

SECTION 5-C DETAILS

CITY OF SACHSE, TEXAS
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DETAILS
WATER DETAILS

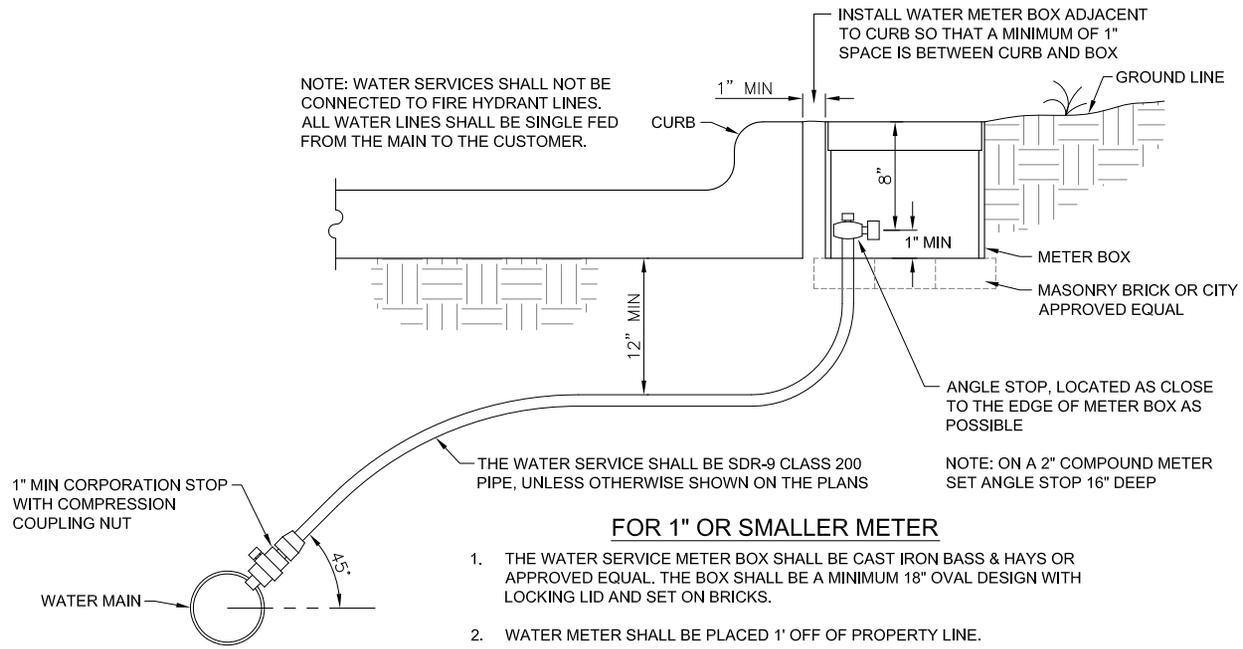
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FOR 1" OR SMALLER METER

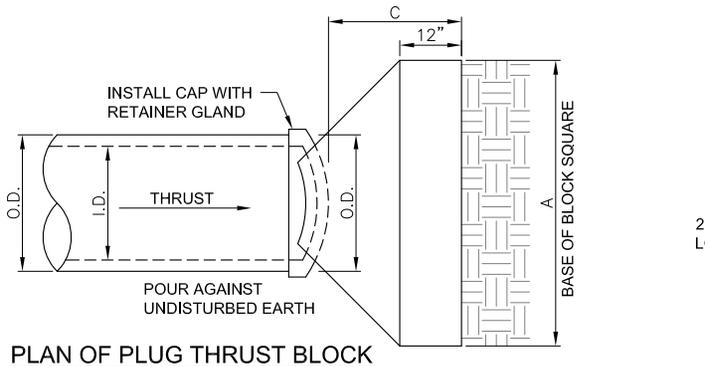
1. THE WATER SERVICE METER BOX SHALL BE CAST IRON BASS & HAYS OR APPROVED EQUAL. THE BOX SHALL BE A MINIMUM 18" OVAL DESIGN WITH LOCKING LID AND SET ON BRICKS.
2. WATER METER SHALL BE PLACED 1' OFF OF PROPERTY LINE.
3. ALL SERVICE TAPS SHALL BE MADE AT 45° ANGLES TO CENTERLINE OF PIPE.

TYPICAL SERVICE CONNECTION WITH METER BOX

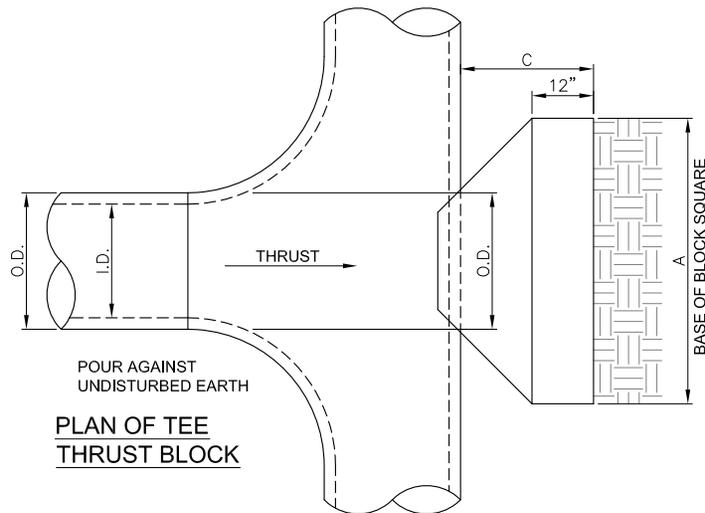
THE WATER SERVICE SHALL BE SDR-9 CLASS 200 PIPE, UNLESS OTHERWISE SHOWN ON THE PLANS	SMITH BLAIR #317 DOUBLE STRAP SADDLE WITH C.C. THREADS	MUELLER CORPORATION STOP	MUELLER ANGLE STOP	BASS & HAYS CAST IRON METER BOX WITH LOCKING LID
1 INCH	1 INCH	B-25008	B-24258	85
2 INCH	2 INCH	B-25008	B-24276	55 A

NOTE:
FOR SERVICE LINES WITH SIZES DIFFERENT THAN SHOWN, SPECIFIC APPROVAL SHALL BE OBTAINED FROM THE CITY ENGINEER.

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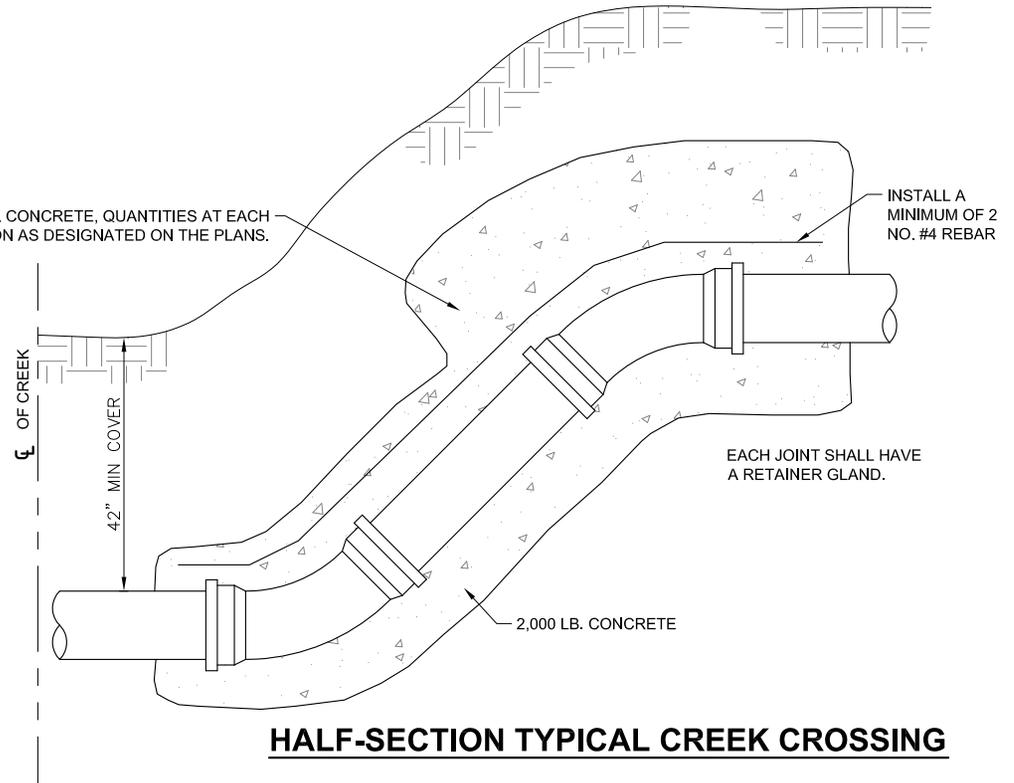
PLAN OF PLUG THRUST BLOCK



PLAN OF TEE THRUST BLOCK

TYPICAL PLUG & TEE THRUST BLOCKS

2,000 LB. CONCRETE, QUANTITIES AT EACH LOCATION AS DESIGNATED ON THE PLANS.



HALF-SECTION TYPICAL CREEK CROSSING

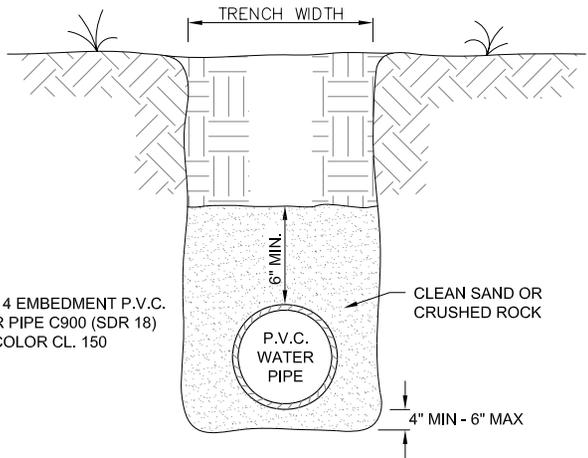
GENERAL NOTES

ALL CALCULATIONS ARE BASED ON TOTAL INTERNAL PRESSURE OF 150 P.S.I. ALLOWABLE SOIL BEARING PRESSURES MUST BE AT LEAST ONE TON PER SQUARE FOOT FOR THE THRUST BLOCKS SHOWN. IN SOILS OF LESSER CAPACITY, INCREASE SIZE AND BEARING AREA PROPORTIONATELY. VOLUMES OF VERTICAL BEND THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED AND THE CORRESPONDING WEIGHT OF THE CONCRETE (AT 4,000# C.Y.) EQUALS THE VERTICAL COMPONENT OF THRUST ON THE VERTICAL BEND. ALL BEARING SURFACES OF THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH. CONCRETE FOR BLOCKING SHALL BE 2,000 LB. CONCRETE. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER BUT SHALL NOT BE LESS THAN THE DIMENSION SHOWN HERE.

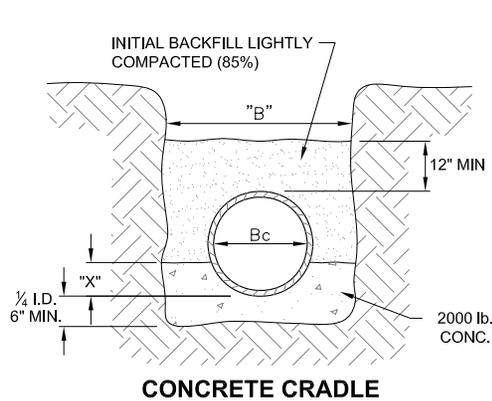
THRUST IN TONS FOR VERTICAL BENDS								
I.D. IN INCHES	ANGLE OF BEND							
	11.25°	15°	22.50°	30°	45°	60°	75°	90°
12	1.90	2.70	3.00	4.50	6.00	8.50	10.10	11.00
14	2.10	3.60	4.00	6.00	8.00	12.20	13.90	14.60
16	2.94	3.90	5.78	7.54	10.66	13.06	14.56	15.08
18	3.72	4.94	7.30	9.54	13.50	16.52	18.42	19.08
20	4.60	6.10	9.02	11.78	16.66	20.40	22.76	23.56
24	6.62	8.78	12.98	16.96	23.98	29.38	32.76	33.92
30	10.34	13.72	20.28	26.52	37.50	45.92	51.22	53.02

TEES & PLUGS			
I.D. IN INCHES	A FT	C FT	THRUST IN TONS
12	2.91	1.17	10.50
14	3.39	1.37	14.50
16	3.87	1.57	15.08
18	4.37	1.77	19.09
20	4.86	1.97	23.56
24	5.82	2.36	33.93
30	7.28	2.95	53.01

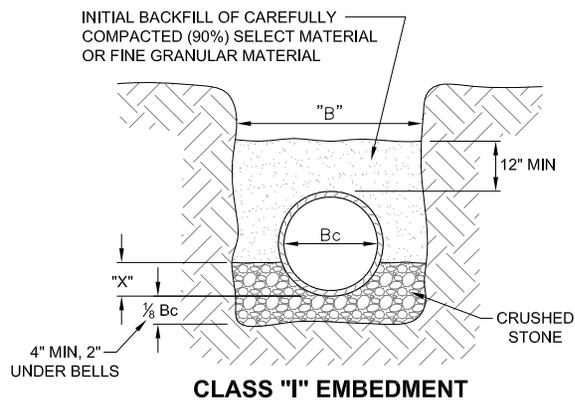
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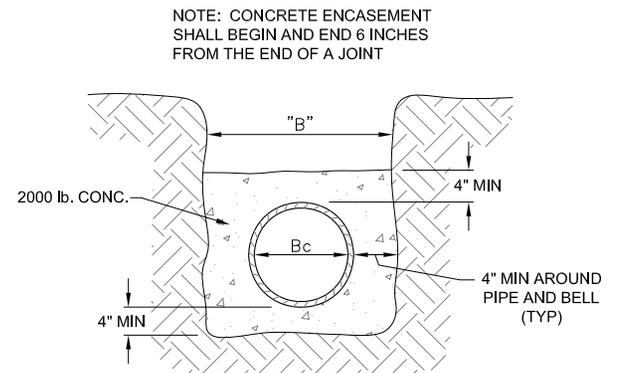
TYPICAL BACKFILL OF WATER MAIN



CONCRETE CRADLE



CLASS "I" EMBEDMENT



CONCRETE ENCASEMENT

EMBEDMENT DETAILS

TABLE OF QUANTITIES OF MATERIALS IN CUBIC YARDS PER 100 LINEAR FEET

INSIDE DIAMETER OF PIPE	APPROX. OUTSIDE DIAMETER OF PIPE	"X" IS A MINIMUM DEPTH	"B" TRENCH WIDTH FOR COMPUTATION OF QUANTITIES	CONCRETE		CRUSHED STONE FOR CLASS "I" EMBEDMENT
				FOR EMBEDMENT	FOR ENCASEMENT	
REINFORCED CONCRETE CYLINDER PIPE						
14"	17.25"	2.53"	34"	6.91	16.07	5.16
16"	19.38"	2.84"	36"	7.50	17.76	5.64
18"	21.78"	3.19"	38"	8.11	19.52	6.16
24"	27.75"	4.06"	44"	9.97	24.90	9.28

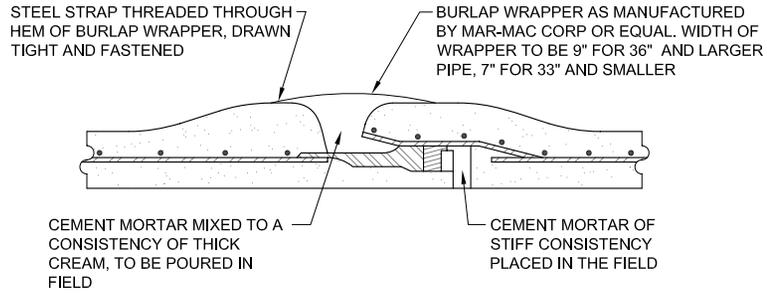
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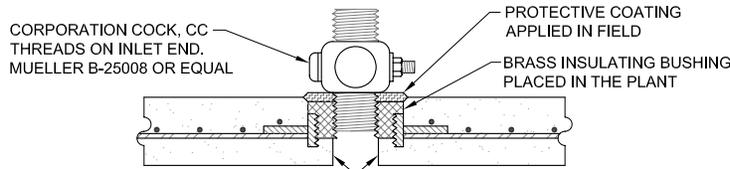
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Note:
Provide 1" minimum thickness concrete or cement mortar coating in the field for the protection of all exposed steel such as flanges, caulked joints, threaded outlets, closures, etc. The cement mortar used shall consist of one part Portland cement to two and one-half parts of fine, sharp (plaster) sand where shown. Coating is to be reinforced with wire mesh.



STANDARD RUBBER GASKET JOINT

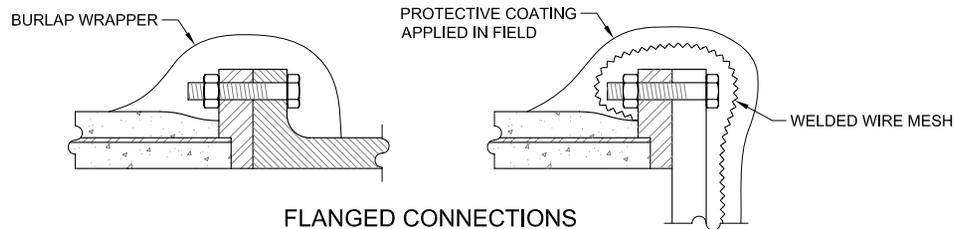
NOTE: ALL CLOSURE SECTIONS SHALL BE FABRICATED WITH HAND HOLES TO ALLOW WIPING INSIDE OF JOINTS AFTER CLOSURE IS IN PLACE



NOTE: IF CORPORATION COCK IS NOT PROVIDED IN FIELD, THEN STEEL PLUG SHALL BE COVERED WITH CEMENT MORTAR

LINE IN PLANT TO COVER ALL EXPOSED STEEL

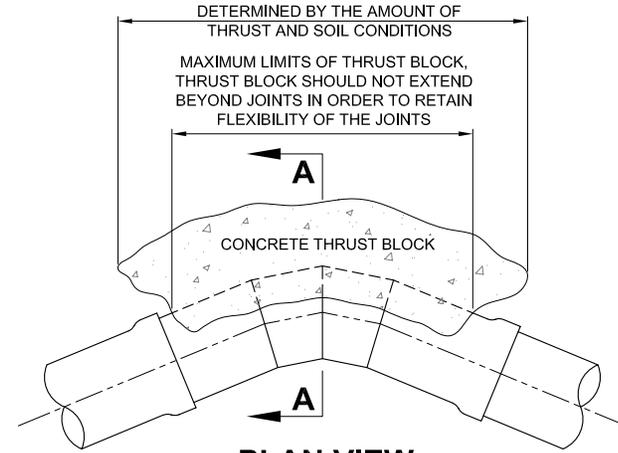
THREADED CONNECTION



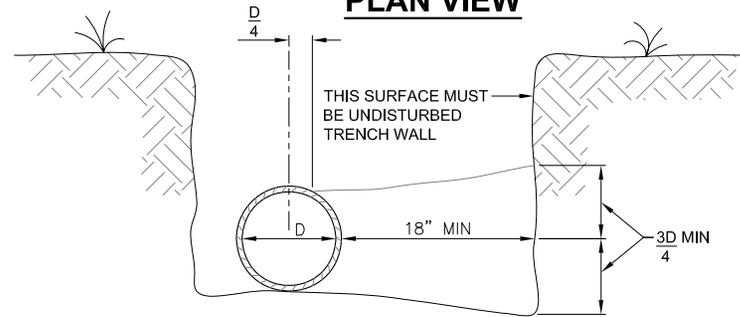
FLANGED CONNECTIONS

REINFORCED CONCRETE CYLINDER PIPE DETAILS

Note:
Any surface receiving a cement mortar coating shall be thoroughly clean and wetted with water just prior to placing the cement mortar coating. After placement, care shall be taken to prevent cement mortar coating from drying out too rapidly by covering with damp earth or burlap. Cement mortar coating shall not be applied during freezing weather.



PLAN VIEW



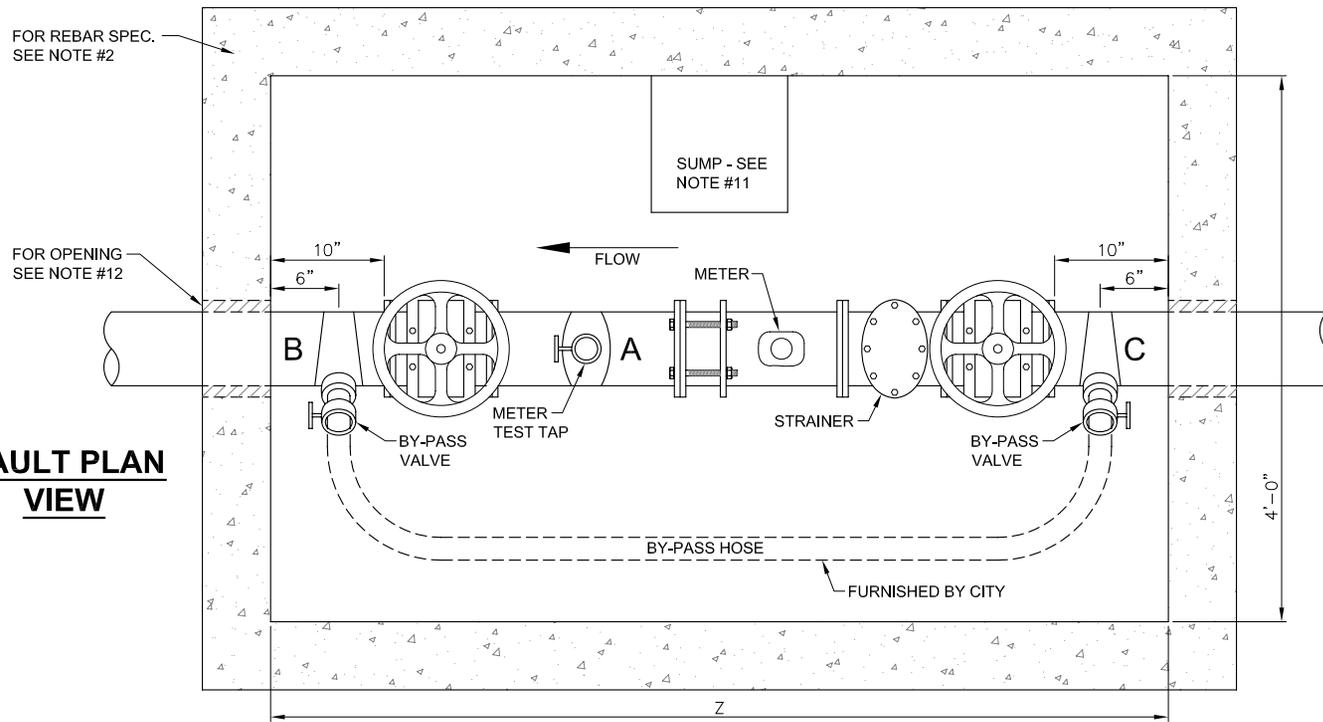
SECTION A-A

PROVIDE ADEQUATE BLOCKING AT TEES, WYES, BENDS, DEAD ENDS, ETC. TO COUNTERACT THE RESULTANT FORCE DUE TO INTERNAL PRESSURES

THRUST BLOCK DETAIL

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VAULT PLAN VIEW



METER VAULT & BY-PASS SPECIFICATIONS

1. Notify the Public Works Department (972-495-7600) prior to construction of vault or by-pass assembly.
2. The meter vault can be either poured in place or prefabricated. Concrete shall be 6" thick and be 3,000 P.S.I. reinforced with #4 steel bars on 12" centers each way if the vault is poured in place. Prefabricated vaults shall be 4" thick and be 4,500 P.S.I. concrete with #4 steel bars on 8" centers. These are minimum specifications.
3. The vault will not be put in any drive or parking areas and must be located in a utility easement.
4. A drawing with the exact measurements of the meter vault and by-pass will be given to the contractor for a 3", 4" and 6" meter.
5. The vault lid shall be a Bilco Lid, Type Q-4 single leaf design. Angle frame is 1/4" steel with strap anchors bolted to the exterior. The leaf is 1/4" steel diamond pattern plate, pivoting on torsion bars for easy operation. The minimum live load capacity is 150 lbs. per square foot. The size of the lid is 3' by 3'.
6. The lid shall be painted with 43-38 Tnemec diffused aluminum paint or approved equal.
7. Contractor shall make 3 taps inside the vaults. Tap "A" must be at least two pipe diameters downstream of meter and must be 2". Taps "B" & "C" must be made at approximately 45° angle on each end of the piping before it intersects the wall. Smith Blair 317 nylon coat or approved equal service saddles, brass nipples and ball valves.
8. The strainer, meter and flexible coupling will be provided and installed by the City at the contractor's expense.
9. The strainer, meter and flexible coupling will not be set until the meter vault and taps are accepted by the City of Sachse Public Works Department.
10. The gate valves are required to be Mueller no. R-2360-6 flanged resilient seat gate valves.
11. The bottom of the meter vault must be 6" thick concrete with #4 steel bars on 12" centers both ways and have a 4" fill sand cushion underneath. A sump 4" deep and 12" in diameter shall be installed to one side of the center of the bottom slab. If a precast vault is to be used, a layer of Ram-Nek shall be installed between the walls and bottom.
12. The contractor shall have a choice of either having a Link-Seal wall sleeve model WE-8-32-5-6 for a 4" pipe, WS-1036-5-6 for 6" or WS-12-37-5-6 for 8" pipe, cast in the vault or have the vault wall cored before installation of vault and piping. In either case, a Link-Seal model no. LB-400-C must be used to seal the annular space between the pipe and wall opening. Breaking of the wall with a jackhammer is not permitted.
13. There will be a concrete support under each valve.
14. Depth of vault shall be a minimum of 4'-6".

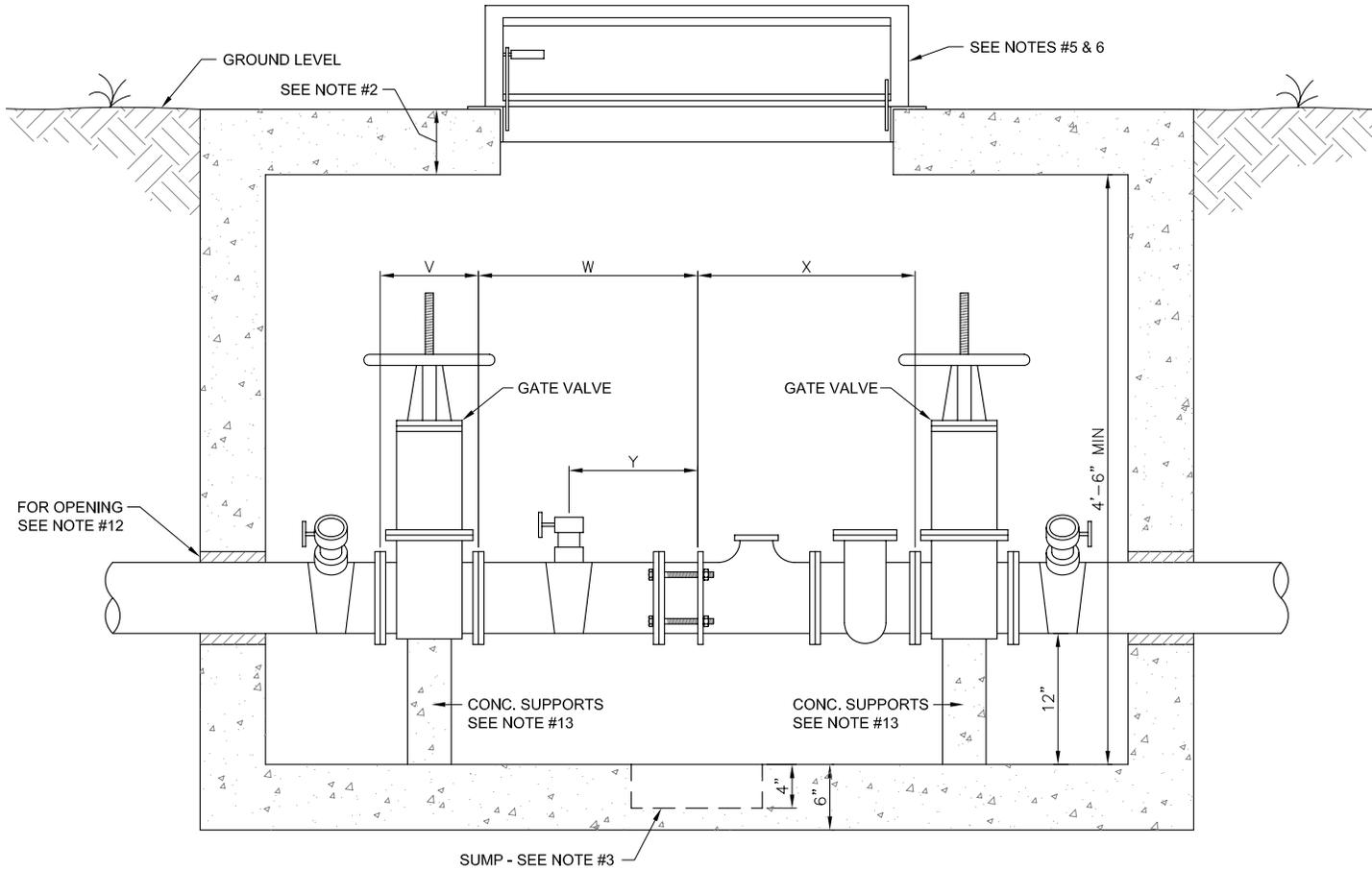
DIMENSION FOR 3", 4" & 6" D.C.V.

METER VAULT SIZES			
DIMENSION	3"	4"	6"
V	8"	9"	10.5"
W	15"	20"	18"
X	20"	23"	27"
Y	9"	9"	12"
Z	6'-1"	7'-0"	7'-5"

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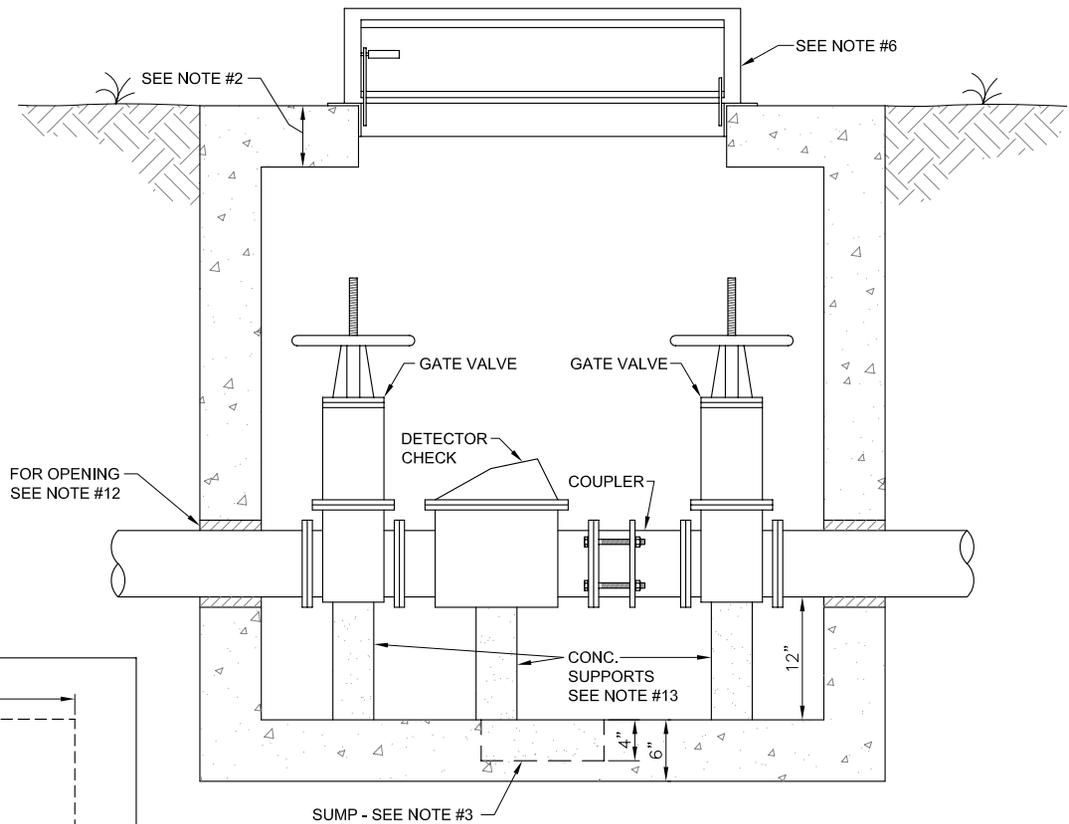
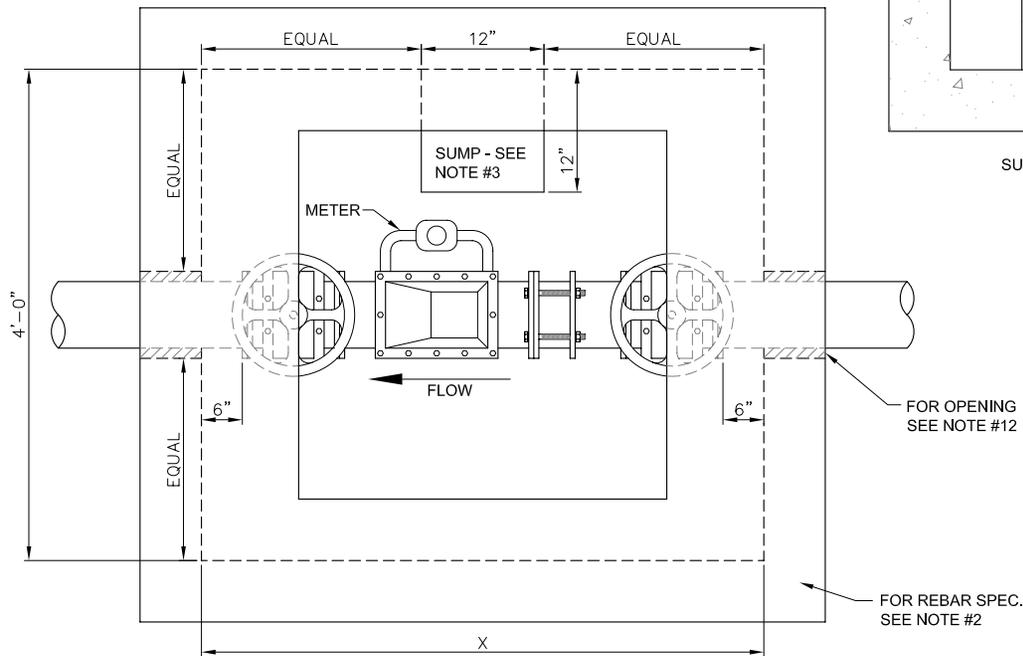


VAULT SECTION VIEW

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DIMENSION FOR 4", 6" & 8" D.C.V.

CHECK VAULT SIZES			
DIMENSION	4"	6"	8"
X	4'-7"	5'-4"	5'-8"

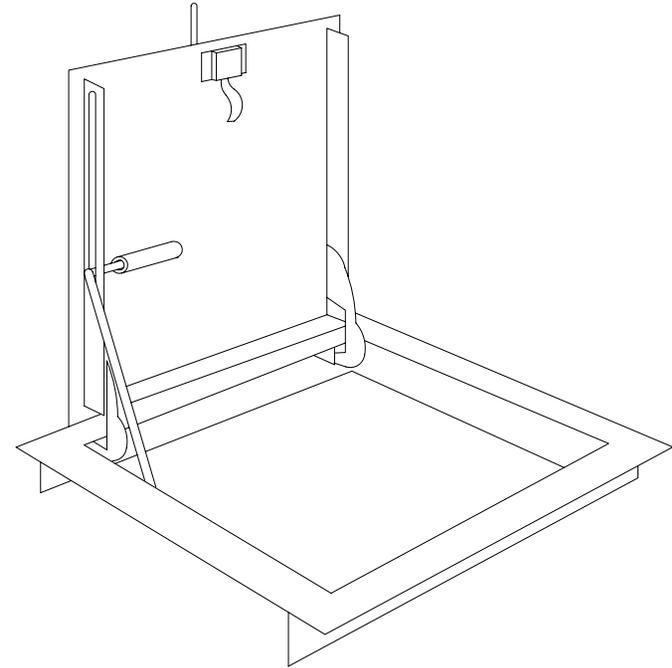


DETECTOR CHECK VAULT

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DETECTOR CHECK VAULT NOTES

1. Notify the Public Works Department (972-495-7600) prior to construction of vault or by-pass assembly.
2. The vault can be either poured in place or prefabricated. Concrete shall be 6" thick and be 3,000 P.S.I. reinforced with #4 steel bars on 12" centers each way if the vault is poured in place. Prefabricated vaults shall be 4" thick and be 4,500 P.S.I. concrete with #4 steel bars on 8" centers. These are minimum specifications.
3. The bottom of the vault shall be 6" thick concrete with #4 steel bars on 12" centers both ways. A sump 4" deep and 12" in diameter shall be installed to one side in the center of the bottom slab. A 4" fill sand cushion shall be installed under the slab. If a precast vault is to be used, a layer of Ram-Nek shall be installed between the walls and bottom.
4. The vault will not be put in any drive or parking areas and must be located in a utility easement.
5. A drawing with the exact measurements of the vault shall be given for the detector check assembly.
6. The vault lid shall be a Bilco Lid, Type Q-4 single leaf design. Angle frame is 1/4" steel with strap anchors bolted to the exterior. The leaf is 1/4" steel diamond pattern plate, pivoting on torsion bars for easy operation. The minimum live load capacity is 150 lbs. per square foot. The size of the lid is 3' by 3'.
7. The lid shall be painted with 43-38 Tnemec diffused aluminum paint or approved equal.
8. All piping inside the vault shall be ductile iron with flanged fittings.
9. The detector check shall be an Ames Series 3000SS (or approved equal) with a red painted exterior, equipped with a bypass meter. The meter will be furnished by the City at the contractor's expense. A Smith Blair flanged adapter coupling will also be furnished by the City at the contractor's expense.
10. The gate valves shall be Mueller no. R-2360-6. Outside stem and yoke shall have an Underwriter's Laboratory listing.
11. All piping inside the vault and the vault itself shall have to be approved by the City of Sachse, Public Works Department.
12. The contractor shall have a choice of either having a Link-Seal wall sleeve model WE-8-32-5-6 for a 4" pipe, WS-1036-5-6 for 6" or WS-12-37-5-6 for 8" pipe, cast in the vault or have the vault wall cored before installation of vault and piping. In either case, a Link-Seal model no. LB-400-C must be used to seal the annular space between the pipe and wall opening. Breaking of the wall with a jackhammer is not permitted.
13. There will be a concrete support under each valve and under the detector check.
14. Depth of vault shall be a minimum of 4'-6".



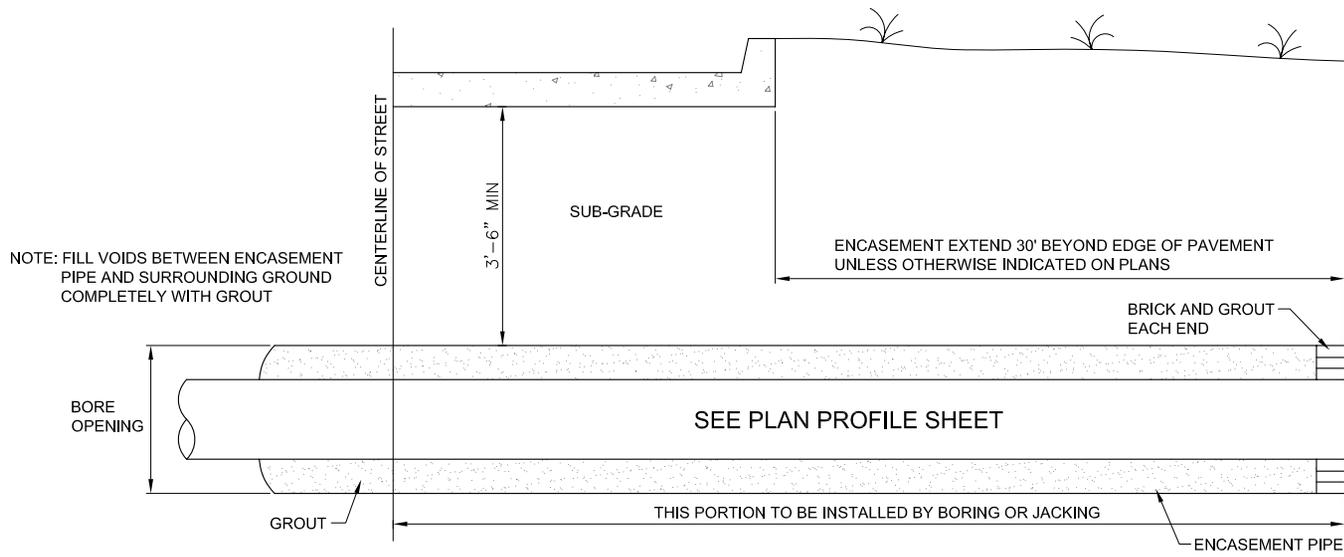
BILCO LID

GENERAL NOTES

1. All water lines shall be rubber gasket pipe only.
2. All cast iron fittings shall be mechanical joint for pvc water pipe.
3. All water mains shall have the following minimum cover or sufficient cover to clear other utilities:

6" and 8" pipe	-	42" cover
12" pipe	-	48" cover
4. Fire hydrants shall be placed on same side of the street with water main, when possible. The location is to be between the back of curb and the sidewalk area. Locking pipe fitting shall be used to form a connected unit.

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NOTE: FILL VOIDS BETWEEN ENCASMENT PIPE AND SURROUNDING GROUND COMPLETELY WITH GROUT

ENCASMENT EXTEND 30' BEYOND EDGE OF PAVEMENT UNLESS OTHERWISE INDICATED ON PLANS

BRICK AND GROUT EACH END

SEE PLAN PROFILE SHEET

THIS PORTION TO BE INSTALLED BY BORING OR JACKING

ENCASMENT PIPE

HALF-SECTION OF TYPICAL HIGHWAY CROSSING

NOTE: ENCASMENT PIPE MAY BE ELIMINATED FOR CITY STREETS PROVIDED PIPE IS DUCTILE IRON

SPECIFICATIONS FOR POLYVINYL CHLORIDE (PVC) WATER PIPE

UNPLASTICIZED POLYVINYL CHLORIDE (PVC) WATER PIPE SHALL MEET OR EXCEED REQUIREMENTS OF AWWA C900 PVC PIPE WITH CAST IRON OUTSIDE DIMENSIONS. PIPE SHALL BE LISTED BY UNDERWRITER LABORATORIES AND SHALL BE APPROVED FOR USE IN CITIES AND TOWNS OF THE STATE OF TEXAS BY THE STATE BOARD OF INSURANCE.

PVC WATER PIPE SHALL BE FURNISHED WITH A RUBBER RING AT EACH JOINT AND IN INTEGRAL THICKENED BELL AS A PART OF EACH JOINT. THE PIPE CLASS SHALL BE A MINIMUM CLASS 150 DR 18 FOR 8 INCH AND LARGER PIPE, WHICH REFERS TO THE MAXIMUM HYDROSTATIC PRESSURE IN NORMAL OPERATIONS. LAYING LENGTHS SHALL BE 20 FEET +/- INCH. PIPE AND FITTINGS MUST BE ASSEMBLED WITH A NONTOXIC LUBRICANT.

FITTINGS FOR PVC WATER PIPE SHALL BE GRAY IRON OR DUCTILE IRON AND AMERICAN MADE. MECHANICAL JOINT TYPE FITTING WITH RETAINER JOINT GLANDS SHALL BE CLASS 150 IN ACCORDANCE WITH LATEST AWWA STANDARDS (COMPACT FITTINGS ACCEPTED).

UNLESS OTHERWISE SPECIFIED ON PLANS OR SHOWN IN PROFILES, PVC WATER PIPE SHALL BE INSTALLED TO CLEAR ALL UTILITY LINES AND SHALL HAVE THE FOLLOWING MINIMUM COVER BELOW THE LOWEST PROPERTY LINE GRADE ON THE STREET

6" & 8" PIPE - 42" COVER
12" PIPE - 48" COVER

NORMAL SIZE	PIPE DIMENSIONS	
	OD	DR 18 MIN. WALL THICKNESS
6	6.90	0.383
8	9.05	0.503
10	11.10	0.617
12	13.20	1.733

ROCKWELL 317 NYLON COATED DOUBLE STRAP STAINLESS STEEL SADDLES SHALL BE USED FOR MAKING 2" OR SMALLER TAPS.

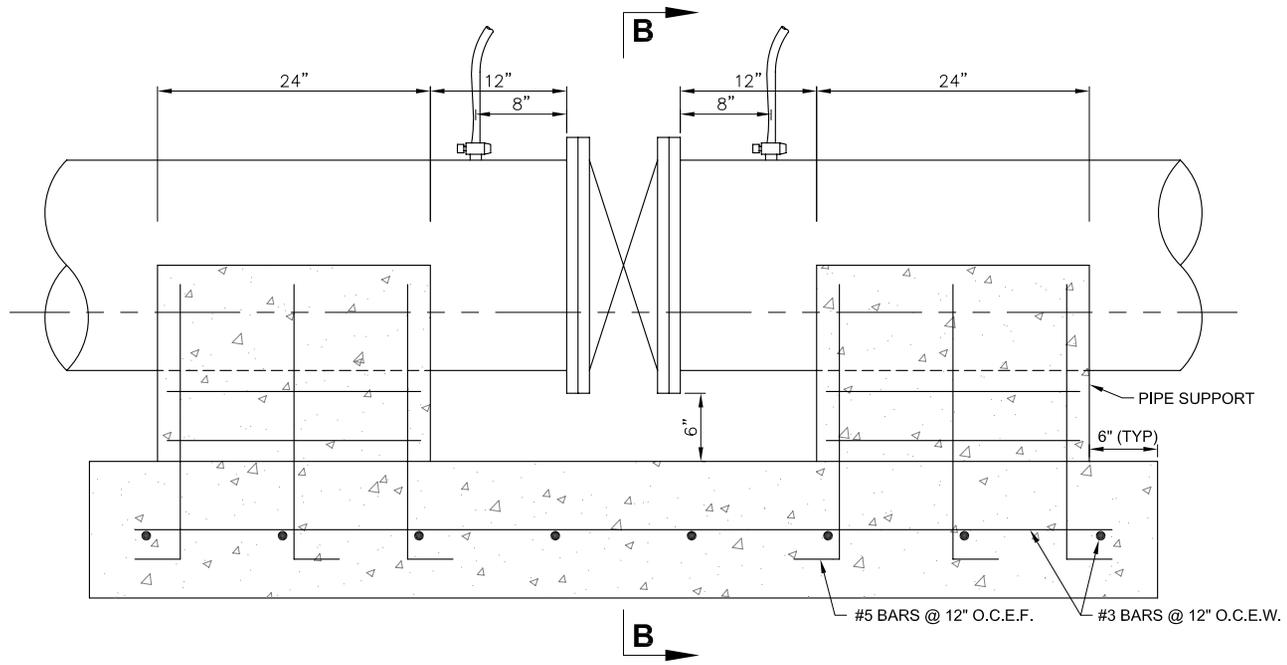
MINIMUM PIPE DIAMETER IS TO BE 6" ON ALL PIPE.

NOTE: FOR WATER PIPES OVER 12" IN DIAMETER, SPECIFIC APPROVAL, SPECIFICATIONS AND PRESSURE CLASS SHALL BE MADE BY THE CITY PRIOR TO ITS USE IN THE SYSTEM.

NO DIRECT TAPPING WILL BE ALLOWED ON SEWER LINES. ALL SEWER SERVICES SHALL BE PROVIDED AND MADE WITH A SADDLE.

ALL WATER LINES SHALL BE BLUE IN COLOR.
ALL SEWER LINES SHALL BE GREEN IN COLOR.

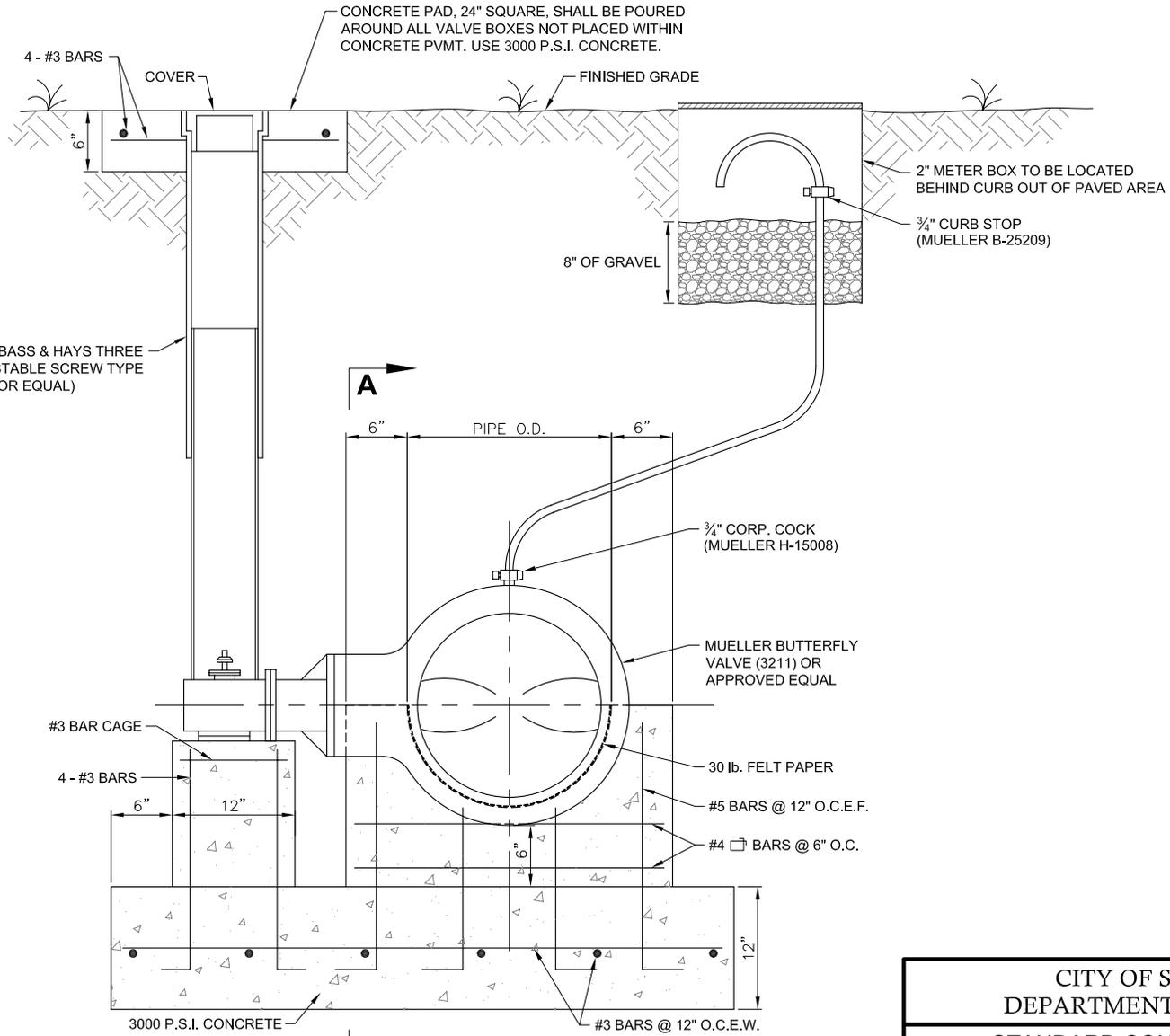
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SECTION A-A

BUTTERFLY VALVE DETAIL

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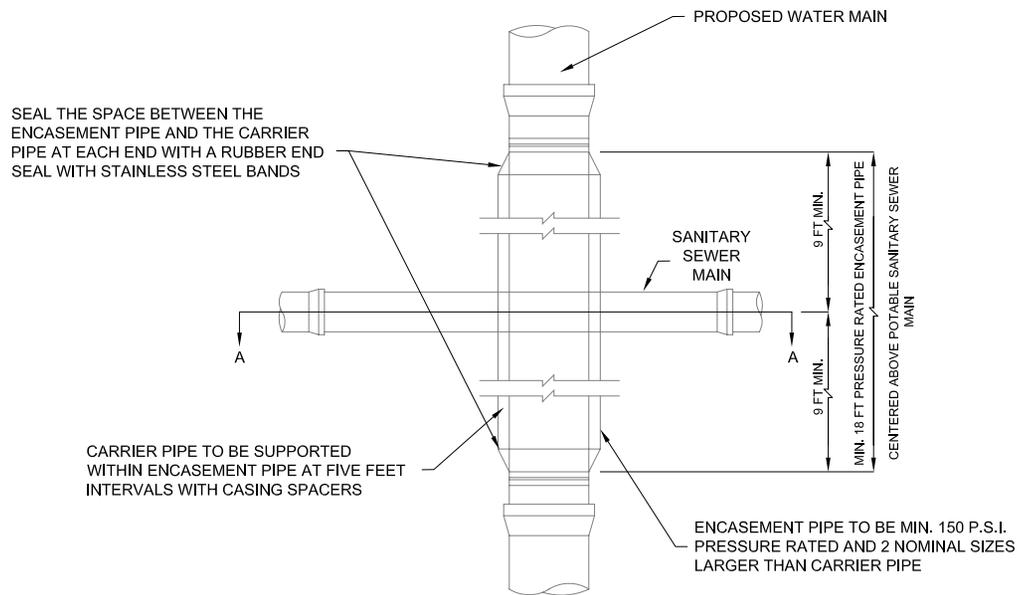


SECTION B-B

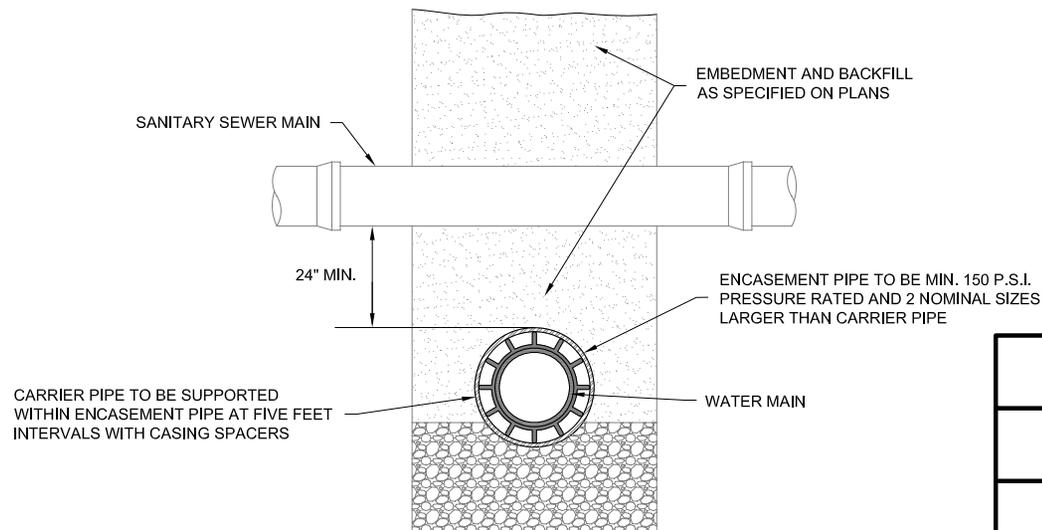
BUTTERFLY VALVE DETAIL

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SECTIONAL PLAN VIEW



SECTION A-A

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