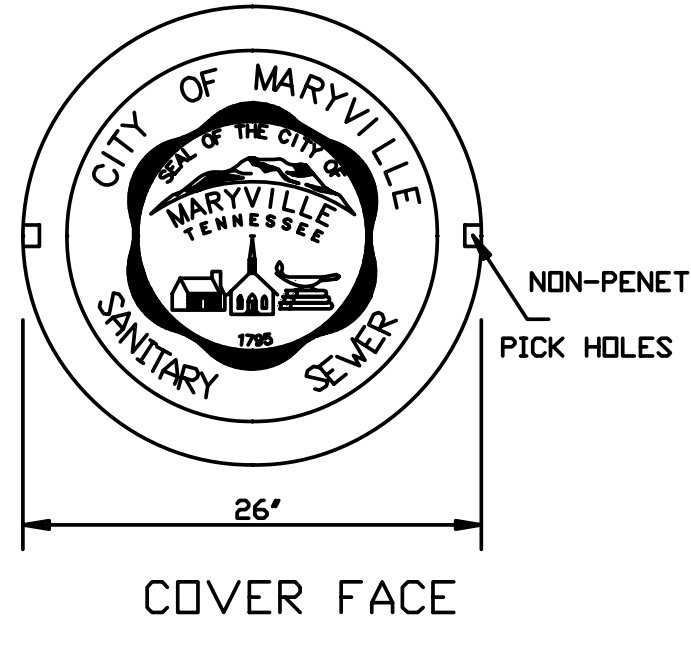
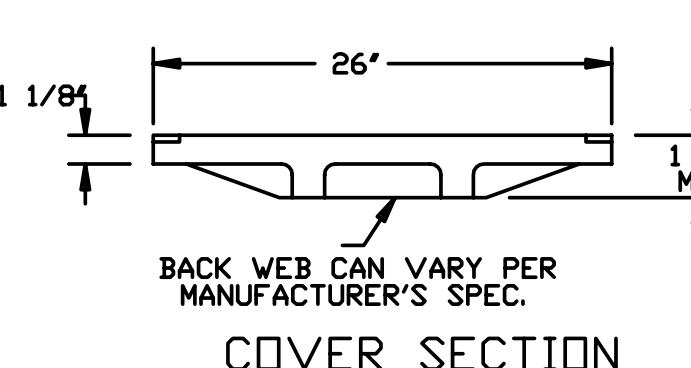
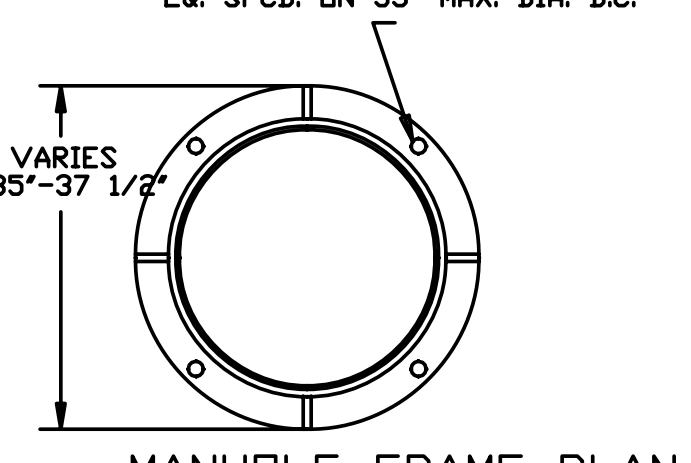
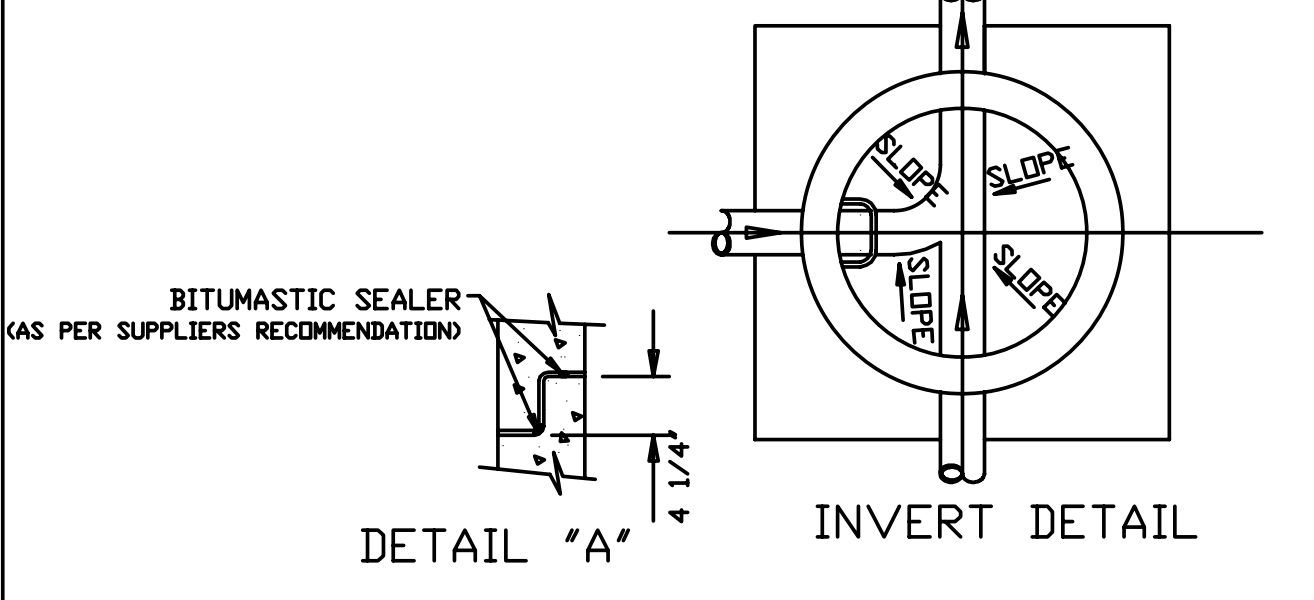
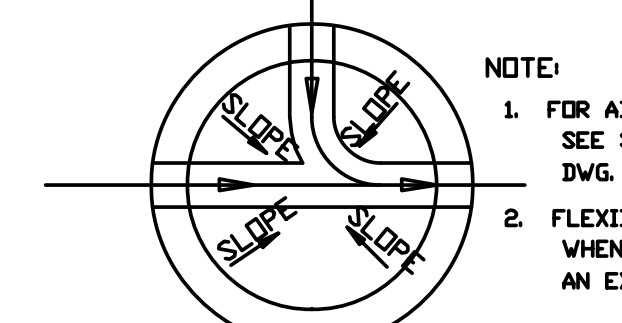
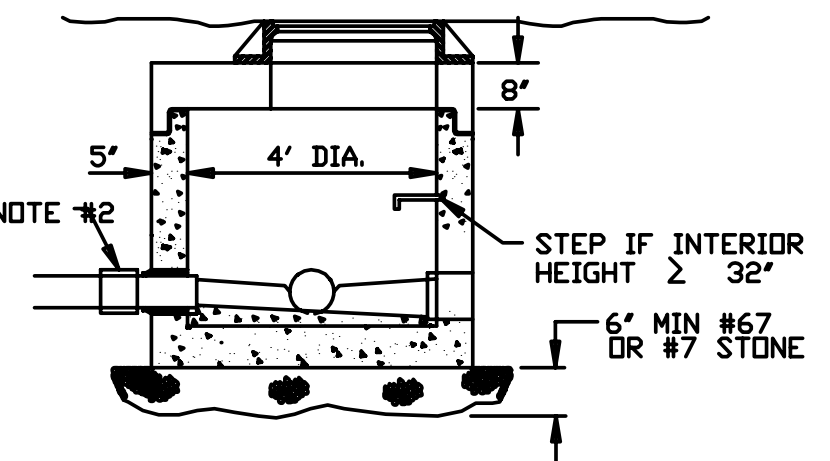
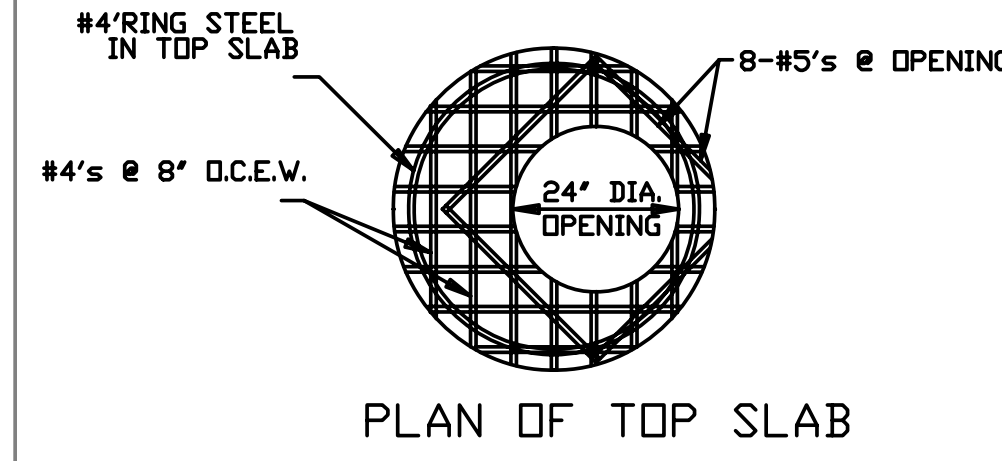
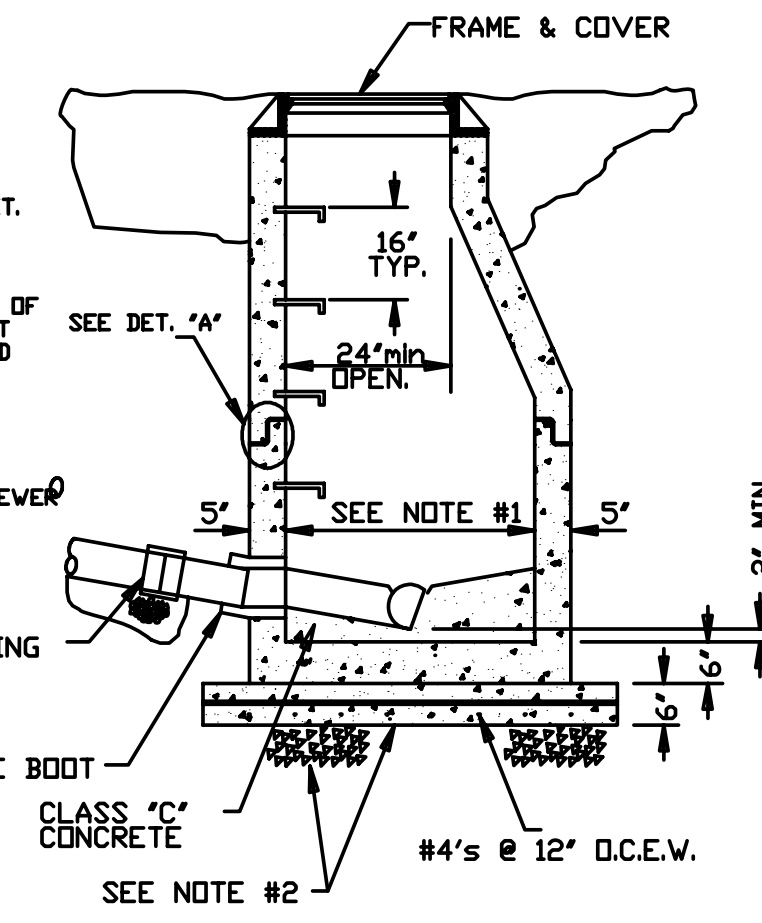
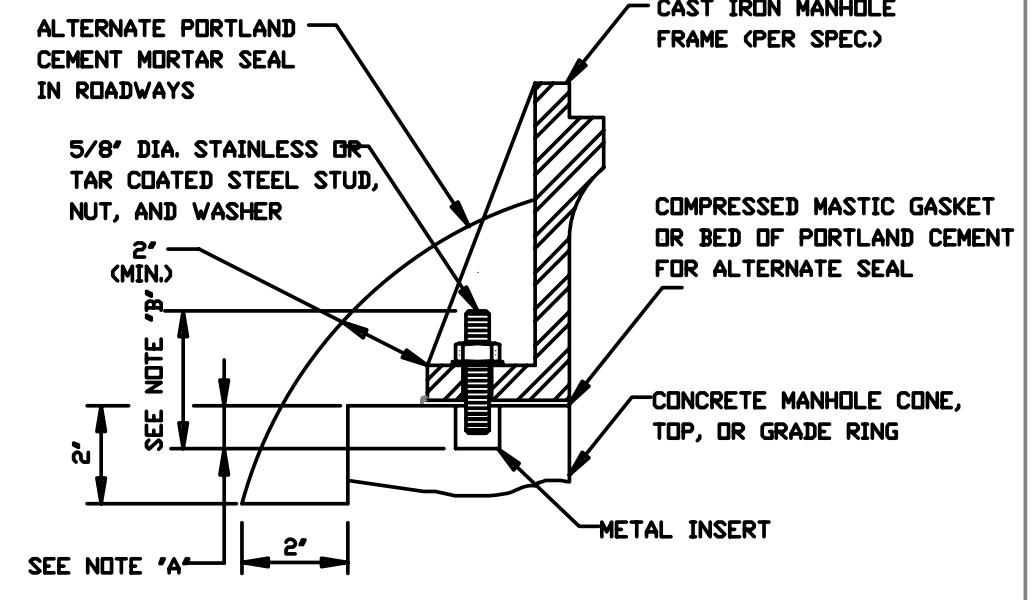
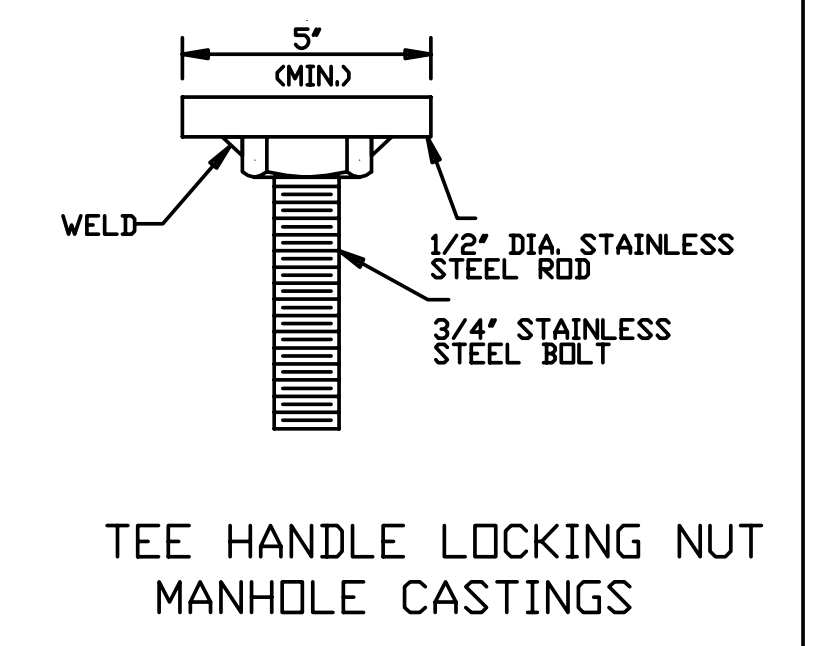
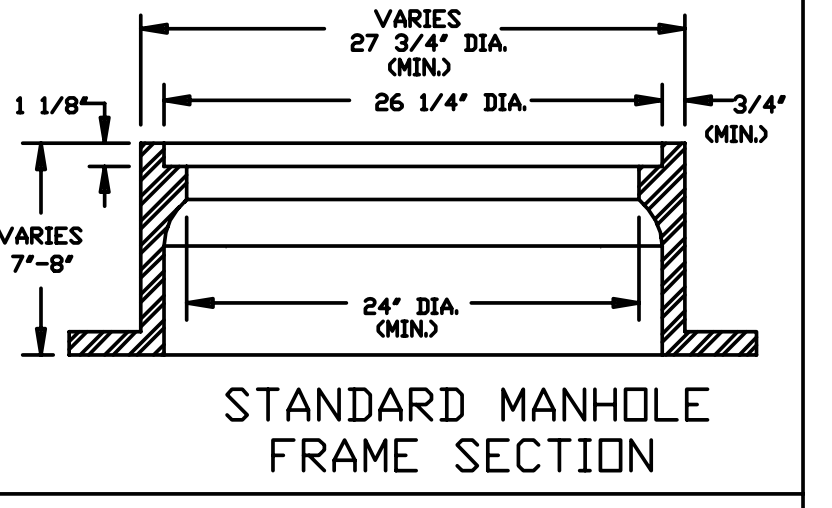
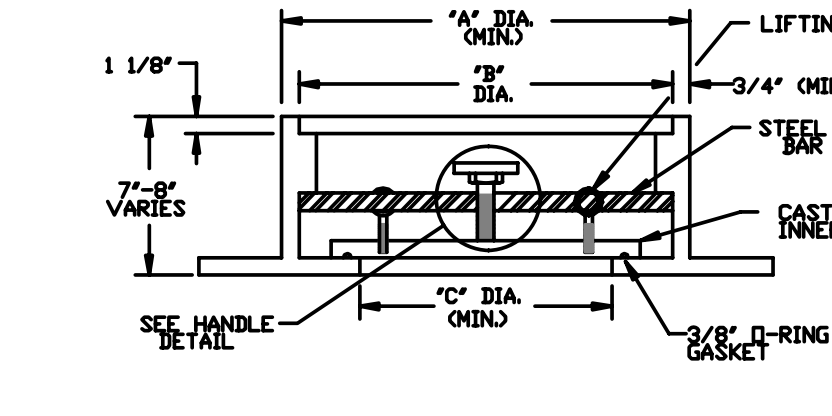


- NOTES:
- MH DIA SHALL BE 48" FOR 18" AND LESSER DIA. PIPE AND 60" FOR 24" THRU 30" DIA.
 - 6" CLASS 'A' CONC. PAD FOR MH'S 12" DP. OR DEEPER. 6" MIN. TH. DLT. #67 DR #7 CRUSHED STONE FOR ALL MH'S.
 - MH STEPS SHALL BE ALUMINUM & ALIGNED OVER INLET OR OUTLET.
 - USE PRE-CAST CONC. RINGS TO BRING GRADE WHERE NECESSARY.
 - PAINT OUTSIDE WALLS W/ (2) COATS OF BITUMINUS PAINT APPLIED @ RIGHT ANGLES TO EA OTHER IF SPECIFIED BY ENGINEER.
 - COAT OUTSIDE OF ALL JOINTS W/ BITUMINUS ROOFING MAT'L.
 - FLEXIBLE COUPLINGS REQ'D. WHEN INSTALLING MH. AT AN EXISTING SEWER MAIN.



WATERTIGHT MANHOLES SHALL BE ANY OF THE FOLLOWING:
 NEENAH
 VULCAN
 JOHN BOUCHARD
 R-1755-E
 V 2150-70
 1123



- NOTES:
- 'A' - STUD TO BE THREADED INSERT A MIN. OF 1" (PER MFG'S. SPECS.)
 - 'B' - STUD TO BE SUFFICIENT LENGTH FOR FULL ATTACHMENT OF ALL HARDWARE

ATTACHMENT OF MANHOLE COVER FRAME TO MANHOLE

CITY OF MARYVILLE

GENERAL UTILITY NOTES:
 All sewer and water extensions shall be built in accordance with the RULES, REGULATIONS, RATES, AND POLICIES of the City of Maryville, Water Quality Control Department, Maryville, Tennessee. Copies are available from the City of Maryville (CDD) and on file with the Tennessee State Department of Health and Environment.
 In cases of conflict the City of Maryville CDD regulations shall rule.
 It shall be the developers and contractors responsibility to obtain and follow the regulations of the City of Maryville.
 Easements shall exist as per the subdivision plat or recorded easements documents. If the necessary easements are not in place the developer shall obtain and furnish the City of Maryville with easements for the portions or utility lines that cross private property. The easement documents shall be reviewed by the City of Maryville for acceptability prior to signatures. All easement documents shall be recorded prior to construction of the utility lines.
 All water and sewer lines shall be laid in undisturbed native soil whenever practical.
 At the Junction of all undisturbed soil and fill sections of the pipe trench the backfill material shall be divided by an impermeable section of fill (e.g. compacted clay) around the installed pipe to prevent piping of water through the pipe bedding.

Utilities crossing under other utilities shall be back filled with compacted No. 7 stone to the spring line of the upper utility to prevent settling of the utility. Any utility trench within the roadway line zone shall be totally backfilled with compacted stone as per the CDM requirements.

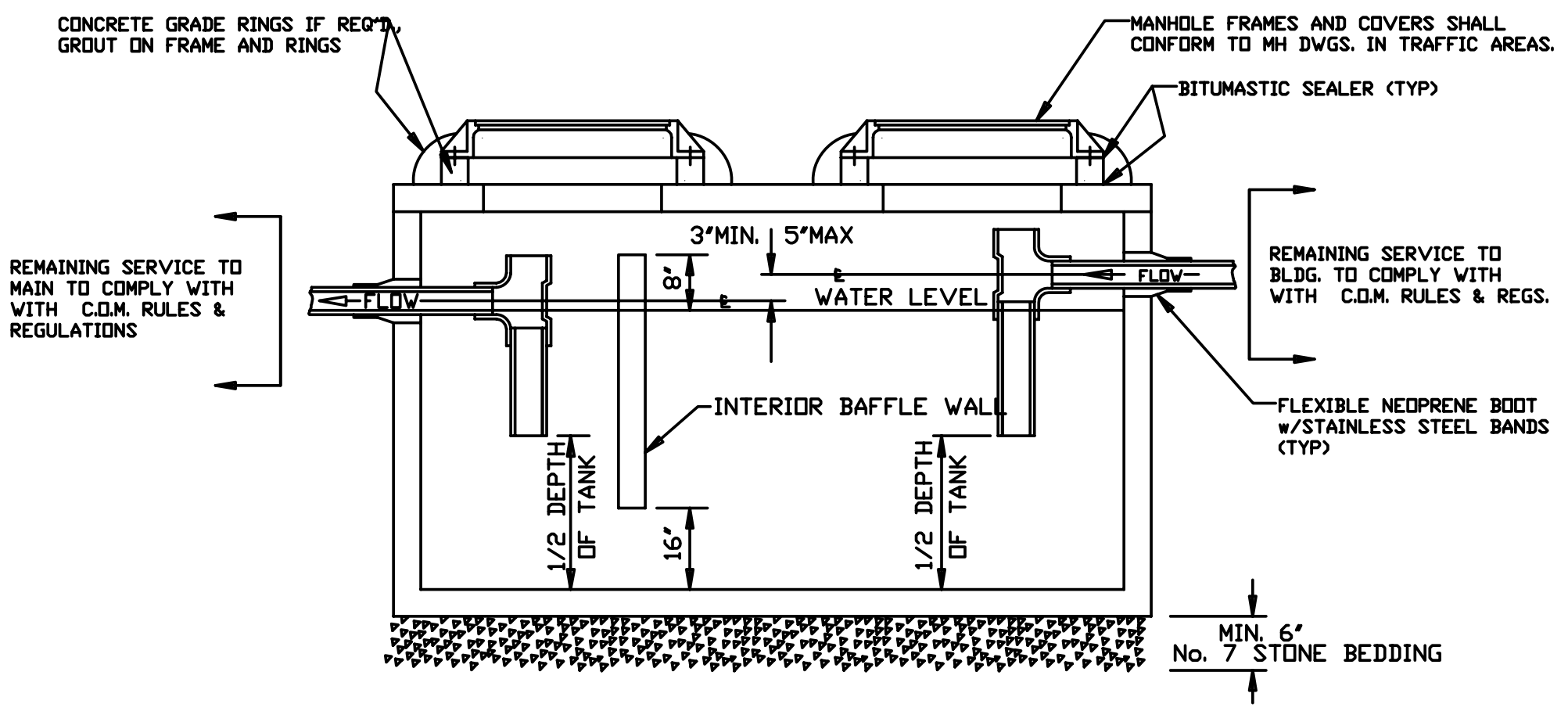
WATER AND SEWER systems shall not be granted final approval by the City of Maryville until 'AS BUILT' drawings have been completed and are acceptable to the City of Maryville.

CITY OF MARYVILLE
 SANITARY SEWER SPECIAL NOTES

- SEWERS IN FILL - Sewer lines laid in fill shall be:
- Ductile Iron pipe
 - Installed on piers
- This requirement may be waived in whole or in part by the local utility district if sufficient compaction has been achieved in the fill (SEE STANDARD T-49 sheets)
- MANHOLE DEPTHS - Shall be the contractors responsibility to bring the finish manhole tops into conformance with the finish grade and/or ground surface.
- MANHOLE INVERTS - When the deflection angle in the invert of a manhole exceeds 90 degrees the City of Maryville requires that:
- The inlet invert be at least 2 inches higher than the outlet invert.
 - The channel from the inlet to the outlet shall be formed so no flow enters the main flow stream counter to the main direction of the flow.
- DEEP SEWER LINES - Where the existing cover is more than 16 feet over the proposed sewer line the ground must be graded to less than 16 feet of cover over the proposed sewer line prior to sewer construction or the sewer line must be constructed of ductile iron pipe. In all cases where the final cover over the sewer line is greater than 16 feet, the sewer line shall be constructed of ductile iron pipe.
- SHALLOW SEWER LINES - Where the existing cover depth is less than 2 1/2 feet in open areas or 4 feet in roadways the utility line shall be mortar lined ductile iron pipe. Where required by the City of Maryville Concrete encasement shall be used. If fill is used to meet minimum cover requirements, the fill must be in place prior to utility installation.
- VACUUM TESTING - All Manholes will be vacuum tested as per the City of Maryville and State of Tennessee requirements prior to acceptance.
- CHECK DAMS - Check dams shall be installed in the bedding and backfill at all junctions of fill and native soil, and upstream of each manhole to limit the trench drain effect of the gravel bedding. The maximum spacing between check dams shall be 500 feet. Check dams shall consist of compacted clay bedding and backfill at least three feet thick to the top of the trench and cut into the walls of the trench two feet. Alternate construction is to use concrete for the check dams with the concrete keyed into the trench walls two feet.
- TEES AND LATERALS - All tees and laterals connected to mortar lined ductile iron pipe sewer mains and all laterals connected to manholes 16 feet or more in depth shall be mortar lined ductile iron construction.
- MANHOLE COUPLINGS - All manholes couplings (boots) shall be 'Steel Band Fernco Boots' wherever the slope of the line entering or exiting the manhole is 10% or greater.
- TRENCH BOTTOM CONDITIONS - Trench bottom may be required to be undercut to a firm base and back filled with stone to prevent settling in areas of unsatisfactory material. Such a determination will be made by the City of Maryville at the time of construction.

SPECIFICATIONS:

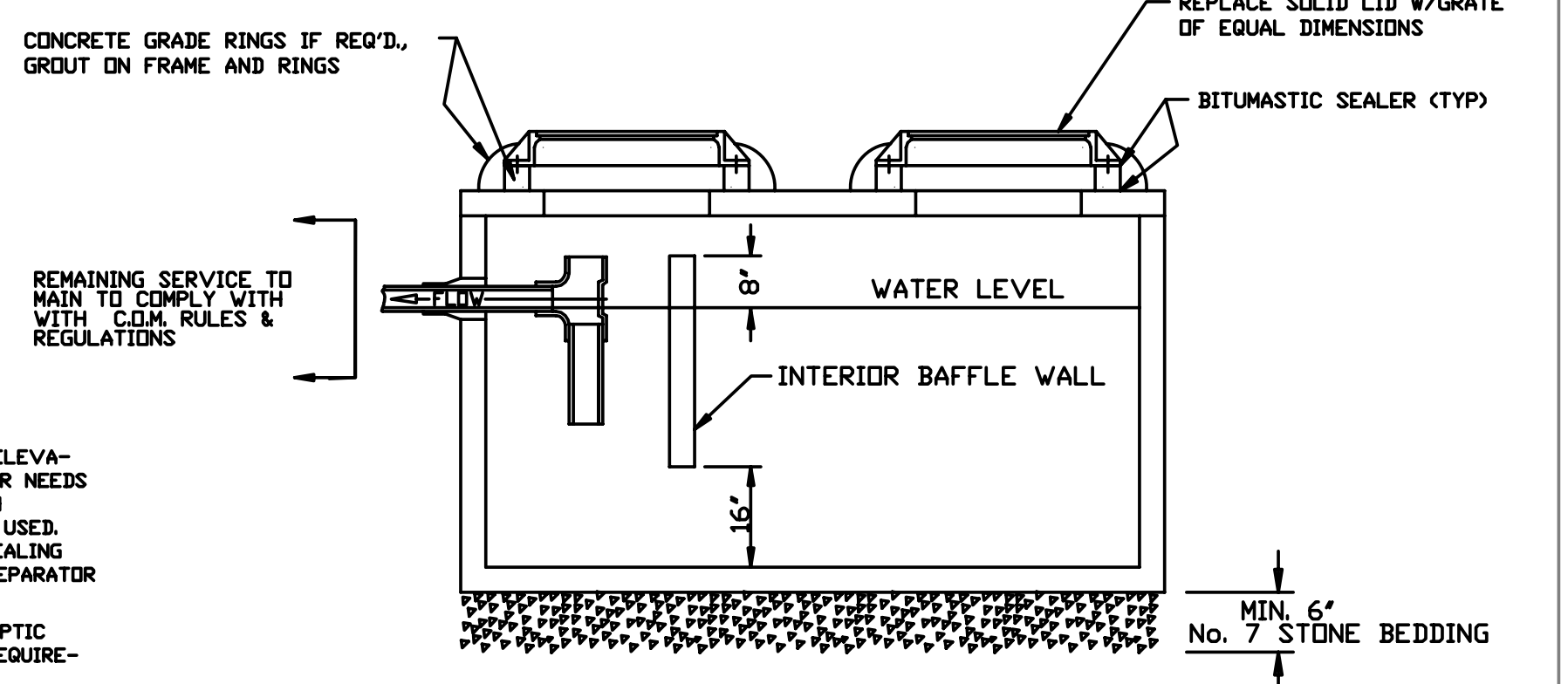
- STRUCTURAL DESIGN: THE TANK SHALL BE DESIGNED TO REMAIN WATERTIGHT AND STRUCTURALLY SOUND WITHOUT CRACKING UNDER THE MAXIMUM COVER HEIGHT OF 5.5' ABOVE THE OUTLET INVERT WATER TABLE AT THE GROUND SURFACE, AND NO WATER IN THE TANK. THE DESIGN MUST SHOW THAT WATERTIGHT INTEGRITY IS ACHIEVED THROUGH THE USE OF QUALITY CONCRETE RATHER THAN THROUGH AN IMPERVIOUS BARRIER. USE OF INTERIOR OR EXTERIOR COATINGS IS NOT ACCEPTABLE AS A PRIMARY WATERTIGHTNESS SYSTEM.
- INTERNAL PLUMBING: NEOPRENE BOOTS WITH STAINLESS STEEL LOCKING BANDS SHALL BE USED ON ALL INLET AND OUTLET PIPING TO ENSURE A WATERTIGHT SEAL BETWEEN THE TANK WALL AND THE INLET AND OUTLET PIPING.
- RISERS AND MH FRAME AND COVER: WHEN THE ELEVATION OF THE TOP OF THE GREASE TRAP MH COVER NEEDS TO BE RAISED, CONCRETE GRADE RINGS SEALED WITH SELF-ADHERING ASPHALT SEALING STRIPS SHALL BE USED. MH FRAME SHALL ALSO BE SEALED WITH ASPHALT SEALING STRIPS AND BOLTED AND GROUTED ONTO THE GREASE TRAP TOP OR GRADE RINGS.
- MINIMUM REQUIREMENTS: PRE-CAST CONCRETE SEPTIC TANKS SHALL ALSO MEET THE FOLLOWING MINIMUM REQUIREMENTS:
 - PRE-CAST REINFORCED CONCRETE WALLS AND TOPS SHALL HAVE A MINIMUM THICKNESS OF THREE (3) INCHES.
 - SECTIONS SHALL BE CURED FOR 24 HRS. MINIMUM.
 - SELF-ADHERING ASPHALT SEALANT STRIP SHALL BE USED FOR SEALING ALL TANK JOINTS.
 - THE MAXIMUM WATER-TO-CEMENT RATIO SHALL BE 0.45.
- CEMENT: THE CEMENT SHALL BE PORTLAND CEMENT CONFORMING TO THE CURRENT ASTM SPECIFICATION C-150, TYPE I PORTLAND, NORMAL, GREY COLOR TYPE III PORTLAND. GREY COLOR SHALL BE USED WHERE HIGH EARLY STRENGTH CONCRETE IS SPECIFIED.
- TEST FOR WATERTIGHT INTEGRITY:
 - THE ENVIRONMENTAL COMPLIANCE INSPECTOR RESERVES THE RIGHT TO WATER TEST ANY TANK FOR WATER-TIGHTNESS, AT THE CONTRACTORS EXPENSE. TESTS SHALL BE PERFORMED UPON INSTALLATION PRIOR TO FINAL BACKFILLING. THE INTENT OF THE TEST IS TO ENSURE WATERTIGHT GREASE TRAPS UNDER GROUNDWATER CONDITIONS.
 - THE WATER TEST WILL BE PERFORMED BY FILLING THE TANK AND ATTACHED RISER WITH WATER TO A HEIGHT OF TWO (2) FEET ABOVE THE RISER-TO-TANK CONNECTION. ANY LEAKAGE WITHIN 24 HOURS CONSTITUTES FAILURE OF THIS TEST.



GREASE TRAP DETAIL

SPECIFICATIONS:

- STRUCTURAL DESIGN: THE TANK SHALL BE DESIGNED TO REMAIN WATERTIGHT AND STRUCTURALLY SOUND WITHOUT CRACKING UNDER THE MAXIMUM COVER HEIGHT OF 5.5' ABOVE THE OUTLET INVERT WATER TABLE AT THE GROUND SURFACE, AND NO WATER IN THE TANK. THE DESIGN MUST SHOW THAT WATERTIGHT INTEGRITY IS ACHIEVED THROUGH THE USE OF QUALITY CONCRETE RATHER THAN THROUGH AN IMPERVIOUS BARRIER. USE OF INTERIOR OR EXTERIOR COATINGS IS NOT ACCEPTABLE AS A PRIMARY WATERTIGHTNESS SYSTEM.
- INTERNAL PLUMBING: NEOPRENE BOOTS WITH STAINLESS STEEL LOCKING BANDS SHALL BE USED ON ALL INLET AND OUTLET PIPING TO ENSURE A WATERTIGHT SEAL BETWEEN THE TANK WALL AND THE INLET AND OUTLET PIPING.
- RISERS AND MH FRAME AND COVER: WHEN THE ELEVATION OF THE TOP OF THE GRIT SEPARATOR MH COVER NEEDS TO BE RAISED, CONCRETE GRADE RINGS SEALED WITH SELF-ADHERING ASPHALT SEALING STRIPS SHALL BE USED. MH FRAME SHALL ALSO BE SEALED WITH ASPHALT SEALING STRIPS AND BOLTED AND GROUTED ONTO THE GRIT SEPARATOR TOP OR GRADE RINGS.
- MINIMUM REQUIREMENTS: PRE-CAST CONCRETE SEPTIC TANKS SHALL ALSO MEET THE FOLLOWING MINIMUM REQUIREMENTS:
 - PRE-CAST REINFORCED CONCRETE WALLS AND TOPS SHALL HAVE A MINIMUM THICKNESS OF THREE (3) INCHES.
 - SECTIONS SHALL BE CURED FOR 24 HRS. MINIMUM.
 - SELF-ADHERING ASPHALT SEALANT STRIP SHALL BE USED FOR SEALING ALL TANK JOINTS.
 - THE MAXIMUM WATER-TO-CEMENT RATIO SHALL BE 0.45.
- CEMENT: THE CEMENT SHALL BE PORTLAND CEMENT CONFORMING TO THE CURRENT ASTM SPECIFICATION C-150, TYPE I PORTLAND, NORMAL, GREY COLOR TYPE III PORTLAND. GREY COLOR SHALL BE USED WHERE HIGH EARLY STRENGTH CONCRETE IS SPECIFIED.
- TEST FOR WATERTIGHT INTEGRITY:
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 - THE WATER TEST WILL BE PERFORMED BY FILLING THE TANK AND ATTACHED RISER WITH WATER TO A HEIGHT OF TWO (2) FEET ABOVE THE RISER-TO-TANK CONNECTION. ANY LEAKAGE WITHIN 24 HOURS CONSTITUTES FAILURE OF THIS TEST.



GRIT SEPERATOR DETAIL



WATER QUALITY CONTROL
 CITY OF MARYVILLE
 MARYVILLE, TENNESSEE

DRAWN BY: GEF	TITLE: STANDARD DETAIL DWGS.	SCALE: NONE
APP'D BY: JG	DATE: 1-30-97	SHEET 1 of 2
REV: 6/2/98	DESCRIPTION: SEWER	
		W.O.

6/2/98 general revisions of text size and locations ---
 8/14/98 change note grease trap to std. mh details