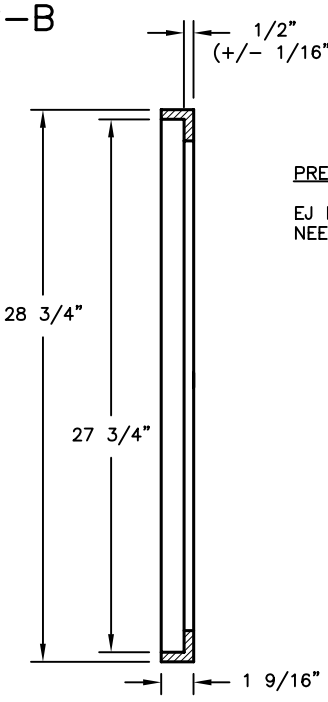
SECTION A–A



SECTION B–B



PLAN
GRATING FRAME



SECTION C–C

PRE–APPROVED CASTINGS:

EJ NO. – 5110M4, 5110Z1
NEENAH NO. – 4859–C, 4859–S, 4871, 4871–3001

NOTES:

1. FRAMES, GRATES, AND COVERS SHALL MEET REQUIREMENTS OF 604.02. DESIGN SHALL BE THE SAME AND EQUALLY AS STRONG AS SHOWN. ALL GRATING EDGES TO HAVE 1/4" RADIUS.
2. ANGLE FRAME FOR STANDARD CATCH BASIN WITH 24" SIDE INLETS.
3. APPROXIMATE WEIGHT OF GRATE = 120 LBS.
4. APPROXIMATE WEIGHT OF FRAME = 40 LBS.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

LIGHT DUTY GRATE AND ANGLE FRAME FOR STANDARD CATCH BASIN

STANDARD DRAWING
AA–S139

REVISED 12/6/13

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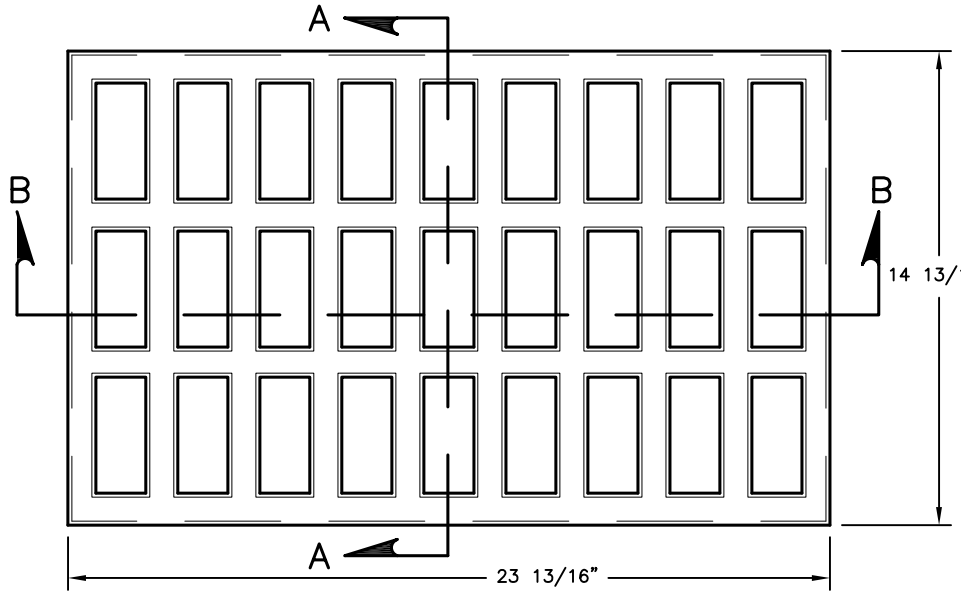
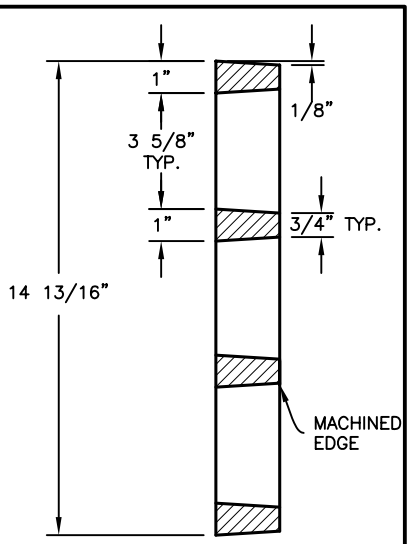
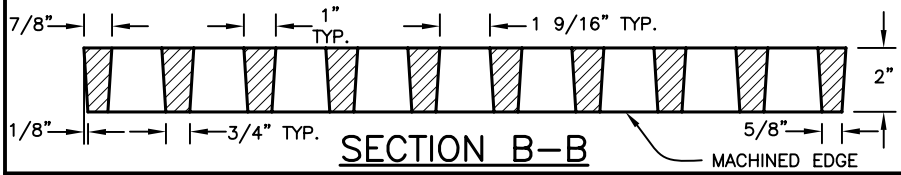


PLAN



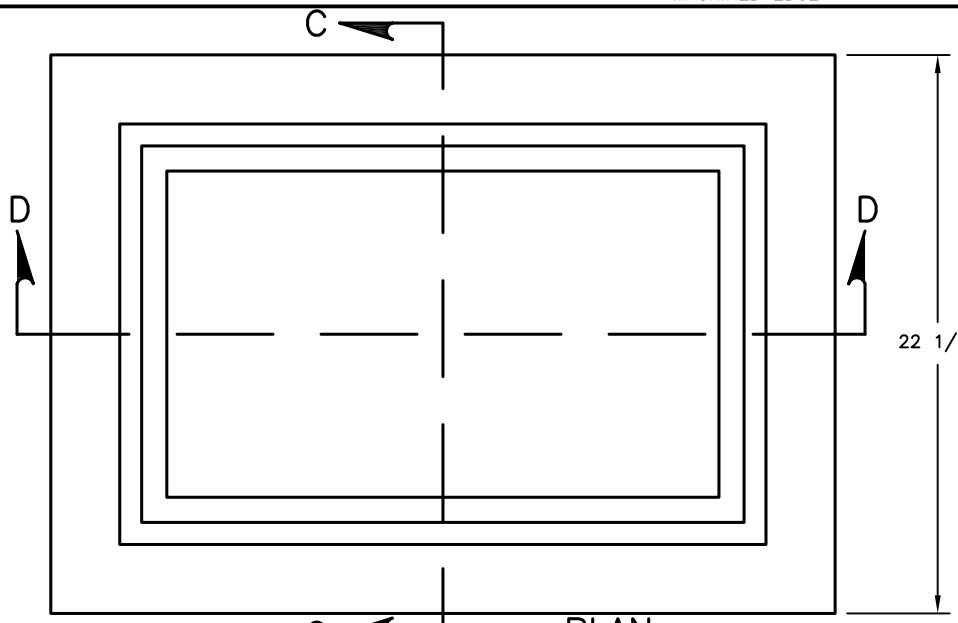
SECTION A–A



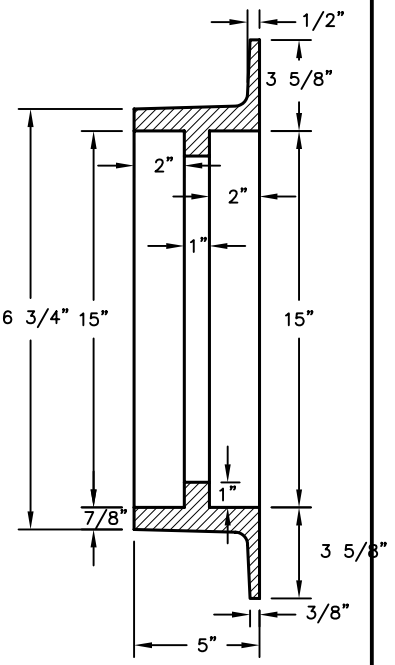
SECTION B–B

NOTE:

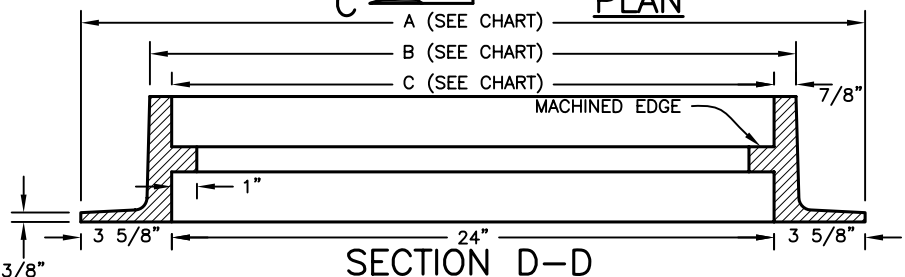
1. GRATING WEIGHT = 93 LBS. APPROX.
2. FRAMES, GRATES, AND COVERS SHALL MEET REQUIREMENTS OF 604.02 & AASHTO M306.
3. FRAME WEIGHT: SINGLE TRACK = 150 LBS. DOUBLE TRACK = 235 LBS.



PLAN



SECTION C–C



SECTION D–D

PRE–APPROVED CASTINGS:

EJ NO. – N/A
NEENAH NO. – 3460–A

FRAME TYPE	A	B	C
SINGLE TRACK	31.25"	24"	25.75"
DOUBLE TRACK	55.25"	48"	49.75"

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

RECTANGULAR CAST IRON INLET FRAME & GRATING

STANDARD DRAWING
AA–S140

REVISED 12/6/13

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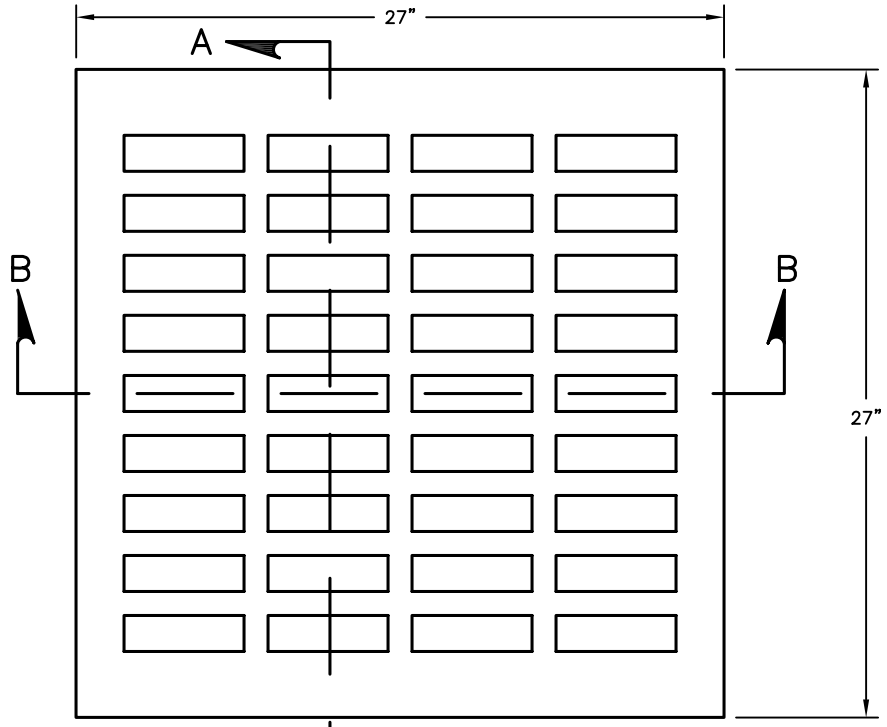
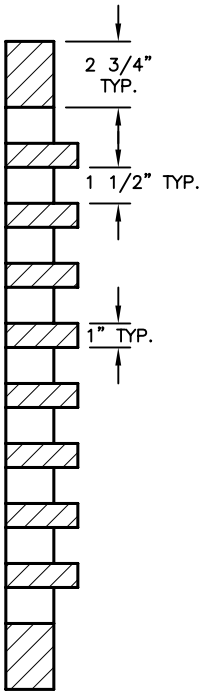
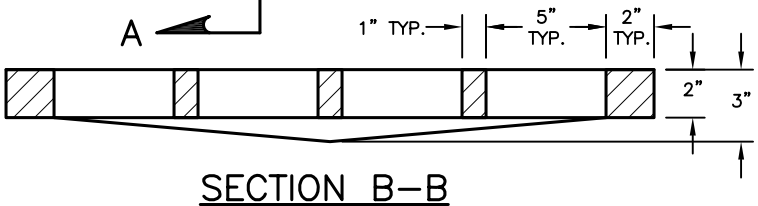
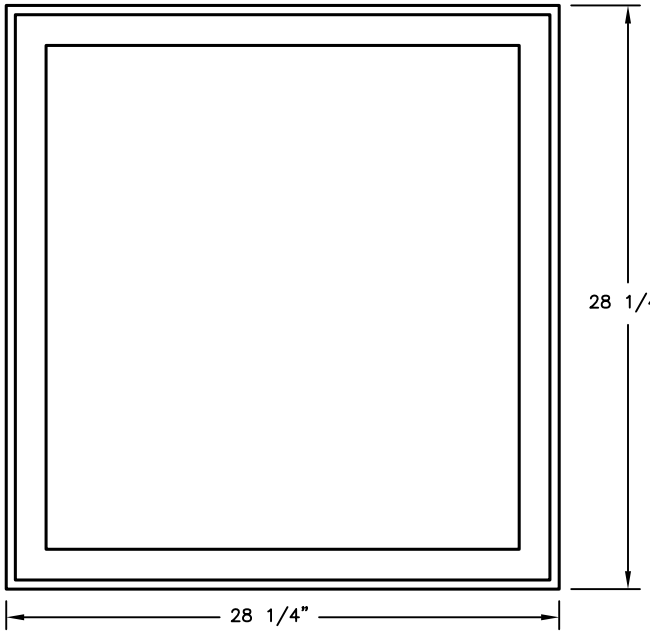




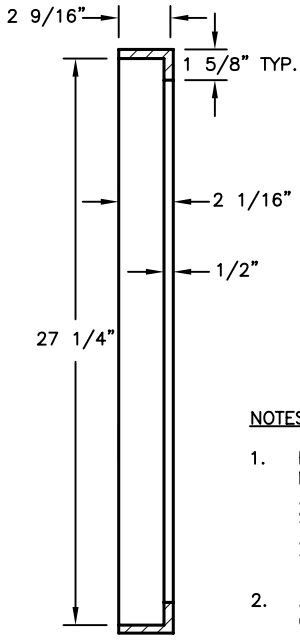
SECTION A–A



SECTION B–B



ANGLE FRAME



SECTION

PRE–APPROVED CASTINGS:

EJ NO. – 5115M2, 5115Z
NEENAH NO. – 4852, 1883–0018

NOTES:

1. FRAMES, GRATES, AND COVERS SHALL MEET REQUIREMENTS OF 604.02 AND AASHTO M306. DESIGN SHALL BE THE SAME AND EQUAL IN STRENGTH AS SHOWN. GRATE EDGES TO HAVE 1/4" ROUNDED EDGES.
2. ANGLE FRAME SHOWN FOR STANDARD CATCH BASIN WITH 24" SIDE INLETS.
3. APPROXIMATE WEIGHT OF GRATE = 210 LBS.
4. APPROXIMATE WEIGHT OF ANGLE FRAME = 54 LBS.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

HEAVY DUTY GRATE AND ANGLE FRAME FOR STANDARD CATCH BASIN

STANDARD DRAWING
AA–S141

REVISED 12/6/13

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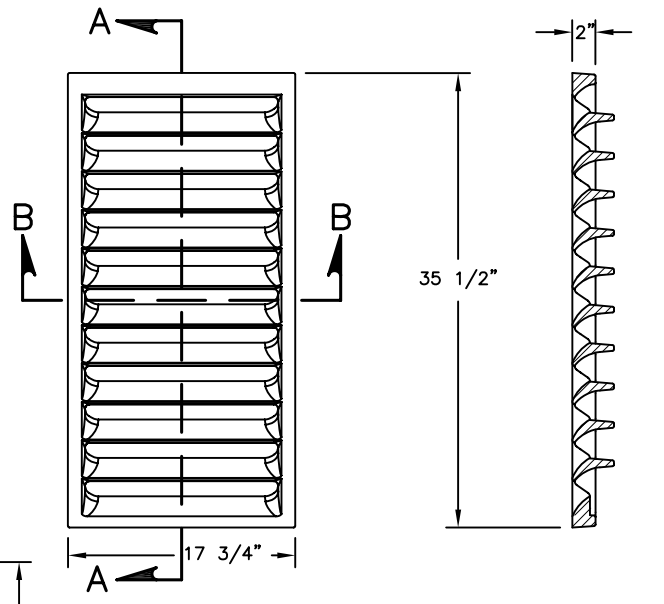
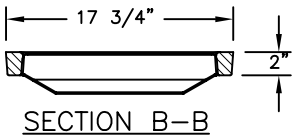
NOTE:

1. FRAMES, GRATES AND COVERS, SHALL MEET REQUIREMENTS OF 604.02 & AASHTO M306

2. CURB ADJUSTABLE FROM 3 1/4" TO 9".

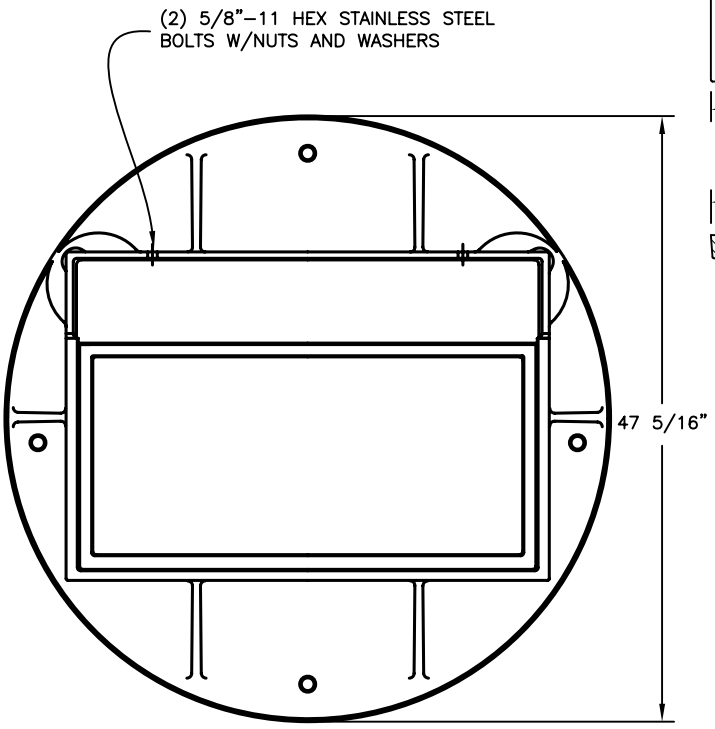


SECTION A–A



SECTION B–B

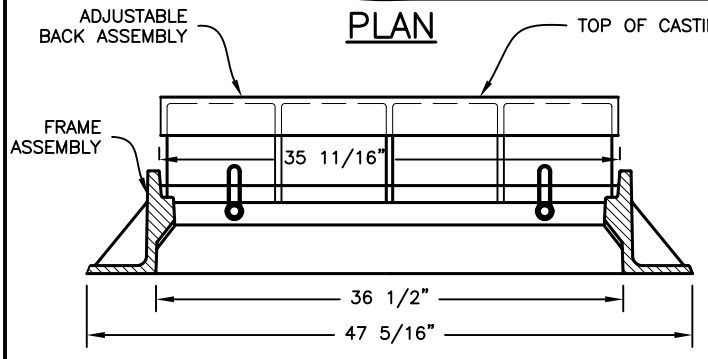
CURB GRATING



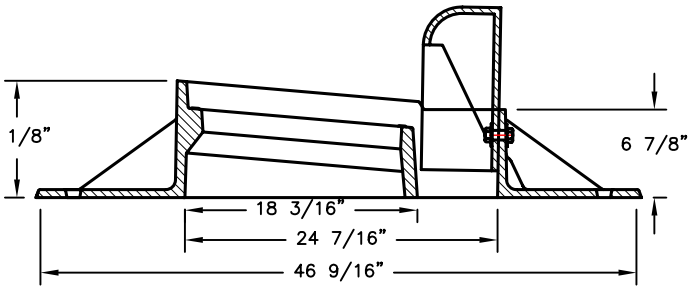
PLAN

PRE–APPROVED CASTINGS:

EJ NO. – 7360Z WITH 7030M4 GRATE & 7030T6 BACK
NEENAH NO. – 3246–F WITH TYPE V GRATE



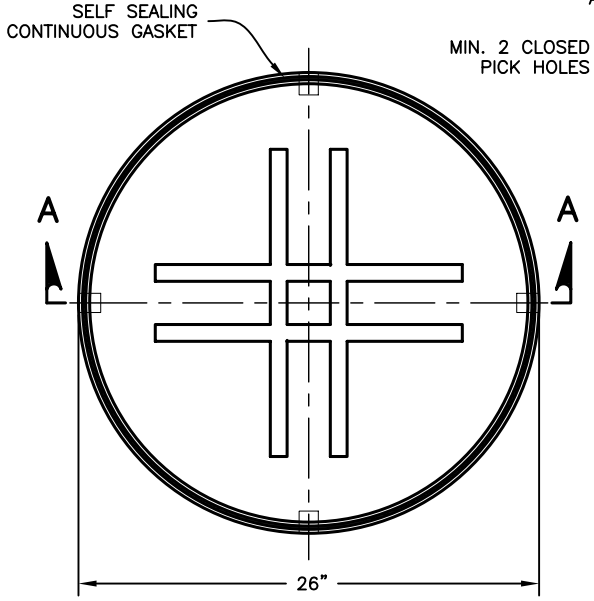
ELEVATION



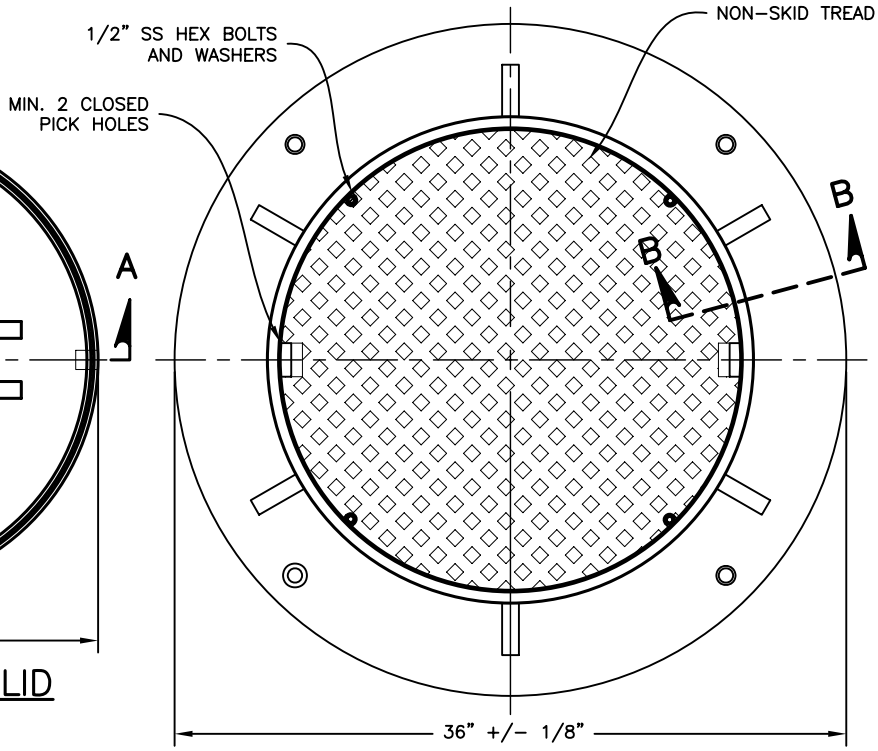
SECTION

FRAME ASSEMBLY W/ADUST. BACK

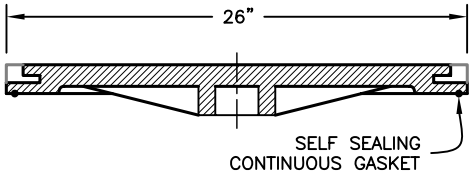
CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	CURB & GUTTER INLET FOR CURB INLET MANHOLES	STANDARD DRAWING AA–S142
SSES MANAGER		REVISED 12/6/13
		PAGE 1 / 1



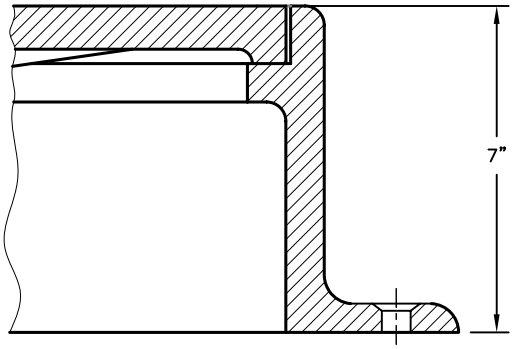
BOTTOM VIEW – LID



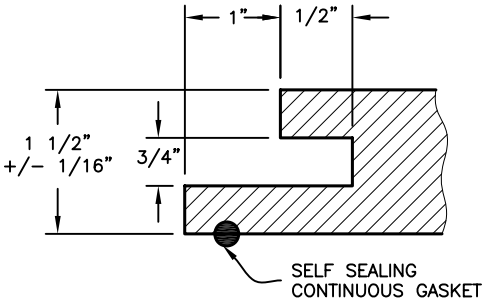
TOP VIEW OF ASSEMBLY



SECTION A–A



SECTION B–B



PICK HOLE DETAIL

NOTES:

1. FRAMES, GRATES, AND COVERS SHALL MEET THE REQUIREMENTS OF 604.02 AND AASHTO M 306.

PRE–APPROVED CASTINGS:

EJ NO. – 1045ZPT ASSEMBLY
NEENAH NO. – 1916–F

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

STANDARD DIMENSIONS FOR 26" BOLT–DOWN FRAME AND COVER

STANDARD DRAWING
AA–S143

REVISED 12/6/13

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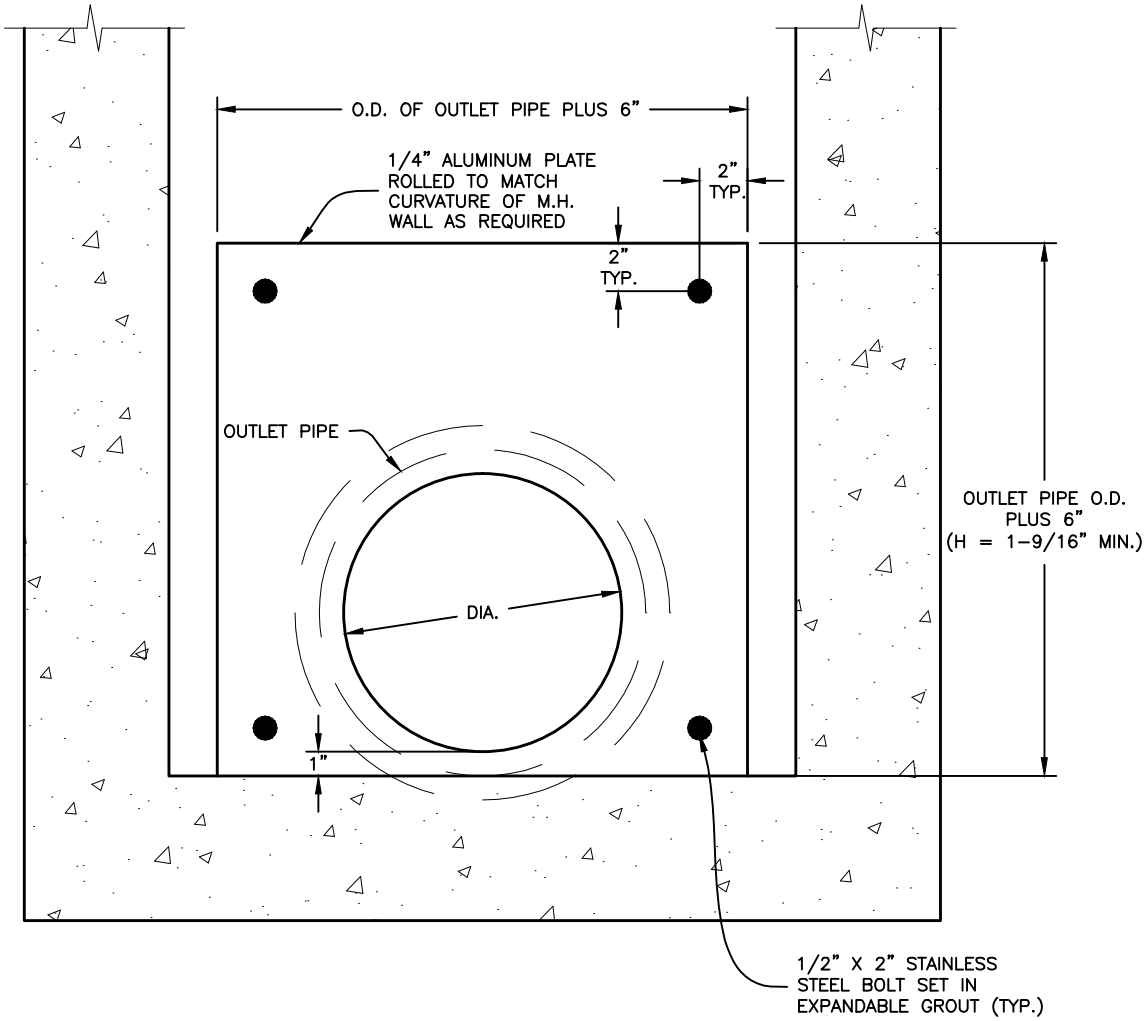

ORIFICE SIZING EQUATION

$$Q = CA(2gH)^{1/2}$$

Q = PEAK DISCHARGE RATE, cfs

C = COEFFICIENT OF DISCHARGE. DIMENSIONLESS, (USE NOMINAL VALUE OF 0.60)

A = CROSS SECTIONAL AREA OF ORIFICE, SQUARE FEET.

g = ACCELERATION DUE TO GRAVITY, 32.16 FT./SEC./SEC.

H = HEAD ON THE ORIFICE, FEET.

NOTES:

1. ORIFICE PLATE TO BE SET ON OUTLET PIPE WALL AT EACH BASIN AS INDICATED ON PLANS.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

OUTLET CONTROL ORIFICE PLATE

STANDARD DRAWING
AA-S145

REVISED 7/9/12

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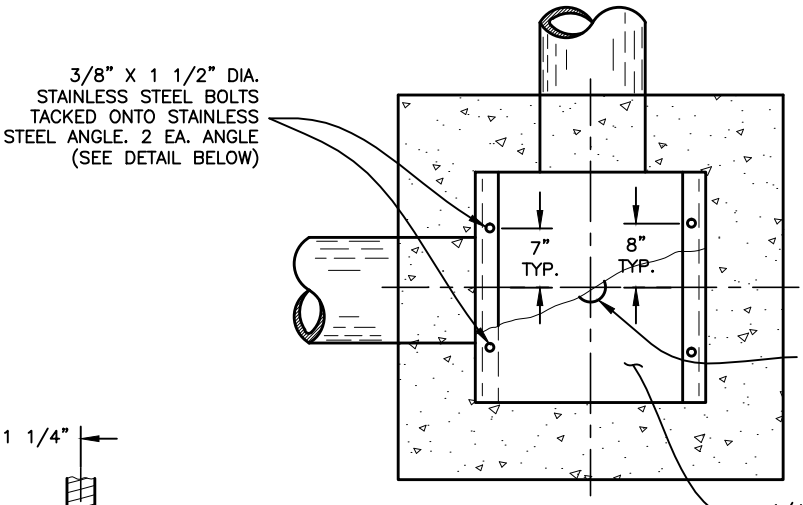
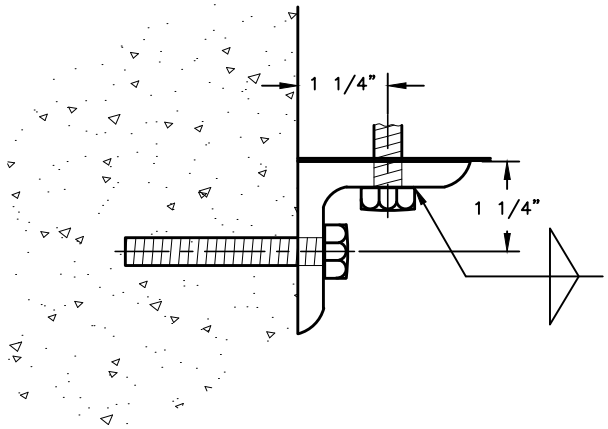
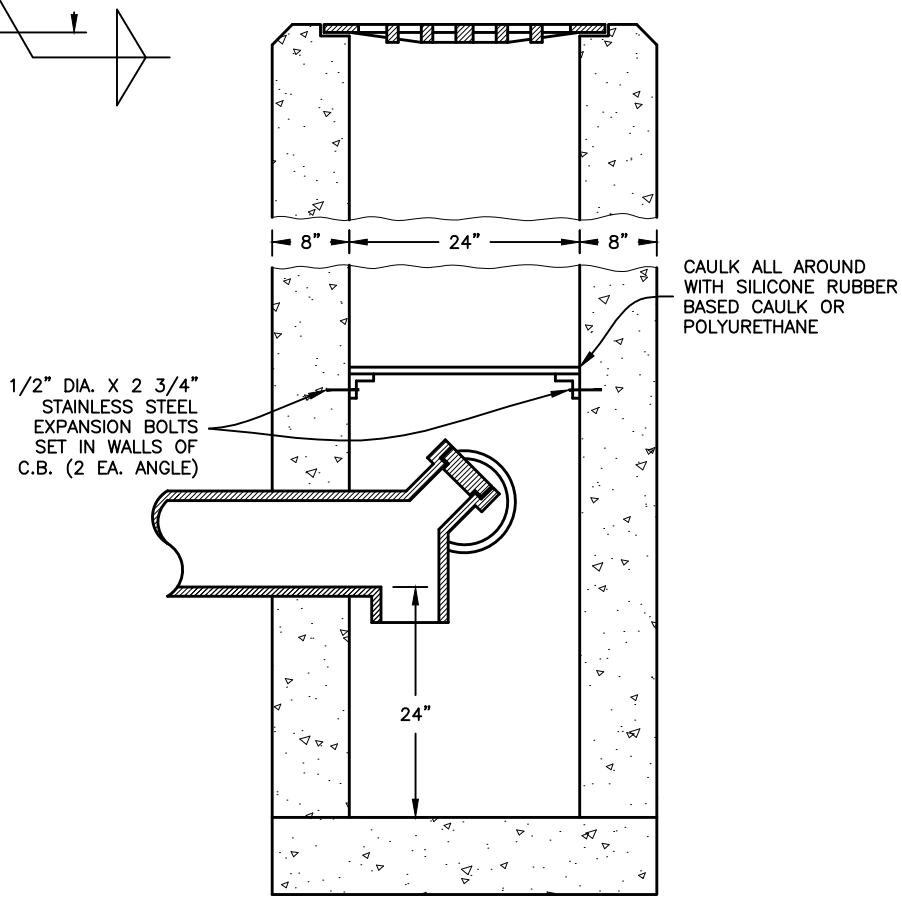


PLAN



BOLTING DETAIL



SECTION

FOR USE IN INLETS WITH H-H TRAPS

ORIFICE SIZING EQUATION

$$Q = CA(2gH)^{1/2}$$

Q = PEAK DISCHARGE RATE, cfs

C = COEFFICIENT OF DISCHARGE. DIMENSIONLESS, (USE NOMINAL VALUE OF 0.60)

A = CROSS SECTIONAL AREA OF ORIFICE, SQUARE FEET.

g = ACCELERATION DUE TO GRAVITY, 32.16 FT./SEC./SEC.

H = HEAD ON THE ORIFICE, FEET.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

HORIZONTAL OUTLET CONTROL ORIFICE PLATE

STANDARD DRAWING
AA-S146

REVISED 7/9/12

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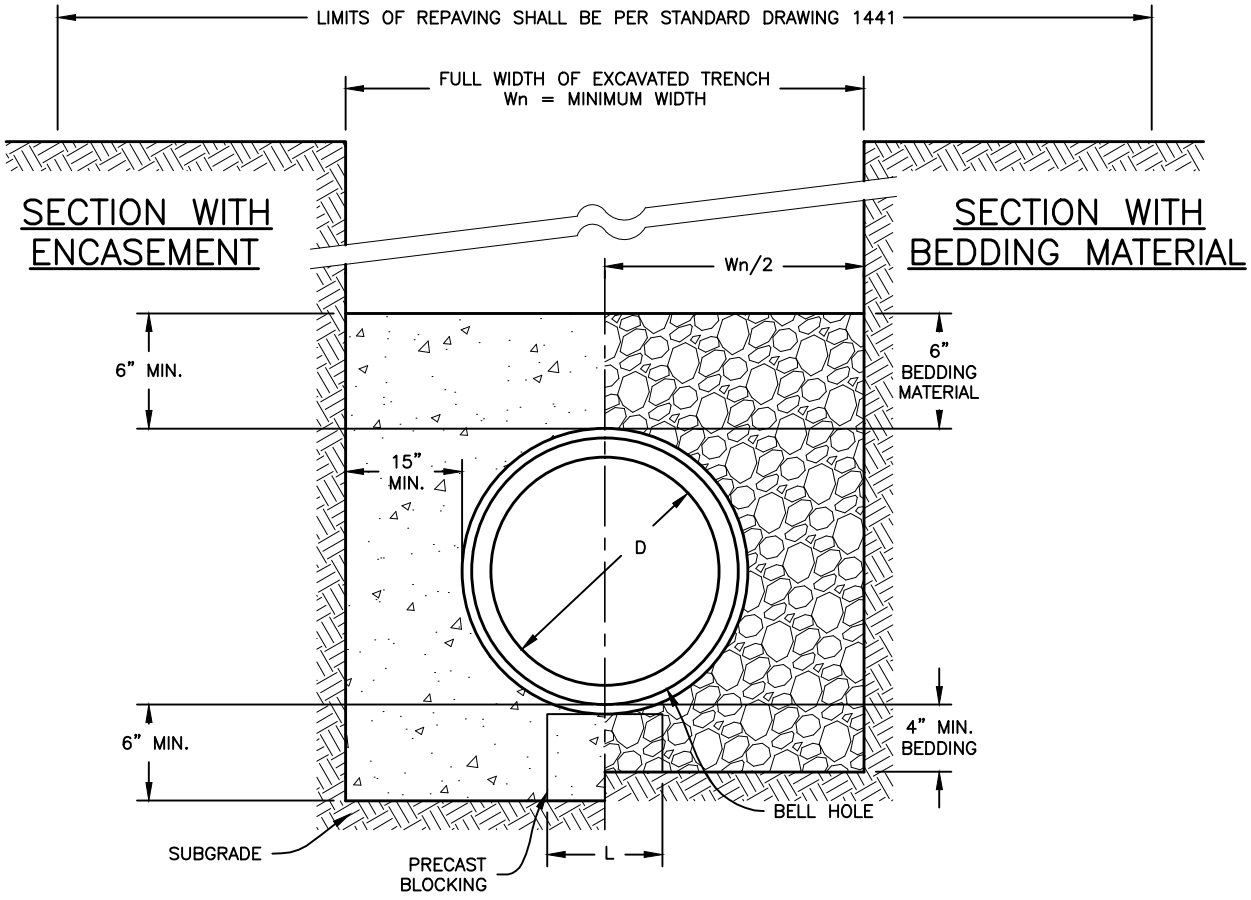


DIA	Wn	L
6"	30"	12"
8"	30"	12"
10"	30"	12"
12"	32"	12"
15"	36"	12"
18"	40"	12"
21"	44"	12"
24"	48"	12"
27"	52"	12"
30"	56"	15"
36"	64"	18"
42"	72"	21"
48"	80"	24"
60"	96"	30"

NOTES:

1. SECTIONS SYMETRICAL ABOUT ℄.
2. PIPE DIMENSIONS ON CHART ARE MINIMUM AND EXPRESSED IN INCHES.
3. FOR SANITARY SEWER CONSTRUCTION TRENCH DAMS ARE REQUIRED AS SPECIFIED UNDER 901.11.
4. PROVIDE EMBEDMENT IN ACCORDANCE WITH THE RECOMMENDATIONS OF ASTM D2321, 7.5.
5. ENCASEMENT TO BE CLASS "A" CONCRETE, ITEM 905.
6. THE PIPE SHALL BE SUPPORTED BY 12" CONCRETE BLOCKING WHEN CONCRETE ENCASEMENT IS REQUIRED.
7. BLOCKING SHALL HAVE THE LENGTH SHOWN IN THE CHART OR OF SUFFICIENT LENGTH SO THAT THE PIPE LOAD ON THE SUBGRADE SHALL NOT EXCEED 3,000 LBS/SF. SEE CHART FOR MINIMUM BLOCKING LENGTHS.

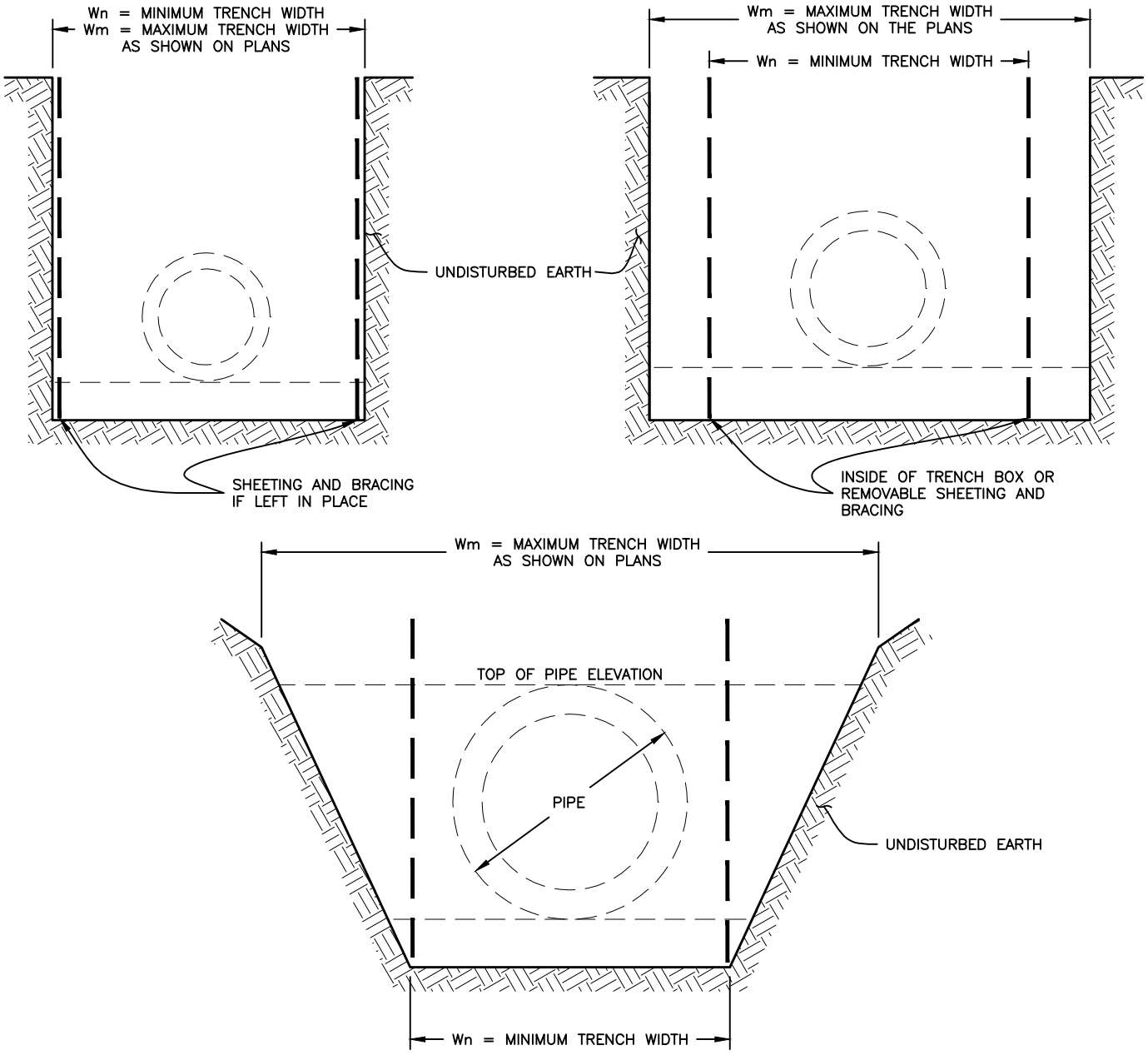
CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPE I BEDDING FOR FLEXIBLE SEWER PIPE 6" TO 60" DIAMETER

STANDARD DRAWING
AA-S149

REVISED 10/15/14



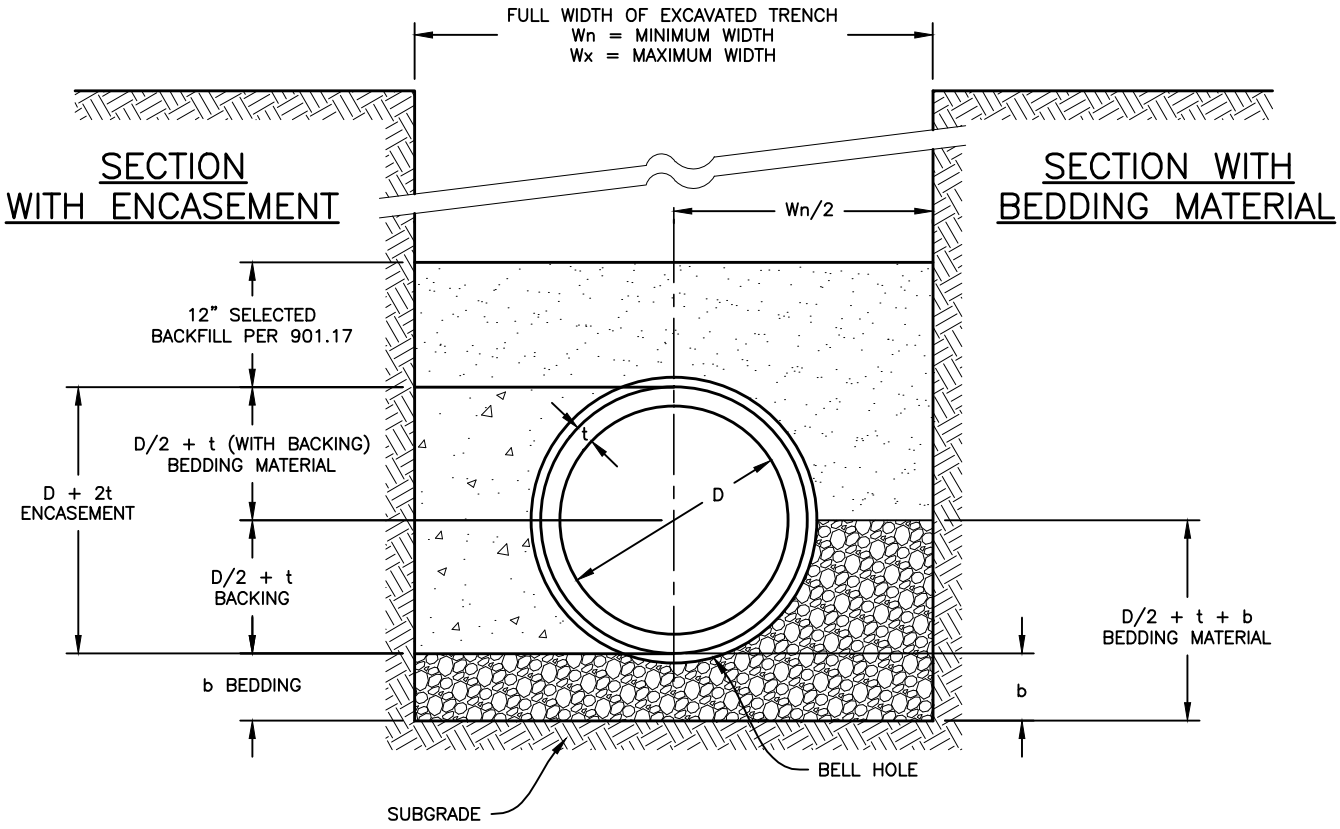
NOTES:

1. QUANTITIES AS SHOWN ON THE STANDARD DRAWINGS ARE BASED ON THE MINIMUM WIDTH OF TRENCH (Wn). IF ANY ALTERNATIVE TRENCH IS USED THE CONTRACTOR WILL BE REQUIRED TO EXTEND THE BEDDING, BACKING OR ENCASEMENT MATERIAL ACROSS THE ENTIRE EXCAVATED TRENCH AT THE DEPTH SPECIFIED. THE COST OF THE INCREASED MATERIAL SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 901.

2. THE MAXIMUM WIDTH OF THE TRENCH (Wm) AS SHOWN ON PLANS, AT TOP OF PIPE, WILL BE STRICTLY ENFORCED AND WILL APPLY TO ANY TYPE OF TRENCH CONSTRUCTION TECHNIQUE USED.

3. IF NO MAXIMUM WIDTH OF TRENCH (Wm) IS SHOWN ON PLANS, THE BACKFILL LOAD ON THE PIPE IS AT A MAXIMUM AND WILL REMAIN CONSTANT REGARDLESS OF ANY INCREASE IN THE WIDTH OF THE TRENCH.

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	TRENCH INSTALLATION WITH MAXIMUM WIDTH SPECIFIED	STANDARD DRAWING AA–S150
John G Jenson SSES MANAGER		REVISED 7/9/12
		PAGE 1 / 1



SMALL DIAMETERS
b = 4"

D	Wn	Wx
6"	24"	48"
8"	27"	48"
10"	30"	48"
12"	32"	48"
15"	36"	50"
18"	40"	53"
21"	44"	57"
24"	48"	60"
27"	52"	64"

MID DIAMETERS
b = 6"

D	Wn	Wx
30"	57"	67"
33"	61"	71"
36"	64"	74"
42"	71"	81"
48"	78"	88"
54"	87"	95"
60"	96"	102"
66"	105"	127"

LARGE DIAMETERS
b = 6"

D	Wn	Wx
72"	116"	134"
78"	123"	141"
84"	130"	148"
90"	136"	155"
96"	143"	162"
102"	151"	169"
108"	160"	176"

NOTES:

1. SECTIONS SYMETRICAL ABOUT ℄.
2. PIPE DIMENSIONS ON CHART ARE EXPRESSED IN INCHES.
3. FOR SANITARY SEWER CONSTRUCTION TRENCH DAMS ARE REQUIRED AS SPECIFIED UNDER 901.11.
4. BACKING AND ENCASEMENT TO BE CLASS "A" CONCRETE, ITEM 905.
5. PAYMENT FOR CONCRETE BACKING AND ENCASEMENT SHALL BE BASED ON MINIMUM TRENCH WIDTH (Wn).

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPE I BEDDING FOR RIGID SEWER PIPE 6" TO 108" DIAMETER

STANDARD DRAWING
AA-S151

REVISED 7/9/12

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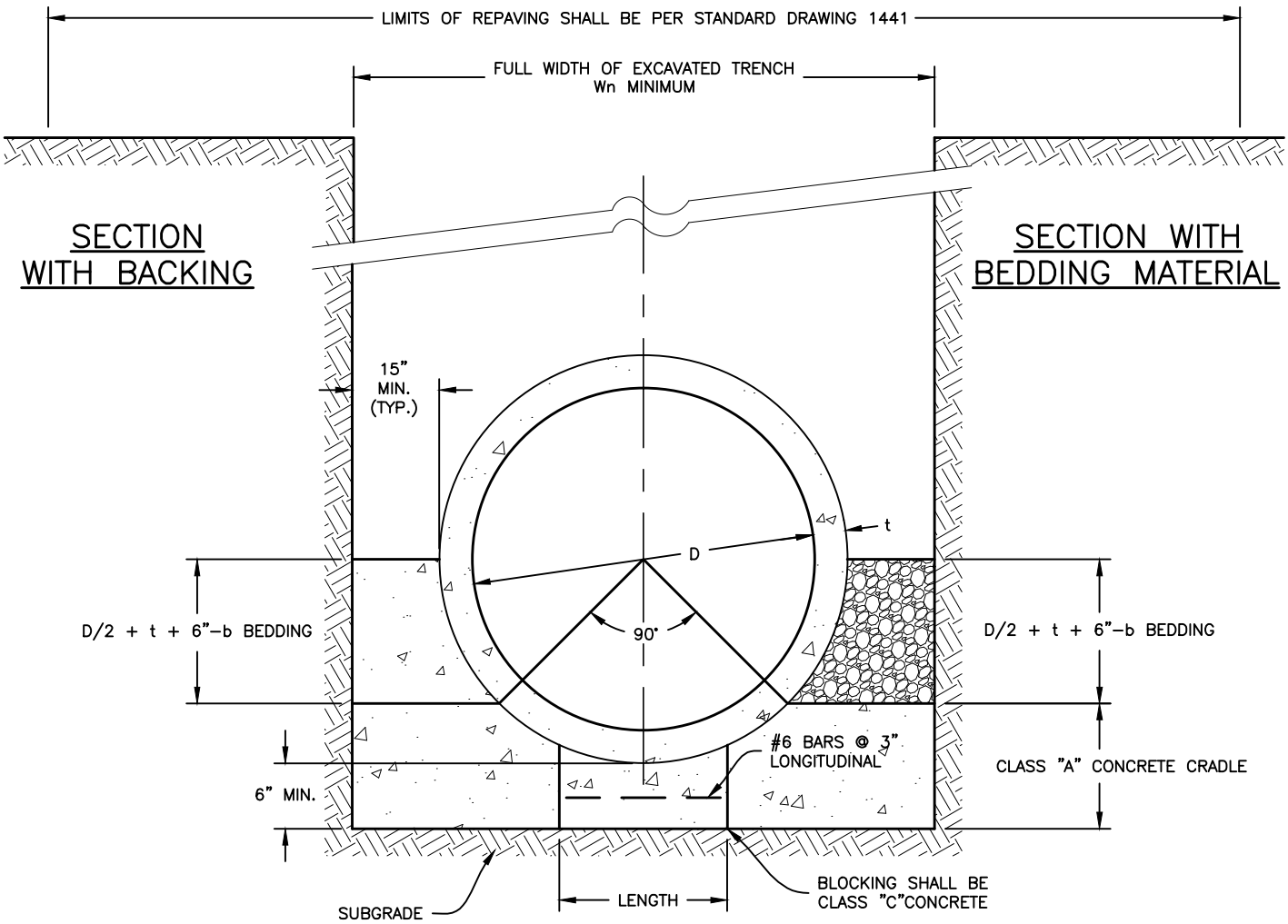

D	t	Wn	b
30	3.5	57	11.5
33	3.75	61	12
36	4	64	12.5
42	4.5	71	13.5
48	5	78	14.5
54	5.5	87	15.5
60	6	96	16.5
66	6.5	105	17.5
72	7	116	18.5
78	7	123	19.5
84	8.5	130	20.5
90	8	136	21.5
96	8.5	143	22.5
102	8.5	151	23.5
108	9	160	24.5

NOTES:

1. SECTIONS SYMETRICAL ABOUT ℄.
2. PIPE DIMENSIONS ON CHART ARE EXPRESSED IN INCHES.
3. FOR SANITARY SEWER CONSTRUCTION TRENCH DAMS ARE REQUIRED AS SPECIFIED UNDER 901.11.
4. BACKING AND ENCASEMENT TO BE CLASS "A" CONCRETE, ITEM 905.
5. PAYMENT FOR CONCRETE BACKING AND ENCASEMENT SHALL BE BASED ON MINIMUM TRENCH WIDTH (Wn).
6. BLOCKING SHALL HAVE THE LENGTH SHOWN IN THE CHART OR OF SUFFICIENT LENGTH SO THAT THE PIPE LOAD ON THE SUBGRADE SHALL NOT EXCEED 3,000 LBS/SF
7. THE CONCRETE CRADLE QUANTITY INCLUDES THE VOLUME OF THE CLASS "C" CONCRETE BLOCKING.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPE II BEDDING FOR RIGID SEWER PIPE 30" TO 108" DIAMETER

STANDARD DRAWING
AA–S153

REVISED 7/9/12

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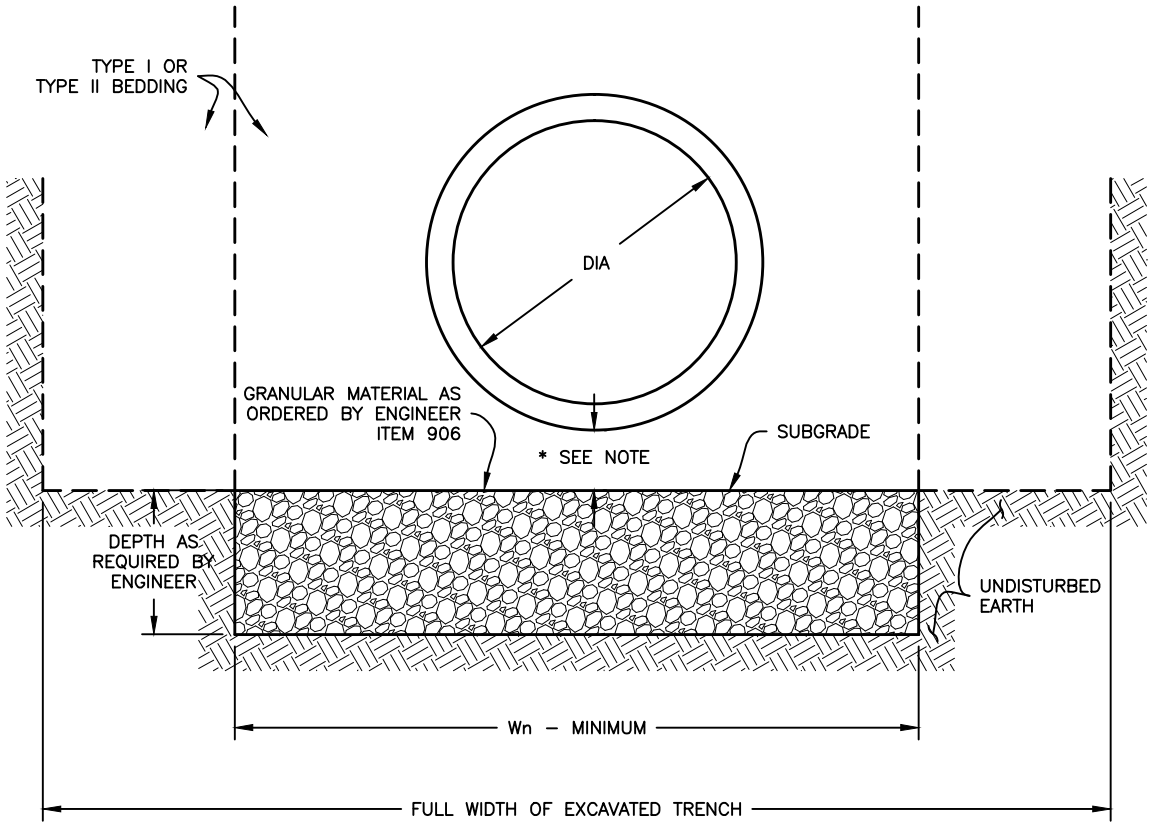


DIA	Wn	VOLUME OF EXCAVATION VOLUME OF GRANULE MATERIAL CU.YD./L.F./IN. OF DEPTH
6	24	.0062
8	27	.0069
10	30	.0077
12	32	.0082
15	36	.0093
18	40	.0103
21	44	.0113
24	48	.0123
27	52	.0134
30	57	.0146
33	61	.0157
36	64	.0164
42	71	.0182
48	78	.0200
54	87	.0223
60	96	.0247
66	105	.0270
72	116	.0298
78	123	.0316
84	130	.0334
90	136	.0349
96	143	.0368
102	151	.0388
108	160	.0411

NOTES:

1. ALL DIMENSIONS ARE EXPRESSED IN INCHES.
   * 4" FOR 6" TO 27" PIPE
   6" FOR 30" TO 108" PIPE
2. ON SANITARY SEWER CONSTRUCTION TRENCH DAMS ARE REQUIRED FROM THE BOTTOM OF THE STONE FOUNDATION AS SPECIFIED UNDER 911.04.

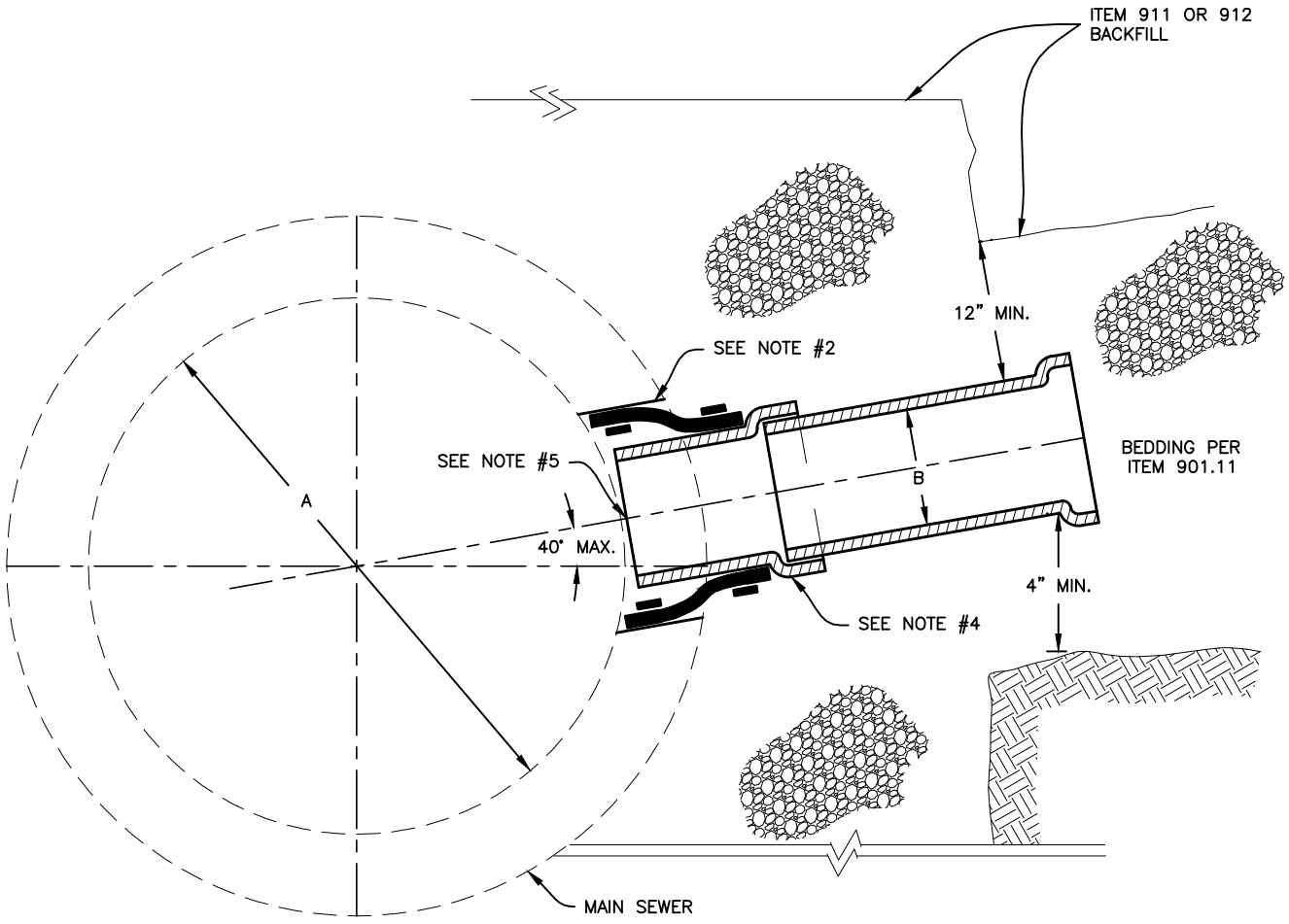
CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

STONE FOUNDATION FOR 6" TO 108" DIAMETER PIPE

STANDARD DRAWING
AA–S154

REVISED 7/9/12



NOTES:

1. THIS DETAIL PERTAINS TO LATERAL SEWER CONNECTIONS TO EXISTING MAIN LINE SEWERS 30" IN DIAMETER AND LARGER.
2. THE PENETRATION IN THE MAIN SEWER SHALL BE CORED FOR THE DIAMETER REQUIRED FOR THE INSERT-A-TEE (OR APPROVED EQUAL) FLEXIBLE CONNECTOR.
3. PIPE MATERIALS SHALL BE IN CONFORMANCE WITH 901.02.
4. BEGINNING OF BELL SECTION OF STUB PIPE TO BE FLUSH WITH END OF FLEXIBLE CONNECTOR.
5. STUB PIPE SHALL NOT EXTEND INTO MAIN SEWER.
6. INTERNAL AND EXTERNAL CLAMPS SHALL BE STAINLESS STEEL.
7. MINIMUM DISTANCE FROM CENTERLINE OF MAIN SANITARY SEWER TO FIRST MANHOLE ON LATERAL – 25 FEET: MAXIMUM 50 FEET.

A DIA.(ID)	B DIA.(OD)MAX.
30"	14.5"
36"	18.5"
42" & LARGER	21.1"

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

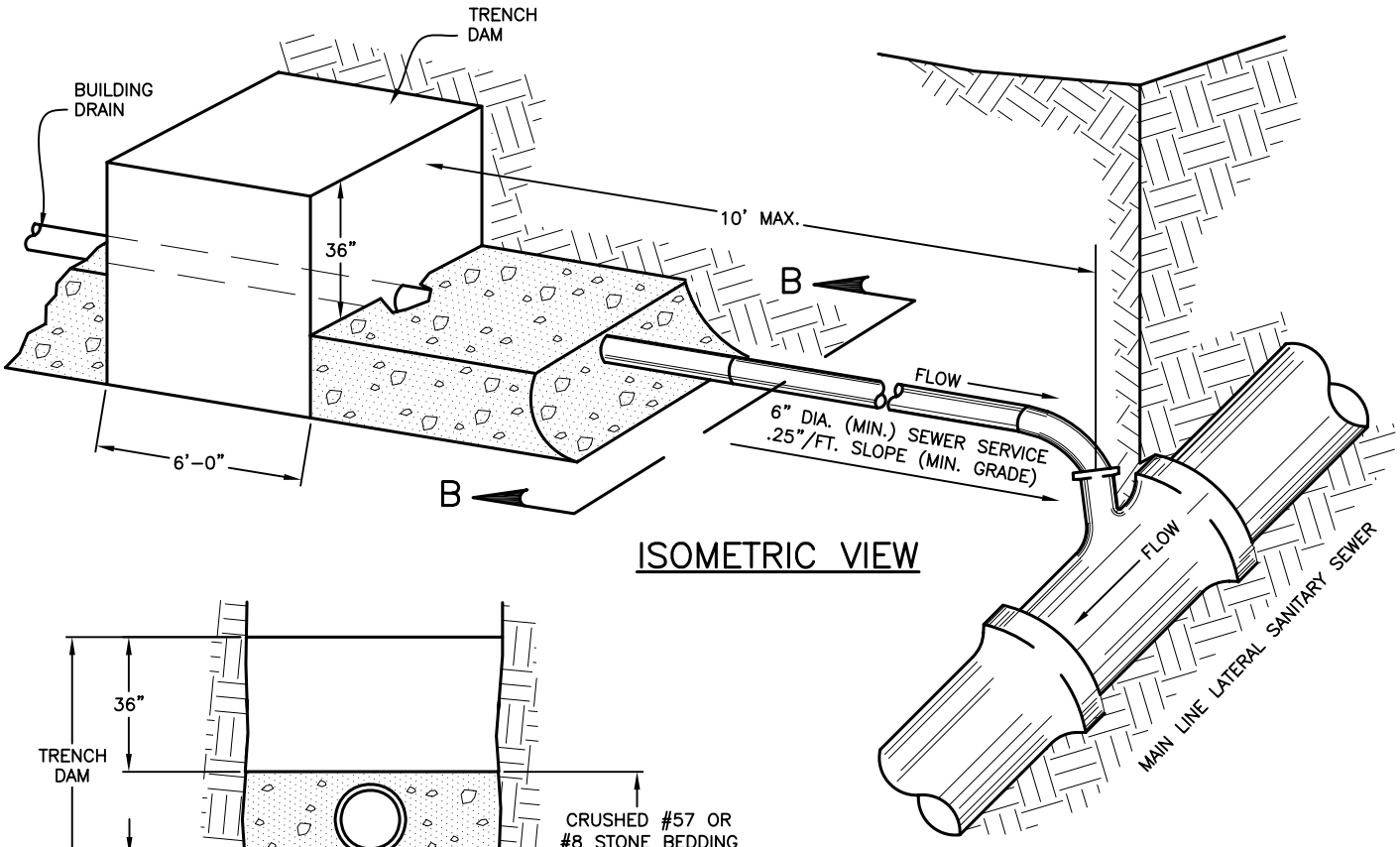
John G Jenson

SSES MANAGER

BLIND CONNECTION DETAIL

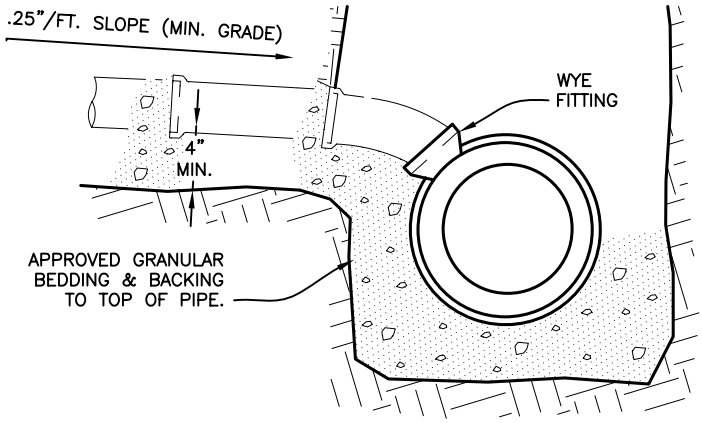
STANDARD DRAWING
AA-S159

REVISED 7/9/12

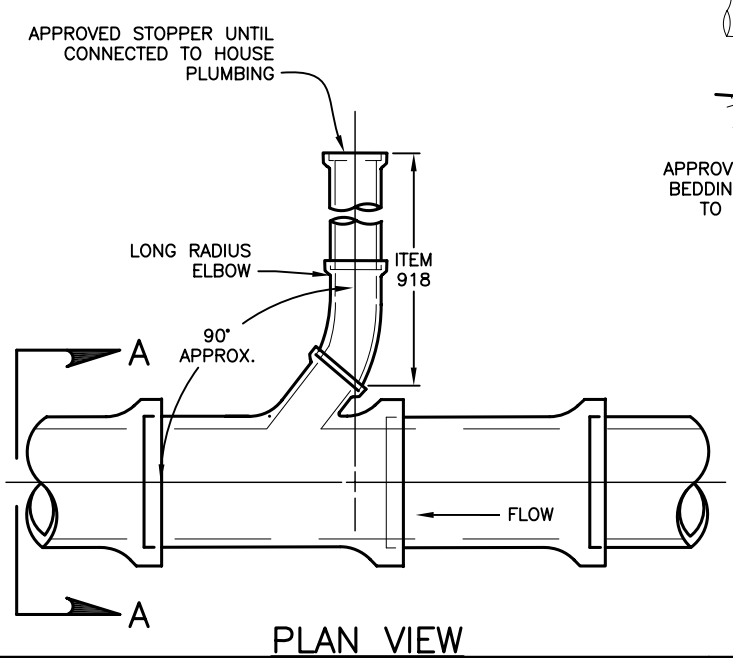


ISOMETRIC VIEW

SECTION B–B



SECTION A–A



PLAN VIEW

NOTES:

1. TRENCH DAMS ARE REQUIRED AS SPECIFIED UNDER 918.04 AND SHALL BE CONSTRUCTED TO 36" OVER THE PIPE.
2. SANITARY HOUSE CONNECTION SERVICES SHALL BE CONNECTED TO THE EXISTING SEWER WITH THE SAME MATERIAL FITTING OR WITH A COMPATIBLE ADAPTOR IN ACCORDANCE WITH 915 AND 918.02.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

APPROVED:

SSES MANAGER

TYPICAL SANITARY HOUSE SERVICE CONNECTION

STANDARD DRAWING
AA–S160

REVISED 3/11/16

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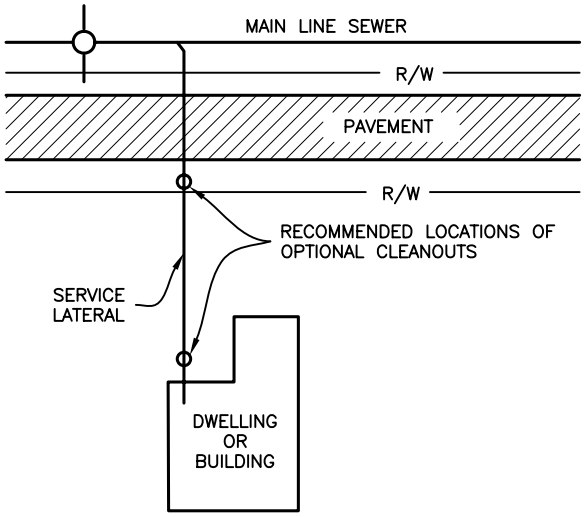
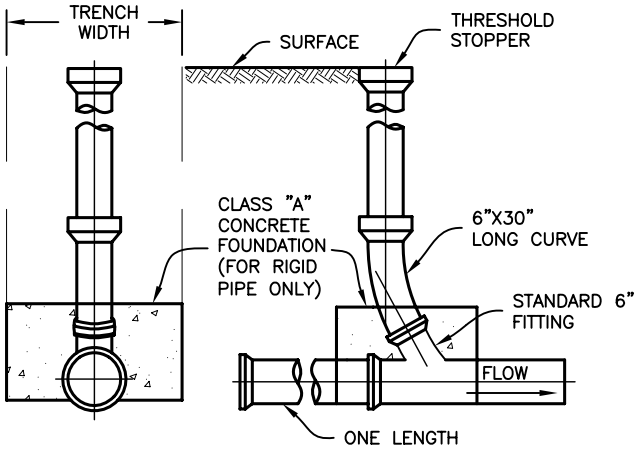
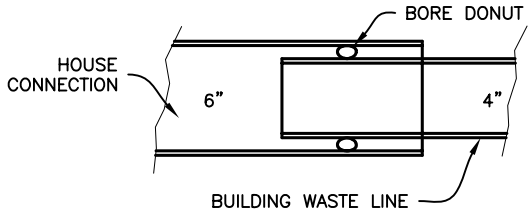


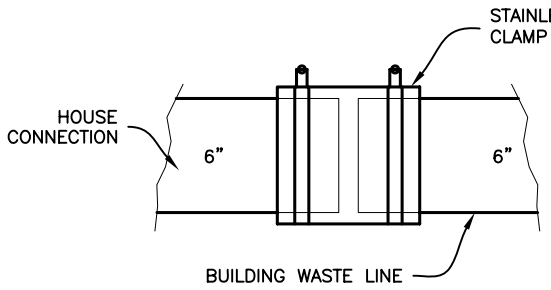


CLEANOUT (OPTIONAL)

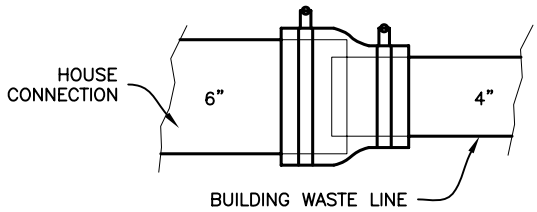
ALLOWABLE CONNECTIONS – SANITARY HOUSE CONNECTION TO BLDG. WASTE LINE



BORE DONUT



FLEXIBLE COUPLING



FLEXIBLE REDUCING COUPLING

NOTES:

1. COUPLINGS SHALL BE FERNCO COUPLINGS SERIES #5000 OR APPROVED EQUAL.
2. FOR PLASTIC TO PLASTIC CONNECTIONS HARD FITTINGS SHALL BE USED.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

APPROVED:

SSES MANAGER

TYPICAL SANITARY HOUSE SERVICE CONNECTION

STANDARD DRAWING
AA–S160

REVISED 3/11/16

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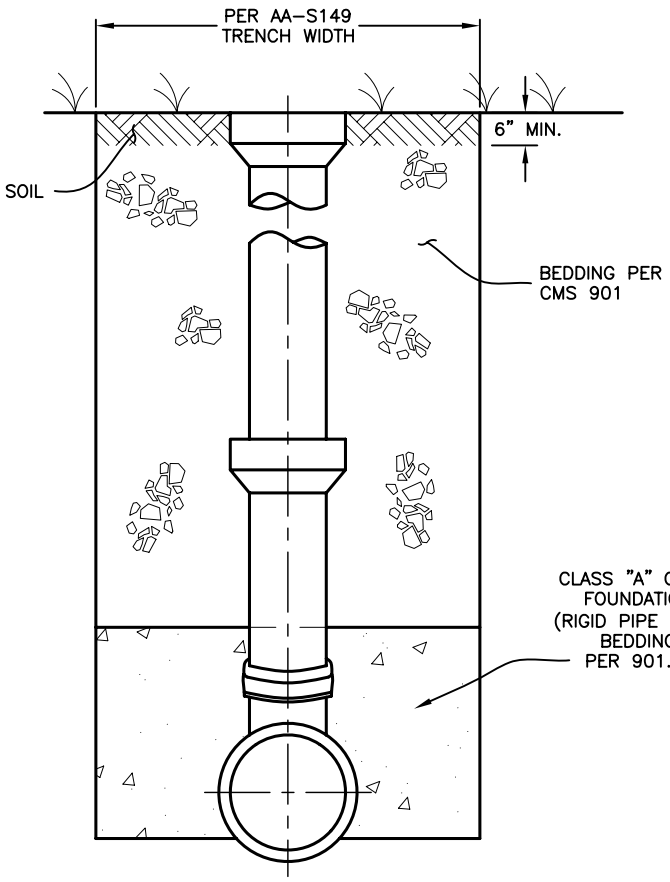
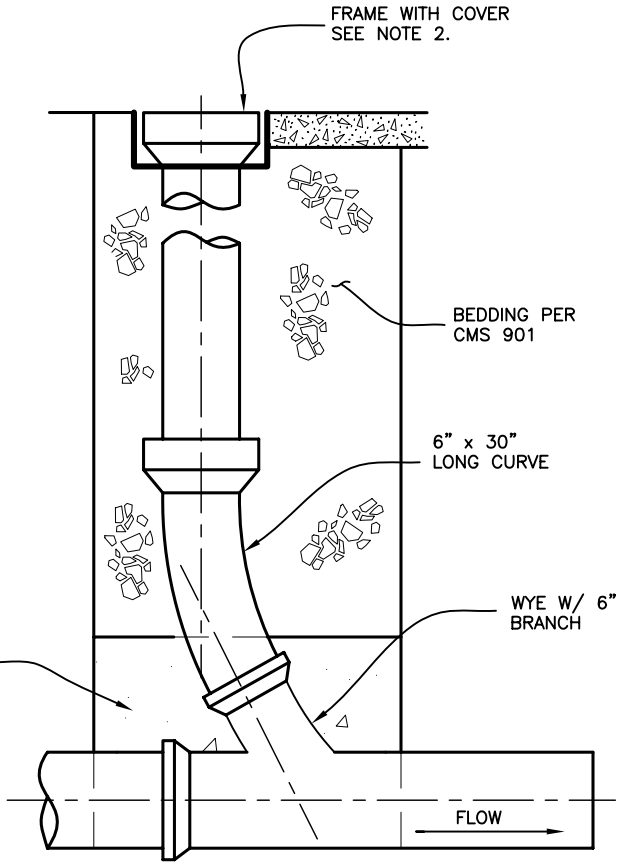


END VIEW



SIDE VIEW

NOTES:

1. PIPE MATERIALS SHALL BE THE SAME MATERIAL FITTING OR WITH A COMPATIBLE ADAPTER AS THE MAIN SEWER OR IN ACCORDANCE WITH 914.02.
2. FOR CLEANOUTS THAT TERMINATE IN PAVED AREAS, A FRAME AND COVER SHALL BE USED IN ADDITION TO MANUFACTURERS CAP/PLUG.

PRE–APPROVED CASTINGS:

EJ NO. – 1578
NEENAH NO. – 1976

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPICAL CLEANOUT

STANDARD DRAWING
AA–S161

REVISED 12/6/13

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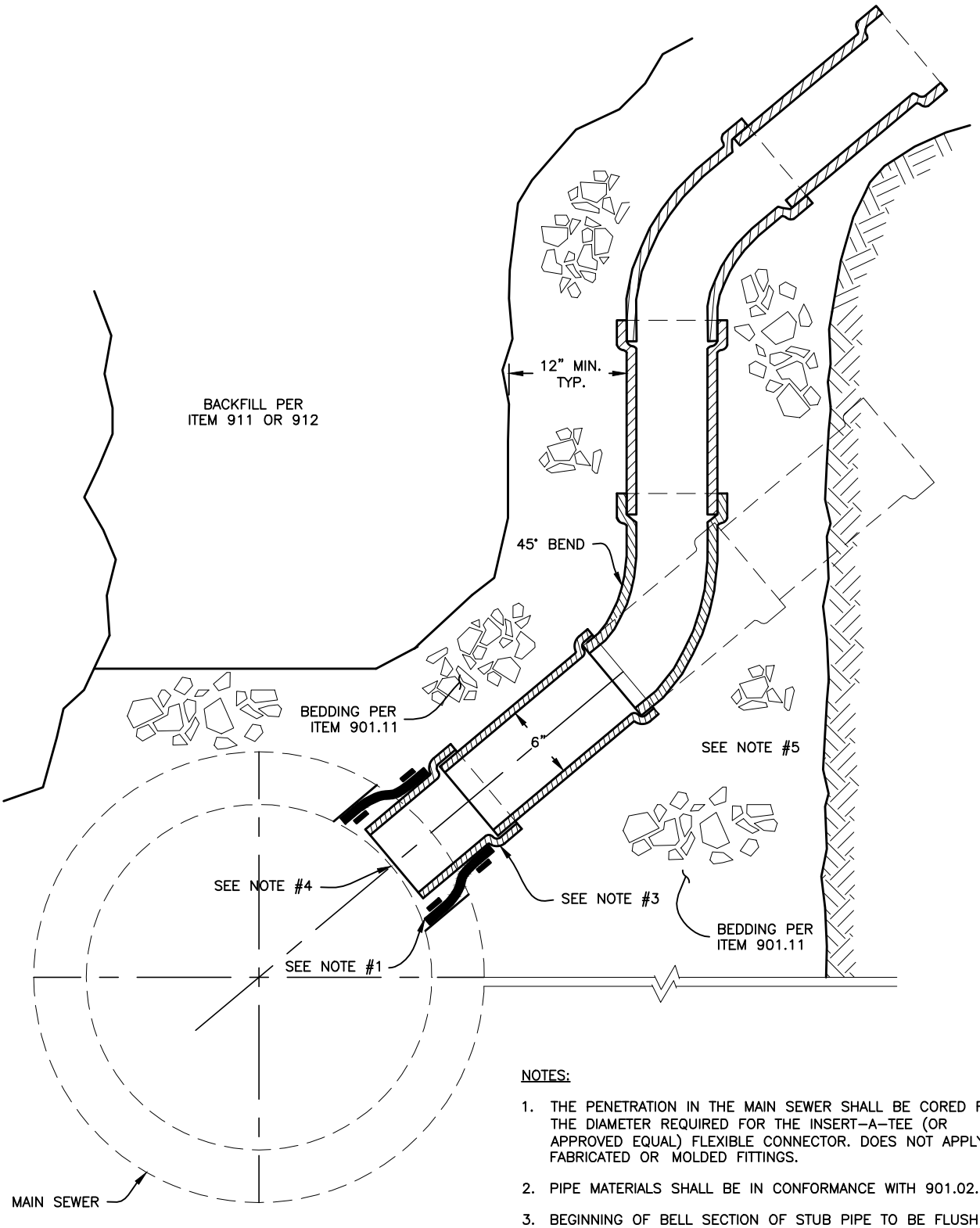

NOTES:

1. THE PENETRATION IN THE MAIN SEWER SHALL BE CORED FOR THE DIAMETER REQUIRED FOR THE INSERT–A–TEE (OR APPROVED EQUAL) FLEXIBLE CONNECTOR. DOES NOT APPLY TO FABRICATED OR MOLDED FITTINGS.
2. PIPE MATERIALS SHALL BE IN CONFORMANCE WITH 901.02.
3. BEGINNING OF BELL SECTION OF STUB PIPE TO BE FLUSH WITH END OF FLEXIBLE CONNECTOR.
4. STUB PIPE SHALL NOT EXTEND INTO MAIN SEWER.
5. VERTICAL RISER MAY LAY AGAINST UNDISTURBED SOIL.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

TYPICAL CORED RISER DETAIL (FLEXIBLE SEWER)

STANDARD DRAWING
AA–S162

REVISED 7/9/12

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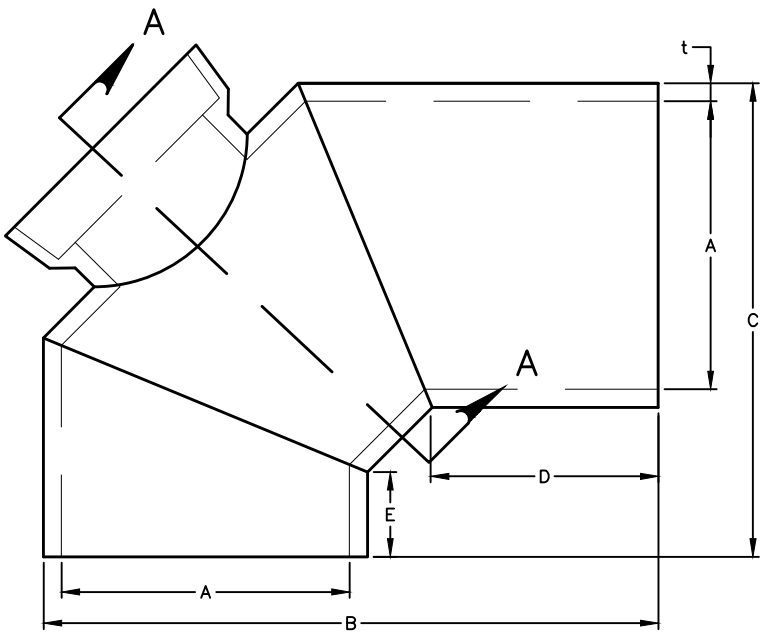
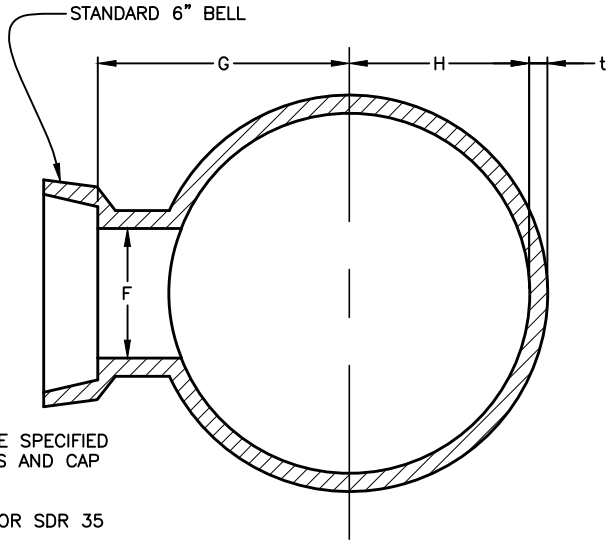


SIDE VIEW



SECTION A–A

GENERAL NOTES:

1. WHEN 8" OR 10" H–H TRAPS ARE SPECIFIED USE PREFABRICATED TEE SECTIONS AND CAP THE APPROPRIATE OPENING.
2. H.H. TRAPS MAY BE EITHER VCP OR SDR 35 PVC PIPE.
3. IN LIEU OF AN H.H. TRAP, A TIDEFLEX SERIES TF–1 CHECK VALVE, SERIES 35–1 CHECK VALVE OR CHECKMATE VALVE MAY BE INSTALLED. ALL INSTALLATIONS SHALL BE PER THE MANUFACTURERS RECOMMENDATION.
4. FOR SEWERS LARGER THAN 15" IN DIAMETER A TIDEFLEX SERIES TF–1 CHECK VALVE, SERIES 35–1 CHECK VALVE OR RODNEY HUNT SERIES FV–AC FLAP GATE MAY BE INSTALLED AT THE DISCRETION OF SSES.

STANDARD DIMENSIONS FOR 12" & 15" H.H. CATCH BASIN TRAPS

TYPE	A	B	C	D	E	F	G	H	t
12" TRAP	12" DIA.	2'–4"	1'–9"	13"	4"	6"	8 3/4"	6"	1"
15" TRAP	15" DIA.	2'–7 3/4"	2'–3/4"	13"	6"	6"	10 3/4"	7 1/2"	1 1/4"

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

H.H. INLET & MANHOLE TRAP 15" DIAMETER & SMALLER

STANDARD DRAWING
AA–S163

REVISED 8/8/14

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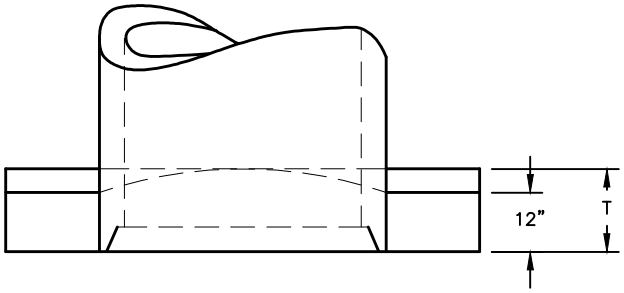
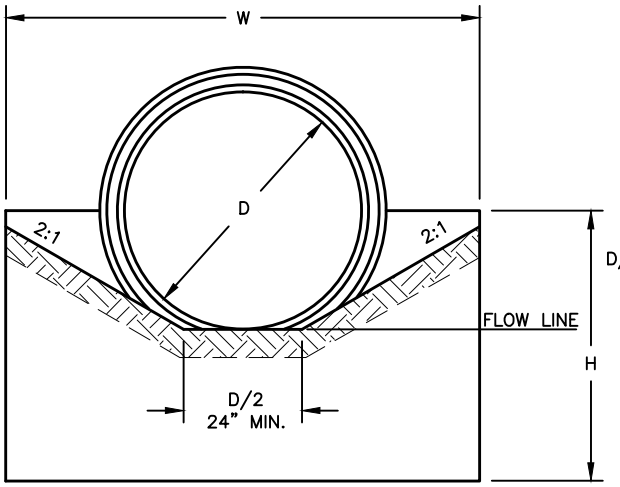
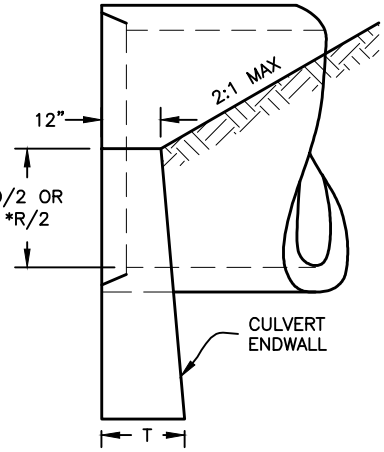


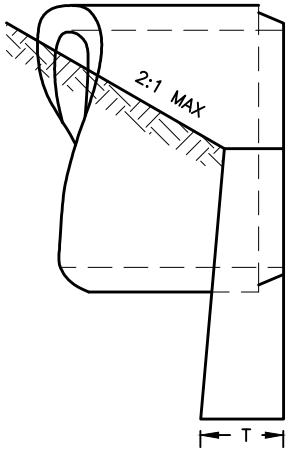
END TREATMENT AT ENDWALL



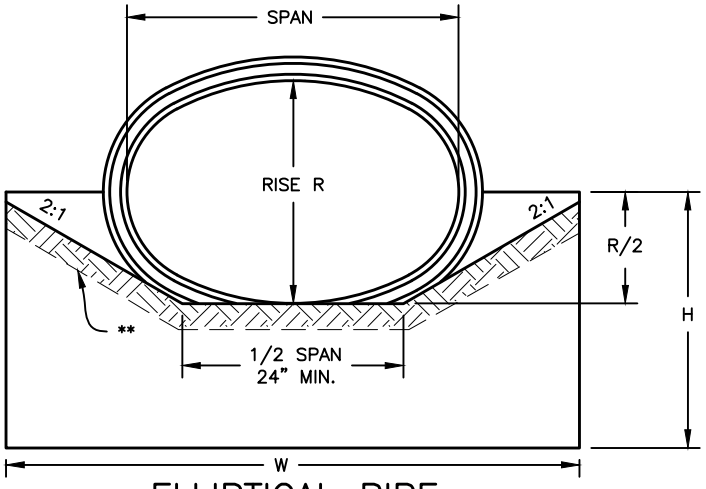
CIRCULAR PIPE



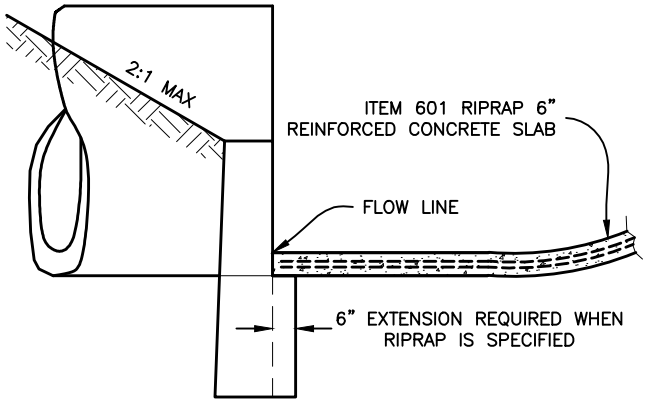
INLET END
GROOVE OR BELL
UPSTREAM



OUTLET END
TONGUE OR SPIGOT
DOWNSTREAM



ELLIPTICAL PIPE



INLET CHANNEL
PROTECTION DETAIL

NOTES:

1. CONCRETE SHALL BE CLASS "C".
2. IF PIPE IS TO BE EXTENDED IN THE FUTURE THE ENDWALL SHALL BE SET BACK 6".
3. DIMENSIONS AND QUANTITIES ARE SHOWN FOR CONCRETE SECTIONS ONLY. WHEN USED WITH OTHER PIPE MATERIALS IT WILL BE NECESSARY TO DETERMINE SUCH DIMENSIONS AND QUANTITIES.
4. * FOR ELLIPTICAL PIPE.
5. ** TOP SURFACE OF 6" INLET HEADWALL EXTENSION.
8. THE CONTRACTOR MAY PROPOSE TO USE PRECAST IN LIEU OF CAST IN PLACE BUT MUST SUBMIT DETAILED DRAWINGS OF THE PROPOSED STRUCTURE WITH AN OHIO REGISTERED PROFESSIONAL ENGINEER'S STAMP OF APPROVAL.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CAST-IN-PLACE
PIPE CULVERT ENDWALLS

STANDARD DRAWING
AA-S165

REVISED 7/9/12

PAGE 1 2

ENDWALL FOR CONCRETE PIPE										
CIRCULAR					ELLIPTICAL					
D	W	H	T	CONC. CU. YDS.	SPAN	RISE	W	H	T	CONC. CU. YDS.
8"~12"	2'–0"	3'–0"	12"	.20	23"	14"	3'–0"	3'–2"	12"	.29
15"	2'–6"	3'–2"	12"	.25	30"	19"	3'–7"	3'–4"	12"	.35
18"	3'–0"	3'–3"	12"	.31	34"	22"	3'–11"	3'–5"	12"	.38
21"	3'–6"	3'–4"	12"	.37	38"	24"	4'–6"	3'–6"	12"	.44
24"	4'–0"	3'–6"	12"	.43	42"	27"	4'–8"	3'–7"	12"	.45
27"	4'–6"	3'–8"	12"	.49	45"	29"	5'–2"	3'–8"	12"	.49
30"	5'–0"	3'–9"	12"	.56	49"	32"	5'–5"	3'–10"	12"	.52
33"	5'–6"	3'–10"	12"	.62	53"	34"	5'–11"	4'–0"	14"	.68
36"	6'–0"	4'–0"	12"	.69	60"	38"	6'–10"	4'–2"	14"	.82
39"	6'–6"	4'–2"	12"	.77	68"	43"	8'–0"	4'–4"	16"	1.01
42"	7'–0"	4'–3"	12"	.84	76"	48"	9'–2"	5'–0"	16"	1.34
48"	8'–0"	4'–6"	14"	1.09	83"	53"	10'–4"	5'–2"	18"	1.65
54"	9'–3"	4'–9"	14"	1.32	91"	58"	11'–6"	5'–5"	18"	1.97
60"	10'–6"	5'–6"	16"	1.93	98"	63"	12'–7"	5'–7"	20"	2.38
66"	11'–9"	5'–9"	18"	2.42	106"	68"	13'–9"	5'–10"	20"	2.69
72"	13'–0"	6'–0"	18"	2.77	113"	72"	14'–9"	6'–0"	22"	3.14
78"	14'–3"	6'–3"	20"	3.37	121"	77"	15'–11"	6'–3"	22"	3.49
84"	15'–6"	6'–6"	22"	4.05	128"	82"	17'–0"	6'–5"	24"	4.04
90"	16'–9"	6'–9"	22"	4.51	136"	87"	18'–2"	6'–8"	24"	4.84
96"	18'–0"	7'–0"	24"	5.31	143"	92"	19'–4"	6'–10"	26"	5.12
102"	19'–3"	7'–3"	26"	6.20	151"	97"	20'–6"	7'–1"	26"	5.42
108"	20'–6"	7'–6"	26"	6.78	166"	106"	22'–7"	7'–5"	28"	6.60
114"	21'–9"	7'–9"	28"	7.81	180"	116"	24'–10"	7'–10"	30"	7.99
120"	23'–0"	8'–0"	30"	8.93						
126"	24'–3"	8'–3"	30"	9.57						
132"	25'–6"	8'–6"	32"	10.84						
144"	28'–0"	9'–0"	34"	13.00						

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CAST–IN–PLACE PIPE CULVERT DETAILS

STANDARD DRAWING
AA–S165

REVISED 7/9/12

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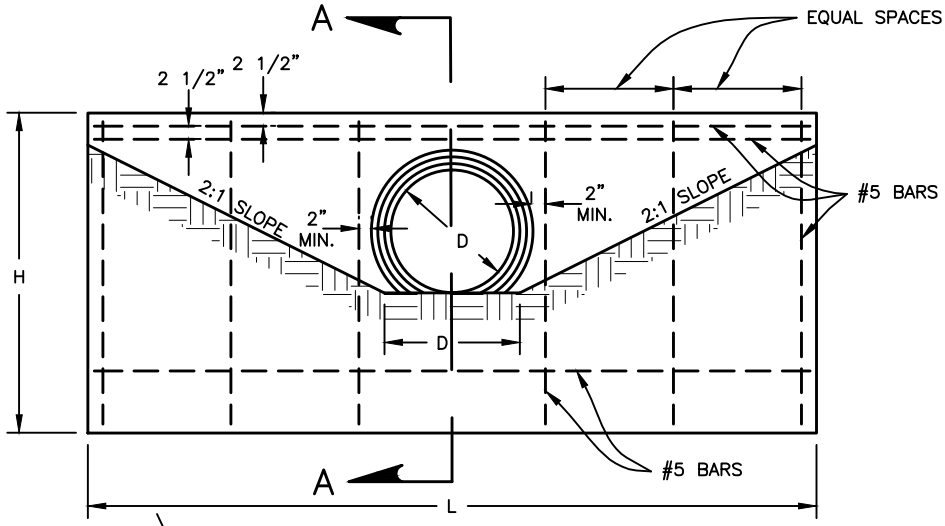
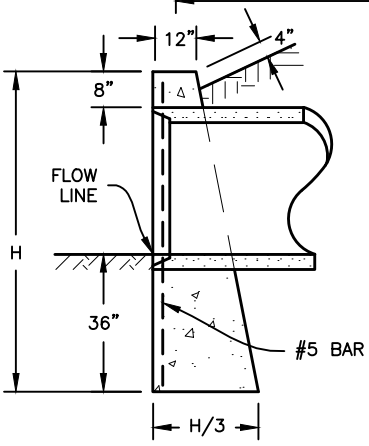
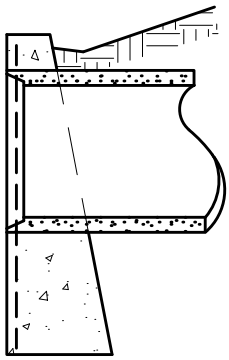
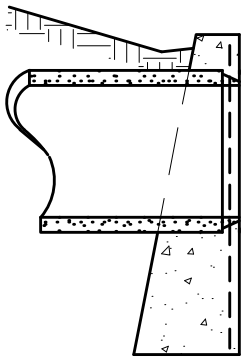




SECTION A–A



INLET END
GROOVE OR BELL
UPSTREAM



OUTLET END
TONGUE OR SPIGOT
DOWNSTREAM

END TREATMENT AT ENDWALL

NOTES:

1. HEADWALL WHERE REQUIRED WILL BE PROVIDED FOR NONSKEWED CULVERTS HAVING A DIAMETER OR RISE OF 36" OR LESS.
2. REINFORCING STEEL SHALL BE #5 BAR.
3. DIMENSIONS AND QUANTITIES ARE SHOWN FOR CIRCULAR SECTIONS ONLY. CALCULATE REINFORCEMENT FOR ELLIPTICAL CONCRETE OR CORRUGATED PIPE IN ACCORDANCE WITH EQUATIONS LISTED BELOW.
4. CONCRETE SHALL BE CLASS "C".
5. FOUNDATION: INCREASE WIDTH OF BASE WHERE SOIL BORINGS INDICATE A BEARING CAPACITY LESS THAN 2600 LBS. PER SQ. FT. IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE BASE.
6. WHEN SLOPES OTHER THAN 2:1 ARE USED ADJUST LENGHT "L" AND HEIGHT "H" AS REQUIRED.

DIMENSIONS			QUANTITIES*	
DIAMETER	H	L	CONCRETE CU. YD.	REINF. STEEL LBS.
8"~12"	4'–9"	5'–8"	1.3	32
15"	5'–2"	7'–0"	1.7	41
18"	5'–5"	8'–4"	2.2	57
21"	5'–8"	9'–8"	2.8	62
24"	5'–11"	11'–0"	3.3	69
30"	6'–5"	13'–8"	4.7	92
36"	7'–0"	16'–4"	6.5	105

LEGEND

D = DIAMETER OF PIPE
R = RISE OF PIPE
S = SPAN OF PIPE
t = THICKNESS OF BARREL
L = LENGTH OF HEADWALL
H = HEIGHT OF HEADWALL

* ONE WALL

EQUATIONS:

L CIRCULAR SECTIONS = 5D+4t
L ELIPTICAL OR PIPE ARCH = 4R+t+S
H CIRCULAR SECTIONS = D+t+44"
H ELLIPTICAL OR PIPE ARCH = R+t+44"

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CAST–IN–PLACE
PIPE HEADWALLS
8" TO 36" DIAMETER

STANDARD DRAWING
AA–S166

REVISED 7/9/12

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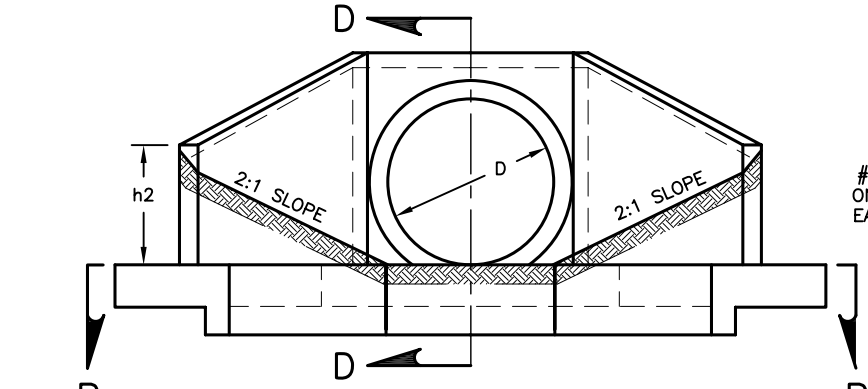
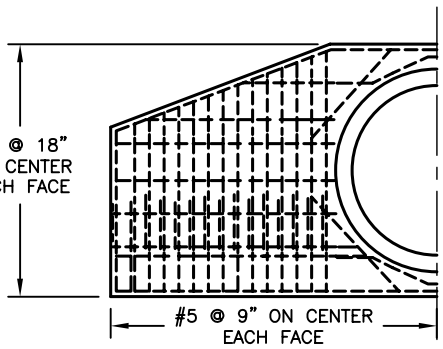
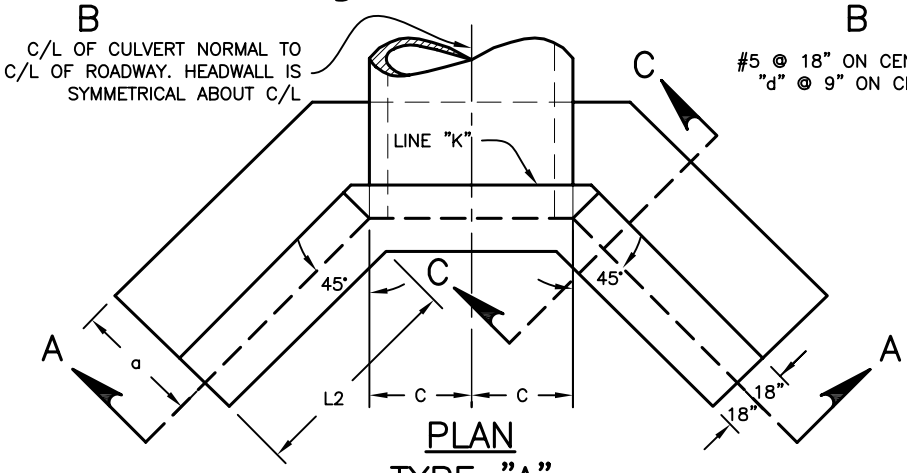
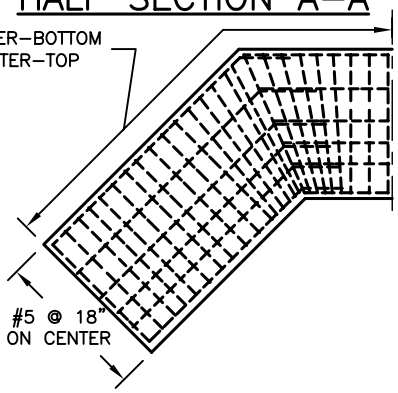




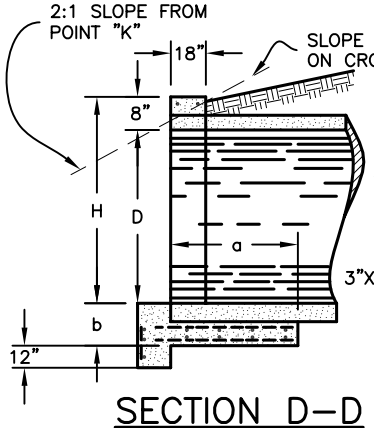
HALF SECTION A–A



PLAN
TYPE "A"



HALF SECTION B–B



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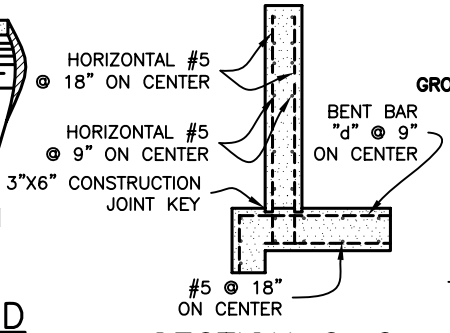

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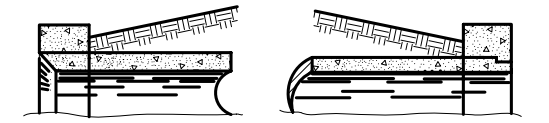
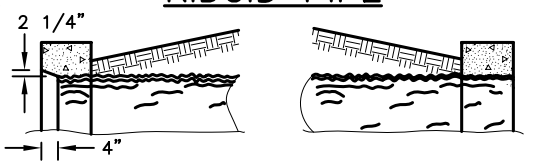


GROOVE OR BELL UPSTREAM

RIDGID PIPE



CORRUGATED PIPE
END TREATMENT OF HEADWALL

NOTES:
CHART CONTINUED ON SHEET 2 OF 2

* ONE WALL

						⌀ = 0°					⌀ = 15°						
PIPE DIA. "D"	H	a	b	c	BAR "d"	L2	h2	C.Y. * CONC. C.M.P.	C.Y. * CONC. R.C.P.	STEEL LBS.	L1	L2	h1	h2	C.Y. * CONC. C.M.P.	C.Y. * CONC. R.C.P.	STEEL LBS.
42"	4'–11"	3'–3"	1'–6"	2'–6"	#5	3'–7"	3'–1"	7.0	6.7	598	8'–9"	4'–6"	3'–8"	3'–2"	7.3	7.1	619
48"	5'–5"	3'–6"	1'–6"	2'–9"	#5	4'–4"	3'–4"	8.5	8.2	793	10'–0"	5'–4"	4'–1"	3'–5"	9.0	8.7	776
54"	5'–11"	3'–9"	1'–6"	3'–0"	#5	5'–2"	3'–8"	10.3	10.0	1069	11'–4"	6'–3"	4'–6"	3'–8"	10.9	10.5	1026
60"	6'–6"	4'–0"	1'–6"	3'–3"	#5	5'–11"	3'–11"	12.3	11.8	1149	12'–7"	7'–2"	4'–10"	4'–0"	12.9	12.4	1174
72"	7'–7"	4'–6"	1'–7"	3'–9"	#7	7'–5"	4'–5"	17.0	16.2	1783	15'–1"	8'–11"	5'–7"	4'–6"	17.8	17.1	1811
84"	8'–8"	5'–0"	1'–10"	4'–3"	#8	9'–0"	5'–0"	23.7	22.8	2595	17'–7"	10'–9"	6'–4"	5'–1"	24.8	23.9	2596

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CAST–IN–PLACE
PIPE CULVERT
HEADWALLS
42" TO 84"

STANDARD DRAWING
AA–S167

REVISED 12/6/13

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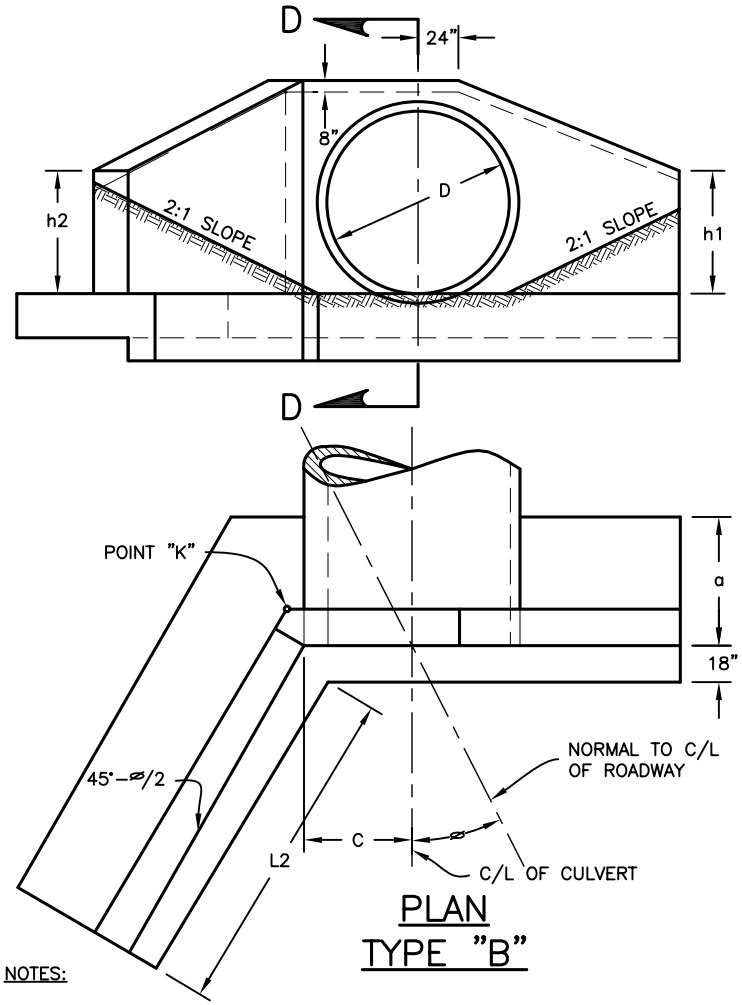
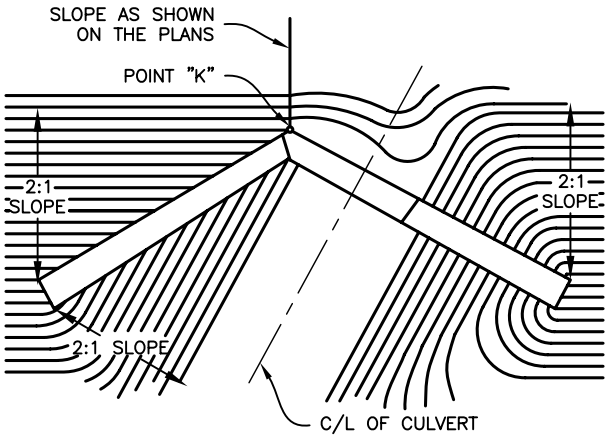


PLAN
TYPE "B"



LOCATION AND GRADING PLAN
FOR SKEWED PIPE CULVERT – TYPE "B"

NOTES:

1. HEADWALL WHERE REQUIRED WILL BE PROVIDED FOR SKEWED AND NONSKEWED CULVERTS HAVING A DIAMETER OR RISE OF 43" TO 84". TYPE "A" IS USED WHEN SKEW ANGLE(⌀) IS 10° OR LESS AND TYPE "B" WHEN ANGLE IS 11° OR OVER.
2. REINFORCING STEEL SHALL BE #5 BAR.
3. DIMENSIONS AND QUANTITIES ARE SHOWN FOR CIRCULAR SECTIONS ONLY. CALCULATE REINFORCEMENT FOR ELLIPTICAL CONCRETE OR CORRUGATED PIPE ARCHES IN ACCORDANCE WITH NEAREST SIZE CIRCULAR PIPE. ESTABLISHED DIMENSIONS FOR VERTCAL DIAMETER SHALL APPLY FOR RISE AND DIMENSIONS FOR HORIZONTAL DIAMETER SHALL APPLY TO SPAN.
4. CONCRETE SHALL BE CLASS "C".
5. FOUNDATION: INCREASE WIDTH OF BASE WHERE SOIL BORINGS INDICATE A BEARING CAPACITY LESS THAN 2600 LBS. PER SQ. FT. IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE FOOTING.
6. WHEN SLOPES OTHER THAN 2:1 ARE USED ADJUST LENGTH "L_1" & "L_2" AND HEIGHT "h_1" & "h_2" AS REQUIRED.
7. HEADWALL LOCATION TO BE DETERMINED BY THE INTERSECTION OF THE EMBANKMENT SLOPE AT THE BACK OF THE HEADWALL AT POINT "K". THE SLOPES ADJACENT TO THE HEADWALL SHALL BE 2:1.
8. THE CONTRACTOR MAY PROPOSE TO USE PRECAST IN LIEU OF CAST IN PLACE BUT MUST SUBMIT DETAILED DRAWINGS OF THE PROPOSED STRUCTURE WITH AN OHIO REGISTERED PROFESSIONAL ENGINEER'S STAMP OF APPROVAL.

* ONE WALL

						⌀ = 30°							⌀ = 45°						
PIPE DIA. "D"	H	a	b	c	BAR "d"	L_1	L_2	h_1	h_2	C.Y.* CONC. C.M.P.	C.Y.* CONC. R.C.P.	STEEL LBS.	L_1	L_2	h_1	h_2	C.Y.* CONC. C.M.P.	C.Y.* CONC. R.C.P.	STEEL LBS.
42"	4'-11"	3'-3"	1'-6"	2'-6"	#5	7'-10"	5'-9"	3'-2"	3'-3"	7.5	7.3	633	7'-10"	7'-9"	3'-2"	3'-3"	8.7	8.5	718
48"	5'-5"	3'-6"	1'-6"	2'-9"	#5	8'-9"	6'-10"	3'-5"	3'-6"	9.1	8.8	801	8'-9"	9'-2"	3'-5"	3'-7"	10.6	10.3	925
54"	5'-11"	3'-9"	1'-6"	3'-0"	#5	9'-8"	7'-11"	3'-8"	3'-9"	10.8	10.5	1,024	9'-8"	10'-7"	3'-8"	3'-10"	12.6	12.2	1,188
60"	6'-6"	4'-0"	1'-6"	3'-3"	#5	10'-7"	9'-0"	3'-10"	4'-1"	12.7	12.3	1,157	10'-7"	12'-0"	3'-10"	4'-1"	14.8	14.3	1,354
72"	7'-7"	4'-6"	1'-7"	3'-9"	#7	12'-5"	11'-2"	4'-3"	4'-7"	17.3	16.6	1,788	12'-5"	14'-10"	4'-3"	4'-8"	20.2	19.6	2,076
84"	8'-8"	5'-10"	1'-10"	4'-3"	#8	14'-7"	13'-4"	4'-10"	5'-2"	24.1	23.3	2,511	14'-3"	17'-8"	4'-8"	5'-2"	27.9	27.0	2,990

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

CAST-IN-PLACE
PIPE CULVERT
HEADWALLS
42" TO 84"

STANDARD DRAWING
AA-S167

REVISED 12/6/13

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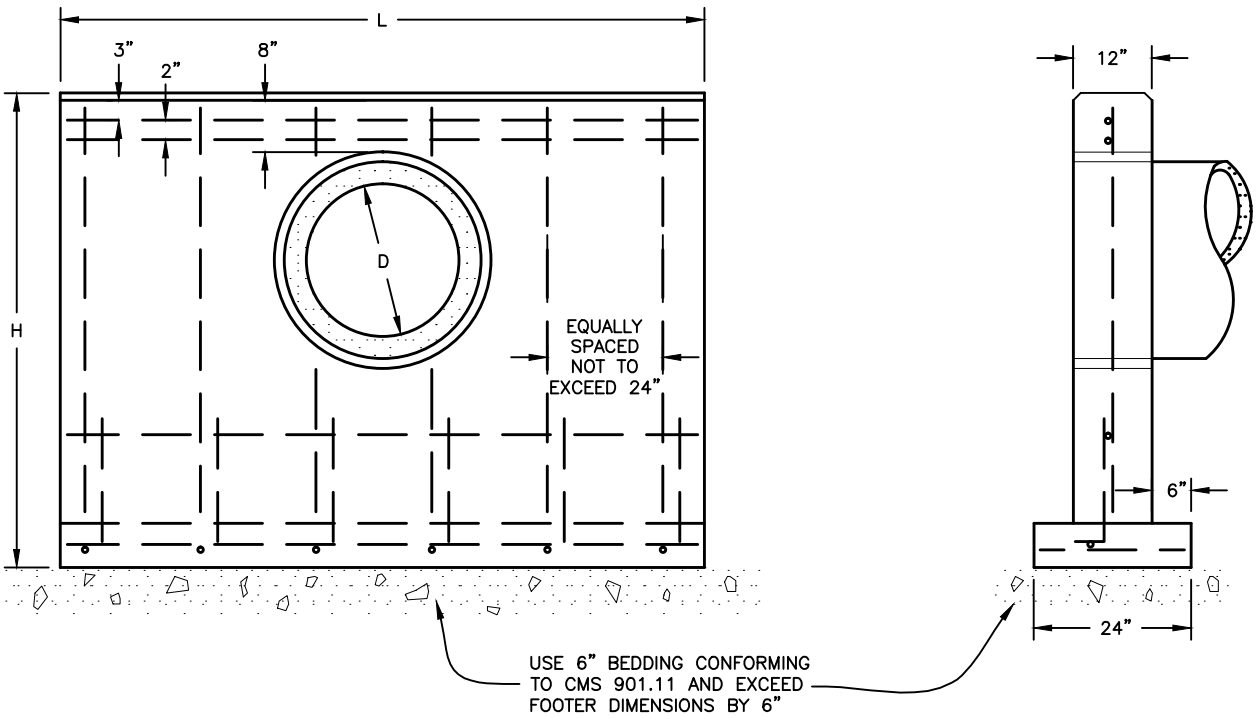

NOTES:

1. HEADWALL WHERE REQUIRED WILL BE PROVIDED FOR NONSKEWED CULVERTS HAVING A DIAMETER OR RISE OF 36" OR LESS.
2. REINFORCING STEEL SHALL BE #5 BAR.
3. DIMENSIONS AND QUANTITIES ARE SHOWN FOR CIRCULAR SECTIONS ONLY. CALCULATE REINFORCEMENT FOR ELLIPTICAL CONCRETE OR CORRUGATED PIPE IN ACCORDANCE WITH EQUATIONS LISTED BELOW.
4. CONCRETE SHALL BE CLASS "C".
5. THE SOIL MUST HAVE A BEARING CAPACITY OF 2600 PSF PRIOR TO PLACING HEADWALL.

DIMENSIONS		
DIAMETER	H	L
8"~15"	6'–0"	8'–4"
18"	6'–0"	8'–4"
21"	6'–0"	11'–0"
24"	6'–0"	11'–0"
30"	7'–0"	13'–8"
36"	7'–0"	16'–4"

LEGEND

D = DIAMETER OF PIPE
R = RISE OF PIPE
S = SPAN OF PIPE
t = THICKNESS OF BARREL
L = LENGTH OF HEADWALL
H = HEIGHT OF HEADWALL

EQUATIONS:

L CIRCULAR SECTIONS = 5D+4t
L ELIPTICAL OR PIPE ARCH = 4R+t+S
H CIRCULAR SECTIONS = D+t+44"
H ELLIPTICAL OR PIPE ARCH = R+t+44"

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

PRECAST PIPE CULVERT HEADWALLS 8" TO 36" DIAMETER

STANDARD DRAWING
AA–S168

REVISED 7/9/12

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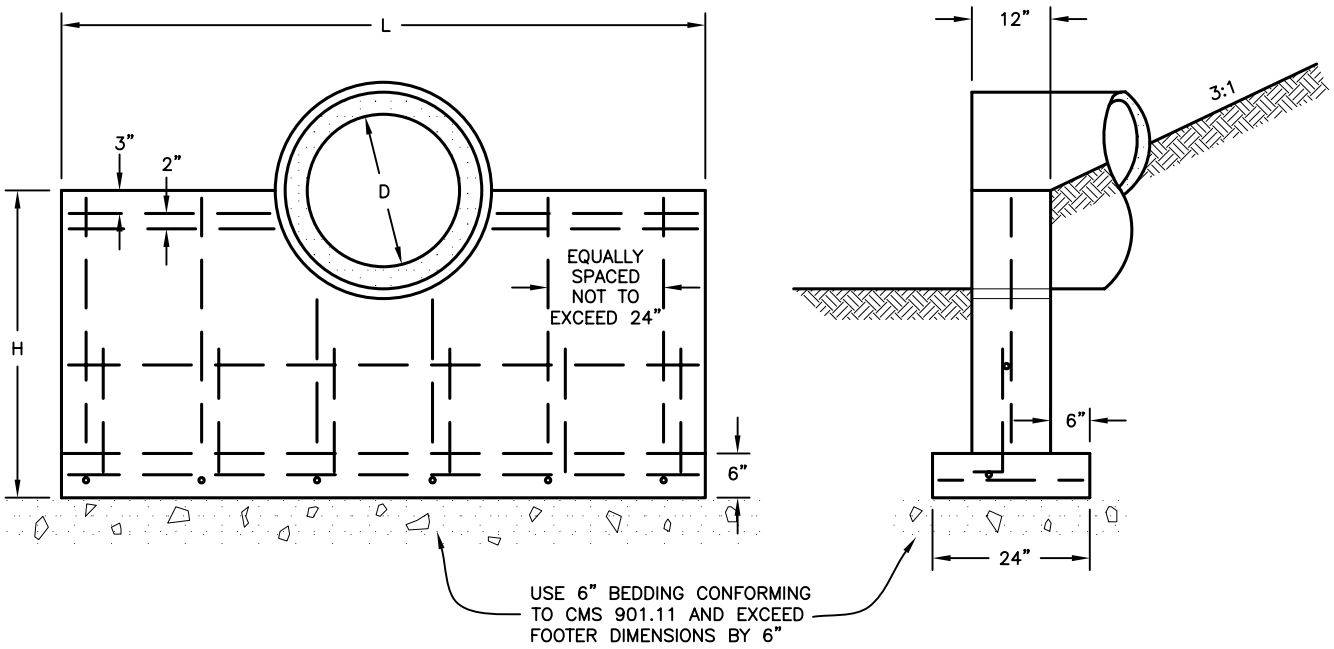

NOTES:

1. HEADWALL WHERE REQUIRED WILL BE PROVIDED FOR NONSKEWED CULVERTS HAVING A DIAMETER OR RISE OF 96" OR LESS.
2. REINFORCING STEEL SHALL BE #5 BAR.
3. DIMENSIONS AND QUANTITIES ARE SHOWN FOR CIRCULAR SECTIONS ONLY. CALCULATE REINFORCEMENT FOR ELLIPTICAL CONCRETE OR CORRUGATED PIPE IN ACCORDANCE WITH EQUATIONS LISTED BELOW.
4. CONCRETE SHALL BE CLASS "C".
5. THE SOIL MUST HAVE A BEARING CAPACITY OF 2600 PSF PRIOR TO PLACING THE HEADWALL.
6. PIPE OPENING SHALL BE THE EXACT DIMENSION OF THE OUTSIDE DIAMETER OF THE SPECIFIED PIPE.

DIMENSIONS		
DIAMETER	H	L
8"	3'-0"	2'-0"
10"	3'-0"	2'-0"
12"	3'-0"	3'-6"
15"	3'-0"	3'-6"
18"	3'-6"	5'-0"
21"	3'-6"	6'-0"
24"	3'-6"	7'-0"
27"	3'-6"	7'-0"
30"	3'-6"	7'-0"
33"	3'-6"	7'-0"
36"	3'-6"	7'-0"
39"	4'-0"	7'-0"
42"	4'-6"	7'-0"
48"	4'-6"	8'-0"
54"	5'-0"	9'-6"
60"	5'-6"	10'-6"

LEGEND

D = DIAMETER OF PIPE
R = RISE OF PIPE
S = SPAN OF PIPE
t = THICKNESS OF BARREL
L = LENGTH OF HEADWALL
H = HEIGHT OF HEADWALL

EQUATIONS:

L CIRCULAR SECTIONS = 5D+4t
L ELIPTICAL OR PIPE ARCH = 4R+t+S
H CIRCULAR SECTIONS = D+t+44"
H ELLIPTICAL OR PIPE ARCH = R+t+44"

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

PRECAST PIPE ENDWALLS 8" TO 60" DIAMETER

STANDARD DRAWING
AA-S169

REVISED 12/6/13

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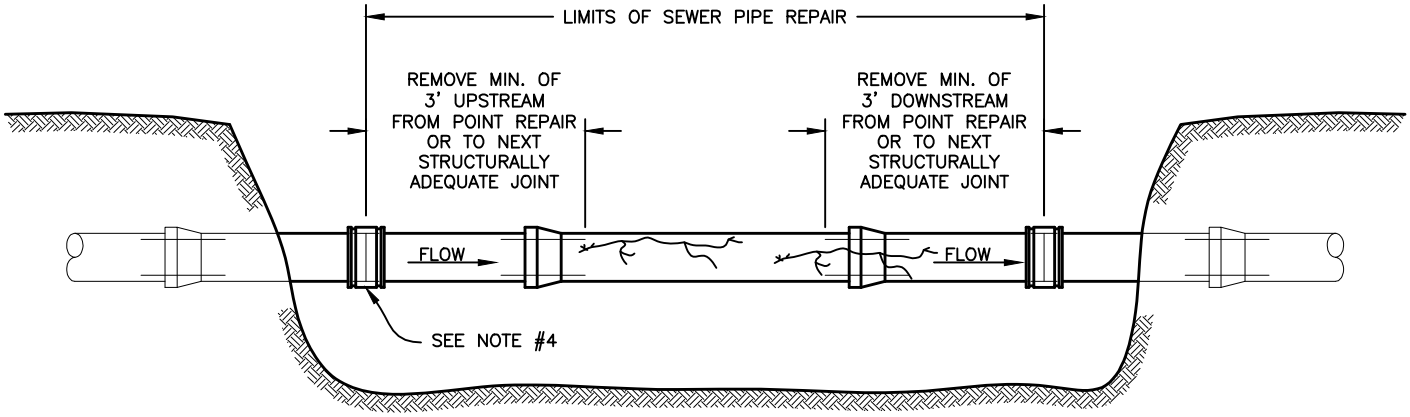
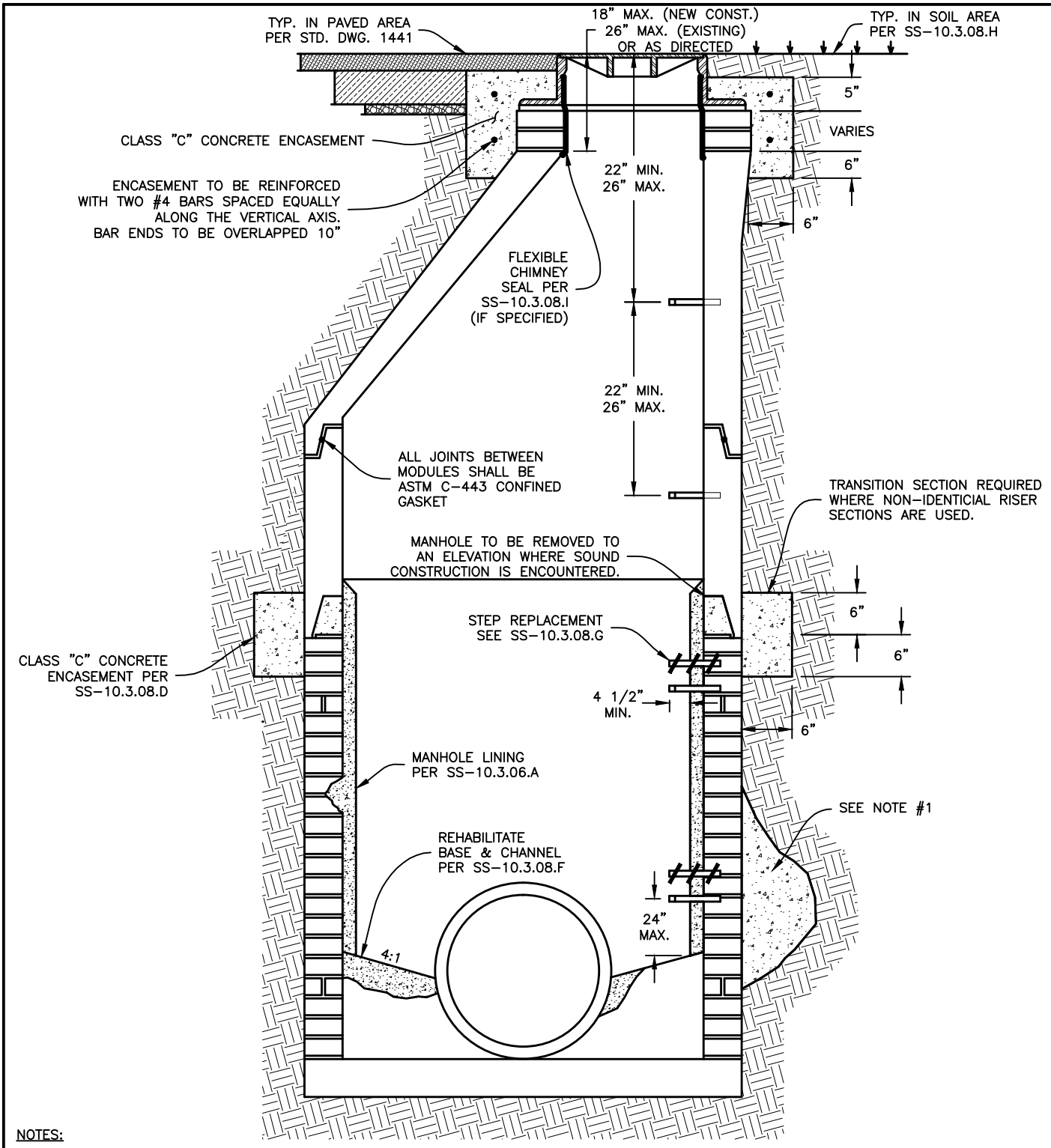


REPAIR DETAIL
NOT TO SCALE

NOTES:

1. BEDDING AND BACKFILL IN ACCORDANCE WITH CMSC ITEM 901 (SEE AA–S149 AND AA–S151). OPEN CUT REPAIRS WITHIN RIGHT OF WAY OR PAVEMENT SHALL USE COMPACTED GRANULAR BACKFILL, CMS ITEM 912.
2. CONTRACTOR SHALL ARRANGE FOR ACCESS TO POINT REPAIR LOCATION AND WORK WITHIN EXISTING EASEMENT.
3. CONTRACTOR SHALL VERIFY LOCATION AND LENGTH OF POINT REPAIR USING CCTV TAPES AND LOGS AND FIELD INVESTIGATIONS. THE UNIT PRICE OF POINT REPAIR SHALL INCLUDE ALL REMOVALS, ACTUAL REQUIRED LENGTH AT POINT REPAIR, AND ALL RESTORATION WORK. POINT REPAIR STATIONS SHOWN ON THE PLANS ARE APPROXIMATE.
4. PLASTIC TO PLASTIC REPAIRS SHALL REQUIRE A HARD FITTING. FOR ALL OTHER PIPE MATERIALS THE FITTINGS SHALL BE FERNCO COUPLINGS SERIES #5000 OR APPROVED EQUAL.
5. CONCRETE ENCASEMENT SHALL NOT BE USED ON FLEXIBLE PIPE POINT REPAIRS UNLESS THE ENTIRE SEWER SEGMENT WAS PREVIOUSLY CONCRETE ENCASED.

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	OPEN CUT POINT REPAIR DETAIL	STANDARD DRAWING AA–S170
John G Jenson SSES MANAGER		REVISED 7/9/12
		PAGE 1 / 1



NOTES:

1. MANHOLE WALLS SHALL BE SOUNDED WITH A HAMMER, AND ALL VOIDS SHALL BE FILLED WITH GROUT AS PER SS-7.
2. MANHOLE WALLS TO BE CLEANED, PATCHED, AND LINED PER SS-10.
3. THE CONTRACTOR SHALL PLACE A DEVICE IN THE MANHOLE TO CATCH ANY DEBRIS WHICH MAY FALL INTO THE MANHOLE DURING PERFORMANCE OF WORK. ALL MATERIAL RESULTING FROM THE CLEANING AND/OR REPAIR OF THE REPAIR OF THE MANHOLE SHALL BE REMOVED AND PROPERLY DISPOSED.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

MANHOLE RECONSTRUCTION AND REHABILITATION

STANDARD DRAWING
AA-S171

REVISED 7/9/12

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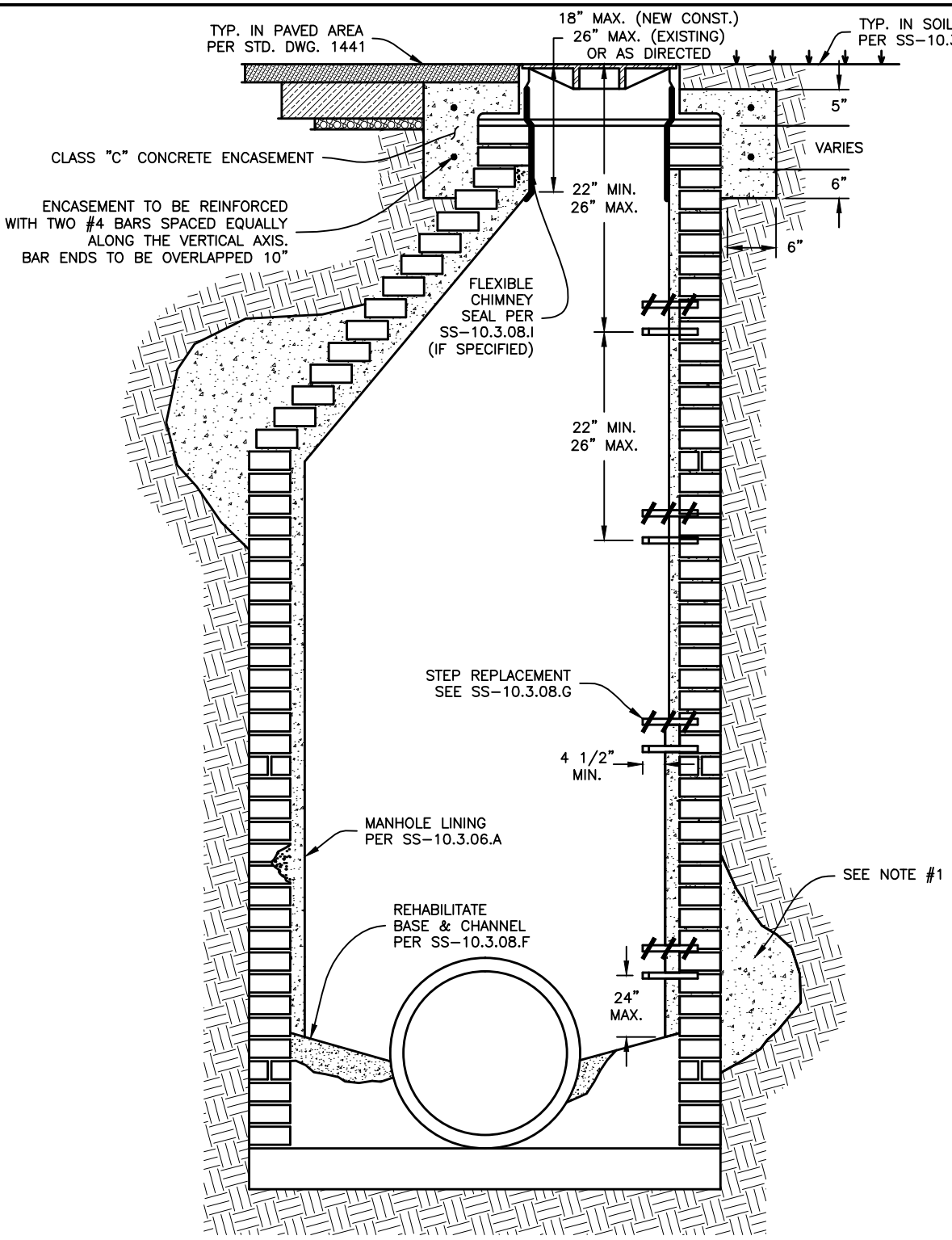

NOTES:

1. MANHOLE WALLS SHALL BE SOUNDED WITH A HAMMER, AND ALL VOIDS SHALL BE FILLED WITH GROUT AS PER SS-7.
2. MANHOLE WALLS TO BE CLEANED, PATCHED, AND LINED PER SS-10.
3. THE CONTRACTOR SHALL PLACE A DEVICE IN THE MANHOLE TO CATCH ANY DEBRIS WHICH MAY FALL INTO THE MANHOLE DURING PERFORMANCE OF WORK. ALL MATERIAL RESULTING FROM THE CLEANING AND/OR REPAIR OF THE REPAIR OF THE MANHOLE SHALL BE REMOVED AND PROPERLY DISPOSED.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

BRICK MANHOLE REHABILITATION

STANDARD DRAWING
AA-S172

REVISED 7/9/12

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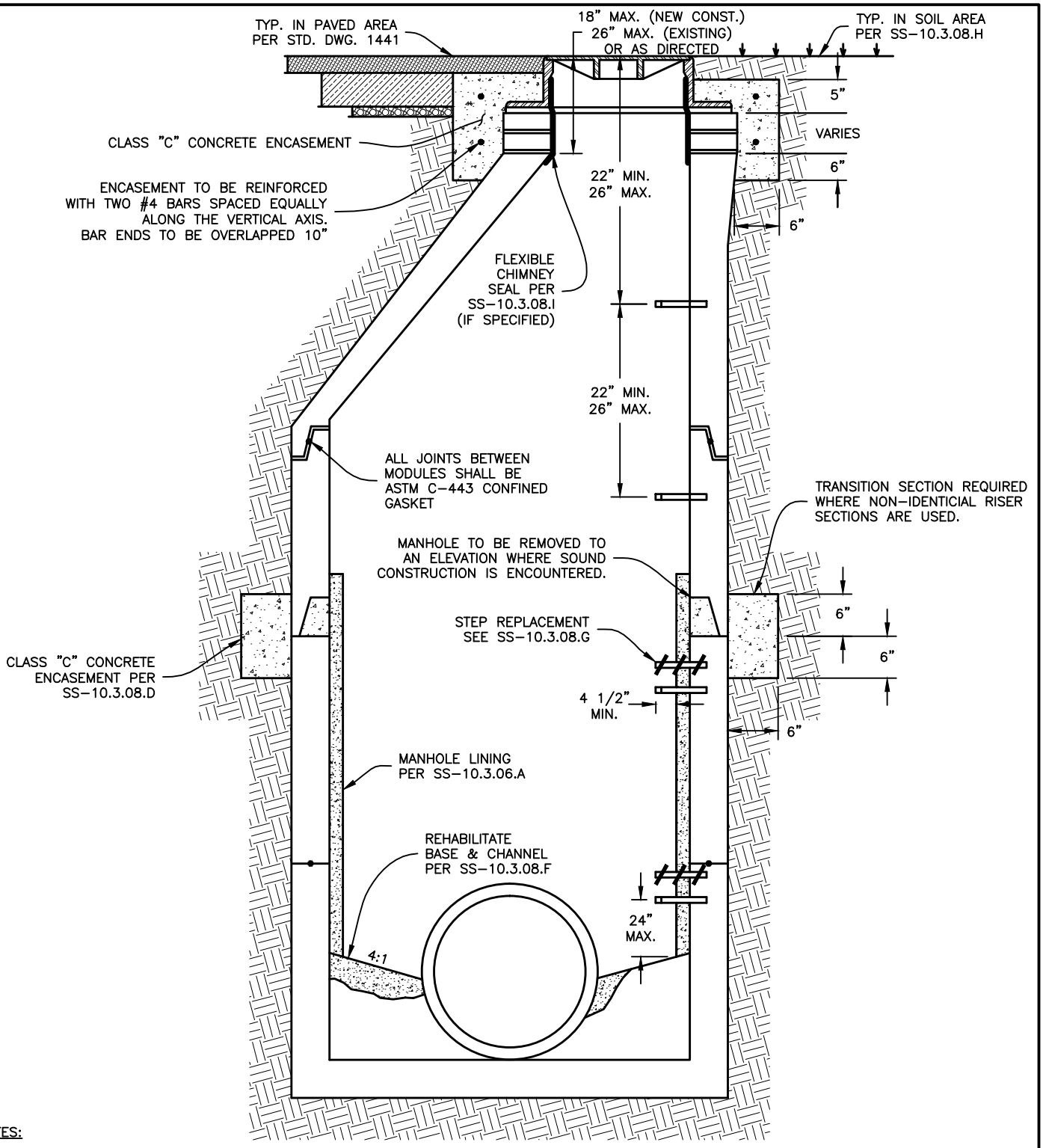

NOTES:

1. MANHOLE WALLS SHALL BE SOUNDED WITH A HAMMER, AND ALL VOIDS SHALL BE FILLED WITH GROUT AS PER SS-7.
2. MANHOLE WALLS TO BE CLEANED, PATCHED, AND LINED PER SS-10.
3. THE CONTRACTOR SHALL PLACE A DEVICE IN THE MANHOLE TO CATCH ANY DEBRIS WHICH MAY FALL INTO THE MANHOLE DURING PERFORMANCE OF WORK. ALL MATERIAL RESULTING FROM THE CLEANING AND/OR REPAIR OF THE REPAIR OF THE MANHOLE SHALL BE REMOVED AND PROPERLY DISPOSED.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

SSES MANAGER

PRE-CAST MANHOLE REHABILITATION

STANDARD DRAWING
AA-S173

REVISED 7/9/12

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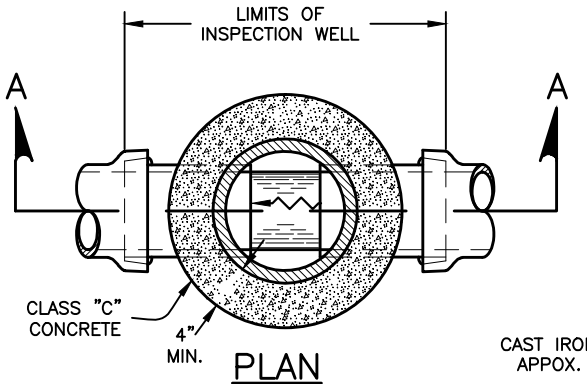
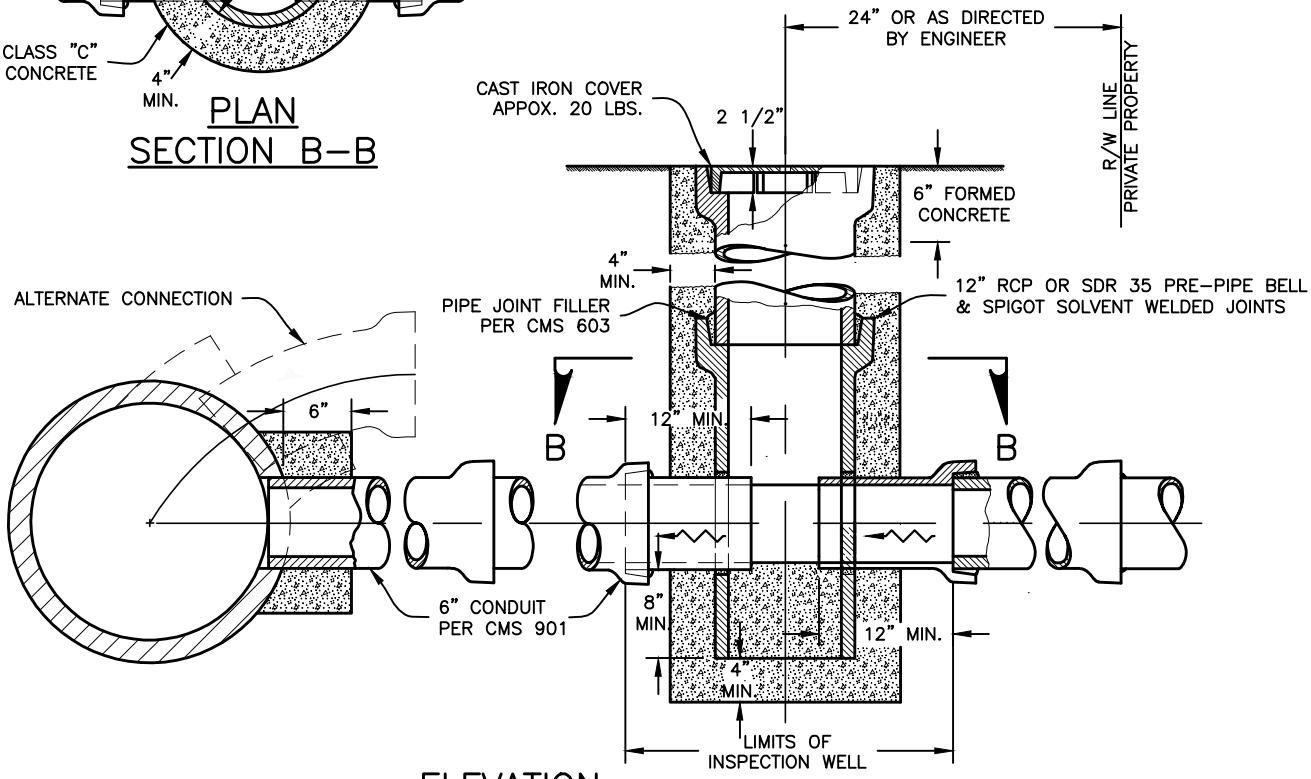


PLAN
SECTION B–B



ELEVATION
SECTION A–A

NOTES:

1. GENERAL: THE CONTRACTOR SHALL ADVISE THE ENGINEER OF ALL PRIVATE DRAINS ENCOUNTERED IF CONNECTED TO A BUILDING, SEPTIC TANK, CESSPOOL, FILTER BED, TREATMENT PLANT OR IF DISCHARGING POLLUTED WATER OF ANY KIND.

2. SUCH DRAINS WILL EITHER BE CONNECTED TO THE DRAINAGE SYSTEM (REQUIRES OFFICIAL PERMIT) OR PLUGGED AS DIRECTED BY THE ENGINEER.

3. IF CONNECTED TO THE STORM SEWER SYSTEM, THE INSPECTION WELL SHALL BE CONSTRUCTED AS DETAILED HERE ON EACH SUCH DRAIN UNLESS THE DRAIN IS TO BE CONNECTED TO A CATCH BASIN, INLET OR MANHOLE OR IS TO DISCHARGE INTO AN OPEN CHANNEL OR DITCH.

4. THE COST OF TAPPING THE STORM SEWER, INCLUDING THE CONCRETE COLLAR OR TEE, SHALL BE INCLUDED IN THE UNIT PRICE BID PER FOOT OF ITEM 901 CONDUIT.

5. WHEN PVC PIPE IS USED FOR THE RISER SECTION OF THE INSPECTION WELL, FORM A RECESSED BELL AREA IN THE CONCRETE AT THE TOP OF THE WELL TO RECEIVE THE CAST IRON COVER.

6. COMPONENT PARTS OF THE INSPECTION WELL MAY BE JOB OR FACTORY CUT AND JOB ASSEMBLED.

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	INSPECTION WELL	STANDARD DRAWING AA–S174
John G Jenson SSES MANAGER		REVISED 7/9/12
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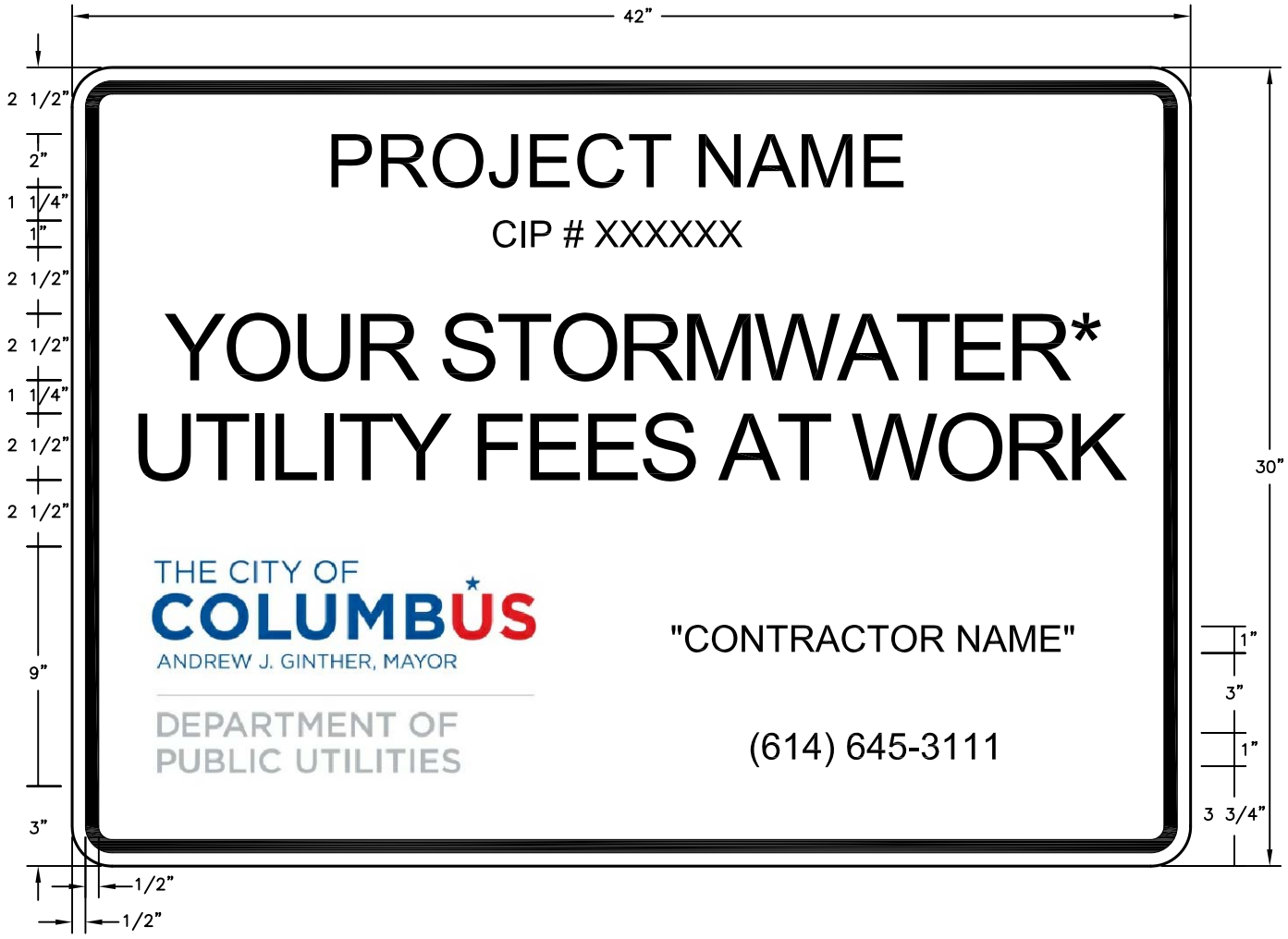

NOTES:

1. ALL TEXT AND BORDER – BLACK
2. ALL BACKGROUND AND MARGIN – WHITE
3. METAL SIGNS TO BE MOUNTED ON 2LB. POSTS. (SEE STD. DWG. 1440 FOR POST LAYOUT).
4. WOOD SIGNS ARE TO BE MOUNTED ON TWO 4"x4" POSTS. (SEE STD. DWG. 1440 FOR POST LAYOUT).
5. WOOD SIGNS MAY HAVE SQUARE CORNERS.
6. CITY OF COLUMBUS LOGO SHALL BE 16" IN LENGTH.
7. SIGNS SHALL BE INSTALLED PER SS–27.

* USE STORMWATER, SEWER, WATER, ETC. AS CALLED FOR.

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE	PROJECT IDENTIFICATION SIGN	STANDARD DRAWING AA–S175
APPROVED: SSES MANAGER		REVISED 2/26/16
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