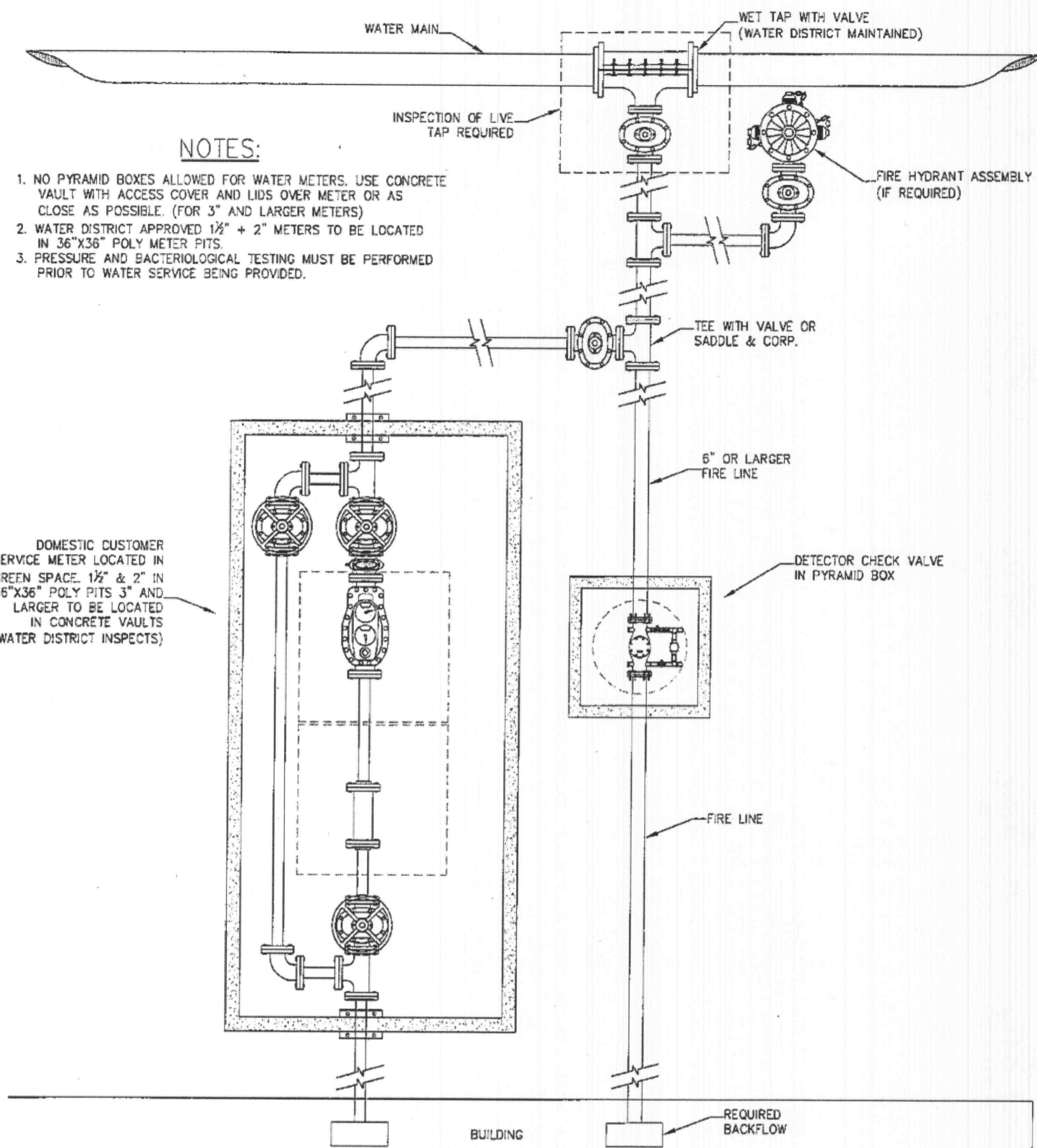


# WATER LINE NOTES

- ALL MATERIALS AND METHODS OF CONSTRUCTION FOR WATER MAINS TO MEET REQUIREMENTS OF THE ST. CHARLES COUNTY PUBLIC WATER SUPPLY DISTRICT NO. 2 "WATER DISTRIBUTION SYSTEM SPECIFICATIONS".
- WATER MAINS SHALL BE POLY VINYL CHLORIDE (PVC) CLASS 200, SDR 21 PIPE CONFORMING TO A.S.T.M. SPECIFICATION D2241. THE PIPE SHALL BE PRESSURE RATED FOR A HYDROSTATIC WORKING PRESSURE OF 200 PSI AT 73.4 DEGREES F AND SHALL MEET ALL APPLICABLE REQUIREMENTS AS SET FORTH UNDER COMMERCIAL STANDARD (CS) 256-63.
- DUCTILE IRON PIPE MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL THE REQUIREMENTS OF U.S.A. STANDARD A2151 (A.W.W.A. C-151-65). THE PIPE SHALL BE FURNISHED WITH MECHANICAL, PUSH ON, OR FLANGE JOINTS AS REQUIRED. THE INTERIOR SURFACE OF PIPE SHALL BE COATED WITH A CEMENT-MORTAR LINING IN ACCORDANCE WITH U.S.A. STANDARD A 21.4 (A.W.W.A. C 104). AFTER DRYING, THE CEMENT LINING SHALL BE SEAL COATED WITH SIMILAR A.W.W.A. APPROVED BITUMINOUS VARNISH. ALL FITTINGS AND BENDS SHALL BE CONSTRUCTED OF CAST OR DUCTILE IRON.
- WATER MAIN TRACER TAPE TO BE INSTALLED WITH ALL WATER MAIN AND SHALL CONSIST OF THREE INCH WIDE TAPE MADE OF BONDED LAYER PLASTIC WITH A METALLIC FOIL CORE. TAPE SHALL BE "TERRA TAPE D" AS MANUFACTURED BY THE GRIFFOLYN COMPANY OF HOUSTON, TEXAS, OR APPROVED EQUAL.
- WATER MAIN LOCATOR WIRE SHALL BE INSTALLED WITH ALL WATER MAIN, FITTINGS, AND VALVE INSTALLATION AND SHALL CONSIST OF A STANDARD ELECTRIC SERVICE WIRE, A SINGLE NO. 12 U.L. APPROVED COPPER WIRE OF THE SOLID OR STRAND TYPE WITH INSULATION FOR 600 VOLTS.
- ALL VALVES FOR EXTERIOR USE SHALL BE BURIED GATE VALVES WITH A VALVE BOX AND TWO INCH SQUARE NUT ATTACHMENT FOR MANUAL OPERATION WITH STANDARD VALVE WRENCH. GATE VALVES SHALL BE IRON BODIED WITH BRASS OR BRONZE MOUNTED DOUBLE DISC GATE. GATE VALVES SHALL BE OF THE NON-RISING STEM TYPE, OPENED BY TURNING COUNTER-CLOCKWISE. THE VALVE STEM SHALL HAVE DOUBLE "O" RING SEALS AND TERMINATE AT TOP WITH TWO INCH SQUARE NUT. GATE VALVE CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE LATEST GOVERNING SPECIFICATIONS OF THE A.S.T.M. AND A.W.W.A. ALL GATE VALVES FOR USE SHALL BE "MUELLER" OR APPROVED EQUAL.
- VALVE BOXES FOR USE SHALL BE THE SCREW-TYPE, EXTENSION SLEEVE KIND, OR P.V.C. PIPE. ALL BOXES SHALL BE FITTED WITH A RECESSED COVER HAVING THE WORD "WATER" CAST IN THE TOP.
- FIRE HYDRANTS SHALL BE MUELLER "CENTURION" OR THE AMERICAN DARLING MODEL NO. "B-84-B". HYDRANTS SHALL BE TRAFFIC MODEL TYPE WITH A WORKING PRESSURE OF 150 PSI IN FULL COMPLIANCE WITH A.W.W.A. STANDARD SPECIFICATIONS C-502 OF THE LATEST REVISION. HYDRANTS TO BE THREE-WAY WITH TWO HOSE CONNECTIONS AND ONE PUMPER CONNECTION AND SHALL HAVE 5 1/4" VALVE OPENINGS. HYDRANTS TO BE YELLOW IN COLOR.
- CONCRETE FOR THRUST BLOCKING AT BENDS, TEES, VALVES, HYDRANTS, ETC., SHALL BE 3,500 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
- BEFORE WATER MAINS SHALL BE ACCEPTED AND PUT INTO SERVICE THEY SHALL BE TESTED FOR TWO HOURS ON EACH SEGMENT BETWEEN END POINTS AT A TEST PRESSURE OF AT LEAST 50% IN EXCESS OF NORMAL MAXIMUM OPERATING PRESSURE, NOT TO EXCEED 200 PSI. WATER MAINS SHALL BE STERILIZED AND FLUSHED IN ACCORDANCE WITH ST. CHARLES COUNTY PUBLIC WATER SUPPLY DISTRICT NO. 2 "WATER DISTRIBUTION SYSTEM SPECIFICATIONS".
- ALL WATER LINES AND SERVICE LINES SHALL HAVE A MINIMUM OF 42" OF COVERAGE.
- VERTICAL CLEARANCE BETWEEN SEWERS AND WATER MAINS SHALL BE A MINIMUM OF 2' - 0".

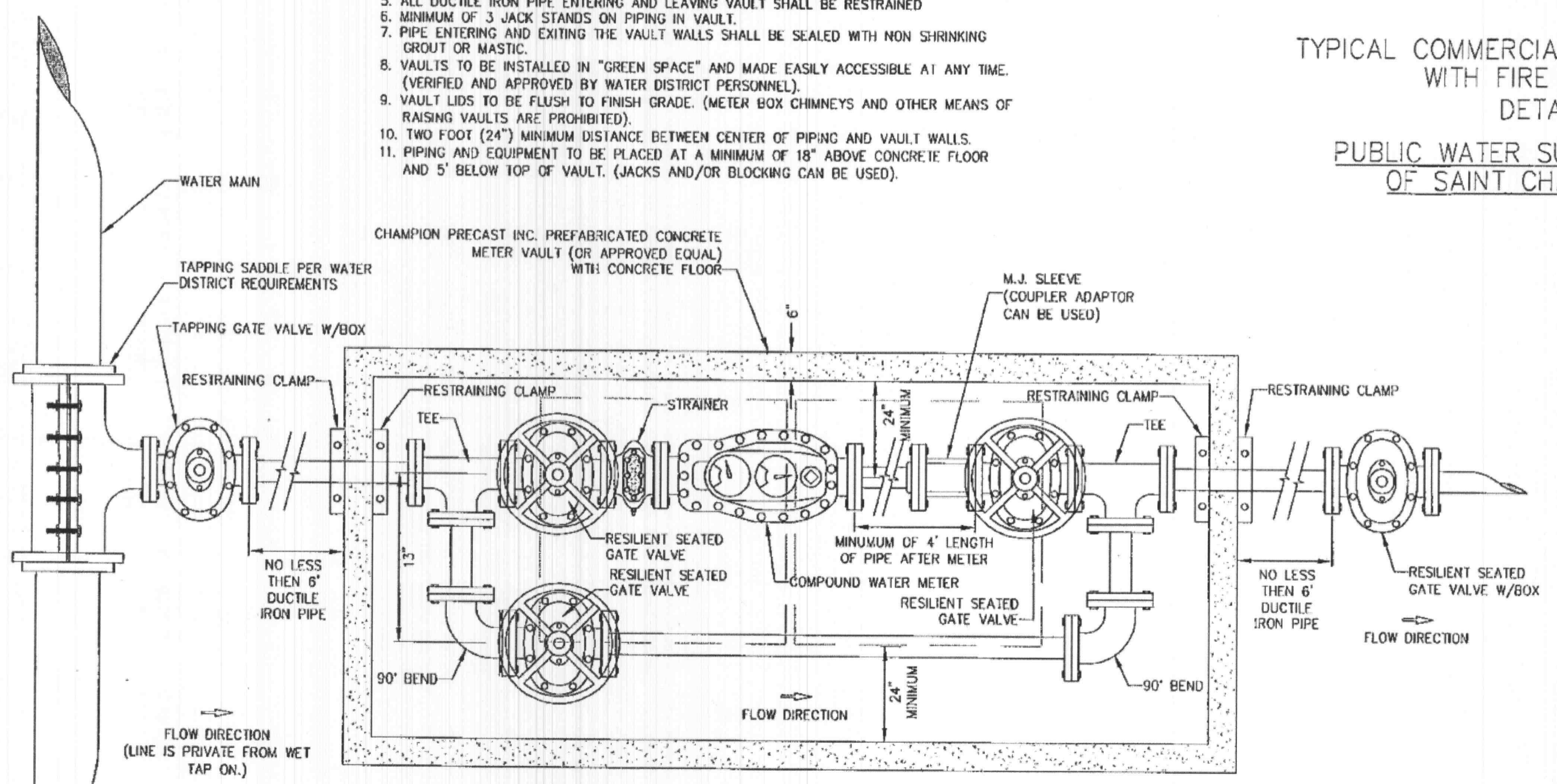


**NOTES:**

- NO PYRAMID BOXES ALLOWED FOR WATER METERS. USE CONCRETE VAULT WITH ACCESS COVER AND LIDS OVER METER OR AS CLOSE AS POSSIBLE (FOR 3" AND LARGER METERS)
- WATER DISTRICT APPROVED 1 1/2" x 2" METERS TO BE LOCATED IN 36"x36" POLY METER PITS.
- PRESSURE AND BACTERIOLOGICAL TESTING MUST BE PERFORMED PRIOR TO WATER SERVICE BEING PROVIDED.

**NOTES:**

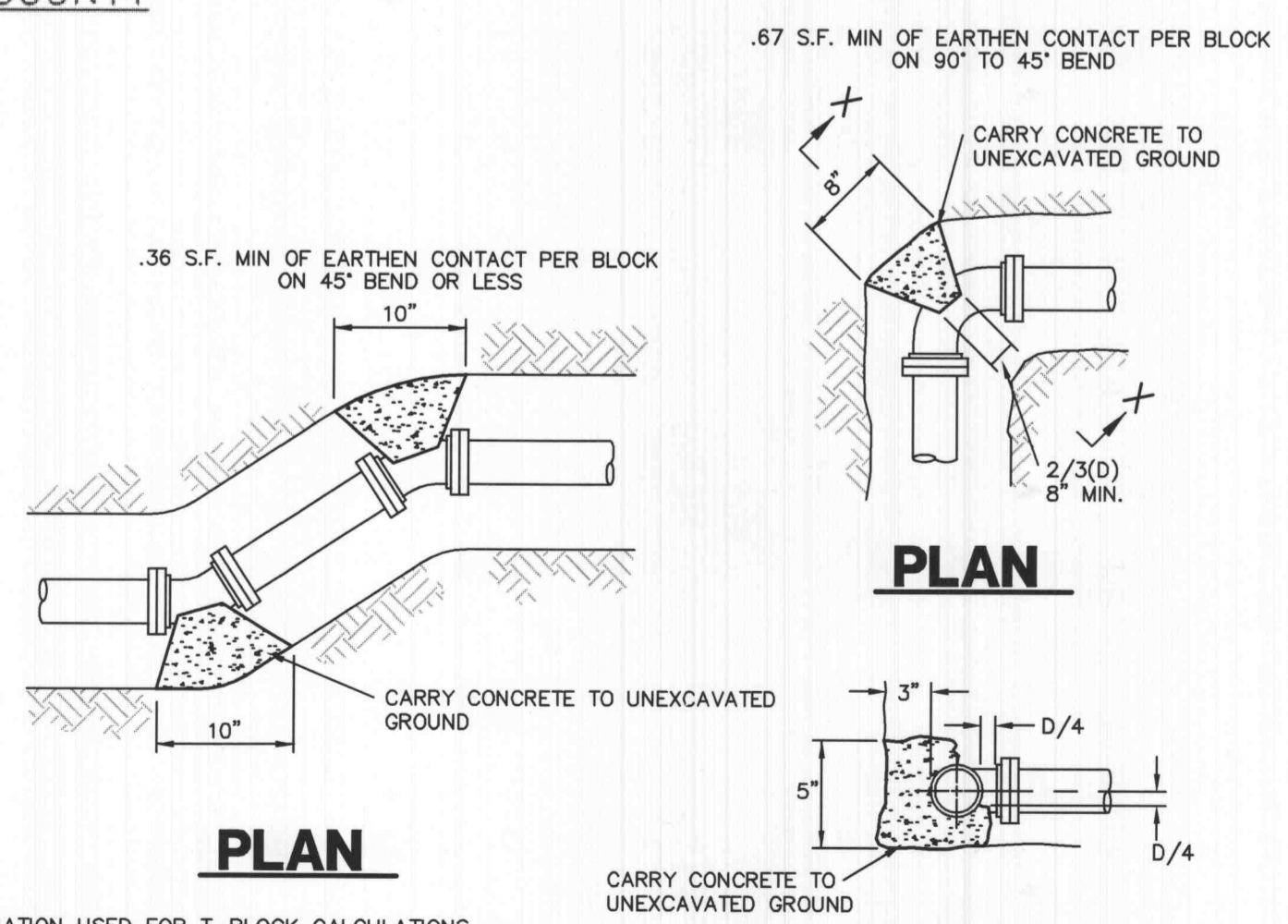
- VAULT LIDS ARE REQUIRED TO HAVE ACCESS FRAME AND COVER TO BE PLACED DIRECTLY OVER METER TO PROVIDE AMPLE SPACE FOR SERVICING OR REMOVING METER.
- IF FIRE FLOW METER IS NECESSARY, LARGER VAULT MAY BE REQUIRED.
- ALL FITTINGS AND VALVES WILL BE FLANGED.
- ALL METERS, GASKETS, BOLTS, AND NUTS WILL BE SUPPLIED BY THE WATER DISTRICT.
- ALL DUCTILE IRON PIPE ENTERING AND LEAVING VAULT SHALL BE RESTRAINED.
- MINIMUM OF 3 JACK STANDS ON PIPING IN VAULT.
- PIPE ENTERING AND EXITING THE VAULT WALLS SHALL BE SEALED WITH NON SHRINKING GROUT OR MASTIC.
- VAULTS TO BE INSTALLED IN "GREEN SPACE" AND MADE EASILY ACCESSIBLE AT ANY TIME. (VERIFIED AND APPROVED BY WATER DISTRICT PERSONNEL).
- VAULT LIDS TO BE FLUSH TO FINISH GRADE. (METER BOX CHIMNEYS AND OTHER MEANS OF RAISING VAULTS ARE PROHIBITED).
- TWO FOOT (24") MINIMUM DISTANCE BETWEEN CENTER OF PIPING AND VAULT WALLS.
- PIPING AND EQUIPMENT TO BE PLACED AT A MINIMUM OF 18" ABOVE CONCRETE FLOOR AND 5' BELOW TOP OF VAULT. (JACKS AND/OR BLOCKING CAN BE USED).



TYPICAL 3" OR LARGER SERVICE METER BOX DETAIL "G" NOT TO SCALE

PUBLIC WATER SUPPLY DISTRICT #2 OF SAINT CHARLES COUNTY

TYPICAL COMMERCIAL SERVICE CONNECTION WITH FIRE PROTECTION DETAIL "H" PUBLIC WATER SUPPLY DISTRICT #2 OF SAINT CHARLES COUNTY



EQUATION USED FOR T-BLOCK CALCULATIONS  
 $T = 2(PA \sin \theta / 2) \times L.O.S. \text{ of } 1.5$   
 ASSUMED PRESSURE OF 150 PSI AND SOIL BEARING CAPACITY OF 1500 PSF

THRUST BLOCK DETAIL SCALE: 1"=1'

PIPE DIA. IN.	PLUG	45° WYE	TEE CONNECTION	UP TO 22.5°	UP TO 45°	UP TO 90°
	A (SQ. FT.)	A (SQ. FT.)	A (SQ. FT.)	A (SQ. FT.)	A (SQ. FT.)	A (SQ. FT.)
4" std brass	0.5	1.4	2.6	1.8	2.2	2.0
6"	1.5	3.0	6.0	4.0	4.5	4.5
8"	2.5	5.0	9.5	6.5	9.5	8.0
10"	4.1	8.0	13.0	9.5	12.5	12.5
12"	5.5	11.5	19.0	13.5	16.0	18.0
16"	9.0	18.0	33.0	23.0	27.0	32.0
20"	14.0	28.0	51.0	36.0	42.0	50.5

**NOTES:**

- BEARING AREAS ARE BASED ON UNDISTURBED SOIL WITH A BEARING CAPACITY OF 1,000 POUNDS PER SQUARE FOOT. FOR A LESSER SOIL BEARING CAPACITY THESE AREAS SHALL BE INCREASED ACCORDINGLY.
- ALL CONCRETE THRUST BLOCKS SHALL BE 3000 P.S.I. CONCRETE.
- THRUST BLOCKS SHALL BE POURED AGAINST UNEXCAVATED EARTH.
- NO JOINT SHALL BE COVERED WITH CONCRETE.
- JOINTS THAT LOCATED AGAINST THRUST BLOCKS ARE TO BE WRAPPED IN A CLOTH MATERIAL.
- APPROVED MECHANICAL JOINT RESTRAINTS ARE REQUIRED AT ALL VERTICAL BENDS AND MAY BE USED IN LIEU OF THRUST BLOCKS AT HORIZONTAL BENDS AT THE OPTION OF THE ENGINEER, AT NO ADDITIONAL COST TO THE OWNER.

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## BIKE RACK DETAIL

- SCALE = N.T.S.
- 06/09/06 REVISED AMERENUE COMMENTS.
  - 05/15/06 REVISED PER SEWER DISTRICT COMMENTS. ADDED ABANDONMENT NOTES TO SHEETS C3 AND C4, REVISED LATERAL STATIONING, ADDED CONCRETE ENCASUREMENT.
  - 05/03/06 REVISED PER CITY COMMENTS
  - 04/25/06 REVISED PER CITY, SEWER DISTRICT AND CLIENT COMMENTS
  - 03/22/06 REVISED PER CITY AND CLIENT COMMENTS

## APC LAB FACILITY UTILITY DETAILS

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