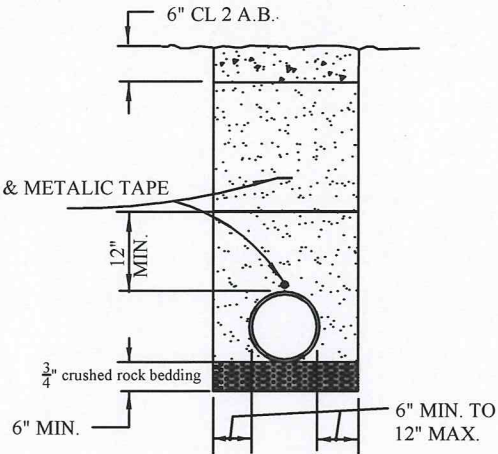
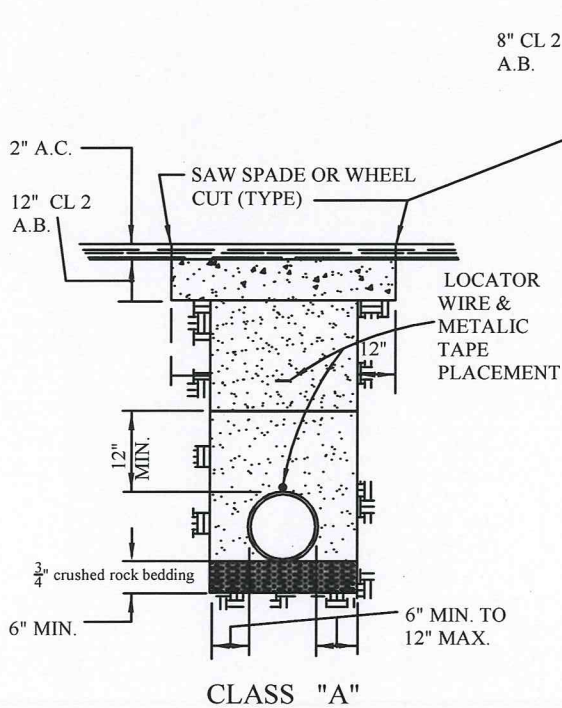


CLASS "C"
OUTSIDE ROAD R/W AND
AT "CROSS COUNTRY AREA"

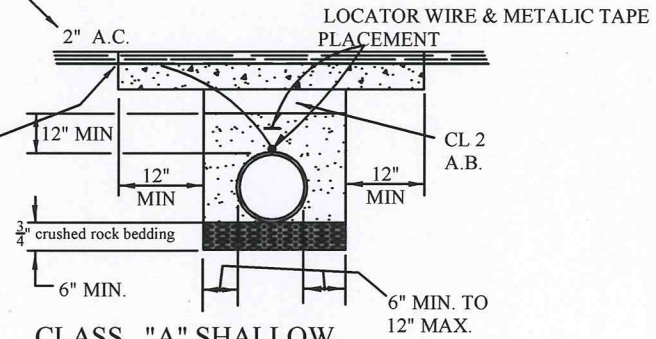


CLASS "B"
WITHIN ROAD R/W, OUTSIDE OF
PAVED SHOULDER & AT DRIVEWAYS

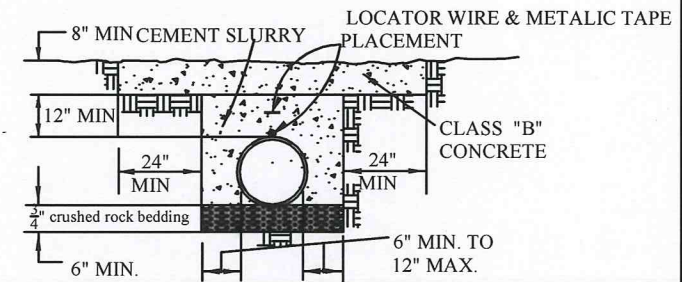
NOTE: CLASS "A" SHALLOW
USED WHERE COVER OVER
PIPE IS LESS THAN 36"



CLASS "A"
WITHIN TRAVELED WAY
AND AT PAVED SHOULDERS



CLASS "A" SHALLOW



STREAM CROSSING

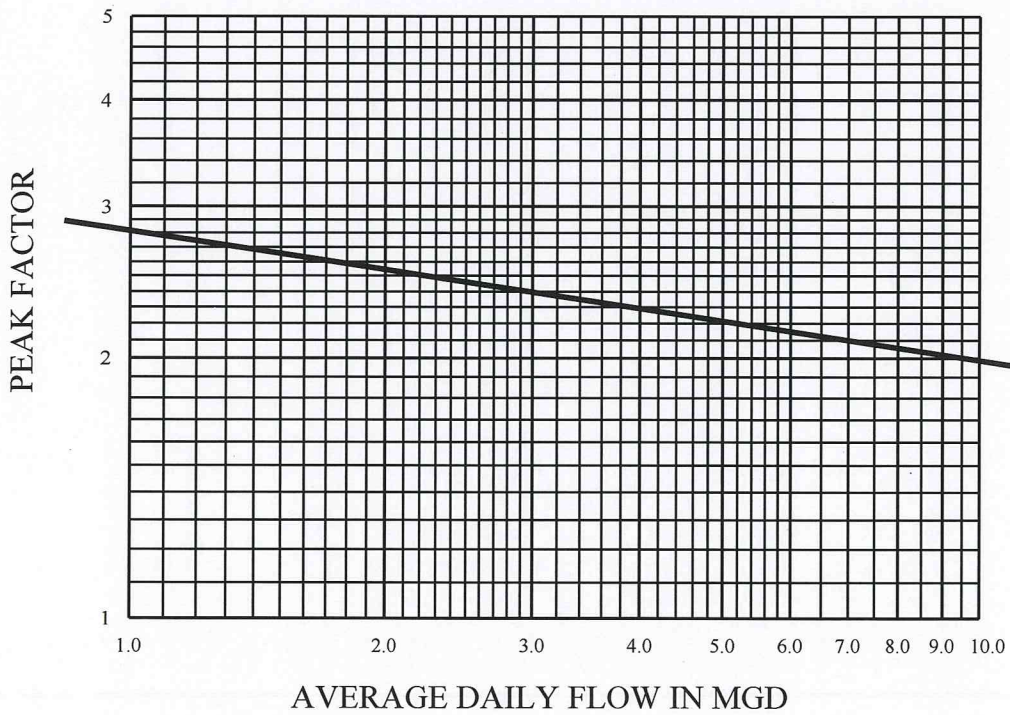
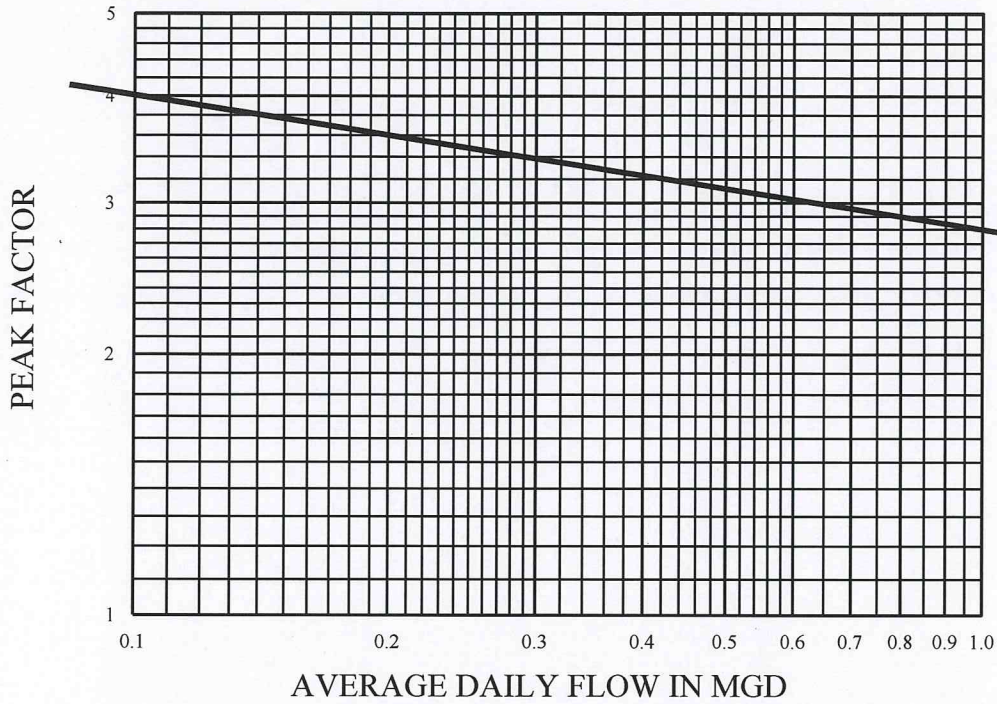
BACKFILL PER SEC 19-3 OF THE STANDARD SPECIFICATIONS
SURFACE REPAIR IN PUBLIC RIGHT OF WAY PER AGENCY

Design: TWSD
Drawn: MLE
Checked: N.STAR
Date: 19 Feb 2008

**TYPICAL TRENCH
SECTIONS (SEWER)**

**Thermalito
Water and
Sewer
District**

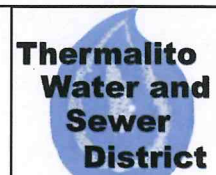
DWG. NO.
S 1



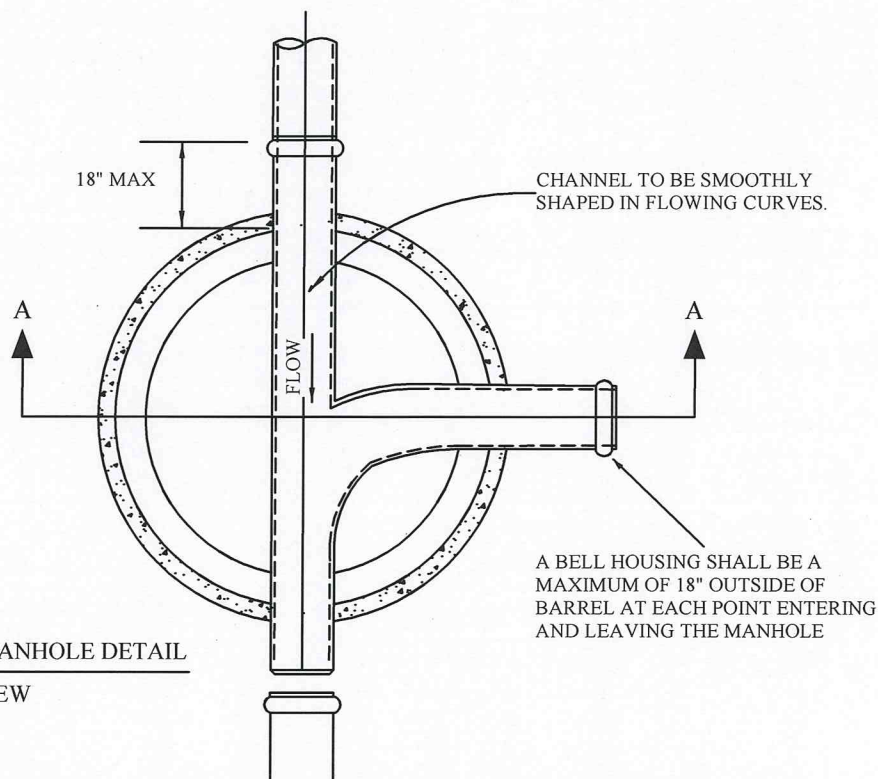
NOTE: FOR Q IN MGD: $PF = 2.80Q^{-0.155}$
 FOR Q IN GPM: $PF = 7.717Q^{-0.155}$

Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

DESIGN FLOW PEAK FACTOR
 FOR NEW CONSTRUCTION



DWG. NO.
 S 2



SANITARY SEWER MANHOLE DETAIL
PLAN VIEW

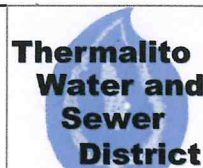
NOTES:

1. THE INVERT OUT OF THE MANHOLE SHALL BE 0.10 FEET BELOW THE INVERT (S) INTO THE MANHOLE.
2. THE ELEVATION OF EACH INLET PIPE SHALL BE SET BY ADJUSTING THE GRADE OF THE INLET PIPE OR EMPLOYING A VERTICAL CURVE TO MAINTAIN THE 0.10 FOOT DROP.
3. IF THE ELEVATION DIFFERENCE BETWEEN THE INLET AND OUTLET IS TO EXCEED 12-INCHES, A DROP MANHOLE SHALL BE USED.
4. MANHOLE CHANNELS MUST TRANSITION SMOOTHLY AND ACCOMMODATE CAMERA EQUIPMENT
5. MANHOLE BASE SHALL BE PRE-CAST EXCEPT AS ALLOWED UNDER NOTE #5.
6. A CAST-IN-PLACE BASE MAY BE USED ONLY IF CONDITIONS PRECLUDE THE USE OF A PRE-CAST BASE AND ONLY WITH THE PRIOR APPROVAL OF THE DISTRICT. A CAST-IN-PLACE BASE SHALL MEET THE FOLLOWING REQUIREMENTS:
 - A. THE BASE SHALL BE CAST IN A SINGLE POUR.
 - B. ALL CONCRETE USED SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI AND A SLUMP OF 2 INCHES.
 - C. THE BARREL OR A RING FORM TEMPLATE MUST BE USED TO MAKE AN INDENTATION IN THE BASE OR, AT THE OPTION OF THE CONTRACTOR, THE FIRST BARREL MAY BE PLACED DIRECTLY IN THE WET BASE AND THE CONCRETE MOUNDED 4 INCHES ABOVE THE JOINT AND PACKED TIGHTLY BOTH INSIDE AND OUTSIDE OF BARREL.
7. MANHOLE SHALL BE LEAK TESTED PER DISTRICT SPECIFICATIONS

NOTE: CONTINUED ON SHEET 2 OF 3

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 Date: 19 Feb 2008

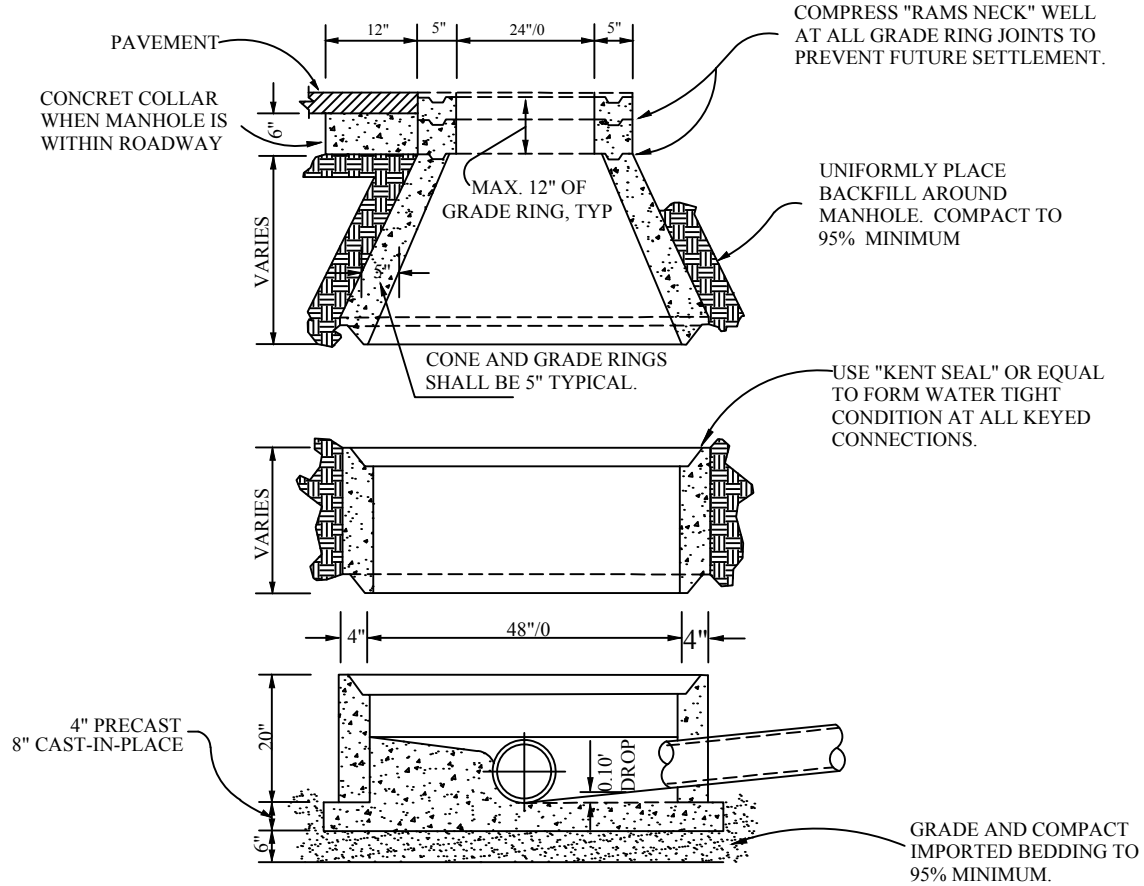
**SANITARY SEWER
 MANHOLE**



DWG. NO.
S 3
 SHEET
 1 OF 3

NOTES CONTINUED:

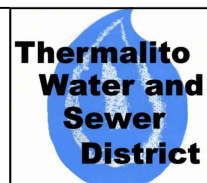
7. FINAL RIM ELEVATION OF MANHOLE TO BE ESTABLISHED IN FIELD.
8. TOP OF MANHOLE TO BE FITTED WITH STANDARD TID CAST IRON COVER ASSEMBLY.
9. WHEN MANHOLE IS LOCATED OUTSIDE OF PAVED AREAS, CEMENT GROUT SHALL BE PLACED AROUND CIRCUMFERENCE OF CASTING AND UPPERMOST GRADE RING AS DIRECTED BY THE DISTRICT.



SECTION A VIEW
SANITARY SEWER MANHOLE DETAIL

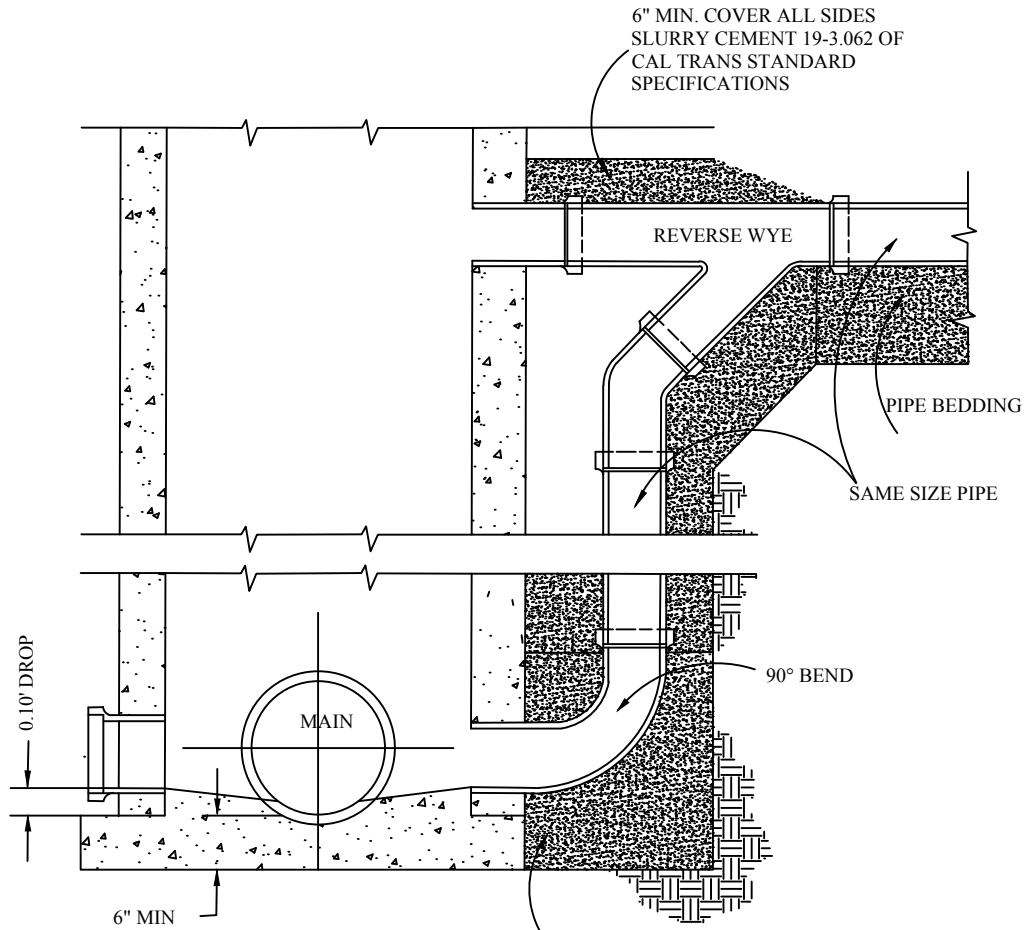
Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

SANITARY SEWER
MANHOLE



DWG. NO.
S 3
SHEET
2 OF 3

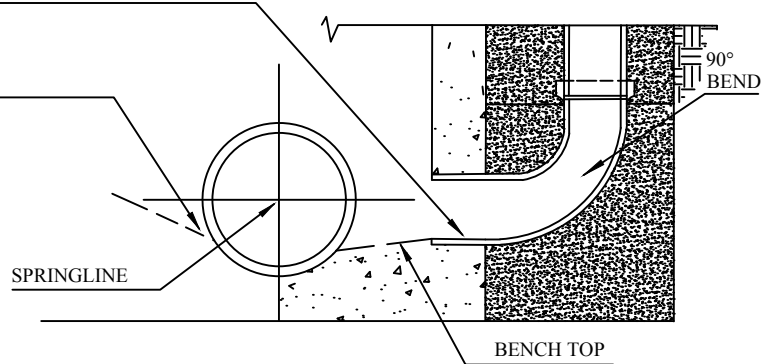
TYPICAL STUB AND DROP MANHOLE



1. 90° BEND MAY BE CORED ABOVE BENCH TOP WITH PRIOR APPROVAL FROM DISTRICT IF A STUB DOES NOT EXIST IN EXISTING MANHOLE BASE

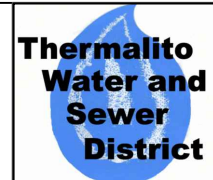
ENCASEMENT CONCRETE SHALL BE Poured AGAINST UNDISTURBED EARTH OR APPROVED BACKFILL MATERIAL.

- 2. WHEN POURING BASE IN PLACE BENCH MUST TERMINATE BELOW SPRINGLINE.
- 3. BENCH SLOPE TO BE BETWEEN 20° & 40°.
- 4. ALL MANHOLE PENETRATIONS SHALL BE CORE DRILLED AND SHALL BE A MINIMUM OF 2" IN DIA. LARGER THAN PIPE.

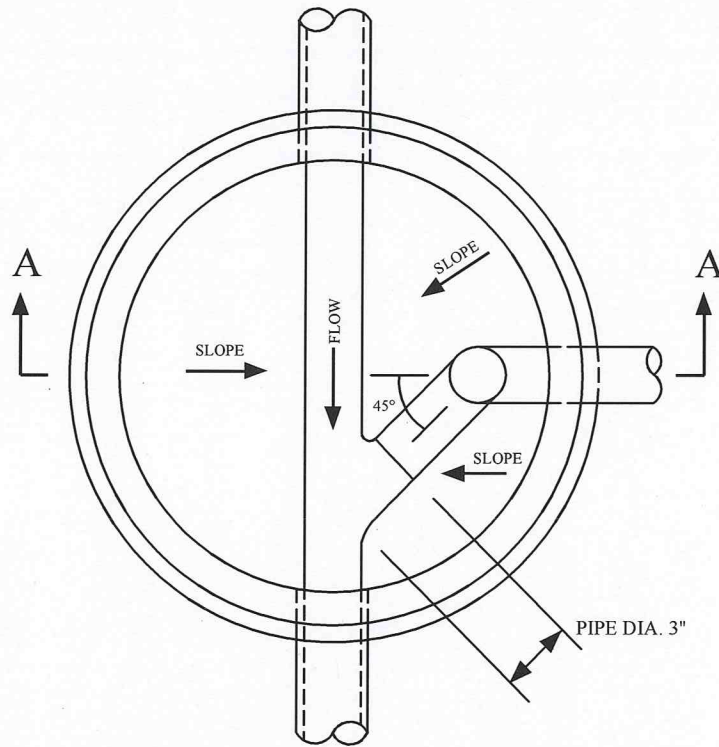


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 Date: 19 February 2008

48" DROP MANHOLE



DWG. NO.
 S 4



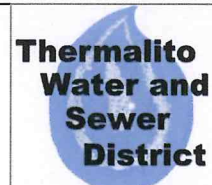
OPTIONAL DROP CONNECTION DETAIL

NOTES:

1. INSIDE DROP CONNECTION MAY BE USED ONLY WHEN CONNECTING A NEW PIPE TO AN EXISTING MANHOLE AND WHEN PHYSICAL CONSTRAINTS MAKE IT IMPRACTICAL FOR CONSTRUCTION OF A STANDARD OUTSIDE DROP CONNECTION.
2. ALL INSIDE DROP PIPING SHALL BE P.V.C. PIPE , SDR-35
3. DROP CONNECTION PIPE AND FITTINGS TO BE SAME SIZE AS ENTERING PIPE.
4. CLAMPS SHALL BE 1- $\frac{1}{2}$ " X 12 GAGE STAINLESS STEEL, ANCHORED TO MANHOLE WALL WITH 2- $\frac{1}{2}$ " CADMIUM PLATED BOLTS.
5. ALL INSIDE DROP CONNECTIONS MUST BE APPROVED BY THE DISTRICT MANAGER.

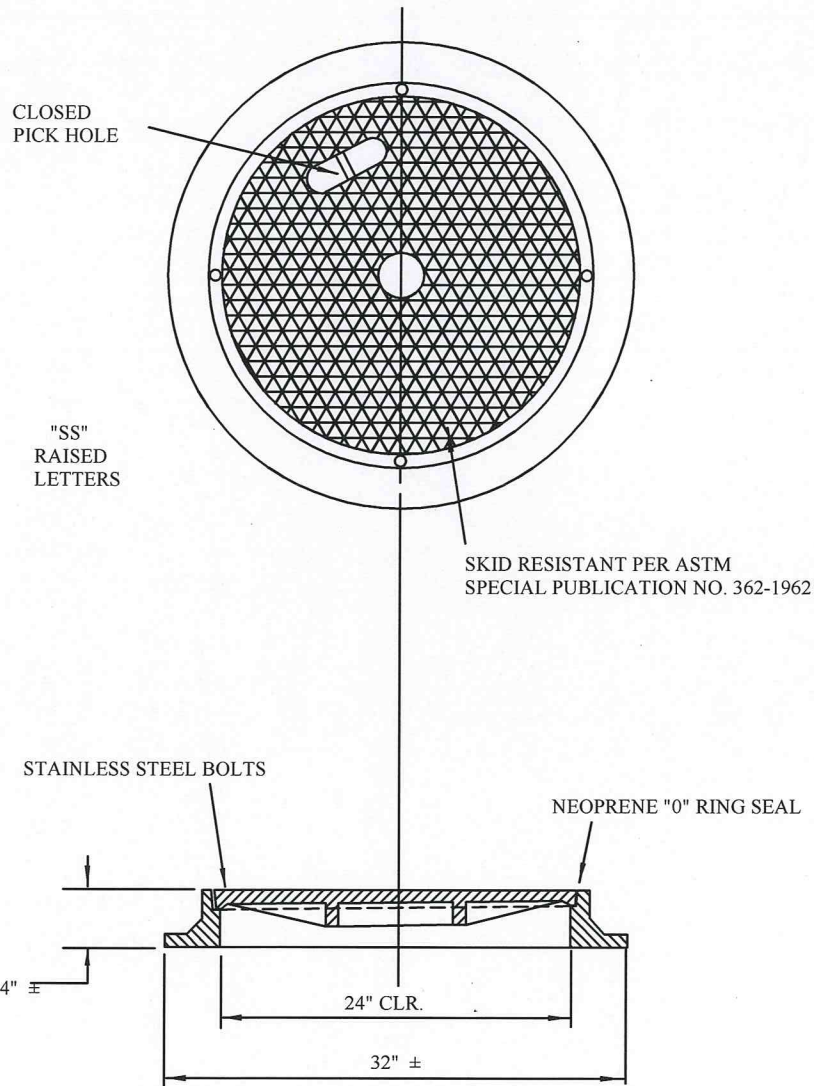
Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

INSIDE DROP CONNECTION
 (4" & 6" ONLY)



DWG. NO.

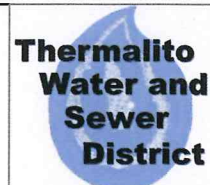
S 5



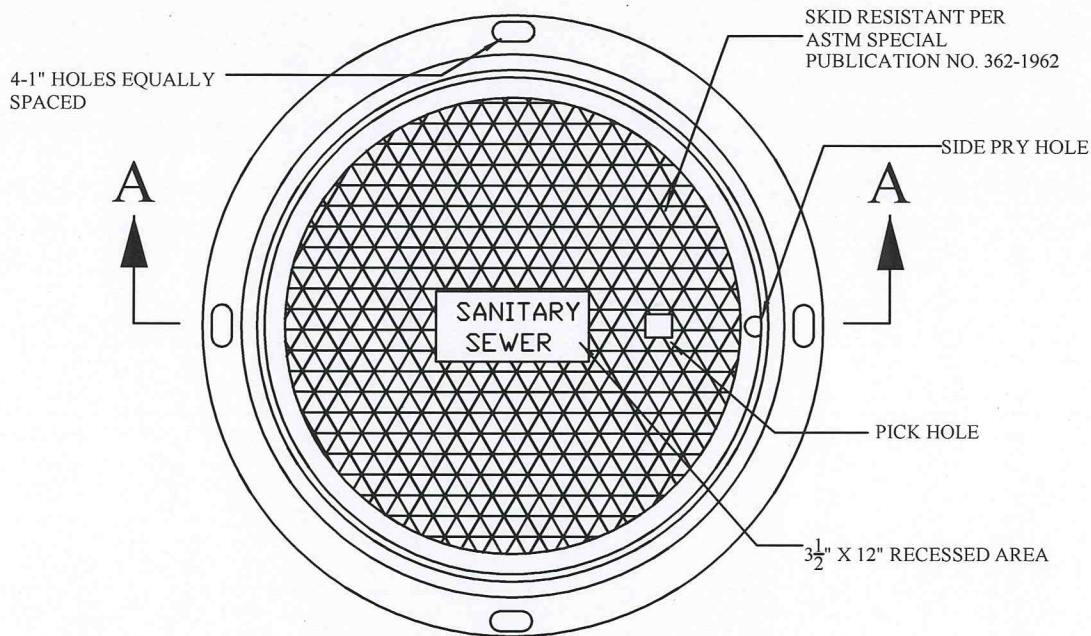
MIN. WT. FRAME & COVER ASSEMBLY = 315 LBS.

Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

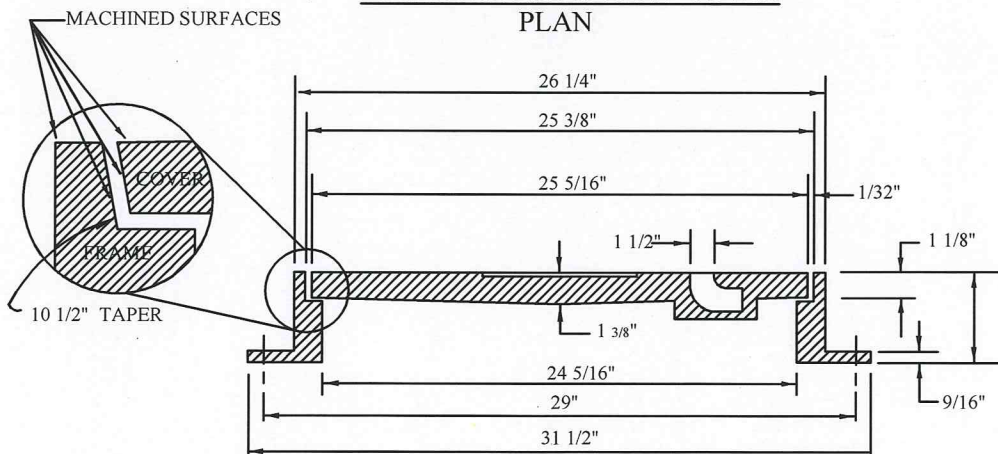
**BOLT DOWN
 MANHOLE COVER**



DWG. NO.
S 6



MANHOLE FRAME AND COVER
PLAN

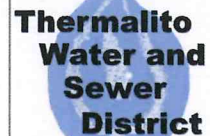


MANHOLE FRAME AND COVER

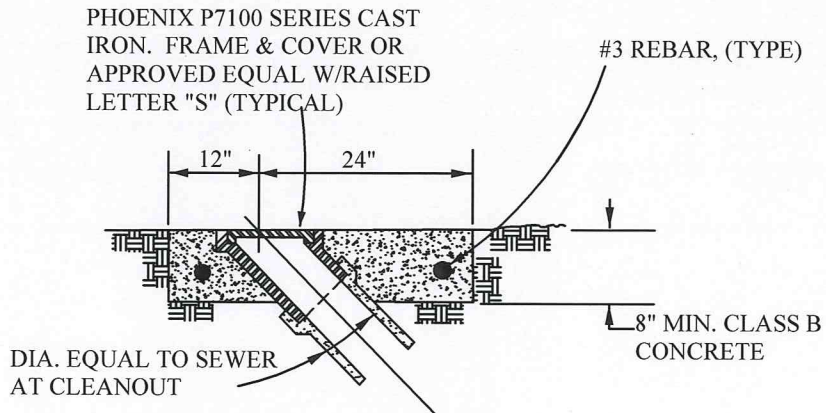
NOTE:
MANHOLE ASSEMBLY, CAST IRON
A-1024 D & L SUPPLY W/BLIND
PICK HOLE TO PREVENT
INFILTRATION (OR APPROVED
EQUAL)

Design: TWSD
Drawn: MLE
Checked: N.STAR
Date: 19 Feb 2008

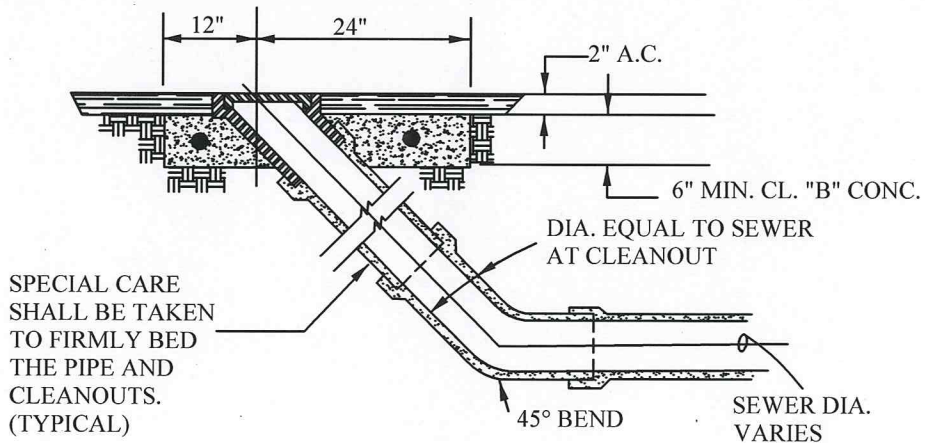
MANHOLE FRAME AND COVER



DWG. NO.
S 7



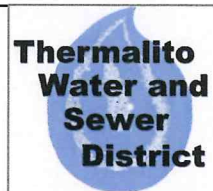
CLASS "B" & "C" TRENCH



CLASS "A" TRENCH

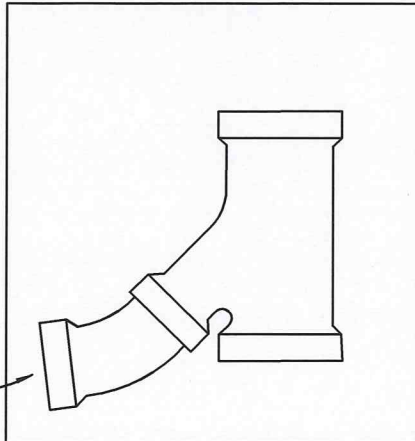
Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

CLEANOUT TO GRADE

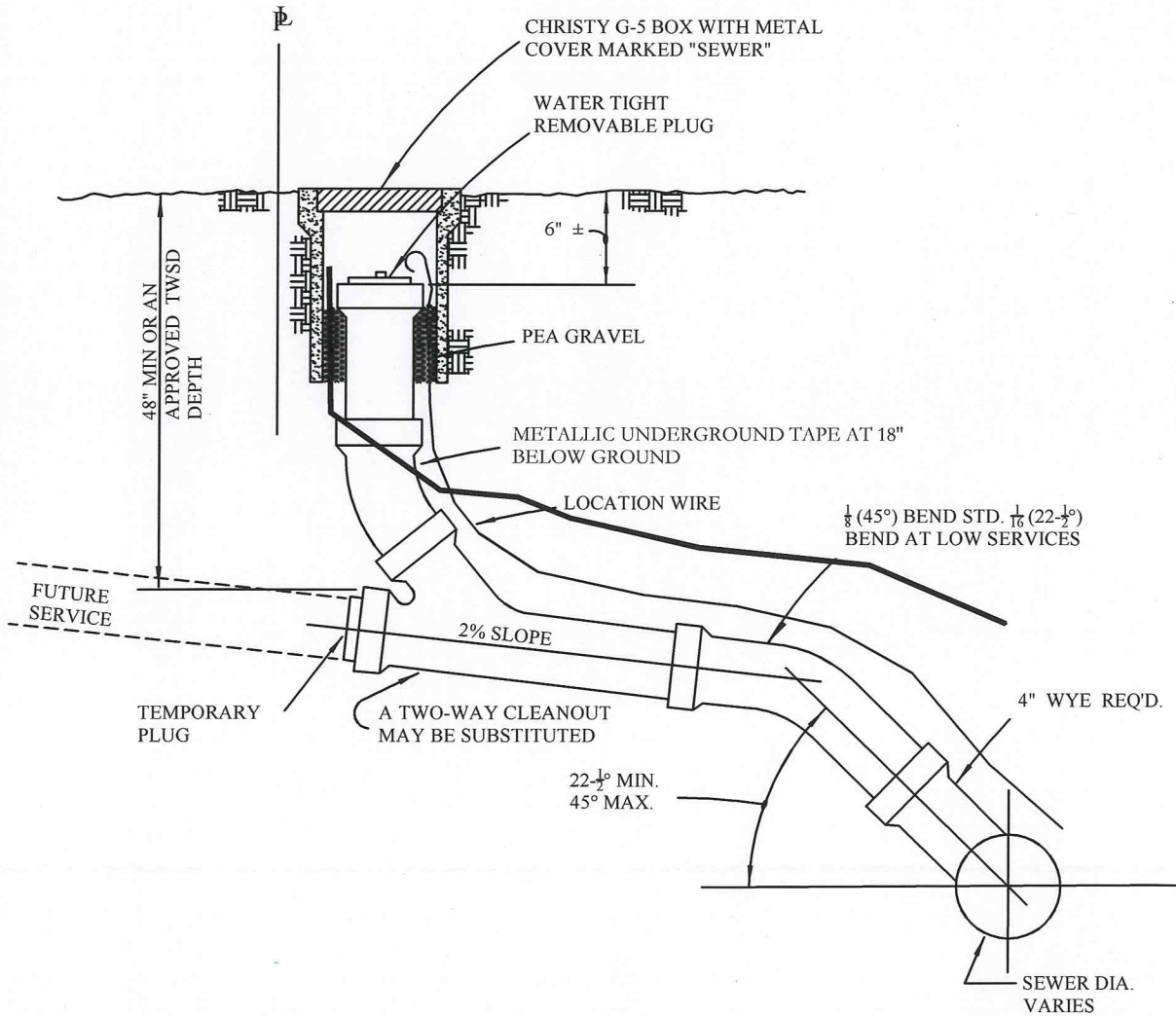


DWG. NO.
 S 8

NEW CONSTRUCTION SERVICES SHALL BE INSTALLED TO MAIN WITH A WYE AND FITTINGS AS NEEDED

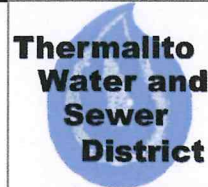


ADD BENDS TO PROVIDE THE TRANSITION FROM MAIN TO SERVICE

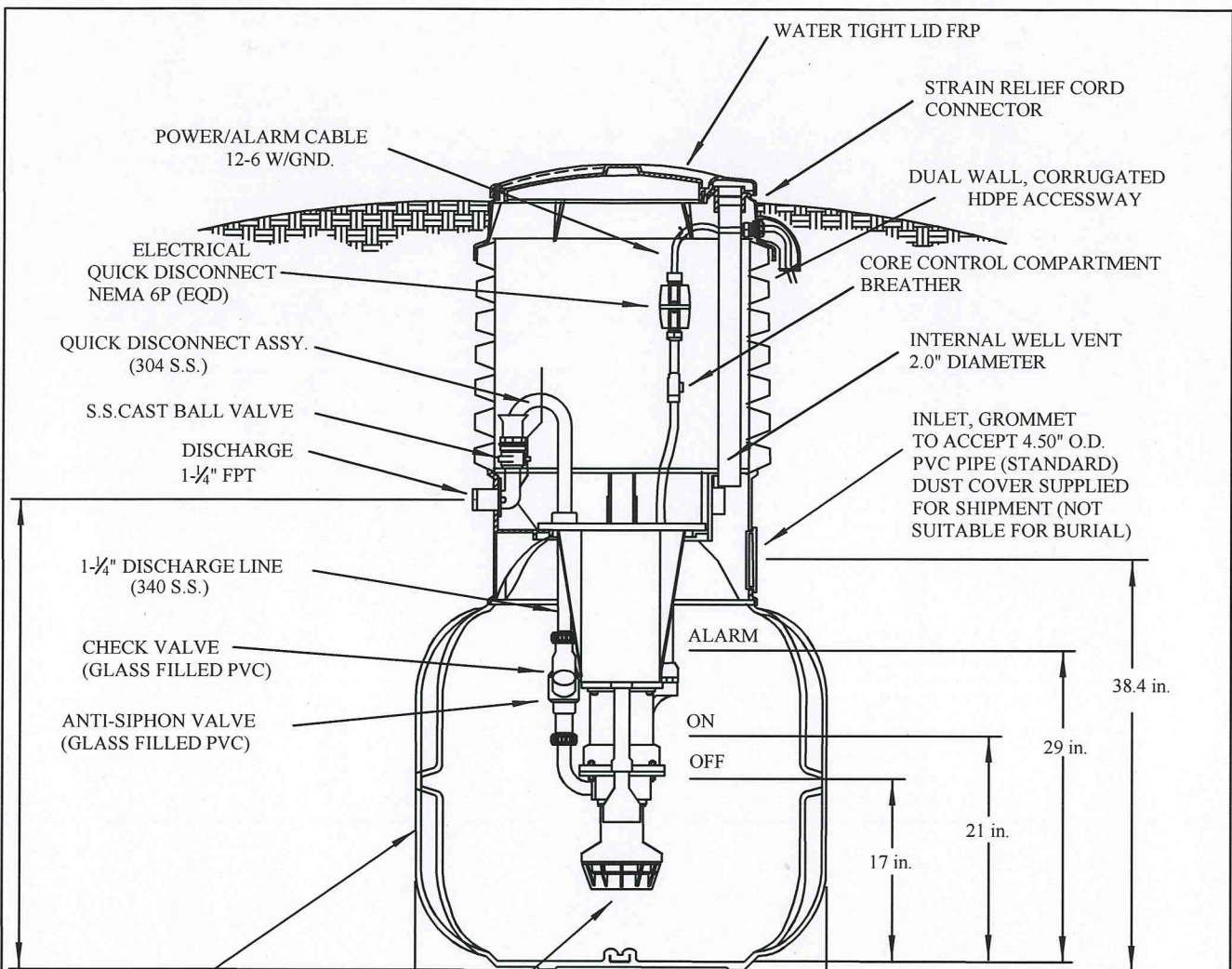


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 Drawn: MLE
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 Date: 19 Feb 2008

TYPICAL SERVICE LATERAL



DWG. NO.
S 9

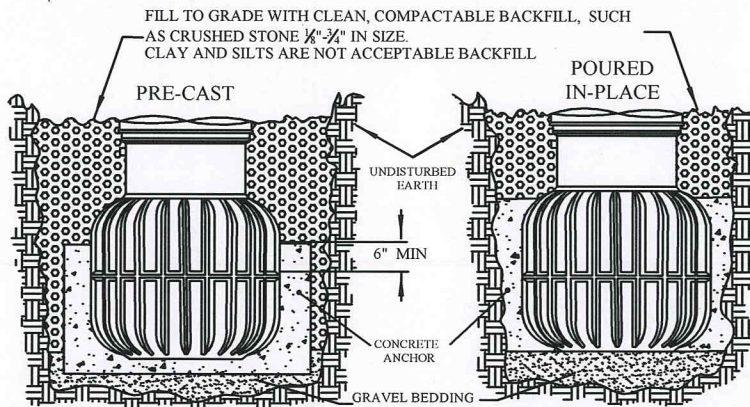


HDPE TANK
 1/2" NOMINAL WALL THICKNESS 150
 GALLON CAPACITY

SEMI-POSITIVE DISPLACEMENT TYPE PUMP
 DIRECTLY DRIVEN BY A 1 HP MOTOR
 CAPABLE OF DELIVERING 9 GPM AT 138'
 T.D.H.

A CONCRETE ANCHOR IS REQUIRED ON ALL
 OUTDOOR MODEL 2012 E-ONE STATIONS

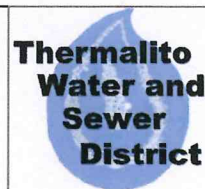
NOTE: A CONCRETE ANCHOR OF 3300 LBS. IS REQUIRED
 ON ALL MODEL 2012 STATIONS.



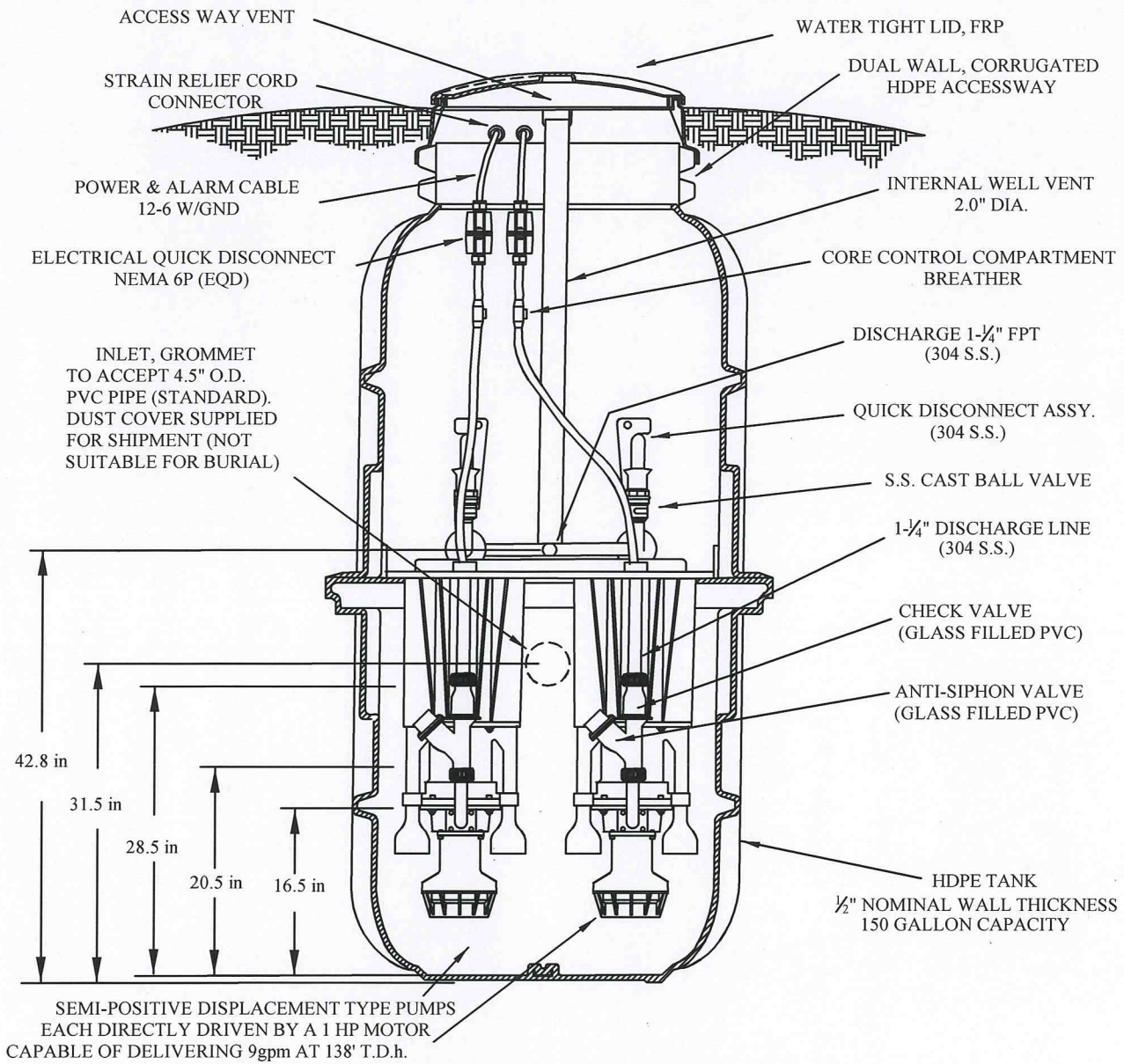
THE E-ONE SYSTEM REQUIRED OR AN APPROVED EQUAL

Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

RESIDENTIAL GRINDER PUMP ASSEMBLY

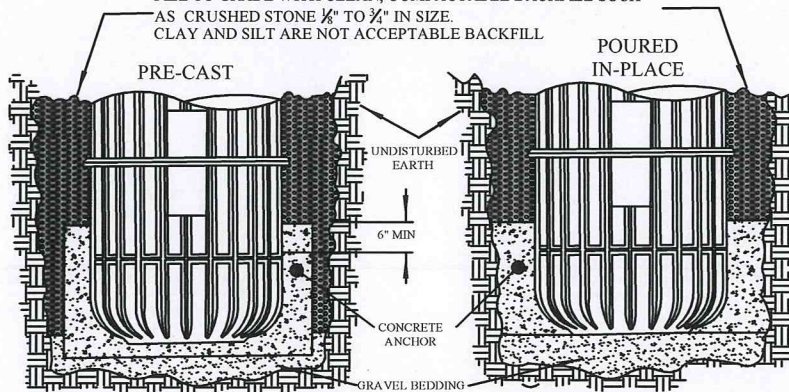


DWG. NO.
 S 10



NOTE: A CONCRETE ANCHOR OF 4500 LBS IS REQUIRED ON ALL MODEL 2014 STATIONS.

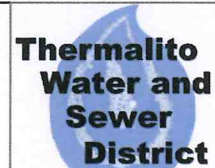
FILL TO GRADE WITH CLEAN, COMPACTABLE BACKFILL SUCH AS CRUSHED STONE 1/8" TO 1/2" IN SIZE. CLAY AND SILT ARE NOT ACCEPTABLE BACKFILL



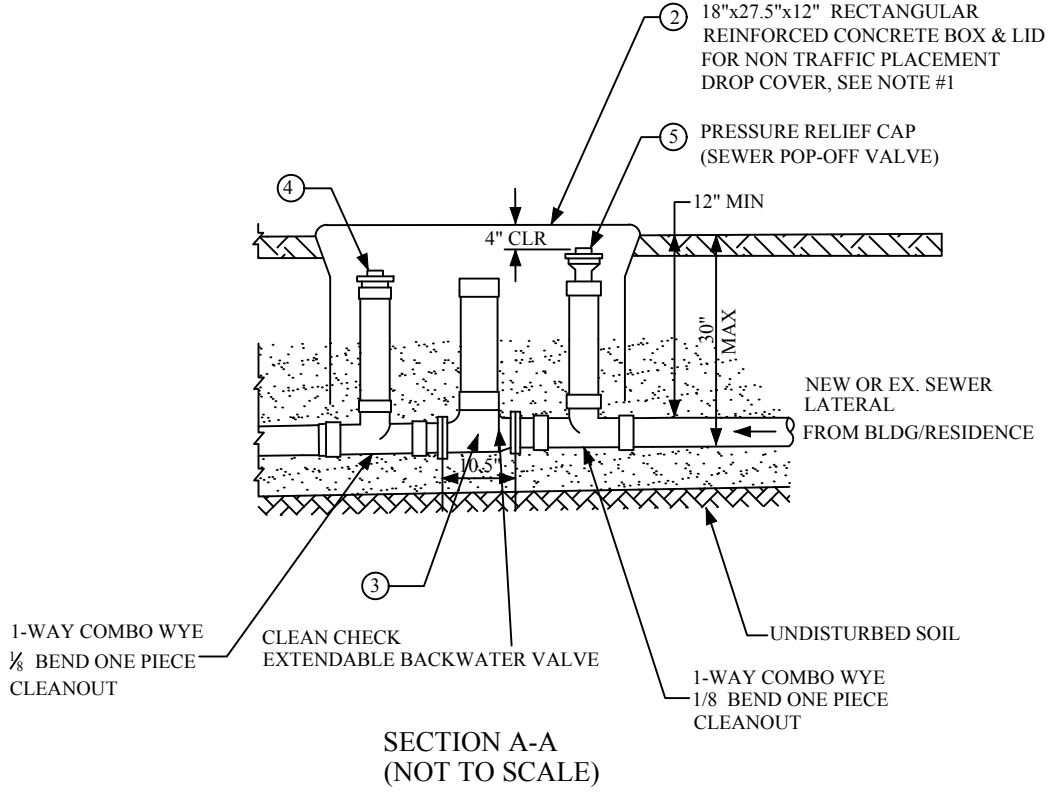
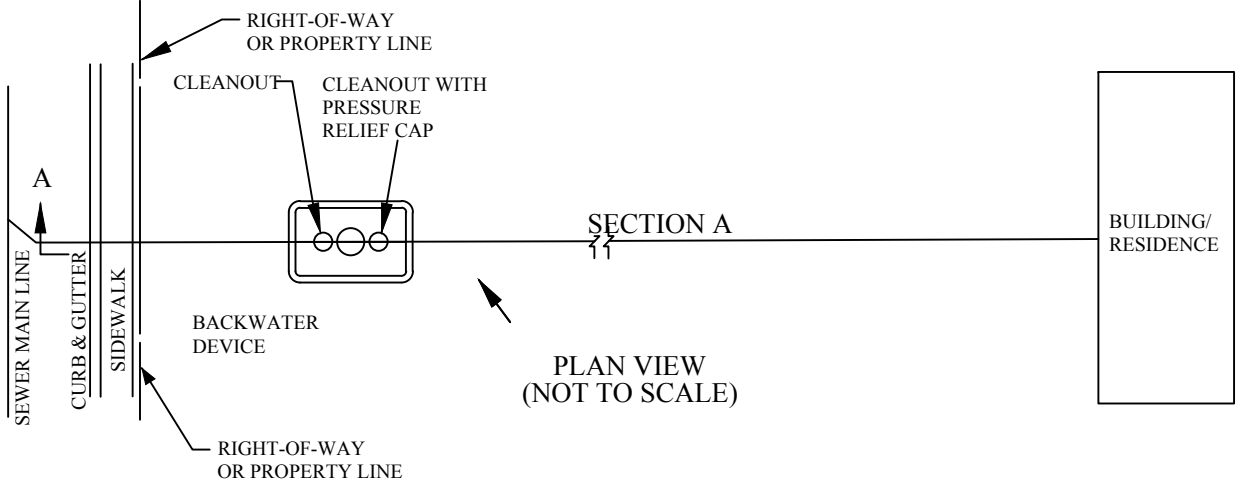
THE E-ONE SYSTEM REQUIRED OR AN APPROVED EQUAL

Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

DUPLEX GRINDER PUMP ASSEMBLY



DWG. NO.
S 11

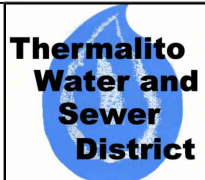


NOTES:

- ① WHEN BACKWATER DEVICE IS INSTALLED IN THE DRIVEWAY, ALLEY OR STREET, TRAFFIC RATED BOX REQUIRED CHRISTY B-30 EQUIVALENT
- ② INSTALL VALVE BOX SO THAT IT IS FLUSH WITH EXISTING PAVEMENT OR SIDEWALK SURFACE AND 1" ABOVE GRADE WHEN INSTALLED IN LANDSCAPE AREA.
- ③ PVC CLEAN CHECK EXTENDABLE BACKWATER DEVICE BY RECTORSEAL OR OTHER DISTRICT APPROVED MFG
- ④ CLEANOUT PLUG (SDR-35) THREADED.
- ⑤ CLEANOUT WITH AN APPROVED PRESSURE RELIEF CAP.
- ⑥ PIPING SHALL BE PER U.P.C. 708.0: SDR-35 PVC.

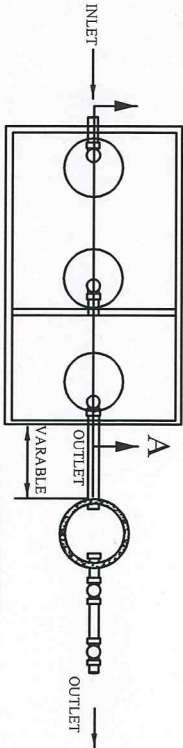
Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 1 Mar 2009

**4" BACKWATER DEVICE
 INSTALLATION**



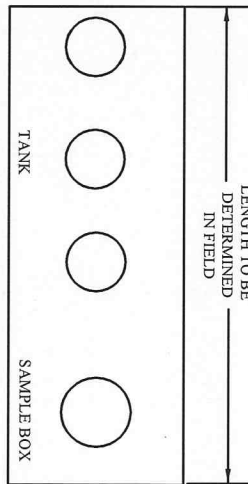
DWG. NO.
S 12

- REQUIREMENTS:
1. SIZE AND LOCATION OF INTERCEPTOR TO BE APPROVED PRIOR TO INSTALLATION, MIN. TANK SIZE SHALL BE 1,000 GALLONS.
 2. INTERCEPTOR TO HAVE:
 - a. SAMPLE BOX
 - b. SANITARY TEE: INSIDE SAMPLE BOX, DISCHARGE SIDE
 - c. VENT
 - d. CLEANOUT PRIOR TO LATERAL CONNECTION
 - e. MANHOLE AT EACH INTERNAL BAFFLE TUBE - NO MORE THAN 10' BETWEEN MANHOLES
 3. INSPECTION OF INTERCEPTOR:
 - a. ALL CONNECTIONS TO INTERCEPTOR TO BE INSPECTED BY TWSO PRIOR TO BACKFILL
 - b. INTERCEPTOR TO BE FILLED WITH WATER PRIOR TO INSPECTION, PER MANUFACTURERS INSTRUCTION OR REQUEST.
 4. ALL MANHOLES AND SAMPLE BOXES TO BE INSTALLED A MINIMUM OF 1/2" ABOVE FINISH GRADE/PAVEMENT WITH CONCRETE COLLAR A MINIMUM OF 18" AROUND ALL MANHOLE LIDS AND 12" DEEP.
 5. CONCRETE COLLAR, SAMPLE BOX FITTING, AND ALL EXTERIOR PIPING SUPPLIED BY INSTALLER.
 6. THE SURFACE TO BE GRADED AWAY FROM THE MANHOLE LIDS IN ALL DIRECTION.
 7. THE BACKWATER VALVE WILL BE PLACED AT A CONVENIENT SITE WHERE SEWAGE AND INTERCEPTOR STREAMS UTILIZE THE SAME UNIT. IF IN ASPHALTED AREA A TRAFFIC BOX WILL BE INSTALLED.



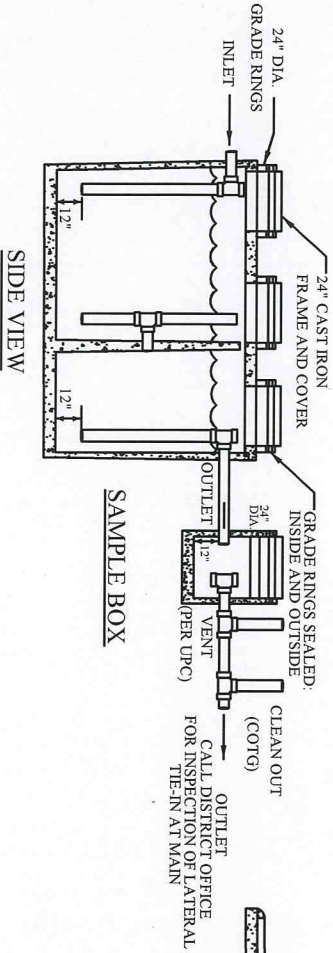
PLAN VIEW

SAMPLE BOX



CONCRETE COLLAR DETAIL

PLAN VIEW



SIDE VIEW

SAMPLE BOX

OUTLET
CALL DISTRICT OFFICE
FOR INSPECTION OF LATERAL
TIE-IN AT MAIN



SIDE VIEW



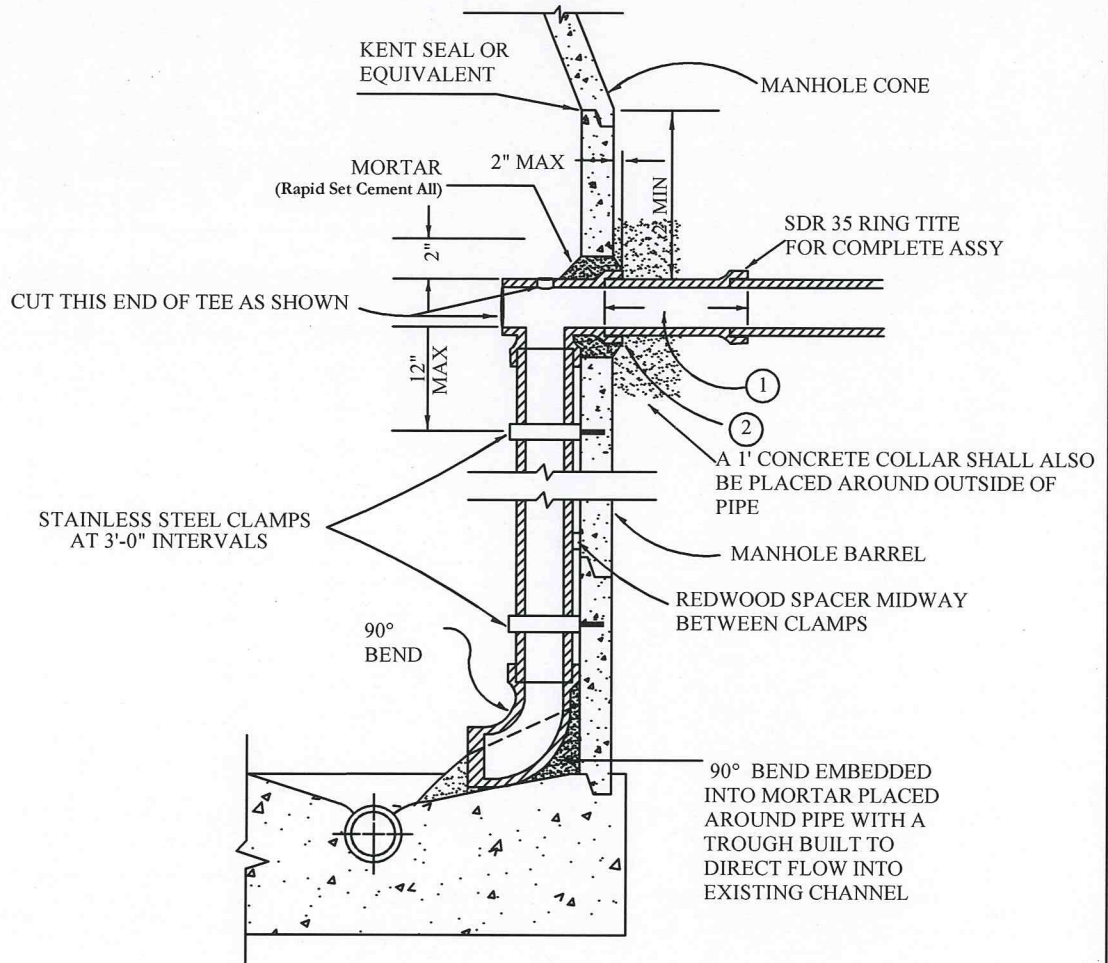
END VIEW

DWG. NO.
S 13

**Thermalito
Water and
Sewer
District**

GREASE INTERCEPTOR TANK WITH SAMPLE BOX

Design: TWSO
Drawn: MLE
Checked: N.STAR
Date: 1 Mar 2009



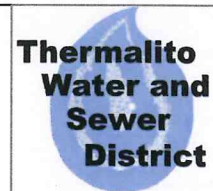
OPTIONAL DROP CONNECTION DETAIL

NOTES:

1. A 3' MAXIMUM SECTION OF PIPE WITH A BELL END SHALL PROTRUDE OUT FROM DROP CONNECTED TO THE WYE.
2. HOLE SHALL BE CORED AND BE A MINIMUM OF 2" LARGER IN DIA.
3. INSIDE DROPS ARE ALLOWED IN ALL 60" AND LARGER MANHOLES. EXISTING 48" MANHOLES SHALL BE APPROVED BY THE DISTRICT.

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 Date: 19 Feb 2008

INSIDE DROP IN 60" AND
 LARGER MANHOLE



DWG. NO.
 S-16