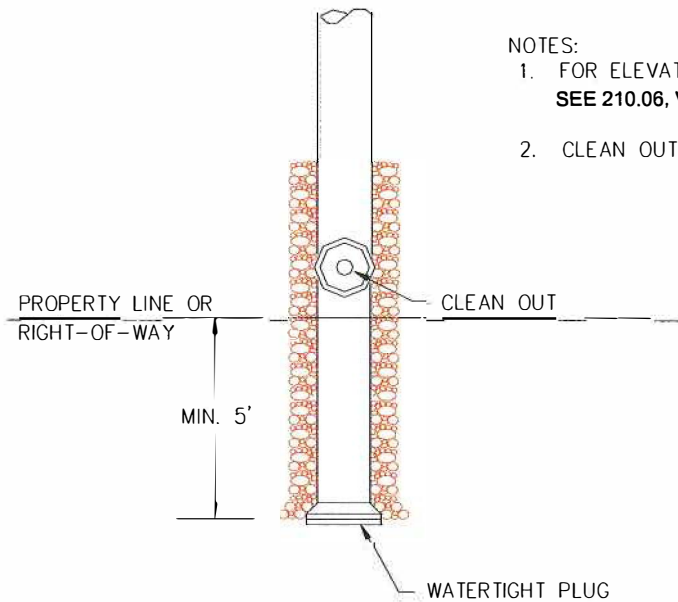
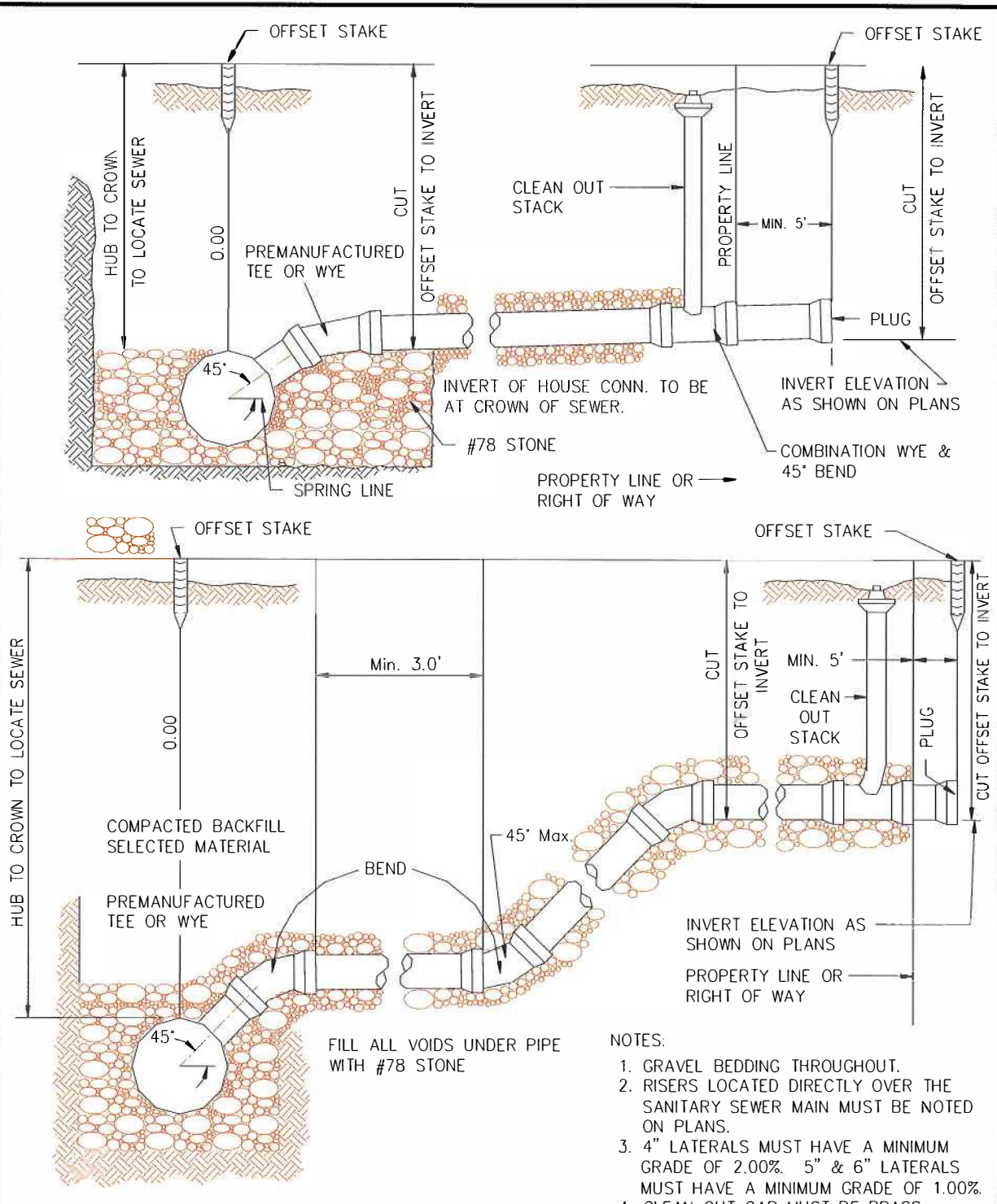


SADDLES MAY BE USED IN NEW CONSTRUCTION ONLY WITH THE APPROVAL OF THE **CCWSA** AND SHALL BE SUBJECTED TO TEN FEET OF HYDROSTATIC HEAD (4.3 PSI) PRIOR TO CUTTING MAIN.

NOTES:

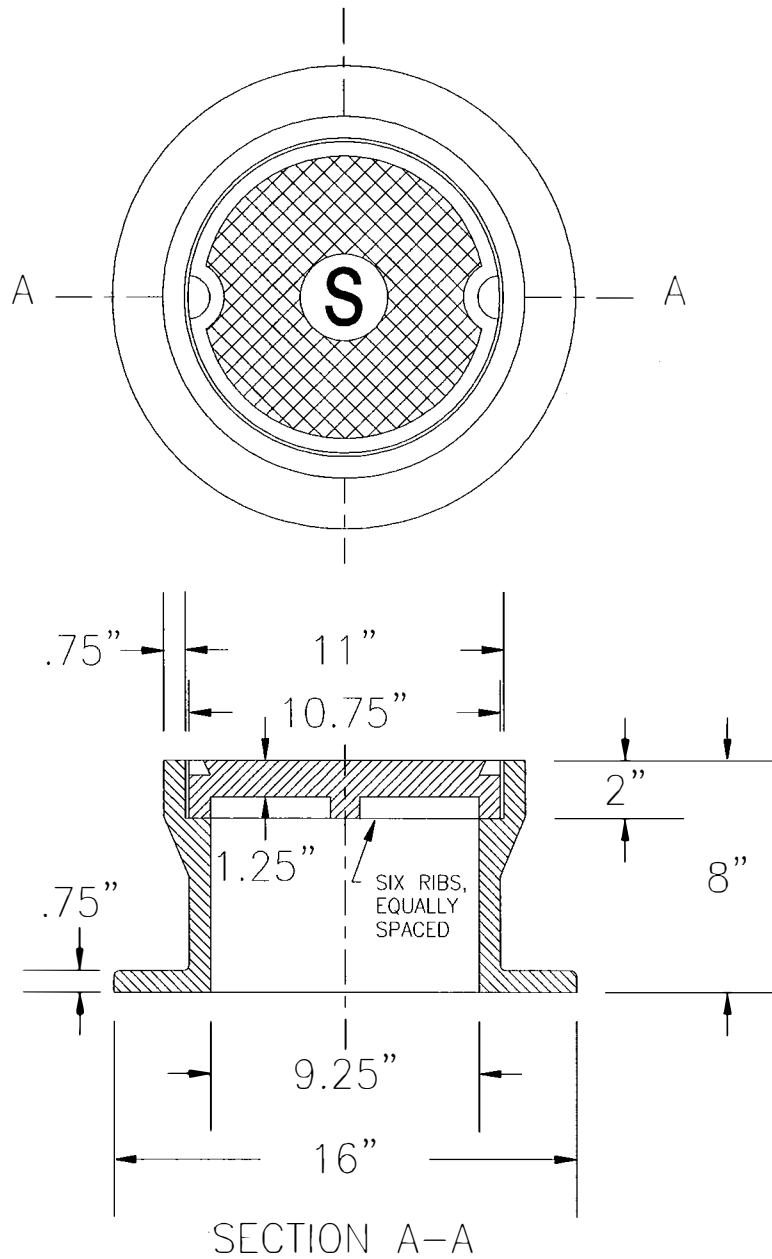
1. FOR ELEVATIONS AND FURTHER DETAILS, SEE 210.06, Vol B.
2. CLEAN OUT CAP MUST BE BRASS



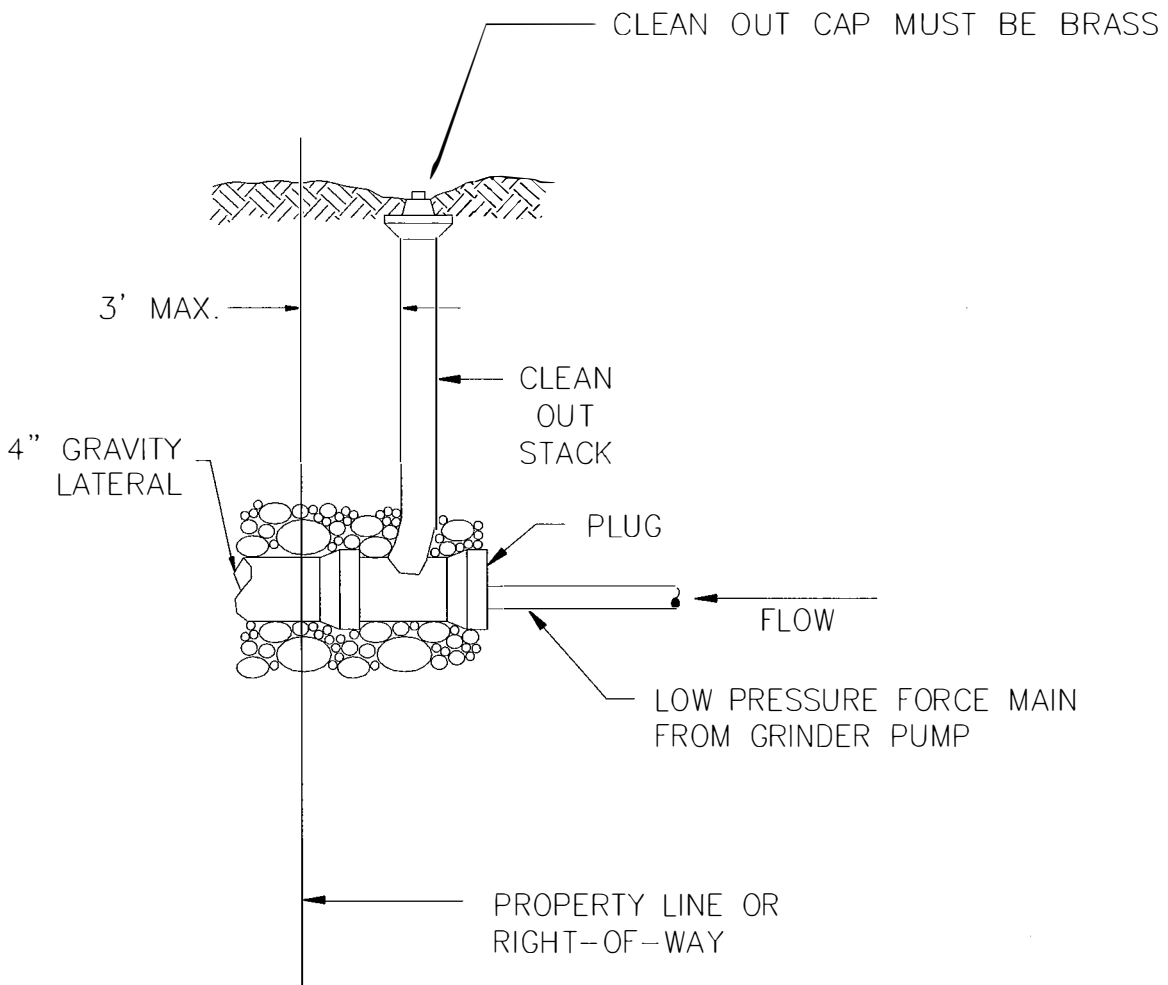


NOTES:

1. GRAVEL BEDDING THROUGHOUT.
2. RISERS LOCATED DIRECTLY OVER THE SANITARY SEWER MAIN MUST BE NOTED ON PLANS.
3. 4" LATERALS MUST HAVE A MINIMUM GRADE OF 2.00%. 5" & 6" LATERALS MUST HAVE A MINIMUM GRADE OF 1.00%.
4. CLEAN OUT CAP MUST BE BRASS.



NOTE
ALL PARTS SHALL BE ASPHALTUM PAINT
COATED ASTM A-48, CLASS 25 CAST IRON.

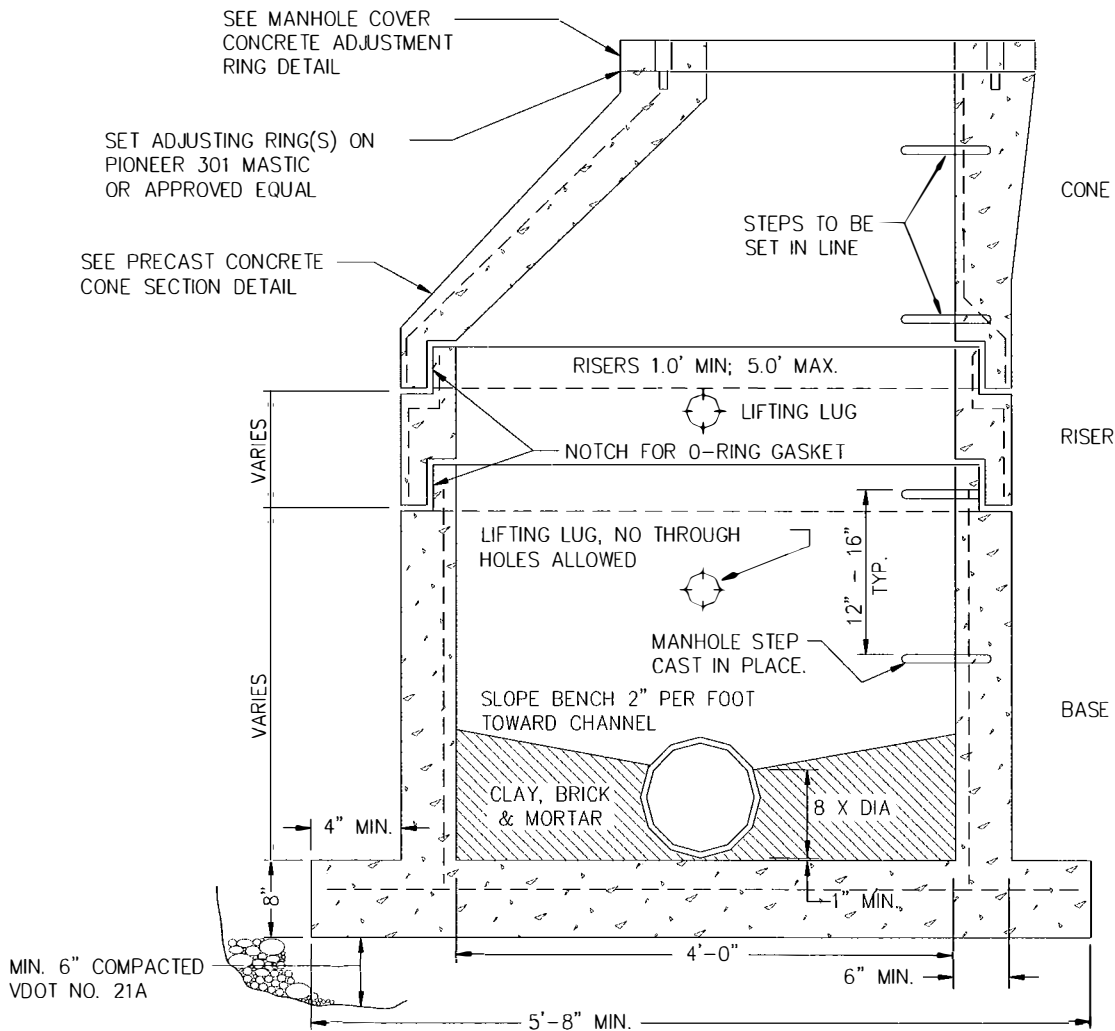


NOTE

GRAVITY LATERAL SHALL CONFORM TO SEWER SERVICE CONNECTION DETAIL EXCEPT FOR LOCATION RELATIVE TO PROPERTY LINE.

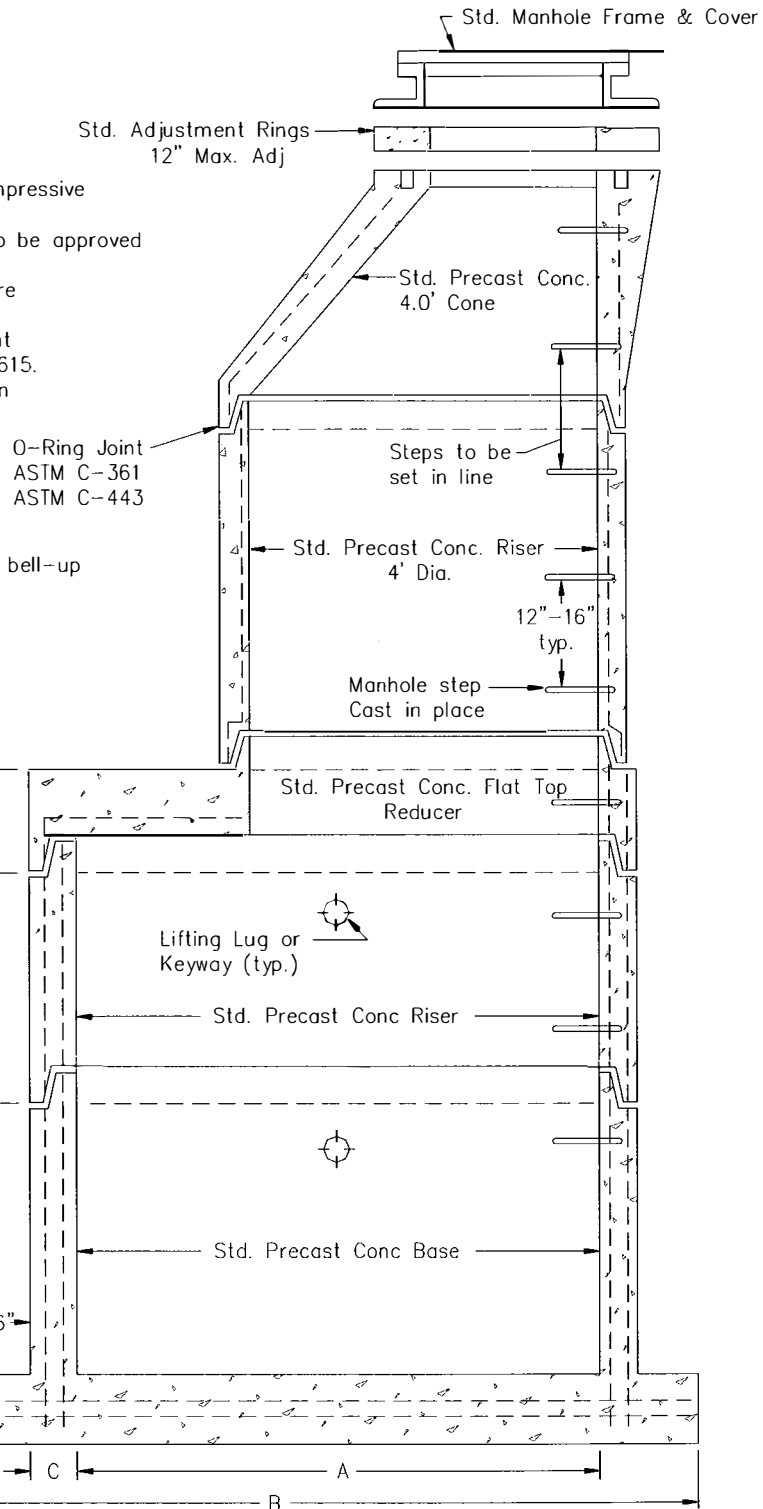
NOTES:

1. MANHOLE TO MEET CURRENT REQUIREMENTS OF ASTM SPEC. C-476.
2. ALL REINFORCING STEEL TO MEET CURRENT REQUIREMENTS OF ASTM SPEC. A-615.
3. CONCRETE TO BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH.
4. TAPERED JOINT WITH O-RING GASKET TO MEET CURRENT REQUIREMENTS OF ASTM SPEC. C-361 & C-443.
5. 301 MASTIC OR APPROVED EQUAL SHALL BE USED IN ADDITION TO THE JOINT SPECIFIED.
6. APPROVED FLEXIBLE JOINT REQUIRED ON ALL PIPE CONNECTIONS TO MANHOLES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. STUB MAY BE USED AT THE APPROVAL OF THE INSPECTOR.
7. MANUFACTURER'S NAME TO BE ON THE INSIDE FACE OF ALL SECTIONS.
8. SET COVER FRAME ON PIONEER 301 MASTIC OR APPROVED SUBSTITUTE.
9. FASTEN WATERTIGHT FRAME TO 3/4" ANCHOR BOLTS (SET ACCORDING TO CONE SECTION DETAIL) WITH NUT AND 2" WASHER. CUT ANCHOR BOLTS OFF 1" ABOVE NUT.
10. KEYWAYS MAY BE SUBSTITUTED FOR LIFTING LUGS.



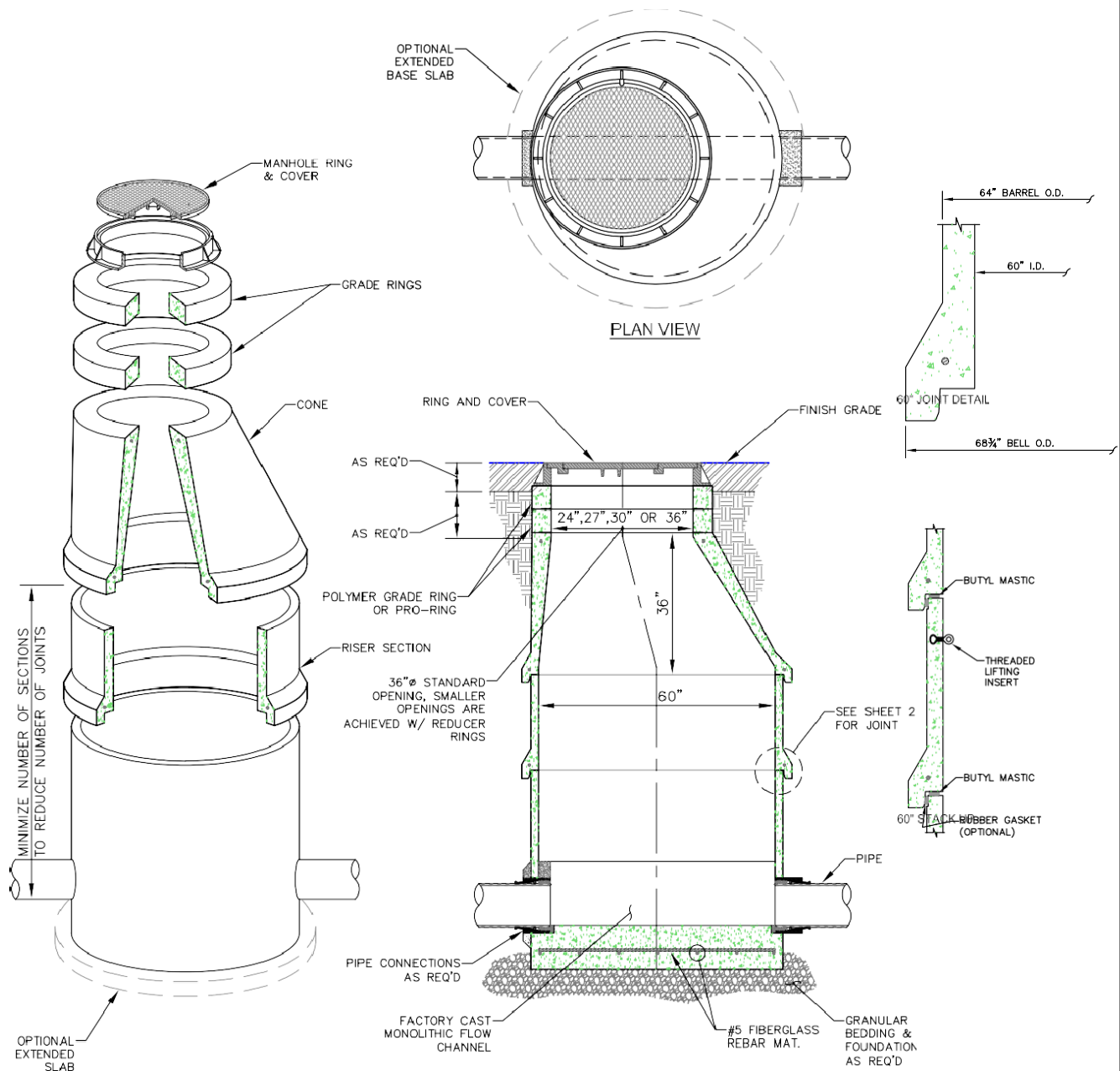
NOTES:

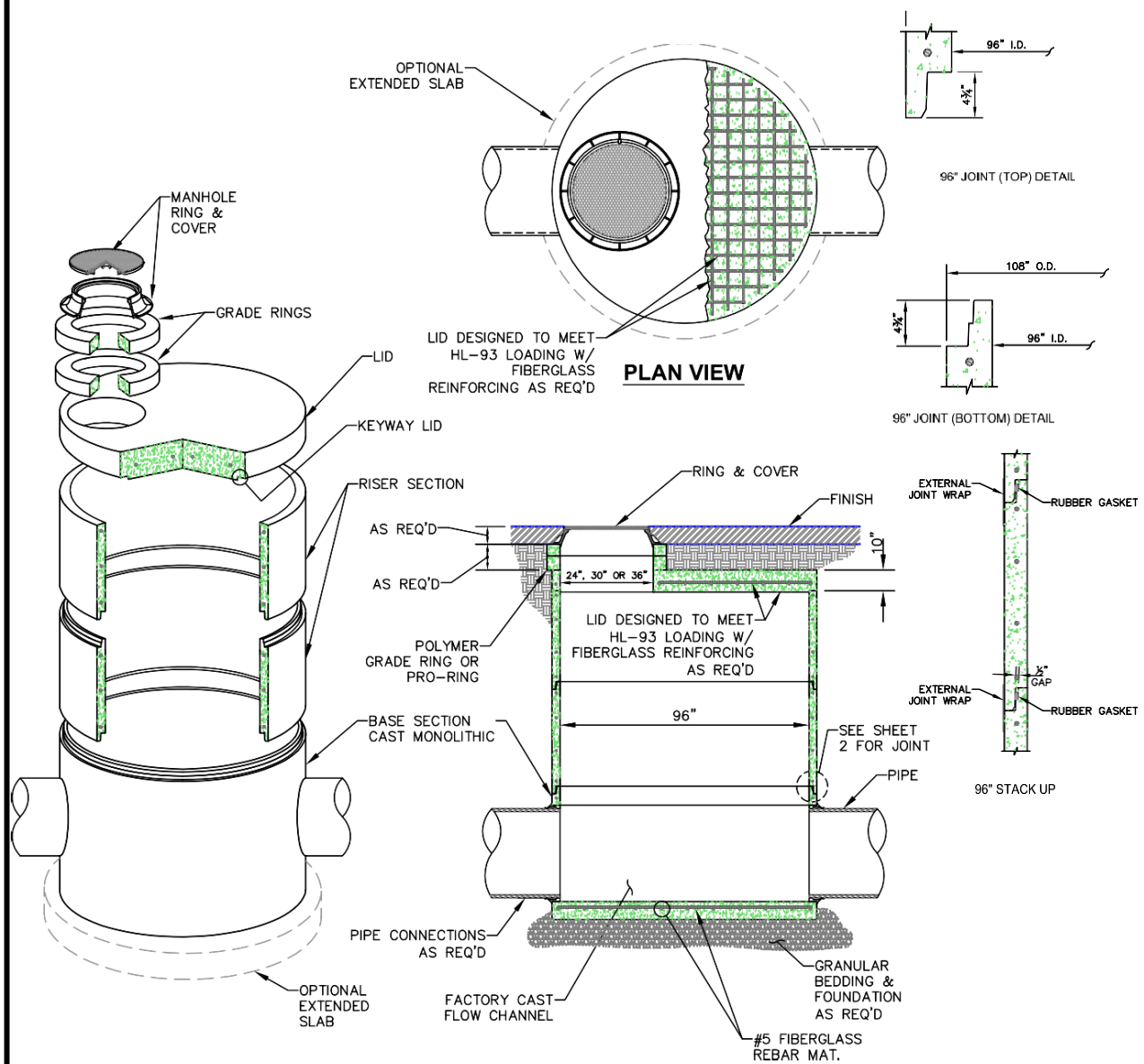
1. Concrete must be 4000 PSI compressive strength, minimum.
2. Pipe connections to manholes to be approved flexible sleeves.
3. Manholes over 6' diameter require detailed drawings on plans.
4. All reinforcing must meet current requirements of ASTM Spec. A-615.
5. Manufacturer's name must be on inside face of all sections.
6. Manhole must meet current requirements of ASTM Spec. C-478.
7. Place 6" compacted VDOT No. 21A under base sections.
8. Joint configuration may be cast bell-up or spigot-up.



Manhole Diameter In Feet	
5'	6'
A	60" 72"
B	84" 98"
C	6" 7"
D	8" 8"
E	Varies
F	13" min. 13" min.
G	Varies

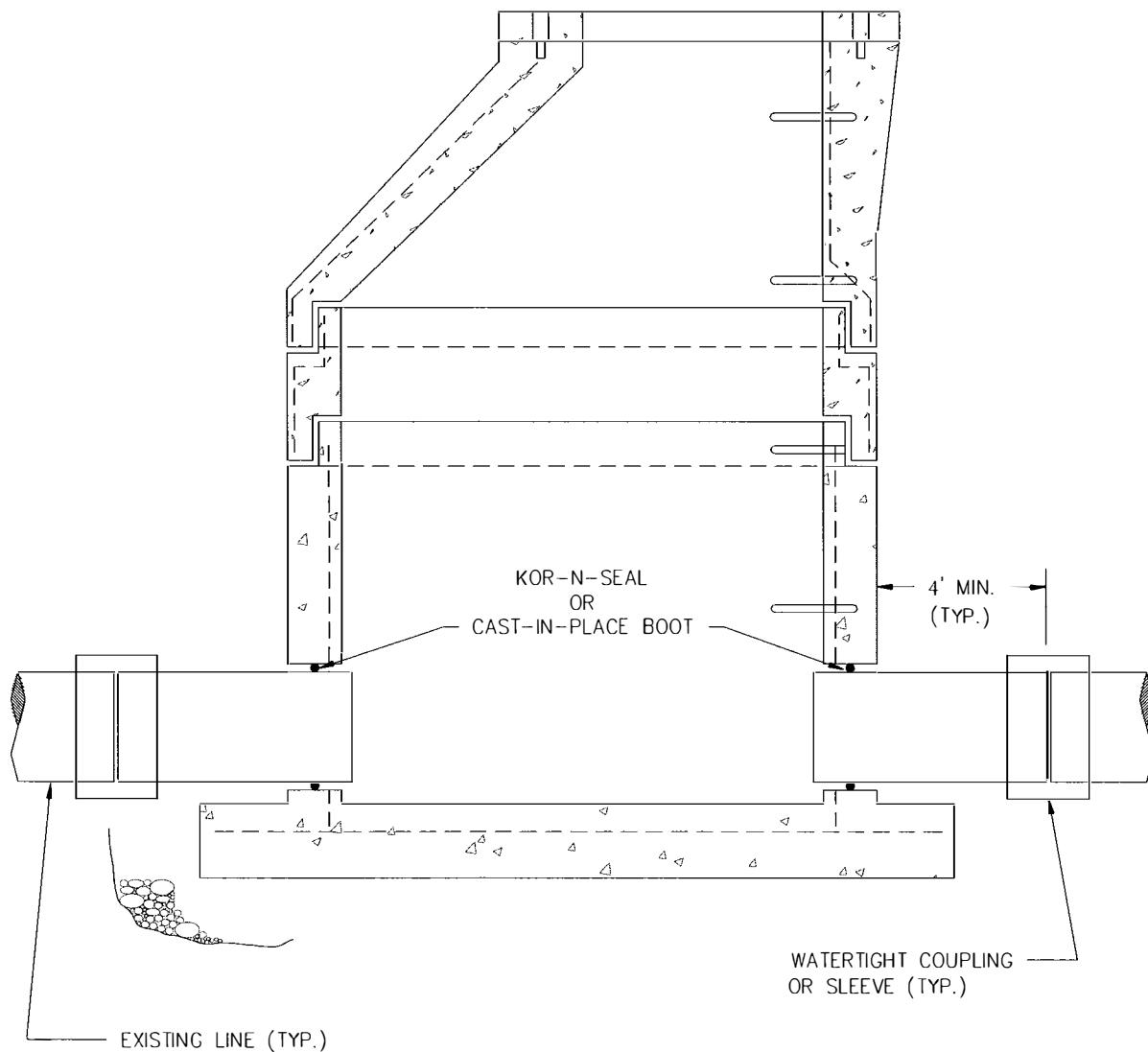
Dimensions





NOTES:

1. CONTRACTOR MUST HAVE ADEQUATE EQUIPMENT TO PUMP AROUND EXISTING LINE WHILE MANHOLE IS CUT IN.
2. PRECAST CONCRETE MANHOLE SHALL CONFORM IN ALL OTHER RESPECTS TO STANDARD PRECAST CONCRETE MANHOLES.



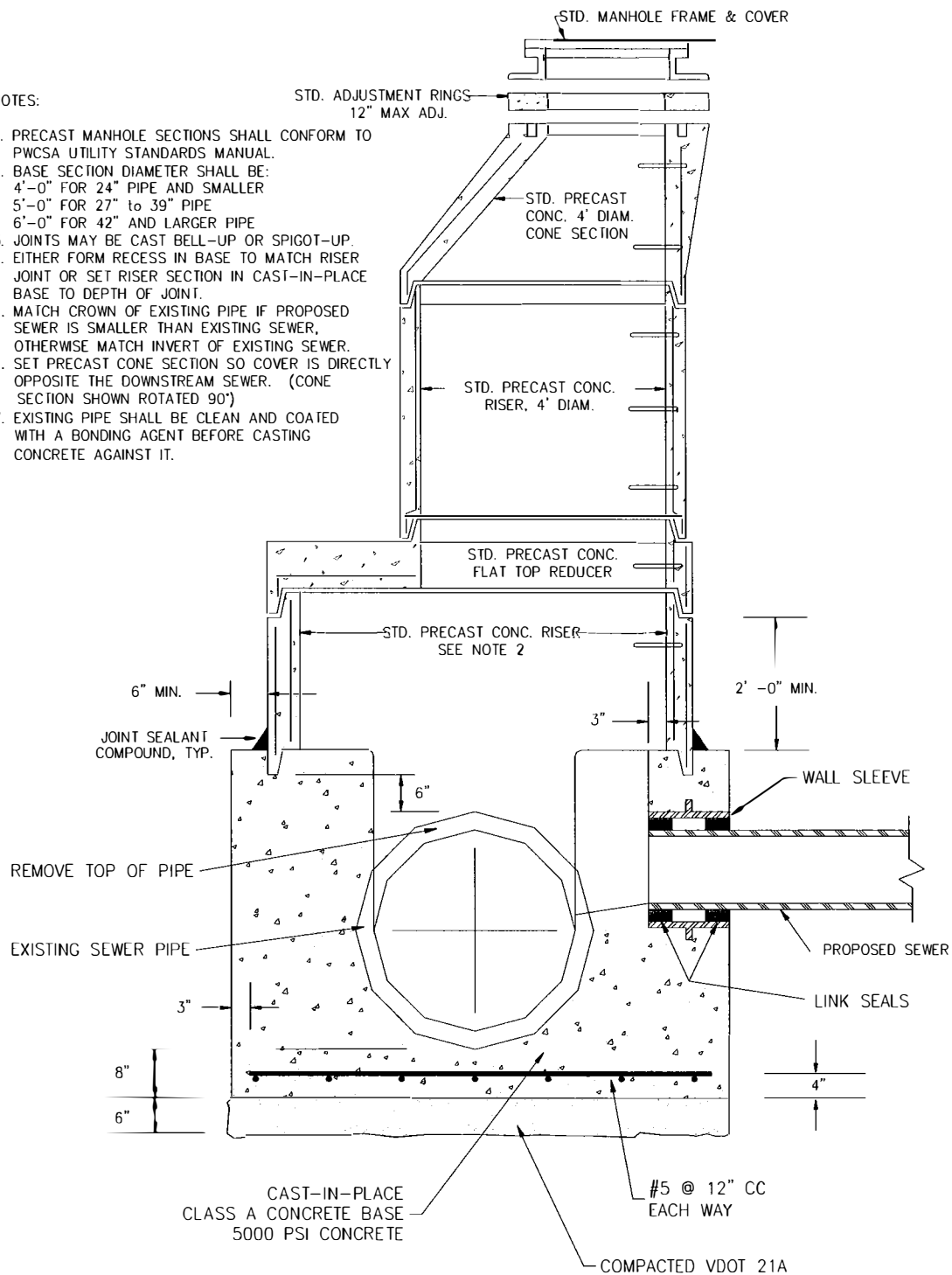
35

**Town of Culpeper &
Culpeper County**

PRECAST CONCRETE
CUT-IN MANHOLE

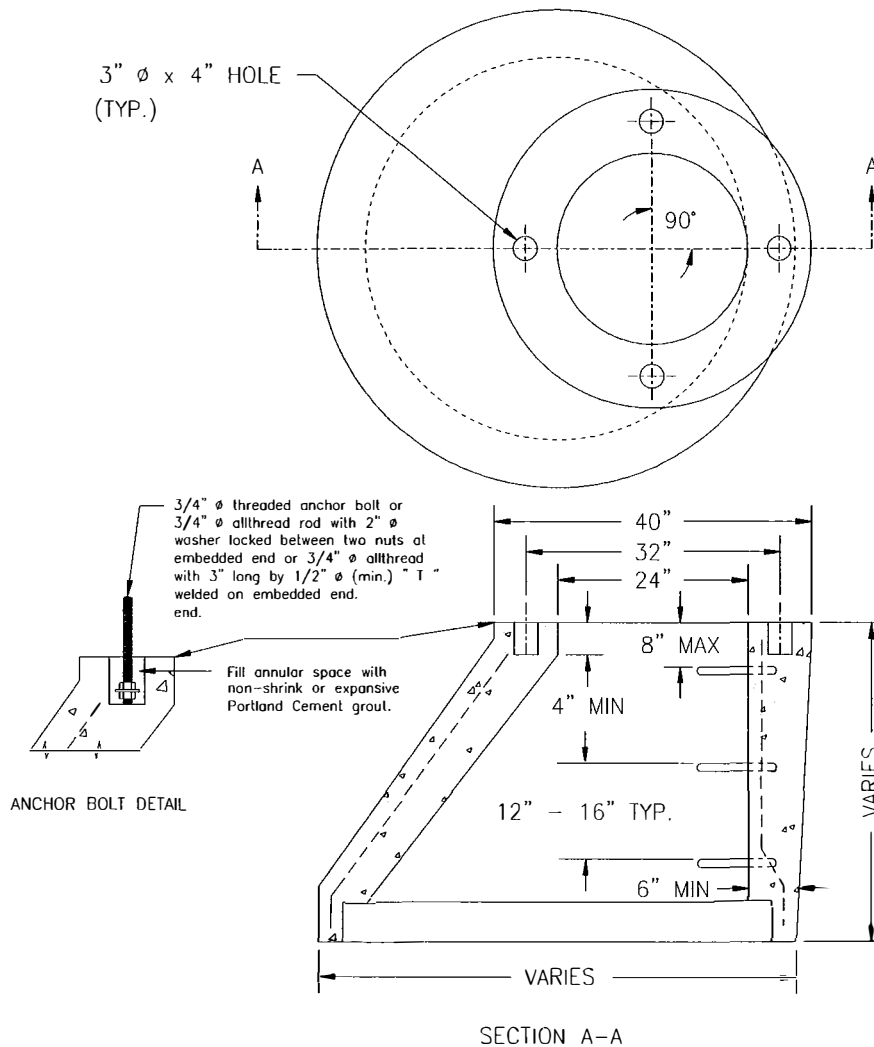
NOTES:

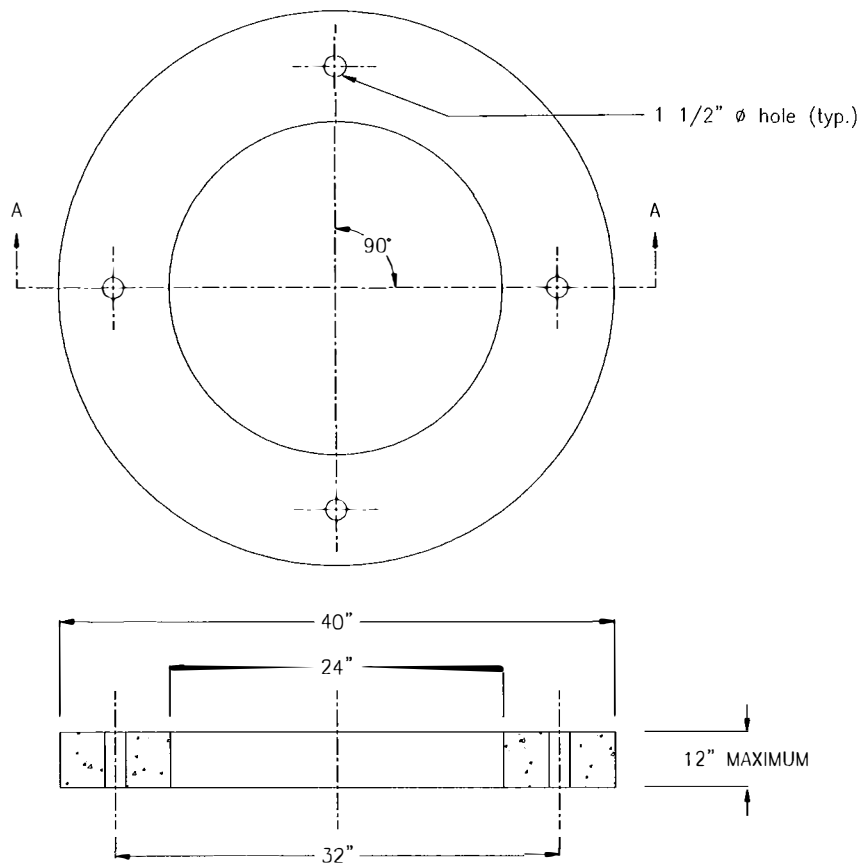
1. PRECAST MANHOLE SECTIONS SHALL CONFORM TO PWCSA UTILITY STANDARDS MANUAL.
2. BASE SECTION DIAMETER SHALL BE:
4'-0" FOR 24" PIPE AND SMALLER
5'-0" FOR 27" TO 39" PIPE
6'-0" FOR 42" AND LARGER PIPE
3. JOINTS MAY BE CAST BELL-UP OR SPIGOT-UP.
4. EITHER FORM RECESS IN BASE TO MATCH RISER JOINT OR SET RISER SECTION IN CAST-IN-PLACE BASE TO DEPTH OF JOINT.
5. MATCH CROWN OF EXISTING PIPE IF PROPOSED SEWER IS SMALLER THAN EXISTING SEWER, OTHERWISE MATCH INVERT OF EXISTING SEWER.
6. SET PRECAST CONE SECTION SO COVER IS DIRECTLY OPPOSITE THE DOWNSTREAM SEWER. (CONE SECTION SHOWN ROTATED 90°)
7. EXISTING PIPE SHALL BE CLEAN AND COATED WITH A BONDING AGENT BEFORE CASTING CONCRETE AGAINST IT.



NOTES:

1. MANHOLE TO MEET CURRENT REQUIREMENTS OF ASTM SPEC. C-476.
2. ALL REINFORCING STEEL TO MEET CURRENT REQUIREMENTS OF ASTM SPEC. A-615.
3. CONCRETE TO BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH.
4. TAPERED JOINT WITH O-RING GASKET TO MEET CURRENT REQUIREMENTS OF ASTM SPEC. C-361 & C-443.
5. 301 MASTIC OR APPROVED EQUAL SHALL BE USED IN ADDITION TO THE JOINT SPECIFIED.
6. PROVIDE LIFTING LUGS OR KEYWAYS, NO THROUGH LIFTING HOLES ARE ALLOWED.
7. MANUFACTURER'S NAME TO BE ON THE INSIDE FACE OF CONE SECTION.



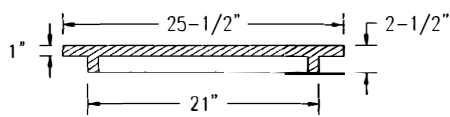
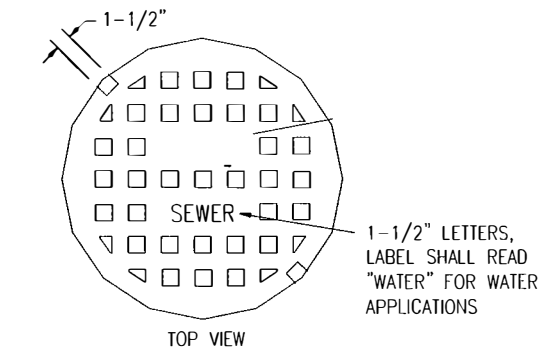


SECTION A-A

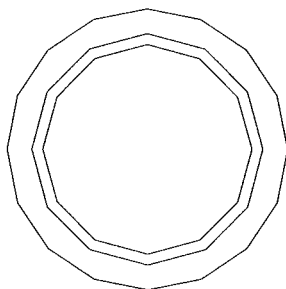
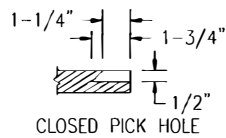
NOTES

1. Concrete shall be 4000 psi minimum compressive strength.
2. All surfaces shall be smooth and even.
3. Top and bottom surfaces shall be flat within 1/8" when tested across major diameter with a straight edge.
4. Manufacturer's name shall be on top of ring.

COVER

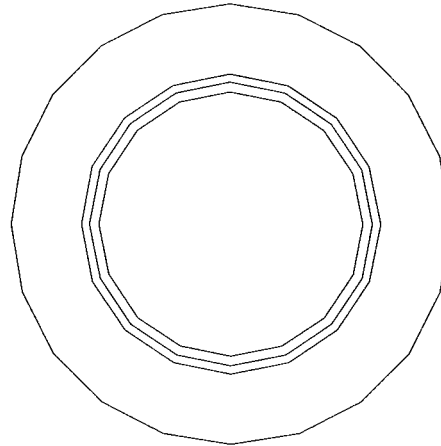


SECTION

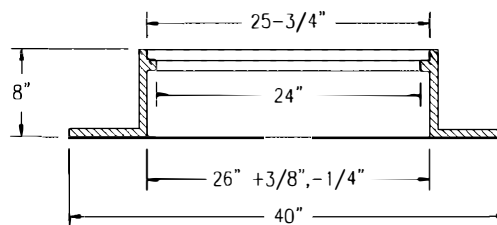
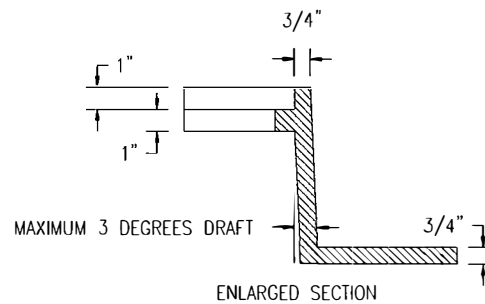


BOTTOM VIEW

FRAME



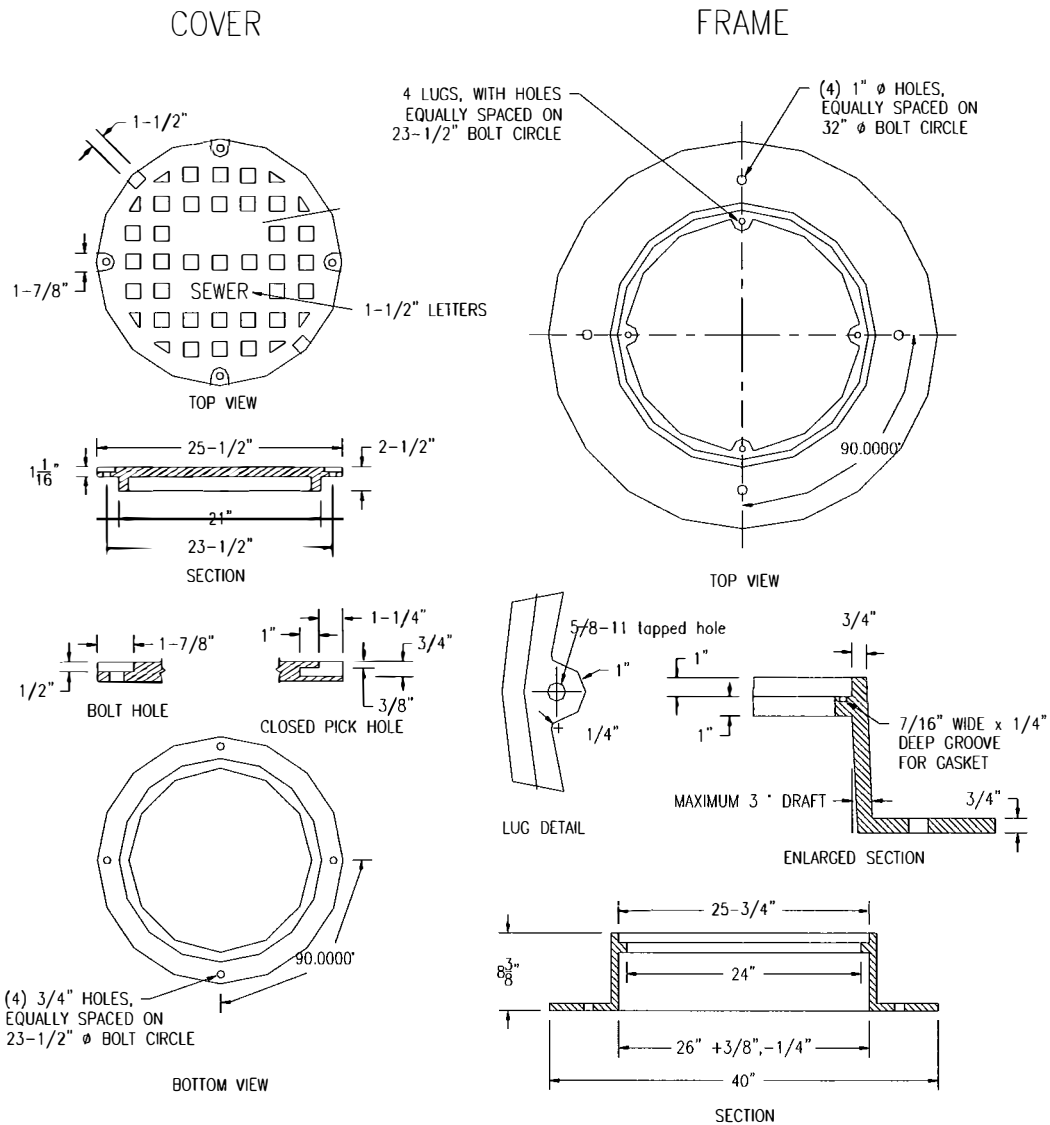
TOP VIEW



SECTION

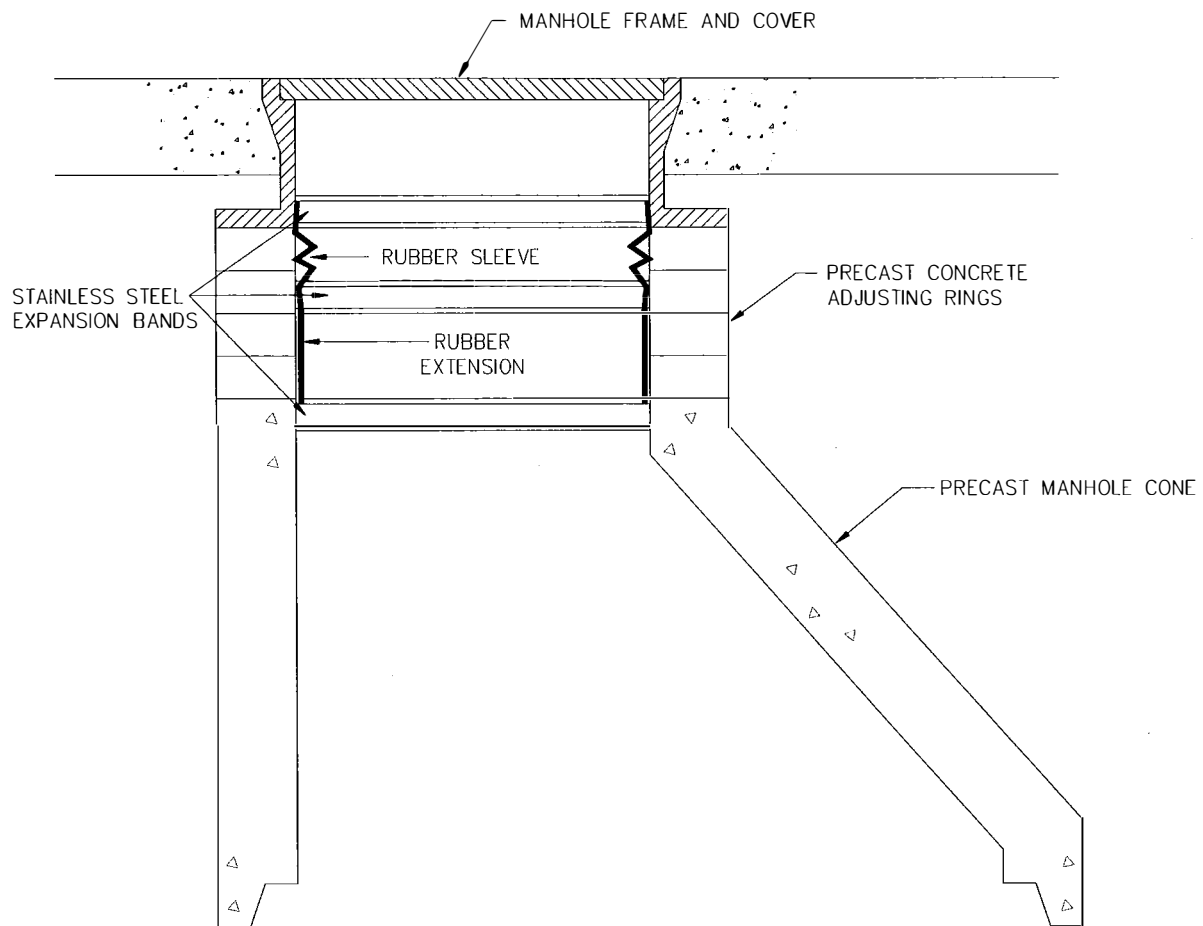
NOTES

1. MACHINE ALL BEARING SURFACES TO TRUE AND LEVEL.
2. MANHOLE FRAME MAY BE GUSSETED.
3. USE ASTM A48 CLASS 30B GRAY IRON OR BETTER.
4. CERTIFY FRAME AND COVER FOR AASHTO H20 LOADING OR BETTER.
5. RECESS LABEL LETTERING AND LOGO.



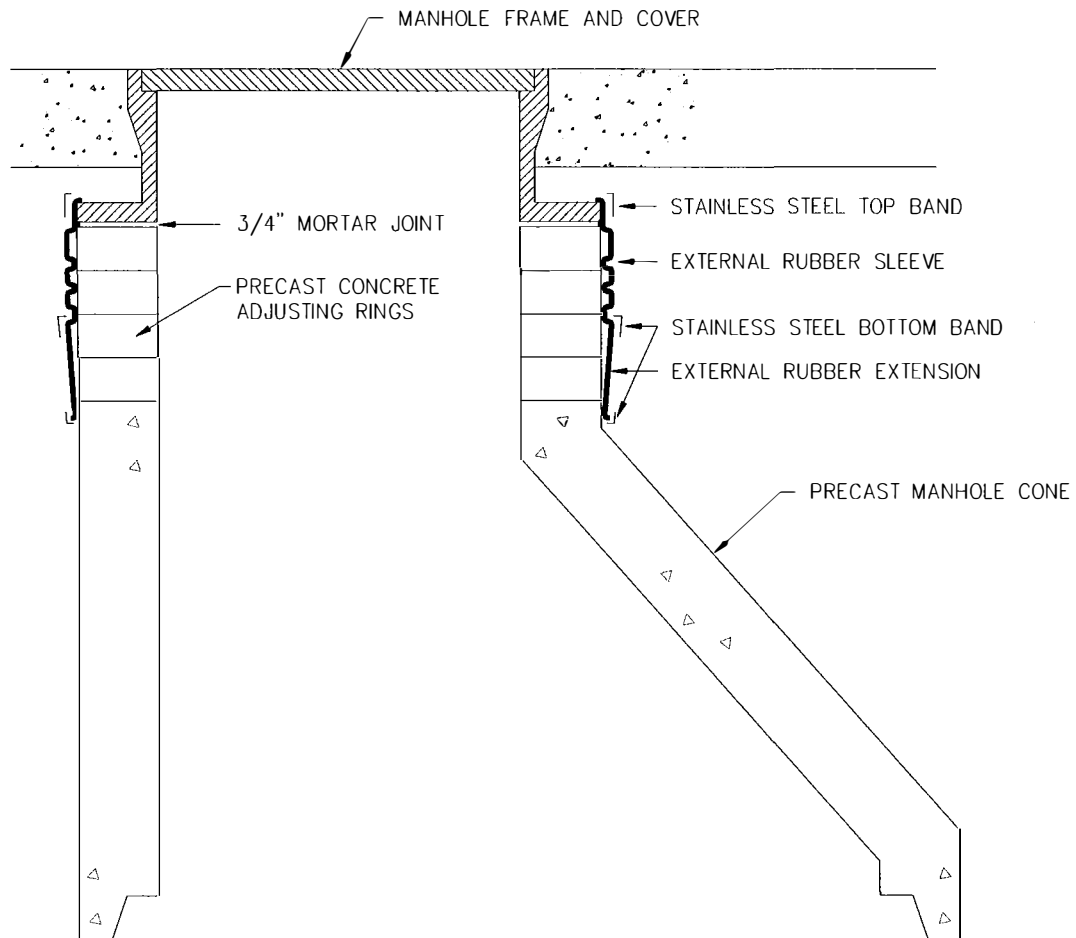
NOTES

1. MACHINE ALL BEARING SURFACES TO TRUE AND LEVEL.
2. MANHOLE FRAME MAY BE GUSSETED.
3. USE ASTM A48 CLASS 30B GRAY IRON OR BETTER.
4. CERTIFY FRAME AND COVER FOR AASHTO H20 LOADING OR BETTER.
5. RECESS LABEL LETTERING AND LOGO.
6. PROVIDE 3/8" Ø RUBBER O-RING GASKET FOR MANHOLE SEAT.
7. PROVIDE FOUR 5/8-11 x 1-1/2" STAINLESS STEEL HEX HEAD BOLTS.

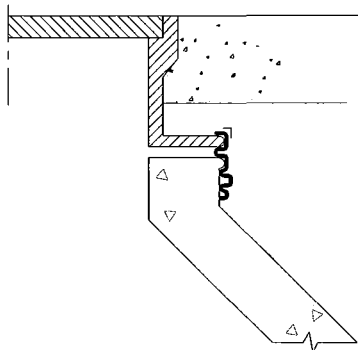


To Span Chimney Heights of:

0 - 4 1/2"	— Chimney Seal Only
Over 4 1/2" - 9"	— Seal + 7" Extension
Over 9" - 12"	— Seal + 10" Extension
Over 12"	— Seal + Mult. Extensions

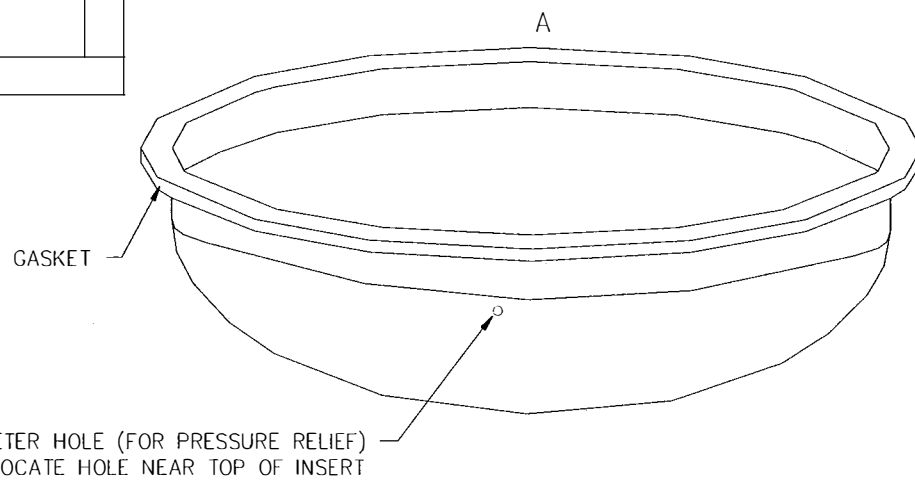
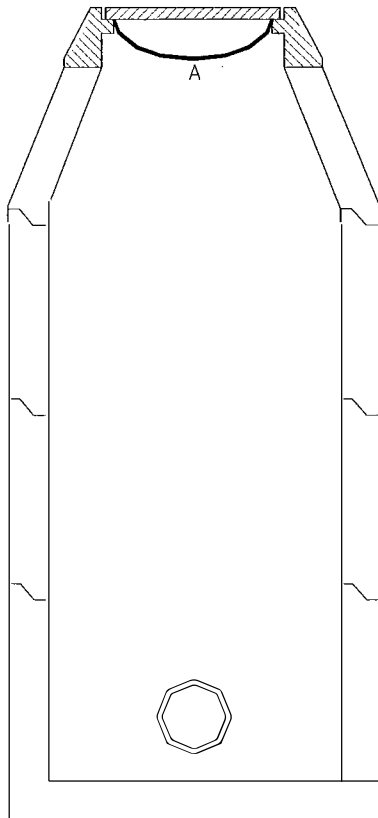


NARROW EXTERNAL RUBBER SEAL



To Span Chimney Heights of:

0 - 3"	— Narrow (6") Seal only
Over 3" - 6 1/2"	— Standard (9") Seal only
Over 6 1/2" - 12"	— Std. Seal + Extension
Over 12"	— Seal + Mult. Extensions

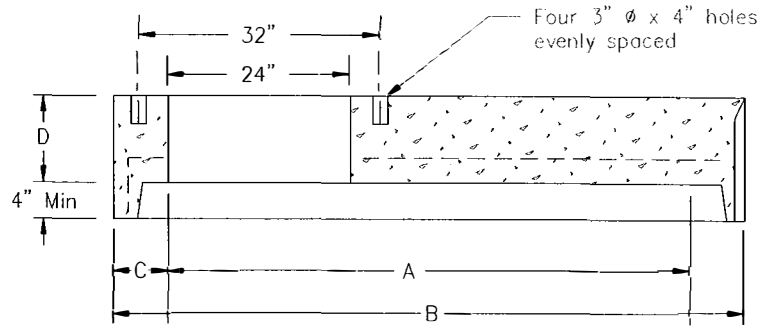


1/8" DIAMETER HOLE (FOR PRESSURE RELIEF)
LOCATE HOLE NEAR TOP OF INSERT

NOTE:

1. The manhole insert will be made of non-corrodable materials and will not be damaged by sewer gases or road oil.
2. The insert shall have two nylon straps for lifting the insert. The straps shall be attached to the insert with stainless steel rivets.
3. The bowl shall be one-eighth of an inch ($1/8"$) \pm thick and shall be between six inches (6") and eight inches (8") deep.
4. The insert shall have a gasket to seal between the insert and the lip of the manhole frame.

SECTION A-A

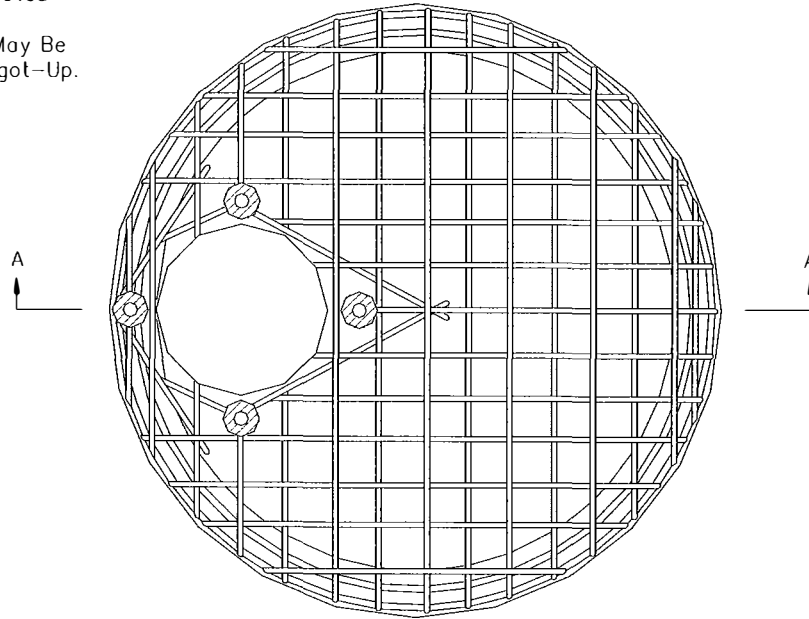


NOTES:

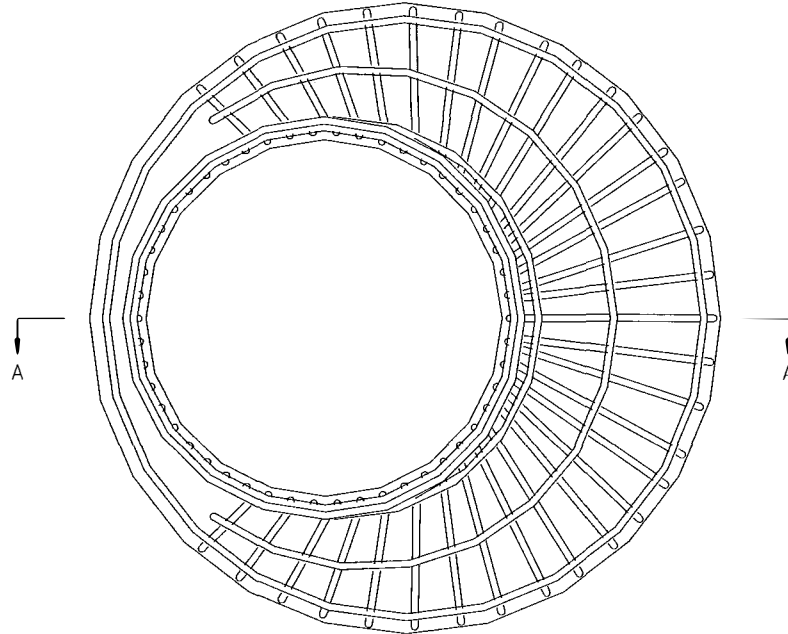
1. Concrete To Be 4000 PSI Compressive Strength, Min.
2. All Reinforcing Steel To Meet Current Requirements Of ASTM Spec. A-615.
3. Manhole Sections To Meet Current Requirements Of ASTM Spec. C-478.
4. Flat Top Shall Be Used Only When Specifically Required By The Plans Or Where There Is Height Or Invert Conflict As Determined By The Contractor And Approved By The Inspector.
5. Joint Configuration May Be Cast Bell-Up Or Spigot-Up.

MANHOLE SIZE

	4'	5'	6'
A	48"	60"	72"
B	58"	72"	86"
C	6"	6"	7"
D	6"	8"	8"



TOP VIEW



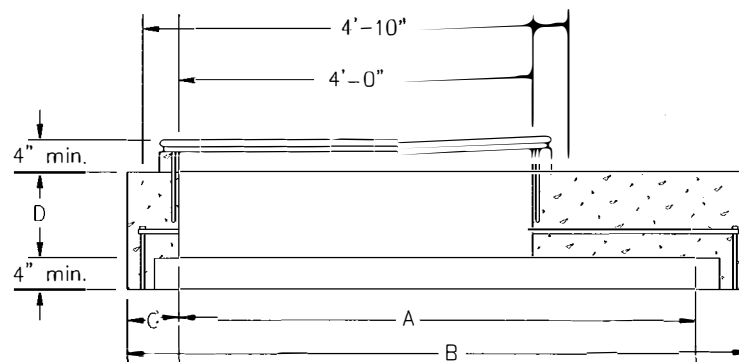
NOTES:

1. Concrete To Be 4000 PSI Compressive Strength, Min.
2. All Reinforcing Steel To Meet Current Requirements Of ASTM Spec. A-615.
3. Manhole Section To Meet Current Requirements Of ASTM Spec. C-478.
4. Joint Configuration May Be Cast Bell-Up Or Spigot-Up.

TOP VIEW

DIMENSIONS

	5'-4"	6'-4"
A	60"	72"
B	72"	86"
C	6"	7"
D	8"	8"

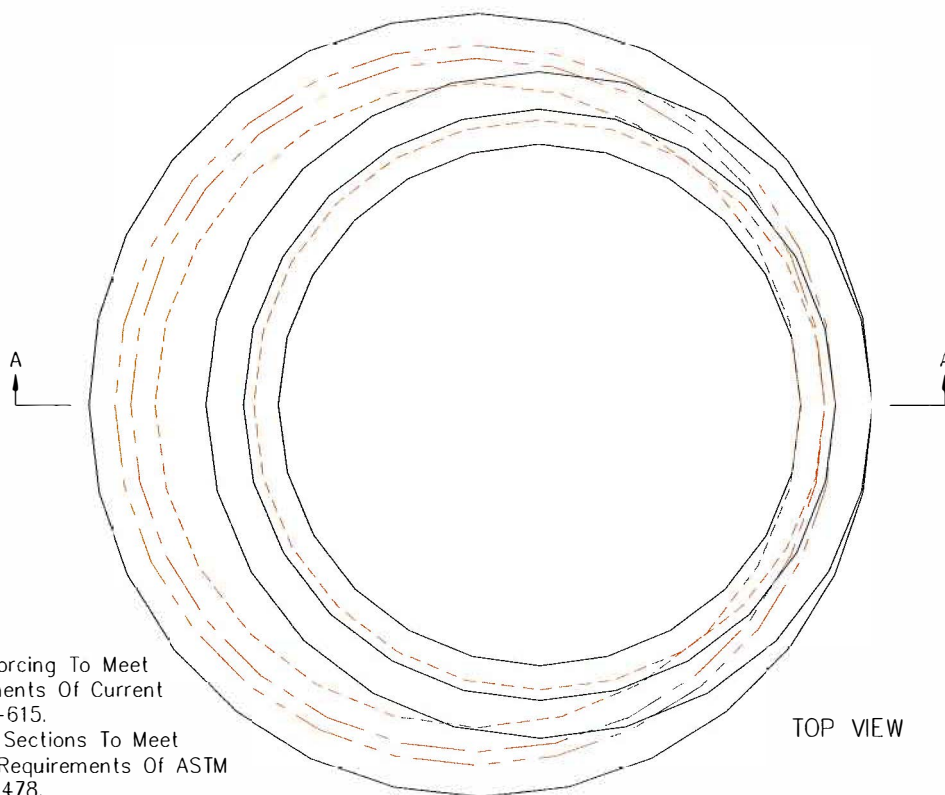


SECTION A-A

45

**Town of Culpeper &
Culpeper County**

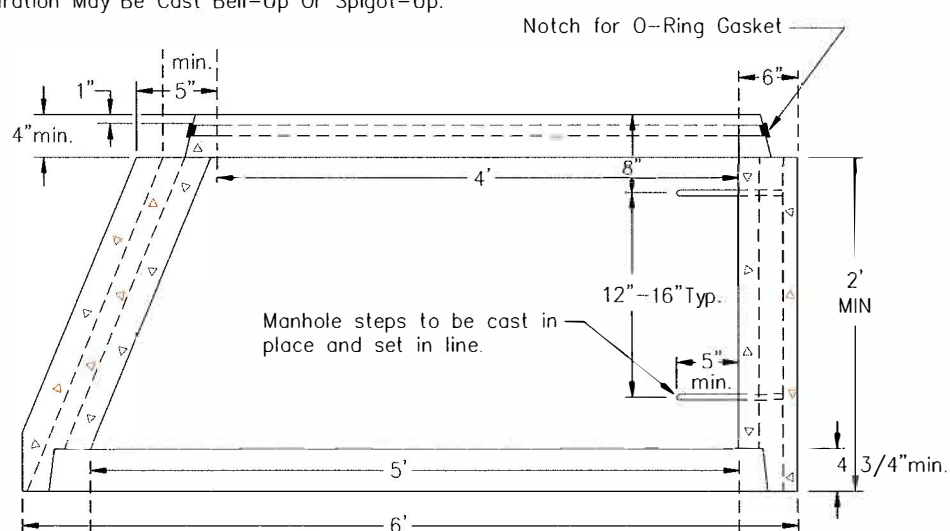
PRECAST CONCRETE
MANHOLE REDUCER



NOTES:

1. All Reinforcing To Meet Requirements Of Current ASTM A-615.
2. Manhole Sections To Meet Current Requirements Of ASTM Spec C-478.
3. Tapered Joint With O-Ring Gasket To Meet Current Requirements Of ASTM Spec. C-361
4. Joint Configuration May Be Cast Bell-Up Or Spigot-Up.

TOP VIEW



SECTION A-A

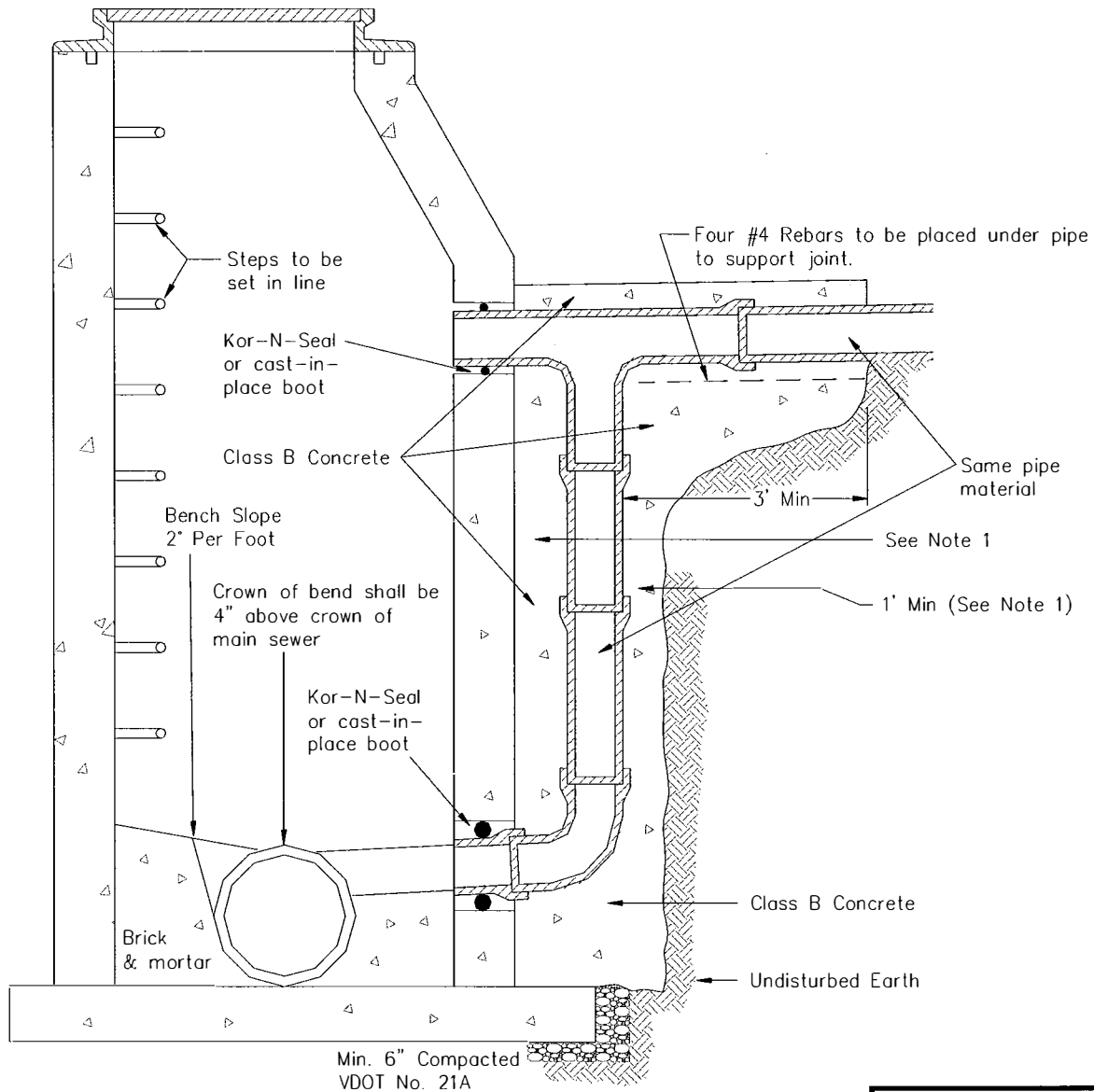
46

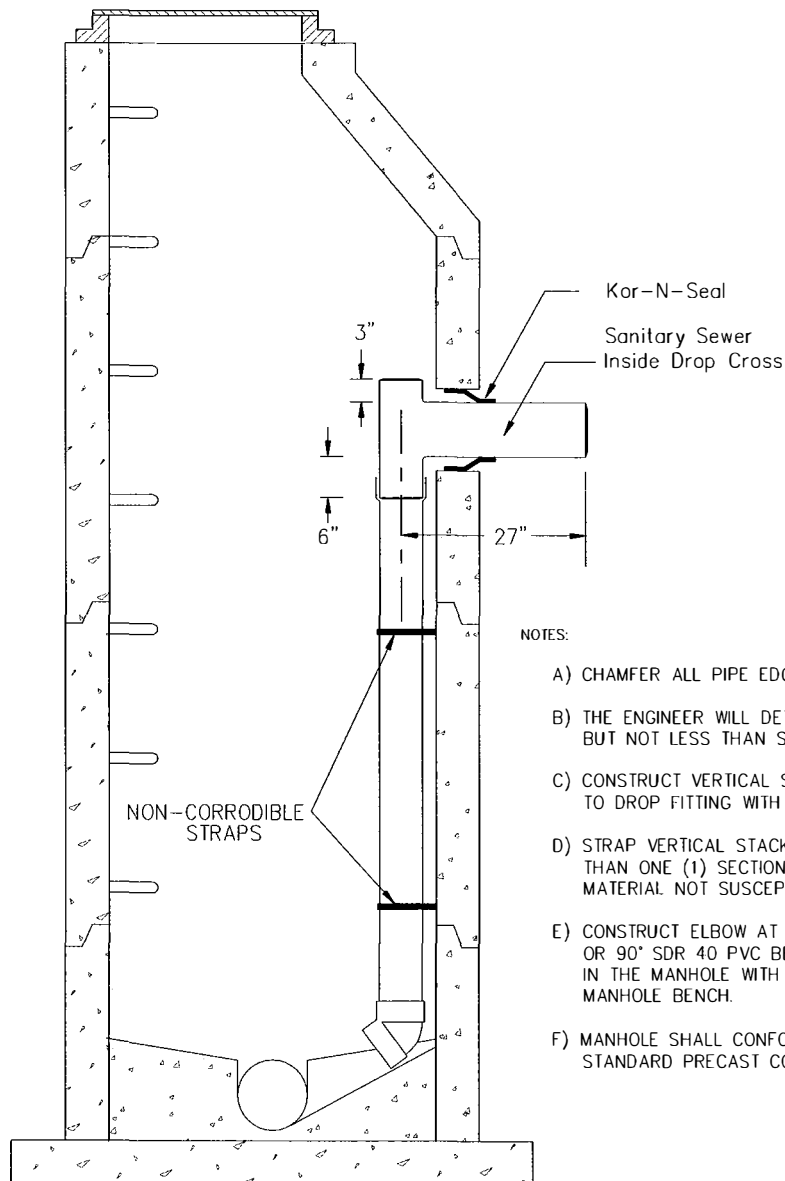
**Town of Culpeper &
Culpeper County**

PRECAST CONCRETE
MANHOLE CONICAL REDUCER - 5' TO 4'

NOTES:

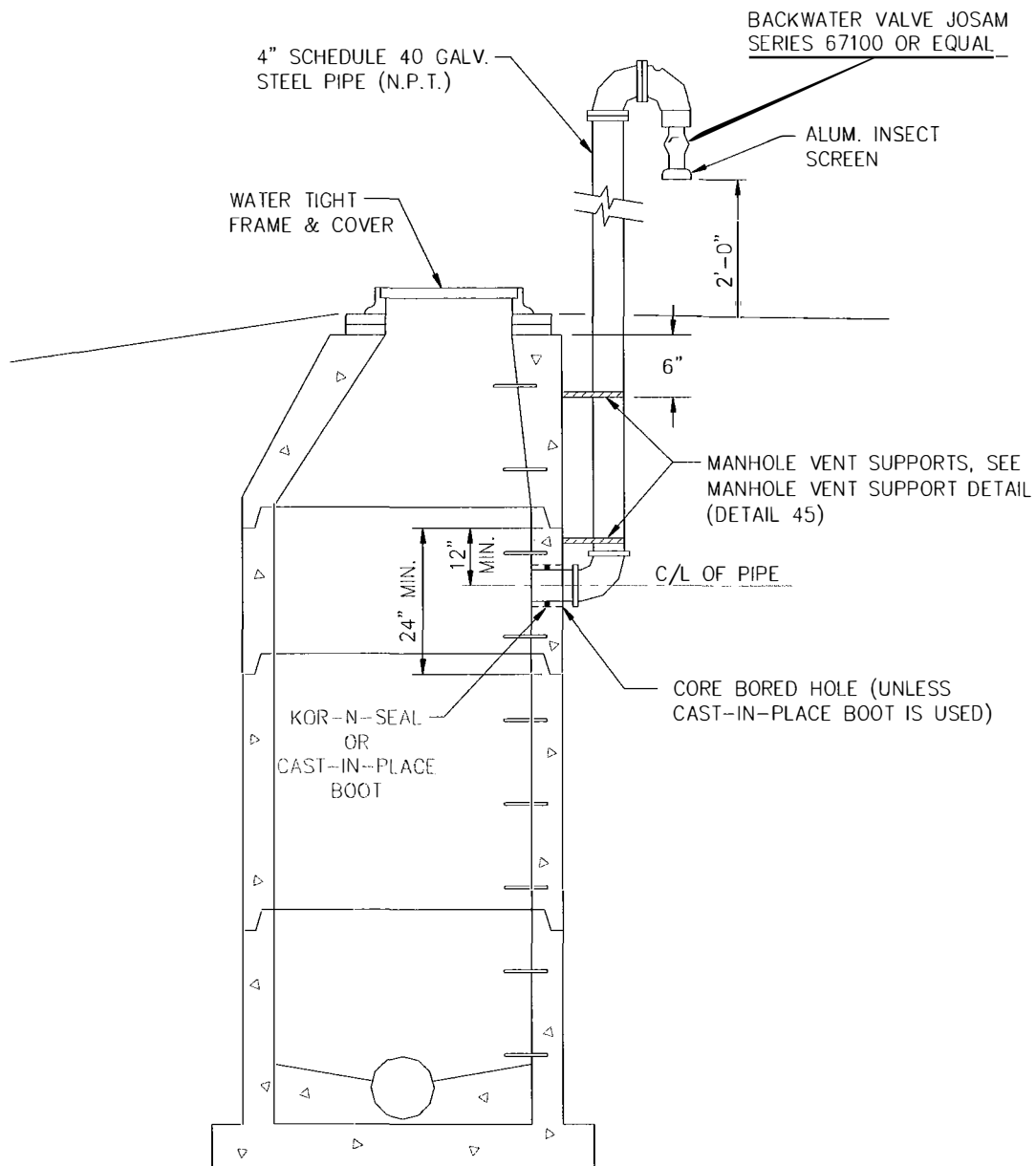
1. Fill drop connection trench with Class B concrete. Drop connection trench width to be same as approach trench.
2. Manhole shall conform in all other respects to STANDARD 4' I.D. PRECAST CONCRETE MANHOLE and CONE SECTION details.
3. Keep annular space between manhole and pipes free of concrete, mortar and grout.

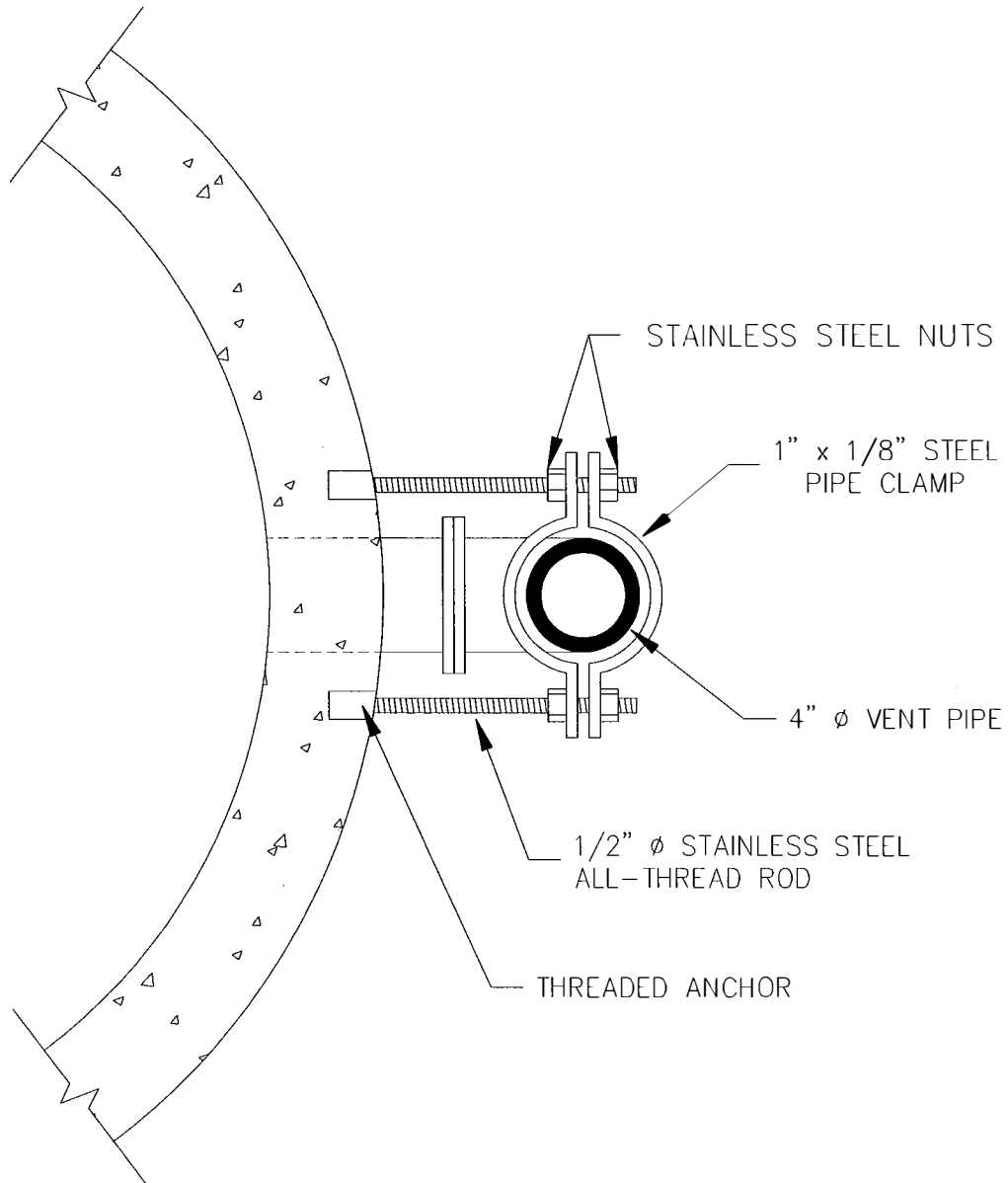




NOTES:

- A) CHAMFER ALL PIPE EDGES AT A 15° ANGLE.
- B) THE ENGINEER WILL DETERMINE THE SIZE OF THE VERTICAL STACK, BUT NOT LESS THAN SIX (6) INCHES IN DIAMETER.
- C) CONSTRUCT VERTICAL STACK OF SDR 40 PVC PIPE CONNECTED TO DROP FITTING WITH STANDARD COUPLING BY SOLVENT WELD.
- D) STRAP VERTICAL STACK TO MANHOLE WALL AT JOINT WHEN MORE THAN ONE (1) SECTION OF PIPE IS USED. USE STRAP AND ANCHOR MATERIAL NOT SUSCEPTIBLE TO SEWER GAS CORROSION.
- E) CONSTRUCT ELBOW AT BOTTOM OF THE STACK FROM EITHER 45° OR 90° SDR 40 PVC BEND TURNED IN THE DIRECTION OF FLOW IN THE MANHOLE WITH BENCH CONSTRUCTED TO CONFORM TO MANHOLE BENCH.
- F) MANHOLE SHALL CONFORM IN ALL OTHER RESPECTS TO THE STANDARD PRECAST CONCRETE MANHOLE





NOTES

1. ANCHOR HOLES SHALL NOT EXTEND THROUGH MANHOLE WALL
2. COAT PIPE CLAMP WITH BITUMASTIC SEALANT

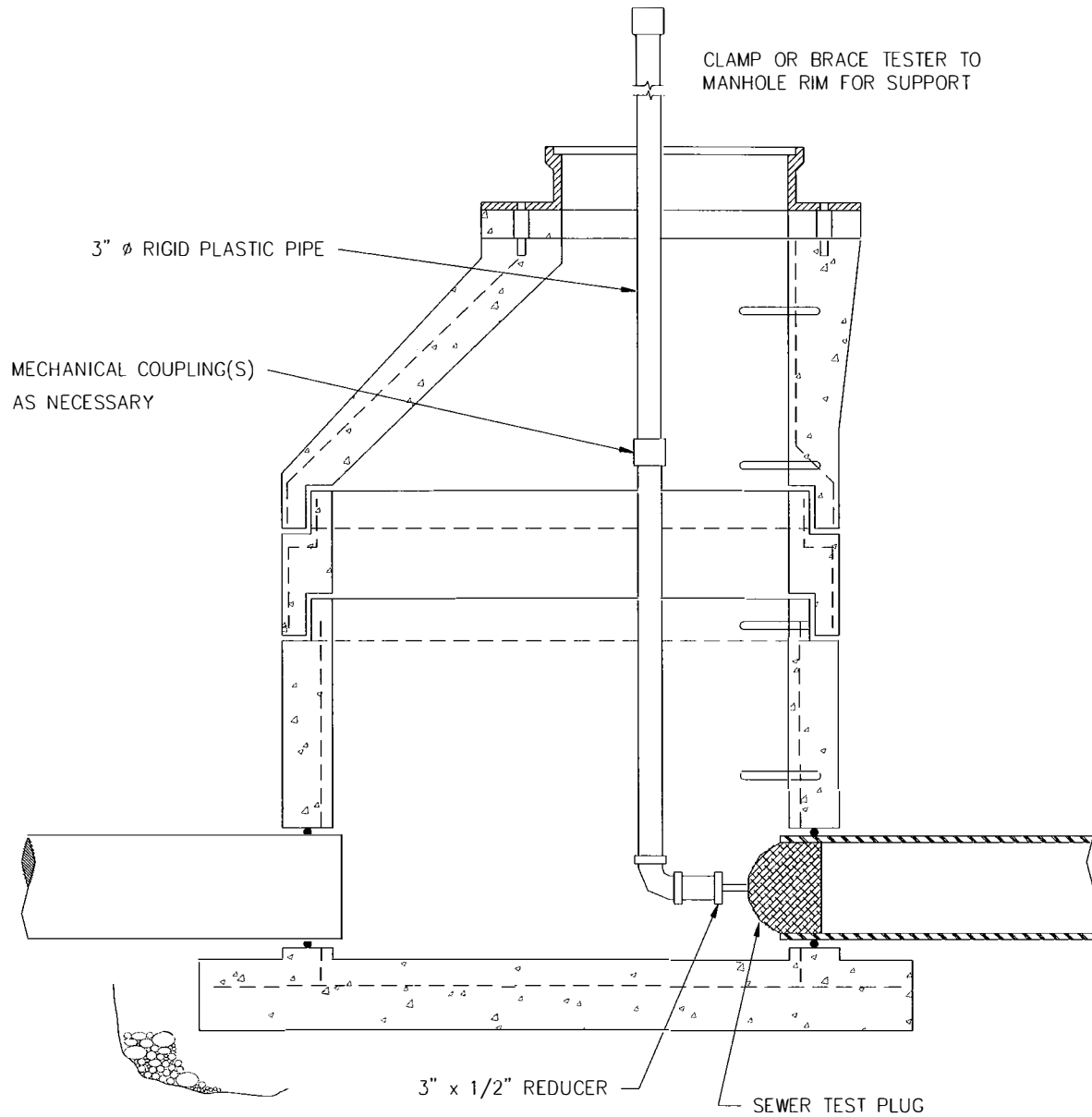
50

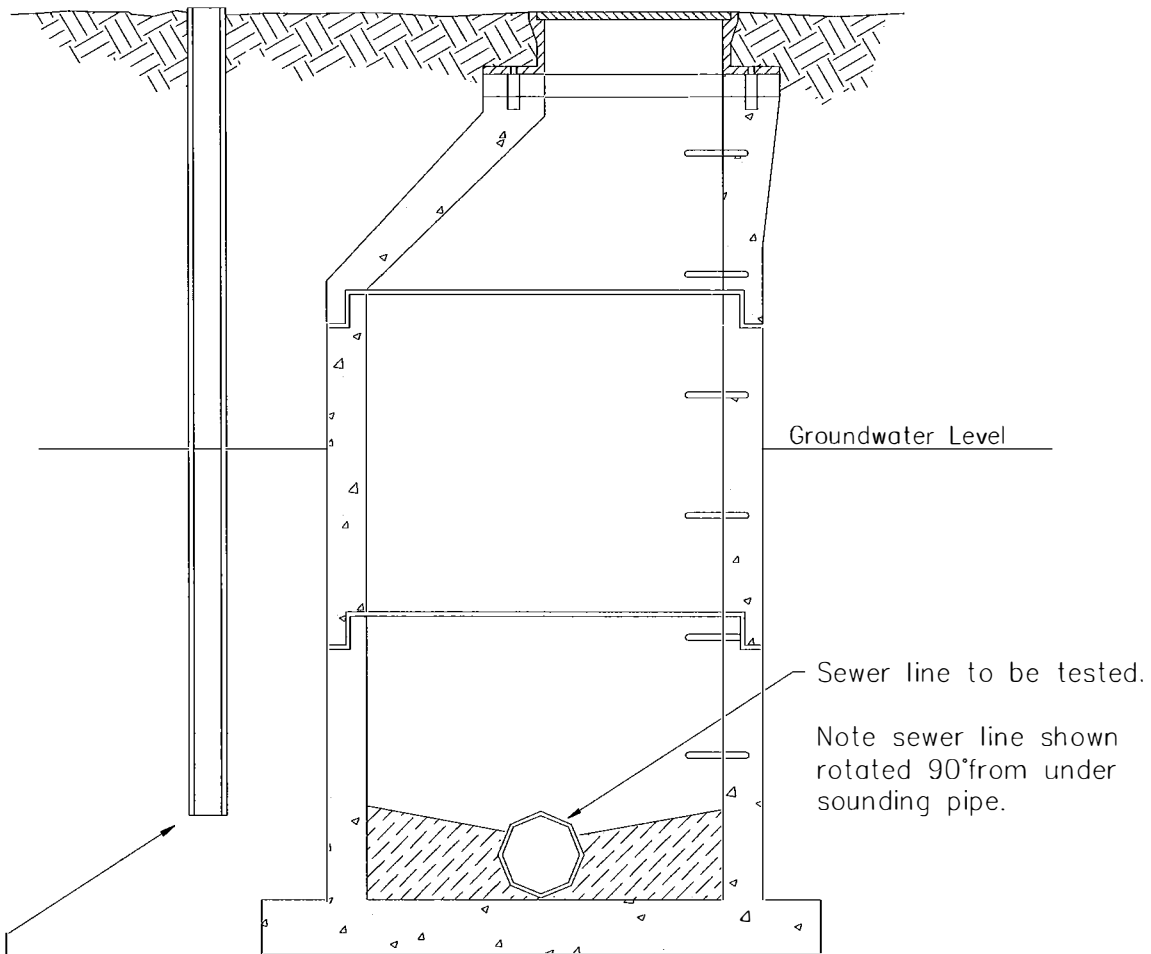
**Town of Culpeper &
Culpeper County**

MANHOLE VENT SUPPORT

NOTE

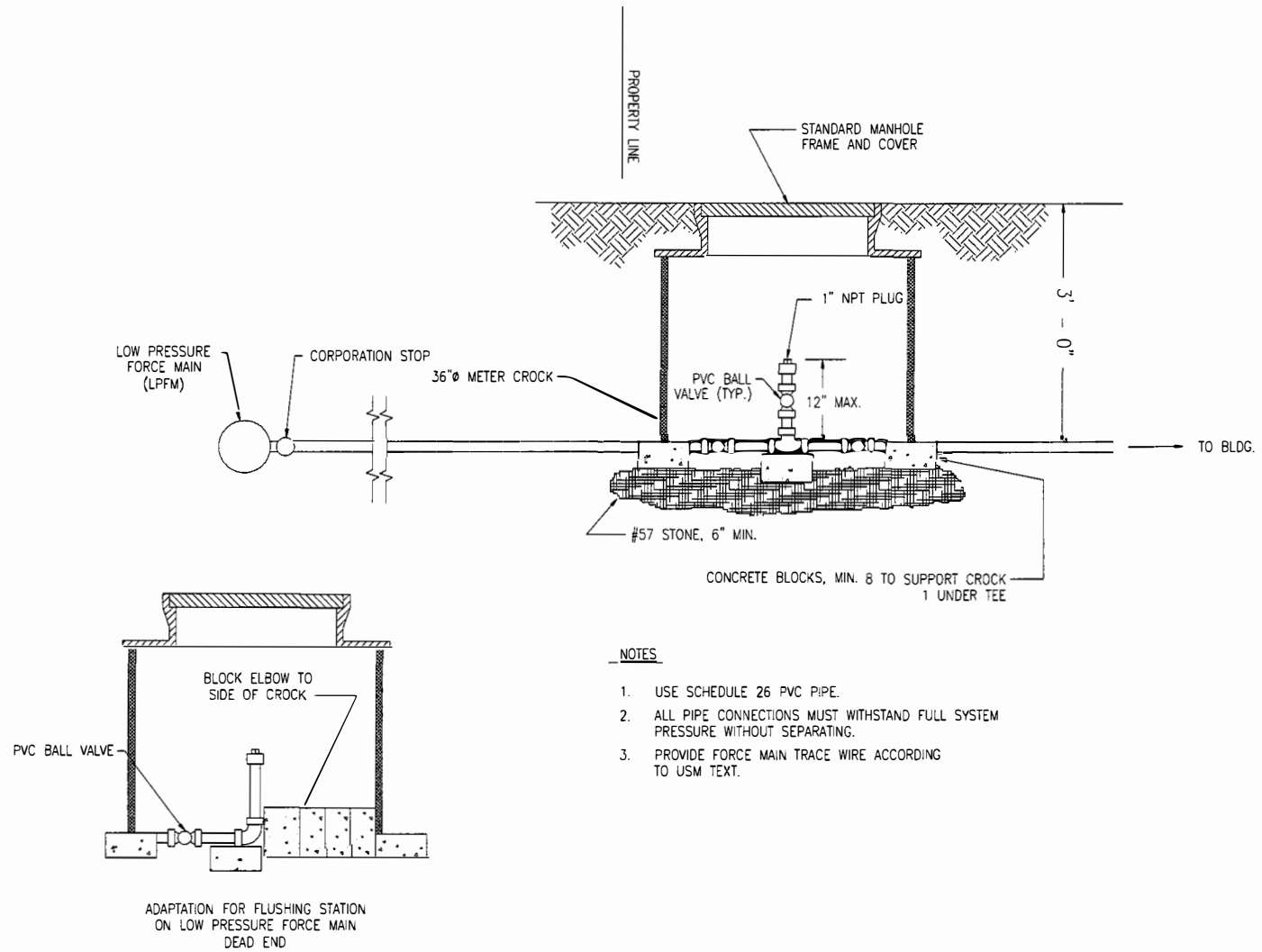
LEVEL IN STANDPIPE MUST BE FOUR FEET MINIMUM AND
TEN FEET MAXIMUM ABOVE ANY POINT IN PIPE.

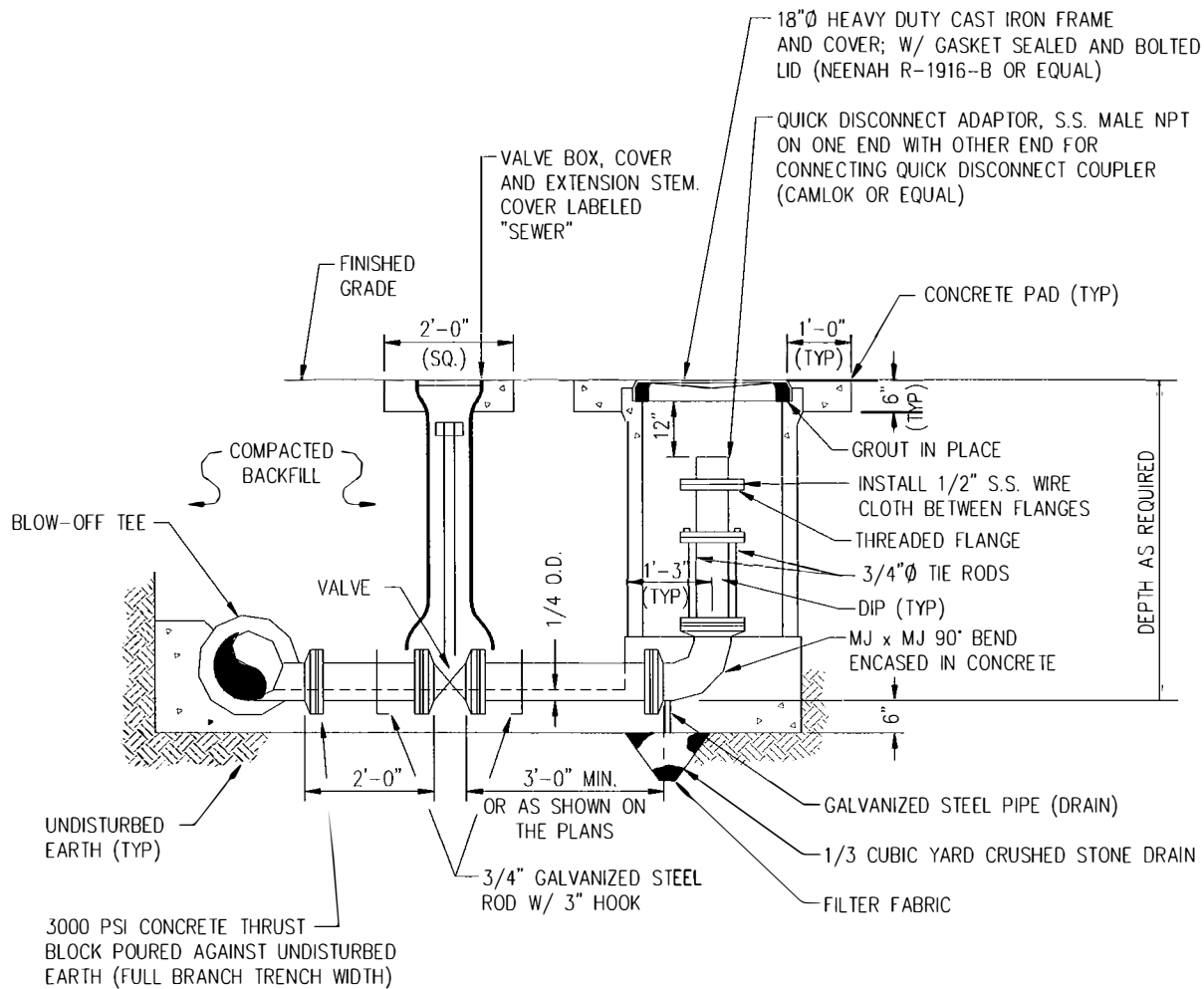




PVC Pipe; set bottom of pipe, into pipe bedding, level with crown of sewer line to be tested.

Measure water level in pipe with sounding tape or stick.



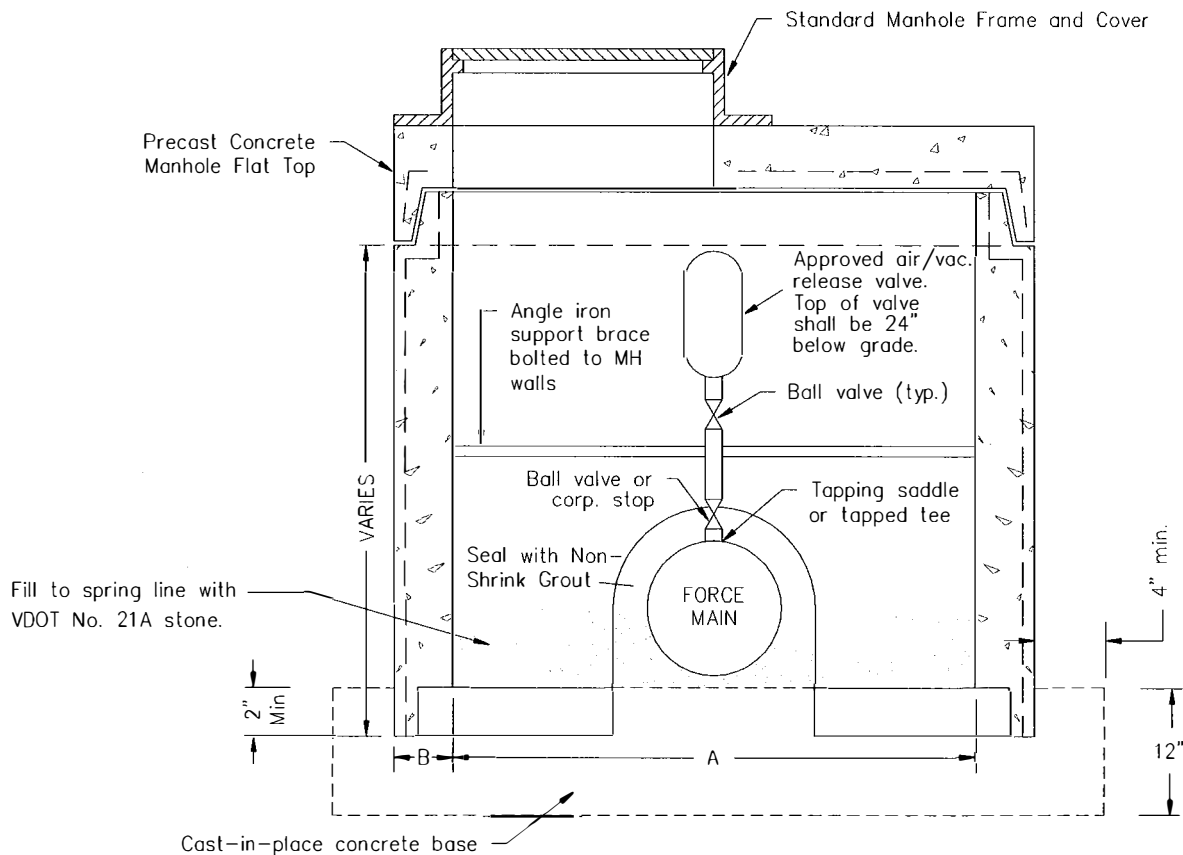


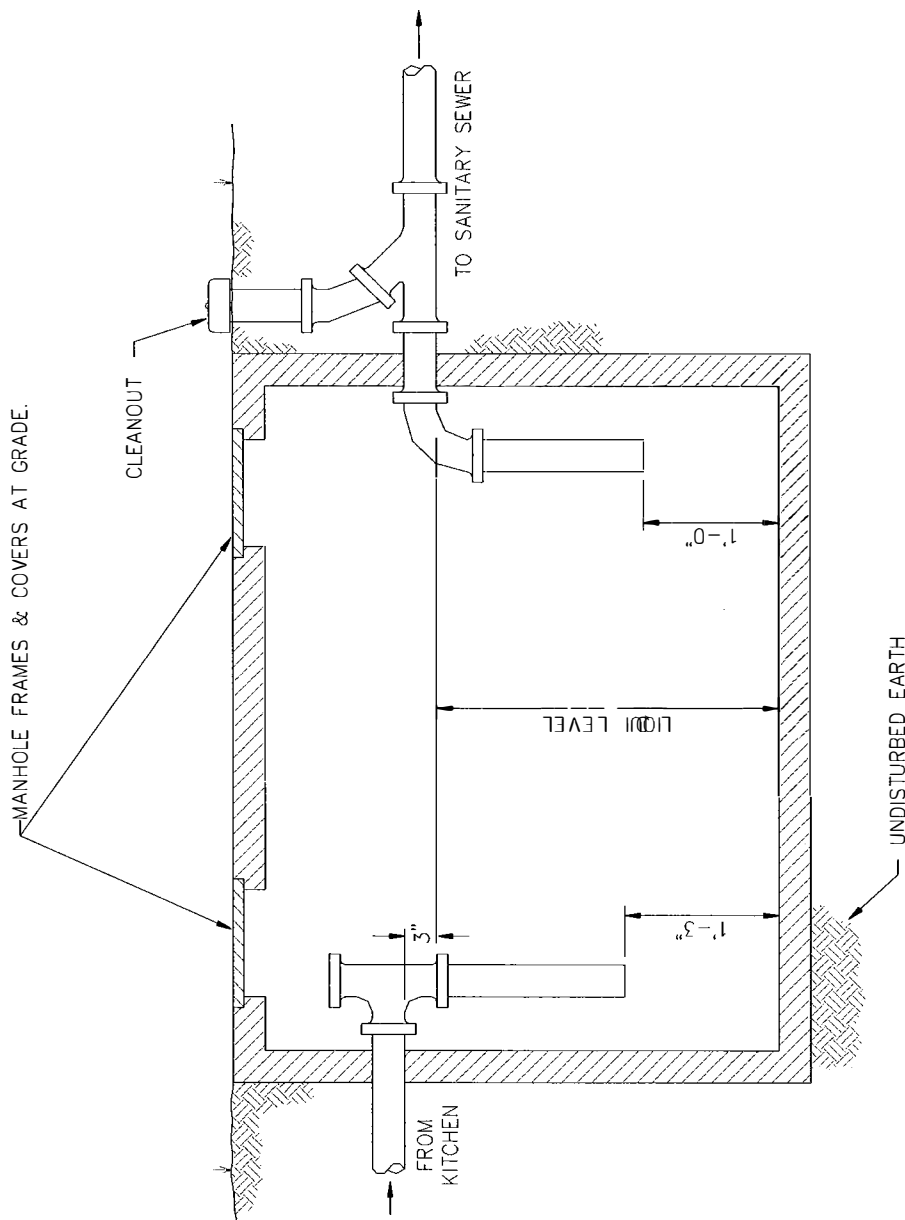
NOTES:

1. Concrete shall be 4000 PSI compressive strength, min.
2. All reinforcing shall meet requirements of current ASTM Spec A-615.
3. Manhole sections shall meet requirements of current ASTM Spec C-478.
4. Tapered joint with O-ring gasket shall meet requirements ASTM Specs C-361 & C-443.
5. Cast manhole section into base 2" or depth of joint, whichever is deeper.
6. Joint configuration may be cast bell-up or spigot-up.
7. Size doghouse openings 4" min. and 8" max. larger than pipe O.D.
8. All air release piping shall be stainless steel.
9. For force mains smaller than 6" diameter, except for ductile iron, clamp the air/vacuum release valve to the angle iron support brace.
10. Cast base on firm, undisturbed soil.
11. Standard precast base section may be used for new force main construction. Bed standard base on min. 6" VDOT No. 21A. Core holes for pipe min. 4" larger than pipe O.D. Conform to this detail in all other respects.

CHART A

	Min Dimensions		
	to 16"	to 20"	to 36"
FM			
MH	4'	5'	6'
A	48"	60"	72"
B	6"	6"	7"





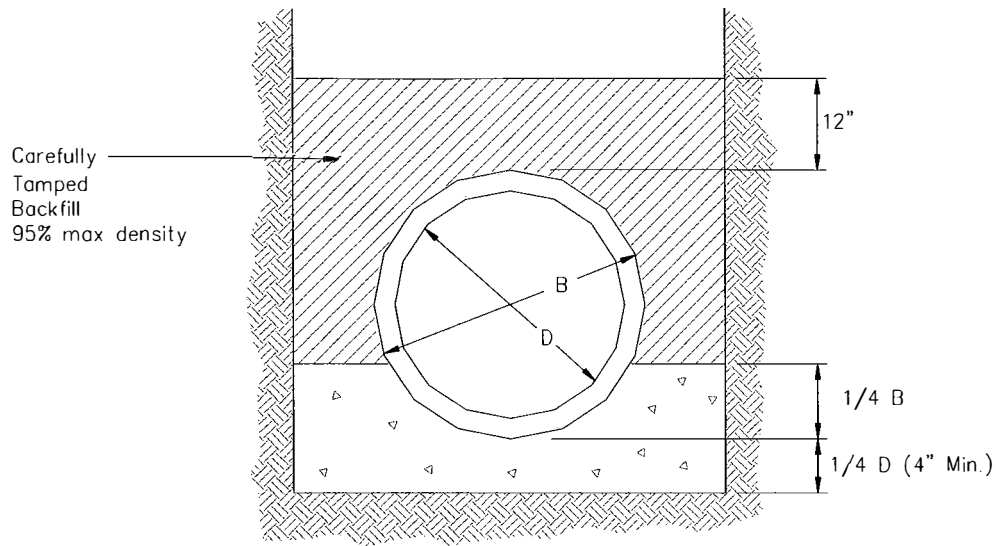
NOTES:
 DESIGN BASED ON COMMERCIALLY AVAILABLE PRE-CAST SEPTIC TANK.
 MINIMUM STORAGE 500 GALLONS.

**Town of Culpeper &
Culpeper County**

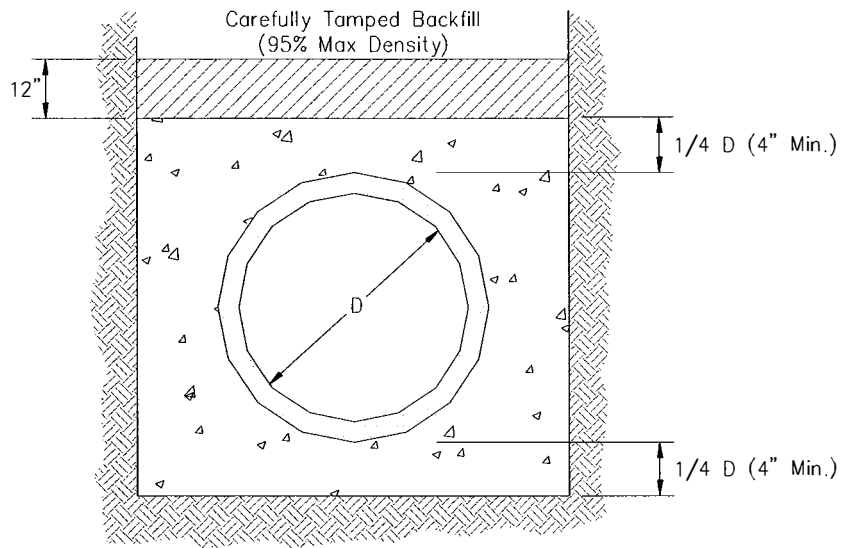
SANITARY SEWER DESIGN CALCULATION SHEET

57

[illegible]



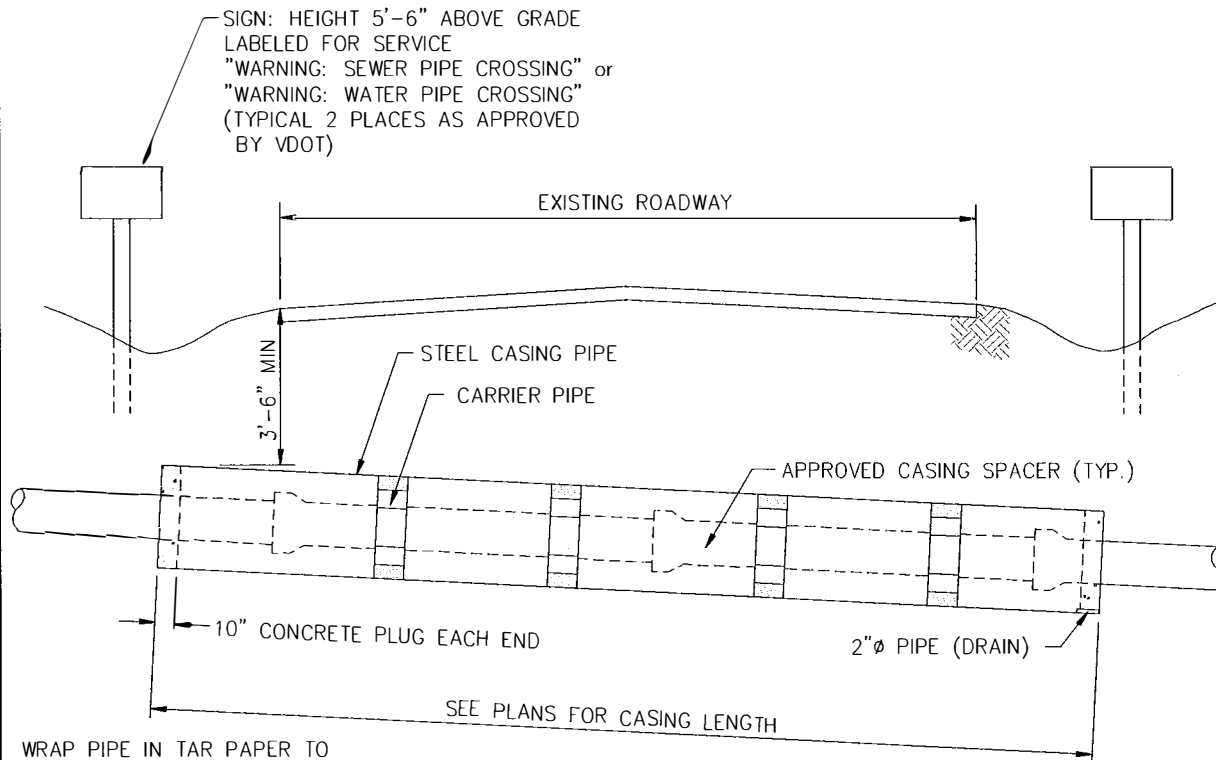
STANDARD CONCRETE CRADLE



STANDARD CONCRETE ENCASEMENT

NOTES:

1. Concrete To Be Class "B" Unless Otherwise Specified.
2. Trench Width Shall Be As Specified Or As Shown On Plans.



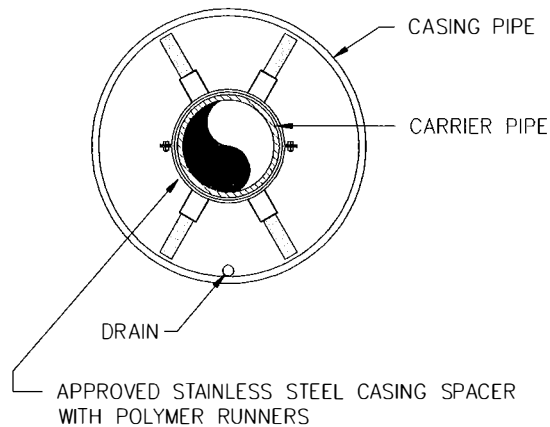
WRAP PIPE IN TAR PAPER TO
BREAK BOND AT PLUGS

SPACE CASING SPACERS ACCORDING TO PIPE OR SPACER MANUFACTURERS' RECOMMENDATIONS OR
2 PER SECTION OF PIPE, WHICHEVER IS GREATEST, PLUS 1 WITHIN 2 FEET OF EACH END OF CASING.

FOR GRAVITY SEWER PIPE - PUMP NEAT
GROUT TO THE SPRING LINE OF THE CARRIER PIPE.

PUSH OR PULL THE CARRIER PIPE THROUGH THE CASING SO
THAT THE CARRIER PIPE JOINTS ARE ALWAYS COMPRESSED.

CARRIER PIPE	CASING PIPE		
	MINIMUM CASING PIPE O.D.	MINIMUM CASING THICKNESS	
		COVER TO 15'	COVER 15' & OVER
4	14	1/4"	5/16"
6	16	1/4"	5/16"
8	18	1/4"	5/16"
10	18	1/4"	5/16"
12	24	1/4"	5/16"
14	24	1/4"	5/16"
16	30	3/8"	3/8"
18	30	3/8"	3/8"
20	30	3/8"	3/8"
24	36	3/8"	3/8"
30	42	7/16"	7/16"
36	48	7/16"	7/16"
42	54	7/16"	7/16"
48	60	7/16"	7/16"
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PIPE IN CASING END VIEW

NOTES

1. VERTICAL BENDS SHALL ONLY BE USED ON DUCTILE IRON PIPE.
2. MANHOLE SHALL CONFORM IN ALL RESPECTS TO STANDARD MANHOLE.
3. PIPE BEDDING AND BACKFILL SHALL CONFORM TO ALL USM REQUIREMENTS.
4. BENDS GREATER THAN $11\frac{1}{4}^{\circ}$ MUST BE APPROVED ON A CASE BY CASE BASIS.
5. BENDS DO NOT REQUIRE REACTION (THRUST) BLOCKING.

