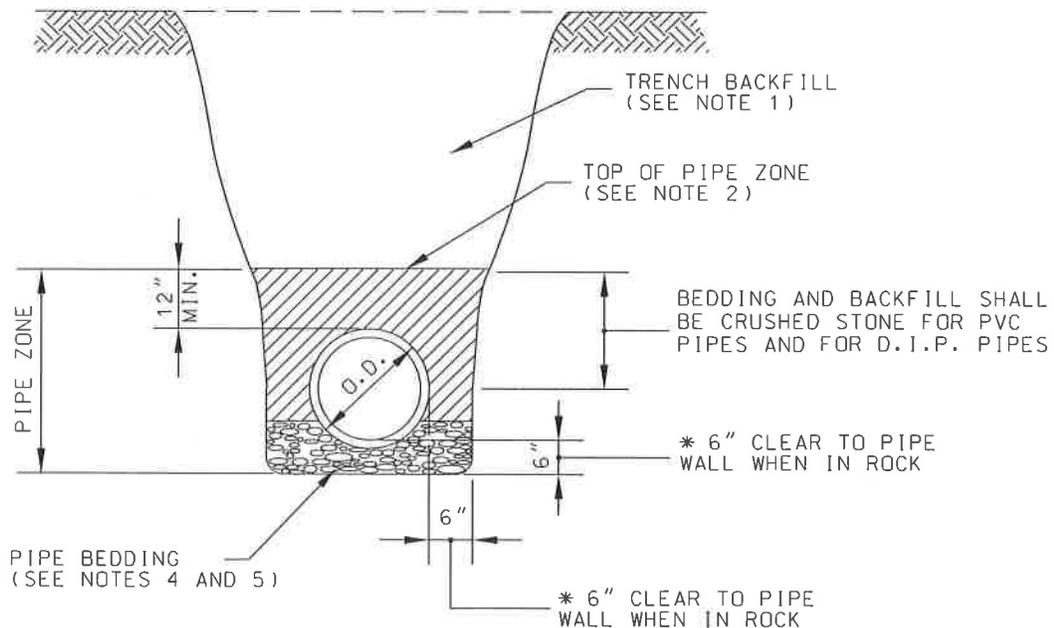


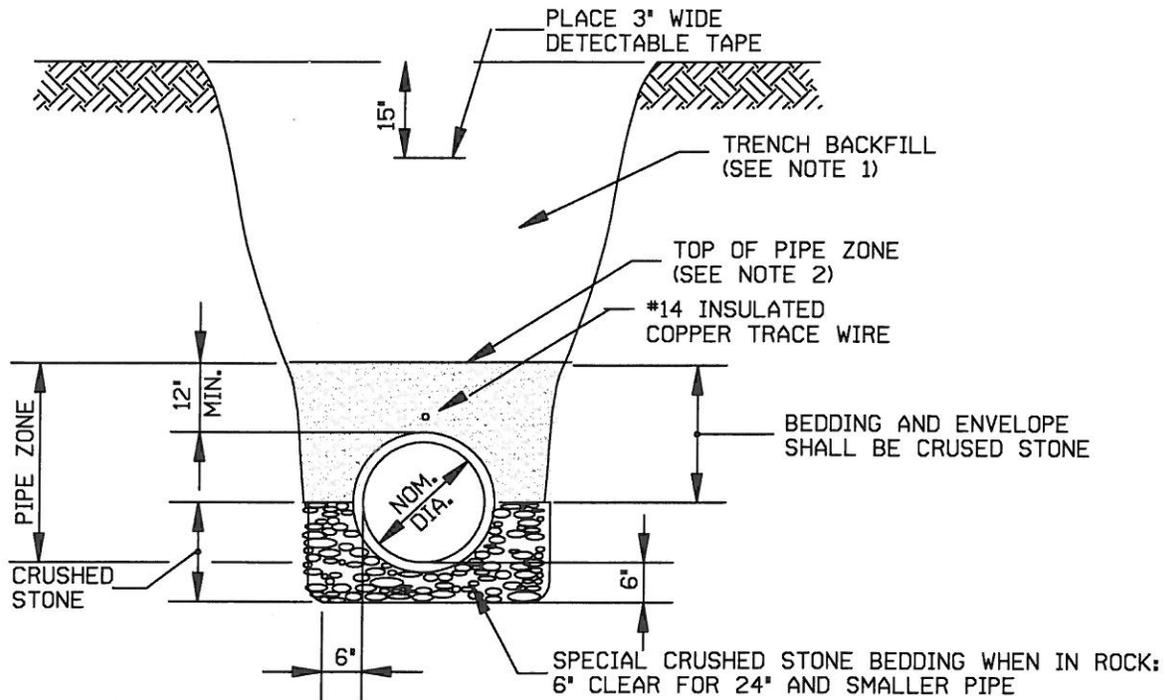
NOTES:

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. PIPE BEDDING IS TO BE CRUSHED STONE, GRAVEL OR OTHER GRANULAR MATERIAL AS APPROVED BY ENGINEER. DEPTH UNDER BOTTOM OF PIPE IS TO BE $\frac{1}{8}$ OUTER DIAMETER (O.D.) OF PIPE OR 4", WHICHEVER IS GREATER.* BEDDING SHALL EXTEND ABOVE PIPE BOTTOM TO A DEPTH EQUAL TO $\frac{1}{4}$ OUTER DIAMETER (O.D.) OF PIPE OR 2", WHICHEVER IS GREATER.
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 SEWER INSTALLATION
SHAPED TRENCH BOTTOM
GRANULAR BEDDING AND SIDEWALL SUPPORT

NOT TO SCALE



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 CRUSHED STONE BEDDING. BEDDING FROM PIPE GRADE TO $\frac{1}{2}$ PIPE DIAMETER 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

CEMENT GROUT

FINISH IN TRAFFIC AREA

MANHOLE FRAME AND COVER (SEE PROJECT SPECS.)

CASTING ELEVATION (C.E.)

FINISH IN NON-TRAFFIC AREA GRADE TO DRAIN AWAY FROM MANHOLE

BRICK OR PRECAST CONCRETE ADJUSTING RINGS (12" MAX. ADJUSTMENT)

PRECAST CONCRETE CONSTRUCTION DETAIL

ASTM C478

PLASTIC SEALANT

RESLLIENT PIPE CONNECTOR

MANHOLE STEPS (SEE SPECS)

4' DIA. UNLESS SHOWN OTHERWISE ON PROJECT DRAWINGS

RESLLIENT PIPE CONNECTOR

FILL ANNULAR SPACE WITH "CAVITY-D-RING" AS MANUFACTURED BY N.P.C. SYSTEMS, INC. OF MILFURD, NH OR APPROVED EQUAL

ALL FILL UNDER PIPE IN AREA OF MH TO BE CRUSHED STONE

CONNECT ALL PIPE INVERTS WITH SMOOTH FLOW CHANNEL. HEIGHT OF CHANNEL TO BE 0.5 OF PIPE DIAMETER. SLOPE BENCH AT 1/2" PER FT. TO DRAIN TO CHANNEL

IF BASE IS IN ROCK, GRADE THIS AREA WITH CRUSHED STONE OR OTHE APPROVED INCOMPRESSIBLE MATERIAL. COVER WITH IMPERMEABLE MEMBRANE BEFORE POURING CONCRETE

CLASS "D" CONCRETE OR RUBBLE MASONRY CHANNEL CONSTRUCTION

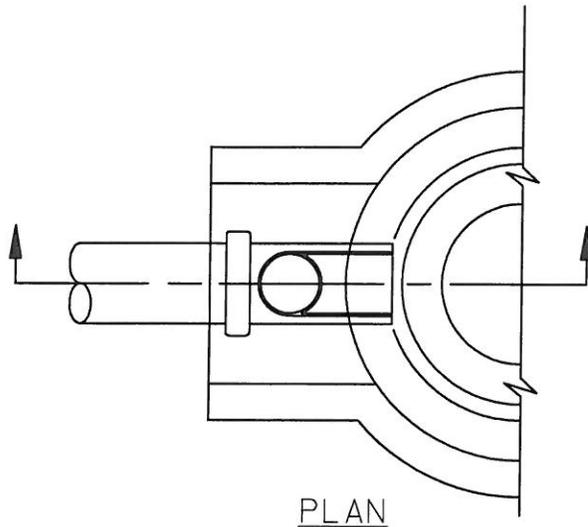
CLASS "D" CONCRETE BASE SLAB (8" MIN. THICKNESS) POUR DIRECTLY ON SOIL (IF POROUS, PLACE IMPERMEABLE MEMBRANE BEFORE POURING CONCRETE)

NOTE:

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

STANDARD MANHOLE

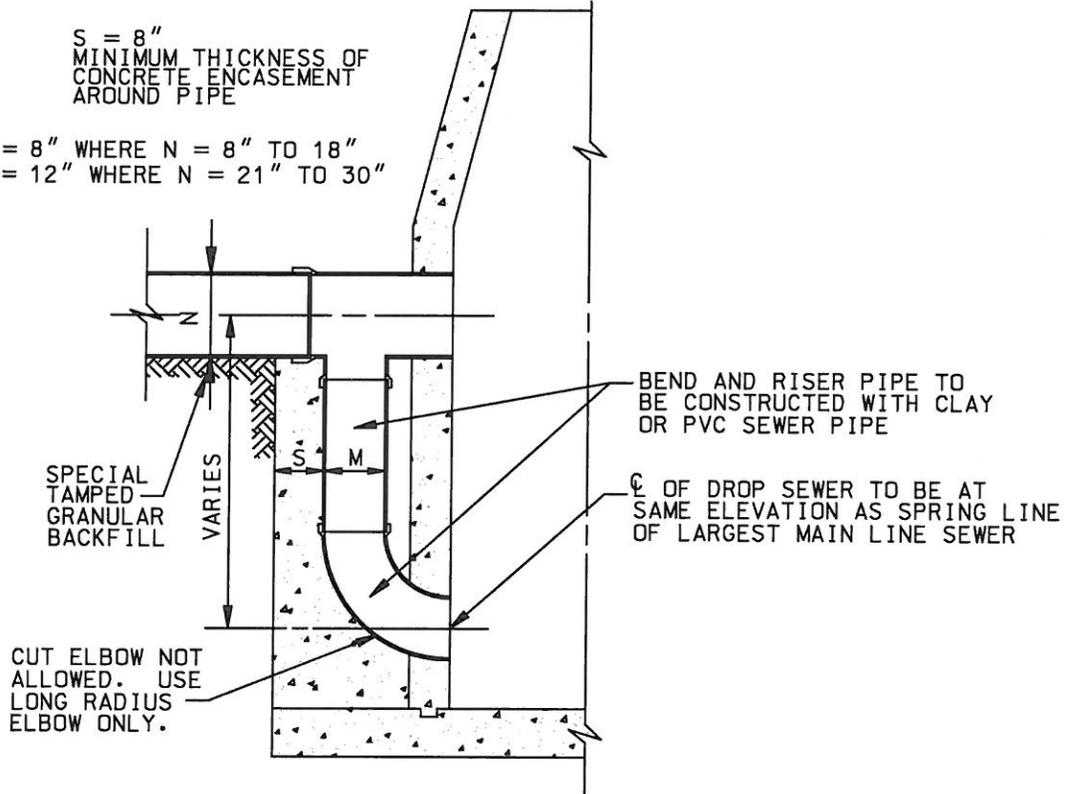
NOT TO SCALE



PLAN

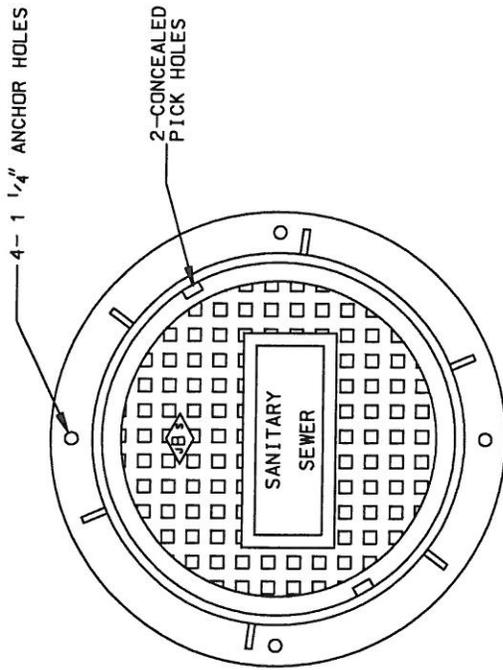
S = 8"
 MINIMUM THICKNESS OF
 CONCRETE ENCASEMENT
 AROUND PIPE

M = 8" WHERE N = 8" TO 18"
 M = 12" WHERE N = 21" TO 30"

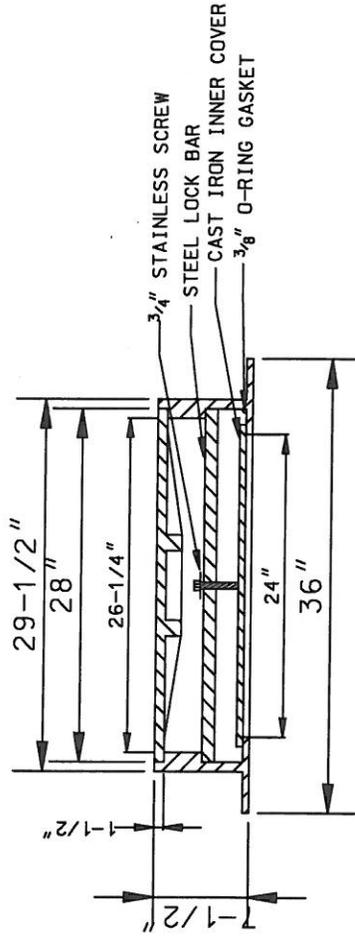


SECTION

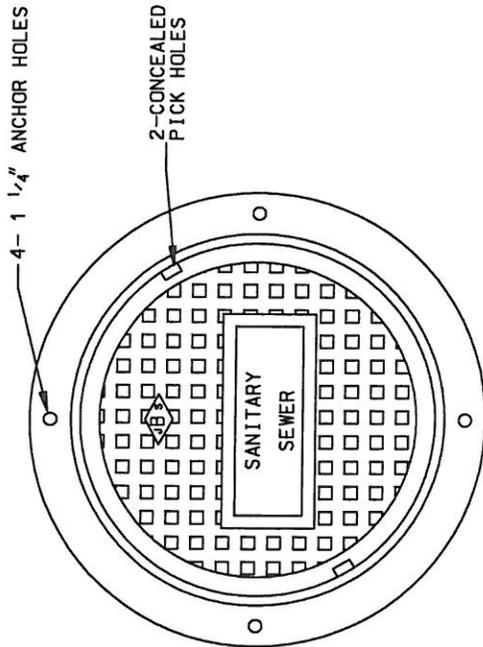
DROP PIPE
FOR STANDARD MANHOLES
 NOT TO SCALE



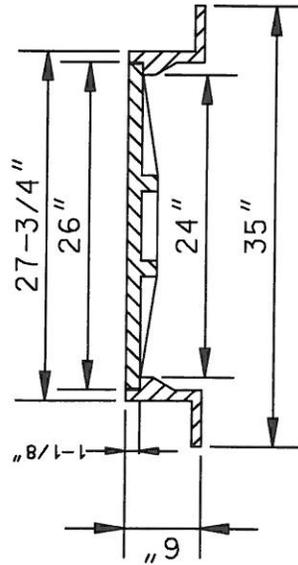
JOHN BOUCHARD & SONS CO.
NO. 1123 OR APPROVED EQUAL



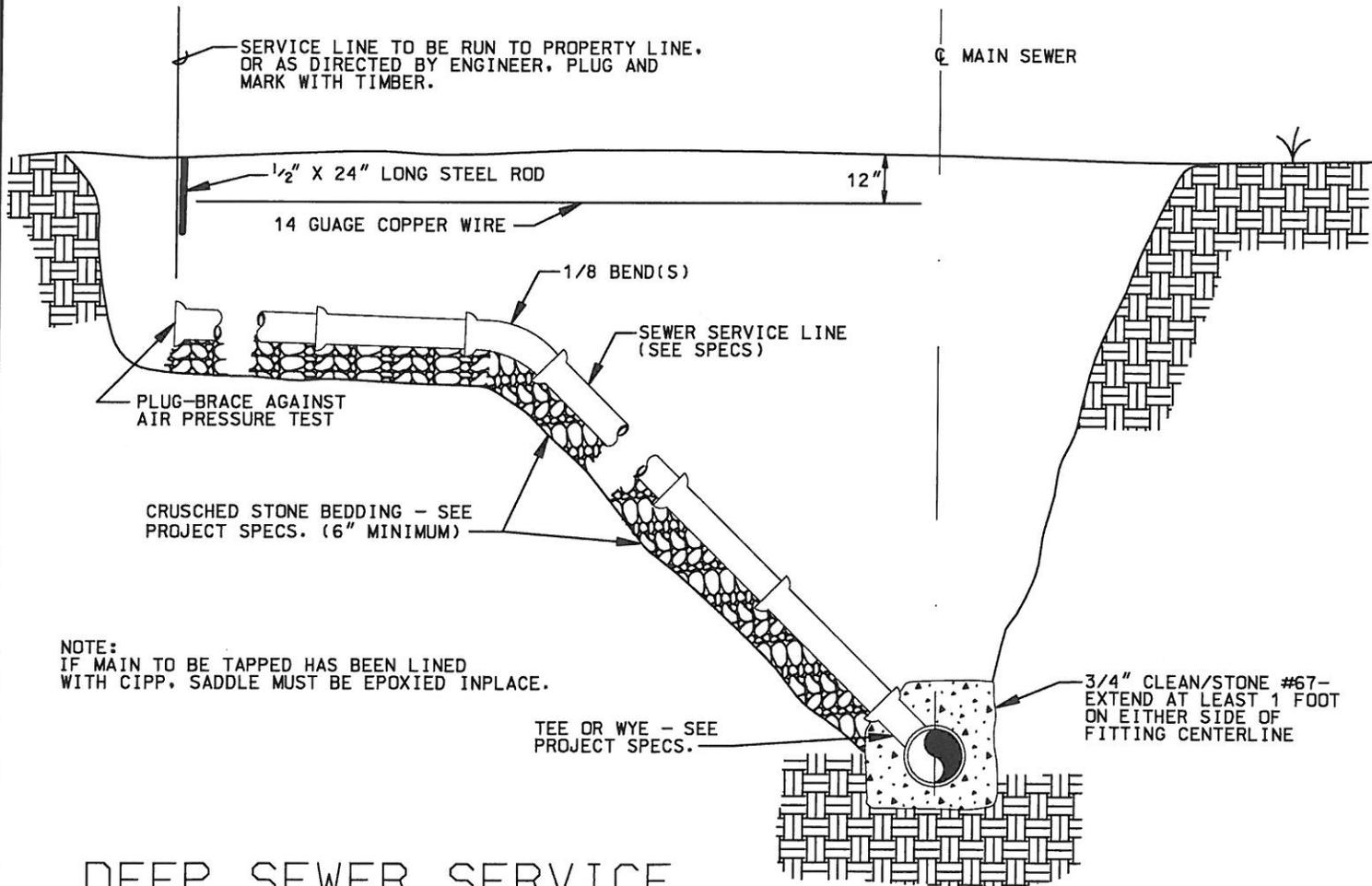
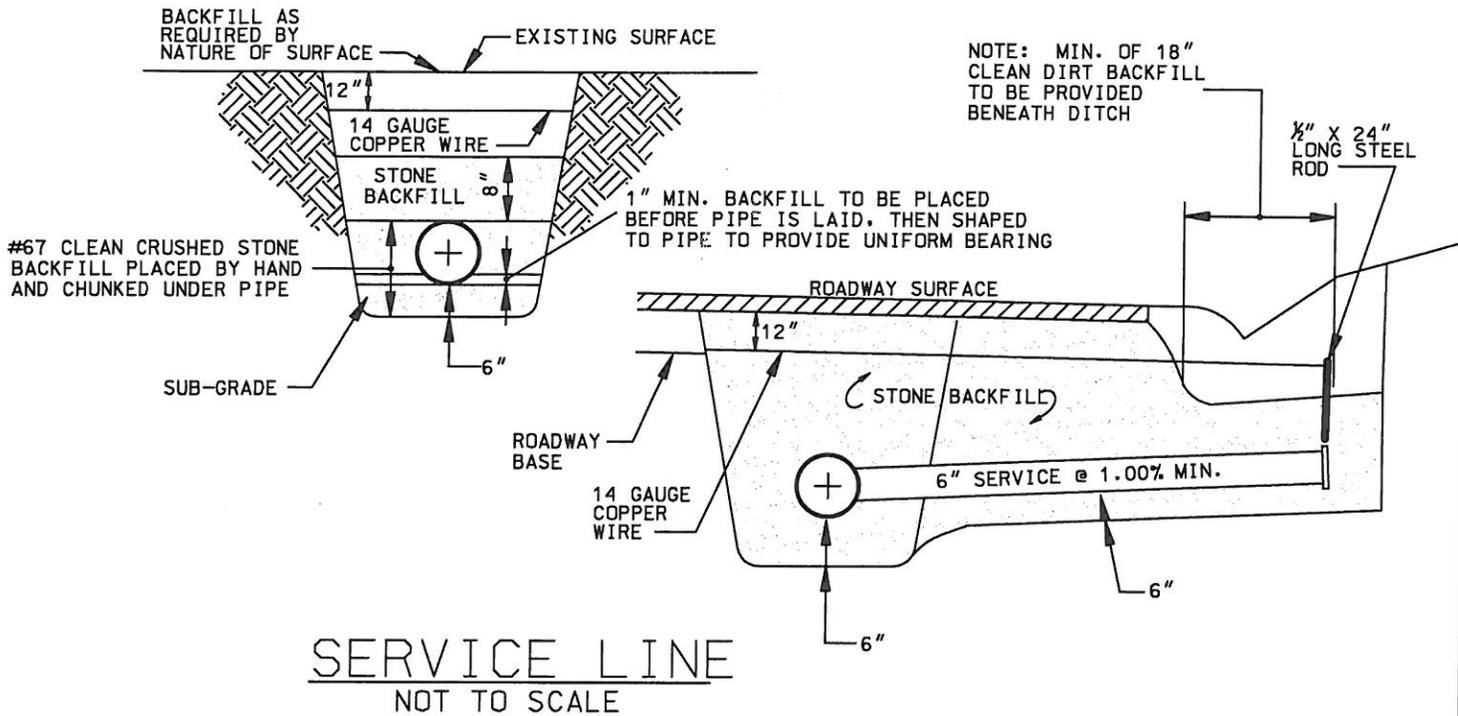
STANDARD WATERTIGHT
MANHOLE FRAME AND COVER
NOT TO SCALE



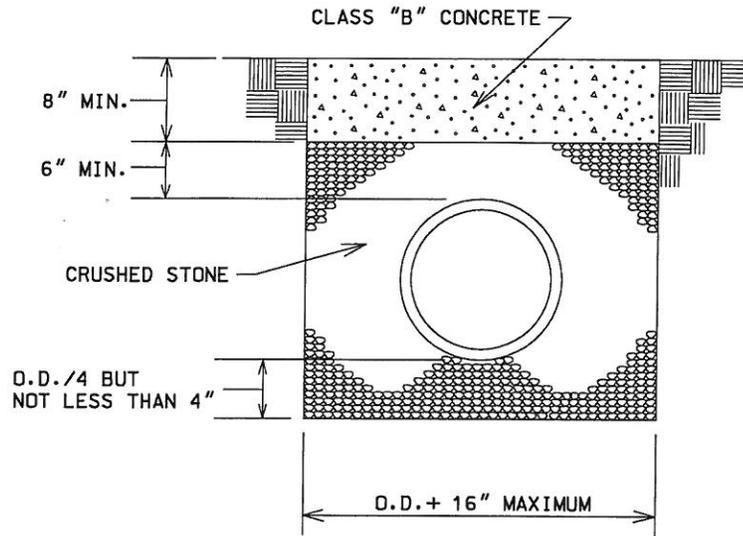
JOHN BOUCHARD & SONS CO.
NO. 1155 OR APPROVED EQUAL



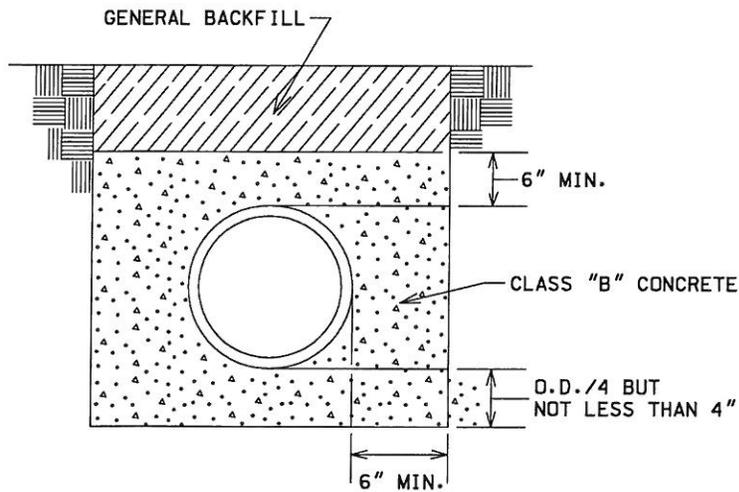
STANDARD TRAFFIC TYPE
MANHOLE FRAME AND COVER
NOT TO SCALE



SEWER SERVICE



CONCRETE CAP

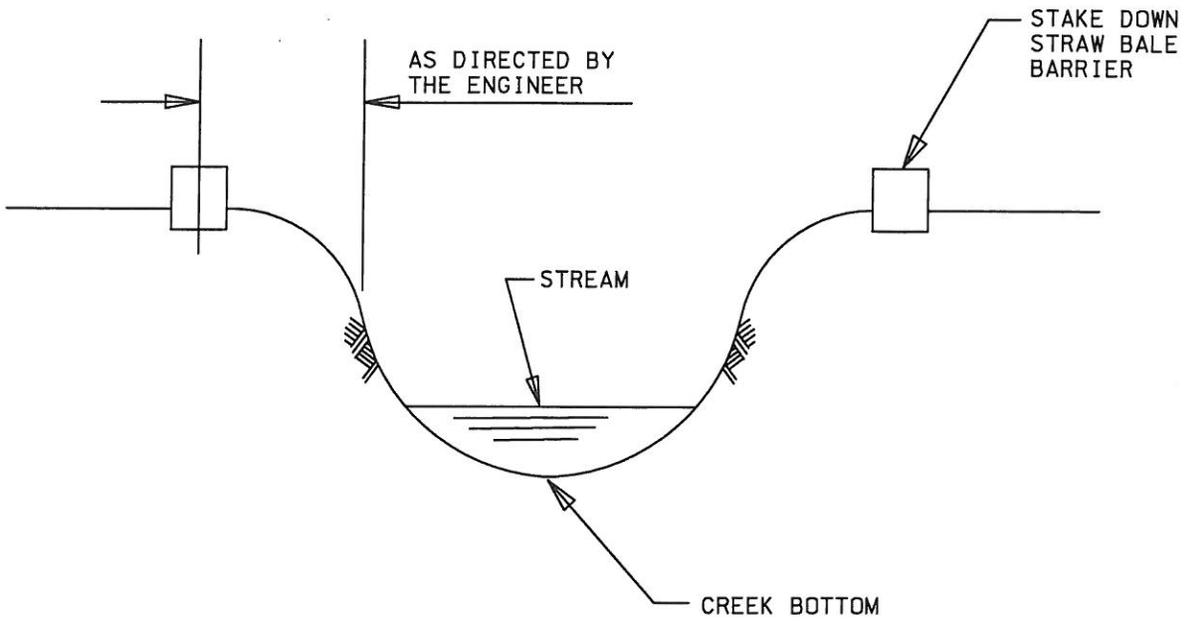


CONCRETE ENCASEMENT

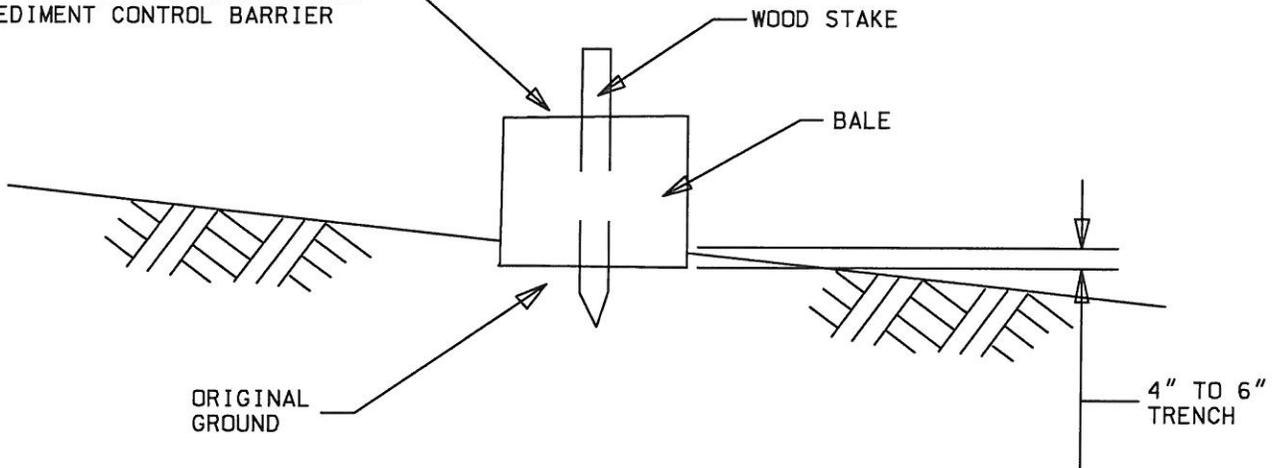
NOTE: TO BE USED WHERE NOTE ON DRAWINGS REQUIRES PIPE TO BE ENCASED OR CAPPED WITH CONCRETE OR WHERE THE OWNER OR HIS AUTHORIZED REPRESENTATIVE DIRECTS CONCRETE TO BE POURED.

CONCRETE CAP AND ENCASEMENT DETAILS

NOT TO SCALE

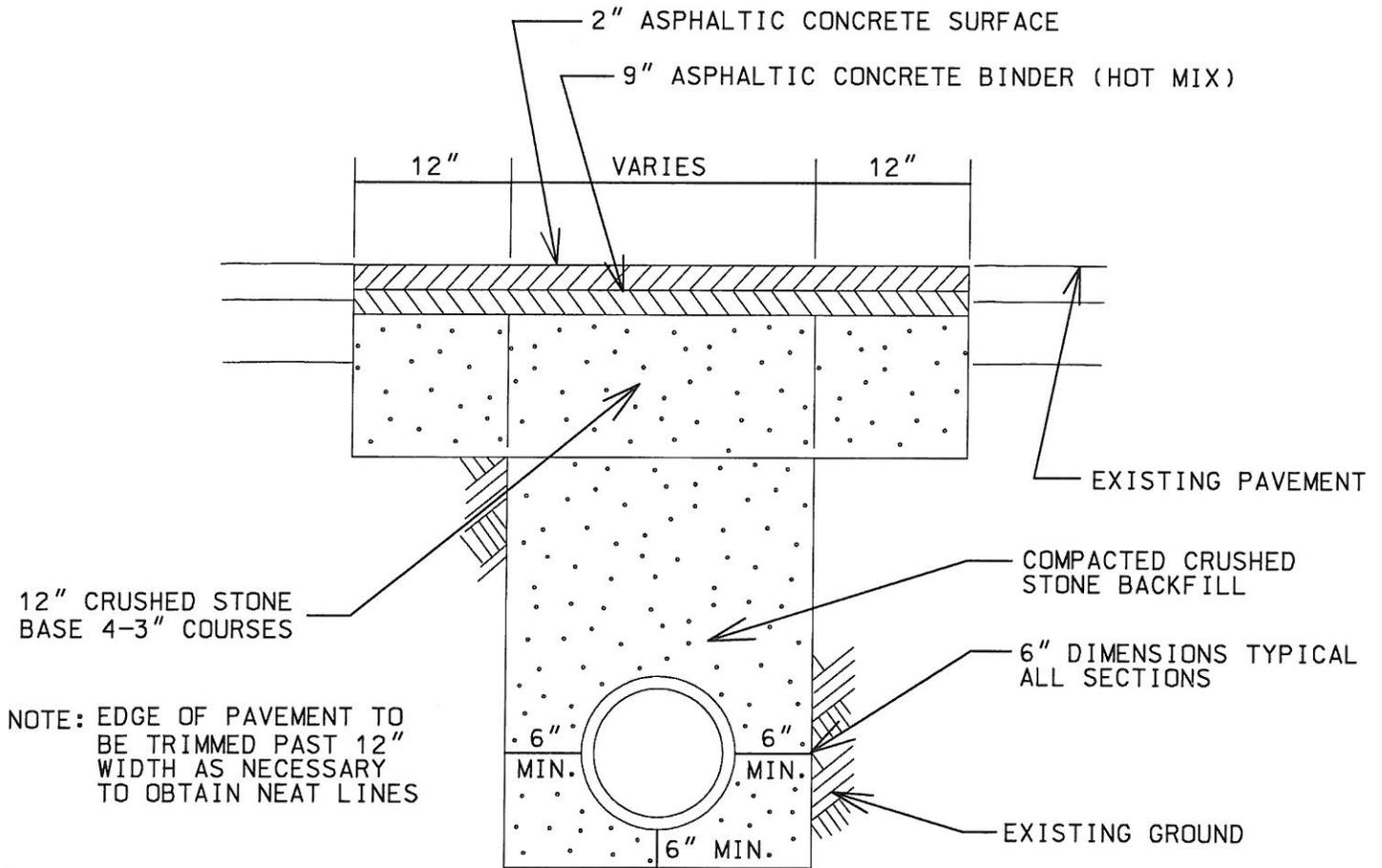


PLACE AND MAINTAINED CONTINUOUSLY
AS NECESSARY TO MAINTAINED
SEDIMENT CONTROL BARRIER



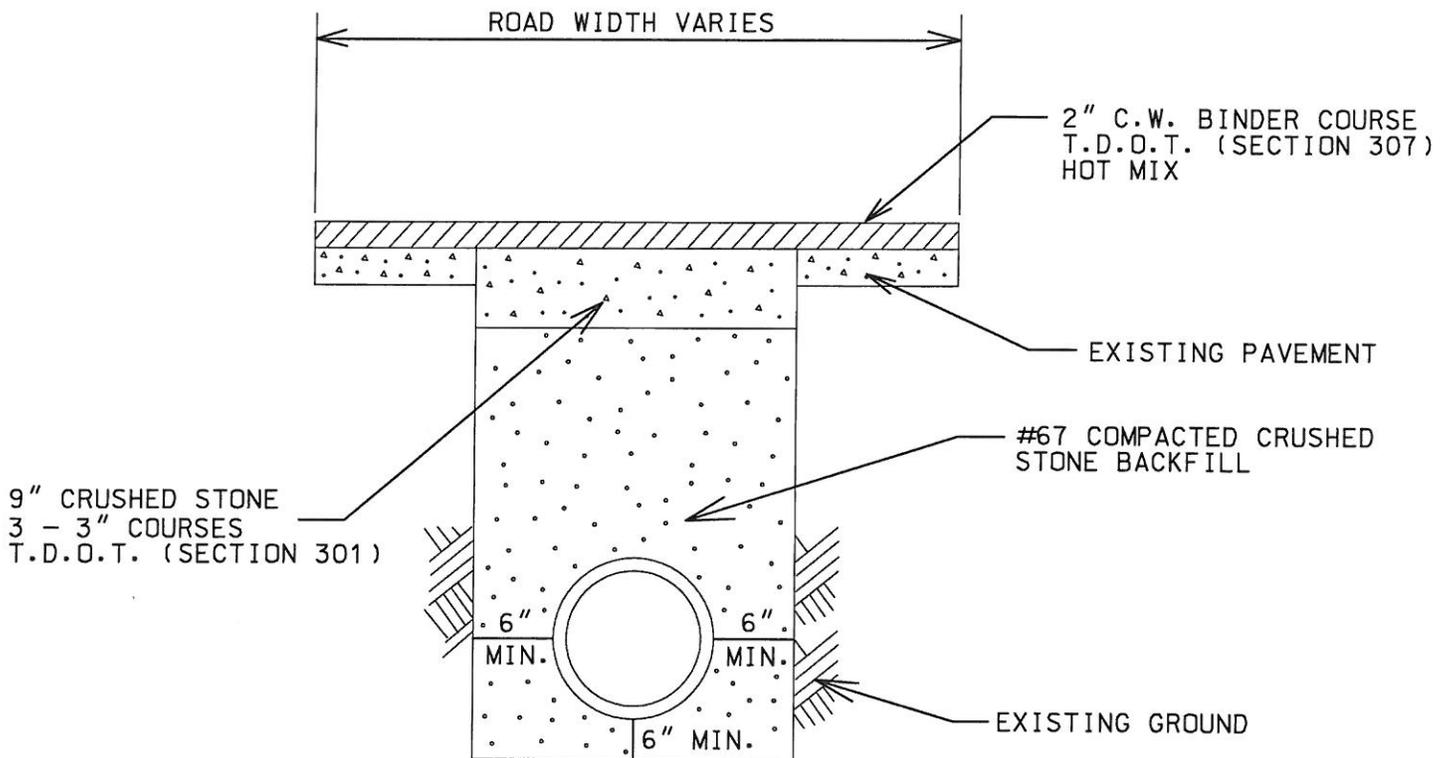
STRAW BALE SEDIMENT CONTROL BARRIER DETAIL

NOT TO SCALE



TYPICAL SECTION ASPHALT PAVEMENT TYPE "A"

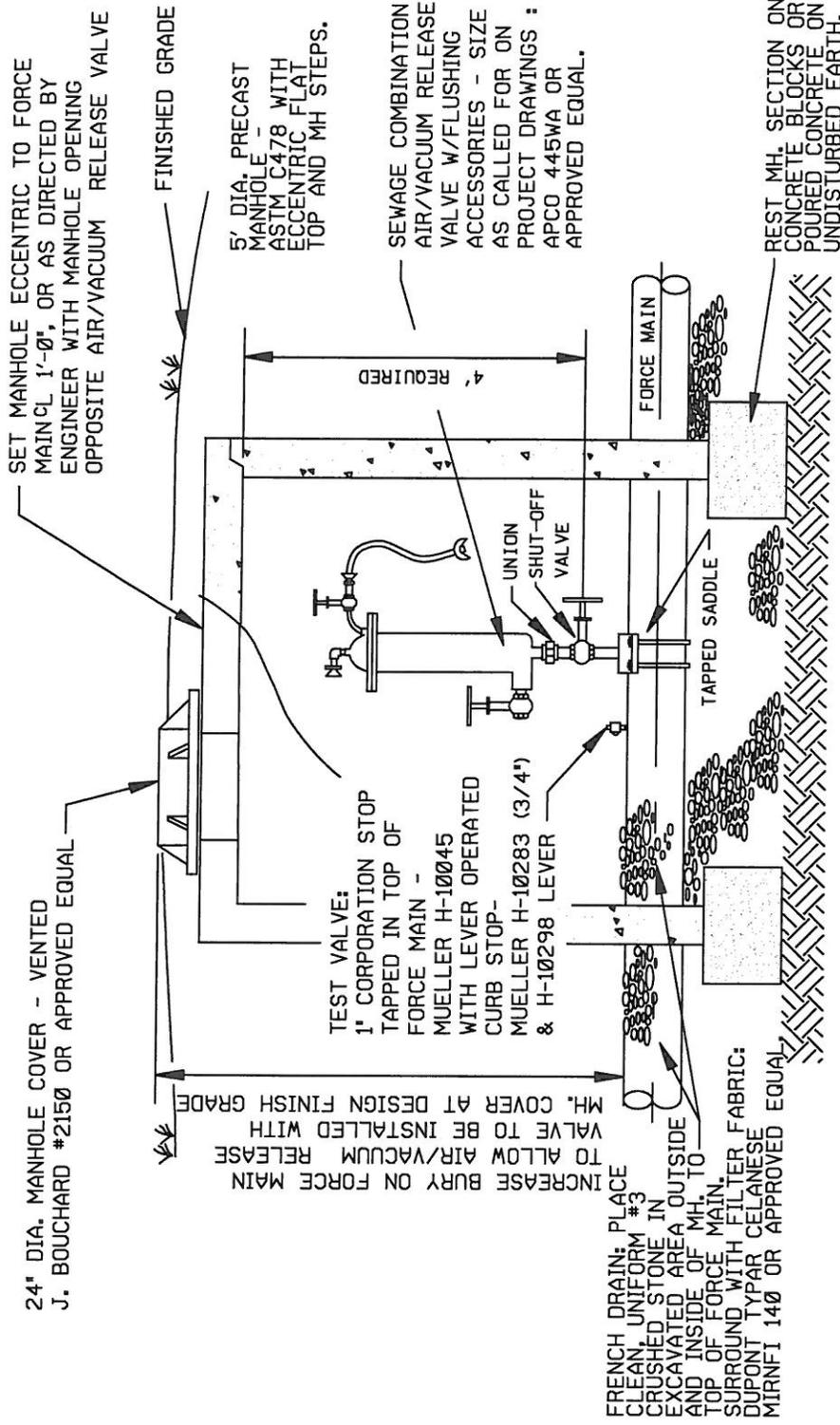
FOR BOTH WATER AND SEWER MAINS
NOT TO SCALE



FULL WIDTH CW BINDER COURSE

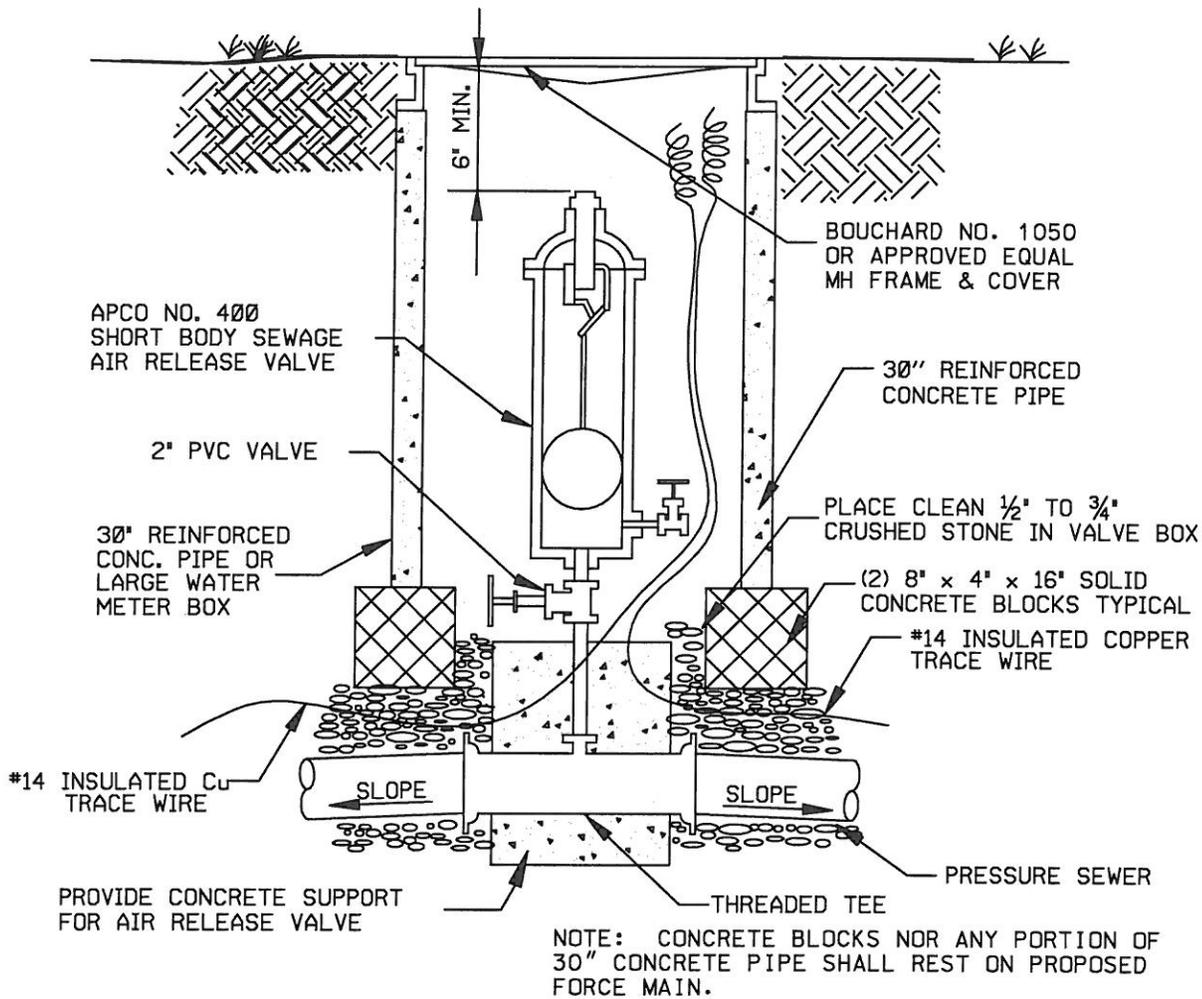
PAVEMENT REPLACEMENT DETAIL TYPE "G"

NOT TO SCALE



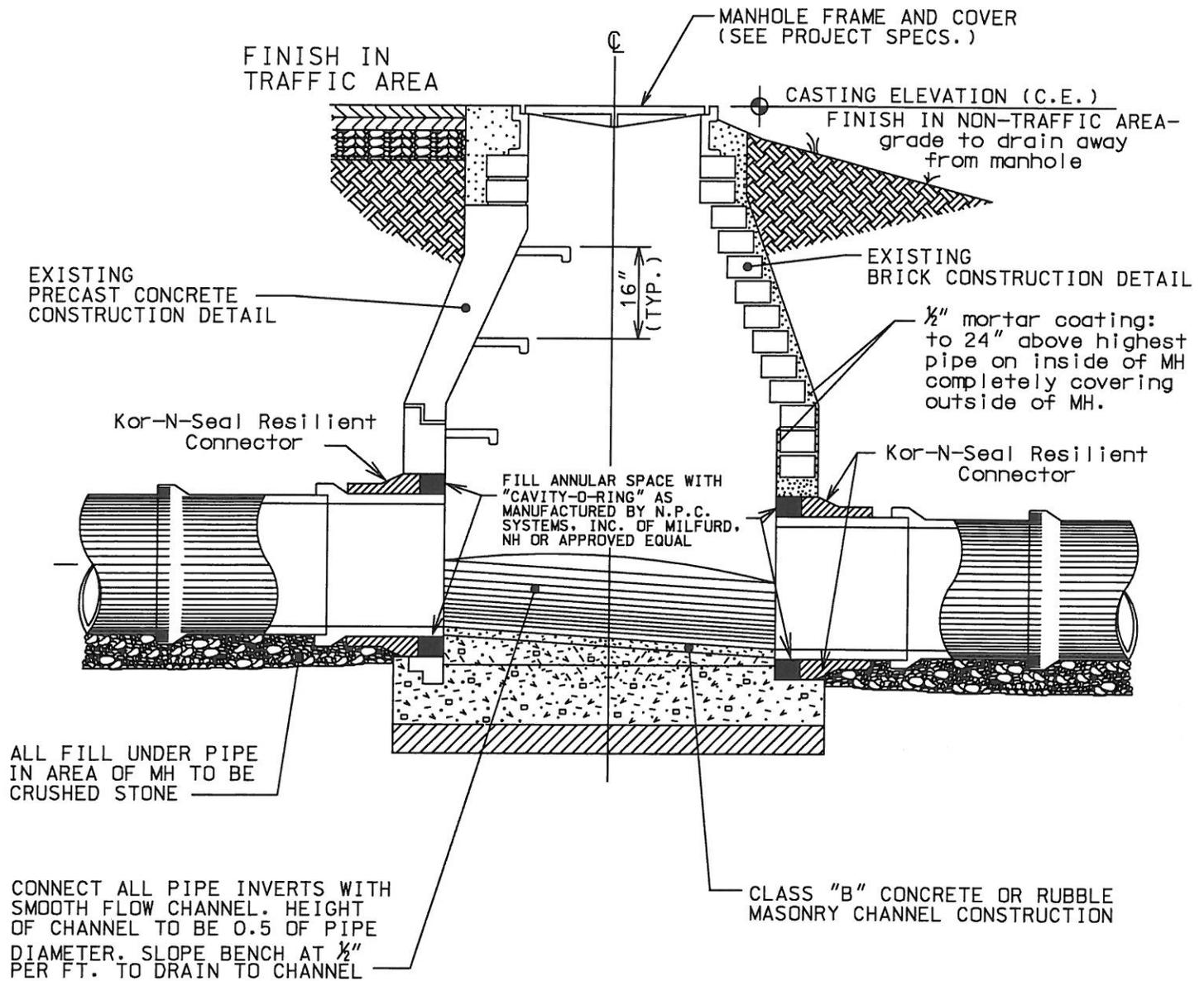
TYPE C - AUTOMATIC COMBINATION AIR & VACUUM RELEASE MANHOLE

NOT TO SCALE



TYPE A AUTOMATIC AIR RELEASE MANHOLE

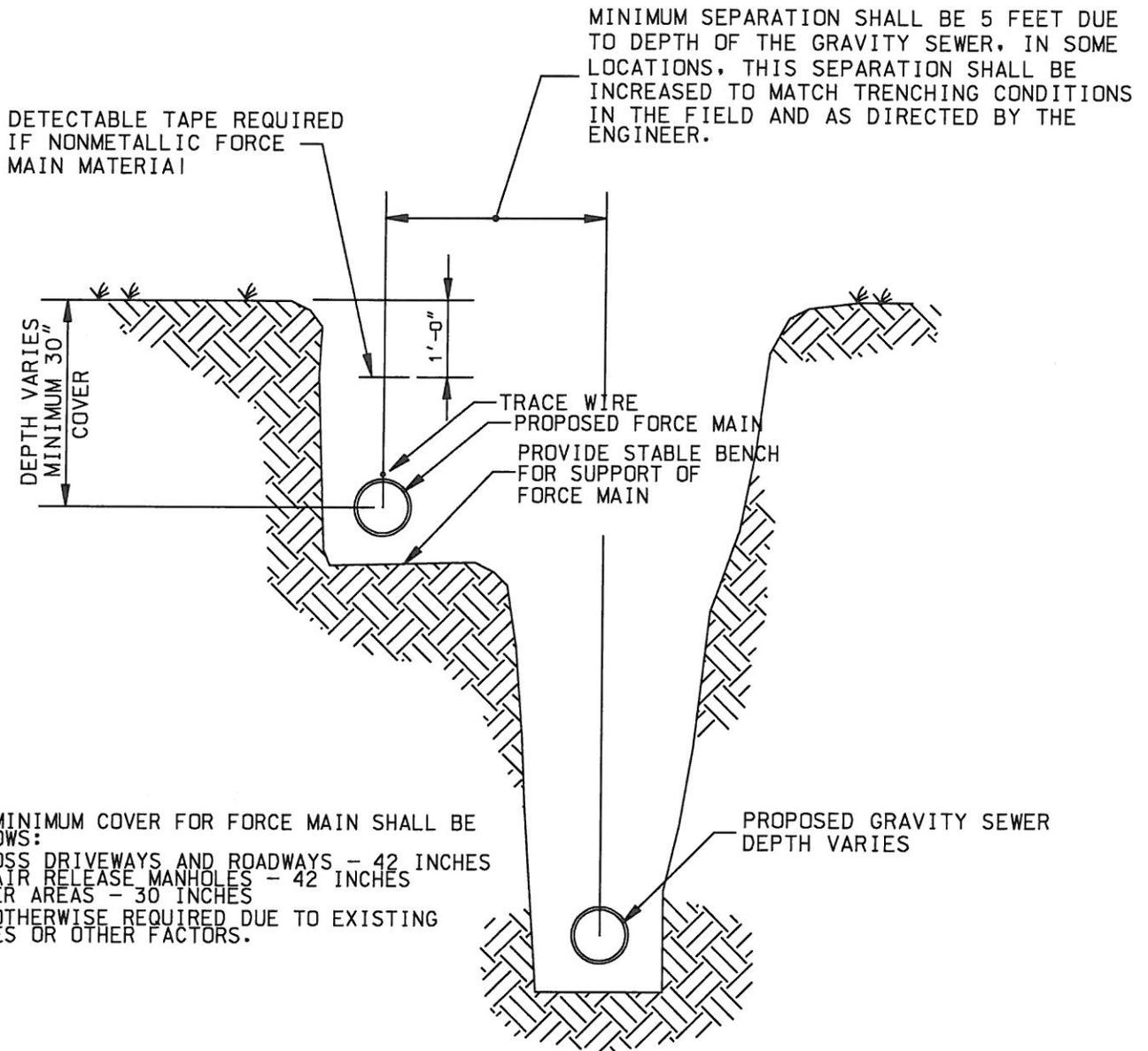
NOT TO SCALE



CONNECTION TO EXISTING MANHOLE

(PRECAST CONCRETE & BRICK CONSTRUCTION SHOWN)

NOT TO SCALE



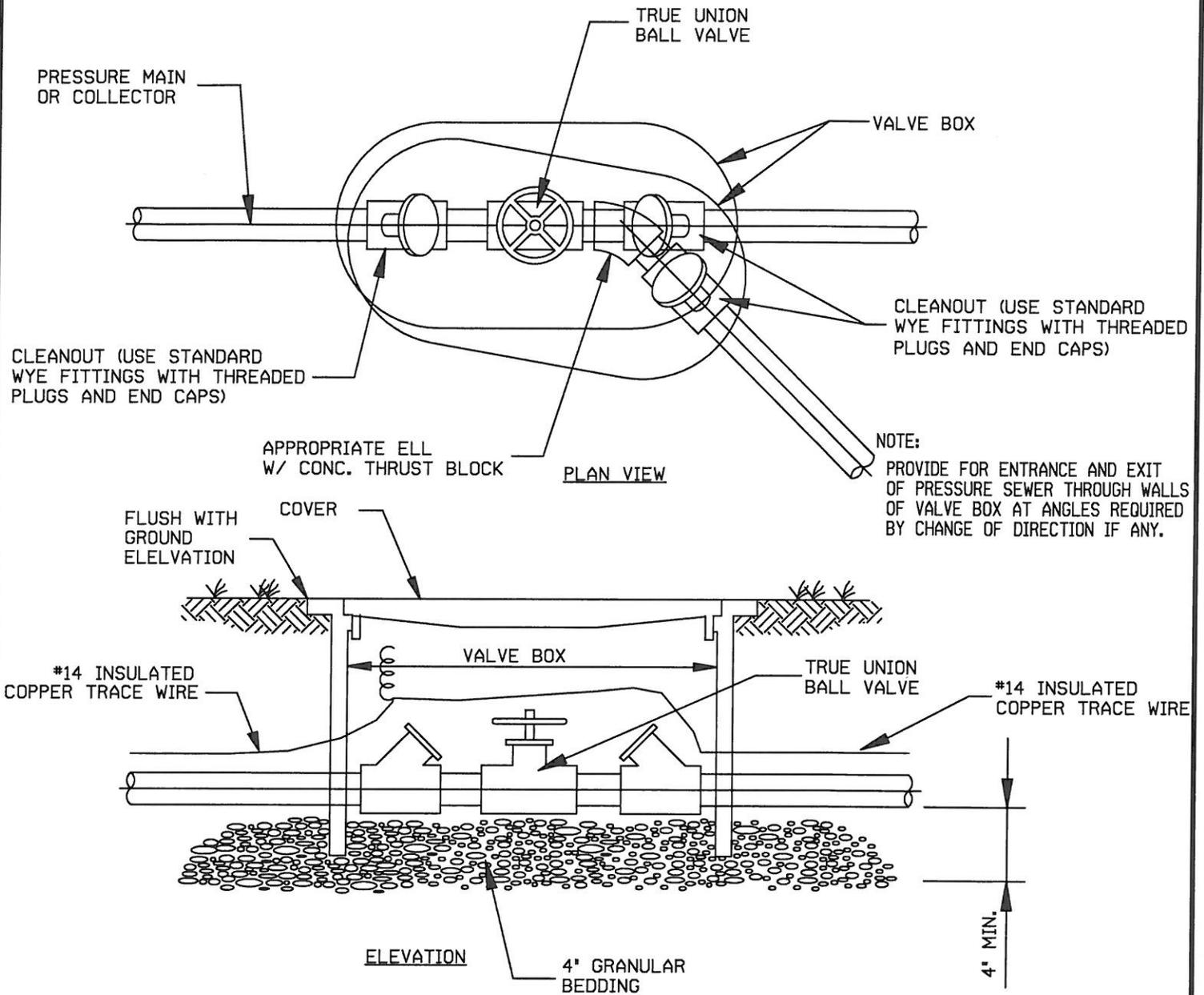
NOTE: MINIMUM COVER FOR FORCE MAIN SHALL BE AS FOLLOWS:

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.

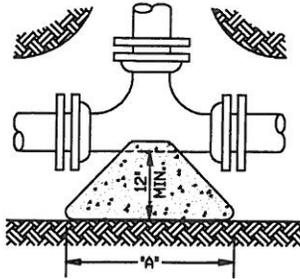
TYPICAL TRENCHING DETAIL FOR PARALLEL INSTALLATIONS

NOT TO SCALE

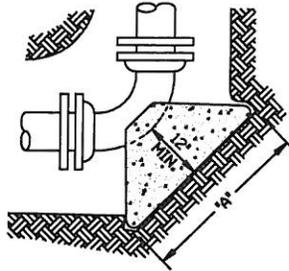


TYPICAL VALVE BOX AND CLEANOUT
ARRANGEMENT ALONG STRAIGHT RUNS
AT CHANGES IN DIRECTION

NOT TO SCALE



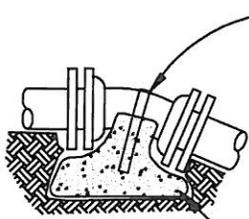
PLAN: TEE



PLAN: 90° BEND

NOTES:

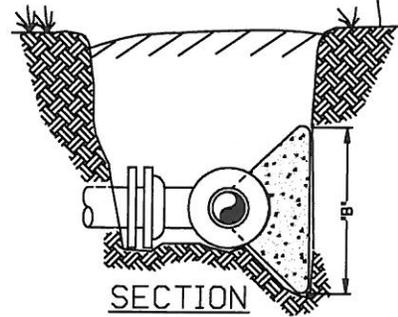
1. CONCRETE TO BE CLASS "B" (2000 P.S.I.) OR STRONGER.
2. DIMENSIONS AS SHOWN ARE APPROXIMATE - SUBJECT TO CHANGE AT DIRECTION OF OR APPROVAL OF ENGINEER.
3. KEEP CONCRETE CLEAR OF ANY PIPE JOINT, GLAND BOLTS, ECT.
4. CONCRETE TO BEAR AGAINST UNDISTURBED EARTH WITH BEARING AREA EQUIVALENT TO AT LEAST 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

SCHEDULE OF MINIMUM BEARING AREA REQUIRED

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

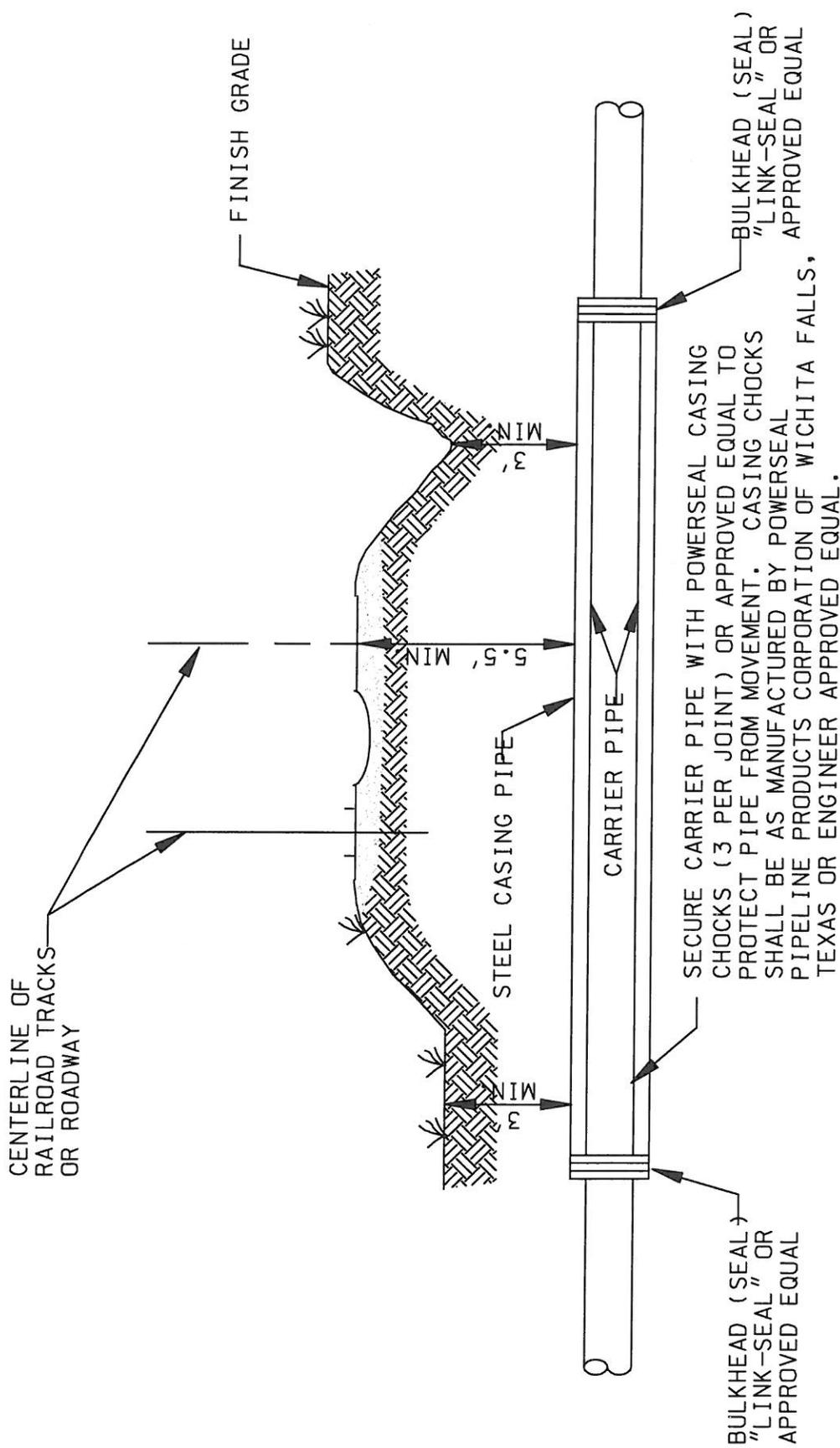
PIPE SIZE	TEE OR DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4"	1.0	1.5	1.0	1.0	1.0
6"	2.5	3.0	2.0	1.0	1.0
8"	4.0	5.5	3.0	1.5	1.0
10"	6.0	8.5	4.5	2.5	1.5
12"	8.5	12.0	6.5	3.0	2.0
16"	15.0	21.5	11.5	6.0	3.0
18"	20.0	27.5	15.0	8.0	4.0
20"	24.0	33.5	18.5	9.5	5.0
24"	34.0	48.0	26.0	13.5	7.0

VALUES ARE TABULATED IN SQUARE FEET

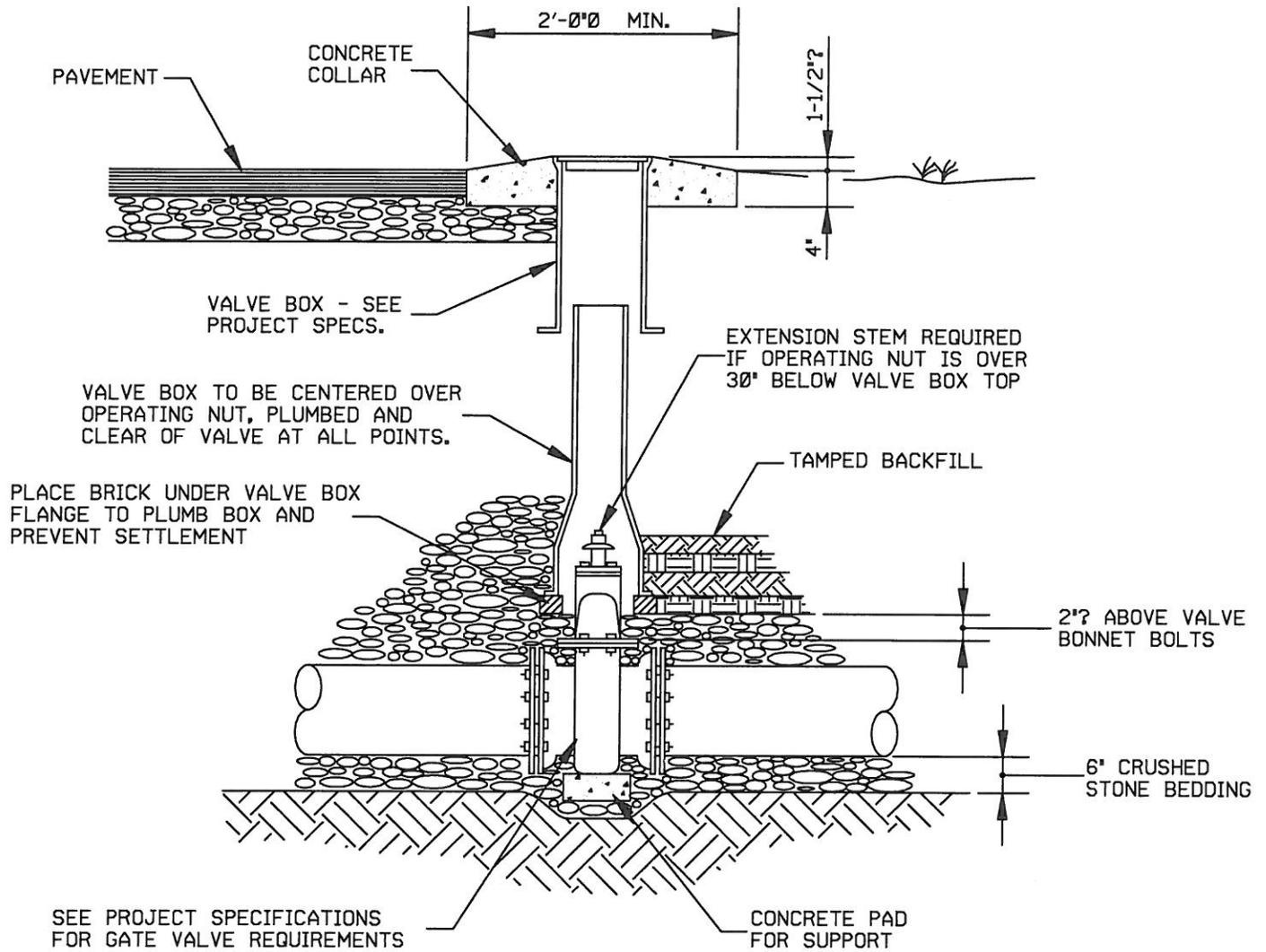
*Engineer to confirm actual required dimensions before construction of the Thrust Block.
 Bearing Area (square feet) = A(feet) x B(feet)

CONCRETE THRUST BLOCK DETAILS

NOT TO SCALE

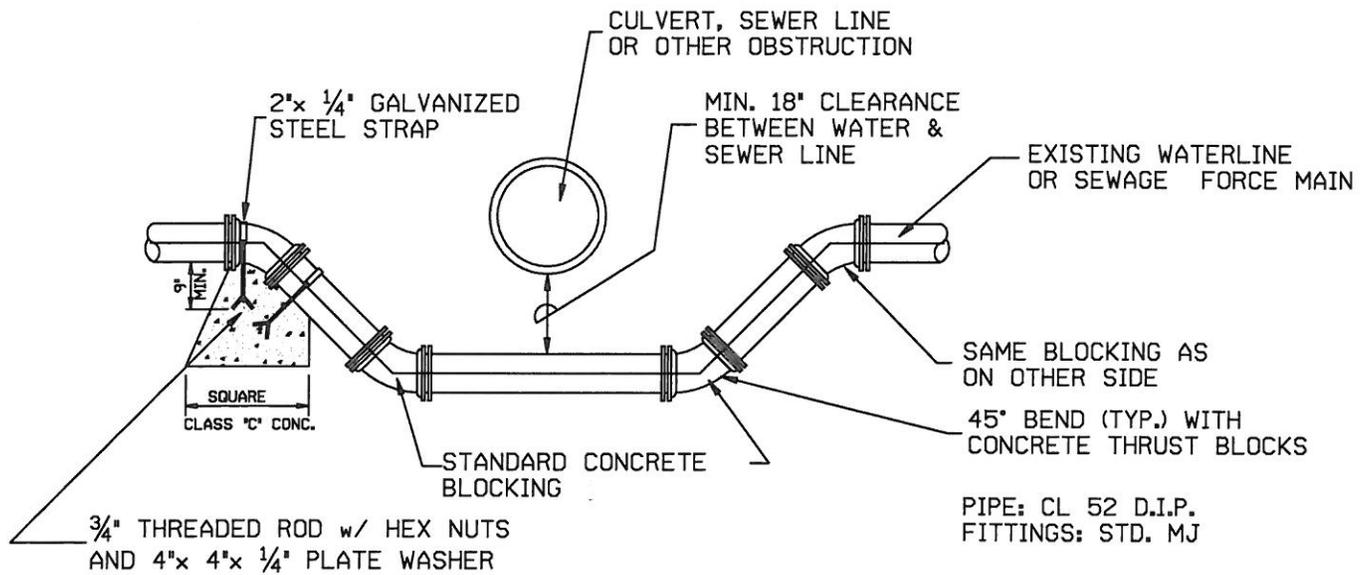


TYPICAL BORE CASING DETAIL
NOT TO SCALE



TYPICAL GATE VALVE INSTALLATION
NOT TO SCALE

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.

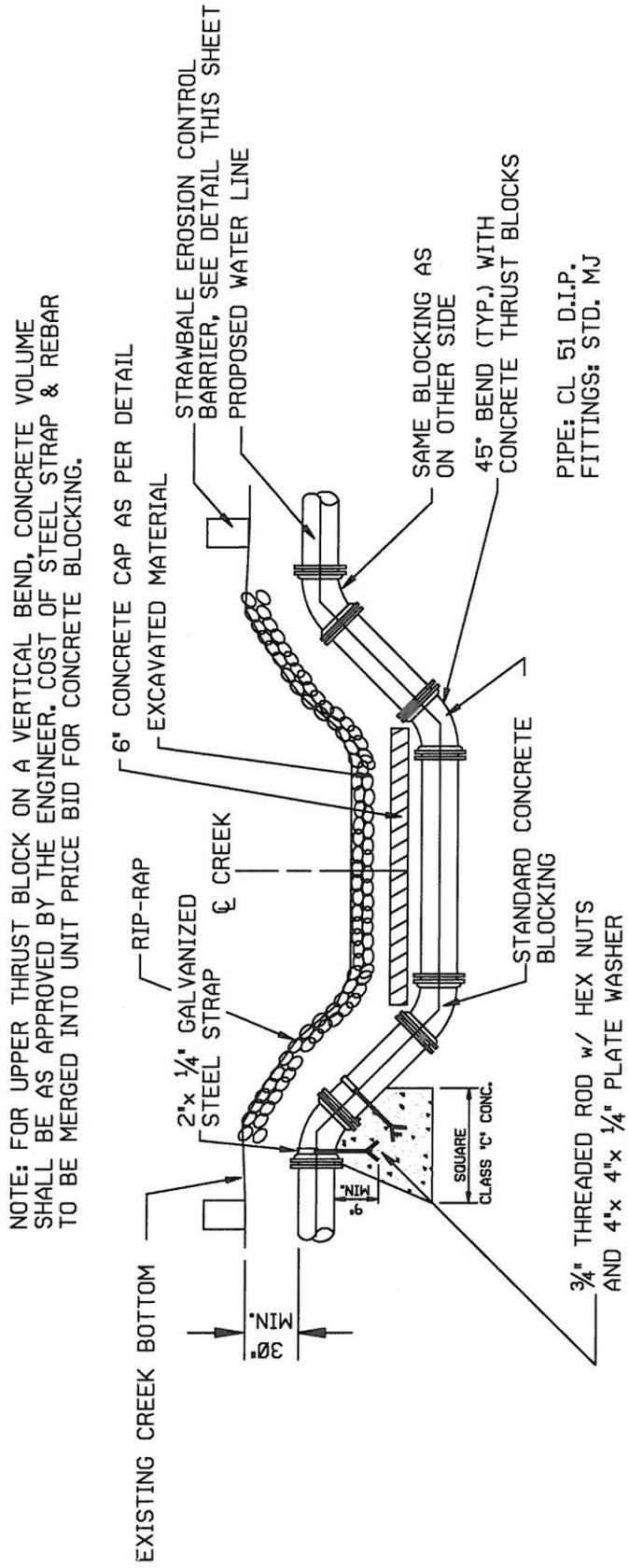


(Water Line or Main Relocation)

METHOD OF CROSSING PROPOSED SEWER

NOT TO SCALE

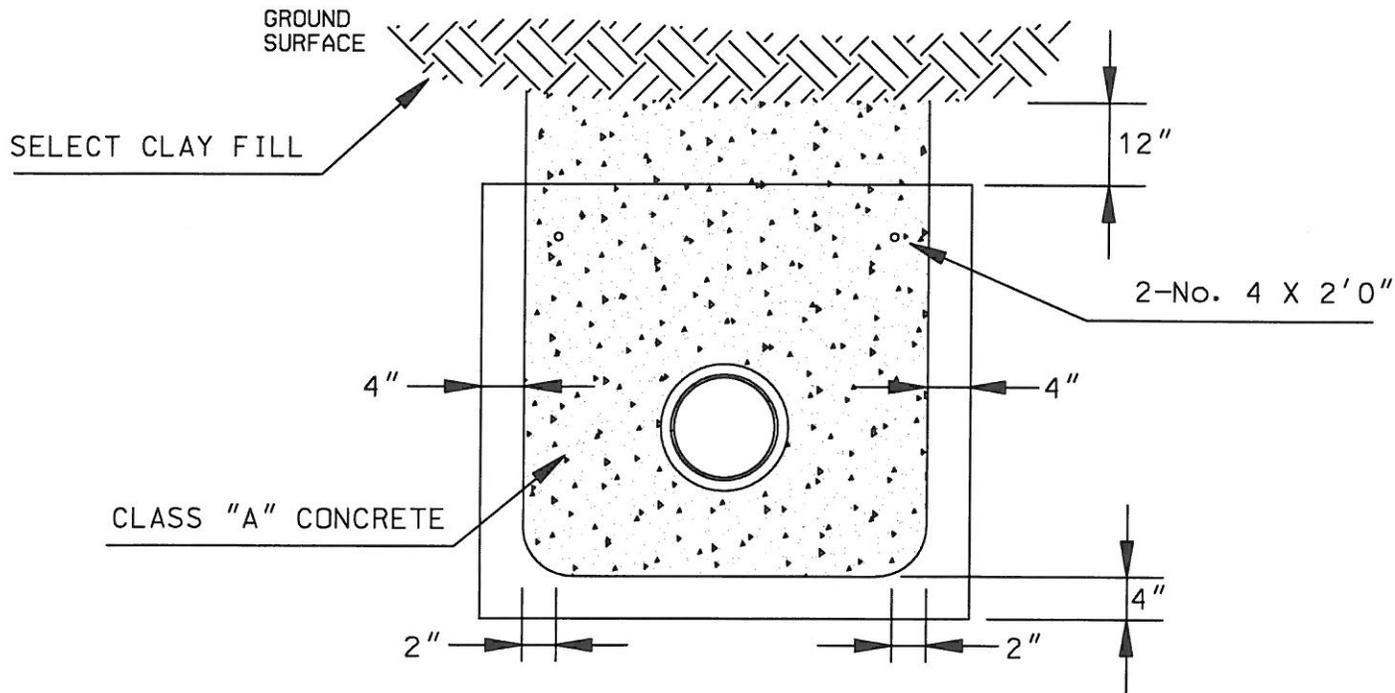
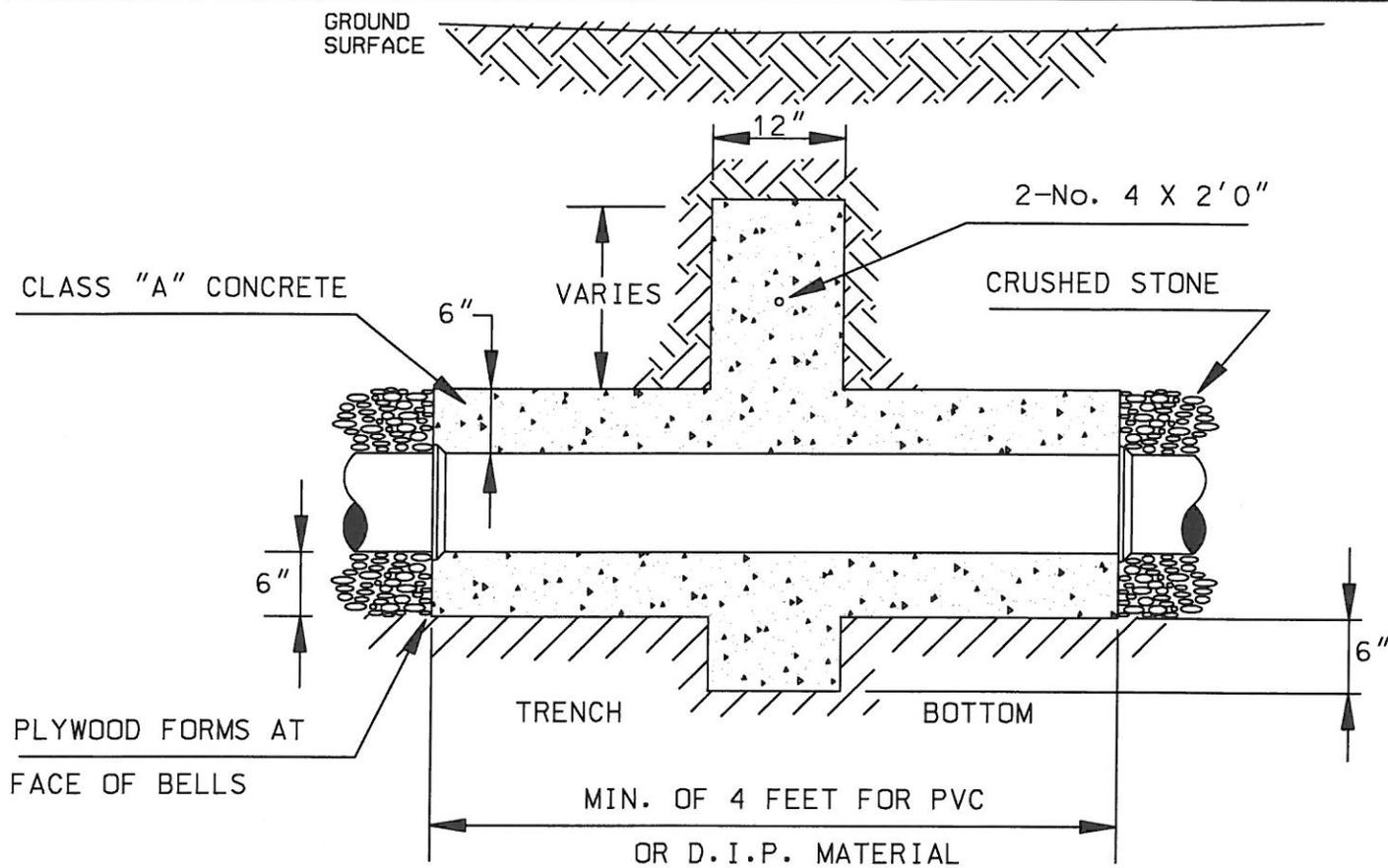
NOTE: USE THIS METHOD TO OFFSET EXISTING SEWER (THAT IS TO BE ABANDONED) TEMPORARILY TO ACCOMMODATE PROPOSED SEWER.



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.

PIPE: CL 51 D.I.P.
FITTINGS: STD. MJ

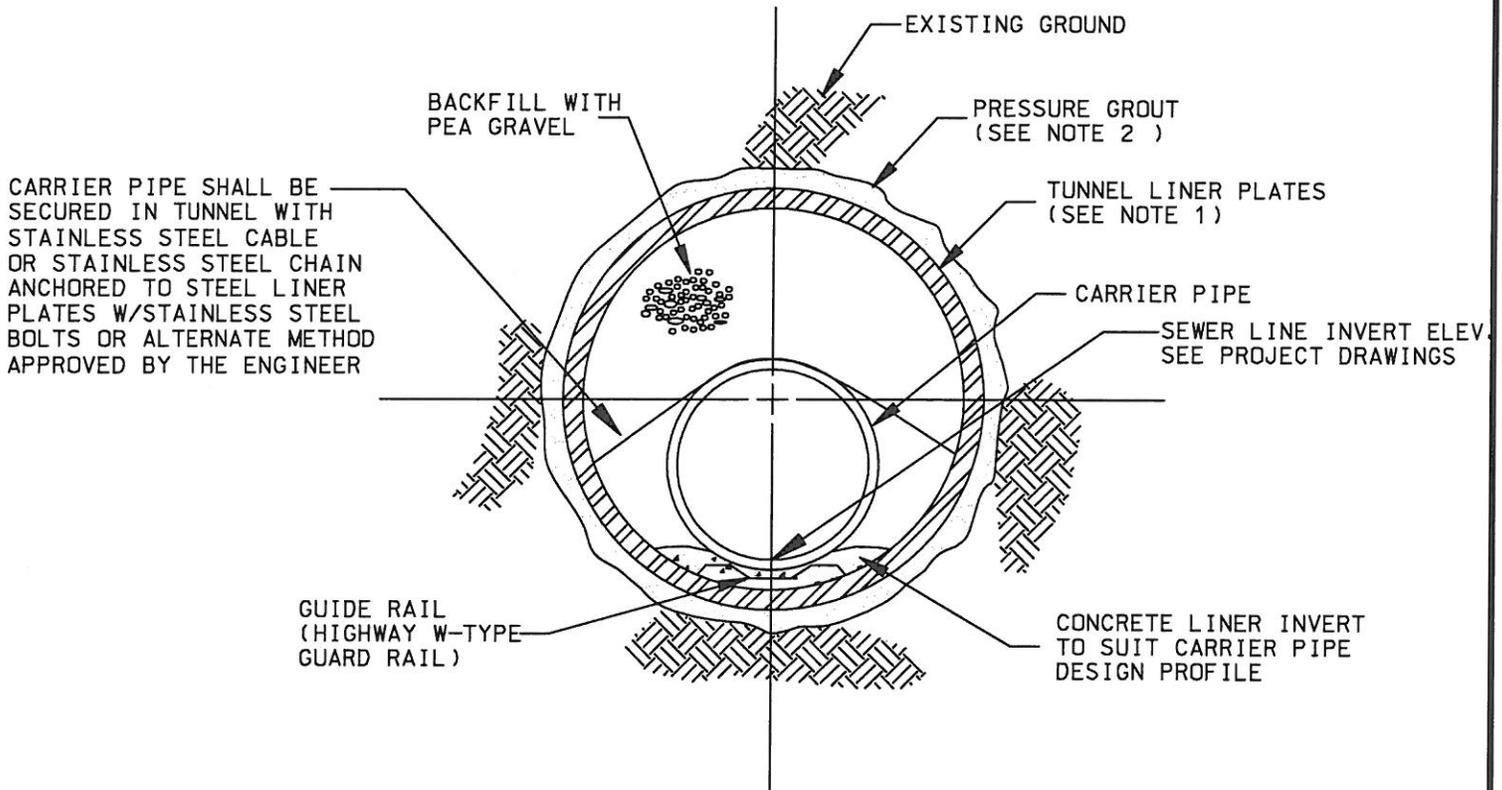
TYPICAL CREEK CROSSING
NOT TO SCALE



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

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.

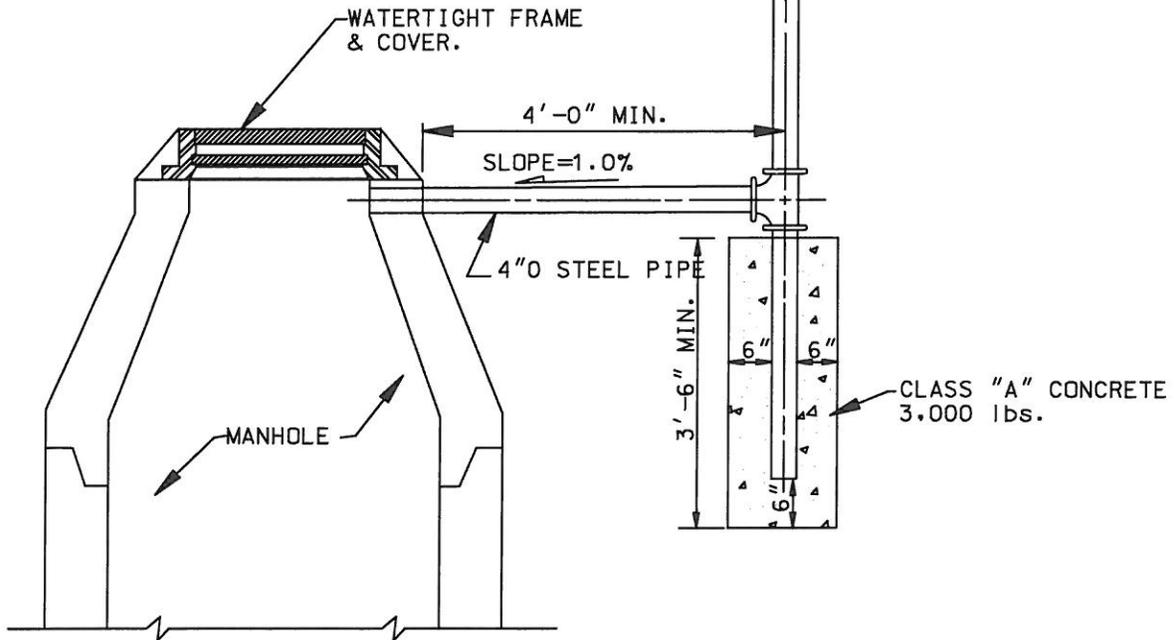
TYPICAL TUNNEL SECTION
NOT TO SCALE

MINIMUM HEIGHT SHALL BE 8- FEET ABOVE GROUND LEVEL OR 1-FOOT ABOVE 100-YEAR FLOOD LEVEL, WHICH EVER IS HIGHER.

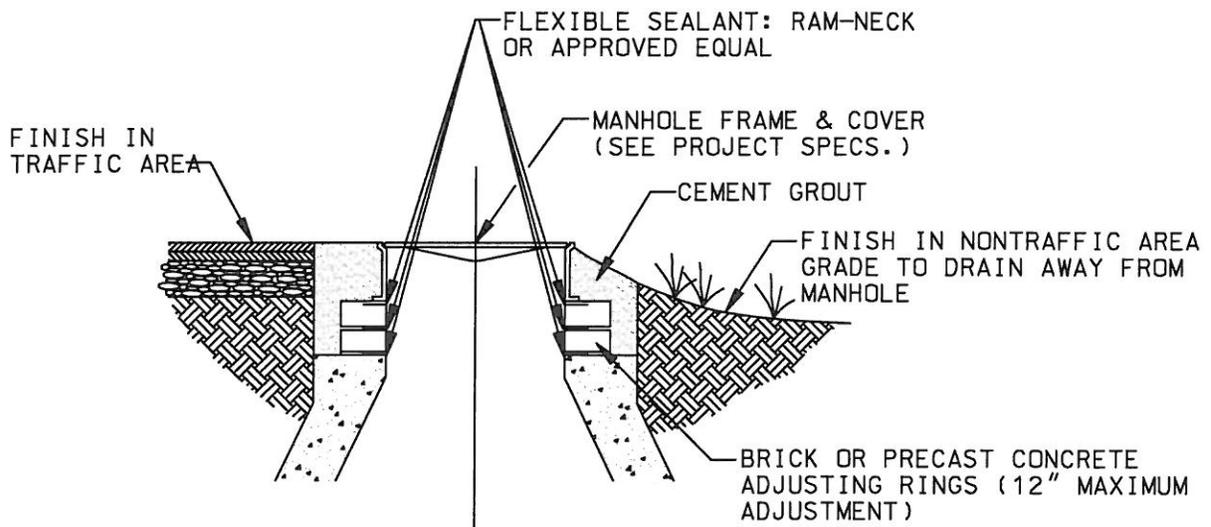
180° BEND W/INSECT SCREEN

VENT PIPE SHALL BE LOCATED OUT OF A TRAVELED WAY, IN BACK OF A CURB OR SIDEWALK, OR AS CALLED FOR ON PLANS. PIPE TO BE PAINTED WITH ONE COAT 4-6 MILS. OF TNEEC 66-1255 HB EPOXOLINE AND FOLLOWED BY 4-6 MILS. OF TNEEC 66-COLOR HB EPOXOLINE. PRIMER SHALL BE ALLOWED TO DRY 72 HRS. IN GOOD WEATHER AND SHALL BE THOROUGHLY DRY BEFORE RECOATING. TOP COAT OF PAINT SHALL BE DARK GREEN.

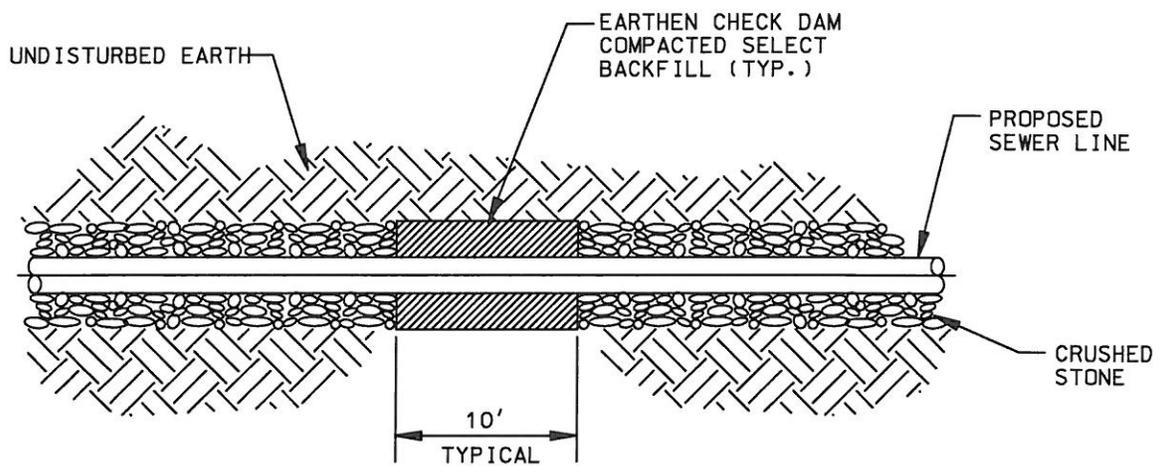
4"Ø STEEL PIPE VENT



VENT PIPE ASSEMBLY
NOT TO SCALE

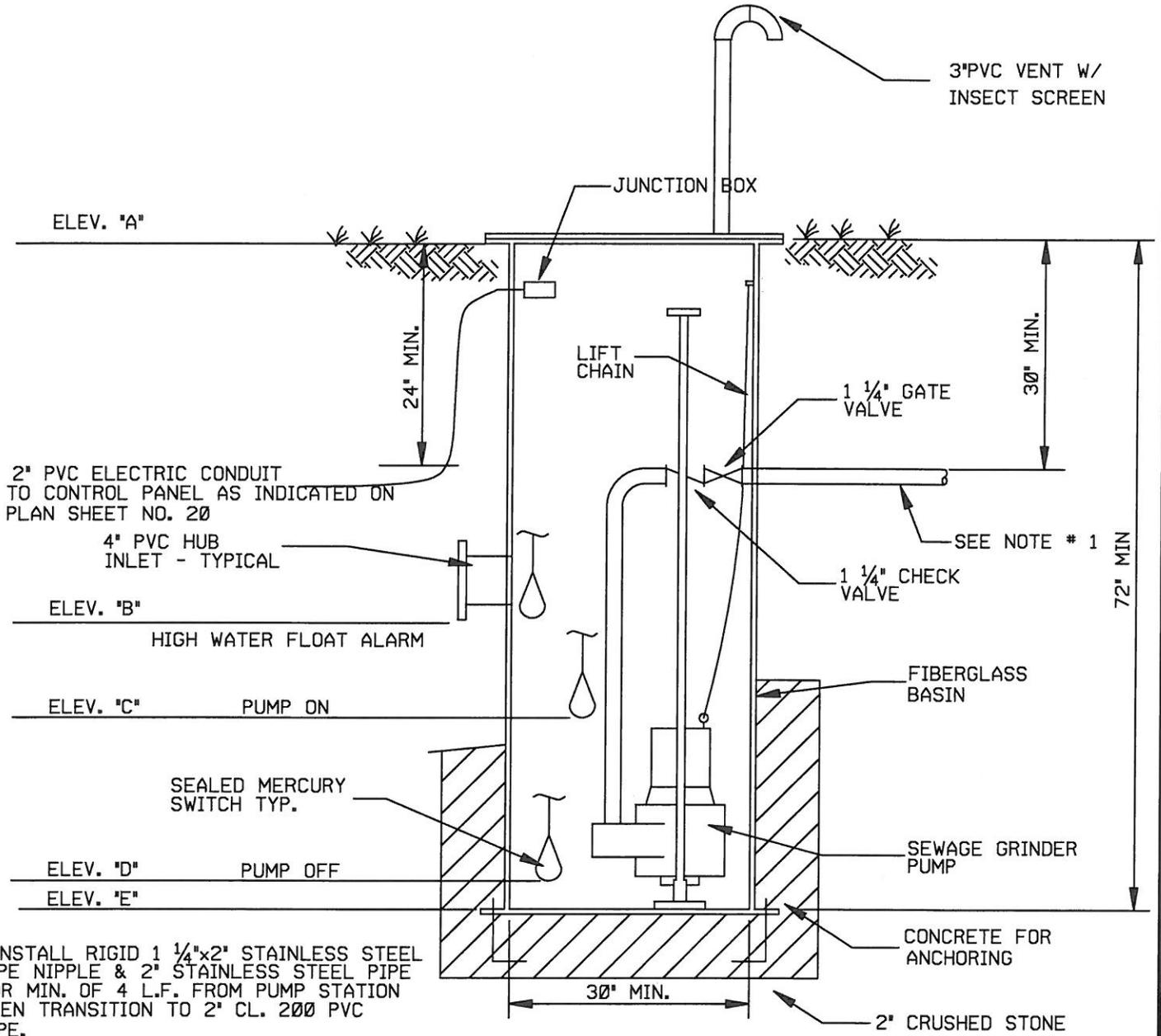


TYPICAL MANHOLE CASTING FINISH
 NOT TO SCALE



IN AREAS DESIGNATED FOR "EARTHEN CHECK DAM", BACKFILL WITHIN THE PIPE ZONE FOR A DISTANCE OF 10 FEET ALONG THE PIPE CENTERLINE SHALL BE SELECTED CLAY SOIL PLACED IN LIFTS OF 6 INCHES \pm AND COMPACTED TO AT LEAST 80% MINIMUM DENSITY (STANDARD PROCTOR)

EARTHEN CHECK DAM
NOT TO SCALE



NOTE:
 1. INSTALL RIGID 1 1/4"x2" 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.

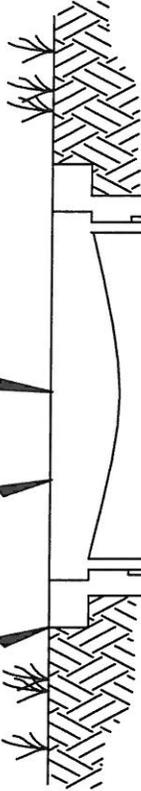
SIMPLEX GRINDER PUMP STATION

SCALE: NONE

NOTE: IN PAVEMENT OR TRAFFIC AREAS VALVE BOX COVER SHALL BE TRAFFIC TYPE. SEE MATERIAL SPECIFICATIONS IN SEWER SPECIFICATIONS.

BOX TO BE FLUSH W/ GROUND

COVER



VALVE BOX

BOX SHALL BE MINIMUM 16" x 10" x 12" AND 6" EXTENSIONS. INJECTION MOLDED PLASTIC (NO TRAFFIC)

6" CAP OR PLUG ARRANGEMENT

PLACE BRICK UNDER VALVE BOX FLANGE TO PLUMB BOX AND PREVENT SETTLEMENT

6" SDR 35 TO 4" SCH 40 TRANSITION (GLUE JOINT)

USE STEEL BACKED 4" FERNCO IF GLUE JOINT NOT POSSIBLE

* 4" SCH 40

CUSTOMER

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

MIN. 4" GRAVEL BEDDING (#67 / 57)

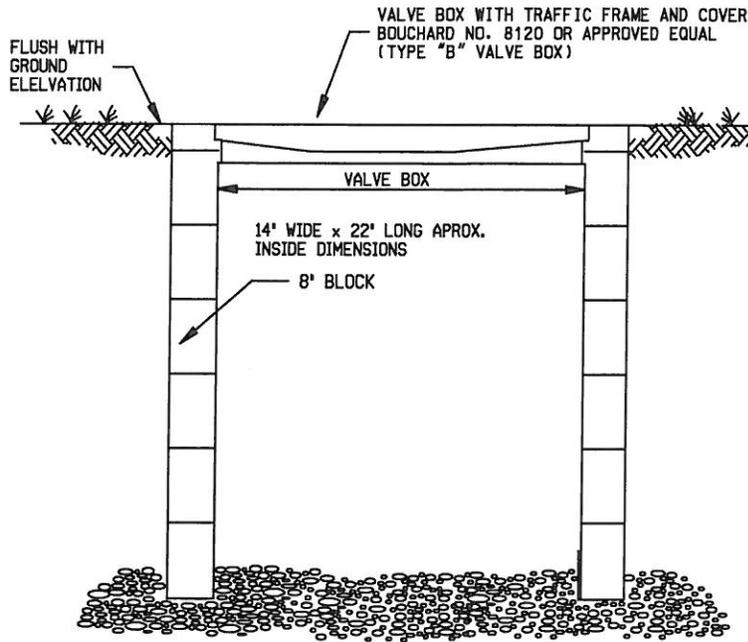
6" SCH 40 SINGLE SWEEP (4" DOUBLE SWEEP AS APPROVED BY CITY)

SEWER MAIN

BACKFILL UNDER BOX TO BE GRAVEL (#67 / 57)

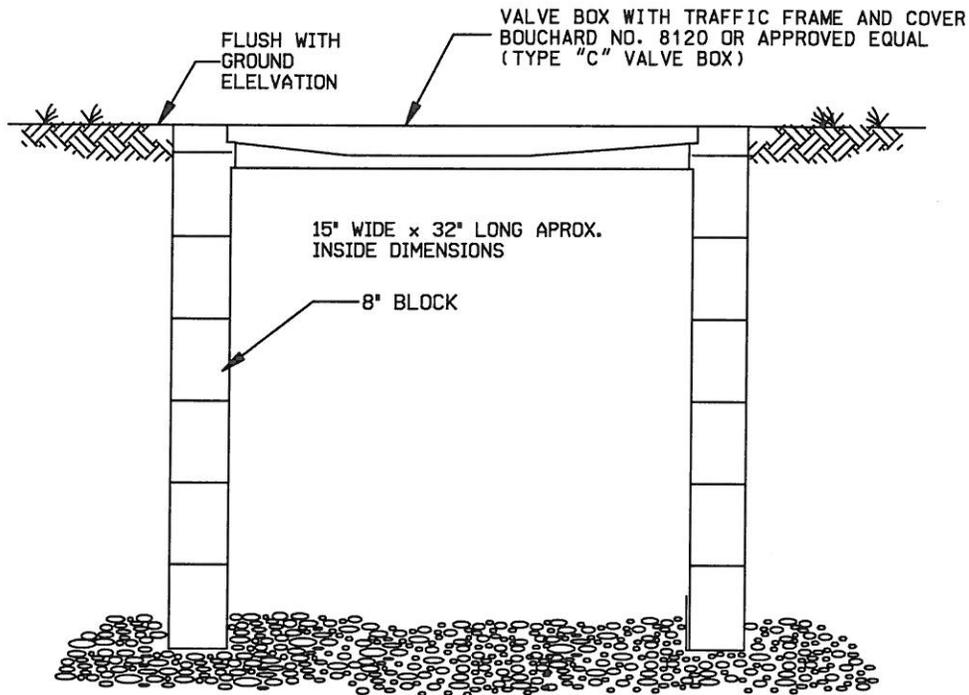
TYPICAL CLEANOUT ASSEMBLY

NOT TO SCALE



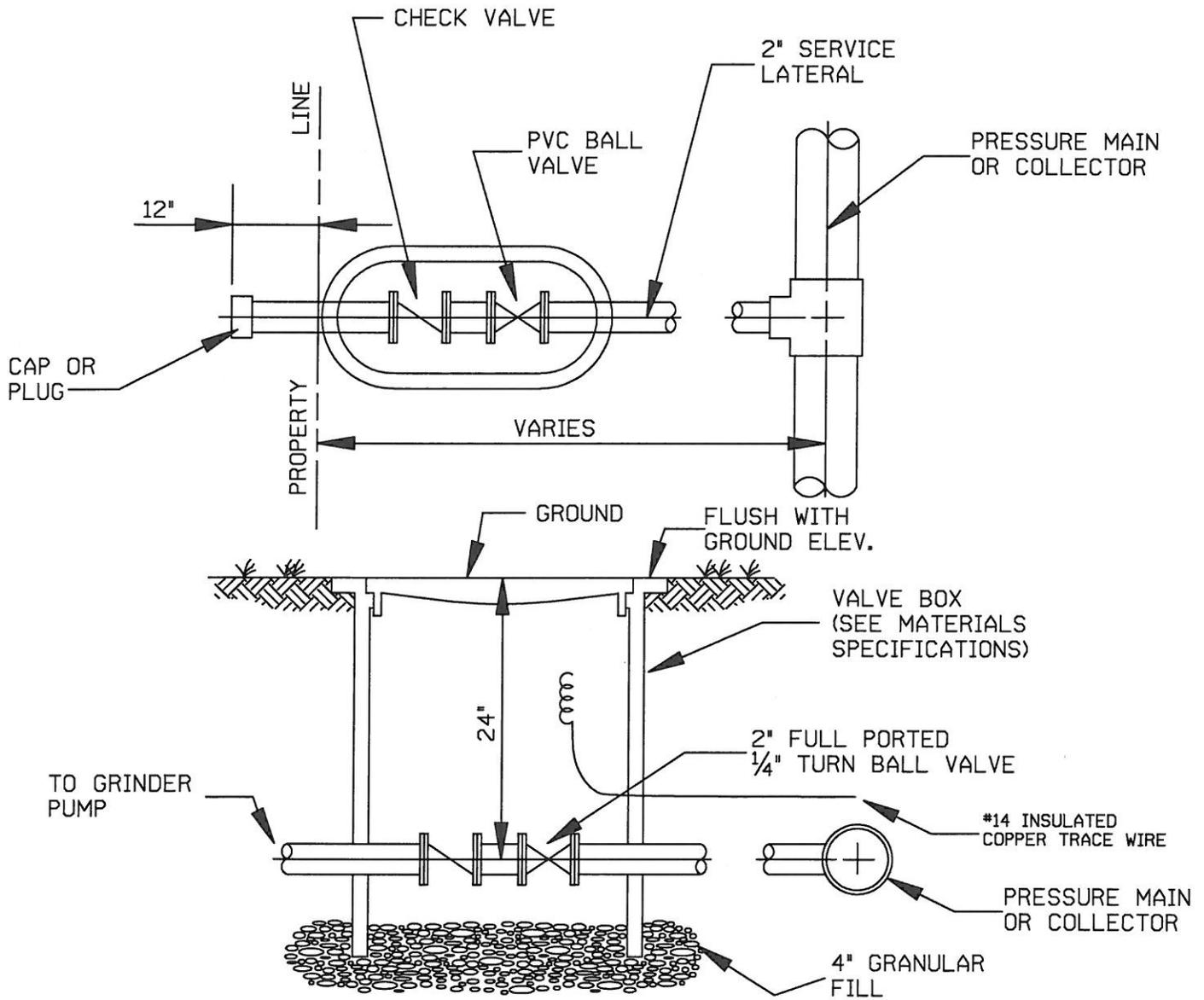
SMALL VALVE BOX AND COVER
(TRAFFIC TYPE) (THIS DETAIL FOR
VALVE BOX CONSTRUCTION ONLY)

NOT TO SCALE



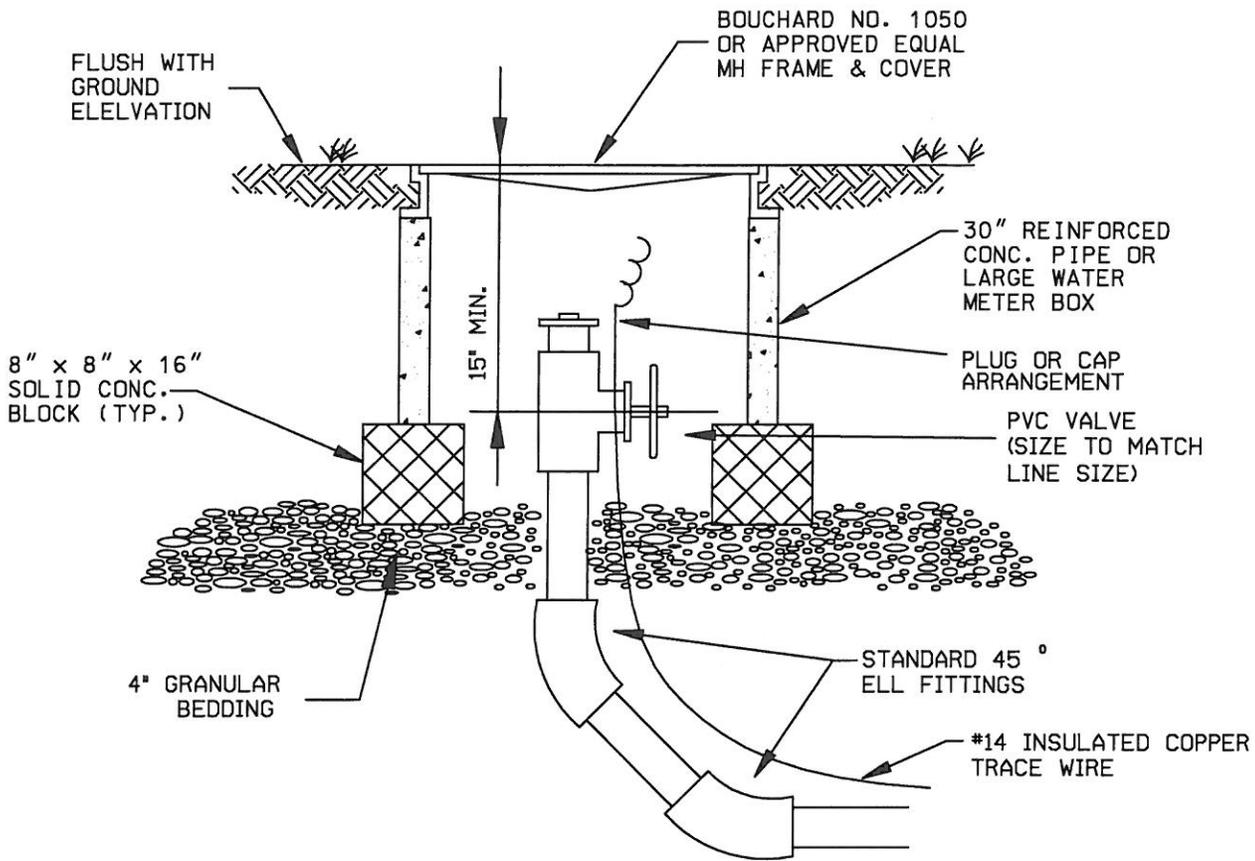
LARGE VALVE BOX AND COVER (TRAFFIC TYPE)
(THIS DETAIL FOR VALVE BOX CONSTRUCTION ONLY)

NOT TO SCALE

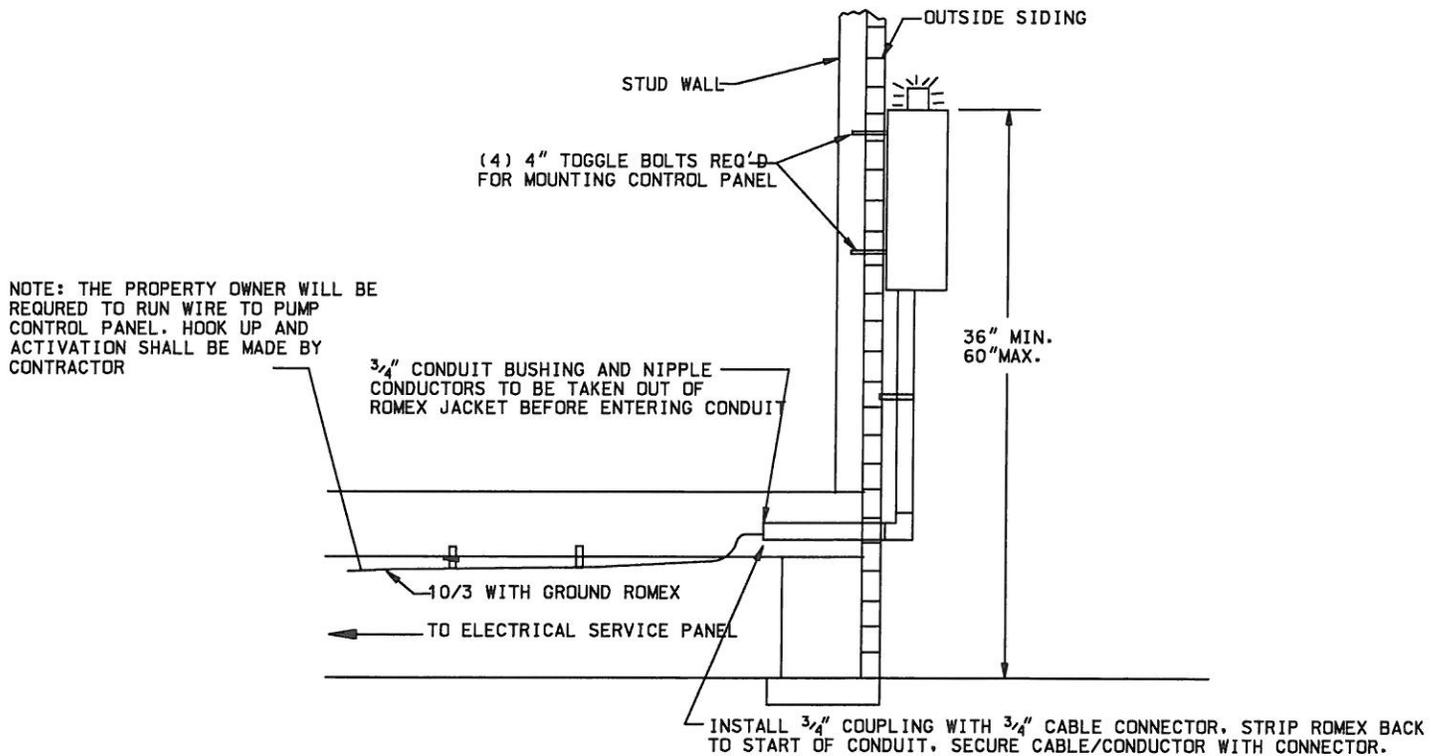


TYPICAL SERVICE LINE CONNECTION (2")

NOT TO SCALE



TERMINAL VALVE BOX AND CLEANOUT ASSEMBLY
AT END OF PRESSURE SEWER
 NOT TO SCALE



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

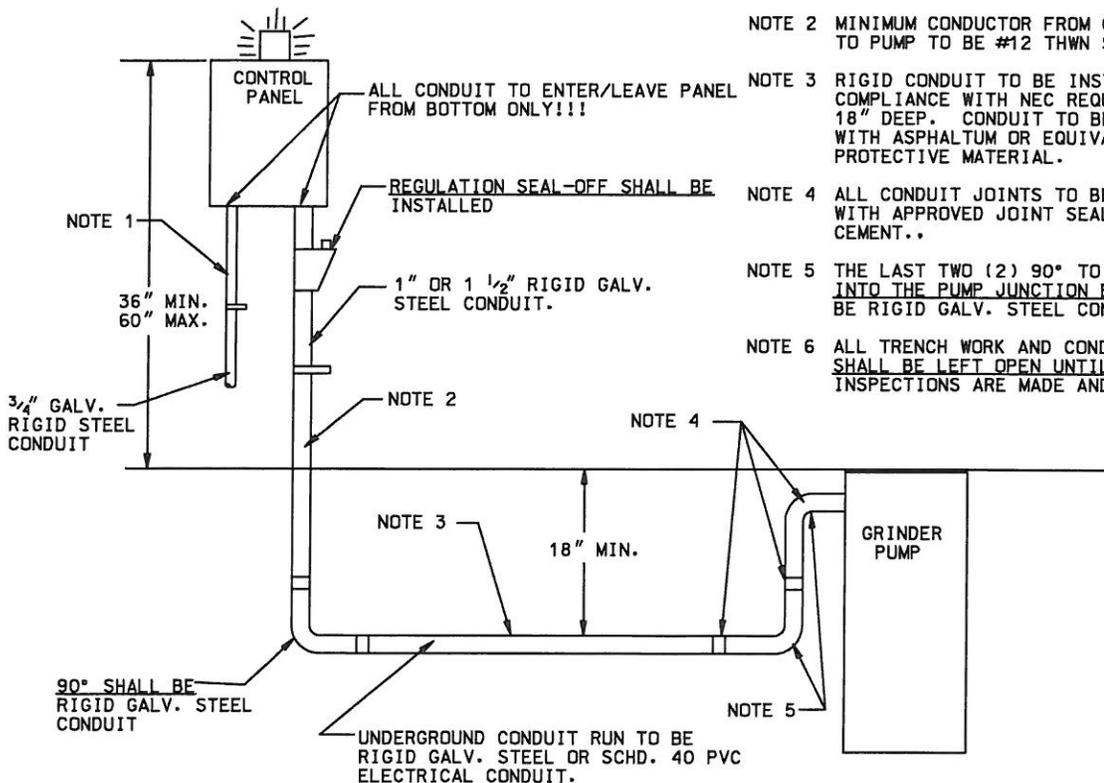
NOTE 2 MINIMUM CONDUCTOR FROM CONTROL TO PUMP TO BE #12 THWN STRANDED

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..

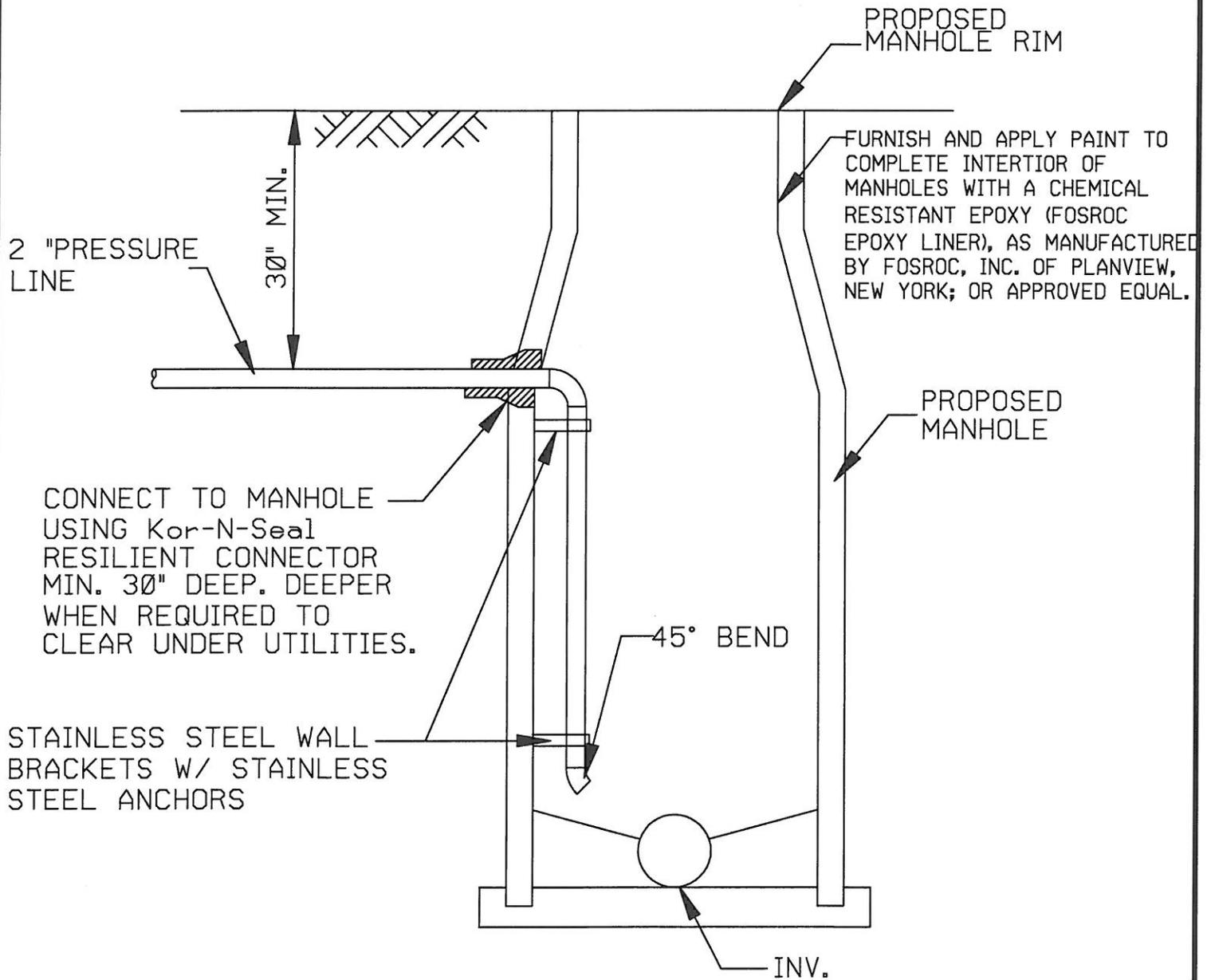
NOTE 5 THE LAST TWO (2) 90° TO MAKE ENTRY INTO THE PUMP JUNCTION BOX SHALL BE RIGID GALV. STEEL CONDUIT.

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



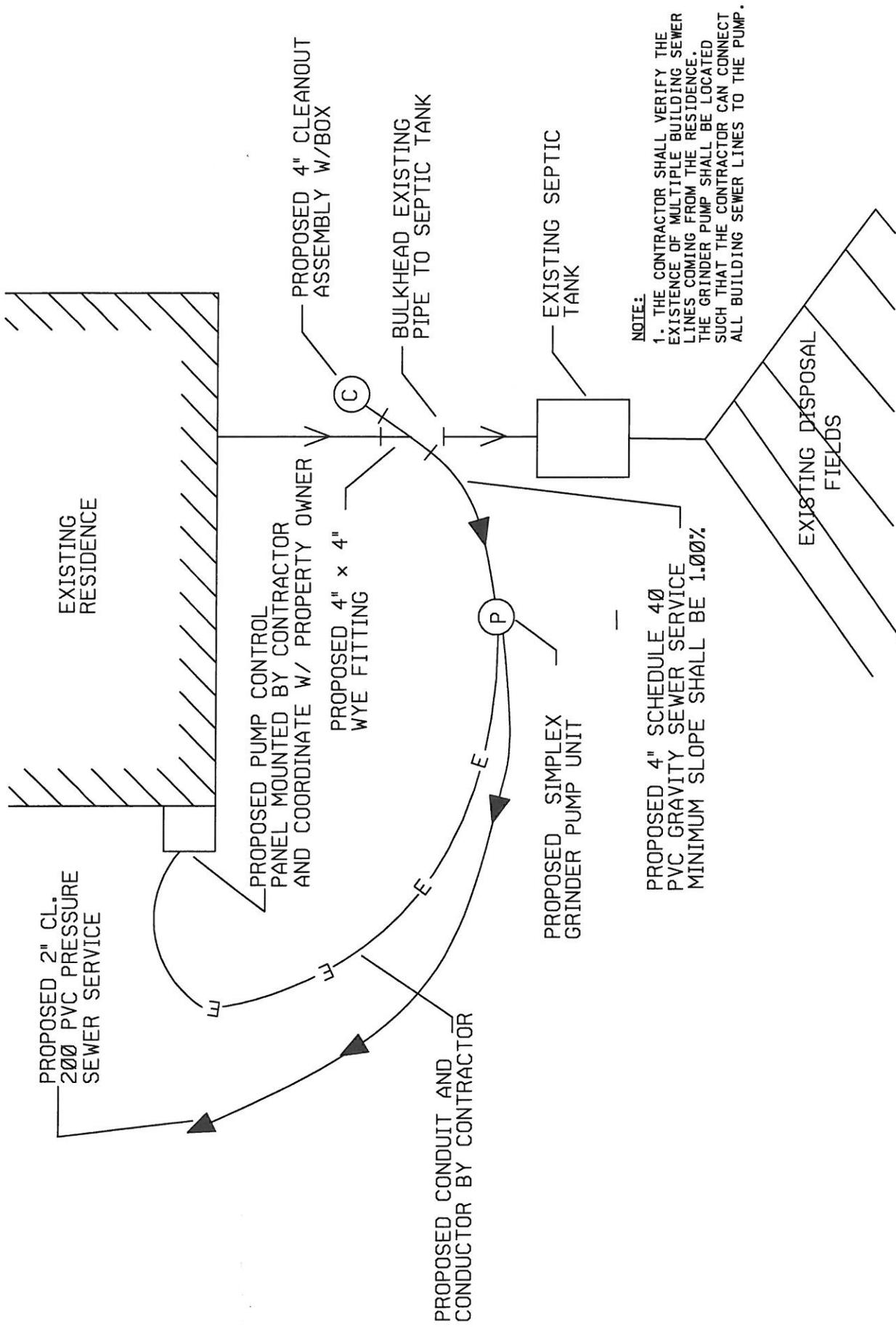
TYPICAL ELECTRICAL WIRING INSTALLATIONS

NOT TO SCALE



PRESSURE MAIN CONNECTION
AT GRAVITY MANHOLE

SCALE: NONE

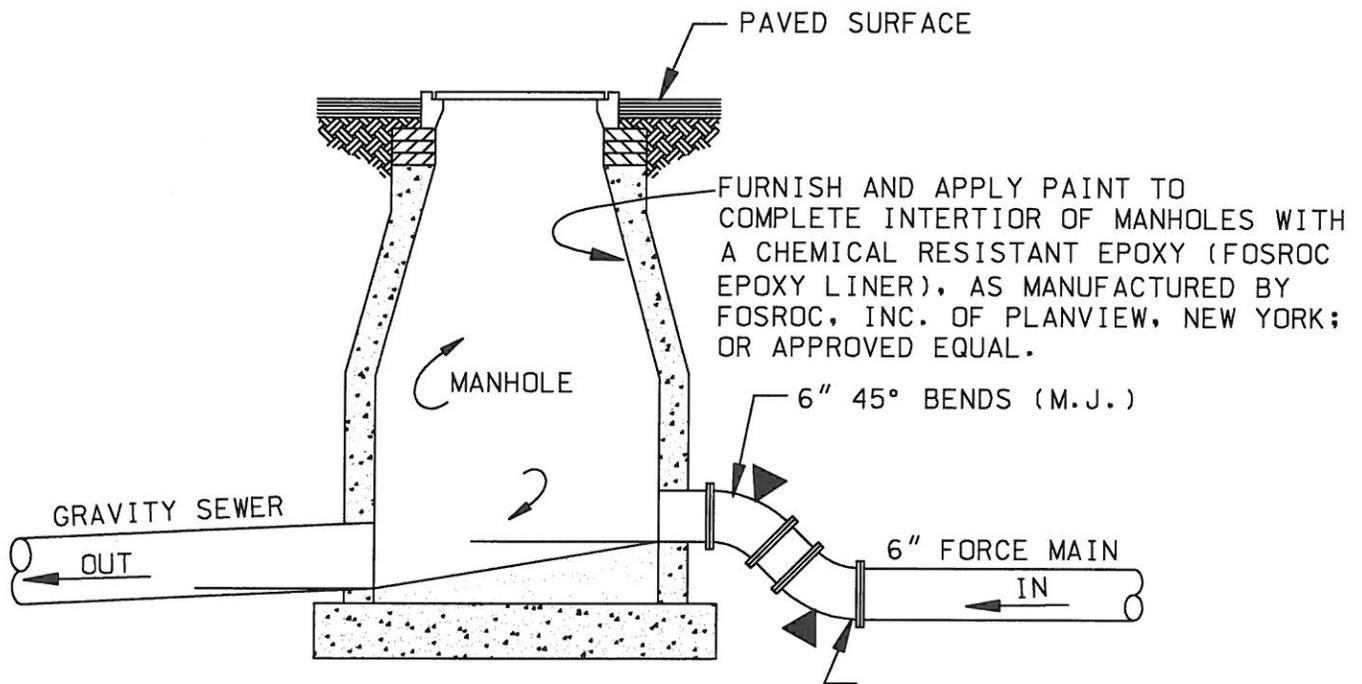


NOTE:
 1. THE CONTRACTOR SHALL VERIFY THE EXISTENCE OF MULTIPLE BUILDING SEWER LINES COMING FROM THE RESIDENCE. THE GRINDER PUMP SHALL BE LOCATED SUCH THAT THE CONTRACTOR CAN CONNECT ALL BUILDING SEWER LINES TO THE PUMP.

PROPOSED 4" SCHEDULE 40
 PVC GRAVITY SEWER SERVICE
 MINIMUM SLOPE SHALL BE 1.00%

TYPICAL GRINDER PUMP AND SERVICE CONNECTION DETAIL

NOT TO SCALE

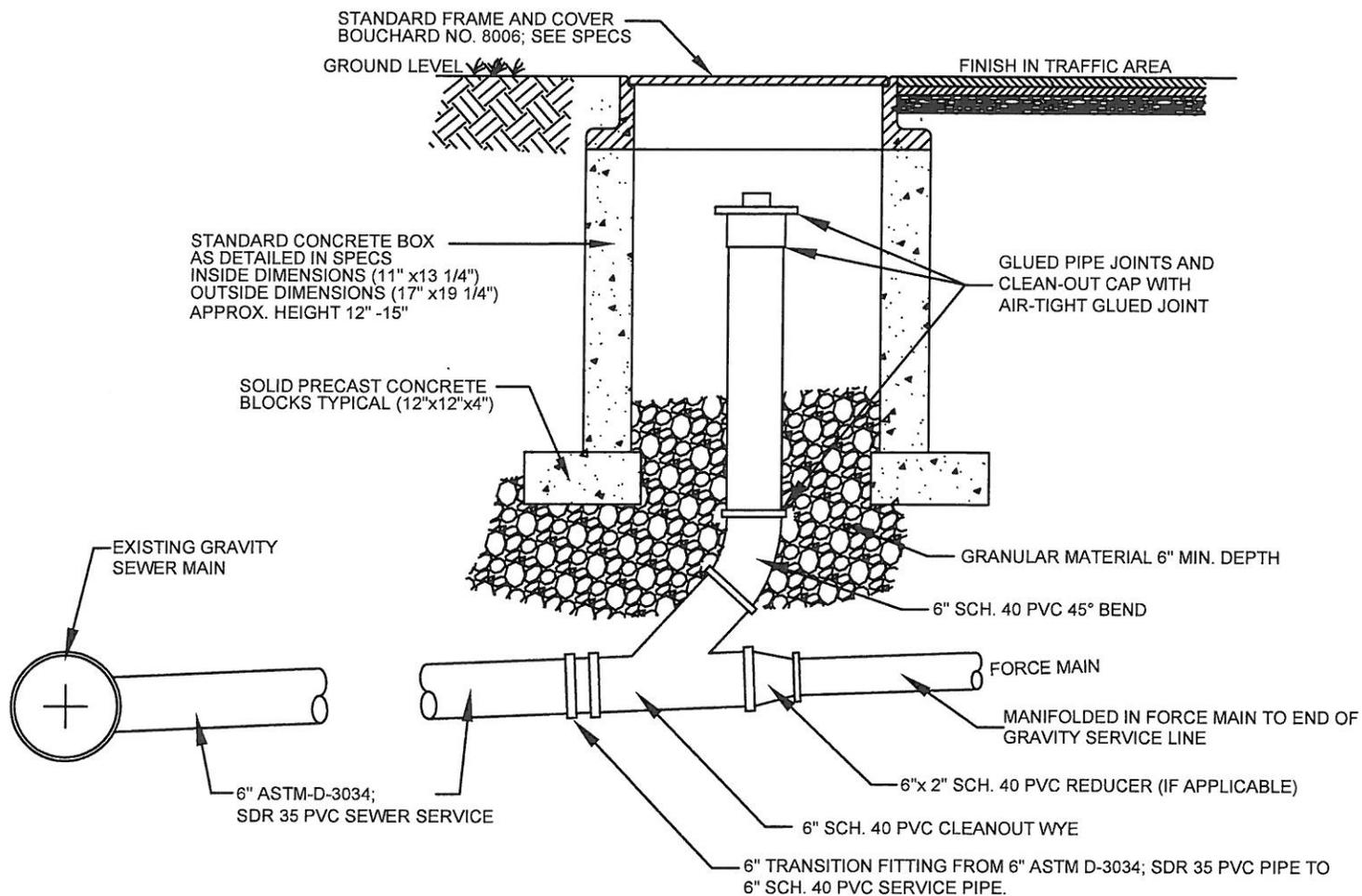


SPECIAL TIE-IN MANHOLE

NOT TO SCALE

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.

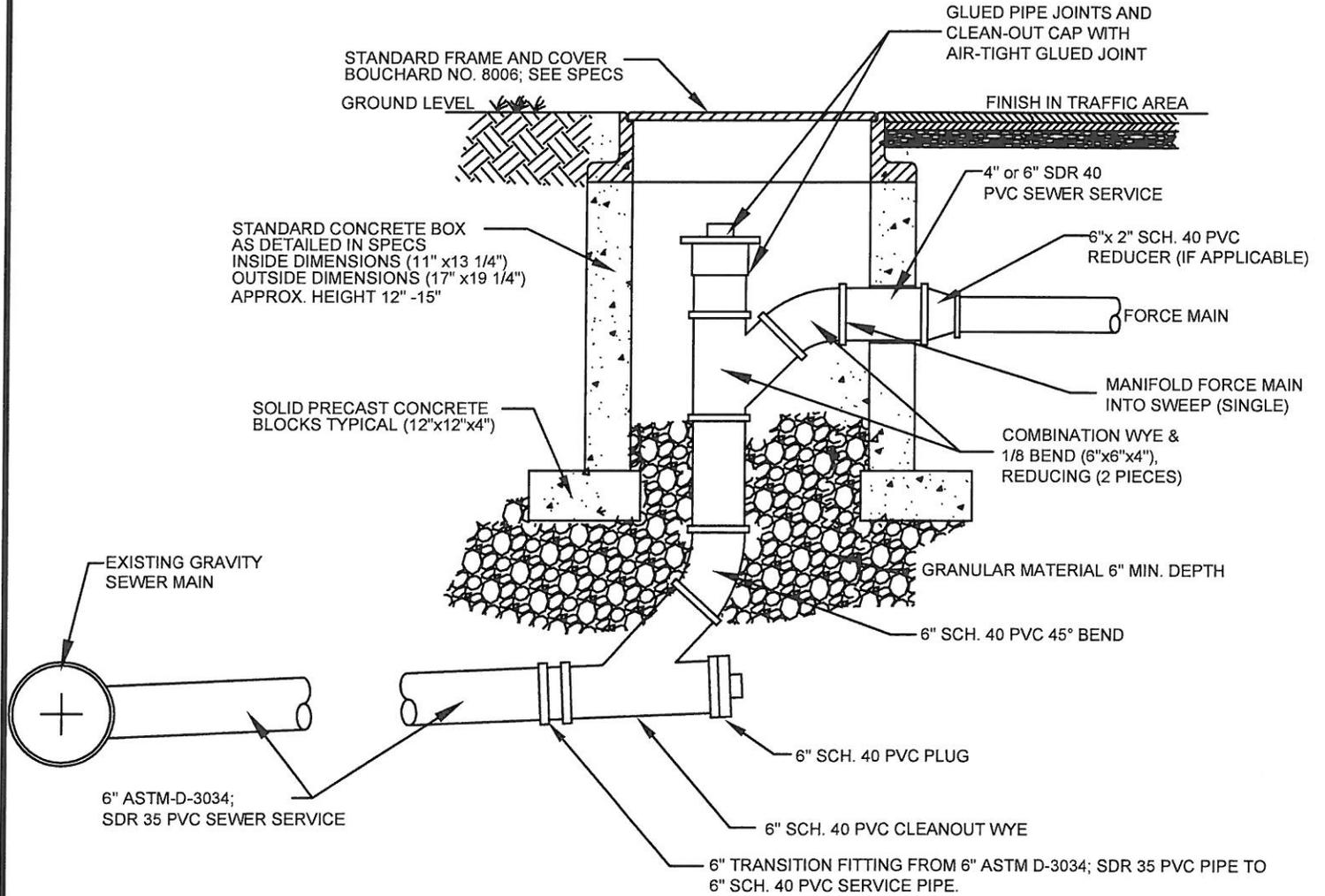


TYPICAL SHALLOW CLEANOUT ASSEMBLY
W/ FORCE MAIN CONNECTION

NOT TO SCALE

GENERAL NOTES:

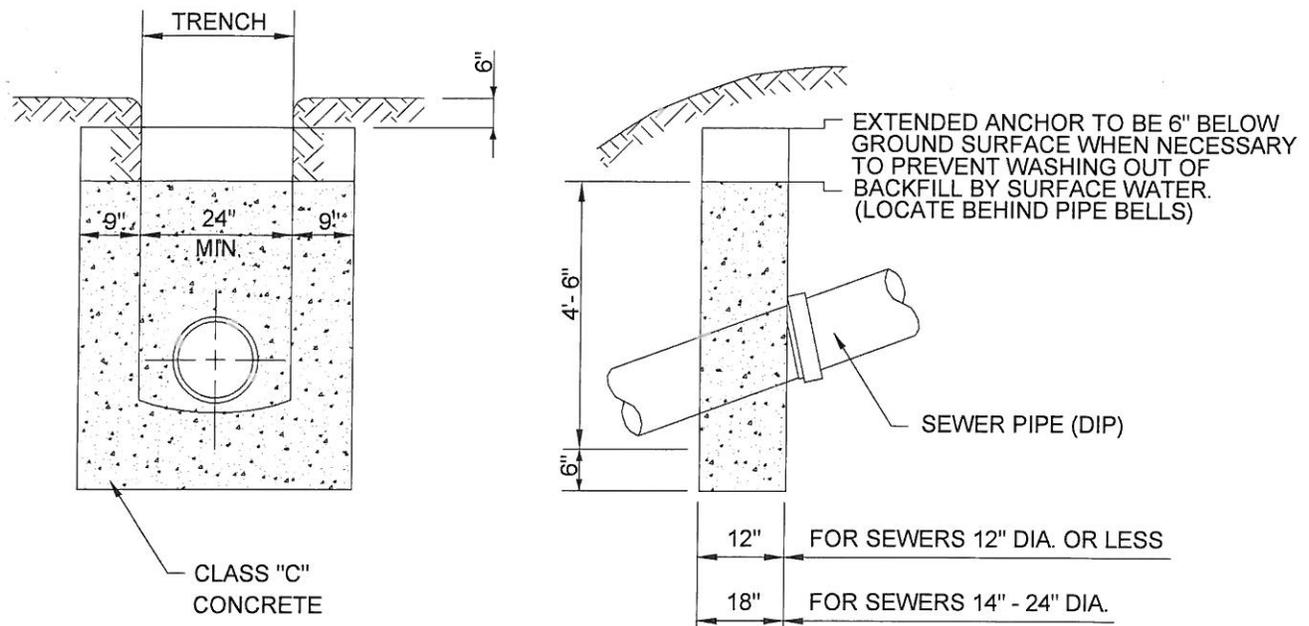
1. TRAFFIC BEARING BOX REQUIRED IN TRAFFIC AREAS.
2. ALL PIPE AND FITTINGS SHALL BE OF SIMILAR MATERIAL.
3. ALL PIPE SHALL BE OF SAME SIZE.
4. NO BENDS ARE ALLOWED IN THE LATERAL FROM THE MAIN TO THE CLEAN-OUT STACK WYE (EXCEPT AS NOTED.)
5. ALL MAIN LINE TAPS ON ACTIVE MAINS SHALL BE SUPERVISED OR PERFORMED 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

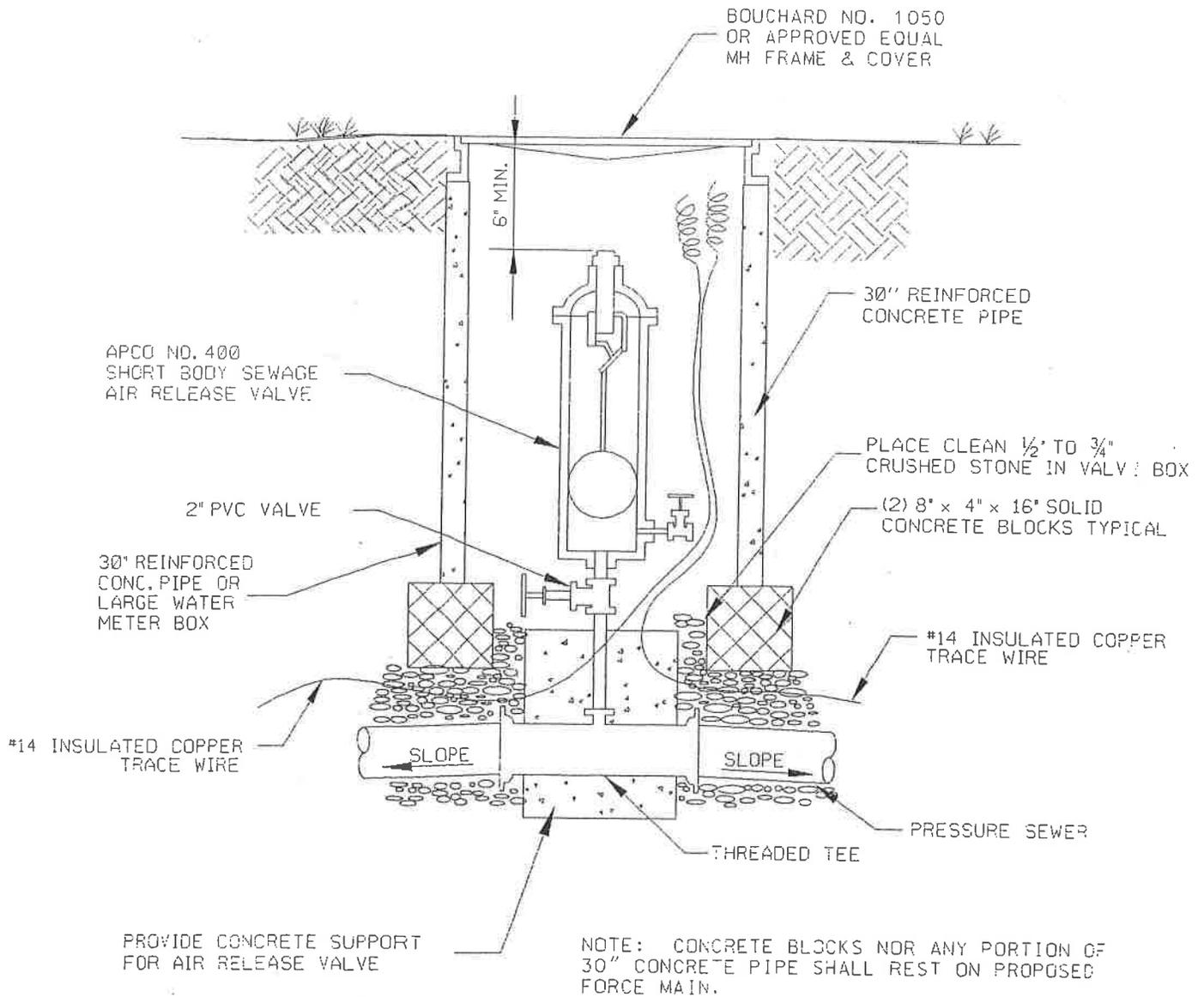


NOTE:

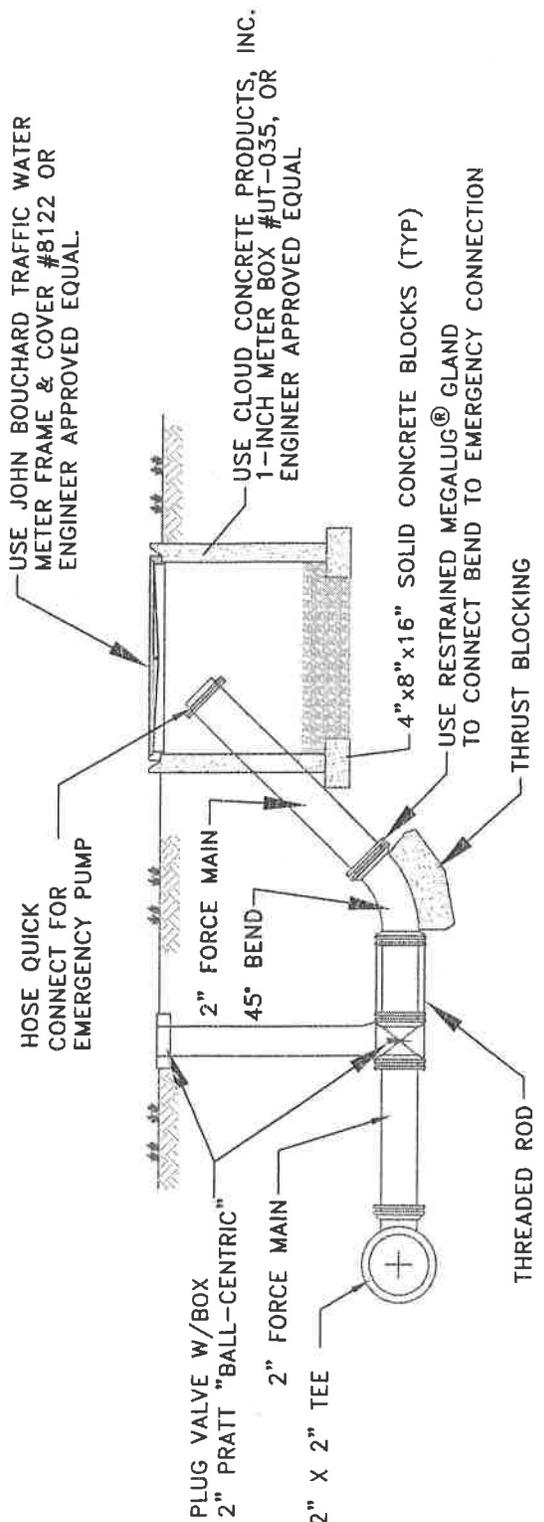
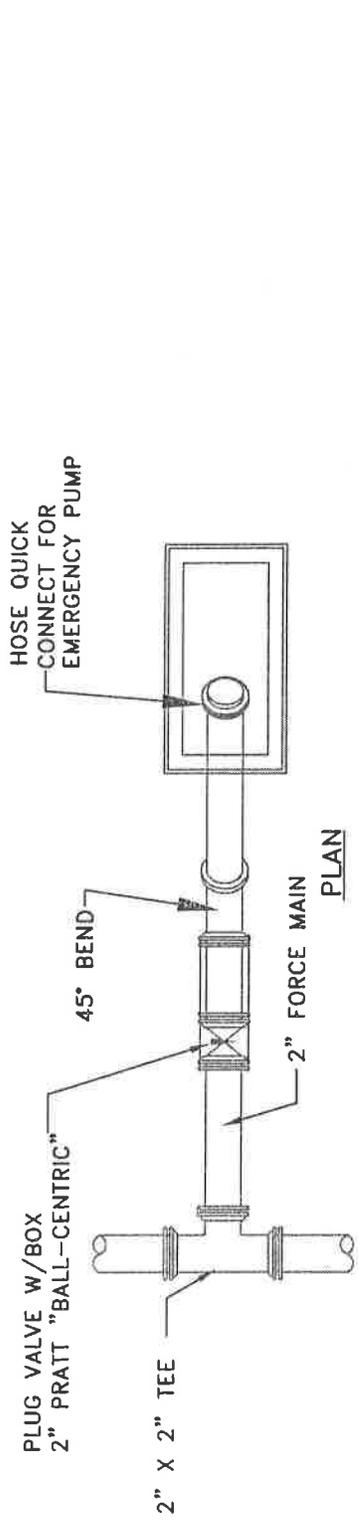
PROVIDE NO ANCHOR ON GRADES LESS THAN 18.86% UNLESS NOTED.
 PROVIDE ANCHOR 36' C-C ON GRADES BETWEEN 18.86% AND 34%.
 PROVIDE ANCHOR 24' C-C ON GRADES BETWEEN 34% AND 50%.
 FOR CONDITIONS OTHER THAN SHOWN HEREON PROVIDE ANCHORS AS REQUIRED
 BY THE CONTRACT OR ORDERED BY THE ENGINEER IN THE FIELD.

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

CONCRETE ANCHOR
 NOT TO SCALE



TYPE A
AUTOMATIC AIR RELEASE MANHOLE
NOT TO SCALE



TYPICAL EMERGENCY PUMPING CONNECTION DETAIL
NOT TO SCALE