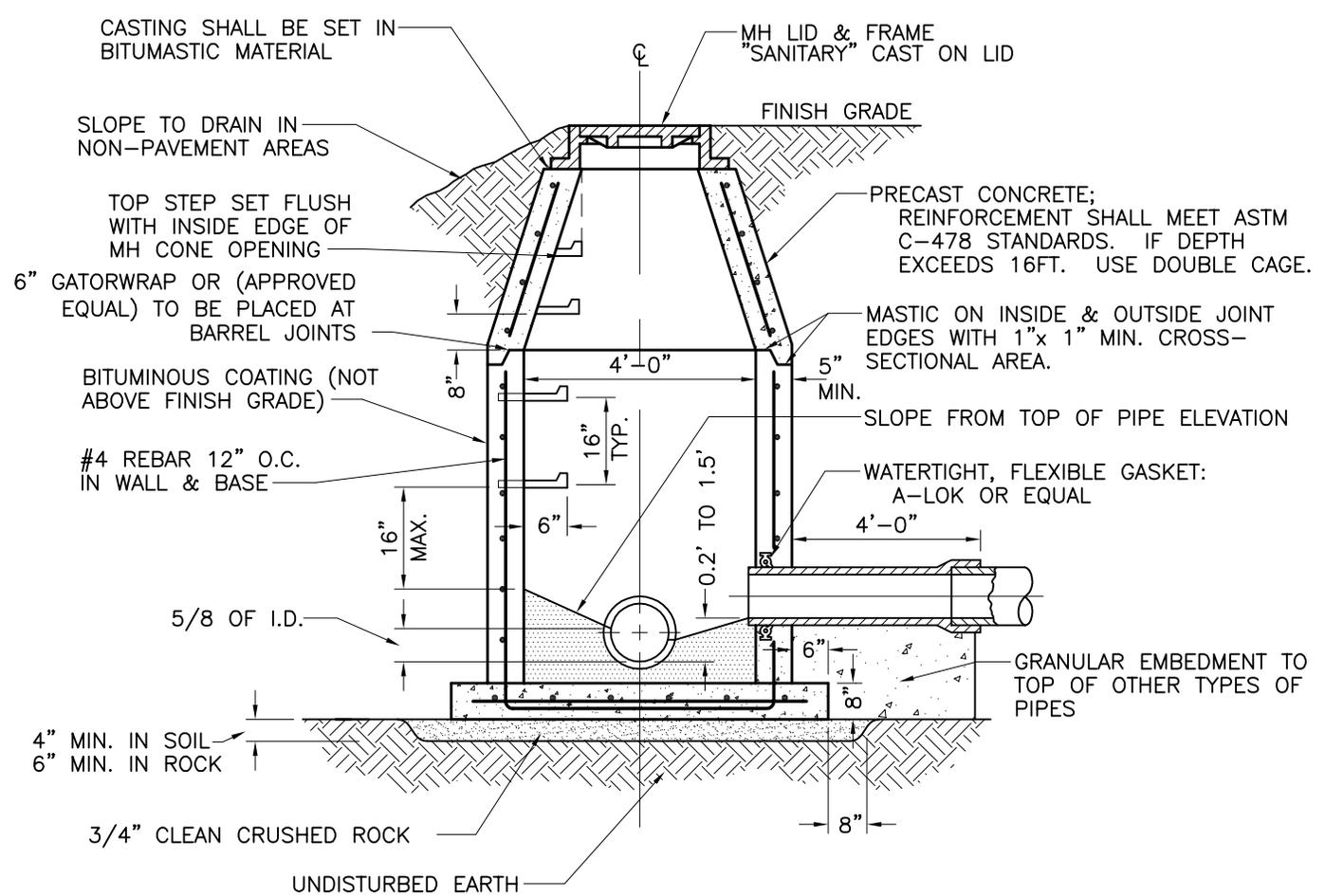


HORIZONTAL SECTION



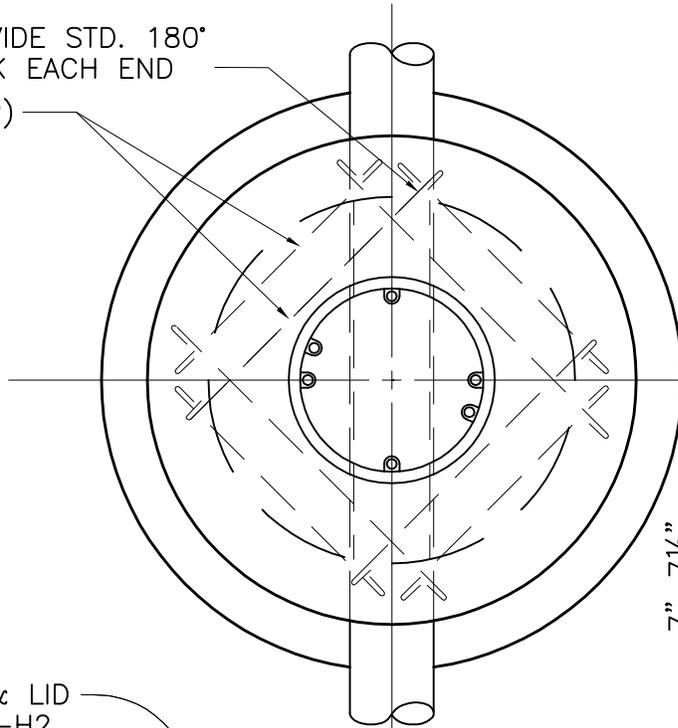
VERTICAL SECTION

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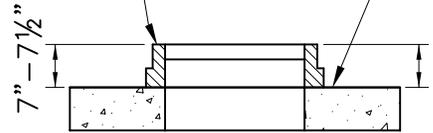
STANDARD MANHOLE

PROVIDE STD. 180°
HOOK EACH END
#6 REBAR (TYP)



NEENAH R1726-A
OR APPROVED EQUAL

BITUMINOUS SETTING
COMPOUND



MANHOLE FRAME & LID
NEENAH PR-1915-H2
CLAY & BAILY 2002
OR AN APPROVED EQUAL

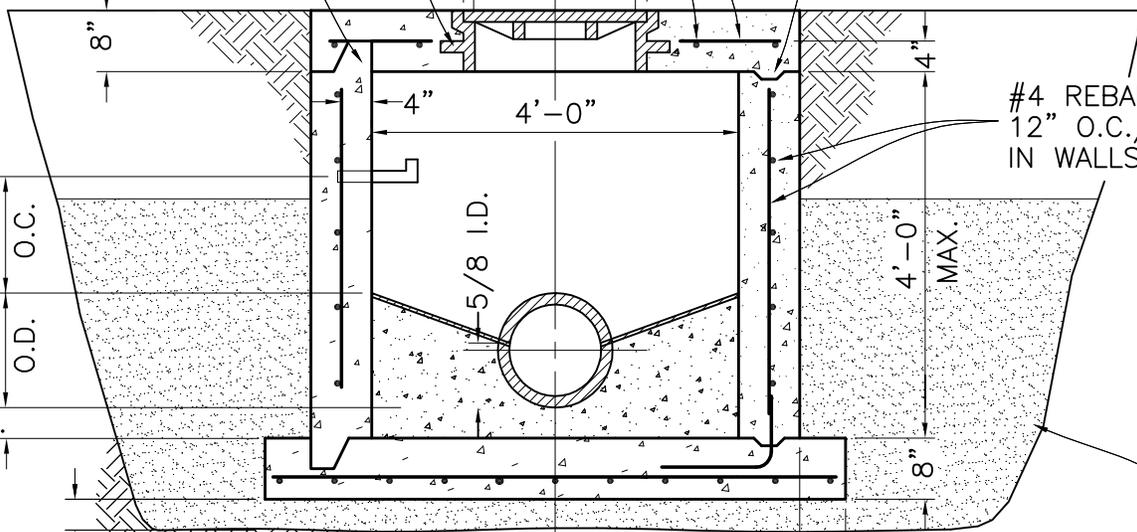
ALTERNATE TOP
(TO BE USED UNDER
PAVEMENTS ONLY)

5" PRECAST OR
8" REINFORCED
CONCRETE

2'-0"
1'-10"

#6 REBAR

2" KEYWAY
(TOP & BOTTOM)



#4 REBAR
12" O.C./E.W.
IN WALLS & BASE

4'-0"
MAX.

4" MIN. IN SOIL
6" MIN. IN ROCK

UNDISTURBED
EARTH

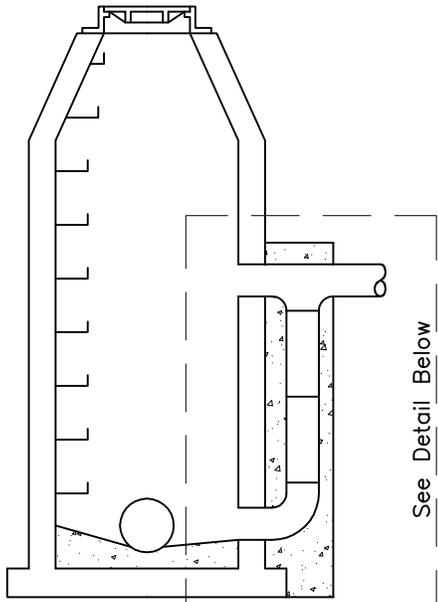
3/4" CLEAN CRUSHED
ROCK

VERTICAL SECTION

Approved  6/01/16
Date



**FLAT TOP
SHALLOW MANHOLE**



See Detail Below

WATERTIGHT, FLEXIBLE GASKET: A-LOCK OR APPROVED EQUAL

CONCRETE ENCASEMENT SHALL EXTEND A MIN. OF 6" ABOVE TEE.

STANDARD TEE FITTING

CONCRETE ENCASEMENT SHALL EXTEND TO THE BELL OF THE TEE FITTING

GRANULAR BACKFILL 3/4" CLEAN CRUSHED ROCK, TO UNDISTURBED EARTH

LONG ELBOW

UNDISTURBED EARTH

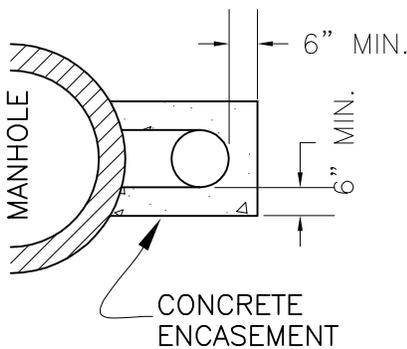
MANHOLE BASE

1'-6" MIN.
10'-0" MAX.

8"

4" MIN. IN SOIL
6" MIN. IN ROCK

WATERTIGHT, FLEXIBLE GASKET: A-LOCK OR APPROVED EQUAL



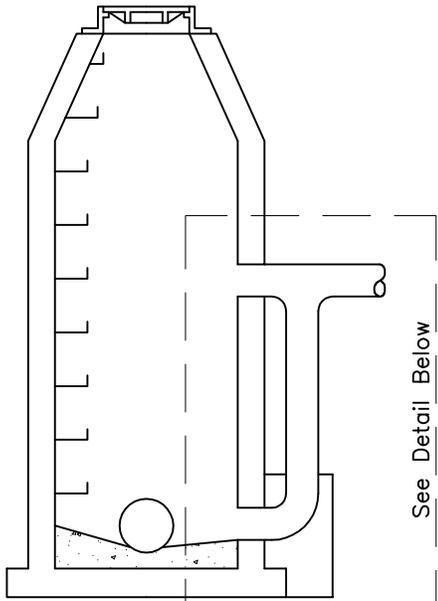
NOTES:

1. DROP INLET PIPE TO BE SAME SIZE AND MATERIAL AS SEWER MAIN.
2. ALIGNMENT OF TEE: DROP INLET PIPE AND LONG ELBOW MAY BE ADJUSTED TO MAXIMUM OF 5% DEFLECTION TO COMPENSATE FOR SLOPE OF SEWER LINE.

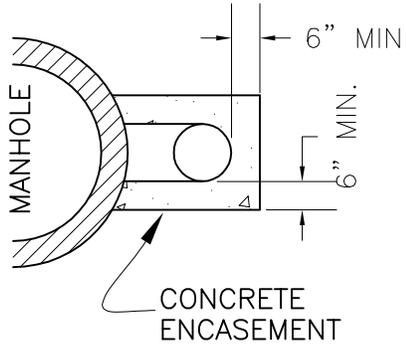
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STANDARD DROP MANHOLE



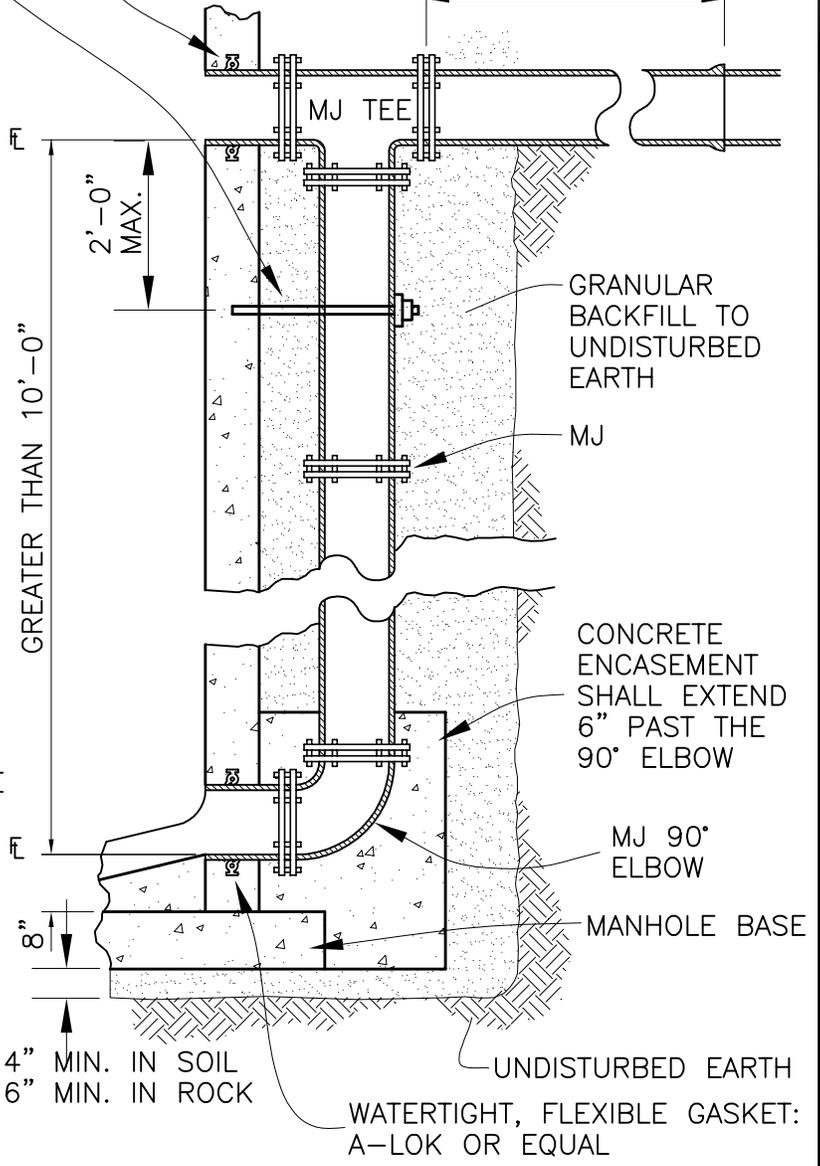
See Detail Below



STAINLESS STEEL HALF CLAMP
ATTACHED WITH 2-3/4" STAINLESS
STEEL ANCHORS, MAX. 6' VERTICAL
SPACING.

WATERTIGHT, FLEXIBLE GASKET:
A-LOK OR EQUAL

ONE FULL SECTION
OF DROP ASSEMBLY
PIPE (MIN.)



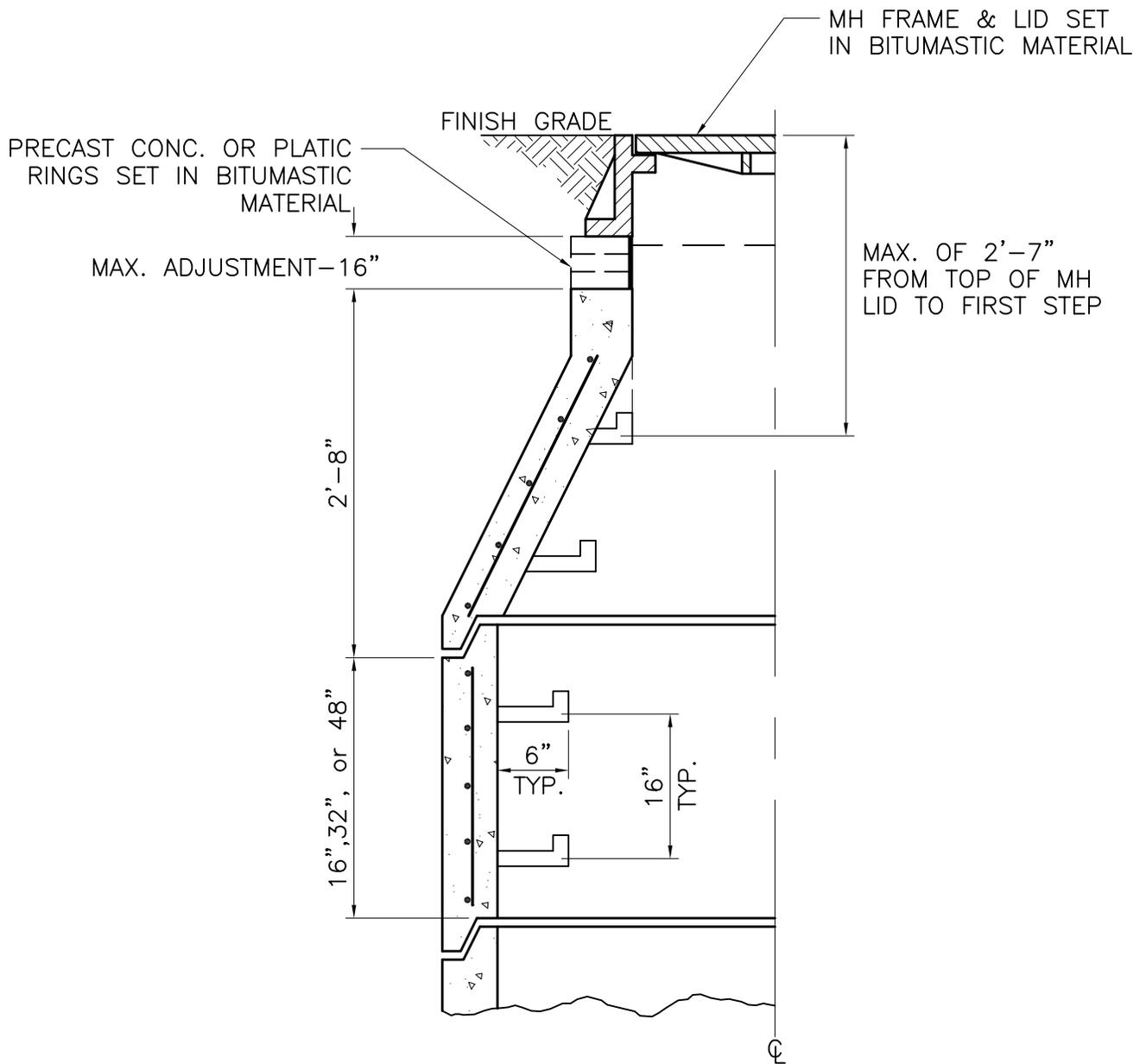
NOTES:

1. DROP INLET PIPE TO BE SAME SIZE AND MATERIAL AS SEWER MAIN.
2. ALIGNMENT OF TEE: DROP INLET PIPE AND LONG ELBOW MAY BE ADJUSTED TO MAXIMUM OF 5% DEFLECTION TO COMPENSATE FOR SLOPE OF SEWER LINE.
3. PIPE MATERIAL IN THE DROP ASSEMBLY SHALL CONFORM TO SECTION 505.2.b OF THE STANDARD SPECIFICATIONS.
4. DROP ASSEMBLY SHALL UTILIZE MECHANICAL COUPLINGS. THE COUPLINGS SHALL BE A MEGALUG MECHANICAL JOINT RESTRAINT, OR APPROVED EQUAL.

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DEEP DROP MANHOLE



BARREL SECTION

NOTE:

IF MORE THEN 16" OF ADJUSTMENT IS NEEDED, REMOVE CONE SECTION AND ADD OR REMOVE BARREL SECTIONS AS NECESSARY.

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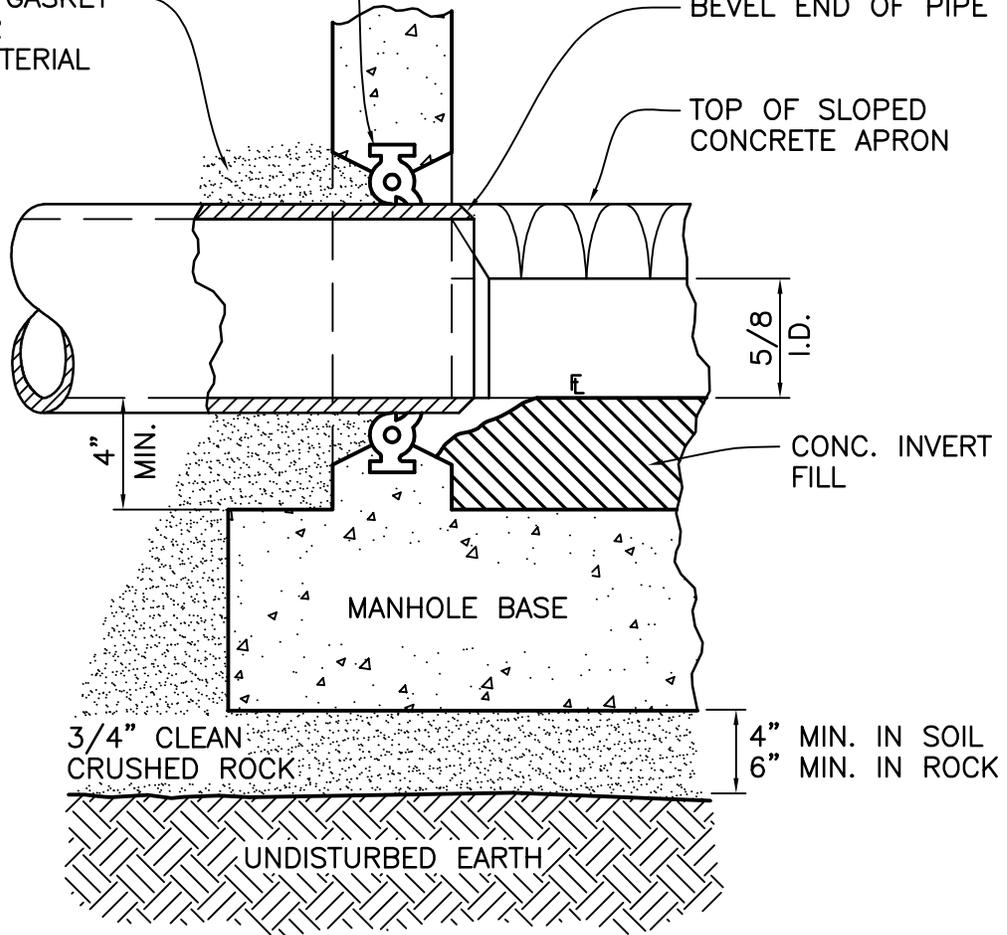
MANHOLE ADJUSTMENT

WATERTIGHT FLEXIBLE GASKET
"A-LOK" OR EQUAL

INITIAL FILL AT GASKET
WITH GRANULAR
EMBEDMENT MATERIAL

BEVEL END OF PIPE

TOP OF SLOPED
CONCRETE APRON



NOTE:

1. BITUMINOUS COATING ON EXTERIOR SURFACE OF MANHOLE SHALL NOT COME IN CONTACT WITH PIPE GASKET.
2. FOR CAST-IN-PLACE CONCRETE MANHOLES OR PRE-CAST WITH BOX-OUTS, THE PIPE GASKET SHALL BE A RUBBER LABYRINTH WATERSTOP WITH STAINLESS STEEL CLAMPING BANDS LOCATED AT CENTER OF WALL AND THE SPACE BETWEEN PIPE & WALL COMPLETELY GROUTED WITH NONSHRINKING MORTAR.
3. PIPE MAY PROJECT 1" MAXIMUM PAST INSIDE WALL OF MANHOLE. NO CONTACT BETWEEN PIPE & INVERT MAY OCCUR.

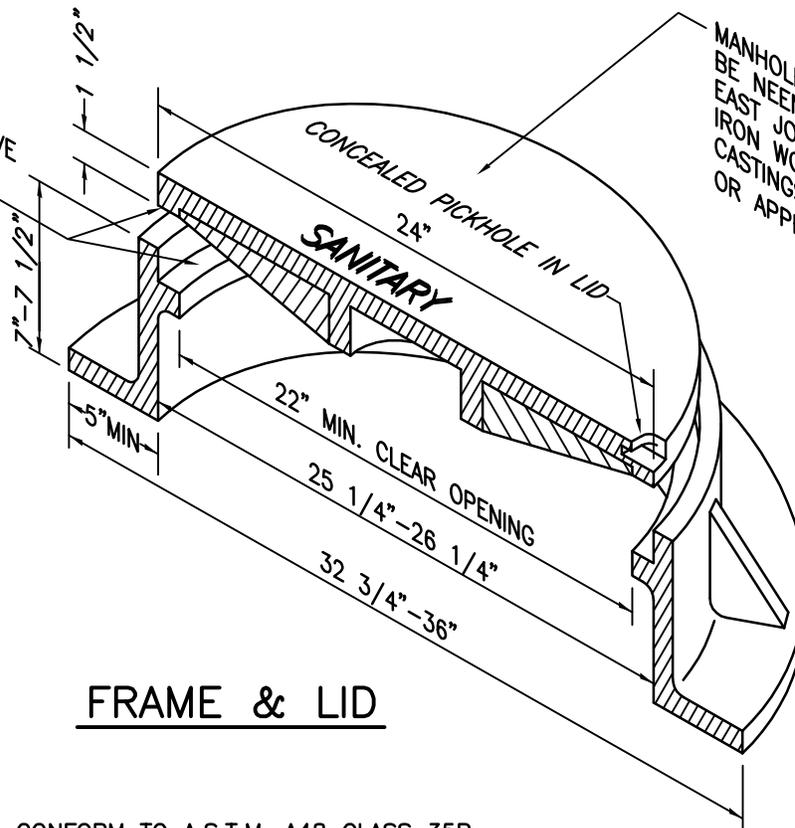
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MANHOLE GASKET (Pipe Gasket Detail)

FRAME & LID TO HAVE MACHINED BEARING SURFACES

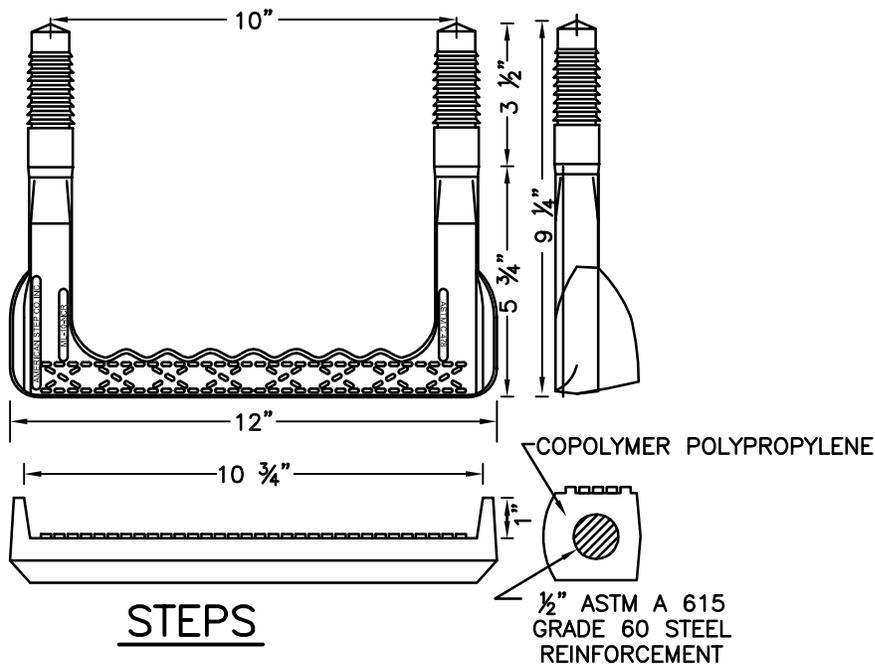
MANHOLE LID & FRAME TO BE NEENAH #R1726-A, EAST JORDAN IRON WORKS CASTINGS 2276 OR APPROVED EQUAL



FRAME & LID

NOTES:

- 1. CASTINGS SHALL CONFORM TO A.S.T.M. A48 CLASS 35B.
- 2. LIDWEIGHT 135 lbs. ±5%. TOTAL WEIGHT OF 350 lbs. ±5%.
- 3. WATERTIGHT LID AND FRAME TO BE NEENAH #R-1916-F, OR APPROVED EQUAL
- 4. MANHOLE STEP NEENAH R-1980-J, CLAY & BAILEY 2102-01-6200 & 2102-01-6300, GCI MS 1114B OR APPROVED EQUAL.
- 5. BOLT DOWN LIDS SHALL HAVE FRAMES BOLTED TO THE CONE SECTION

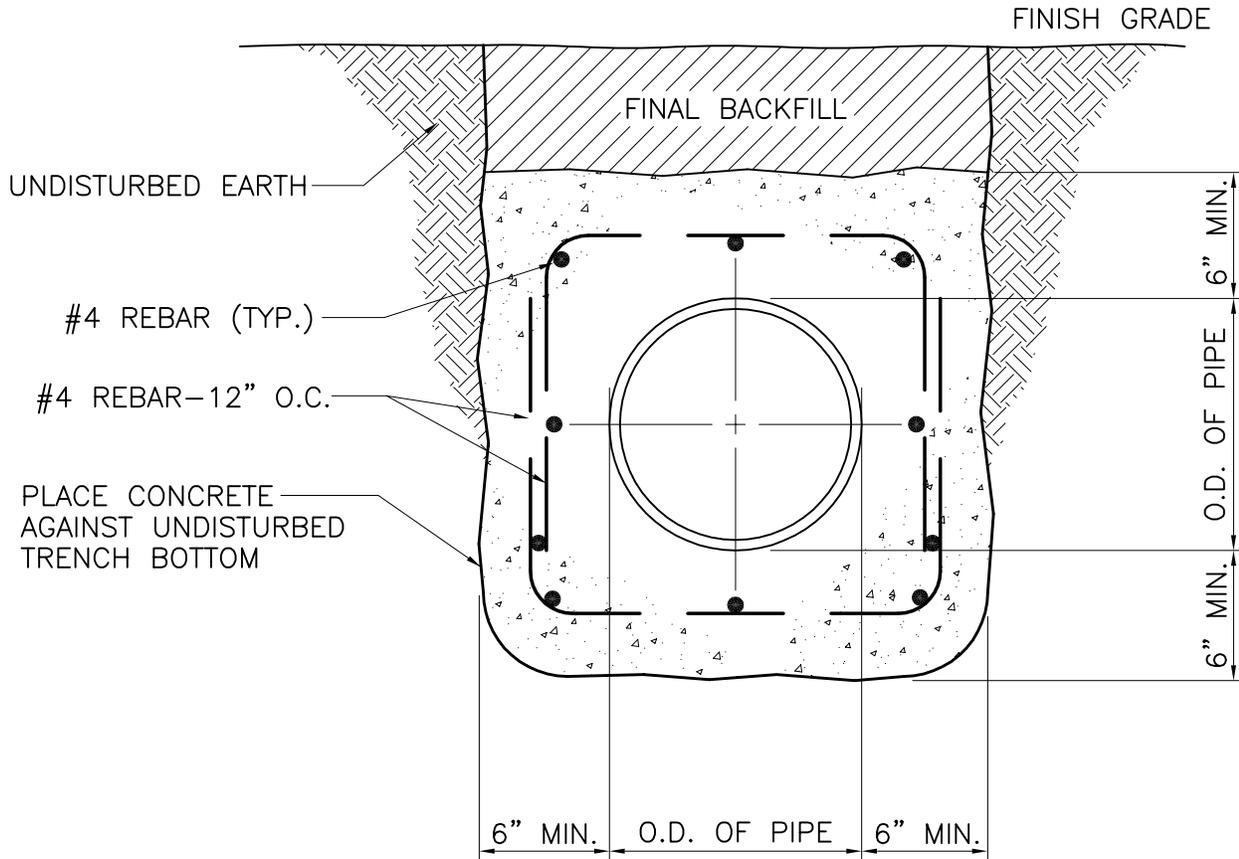


STEPS

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	Revised casting weight



MANHOLE CASTINGS
(Frame, Lid & Steps)



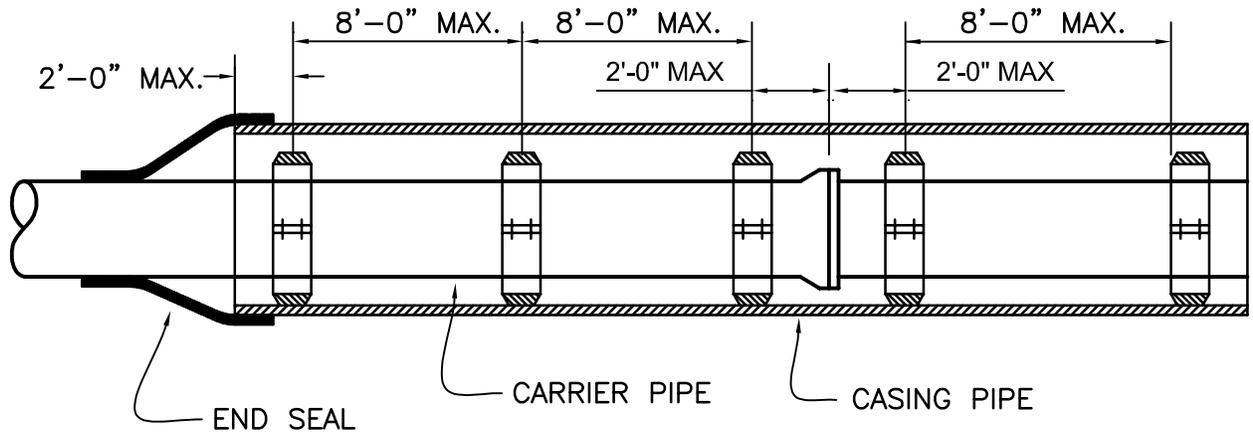
NOTES:

1. FOR PIPE LARGER THAN 12" DIAMETER THE MINIMUM CONCRETE COVER SHALL BE 8" WITH # 5 REBAR @ 12" O.C. EACH WAY.
2. BRACE OR TIE PIPE TO PREVENT FLOTATION OR DEFLECTION, DURING CONCRETE PLACEMENT.
3. VERTICAL CLEARANCE BETWEEN SEWER AND WATER MAINS SHALL BE A MINIMUM OF 2 FEET.

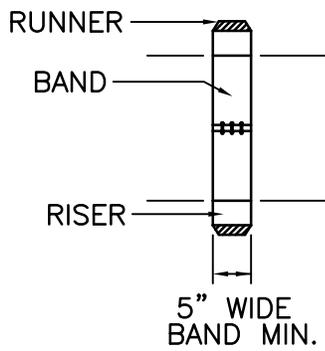
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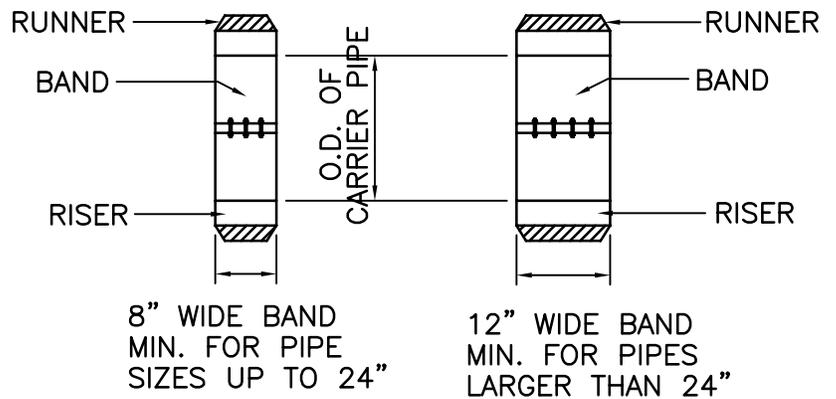
PIPE ENCASEMENT (Concrete)



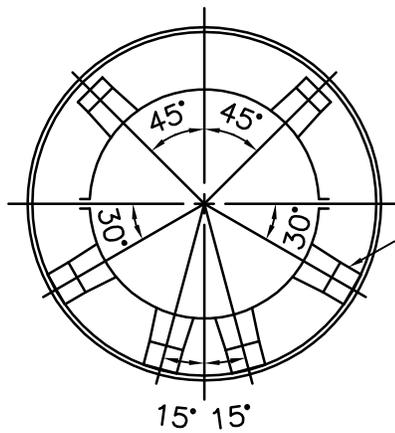
TYPE I SPACERS



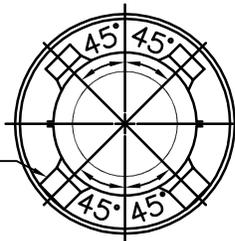
TYPE II SPACERS



SIZES 14" THRU 36"



SIZES 4" THRU 12"

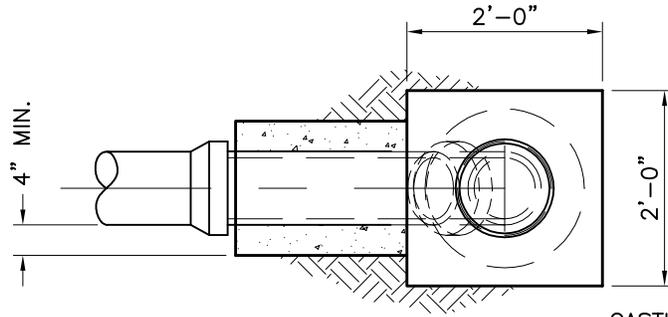


RISER

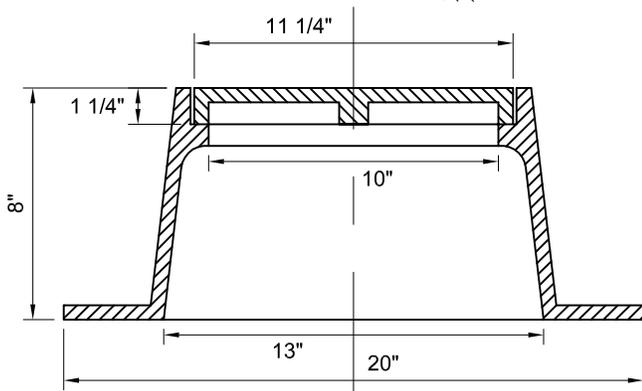
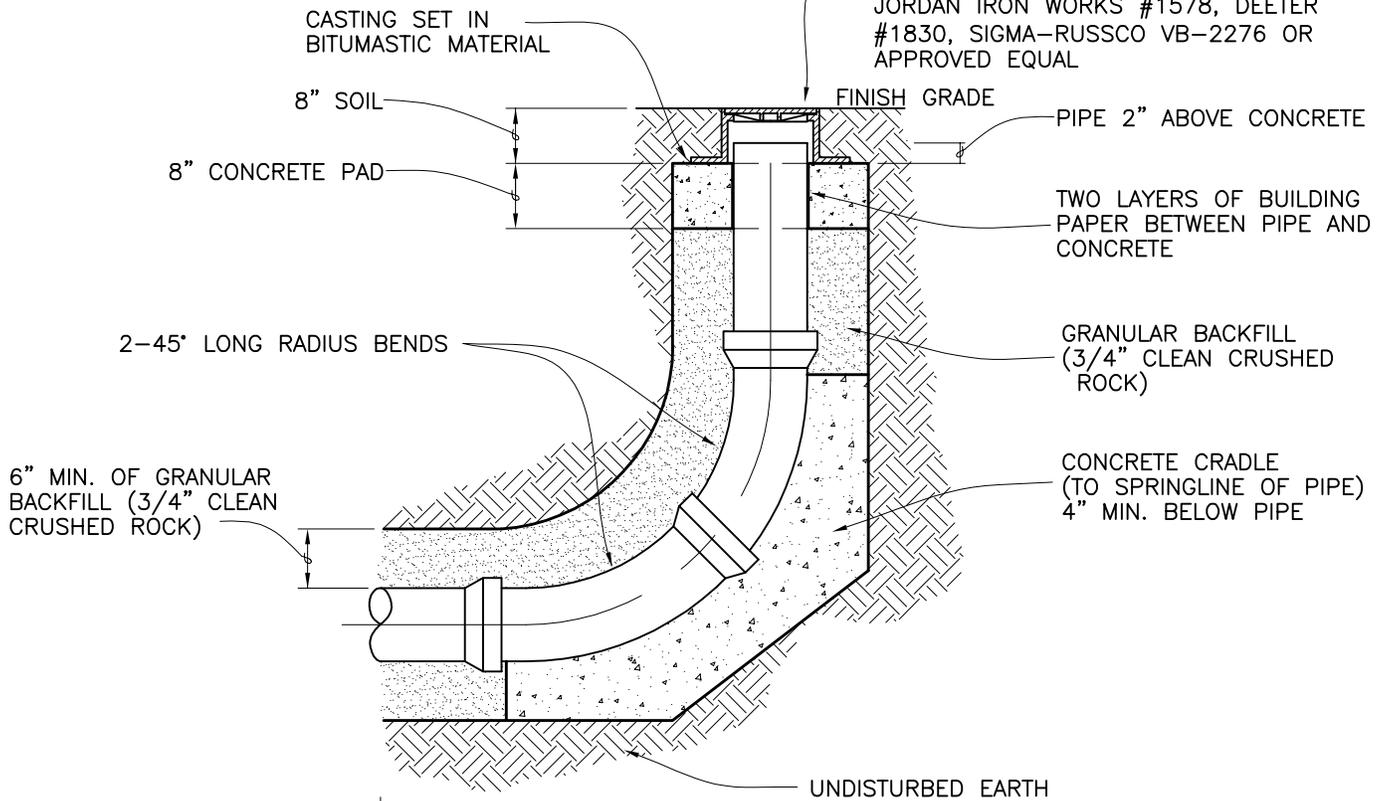
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PIPE ENCASEMENT
(Steel)



CASTING WEIGHT 90 lbs ±5%. (NO VENT HOLES OR OPEN PICK HOLES) NEENAH #R-1976, GCI CASTINGS #G1000, EAST JORDAN IRON WORKS #1578, DEETER #1830, SIGMA-RUSSCO VB-2276 OR APPROVED EQUAL



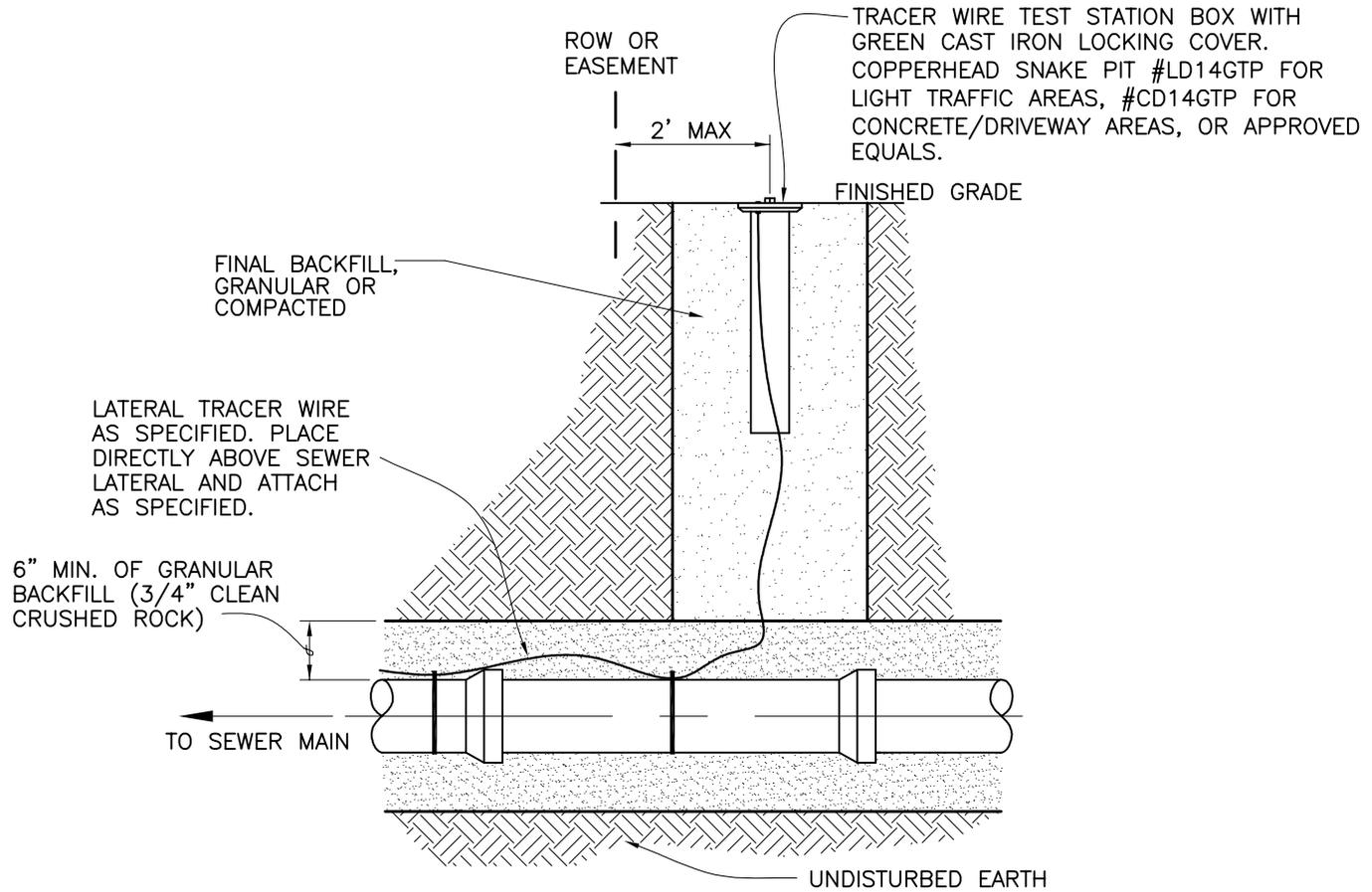
FRAME & LID

NOTE:
DISTANCE FROM CENTER OF DOWNSTREAM MANHOLE TO CENTER OF CLEANOUT SHALL BE 150 FEET OR LESS.

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STANDARD CLEANOUT



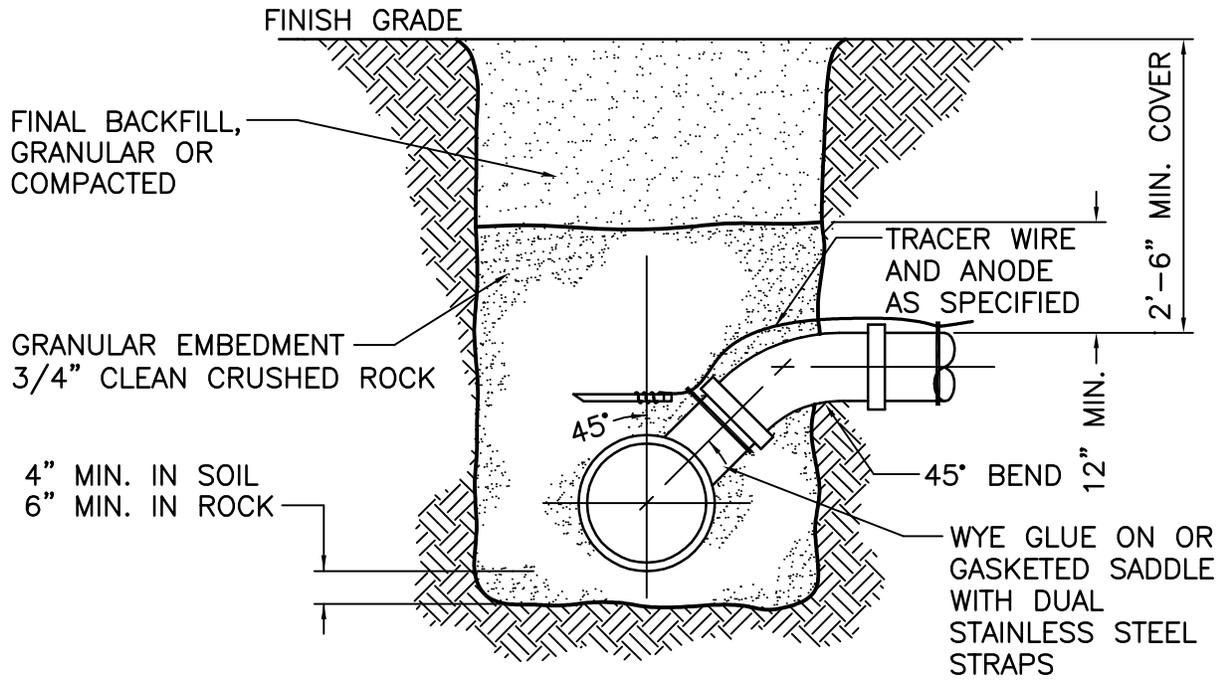
1. TRACER WIRE TEST STATIONS FOR NEW CONSTRUCTION SHALL EXTEND 1' ABOVE THE PROPOSED FINAL GRADE USING SNAKEPIT #LD14GTP-ADJ OR APPROVED EQUAL. UPON COMPLETION OF FINAL GRADING, CONTRACTOR SHALL ADJUST THE TEST STATION BOX TO MEET FINAL GRADE.

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STANDARD TRACER WIRE TEST STATION

12A



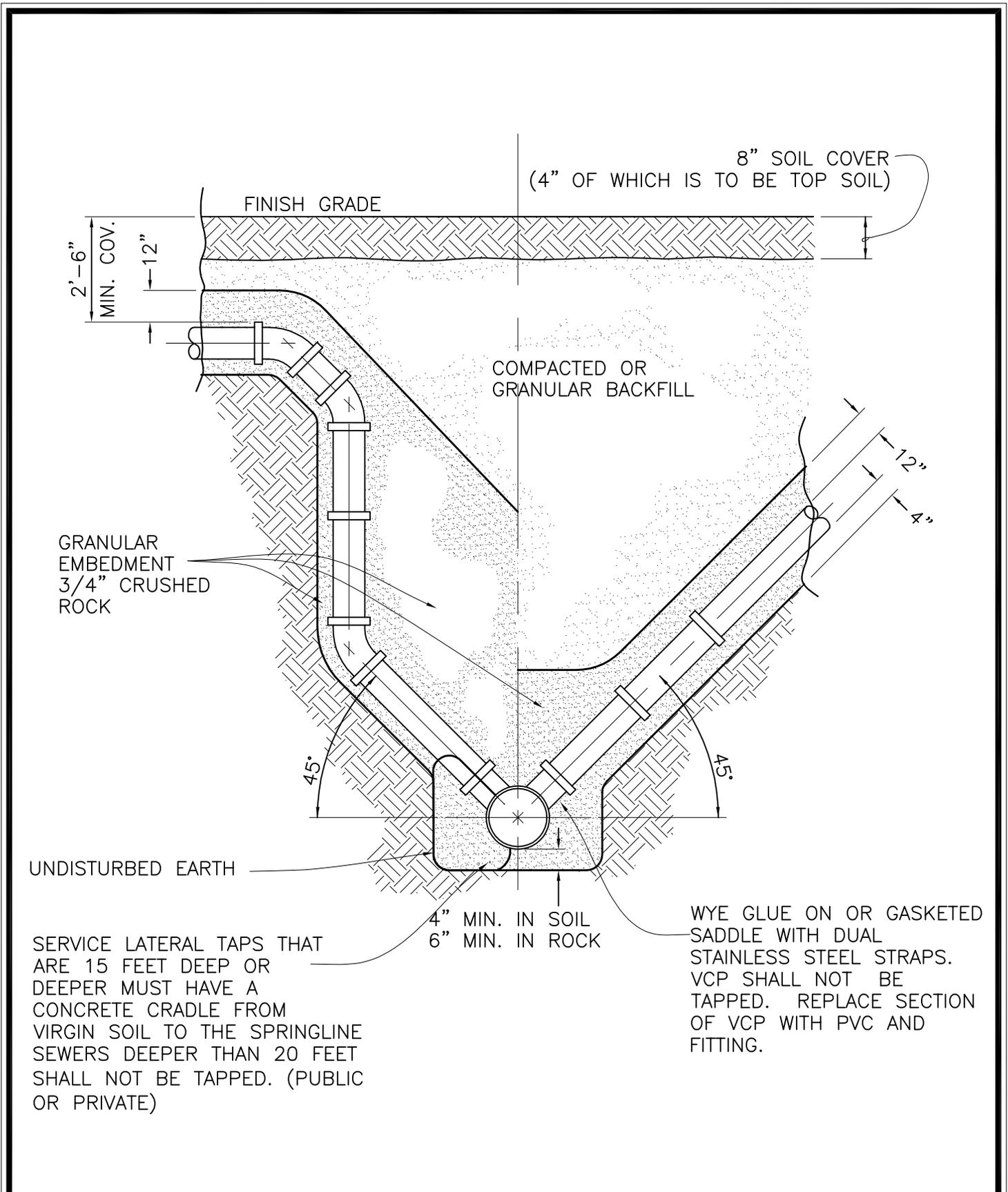
NOTES:

1. VCP PIPES SHALL NOT BE TAPPED. REPLACE SECTION OF VCP WITH PVC AND FITTING.

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STANDARD SERVICE CONNECTION



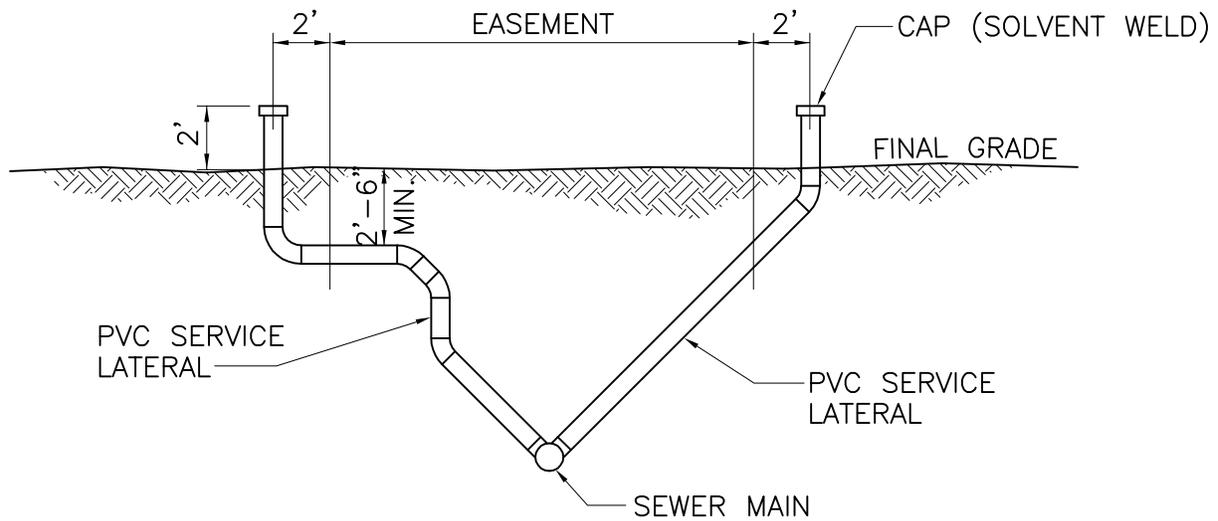
SERVICE LATERAL TAPS THAT ARE 15 FEET DEEP OR DEEPER MUST HAVE A CONCRETE CRADLE FROM VIRGIN SOIL TO THE SPRINGLINE SEWERS DEEPER THAN 20 FEET SHALL NOT BE TAPPED. (PUBLIC OR PRIVATE)

WYE GLUE ON OR GASKETED SADDLE WITH DUAL STAINLESS STEEL STRAPS. VCP SHALL NOT BE TAPPED. REPLACE SECTION OF VCP WITH PVC AND FITTING.

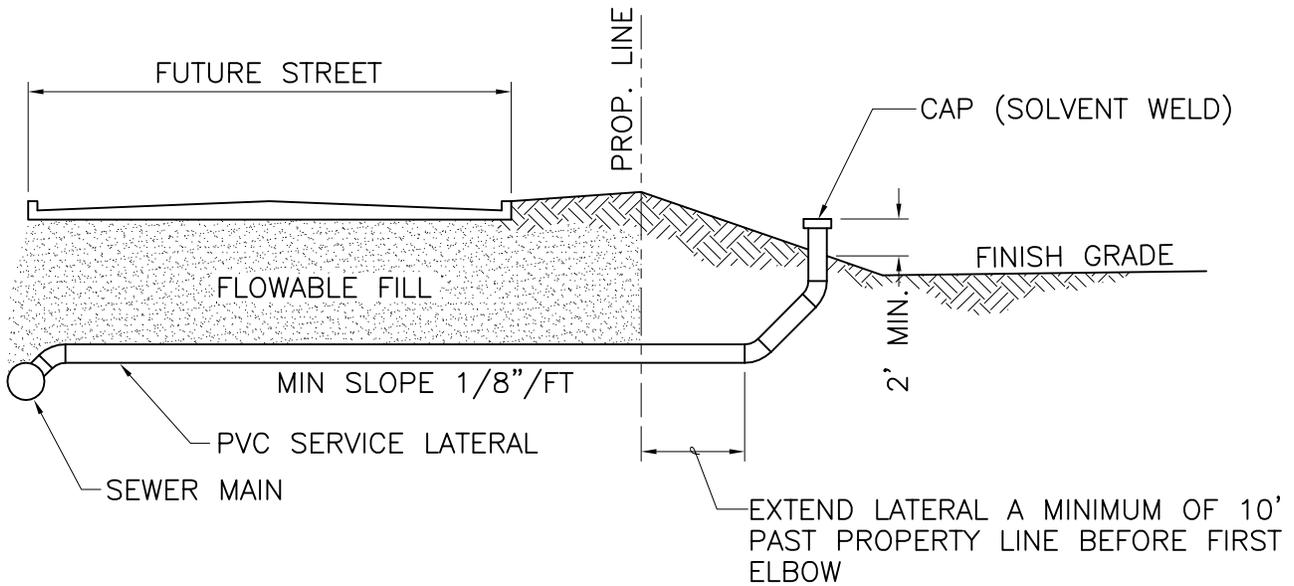
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DEEP SERVICE CONNECTION



SERVICE LATERAL EXTENSION FROM DEEP SEWER



SERVICE LATERAL EXTENSION UNDER FUTURE STREETS

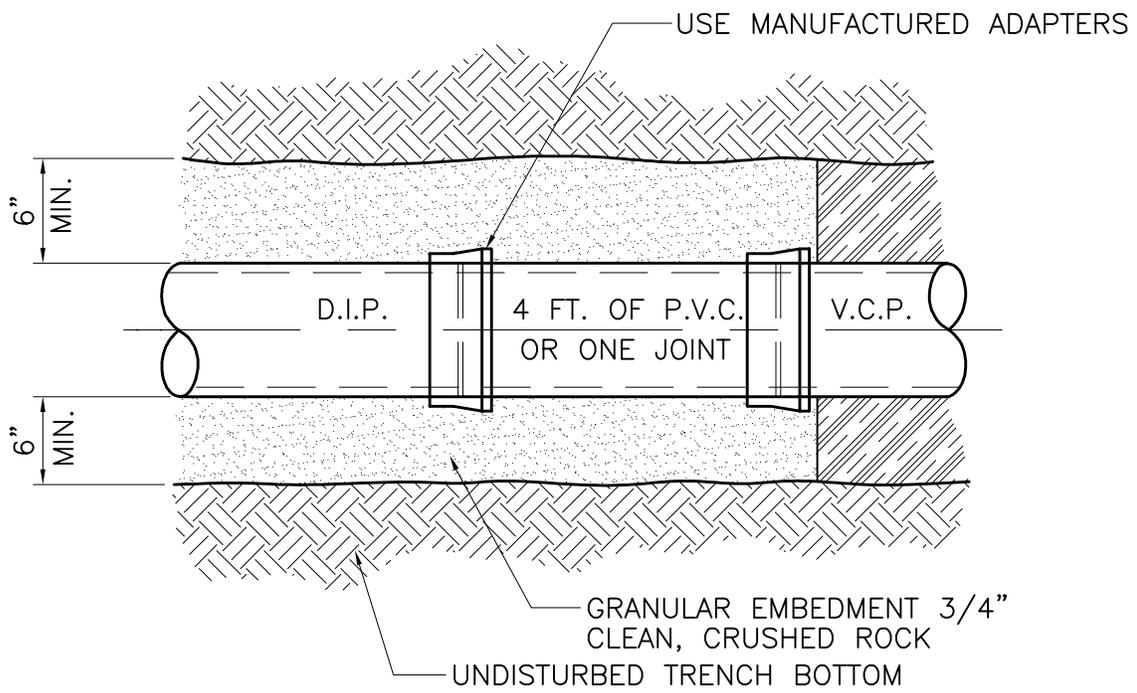
NOTE:

THIS DETAIL IS FOR USE WHENEVER LATERALS ARE EXTENDED FROM THE SEWER MAIN DURING NEW CONSTRUCTION. IN ALL CASES WHEN SERVICE LATERALS ARE EXTENDED THE PIPE SHALL EXTEND A MINIMUM OF TWO (2) FEET ABOVE THE PROPOSED FINAL GRADE AND SHALL BE FITTED WITH A CAP THAT IS SOLVENT WELDED IN PLACE.

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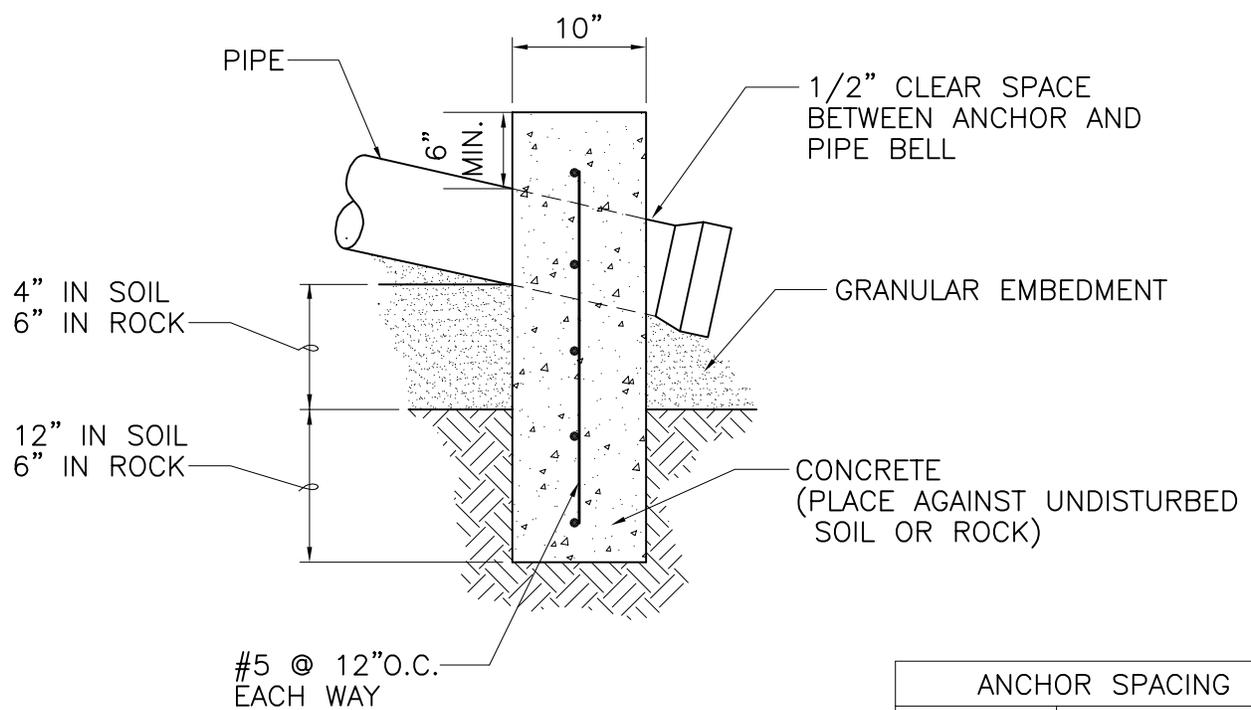
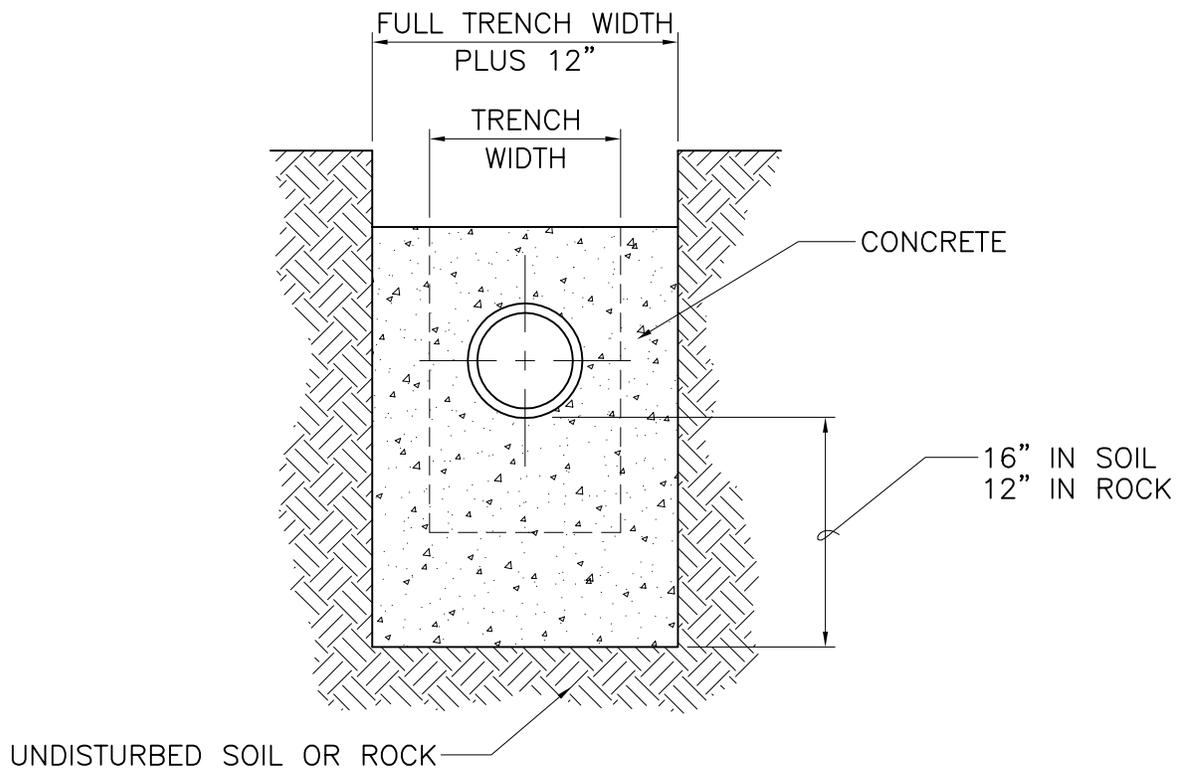
**LATERAL EXTENSION FOR
NEW CONSTRUCTION**



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V.C.P. / D.I.P. CONNECTION



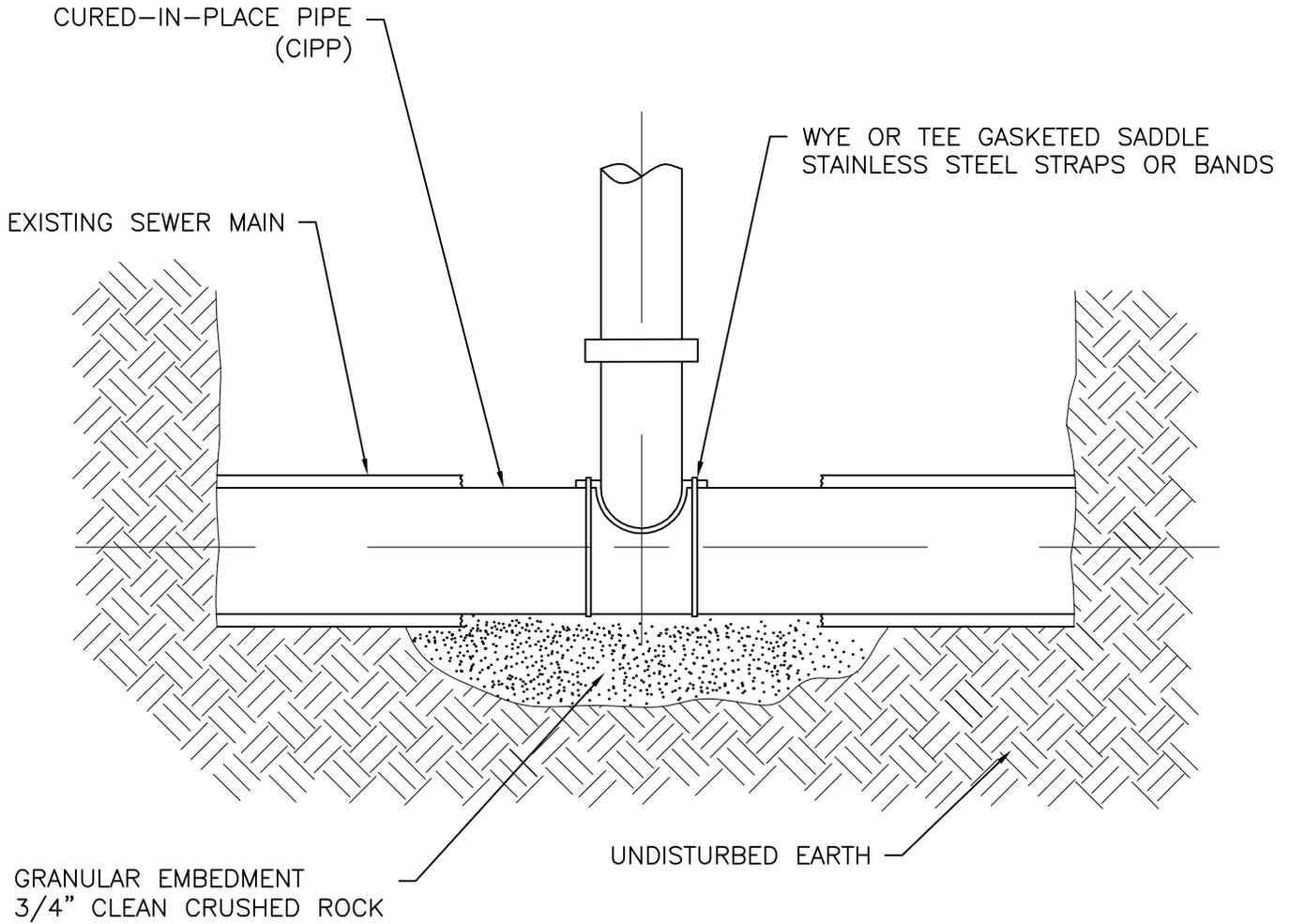
SIDE ELEVATION

ANCHOR SPACING	
SLOPE	MAX. DISTANCE
20%–35%	36'
35%–50%	24'
>50%	12' OR ONE PER JOINT OF PIPE

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ANCHOR DETAIL



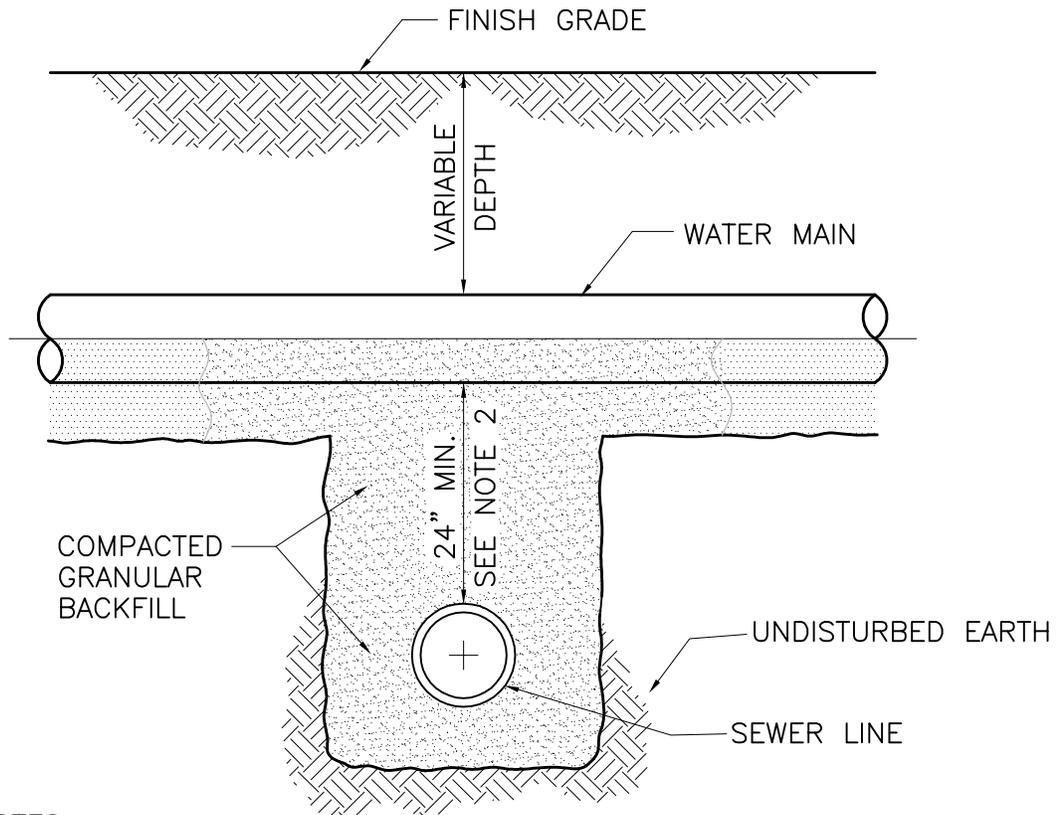
NOTES:

1. REFER TO THIS DETAIL TO CONNECT NEW SERVICE LATERALS OR TO REPLACE EXISTING LATERAL CONNECTIONS TO SEWERS LINED WITH CIPP.
2. REMOVE VCP OR OTHER HOST PIPE FROM AREA TO BE TAPPED. AREA SHALL BE SANDED TO PROVIDE A SMOOTH FLAT SURFACE FOR THE INSTALLATION OF THE SADDLE.
3. IF A NEW TAP IS INSTALLED A HOLE SHALL BE NEATLY CUT WITH AN APPROPRIATE SIZED HOLE SAW AND TAPPED AT A 45 DEGREE ANGLE PER DETAIL 13 STANDARD SERVICE CONNECTION.
4. IF REPLACING A TAP THE HOLE IN THE MAIN, REGARDLESS OF TAP POSITION, SHALL BE CLEANED AND TRIMMED TO THE APPROPRIATE SIZE. IF THE HOLE IS TOO LARGE FROM THE TAP CUTTING PROCESS THE NEXT SIZE UP TAPPING SADDLE SHALL BE USED AND REDUCED IN THE VERTICAL SECTION OF PIPE BEFORE CONNECTING TO THE EXISTING LATERAL.
5. IN ADDITION TO THE GASKETED SADDLE A FAST CURE SEALANT SUCH AS 3M 4200 OR APPROVED EQUAL SHALL BE USED.

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SERVICE LATERAL CONNECTION TO CURED-IN-PLACE PIPE (CIPP)



NOTES:

1. SEWERS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A VERTICAL SEPARATION THAT IS NO LESS THAN 24 INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER MAIN.
2. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER LINE CROSSES BELOW THE WATER LINE. CROSSINGS IN WHICH THE SEWER LINE IS ABOVE THE WATER LINE WILL ONLY BE APPROVED ON A CASE BY CASE BASIS.
3. THE CROSSING SHALL BE ARRANGED SO THAT THE ENDS OF A FULL JOINT OF PIPE WILL BE EQUIDISTANT FROM THE WATER MAIN AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.
4. IF THE VERTICAL SEPARATION BETWEEN THE WATER MAIN AND SEWER MAIN IS LESS THAN 18 INCHES, THE SEWER MAIN SHALL BE D.I.P. OR PRESSURE RATED PVC PIPE WITH A PRESSURE RATING THAT IS EQUAL TO OR GREATER THAN THE WATER MAIN. THE D.I.P. OR PRESSURE RATED P.V.C. MUST BE EXTENDED A DISTANCE 10 FEET ON BOTH SIDES OF THE WATER MAIN. THE TRANSITION BETWEEN PIPE MATERIALS SHALL BE ACCOMPLISHED WITH A RESTRAINED MECHANICAL TYPE JOINT OR FITTING. FLEXIBLE TYPE (FERNCO) FITTINGS ARE NOT ACCEPTABLE.
5. PRESSURE SEWER LINE AND WATER LINE CROSSINGS SHALL BE REVIEWED ON A CASE BY CASE BASIS.

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GRAVITY SEWER AND WATER LINE CROSSING

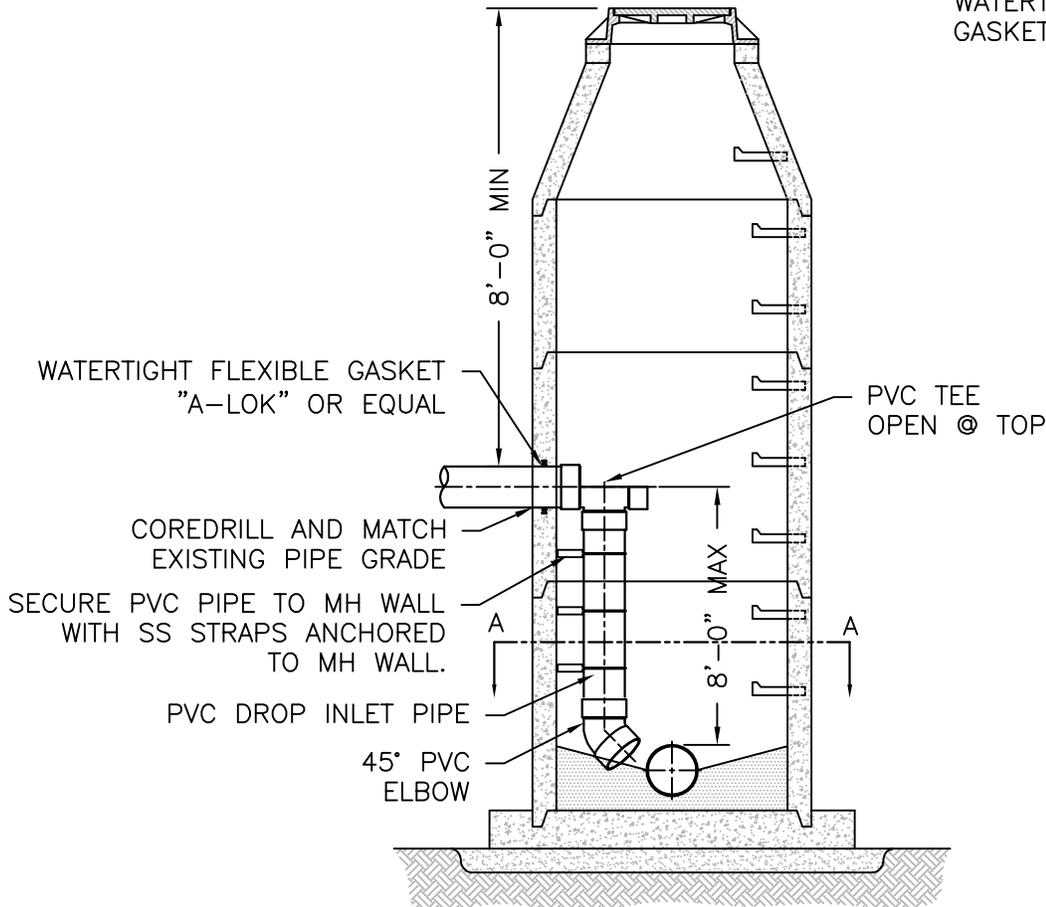
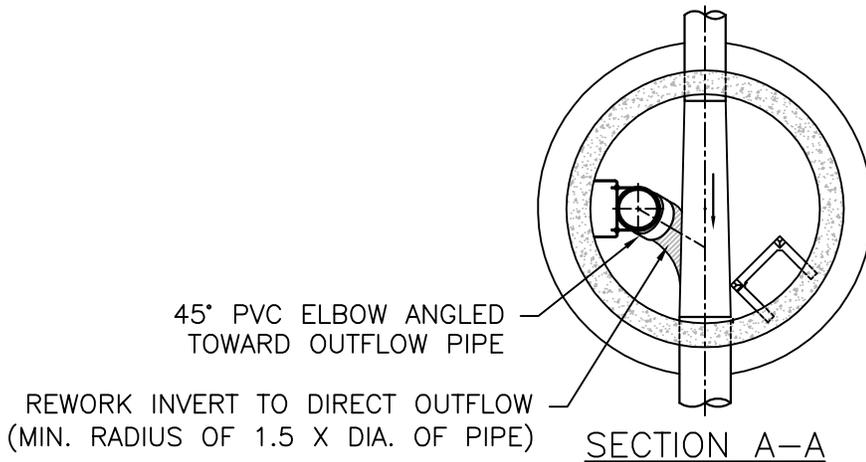
NOTES:

1. INSIDE DROP CONNECTION ONLY ALLOWED WITH PUBLIC WORKS DEPT. APPROVAL, WHEN PW DEPT. DEEMS UNFEASIBLE, UNPRACTICAL OR DANGEROUS TO PROVIDE OUTSIDE DROP.

2. DROP INLET PIPE TO BE SAME SIZE AND MATERIAL AS SEWER LINE.

3. ALIGNMENT OF TEE: DROP INLET PIPE MAY BE ADJUSTED TO A MAXIMUM OF 5% DEFLECTION.

4. ANNULAR SPACE AROUND NEW PIPE TO BE SEALED WITH NON-SHRINK GROUT, LINK SEAL, OR WATERTIGHT AND FLEXIBLE GASKET.

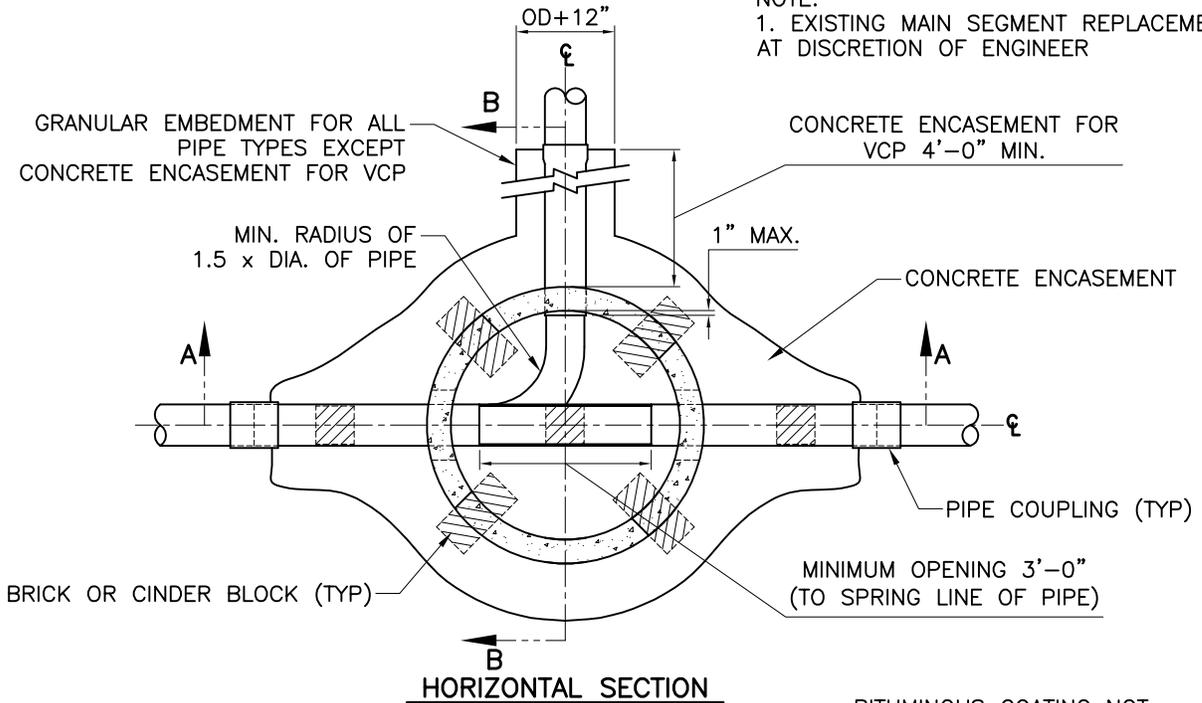


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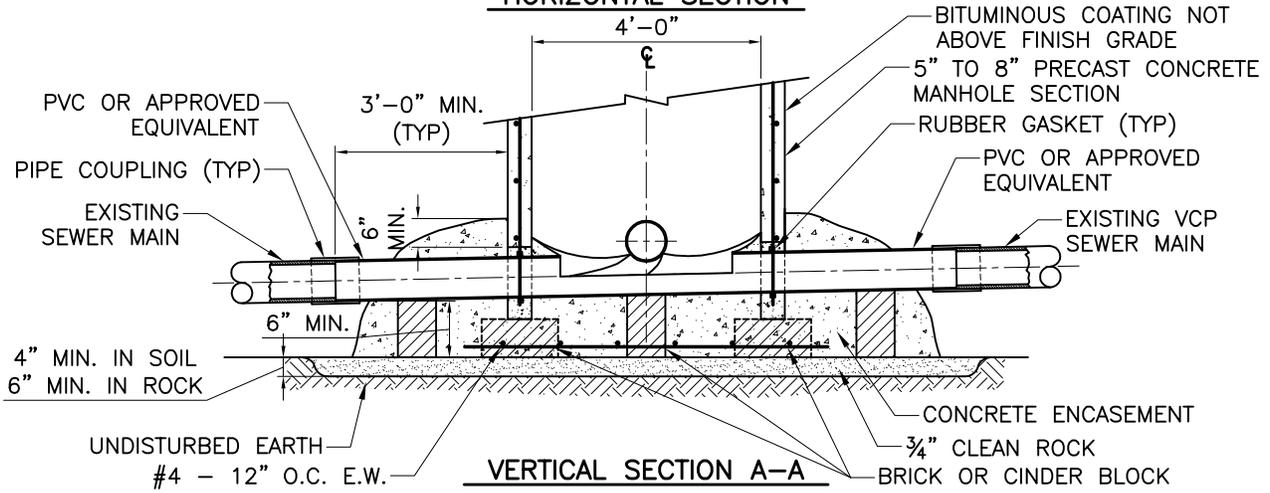


INSIDE DROP MANHOLE CONNECTION

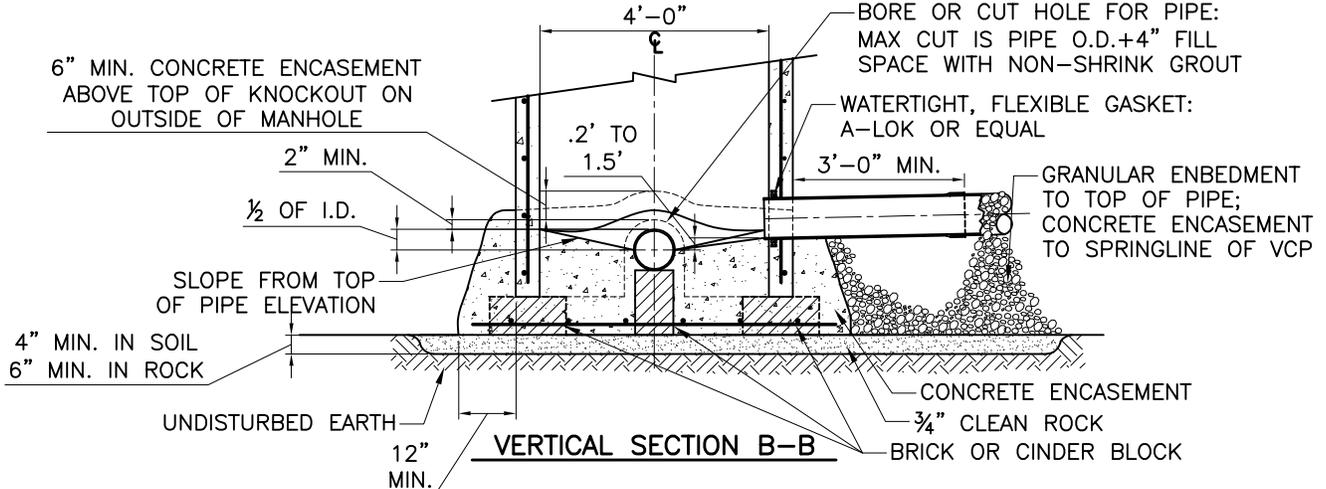
NOTE:
1. EXISTING MAIN SEGMENT REPLACEMENT AT DISCRETION OF ENGINEER



HORIZONTAL SECTION



VERTICAL SECTION A-A



VERTICAL SECTION B-B

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City of Columbia Public Works Department	



DOGHOUSE MANHOLE