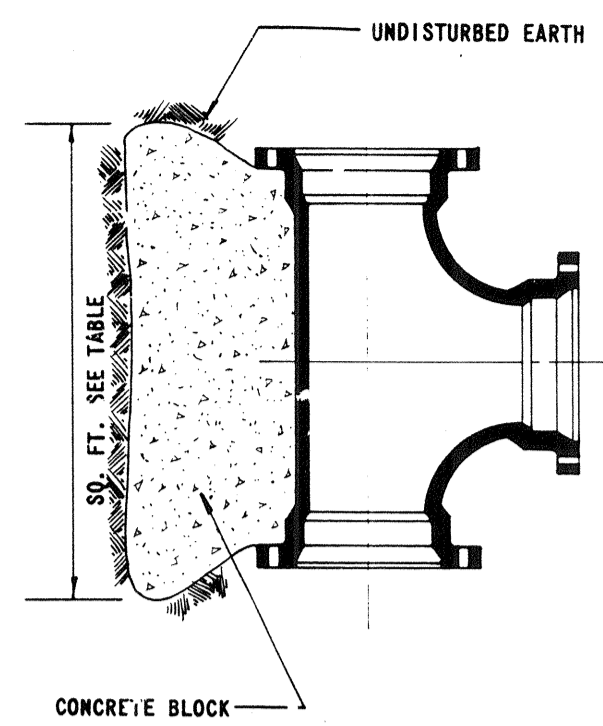


PIPE SIZE	ANCHOR SIZE ¹	TIE BAR DIA.
2"	2'x 2'x 2'	0.25"
3"	2.6'x 2.6'x 2.6'	0.25"
4"	3.1'x 3.1'x 3.1'	0.25"
6"	4'x 4'x 4'	0.375"
8"	4.8'x 4.8'x 4.8'	0.50"
10"	5.6'x 5.6'x 5.6'	0.50"
12"	6.3'x 6.3'x 6.3'	0.625"

NOTES: 1. ANCHOR BLOCKS SIZES DIFFERENT THAN THOSE SHOWN MUST BE APPROVED BY THE ENG. NEER.
2. SEE THRUST BLOCK GENERAL NOTES FOR MORE INFORMATION.

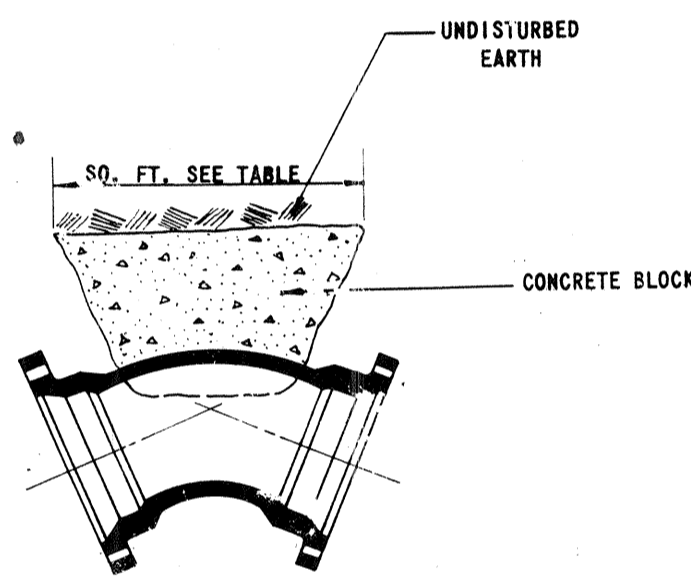
ANCHOR BLOCK 45°/22 1/2° BEND VERTICAL
N.T.S.



NOTE: SEE THRUST BLOCK GENERAL NOTES THIS SHEET.

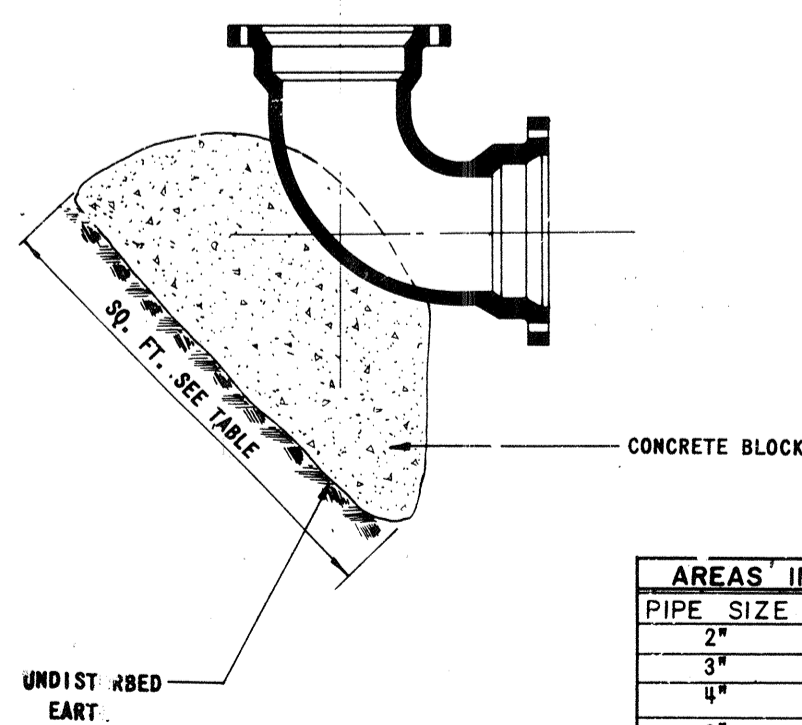
PIPE SIZE	TEE
2"	0.8
3"	1.8
4"	3.1
6"	7.1
8"	12.6
10"	19.6
12"	28.3
14"	38.5
18"	60.3

THRUST BLOCK TEE
N.T.S.



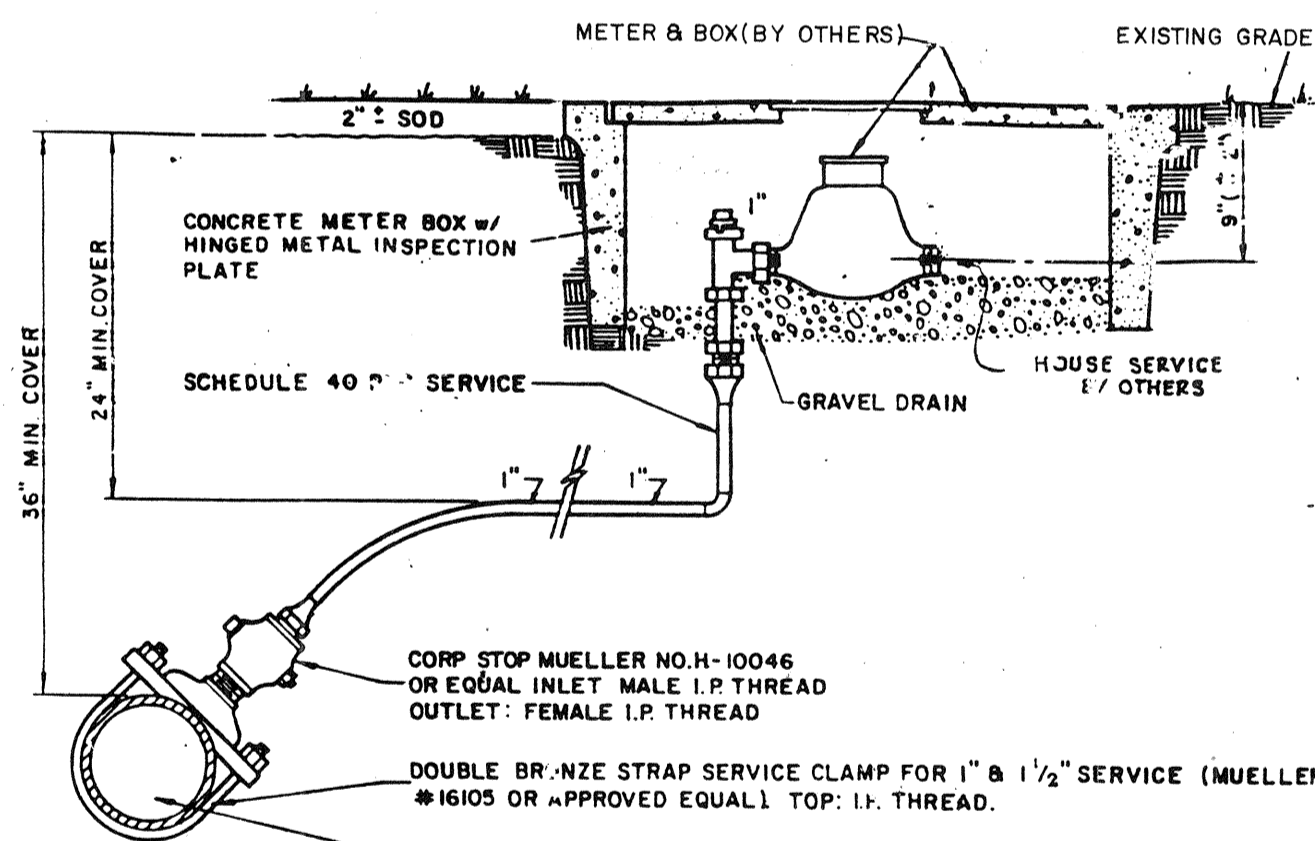
PIPE SIZE	45°	22 1/2°	11 1/4°
2"	0.6	0.3	0.2
3"	1.4	0.7	0.4
4"	2.4	1.2	0.6
6"	5.4	2.8	1.4
8"	9.6	4.9	2.5
10"	15.0	7.7	3.9
12"	21.6	11.0	5.5
14"	29.4	15.0	7.5

THRUST BLOCK 45°/22 1/2°/11 1/4° BEND
N.T.S.

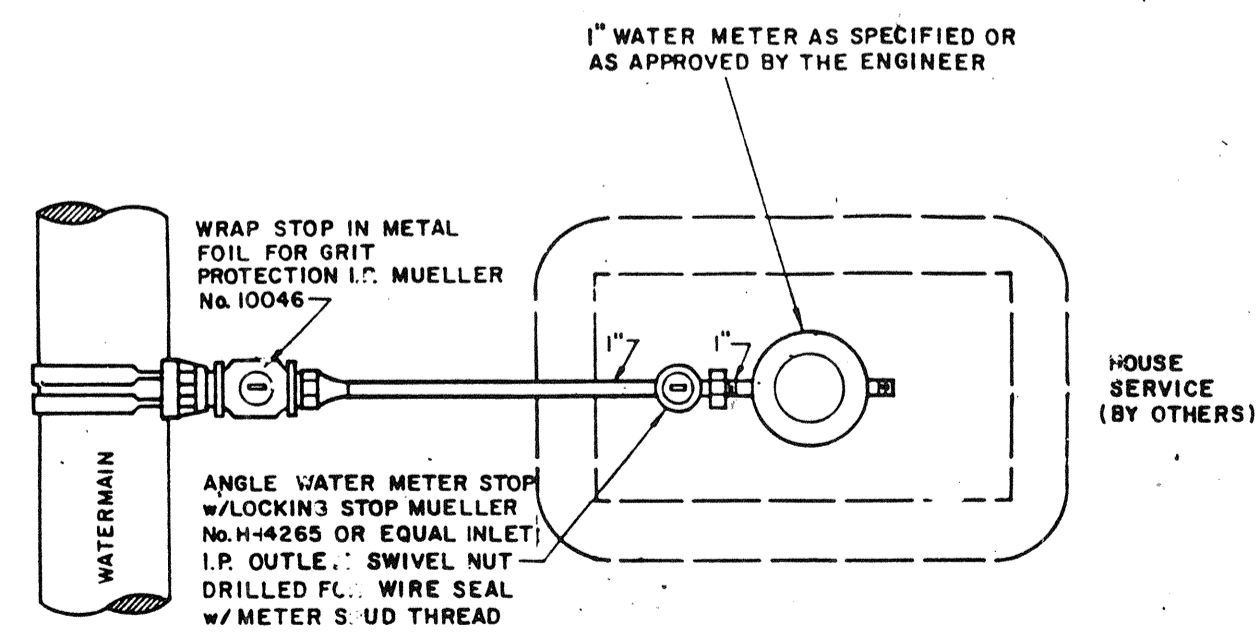


PIPE SIZE	90°
2"	1.1
3"	2.5
4"	4.4
6"	10.0
8"	17.8
10"	27.8
12"	40.0
14"	54.4

THRUST BLOCK 90° BEND
N.T.S.

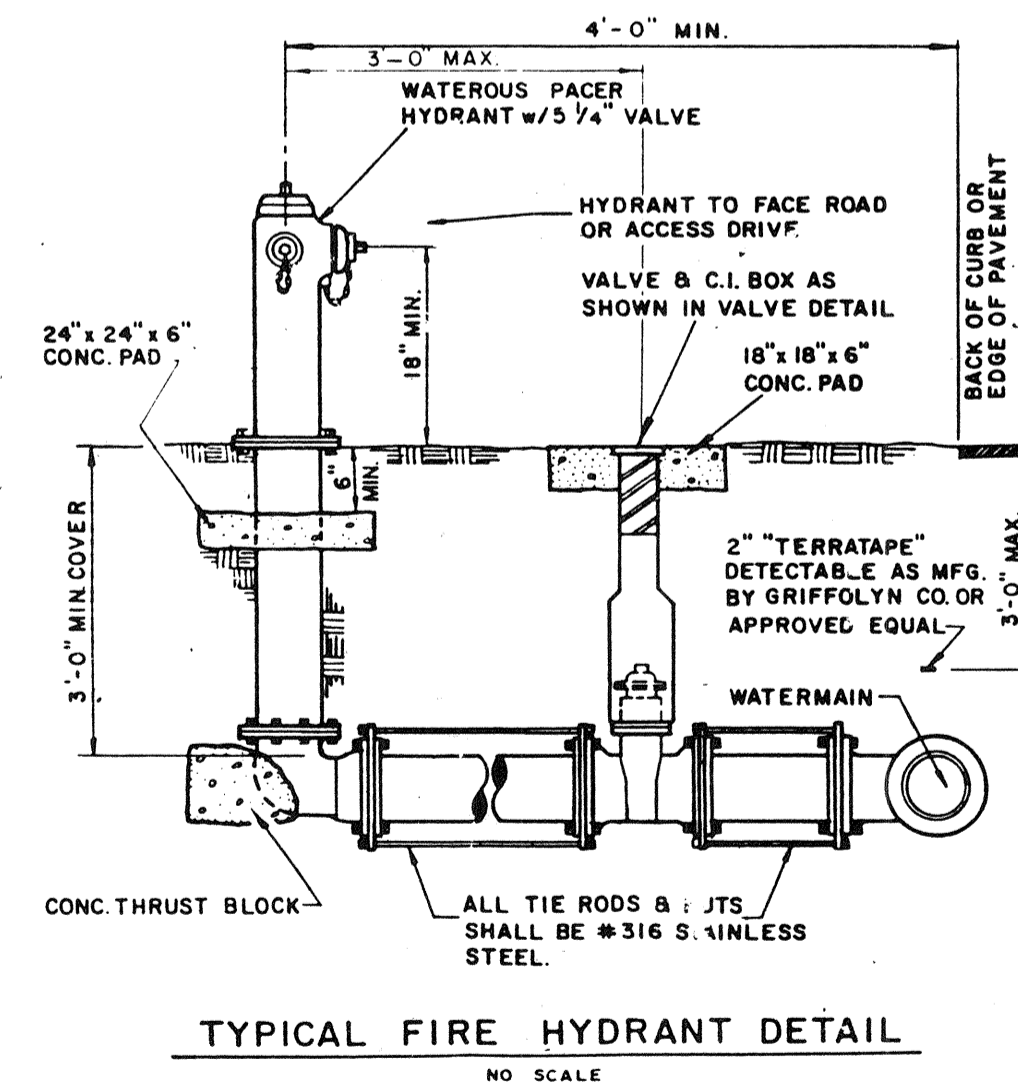


PROFILE

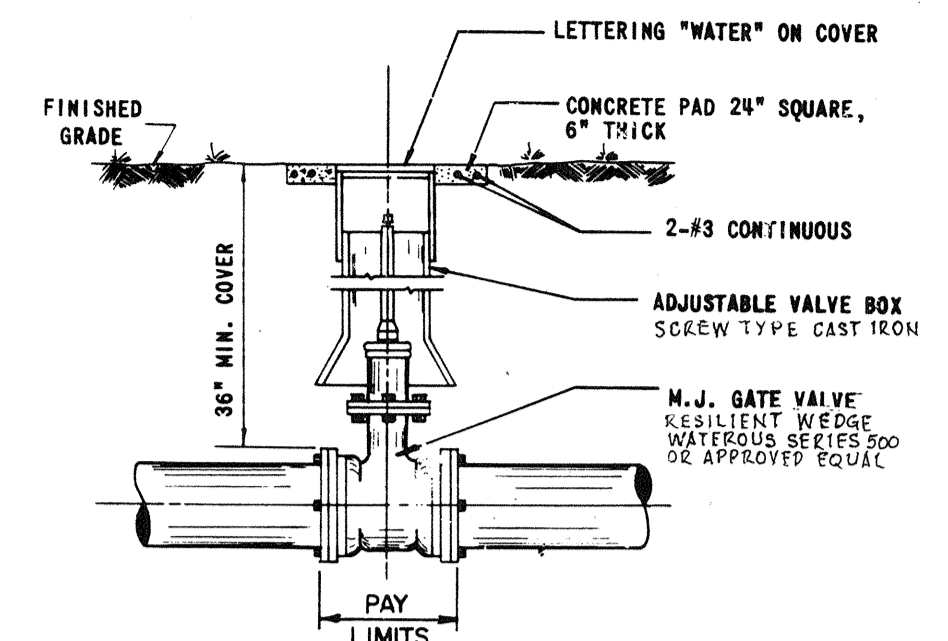


PLAN

TYPICAL METERED SERVICE



TYPICAL FIRE HYDRANT DETAIL
NO SCALE



TYPICAL GATE VALVE & ASSEMBLY DETAIL
N.T.S.

CONSTRUCTION NOTES

- WATER DISTRIBUTION GENERAL**
- THE CONTRACTOR SHALL INVESTIGATE AND VERIFY OR HAVE VERIFIED THE LOCATION OF UTILITIES BEFORE STARTING WORK. HE SHALL BE LIABLE FOR ANY EXPENSE RESULTING FROM DAMAGE TO SAME AND ANY CHANGES TO EXISTING UTILITIES WILL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AS SOON AS POSSIBLE IN ORDER THAT HE MAY VERIFY THE ELEVATION AND LOCATION OF EXISTING CONDITIONS AND TAKE APPROPRIATE ACTION AS REQUIRED.
 - IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE CITY UTILITY COMPANIES AND THE ENGINEER 48 HOURS PRIOR TO ANY WORK AT SITE. WATER MAIN TIE-INS REQUIRING WATER SERVICE SHALL BE SHUT OFF WHEN MADE DURING DAY OR NIGHT HOURS AS REQUIRED BY LONGBOAT KEY WATER DEPARTMENT.
 - THE WATER MAIN SHALL BE CONSTRUCTED TO THE ELEVATIONS AND DEPTHS AS INDICATED ON THE DRAWINGS, WITHIN 0.25 FT. AND IN GENERAL SHALL HAVE A MINIMUM OF 3 FEET OF COVER BELOW PROPOSED GRADE OR NATURAL GRADE, EXCEPT WHERE SHOWN OTHERWISE. IF NECESSARY, WILL BE BORNE BY THE CONTRACTOR.
 - ALL DISTURBED AREAS IN EXISTING LAWNS SHALL BE REPLACED WITH SOIL EQUAL TO OR BETTER THAN EXISTING AND OF THE SAME TYPE. SWALE SLOPES AND BOTTOM AND OTHER SLOPES SHALL BE SODDED TO ELIMINATE EROSION. RESTORATION DUE TO EROSION OCCURRING PRIOR TO GRASS ROOTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL WATER AS NECESSARY ALL SODDED AND GRASSED AREAS UNTIL GRASS ROOTS. SEE THE CONTRACT DOCUMENTS FOR ADDITIONAL REQUIREMENTS.
 - ALL PVC WATER MAINS WILL BE WATER BLUE IN COLOR. NYLON DETECTABLE COLOR TAPE (BLUE) WITH WORDS "CAUTION-BURIED WATER LINE BELOW" WILL BE PLACED 12 INCHES TO 18 INCHES BELOW FINISHED GRADE AND ABOVE ALL WATER MAINS. THE COST FOR COLOR TAPE WILL BE INCLUDED IN THE WATER MAIN PRICES CONTAINED IN THE BID SCHEDULE.
 - FIELD DEFLECTION OF WATER MAINS FROM A STRAIGHT LINE OR GRADE SHALL NOT EXCEED 75 PERCENT OF THE MANUFACTURERS RECOMMENDED JOINT DEFLECTION, VALVE AND BOX DETAILS.
- VALVE DETAILS**
- ALL PROPOSED VALVE BOXES AND METER BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS ESTABLISHED IN THE FIELD. CONCRETE VALVE BOX PADS SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS AND AS DESCRIBED IN THE CONTRACT DOCUMENTS. ALL COSTS INVOLVED WILL BE INCLUDED IN THE APPROPRIATE LINE ITEMS CONTAINED IN THE BID SCHEDULE. NO ADDITIONAL COMPENSATION WILL BE MADE BY THE OWNER.

SERVICE DETAILS

- FOR SERVICE INSTALLATION ON WATER MAINS, A DOUBLE STRAP BRONZE SERVICE SADDLE SHALL BE USED.
 - SERVICE CONNECTION TAPS SHALL NOT BE CLOSER THAN 2 FEET APART OR CLOSER THAN 2 FEET TO 4 INCHES BELOW FINISHED GRADE AND ABOVE ALL WATER MAINS. SHALL NOT BE MADE IN THE SAME LONGITUDINAL LINE OF THE WATER MAIN, BUT SHALL BE STAGGERED.
 - PRESSURE TESTING OF MAINS SHALL INCLUDE ALL SERVICES. NO PLUGS WILL BE USED IN CURB STOPS DURING PRESSURE TESTING.
 - 2 INCH OR SMALLER DIAMETER SERVICES SHALL INCLUDE THE SERVICE SADDLE. THE CORPORATION STOP, VARIABLE LENGTH SCHEDULE 40 PIPE AND THE SERVICE SADDLE FOR THE METER INTENDED.
- FIRE HYDRANT DETAILS**
- FIRE HYDRANTS SHALL BE CONSTRUCTED WITH THE "GROUND LINE" SET TO FINISHED GRADE AS ESTABLISHED IN THE FIELD. THE CONTRACTOR SHALL DETERMINE THE DEPTH OF EACH LIFT AND SETTING AND ORDER THE BARREL SECTION ACCORDINGLY. EXTENSIONS REQUIRED SHALL BE INDICATED IN THE BID PRICE PER HYDRANT ASSEMBLY ALL AT NO ADDITIONAL COST TO THE OWNER. FIRE HYDRANTS SHALL BE PLACED AS SHOWN ON THE DRAWINGS. ALL HYDRANTS SHALL BE WATEROUS PACER (NO EXCEPTIONS).

MAIN FLUSHING

- BLOW-OFFS SHALL BE PROVIDED AND SHALL BE SIZED TO MAINTAIN A CLEANSING VELOCITY DURING FLUSHING OPERATIONS.

METER VAULT DETAILS

- MASTER METERED SERVICES SHALL INCLUDE THE PIPE FROM TEE AT MAIN TO END OF SERVICE. CONTRACTOR SHALL PROVIDE THIRD PARTY BLOCKING AND JOINT RESTRAINING AS REQUIRED. SEE THRUST BLOCK DETAILS AND THE CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION.

TRENCH DETAILS

- WHERE WATER MAINS CROSS SEWERS, THEY SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE TOP OF THE WATER MAIN AND THE BOTTOM OF THE SEWER. THE WATER MAIN IS EITHER ABOVE OR BELOW THE SEWER. AT CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED 25 FEET FROM THE SEWER. WHERE FAR FROM THE SEWER AS POSSIBLE, WHERE WATER MAINS ARE PARALLEL TO EXISTING OR PROPOSED SEWERS, THE WATER MAIN SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM THE SEWER. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.
- USE OF SHEETING, TRENCH BOX OR OTHER APPROVED METHOD OF SHORING SHALL BE USED IN SITUATIONS WHERE DAMAGE TO ADJACENT UTILITIES DRAINAGE, UNDER-SIDE EQUIPMENT, PAVEMENT OR UNSUITABLE MATERIALS DRAINAGE, UNSAFE CONDITION, COMPENSATION FOR BORING NOT LEFT IN PLACE SHALL BE INCLUDED IN THE RESERVE BILLS.
- MAXIMUM TRENCH WIDTHS SHALL BE OUTSIDE DIAMETER OF PIPE PLUS TWENTY-FOUR INCHES (24").

THRUST BLOCKS, ANCHOR BLOCKS AND JOINT RESTRAINING

- THE CONTRACTOR SHALL PROVIDE BLOCKING AND JOINT RESTRAINING AS REQUIRED. SEE THRUST BLOCK DETAILS AND THE CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION.
- AREAS AND DIMENSIONS OF THRUST BLOCKS WILL BE AS SHOWN IN THE DETAILS UNLESS DIRECTED BY THE ENGINEER ACCORDING TO ACTUAL FIELD CONDITIONS. LENGTH OF RESTRAINED JOINT PIPING WILL BE AS SHOWN ON THE DRAWINGS UNLESS DIRECTED BY THE ENGINEER ACCORDING TO ACTUAL FIELD CONDITIONS.
- DESIGN CRITERIA: 1.5x SILENT PRESSURE TEST PRESSURE TIMES 1.5x SAFETY FACTOR (SEE P.S.D.) FOR WATER HAMMER WITH ASSUMED SOIL BEARING CAPACITY OF 1000 LBS. PER SQUARE FOOT.
- COMPLETELY COAT TIE-RODS OR OTHER UNCOATED STEEL AFTER INSTALLATION. THE COATING SHALL BE AN APPROVED EQUAL TO THE MANUFACTURERS RECOMMENDATION. APPROVED BY THE ENGINEER AND APPLIED TO ALL TIE-RODS AND FITTINGS. IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION. 5 MILS. DFT. IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION.
- WRAP ALL PIPE AND FITTINGS IN 4 MIL POLYETHYLENE PRIOR TO PLACING CONCRETE.
- ALL CONCRETE REQUIREMENTS SHALL BE 2500 P.S.I. AT 28 DAYS MINIMUM.
- BLOCKING REQUIREMENTS FOR PLUG OR DEAD END SHALL BE THE SAME AS "TEE" BLOCKING REQUIREMENTS.
- BLOCK FOR TEE SHALL BE CONSTRUCTED IN SIZE FOR THE BRANCH DIAMETER.

AS-BUILTS

- THE CONTRACTOR SHALL LOCATE ALL CROSSINGS, TEES, WYES, BENDS, VALVES, CURB STOPS, HYDRANTS, STUB-OUTS, BLOW-OFFS, AIR RELEASE VALVES, ETC. BY USING A TWO (2) POINT SWING MEASUREMENT FROM PERMANENT PHYSICAL FEATURES THAT CAN READILY BE FOUND ON THE DRAWING AND IN THE FIELD. THESE MEASUREMENTS SHALL BE SHOWN ON THE AS-BUILT DRAWINGS BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER AT THE TIME OF FINAL PAY REQUEST. FOR PERMANENT RECORDING. SEWER SERVICES SHALL BE LOCATED IN LIKE MANNER.
- THE CONTRACTOR SHALL FURNISH "AS-BUILT" TOP OF PIPE ELEVATIONS OF ALL WATER MAINS AT MAXIMUM INTERVALS OF ONE HUNDRED FEET (100') AT ALL JOINTS, FITTINGS AND VALVES AND ALL CHANGES IN GRADE IN ACCORDANCE WITH THE CITY UTILITY DEPT. REQUIREMENTS.

FOR: YALE PROPERTIES L'AMBANCE
SMALLY, WELLFORD & NALVEN, Inc.
INDEX NO. G-2591-021

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SARASOTA, FLA. 33562

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CONSULTING ENGINEERS & SURVEYORS