NOTES:

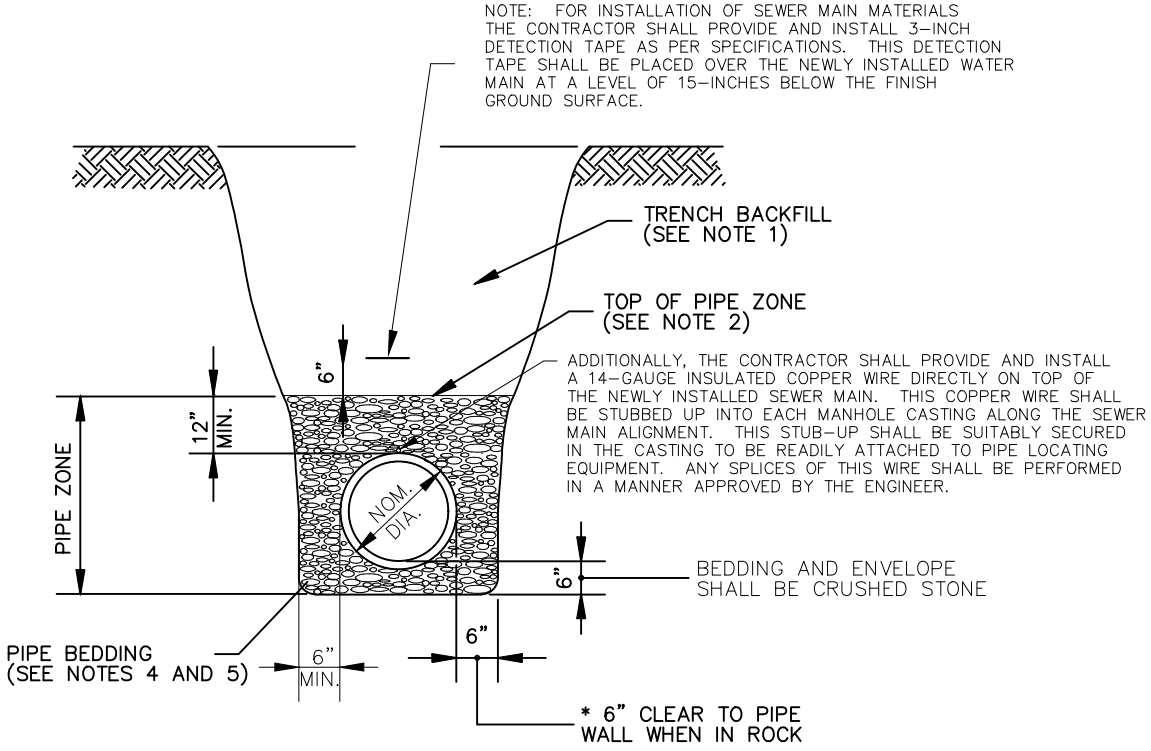
1. SEE PROJECT SPECIFICATIONS FOR BACKFILL REQUIREMENTS.

2. "PIPE ZONE" EXTENDS TO 12" ABOVE TOP OF PIPE AND IS AREA IN WHICH SPECIAL CARE IS TO BE GIVEN TO PLACEMENT AND COMPACTION TO PROTECT PIPE DURING AND AFTER LAYING.

3. LIMIT TRENCH WIDTH AT TOP OF PIPE TO NOMINAL PIPE DIAMETER PLUS 16", UNLESS PERMITTED OTHERWISE BY ENGINEER.

4. TRENCH SHALL BE DUG TO GIVE PIPE FULL AND CONTINUOUS SUPPORT. ALL ROCK TO BE REMOVED TO WITHIN 6" OF PIPE-BED TO PIPE GRADE WITH 3/4" CRUSHED STONE BEDDING. BEDDING FROM PIPE GRADE TO 12" ABOVE PIPE TO BE CRUSHED STONE.

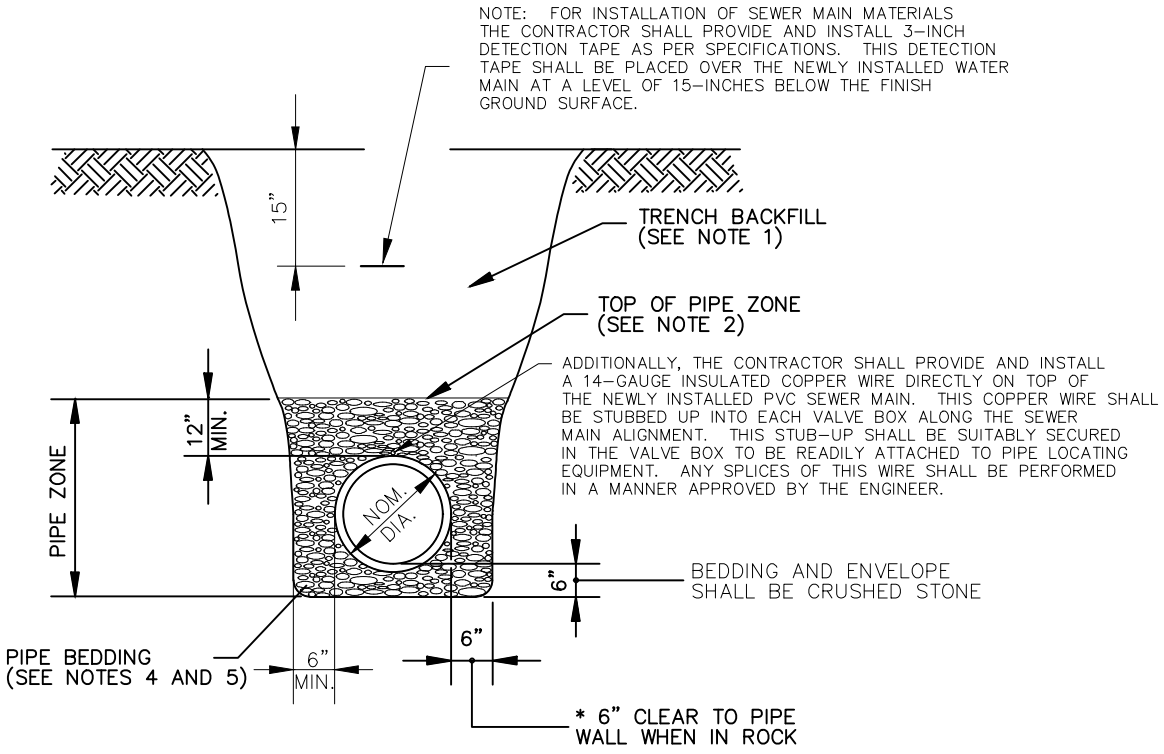
5. PIPE TO BE CONTINUOUSLY SUPPORTED ALONG LENGTH OF PIPE BARREL EXCEPT AT BELLS. BELL HOLES REQUIRED SUCH THAT NO BEARING LOAD IS TAKEN BY THE BELL.



TYPICAL GRAVITY SEWER INSTALLATION
SHAPED TRENCH BOTTOM
GRANULAR BEDDING AND SIDEWALL SUPPORT

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S1



NOTES:

1. SEE PROJECT SPECIFICATIONS FOR BACKFILL REQUIREMENTS.

2. "PIPE ZONE" EXTENDS TO 12" ABOVE TOP OF PIPE AND IS AREA IN WHICH SPECIAL CARE IS TO BE GIVEN TO PLACEMENT AND COMPACTION TO PROTECT PIPE DURING AND AFTER LAYING.

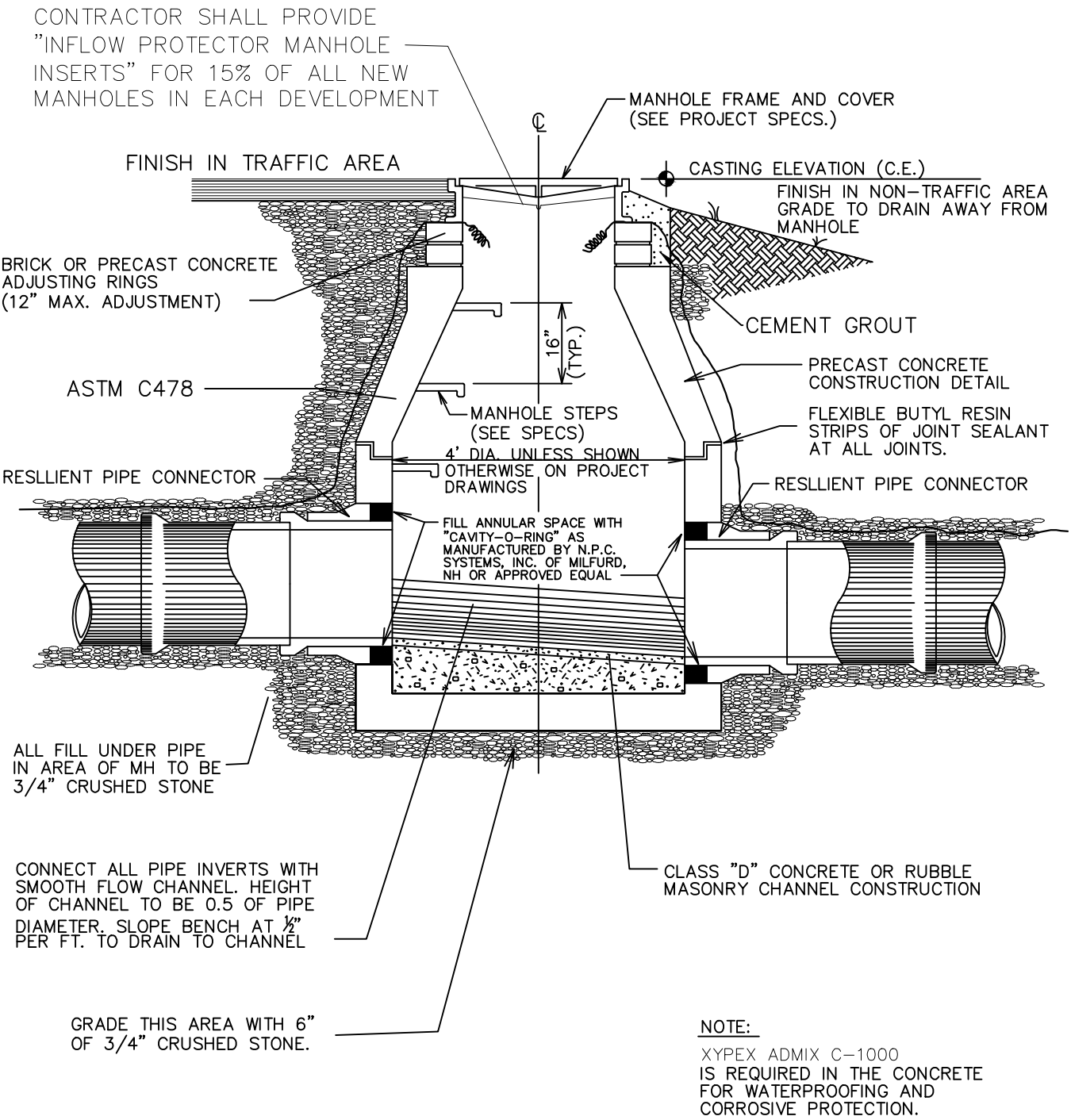
3. TRENCH SHALL BE DUG TO GIVE PIPE FULL AND CONTINUOUS SUPPORT. ALL ROCK TO BE REMOVED TO WITHIN 6" OF PIPE – BED TO PIPE GRADE WITH 3/4" CRUSHED STONE BEDDING. BEDDING FROM PIPE GRADE TO 12" ABOVE PIPE TO BE CRUSHED STONE.

4. PIPE TO BE CONTINUOUSLY SUPPORTED ALONG LENGTH OF PIPE BARREL EXCEPT AT BELLS. BELL HOLES REQUIRED SUCH THAT NO BEARING LOAD IS TAKEN BY THE BELL.

TYPICAL PRESSURE SEWER AND SCH. 40 PVC PIPE INSTALLATION

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S2



NOTE:

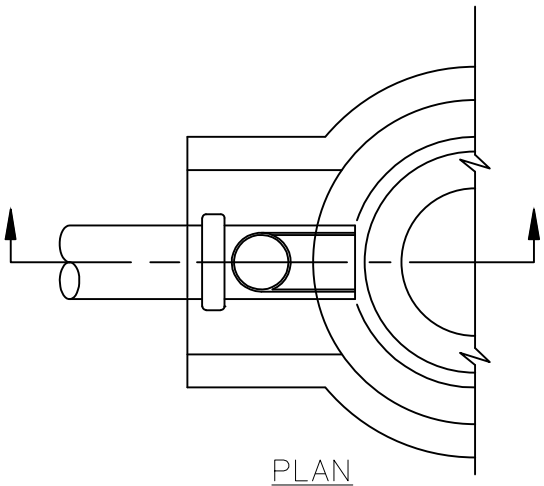
XYPEX ADMIX C-1000 IS REQUIRED IN THE CONCRETE FOR WATERPROOFING AND CORROSIVE PROTECTION.

STANDARD MANHOLE

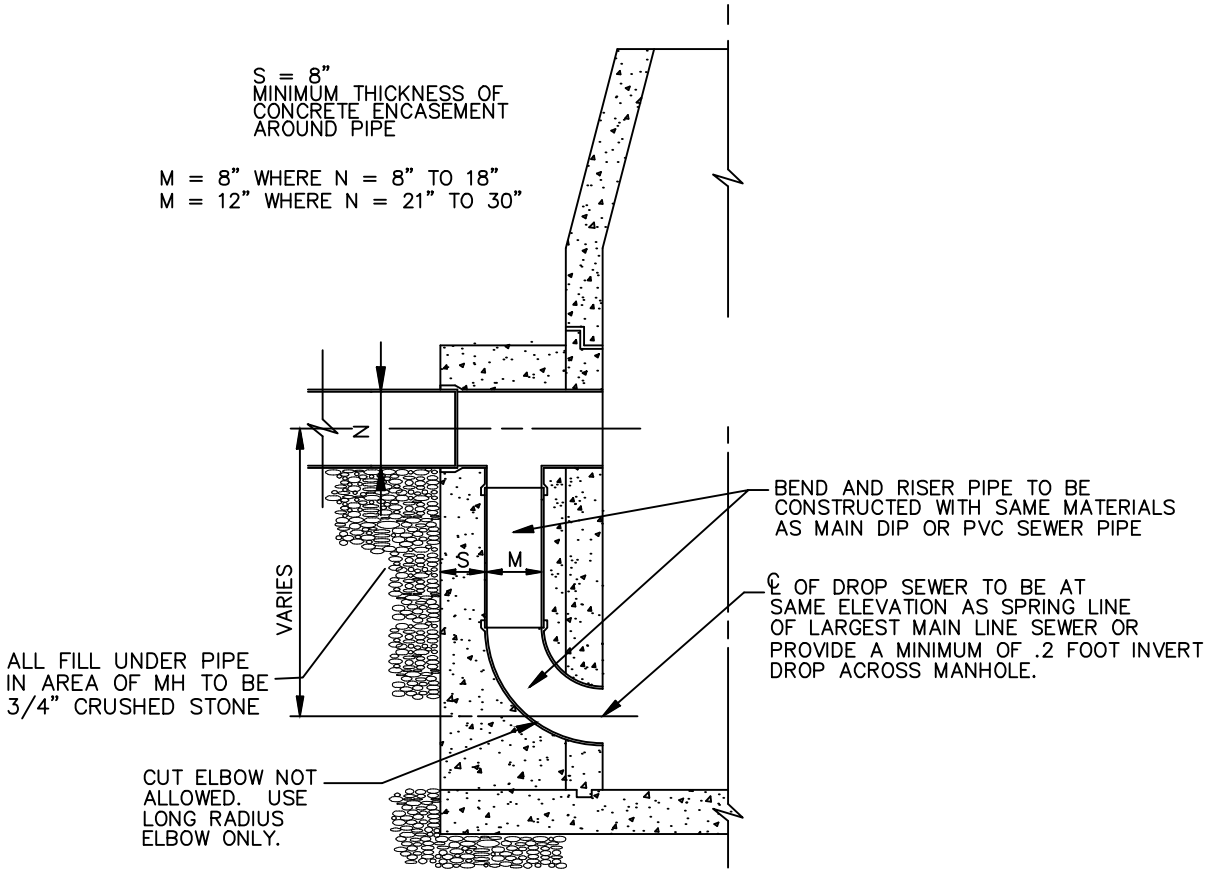
NOT TO SCALE

NOTE = INFLOW PROTECTORS ARE NOT INTENDED FOR WATERTIGHT MANHOLES OR END-OF-LINE MANHOLES. END-OF-LINE MANHOLES SHALL HAVE VENTED LIDS.

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S3



PLAN



SECTION

DROP PIPE
FOR STANDARD MANHOLES

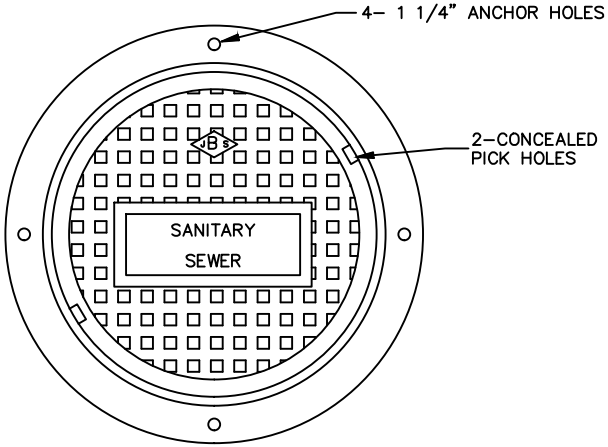
NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S4

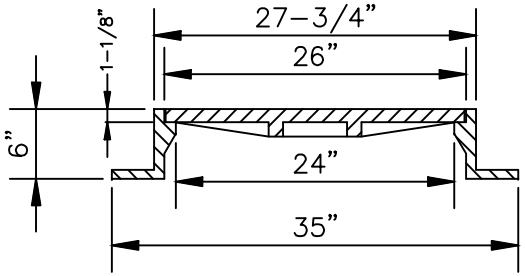
LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS

STANDARD DETAIL

S5

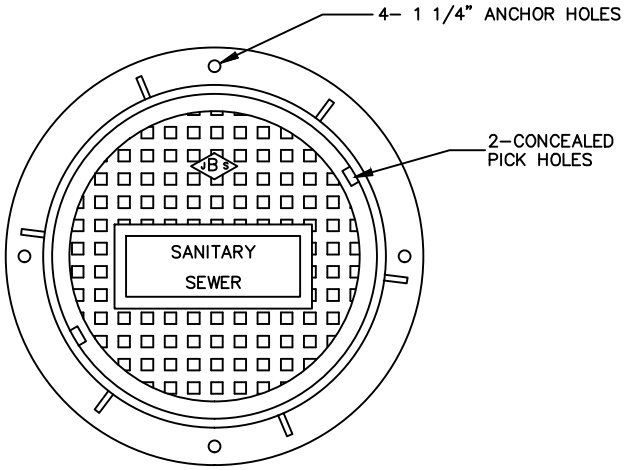


JOHN BOUCHARD & SONS CO.
NO. 1155 OR APPROVED EQUAL

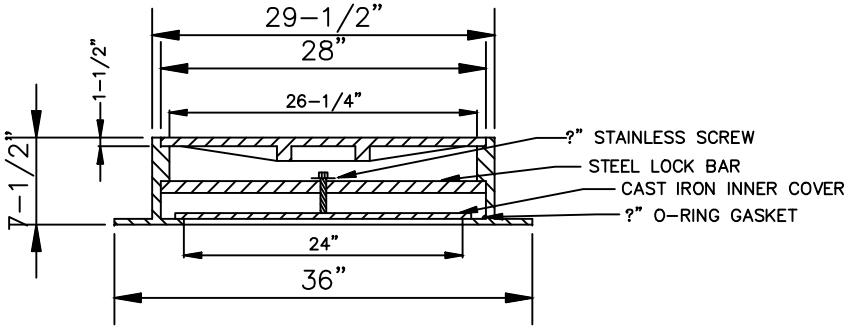


STANDARD MANHOLE CASTING NON–TRAFFIC & TRAFFIC

NOT TO SCALE

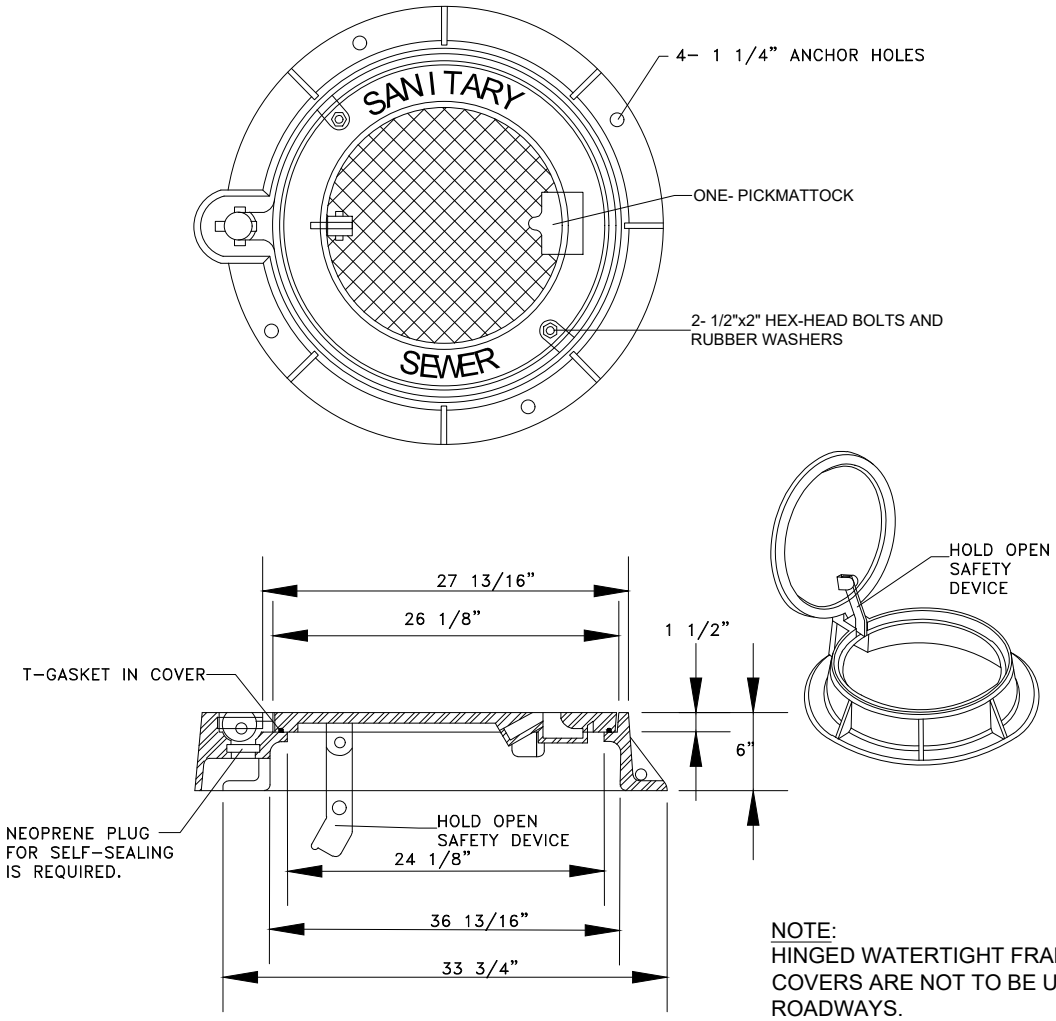


JOHN BOUCHARD & SONS CO.
NO. 1123 OR APPROVED EQUAL



STANDARD WATERTIGHT MANHOLE FRAME AND COVER

NOT TO SCALE



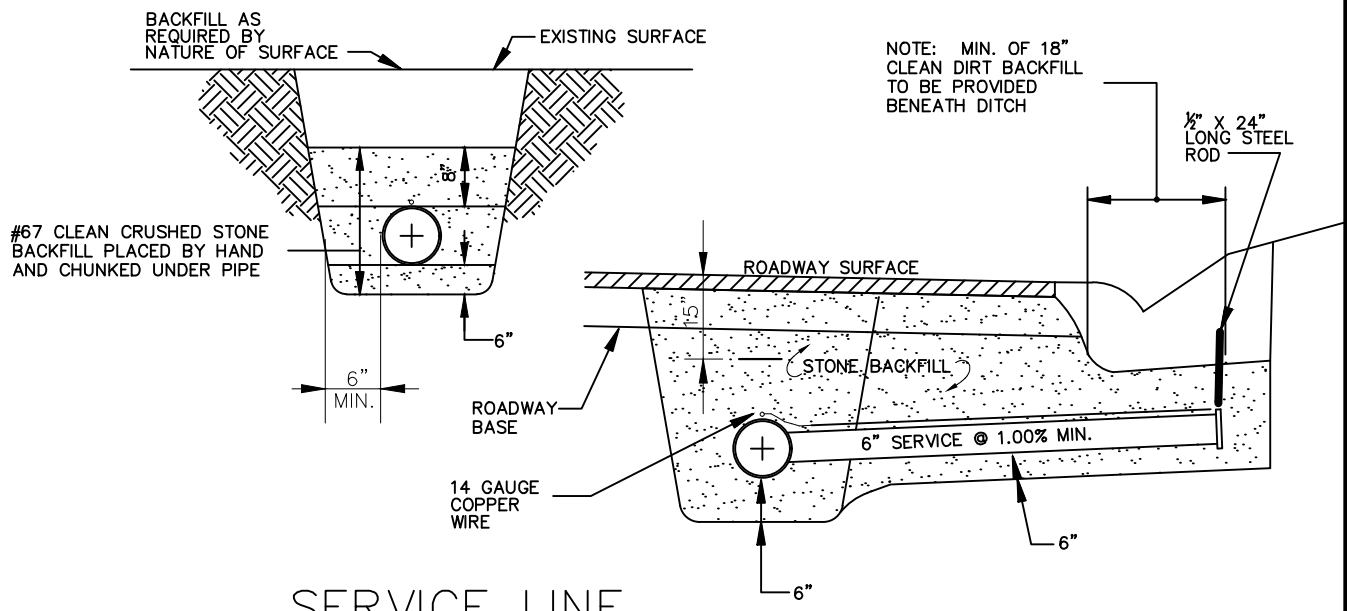
NOTE:
HINGED WATERTIGHT FRAME AND COVERS ARE NOT TO BE USED IN ROADWAYS.

JOHN BOUCHARD & SONS CO.
NO. 1295–LM OR APPROVED EQUAL

STANDARD HINGED WATERTIGHT FRAME & COVER

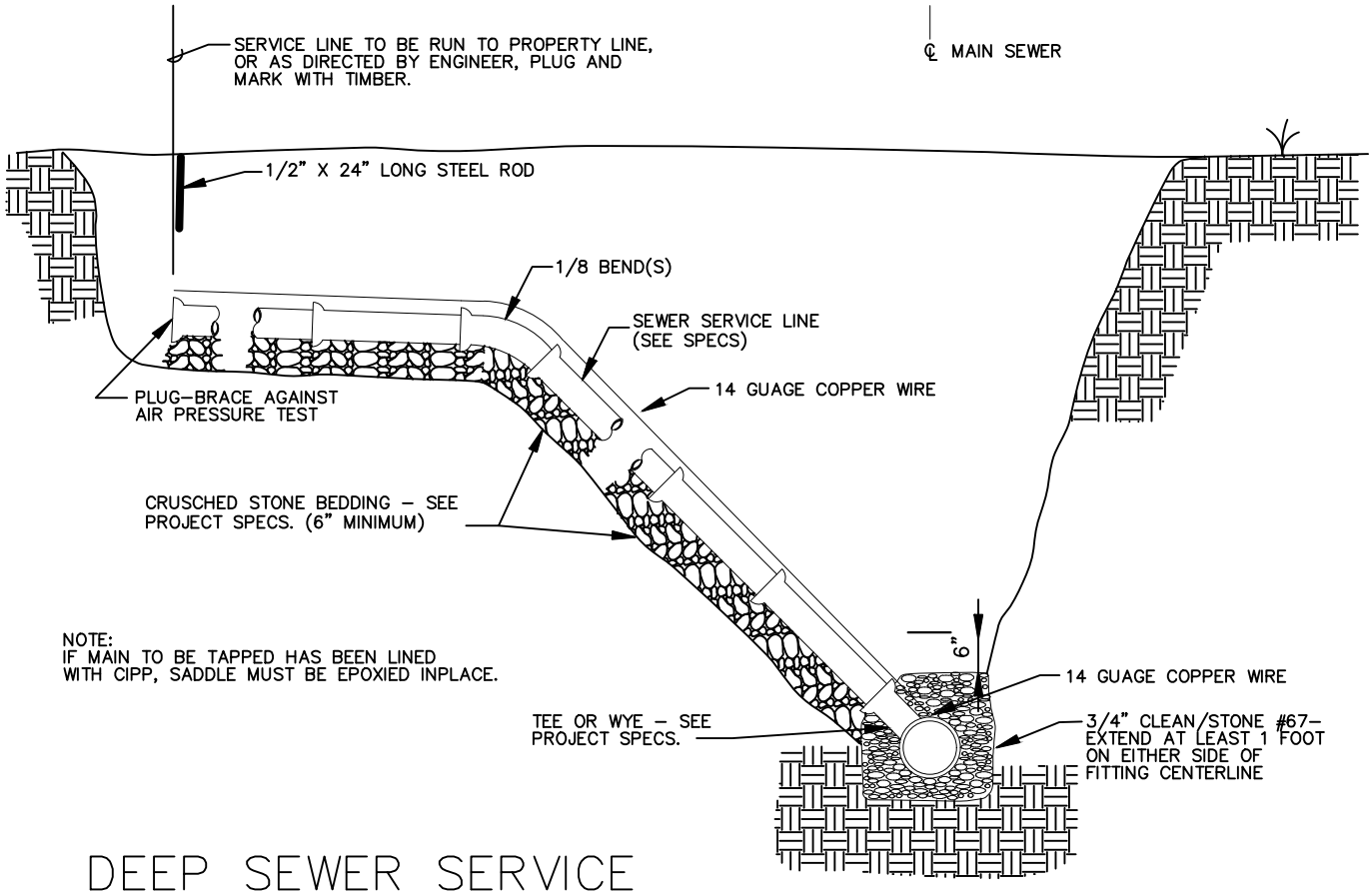
NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S6



SERVICE LINE

NOT TO SCALE

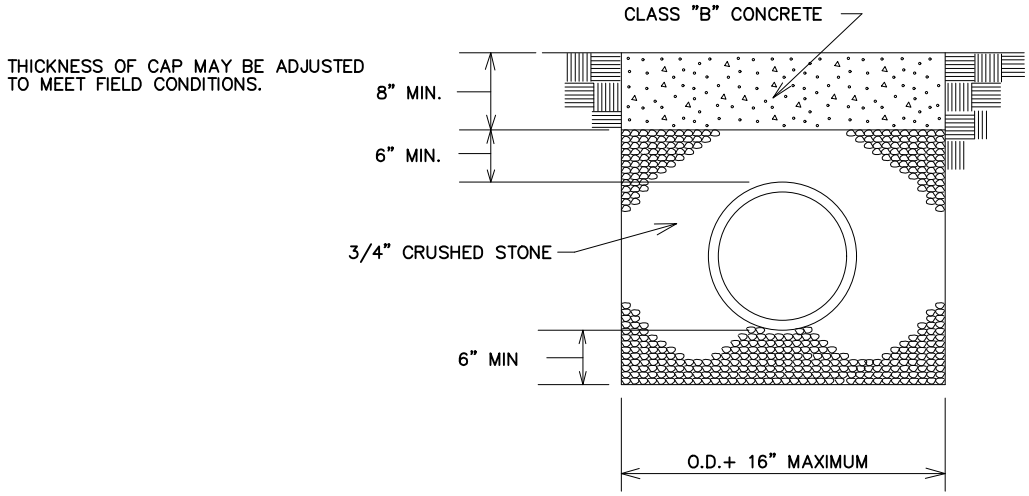


DEEP SEWER SERVICE

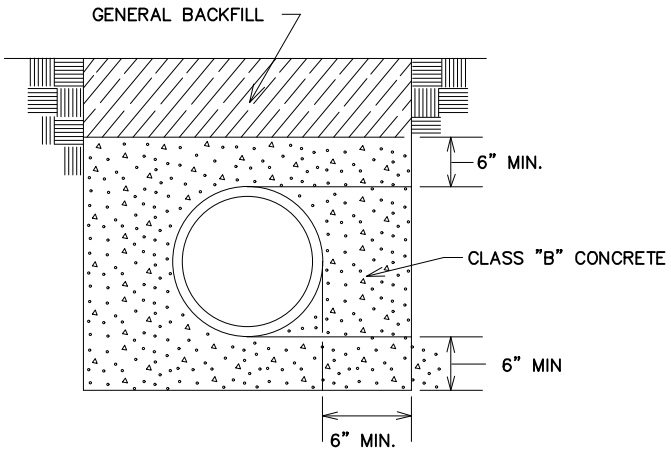
USE WHERE DIRECTED BY ENGINEER

SEWER SERVICE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S7



CONCRETE CAP



CONCRETE ENCASEMENT

NOTE: TO BE USED WHERE NOTE ON DRAWINGS REQUIRES PIPE TO BE ENCASED OR CAPPED WITH CONCRETE OR WHERE THE OWNER OR HIS AUTHORIZED REPRESENTATIVE DIRECTS CONCRETE TO BE POURED.

CONCRETE CAP AND ENCASEMENT DETAILS

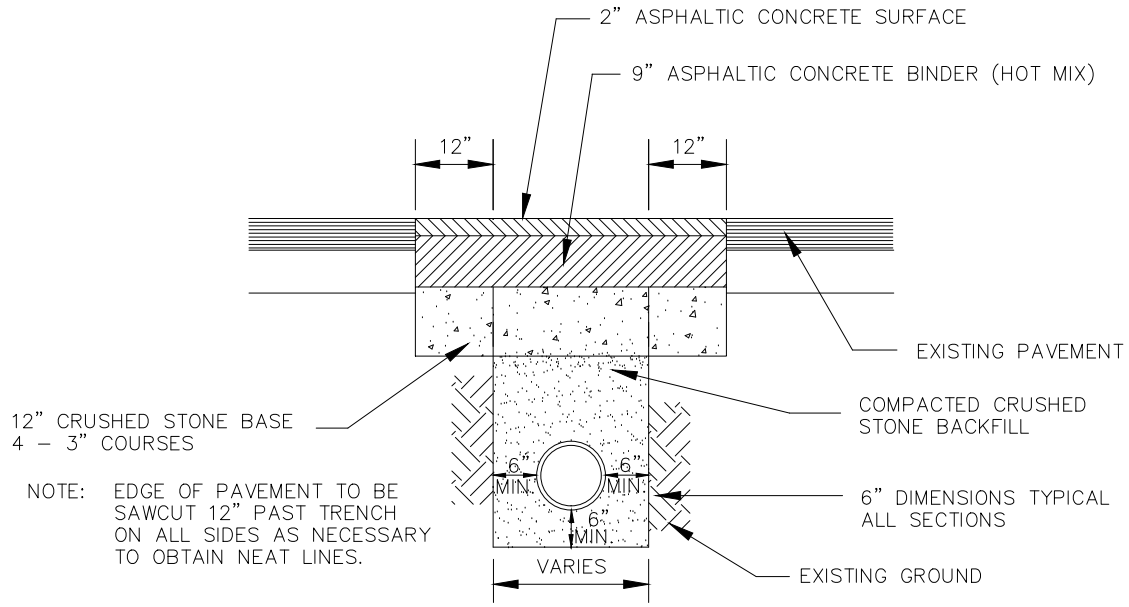
NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S8

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS

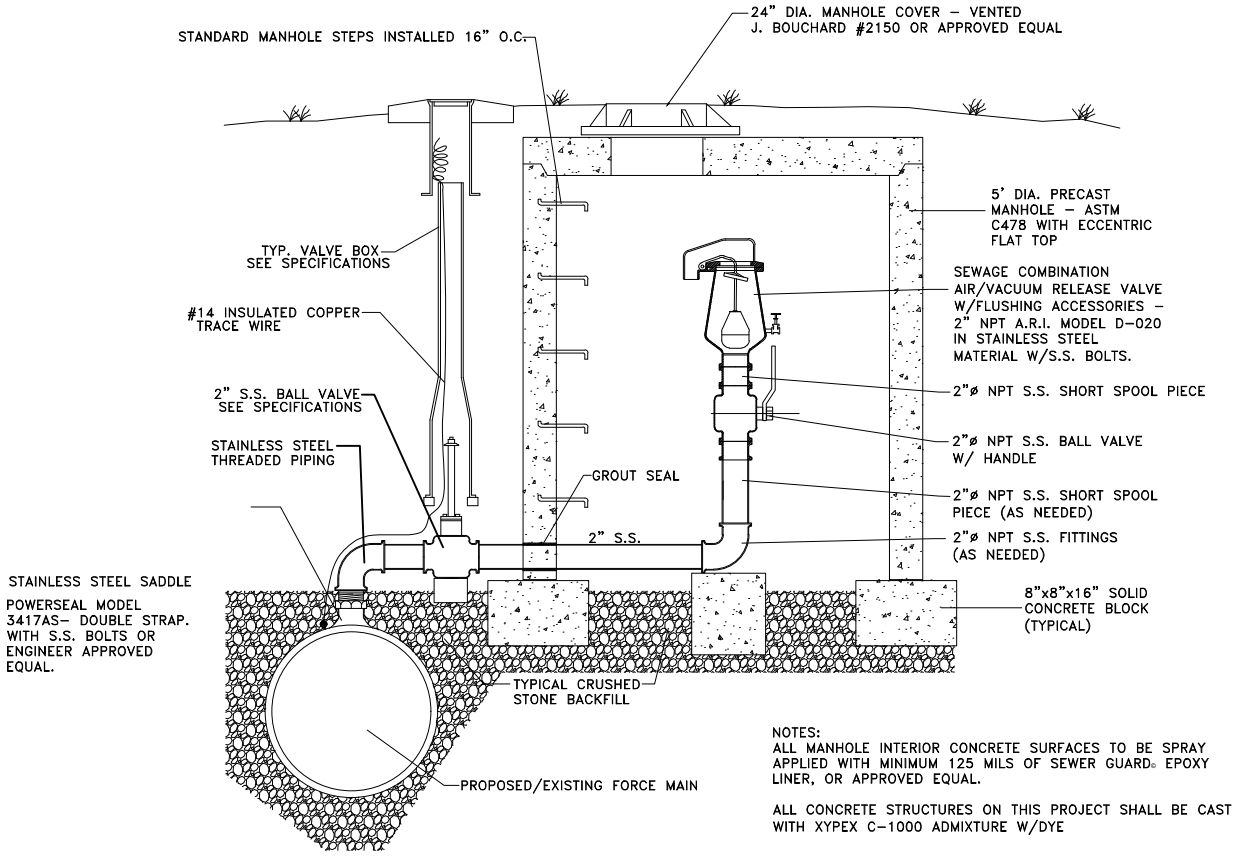
STANDARD DETAIL

S9



TYPICAL SECTION ASPHALT PAVEMENT – TYPE A

NOT TO SCALE



NOTES:
ALL MANHOLE INTERIOR CONCRETE SURFACES TO BE SPRAY APPLIED WITH MINIMUM 125 MILS OF SEWER GUARD® EPOXY LINER, OR APPROVED EQUAL.

ALL CONCRETE STRUCTURES ON THIS PROJECT SHALL BE CAST WITH XYPEX C-1000 ADMIXTURE W/DYE

AUTOMATIC COMBINATION AIR/VACUUM VALVE W/ OFFSET 5' DIA. MANHOLE ASSEMBLY

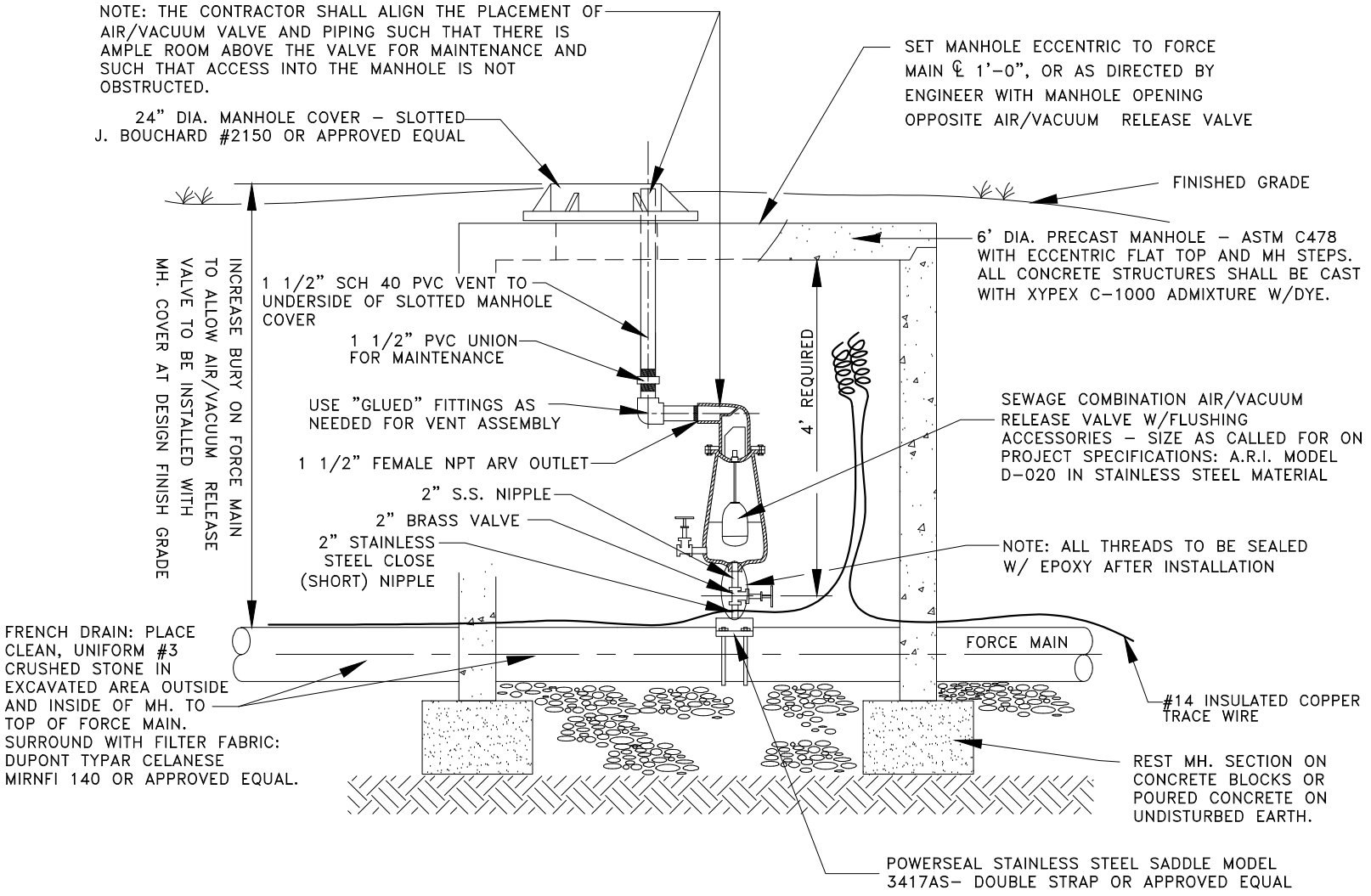
NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S10

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS

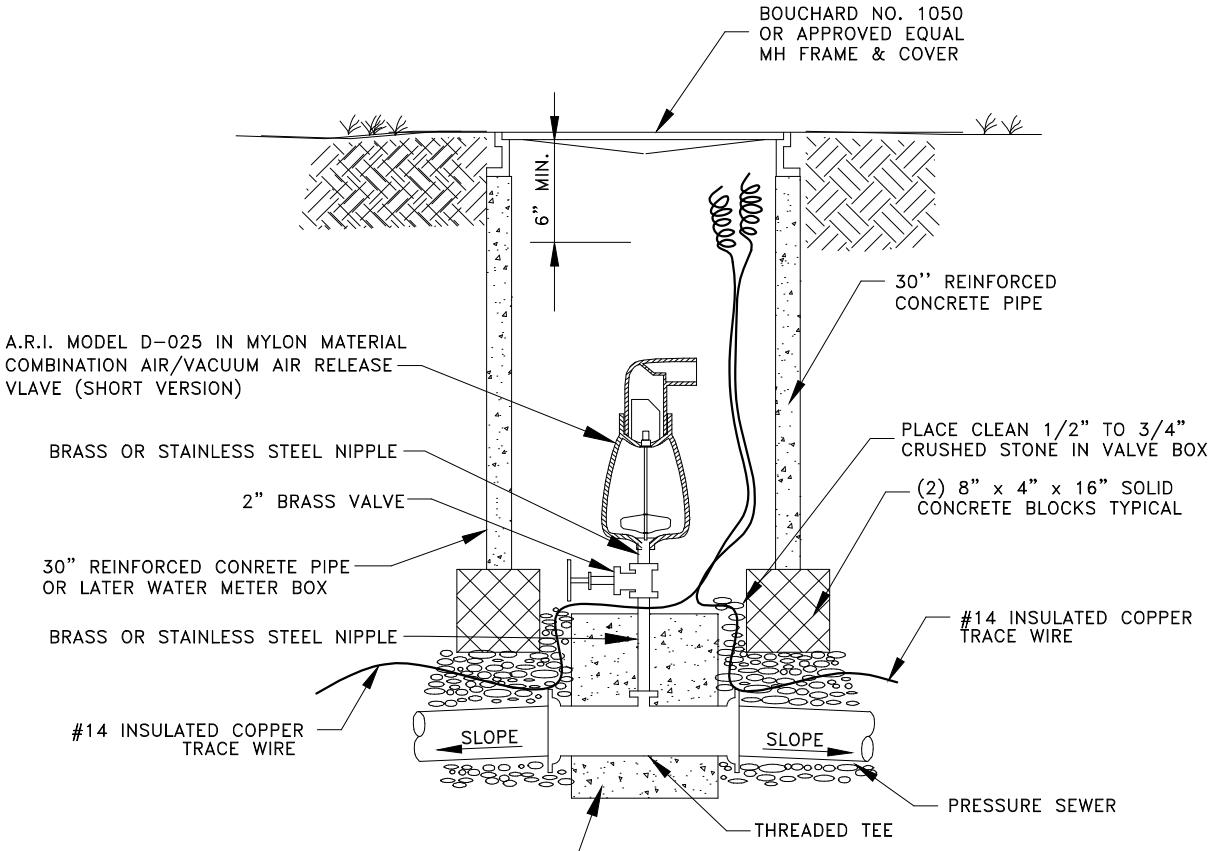
STANDARD DETAIL

S11



TYPE C – AUTOMATIC COMBINATION AIR & VACUUM RELEASE MANHOLE

NOT TO SCALE



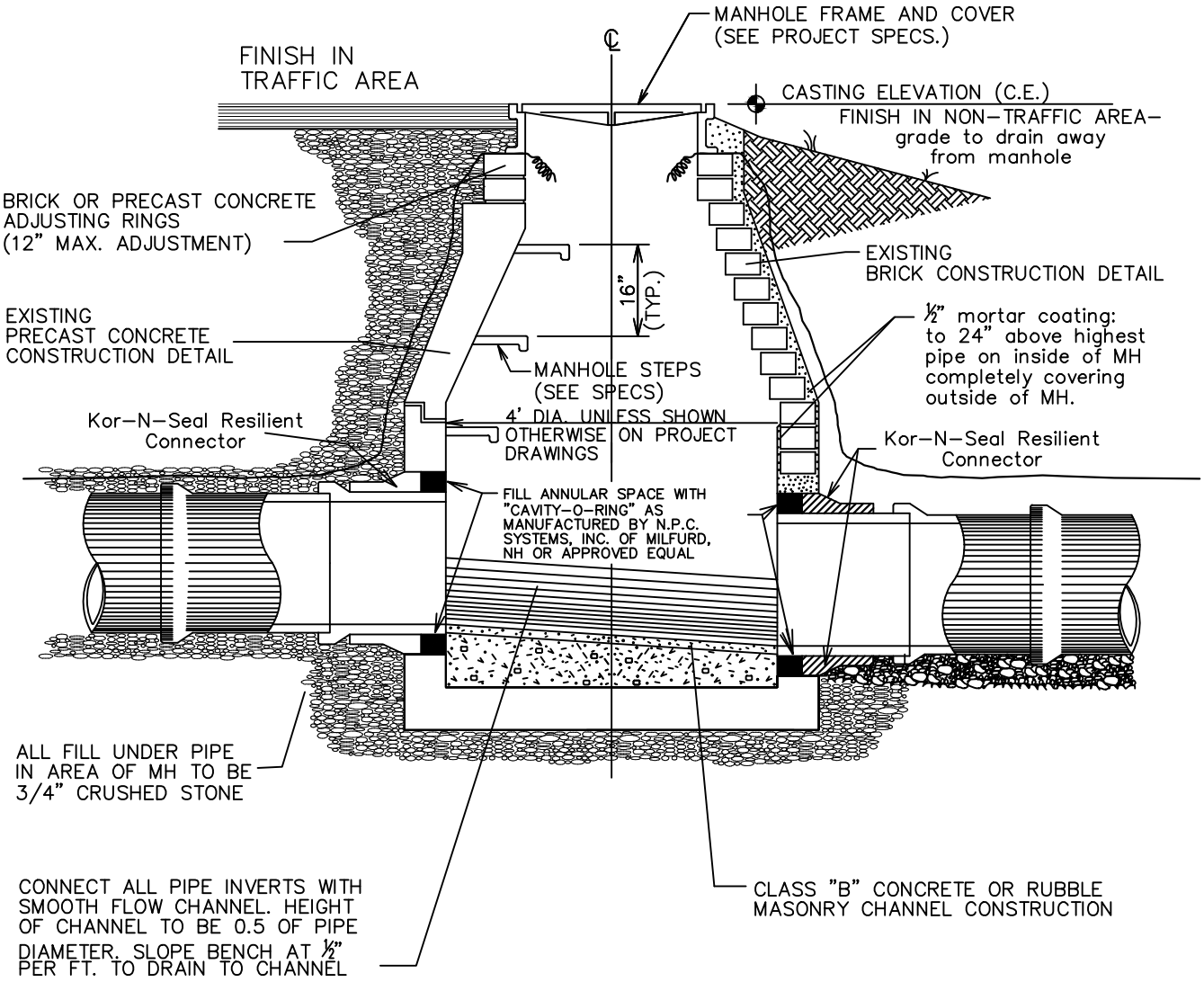
NOTE: CONCRETE BLOCKS NOR ANY PORTION OF 30" CONCRETE PIPE SHALL REST ON PROPOSED FORCE MAIN.

NOTE: THIS ARV FOR SMALL PRESSURE / GRINDER SYSTEMS WITH 3" AND DOWN PVC FORCE MAINS.

TYPE A AUTOMATIC COMBINATION AIR & VACUUM RELEASE MANHOLE

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S12

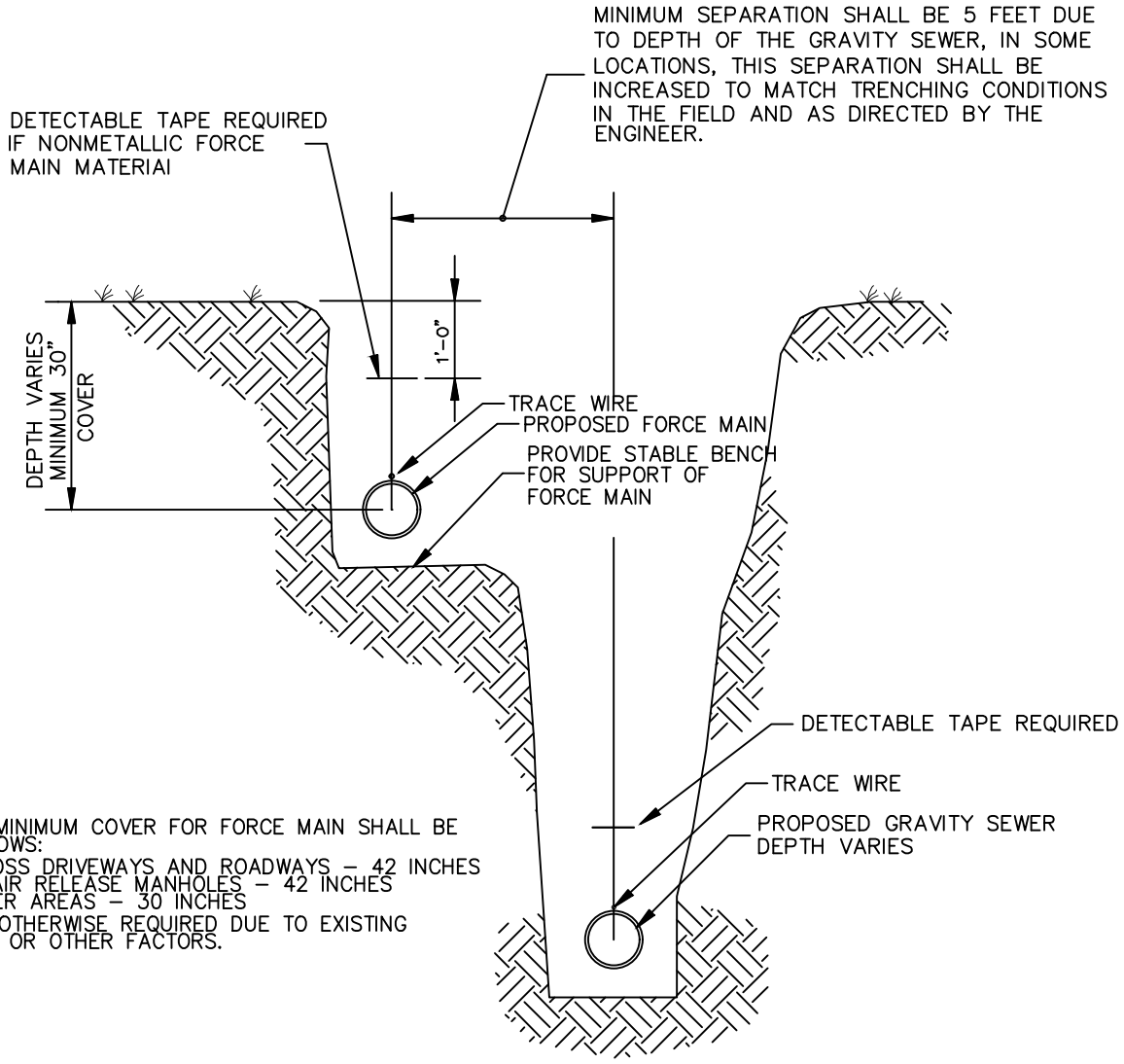


CONNECTION TO EXISTING MANHOLE

(PRECAST CONCRETE & BRICK CONSTRUCTION SHOWN)

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S13



NOTE: MINIMUM COVER FOR FORCE MAIN SHALL BE AS FOLLOWS:

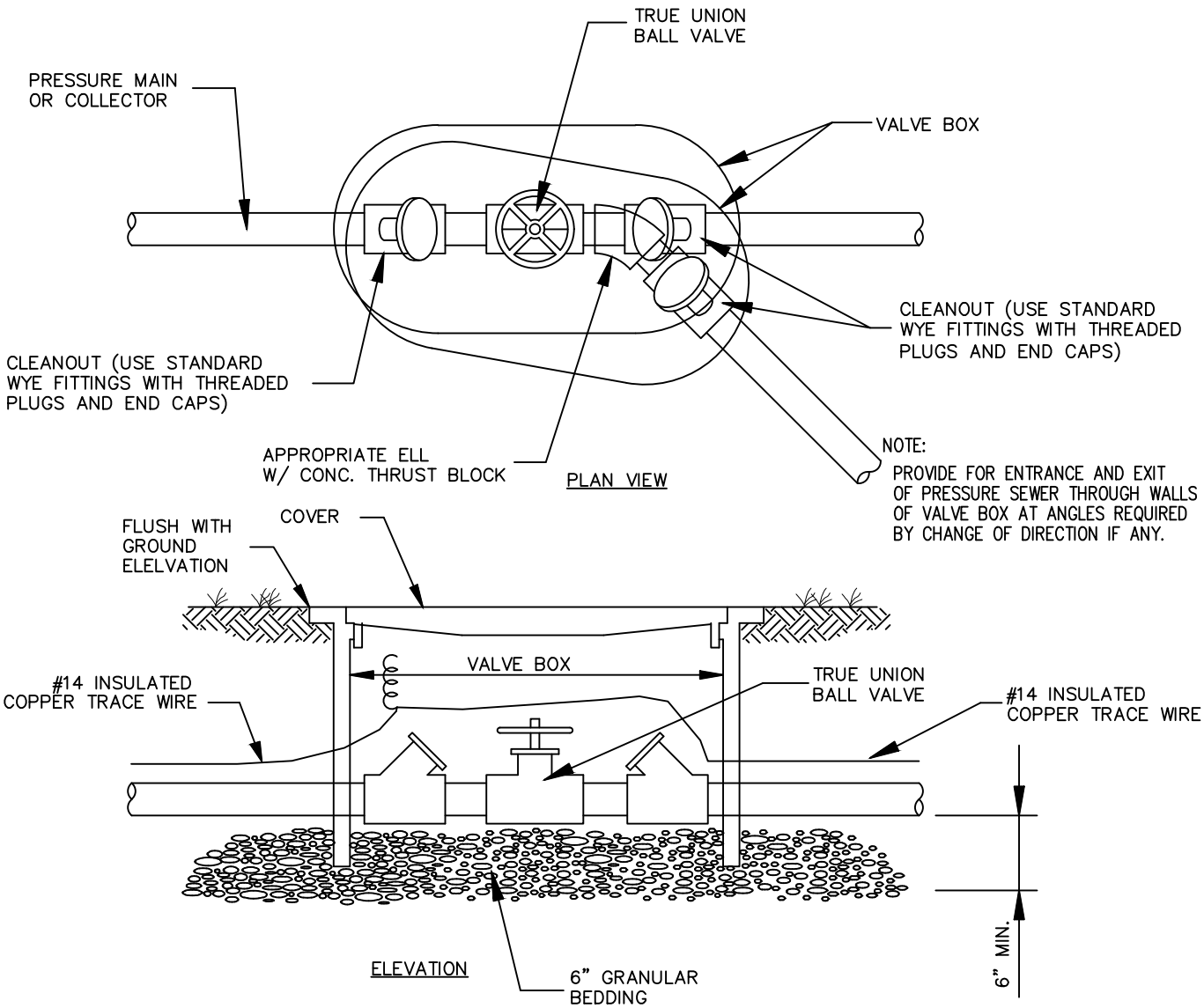
1. ACROSS DRIVEWAYS AND ROADWAYS – 42 INCHES
2. AT AIR RELEASE MANHOLES – 42 INCHES
3. OTHER AREAS – 30 INCHES

UNLESS OTHERWISE REQUIRED DUE TO EXISTING UTILITIES OR OTHER FACTORS.

TYPICAL TRENCHING DETAIL
FOR PARALLEL INSTALLATIONS

NOT TO SCALE

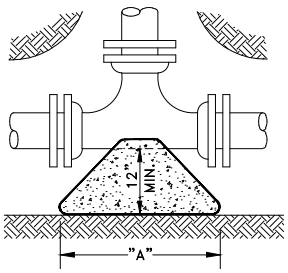
LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S14



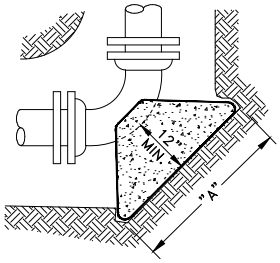
TYPICAL VALVE BOX AND CLEANOUT ARRANGEMENT ALONG STRAIGHT RUNS AT CHANGES IN DIRECTION

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S15



PLAN: TEE



PLAN: 90° BEND

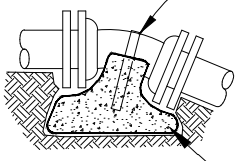
NOTES:

1. CONCRETE TO BE CLASS "B" (2000 P.S.I.) OR STRONGER.

2. DIMENSIONS AS SHOWN ARE APPROXIMATE – SUBJECT TO CHANGE AT DIRECTION OF OR APPROVAL OF ENGINEER.

3. KEEP CONCRETE CLEAR OF ANY PIPE JOINT, GLAND BOLTS, ETC.

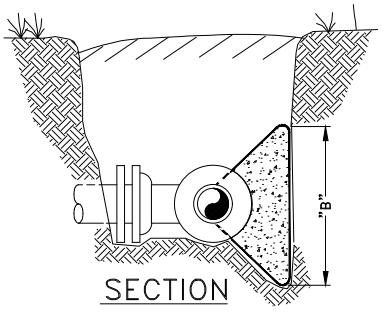
4. CONCRETE TO BEAR AGAINST UNDISTURBED EARTH WITH BEARING AREA EQUIVALENT TO AT LEAST AxB.



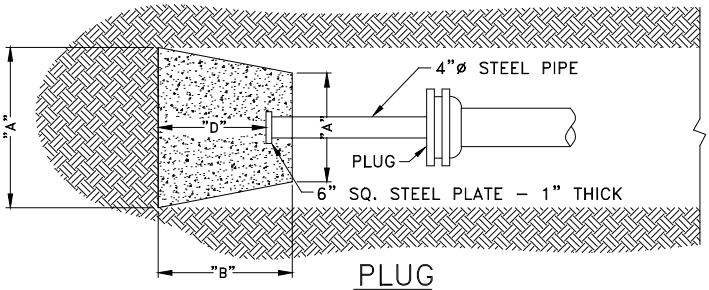
FOR UPPER THRUST BLOCK ON A VERTICAL BEND, CONCRETE VOLUME SHALL BE AS DETERMINED BY ENGINEER. LOWER BLOCK TO HAVE DIMENSIONS ACCORDING TO SCHEDULE BELOW. FITTING TO BE FIXED TO UPPER BLOCK USING 1/4" x 2" STEEL STRAP PROTECTED WITH 2 COATS BITUMASTIC PAINT (OR AS OTHERWISE APPROVED BY ENGINEER).

GRAVITY–TYPE THRUST BLOCK

WEIGHT IS CRITICAL – MUST BE DETERMINED OR APPROVED BY ENGINEER.



SECTION



PLUG

SCHEDULE OF MINIMUM BEARING AREA REQUIRED

BASED ON 200 PSI INTERNAL PRESSURE AND 4000 PSF SOIL BEARING CAPACITY*

PIPE SIZE	TEE OR DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4"	1.0	1.5	1.0	1.0	1.0
6"	2.5	3.0	2.0	1.0	1.0
8"	4.0	5.5	3.0	1.5	1.0
10"	6.0	8.5	4.5	2.5	1.5
12"	8.5	12.0	6.5	3.0	2.0
16"	15.0	21.5	11.5	6.0	3.0
18"	20.0	27.5	15.0	8.0	4.0
20"	24.0	33.5	18.5	9.5	5.0
24"	34.0	48.0	26.0	13.5	7.0
30"	53.0	76.5	41.0	21.5	12.0
36"	76.5	110.0	59.0	30.5	17.5
VALUES ARE TABULATED IN SQUARE FEET					

*Engineer to confirm actual required dimensions before construction of the Thrust Block.
Bearing Area (square feet) = A(feet) x B(feet)

CONCRETE THRUST BLOCK DETAILS

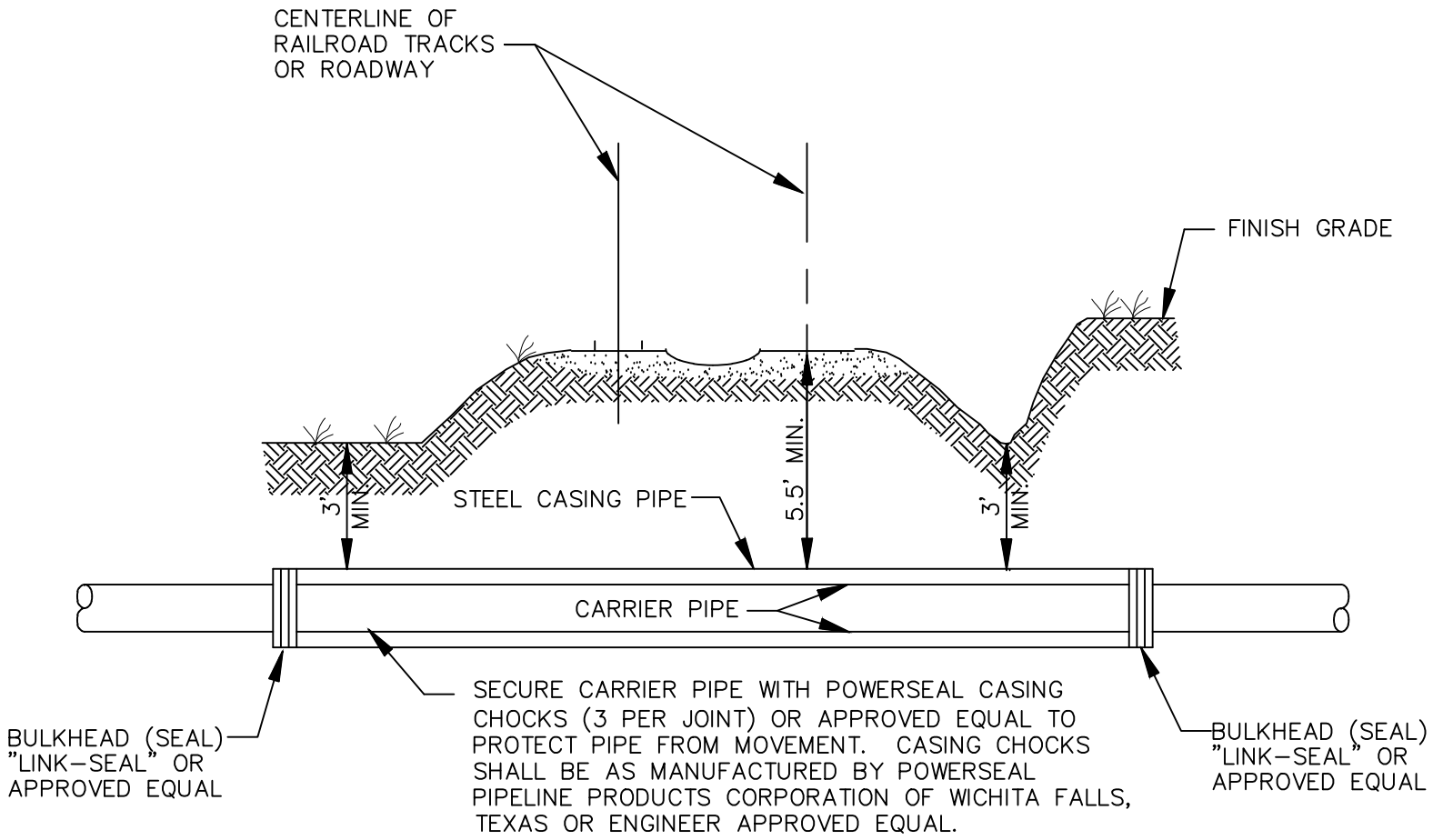
FOR BOTH WATER AND FORCE MAINS

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S16

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS

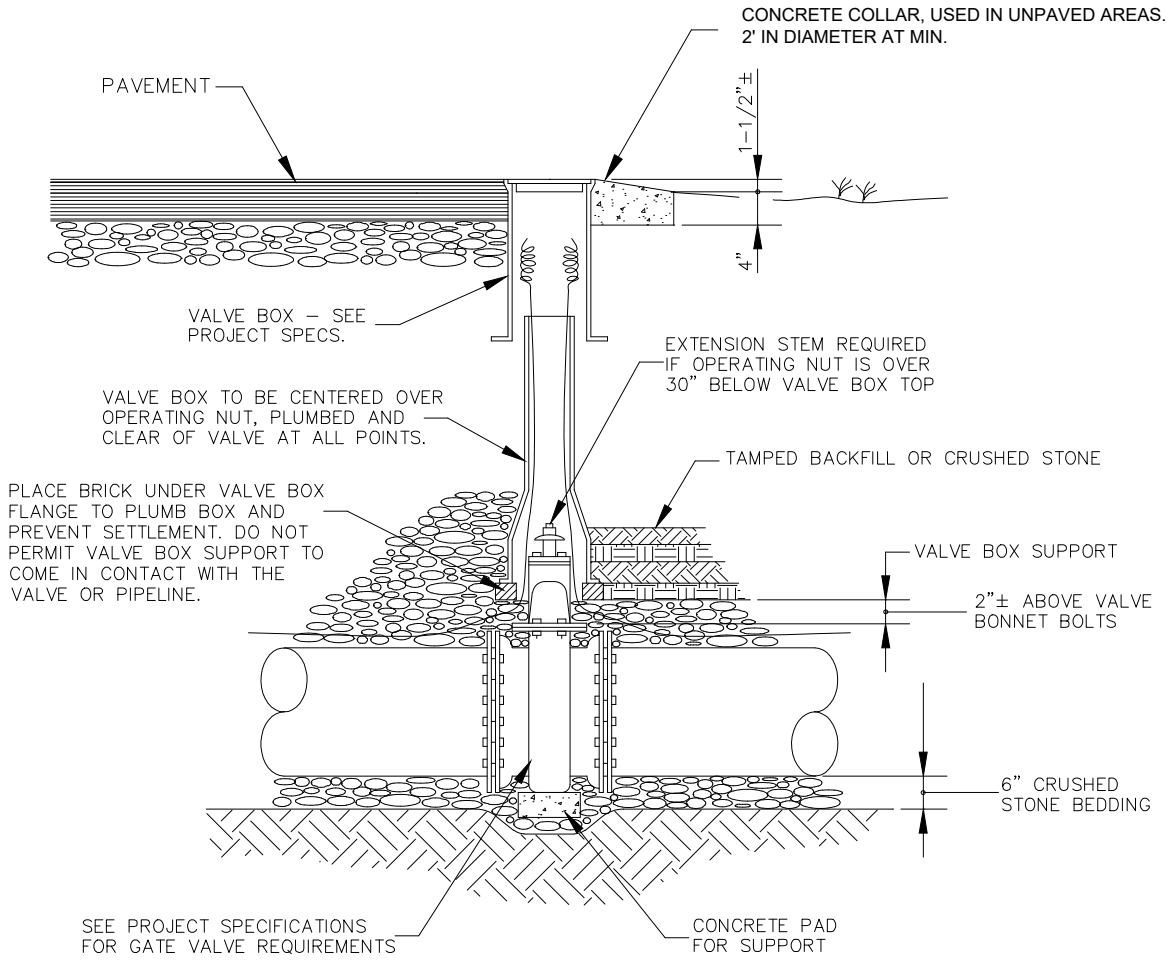
STANDARD DETAIL

S17



TYPICAL BORE CASING DETAIL

NOT TO SCALE

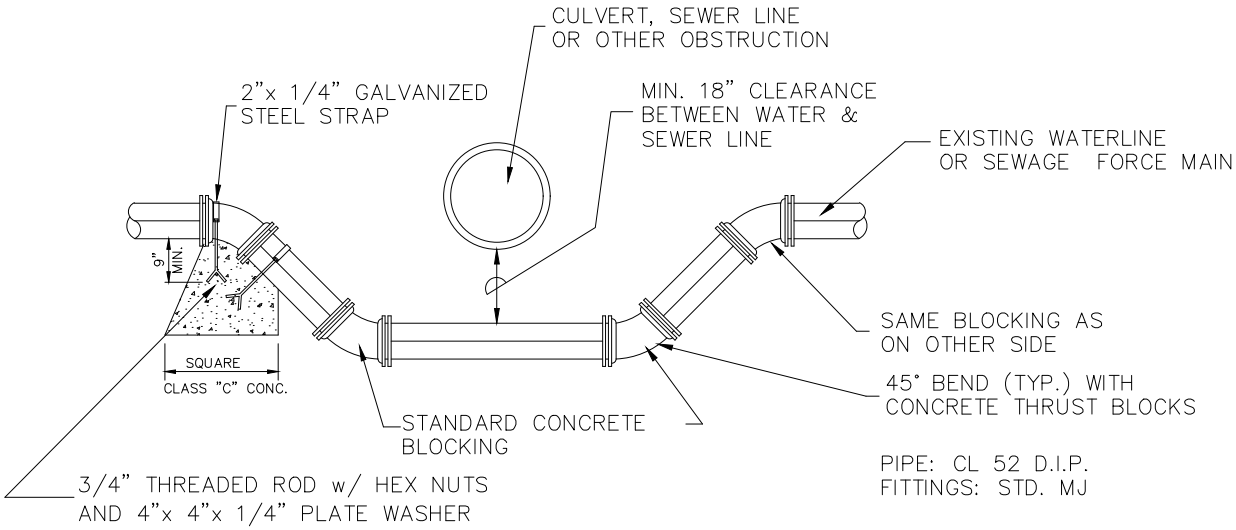


TYPICAL GATE VALVE INSTALLATION

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S18

NOTE: FOR UPPER THRUST BLOCK ON A VERTICAL BEND, CONCRETE VOLUME SHALL BE AS APPROVED BY THE ENGINEER. COST OF STEEL STRAP & REBAR TO BE MERGED INTO UNIT PRICE BID FOR CONCRETE BLOCKING.



(Pressure Sewer Mains or Main Relocation)

METHOD OF CROSSING OBSTRUCTION

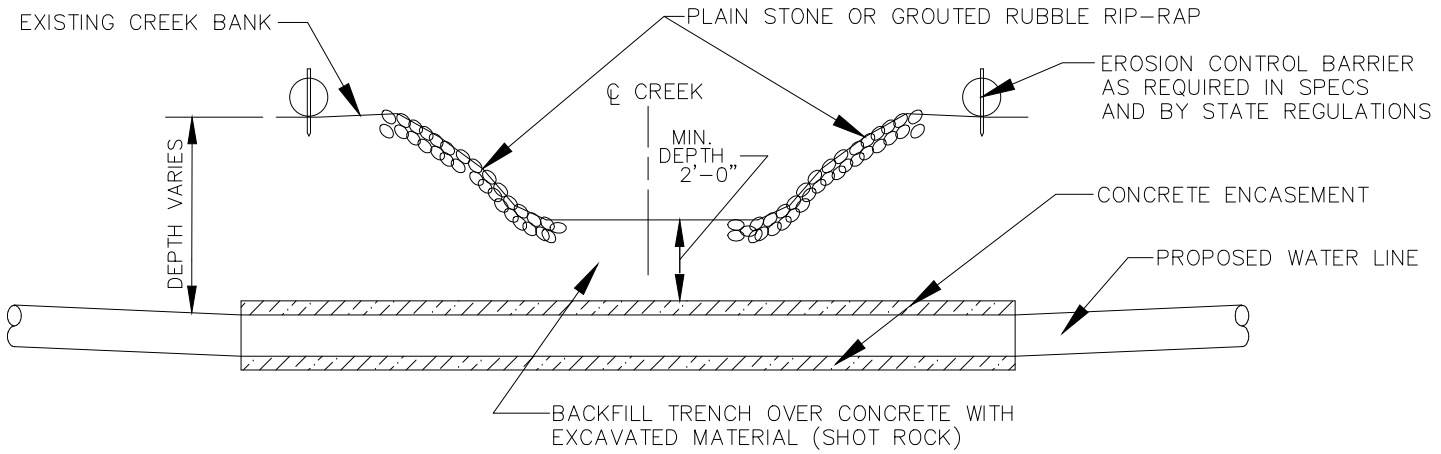
NOT TO SCALE

NOTE: INSTALL STANDARD 3/4" RODDING BETWEEN FITTINGS OR USE MEGALUGS IF THERE ARE NO JOINTS BETWEEN FITTINGS.

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS

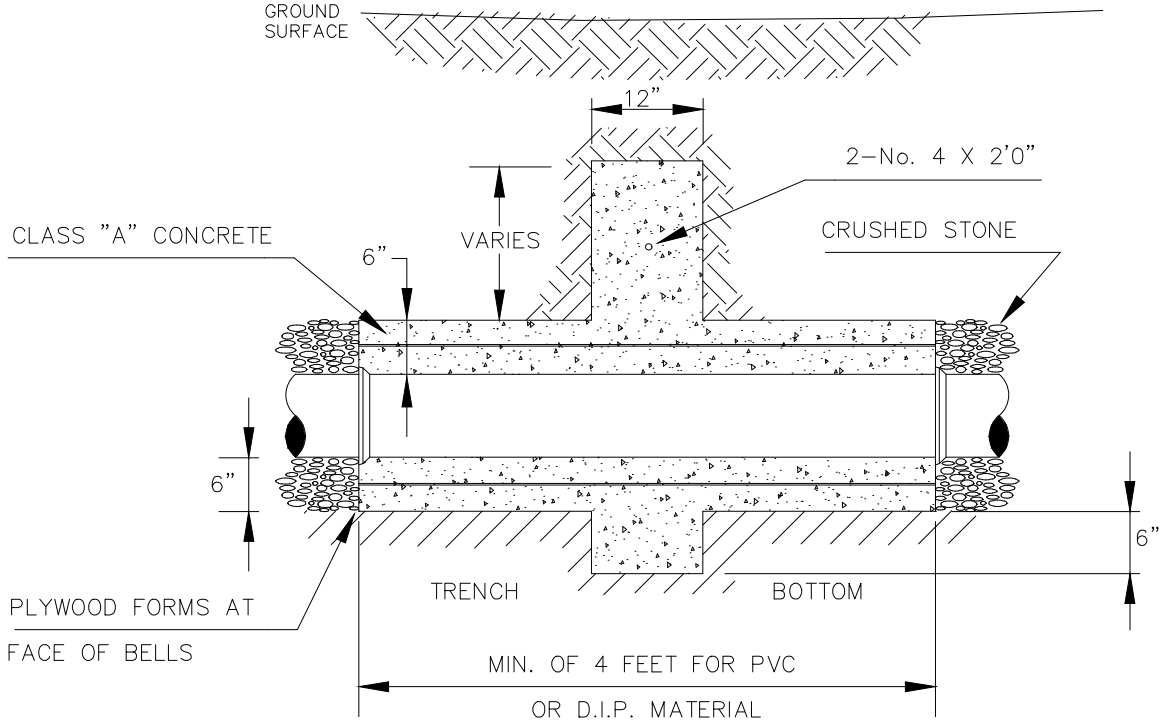
STANDARD DETAIL

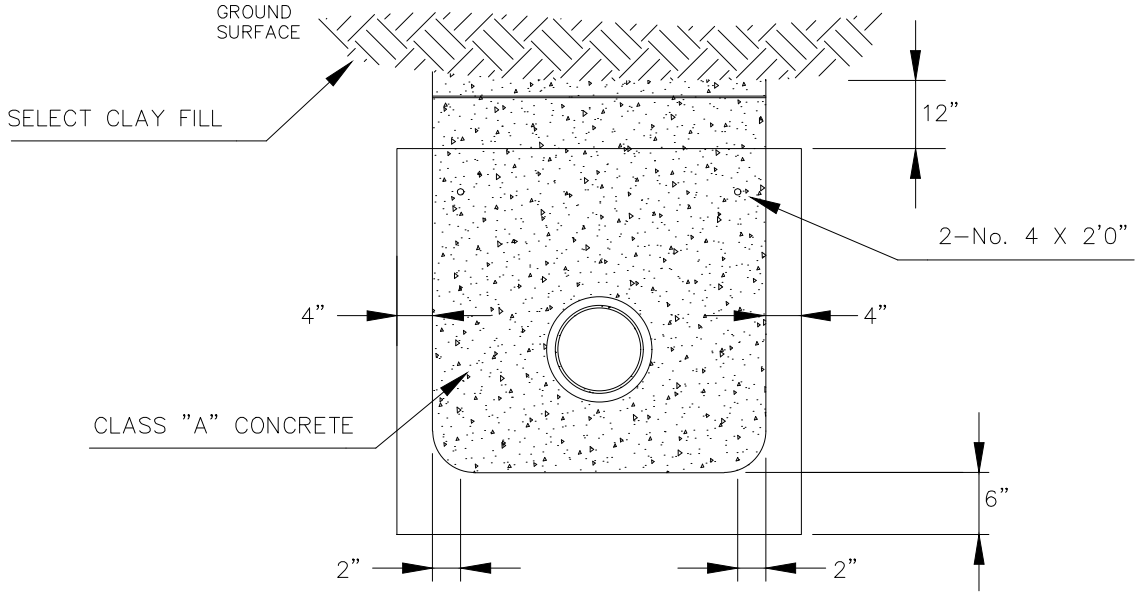
S20



TYPICAL CREEK CROSSING

NOT TO SCALE





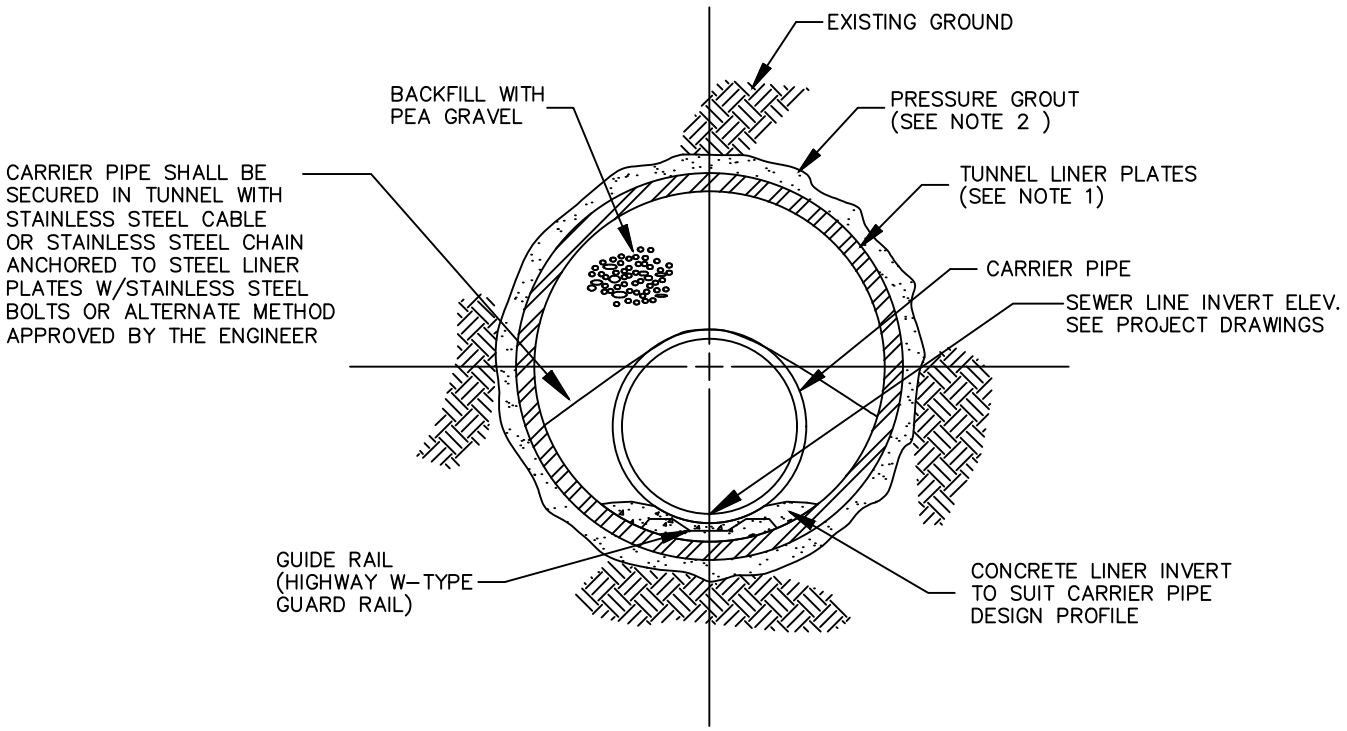
NOTE: A 4–INCH KEYWAY SHALL BE CUT IN DIRT EXCAVATION. FRACTURED AND SHOT ROCK SHALL BE REMOVED TO CLEAN SOLID ROCK IN ROCK TRENCHES. THIS IS REQUIRED ON SIDES IN ADDITION TO BOTTOM. IF BOTTOM IS OVERSHOT MUST BE CLEANED TO SOLID UNFRACTURED ROCK.

CONCRETE CHECK DAM

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S21

AT THE CONTRACTOR'S OPTION AND WITH CONSENT OF THE PARTIES OR AGENCIES HAVING JURISDICTION, STEEL PIPE OR OTHER ACCEPTABLE MATERIAL MAY BE JACKED OR BORED INTO PLACE IN LIEU OF A LINER PLATE TUNNEL PROVIDED THE CONTRACTOR BE RESPONSIBLE FOR ALL APPROVALS FROM THE PARTIES AND / OR AGENCIES HAVING JURISDICTION INCLUDING, BUT NOT LIMITED TO, FURNISHING COMPLETE DETAILS OF THE METHODS TO BE EMPLOYED FOR APPROVAL.



NOTES:

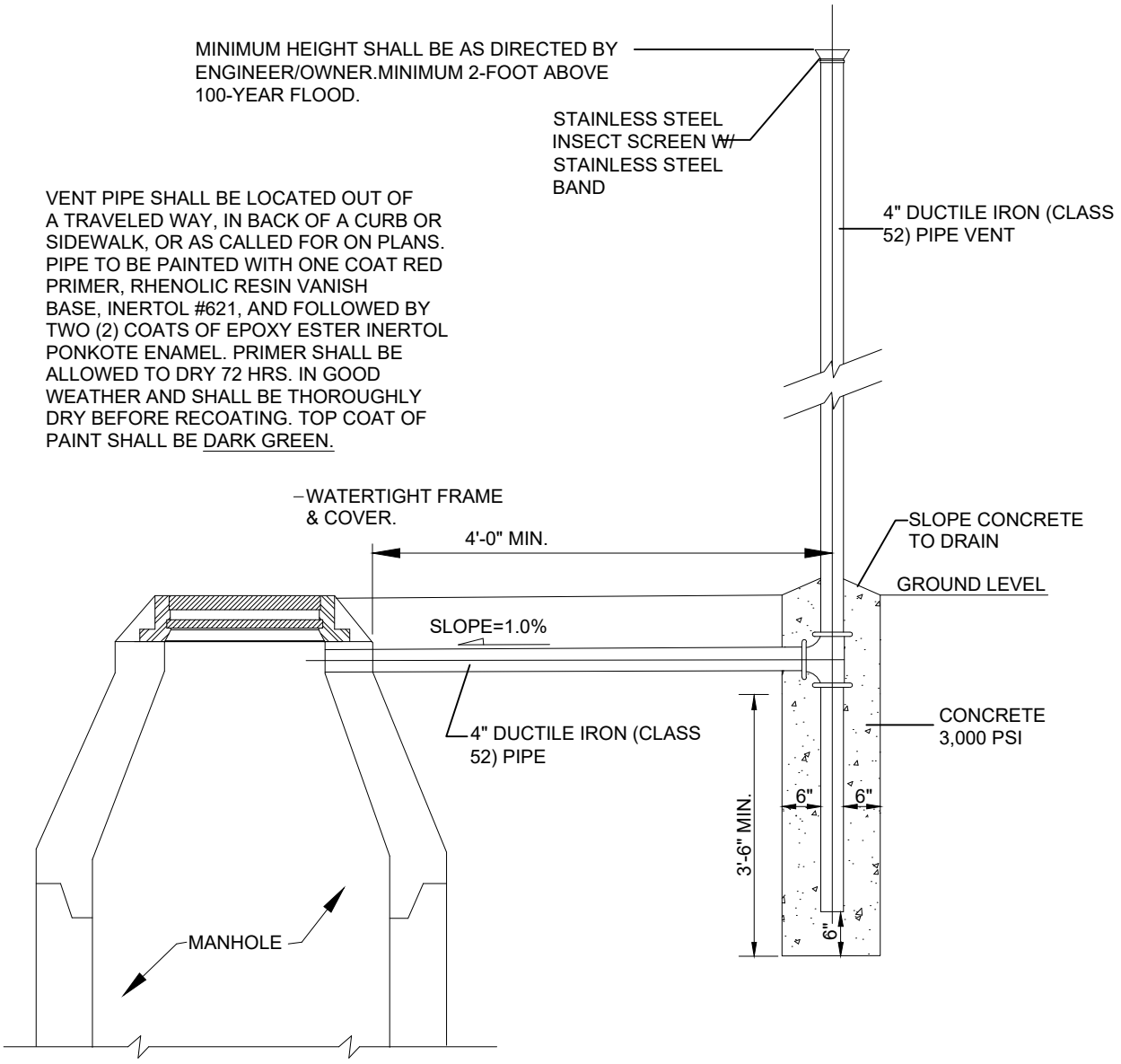
1. TUNNEL: MINE/EXCAVATE TUNNEL AS NEATLY AS POSSIBLE TO ELIMINATE VOIDS OR OVERBREAKS AND TO MAXIMIZE LINER TO SOIL CONTACT.

2. PRESSURE GROUT: OVERCUT AS SOON AS POSSIBLE AFTER INSTALLATION OF LINER PLATES (9' LENGTH MAX.) TO PREVENT SOIL SHIFTING AND TO MAINTAIN PROPER SHAPE OF TUNNEL.

TYPICAL TUNNEL SECTION

NOT TO SCALE

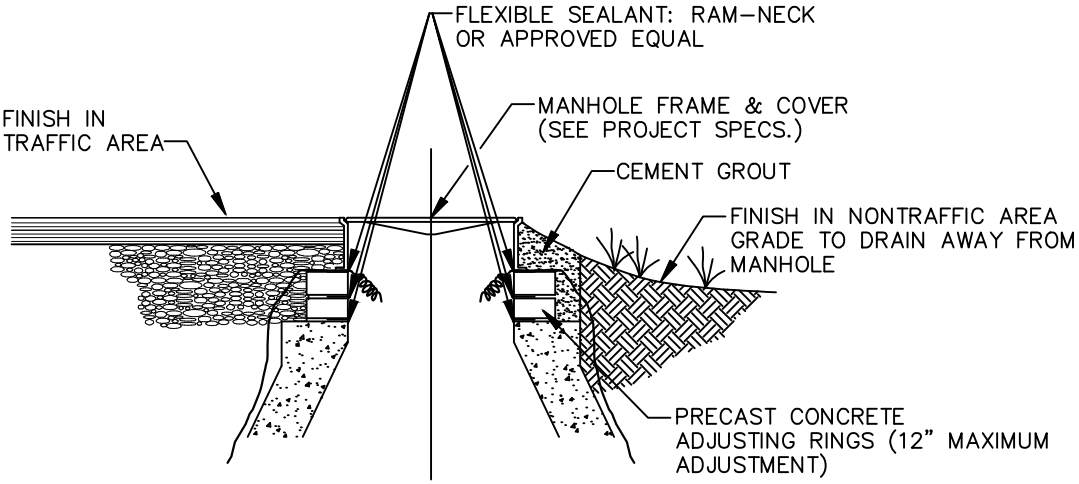
LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S22



VENT PIPE ASSEMBLY

N.T.S

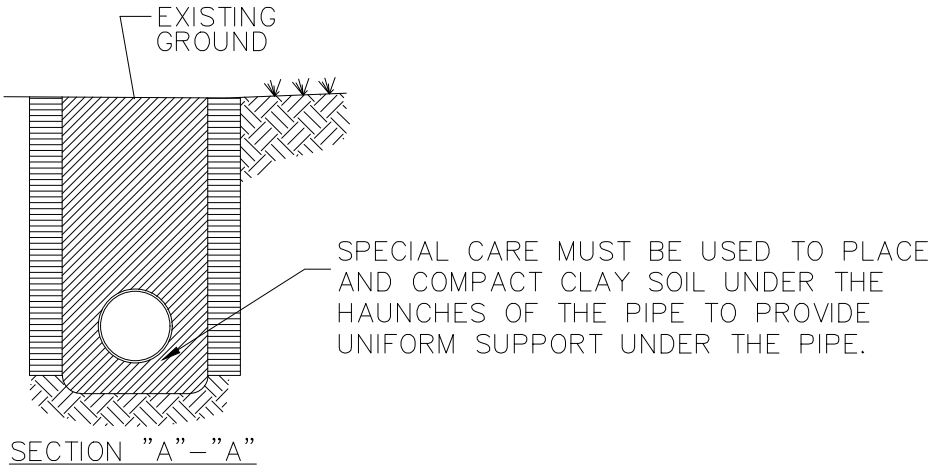
LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S23

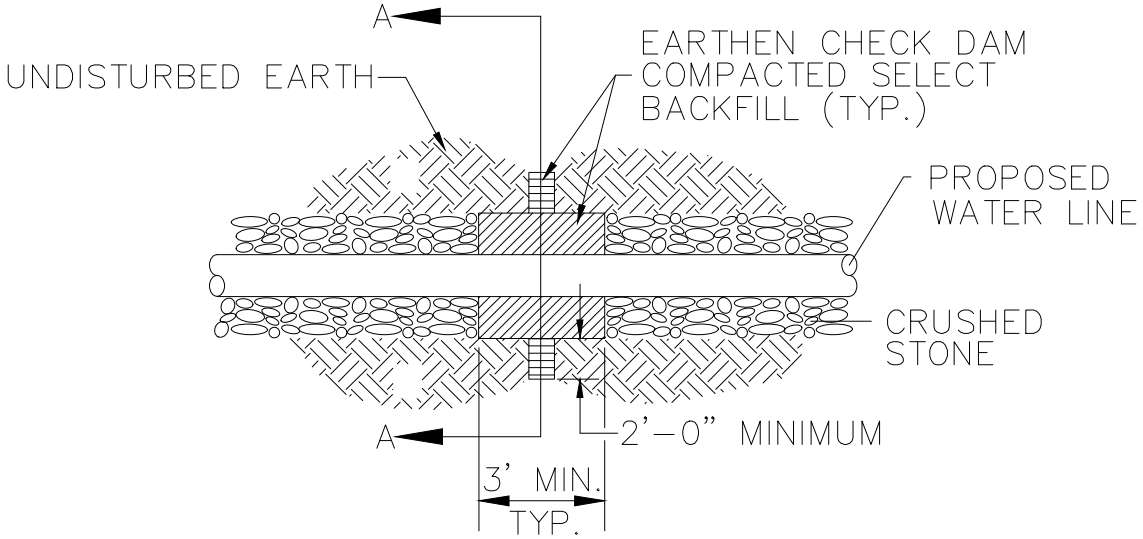


TYPICAL MANHOLE CASTING FINISH

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S24



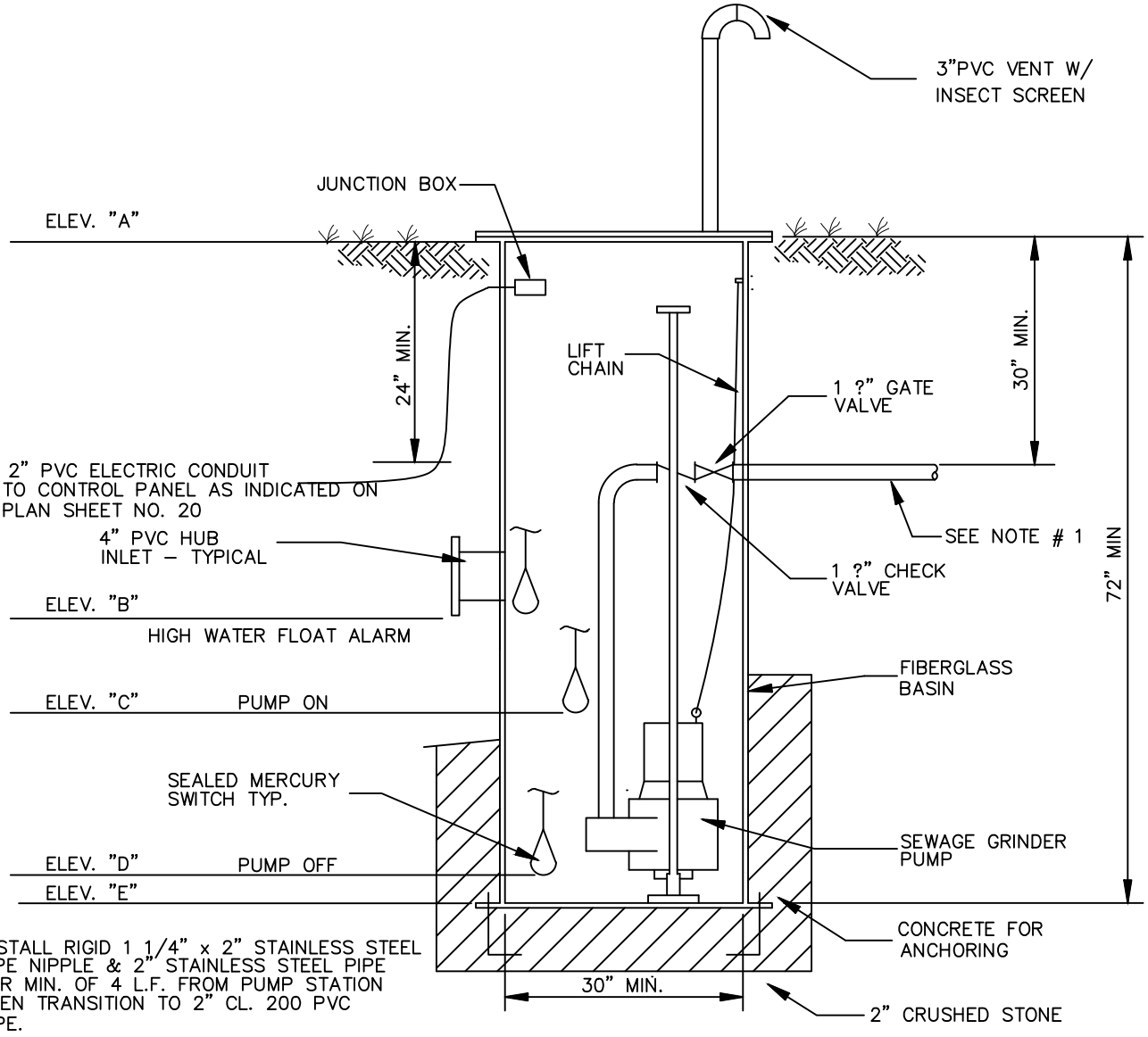


IN AREAS DESIGNATED FOR "EARTHEN CHECK DAM", BEDDING & BACKFILL WITHIN THE PIPE ZONE AND FOR A DISTANCE OF 3 FEET ALONG THE PIPE CENTERLINE SHALL BE SELECTED CLAY SOIL PLACED IN LIFTS OF 6 INCHES± AND COMPACTED TO AT LEAST 80% MINIMUM DENSITY (STANDARD PROCTOR)

EARTHEN CHECK DAM

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S25



NOTE:

1. INSTALL RIGID 1 1/4" x 2" STAINLESS STEEL PIPE NIPPLE & 2" STAINLESS STEEL PIPE FOR MIN. OF 4 L.F. FROM PUMP STATION THEN TRANSITION TO 2" CL. 200 PVC PIPE.

SIMPLEX GRINDER PUMP STATION

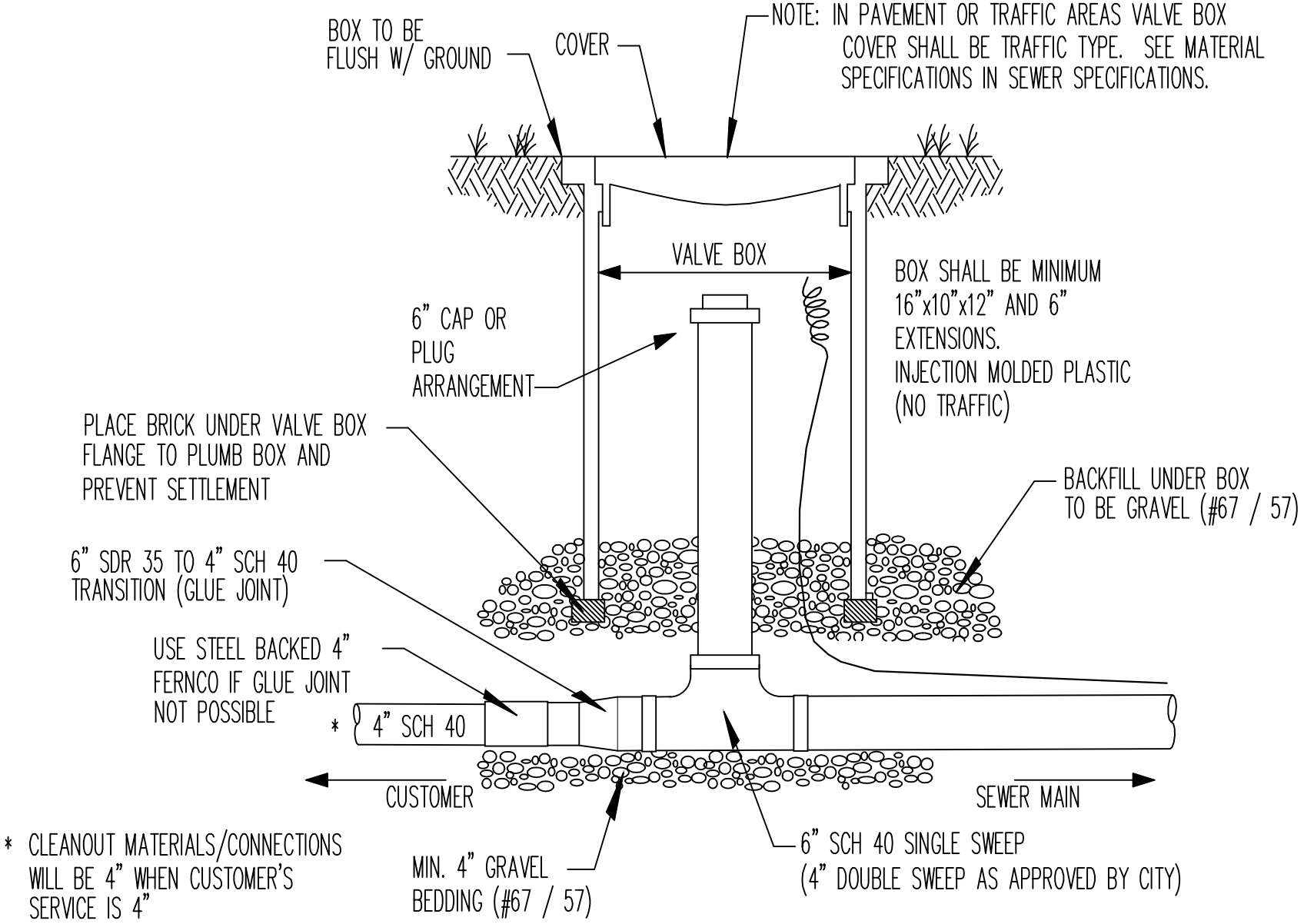
SCALE: NONE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S26

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS

STANDARD DETAIL

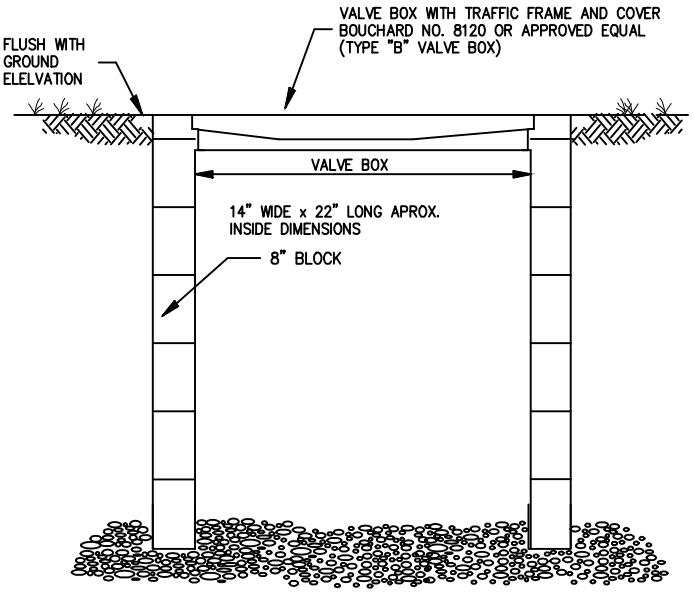
S27



* CLEANOUT MATERIALS/CONNECTIONS WILL BE 4" WHEN CUSTOMER'S SERVICE IS 4"

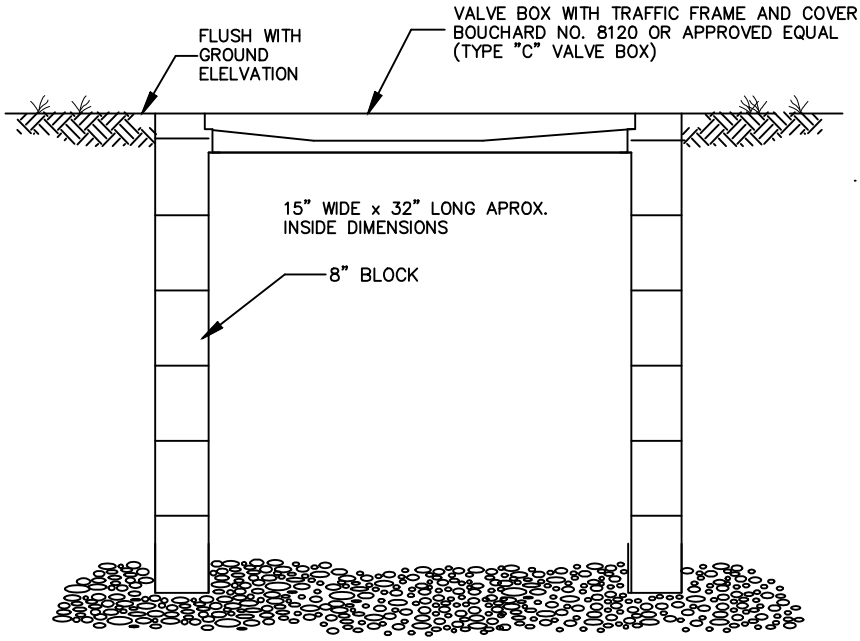
TYPICAL CLEANOUT ASSEMBLY

NOT TO SCALE



SMALL VALVE BOX AND COVER (TRAFFIC TYPE) (THIS DETAIL FOR VALVE BOX CONSRUCTION ONLY)

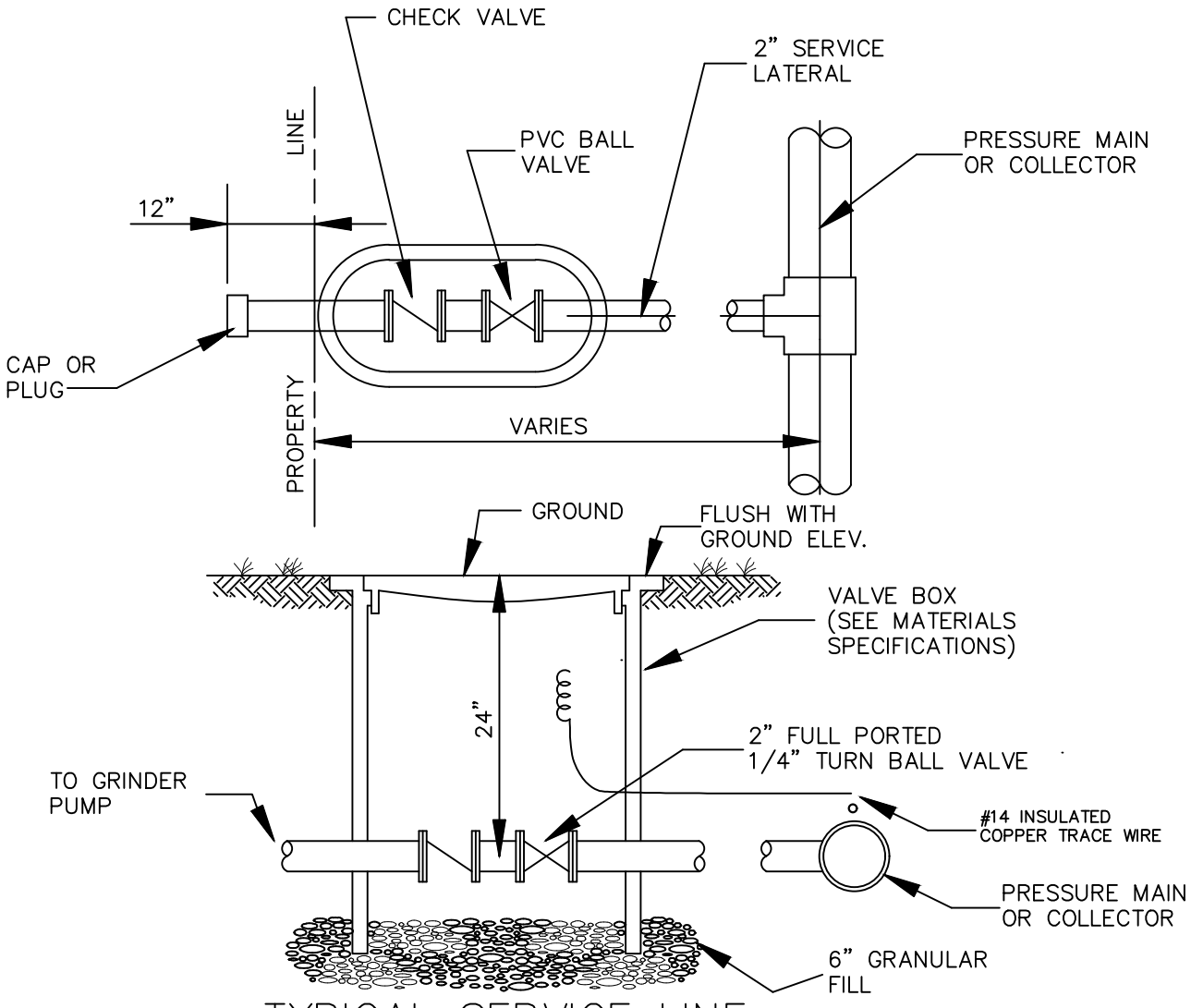
NOT TO SCALE



LARGE VALVE BOX AND COVER (TRAFFIC TYPE) (THIS DETAIL FOR VALVE BOX CONSTRUCTION ONLY)

NOT TO SCALE

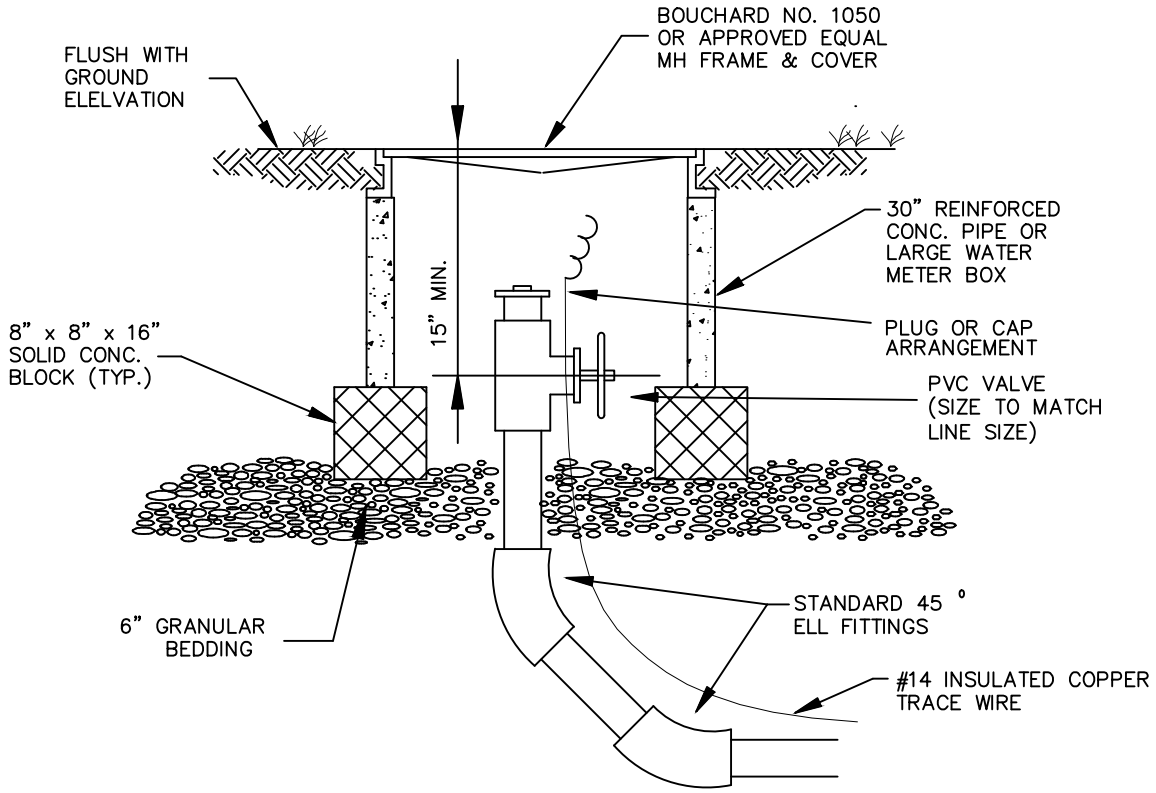
LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S28



TYPICAL SERVICE LINE CONNECTION (2")

NOT TO SCALE

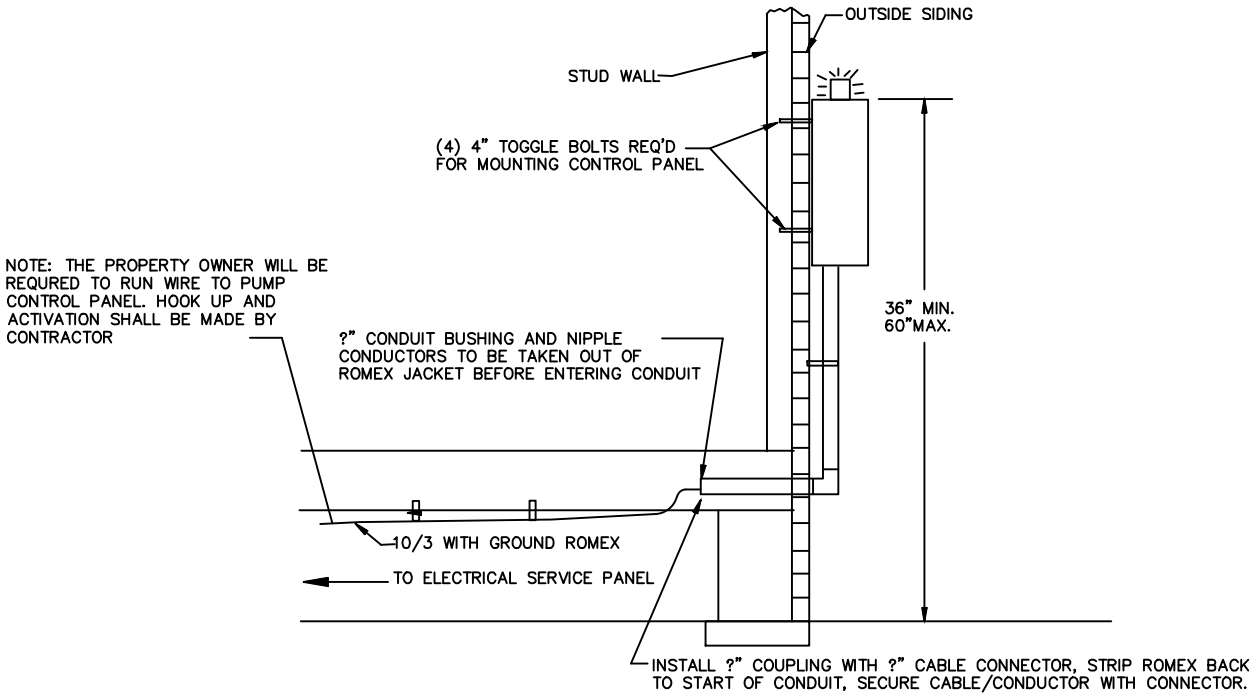
LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S29



TERMINAL VALVE BOX AND CLEANOUT ASSEMBLY AT END OF PRESSURE SEWER

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S30



NOTE 1 MINIMUM CONDUCTOR SIZE FROM CUSTOMER'S ELECTRICAL SERVICE TO BE #10 TW 3c/w GND. (THREE INSULATED CONDUCTORS AND ONE GROUND WIRE.

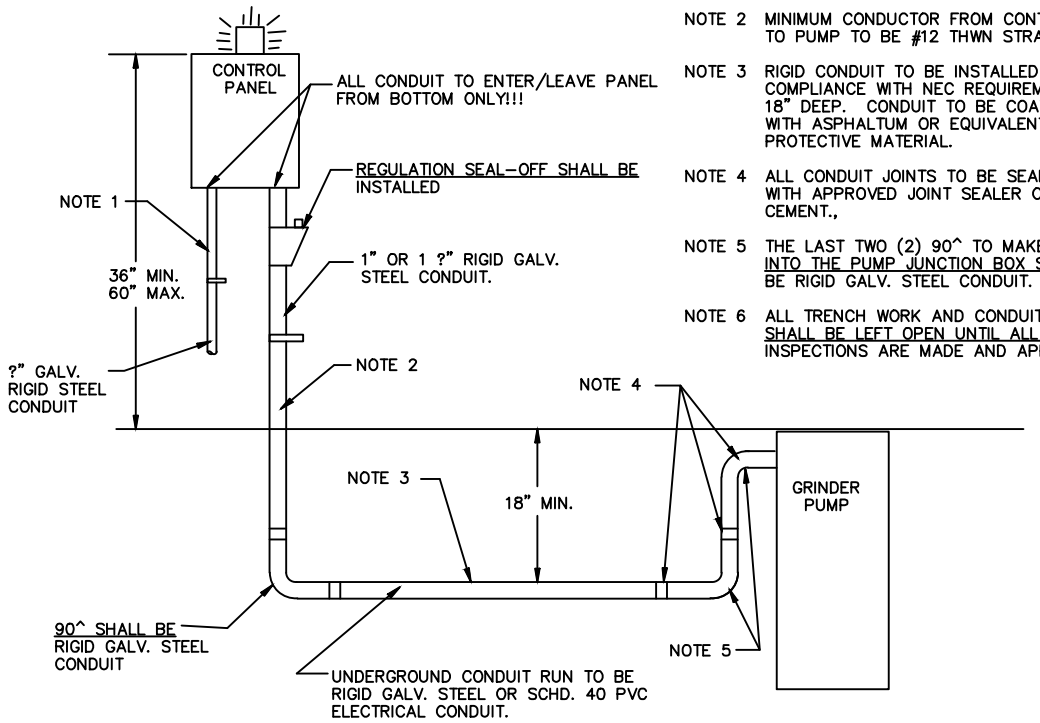
NOTE 2 MINIMUM CONDUCTOR FROM CONTROL TO PUMP TO BE #12 THWN STRANDED

NOTE 3 RIGID CONDUIT TO BE INSTALLED IN COMPLIANCE WITH NEC REQUIREMENTS, 18" DEEP. CONDUIT TO BE COATED WITH ASPHALTUM OR EQUIVALENT PROTECTIVE MATERIAL.

NOTE 4 ALL CONDUIT JOINTS TO BE SEALED WITH APPROVED JOINT SEALER OR CEMENT.,

NOTE 5 THE LAST TWO (2) 90^ TO MAKE ENTRY INTO THE PUMP JUNCTION BOX SHALL BE RIGID GALV. STEEL CONDUIT.

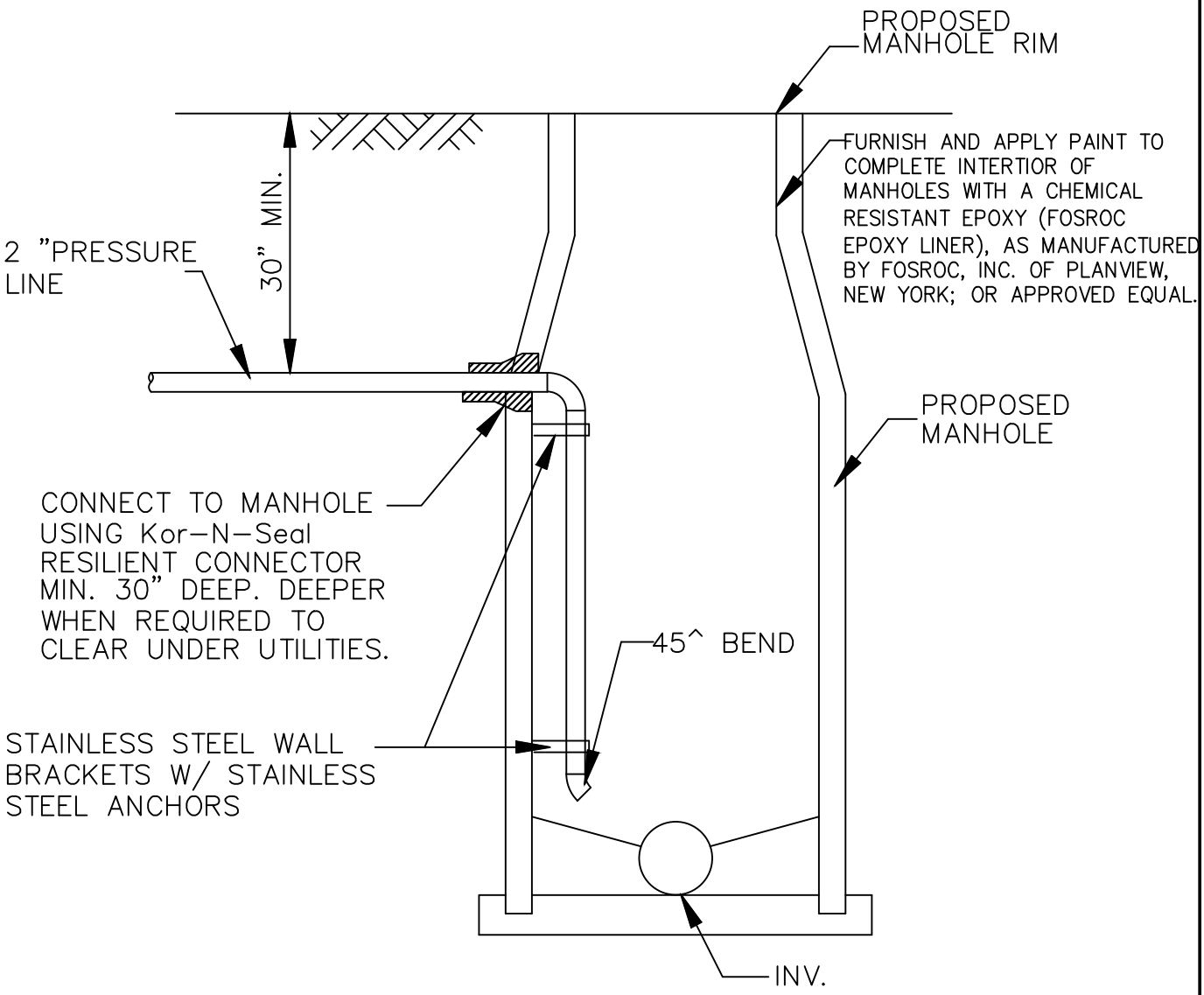
NOTE 6 ALL TRENCH WORK AND CONDUIT INSTALLATIONS SHALL BE LEFT OPEN UNTIL ALL FINAL INSPECTIONS ARE MADE AND APPROVED



TYPICAL ELECTRICAL WIRING INSTALLATIONS

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S31



PRESSURE MAIN CONNECTION AT GRAVITY MANHOLE

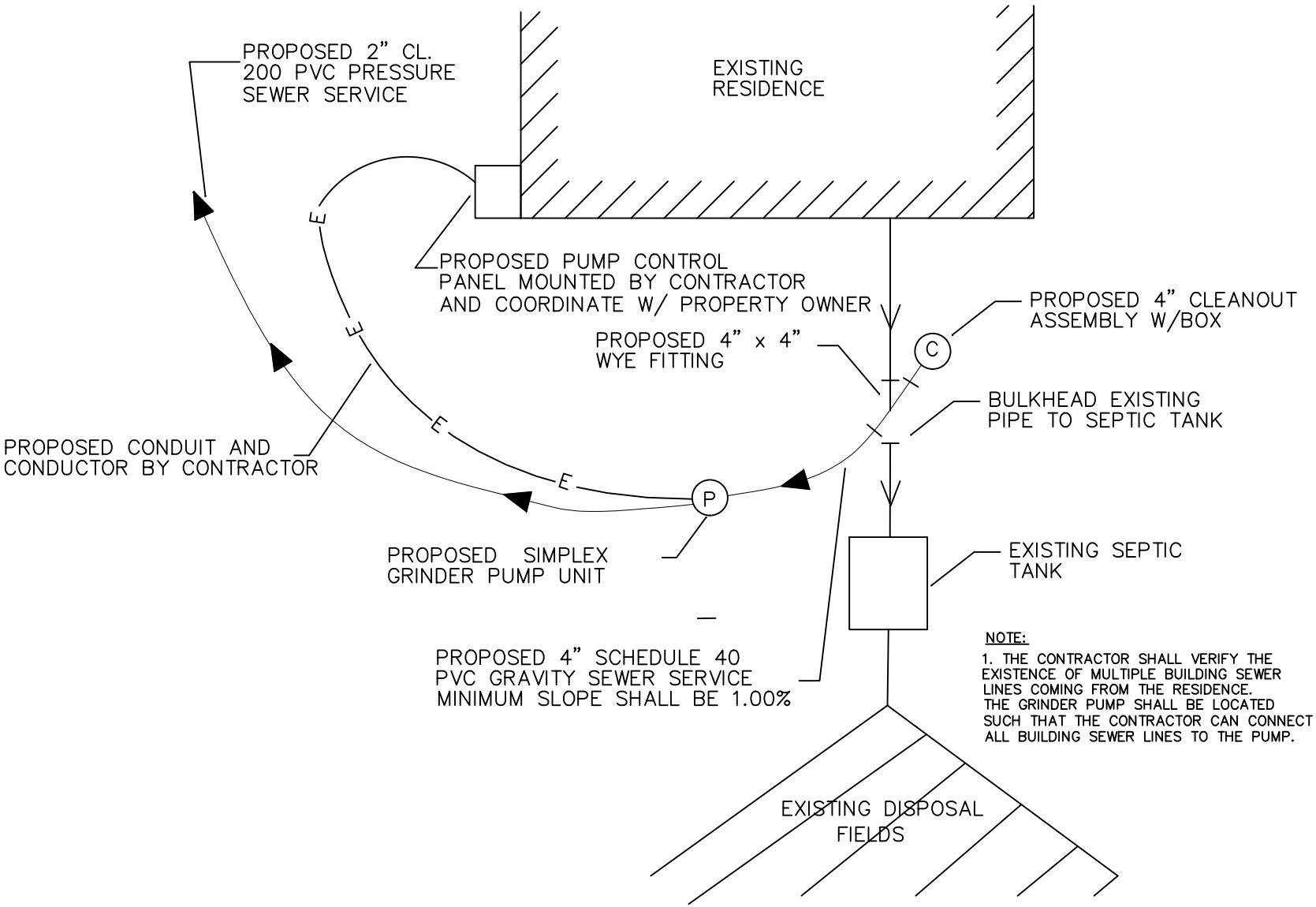
SCALE: NONE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S32

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS

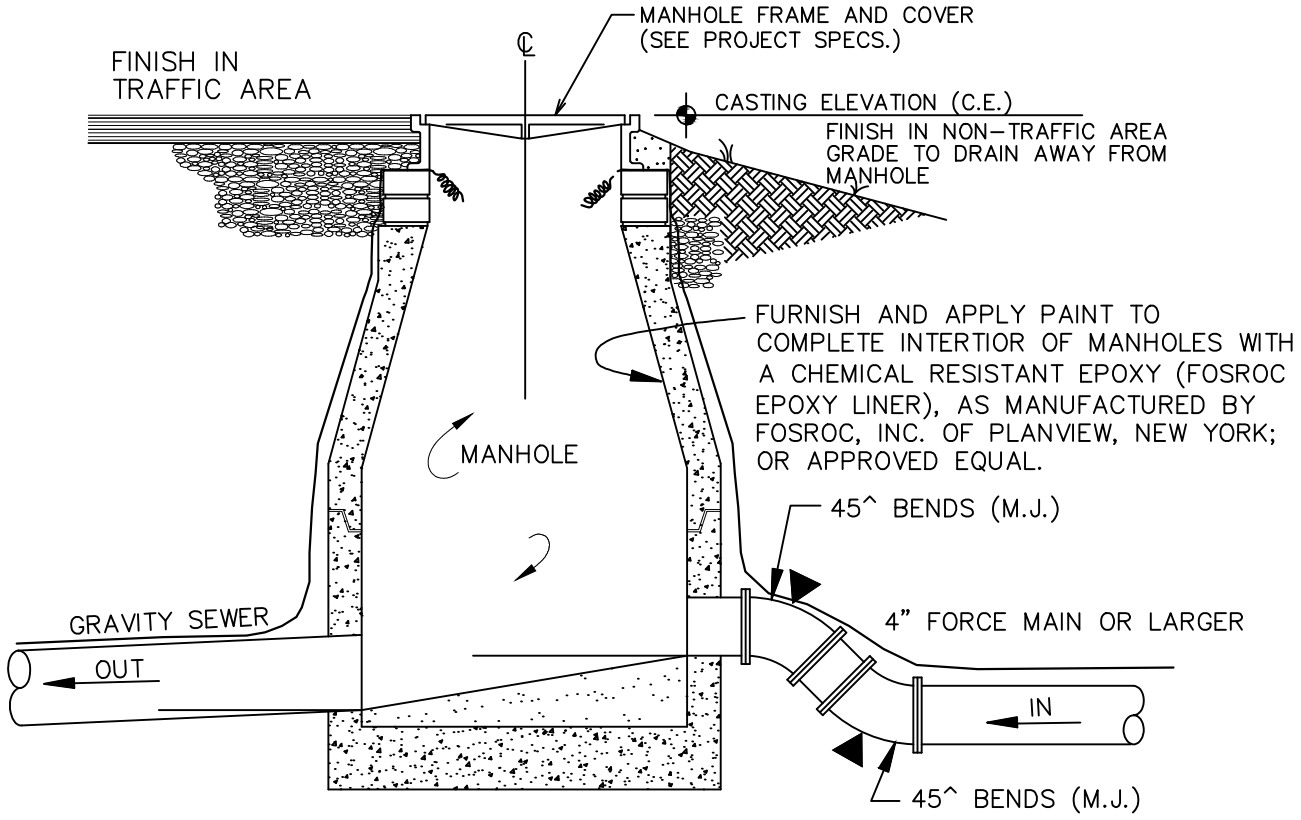
STANDARD DETAIL

S33



TYPICAL GRINDER PUMP AND SERVICE CONNECTION DETAIL

NOT TO SCALE



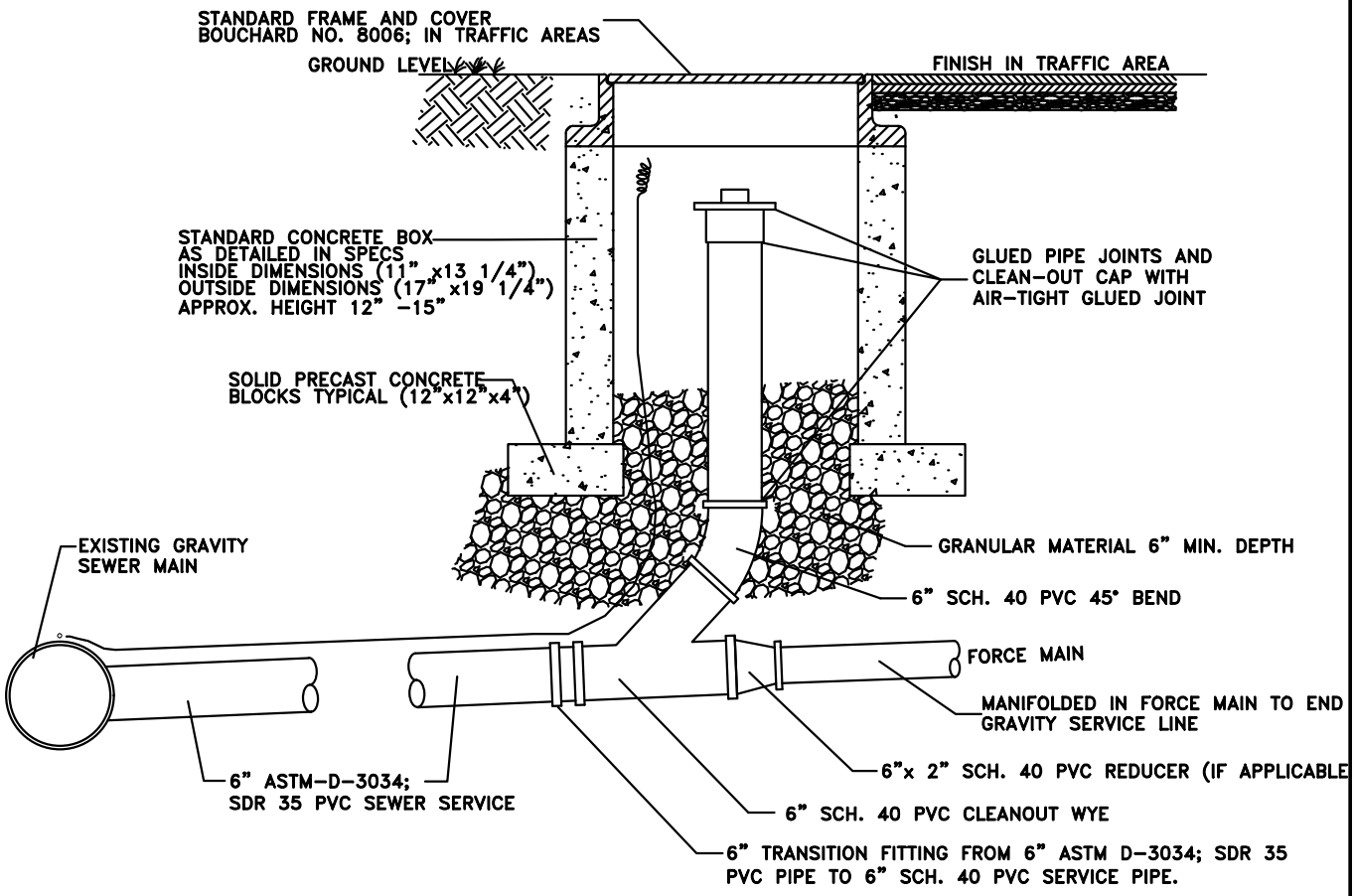
LARGE FORCMAIN TIE-IN MANHOLE

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S34

GENERAL NOTES:

1. TRAFFIC BEARING BOX REQUIRED IN TRAFFIC AREAS.
2. ALL PIPE AND FITTINGS SHALL BE OF SIMILAR MATERIAL.
3. ALL PIPE SHALL BE OF SAME SIZE.
4. NO BENDS ARE ALLOWED IN THE LATERAL FROM THE MAIN TO THE CLEAN-OUT STACK WYE (EXCEPT AS NOTED.)
5. ALL MAIN LINE TAPS ON ACTIVE MAINS SHALL BE SUPERVISED OR PERFORMED BY THE CITY OF LEBANON.
6. MINIMUM COVER FOR ALL SEWER LATERALS SHALL BE THREE (3') FEET.
7. GRAVITY SECTION AND CLEANOUT SHALL BE 6" DIAMETER FOR PUBLIC FORCE MAINS AND 4" DIAMETER FOR PRIVATE FORCE MAINS AS APPROVED.
8. PUBLIC FORCE MAINS SHALL CONNECT TO SEWER MANHOLES.
9. PROPERTY OWNER RESPONSIBLE FOR INSTALLING CLEANOUT ON PROPERTY LINE WHEN MAINTENANCE OCCURS, IN ACCORDANCE WITH THIS STANDARD.



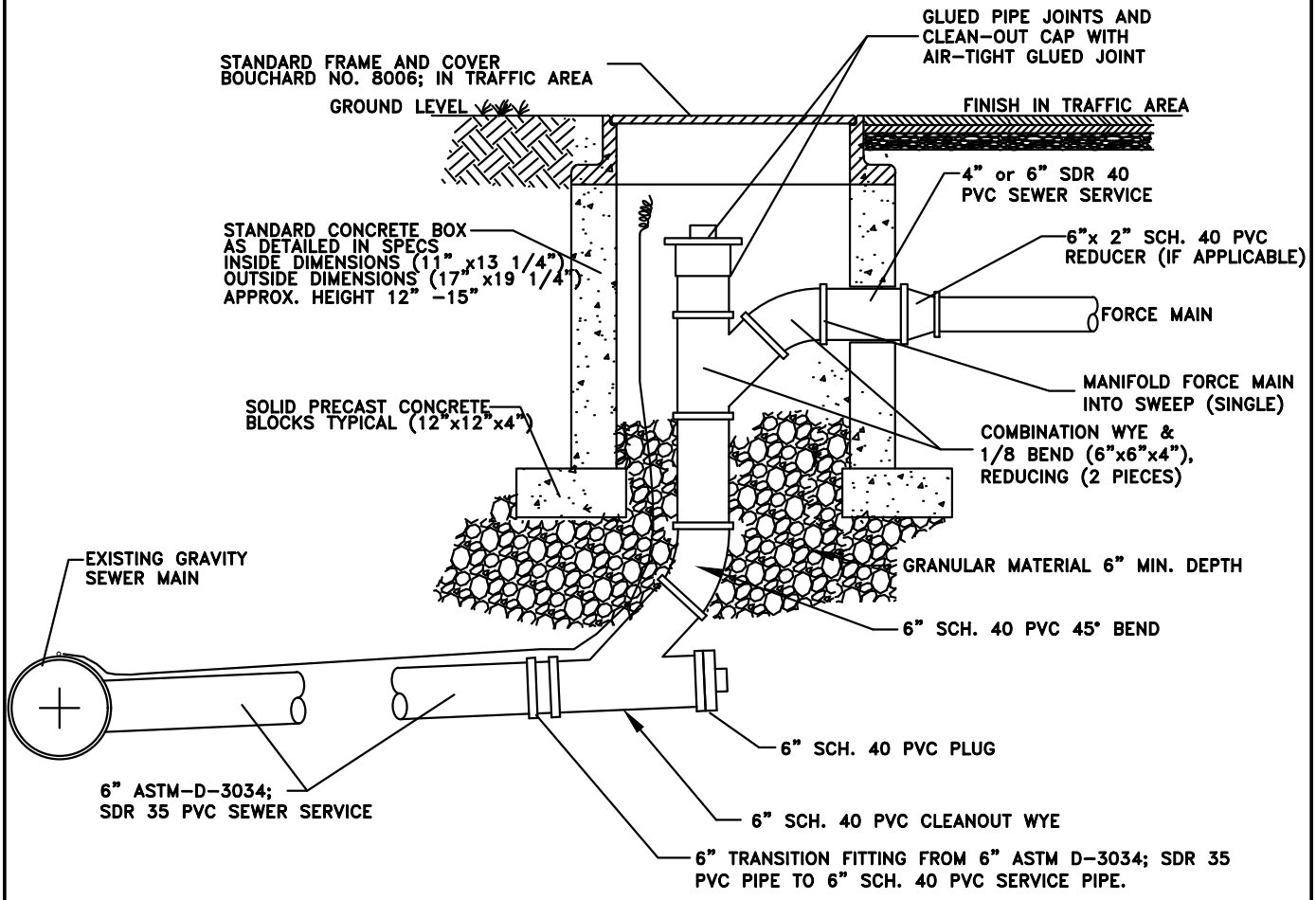
TYPICAL SHALLOW CLEANOUT ASSEMBLY W/ FORCE MAIN CONNECTION

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S35

GENERAL NOTES:

1. TRAFFIC BEARING BOX REQUIRED IN TRAFFIC AREAS.
2. ALL PIPE AND FITTINGS SHALL BE OF SIMILAR MATERIAL.
3. ALL PIPE SHALL BE OF SAME SIZE.
4. NO BENDS ARE ALLOWED IN THE LATERAL FROM THE MAIN TO THE CLEAN-OUT STACK WYE (EXCEPT AS NOTED.)
5. ALL MAIN LINE TAPS ON ACTIVE MAINS SHALL BE SUPERVISED OR PERFORMED BY THE CITY OF LEBANON.
6. MINIMUM COVER FOR ALL SEWER LATERALS SHALL BE THREE (3') FEET.
7. GRAVITY SECTION AND CLEANOUT SHALL BE 6" DIAMETER FOR PUBLIC FORCE MAINS AND 4" DIAMETER FOR PRIVATE FORCE MAINS AS APPROVED.
8. PUBLIC FORCE MAINS SHALL CONNECT TO SEWER MANHOLES.
9. PROPERTY OWNER RESPONSIBLE FOR INSTALLING CLEANOUT ON PROPERTY LINE WHEN MAINTENANCE OCCURS, IN ACCORDANCE WITH THIS STANDARD.

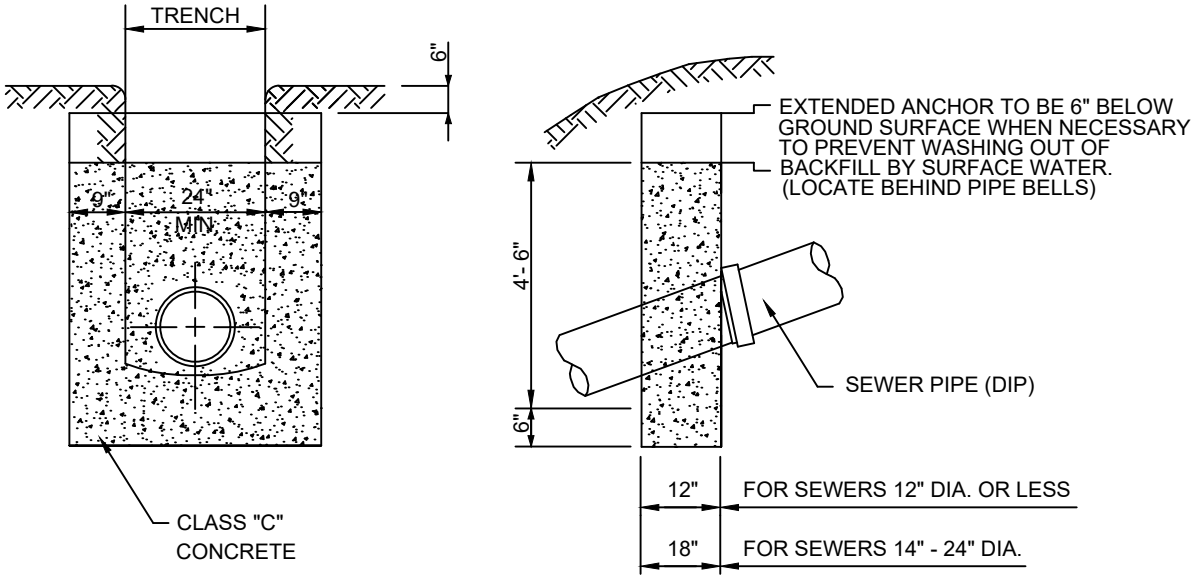


* IF APPROVED BY CITY OF LEBANON ENGINEERING DEPARTMENT FOR DEEP INSTALLATION

TYPICAL DEEP CLEANOUT ASSEMBLY W/ FORCE MAIN CONNECTION*

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S35-A



NOTE:

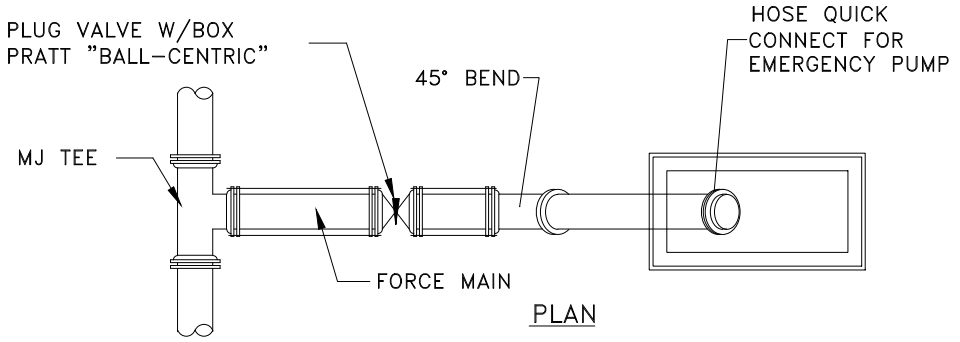
PROVIDE NO ANCHOR ON GRADES LESS THAN 18.86% UNLESS NOTED.
PROVIDE ANCHOR 36' C-C ON GRADES BETWEEN 18.86% AND 34%.
PROVIDE ANCHOR 24' C-C ON GRADES BETWEEN 34% AND 50%.
FOR CONDITIONS OTHER THAN SHOWN HEREON PROVIDE ANCHORS AS REQUIRED BY THE CONTRACT OR ORDERED BY THE ENGINEER IN THE FIELD.

CONCRETE SHALL BE PAID FOR UNDER CONTRACT ITEM FOR CONCRETE CRADLE AND / OR ENCASEMENT.

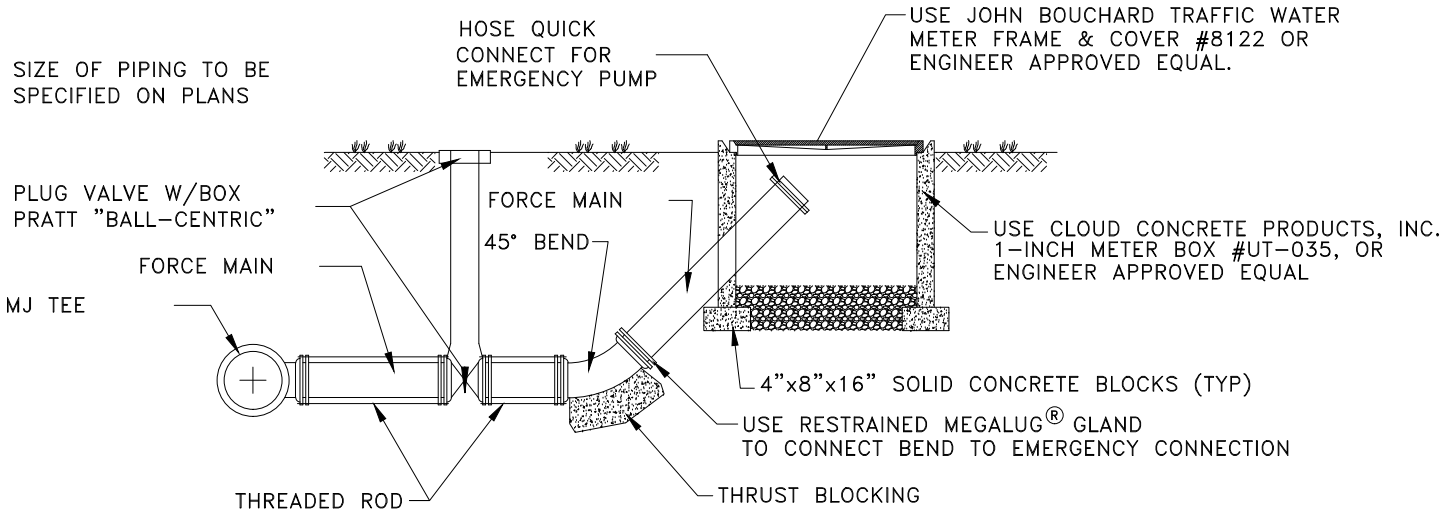
CONCRETE ANCHOR

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S36



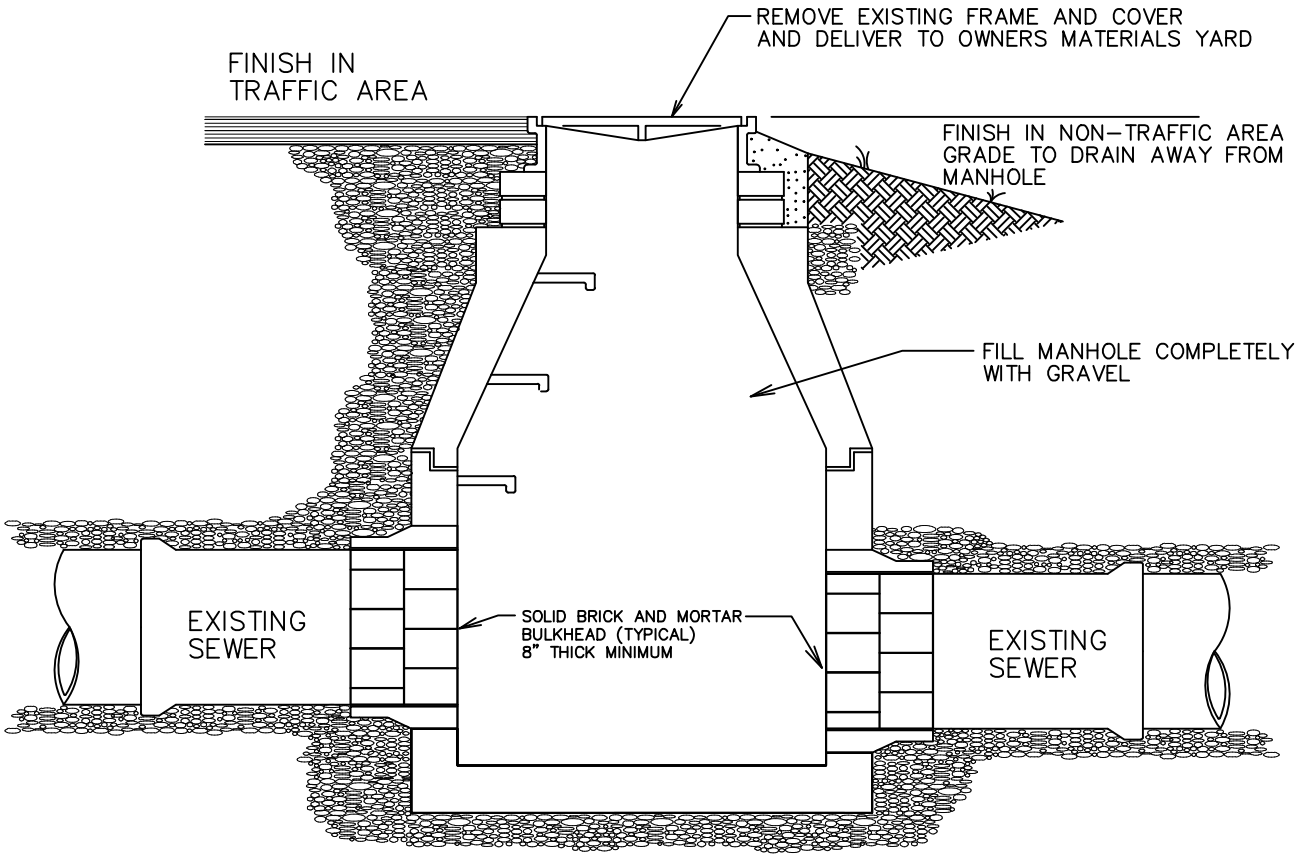
PLAN



SECTION

TYPICAL EMERGENCY PUMPING CONNECTION DETAIL

NOT TO SCALE



TYPICAL EXISTING MANHOLE ABANDONMENT

NOT TO SCALE

LEBANON, TN. – DEPARTMENT OF PUBLIC WORKS	STANDARD DETAIL	S38