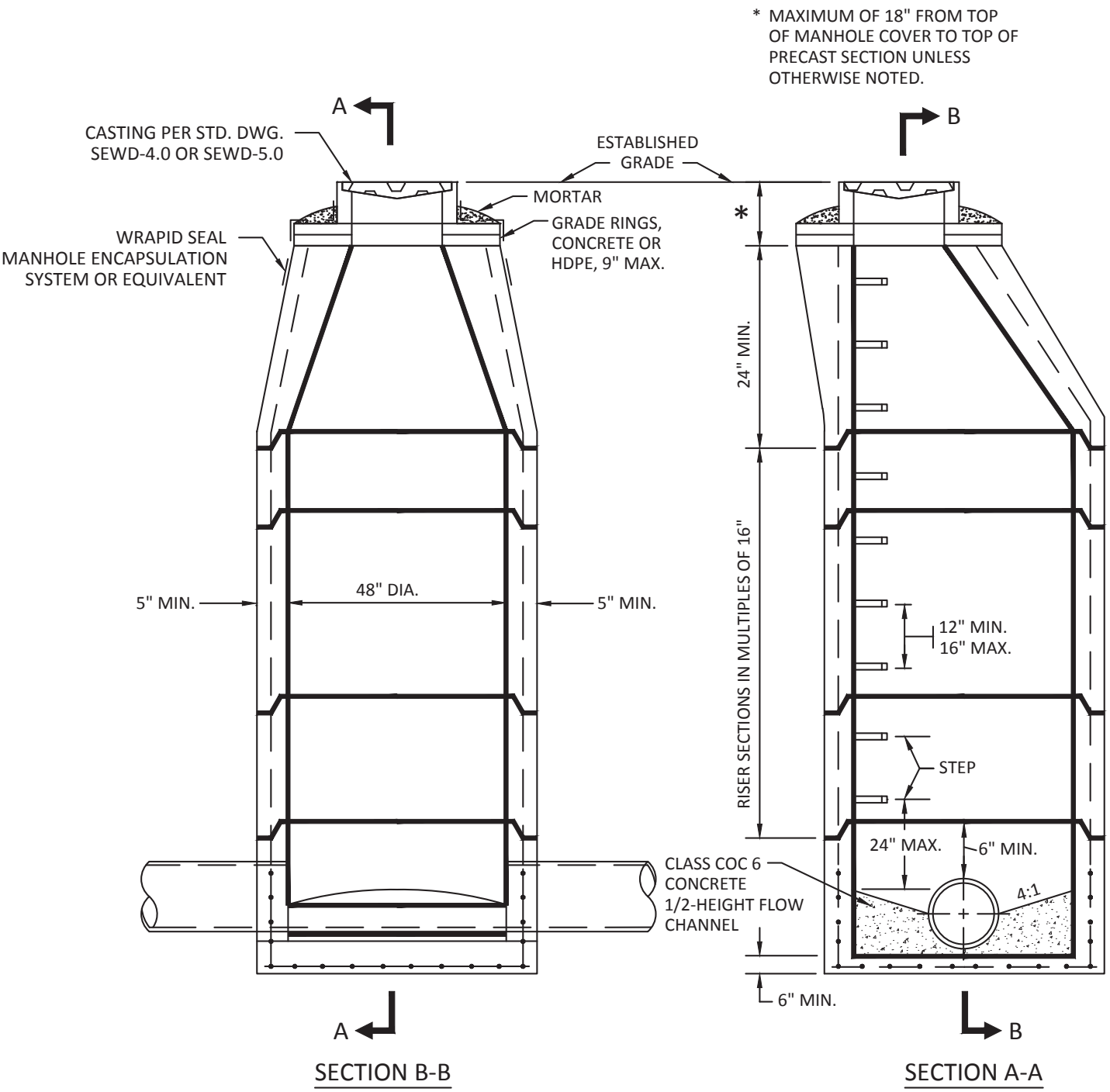
EST 1808
CITY OF
DELAWARE
OHIO

UTILITIES
STANDARD CONSTRUCTION DRAWINGS



NOTE:

1. PRECAST MANHOLE SECTIONS SHALL BE USED AT ALL LOCATIONS UNLESS APPROVED OTHERWISE BY THE CITY.
2. JOINTS BETWEEN MANHOLE SECTIONS SHALL INCLUDE EITHER A ROUND RUBBER GASKET CONFORMING TO ASTM C443 OR BUTYL RUBBER SEALANT CONFORMING TO ASTM C990 AS MANUFACTURED BY CONSEAL SEALANTS, INC. OR APPROVED EQUAL.
3. STORM SEWER MANHOLES SHALL HAVE CONNECTIONS PER GENERAL NOTE STM-7.
4. SANITARY SEWER MANHOLES SHALL HAVE FLEXIBLE WATERTIGHT CONNECTIONS IN ACCORDANCE WITH CMS 706.16.
5. MANHOLES MUST BE IN ACCORDANCE WITH ASTM C-478.
6. PRECAST WALLS SHALL HAVE A MINIMUM THICKNESS OF 5 INCHES AND REINFORCED SUFFICIENTLY TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.
7. FINISH MANHOLE CHANNEL ACCORDING TO STANDARD DRAWING SEWD-6.0.
8. FOR MANHOLES LOCATED IN ROADWAYS, CONE SECTION SHALL BE ROTATED TO POSITION THE CASTING AS NEAR AS POSSIBLE TO THE CENTER OF THE DRIVING LANE.
9. PROVIDE ANTI-FLOTATION COLLAR WHERE REQUIRED TO PREVENT BUOYANCY.

EST 1808
CITY OF DELAWARE OHIO
Public Works Department

STANDARD DETAIL

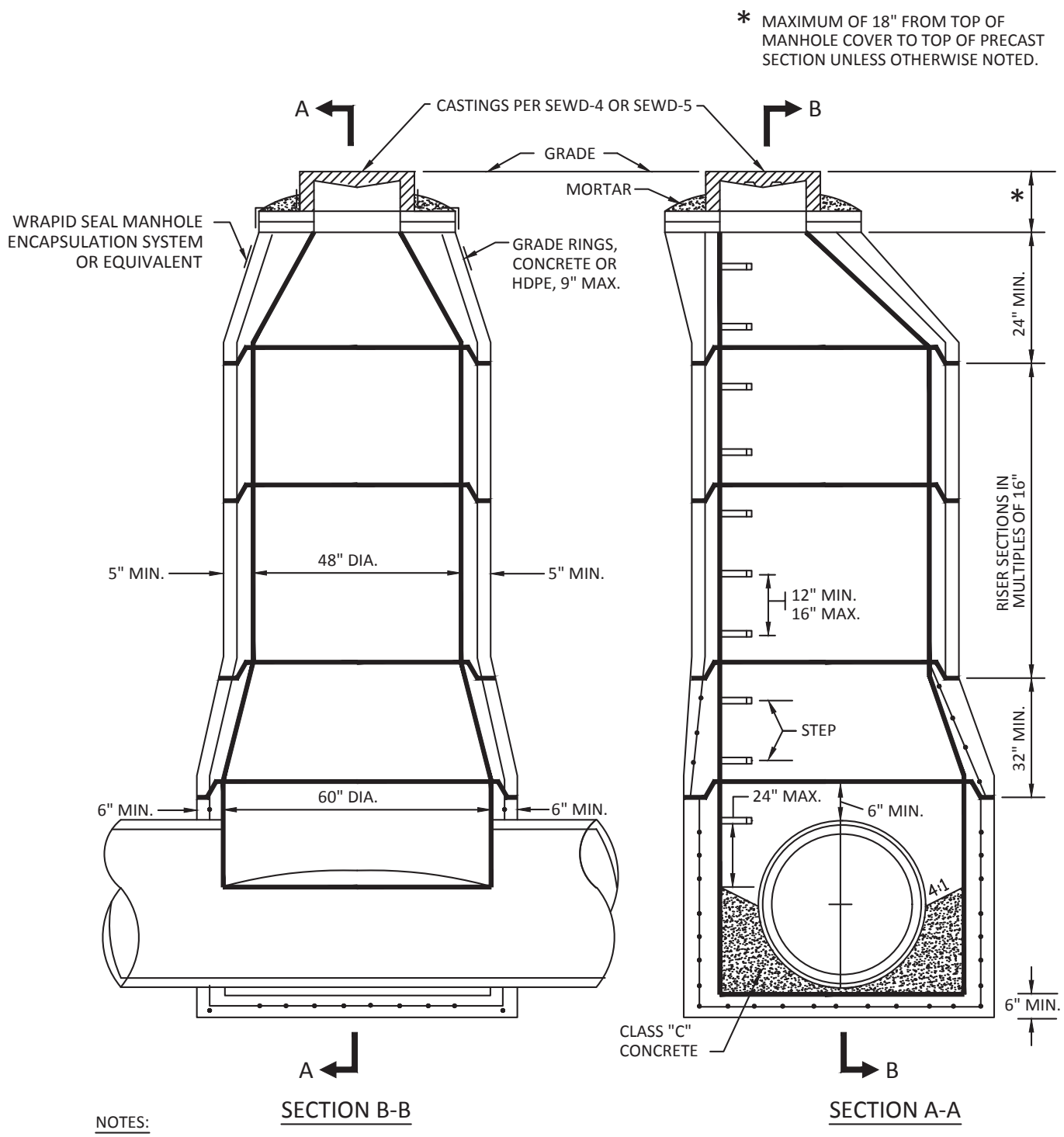
TYPE "C" MANHOLE

48" PRECAST BASE / 8-INCH THROUGH 27-INCH PIPE

UTILITIES

SEWD-1.0

Rev. 12/31/2018



NOTES:

1. PRECAST MANHOLE SECTIONS SHALL BE USED AT ALL LOCATIONS UNLESS APPROVED OTHERWISE BY THE CITY.
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9. PROVIDE ANTI-FLOTATION COLLAR WHERE REQUIRED TO PREVENT BUOYANCY.

EST 1808
CITY OF DELAWARE OHIO
Public Works Department

STANDARD DETAIL

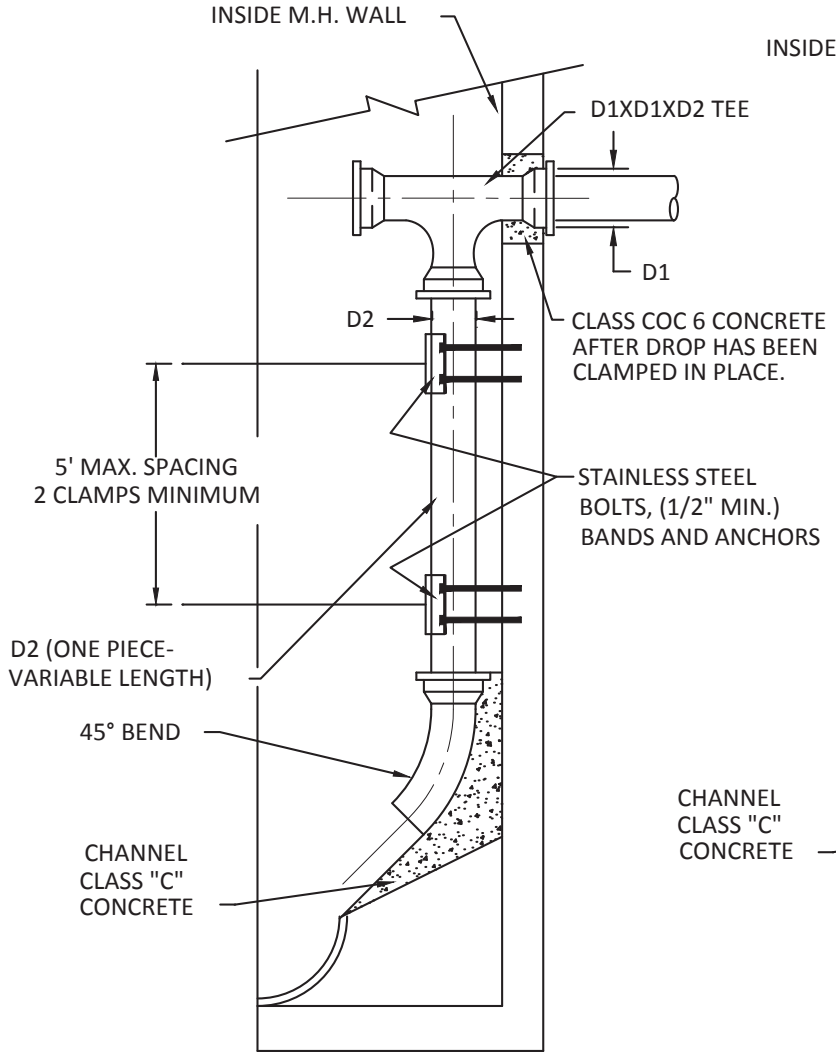
TYPE "D" MANHOLE

60-INCH PRECAST BASE / 30-INCH THROUGH 42-INCH PIPE

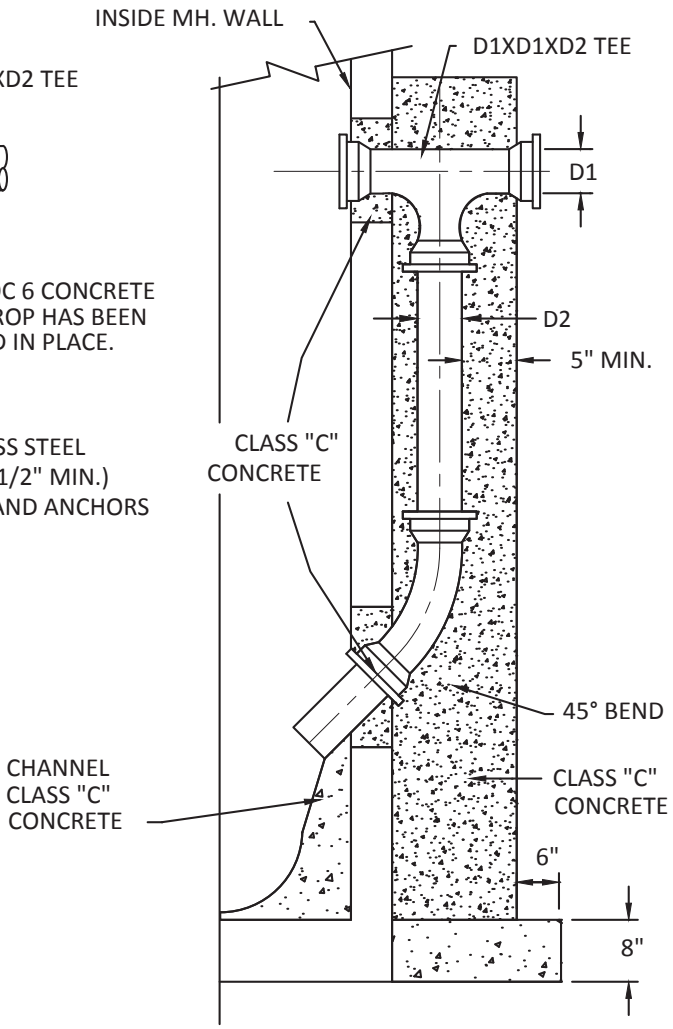
UTILITIES

SEWD-2.0

Rev. 12/31/2018



INSIDE DROP
(HALF SECTION)



OUTSIDE DROP
(HALF SECTION)

NOTES:

1. DROP IS REQUIRED WHEN INVERT DIFFERENTIAL IS 24" OR GREATER.
2. HEIGHT OF DROP PIPE IS TO BE AS 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 SHOULD BE INCLUDED FOR PAYMENT UNDER ITEM 604, MANHOLES, OR ITEM 901, PIPE SEWERS COMPLETE IN PLACE.
4. WHERE CALLED FOR, AND UNLESS OTHERWISE REQUIRED BY THE PLANS, THE OUTSIDE DROP WILL BE CONSTRUCTED WITH NEW MANHOLES.
5. MATERIALS FOR THE TEE, DROP PIPE AND BEND SHALL BE OF ONE TYPE AND BE ONE OF THE FOLLOWING - INSIDE DROP: DUCTILE IRON OR PVC. OUTSIDE DROP: DUCTILE IRON OR PVC.
6. OUTSIDE DROP PIPES REQUIRE A 5" THICK (MINIMUM) CLASS "C" CONCRETE ENCASEMENT ON THREE SIDES OF PIPE AND TIED TO MANHOLE WALL WITH 5/8"-"U" RODS X 6" LONG @ 12".
7. INSIDE DROP MAY BE USED ON NEW CONSTRUCTION PROVIDED THAT 60" BASE AND RISER SECTIONS ARE USED.
8. IN LIEU OF A TEE FITTING FOR INSIDE DROPS, DROP BOWL AND HOOD ASSEMBLY BY DURAN-RELINER OR APPROVED EQUAL MAY BE UTILIZED IN CONJUNCTION WITH A FLEXIBLE WATERTIGHT CONNECTION FOR THE INCOMING SEWER.

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

EST 1808
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DELAWARE
OHIO
Public Works Department

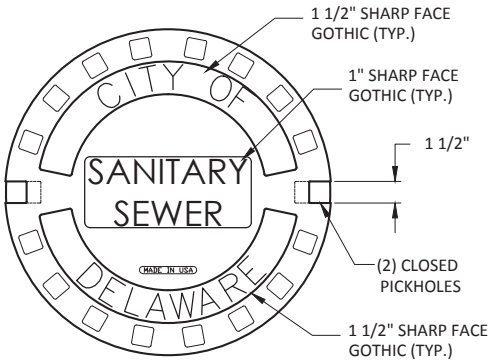
STANDARD DETAIL

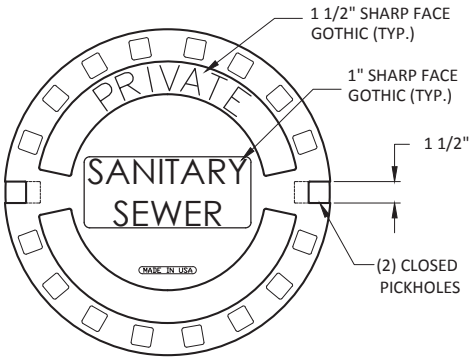
INSIDE & OUTSIDE DROP PIPES FOR
SANITARY SEWER MANHOLES

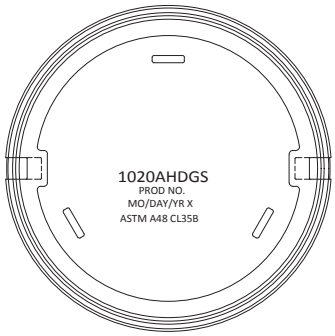
UTIILITIES

SEWD-3.0

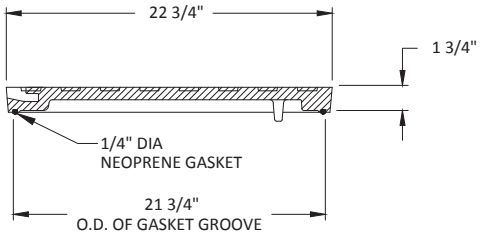
Rev. 12/31/2018



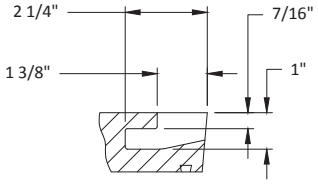




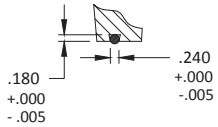
BOTTOM VIEW



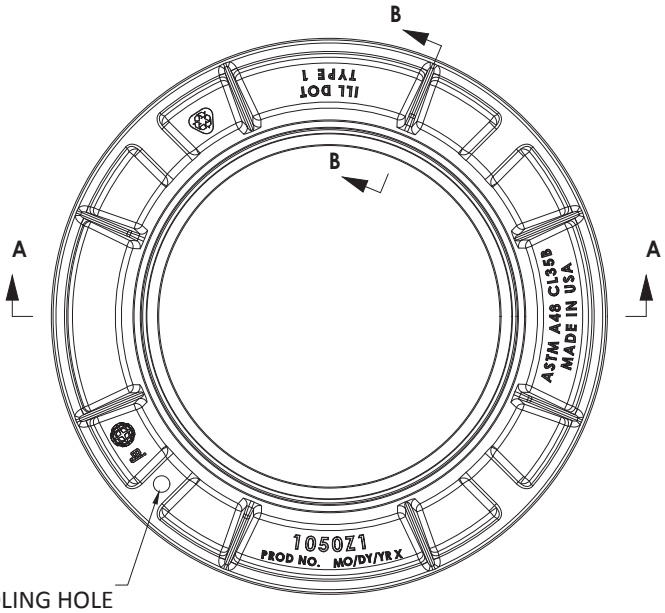
COVER SECTION

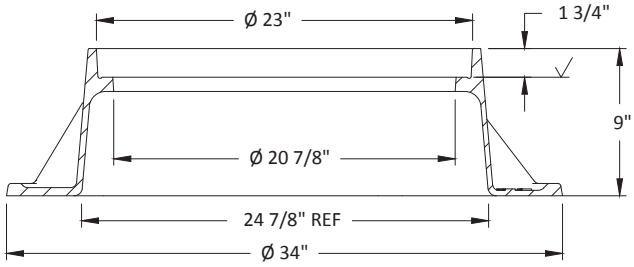


PICKHOLE DETAIL

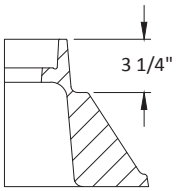


GROOVE DETAIL





SECTION A-A



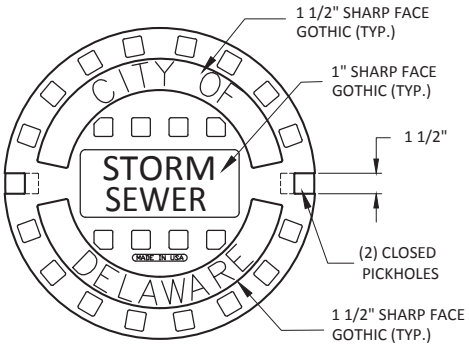
SECTION B-B

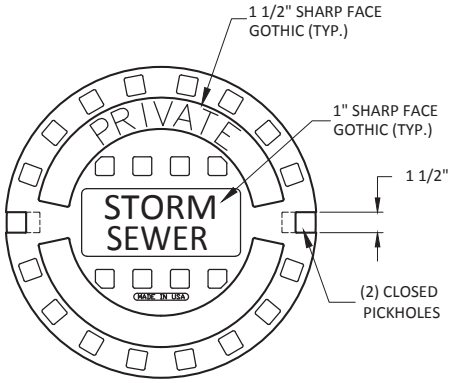
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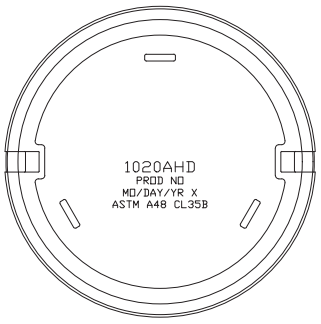
NOTE:

1. DIMENSIONS SHOWN ARE EQUIVALENT DECIMALS OF 1/8 INCH FRACTIONAL SIZES. TOLERANCES SHALL BE ACCEPTED FOUNDRY STANDARDS AS OUTLINED IN THE IRON CASTINGS HANDBOOK PUBLISHED BY THE AMERICAN CAST METALS INSTITUTE. ALL CASTINGS SHALL MEET THE REQUIREMENTS OF 604.02.
2. COVERS SHALL BE EAST JORDAN IRON WORKS EJ 1020 AGS, NEENAH R-1530, OR APPROVED EQUAL.
3. FRAMES SHALL BE EAST JORDAN IRON WORKS EJ 1050 ZA, NEENAH R-1530, OR APPROVED EQUAL.

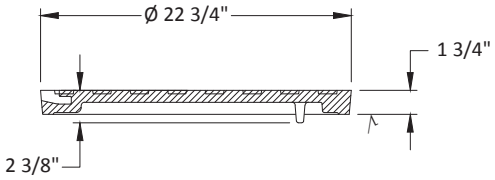
EST 1808 CITY OF DELAWARE OHIO Public Works Department	STANDARD DETAIL MANHOLE FRAME & COVER CASTINGS (SANITARY SEWERS)	UTILITIES SEWD-4.0 Rev. 12/31/2018



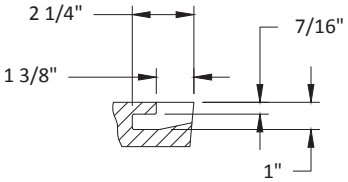




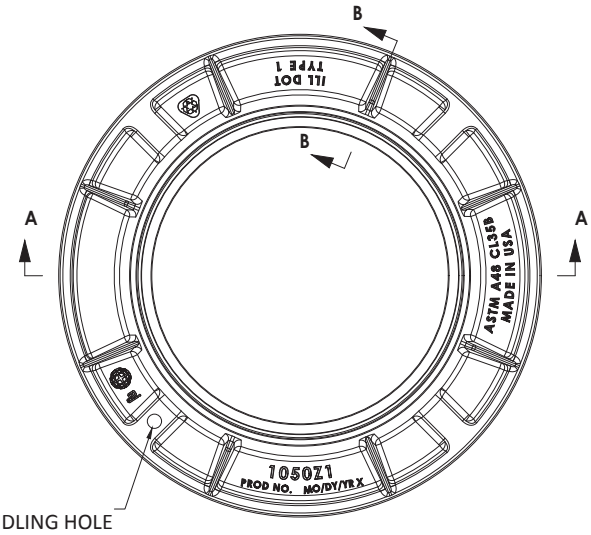
BOTTOM VIEW

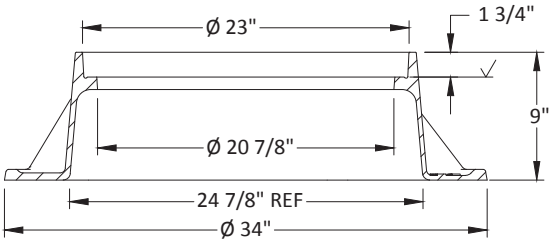


COVER SECTION

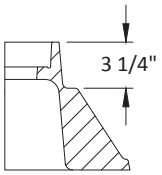


PICKHOLE DETAIL





SECTION A-A



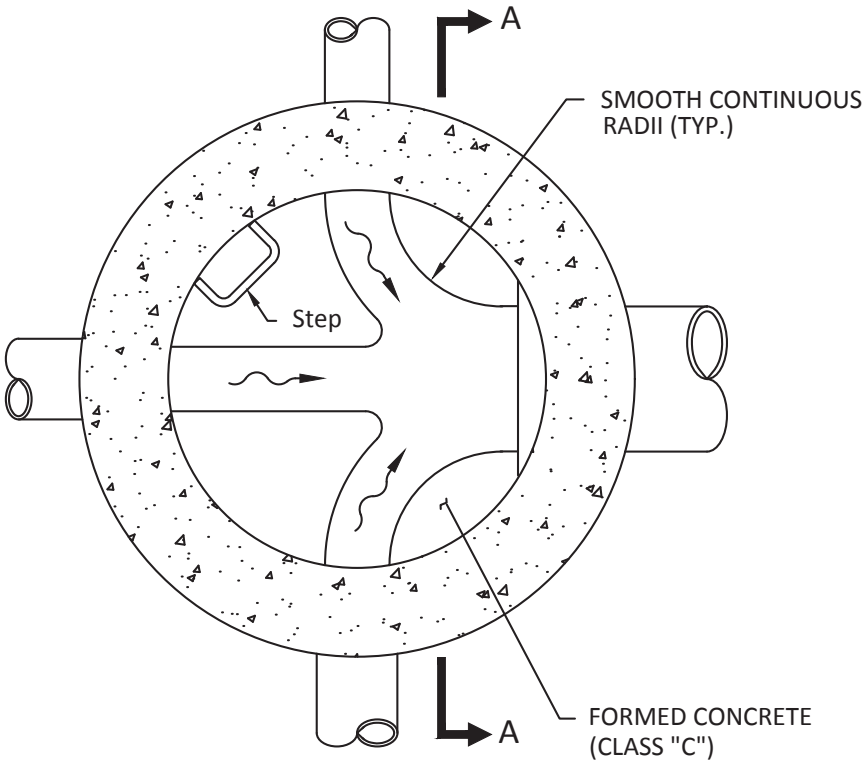
SECTION B-B

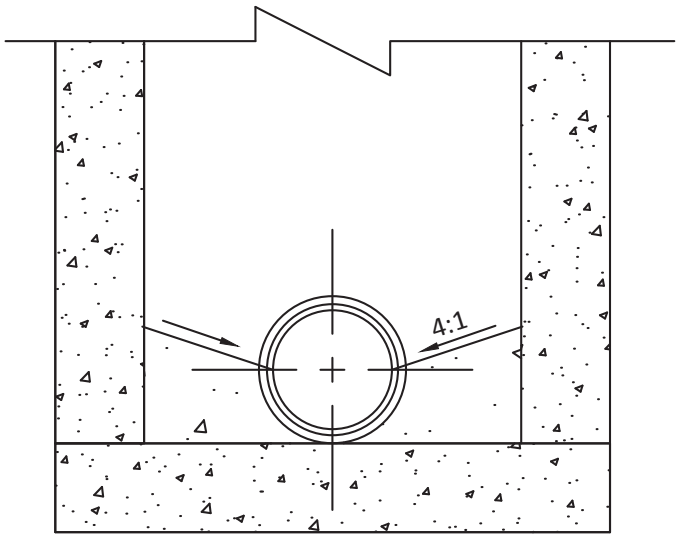
FRAME

NOTE:

1. DIMENSIONS SHOWN ARE EQUIVALENT DECIMALS OF 1/8 INCH FRACTIONAL SIZES. TOLERANCES SHALL BE ACCEPTED FOUNDRY STANDARDS AS OUTLINED IN THE IRON CASTINGS HANDBOOK PUBLISHED BY THE AMERICAN CAST METALS INSTITUTE. ALL CASTINGS SHALL MEET THE REQUIREMENTS OF 604.02.
2. COVERS SHALL BE EAST JORDAN IRON WORKS EJ 1020 AGS, NEENAH R-1530, OR APPROVED EQUAL.
3. FRAMES SHALL BE EAST JORDAN IRON WORKS EJ 1050 ZA, NEENAH R-1530, OR APPROVED EQUAL.

EST 1808 CITY OF DELAWARE OHIO Public Works Department	STANDARD DETAIL MANHOLE FRAME & COVER CASTINGS (STORM SEWERS)	UTILITY SEWD-5.0 Rev. 12/31/2018





SECTION A-A

EST 1808
CITY OF
DELAWARE
OHIO
Public Works Department

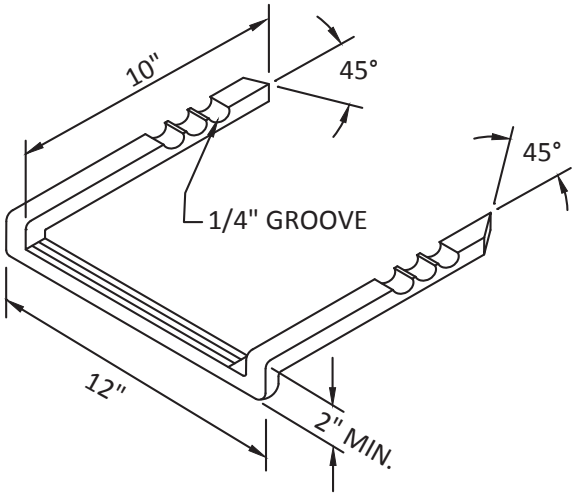
STANDARD DETAIL

PRECAST MANHOLE BASE CHANNELIZATION DETAIL

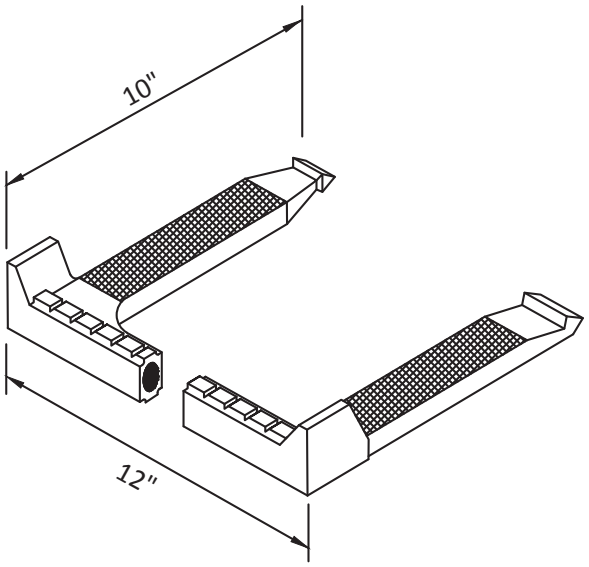
UTILITIES

SEWD-6.0

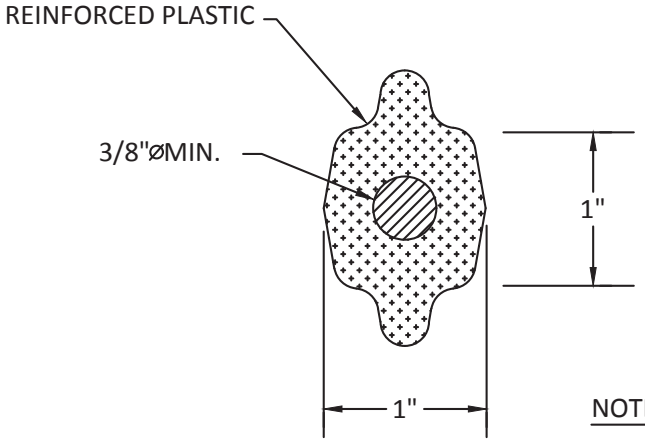
Rev. 12/31/2018



ALUMINUM STEP
ITEM 711.30



POLYPROPYLENE STEP
ITEM 711.31

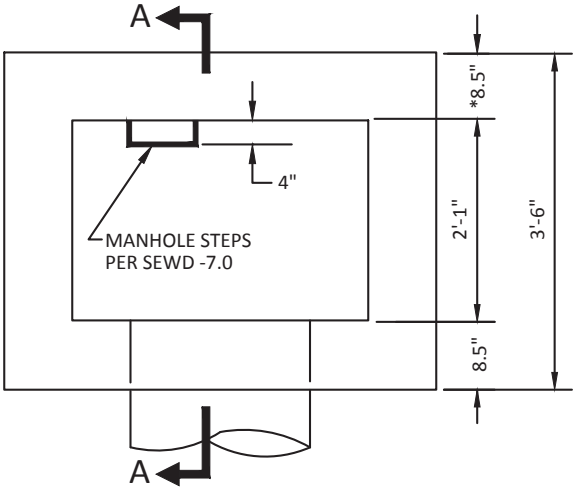


NOTE:

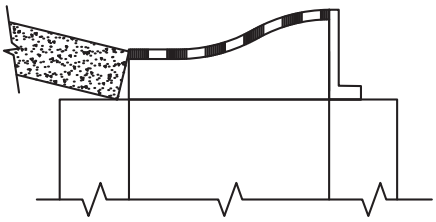
1. STEPS SHALL MEET THE REQUIREMENTS OF ASTM C-478, AND SHALL BE INSTALLED WITH A UNIFORM VERTICAL SPACING OF 12-INCHES TO 16-INCHES.

2. STEPS SHALL HAVE A MINIMUM CROSS SECTIONAL DIMENSION OF 1-INCH FOR FERROUS METAL AND 3/4-INCHES FOR ALUMINUM.

EST 1808 CITY OF DELAWARE OHIO Public Works Department	STANDARD DETAIL MANHOLE STEPS	UTILITIES SEWD-7.0 Rev. 12/31/2018

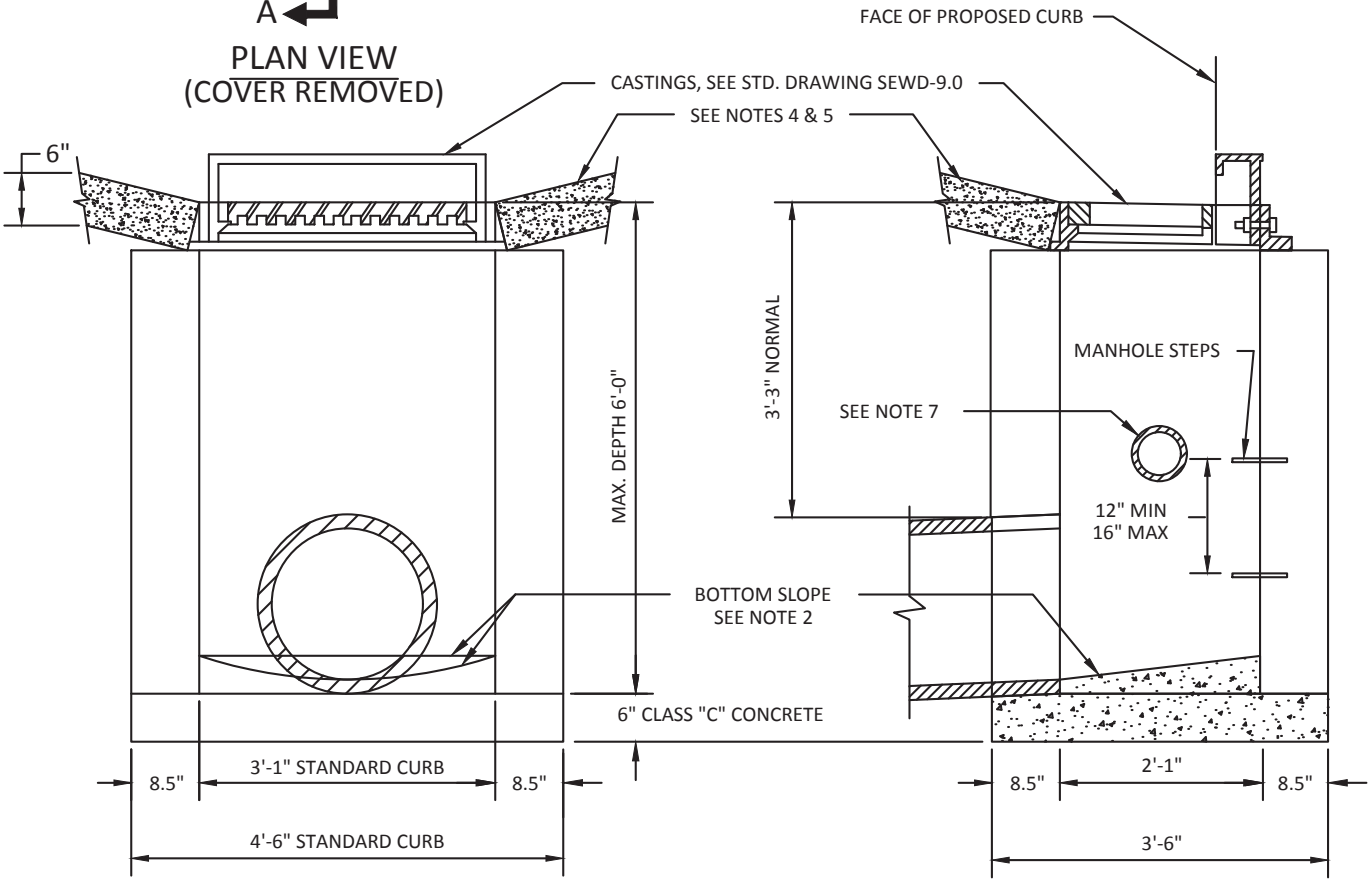


PLAN VIEW
(COVER REMOVED)



MOUNTABLE INLET

(EXISTING AREAS ONLY)



ELEVATION

SECTION A-A

NOTE:

1. CURB & GUTTER INLETS SHALL BE PRECAST UNLESS APPROVED OTHERWISE BY THE CITY.
2. PRECAST WALLS SHALL HAVE A MINIMUM THICKNESS OF 6 INCHES AND BE REINFORCED SUFFICIENTLY TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.
3. THE INLET BOTTOM SHALL BE SHAPED TO PROVIDE SLOPE OF 3" TO 4" TO OUTLET PIPE. THE CROSS SECTIONAL FORM OF BOTTOM AND LONGITUDINAL SLOPE IS TO BE ADAPTED TO LOCATION OF OUTLET PIPE AS DIRECTED.
4. OUTLET PIPE MAY BE LOCATED IN FRONT OR BACK AND SHALL BE DIRECTED TOWARDS THE CENTER OF THE INLET.
5. THE EXISTING GUTTER WITHIN THE AREA AROUND THE INLET WHERE CUT OUT, SHALL BE REPLACED WITH CLASS "C" CONCRETE OR ASPHALTIC CONCRETE PAVING AS ORDERED.
6. THE BACKFILLING WITHIN PROPOSED PAVED AREAS SHALL BE IN ACCORDANCE WITH ITEM 912.
7. WALLS MAY BE BRICK, PRECAST SOLID CONCRETE BLOCKS, CAST IN PLACE CLASS "C" CONCRETE, OR PRECAST CONCRETE.
8. PLACE 4" CURB DRAIN STUBS 30" BELOW TOP OF CURB OR AS DIRECTED.
9. MAXIMUM PIPE DIAMETERS ARE 18" INTO SIDE WALLS AND 24" INTO FRONT OR BACKWALL.

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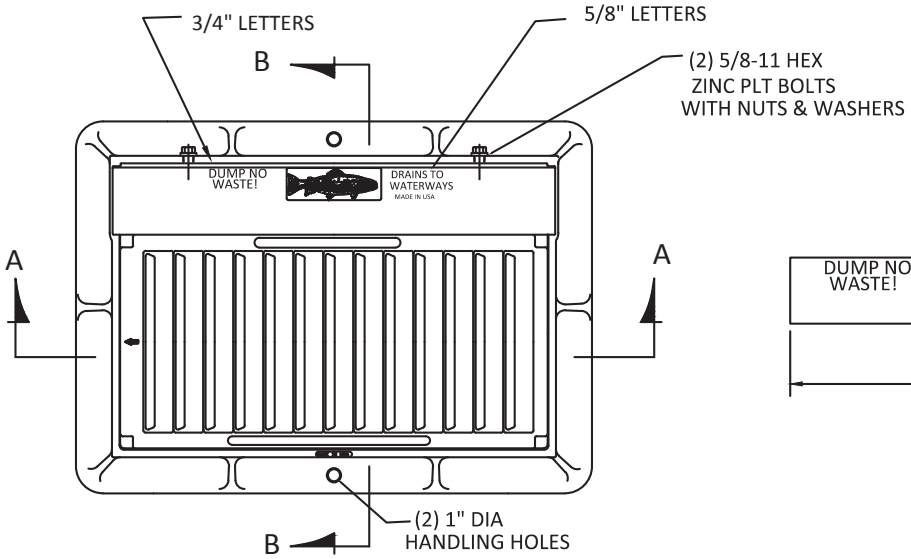
STANDARD DETAIL

CURB & GUTTER INLET

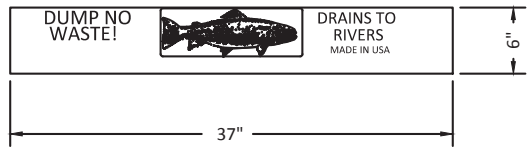
UTILITIES

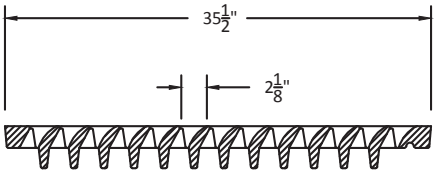
SEWD-8.0

Rev. 12/31/2018



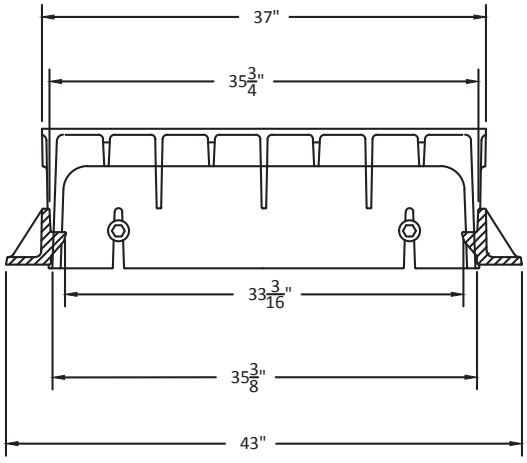
TOP VIEW



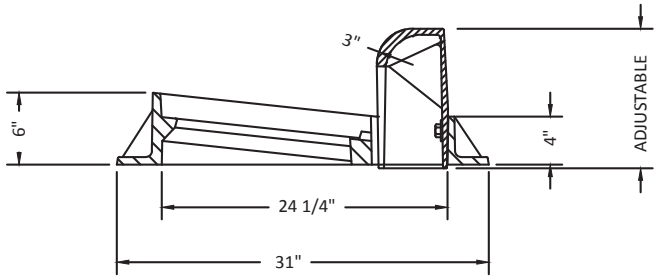


EAST JORDAN IRON WORKS
7030 CATCH BASIN CURB INLET

HEAVY DUTY WITH TYPE M4 GRATE AND T1 BACK
APPROXIMATELY 260 SQ INCHES IN OPEN AREA
CURB BACK ADJUSTS FROM 3 1/4" TO 9"
"DUMP NO WASTE!" AND FISH IMAGE



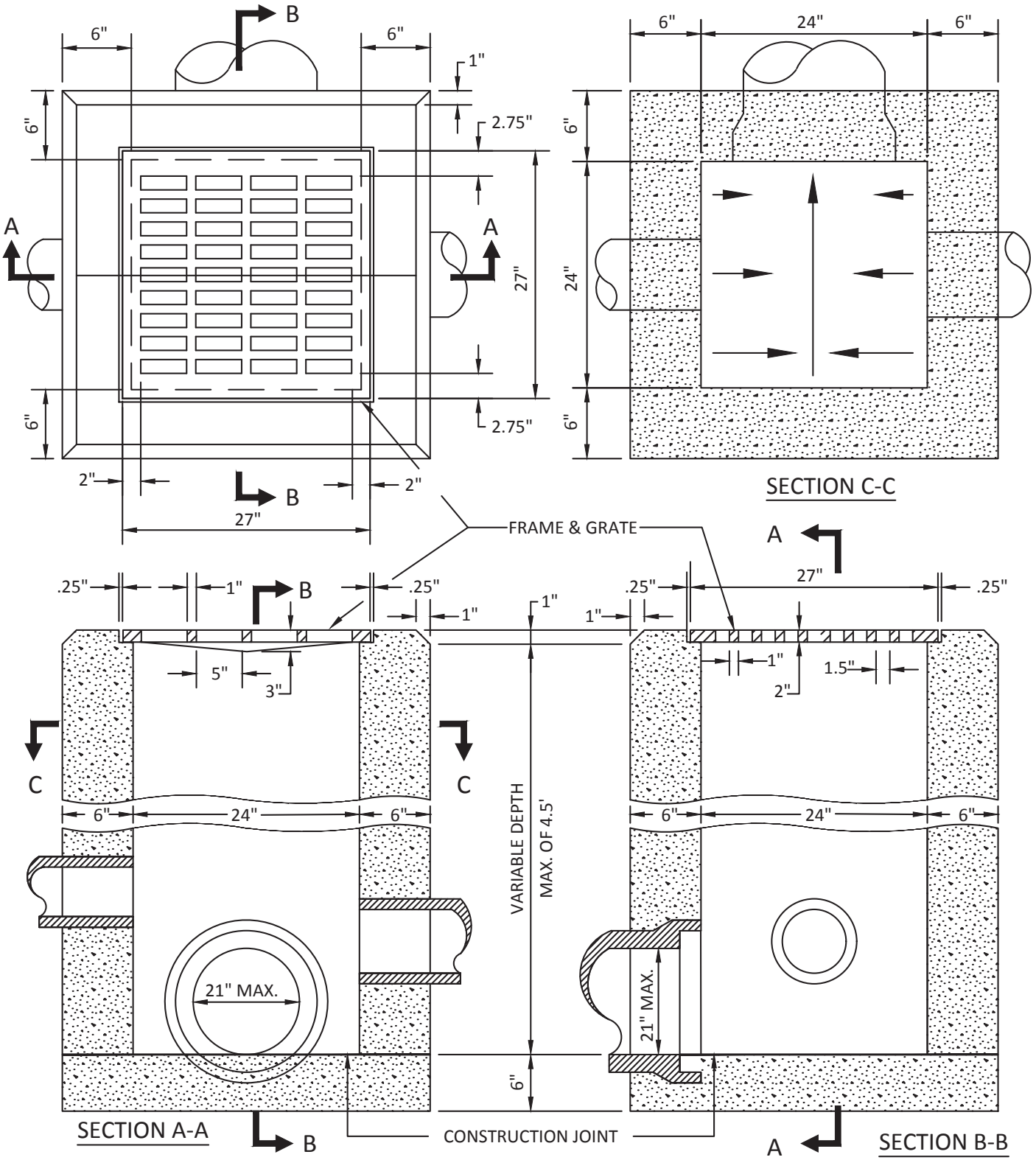
SECTION A-A



CURB ADJUSTMENT
6" TO 10"

SECTION B-B

EST 1808 CITY OF DELAWARE OHIO Public Works Department	STANDARD DETAIL CAST IRON FRAME & GRATE FOR CURB & GUTTER INLET (STD. CURB)	UTILITIES SEWD-9.0 Rev. 12/31/2018



NOTES:

1. ALL BASINS TO BE PRECAST CONCRETE WITH MINIMUM WALL THICKNESS OF 6 INCHES AND BE REINFORCED SUFFICIENTLY TO PERMIT SHIPPING AND HANDLING WITHOUT DAMAGE.
2. GRATE SHALL BE EAST JORDAN IRON WORKS 5115M2, NEENAH 4852, OR APPROVED EQUAL.
3. IN NON-TRAFFIC APPLICATIONS GRATE MAY BE USED WITHOUT A FRAME. IN TRAFFIC APPLICATIONS, USE ANGLE FRAME, EAST JORDAN IRON WORKS 5115Z, NEENAH 1883-0018, OR APPROVED EQUAL.

EST 1808
CITY OF
DELAWARE
OHIO
Public Works Department

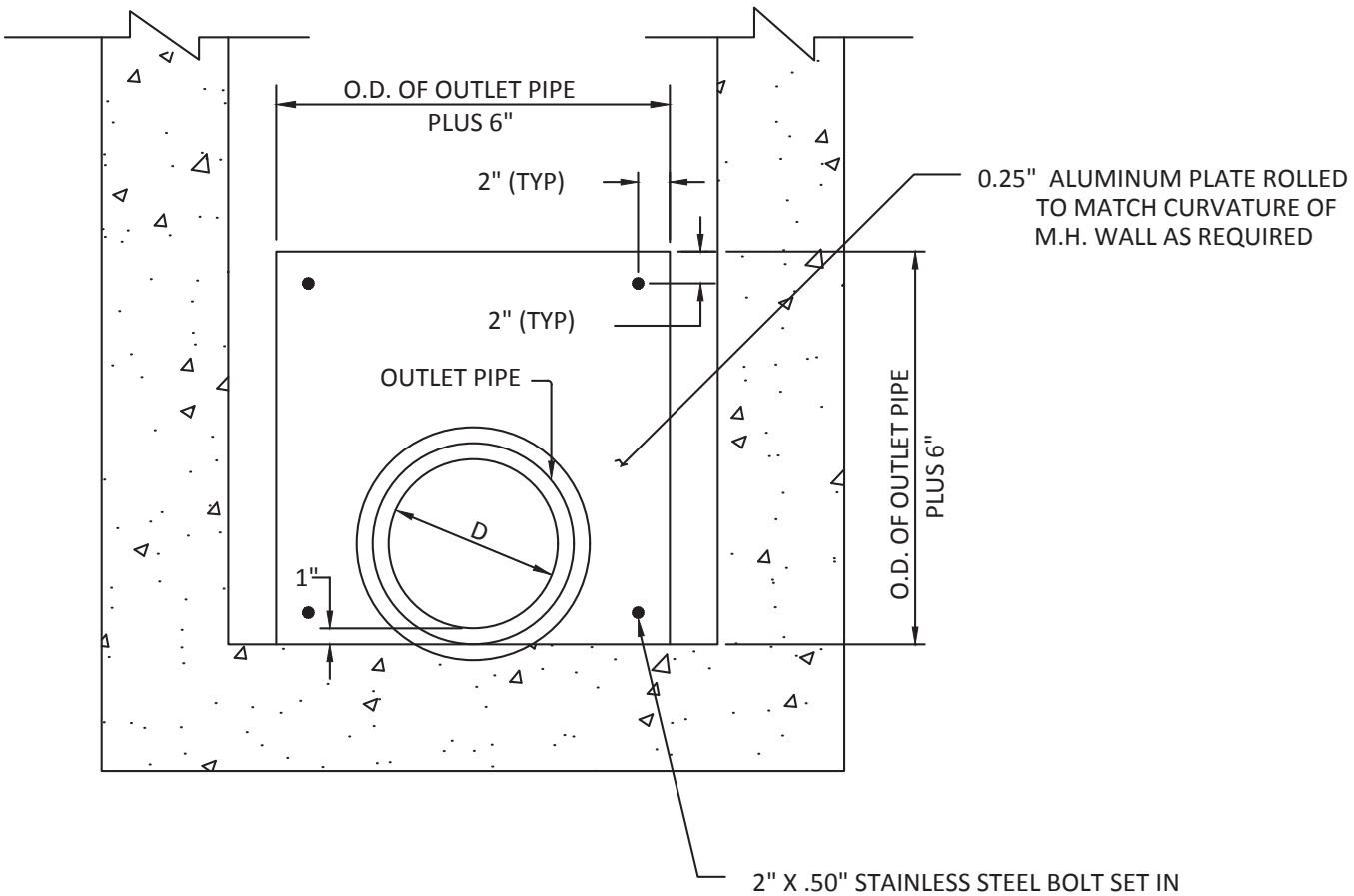
STANDARD DETAIL

STANDARD 2-FT x 2-FT CATCH BASIN

UTILITIES

SEWD-10.0

Rev. 12/31/2018



ORIFICE SIZING EQUATION

$$Q = CA(2GH)^{0.5}$$

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 OFFICE, FEET

ORIFICE PLATE TO BE SET ON OUTLET PIPE WALL AT EACH BASIN INDICATED ON PLAN.

SEE PLANS FOR ORIFICE DIAMETER (D)

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CITY OF DELAWARE OHIO
Public Works Department

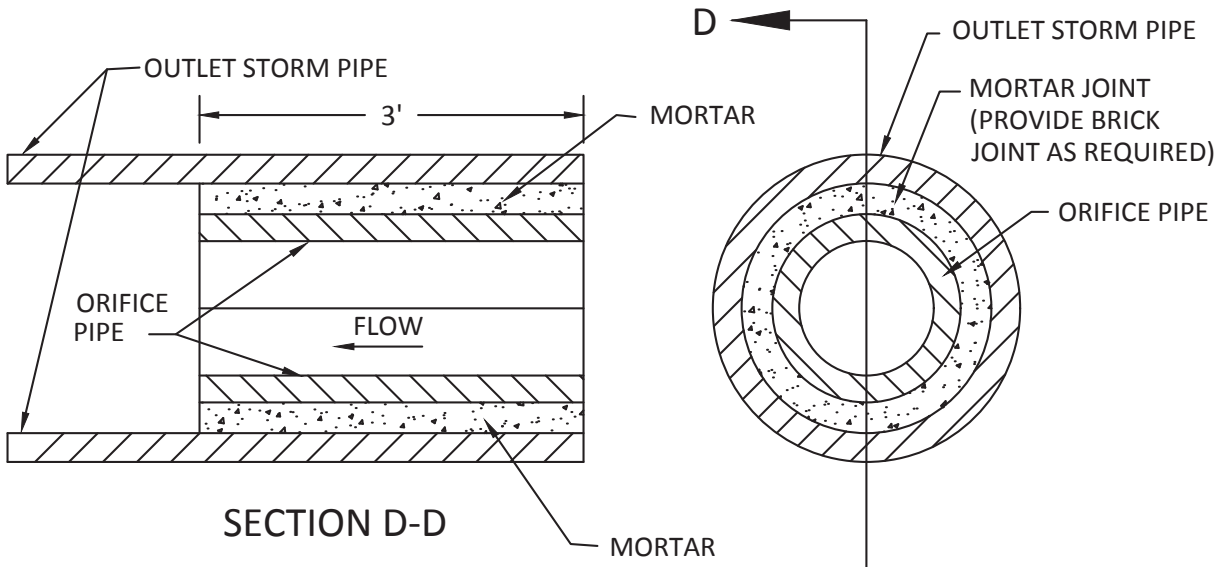
STANDARD DETAIL

OUTLET CONTROL ORIFICE PLATE

UTILITIES

SEWD-11.1

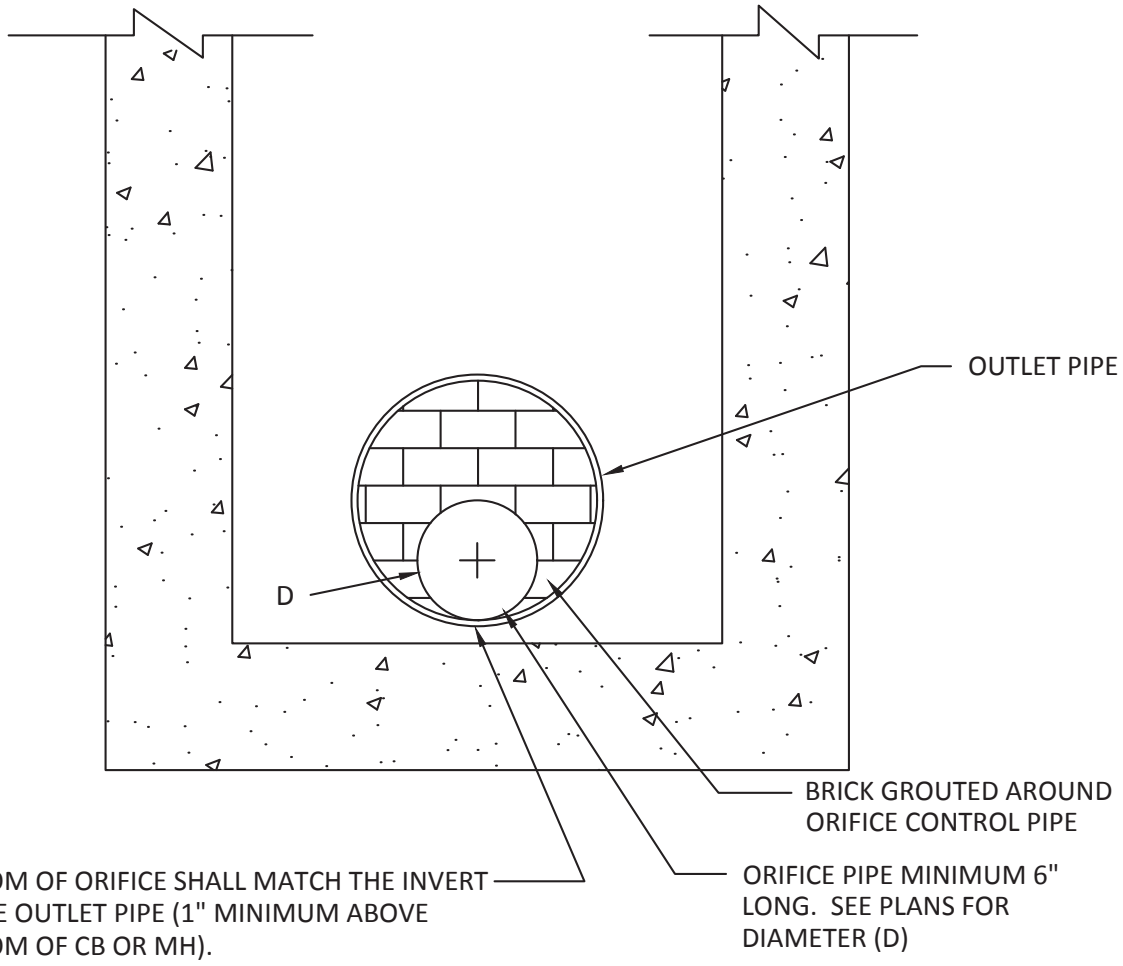
Rev. 12/31/2018



SECTION D-D

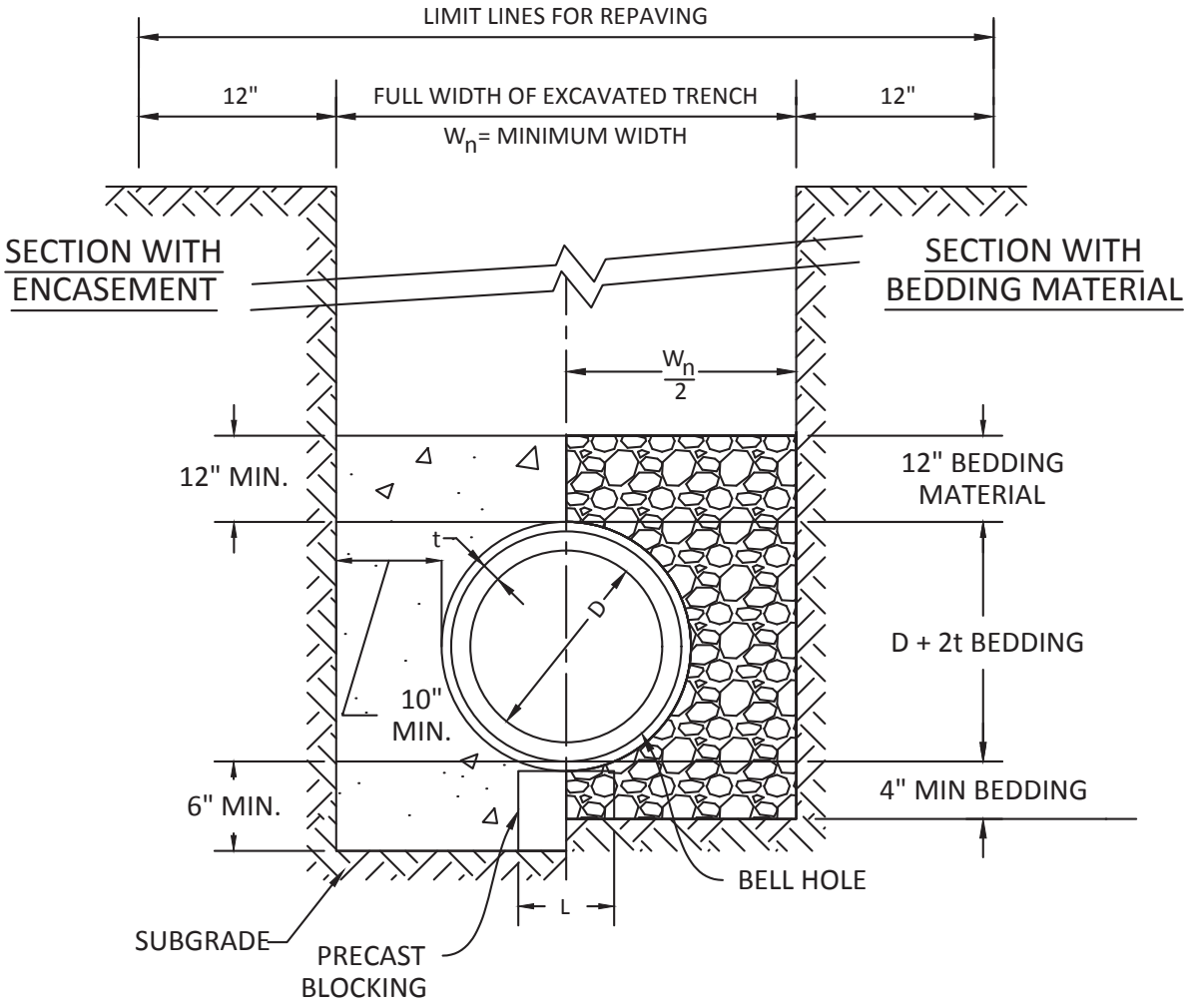
BASIN OUTLET ORIFICE DETAIL

(OFFSITE BASIN)
NO SCALE



ORIFICE PIPE TO BE SET ON OUTLET PIPE WALL AT
EACH BASIN INDICATED ON PLAN.

EST 1808 CITY OF DELAWARE OHIO Public Works Department	STANDARD DETAIL OUTLET CONTROL ORIFICE PIPE	UTILITIES SEWD-11.2 Rev. 12/31/2018



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. SECTION SYMMETRICAL ABOUT C/L
2. DIMENSIONS ARE EXPRESSED IN INCHES.
3. ENCASEMENTS TO BE CLASS "A" CONCRETE, ITEM 905.
4. ON SANITARY SEWER CONSTRUCTION TRENCH DAMS ARE REQUIRED AS SPECIFIED UNDER 901.11
5. PROVIDE EMBEDMENT IN ACCORDANCE WITH THE RECOMMENDATIONS OF ASTM D2321, 7.5.
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.

EST 1808
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STANDARD DETAIL

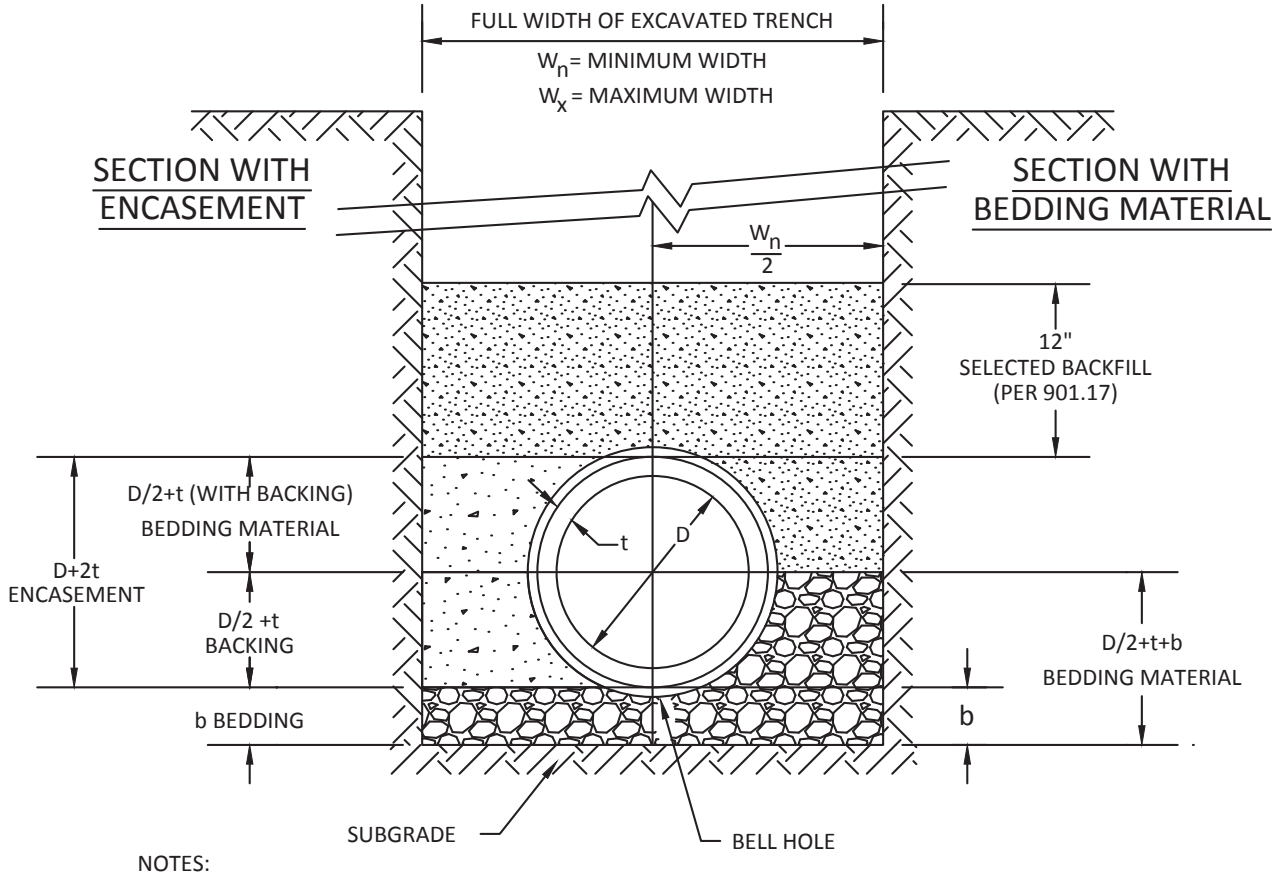
TYPE 1 BEDDING

FOR FLEXIBLE SEWER PIPE 6-INCHES TO 60 INCHES IN DIAMETER

UTILITIES

SEWD-12.0

Rev. 12/31/2018



NOTES:

1. SECTION SYMMETRICAL ABOUT C/L
2. *DIMENSIONS ARE EXPRESSED IN INCHES.
3. BACKING OR ENCASEMENTS TO BE CLASS "A" CONCRETE, ITEM 905.
4. ON SANITARY SEWER CONSTRUCTION TRENCH DAMS ARE REQUIRED AS SPECIFIED UNDER 901.11.
5. PAYMENT FOR CONCRETE BACKING AND ENCASEMENT SHALL BE BASED ON MINIMUM TRENCH WIDTH (W_n).

SMALL DIAMETERS
b = 4"

D*	W_n*	W_x*
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*	W_n*	W_x*
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*	W_n*	W_x*
72	116	134
78	123	141
84	130	148
90	136	155
96	143	162
102	151	169
108	160	176

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STANDARD DETAIL

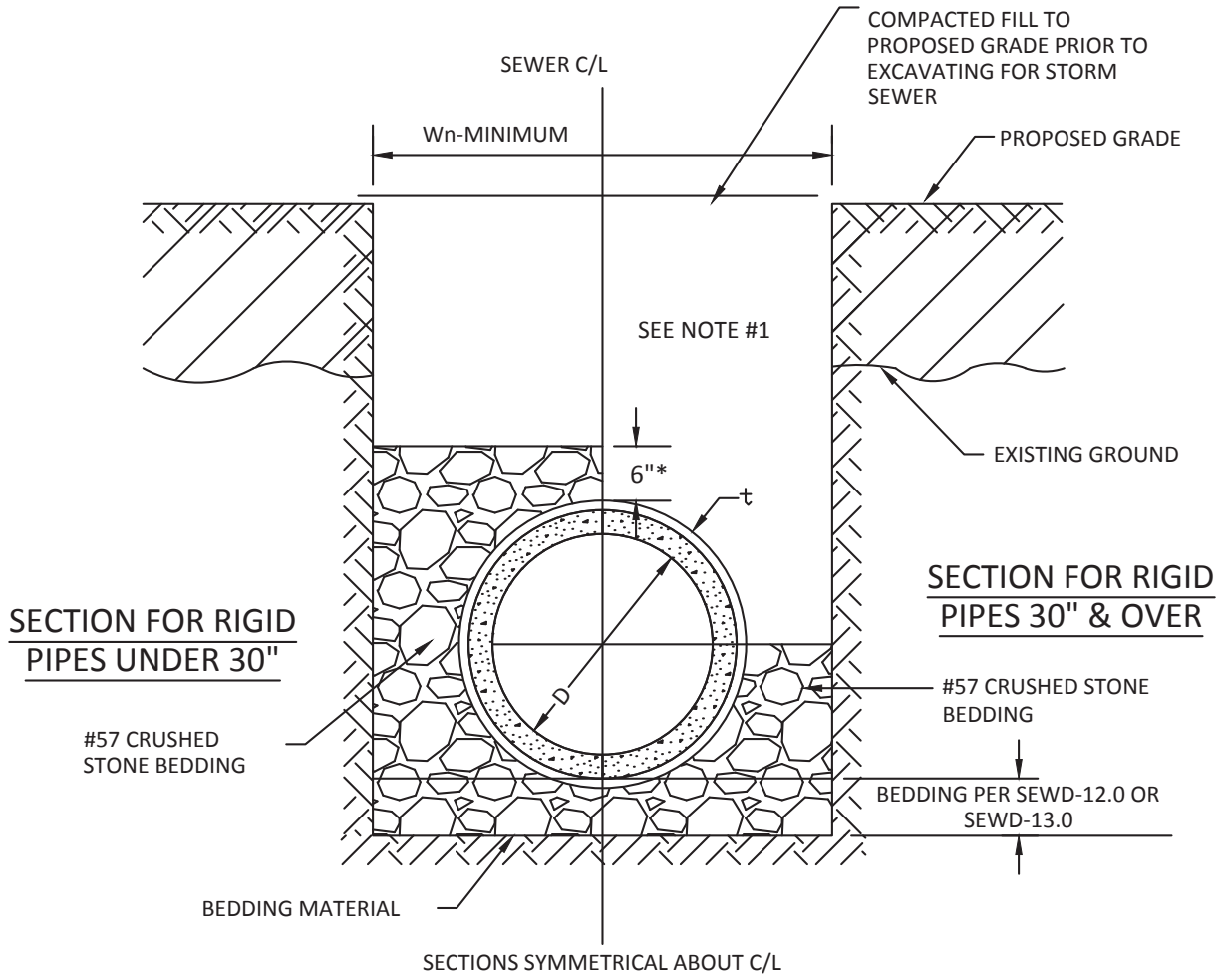
TYPE 1 BEDDING

FOR RIGID SEWER PIPE 6-INCHES TO 108-INCHES DIAMETER

UTILITIES

SEWD-13.0

Rev. 12/31/2018



*12" FOR ALL FLEXIBLE PIPES REGARDLESS OF SIZE.

NOTES:

1. BACKFILL OF TRENCH FROM TOP OF #57 CRUSHED STONE BEDDING TO THE TOP OF TRENCH SHALL BE COMPACTED TO 98% MAXIMUM DRY DENSITY IN ACCORDANCE WITH SECTION 911. NO GRITS WILL BE ALLOWED.
2. THE COMPACTION REQUIREMENT WILL BE STRICTLY ENFORCED BY THE CITY.
3. THE C/L OF THE PROPOSED STORM SEWER SHOULD BE OFFSET FROM THE PROPERTY LINE.
4. THE COST OF THE #57 CRUSHED STONE BEDDING, COMPACTED FILL AND BACKFILL SHALL BE INCLUDED IN ITEM 901.
5. MINIMUM WIDTH OF TRENCH (Wn) ARE AS SHOWN ON DRAWINGS SEWD-12.0 OR SEWD-13.0.

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Public Works Department

STANDARD DETAIL

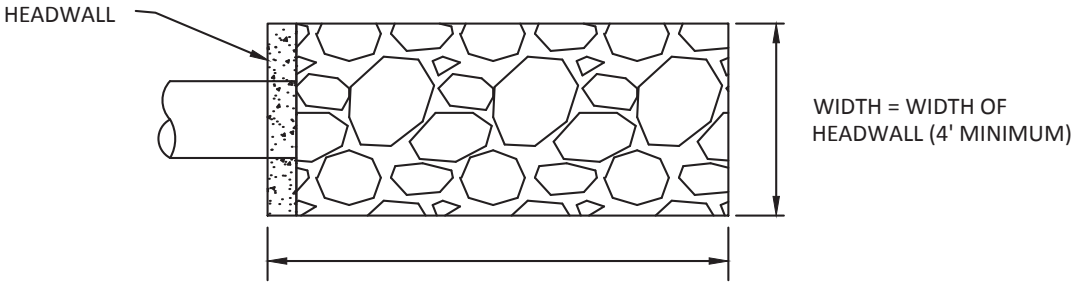
TYPICAL TRENCH DETAIL

FOR STORM SEWERS OUSIDE R/W WITH COVER OF 30-INCHES OR LESS

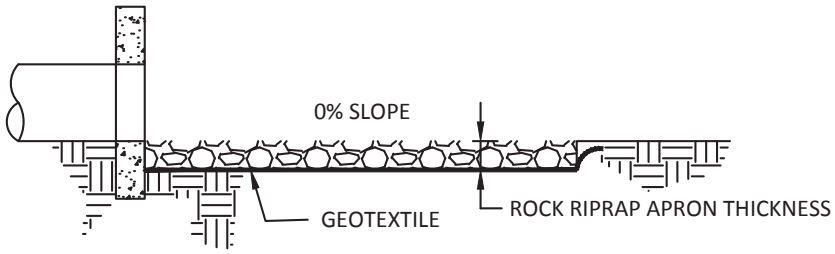
UTILITIES

SEWD-14.0

Rev. 12/31/2018



PLAN VIEW



PROFILE

1. THE SUBGRADE FOR THE FILTER AND RIPRAP SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES AS SHOWN ON THE PLAN.

2. THE RIPRAP SHALL CONFORM TO THE GRADING LIMITS AS SHOWN ON THE PLAN.

3. GEOTEXTILE SHALL BE WOVEN OR NONWOVEN MONOFILAMENT YARN AND SHALL MEET THE FOLLOWING:
   - ~ THICKNESS 20-60 MILS
   - ~ GRAB STRENGTH 90-120 LB.
   - ~ ASTM D-1777 AND ASTM D-1682

4. RIPRAP MAY BE PLACED BY EQUIPMENT BUT SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE.

TYPE OF ROCK OR RIPRAP	SIZE OF ROCK	
	50% BY WEIGHT	85% BY WEIGHT
TYPE D	> 6 IN.	3 - 12 IN.
TYPE C	> 12 IN.	6 - 18 IN.
TYPE B	> 18 IN.	12 - 24 IN.
TYPE A	> 24 IN.	18 - 30 IN.

ROCK CHANNEL PROTECTION

GENERAL

ROCK CHANNEL PROTECTION IS USED TO CONTROL EROSION AT THE OUTLET OF CULVERTS AND STORM SEWERS, OR FOR LINING DITCHES OR STEEP GRADES.

ROCK CHANNEL PROTECTION IS REQUIRED AT ALL STORM PIPE OUTLETS. A MINIMUM DEPTH OF 18-INCHES IS REQUIRED THE WIDTH OF THE ENDWALL AND THE MINIMUM LENGTH IS 5-FEET. THE MINIMUM TYPE IS TYPE C.

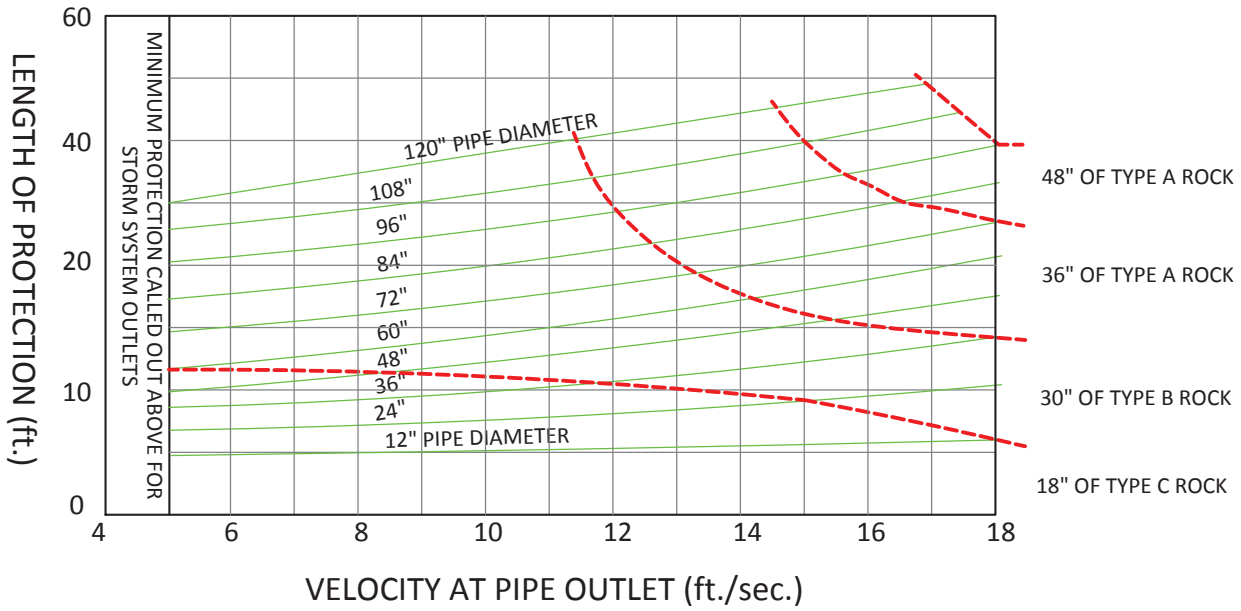
TYPES

THERE ARE FOUR TYPES OF ROCK CHANNEL PROTECTION THAT ARE USED IN VARIOUS SITUATIONS. THE USE OF THE PROPER TYPE AT CULVERT AND STORM SEWER OUTLETS CAN BE DETERMINED FROM THE FIGURE BELOW. TYPE A IS GENERALLY USED BEYOND THE OUTLET OF THE LARGER CONDUITS HAVING OUTLET VELOCITIES IN EXCESS OF 12 FEET PER SEC. AND TYPE B OR TYPE C FOR CONDUITS HAVING LESSER VELOCITIES. THE TYPE AND QUANTITY OF ROCK CHANNEL PROTECTION PROVIDED IN THE PLANS SHALL BE BASED ON THE PIPE ALTERNATE REQUIRING THE LARGEST SIZE AND QUANTITY OF ROCK CHANNEL PROTECTION. TYPE C AND TYPE D MAY BE USED TO LINE ROADSIDE DITCHES, AS REQUIRED, WHERE THE DITCHES ARE OUTSIDE THE DESIGN CLEAR ZONE WIDTH OR LOCATED BEHIND GUARDRAIL. ITEM 670 SEEDING AND EROSION CONTROL WITH MATTING MAY BE USED IN DITCHES AND CHANNELS IN LIEU OF ROCK WHERE AVERAGE FLOW VELOCITIES ARE LESS THAN 10 FEET PER SECOND AND CHANNEL SLOPES ARE LESS THAN 10%.

FILTER

A FILTER SHALL BE PROVIDED UNDER ALL ROCK CHANNEL PROTECTION.

A FABRIC FILTER IS REQUIRED OVER GRANULAR FILTER MATERIAL WHERE THE PROTECTED SLOPE IS STEEPER THAN 3:1. THE COST OF THE FILTER SHALL BE INCLUDED IN THE UNIT PRICE BID OF ITEM 601 ROCK CHANNEL PROTECTION WITH FILTER.



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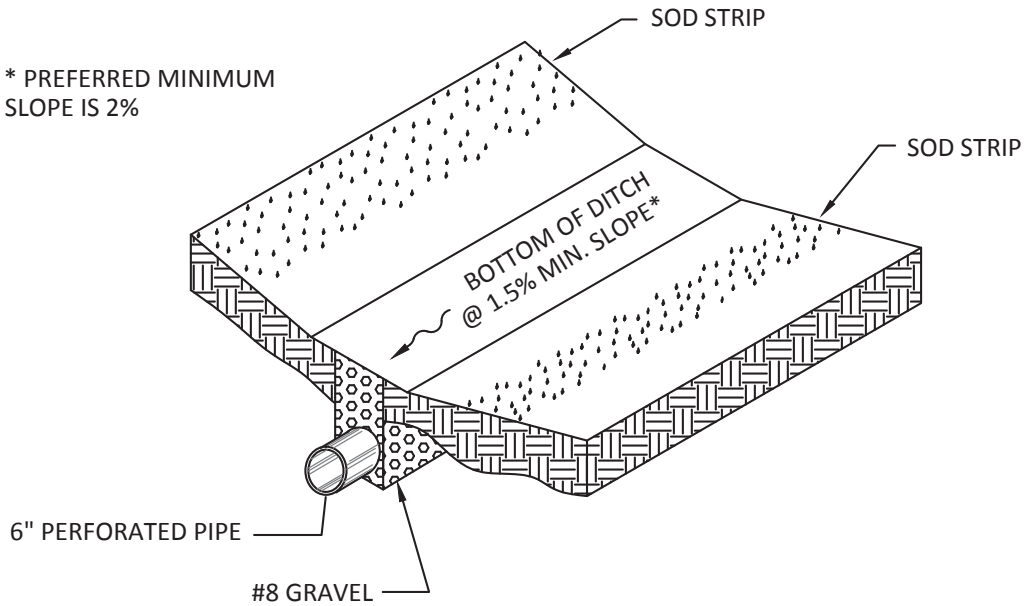
STANDARD DETAIL

ROCK CHANNEL PROTECTION
DETAILS AND NOTES

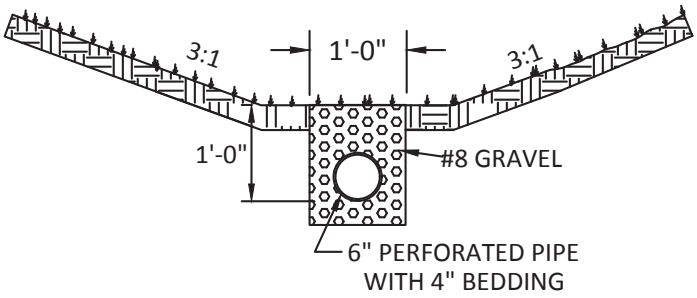
UTILITY

SEWD-15.2

Rev. 12/31/2018

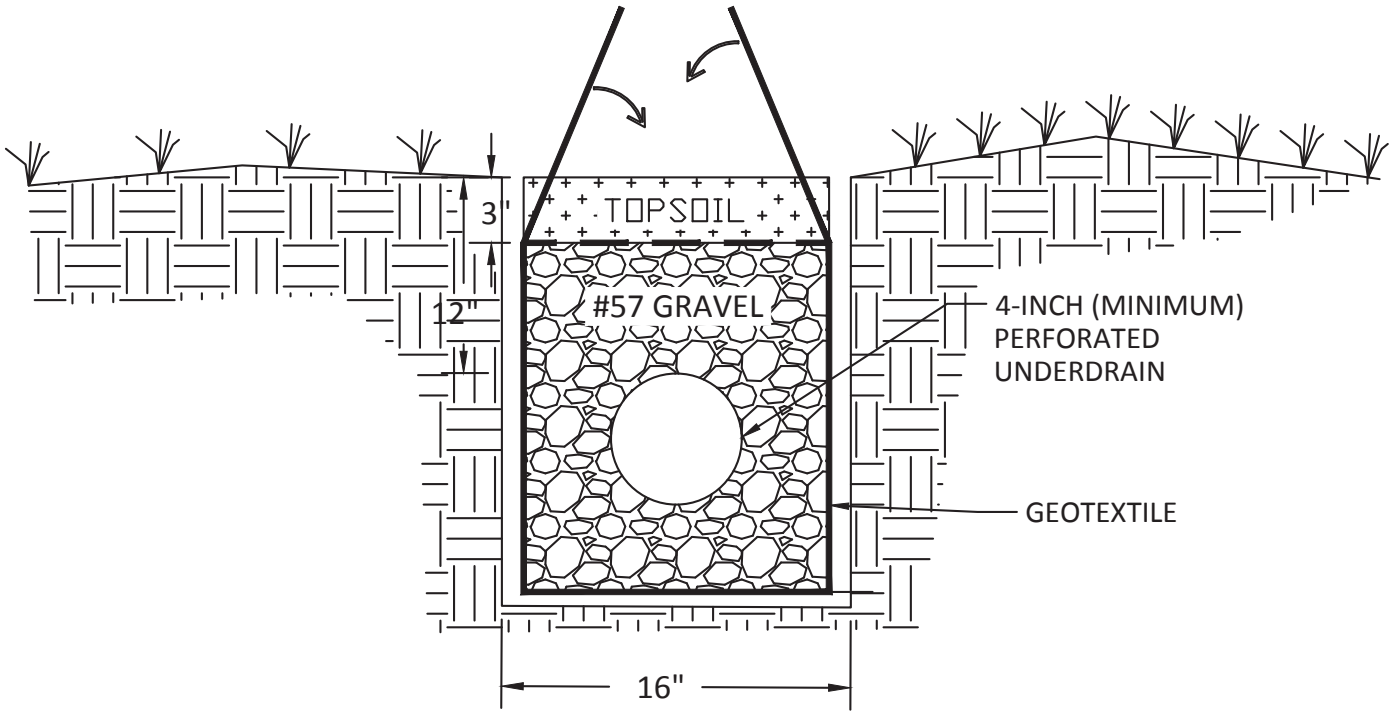


ISOMETRIC VIEW



DITCH FRENCH DRAIN DETAIL

EST 1808 CITY OF DELAWARE OHIO Public Works Department	STANDARD DETAIL DRAINAGE DETAIL FRENCH DRAIN	UTILITIES SEWD-16.1 Rev. 12/31/2018



NOTES:

1. ALL SWALES WITH LESS THAN 2% RUNNING SLOPE SHALL HAVE AN UNDERDRAIN THE ENTIRE LENGTH OF THE SWALE. THE UNDERDRAIN SHALL TERMINATE IN A STORM STRUCTURE.

2. ALL DRY DETENTION BASINS WITH A BOTTOM SLOPE OF LESS THAN 5% SHALL HAVE A SERIES OF UNDERDRAINS INSTALLED THAT OUTLET TO THE BASIN OUTLET STRUCTURE.

3. THE UNDERDRAIN TRENCH IS TO BE BACKFILLED WITH # 57 STONE

4. TRENCH TO BE CAPPED WITH 3-INCHES OF TOPSOIL.

5. TRENCH TO BE LINED WITH GEOTEXTILE PER THIS DETAIL

6. GEOTEXTILE FABRIC TO BE TYPE A AND MEET THE FOLLOWING SPECIFICATIONS:

MINIMUM TENSILE STRENGTH	85 lbs
MINIMUM PUNCTURE STRENGTH	25 lbs
MINIMUM TEAR STRENGTH	25 lbs
APPARENT OPENING SIZE:	≤0.3 mm

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STANDARD DETAIL

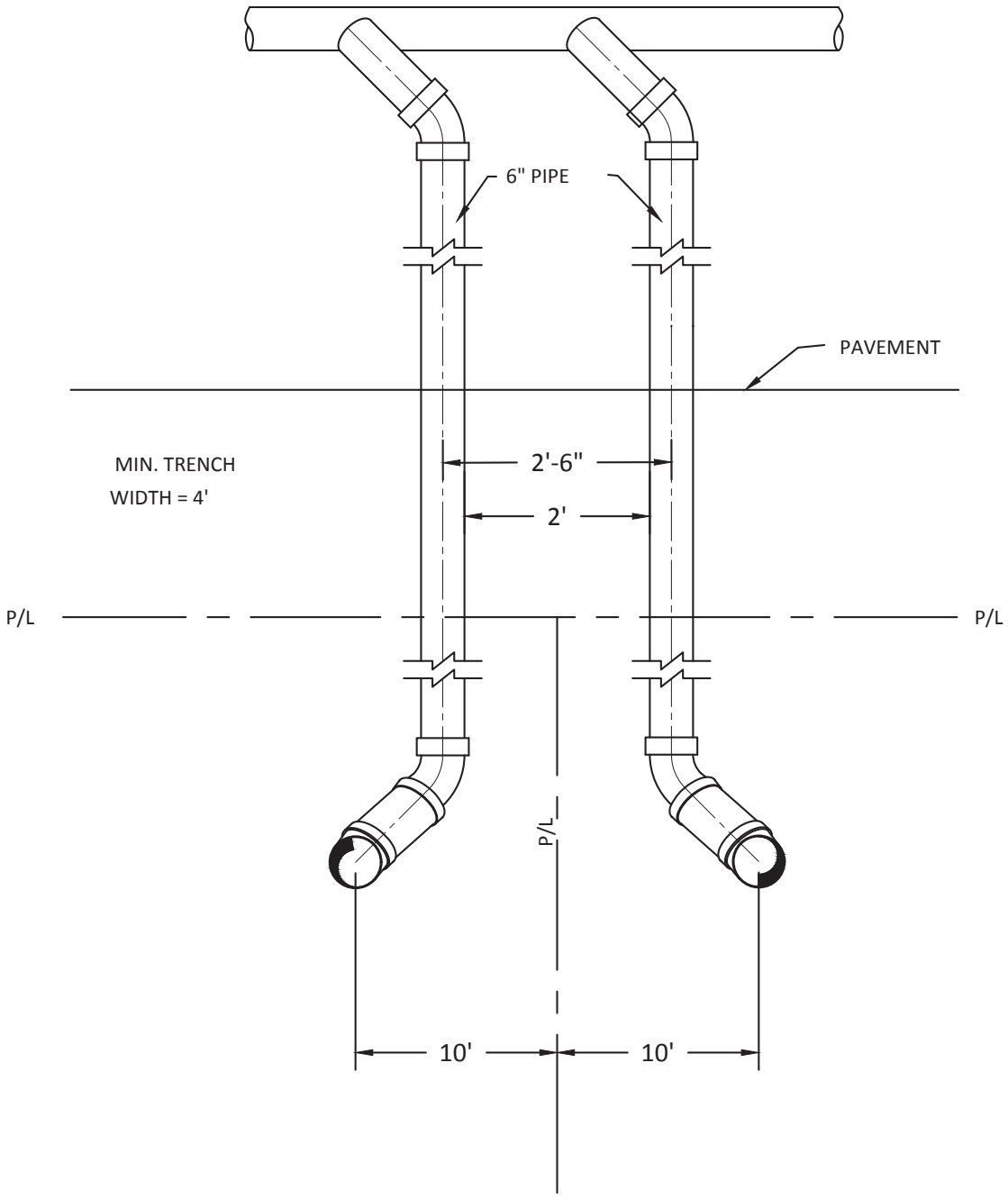
UNDERDRAIN DETAIL

(FOR USE UNDER SWALES AND DRAINAGE BASINS)

UTILITIES

SEWD-16.2

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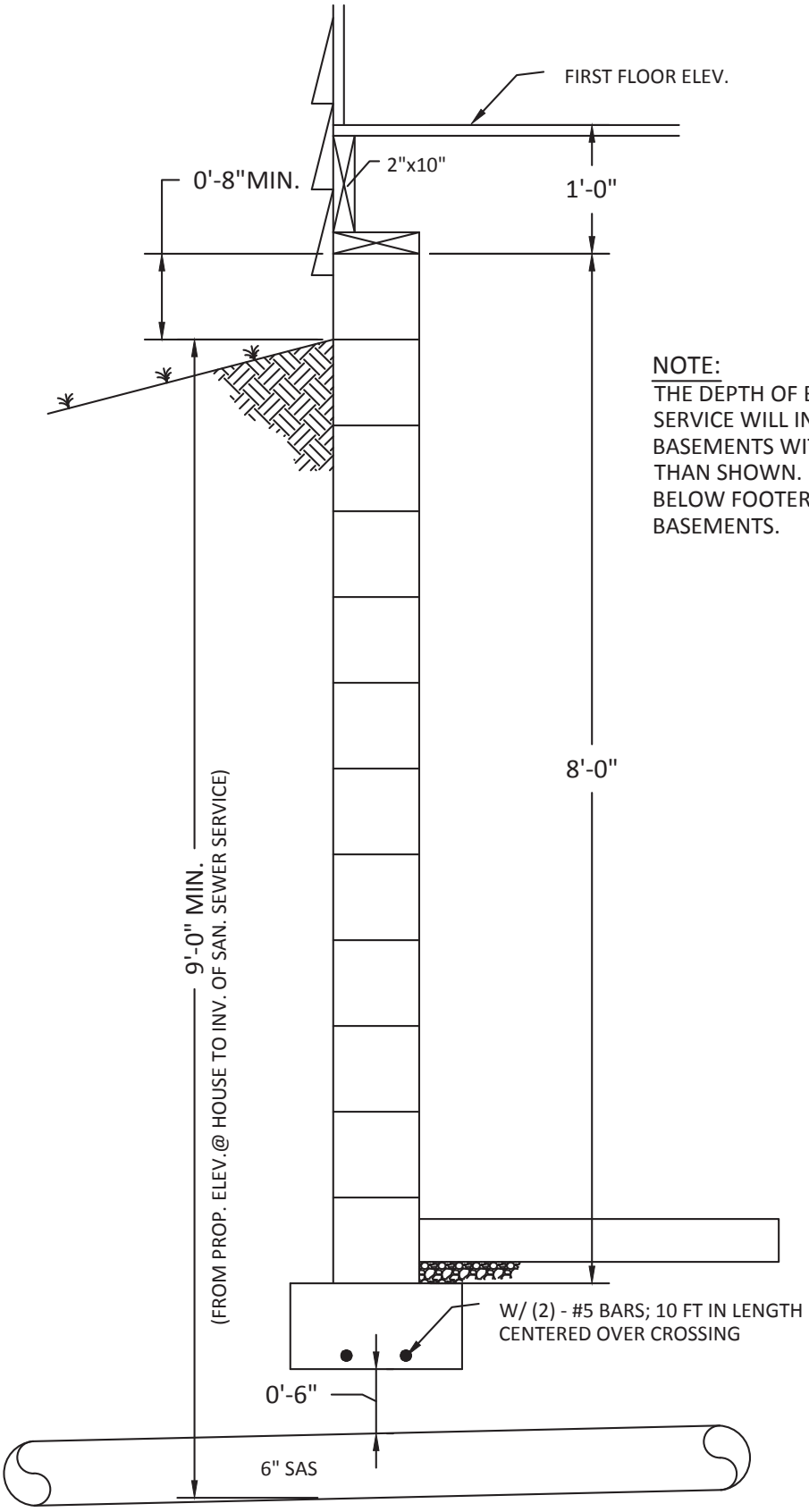
STANDARD DETAIL

SANITARY LATERAL STREET CROSSING
(2 LATERALS IN 1 TRENCH)

UTILITIES

SEWD-17.0

Rev. 12/31/2018



NOTE:
THE DEPTH OF BURY FOR THE SANITARY SERVICE WILL INCREASE FOR BASEMENTS WITH GREATER DEPTH THAN SHOWN. PROVIDE CLEARANCE BELOW FOOTER AS SHOWN FOR DEEPER BASEMENTS.

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STANDARD DETAIL

MINIMUM DEPTH OF SANITARY SEWER SERVICE

UTILITIES

SEWD-18.0

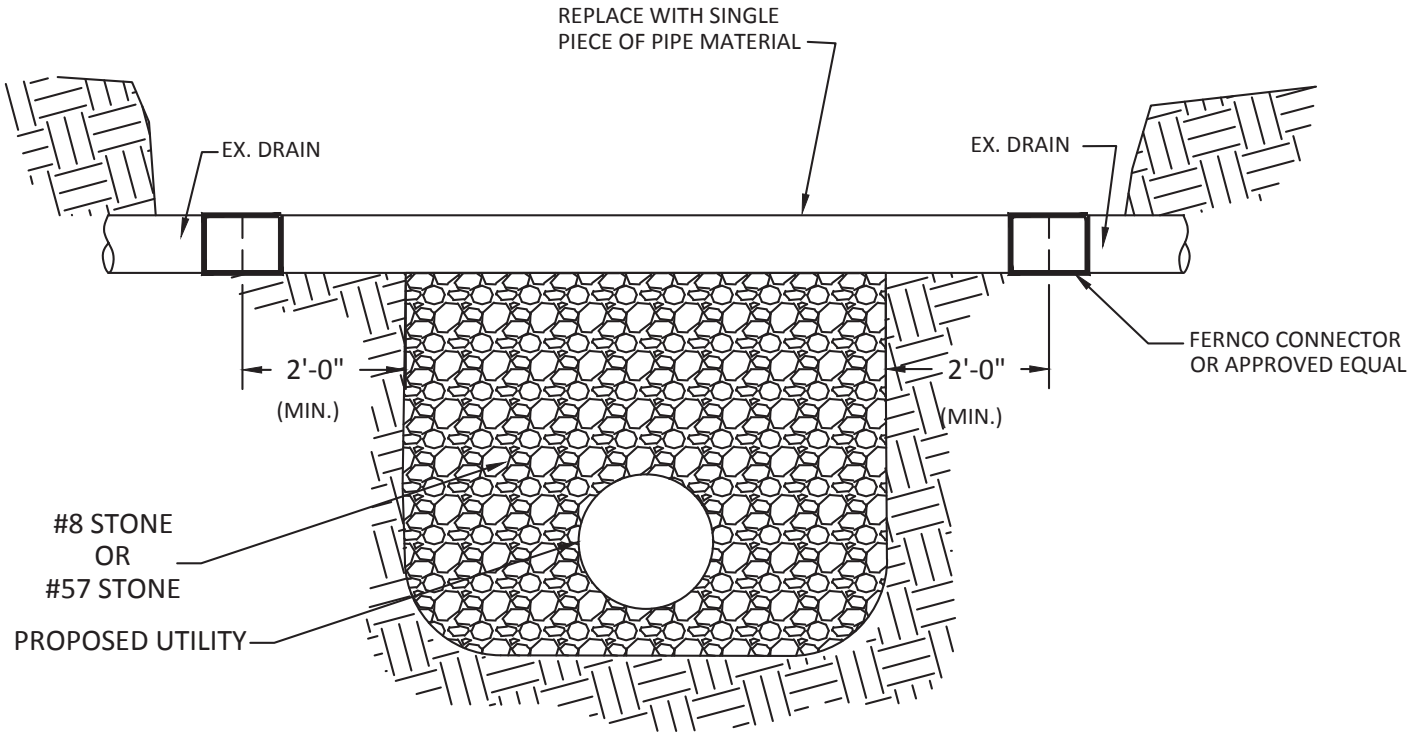
Rev. 12/31/2018

MINIMUM ROAD & CURB UNDERDRAIN REPLACEMENT MATERIAL SHALL BE:

PERFORATED CONCRETE: ITEM 706.06 (ODOTCMS)
CONCRETE DRAIN TILE : TILE 706.07 (ODOTCMS)
VITRIFIED CLAY: ITEM 706.08 (ODOTCMS) PERFORATED
PVC: ITEM 707.17 (ODOTCMS) HEAVY DUTY
CORRUGATED POLYETHYLENE SLOTTED DRAIN: ITEM 707.16 (ODOTCMS)

MINIMUM DRAIN TILE REPLACEMENT MATERIAL SHALL BE:

PVC: ASTM 2241, SDR 26
DUCTILE IRON: AWWA C151, CLASS 50
STEEL PIPE: ASTM 139-B
CONCRETE: ITEM 706.02 (ODOTCMS)
POLYETYLENE: ITEM 707.16, S.S. 944 (ODOTCMS)



NOTES:

1. INSIDE DIAMETER OF REPLACEMENT PIPE SHALL BE EQUAL TO OR GREATER THAN INSIDE DIAMETER OF EXISTING TILE OR UNDERDRAIN.
2. REPLACLEMENT MATERIAL USED SHALL BE EQUAL TO OR BETTER THAN THE EXISTING TILE OR UNDERDRAIN AS DIRECTED BY THE DIVISION OF ENGINEERING SERVICES.
3. PROVIDE FERNCO FITTINGS OR APPROVED EQUIVALENT WHERE EXISTING TILE OR UNDERDRAIN HAS WATERTIGHT JOINTS. PROVIDE 30# FELT OR CONCRETE MORTAR OVER THE UPPER HALF OF THE JOINT WHERE OPEN JOINTS ARE ENCOUNTERED.
4. BACKFILL BETWEEN THE PROPOSED UTILITY AND THE REPLACEMENT TILE OR UNDERDRAIN SHALL BE No. 8 OR No. 57 ANGULAR STONE.

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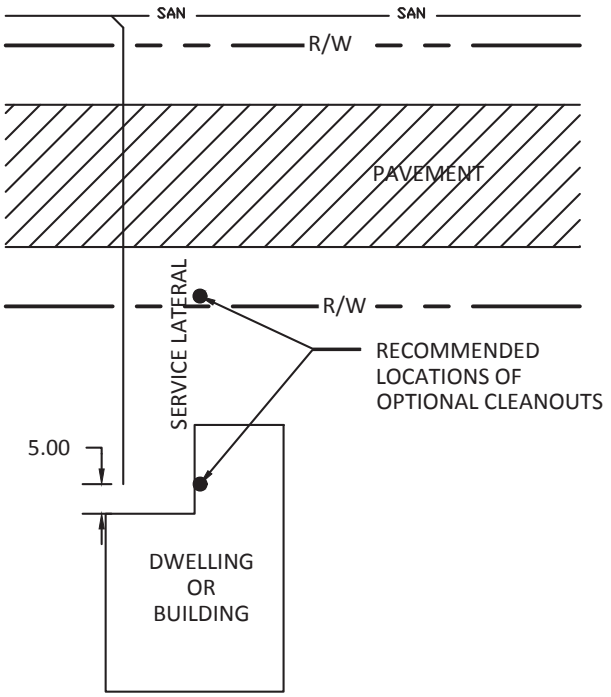
STANDARD DETAIL

FIELD DRAIN TILE & UNDERDRAIN REPLACEMENT

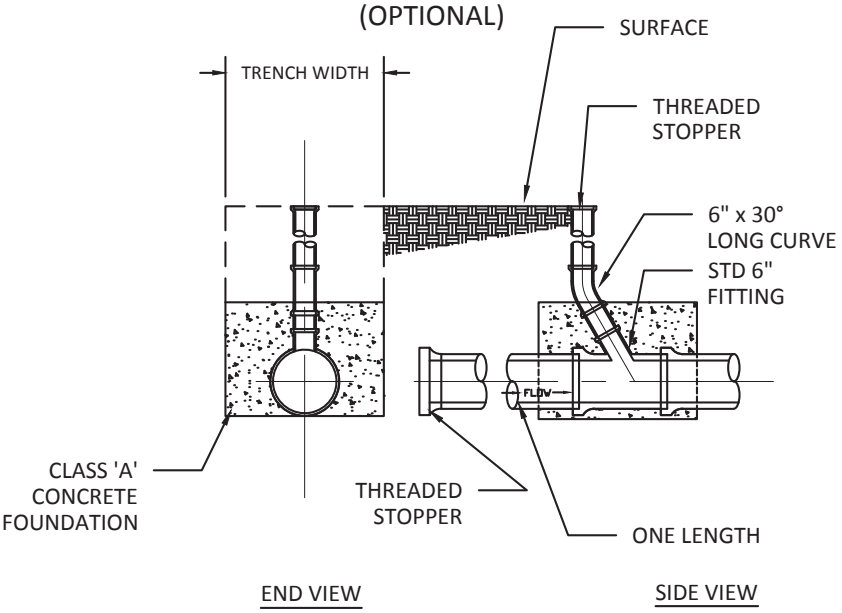
UTILITIES

SEWD-19.0

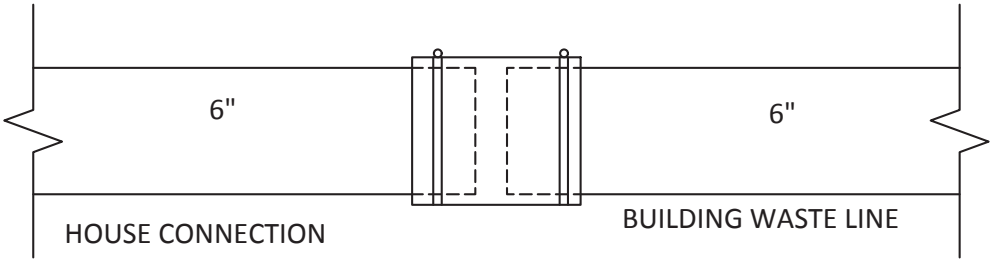
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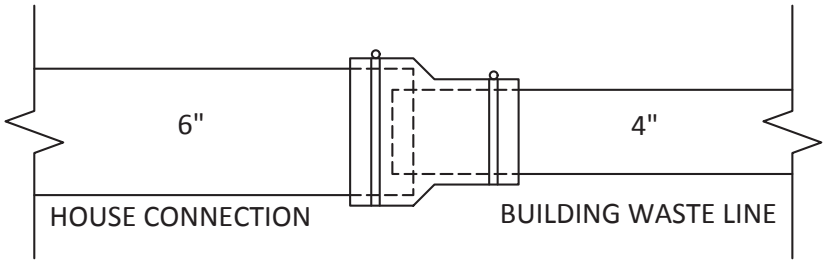
CLEANOUT
(OPTIONAL)



ALLOWABLE CONNECTION -
SANITARY HOUSE CONNECTION TO BUILDING WASTE LINE OF DIFFERING MATERIAL



FLEXIBLE COUPLING



FLEXIBLE REDUCING COUPLING

NOTE:

1. WHEN MAKING CONNECTION TO EXISTING BUILDING WASTE LINE OF A DIFFERENT MATERIAL, UTILIZE FLEXIBLE COUPLINGS, FERNCO SERIES 1000 OR APPROVED EQUAL.
2. WHEN MAKING CONNECTION TO EXISTING BUILDING WASTE LINE OF THE SAME MATERIAL (I.E. PVC TO PVC), UTILIZE SOLID SLEEVE COUPLING.

EST 1808 CITY OF DELAWARE OHIO Public Works Department	STANDARD DETAIL TYPICAL SANITARY HOUSE CONNECTION SERVICE	UTILITIES SEWD-20.0 Rev. 12/31/2018