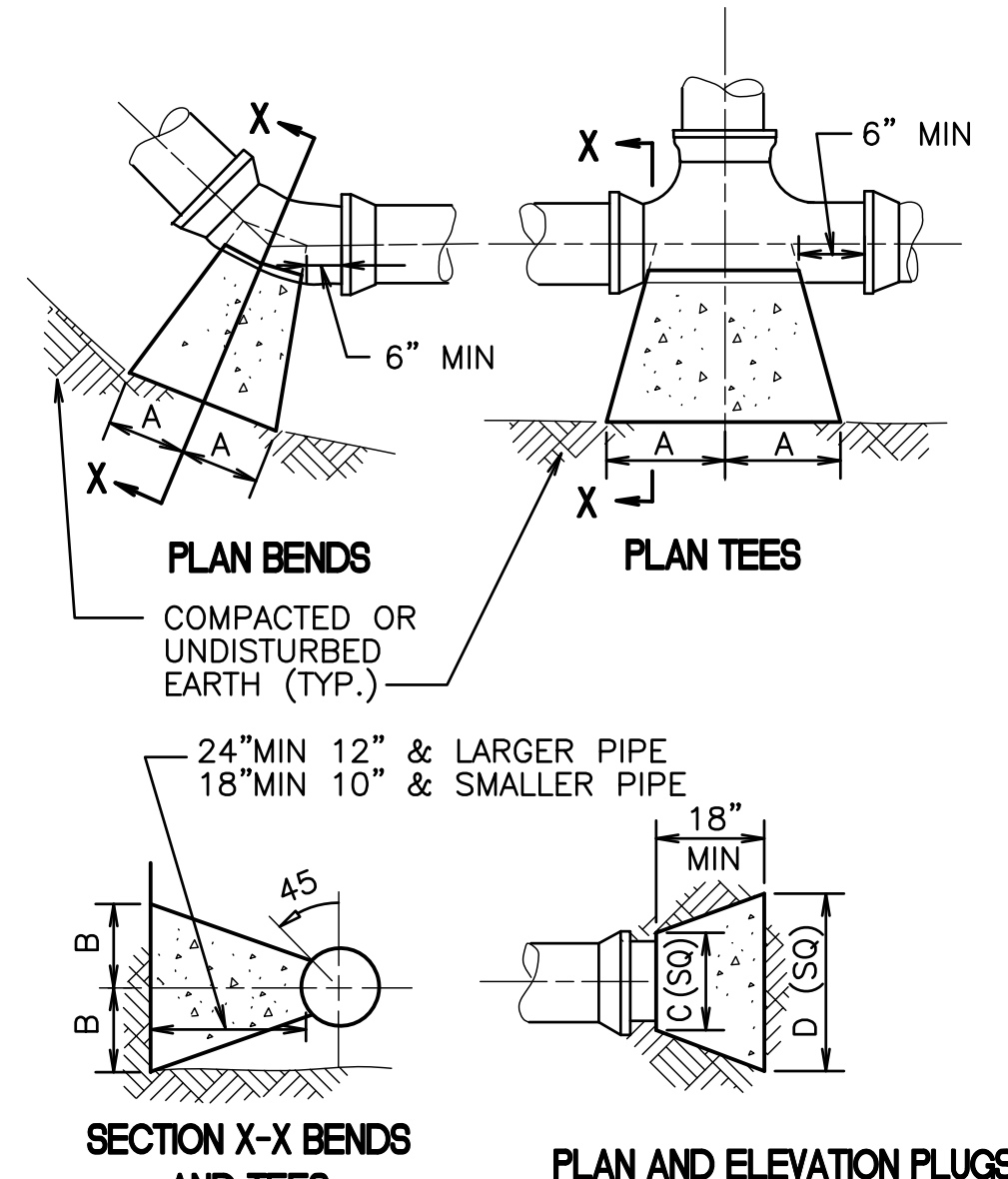
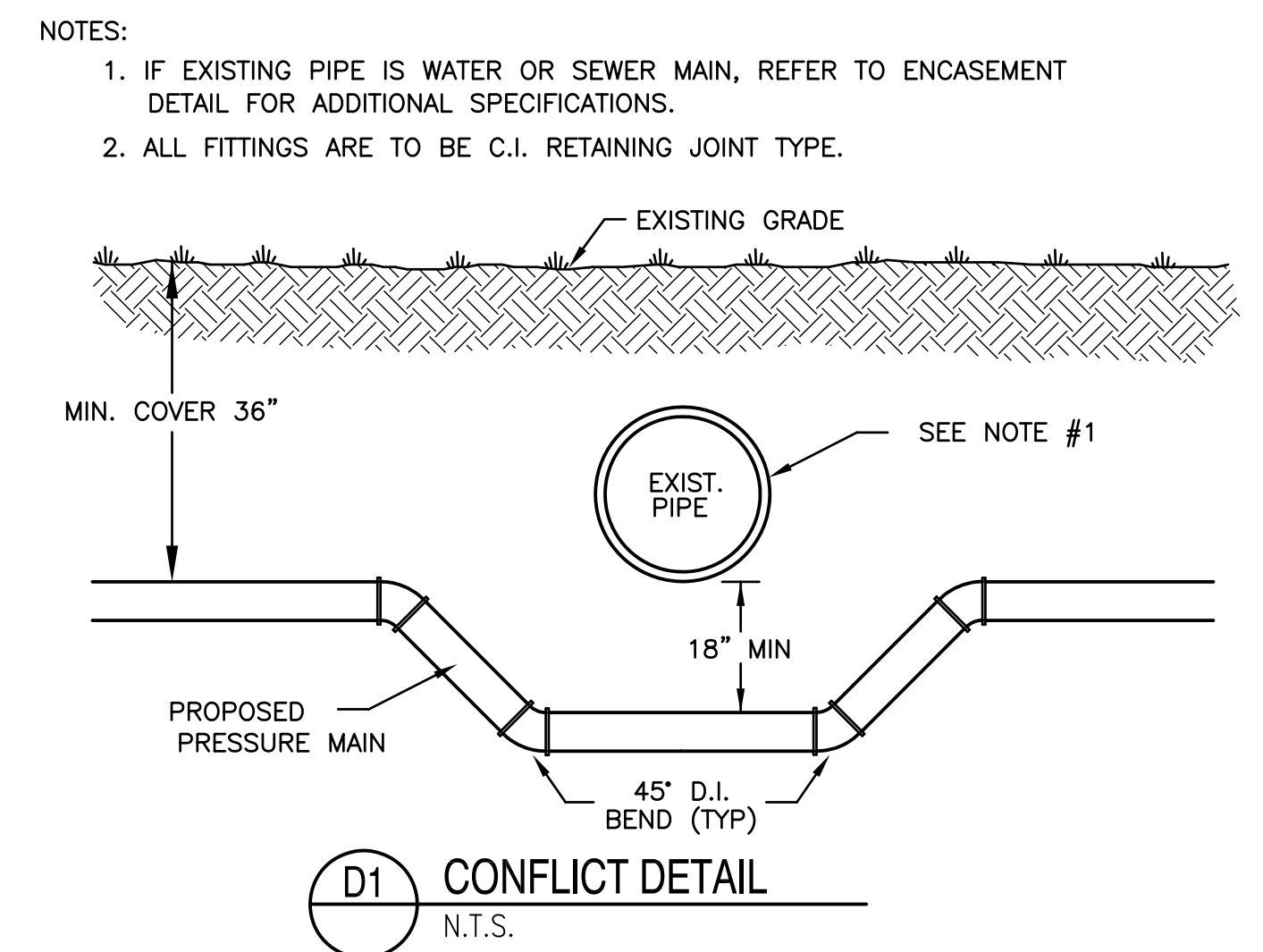


three eighths inch = one foot
one eighth inch = one foot
one quarter inch = one foot
one half inch = one foot
three quarters inch = one foot
one inch = one foot
one and one half inches = one foot
two inches = one foot
three inches = one foot
four inches = one foot
five inches = one foot
six inches = one foot
seven inches = one foot
eight inches = one foot
nine inches = one foot
ten inches = one foot
eleven inches = one foot
twelve inches = one foot
thirteen inches = one foot
fourteen inches = one foot
fifteen inches = one foot
sixteen inches = one foot
seventeen inches = one foot
eighteen inches = one foot
nineteen inches = one foot
twenty inches = one foot
twenty one inches = one foot
twenty two inches = one foot
twenty three inches = one foot
twenty four inches = one foot
twenty five inches = one foot
twenty six inches = one foot
twenty seven inches = one foot
twenty eight inches = one foot
twenty nine inches = one foot
thirty inches = one foot
thirty one inches = one foot
thirty two inches = one foot
thirty three inches = one foot
thirty four inches = one foot
thirty five inches = one foot
thirty six inches = one foot
thirty seven inches = one foot
thirty eight inches = one foot
thirty nine inches = one foot
forty inches = one foot
forty one inches = one foot
forty two inches = one foot
forty three inches = one foot
forty four inches = one foot
forty five inches = one foot
forty six inches = one foot
forty seven inches = one foot
forty eight inches = one foot
forty nine inches = one foot
fifty inches = one foot
fifty one inches = one foot
fifty two inches = one foot
fifty three inches = one foot
fifty four inches = one foot
fifty five inches = one foot
fifty six inches = one foot
fifty seven inches = one foot
fifty eight inches = one foot
fifty nine inches = one foot
sixty inches = one foot
sixty one inches = one foot
sixty two inches = one foot
sixty three inches = one foot
sixty four inches = one foot
sixty five inches = one foot
sixty six inches = one foot
sixty seven inches = one foot
sixty eight inches = one foot
sixty nine inches = one foot
seventy inches = one foot
seventy one inches = one foot
seventy two inches = one foot
seventy three inches = one foot
seventy four inches = one foot
seventy five inches = one foot
seventy six inches = one foot
seventy seven inches = one foot
seventy eight inches = one foot
seventy nine inches = one foot
eighty inches = one foot
eighty one inches = one foot
eighty two inches = one foot
eighty three inches = one foot
eighty four inches = one foot
eighty five inches = one foot
eighty six inches = one foot
eighty seven inches = one foot
eighty eight inches = one foot
eighty nine inches = one foot
ninety inches = one foot
ninety one inches = one foot
ninety two inches = one foot
ninety three inches = one foot
ninety four inches = one foot
ninety five inches = one foot
ninety six inches = one foot
ninety seven inches = one foot
ninety eight inches = one foot
ninety nine inches = one foot
one hundred inches = one foot



SIZE	1/4 BENDS		1/8 BENDS		1/16 BENDS		TEES		PLUGS	
	A	B	A	B	A	B	A	B	C	D
6"	16"	10"	9"	10"	6"	8"	10"	12"	10"	21"
8"	22"	13"	12"	13"	8"	10"	13"	16"	12"	29"
10"	26"	17"	14"	17"	10"	13"	16"	20"	14"	36"
12"	29"	21"	16"	21"	11"	16"	18"	24"	16"	41"
14"	35"	24"	19"	24"	12"	20"	22"	27"	18"	48"
16"	38"	27"	21"	27"	12"	24"	24"	30"	20"	54"

C1 THRUST BLOCK DETAIL
N.T.S.



SANITARY SEWER LINES (GRAVITY OR PRESSURE) SHALL HAVE 18" OR GREATER VERTICAL CLEARANCE BELOW ANY POTABLE WATER LINE WHEN CROSSING. A MINIMUM OF 6" VERTICAL CLEARANCE IS REQUIRED FOR OTHER UTILITIES. HORIZONTAL CLEARANCE BETWEEN SANITARY SEWER LINE THAT IS PARALLEL TO AND LESS THAN 18" BELOW A POTABLE WATER LINE SHALL BE 10" OR GREATER. A MINIMUM OF 30" IS REQUIRED FOR OTHER UTILITIES.

IF THIS IS NOT POSSIBLE OR PRACTICAL, SEE BELOW:

PIPE DIA. + 8" CONCRETE

10'

10'

LESS THAN 18"

4" CONCRETE ENCASEMENT (2500 PSI)

WATER MAIN

S.S. MAIN

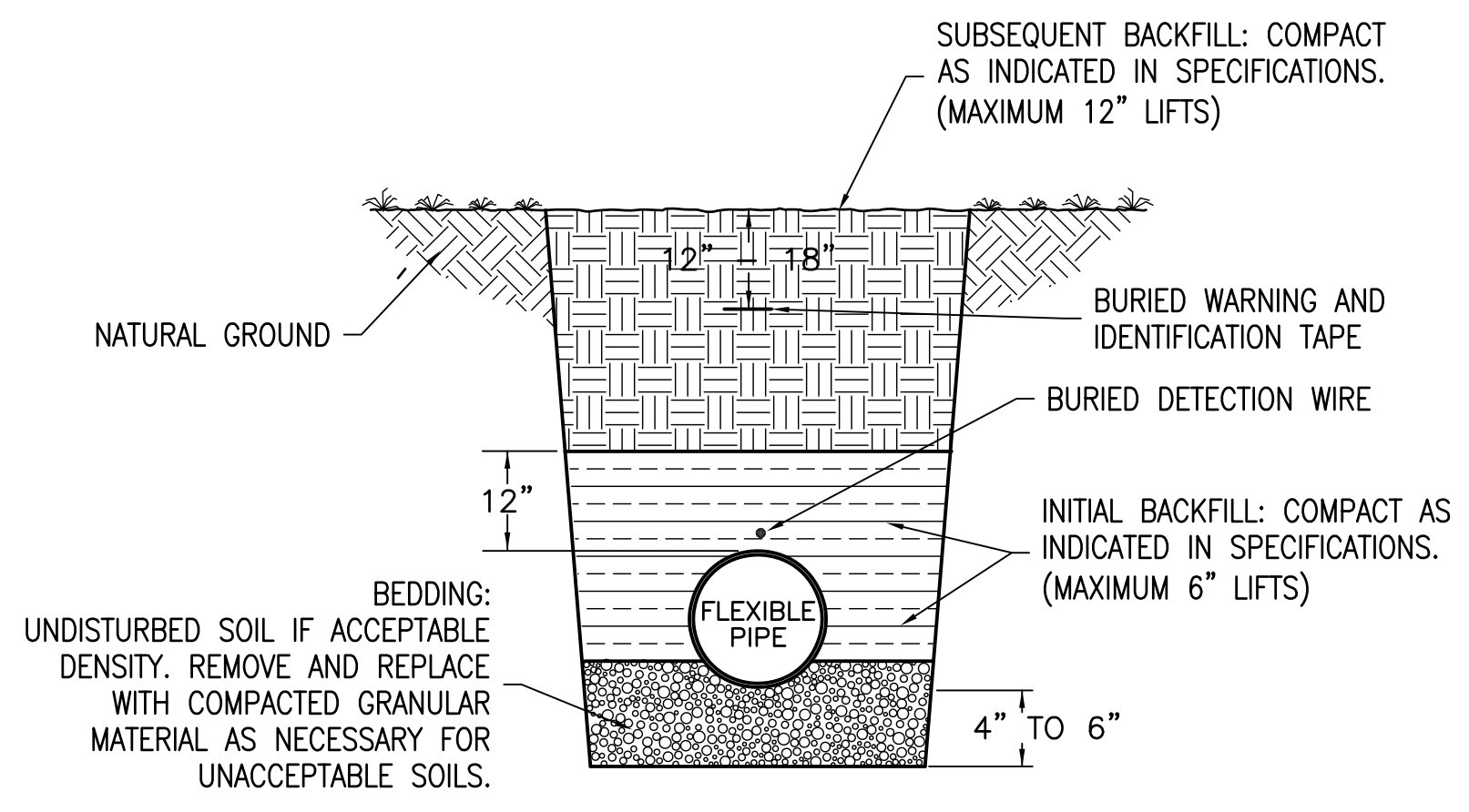
FOR CROSSING: ENCASE AS ABOVE SO THAT THE ENDS OF ENCASEMENT ARE AT LEAST 12" FROM ANY WATER LINE JOINT. WATER LINE JOINT MUST NOT BE CLOSER THAN 5' TO THE POINT OF CROSSING, OR IT MUST ALSO BE ENCASED.

ALTERNATE 1: USE EQUALLY (OR HIGHER) RATED PRESSURE PIPE FOR SEWER WITH NO JOINTS CLOSER THAN 12' APART AND 6" VERTICAL.

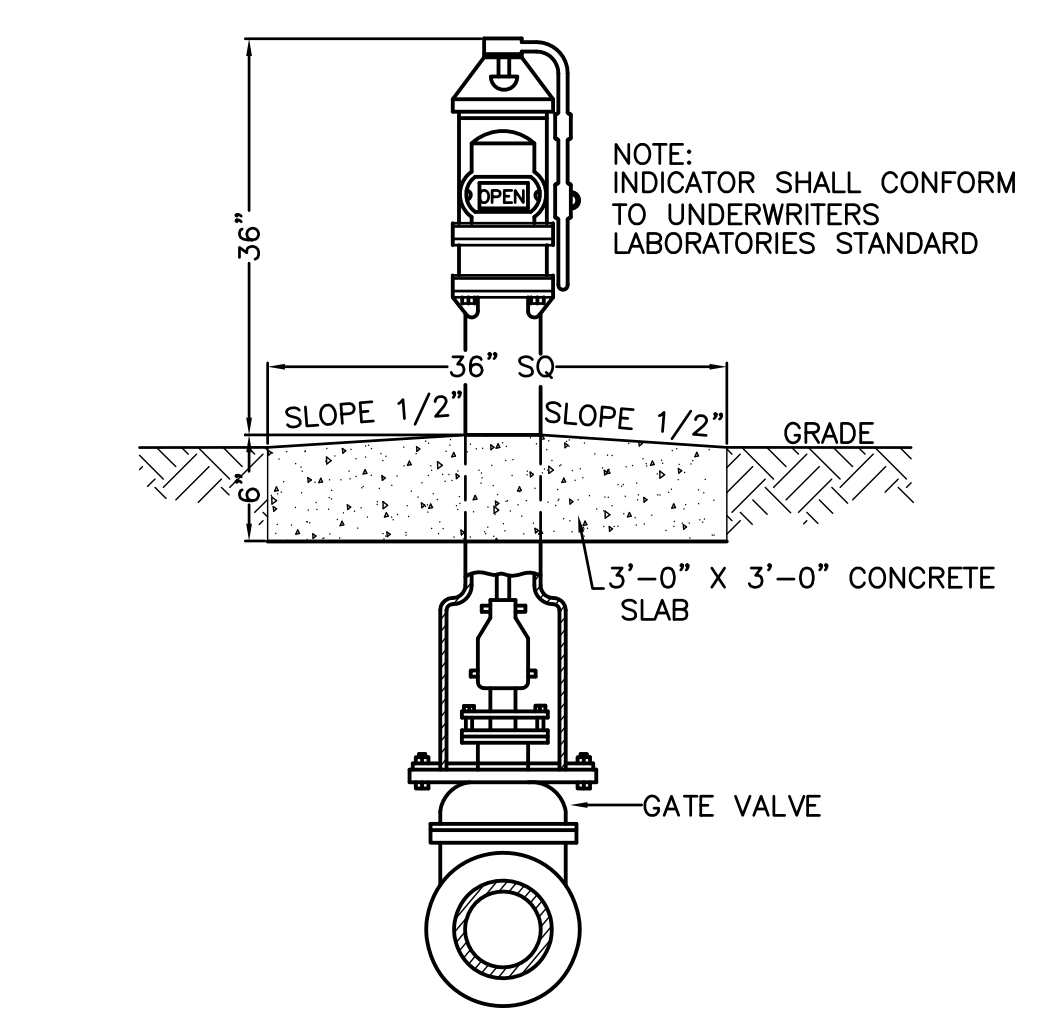
ALTERNATE 2: PLACE SEWER LINE INTO STEEL CASING AND CENTER 20' PIECE WITH 4" VERTICAL CLEARANCE AND SEAL ENDS.

FOR PARALLEL: AND 6' TO 10' APART USE ALTERNATE 2, BUT IF MORE THAN 40' IN LENGTH, ALTERNATE 1 MUST BE USED AND JOINTS ARE TO BE STAGGERED. IF LINES MUST BE 3' TO 6' APART, ALTERNATE 1 MUST BE USED WITH A HIGHER RATED PRESSURE PIPE FOR SEWER (i.e., WATER LINE IS DR25 THEN USE DR18 OR 21 FOR SEWER).

F1 SEWER-WATER SEPARATION & CLEARANCES DETAIL
N.T.S.



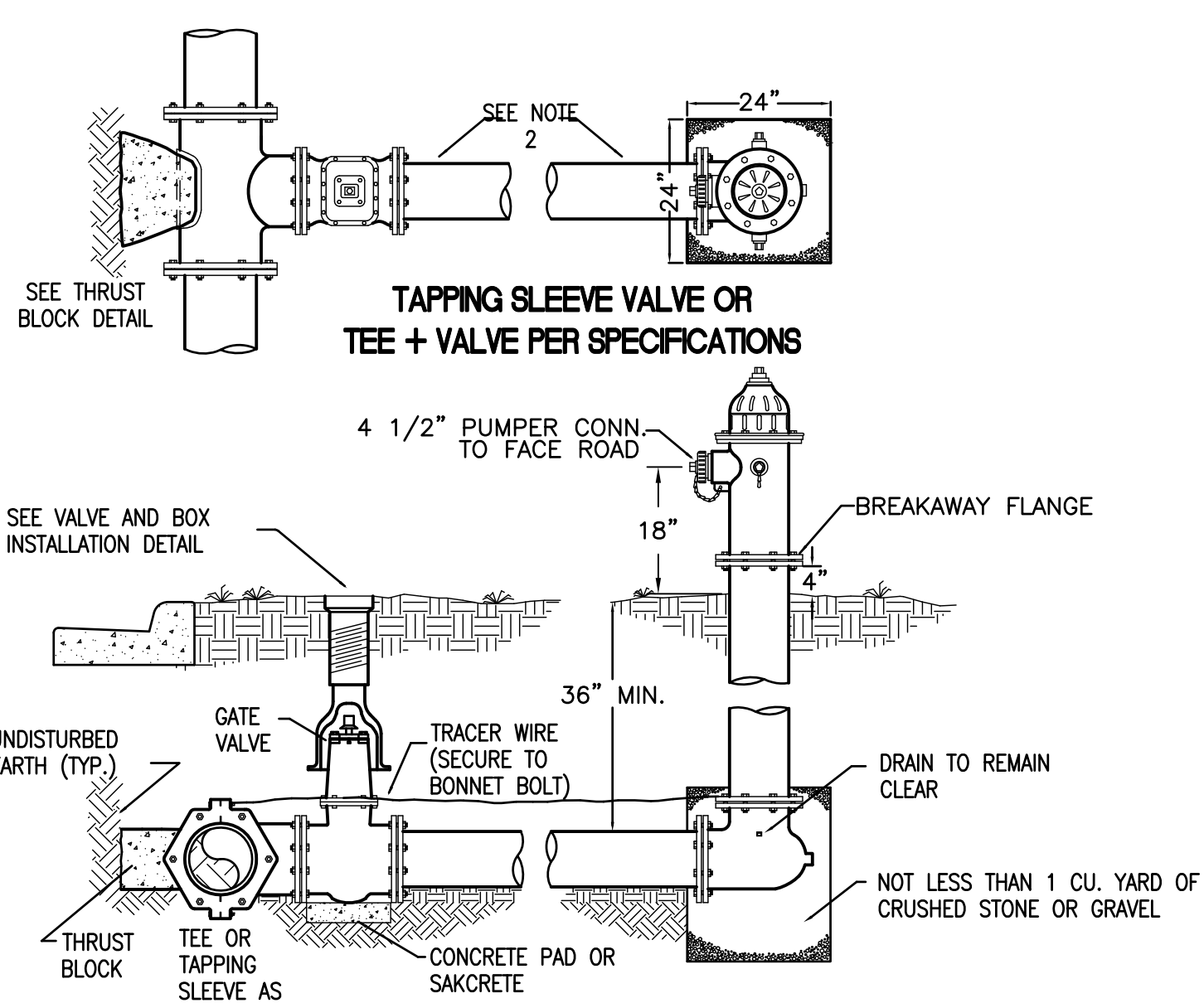
A3 FLEXIBLE PIPE BEDDING DETAIL
N.T.S.



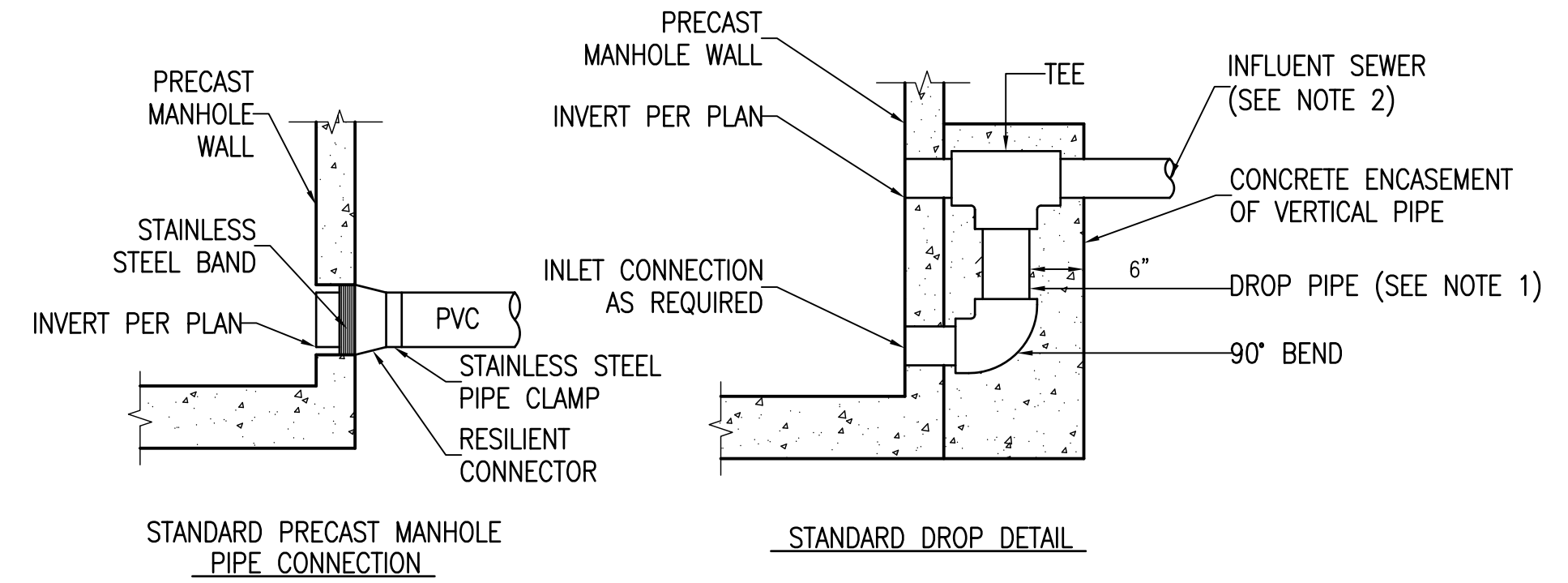
C3 POST INDICATOR VALVE DETAIL
N.T.S.

NOTES:

- CONTRACTOR TO ADJUST FIRE HYDRANT TO FINISHED GRADE.
- HYDRANT CONNECTORS, D.I.P. SPOOLS WITH MEGALUG JOINT RESTRAINTS, OR APPROVED EQUAL. (THRUST BLOCKING NOT REQUIRED.)
- PAIN PER UFC 3-600-01 SECTION 3-7.3.1 AND NFPA 291 (HYDRANT BARRELS SHALL BE RED FOR NON-POTABLE WATER AND YELLOW FOR POTABLE WATER. HYDRANT BONNET TO BE PAINTED ACCORDING TO FLOW RATE IN ACCORDANCE WITH NFPA 291.)



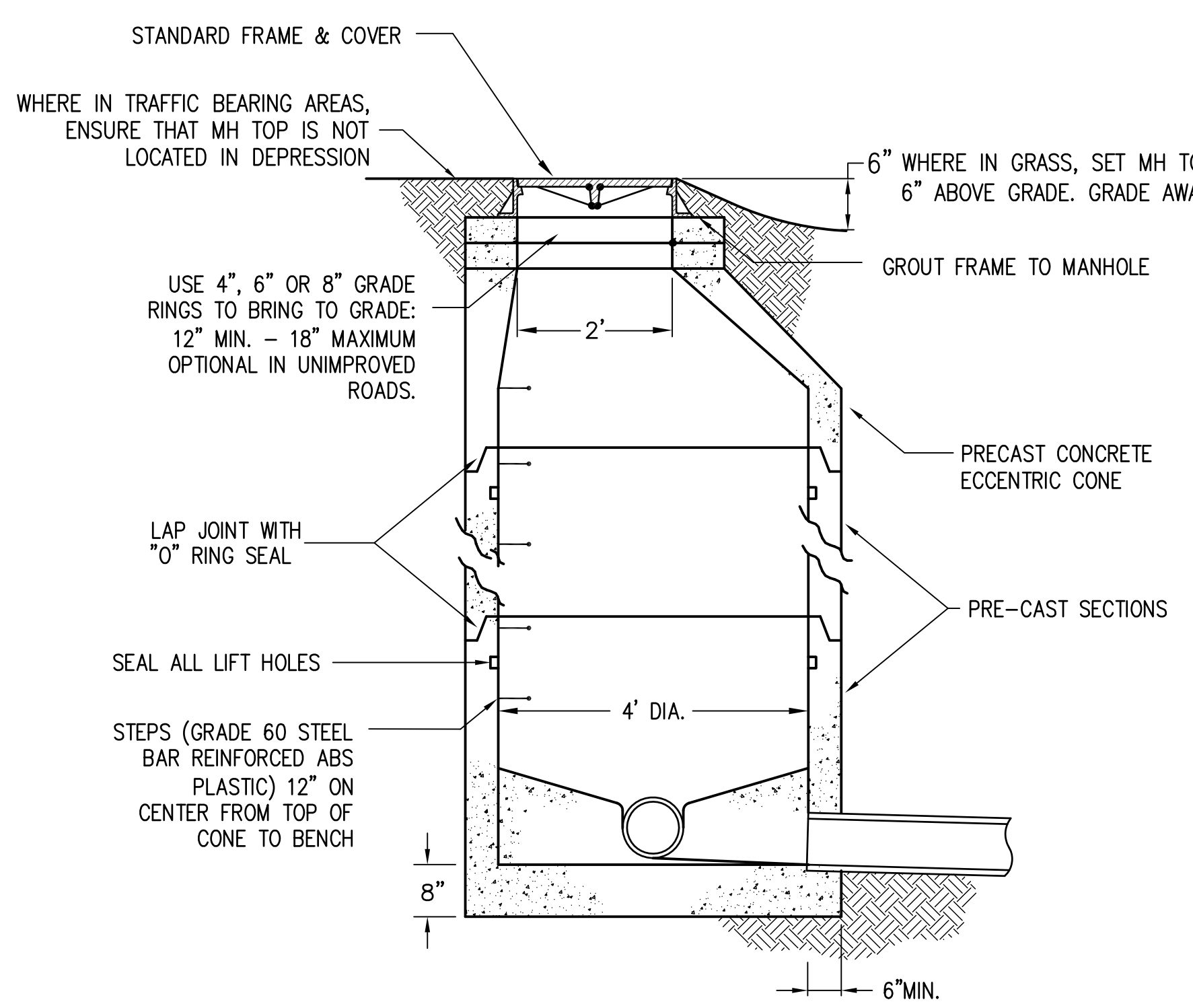
E3 TYPICAL FIRE HYDRANT INSTALLATION DETAIL
N.T.S.



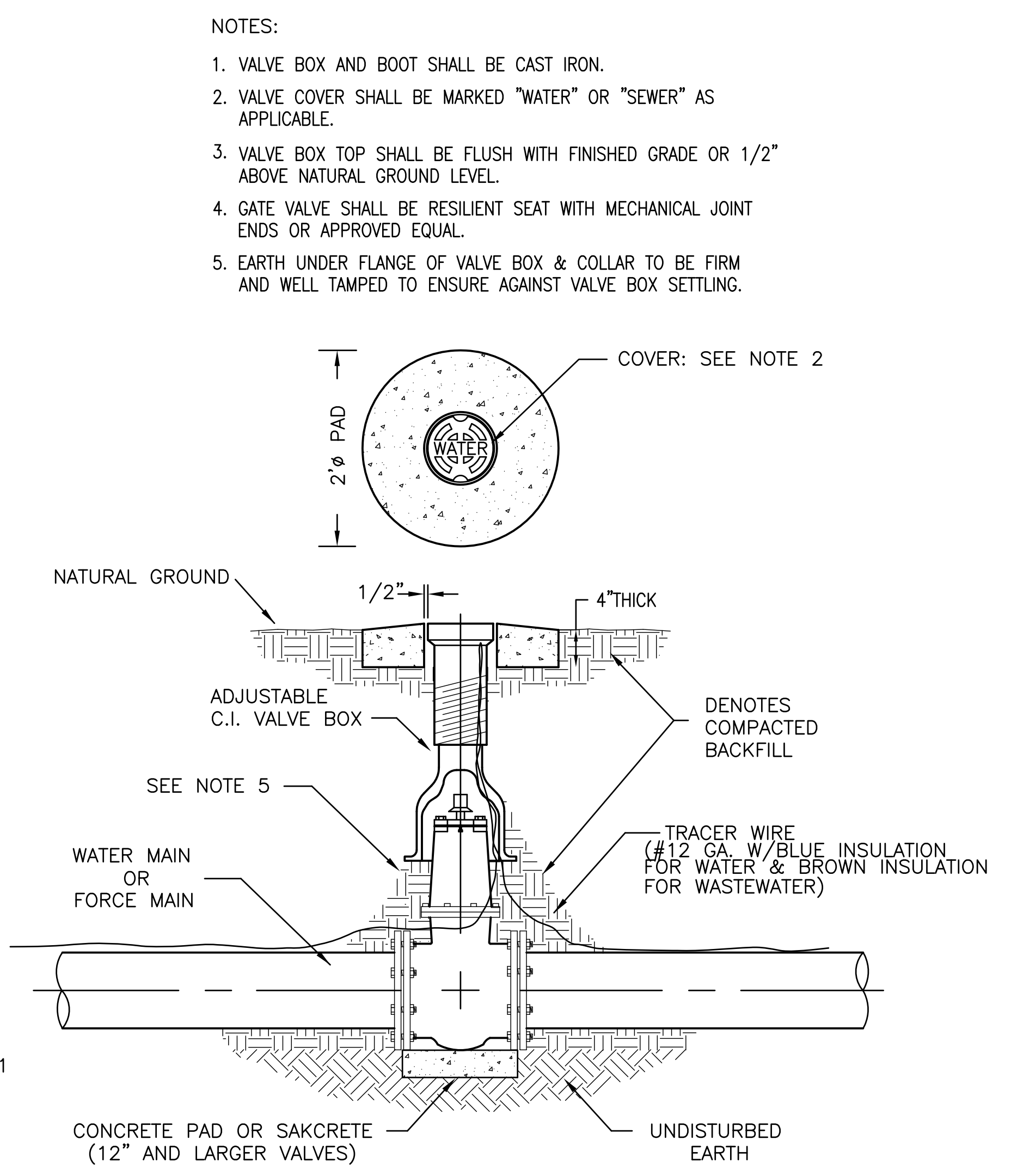
NOTES:

- DROP PIPE AND FITTINGS SHALL BE OF EQUAL SIZE AND MATERIAL AS THE INFLUENT SEWER.
- AN OUTSIDE DROP CONNECTION SHALL BE REQUIRED FOR ALL INFLUENT WHICH HAVE AN INVERT 2' OR MORE ABOVE THE MANHOLE INVERT.

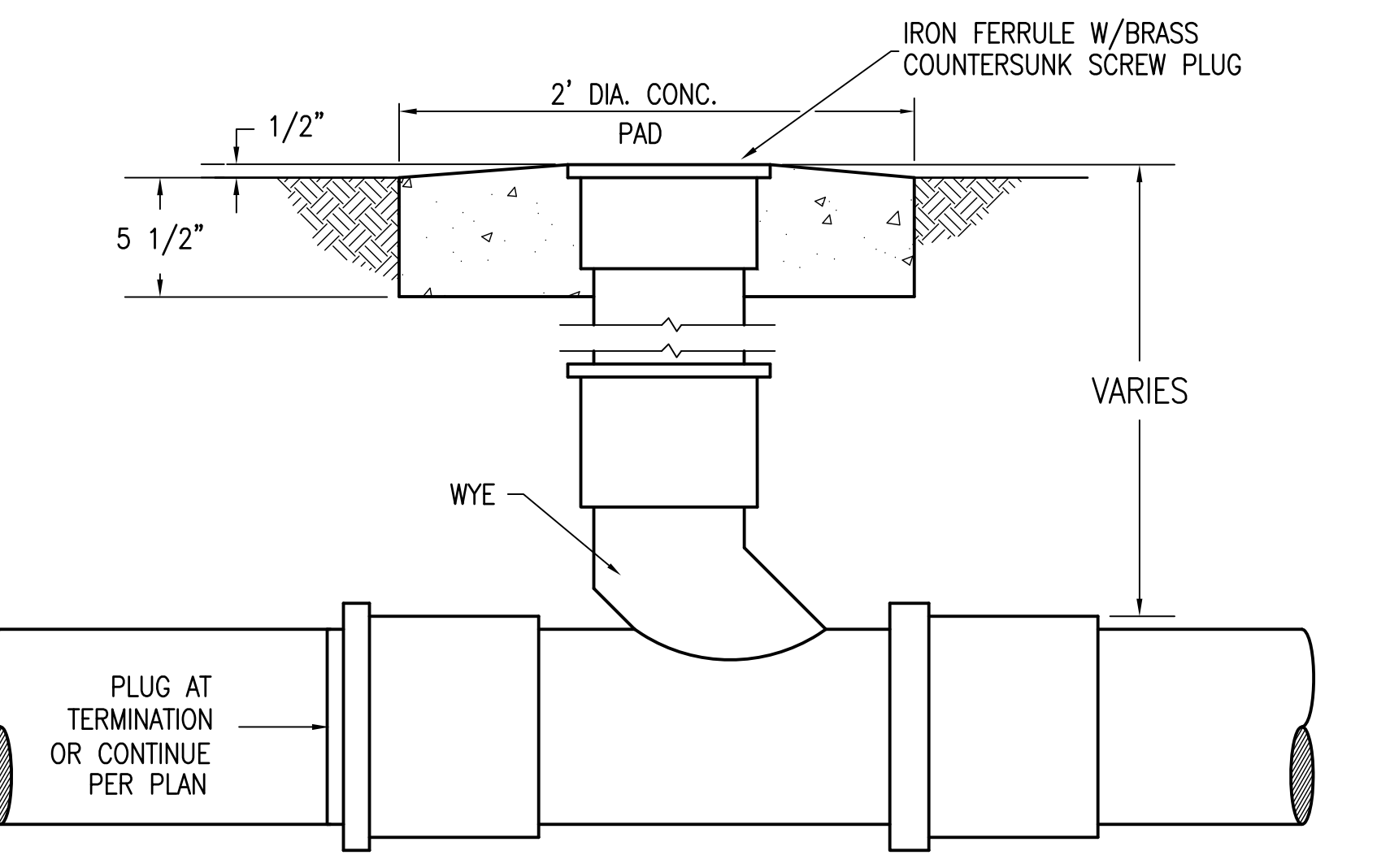
A6 SANITARY SEWER MANHOLE CONNECTIONS DETAIL
N.T.S.



E6 SANITARY SEWER MANHOLE DETAIL
N.T.S.



C8 TYPICAL VALVE & BOX INSTALLATION (WITHIN PROPERTY) DETAIL
N.T.S.



E8 CLEAN-OUT DETAIL
N.T.S.

NOTES:

- ALL SANITARY SEWER MANHOLES FOR THIS PROJECT SHALL BE 4' INSIDE DIAMETER.
- MANHOLE SHALL CONFORM TO A.S.T.M. C 478 SPECIFICATIONS.
- DIAMETER OF OPENING FOR PIPE SHALL BE 1" LARGER DIAMETER THAN BELL OF THE PIPE BEING USED.
- JOINTING COMPOUND SHALL BE RAM NECK, TYPE 1, ROPE FORM PLASTIC GASKET OR EQUAL.
- ALL PATCHING TO BE DONE WITH HYDRAULIC CEMENT. NO MORTAR REPAIRS PERMITTED.
- CONCRETE TO BE 2500 P.S.I., REINFORCING STEEL TO BE A.S.T.M. A 615 GRADE 60.
- SEAL WITH A-LOK, KORE-N-SEAL OR LOCK-JOINT PER SPECIFICATIONS.
- CAST IN PLACE MANHOLE MAY BE ALLOWED IN PRE-APPROVED LOCATIONS.
- ALL NEW LINE TIE-INS SHALL BE CORE-DRILLED WITH RUBBER BOOT ADDED.
- BITUMASTIC COATING SHALL BE FACTORY APPLIED.
- FRAME AND COVER SHALL BE VULCAN 1337-2 (ASTM SPEC. A-48, CLASS 30 CAST IRON) OR APPROVED EQUAL, REFER TO SPECIFICATIONS.
- ALL MANHOLE TOPS SHALL BE ADJUSTED TO WITHIN 0.1' OF FINISH GRADE.

CONSULTANTS:		ARCHITECT/ENGINEERS:		Drawing Title		Project Title		Project Number		Office of Construction and Facilities Management
CIVIL: KENNETH HORNE & ASSOCIATES 7201 NORTH 9TH AVENUE, STE. 8 PENSACOLA, FLORIDA 32504 PH (850) 471-9008 FX (850) 471-0093		COM/DES: SCHMIDT CONSULTING GROUP, INC. 40 S. PALAFOX PLACE, STE. 300 PENSACOLA, FLORIDA 32502 PH (850) 438-0050 FX (850) 432-8651		SURVEYORS: KCI TECHNOLOGIES, INC. 10401 HIGHLAND MANOR DRIVE, SUITE 120 TAMPA, FLORIDA 33610 PH (813) 740-2300		UTILITY DETAILS		520-326		
LANDSCAPE ARCHITECT: CSA GROUP, INC. 6300 PICCADILLY SQUARE DRIVE MOBILE, ALABAMA 36609 PH (251) 344-4023 FX (251) 344-4052		ARCHITECTURE: BULLOCK TOBE ASSOCIATES, INC. 809 EAST CERVANTES STREET PENSACOLA, FL. 32501 PH (850) 438-0444 FX (850) 432-8208				Approved Project Director		Building Number -		
Date		Date				Location PANAMA CITY, FLORIDA		Drawing Number CU501 Dwg 13 of 21		

VA FORM 08-6231

FINAL SUBMISSION