

STANDARD  
CONSTRUCTION  
DETAILS

WASTEWATER

AUGUST 2010

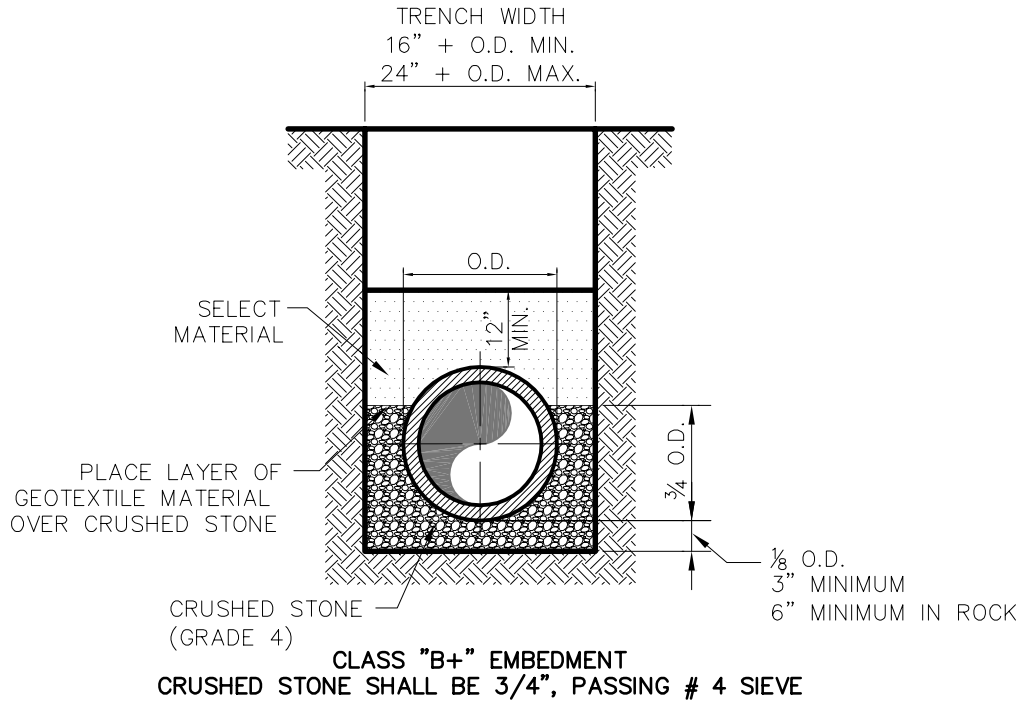


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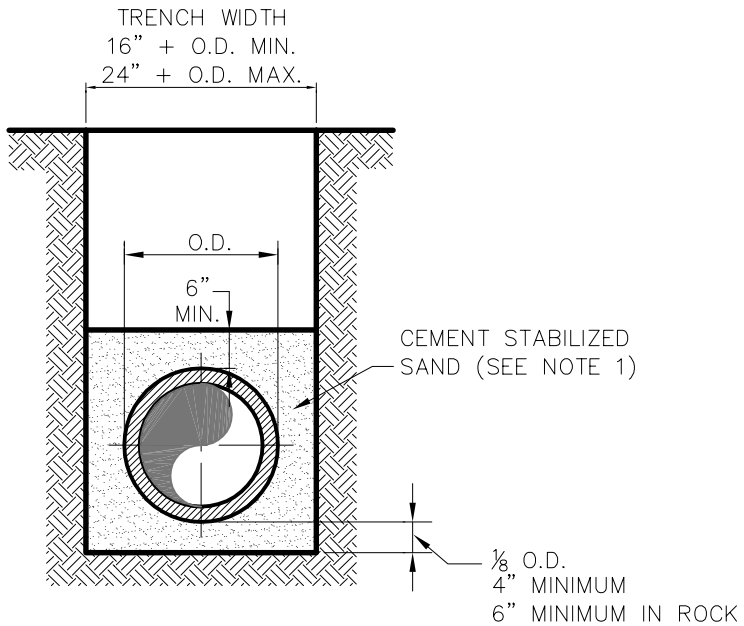
## WASTEWATER

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### TYPICAL P.V.C. WASTEWATER MAIN EMBEDMENT



**NOTE:**

1. CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND IS REQUIRED FOR PRESSURE RATED WASTEWATER MAIN AND LATERAL BEDDING.

### P.V.C. WASTEWATER MAIN CEMENT STABILIZED SAND EMBEDMENT

*Addison!*

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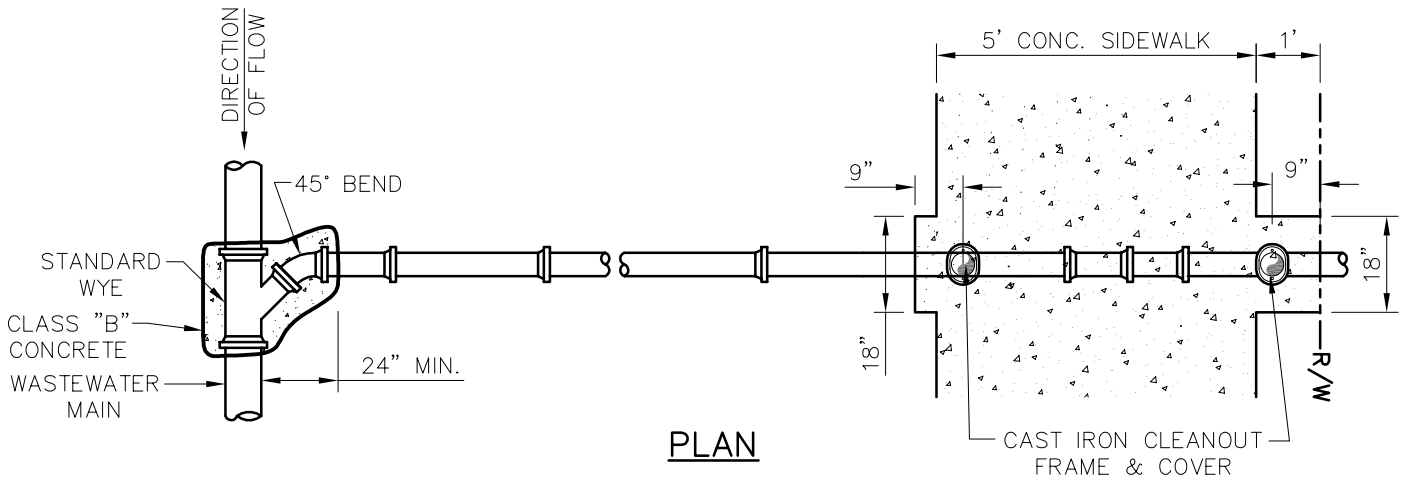
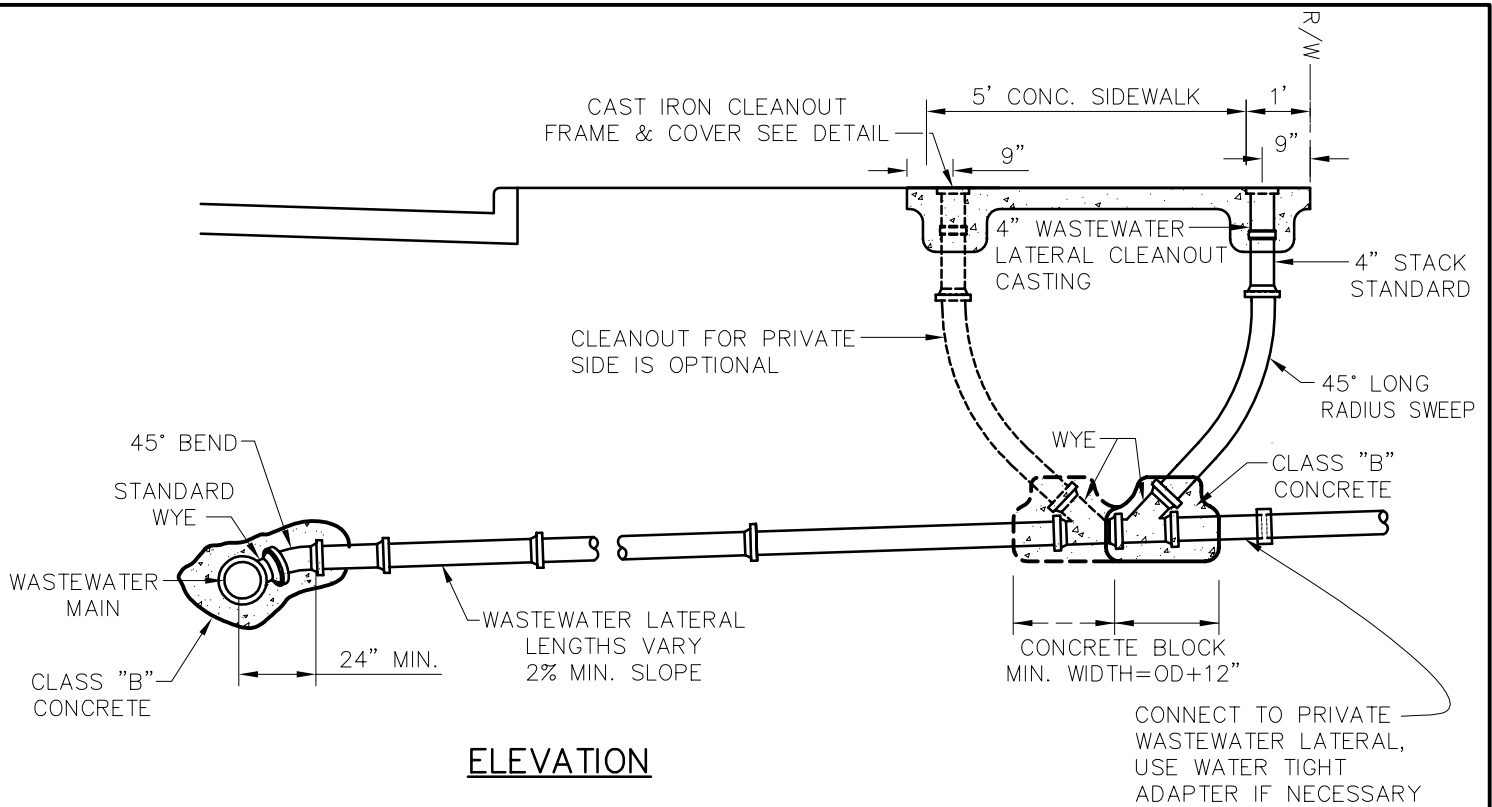
P.V.C. WASTEWATER MAIN  
EMBEDMENT

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WASTEWATER

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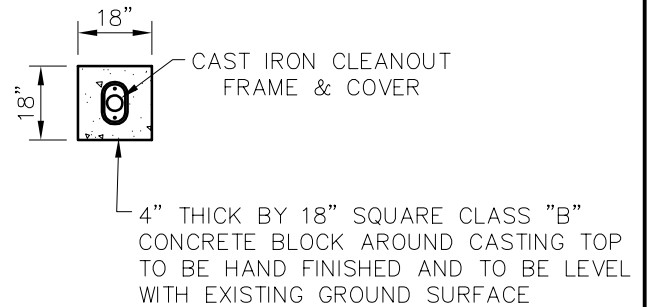
REV DATE:  
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SHEET :  
SD-WW01



**NOTES:**

1. WASTEWATER LATERALS ARE TO BE CONSTRUCTED TO CLEAR EXISTING AND PROPOSED FACILITIES, SUCH AS STORM DRAIN MAINS, RETAINING WALLS, OTHER UTILITIES, ETC.
2. THE WASTEWATER LATERAL SHALL HAVE MINIMUM COVER OF 4'-0" BELOW THE PROPOSED CURB GRADE AT THE PROPERTY LINE, DETERMINED FROM PAVING GRADE, OR AS REQUIRED TO MAINTAIN A MINIMUM OF 2.0% GRADE, OR AS DIRECTED BY THE OWNER.



*Addison!*

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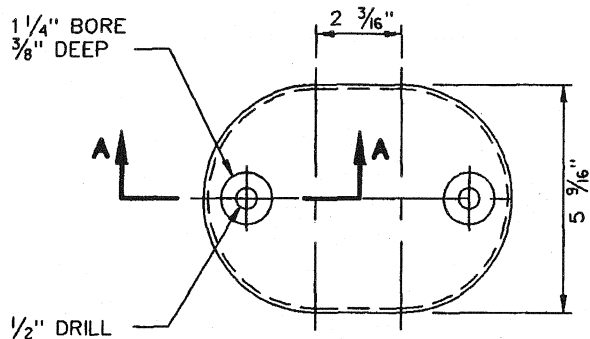
TWO-WAY CLEANOUT  
NEW CONSTRUCTION

STANDARD CONSTRUCTION DETAILS  
WASTEWATER

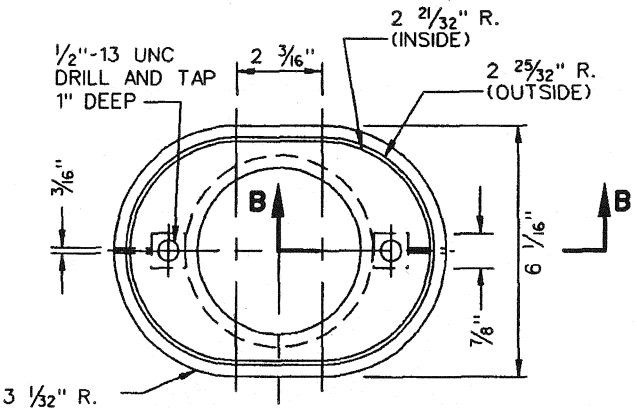
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AUGUST, 2010

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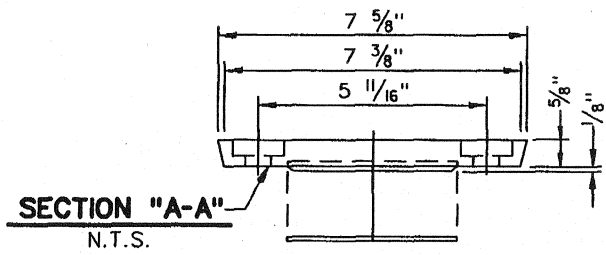
SHEET :  
SD-WW02



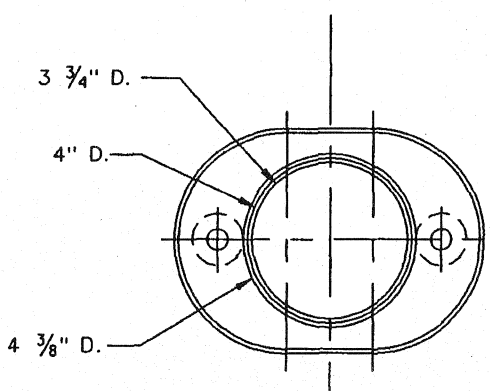
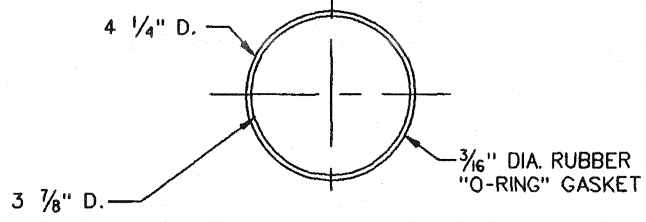
**COVER**  
N.T.S.



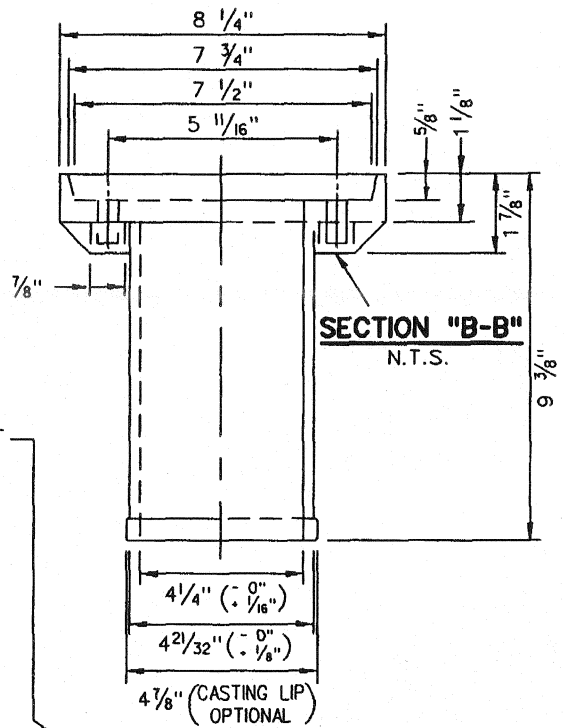
**CLEANOUT FRAME TOP**  
N.T.S.



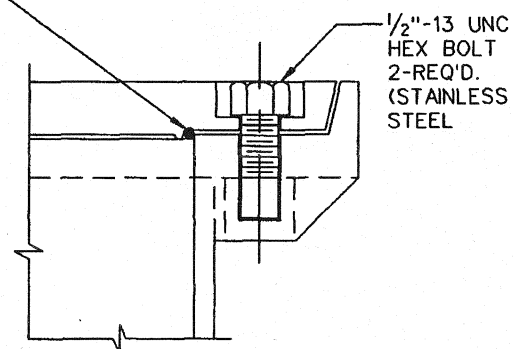
**SECTION "A-A"**  
N.T.S.



**CLEANOUT FRAME BOTTOM**  
N.T.S.



**SECTION "B-B"**  
N.T.S.



**ASSEMBLY VIEW**  
N.T.S.

1. THE WORDS "WASTEWATER LATERAL CLEANOUT" SHALL BE CAST INTO TOP OF COVER.
2. MATERIALS TO BE CAST IRON.

*Addison!*

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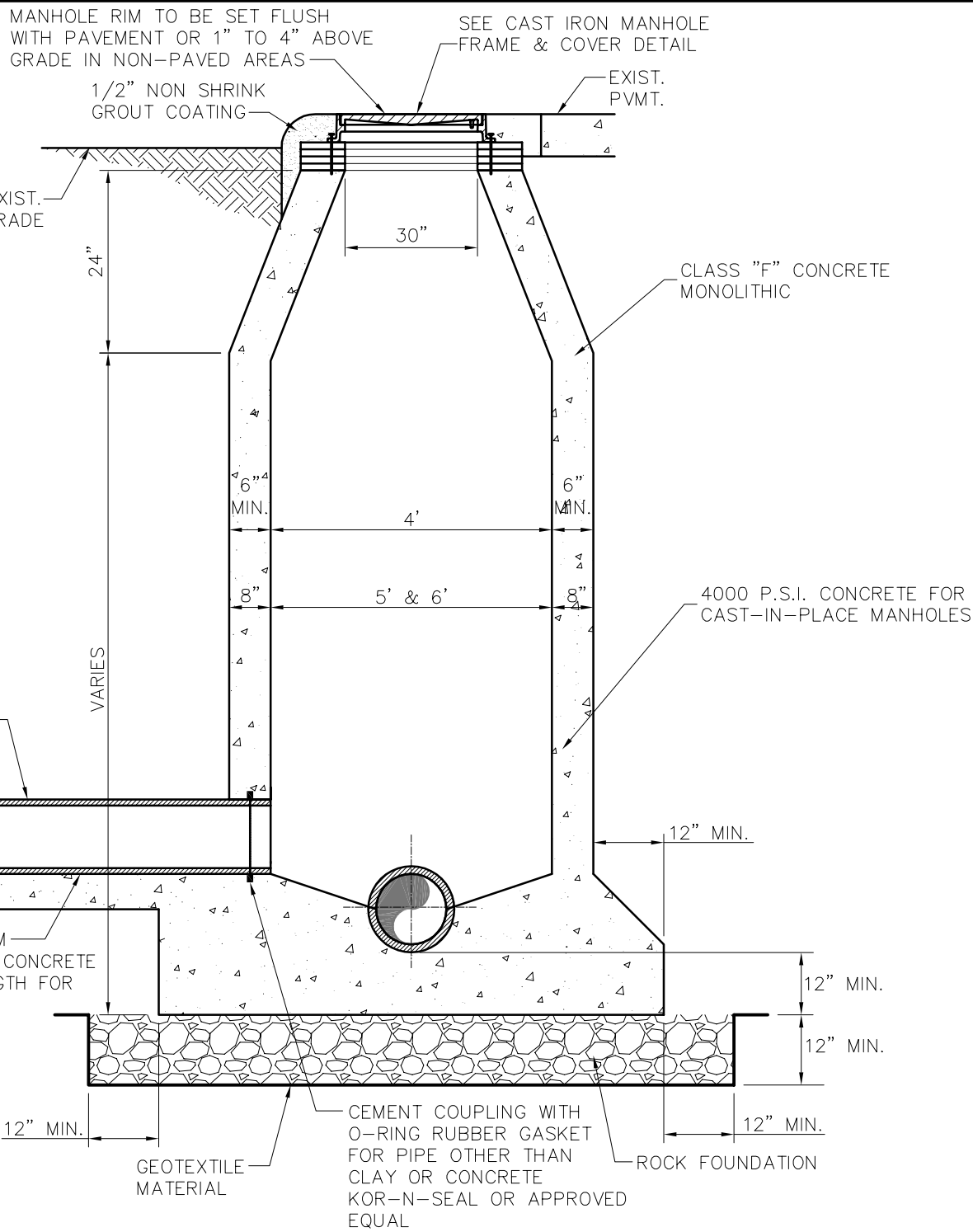
CAST IRON  
CLEANOUT FRAME & COVER

STANDARD CONSTRUCTION DETAILS  
WASTEWATER

DATE:  
AUGUST, 2010

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-

SHEET :  
SD-WW03



**NOTES:**

1. IF FALSE MANHOLE BOTTOMS ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED, AND REMOVED PER WASTEWATER MANHOLE FALSE BOTTOM STD. DETAIL.
2. WHERE MANHOLE'S ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED IN 5'x5' CONCRETE PAD CLASS 'A' CONCRETE, 4" THICK
3. ALL MANHOLES SHALL PASS VACUUM TEST AS PER NCTCOG SPECIFICATIONS

**CAST-IN-PLACE NOTES:**

1. KEYWAYS REQUIRED FOR ALL CONSTRUCTION JOINTS.
2. P.V.C. WATER STOP REQUIRED FOR ALL JOINTS IN LOWER 4'-0" OF MANHOLES
3. CONCRETE SHALL BE 4000 P.S.I.



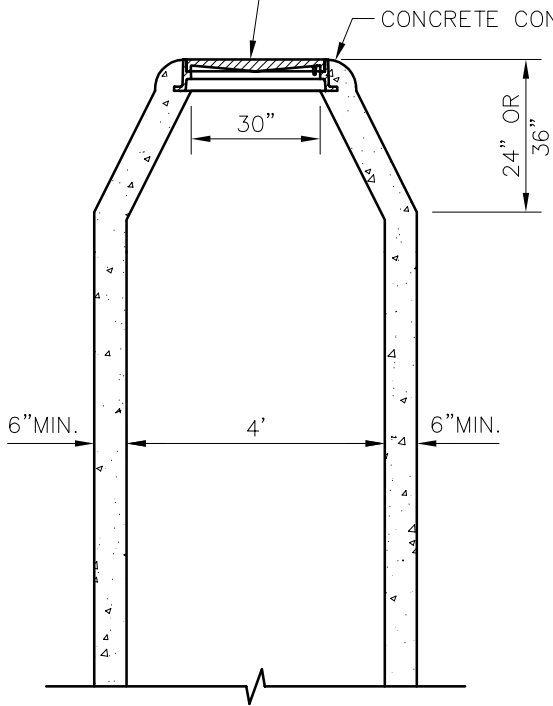
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**CAST-IN-PLACE MANHOLE**

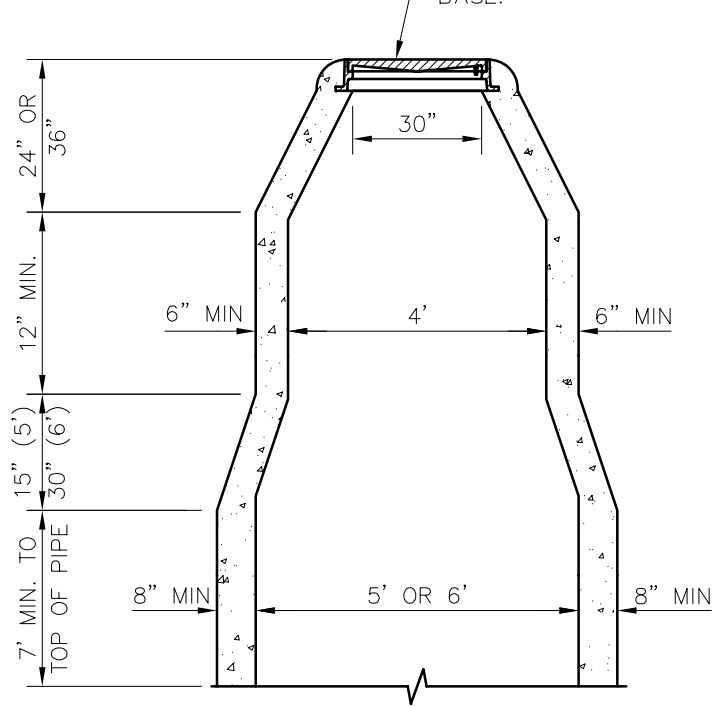
**STANDARD CONSTRUCTION DETAILS WASTEWATER**

DATE: AUGUST, 2010	REV DATE: -	SHEET : SD-WW04
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PRESSURE TYPE MANHOLE  
FRAME AND COVER, MANHOLE  
FRAME CAST IN ROOF  
W/CONTINUOUS POUR FROM  
BASE.



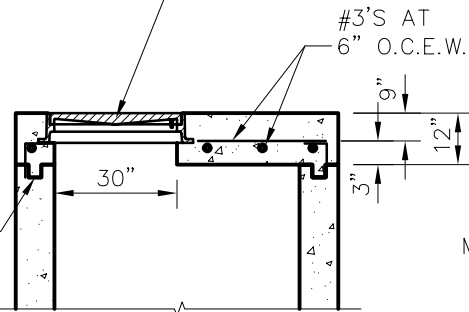
PRESSURE TYPE MANHOLE  
FRAME AND COVER, MANHOLE  
FRAME CAST IN ROOF  
W/CONTINUOUS POUR FROM  
BASE.



TRANSITION DETAIL FOR 5' AND 6'

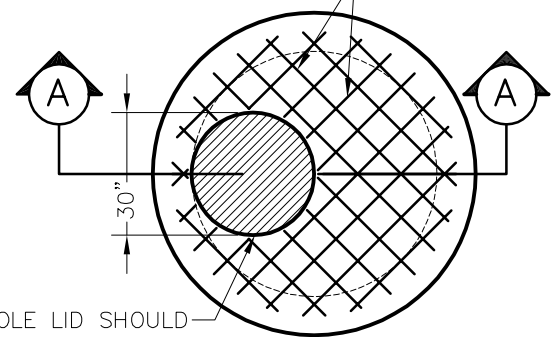
PRESSURE TYPE MANHOLE  
FRAME AND COVER

CONSTRUCTION JOINT  
WITH KEYWAY WATERSTOP  
AND #3'S 12" O.C. EXTENDING  
9" INTO WALL (NOT REQUIRED  
FOR CONTINUOUS POUR).



SECTION A-A

#3'S AT  
6" O.C.E.W.



MANHOLE LID SHOULD  
BE IN LINE WITH  
UPSTREAM PIPE  
WHERE POSSIBLE

ROOF OPTIONS

NOTES:

- IF FALSE MANHOLE BOTTOMS ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED, AND REMOVED PER WASTEWATER MANHOLE FALSE BOTTOM STD. DETAIL.
- WHERE MANHOLE'S ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED IN 5'x5' CONCRETE PAD CLASS 'A' CONCRETE, 4" THICK
- ALL MANHOLES SHALL PASS VACUUM TEST PER NCTCOG SPECIFICATIONS
- LID SHALL BE GASKETED, BOLT-DOWN TYPE WITH STAINLESS STEEL BOLTS.
- SEALED MANHOLE SHALL BE EPOXY COATED TO PREVENT INTERNAL CORROSION. EPOXY COATING SHALL BE RAVEN 405, OR APPROVED EQUAL AND SHALL BE A MINIMUM 200 MILS THICKNESS AND SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

*Addison!*

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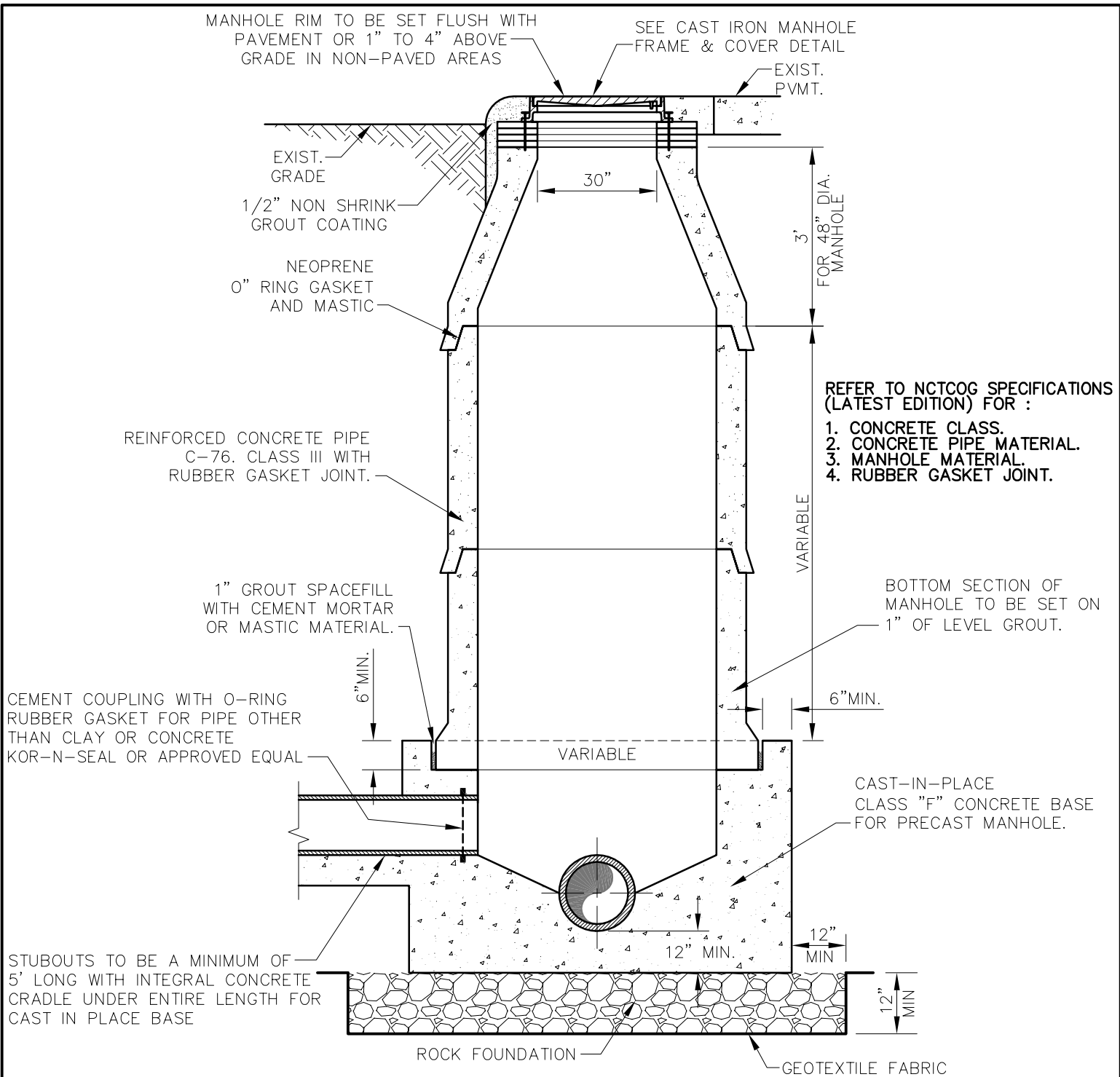
SEALED TYPE 'S'  
CAST-IN-PLACE  
MANHOLE

STANDARD CONSTRUCTION DETAILS  
WASTEWATER

DATE:  
AUGUST, 2010

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-

SHEET :  
SD-WW05



**NOTES:**

1. IF FALSE MANHOLE BOTTOMS ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED, AND REMOVED PER WASTEWATER MANHOLE FALSE BOTTOM STD. DETAIL.
2. WHERE MANHOLE'S ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED IN 5'x5' CONCRETE PAD CLASS 'A' CONCRETE, 4" THICK
3. ALL MANHOLES SHALL PASS VACUUM TEST AS PER NCTCOG SPECIFICATIONS

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PRECAST CONCRETE  
PIPE MANHOLE  
ALTERNATE "A"

STANDARD CONSTRUCTION DETAILS  
WASTEWATER

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SHEET :  
SD-WW06



MANHOLE RIM TO BE SET FLUSH WITH PAVEMENT OR 1" TO 4" ABOVE GRADE IN NON-PAVED AREAS

SEE CAST IRON MANHOLE FRAME & COVER DETAIL

EXIST. GRADE

EXIST. PVMT.

1/2" NON SHRINK GROUT COATING

30"

NEOPRENE "O-RING" GASKET AND MASTIC.

3' TO 5'  
3' FOR 4' MANHOLE

4', 5' OR 6'

VARIES

INTERMEDIATE RISER  
(USE MINIMUM NO. OF RISERS)

REFER TO NCTCOG SPECIFICATION (LATEST EDITION) FOR :

1. CONCRETE CLASS.
2. CONCRETE PIPE MATERIAL.
3. MANHOLE MATERIAL.
4. RUBBER GASKET JOINT.

COUPLING WITH O-RING RUBBER GASKET KOR-N-SEAL, OR APPROVED EQUAL

TOP OF PIPE

BASE RISER  
(VARIES)

EMBEDMENT AS SPECIFIED BY STANDARD DETAILS.

12"

5"

12" MIN.

ROCK FOUNDATION

GEOTEXTILE MATERIAL

**NOTES:**

1. IF FALSE MANHOLE BOTTOMS ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED, AND REMOVED PER WASTEWATER MANHOLE FALSE BOTTOM STD. DETAIL.
2. WHERE MANHOLE'S ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED IN 5'x5' CONCRETE PAD CLASS 'A' CONCRETE, 4" THICK
3. ALL MANHOLES SHALL PASS VACUUM TEST AS PER NCTCOG SPECIFICATIONS

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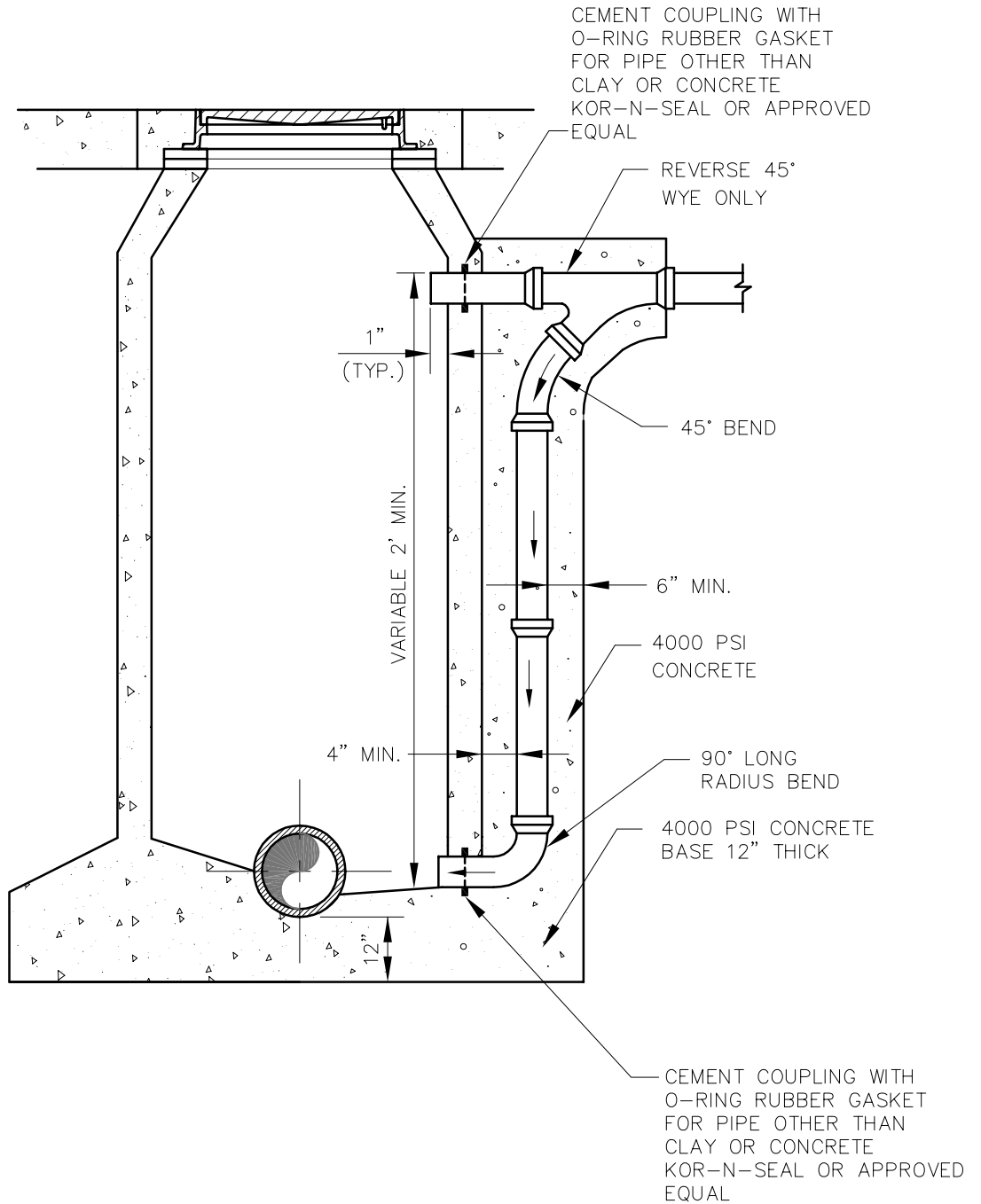
PRECAST CONCRETE  
PIPE MANHOLE  
ALTERNATE "B"

STANDARD CONSTRUCTION DETAILS  
WASTEWATER

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SHEET :  
SD-WW07



EXTERNAL DROP MANHOLE CONNECTION

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EXTERNAL DROP MANHOLE CONNECTION

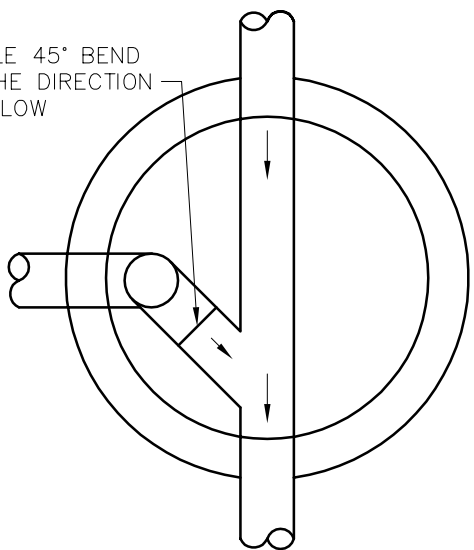
STANDARD CONSTRUCTION DETAILS WASTEWATER

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SHEET :  
SD-WW08

ANGLE 45° BEND  
IN THE DIRECTION  
OF FLOW



PLAN

CEMENT COUPLING WITH  
O-RING RUBBER GASKET  
FOR PIPE OTHER THAN  
CLAY OR CONCRETE  
KOR-N-SEAL OR APPROVED  
EQUAL

THE INSIDE DROP  
CONNECTION PIPE  
SHALL BE THE SAME  
AS THE INCOMING  
PIPE

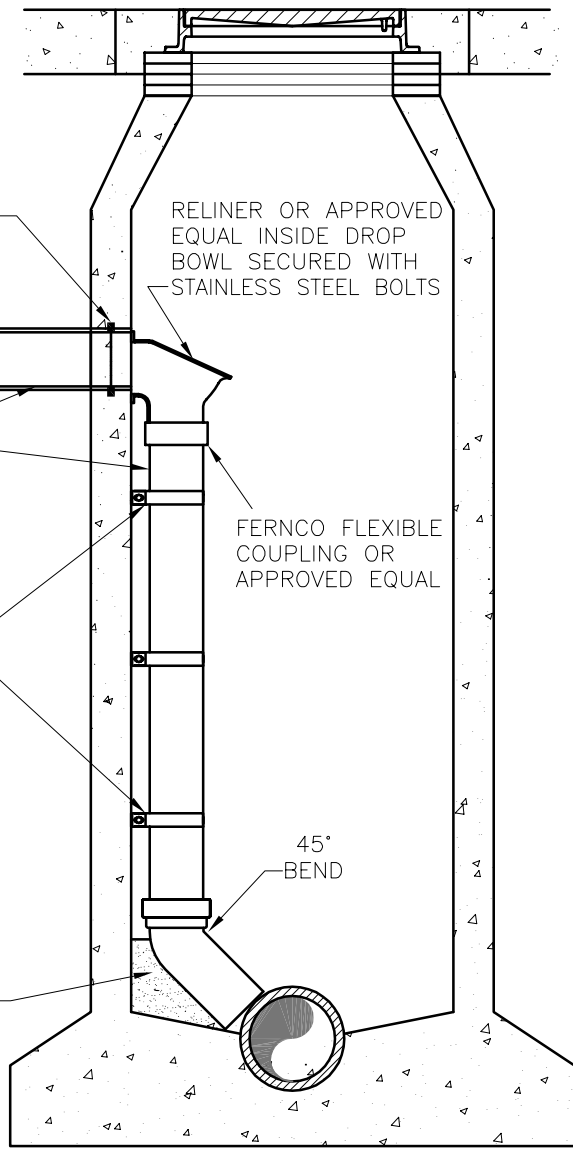
1-1/2" STAINLESS STEEL  
PIPE STRAPS ANCHORED IN  
WALL WITH 2 STAINLESS  
STEEL BOLTS AT 2' MAX.  
SPACING WITH MIN. 2  
PER JOINT

RELINER OR APPROVED  
EQUAL INSIDE DROP  
BOWL SECURED WITH  
STAINLESS STEEL BOLTS

FERNCO FLEXIBLE  
COUPLING OR  
APPROVED EQUAL

45°  
BEND

CONCRETE BLOCKING  
BEHIND BEND



INTERIOR DROP MANHOLE CONNECTION



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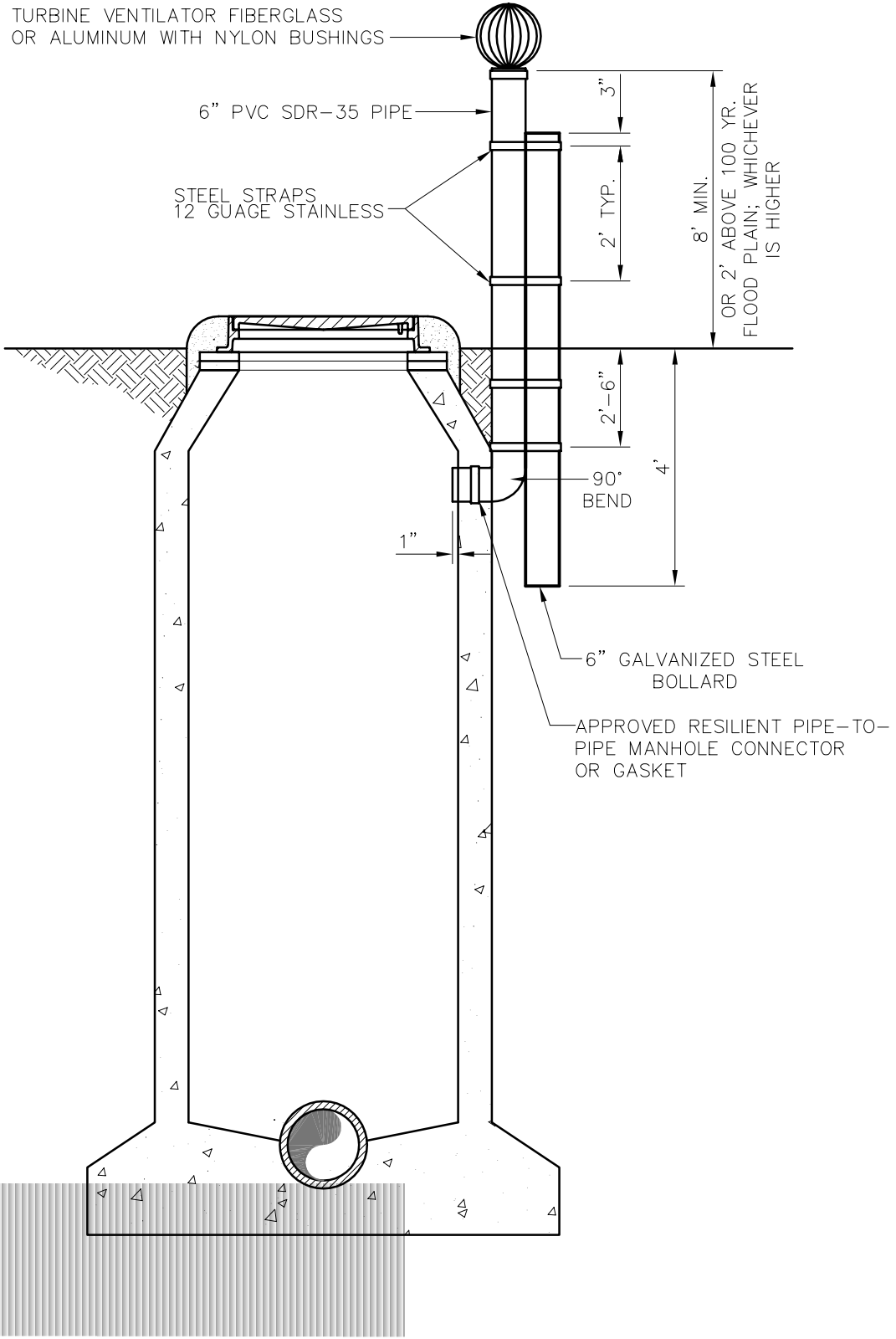
INTERIOR DROP MANHOLE  
CONNECTION

STANDARD CONSTRUCTION DETAILS  
WASTEWATER

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SHEET :  
SD-WW09



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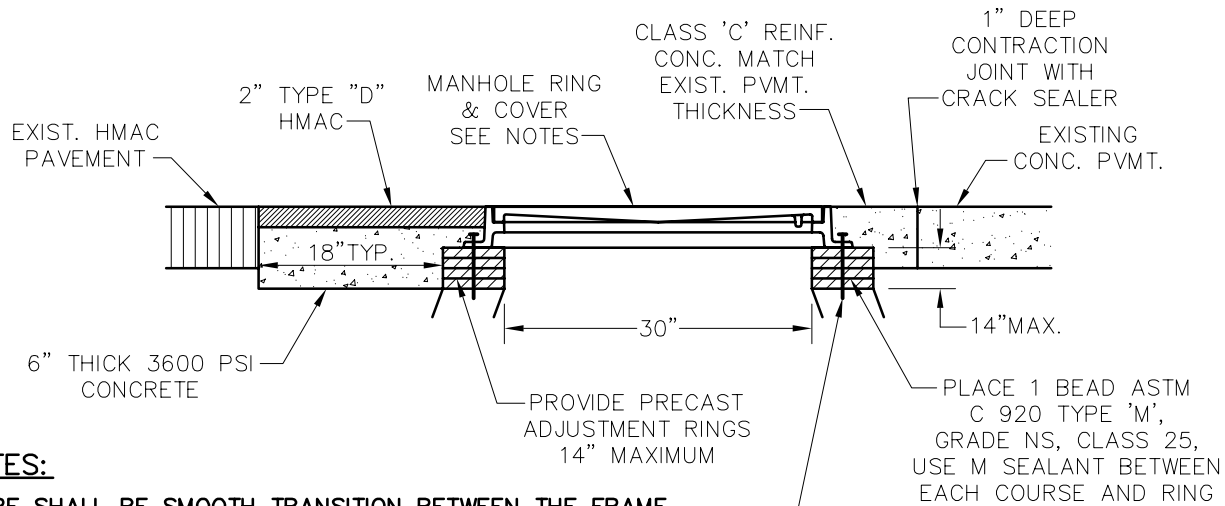
VENTED MANHOLE

STANDARD CONSTRUCTION DETAILS  
WASTEWATER

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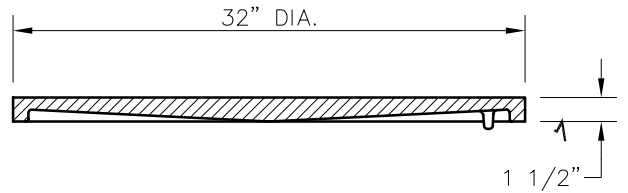
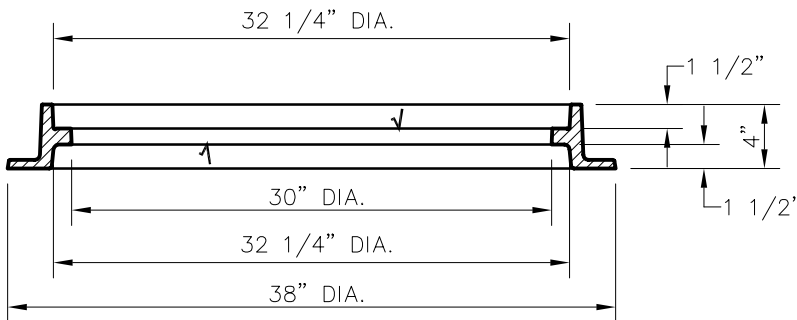
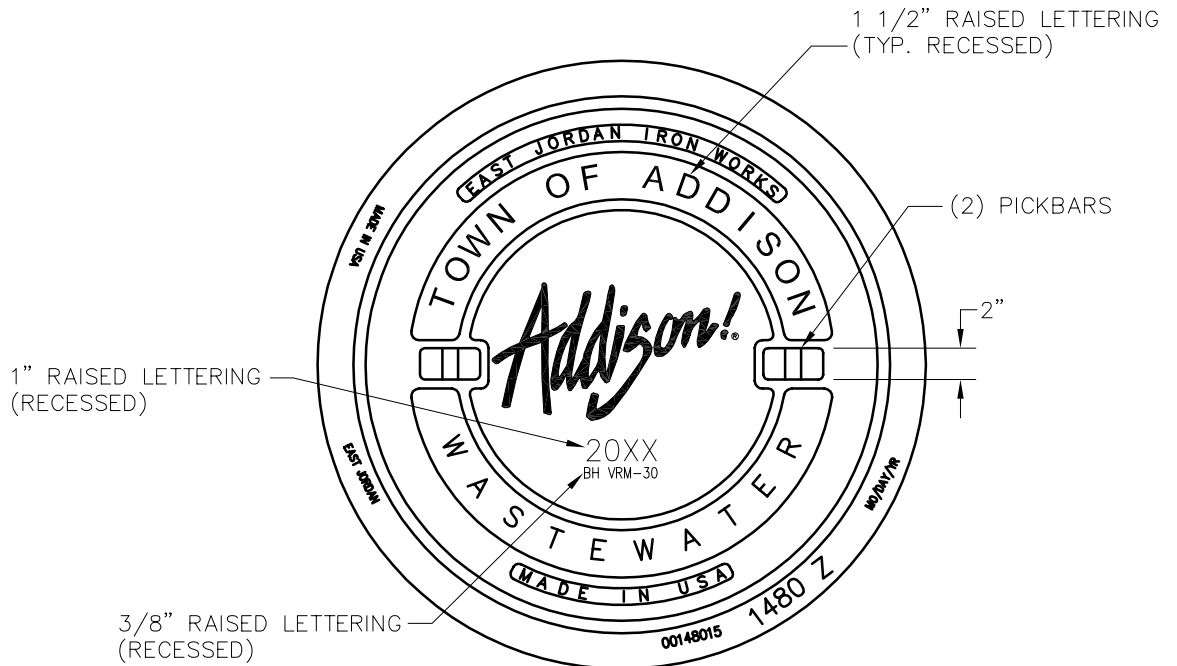
SHEET :  
SD-WW10



**NOTES:**

1. THERE SHALL BE SMOOTH TRANSITION BETWEEN THE FRAME GRADE RING, OR THE GRADE RING AND THE CONE.
2. CONCRETE EXTENSION RINGS MAY BE PRECAST OR CAST-IN-PLACE. BRICK EXTENSION RINGS WILL NOT BE ALLOWED.
3. STANDARD EXTENSIONS SHALL BE 2", 3", 4", 6", AND 12". EXTENSIONS SHALL BE SIZED TO MINIMIZE THE NUMBER REQUIRED TO RAISE THE MANHOLE. NO MORE THAN A TOTAL OF 14" OF EXTENSION WILL BE ALLOWED ON ANY MANHOLE.

RING TO BE ATTACHED TO CONE WITH THREE 3/4" DIA. STAINLESS STEEL ALL THREAD BOLTS. BOLTS TO BE SECURED IN PLACE WITH EPOXY CONCRETE.



√ DESIGNATES MACHINE SURFACE



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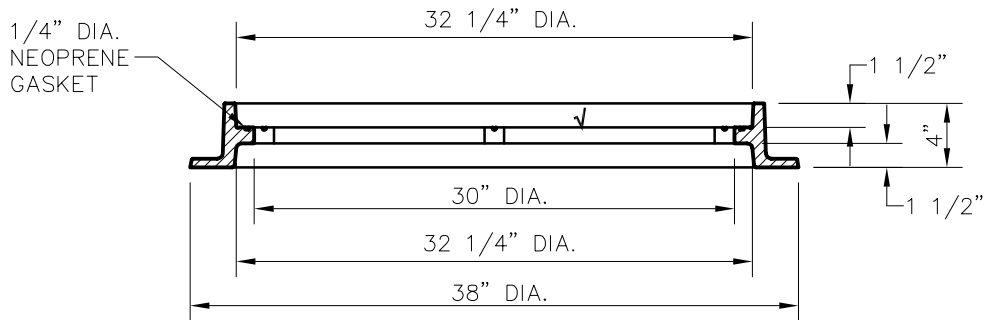
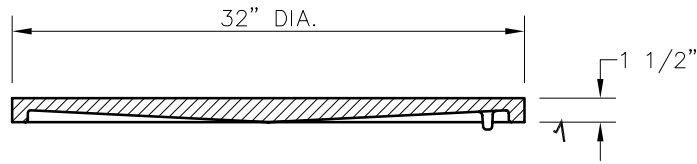
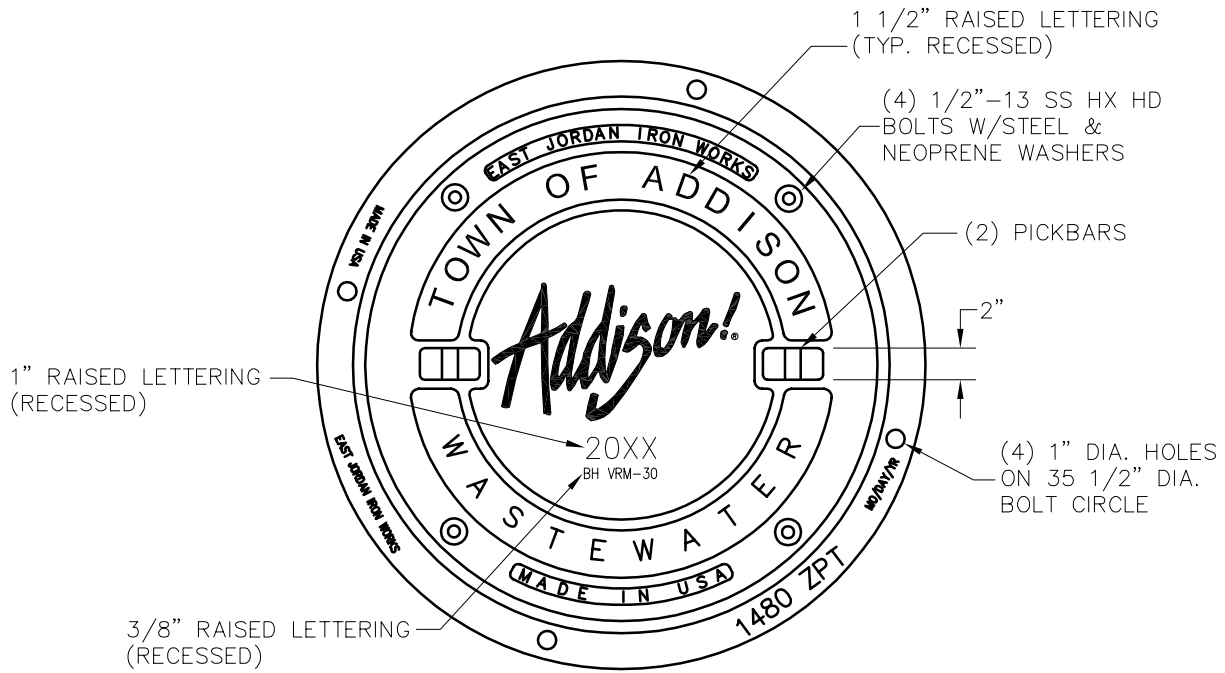
**CAST IRON MANHOLE FRAME AND COVER**

**STANDARD CONSTRUCTION DETAILS WASTEWATER**

DATE: AUGUST, 2010

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√ DESIGNATES MACHINE SURFACE

**Addison!**

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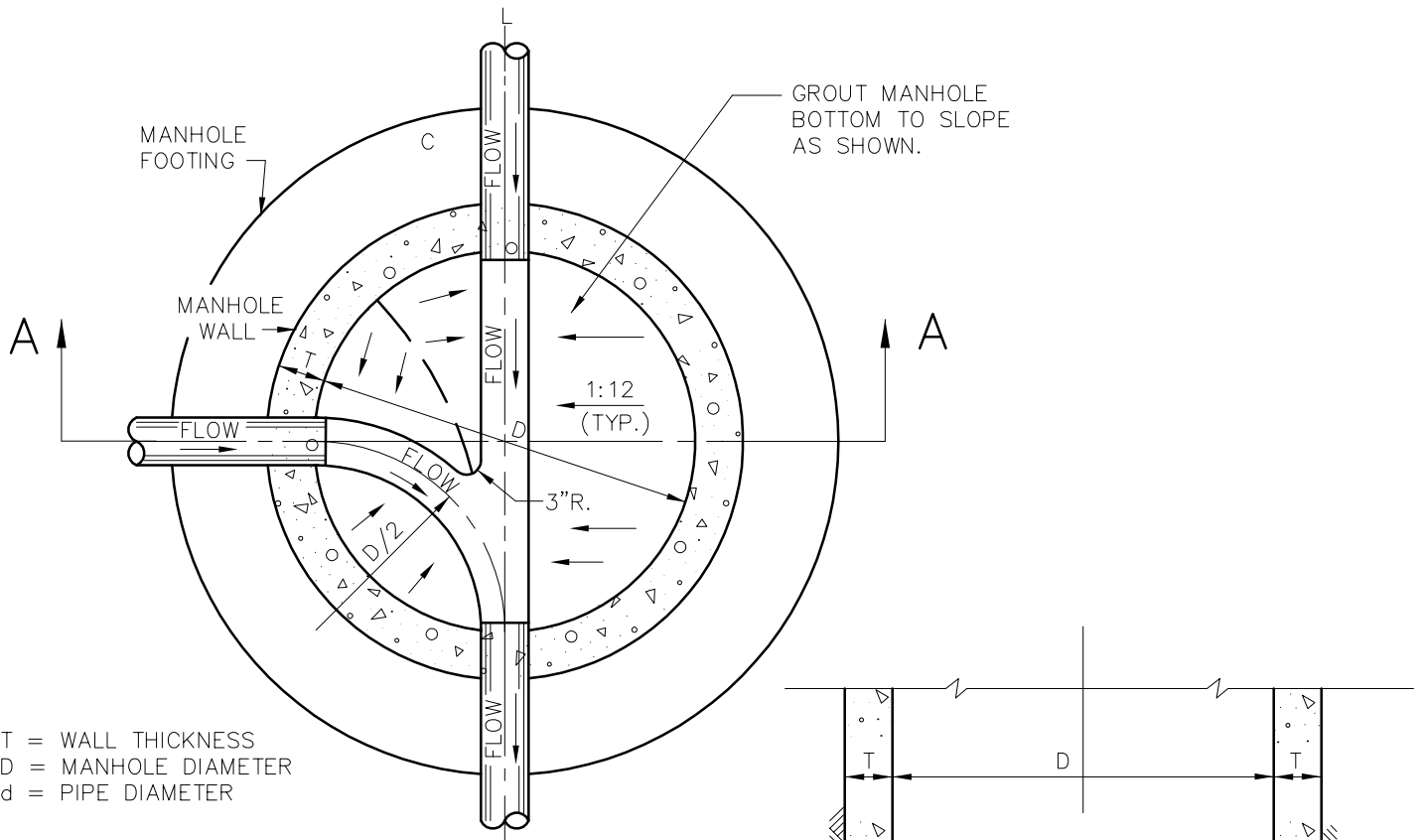
PRESSURE TYPE MANHOLE  
FRAME AND COVER

STANDARD CONSTRUCTION DETAILS  
WASTEWATER

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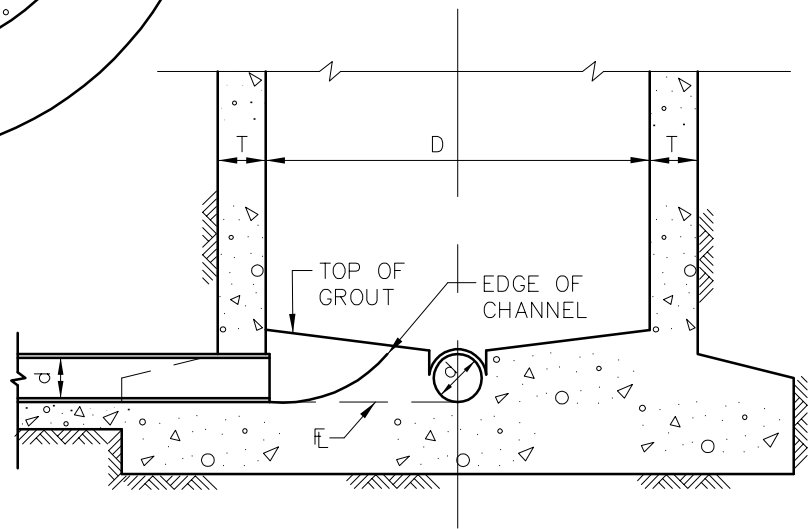
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SHEET :  
SD-WW12



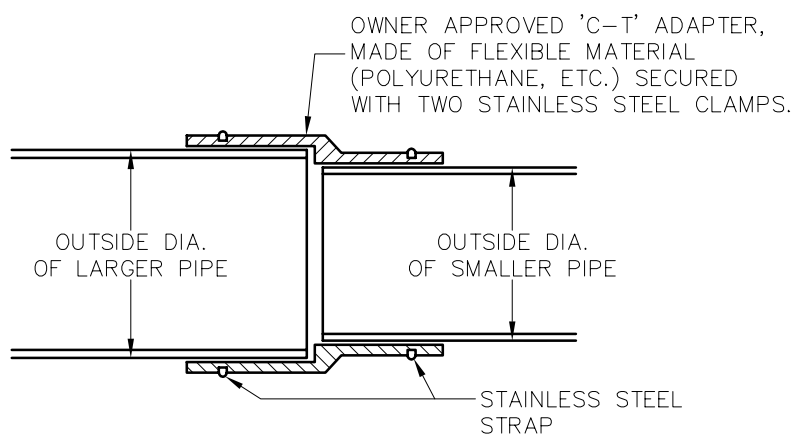
T = WALL THICKNESS  
 D = MANHOLE DIAMETER  
 d = PIPE DIAMETER

**PLAN**  
 N.T.S.



**SECTION A-A**  
 N.T.S.

**WASTEWATER MANHOLE LINE INTERSECTION**



**'C-T' PIPE ADAPTER**



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**WASTEWATER MANHOLE LINE INTERSECTION & 'C-T' PIPE ADAPTER**

**STANDARD CONSTRUCTION DETAILS WASTEWATER**

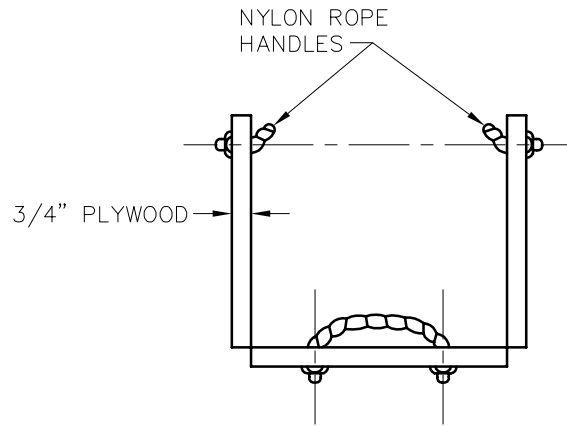
DATE: AUGUST, 2010	REV DATE: -	SHEET : SD-WW13
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**INSTALLATION**

FALSE MANHOLE BOTTOM SHALL BE FURNISHED AND INSTALLED IN ALL MANHOLES CONSTRUCTED IN ADVANCE OF PAVING. THESE FALSE MANHOLE BOTTOMS WILL BE INSTALLED AT A TIME DIRECTED BY THE ENGINEER BUT WILL USUALLY BE AFTER ALL WORK IS COMPLETED ON THE WASTEWATER SYSTEM INCLUDING THE AIR TEST, BUT PRIOR TO THE FINAL INSPECTION.

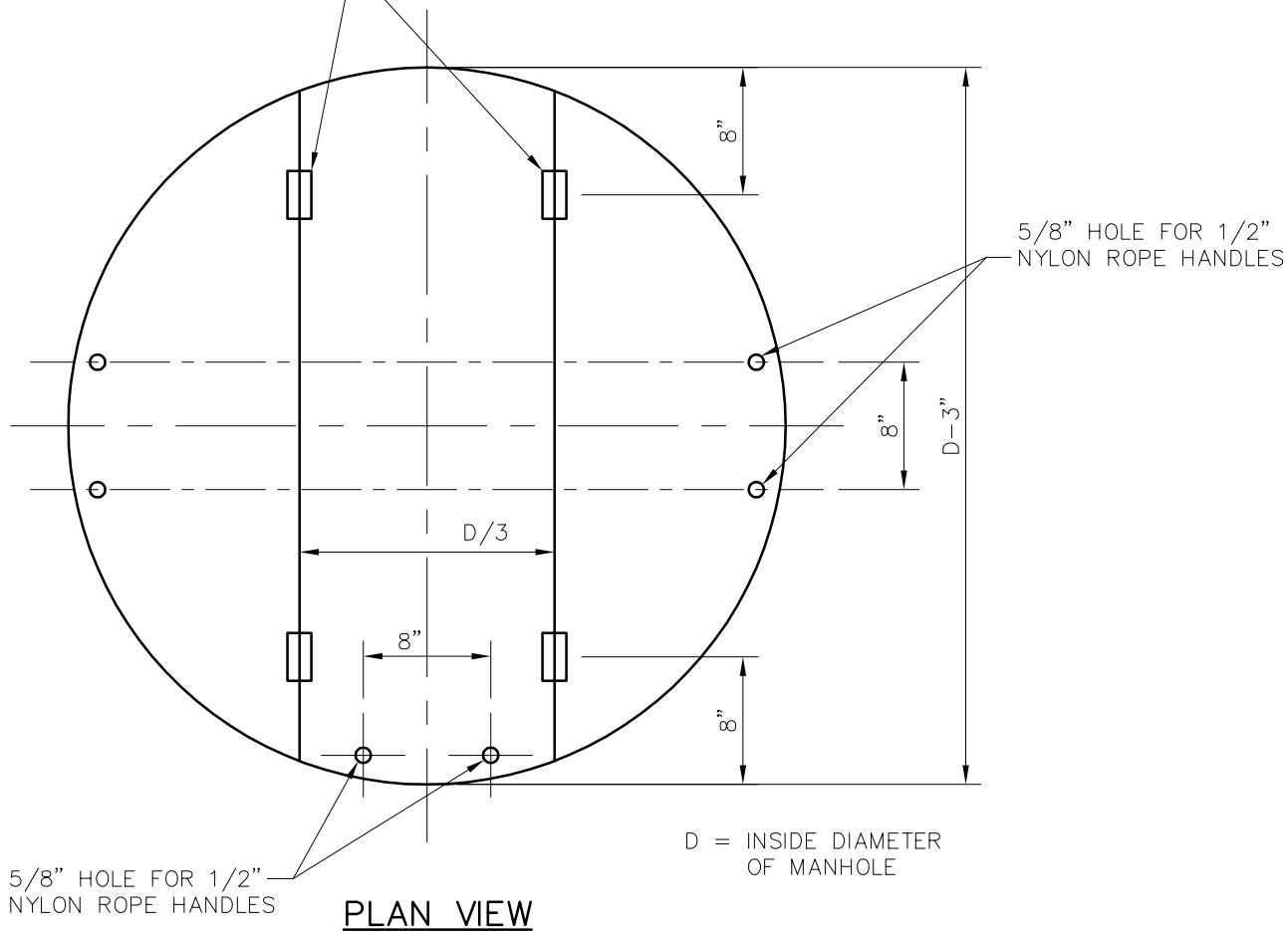
**REMOVAL**

FALSE MANHOLE BOTTOM SHALL BE REMOVED AFTER THE FINAL APPURTENANCES ADJUSTMENT INSPECTION. THE PAVING CONTRACTOR AND OWNER'S REPRESENTATIVE WILL COORDINATE THE REMOVAL OF THE FALSE BOTTOMS.



METAL STRAP HINGES (MIN. 3" LONG) W/BOLTS

**INSTALLATION AND REMOVAL POSITION**



**PLAN VIEW**



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**WASTEWATER MANHOLE FALSE BOTTOM**

**STANDARD CONSTRUCTION DETAILS WASTEWATER**

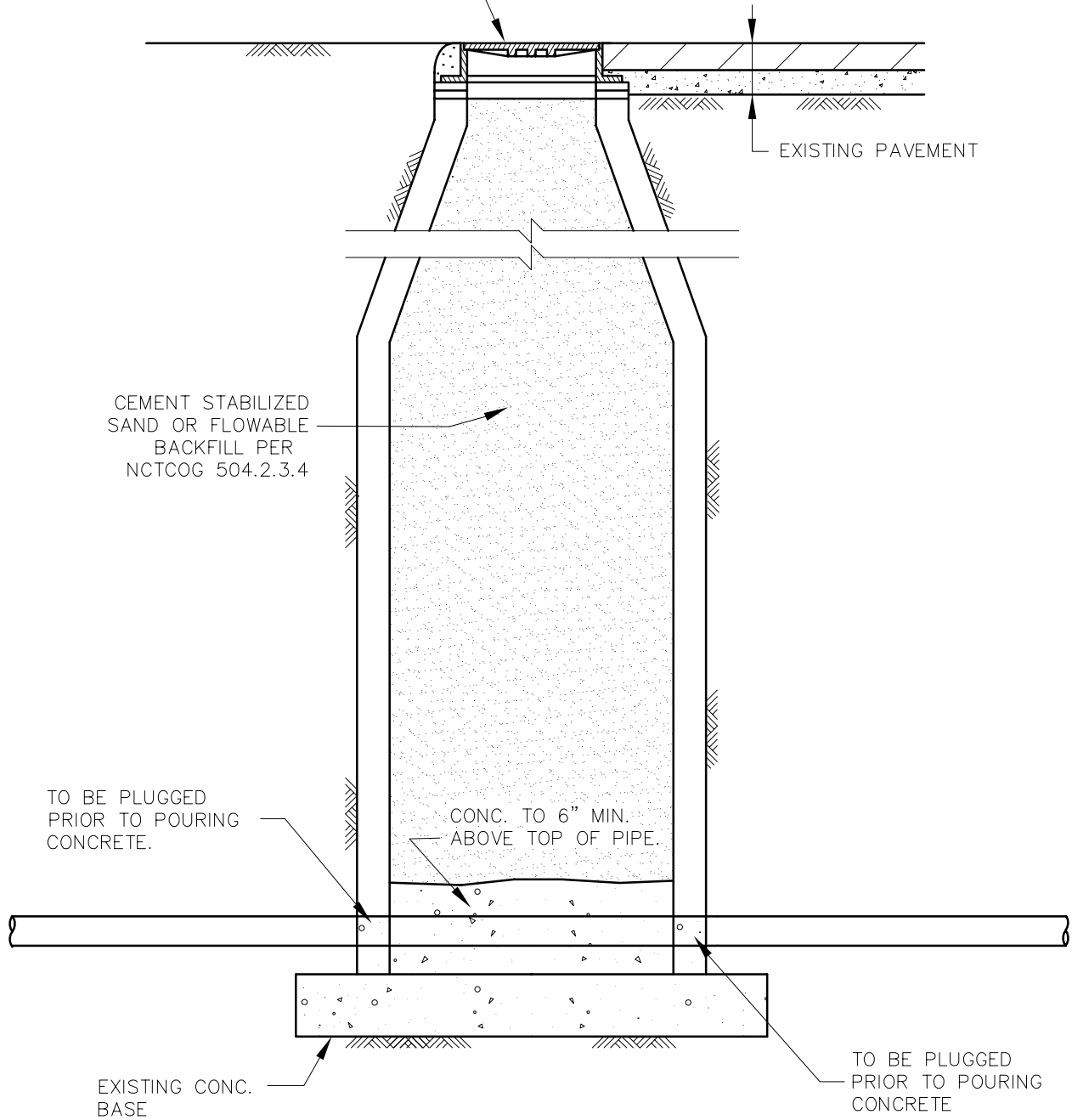
DATE: AUGUST, 2010

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MH. TO BE REMOVED A MIN.  
OF 3'-0" BELOW GRADE.



*Addison!*

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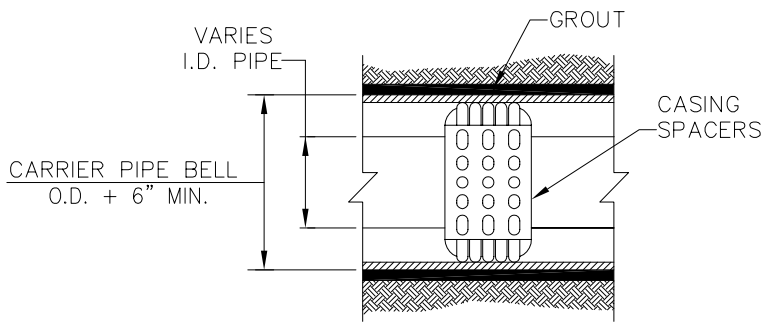
### ABANDONMENT OF MANHOLE

### STANDARD CONSTRUCTION DETAILS WASTEWATER

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AUGUST, 2010

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SHEET :  
SD-WW15

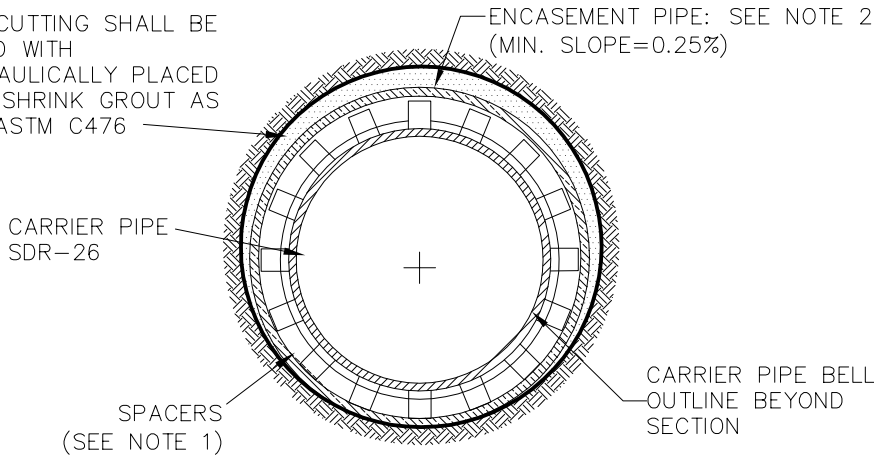


**TYPICAL CASING SECTION**

CARRIER PIPE SIZE (IN)	STEEL ENCASEMENT O.D. (IN)	STEEL ENCASEMENT WALL THICKNESS (IN)
6	14	1/4
8	18	1/4
12	21	1/4
18	27	3/8
21	30	3/8
24	36	3/8
27	39	1/2

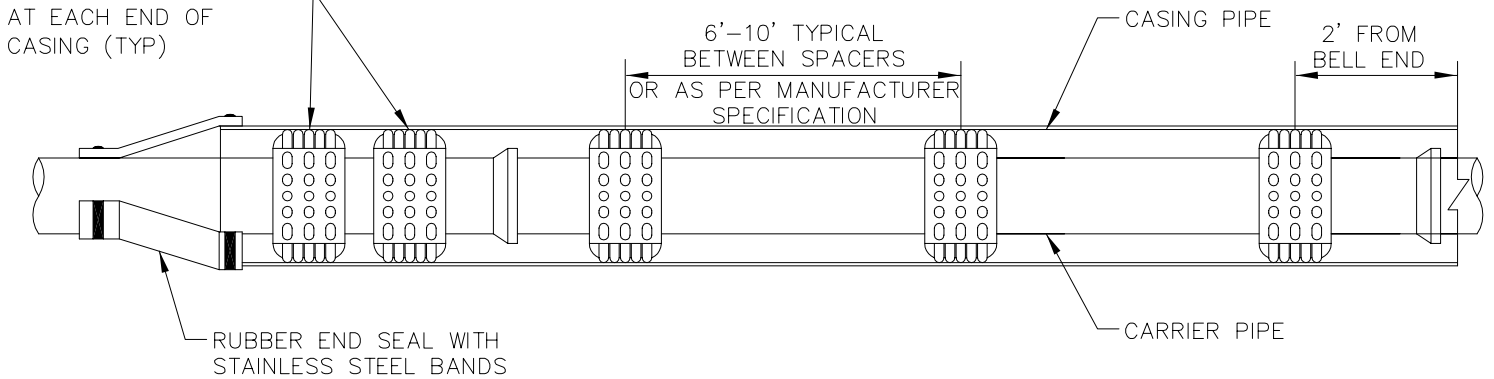
FOR ALL CARRIER PIPES OVER 27": THE STEEL ENCASEMENT PIPE SHALL BE 12" LARGER THAN THE CARRIER PIPE AND THE STEEL ENCASEMENT WALL THICKNESS SHALL BE 1/2".

OVERCUTTING SHALL BE FILLED WITH HYDRAULICALLY PLACED NON-SHRINK GROUT AS PER ASTM C476



**WASTEWATER ENCASEMENT**

TWO SPACERS PLACED AT EACH END OF CASING (TYP)



**INSULATOR SPACING DETAIL**

**NOTES:**

1. HIGH DENSITY POLYETHYLENE SPACERS, RACI OR EQUAL, SHALL BE USED. WHERE NO CASING PIPE IS REQUIRED OVERCUTTING AROUND UTILITY SHALL BE FILLED WITH HYDRAULICALLY PLACED NON-SHRINK GROUT AS PER ASTM C476.
2. ENCASEMENT PIPE SHALL BE HIGH DENSITY STEEL PIPE. ALL JOINTS TO BE WELDED 100%.



PUBLIC WORKS DEPARTMENT

**CASING**

**STANDARD CONSTRUCTION DETAILS WASTEWATER**

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SHEET : SD-WW16