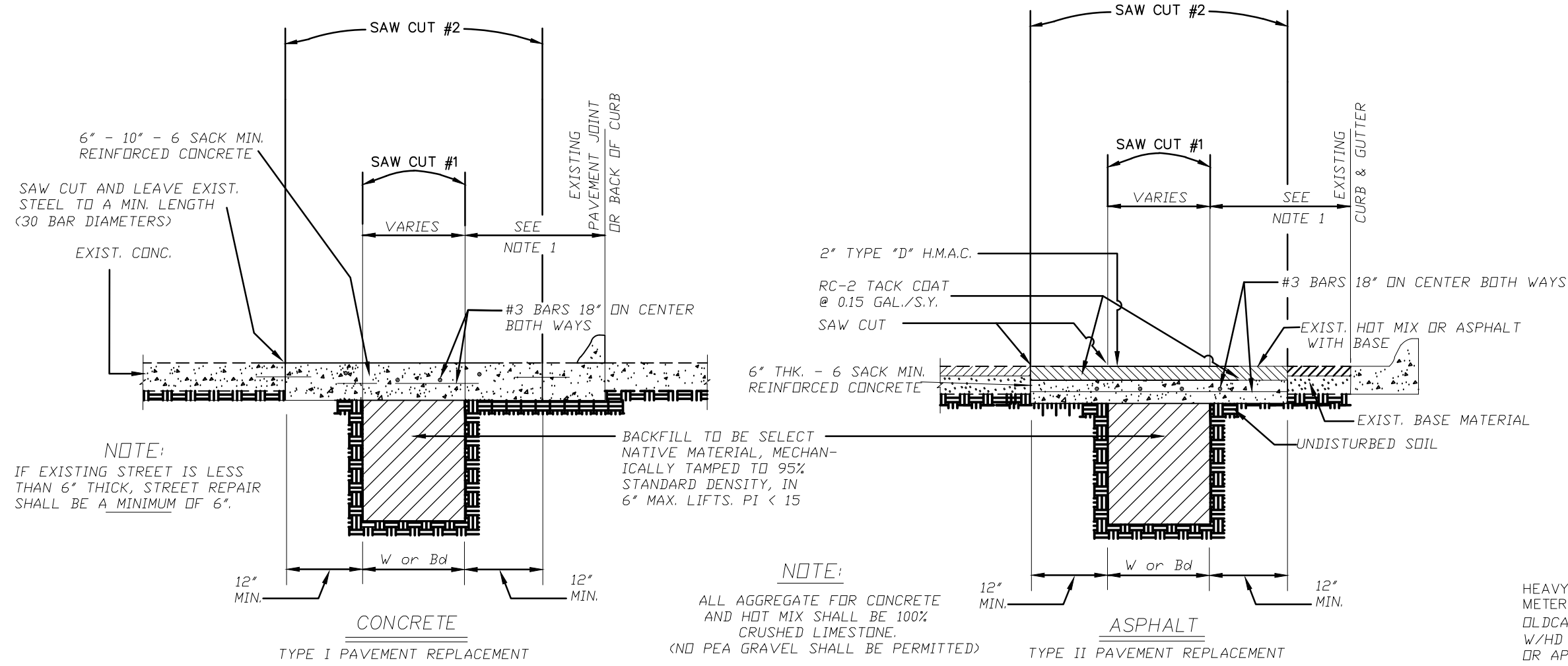


SAW CUT # 1 TO BE MADE PRIOR TO INSTALLATION OF PIPE.
SAW CUT # 2 TO BE MADE AFTER PIPE INSTALLATION, TESTING &
TRENCH BACK FILL COMPLETED & APPROVED. PAVEMENT CUTS
ARE TO BE FULL DEPTH & PARALLEL WITH PROJECT ALIGNMENT.
CUTS ARE TO BE MADE WITH POWER DRIVEN WALK-BEHIND SAW,
MANUFACTURED FOR PURPOSE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



PAVEMENT REPLACEMENT DETAILS

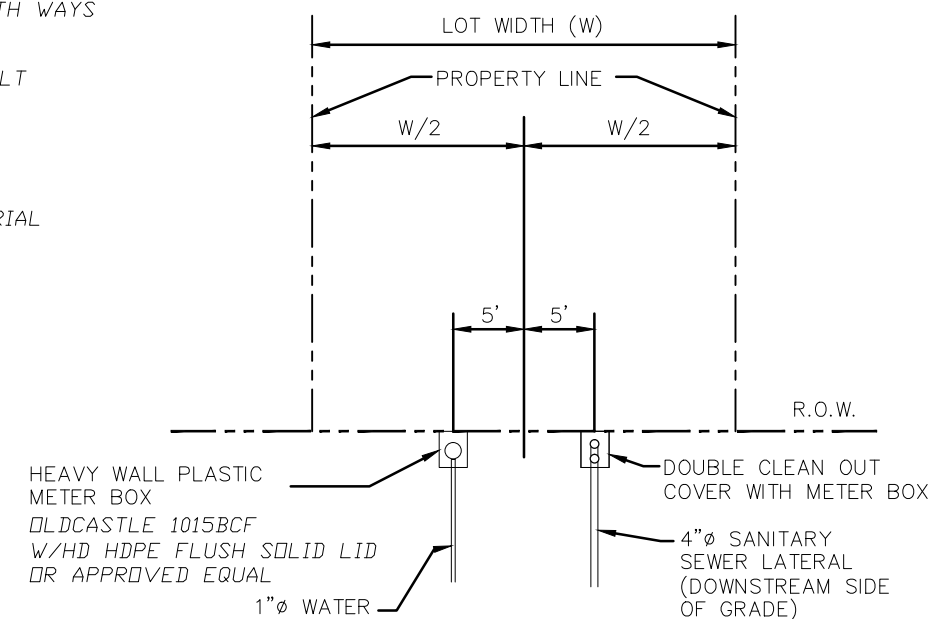
NOT TO SCALE

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

NOTE 1: IF DISTANCE BETWEEN PAVEMENT REPLACEMENT JOINT & BACK OF CURB OR EXISTING PAVEMENT JOINT IS LESS THAN 3 FEET, LIMITS OF PAVEMENT SHALL BE TO BACK OF CURB OR EXISTING PAVEMENT JOINT.

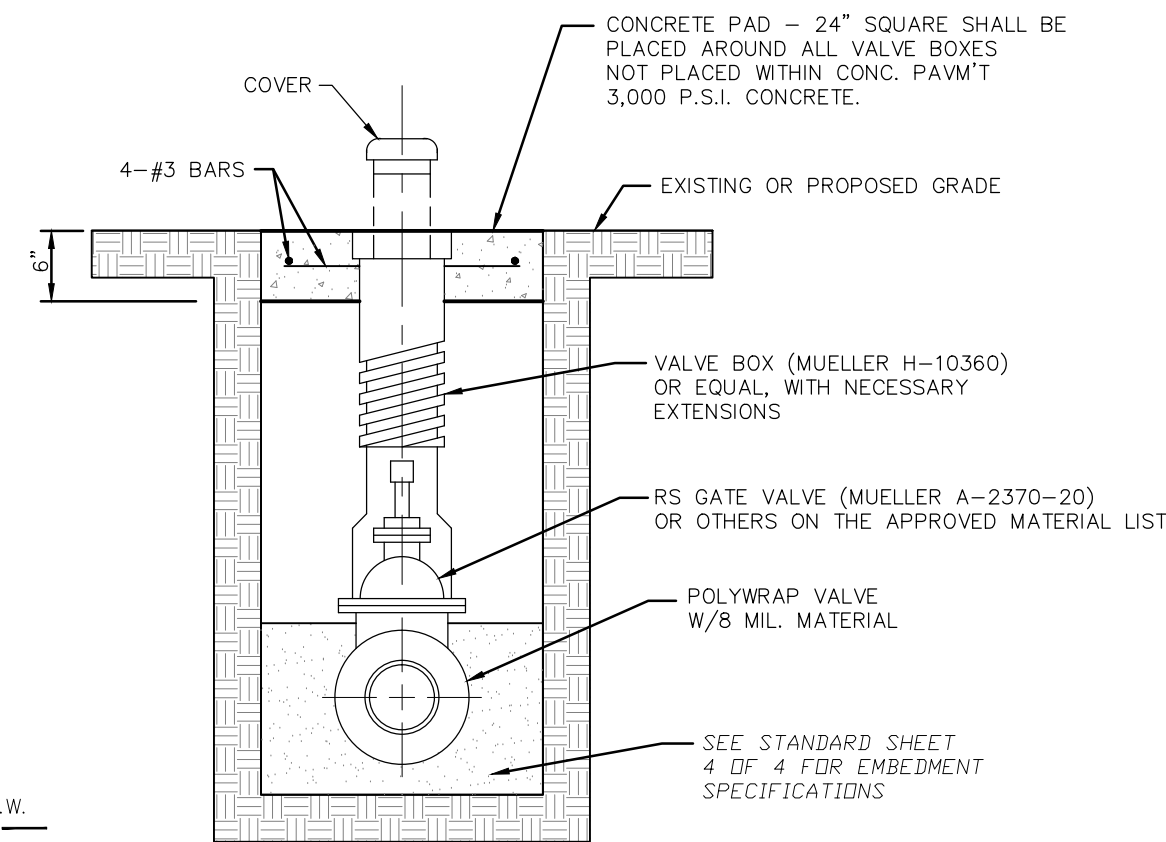
SERVICE LOCATION FOR SINGLE FAMILY LOTS

NOT TO SCALE



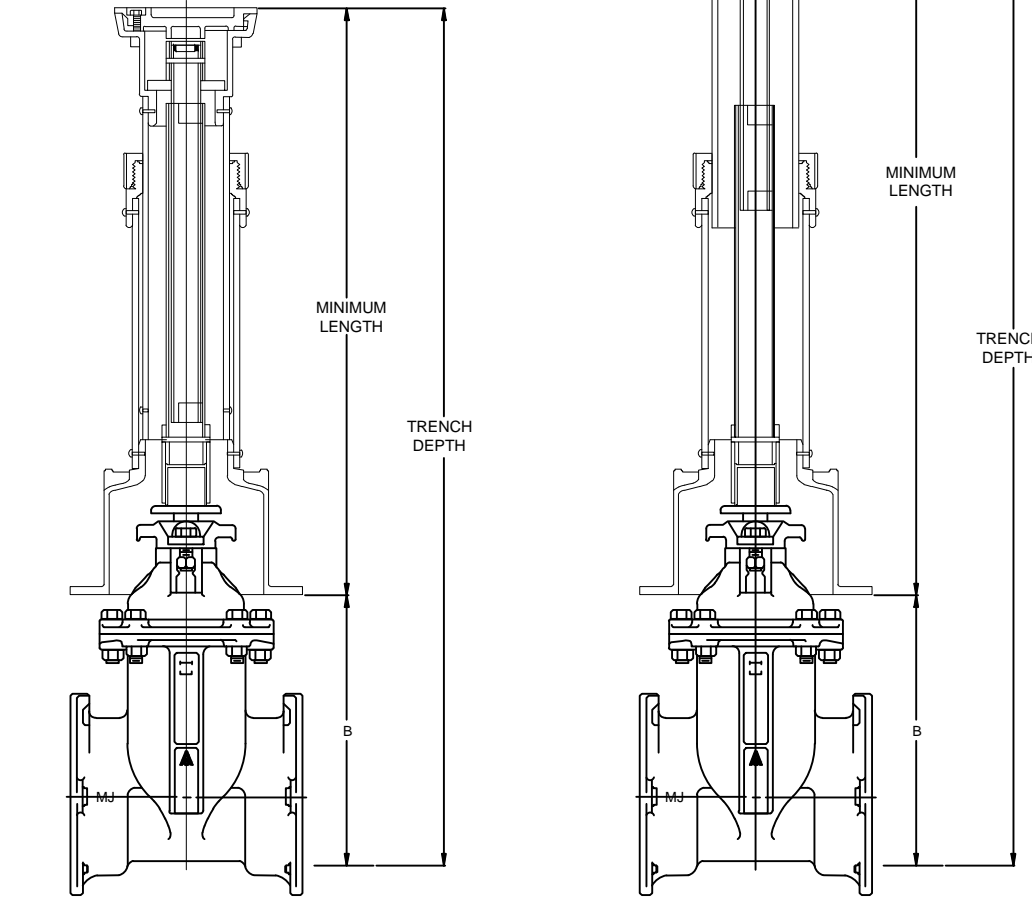
TYPICAL VALVE SETTING & BOX FOR DEPTHS LESS THAN 4 FOOT

NOT TO SCALE



VALVE SIZE	TRENCH DEPTH AND MODEL NUMBER															
	3'	3'6"	4'	4'6"	5'	5'6"	6'	6'6"	7'	7'6"	8'	8'6"	9'	9'6"	10'	10'6"
4"	3	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11
6"	2	3	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5
8"	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11
10"	1	2	3	3.4	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5
12"	1	1	2	3	3.4	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9
14"	1	1	1	2	3	3.4	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5
16"	1	1	1	1	2	3	3.4	4	4.5	5	5.5	6	6.5	7	7.5	8

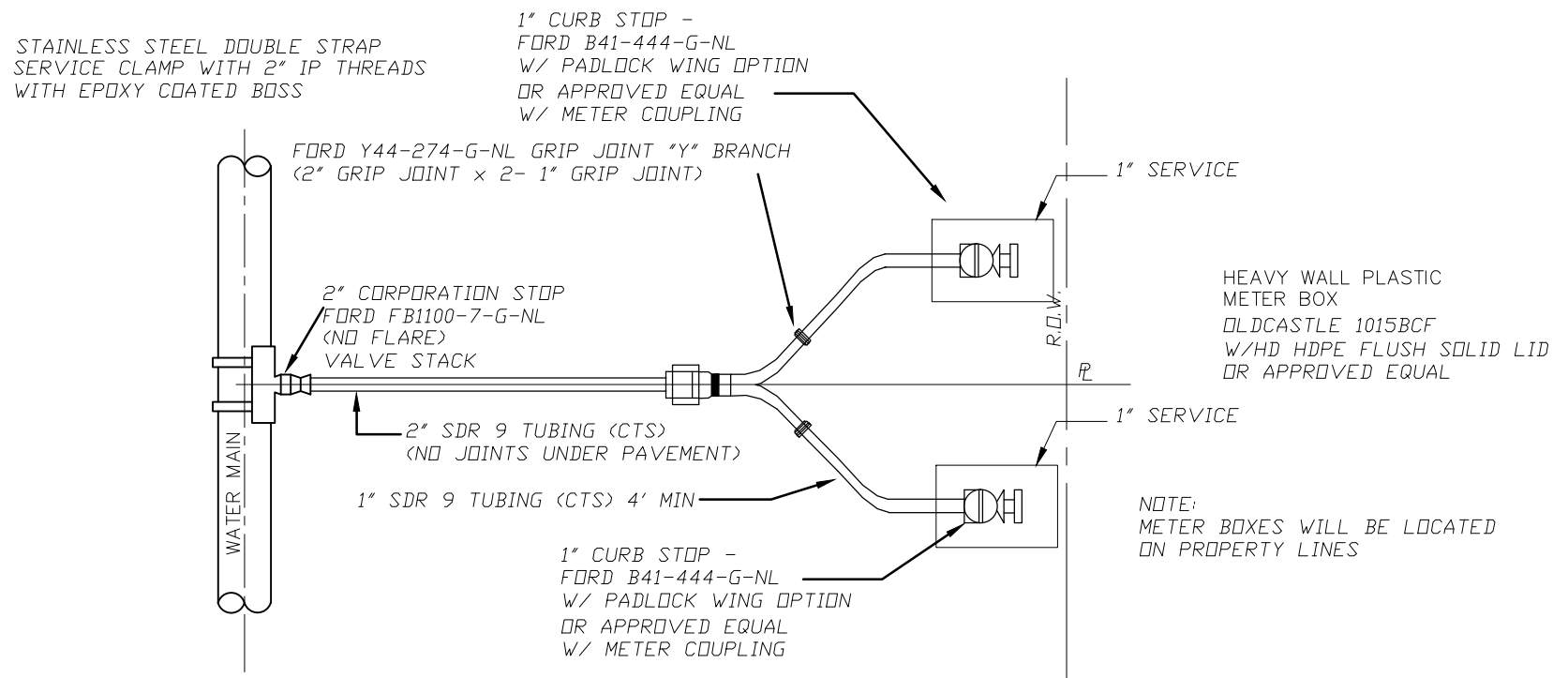
VALVE SIZE	DIMENSION 'B'	MODEL NUMBER		ASSEMBLY HEIGHT
		MIN	MAX	
4"	9.25	#1	18.25	15"
6"	13.50	#2	22.25	18"
8"	18.25	#3	26.75	21"
10"	23.00	#4	29.75	25"
12"	27.50	#5	32.75	28"
14"	36.50	#6	43.75	40"
16"	41.00	#7	48.75	58"



VALVE TRENCH ADAPTER FOR DEPTHS GREATER THAN 4 FOOT

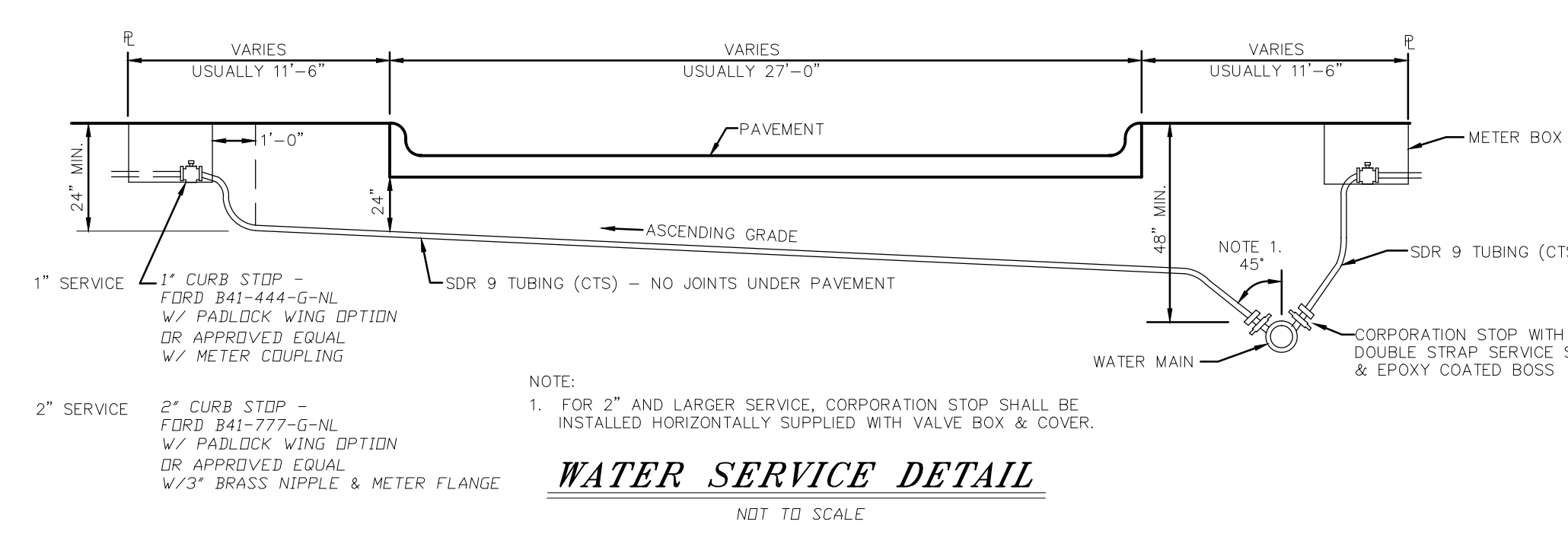
NOT TO SCALE

AMERICAN FLOW CONTROL OR APPROVED EQUAL



BULL HEAD SERVICES

NOT TO SCALE



WATER SERVICE DETAIL

NOT TO SCALE

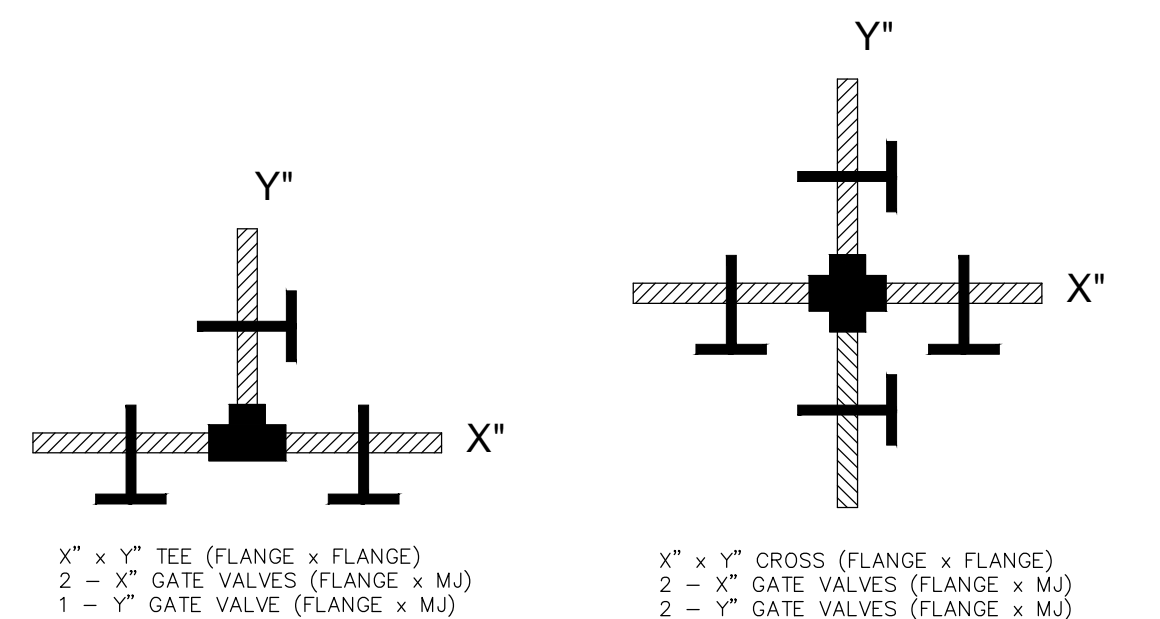
NOTE: PRIOR TO CONSTRUCTION, CONTRACTOR SHALL SUBMIT TO THE PUBLIC WORKS DEPT. A LISTING OF ALL MATERIALS TO BE USED. NO WORK SHALL BE UNDERTAKEN PRIOR TO WRITTEN APPROVAL OF THE MATERIAL LIST BY THE CITY PUBLIC WORKS DEPT.

STANDARD HOUSE SERVICE

- 1" SDR 9 TUBING (CTS), OR APPROVED EQUAL
- STAINLESS STEEL DOUBLE STRAP W/ EPOXY COATED BOSS SERVICE CLAMP W/ FIP THREADS
- 1" CORPORATION STOP-FORD B41-444-G-NL W/PADLOCK WING OPTION OR APPROVED EQUAL
- 1" CURB STOP-FORD FB1100-4-G-NL OR APPROVED EQUAL
- METER BOX-DLDCASTLE 1015BCF W/HD HDPE FLUSH SOLID LID OR APPROVED EQUAL

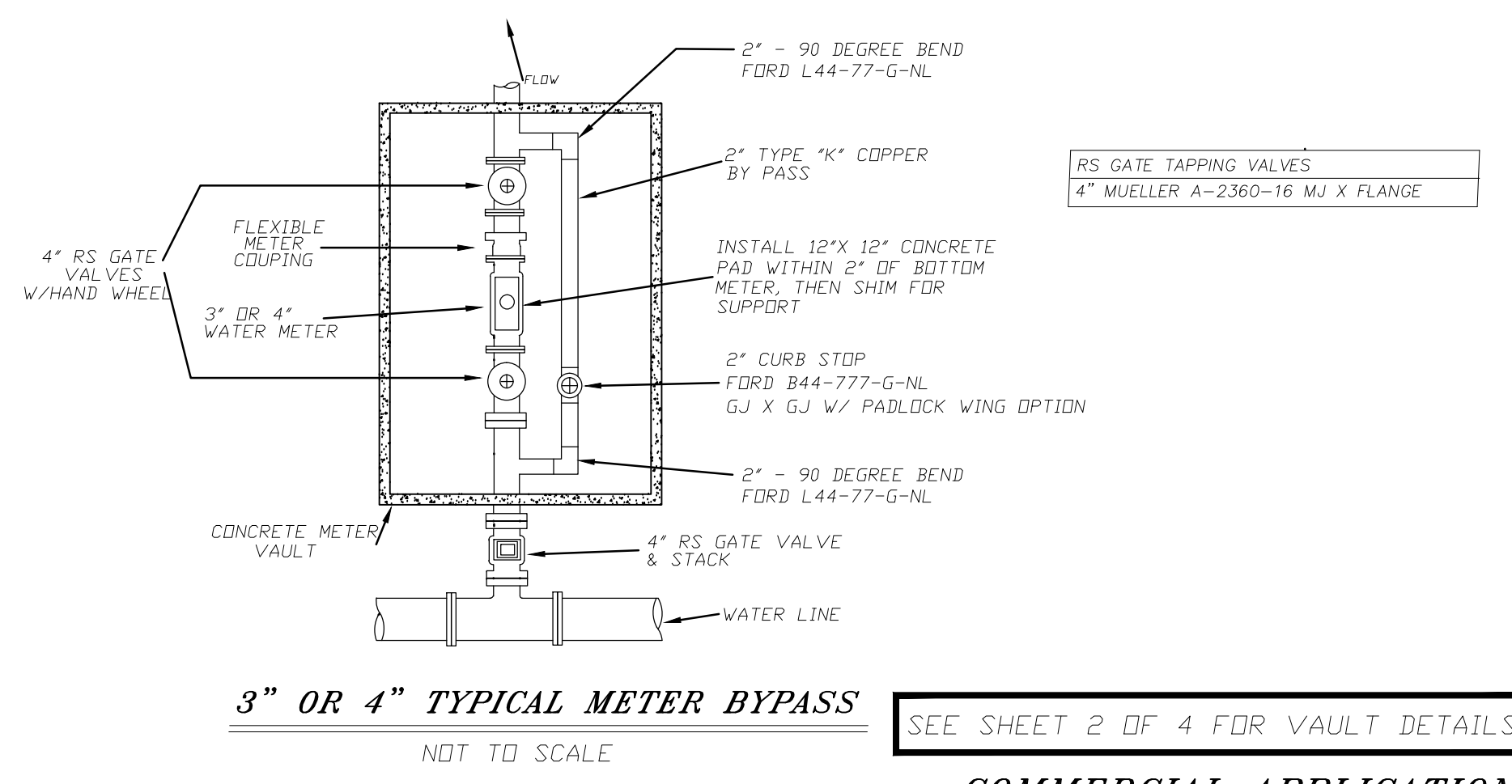
NOTE: SEE SHEET 4 OF 4 FOR ADDITIONAL GENERAL NOTES

	DUCTILE IRON PIPE	PVC PIPE
1" SERVICE	STAINLESS STEEL DOUBLE STRAP WITH EPOXY COATED BOSS SERVICE CLAMP WITH FIP THREADS FORD FB1100-4-G-NL CORP STOP OR APPROVED EQUAL	STAINLESS STEEL DOUBLE STRAP WITH EPOXY COATED BOSS SERVICE CLAMP WITH FIP THREADS FORD FB1100-4-G-NL CORP STOP OR APPROVED EQUAL
2" SERVICE	STAINLESS STEEL DOUBLE STRAP WITH EPOXY COATED BOSS SERVICE CLAMP WITH FIP THREADS FORD FB1100-7-G-NL CORP STOP APPROVED EQUAL (NO FLARE)	STAINLESS STEEL DOUBLE STRAP WITH EPOXY COATED BOSS SERVICE CLAMP WITH FIP THREADS FORD FB1100-7-G-NL CORP STOP APPROVED EQUAL (NO FLARE)



MAIN LINE ISOLATION DETAIL

NOT TO SCALE

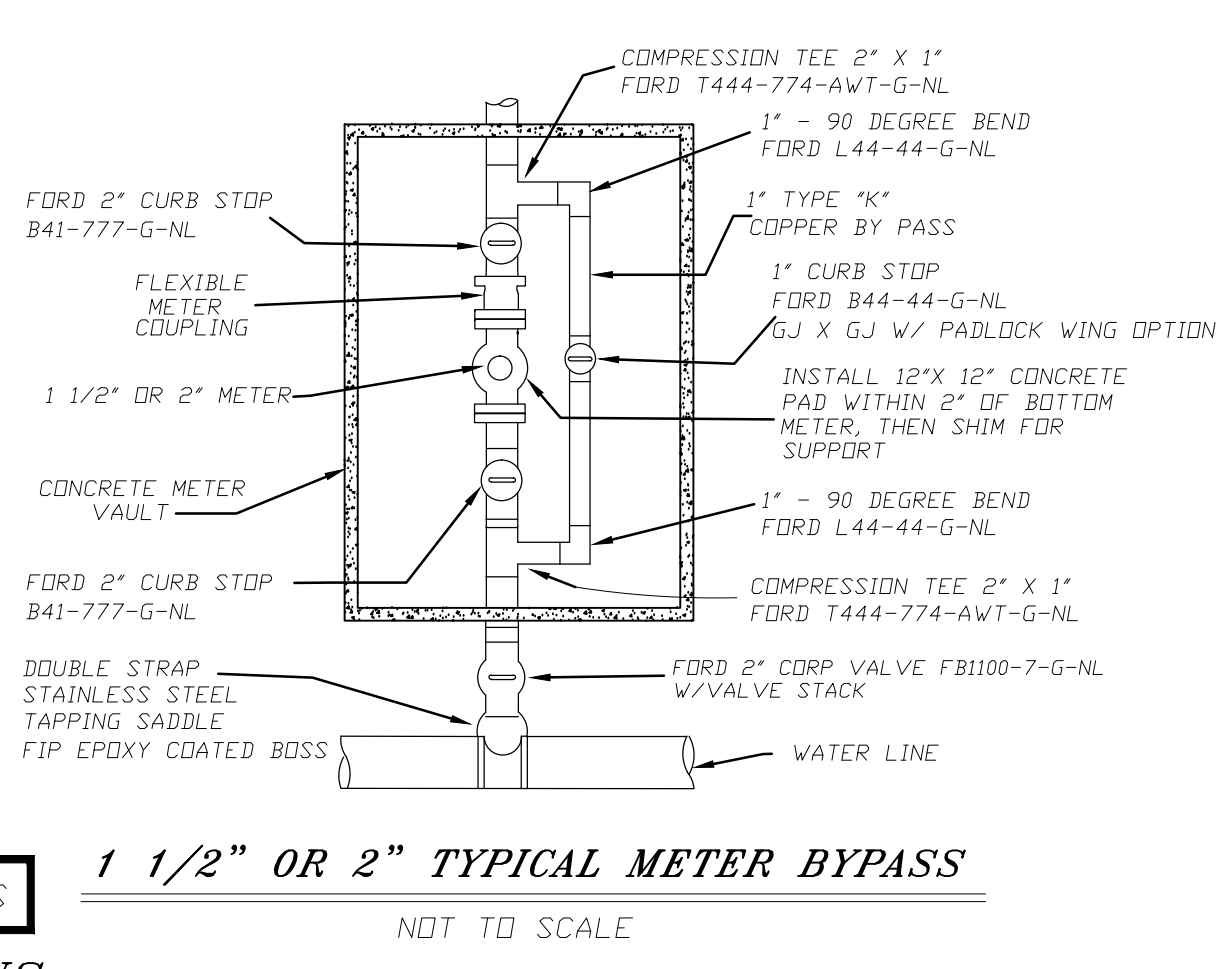


3" OR 4" TYPICAL METER BYPASS

NOT TO SCALE

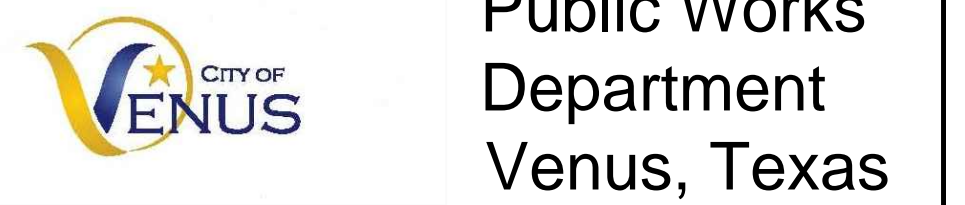
SEE SHEET 2 OF 4 FOR VAULT DETAILS

COMMERCIAL APPLICATIONS



1 1/2" OR 2" TYPICAL METER BYPASS

NOT TO SCALE



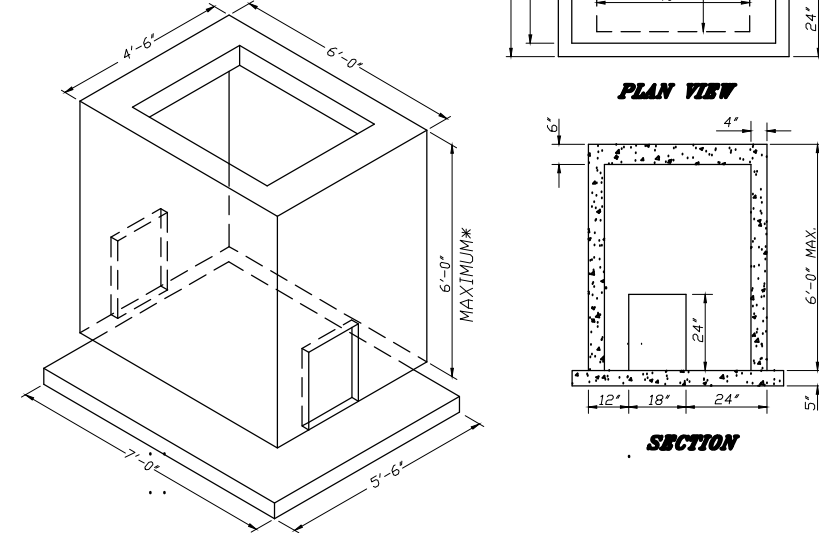
Water Standard Details

SHEET 1 OF 4

DRAWN BY	DATE	SCALE	RVSD
J. DAUGHERTY	March 2018	NOT TO SCALE	

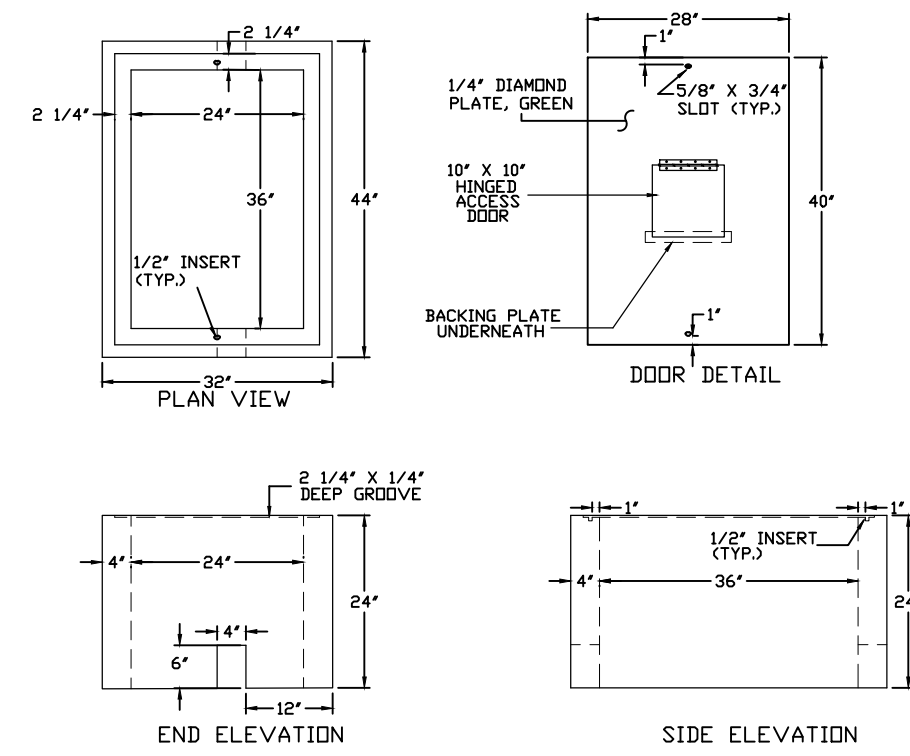
BROOKS MV-800-VAR FOR USE IN GRASS/ EARTH AREAS
 MV-800-3 - 3' HIGH - 3" & 4" WATER METER
 MV-800-4 - 4' HIGH - FIRE LINE W/ 4" DEPTH OF COVER OVER WATER LINE
 MV-800-5 - 5' HIGH - FIRE LINE W/ 5" DEPTH OF COVER OVER WATER LINE
 MV-800-6 - 6' HIGH - FIRE LINE W/ 6" DEPTH OF COVER OVER WATER LINE
 * USE BILCO D4 LID

BROOKS MV-801-VAR FOR USE IN STREET / PAVEMENTS
 MV-801-3 - 3' HIGH - 3" & 4" WATER METER
 MV-801-4 - 4' HIGH - FIRE LINE W/ 4" DEPTH OF COVER OVER WATER LINE
 MV-801-5 - 5' HIGH - FIRE LINE W/ 5" DEPTH OF COVER OVER WATER LINE
 MV-801-6 - 6' HIGH - FIRE LINE W/ 6" DEPTH OF COVER OVER WATER LINE
 * USE BASS & HAYS VLM - 30 LID



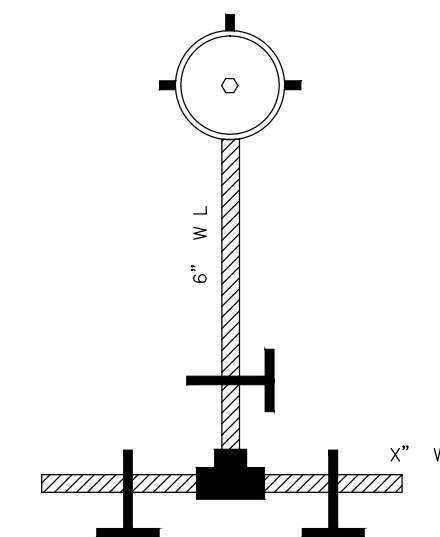
3" - 4" METER & FIRE LINE BACKFLOW PREVENTER VAULT DETAIL

NOT TO SCALE



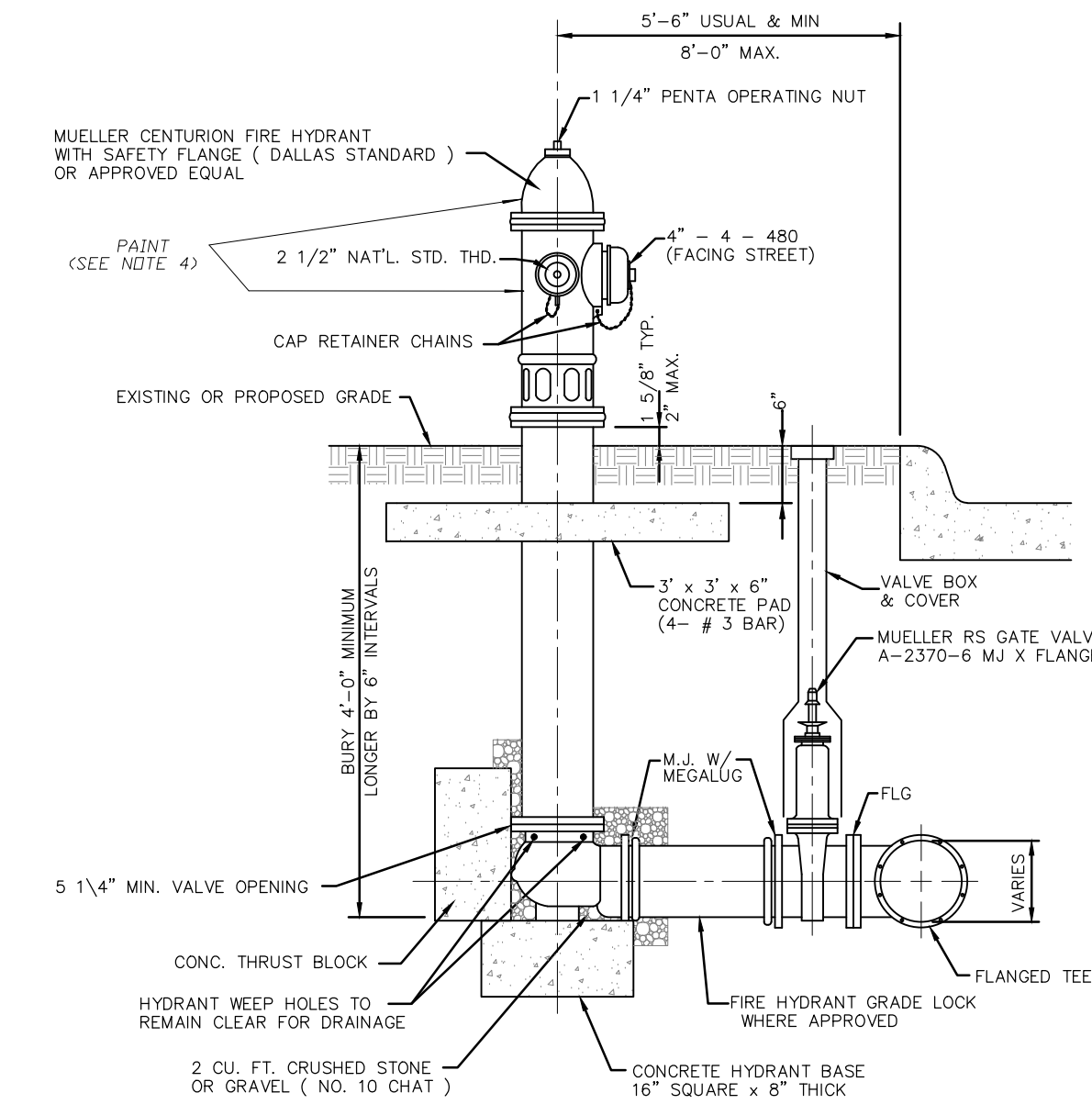
BROOKS 2 X 3 VAULT LID INCLUDED
METER VAULT DETAIL FOR 1 1/2" & 2" METER W/BYPASS

NOT TO SCALE



FIRE HYDRANT ISOLATION DETAIL FOR ALL FIRE HYDRANTS

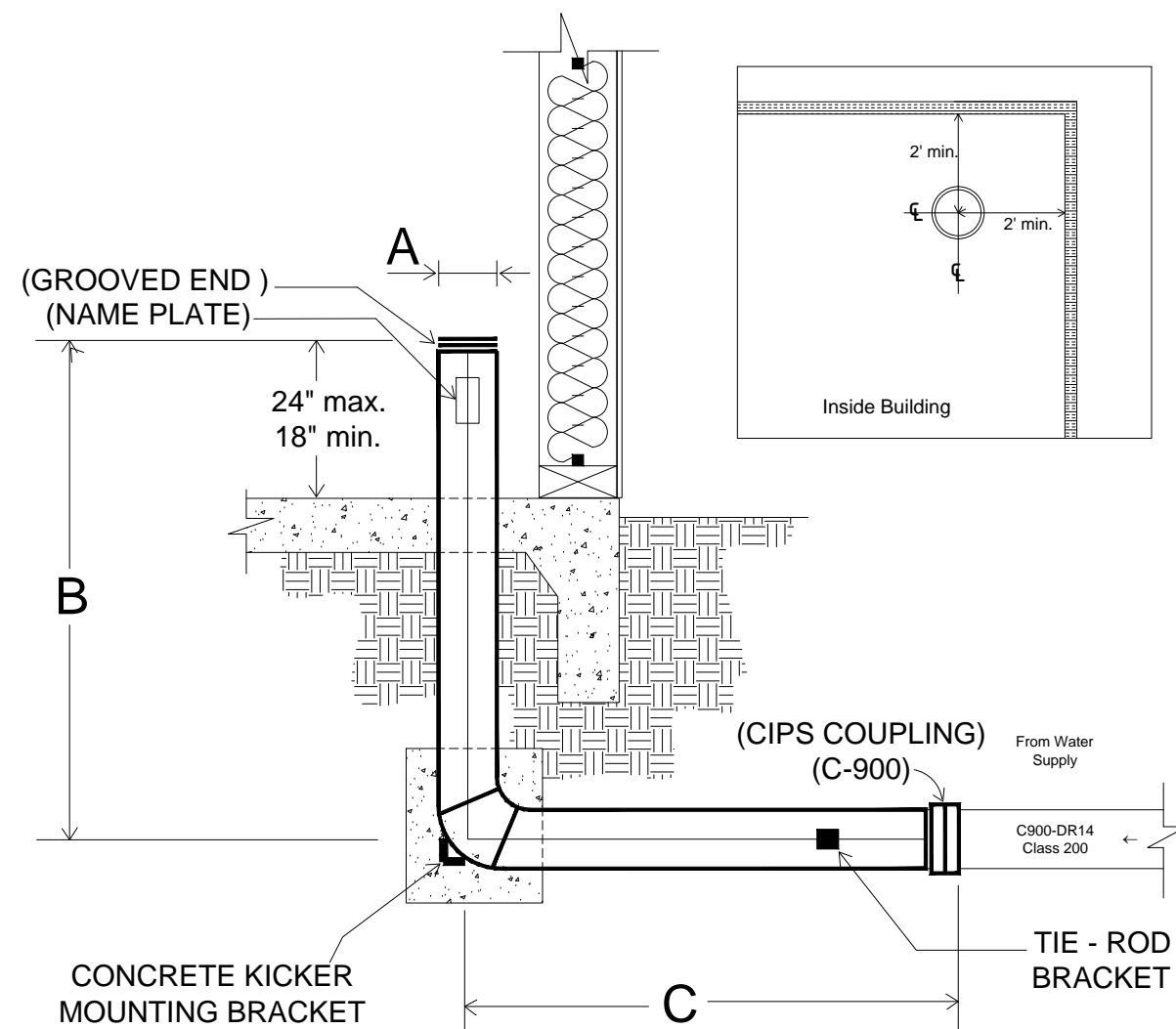
NOT TO SCALE



STANDARD FIRE HYDRANT DETAIL

NOT TO SCALE

- NOTE:
1. FIRE HYDRANTS OTHER THAN MUELLER BRAND, SHALL BE INSTALLED AT A HEIGHT OF 16-3/4" FROM CENTER LINE OF STEAMER NOZZLE TO TOP OF FINISH GRADE OR PAVING.
 2. IF FIRE HYDRANT IS IN CONCRETE, BOTTOM FLANGE AND NUTS SHALL BE CLEAR OF CONCRETE.
 3. ALL MJ FITTINGS TO BE RETAINER GLANDS
 4. CONTRACTOR IS RESPONSIBLE FOR PAINTING FIRE HYDRANT (BARREL, BONNET & CAPS). HYDRANT BARREL ALUMINUM SILVER (FLYNT BRAND), BONNET & NOZZLES CAPS COLOR CODED BY WATER MAIN SIZE:
 10" & UP - SAFETY BLUE GLOSS (620-1427)
 8" DARK GREEN (620-1449)
 6" SAFETY RED (620-1423)



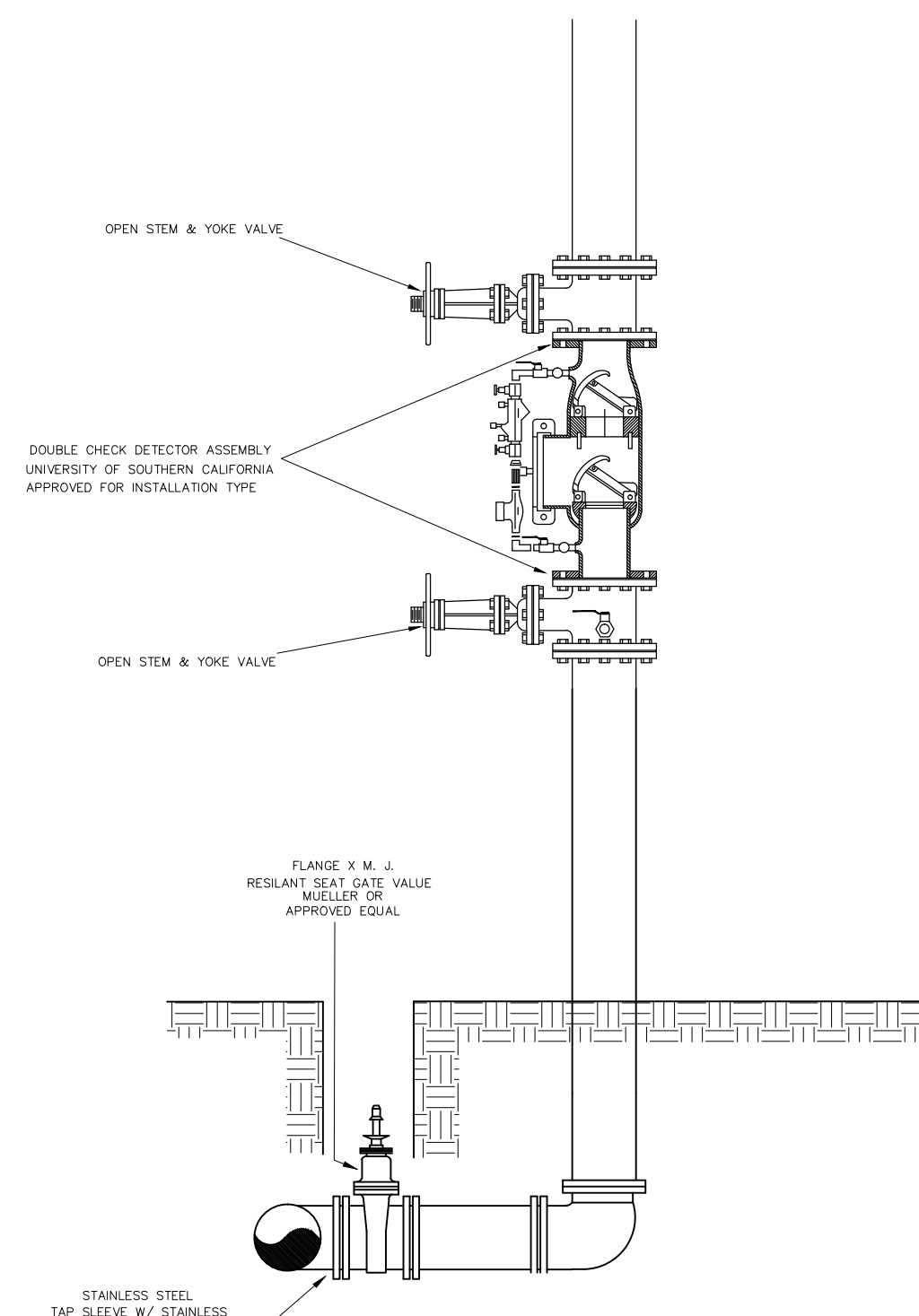
DIMENSIONS				
SIZE	A	B	C	WEIGHT
6"	6 3/8" OD	6'	6'	98 LBS
8"	8 3/8" OD	6'	6'	129 LBS
10"	10 3/8" OD	6'	6'	202 LBS

LEAD FREE
 AMES or Approved Equal

FIRE LINE RISER

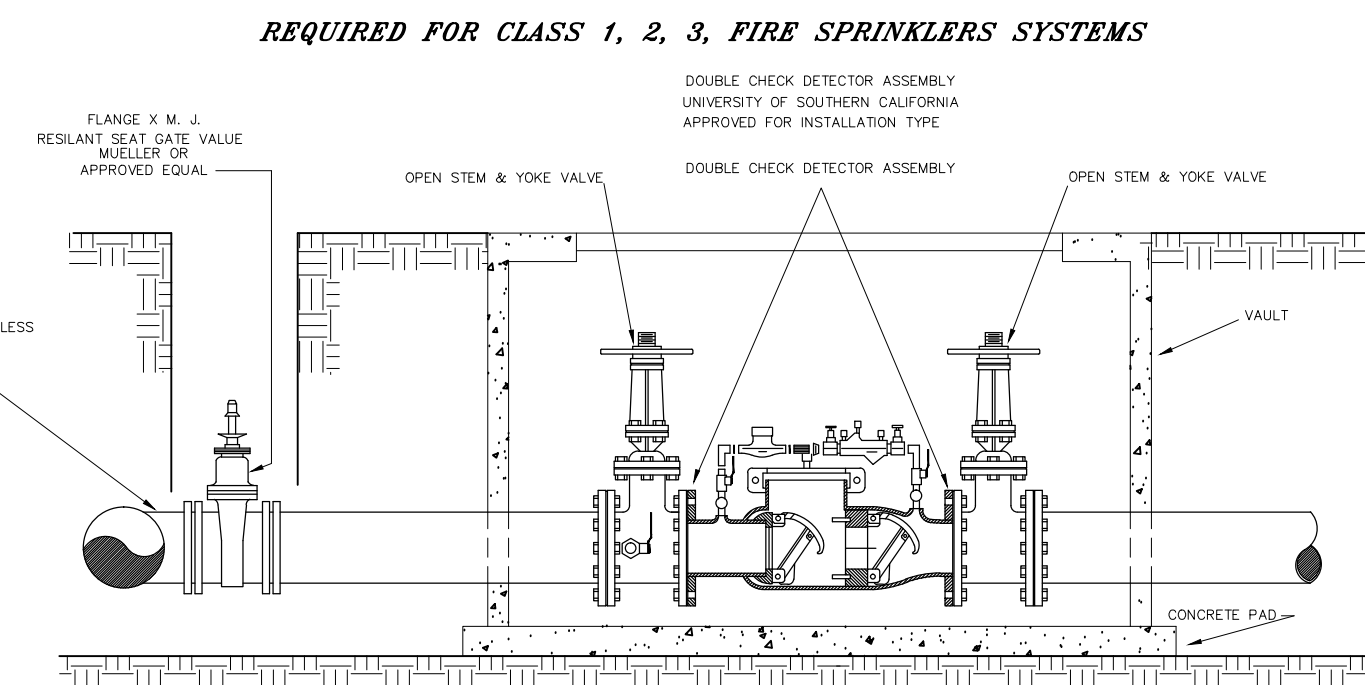
NOT TO SCALE

NOTE: SEE SHEET 4 OF 4 FOR ADDITIONAL GENERAL NOTES



VERTICAL DOUBLE CHECK DETECTOR ASSEMBLY DETAIL

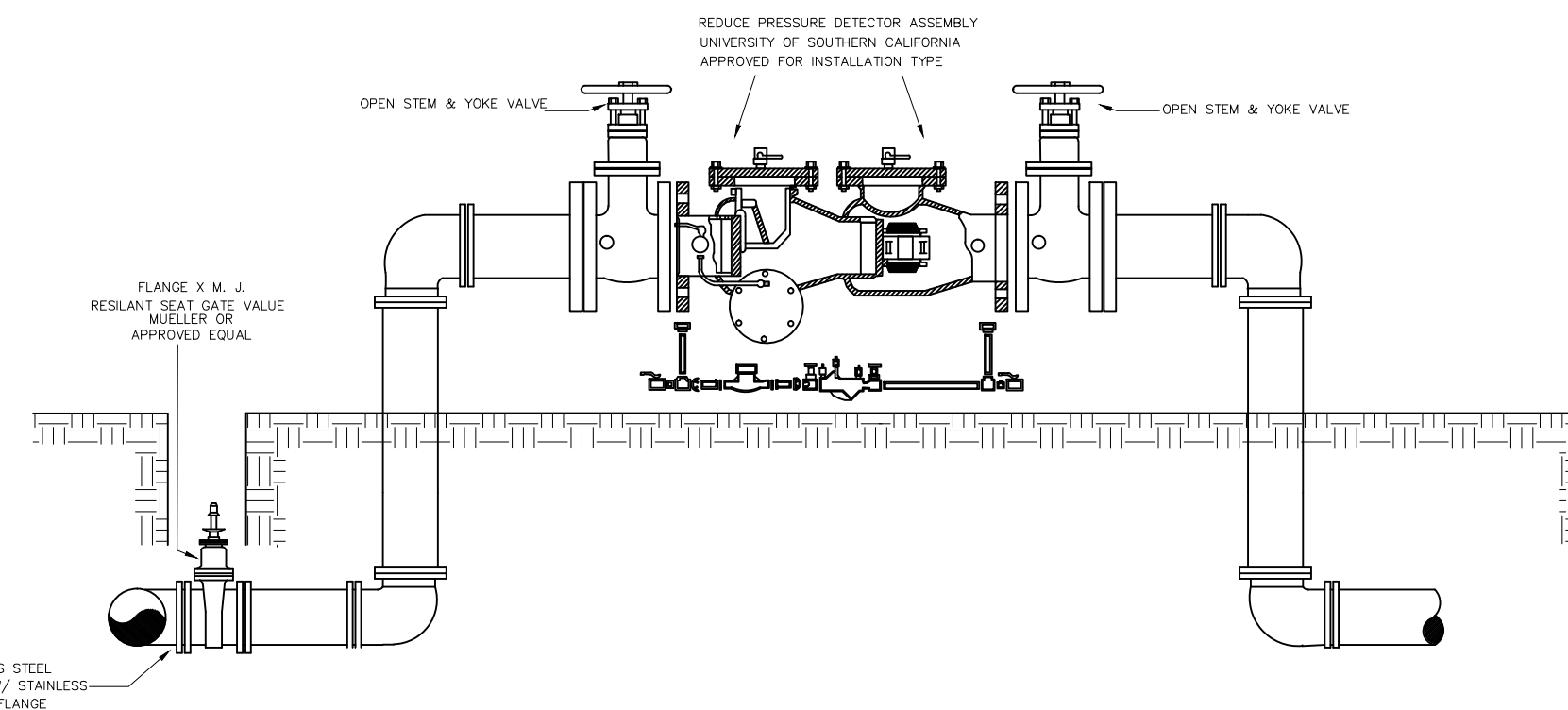
NOT TO SCALE



HORIZONTAL DOUBLE CHECK DETECTOR ASSEMBLY DETAIL

NOT TO SCALE

REQUIRED FOR CLASS 4, 5, 6, FIRE SPRINKLERS SYSTEMS OR MULTISTORY BUILDINGS (3 STORY OR GREATER)
REQUIRED FOR DOMESTIC WATER SYSTEMS FOR MULTISTORY BUILDINGS (3 STORY OR GREATER) OR DOMESTIC / IRRIGATION SYSTEMS WITH PUMPS OR CHEMICAL INJECTIONS



REDUCE PRESSURE DETECTOR ASSEMBLY

NOT TO SCALE



Public Works
 Department
 Venus, Texas

Water Standard Details

SHEET 2 OF 4

DRAWN BY	DATE	SCALE	RVSD
J. DAUGHERTY	March 2018	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 SUBMITTED MATERIAL LIST BY THE CITY PUBLIC WORKS DEPT.

GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY LOCATION OF WATER MAINS AND ALL UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION OF IMPROVEMENTS.
2. ALL MATERIALS AND CONSTRUCTION UNLESS OTHERWISE NOTED SHALL CONFORM TO THE CURRENT "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION," PUBLISHED BY THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS AND THE CITY OF VENUS STANDARD DETAIL DRAWINGS FOR WATER & WASTEWATER CONSTRUCTION METHODS.
3. ALL VALVES TO BE MUELLER RESILIENT SEAT WEDGE GATE WITH NON-RISING STEMS, OR AN APPROVED EQUAL .
4. ALL 16" VALVES OR LARGER SHALL BE BUTTERFLY TYPE VALVES.
5. A PERMANENTLY ATTACHED VALVE EXTENSION STEM SHALL BE REQUIRED FOR ANY VALVE IF THE OPERATING NUT IS LOCATED MORE THAN 4' BELOW THE TOP OF THE VALVE BOX. THIS EXTENSION SHALL BE OF SUFFICIENT LENGTH TO ENSURE THAT ITS TOP IS WITHIN 4' OF THE VALVE BOX LID.
6. ALL FITTINGS TO BE MECHANICAL JOINT WITH RESTRAINING GLANDS, UNLESS OTHERWISE NOTED ON PLANS.
7. ALL MECHANICAL JOINT RESTRAINING GLANDS SHALL BE "MEGA LUG" OR AN APPROVED EQUAL FOR ALL WATER PIPE. IN ADDITION, THRUST BLOCKING IS REQUIRED PER CITY STANDARD DRAWINGS.
8. ALL TEES AND CROSSES SHALL HAVE A GATE VALVE ON ALL SIDES OF THE FITTING UNLESS OTHERWISE NOTED ON PLANS .
9. ALL VALVES TO BE IN LINE WITH PROPERTY LINE WHERE POSSIBLE.
10. ALL WATER LINE CONNECTIONS SHALL BE INSTALLED PER ITEM 6.7.3. (G) OF THE NCTCOG STANDARD SPECIFICATIONS REFERENCED.
11. ALL WATER MAINS SHALL HAVE A MINIMUM COVER OF 48", UNLESS OTHERWISE NOTED ON PLANS.
12. ALL WATER MAINS SHALL BE PVC C-900 DR14 OR DUCTILE IRON, CLASS 51, WITH 8 MIL. POLYWRAP, UNLESS OTHERWISE NOTED ON PLANS.
13. LOCATION OF WATER MAINS AND HOUSE SERVICES TO BE TIED FOR RECORD DRAWINGS.
14. PRIOR TO MAKING CONNECTION WITH EXISTING WATER MAIN, THE CONTRACTOR SHALL INSTALL SDR 9 TUBING (CTS) BLEEDER LINES PER TCEQ RULES & REGULATIONS (1000' MAXIMUM SPACING) OR AS APPROVED BY CITY FOR TESTING PURPOSES.
15. A HYDROSTATIC TEST SHALL BE PERFORMED ON ALL INSTALLED WATER LINES PER ITEM 6.7.3.(F) OF THE NCTCOG STANDARD SPECIFICATIONS REFERENCED. (NO LEAKAGE WILL BE PERMITTED)
16. PRESSURE TESTING SHALL BE COMPLETED PRIOR TO THE PLACING OF FORMS AND/OR REINFORCED STEEL FOR PAVING.
17. BACTERIA TEST SHOULD BE TAKEN WITH CITY'S REPRESENTATIVE PRESENT. A MINIMUM OF 2 SAMPLES PER BLEEDER LINE WILL BE REQUIRED ON TWO CONSECUTIVE DAYS. ALL WATER SAMPLES SHALL THEN BE TAKEN BY THE CITY TO A TESTING LAB. THE CITY SHALL BEAR THE COST OF THE INITIAL LAB TESTING. IF INITIAL BACTERIA TEST FAIL, ALL SUBSEQUENT TESTING SHALL BE AT THE EXPENSE OF THE CONTRACTOR. UPON RECEIPT OF A BACTERIOLOGICAL PASSING REPORT ON NEW WATER MAINS IN WRITING, THE CONTRACTOR SHALL REMOVE SDR 9 TUBING (CTS) BLEEDER LINES AND CORPS FROM WATER MAINS AND INSTALL BRASS PLUGS (SUBSIDIARY TO WORK PERFORMED)
18. ALL FIRE HYDRANTS SHALL BE MUELLER CENTURION (DALLAS STANDARD), OR APPROVED EQUAL AND PAINTED PER NOTE 4 ON SHEET 2 OF 4.
19. FIRE HYDRANTS SHALL BE MOUNTED WITH CENTER OF BARREL SPACED BEHIND BACK OF PROPOSED CURB A MINIMUM OF 5'-6" AND A MAXIMUM DISTANCE OF 8'-0" (FIRE HYDRANT LOCATIONS SHALL BE CLEAR OF PRESENT OR FUTURE SIDEWALKS).
20. FIRE HYDRANTS IN RESIDENTIAL SHALL BE SPACED 600' CENTER TO CENTER MAXIMUM, UNLESS OTHERWISE STATED ON PLANS.
21. FIRE HYDRANTS IN COMMERCIAL AND INDUSTRIAL SHALL BE SPACED 400' CENTER TO CENTER MAXIMUM, UNLESS OTHERWISE STATED IN THE PLANS.
22. CONTRACTOR SHALL FURNISH AND INSTALL APPROPRIATE METER BOXES FOR FIRST TIME SERVICES.
23. ALL 1" AND 2" SERVICE TAPS ON DUCTILE IRON OR PVC SHALL USE STAINLESS STEEL STRAP TAPPING SADDLES WITH IP THREAD EPOXY COATED BOSS.
24. CENTER LINE OF SERVICES IN METER BOX SHALL NOT EXCEED 18" FROM TOP OF SURROUNDING GRADE.
25. ALL 4" AND UP TAPPING SLEEVES SHALL BE FULL CIRCLE, STAINLESS STEEL WITH STAINLESS STEEL BOLTS AND FLANGES, ROMAC BRAND OR APPROVED EQUAL.
26. ALL PRECAST VAULTS AND PRECAST FLOORS USED IN THE INSTALLATION OF LARGE WATER SERVICES WILL MEET DRAWING SPECIFICATIONS.
27. CAST IN PLACE CONCRETE SHALL BE CLASS "F" CONCRETE, EXCEPT FOR CONCRETE USED FOR THRUST BLOCKING, WHICH SHALL BE CLASS "B" CONCRETE
28. THE 3' X 4' ALUMINUM ACCESS HATCH COVER SHALL MEET DRAWING SPECIFICATIONS AND SHALL BILCO TYPE OR APPROVED EQUAL..
29. ONLY DUCTILE IRON PIPE CLASS 52 OR PVC-C900 DR-14 WATER PIPE WILL BE PERMITTED FOR FIRE LINE WATER SERVICE INSTALLATION.
30. DOUBLE CHECK DETECTOR ASSEMBLY DEVICES SHALL BE PROVIDED AND INSTALLED BY THE DEVELOPER
31. THE INSTALLATION OF A 6", 8" OR 12" CLOSED FIRE LINE SERVICE WITH A DOUBLE CHECK DETECTOR DEVICE MAY REQUIRE A DIFFERENT DIMENSION THEN THOSE SHOWN ON THE SPECIFICATIONS.
32. FIRE LINE DOUBLE CHECK DETECTOR ASSEMBLY SHALL BE TESTED AND CERTIFIED BY A TCEQ REGISTERED FIRE LINE TESTER.
33. EMBEDMENT, TRENCH BACKFILL, CONCRETE, AND ASPHALTIC CONCRETE MATERIALS AND THEIR PLACEMENT METHODS SHALL CONFORM TO NCTCOG SPECIFICATIONS FOR MATERIAL FOR CONSTRUCTION METHODS.

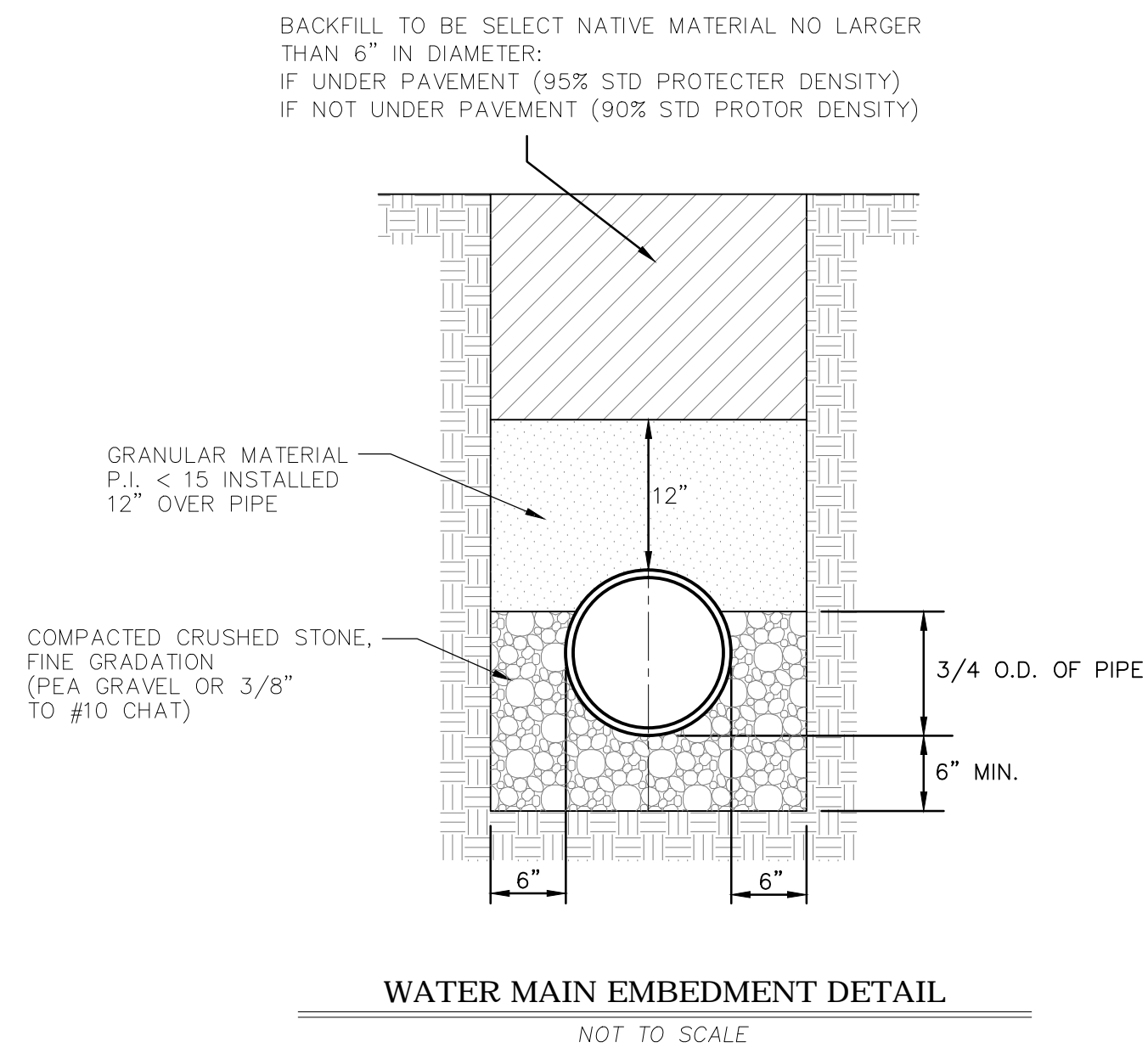
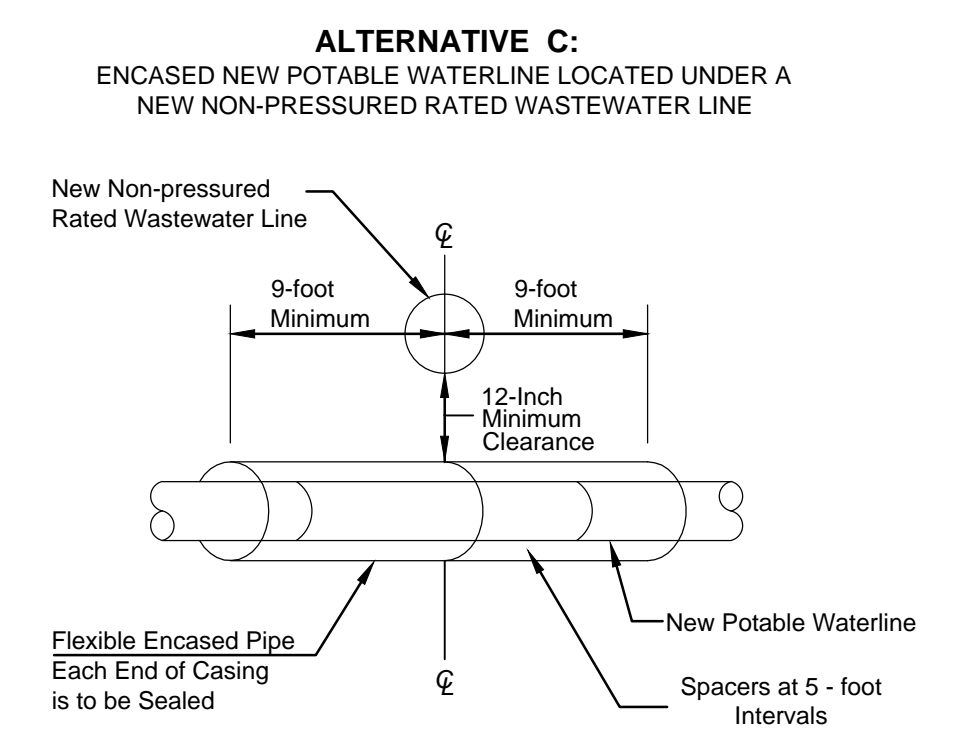
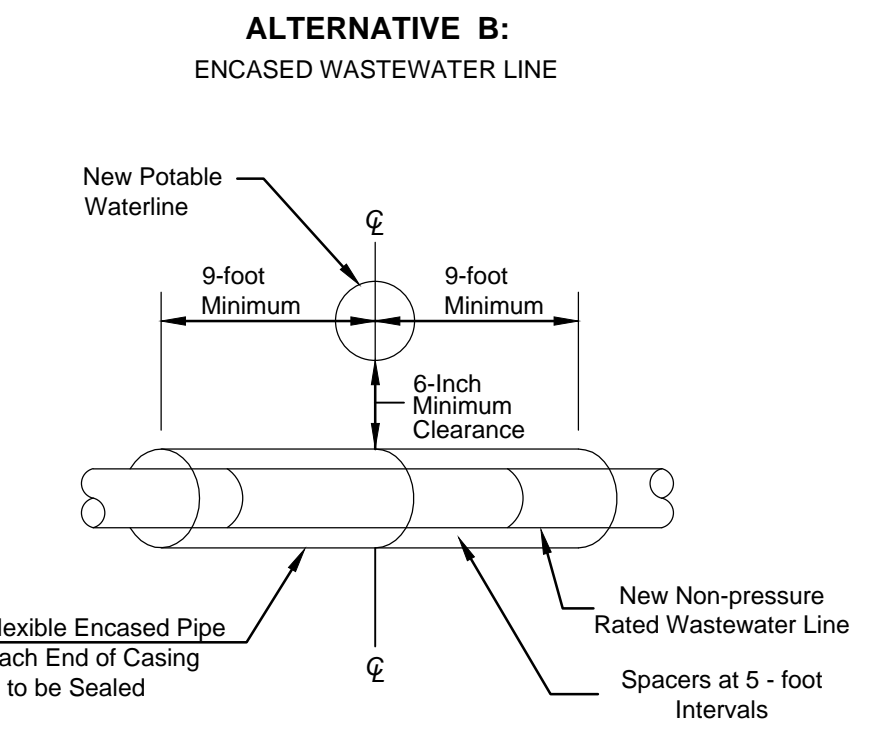
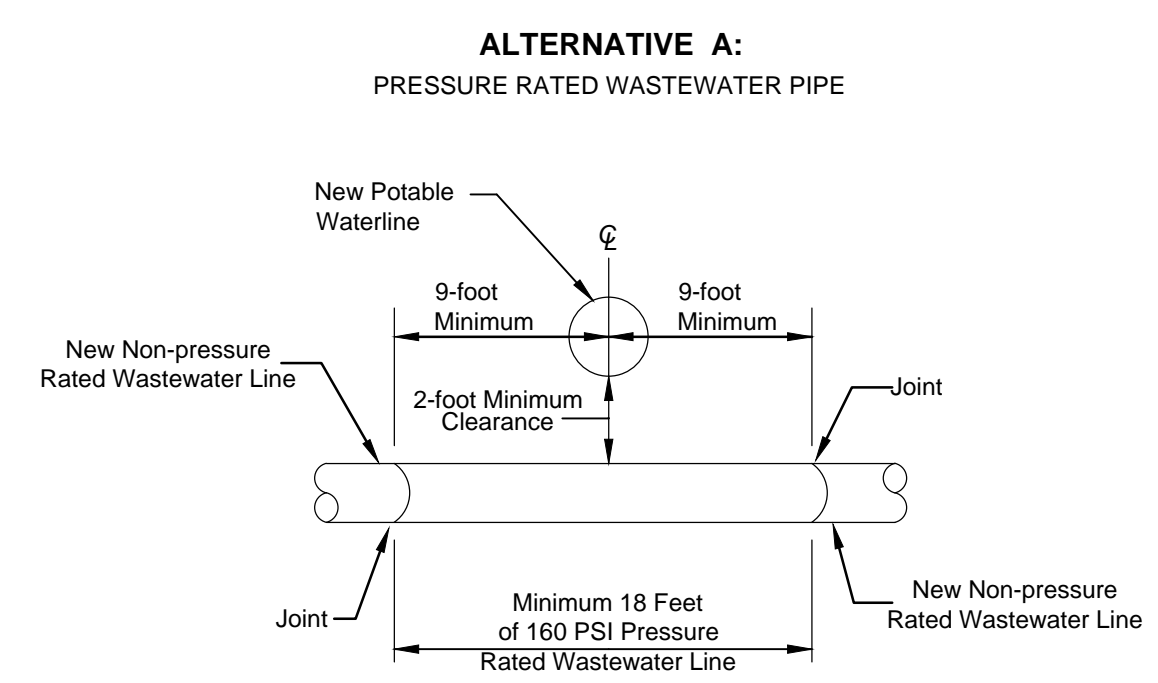


TABLE OF TRENCH WIDTHS				
SIZE OF PIPE IN INCHES DIA.	KIND OF PIPE	EXTERNAL DIAMETER IN INCHES Bc	TRENCH WIDTH Bd IN INCHES	TRENCH WIDTH Bd IN FEET
6"	Ductile or C.I. Water Pipe	6.90	24	2.00
6"	P.V.C. Water Pipe	6.90	24	2.00
8"	Ductile or C.I. Water Pipe	9.05	25	2.09
8"	P.V.C. Water Pipe	9.05	25	2.09
10"	Ductile or C.I. Water Pipe	11.10	27	2.26
10"	P.V.C. Water Pipe	11.10	27	2.26
12"	Ductile or C.I. Water Pipe	13.20	29	2.43
12"	P.V.C. Water Pipe	13.20	29	2.43
16"	Ductile or C.I. Water Pipe	17.40	33	2.75
16"	Prestressed Conc. Lined Cyl. Pipe	21.00	37	3.10
16"	Pretensioned Conc. Lined Cyl. Pipe	20.50	37	3.10
18"	Ductile or C.I. Water Pipe	19.50	36	3.00
18"	Prestressed Conc. Lined Cyl. Pipe	23.50	40	3.33
18"	Pretensioned Conc. Lined Cyl. Pipe	23.00	39	3.25
20"	Ductile or C.I. Water Pipe	21.60	38	3.17
20"	Prestressed Conc. Lined Cyl. Pipe	25.50	42	3.50
20"	Pretensioned Conc. Lined Cyl. Pipe	25.00	42	3.50
24"	Ductile or C.I. Water Pipe	25.80	42	3.50
24"	Prestressed Conc. Lined Cyl. Pipe	30.00	46	3.83
24"	Pretensioned Conc. Lined Cyl. Pipe	29.00	45	3.75
30"	Ductile or C.I. Water Pipe	32.00	48	4.00
30"	Prestressed Conc. Lined Cyl. Pipe	37.00	61	5.00
30"	Pretensioned Conc. Lined Cyl. Pipe	35.00	59	4.92
36"	Ductile or C.I. Water Pipe	38.30	62	5.19
36"	Prestressed Conc. Lined Cyl. Pipe	43.50	68	5.70

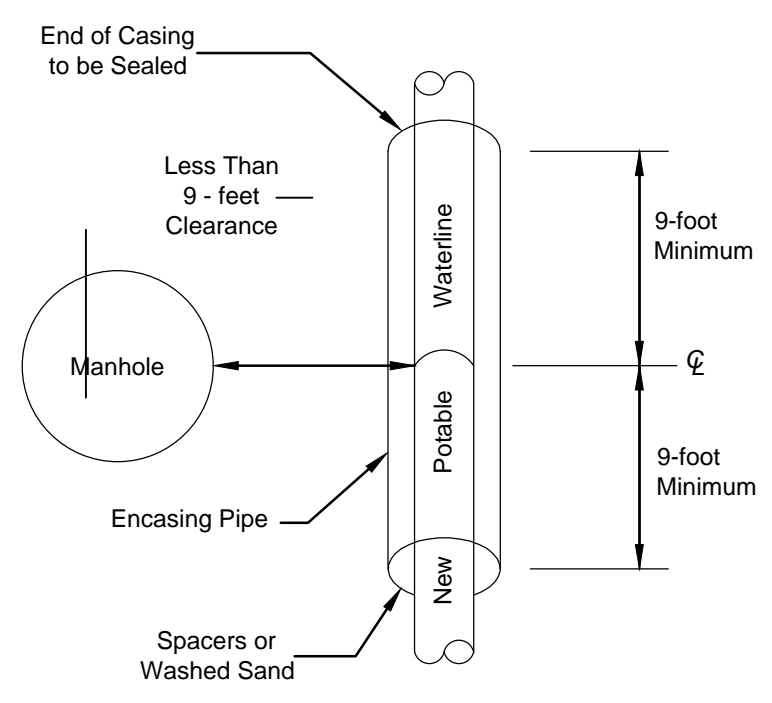
ALL WATER LINES AND WASTEWATER CROSSINGS SHALL CONFORM TO T.C.E.Q. CHAPTER 290 REGULATIONS



- 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.

MANHOLE CLEARANCE



ENCASING PIPE

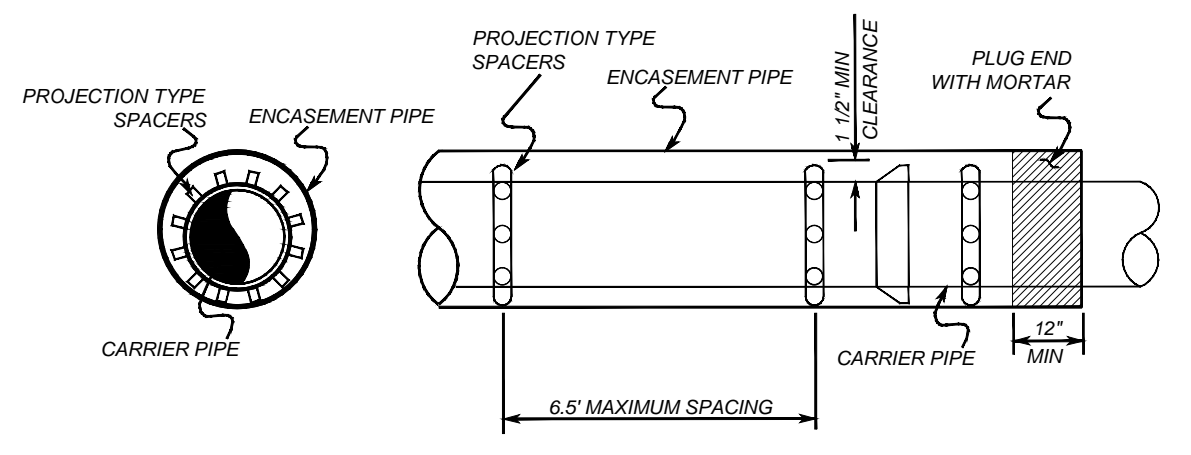
- 150 PSI Pressure Class Pipe
- Minimum 18 Feet Long
- Casing Pipe Diameter To Be Determined For Each Project As Shown on Construction Plans
- Space around Carrier Pipe shall be Supported at Five (5) Foot (or less) Intervals with Spacers.
- Centered on Crossing
- Both Ends Sealed with Cement Grout or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

SPACERS SHALL BE OF PROJECTION TYPE THAT HAS A MINIMUM NUMBER OF PROJECTIONS AROUND THE CIRCUMFERENCE TOTALING THE NUMBER OF DIAMETER INCHES.

SPACERS SHALL USE DOUBLE BACKED TAPE TO FASTEN TIGHTLY ONTO THE CARRIER PIPE SO THAT THE SPACERS DO NOT MOVE DURING INSTALLATION.

SPACERS SHALL HAVE A MINIMUM HEIGHT THAT CLEARS THE CARRIER PIPE BELL.

PLUG ENDS OF ENCASEMENT PIPE WITH MORTAR.



WATER MAIN BORE DETAIL

CARRIER PIPE THRU ENCASEMENT PIPE INSTALLATION DETAIL
SCALE: NONE



Public Works Department
Venus, Texas

Water Standard Details

SHEET 4 OF 4

DRAWN BY	DATE	SCALE	RVSD
J. DAUGHERTY	March 2018	NOT TO SCALE	