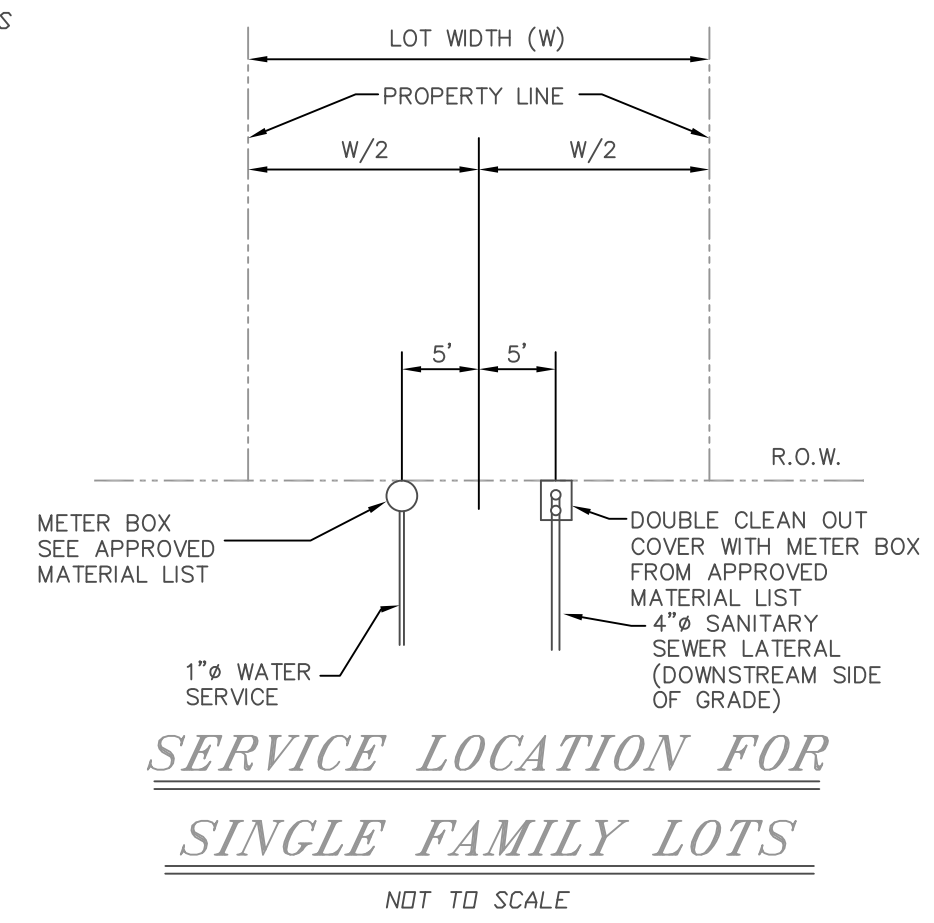


PAVEMENT REPLACEMENT DETAILS

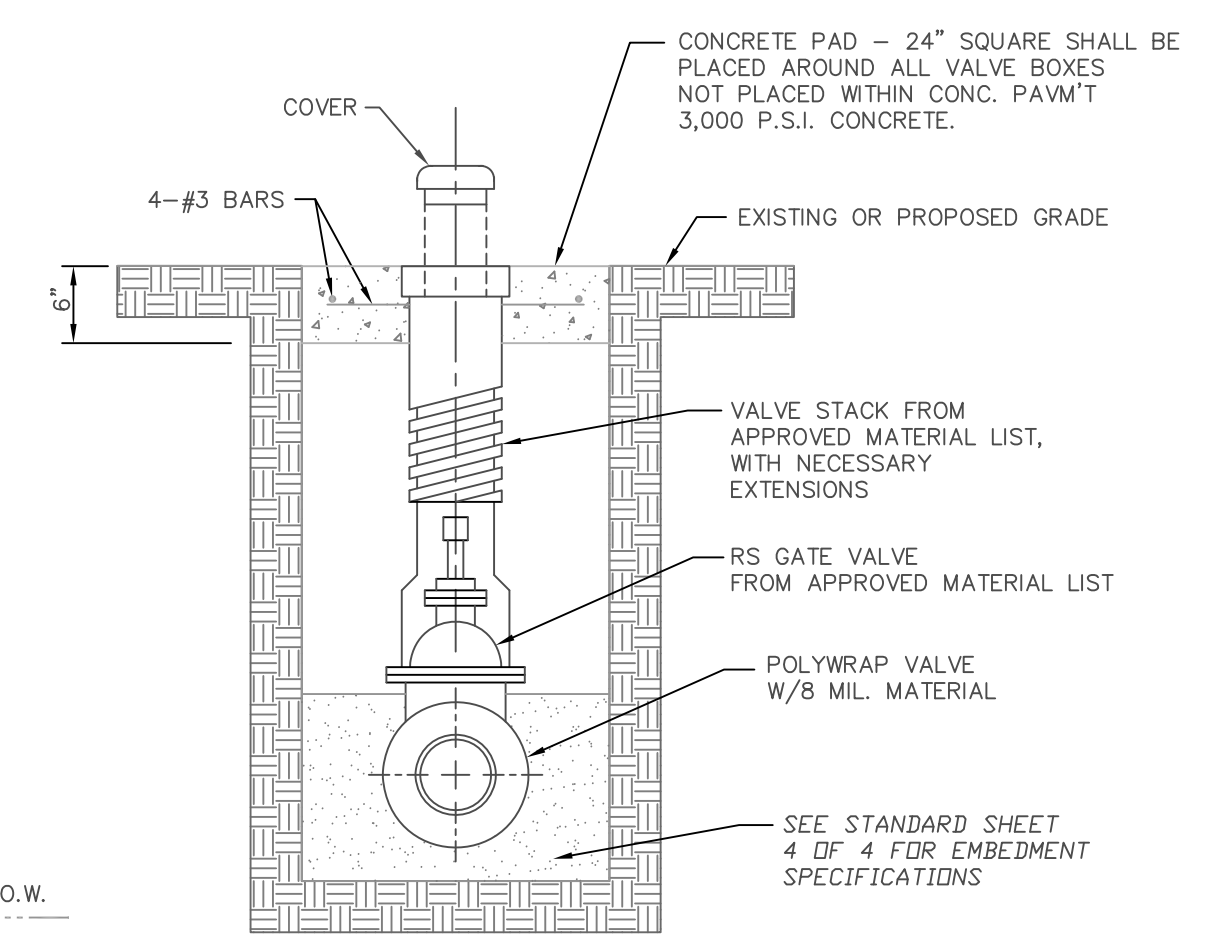
NOT TO SCALE
(FOR ALL STREET CUTS-WATER, SANSEWER AND STORM SEWER)

- NOTE:
1. IF DISTANCE BETWEEN PAVEMENT REPLACEMENT JOINT & BACK OF CURB OR EXISTING PAVEMENT JOINT IS LESS THAN 3 FOOT, LIMITS OF PAVEMENT SHALL BE TO BACK OF CURB OR EXISTING PAVEMENT JOINT.
 2. SAW CUT # 1 TO BE MADE PRIOR TO INSTALLATION OF PIPE; SAW CUT # 2 TO BE MADE AFTER PIPE INSTALLATION, TESTING & TRENCH BACK FILL COMPLETED & APPROVED.
 3. PAVEMENT CUTS ARE TO BE FULL DEPTH & PARALLEL WITH PROJECT ALIGNMENT. CUTS ARE TO BE MADE WITH POWER DRIVEN WALK-BEHIND SAW, MANUFACTURED FOR PURPOSE OF SAWING PAVEMENT.
 4. EDGES OF PAVEMENT WHICH ARE DAMAGE SUBSEQUENT TO SAW CUT # 2 SHALL AGAIN BE SAW CUT TO NEAT STRAIGHT LINES TO REMOVE DAMAGE (SUCH SAW CUTS LINES SHALL BE PARALLEL TO ORIGINAL SAW CUT).
 5. NO ADDITIONAL PAY FOR PAVEMENT OUTSIDE THE LIMITS OF SAW CUT #2.
 6. 10 INCH THICK CONCRETE PAVEMENT REQUIRED FOR ALL THOROUGHFARES AS DEEMED BY THE CITY OF DUNCANVILLE.



SERVICE LOCATION FOR SINGLE FAMILY LOTS

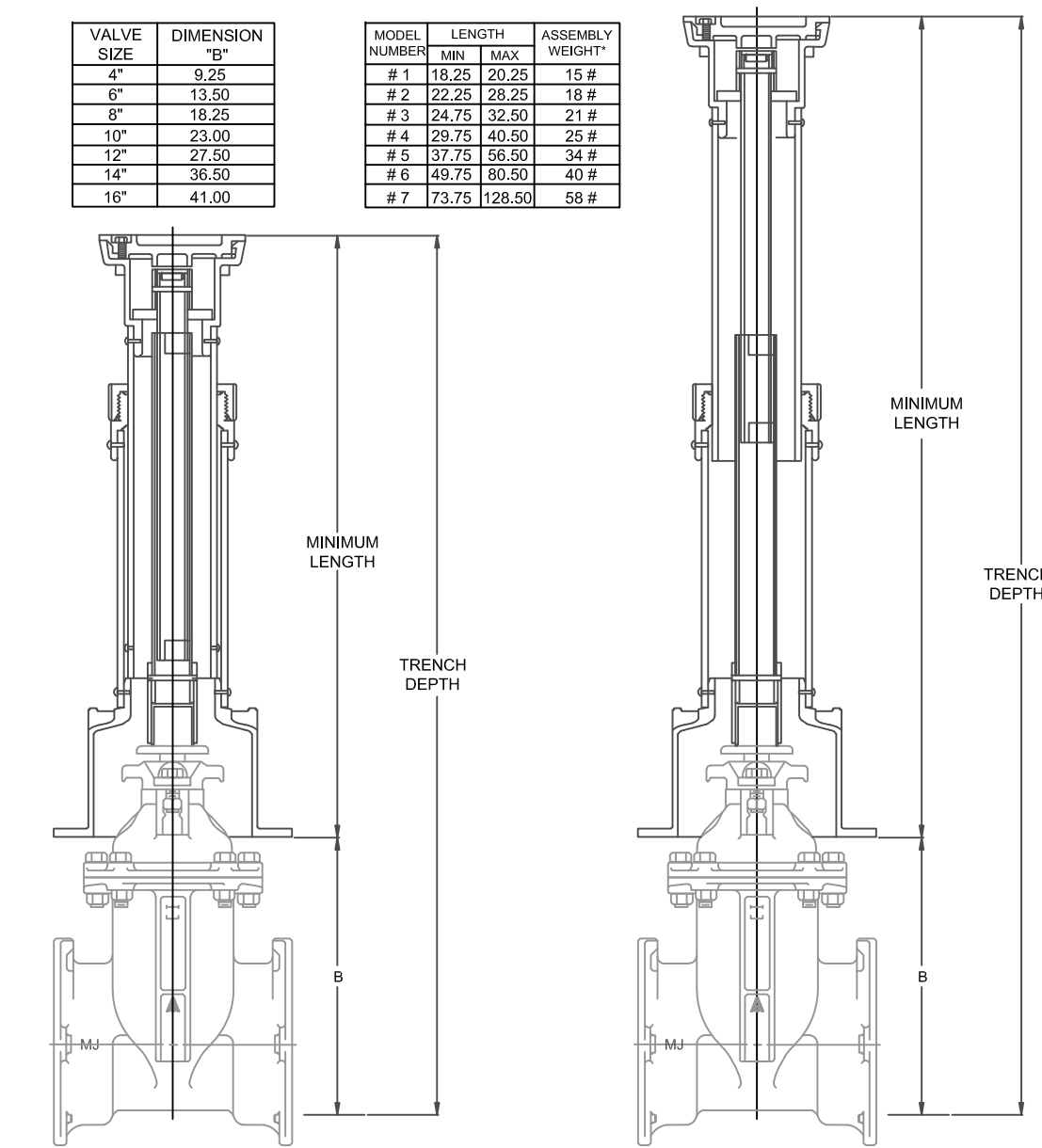
NOT TO SCALE



TYPICAL VALVE SETTING & BOX FOR DEPTHS LESS THAN 4 FOOT

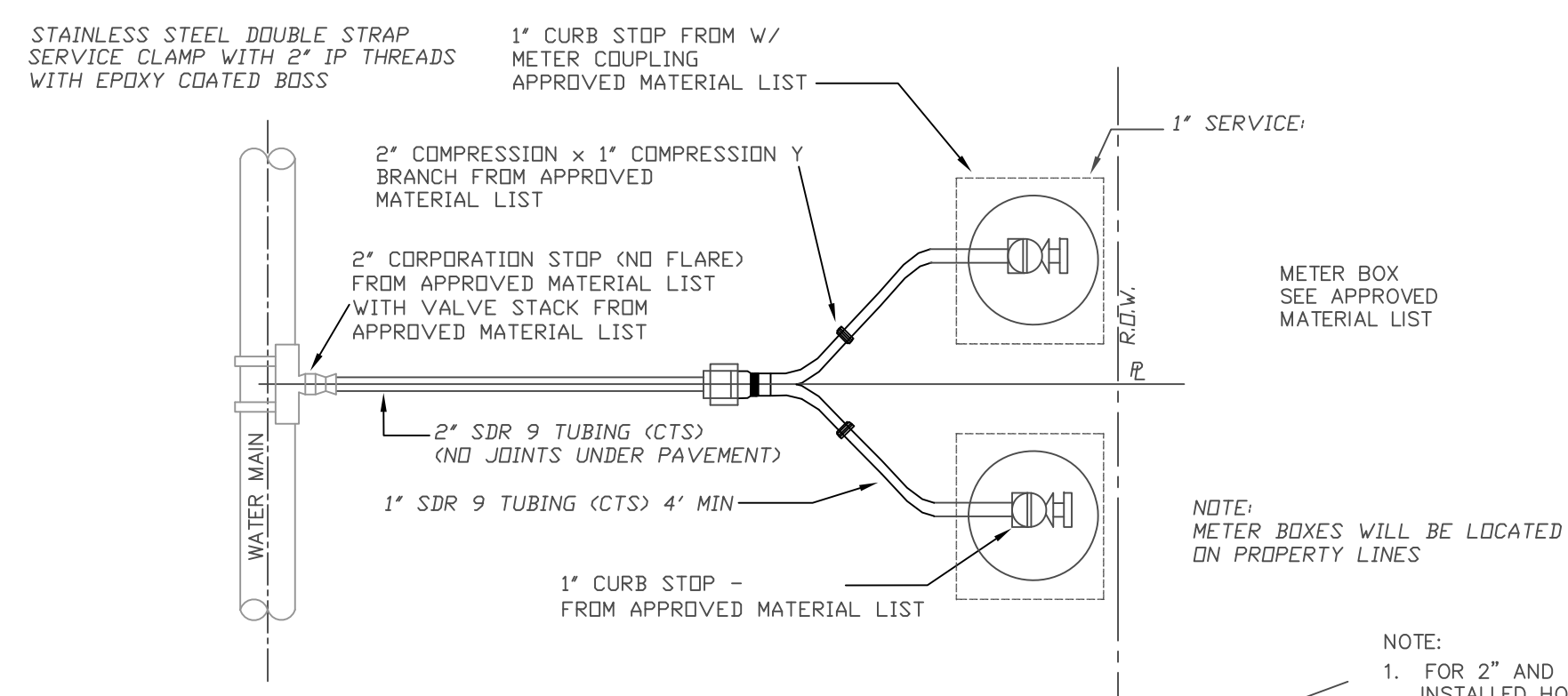
NOT TO SCALE

VALVE SIZE	2' or 3'	4'	5'	6'	8'	10'	12'	14'	16'	TRENCH DEPTH	MODEL NUMBER
2"	3	4	4.5	5	5.5	6	6	6	6	7	7
4"	2	3	4	5	5	6	6	6	6	7	7
6"	1	2	3	4	5	6	6	6	6	7	7
8"	-	-	-	-	-	-	-	-	-	-	-
10"	-	-	-	-	-	-	-	-	-	-	-
12"	-	-	-	-	-	-	-	-	-	-	-
14"	-	-	-	-	-	-	-	-	-	-	-
16"	-	-	-	-	-	-	-	-	-	-	-



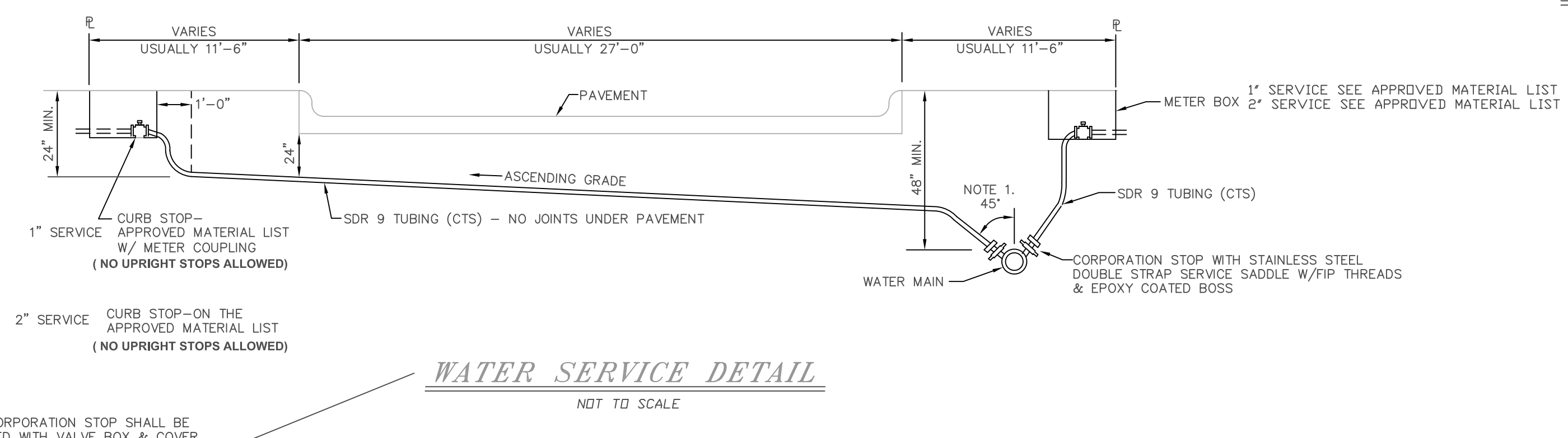
VALVE TRENCH ADAPTER FOR DEPTHS GREATER THAN 4 FOOT

NOT TO SCALE
CITY SHALL DETERMINE LOCATION TO BE USED



BULL HEAD SERVICES

- NOTE:
1. FOR 2" AND LARGER SERVICE, CORPORATION STOP SHALL BE INSTALLED HORIZONTALLY SUPPLIED WITH VALVE BOX & COVER. (SEE DETAIL ON SHEET 4 OF 4)
 2. NO CONNECTIONS ALLOWED UNDER PAVEMENT, OTHER THAN CORP STOP.
 3. NO 90° BENDS ALLOWED ON ANY WATER SERVICES.
 4. NO UPRIGHT STOPS ALLOWED ON ANY WATER SERVICES.



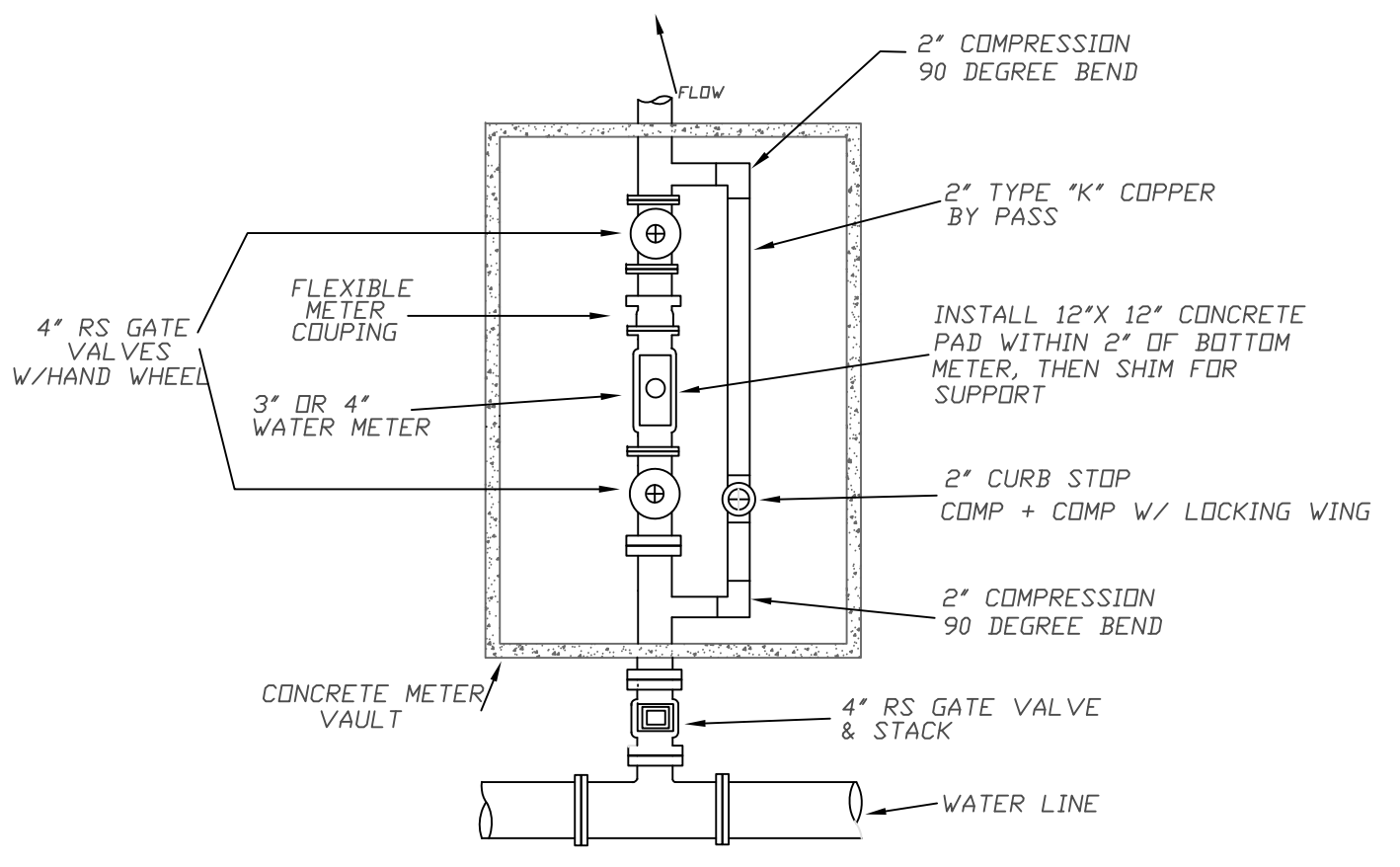
WATER SERVICE DETAIL

NOT TO SCALE

NOTE: PRIOR TO CONSTRUCTION, CONTRACTOR SHALL SUBMIT TO THE PUBLIC WORKS DEPT. A LISTING OF ALL MATERIALS TO BE USED. NO WORK SHALL BE UNDERTAKEN PRIOR TO WRITTEN APPROVAL OF THE MATERIAL LIST BY THE CITY PUBLIC WORKS DEPT.

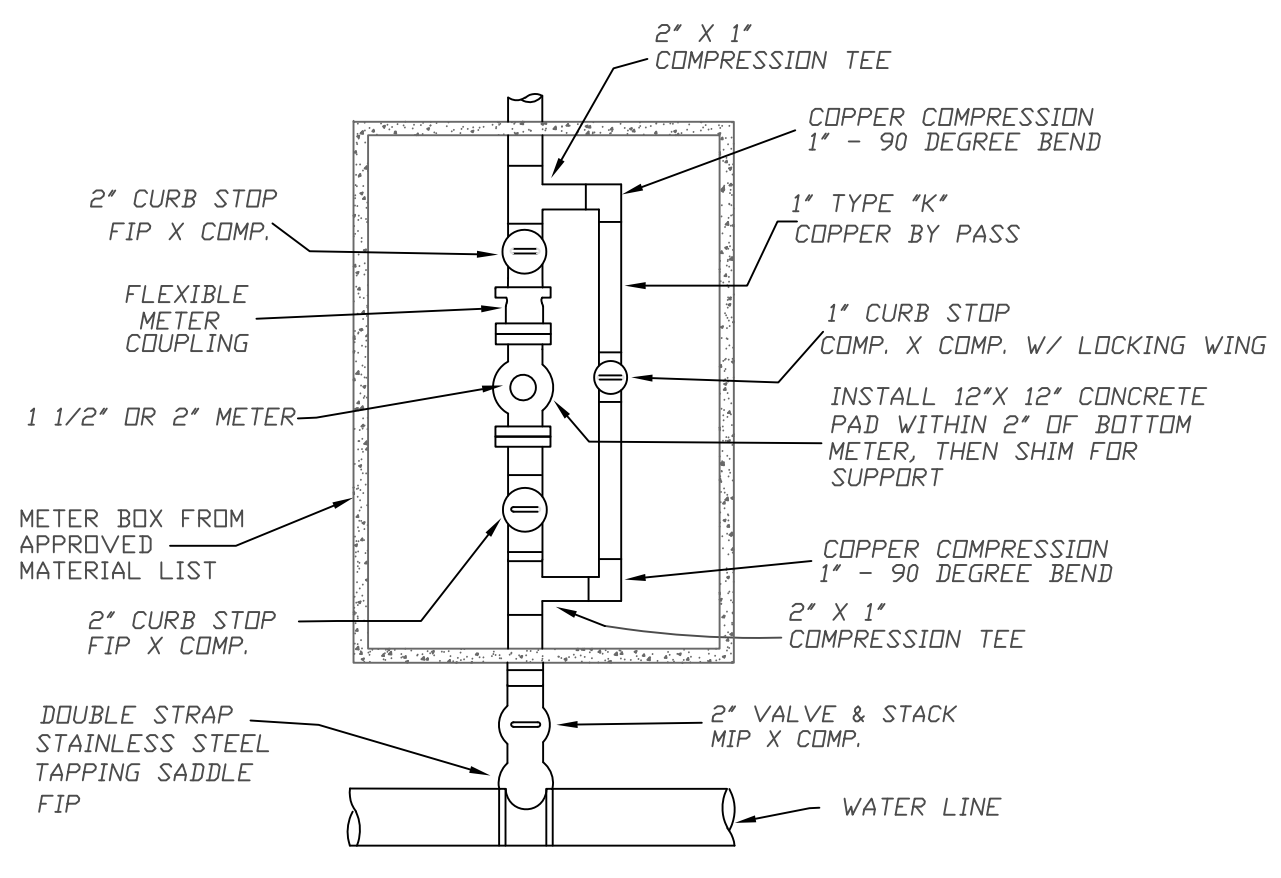
STANDARD HOUSE SERVICE

1. 1" SDR 9 TUBING (CTS)
2. STAINLESS STEEL DOUBLE STRAP W/ EPDXY COATED BOSS SERVICE CLAMP E/ FIP THREADS
3. 1" CORPORATION STOP FROM APPROVE MATERIAL LIST
4. 1" CURB STOP FROM APPROVED MATERIAL LIST
5. METER BOX FROM APPROVED MATERIAL LIST
6. NO CONNECTION UNDER PAVEMENT OTHER THAN CORP STOP CONNECTION



3" OR 4" TYPICAL METER BYPASS

NOT TO SCALE

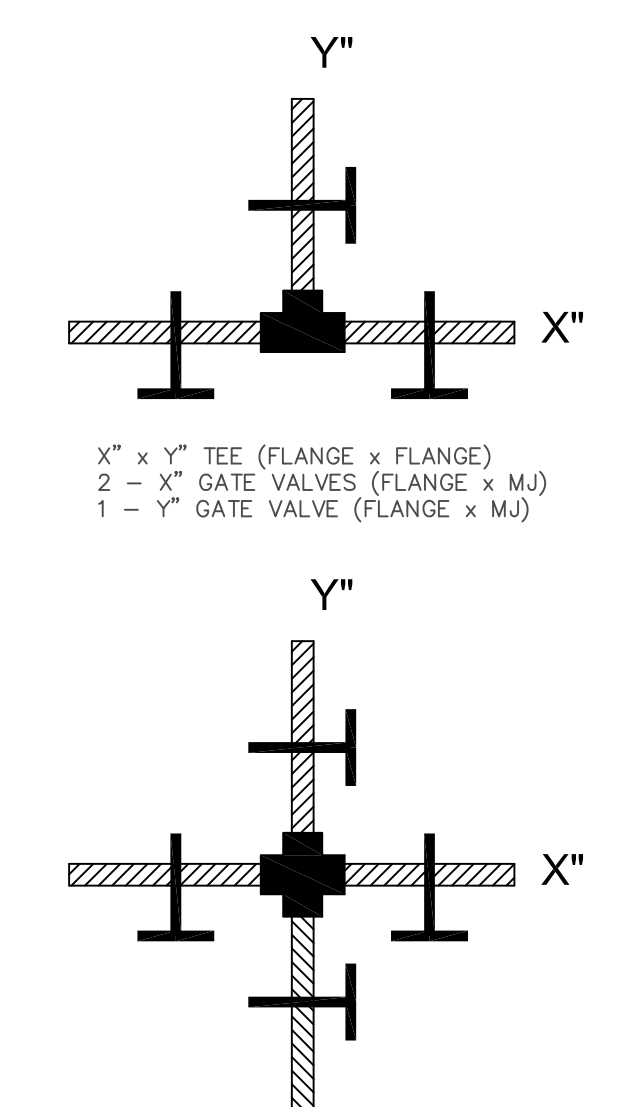


1 1/2" OR 2" TYPICAL METER BYPASS

NOT TO SCALE

COMMERCIAL APPLICATIONS

	DUCTILE IRON PIPE	PVC PIPE
1" SERVICE	STAINLESS STEEL DOUBLE STRAP WITH EPDXY COATED BOSS SERVICE CLAMP WITH FIP THREADS CORP STOP FROM APPROVED MATERIAL LIST	STAINLESS STEEL DOUBLE STRAP WITH EPDXY COATED BOSS SERVICE CLAMP WITH FIP THREADS CORP STOP FROM APPROVED MATERIAL LIST
1 1/2" - 2" SERVICE	STAINLESS STEEL DOUBLE STRAP WITH EPDXY COATED BOSS SERVICE CLAMP WITH FIP THREADS FROM APPROVED MATERIAL LIST	STAINLESS STEEL DOUBLE STRAP WITH EPDXY COATED BOSS SERVICE CLAMP WITH FIP THREADS FROM APPROVED MATERIAL LIST

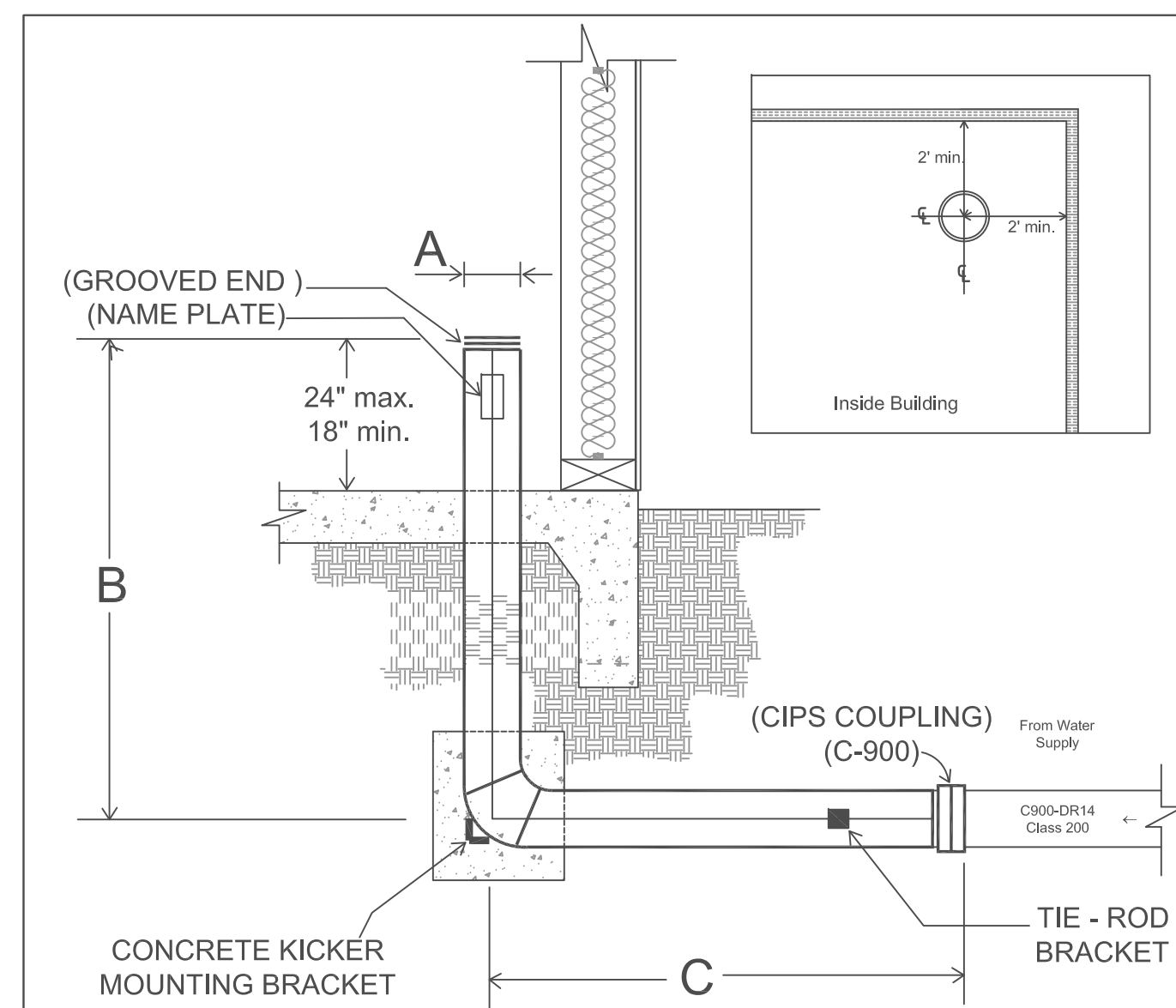
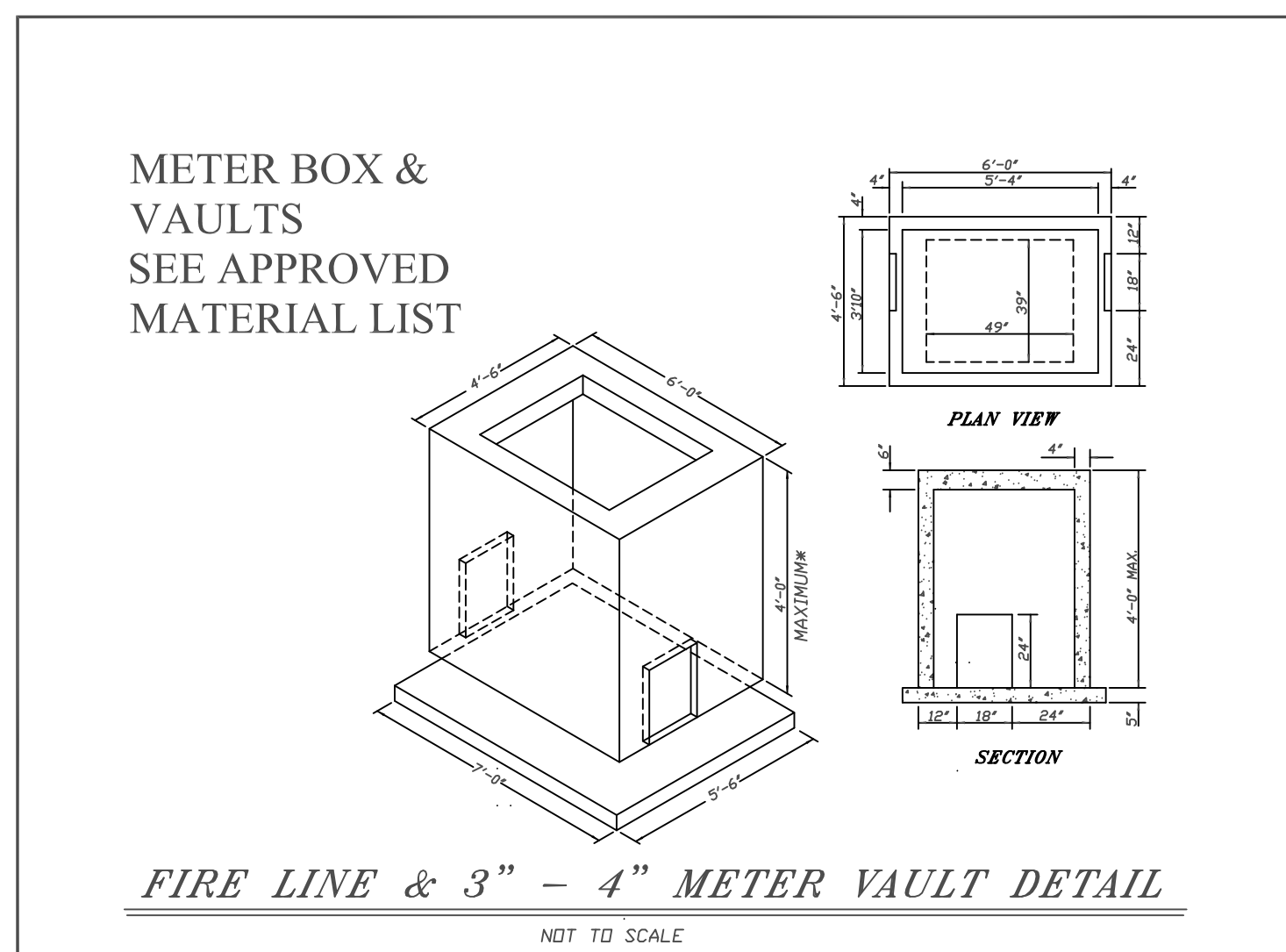


MAIN LINE ISOLATION DETAIL

NOTE: CITY TO DETERMINE IF ONE IN LINE VALVE IS ACCEPTABLE

NOT TO SCALE



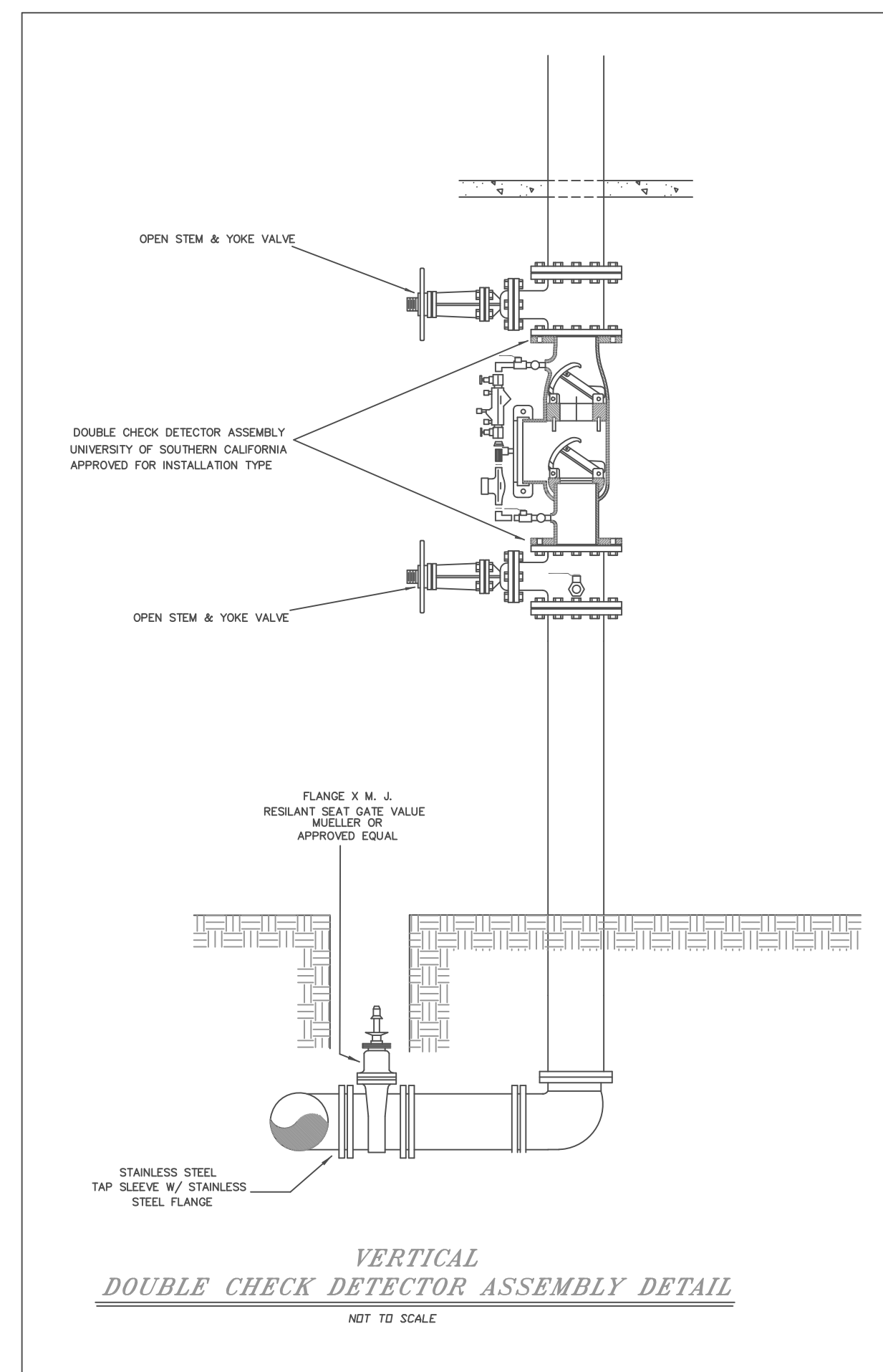
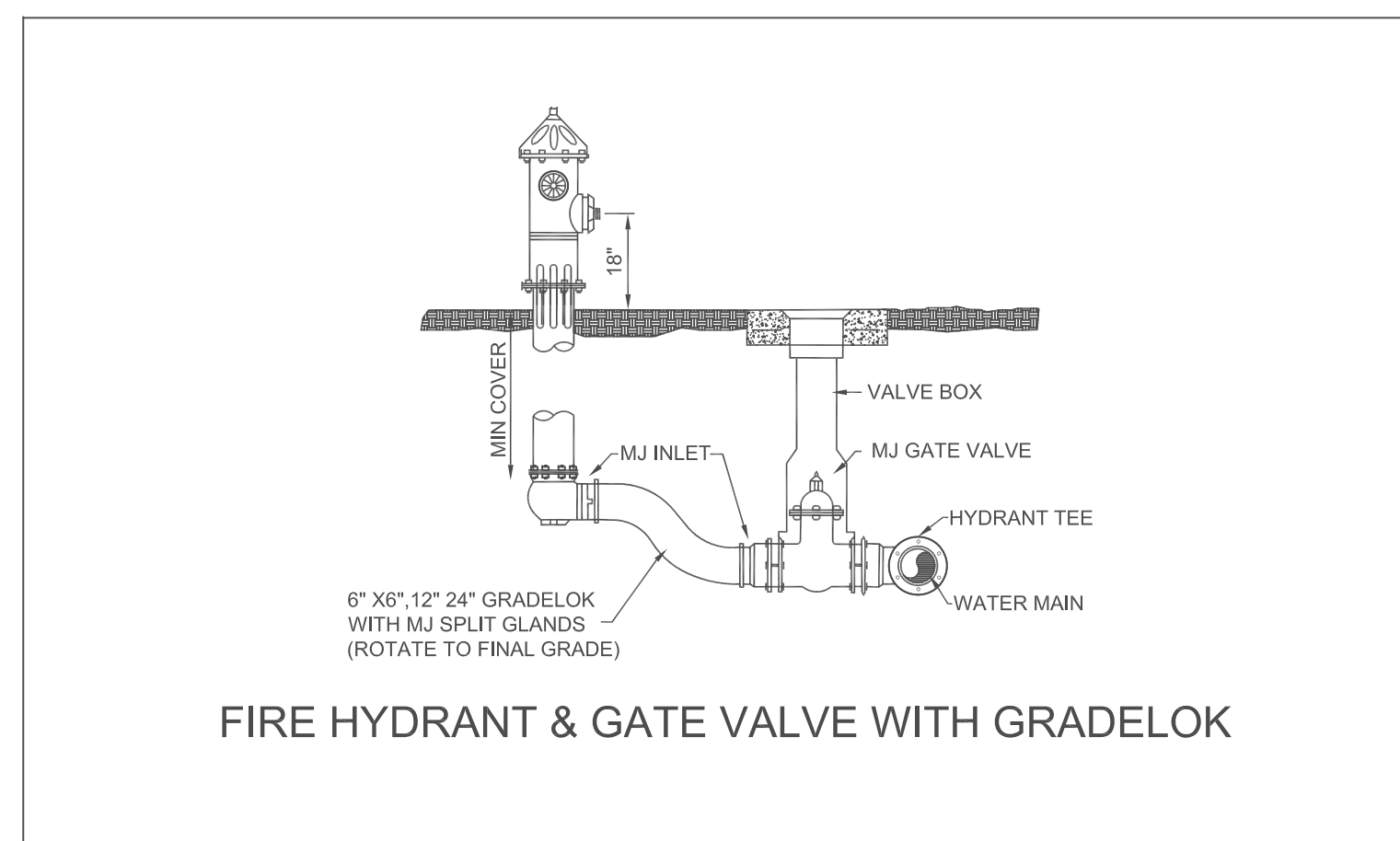
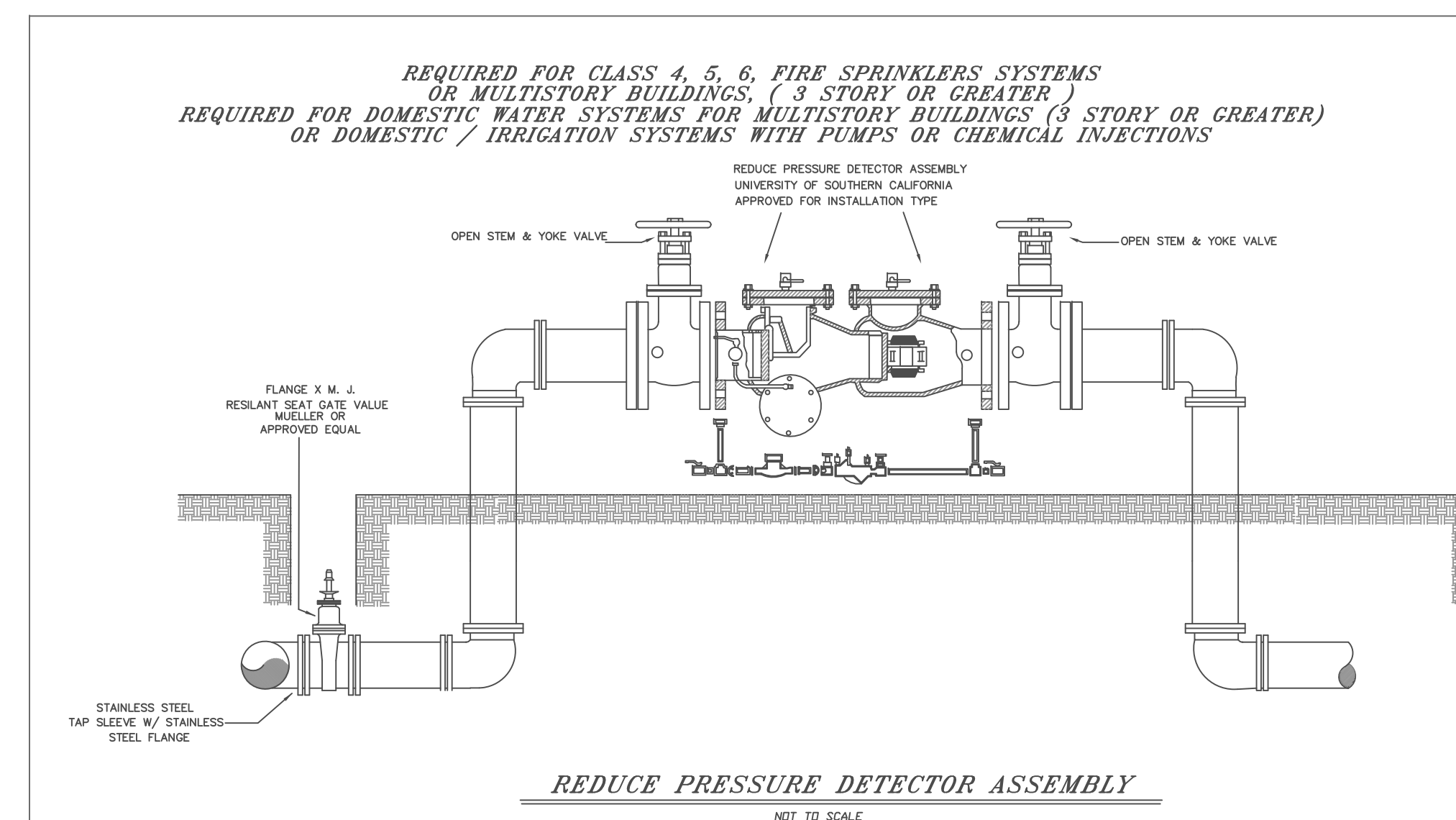
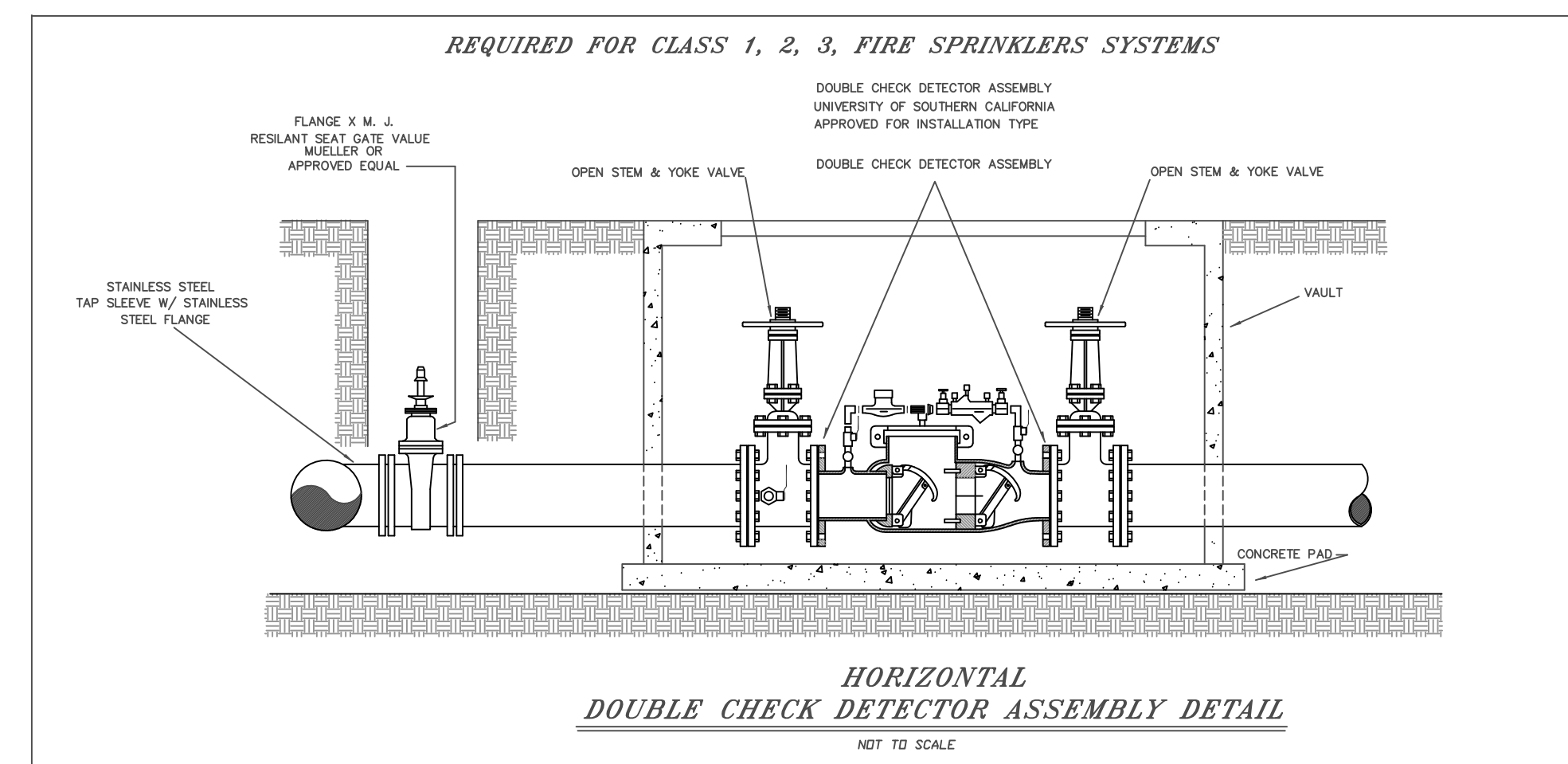
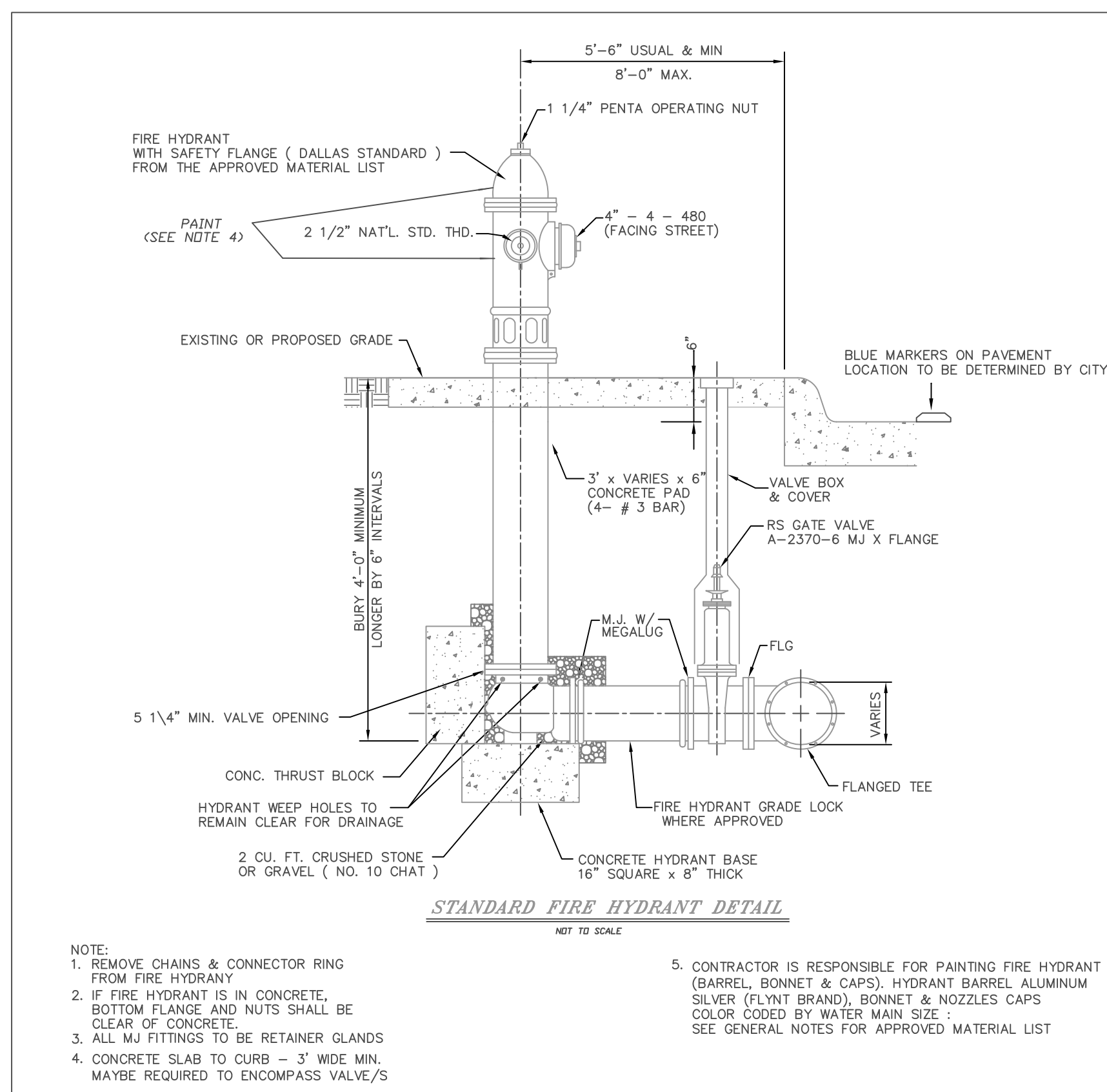
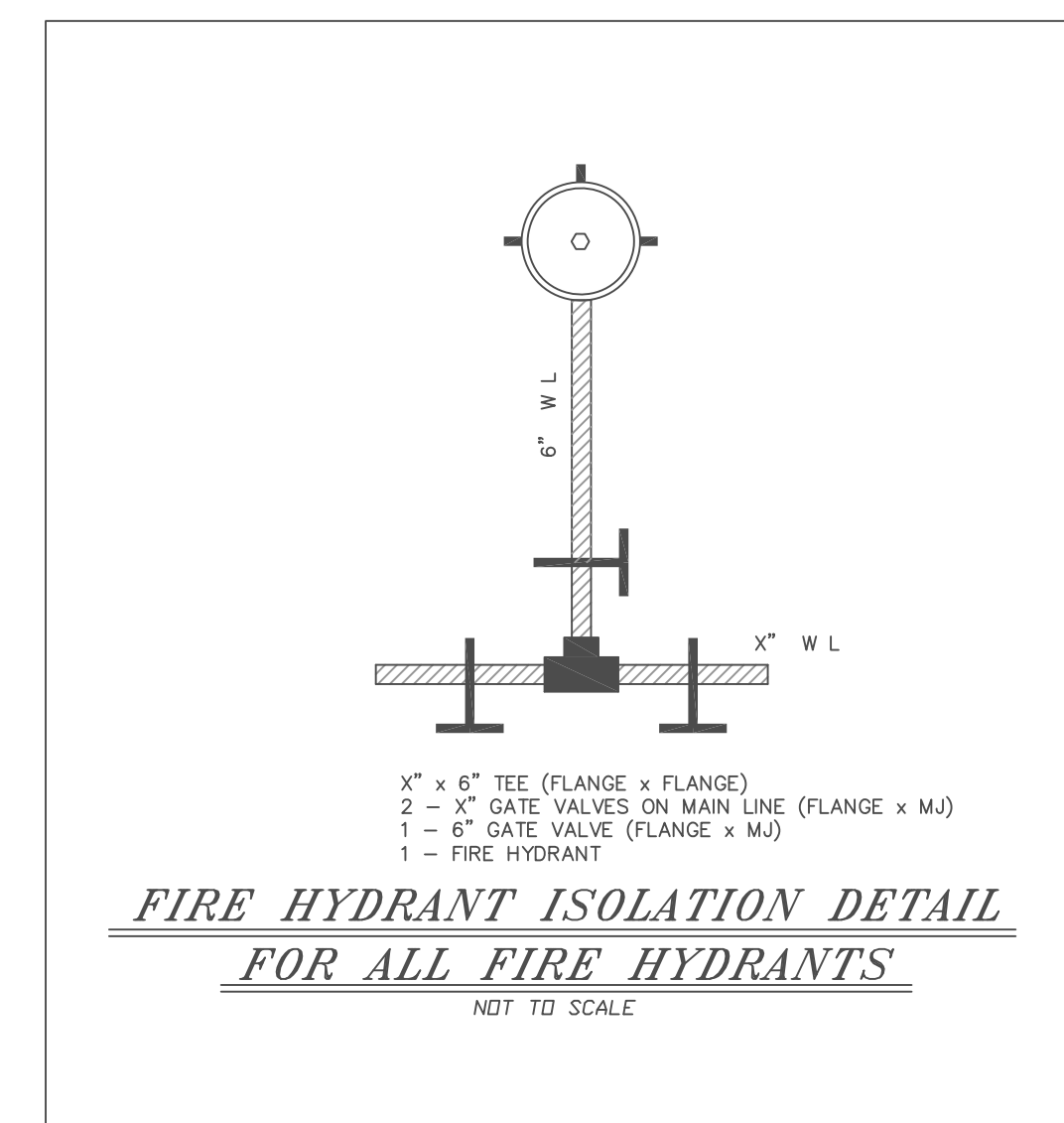


DIMENSIONS

SIZE	A	B	C	WEIGHT
6"	6 3/4" OD	6'	6'	98 LBS
8"	8 3/4" OD	6'	6'	129 LBS
10"	10 3/4" OD	6'	6'	202 LBS

" IN-BUILDING RISER "

LEAD FREE
 AMES or Approved Equal
 Not to Scale

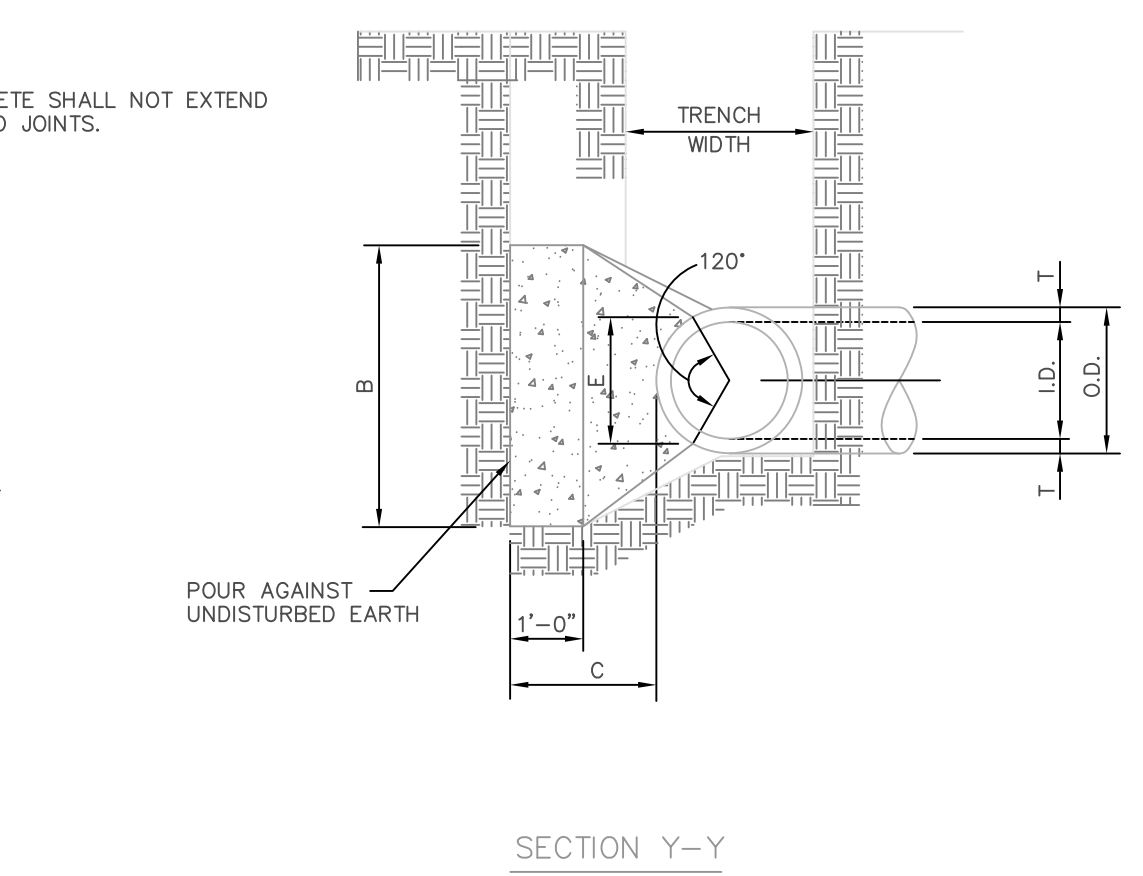


HORIZONTAL BENDS

Δ=11.25°					Δ=22.50°					Δ=30°					Δ=45°					Δ=67.50°																							
EARTH					ROCK					EARTH					ROCK					EARTH					ROCK																		
I.D. (in.)	T in.	C 11.25° ft.	C 22.50° ft.	E ft.	I.D. (in.)	G ft.	Thrust tons	A ft.	B ft.	Volume c.y.	I.D. (in.)	G ft.	Thrust tons	A ft.	B ft.	Volume c.y.	I.D. (in.)	G ft.	Thrust tons	A ft.	B ft.	Volume c.y.	I.D. (in.)	G ft.	Thrust tons	A ft.	B ft.	Volume c.y.	I.D. (in.)	G ft.	Thrust tons	A ft.	B ft.	Volume c.y.									
4.68	0.4	1.5	1.5	0.9	4.68	0.4	1.0	1.5	0.1	0.1	4.68	0.8	2.0	1.5	0.1	0.1	4.68	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.1	4.68	1.5	3.9	2.0	2.0	0.2	1.5	0.1	4.68	2.1	5.6	3.0	2.0	0.3	2.0	1.5	0.2	4.68

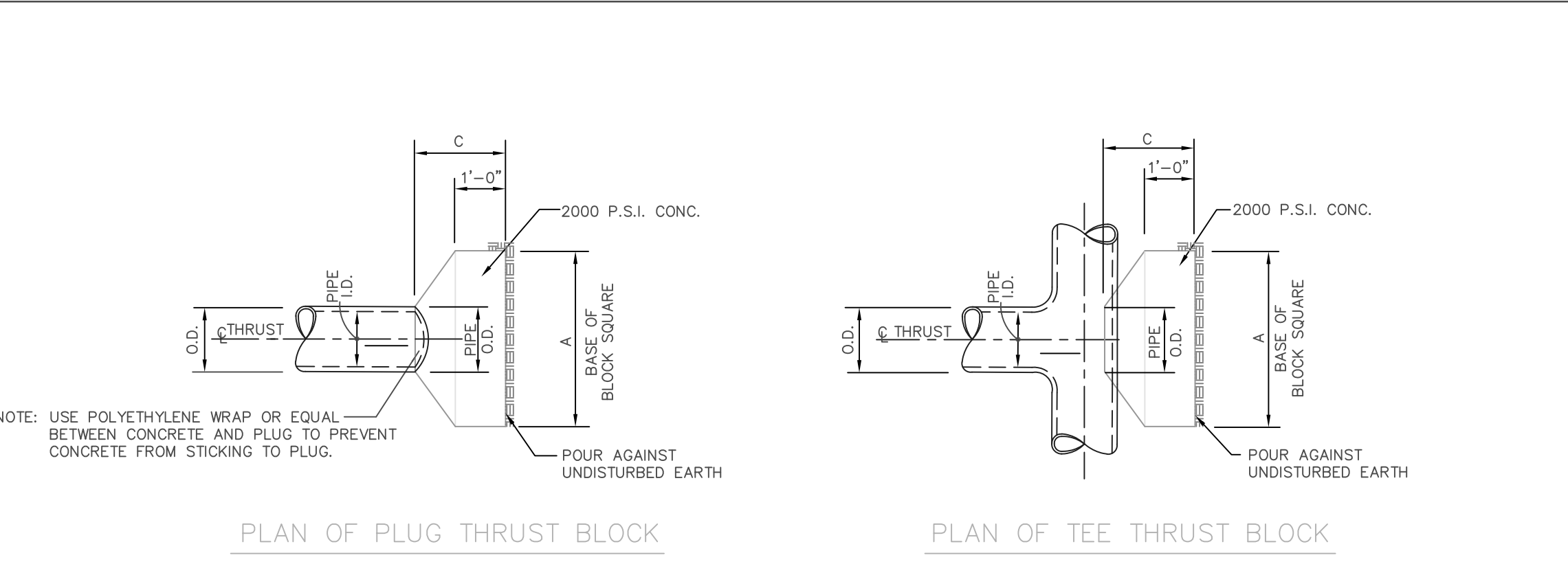


- GENERAL NOTES
- ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 P.S.I. FOR 24" I.D. PIPE AND SMALLER AND 150 P.S.I. ON 30" I.D. AND LARGER.
 - VOLUMES OF VERTICAL BEND THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE (4000 LB/C.Y.) IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THRUST ON THE VERTICAL BEND.
 - ALL BEARING SURFACES OF THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH OR ROCK.
 - WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
 - CONCRETE FOR BLOCKING SHALL BE 2000 P.S.I. CONCRETE.
 - DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.



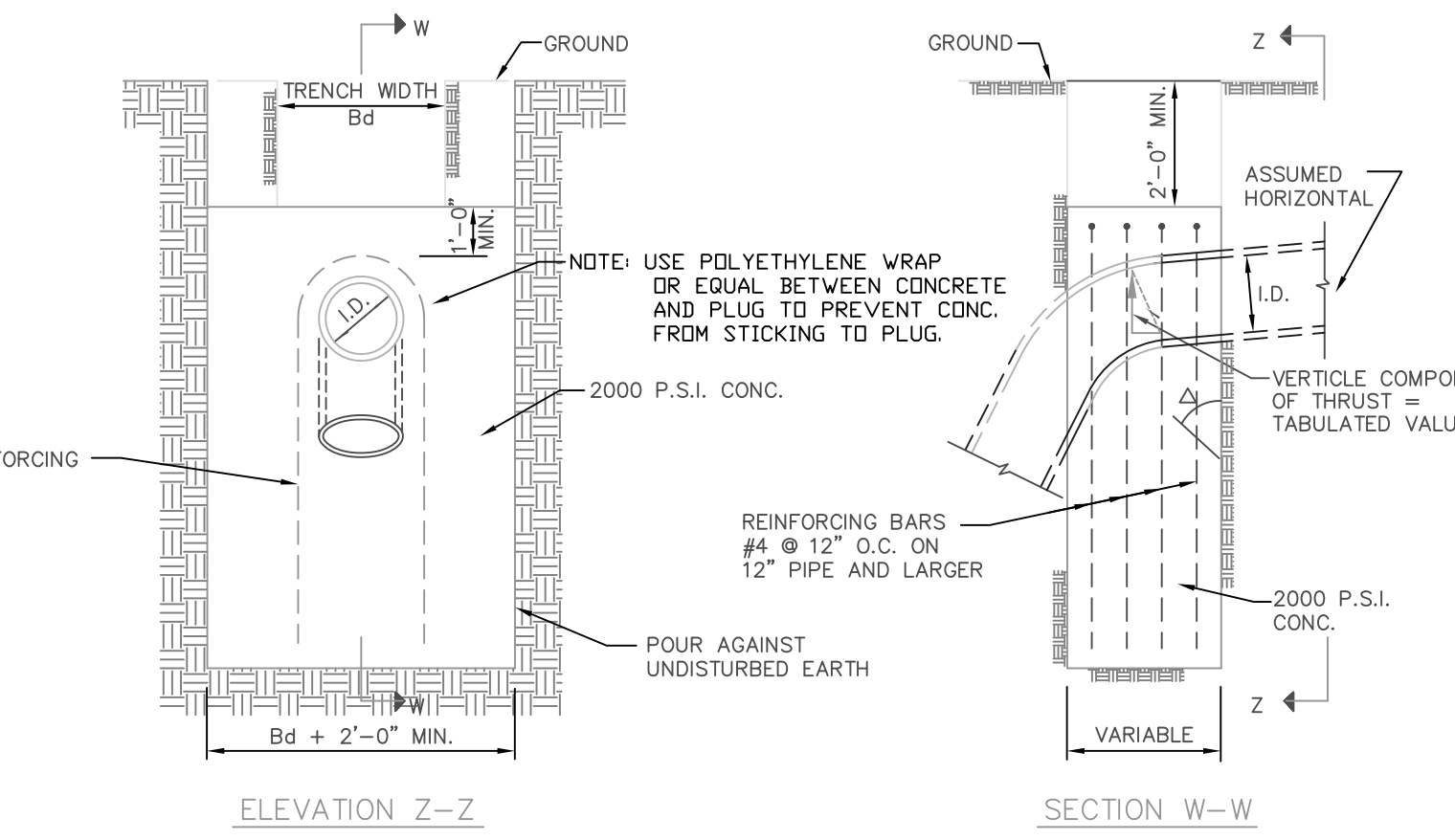
EARTH					ROCK						
I.D. (in.)	G ft.	Thrust tons	A ft.	B ft.	Volume c.y.	I.D. (in.)	G ft.	Thrust tons	A ft.	B ft.	Volume c.y.
4.68	2.7	7.1	5.0	1.5	0.4	4.68	2.0	2.0	0.2	0.2	4.68

TYPICAL HORIZONTAL THRUST BLOCK



TEES & PLUGS

I.D. (in.)	THRUST TONS	EARTH		ROCK		I.D. (in.)
		C FT.	A FT.	VOLUME C.Y.	VOLUME C.Y.	
4.68	5.1	1.5	2.5	0.3	2.0	0.3

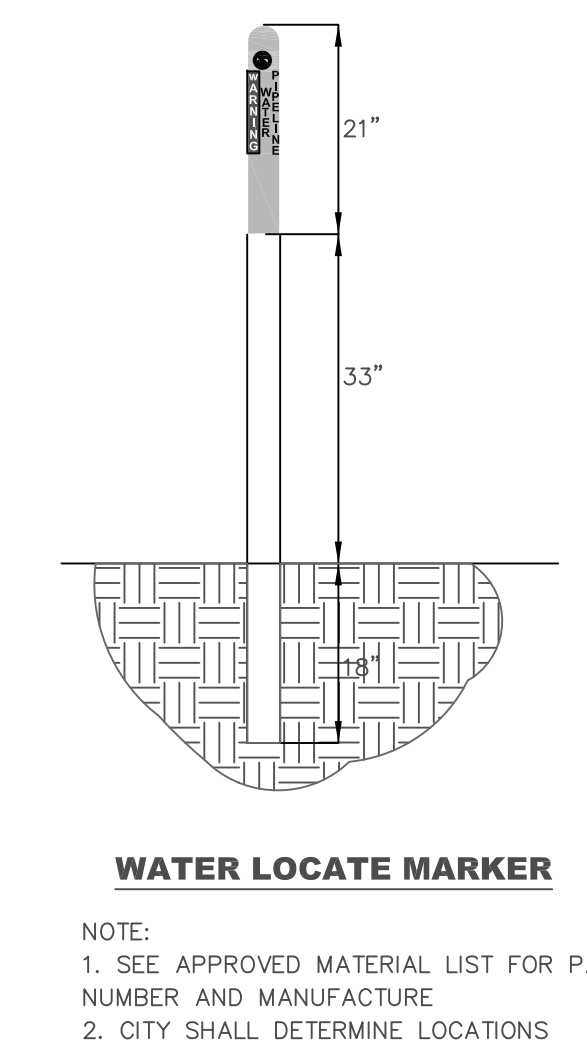
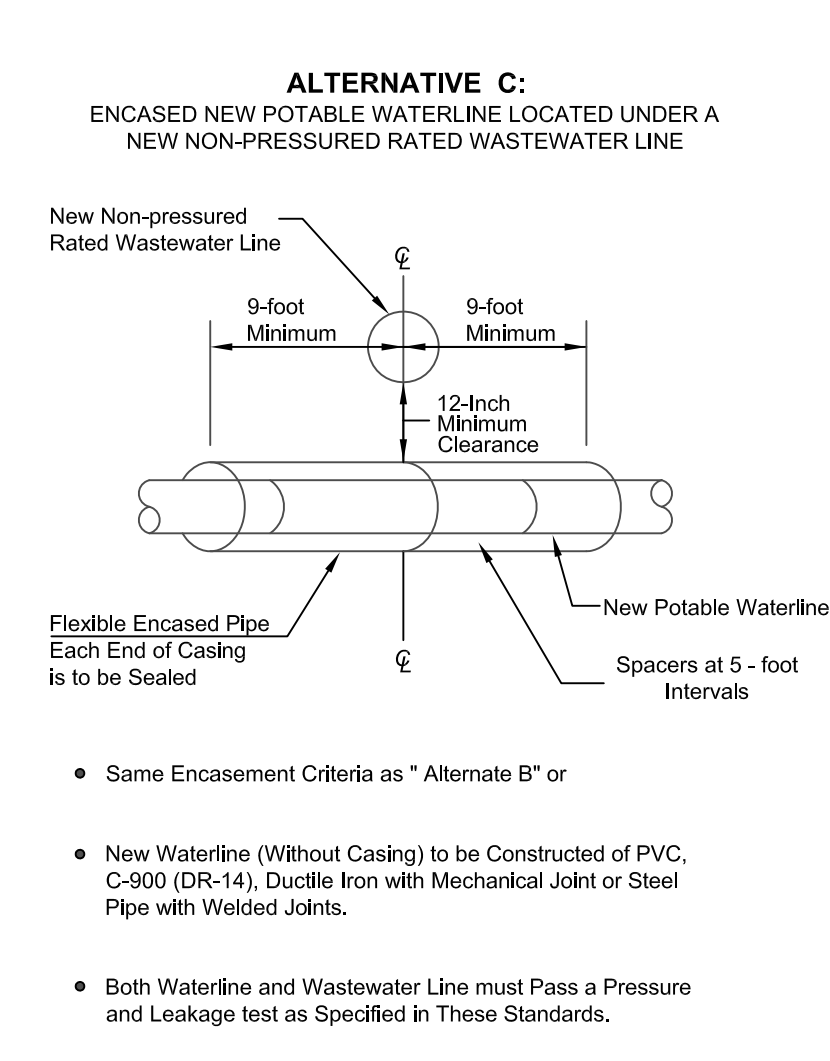
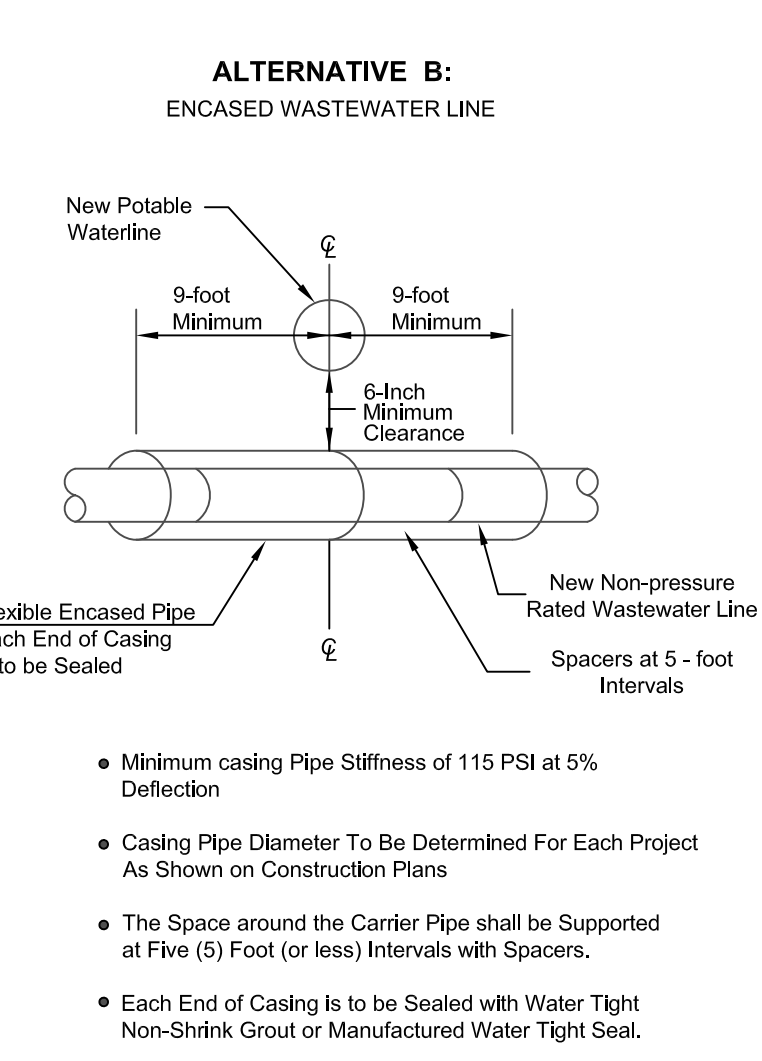
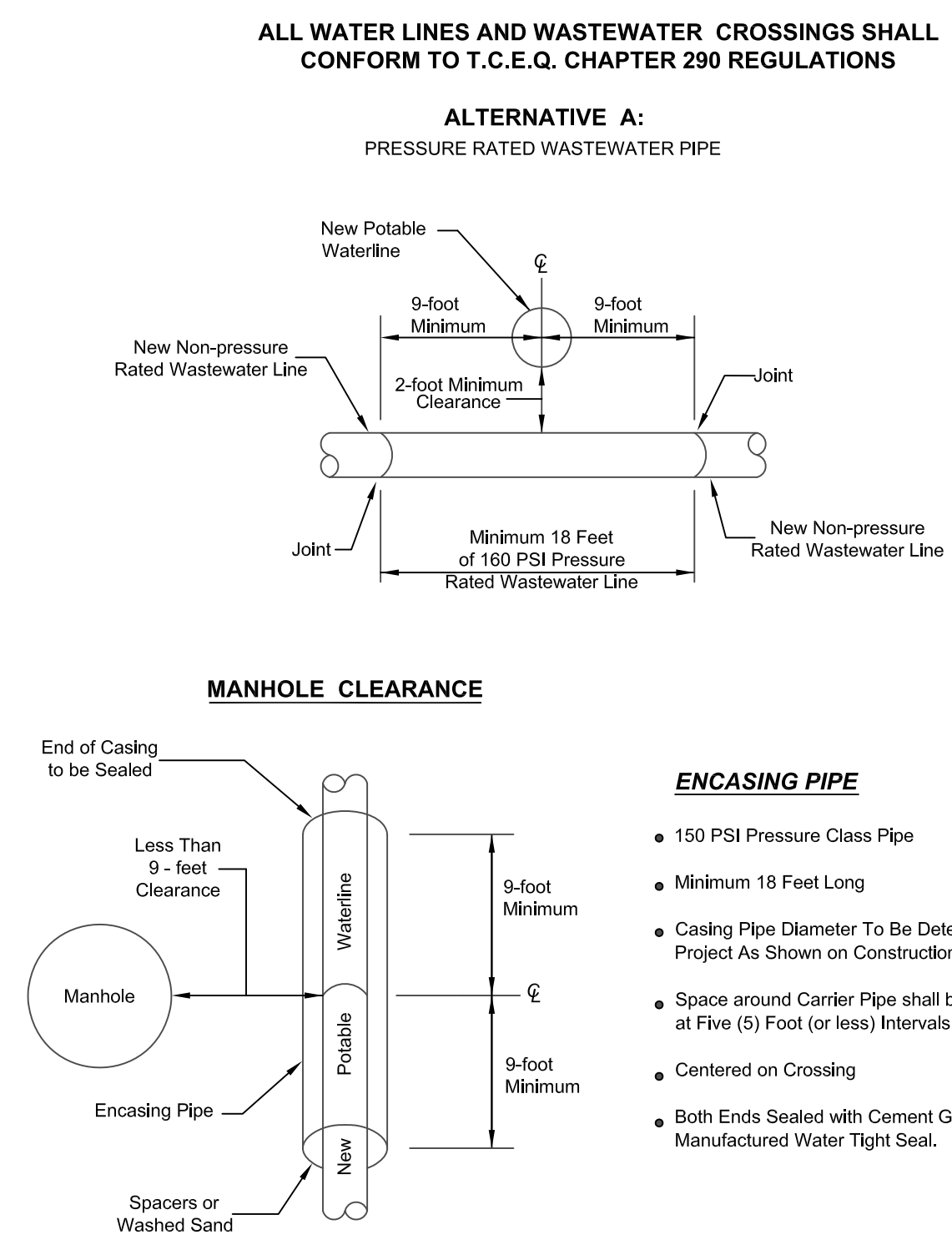
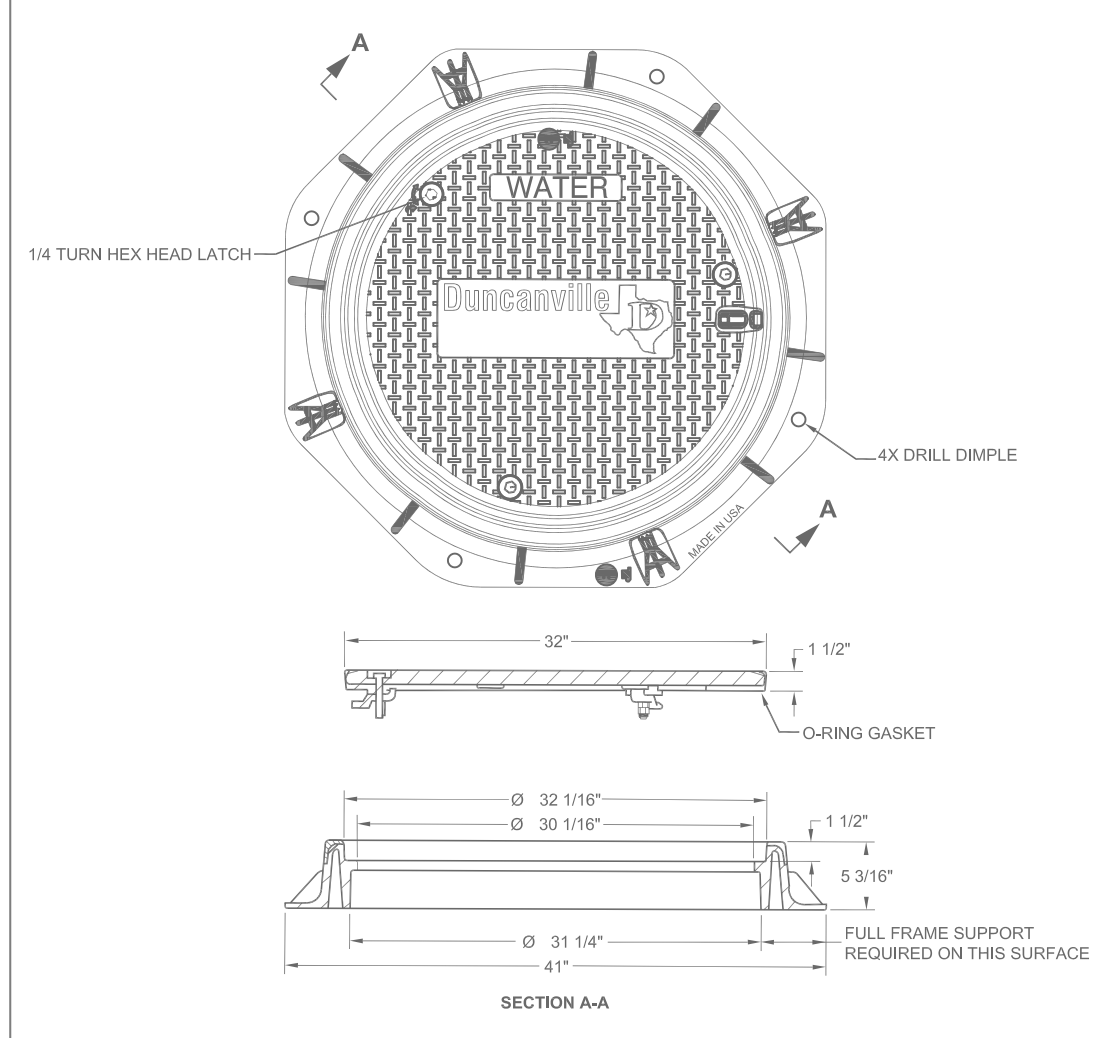
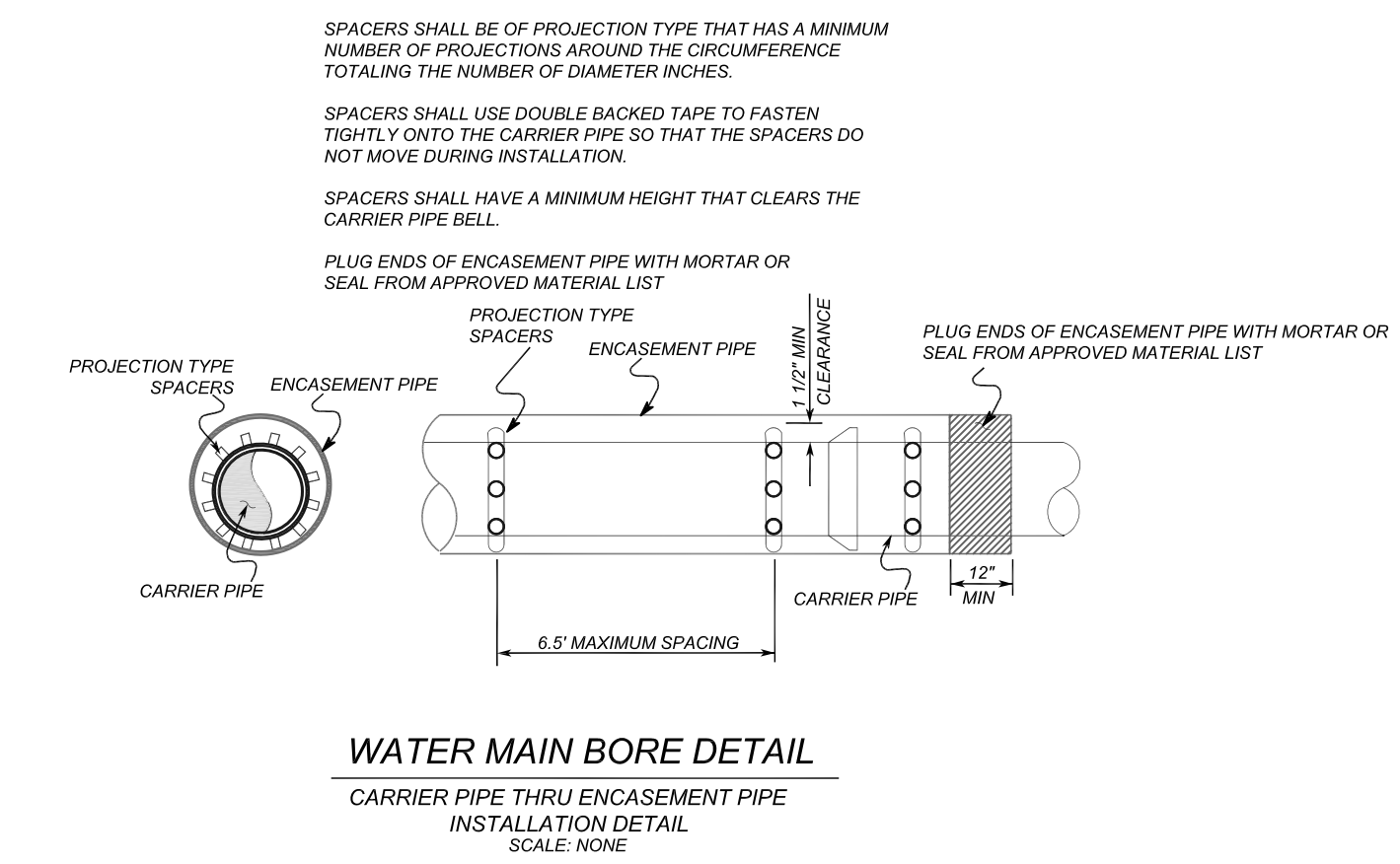
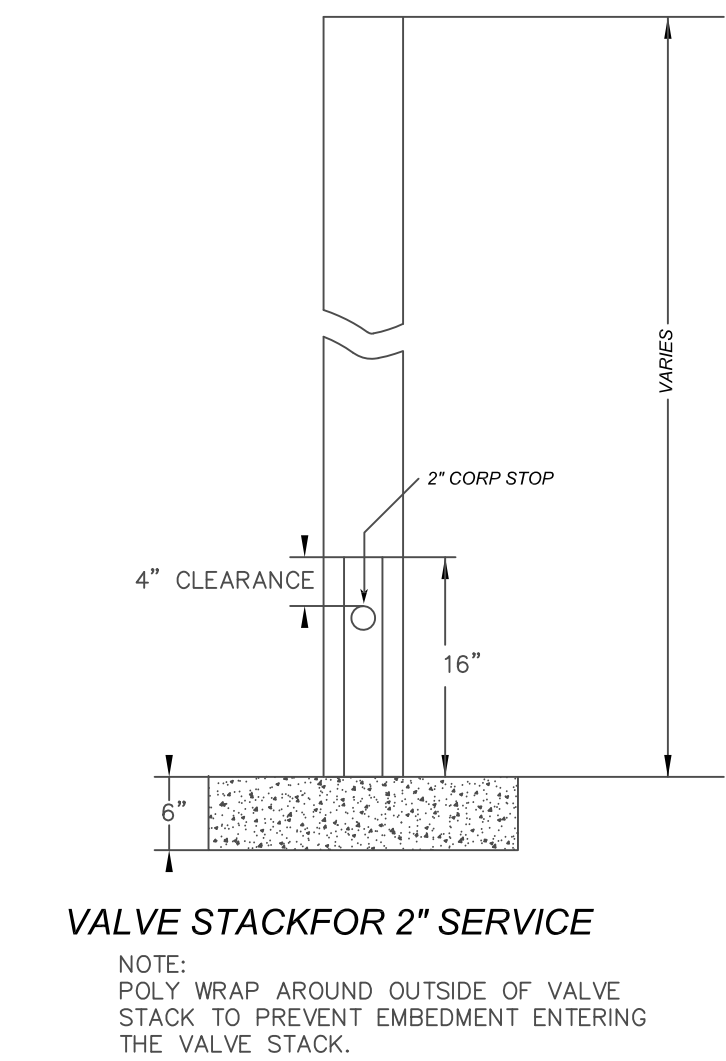
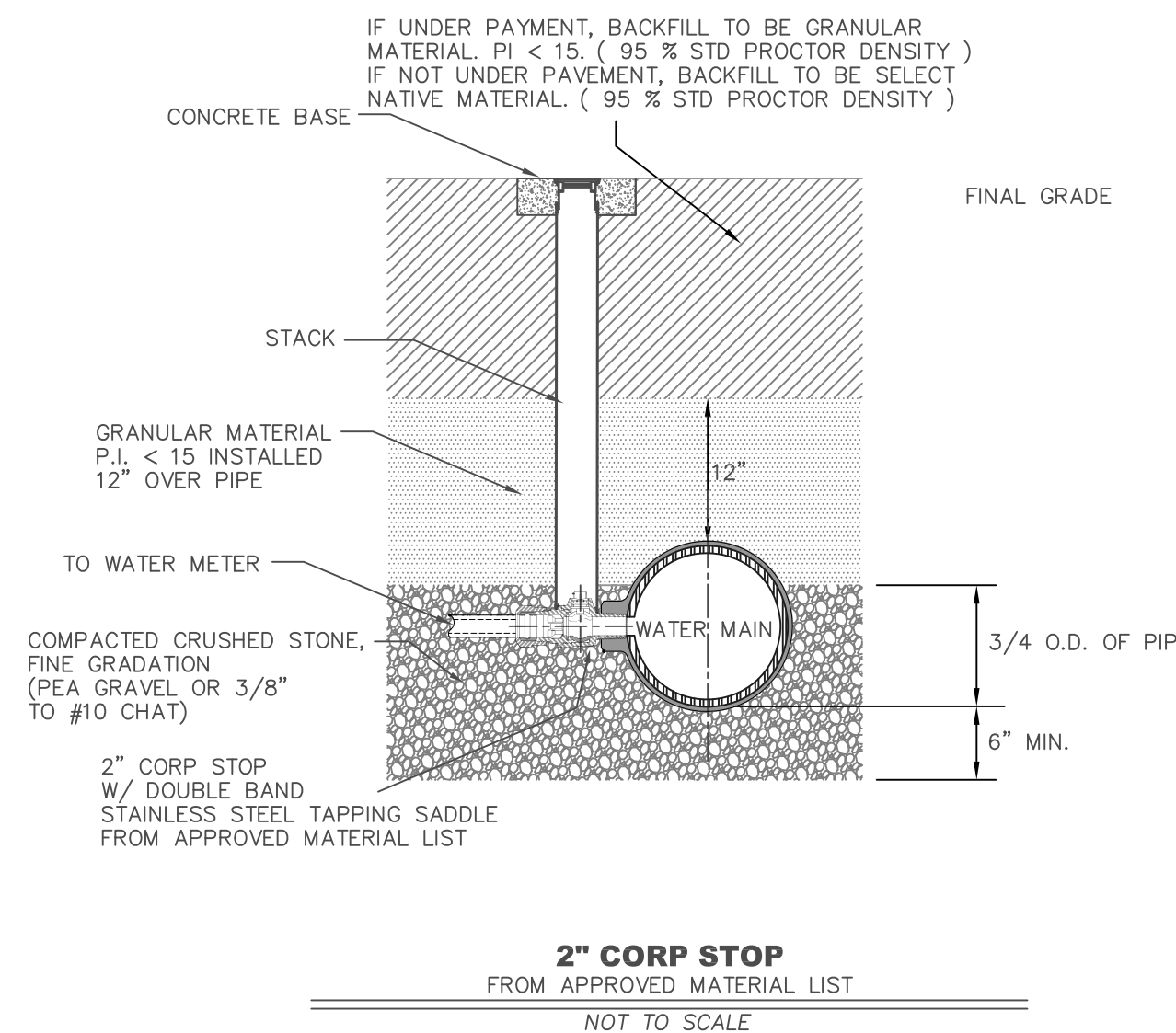
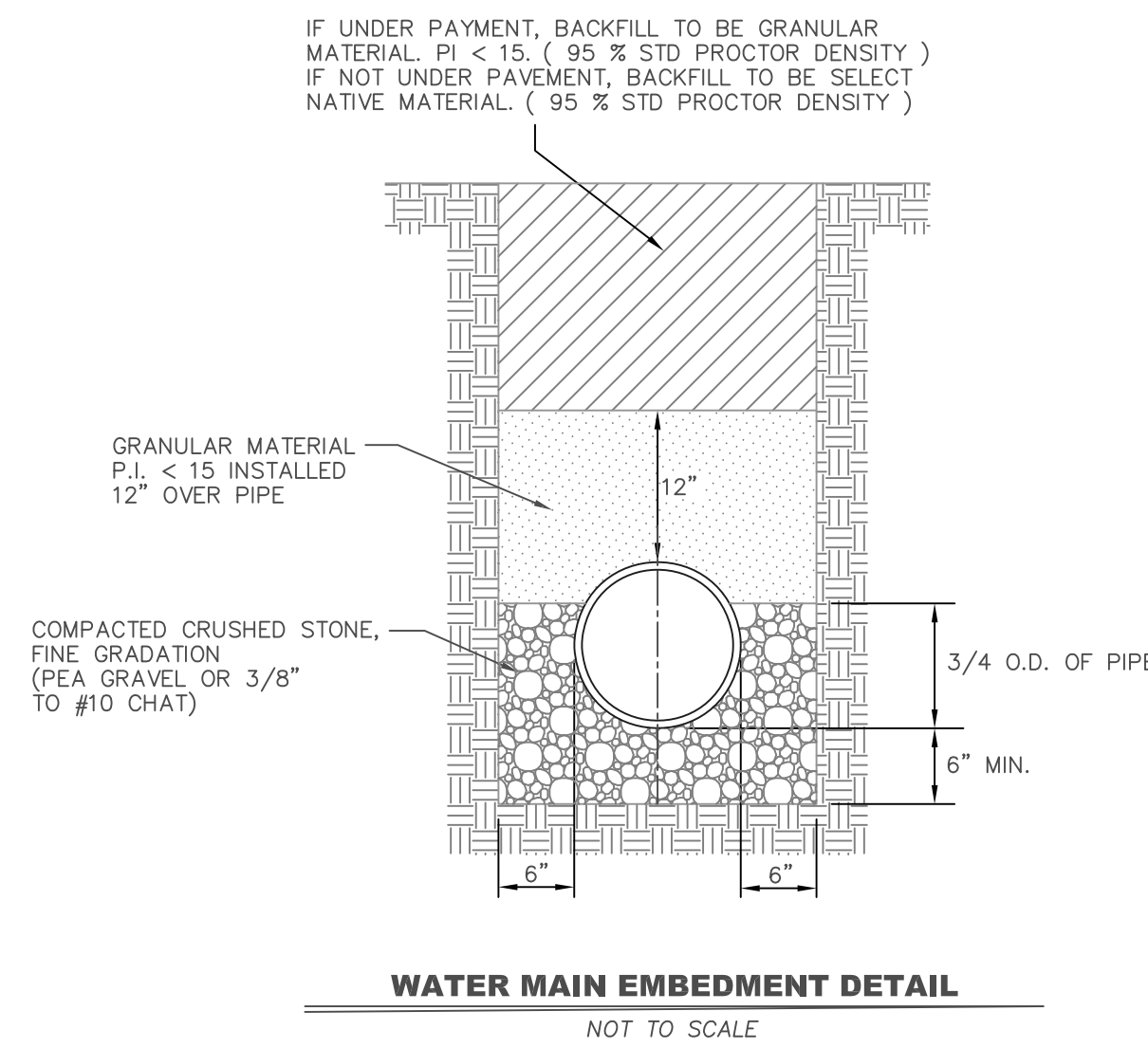


TYPICAL VERTICAL BEND THRUST BLOCK

Δ	11.25°	22.50°	30°	45°	67.50°	90°	← Δ				
I.D. (in.)	Thrust tons	Volume c.y.	Thrust tons	Volume c.y.	Thrust tons	Volume c.y.	Thrust tons	Volume c.y.	Thrust tons	Volume c.y.	I.D. (in.)
4.68	1.0	0.5	2.0	1.0	2.0	1.0	4.68	2.0	2.0	1.0	4.68

EMBEDMENT FOR WATER MAINS

TABLE OF TRENCH WIDTHS			
SIZE OF PIPE IN INCHES DIA.	KIND OF PIPE	EXTERNAL DIAMETER IN INCHES Be	TRENCH WIDTH Bd IN INCHES
6"	P.V.C. Water Pipe	6.90	24
8"	P.V.C. Water Pipe	9.05	25
10"	P.V.C. Water Pipe	11.10	27
12"	P.V.C. Water Pipe	13.20	29
16"	Ductile or C.I. Water Pipe	17.40	33
16"	Prestressed Conc. Lined Cyl. Pipe	21.00	37
16"	Pretensioned Conc. Lined Cyl. Pipe	20.50	37
18"	Ductile or C.I. Water Pipe	19.50	36
18"	Prestressed Conc. Lined Cyl. Pipe	23.50	40
18"	Pretensioned Conc. Lined Cyl. Pipe	23.00	39
20"	Ductile or C.I. Water Pipe	21.60	38
20"	Prestressed Conc. Lined Cyl. Pipe	25.50	42
20"	Pretensioned Conc. Lined Cyl. Pipe	25.00	42
24"	Ductile or C.I. Water Pipe	25.80	42
24"	Prestressed Conc. Lined Cyl. Pipe	30.00	46
24"	Pretensioned Conc. Lined Cyl. Pipe	29.00	45
30"	Ductile or C.I. Water Pipe	32.00	48
30"	Prestressed Conc. Lined Cyl. Pipe	37.00	61
30"	Pretensioned Conc. Lined Cyl. Pipe	35.00	59
36"	Ductile or C.I. Water Pipe	38.30	62
36"	Prestressed Conc. Lined Cyl. Pipe	43.50	68

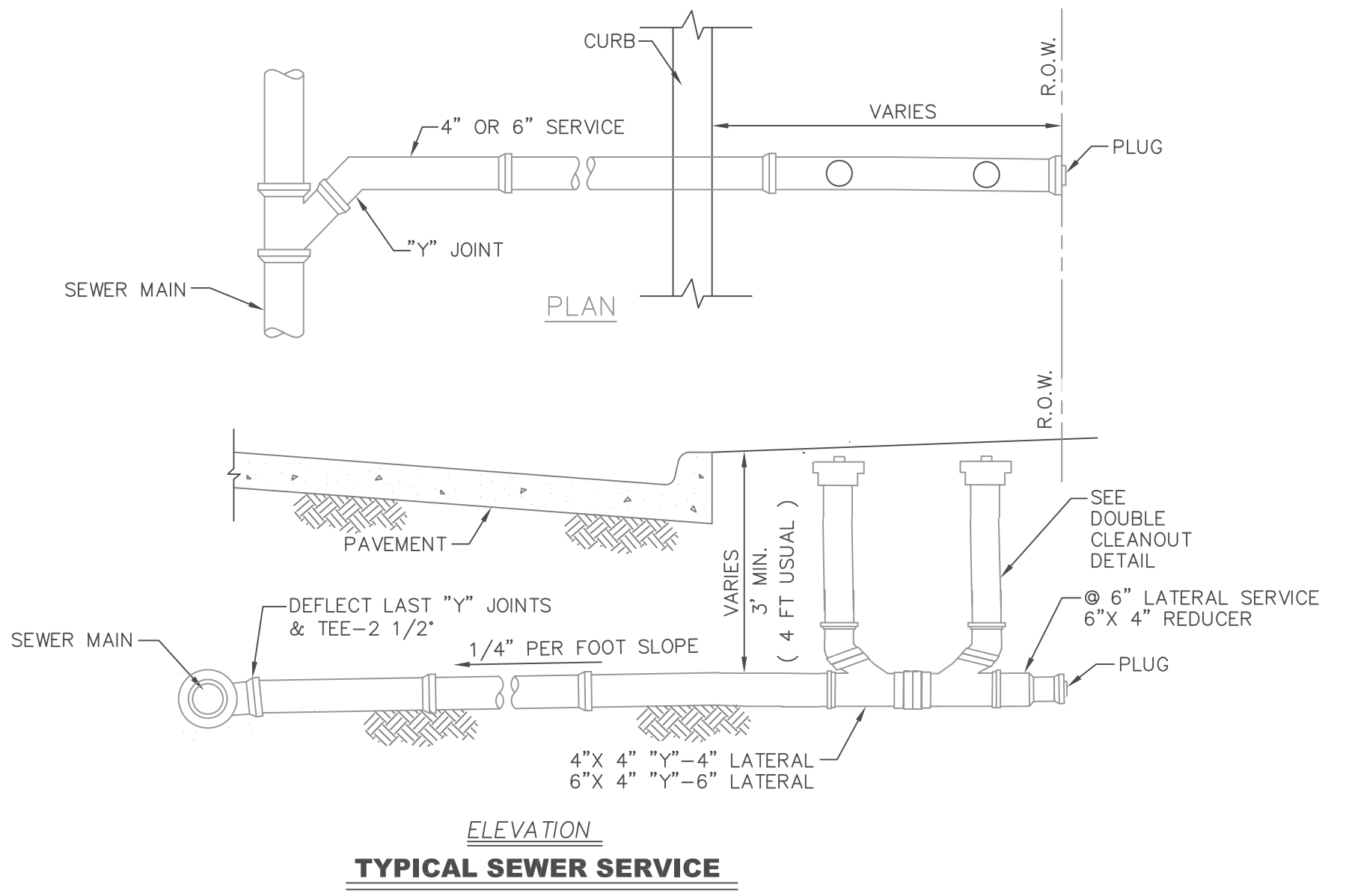


- ENCASING PIPE**
- 150 PSI Pressure Class Pipe
 - Minimum 18 Feet Long
 - Casing Pipe Diameter To Be Determined For Each Project As Shown on Construction Plans
 - Space around Carrier Pipe shall be Supported at Five (5) Foot (or less) Intervals with Spacers.
 - Centered on Crossing
 - Both Ends Sealed with Cement Grout or a Manufactured Water Tight Seal.

- Minimum casing Pipe Stiffness of 115 PSI at 5% Deflection
- Casing Pipe Diameter To Be Determined For Each Project As Shown on Construction Plans
- The Space around the Carrier Pipe shall be Supported at Five (5) Foot (or less) Intervals with Spacers.
- Each End of Casing Is to be Sealed with Water Tight Non-Shrink Grout or Manufactured Water Tight Seal.

- Same Encasement Criteria as "Alternate B" or
- New Waterline (Without Casing) to be Constructed of PVC, C-900 (DR-14), Ductile Iron with Mechanical Joint or Steel Pipe with Welded Joints.
- Both Waterline and Wastewater Line must Pass a Pressure and Leakage test as Specified in These Standards.

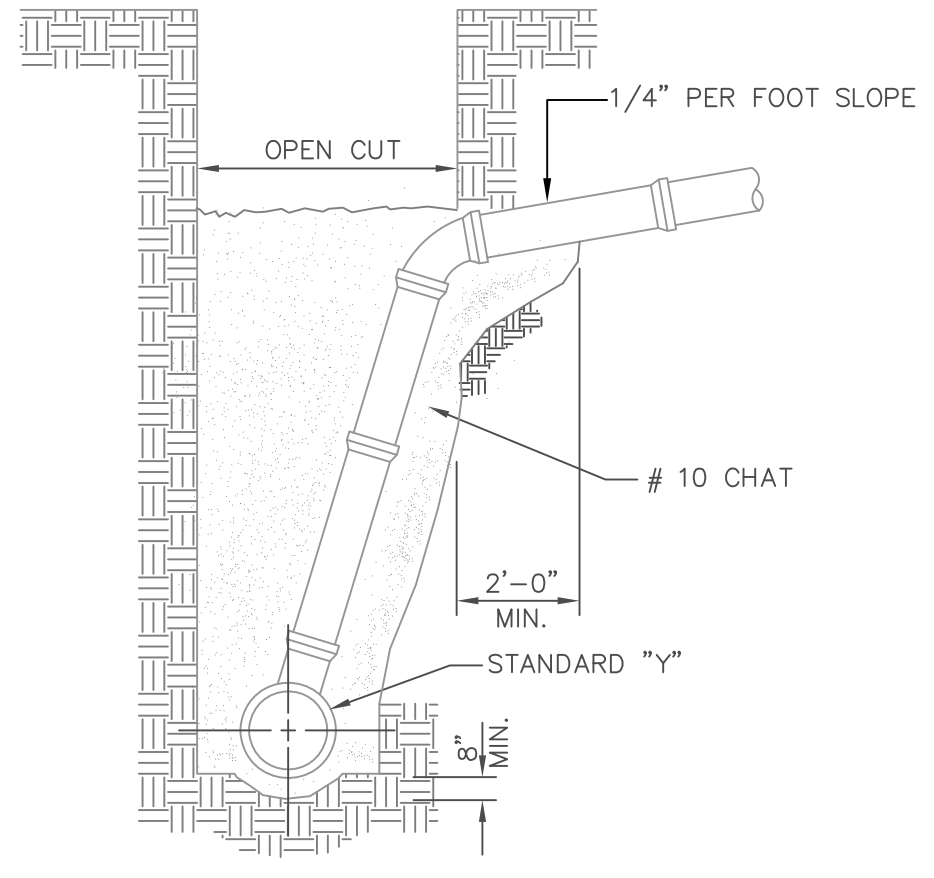
NOTE:
1. SEE APPROVED MATERIAL LIST FOR PART NUMBER AND MANUFACTURE
2. CITY SHALL DETERMINE LOCATIONS



TYPICAL SEWER SERVICE

NOTE:
 CONTRACTOR TO SUPPLY LOCATION ON AS BUILT
 ALL LATERALS SHALL BE INSTALLED AT 1/4" PER FOOT SLOPE PER "TYPICAL SEWER SERVICE" DETAIL.
 ALL CONSTRUCTION BIDS ON CITY PROJECTS SHALL BE BASED ON "TYPICAL SEWER SERVICE" DETAILS.
 ALL SEWER LATERALS SHALL BE SDR26 HEAVY WALL P.V.C. PIPE UNLESS OTHER WISE NOTED.

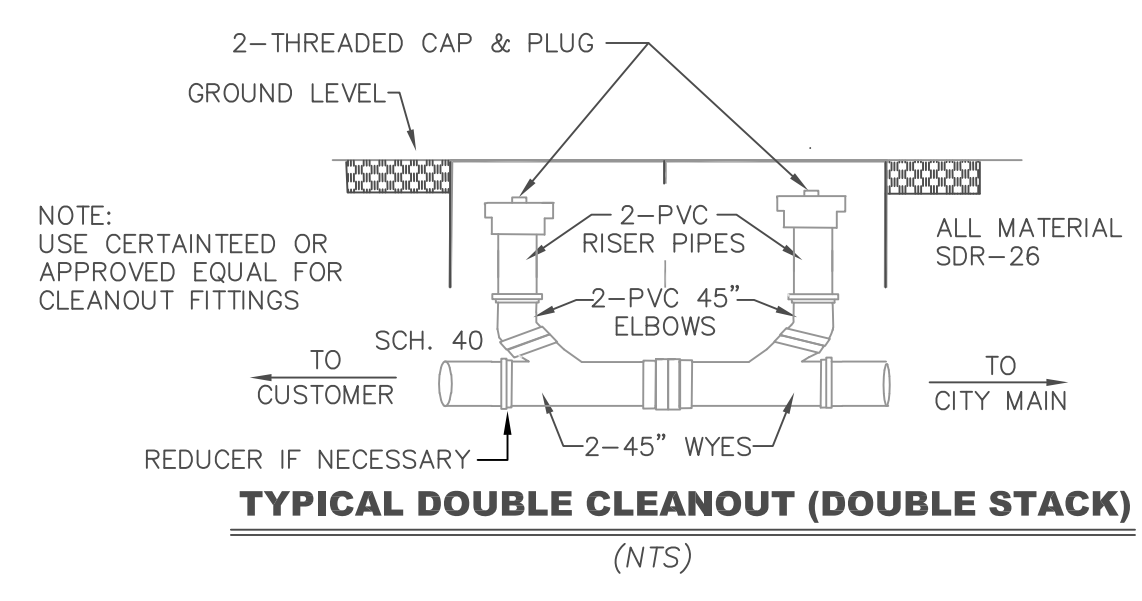
TABLE OF QUANTITIES OF CONCRETE AND GRAVEL IN CUBIC YARDS PER 100 LINEAR FEET						
PIPE DIAMETER IN INCHES	PIPE MATERIAL	OUTSIDE DIAMETER "O.D."	TRENCH WIDTH IN INCHES "B"	CRUSHED STONE		CONCRETE BACKFILL
				IN EARTH	IN ROCK	
8	PVC	8.4	25	4.7	4.7	10.10
12	PVC	12.5	29	6.5	6.5	13.30
15	PVC	15.3	31	7.9	7.9	15.60



STACKED DEEP CUT

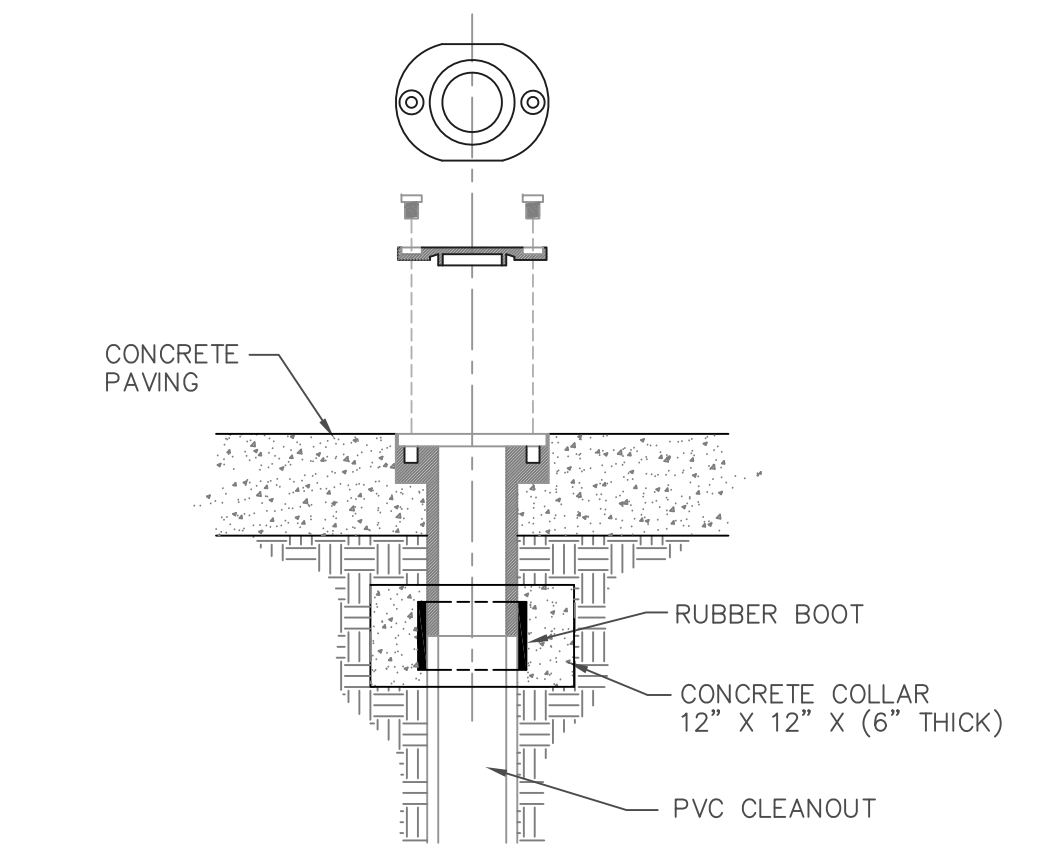
STACKED DEEP CUT LATERALS SHALL NOT BE INSTALLED WITHOUT VERIFICATION OF FLOW LINE ELEVATIONS FOR EACH LOT AND WRITTEN APPROVAL FROM THE CITY.

DOUBLE CLEANOUT
 IN CONCRETE DRIVEWAYS, ALLEY PAVING OR SIDEWALK SEE DETAIL BELOW
 IN GRASSY AREAS TWO METER BOXES FROM APPROVED MATERIAL LIST



TYPICAL DOUBLE CLEANOUT (DOUBLE STACK)

(NTS)

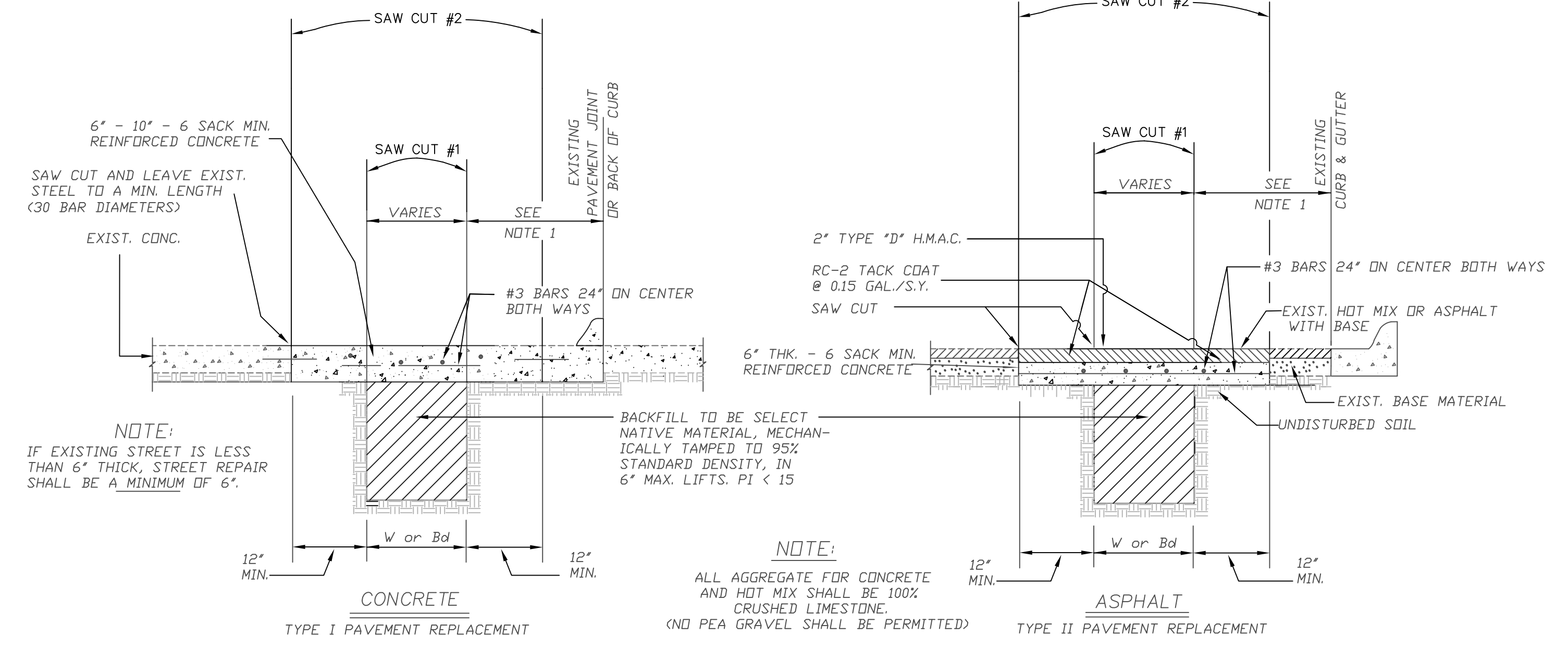


SANITARY SEWER LATERAL CLEANOUT IN CONCRETE

SEE APPROVED MATERIAL LIST

NOT TO SCALE

SAW CUT # 1 TO BE MADE PRIOR TO INSTALLATION OF PIPE;
 SAW CUT # 2 TO BE MADE AFTER PIPE INSTALLATION, TESTING & TRENCH BACK FILL COMPLETED & APPROVED. PAVEMENT CUTS ARE TO BE FULL DEPTH & PARALLEL WITH PROJECT ALIGNMENT. CUTS ARE TO BE MADE WITH POWER DRIVEN WALK-BEHIND SAW, MANUFACTURED FOR PURPOSE OF SAWING PAVEMENT. EDGES OF PAVEMENT WHICH ARE DAMAGE SUBSEQUENT TO SAW CUT # 2 SHALL AGAIN BE SAW CUT TO NEAT STRAIGHT LINES TO REMOVE DAMAGE (SUCH SAW CUTS LINES SHALL BE PARALLEL TO ORIGINAL SAW CUT).

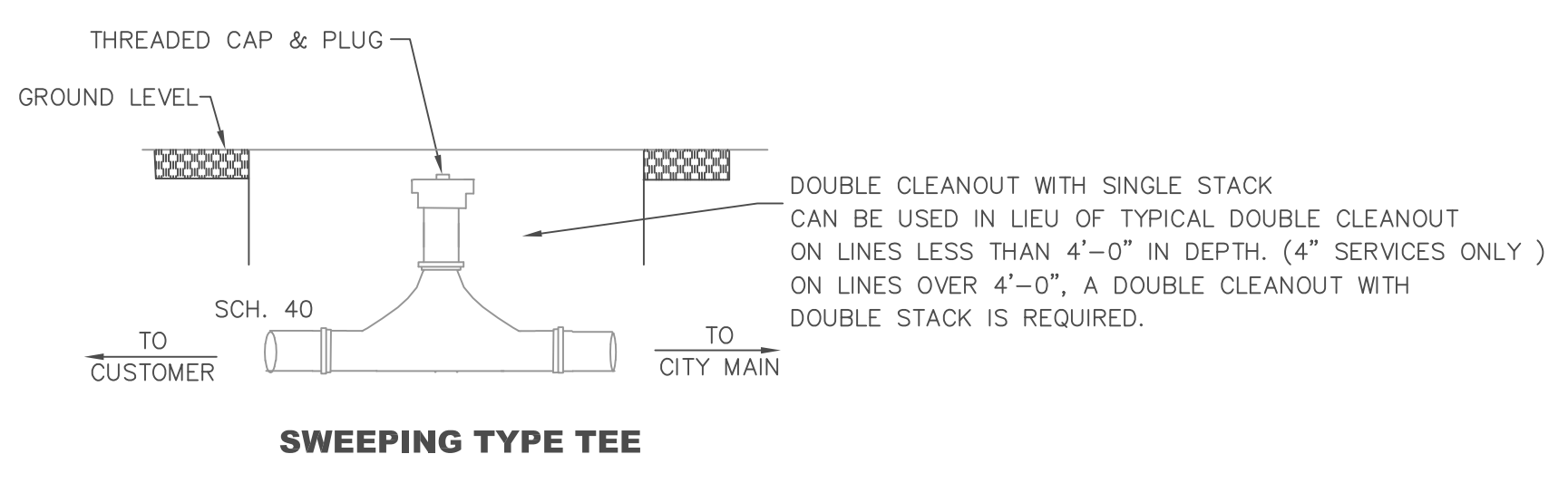


PAVEMENT REPLACEMENT DETAILS

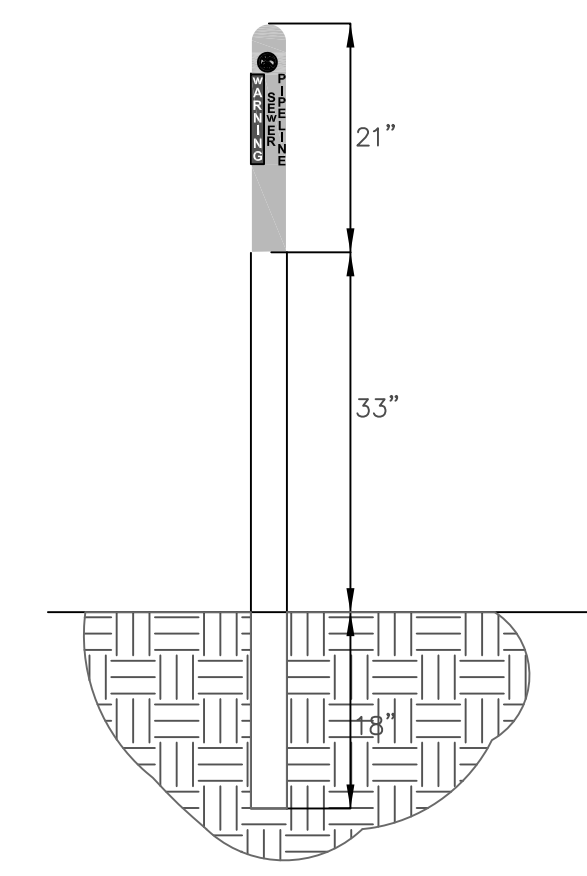
NOT TO SCALE

(FOR ALL STREET CUTS-WATER, SAN,SEWER AND STORM SEWER)

- NOTE:**
- IF DISTANCE BETWEEN PAVEMENT REPLACEMENT JOINT & BACK OF CURB OR EXISTING PAVEMENT JOINT IS LESS THAN 3 FOOT, LIMITS OF PAVEMENT SHALL BE TO BACK OF CURB OR EXISTING PAVEMENT JOINT.
 - SAW CUT # 1 TO BE MADE PRIOR TO INSTALLATION OF PIPE; SAW CUT # 2 TO BE MADE AFTER PIPE INSTALLATION, TESTING & TRENCH BACK FILL COMPLETED & APPROVED.
 - PAVEMENT CUTS ARE TO BE FULL DEPTH & PARALLEL WITH PROJECT ALIGNMENT. CUTS ARE TO BE MADE WITH POWER DRIVEN WALK-BEHIND SAW, MANUFACTURED FOR PURPOSE OF SAWING PAVEMENT.
 - EDGES OF PAVEMENT WHICH ARE DAMAGE SUBSEQUENT TO SAW CUT # 2 SHALL AGAIN BE SAW CUT TO NEAT STRAIGHT LINES TO REMOVE DAMAGE (SUCH SAW CUTS LINES SHALL BE PARALLEL TO ORIGINAL SAW CUT).
 - NO ADDITIONAL PAY FOR PAVEMENT OUTSIDE THE LIMITS OF SAW CUT #2.
 - 10 INCH THICK CONCRETE PAVEMENT REQUIRED FOR ALL THOROUGHFARES AS DEEMED BY THE CITY OF DUNCANVILLE.



SWEEPING TYPE TEE

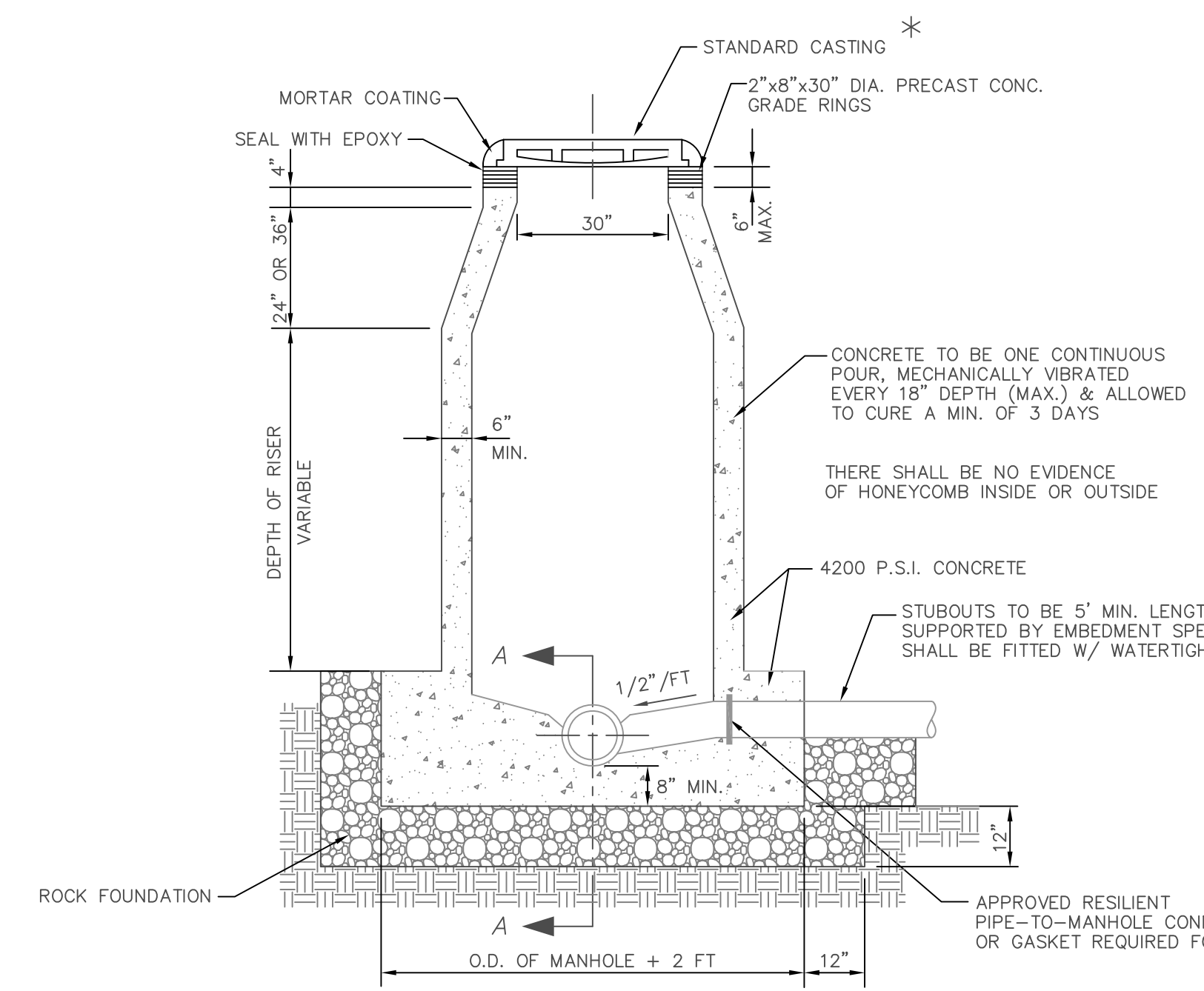


SEWER LOCATE MARKER

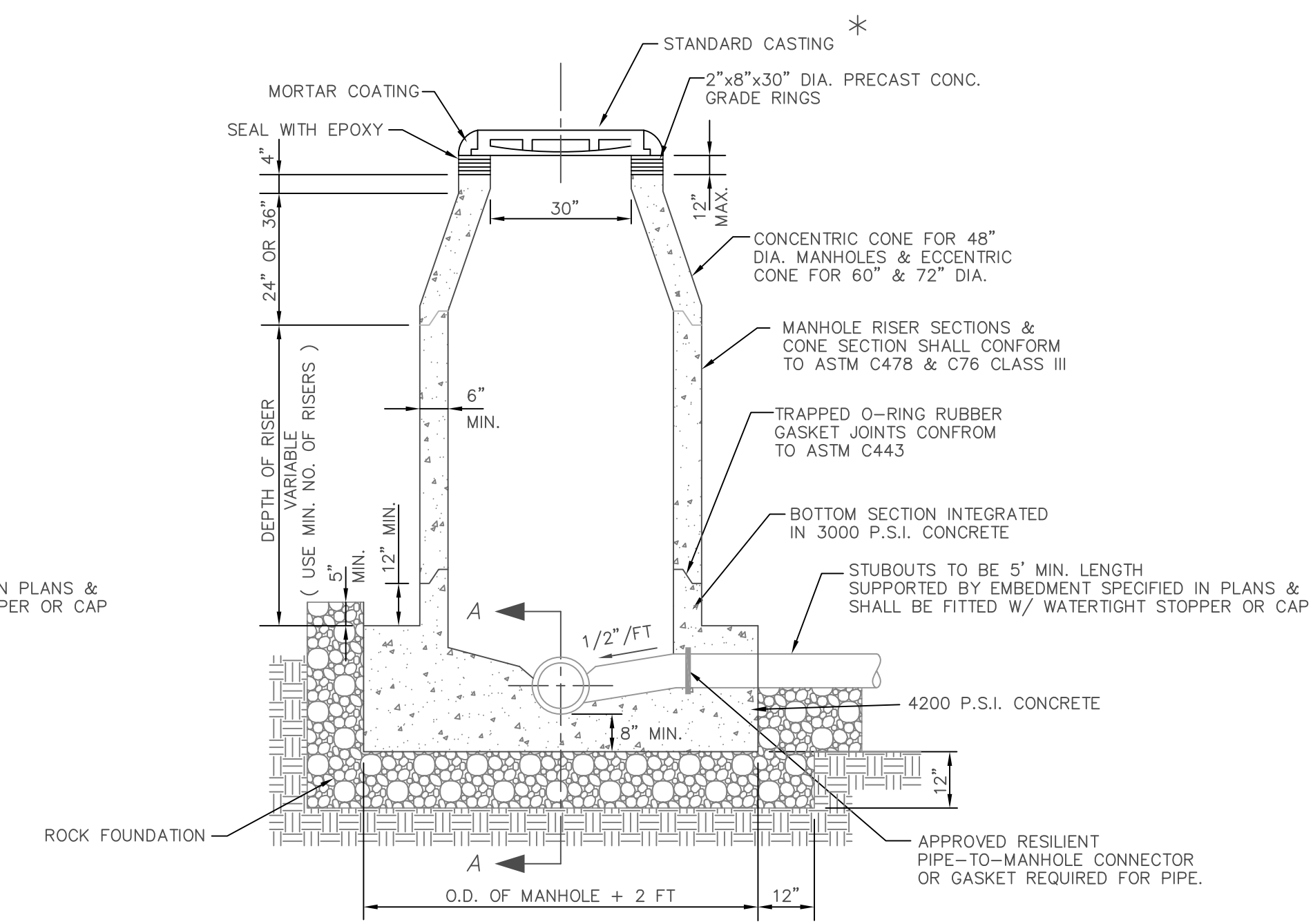
- NOTE:**
- SEE APPROVED MATERIAL LIST FOR PART NUMBER AND MANUFACTURE
 - CITY SHALL DETERMINE LOCATIONS

MAIN SIZE TO MANHOLE SIZE CHART	
MAIN LINE SIZE	MANHOLE SIZE
6" - 10"	48" DIAMETER
12" - 15"	60" DIAMETER
18" - UP	72" DIAMETER

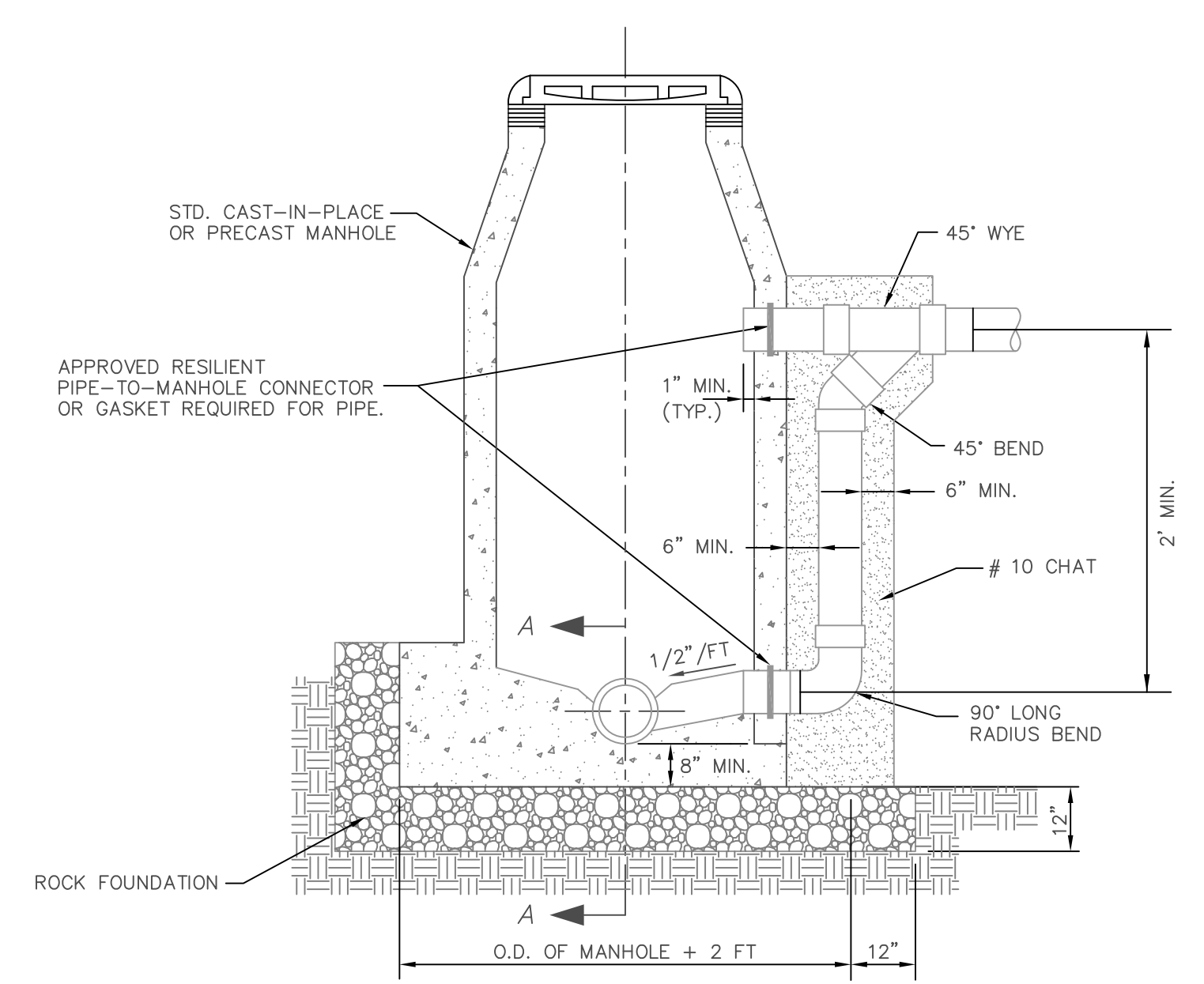
- * A. 30" DIA M.H. RING & COVER (FROM APPROVED MATERIAL LIST)
- B. MANHOLES >10' DEEP TO BE 60" DIAMETER MINIMUM.
- C. ALL MANHOLE SHALL HAVE A SPRAY APPLIED MONOLITHIC HIGH BUILD EPOXY COATING INSTALLED SEE APPROVED MATERIAL LIST



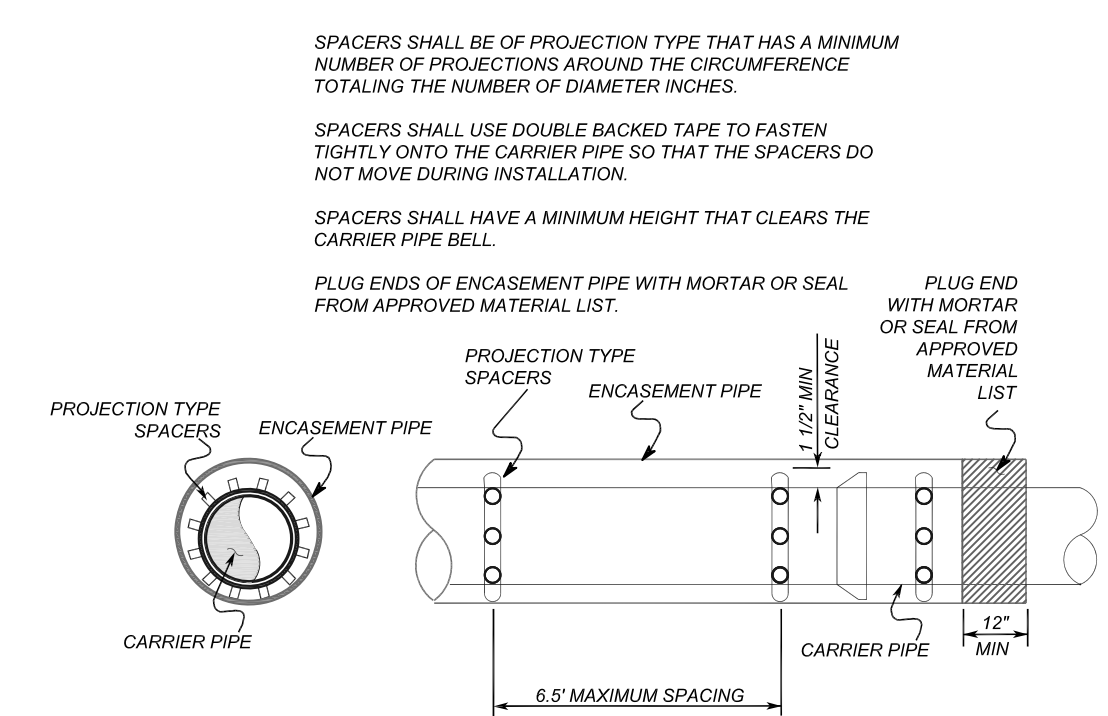
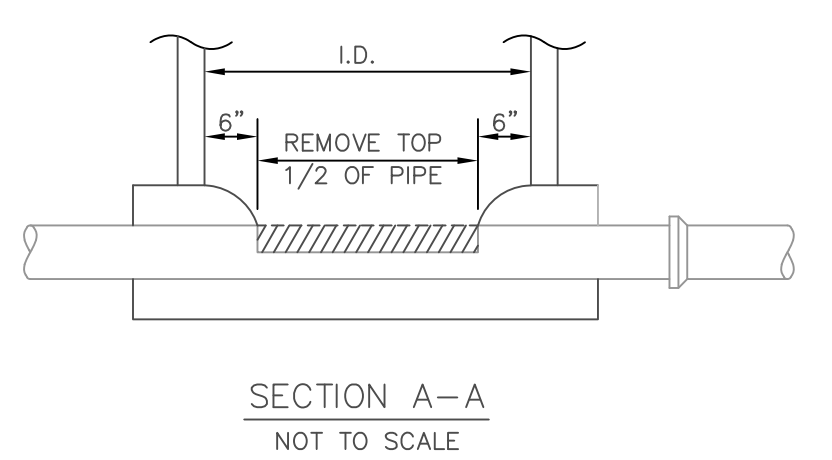
CAST IN PLACE CONCRETE WASTEWATER MANHOLE
NOT TO SCALE



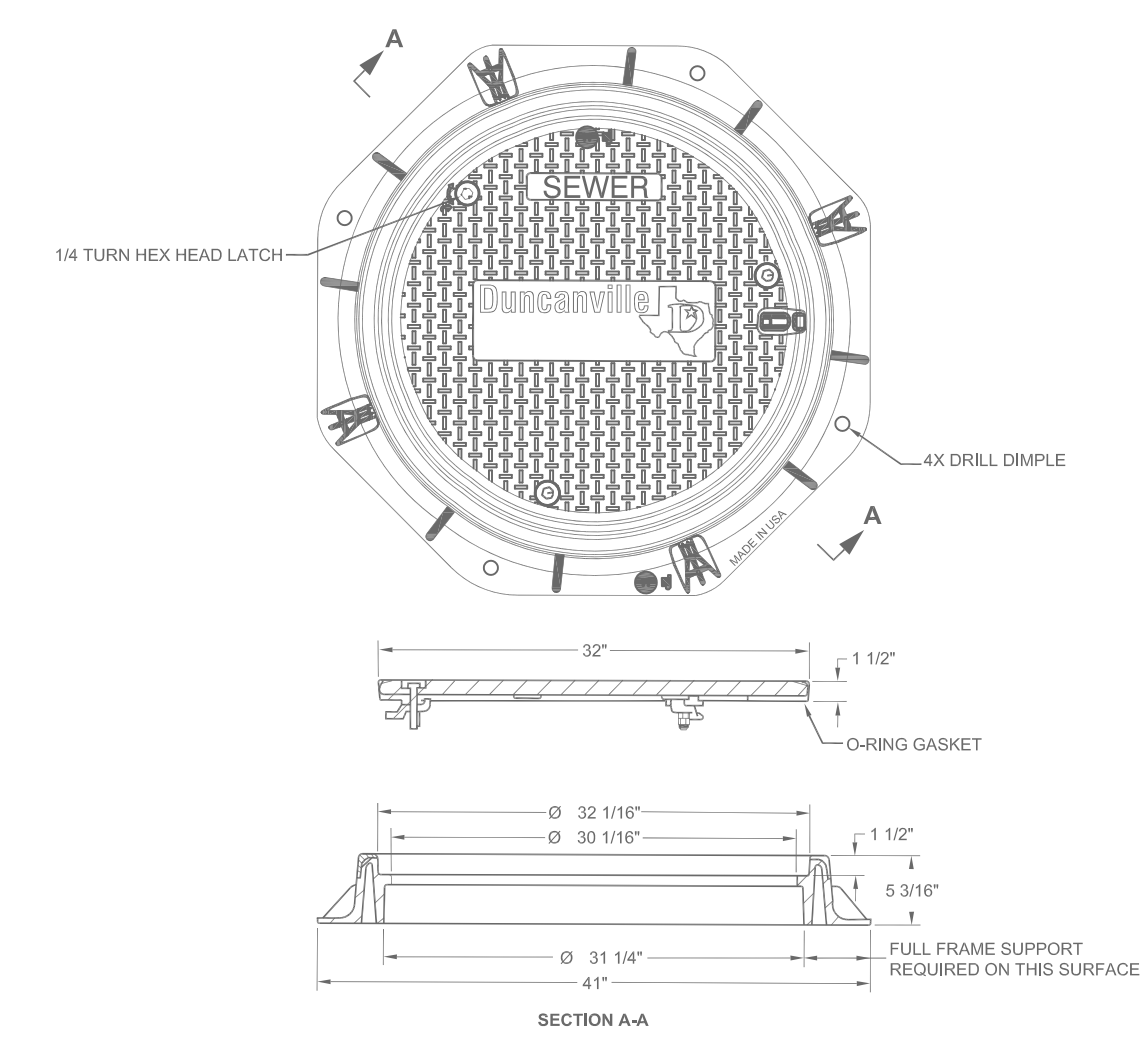
PRECAST CONCRETE WASTEWATER MANHOLE
NOT TO SCALE



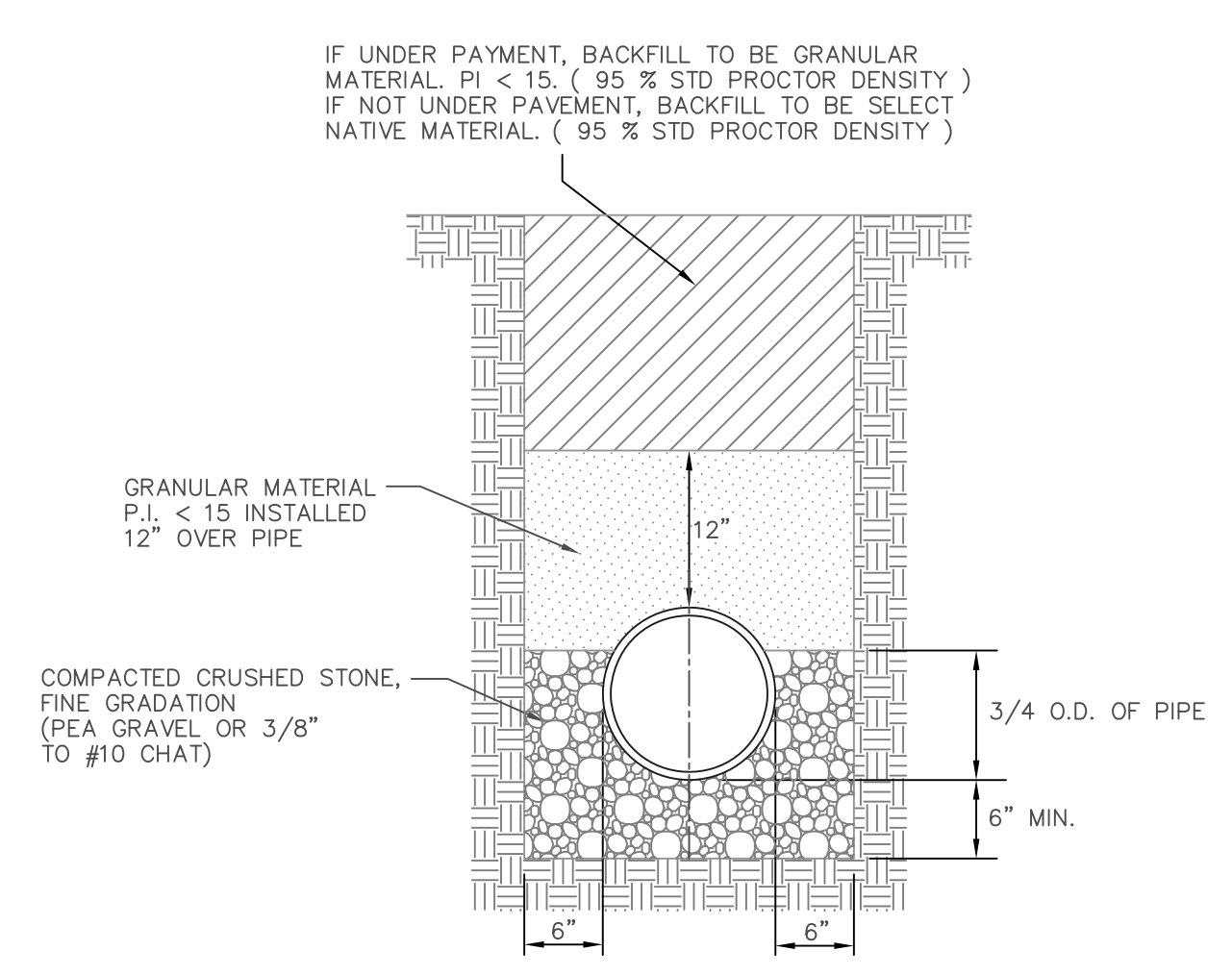
WASTEWATER MANHOLE WITH OUTSIDE DROP CONNECTION
NOT TO SCALE
1. NO INTERNAL DROPS



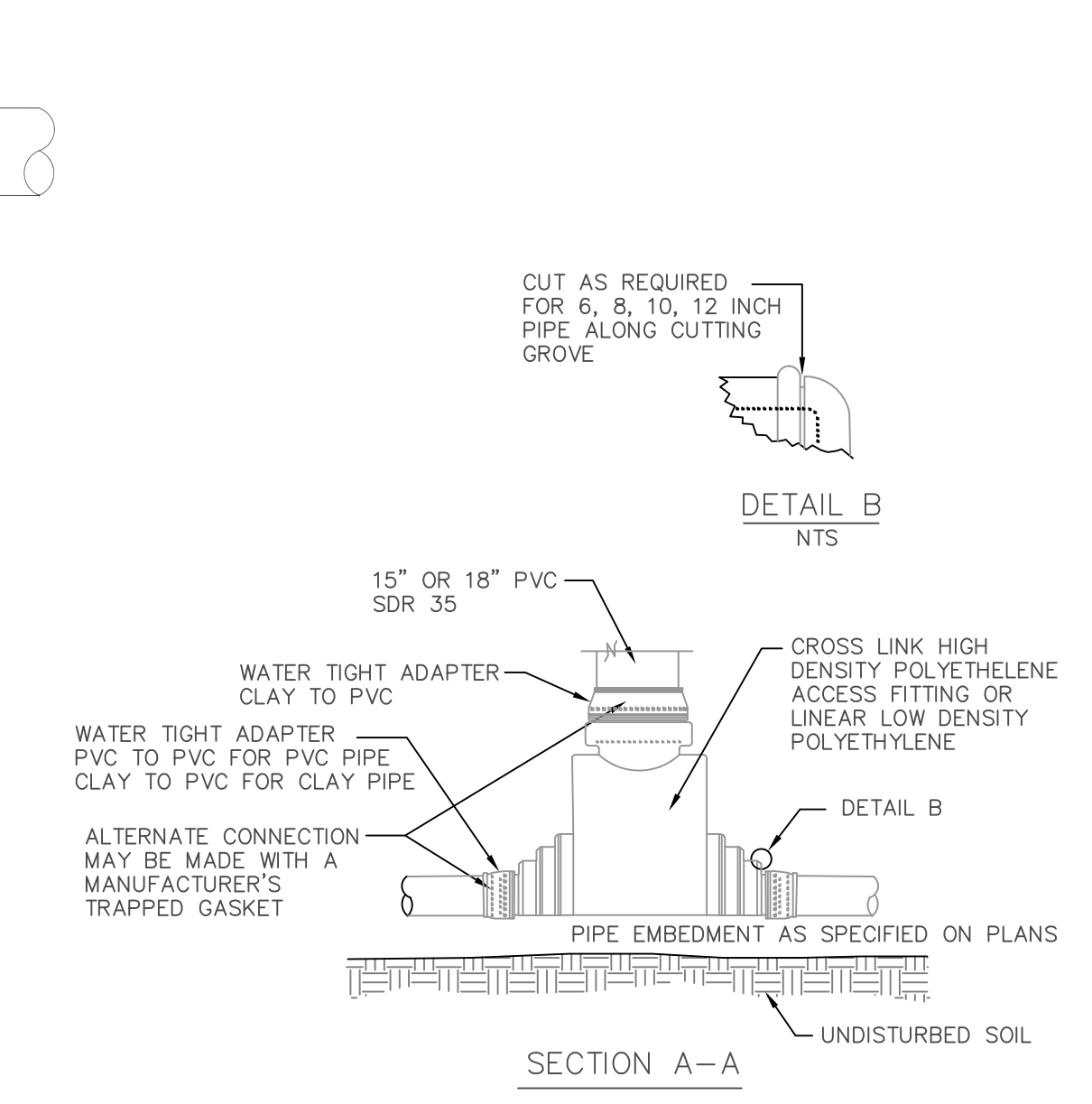
SEWER MAIN BORE DETAIL
CARRIER PIPE THRU ENCASEMENT PIPE
INSTALLATION DETAIL
SCALE: NONE



SECTION OF RING STANDARD CASTING
NOT TO SCALE
SEE APPROVED MATERIAL LIST



WASTEWATER MAIN EMBEDMENT DETAIL
NOT TO SCALE



WASTEWATER ACCESS DEVICE
NOT TO SCALE

