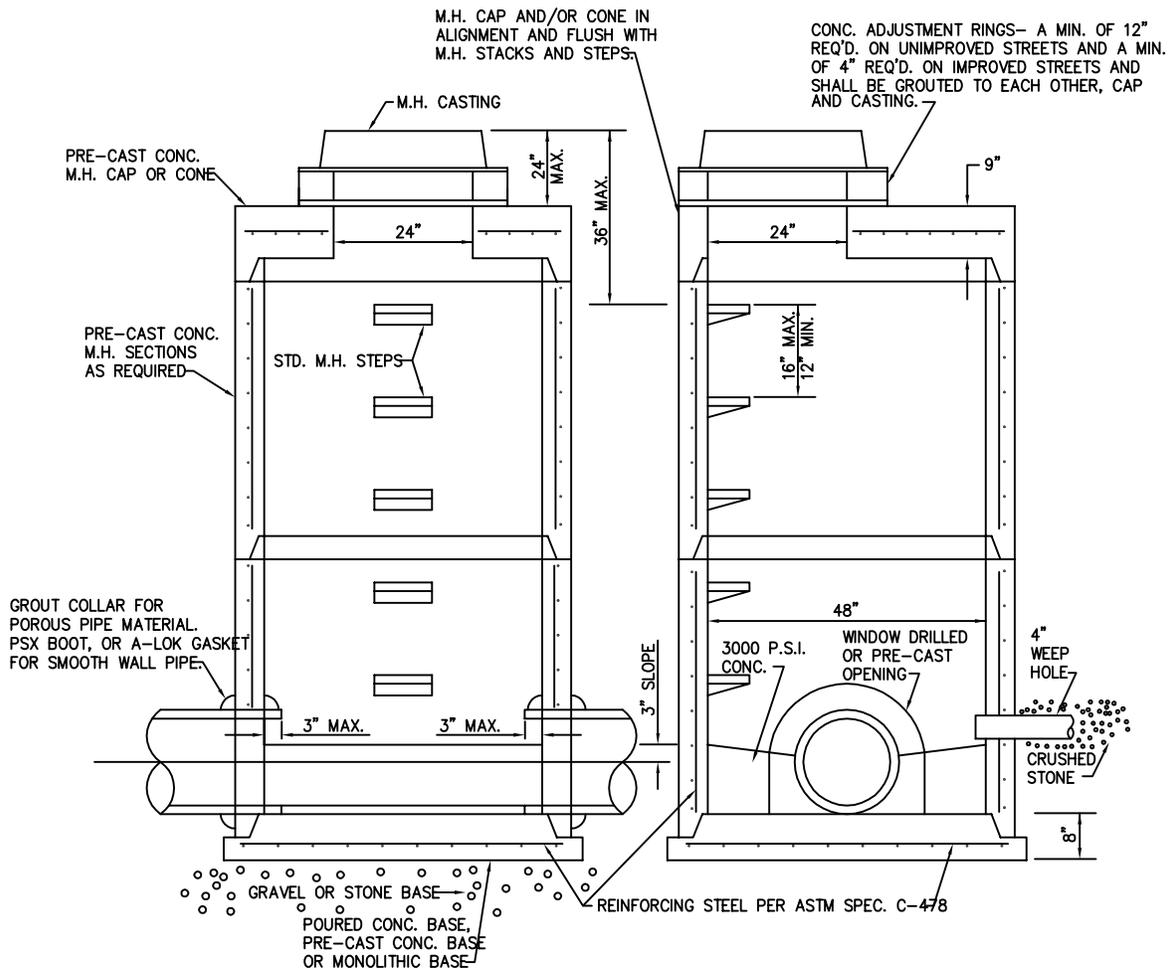


Sewer Details

S1	Type 1 Manhole
S2	Type II Manhole for 36in to 96in Diameter Pipe
S4	Type IV Manhole (Shallow Connection)
S6	Type VI Manhole (Drop Manhole)
S7	Invert For Cast In place Pipe & Base
S8	Invert Shapes
S9	Type I Catch Basin
S10	Type I Inlet
S11	Type III Inlet
S12	Cast Iron Manhole Step
S13	Reinforced Plastic Manhole Step
S14	Standard Cleanout Detail with Casting
S15	Tap Connection Detail (Deep Connection 10ft or Greater)
S16	Tap Connection Detail (Shallow Connection 10ft or Less)
S17	Typical Full Cut-In Wye
S18	Typical Partial Cut-In Wye
S19	Dissimilar Pipe Size Tap Connection
S20	Flexible Sewer Pipe Bedding Detail, Class I & II
S20A	Rigid Pipe Bedding Detail, Class A
S20B	Rigid Pipe Bedding Detail, Class B
S20C	Rigid Pipe Bedding Detail, Class C
S20D	Sewer Trench Detail
S21	Backfill Requirements (for pipe lines within right of way for improved streets)
S22	Backfill Requirements (for pipe lines crossing right of way for improved streets)
S23	Types A, B, and C Casting Detail
S24	Standard Casting Detail for Rolled Curb Type D
S25	Curb Casting Detail Type E
S26	Type F Casting Detail (Inverted Crown)
S27	Type G Casting Detail (Bee Hive Casting)
S28	Type J Waterproof Manhole Frame (Bolted Lid & Gasket)
S29	Trench Drain Detail
S30	Anti-Seep Collar Details
S31	18in Inlet
S32	Special Inlet for Yard Drain
S33	Sewer Air Valve Structure
S34	Sanitary Sewer Notes
S35	Storm Sewer Notes
S36	Line Drain Structure
S37	Fin Detail for Type H Casting
S38	Fin Detail for Type L Grate
S39	Type M Casting
S40	Trench Drain Detail
S41	Type 8 Casting Detail
S42	Inlet Type A Detail
S43	Storm Crossing Sanitary



GENERAL CONSTRUCTION REQUIREMENTS

- 1) MANHOLE MADE IN ACCORDANCE WITH ASTM C-478.
- 2) ALL PIPES SHALL HAVE A SMOOTH FINISH.
- 3) MANHOLE JOINTS TONGUE AND GROOVE WITH BUTYL ROPE OR O'RING IN ACCORDANCE WITH ASTM C-443.
- 4) PLUG WEEP HOLES WITH CONC. GROUT AFTER APPROVED COMPACTION.
- 5) THE BASE SHALL BE PLACED ON 4" MINIMUM COMPACTED GRAVEL OR STONE.
- 6) BASE DIAMETER 48"
- 7) PIPE DIAMETER: 6" TO 33" STRAIGHT THRU TO 45 ; 6" TO 24" 135° TO 90°

TYPE I MANHOLE



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Engineering & Public Works

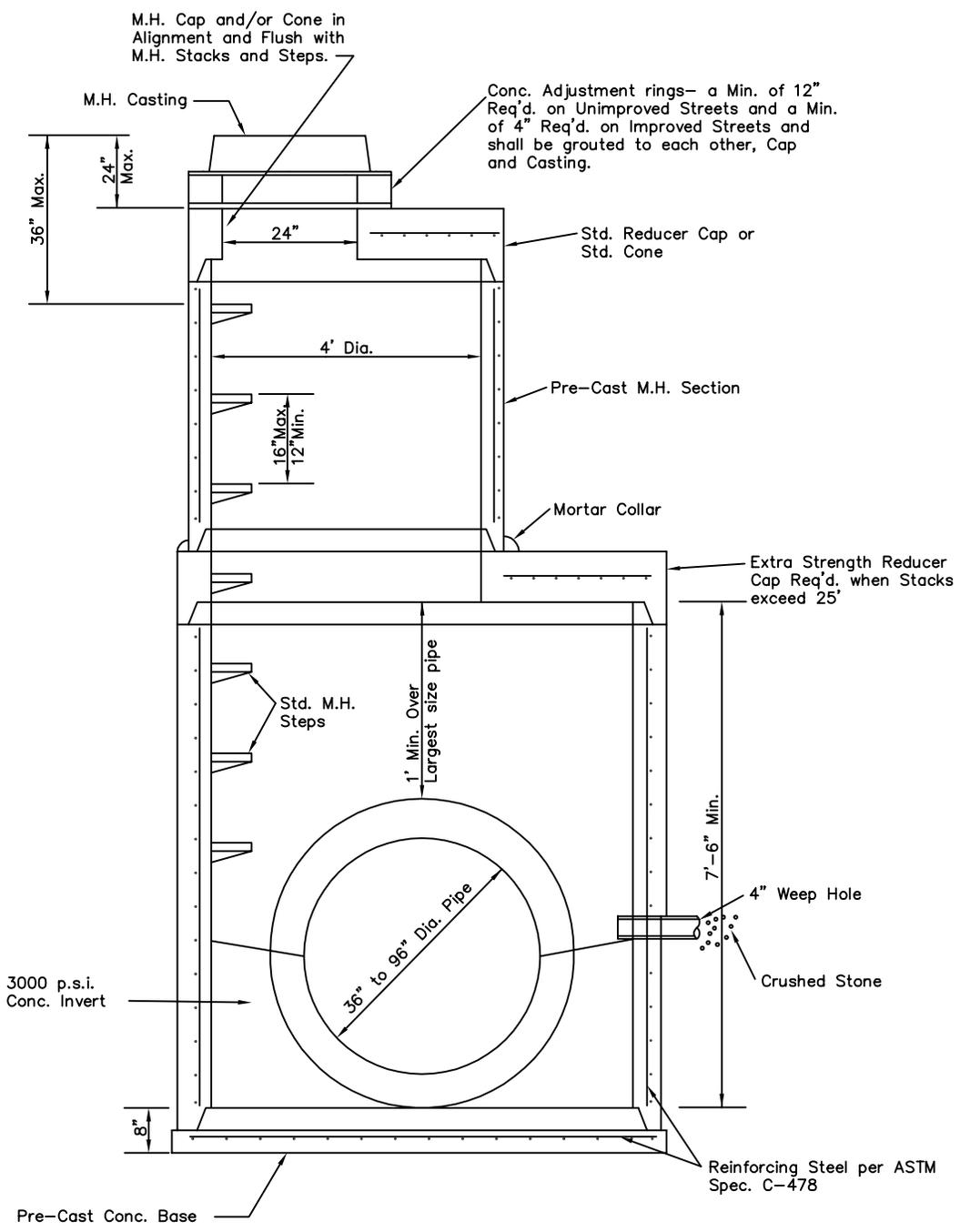
Type 1 Manhole

9-13-2017

Scale: N.T.S

S1

JF



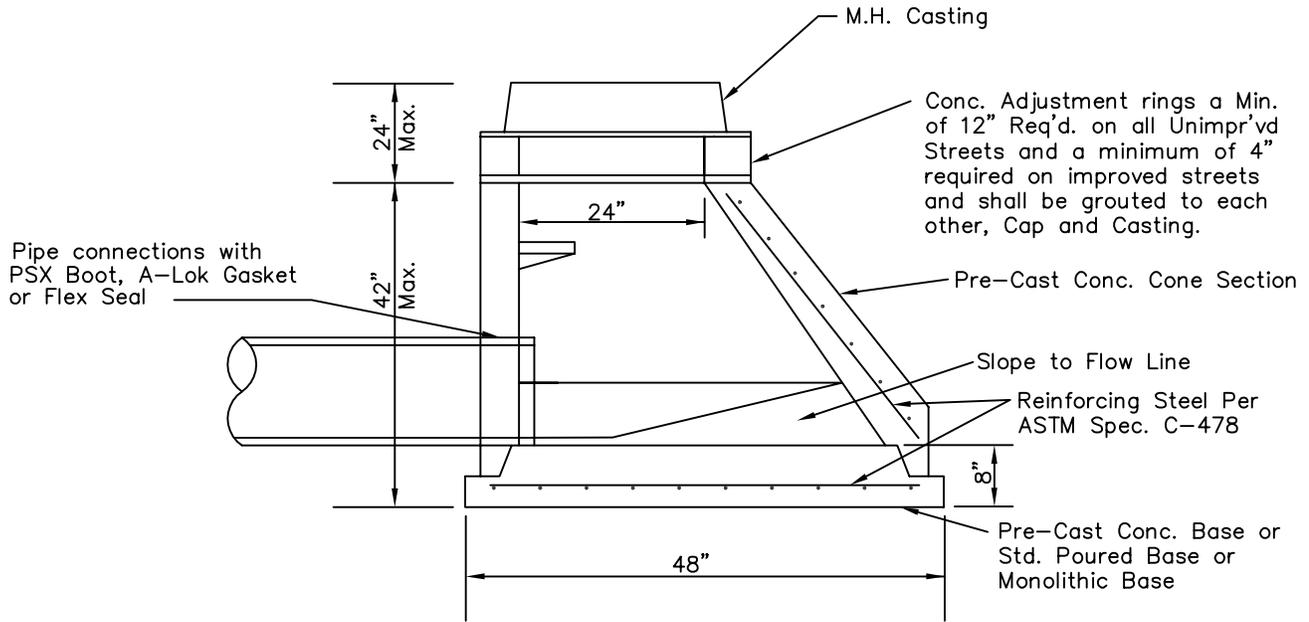
NOTE: General Construction Requirements Same as TYPE I Manhole

**TYPE II MANHOLE
(FOR 36" TO 96" DIA. PIPE)**



CITY OF HUNTINGTON
Engineering & Public Works

Type II Manhole for 36in to 96in Diameter Pipe	
9-13-2017	Scale: N.T.S
S2	JF



NOTE: General Construction Requirements
Same as TYPE I Manhole

TYPE IV MANHOLE
(SHALLOW CONNECTION)



CITY OF HUNTINGTON
Engineering & Public Works

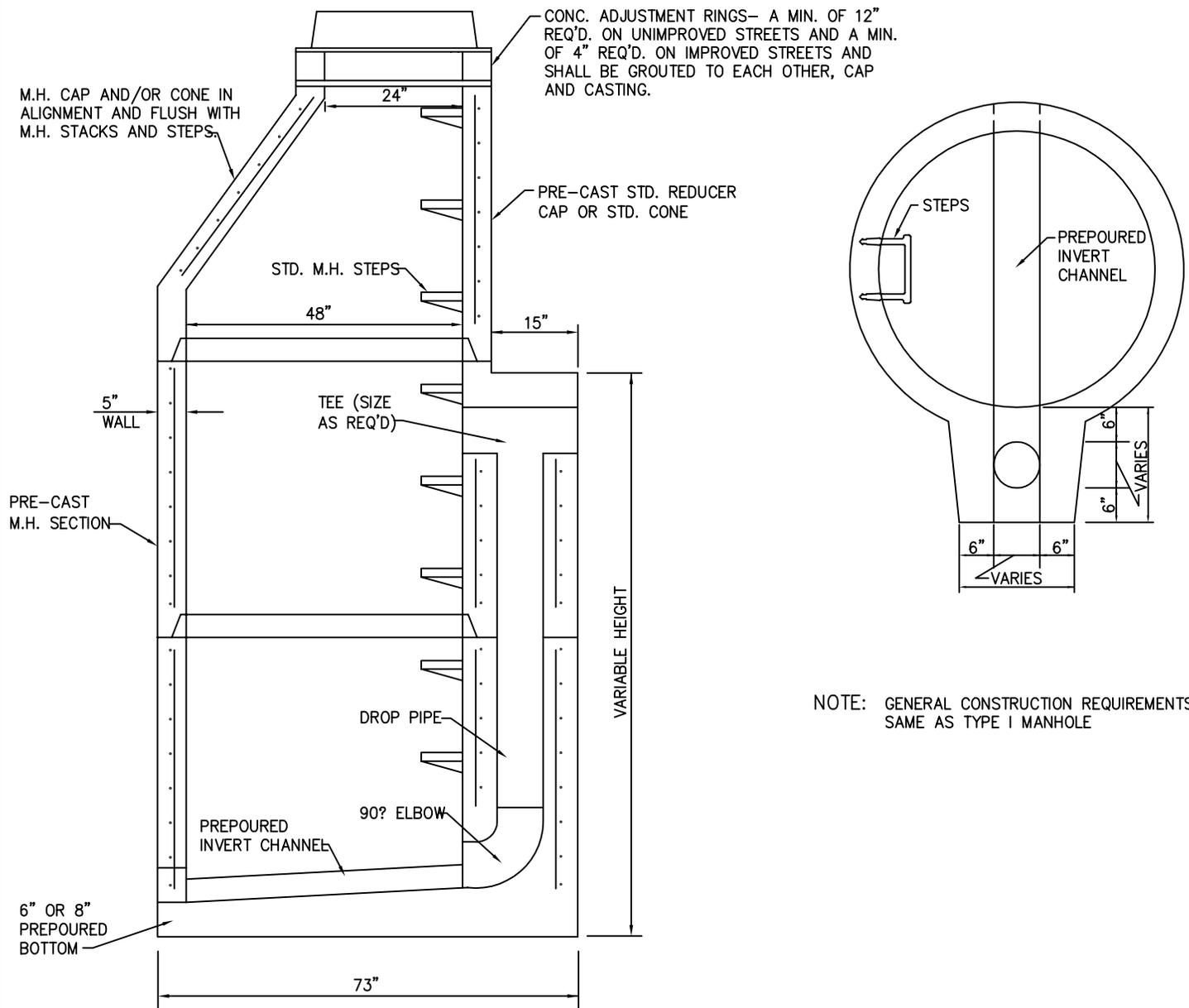
Type IV Manhole
(Shallow Connection)

9-13-2017

Scale: N.T.S

S4

JF



NOTE: GENERAL CONSTRUCTION REQUIREMENTS SAME AS TYPE I MANHOLE

TYPE VI MANHOLE (DROP MANHOLE)



CITY OF HUNTINGTON
Engineering & Public Works

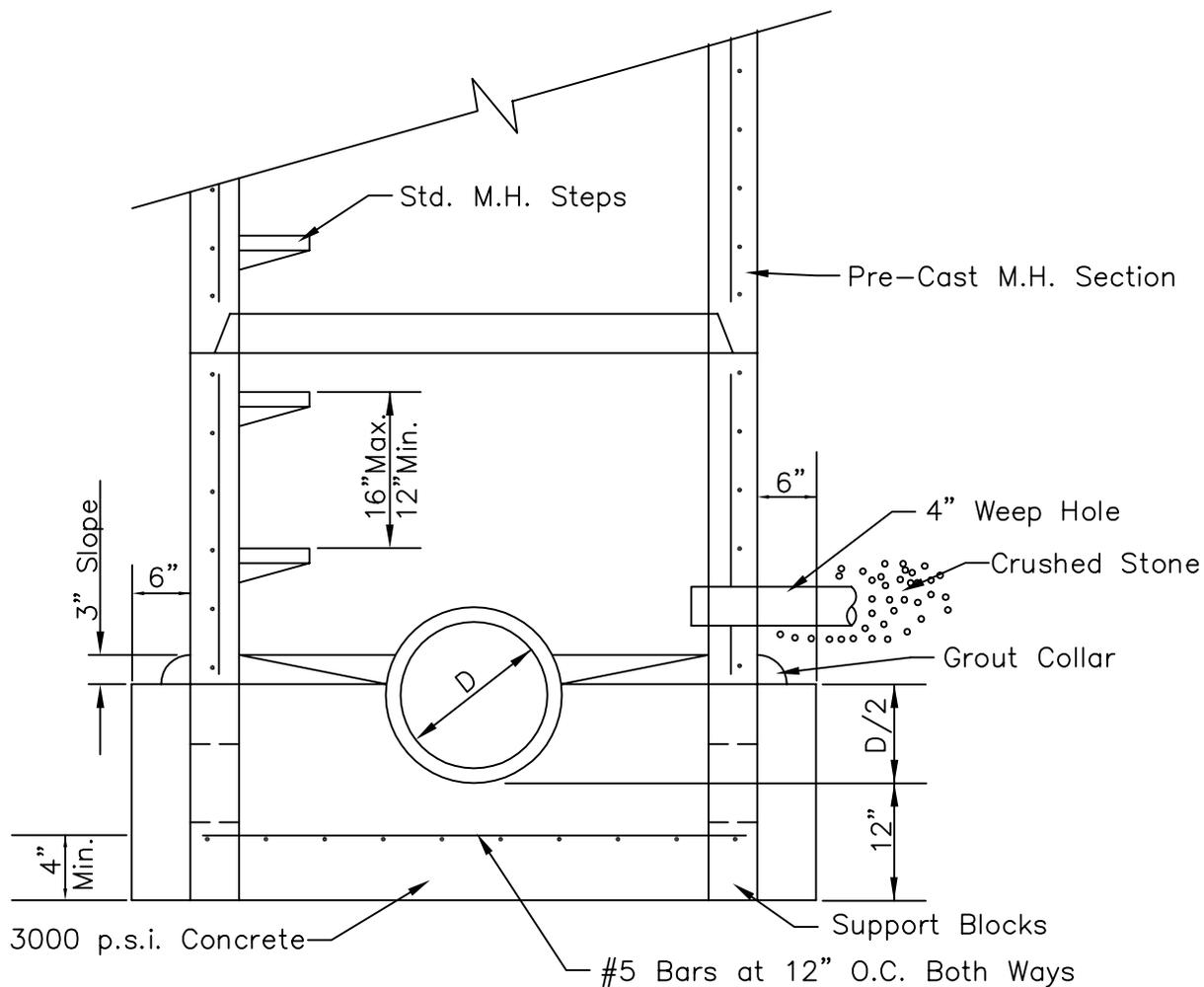
Type VI Manhole (Drop Manhole)

9-13-2017

Scale: N.T.S

S6

JF



NOTE: General Construction Requirements Same as Standard Manhole.

*INVERT FOR CAST IN
PLACE PIPE & BASE*



CITY OF HUNTINGTON
Engineering & Public Works

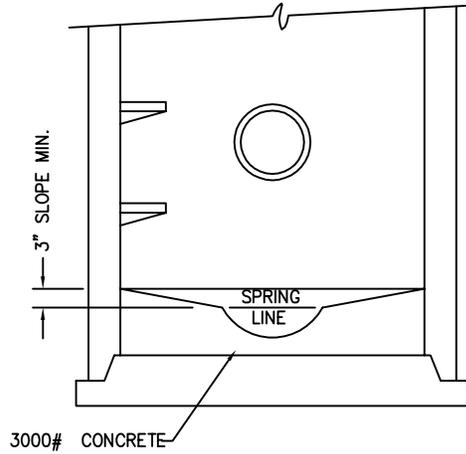
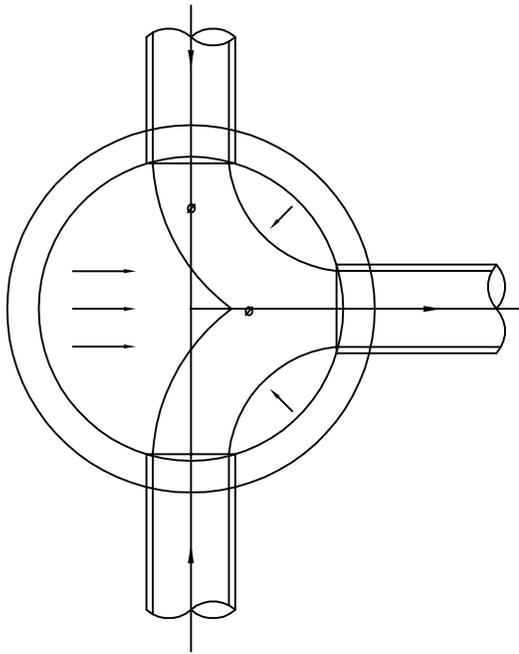
Invert For Cast In Place
Pipe & Base

9-13-2017

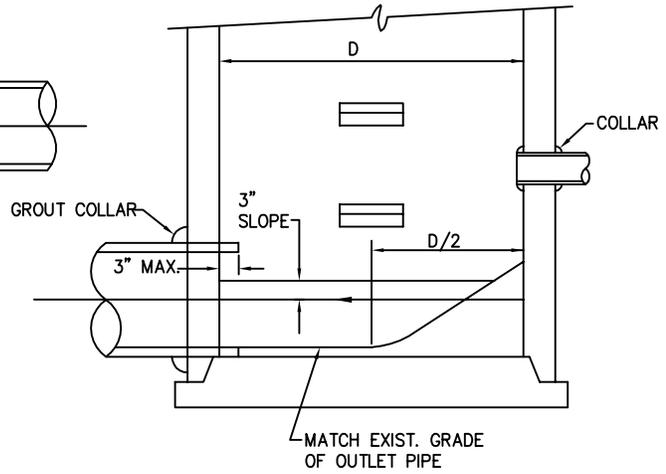
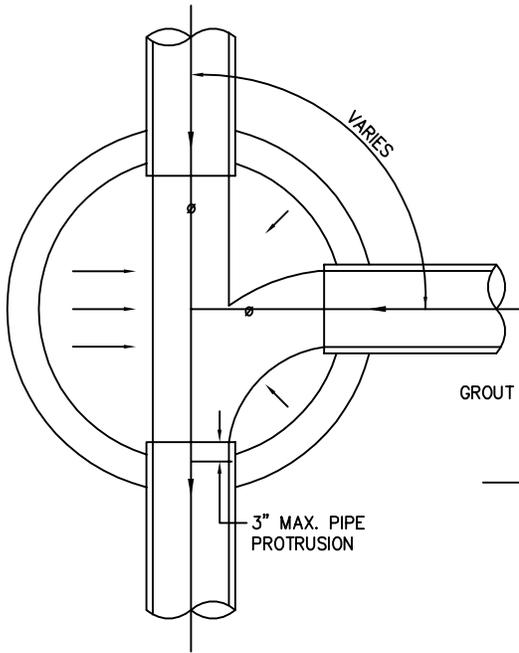
Scale: N.T.S

S7

JF



DROP, END, OR STEP-UP MANHOLE



NOTE:

- 1.) ϕ OF ALL PIPE TO INTERSECT ϕ OF M.H.
- 2.) ALL INCOMING PIPE SHALL HAVE A SMOOTH FINISH.
- 3.) INVERTS TO BE CAST UNDER DRY PIPE CONDITIONS.

INVERT SHAPES



CITY OF HUNTINGTON
Engineering & Public Works

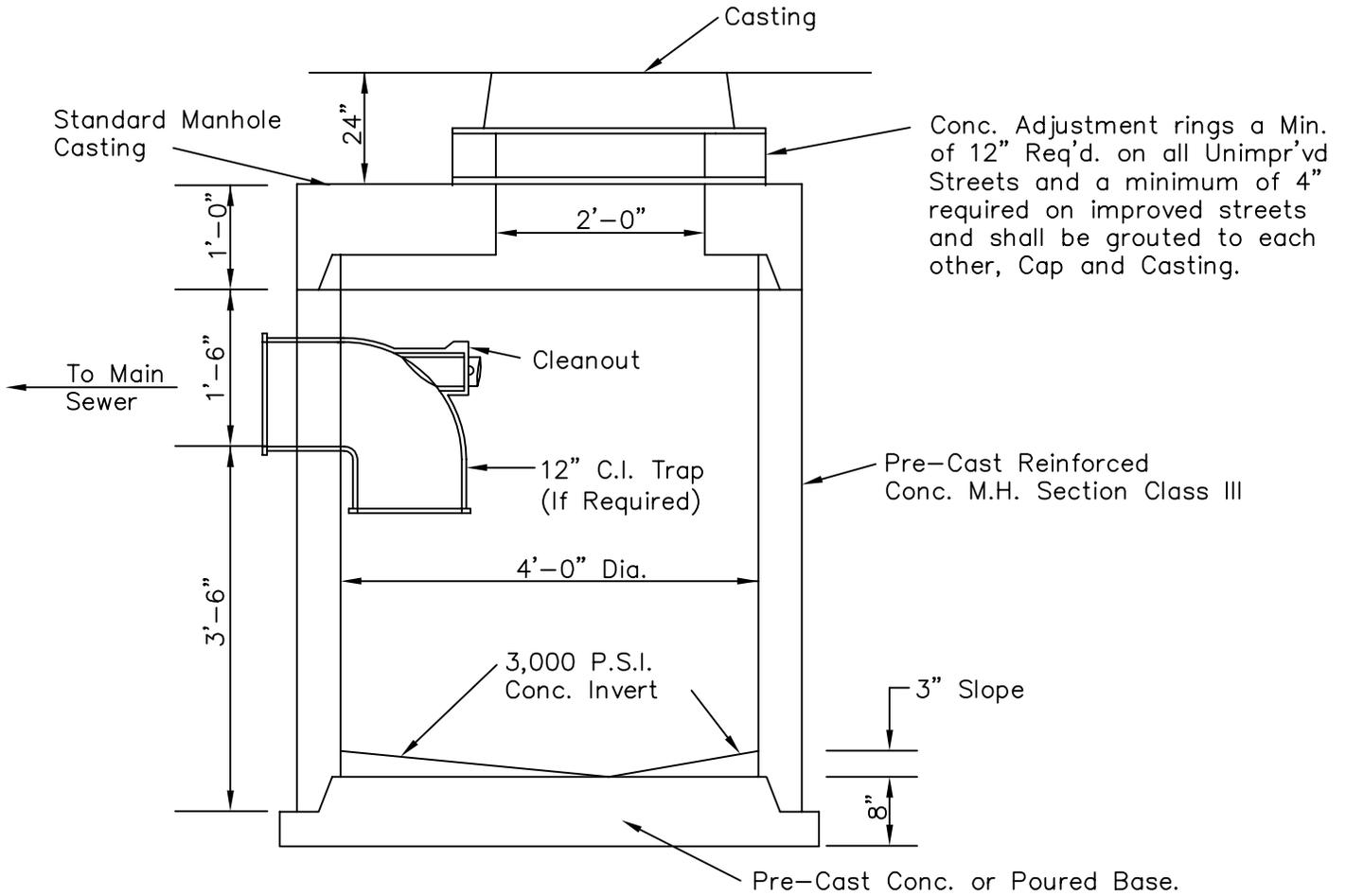
Invert Shapes

9-13-2017

Scale: N.T.S

S8

JF



NOTES:

- 1) All General Construction Requirements and Base same as TYPE I Manhole.
- 2) The Conc. Base & Invert shall be poured within 48 Hours. (3,000 P.S.I.)

TYPE I CATCH BASIN



CITY OF HUNTINGTON
Engineering & Public Works

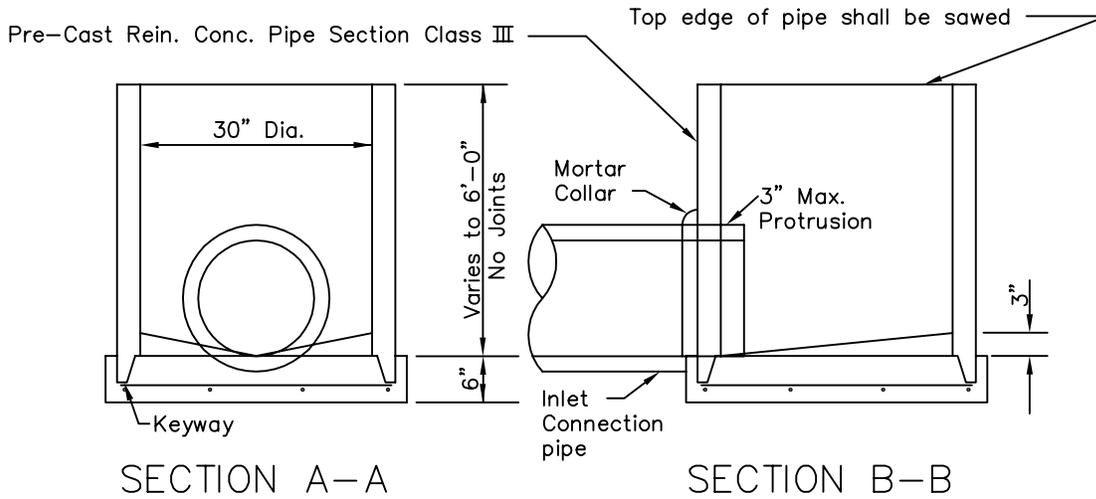
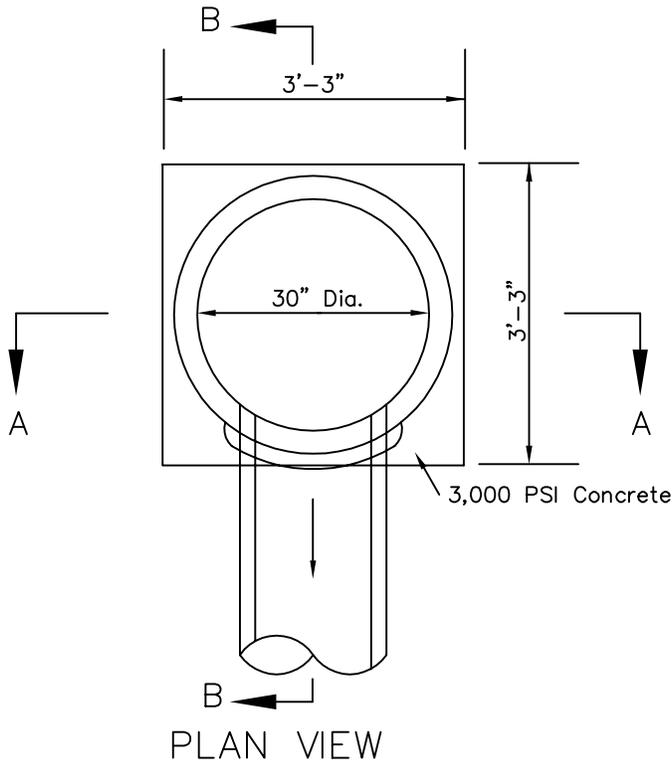
Type I Catch Basin

9-13-2017

Scale: N.T.S

S9

JF



NOTES:

- 1) 30" Dia. up to 15" pipe
- 2) 33" for 18" pipe
- 3) Poured Conc. Base with #5 Bars both ways 12" C to C.

TYPE I INLET



CITY OF HUNTINGTON
Engineering & Public Works

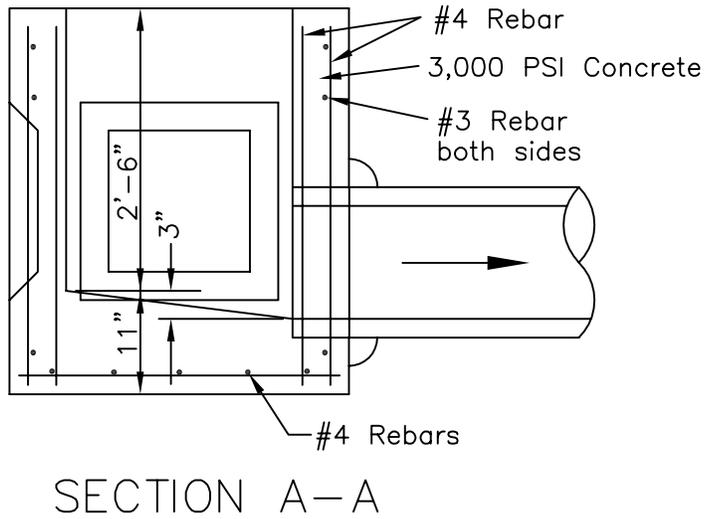
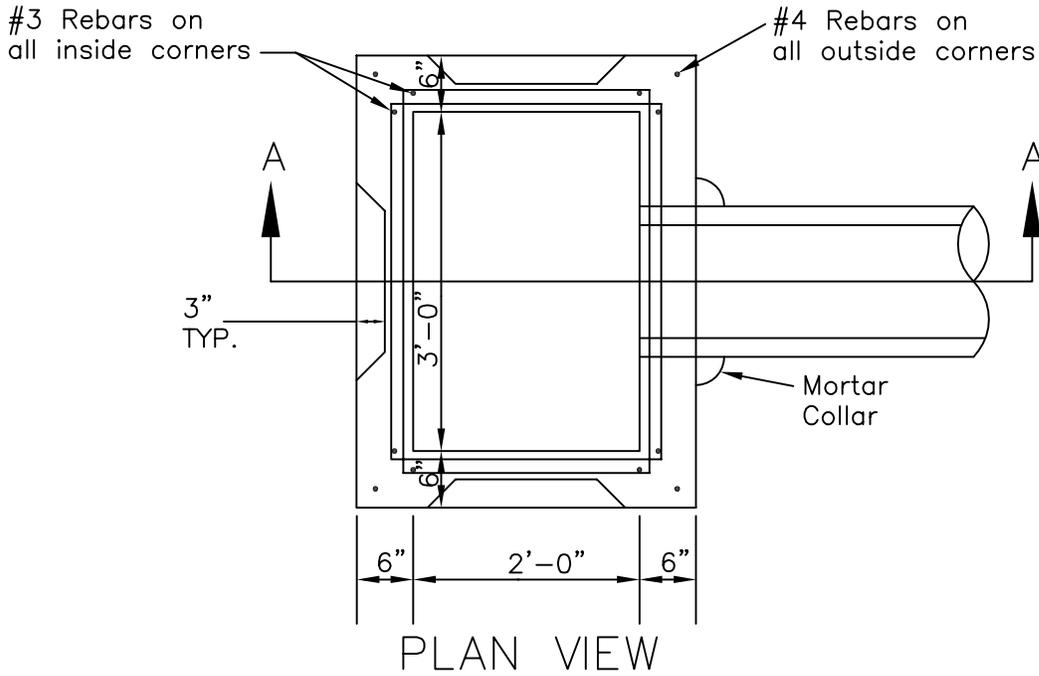
Type I Inlet

9-13-2017

Scale: N.T.S

S10

JF



NOTES:

- 1) All pipe shall have smooth finish.
- 2) Reinforcing Steel Per ASTM Spec. C-478-72a.

TYPE III INLET



CITY OF HUNTINGTON
Engineering & Public Works

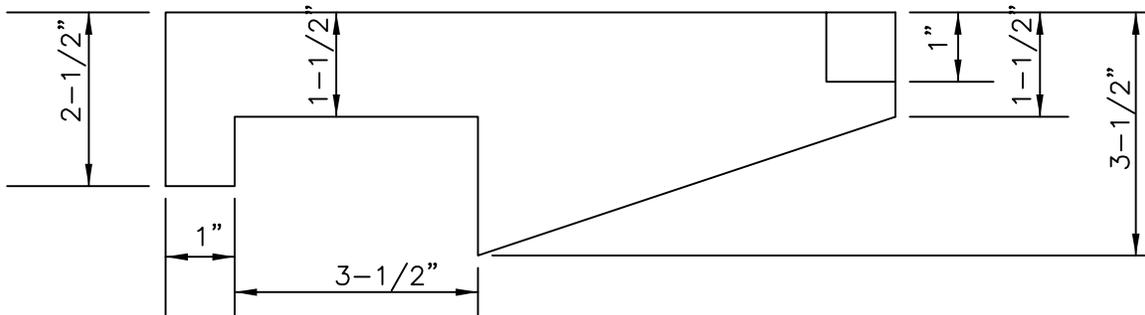
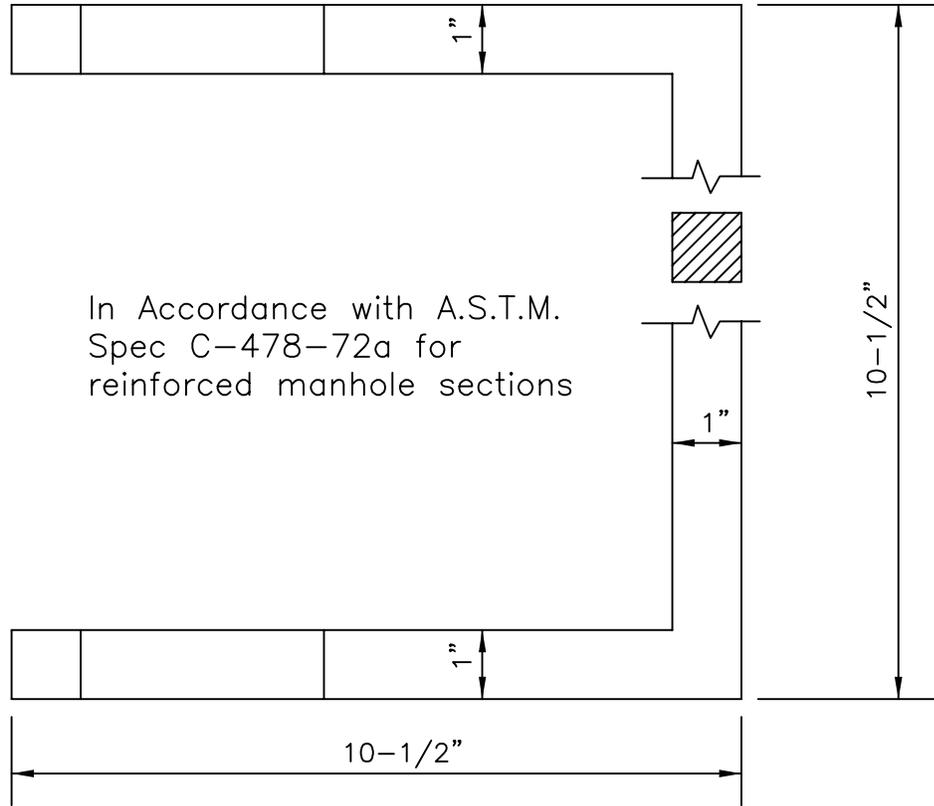
Type III Inlet

9-13-2017

Scale: N.T.S

S11

JF



CAST IRON MANHOLE STEP



CITY OF HUNTINGTON
Engineering & Public Works

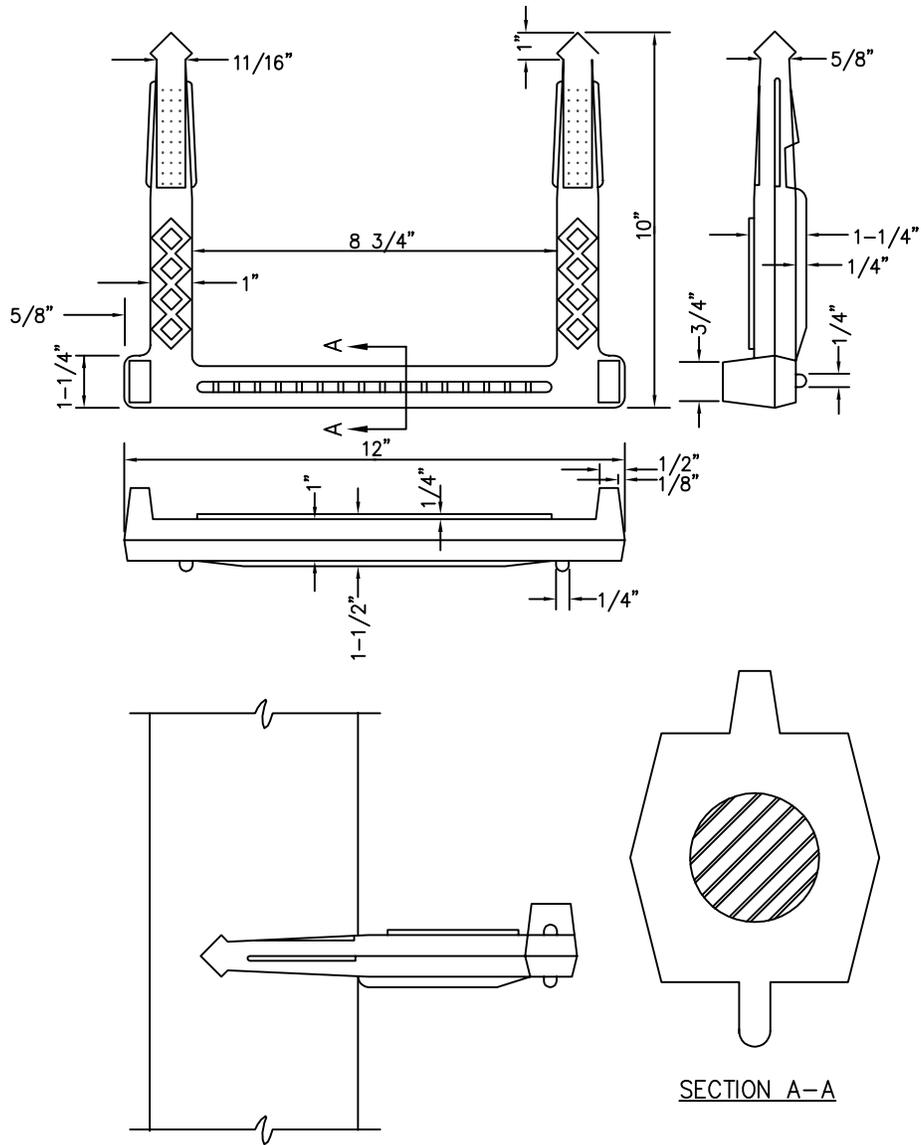
Cast iron Manhole Step

9-13-2017

Scale: N.T.S

S12

JF



NOTES:

- 1) STEPS SHALL BE PLACED INTO WET CONCRETE WALL DURING MANUFACTURE OR MORTED INTO HOLES AFTER CONCRETE HAS SET.
- 2) IN ACCORDANCE WITH INDIANA STATE HIGHWAY COMMISSION TESTS OF M.H. STEP #170, OR APPROVED EQUAL.

REINFORCED PLASTIC MANHOLE STEP



CITY OF HUNTINGTON
Engineering & Public Works

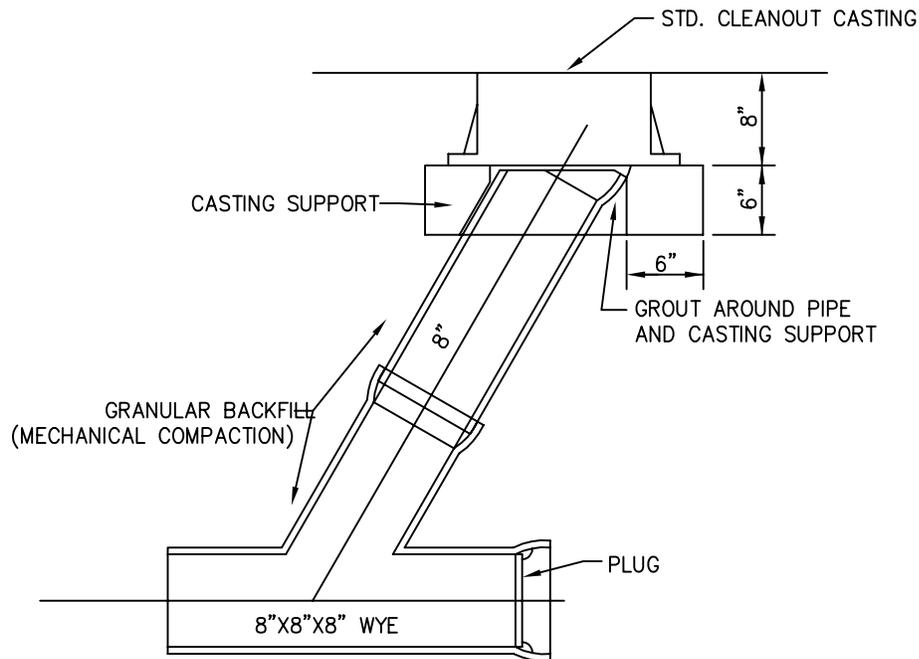
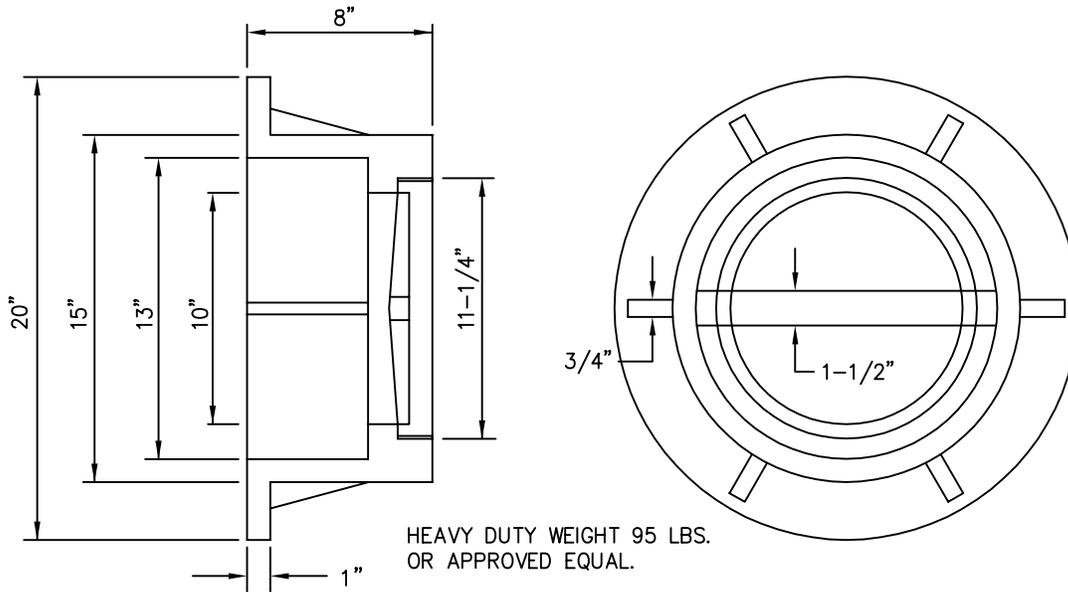
Reinforced Plastic Manhole Step

9-13-2017

Scale: N.T.S

S13

JF



STANDARD CLEANOUT DETAIL WITH CASTING



CITY OF HUNTINGTON
Engineering & Public Works

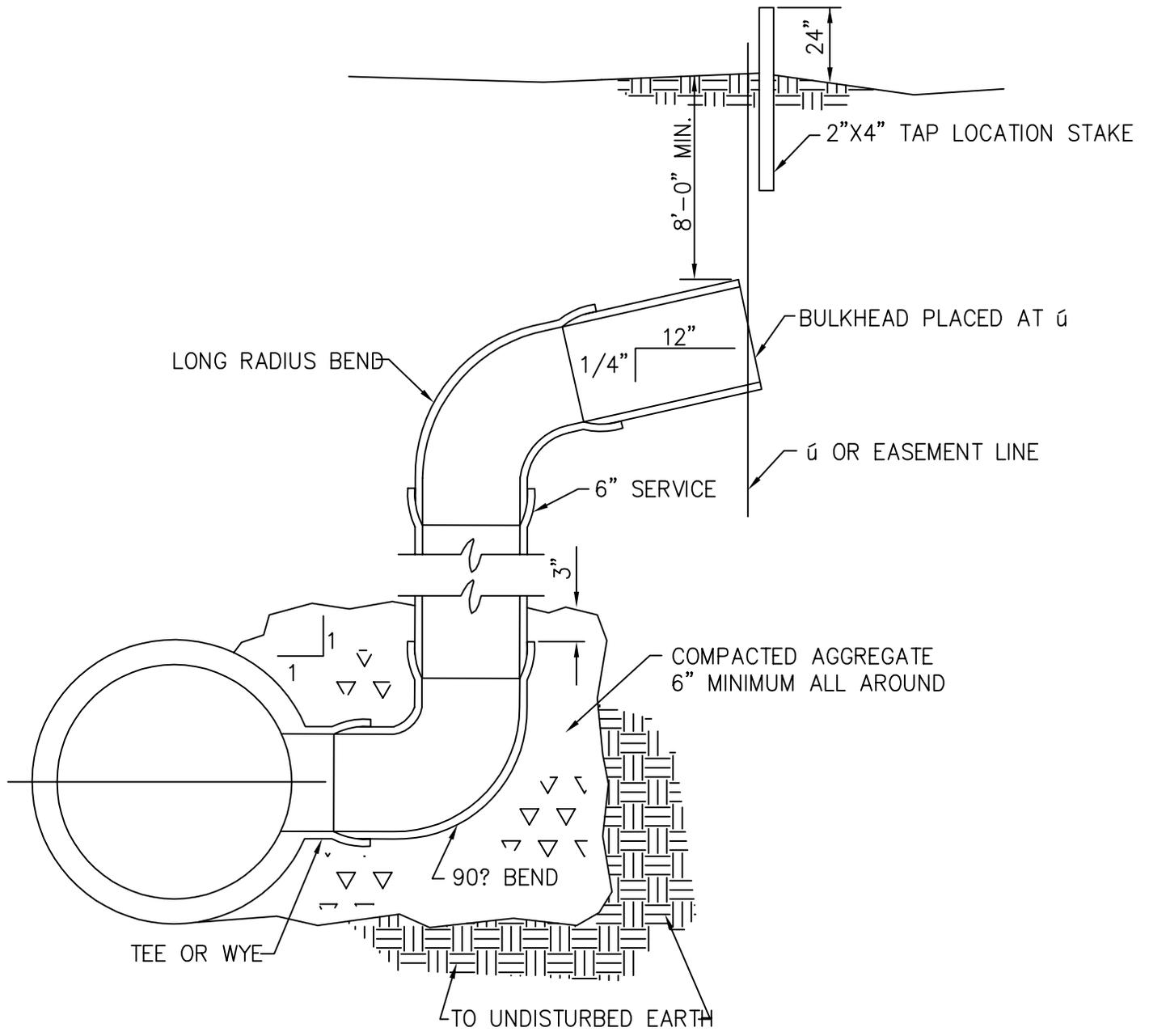
Standard Cleanout Detail with Casting

9-13-2017

Scale: N.T.S

S14

JF

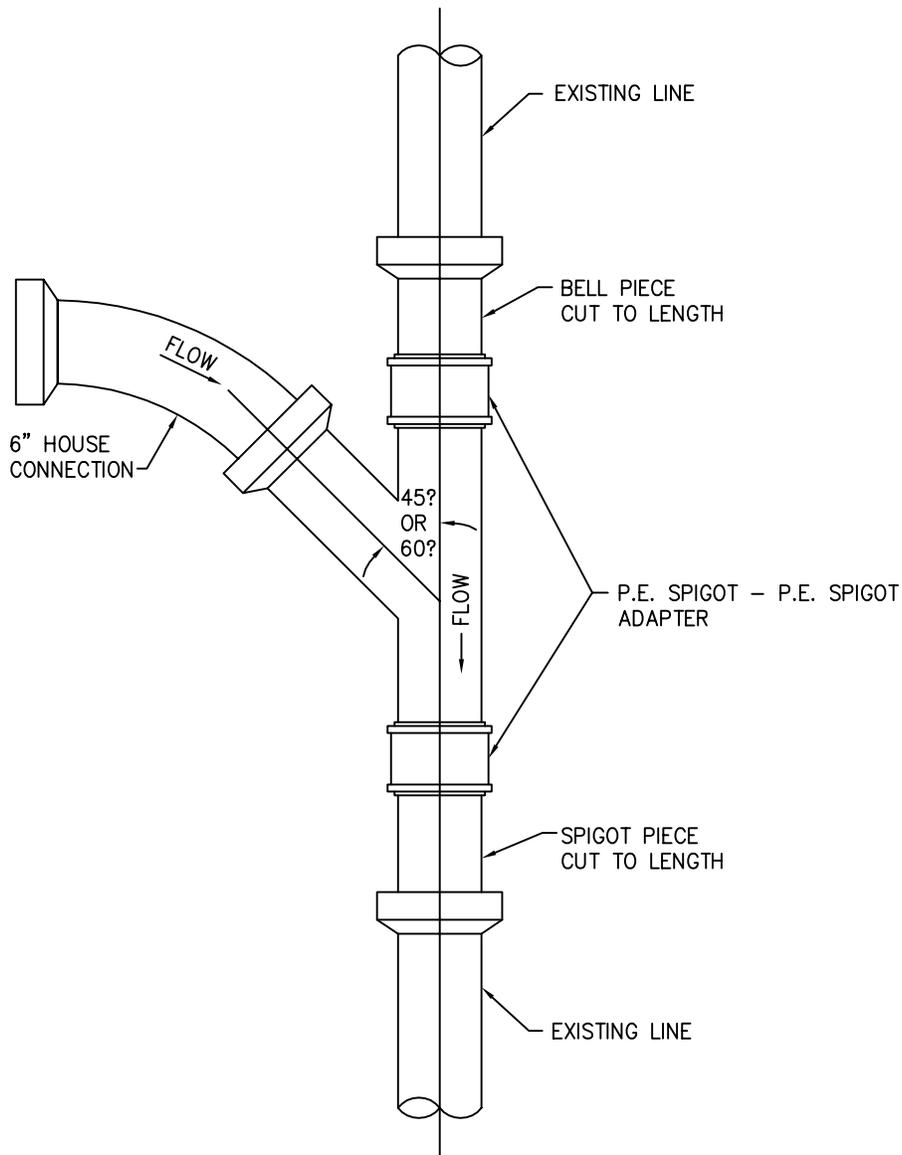


TAP CONNECTION DETAIL
(DEEP CONNECTION, 10' OR GREATER)



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Engineering & Public Works

Tap Connection Detail (Deep Connection 10ft. or Greater)	
9-13-2017	Scale: N.T.S
S15	JF



TYPICAL FULL CUT-IN WYE



CITY OF HUNTINGTON
Engineering & Public Works

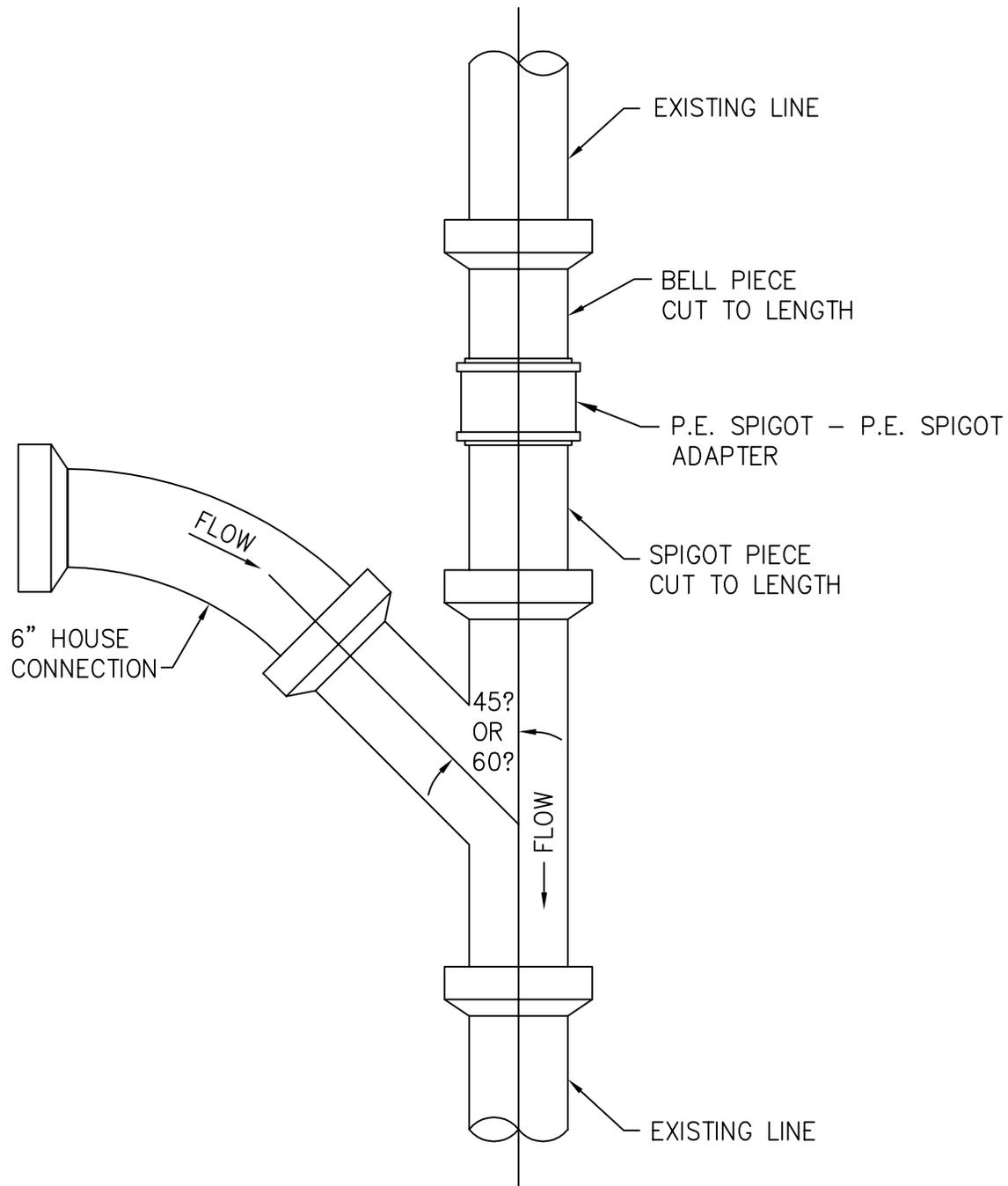
Typical Full Cut-In Wye

9-13-2017

Scale: N.T.S

S17

JF



TYPICAL PARTIAL CUT-IN WYE



CITY OF HUNTINGTON
Engineering & Public Works

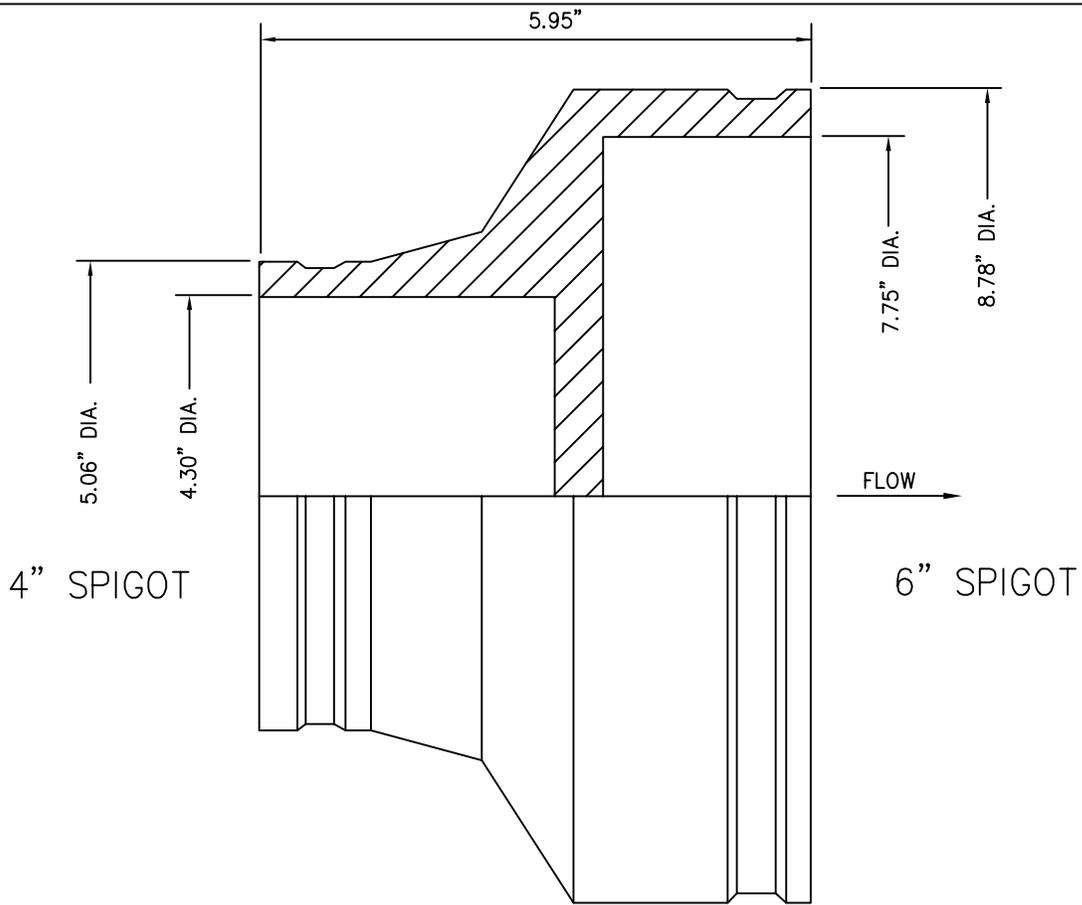
Typical Partial Cut-In Wye

9-13-2017

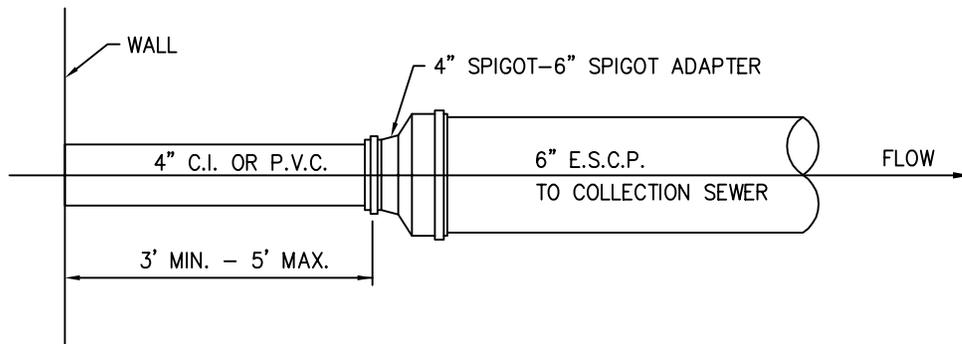
Scale: N.T.S

S18

JF



NOTE: EACH COUPLING TO HAVE TWO 302 STAINLESS STEEL ADJUSTABLE BANDA



DISSIMILAR PIPE SIZE TAP CONNECTION



CITY OF HUNTINGTON
Engineering & Public Works

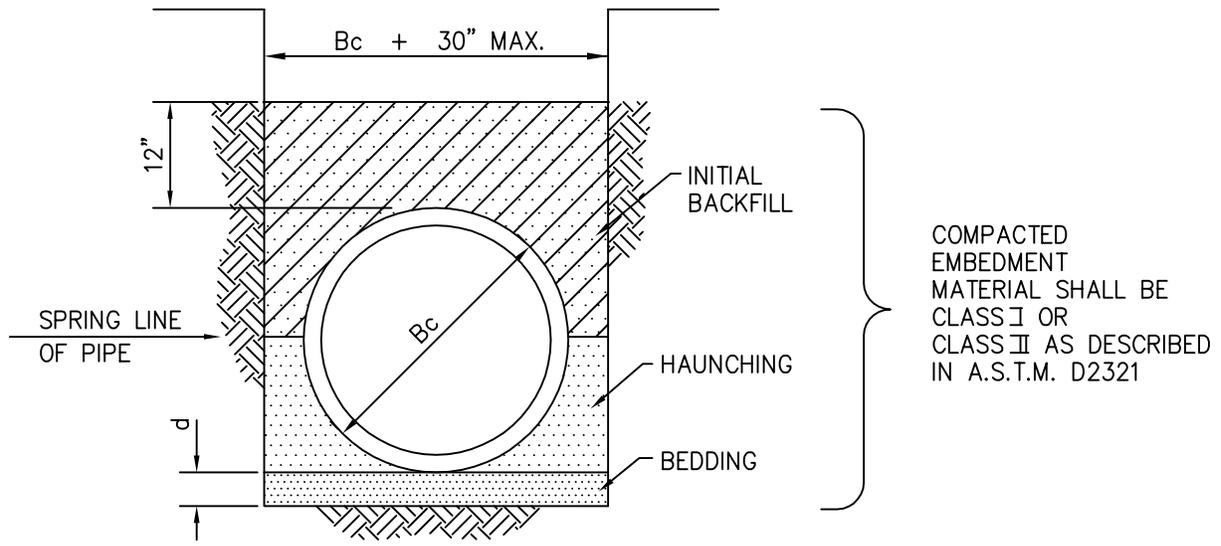
Dissimilar Pipe Size Tap Connection

9-13-2017

Scale: N.T.S

S19

JF



GRANULAR FOUNDATION

DEPTH OF BEDDING MATERIAL BELOW PIPE	
D	d(MIN.)
27" & SMALLER	4"
30" TO 60"	4"
66" & LARGER	6"

LEGEND
 Bc = OUTSIDE DIAMETER
 D = INSIDE DIAMETER
 d = DEPTH OF BEDDING MATERIAL BELOW PIPE BELL

NOTE:

FOR ROCK OR OTHER NON-COMPRESSABLE MATERIAL:
 THE TRENCH SHOULD BE OVER-EXCAVATED A MIN.
 OF 6" & REFILLED WITH GRANULAR MATERIAL.

FLEXIBLE SEWER PIPE BEDDING DETAIL,
CLASS I & II



CITY OF HUNTINGTON
 Engineering & Public Works

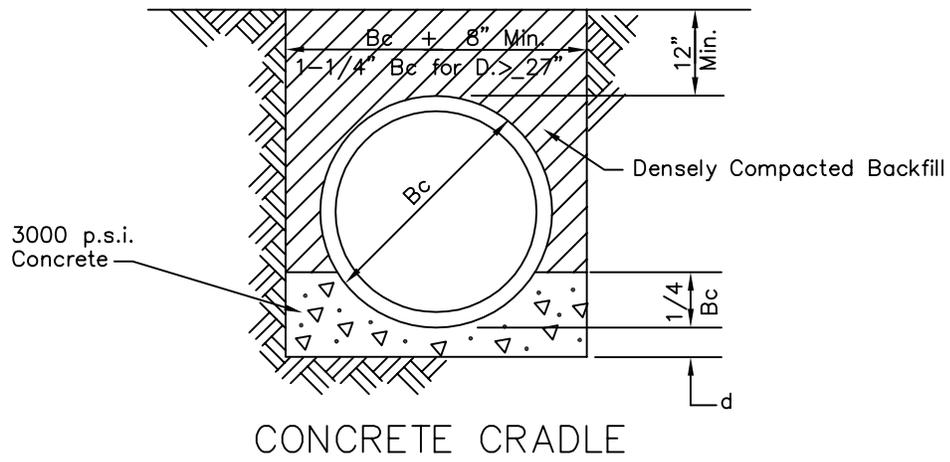
Flexible Sewer Pipe Bedding Detail
 Class I & II

9-13-2017

Scale: N.T.S

S20

JF



Depth of Bedding Material Below Pipe	
D	d(Min.)
27" & Smaller	3"
30" to 60"	4"
66" & Larger	6"

LEGEND

Bc = Outside Diameter
D = Inside Diameter
d = Depth of Concrete Cradle below Pipe Bell

NOTE:

For Rock or Other Non-Compressable Material:
The Trench should be over-excavated a min. of 6" & refilled with Granular Material.

RIGID PIPE BEDDING DETAIL, CLASS "A"



CITY OF HUNTINGTON
Engineering & Public Works

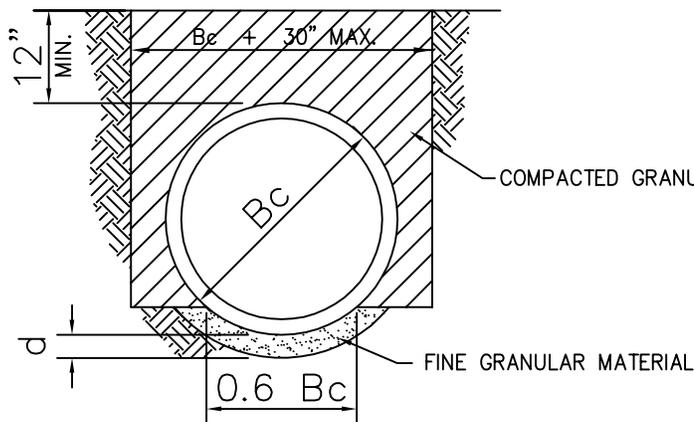
Ridge Pipe Bedding Detail
Class A

9-13-2017

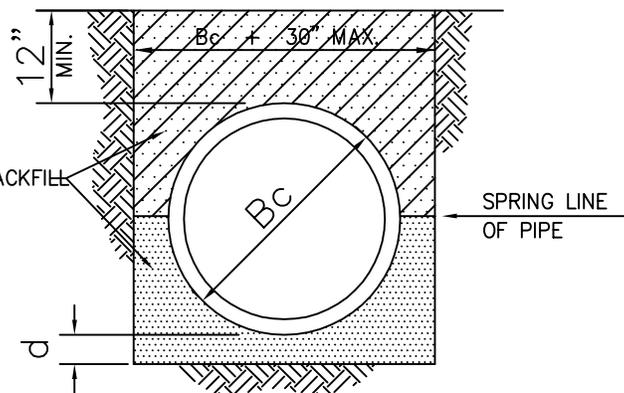
Scale: N.T.S

S20A

JF



SHAPED SUBGRADE WITH GRANULAR FOUNDATION



GRANULAR FOUNDATION

DEPTH OF BEDDING MATERIAL BELOW PIPE	
D	d(MIN.)
27" & SMALLER	3"
30" TO 60"	4"
66" & LARGER	6"

LEGEND
 Bc = OUTSIDE DIAMETER
 D = INSIDE DIAMETER
 d = DEPTH OF BEDDING MATERIAL BELOW PIPE BELL

NOTE:
 FOR ROCK OR OTHER NON-COMPRESSABLE MATERIAL:
 THE TRENCH SHOULD BE OVER-EXCAVATED A MIN.
 OF 6" & REFILLED WITH GRANULAR MATERIAL.

RIGID PIPE BEDDING DETAIL, CLASS "B"



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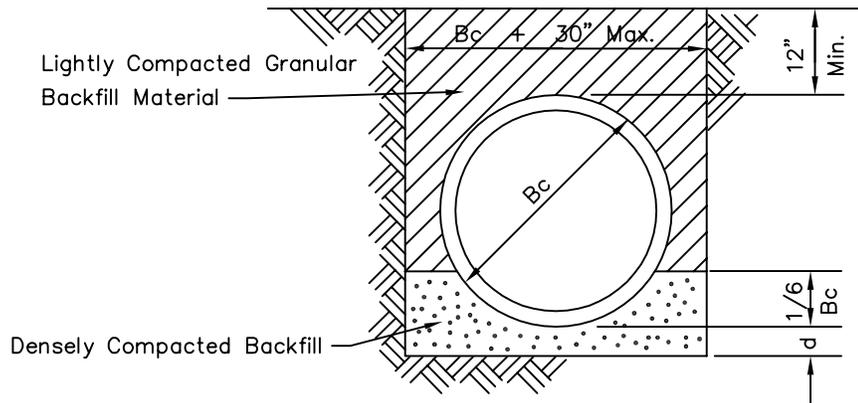
Ridge Pipe Bedding Detail
 Class B

9-13-2017

Scale: N.T.S

S20B

JF



GRANULAR FOUNDATION

Depth of Bedding Material Below Pipe	
D	d(Min.)
27" & Smaller	3"
30" to 60"	4"
66" & Larger	6"

LEGEND

- Bc = Outside Diameter
- D = Inside Diameter
- d = Depth of Bedding Material below Pipe Bell

NOTE:

For Rock or Other Non-Compressable Material:
The Trench should be over-excavated a min.
of 6" & refilled with Granular Material.

RIGID PIPE BEDDING DETAIL, CLASS "C"



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Engineering & Public Works

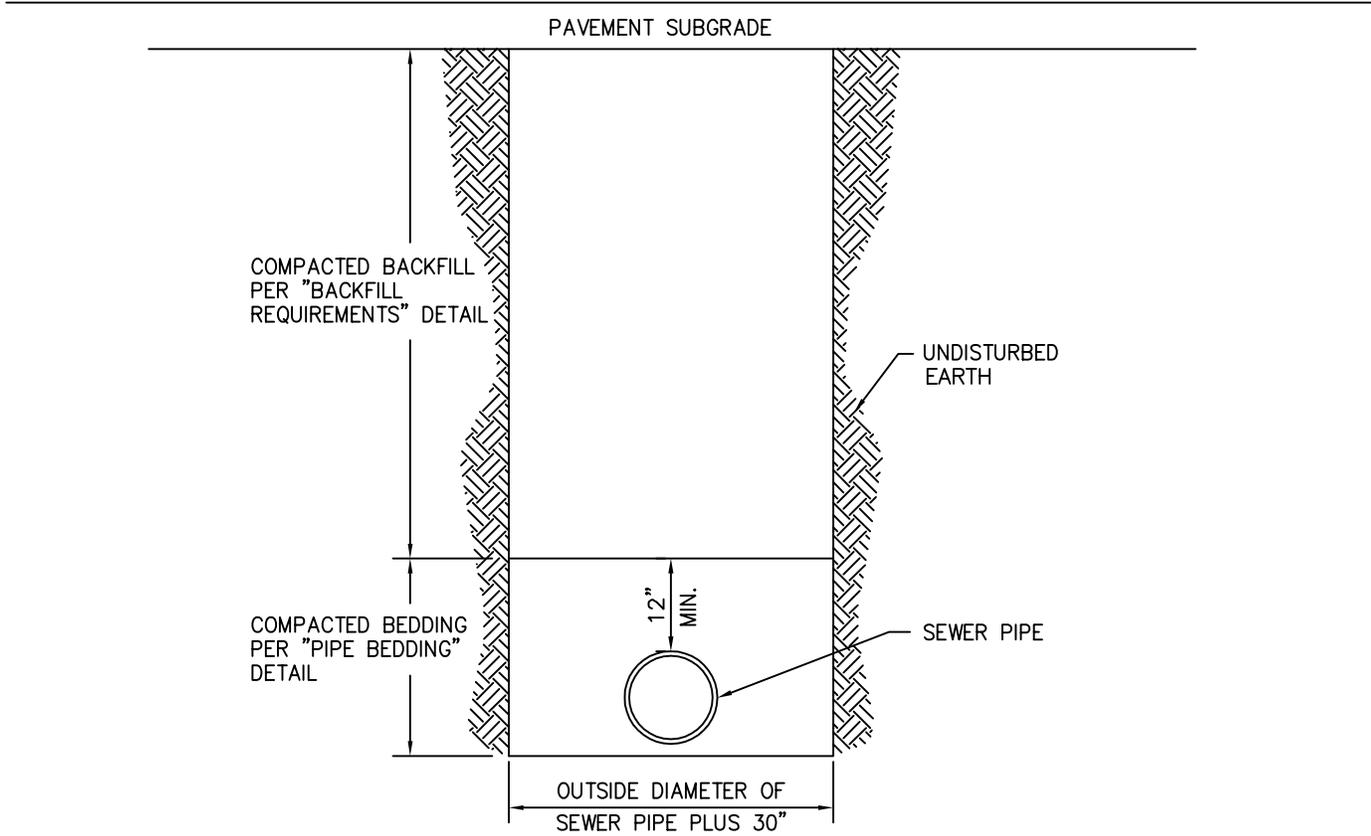
Ridge Pipe Bedding Detail
Class C

9-13-2017

Scale: N.T.S

S20C

JF



SEWER TRENCH DETAIL



CITY OF HUNTINGTON
Engineering & Public Works

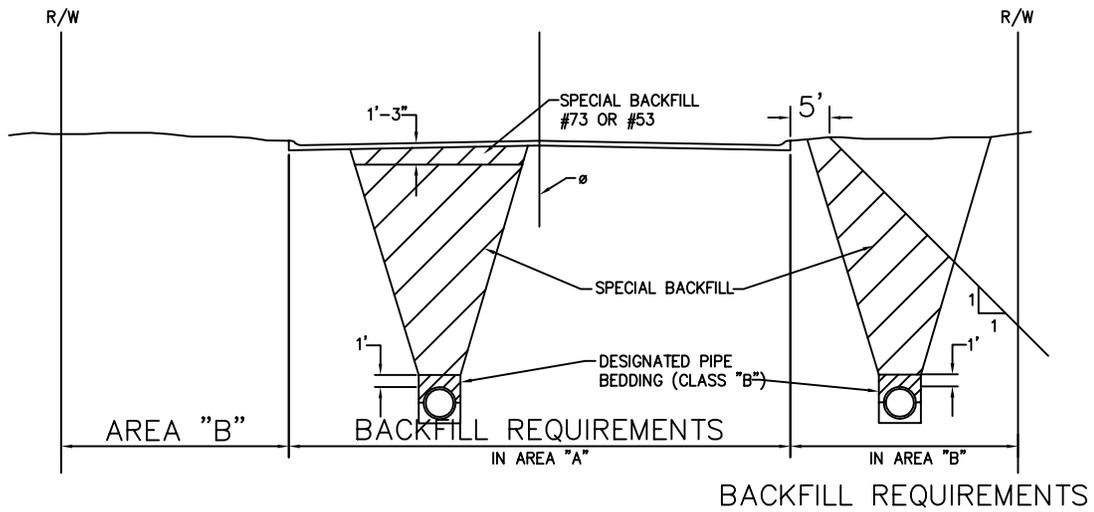
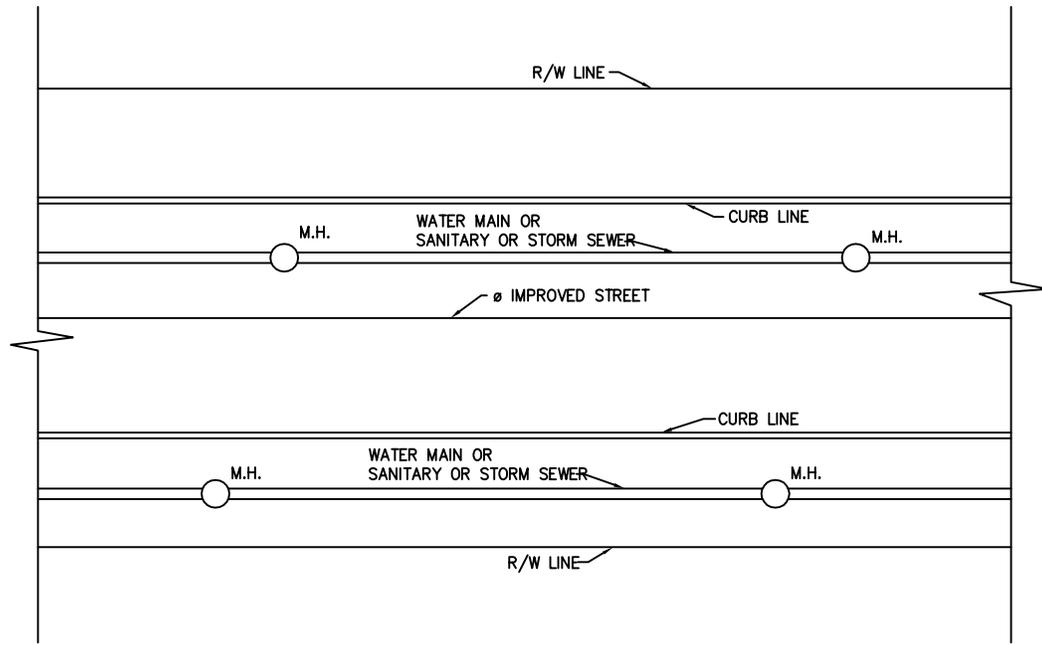
Sewer Trench Detail

9-13-2017

Scale: N.T.S

S20D

JF



BACKFILL REQUIREMENTS

(FOR PIPE LINES WITHIN RIGHT OF WAY FOR IMPROVED STREETS)



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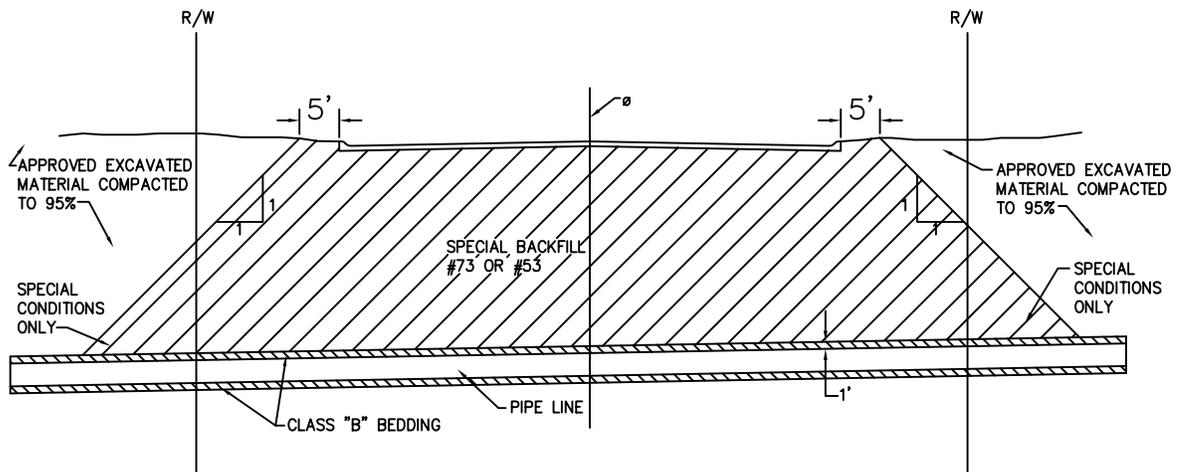
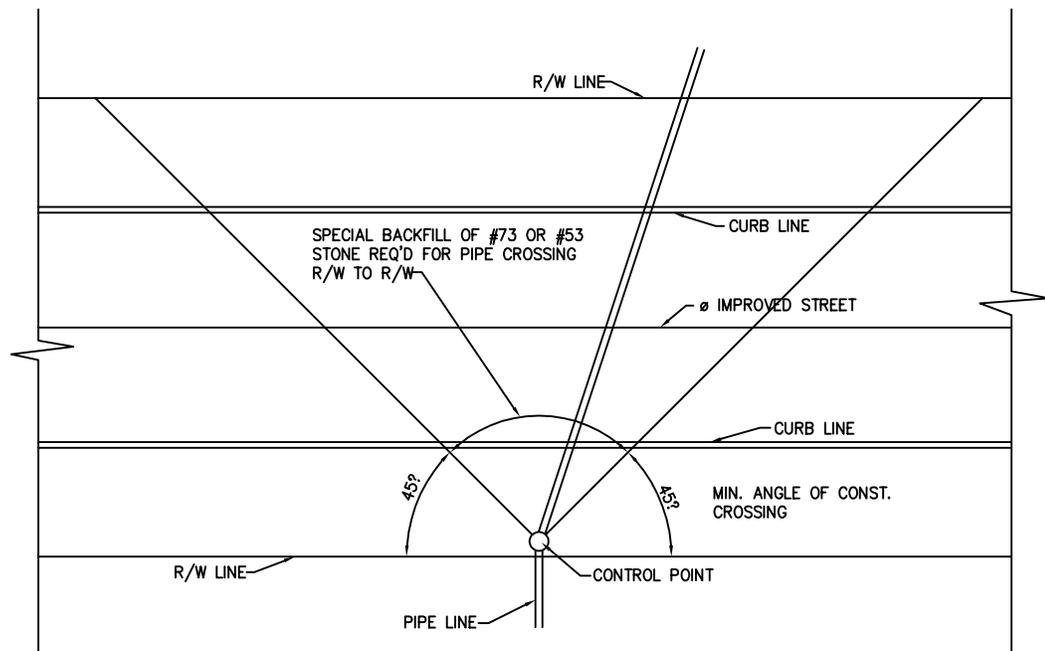
Backfill Requirements
(pipes within right of way)

9-13-2017

Scale: N.T.S

S21

JF



BACKFILL REQUIREMENTS

(FOR PIPE LINES CROSSING RIGHT OF WAY FOR IMPROVED STREETS)



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Engineering & Public Works

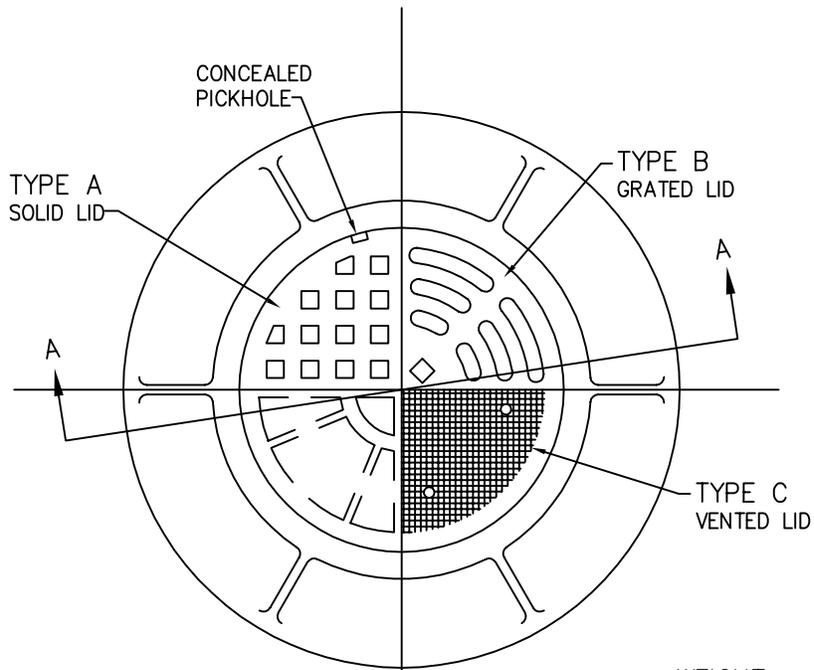
Backfill Requirements
(pipes crossing right of way)

9-13-2017

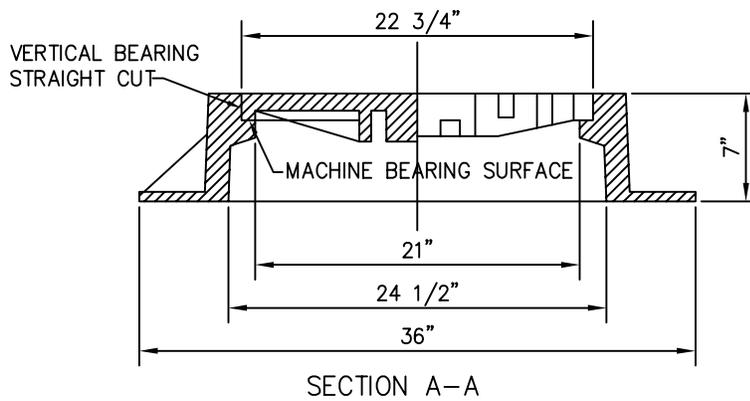
Scale: N.T.S

S22

JF



WEIGHT
 TOTAL WT. 400 LBS.
 OR APPROVED EQUAL



TYPES A, B OR C CASTING DETAIL
 (MANHOLE CASTING)



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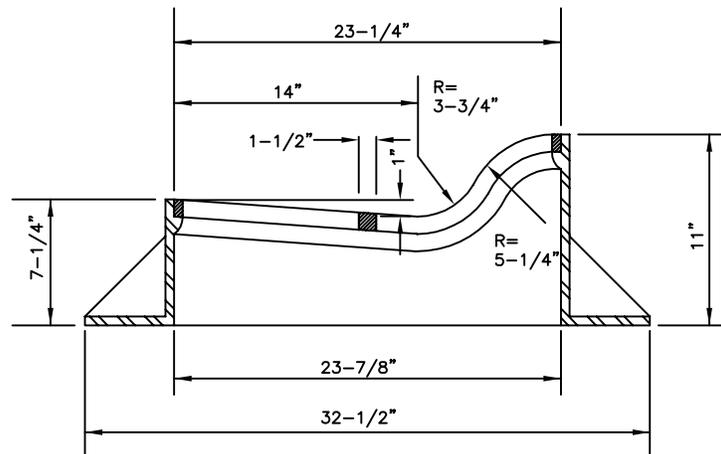
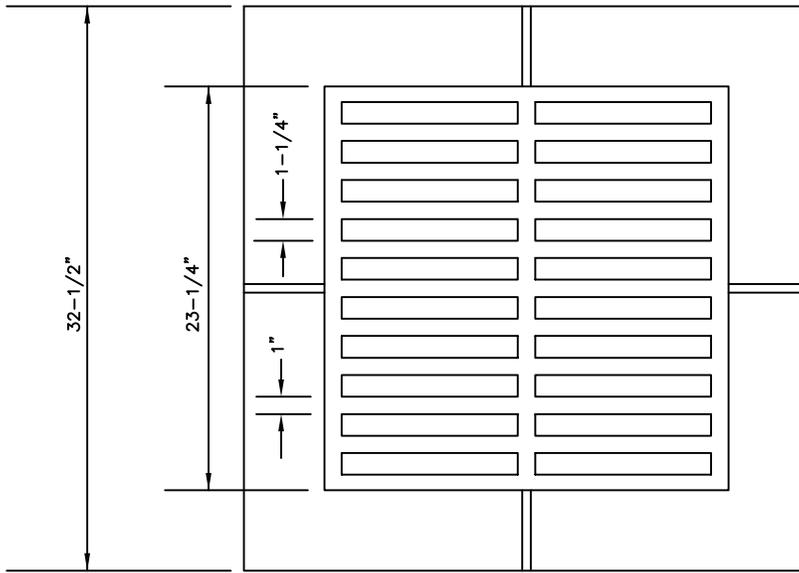
Types A, B and C Casting Detail

9-13-2017

Scale: N.T.S

S23

JF



Total Weight 400 lbs.
or approved equal

*STANDARD CASTING DETAIL FOR ROLLED CURB
TYPE D*



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Engineering & Public Works

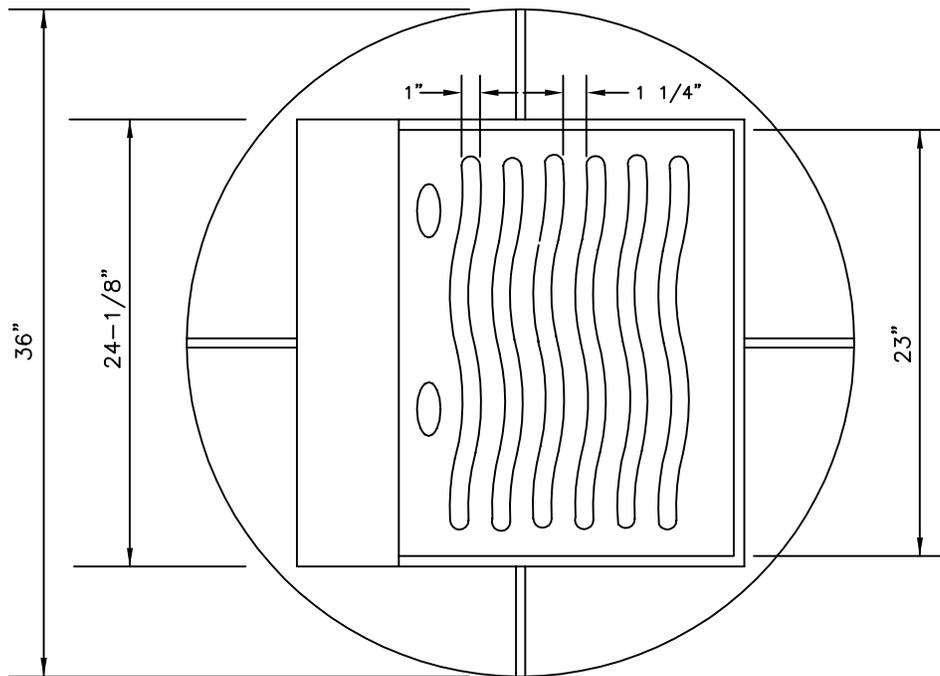
Standard Casting Detail for Rolled
Curb Type D

9-13-2017

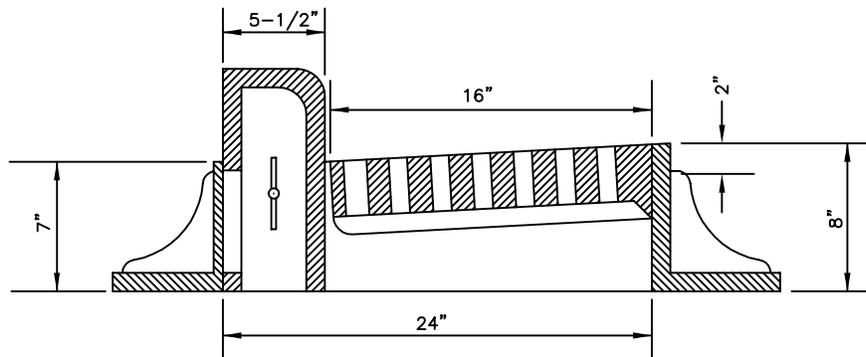
Scale: N.T.S

S24

JF



Total Weight 385 lbs.
or approved equal



*CURB CASTING DETAIL
TYPE E*



CITY OF HUNTINGTON
Engineering & Public Works

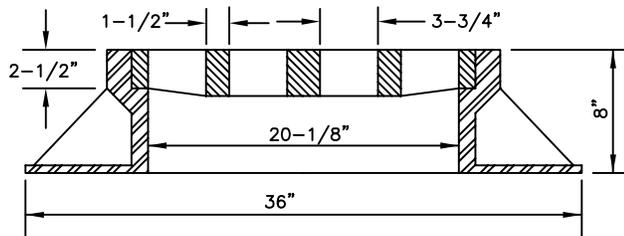
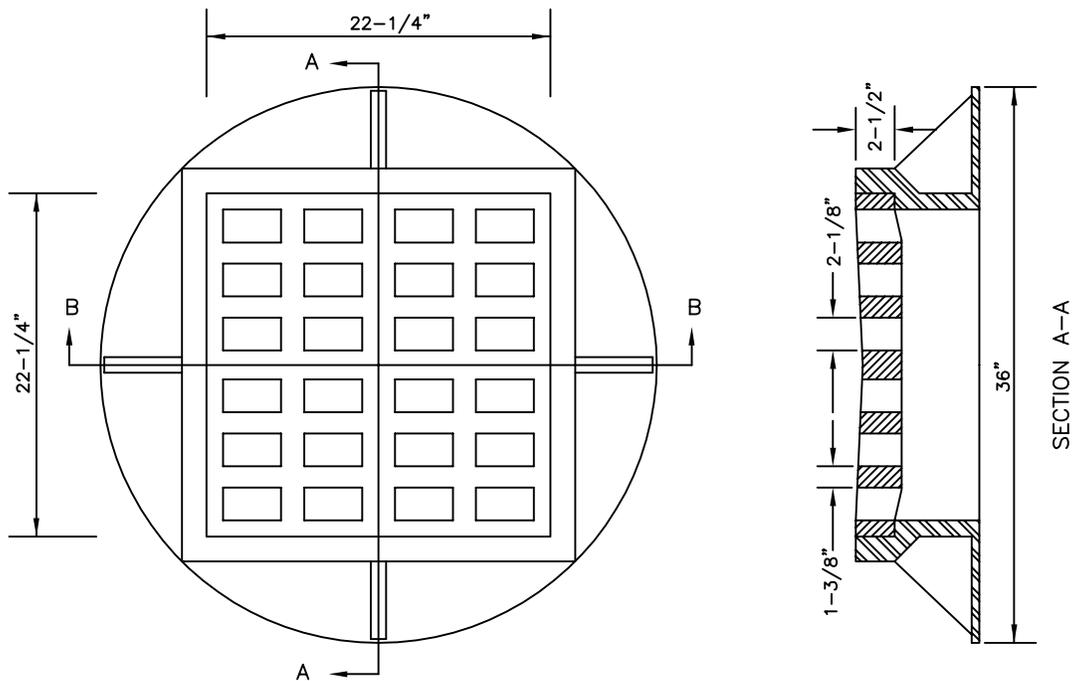
Curb Casting Detail Type E

9-13-2017

Scale: N.T.S

S25

JF



Total Weight 485 lbs.
or approved equal

SECTION B-B

*TYPE F CASTING DETAIL
(INVERTED CROWN)*



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Engineering & Public Works

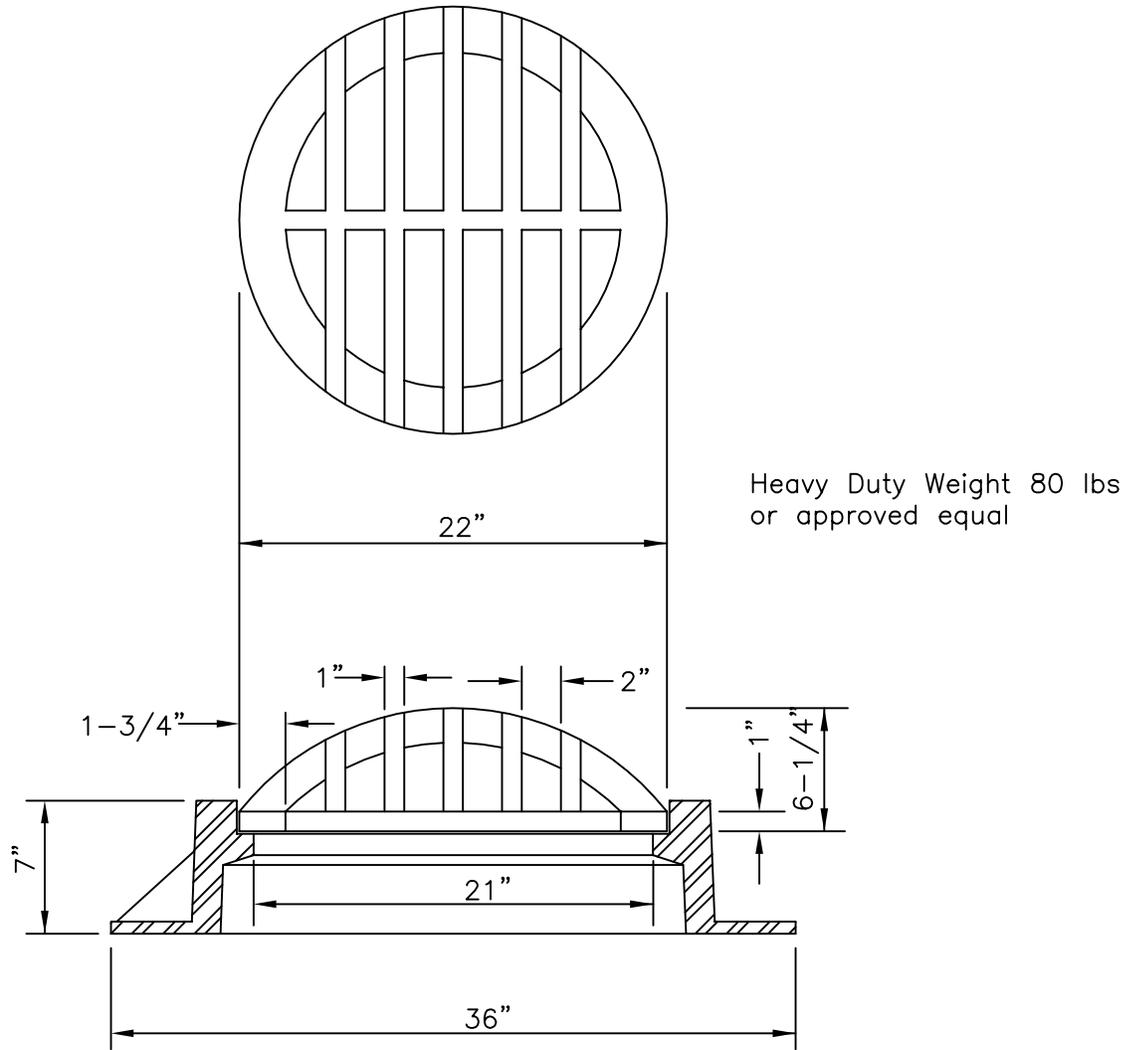
Type F Casting Detail
(Inverted Crown)

9-13-2017

Scale: N.T.S

S26

JF



NOTE: to be used with std. 22" M.H. Frame

*TYPE G CASTING DETAIL
(BEE HIVE CASTING)*



CITY OF HUNTINGTON
Engineering & Public Works

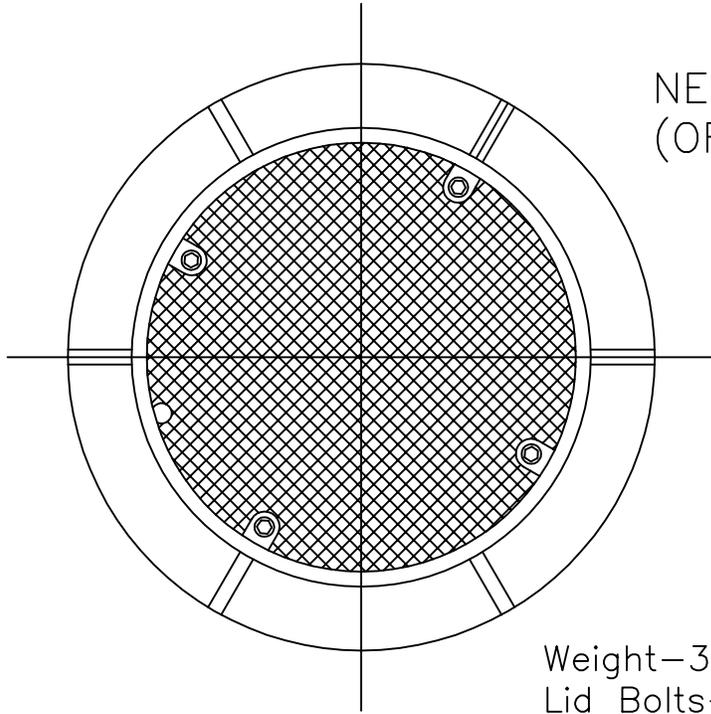
Type G Casting Detail
(Bee Hive Casting)

9-13-2017

Scale: N.T.S

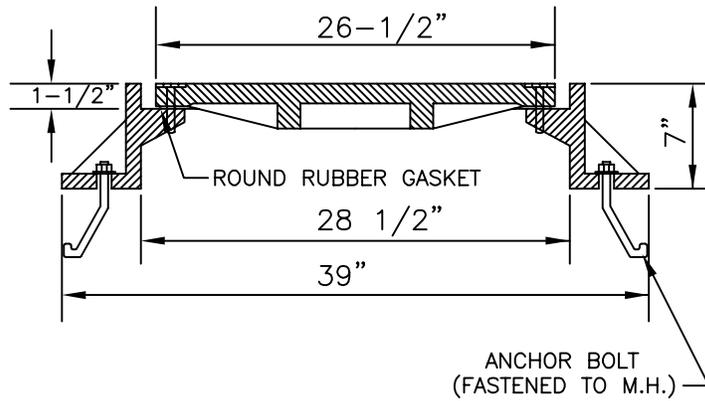
S27

JF



NEENAH R-1916-F
(OR EQUAL)

Weight-370lbs.
Lid Bolts-4



*TYPE J WATERPROOF MANHOLE
FRAME w/BOLTED LID & GASKET*

(MANHOLE CASTING)



CITY OF HUNTINGTON
Engineering & Public Works

Type J Waterproof Manhole Frame
(Bolted Lid & Gasket)

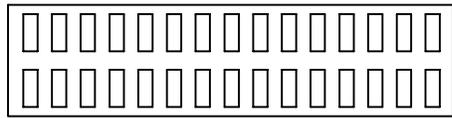
9-13-2017

Scale: N.T.S

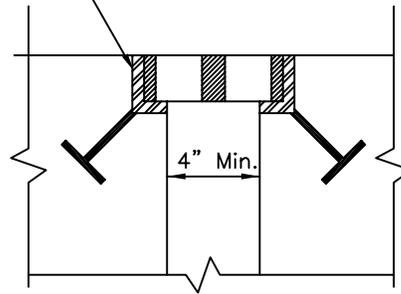
S28

JF

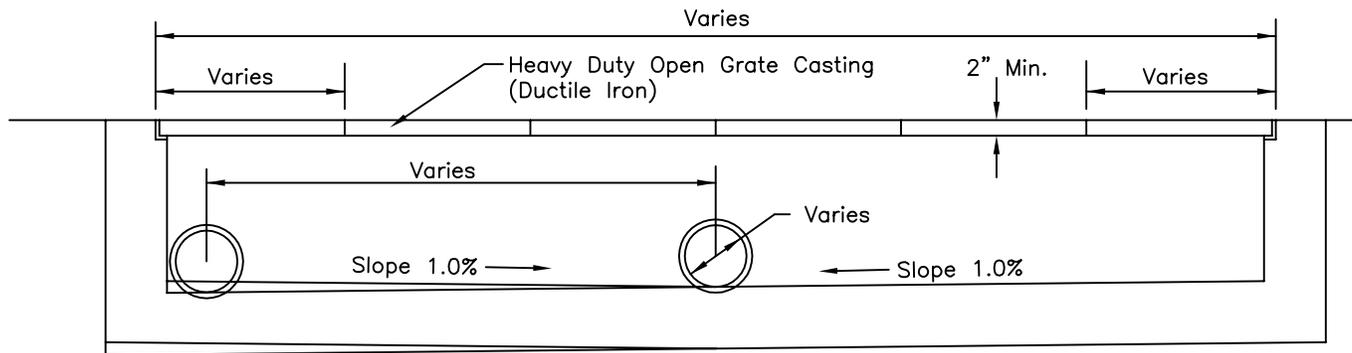
Anchor supports
anchored to conc.



GRATE

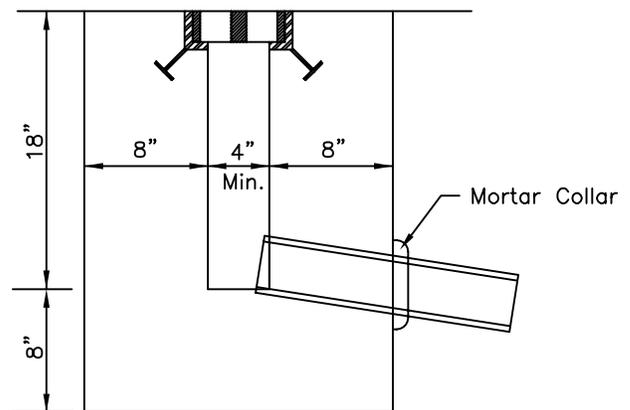


FRAME



NOTES:

- 1.) Outlet pipe to have smooth finish.
- 2.) Reinforcing as req'd.
- 3.) 3,000 lb.-28 day strength concrete.



TRENCH DRAIN DETAIL



CITY OF HUNTINGTON
Engineering & Public Works

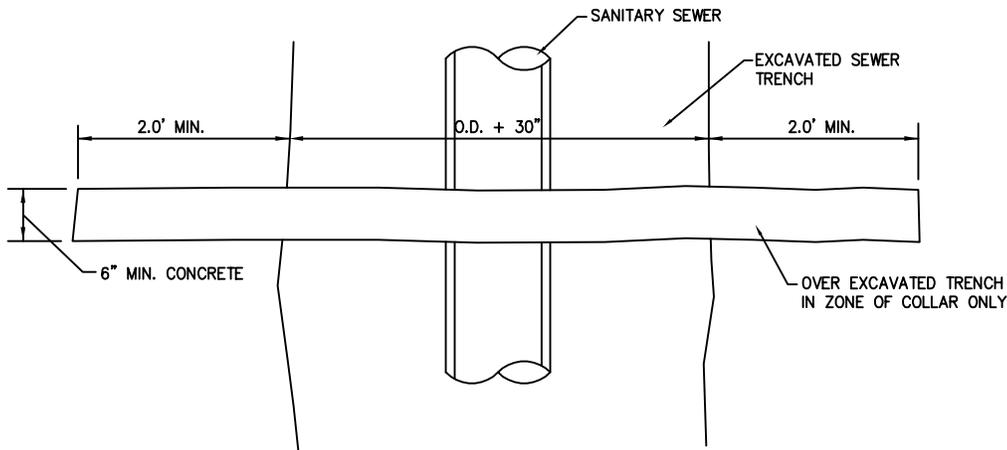
Trench Drain Detail

9-13-2017

Scale: N.T.S

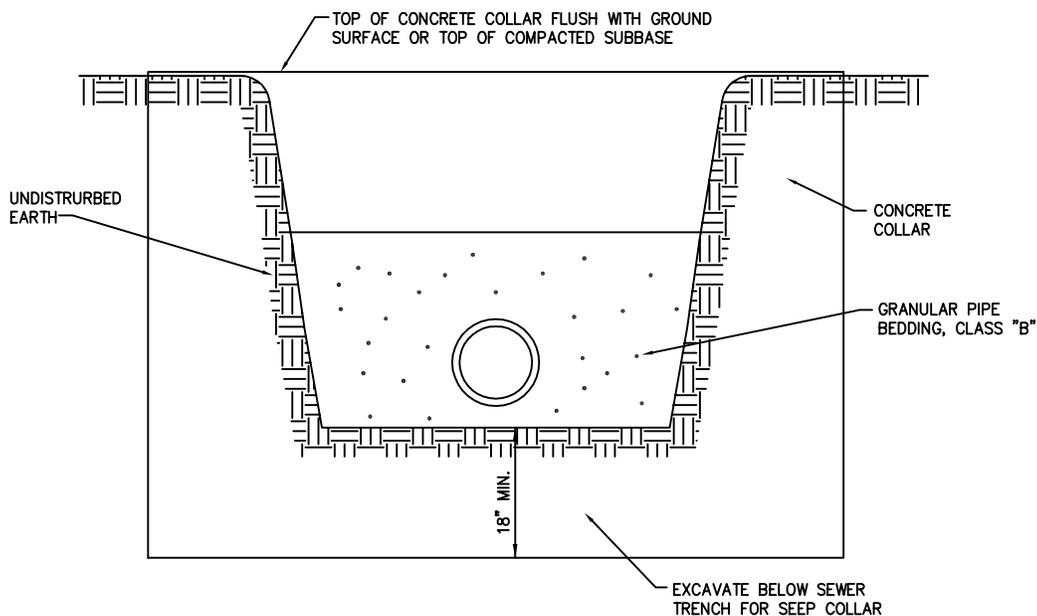
S29

JF



NOTE:

1. CONCRETE SHALL BE A MINIMUM OF 2,000 P.S.I., NON-SHRINK & WATERPROOF.



ANTI-SEEP COLLAR DETAILS



CITY OF HUNTINGTON
Engineering & Public Works

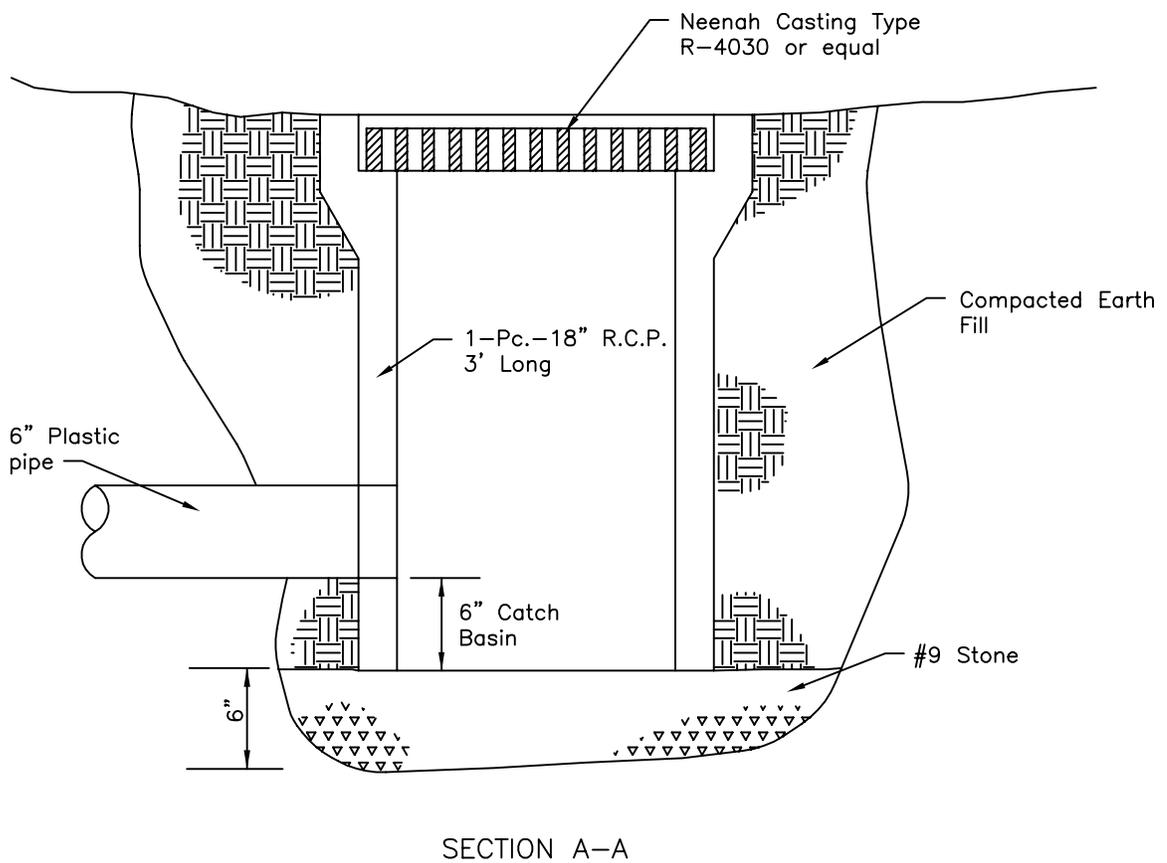
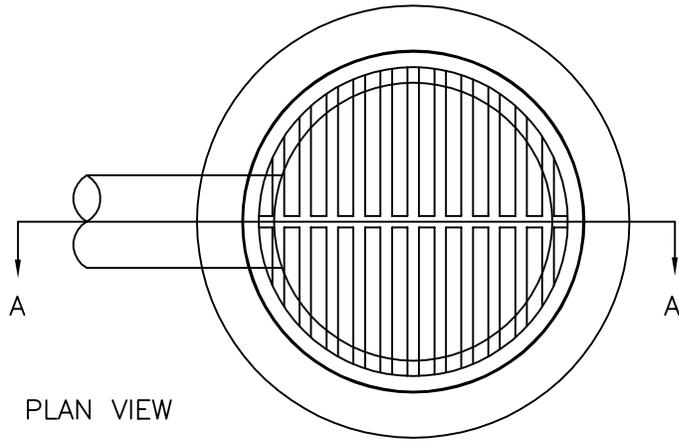
Anti-Seep Collar Details

9-13-2017

Scale: N.T.S

S30

JF



18" INLET



CITY OF HUNTINGTON
Engineering & Public Works

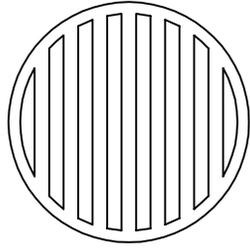
18in Inlet

9-13-2017

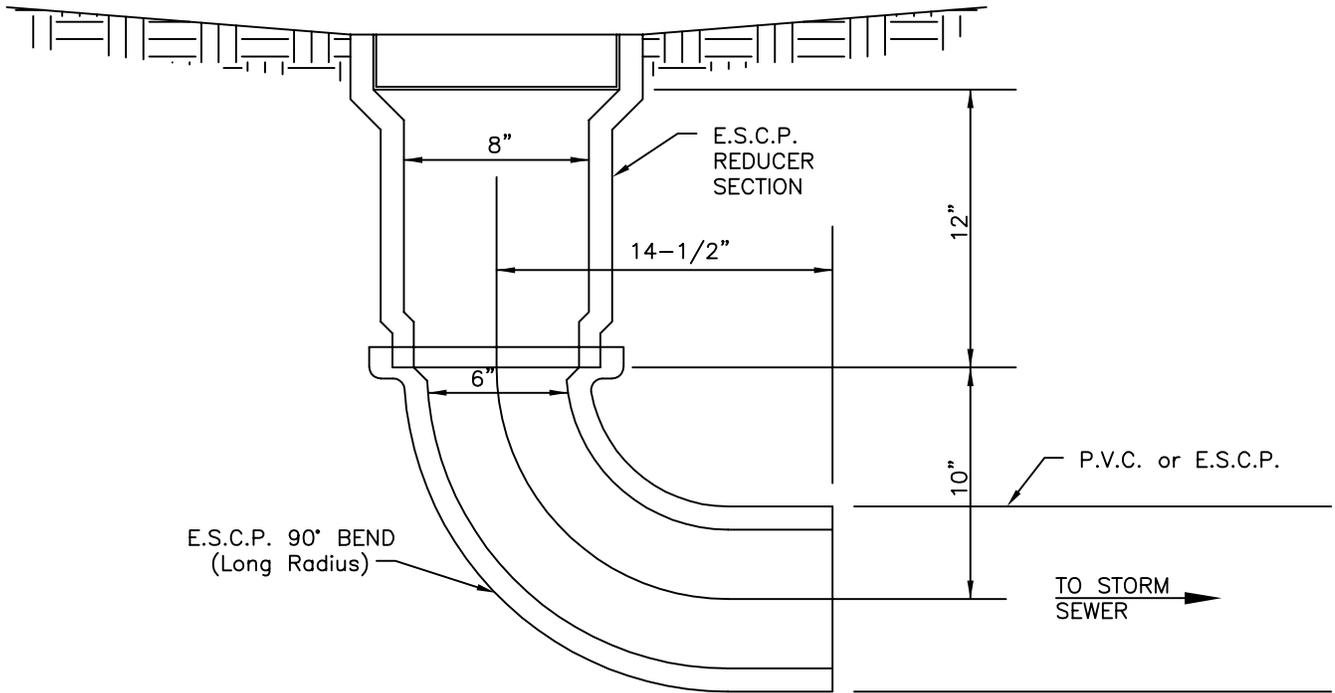
Scale: N.T.S

S31

JF



NEENAH CASTING
TYPE R-4040
or equal



SPECIAL INLET FOR YARD DRAIN



CITY OF HUNTINGTON
Engineering & Public Works

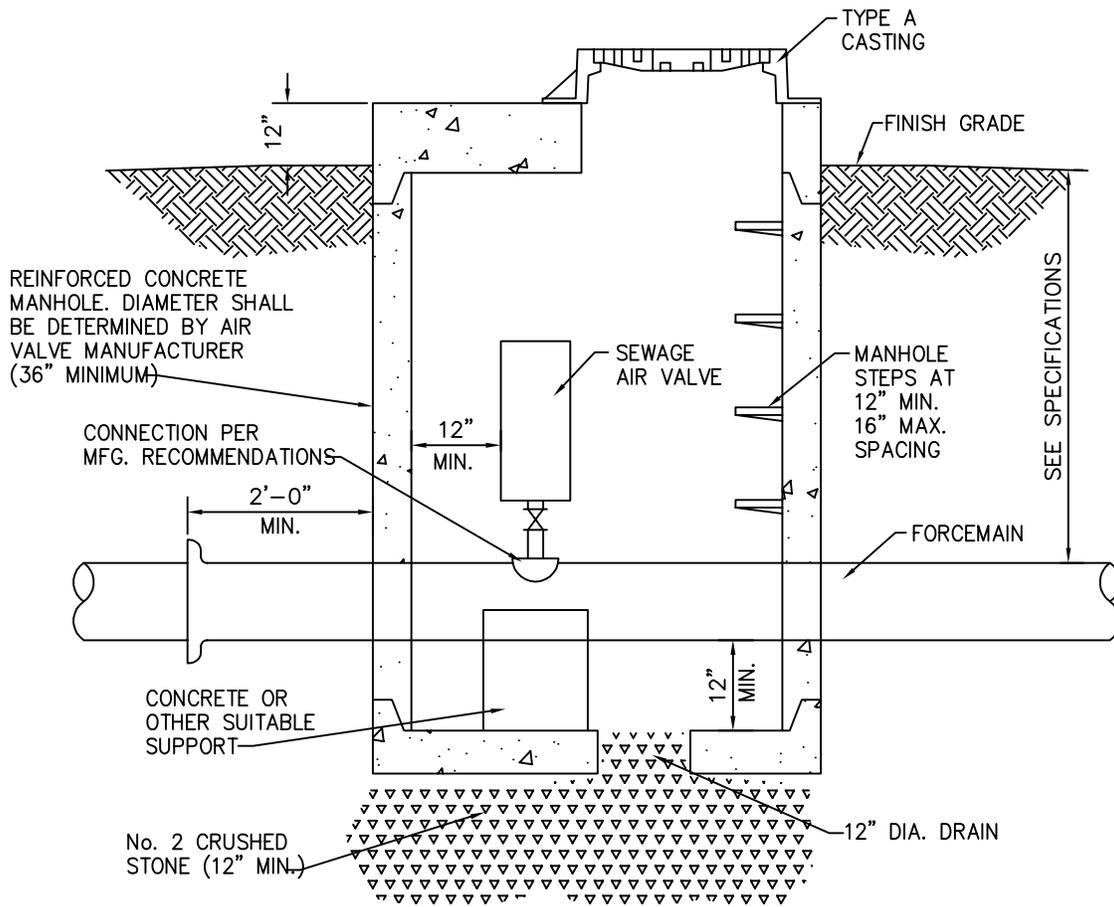
Special Inlet for Yard Drain

9-13-2017

Scale: N.T.S

S32

JF



SEWAGE AIR VALVE STRUCTURE

NOTE:

ALL AIR VALVE STRUCTURES SHALL BE FIELD LOCATED ON EACH HIGH POINT ELEVATION ON THE FORCEMAIN OR AS LOCATED ON THE DRAWINGS. THE LOCATION OF EACH STRUCTURE WHERE SHOWN ON THE DRAWINGS IS APPROXIMATE.



CITY OF HUNTINGTON
Engineering & Public Works

Sewer Air Valve Structure

9-13-2017

Scale: N.T.S

S33

JF

SANITARY SEWER NOTES

1. Material and workmanship shall comply with Engineering Standards and Specifications, for the City of Huntington
2. All pipe shall be ASTM C-700 Extra Strength Clay; Truss Pipe, ASTM D-2680; PVC Pipe ASTM D-3034, SDR 35 with stone bedding; or approved equal with Class "B" bedding. Cost per lineal foot of pipe shall include all items necessary for complete and usable final products.
3. All manholes shall be 48" Type 1-A or Type IV-A.
4. City of Huntington inspection required on installation of all sanitary sewers.
5. All taps shall have a minimum of 1/4-inch per foot rise and shall be extended to a point as indicated on the plans. Location of taps to be marked with 2 X 4 at end of tap.
6. A minimum of 10 feet of horizontal separation shall be maintained between the sanitary sewer and the water mains.
7. Maximum allowable infiltration shall not exceed 200 gpd/mile/inch of diameter of the pipe.
8. All permits, including street and road cut permits, necessary for the construction of this sanitary sewer shall be secured and paid for by the Contractor and a copy furnished to the Syracuse City Engineering Department before construction starts.
9. Contractor shall furnish a set of Construction Drawings to Engineer showing location of main lines and taps.
10. To tap the existing manhole the Contractor shall "core" the manhole and install a rubber boot as manufactured by Press-Seal Gasket Corporation or an equal product that has been approved by the local utility.



CITY OF HUNTINGTON
Engineering & Public Works

Sanitary Sewer Notes

9-13-2017

Scale: N.T.S

S34

JF

STORM SEWER NOTES

1. All concrete pipe shall be manufactured in accordance with ASTM C14, AASHTO M86, and Federal SS-P-371 for non-reinforced concrete pipe; ASTM C76, AASHTO M170 and Federal S-P-375 reinforced concrete pipe and ASTM C361 for reinforced low head concrete pipe, with Class "B" bedding.
2. All concrete adjustment ring joints shall be grouted (watertight) to top of inlet and casting. When weep holes are used for subbase drainage, geotextile/filter fabric shall be required to restrict fine materials from washing into storm system.
3. All storm sewer shall have stone bedding (Class "B").
4. All storm pipe 12 inches and larger shall be concrete as noted in Note 1 of these storm sewer notes.



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 Engineering & Public Works

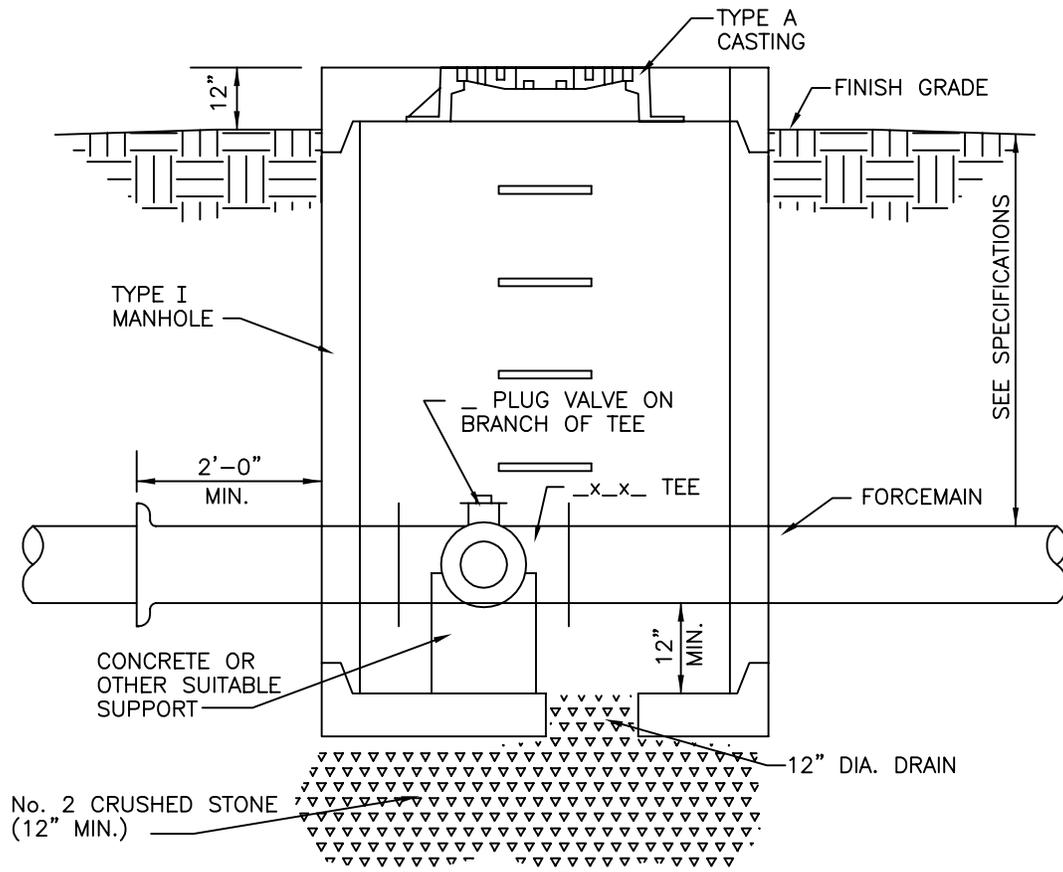
Storm Sewer Notes (2)

9-13-2017

Scale: N.T.S

S35

JF



LINE DRAIN STRUCTURE

NOTE:

ALL LINE DRAIN STRUCTURES SHALL BE FIELD LOCATED ON EACH LOW POINT ELEVATION ON THE FORCEMAIN OR AS LOCATED ON THE DRAWINGS. THE LOCATION OF EACH STRUCTURE WHERE SHOWN ON THE DRAWINGS IS APPROXIMATE.



CITY OF HUNTINGTON
Engineering & Public Works

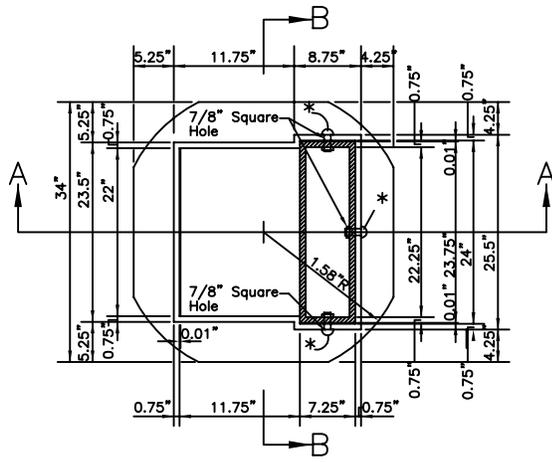
Line Drain Structure

9-13-2017

Scale: N.T.S

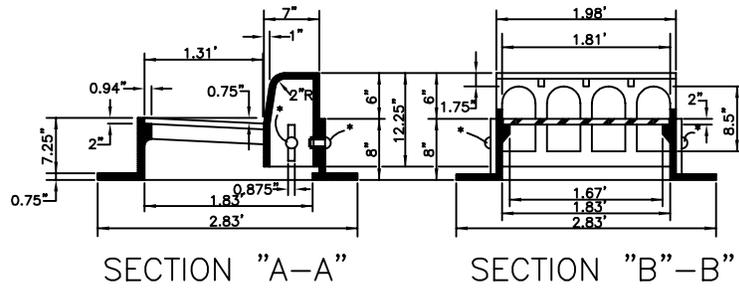
S36

JF

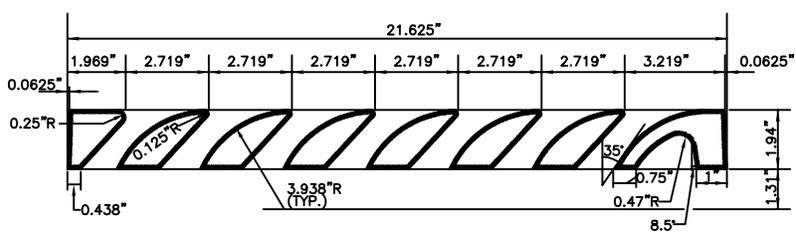


PLAN

* Galvanized or stainless steel 3/4"-10 UNC x 3 1/2" round head, Square shouldered bolts with 1 flat washer, 1 lock washer and 1 nut each.



TYPE H CASTING



FIN DETAIL FOR TYPE H CASTING



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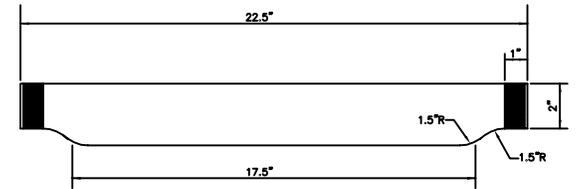
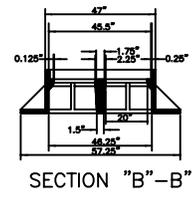
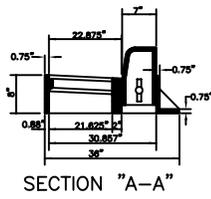
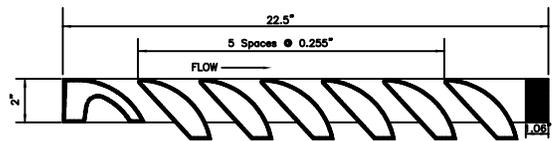
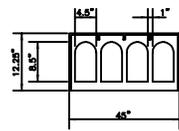
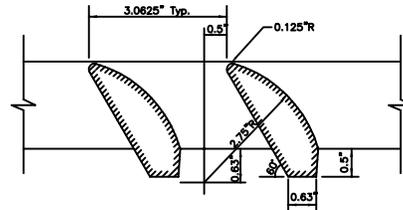
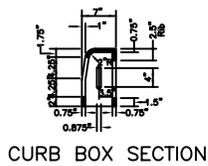
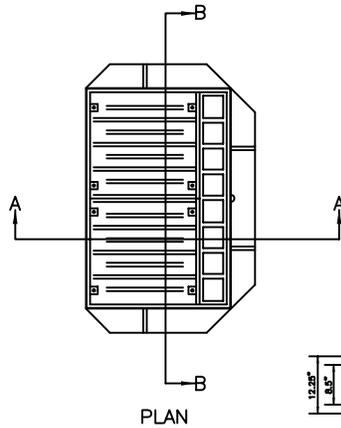
Fin Detail For Type H Casting

9-13-2017

Scale: N.T.S

S37

JF



TYPE "L" CASTING

FIN DETAIL FOR TYPE "L" GRATE



CITY OF HUNTINGTON
Engineering & Public Works

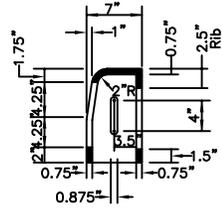
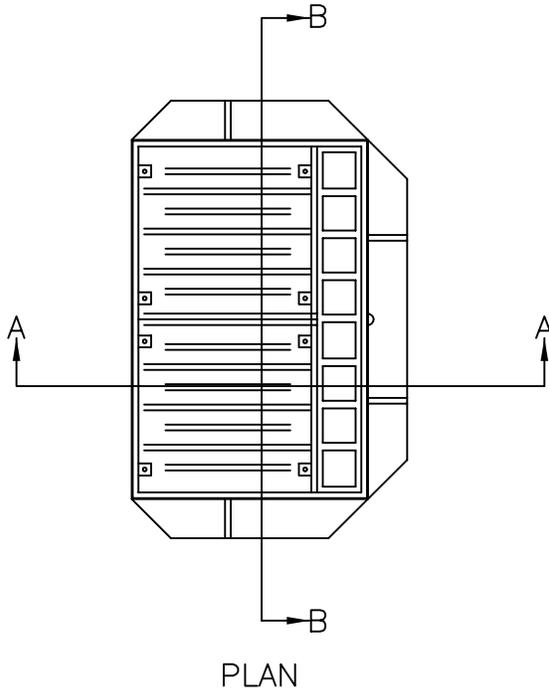
Fin Detail For Type "L" Grate

9-13-2017

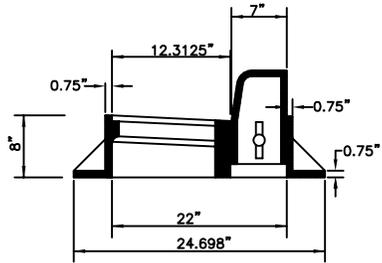
Scale: N.T.S

S38

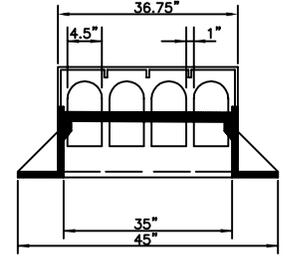
JF



CURB BOX SECTION



SECTION "A-A"



SECTION "B-B"

TYPE "M" CASTING



CITY OF HUNTINGTON
Engineering & Public Works

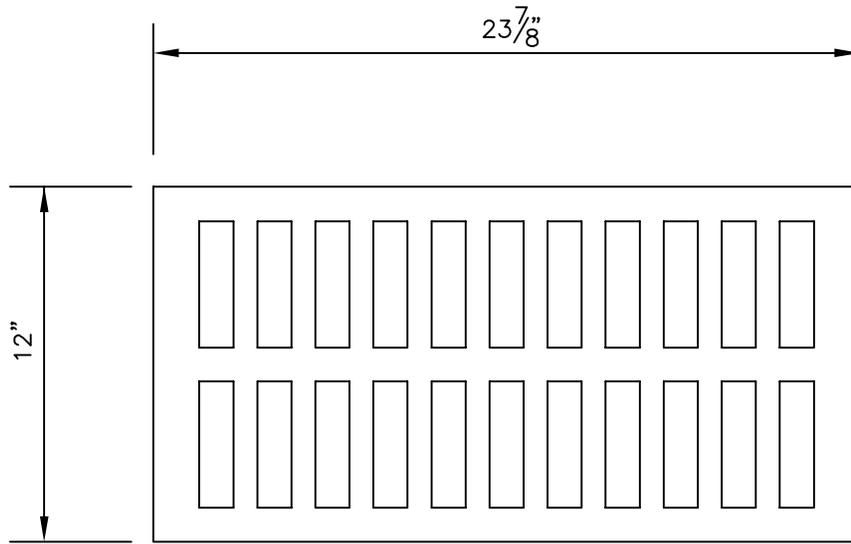
Type "M" Casting

9-13-2017

Scale: N.T.S

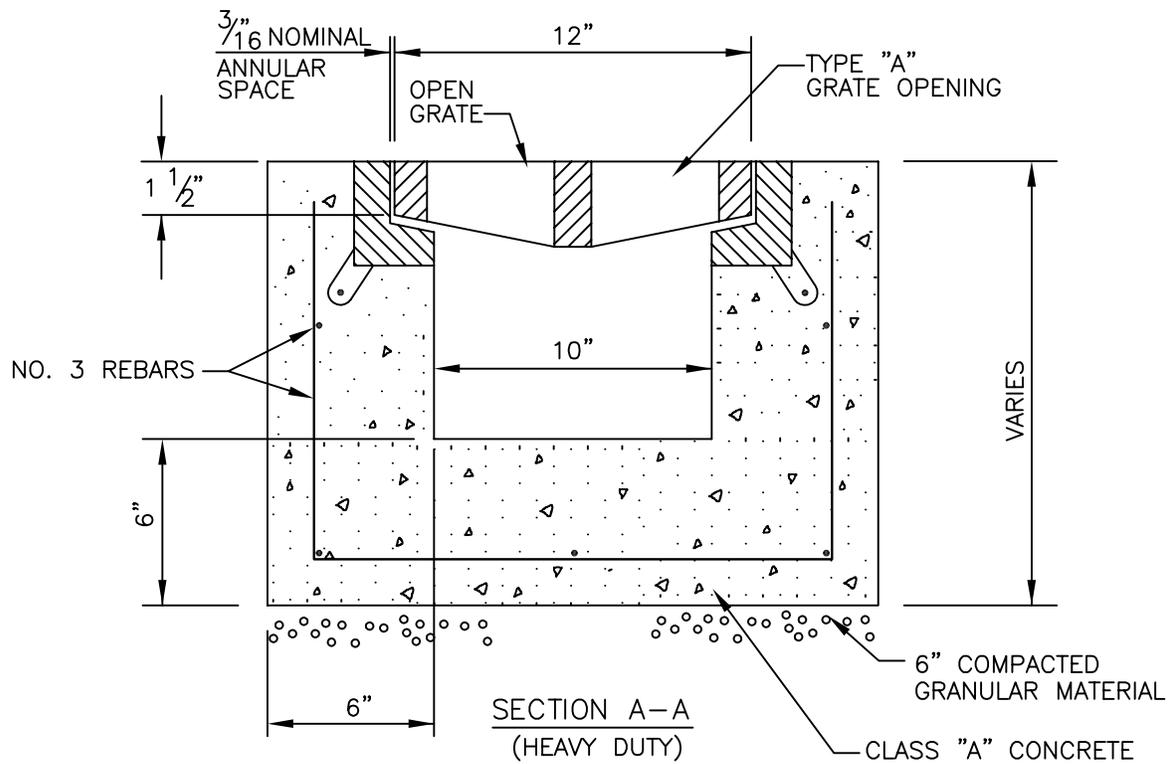
S39

JF



NEENAH, R-4990-CX OR
APPROVED EQUAL

TYPE "A" GRATE OPENINGS
(HEAVY DUTY)



TRENCH DRAIN DETAIL



CITY OF HUNTINGTON
Engineering & Public Works

Trench Drain Detail

9-13-2017

Scale: N.T.S

S40

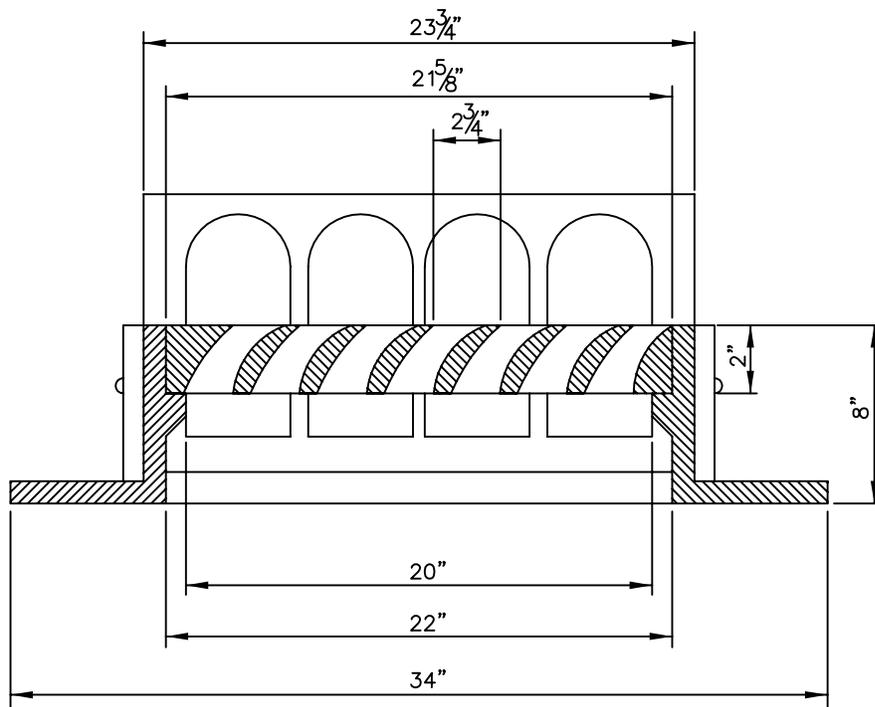
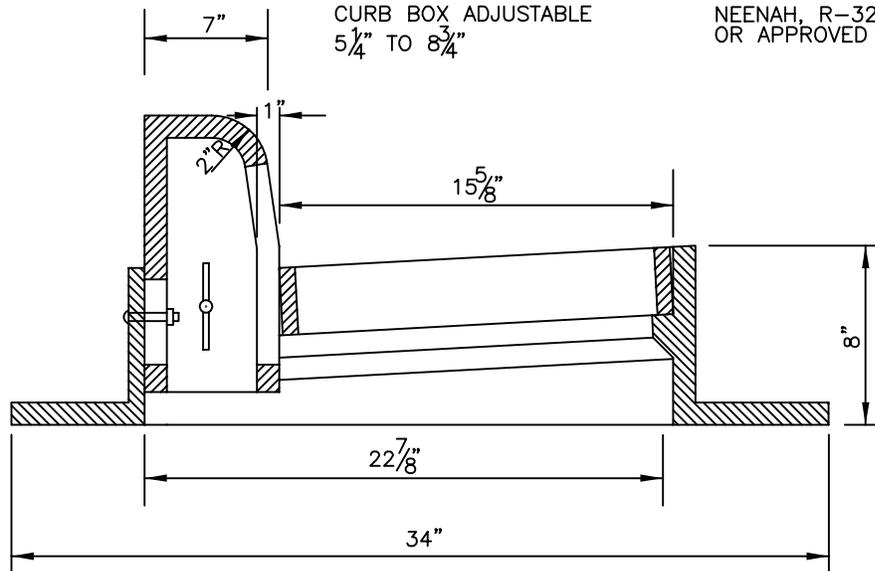
JF

HEAVY DUTY
Total Weight 485 lbs.

NOTE:
TO BE USED WITH
TYPE "A" INLET

CURB BOX ADJUSTABLE
 $5\frac{1}{4}"$ TO $8\frac{3}{4}"$

NEENAH, R-3286-8V
OR APPROVED EQUAL



*

TYPE "8" CASTING DETAIL



CITY OF HUNTINGTON
Engineering & Public Works

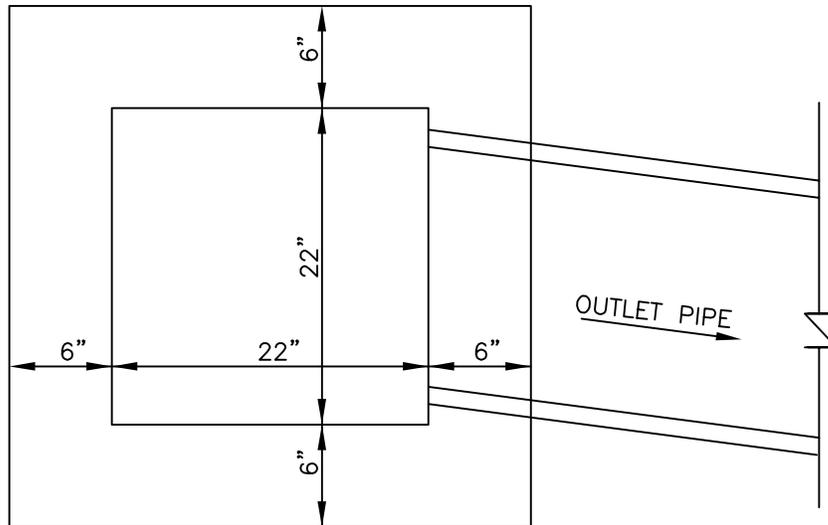
Type "8" Casting Detail

9-13-2017

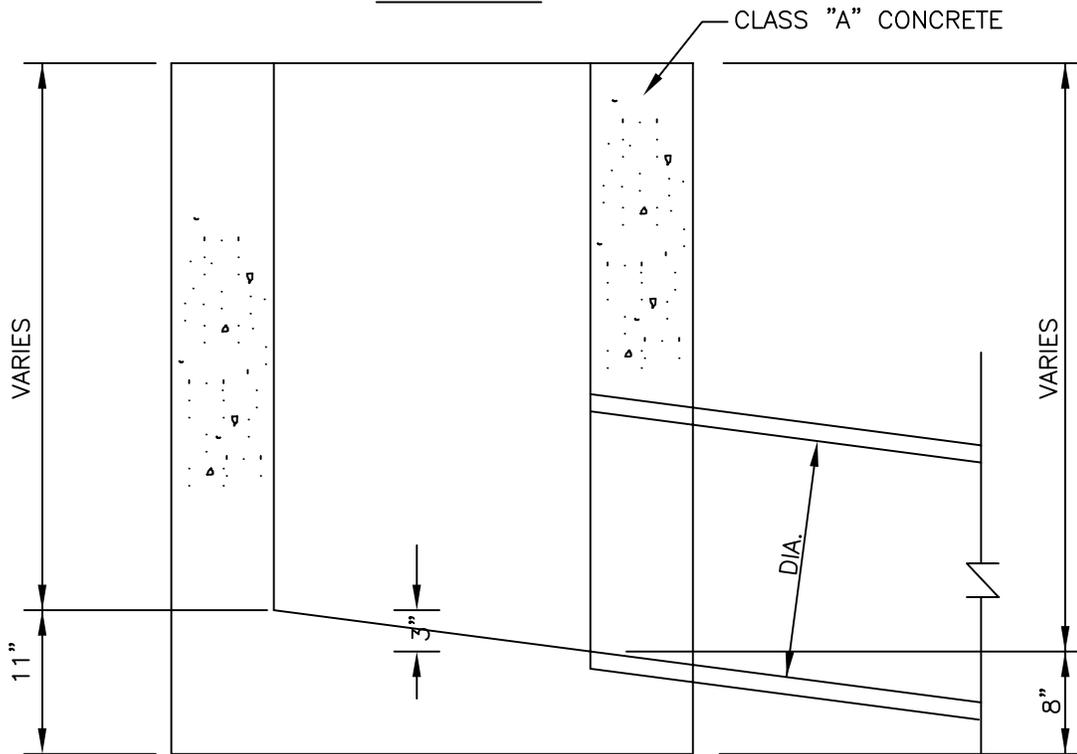
Scale: N.T.S

S41

JF



PLAN VIEW



SECTION VIEW

INLET TYPE "A" DETAIL



CITY OF HUNTINGTON
Engineering & Public Works

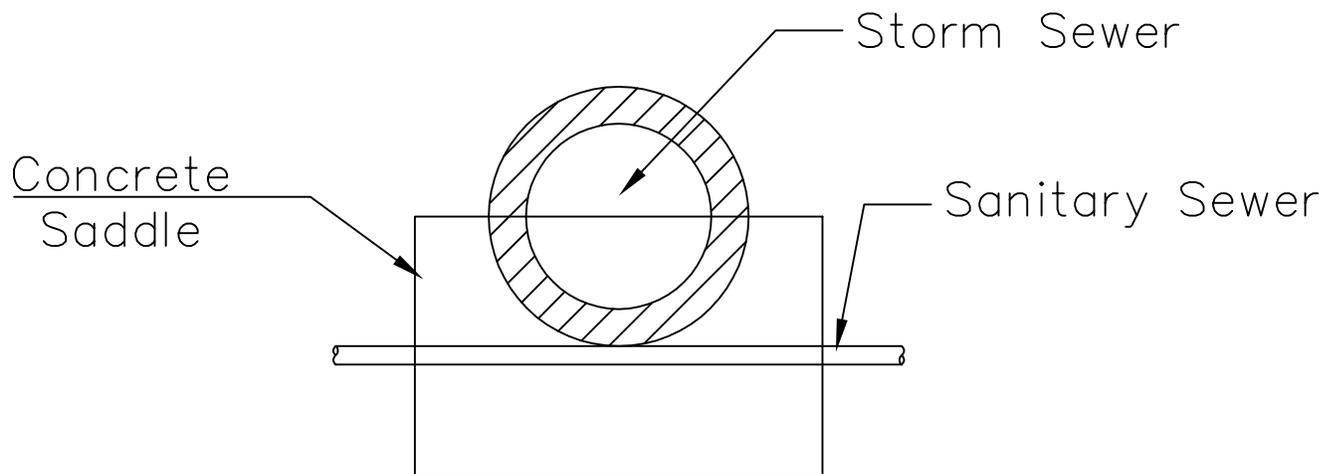
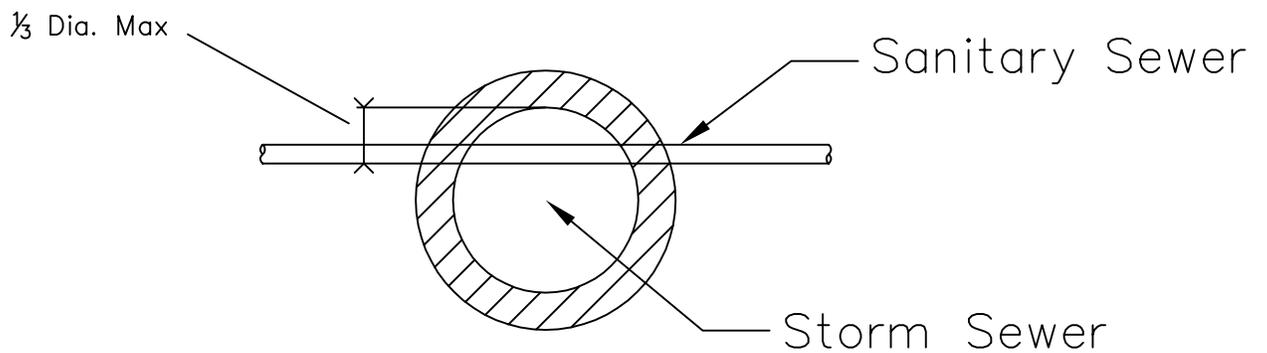
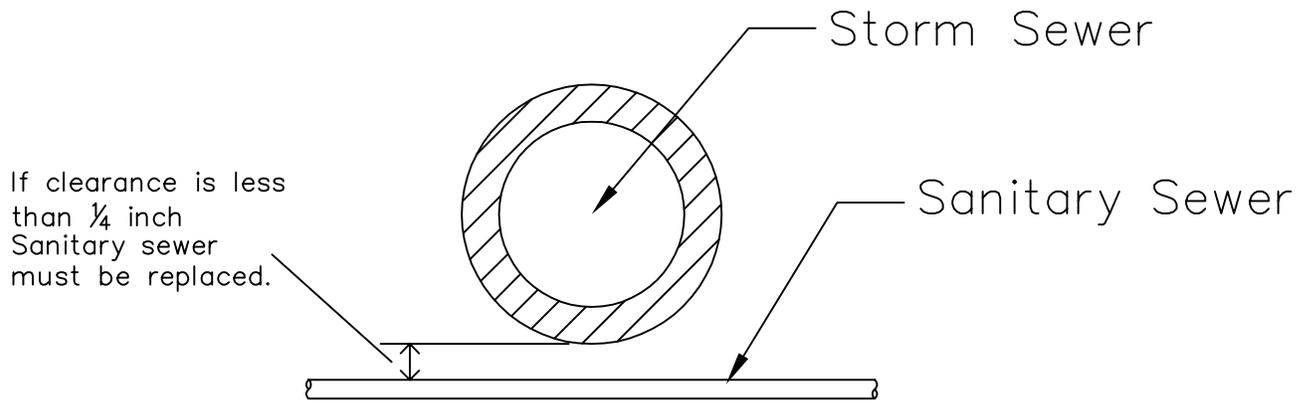
Inlet Type "A" Detail

9-13-2017

Scale: N.T.S

S42

JF



CITY OF HUNTINGTON
Engineering & Public Works

Sanitary Sewer Crossing Storm Sewer

9-13-2017

Scale: N.T.S

S43

JF