

SEEKONK WATER DISTRICT

“WATERMAIN INSTALLATION SPECIFICATIONS”



**50 Water Lane
Seekonk, Massachusetts 02771
Tel. (508) 761-8170
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NOTICE

EFFECTIVE OCTOBER 27, 1992; THE BOARD OF WATER COMMISSIONERS UNANIMOUSLY VOTED TO REQUIRE “AS-BUILT” PLANS OF ANY NEW WATER DISTRIBUTION SYSTEM FROM ALL DEVELOPERS. THE “AS-BUILT” PLANS MUST BE SUBMITTED TO THE DISTRICT PRIOR TO THE ISSUANCE OF ANY WATER APPLICATION.

REGULATIONS
FOR
BACKFILLING AND FINAL PAVING

1. All material for backfilling the trench will be suitable and free from organic substances, large stones and frost.
2. 12” of gravel shall be compacted to a minimum of 90% of maximum density for roadway trenches and 95% of maximum density for sidewalk trenches, before permanent patch is applied.
3. Before the permanent patch, the contractor shall lay 3” of bituminous concrete overlaying 5% on both sides of the area of roadway or sidewalk disturbed.
4. The bituminous concrete on all roadway cuts shall be Class I Bituminous concrete pavement, Type I.

SEEKONK WATER DISTRICT

_____ hereby requests permission to obstruct and disturb the surface of _____ Street and _____ Street for the purpose of installing _____ in water main and appurtenances. Work will begin (weather permitting) _____ 20__. Length of time street will be obstructed and surface disturbed _____ days from and after permit is granted and work commenced.

Attention is hereby directed to the provisions of Section 40, Chapter 82 of the General Laws requiring contractors to notify public utility companies in writing at least 72 hours before excavating and a permit from the Seekonk Department of Public Works is to be obtained before disturbing the street. All installation work shall be performed in accordance to the Seekonk Water District specifications with final paving to be approved by the Seekonk Department of Public Works.

The applicant agrees that a suitable barrier shall be put and at all times kept around the section or parts of the street, lane, alley or other public places so dug up or obstructed, so long as the same shall be or remains unsafe, and that the barrier shall be sufficiently lighted by one or more lanterns fixed to such barrier or in some other proper manner, every night from twilight in the evening, and through the whole night, so long as such barrier shall be kept standing; and it is further agreed that the District shall be saved harmless from all damages, costs, or expenses on account of any injury to persons or property which is due to anything done under the authority of the permit.

The applicant further agrees that notice shall be given at the Seekonk Water District office prior to backfilling of the utility trench and prior to restoration of the surface of the street to allow for inspection of the work.

Issuance of such a permit is conditional upon the applicant having posted a Certificate of Insurance as required.

Date _____
_____ Applicant

The petition of _____ under date of _____ 20__, is received and permission in accordance with the above request is hereby granted.

Date _____

Adopted by the Board of Water Commissioners: June 13, 1978
revised: Sept. 12, 1989



SEEKONK WATER DISTRICT

50 Water Lane
Seekonk, Massachusetts 02771
(508) 761-8170

APPLICATION TO EXTEND WATER SYSTEM

Date _____

To the Board of Water Commissioners:

I hereby make application to extend the existing water distribution system located at

_____ for the purpose of

and I agree to pay all costs for this extension in accordance with the Rules and Regulations of the Seekonk Water District.

Signature of applicant _____

Address _____

Telephone Number _____

NOTE: The applicant will bear all engineering review expenses if applicable.

SEEKONK WATER DISTRICT
WATER CONSTRUCTION SPECIFICATIONS
FOR
CONTRACTORS - DEVELOPERS - SUB-DIVISIONS

BOARD OF WATER COMMISSIONERS

JUNE 10, 1975

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SEEKONK WATER DISTRICT

CONSTRUCTION SPECIFICATIONS

A - GENERAL PROVISIONS

INTENT OF THE SPECIFICATIONS

The intent of these standard specifications is to clarify and advise the Contractor and Developer of his responsibility to perform all work and services as outlined. If, for any reason, a particular phase or phases of any or all the operations has been omitted, it is not intentional, and it is to be understood that the Contractor must perform the work as fully as if it were described and delineated.

The Water Superintendent shall, in the case of any discrepancies or questions, interpret the plans and details and direct the Contractor accordingly.

CONTRACTOR'S LEGAL RESPONSIBILITY UNDER STATE LAWS

Attention is hereby directed to the provisions of Section 40, Chapter 82 of the General Laws requiring Contractors to notify public utilities companies, in writing, at least 72 hours before excavating a public way to prevent accidental damage; to Chapter 220 of the Acts of 1965 (the so-called Hatch Act) relating to the Protection of Flood Plains and requiring the approval by the Town's Board of Selectmen, the State Department of Public Works and the Department of Natural Resources prior to doing any work in areas considered "a bank, flat, marsh, meadow or swamp bordering any inlet waters".

It shall be the Contractor's responsibility to familiarize himself with any applicable local, state and federal laws governing his intended activities.

CERTIFICATES OF COMPLIANCE

Prior to the use of any material covered by these specifications, the Contractor shall furnish the Water District a statement in triplicate, certifying that all materials to be used in the work comply with the requirements of the specifications. These statements shall be prepared by the manufacturer, and approved commercial laboratory or any other agency acceptable to the Water Superintendent. In case of question or failure, it shall be the responsibility of the Contractor to arrange for required sampling and testing of the materials at no additional cost to the District.

Unless otherwise approved in writing by the Water Superintendent only new materials and equipment shall be incorporated in the work.

REFERENCE TO SPECIFICATIONS

Where specifications of the American Society for Testing and Materials (ASTM), the American Standards Association (ASA), the American Water Works Association (AWWA), or any other agency are called for, the latest edition of these specifications shall be used, unless otherwise noted.

LAYOUT OF WORK

The Contractor shall lay out his own work and be responsible for the execution of the work to such lines and grades indicated on the drawings, prescribed in the specifications, or directed by the Water Superintendent. In no case shall construction be performed without plans that have been approved by the Water Commissioners. The Contractor shall furnish, at his expense, all stakes, templates, range markers and other equipment, material and labor as may be required in laying out any part of the work.

The Contractor shall maintain and preserve all stakes, monuments, bounds and other marks existing in the work area. Bounds for other marks which have to be destroyed during construction shall have adequate ties to facilitate replacement. Any marks which are damaged or destroyed by the contractor shall be replaced by him to the satisfaction of the Water Superintendent or other concerned parties.

The water service SHALL NOT be installed any closer to a waste water system than fifteen (15) feet at any horizontal point.

SAFETY PRECAUTIONS

The Contractor shall provide fences, barriers, warning lights, police officers, signs and any other safety features as may be necessary for the protection to the public. These precautions shall apply particularly at open excavations.

Where the Contractor performs work on any public roads or thoroughfares, he shall first obtain a permit from the Town and then perform his work in accordance with said permit. He shall be responsible to maintain traffic control with police officers, flagman, signs, etc. If roads are disturbed, he shall maintain the work until such time that he restores the road base and surface to the satisfaction of the local controlling government agency.

The Contractor shall take all necessary precautions to protect his work from damage by vandalism, storms, ground water infiltration, etc. In case of damage, the Contractor shall make such repairs or replacements or rebuild such parts of the work as the Water Superintendent and the Town Highway Department may require in order that the finished work may be completed as required by the drawings and specifications.

INSPECTION

The Contractor shall notify the Water District at least twenty-four (24) hours prior to the construction of any public improvement so that the District can have an Inspector present if the work requires inspection. In general, inspection will be required.

1. For Water Construction:

- a. While laying pipe, but before backfilling, and
- b. During backfilling operations. (In the case of water main installation, a final pressure test will be required by the Water District to assure pipe tightness).

There will be no inspection charge per se, except in cases where such inspections are made outside the regular work hours. The cost will then be at the rate of time and one-half of the Inspector's pay rate, to be paid to the District by the Contractor.

The Inspector will have the authority to reject any work or materials that do not constitute approval by the District and shall not relieve the Contractor of any of his obligations to perform the work in accordance with the plans and specifications.

WATER MAIN CONSTRUCTION

SCOPE OF WORK

The Contractor shall furnish all materials and perform all the work and services necessary for the complete construction of the water distribution system; i.e. - installation of all pipes, gate valves, fittings, hydrants, thrust blocks, etc., including all related work such as excavation, backfilling, compaction, testing and disinfecting.

The Contractor shall perform his work in accordance with the plans, approved by the Water Commissioners.

CONNECTION TO THE DISTRICT'S SYSTEM

Water main connections to the District's distribution system shall be made by the Contractor and the Contractor shall furnish all necessary materials needed for such connection.

No water supply will be shut off without giving sufficient notice to the consumers and stating the time when the supply will be turned on. Permission to shut off water shall first be obtained from the Water District who will shut the water off and turn it on again. Special care shall be taken so as not to damage consumers' appurtenances. If such damages occur, the Contractor shall repair such damages at his own expense.

MATERIALS

PIPE

Ductile Iron Pipe shall be Class 52 conforming to the latest U.S.A. Standards designation ANS A21.50 for “Ductile-Iron Pipe Centrifugally Cast in Metal Molds or Sand-Lined Molds for Water or other Liquids” and ANS A21.51 for “Thickness Design of Ductile-Iron Pipe”.

Joints shall be in accordance with the latest U.S.A. Standards for Rubber Gasket Joints for Cast-Iron Pressure Pipe and Fittings”, designation ANS A21.11.

Pipe shall have normal laying lengths of at least 18 feet.

Pipe shall have normal laying lengths of at least 18 feet.

Pipe shall be cement lined with a seal coat inside and coated outside in accordance with the latest ASA Specifications ANS A21.4. Lining shall be double thickness.

FITTINGS

Cast iron fittings shall conform to the requirements of the latest A.S.A. specs for short body cast iron fittings A21-10, A21-11 for mechanical joint fittings, or Class D metal thickness in accordance with A.W.W.A. specifications C100-08. The fittings shall be cement-lined with a bituminous seal coat inside and coated outside in accordance with the latest A.S.A. specifications designation A21-4.

GATE VALVES AND VALVE BOXES

Gate valves shall be in accordance with AWWA C-500, “Gate Valves for Ordinary Water Works Service”, but shall meet the specific requirements and exceptions to the aforementioned specifications, as follows: Gate valves shall be mechanical joint, having a non-rising stem, and shall turn left to open. The gate valves shall be manufactured by the Darling Valve & Manufacturing company, Eddy Valve or by an approved equal.

BUTTERFLY VALVES

Butterfly valves shall be short body, manufacturer’s standard pattern conforming to the latest AWWA Standard for “Rubber-Seated Butterfly Valves” designation C504 Class 150B, as amended. Butterfly valves shall be designed for buried and submerged service; shall have cast-iron discs, stainless steel shafts and neoprene or rubber seats; and shall be adequate for flows creating velocities up to 16 feet per second through the valve.

Butterfly valves shall be designed for operation with the shaft in the horizontal position and shall be furnished with an enclosed gearing with 2-inch square nut operator. The gearing shall be designed to open the valve when the nut is turned left. The gearing shall be self-locking, designed to hold the valve disc in any intermediate position without use of additional locking devices.

GATE VALVE BOXES

Valve Boxes shall be of the sliding type. The castings shall be made of gray cast iron true pattern and free of flaws. They shall be thoroughly coated with two coats of asphaltum varnish. Tops and bottoms to have flanges, and extra deep covers marked with the word "Water". Covers to be slotted for removal. Bottom section shall have opening of no less than five and one quarter inches in diameter. Top section to be 24" long, bottom section to be 48" long.

FIRE HYDRANTS

Fire hydrants shall be in accordance with AWWA C-502, "Fire Hydrants for Ordinary Water Service", but shall meet the following additional specifications:

- a. Hydrants shall be according to manufacturer's standard patterns and of standard size and shall have one 4-1/2 inch steamer nozzle and two 2-1/2 inch hose nozzles.
- b. The hydrant inlet connection shall be mechanical joint of 6 inch cast iron pipe, unless otherwise authorized by the Water District.
- c. The hydrant main valve openings shall have a net area at least equal to the area of 5-1/4 inch diameter circle.
- d. Hydrants shall be suitable to be set in a trench 6 feet deep, 6 feet being the distance from the ground surface to the bottom of the 6 inch pipe connecting with the hydrants.
- e. All nozzle threads shall be National Standard.
- f. The operating nut shall be National Standard.
- g. Hydrants shall open by turning operating nuts in the same direction as the hydrants now installed in the District's existing system (i.e. - turn left to open), and must be marked with an arrow and the word "OPEN" to indicate the direction to turn stem to open hydrant.

The following hydrants are approved for use within the District:

Darling B62B
Kennedy Guardian with Baltimore Drain
Mueller Centurian

- i. Hydrants shall be of the traffic type model.
- j. The bottom of hydrant, which is to be set below ground, shall be painted black. The top of hydrant, which is to be left above ground, shall be painted orange.
- k. Nozzle caps will not require chains.
- l. Hydrants shall utilize "O" Rings in the packing.

HOUSE SERVICES

Copper Tubing:

Tubing shall be in accordance with and conforming to A.W.W.A. Specifications 7S-CR Type K or Federal Specs, W.W.T. 799 Type K, as amended, in 60 foot coils.

Plastic Tubing:

Pipe shall be in accordance with A S T M D-1248 Type 111, Class C category 5 P 34 (P E 3406 or P E 3408) copper tube size, 200 P.S.I. (N.S.F. approved).

Corporation Stops:

Corporation stops shall be 1" Ford F 1000 with inserts and have a Mueller thread inlet and a compression type outlet or approved equal.

Curb Stops:

Curb stops shall be ball type, round way C X C compression joint with stop, and turn left 1/4 turn to open and shall be a Ford B44-444 with inserts. Curb stops larger than one inch shall be Mueller Ori-Seal curb valves with compression joints and turn left 1/4 turn to open. Curb boxes for services shall be Erie Type 1", shaft extending 51" - 72" and a stationary rod 42 inches long, with extra heavy tops.

EXCAVATION AND BACKFILLING

The Contractor shall excavate all encountered materials to the depths shown on the drawings. Trench depths, not shown, shall be figured to allow a minimum of 5 feet cover over the top of the pipe. No tunneling shall be permitted in place of trench construction for the water mains, unless the road grade has been established in accordance with grade stakes previously set by a reputable engineer or surveyor at the expense of the Contractor.

In open cut excavation, the trench width at the top of the pipe shall be no wider than the outside diameter of the pipe, plus 1.5 feet, unless permission is granted by the Inspector. The trench above the top of the pipe shall have sufficient slope so that the banks will not slide. Sheeting of trenches will be at the Contractor's discretion and as may be required by applicable governmental laws and regulations.

Care must be taken not to damage water pipes, drains, sewers, gas mains, electric conduits or other structures encountered on the lines of the work. In case of damage to any structures, the owner shall be notified immediately by the Contractor so that the proper steps may be taken to repair, at the expense of the Contractor, any and all damage done.

ROCK EXCAVATION

Any rock blasting shall be done by licensed persons only and shall be carried out in strict accordance with the existing governmental ordinances and regulations. A blasting permit must be obtained from the local Fire Chief having jurisdiction over the area. Any damage to the work or property of others caused by blasting operations shall be repaired at the expense of the Contractor.

Whenever the bottom of the trench is rock or boulders, it shall be excavated 12 inches below grade and refilled to grade with gravel well rammed in place. The sides of the trench in rock shall be excavated to such width that no rock shall be closer to the pipe barrel or other structures than 12 inches when the pipe is laid in the trench with a normal alignment.

Bedding

The bottom of the trench shall be shaped to conform as nearly as possible to the outside of the pipe so that the pipes shall have a continuous and even bearing. Where the bottom of the trench has been taken out to a greater depth than above specified, it shall be refilled with earth, properly compacted and shaped.

The Contractor shall undercut unsuitable material and replace it with suitable material.

Backfilling

All materials for backfilling the trench shall be suitable and free from organic substance, large stones and frost. No stones weighing over 10 lbs. shall be backfilled anywhere into the pipe trench.

The backfill around the pipes shall be deposited by hand, evenly on both sides of the pipe to the center line of the pipe and rammed with suitable tools, then filled in by hand for one foot above the pipe before backfilling with a machine. The remaining backfill shall be compacted in 6 inch lifts either by machines, compactors, or by puddling, in which case a water charge will be made. The water shall not be turned on until proper fill material is placed to proper grade over the pipe lines and around hydrants.

INSTALLATION

Pipe Laying

Grade stakes with finish elevations must be installed every fifty (50) feet and maintained during the duration of the work. All pipe, before being lowered into the trench, shall be clean and free from defects. The Contractor shall remove, by pumping or other means, any water accumulated in the trench during the pipe laying period and keep the trench dry until the joints are properly connected. When pipe laying is not in progress, the open ends of all pipe lines shall be closed to keep out all foreign material and trench water. All "PUSH-ON" type joints require two (2) Bronze wedges per joint. All new water mains will be installed in the sidewalk area and must have at least 12 inches of clearance between any other structure, pipe or utility.

Gate Valves and Hydrants

All gate valves and valve boxes shall be set plumb.

Hydrants shall be set plumb, and shall have the steamer nozzle facing the roadway. Mechanical joint gate valves shall be tied to the tee fitting with tie rods and clamps. Bolts used with Mechanical joint fittings shall torque within 60-90 lbs. Concrete backing shall be placed between the back of hydrant and the undisturbed bank. The concrete must not obstruct the hydrant drip.

A pit at least 12 inches in depth below the bottom of the hydrant and at least 18 inches in diameter shall be dug at each hydrant. This pit and a space around the surface with clean stone or gravel. The back filling around the hydrant shall be thoroughly rammed.

Joints

Joints in grooved rubber gasket and mechanical joint cast iron pipe shall be made in accordance with the latest directions and specifications of the manufacturer. Silicon bronze wedges shall be inserted in each joint (two per joint) in accordance with the manufacturer's installation instructions.

Concrete Backing

The Contractor shall be responsible to supply and install concrete thrust blocks at all bends, tees, and hydrants as shown on the Standard Detail. The concrete shall be composed of one part Portland cement, two parts sand and four parts coarse aggregate. The concrete shall be mixed and placed in a manner satisfactory to the Inspector. In placing the concrete, care shall be taken not to disturb the alignment of the pipes around or adjacent to the concrete being placed.

Dead End Mains

All dead ends of mains shall have a line cap installed with a 2 inch threaded opening for insertion of a copper flow for flushing purposes. The flow shall consist of a 1 inch inverted key, copper by copper flanged curb stop, with waste hole. The curb stop shall turn left 1/4 turn to open and have an Erie type curb box with rod. The line cap shall be held in place by thrust block. The flow curb box shall be on the sidewalk curb line with the outlet in the street.

(See Drawing)

House Services

Tapping for 1" services shall be made directly into the pipe. Other taps up to two inches shall be with a double-strapped Mueller service clamp with a neoprane gasket and tapped Mueller thread to the desired size, with a corporation stop.

All services shall have a minimum cover of 5 feet and shall be of the same diameter from the water main to the water meter. Services shall enter the house or meter box at a 90 degree angle from the street directly into the front or either side of the house, where the meter can be read easily and not create a hardship to the property owner, and shall be installed during main construction.

SPECIAL REQUIREMENTS

Testing

PRESSURE AND LEAKAGE TESTS. All acceptance tests shall be conducted in the presence of District personnel. All pipelines shall be given combined pressure and leakage tests. The initial pressure and leakage test shall be carried out on the section of pipeline between the first two valves to be laid (not exceeding 1/2 mile in length).

The test shall be conducted as soon as possible after completion of each pipeline section, allowing at least 7 days after the last concrete thrust block has been cast (3 days with the use of high-early-strength, Type III, Portland cement).

Thereafter, the combined pressure and leakage tests shall be carried out on sections of completed pipeline, approved by the District, which in any case shall not exceed 1 mile in length. Hydrant laterals shall be included for all pressure tests. Each isolated section shall be tested upon completion. The Contractor shall furnish and install suitable temporary testing plugs or taps, blowoffs and all necessary pressure pumps, pipe connections, meters, gauges, and other similar equipment; and all labor required. All pressure gauges shall be inspected by the District prior to tests.

Apart from the initial test subject to approval and provided that the tests are made within a reasonable time considering the progress of the project as a whole and the need to put the section into service, the Contractor may make the tests when he desires. The District shall be notified at least 48-hours in advance of all tests.

Filling and flushing of new mains from existing mains shall be done only at a time, rate and location approved by the District. Operation of existing hydrants and valves shall be by District personnel only. Flushing water shall be handled in an approved manner.

The section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If hydrants or blowoffs are not available at high points for releasing air, the Contractor shall make the necessary excavations and do the necessary backfilling and make the necessary taps at such points and shall plug said holes after completion of the test.

The section under test shall be maintained full of water for a period of at least 24 hours prior to the combined pressure and leakage test being applied.

The pressure and leakage test shall consist of first raising the water pressure to 150 pounds per square inch, or as directed by the District. If the leakage during a two-hour period after initiating the test exceeds 0.833 gallons per inch of diameter per mile of pipeline, the section shall be considered as having failed the test.

No additional allowance will be made for testing existing pipe, fittings and valves.

If the section fails to pass the pressure and leakage test, the Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting, hydrant or joint, all at his own expense. Additional tests and repairs shall be made until the section passes the specified test.

If, in the judgment of the District, it is impracticable to follow the foregoing procedure exactly for any reason, modifications in the procedure shall be made as required and approved, but in any event the Contractor shall be responsible for the ultimate tightness of the line within the above leakage and pressure requirements.

DISINFECTING AND FLUSHING. The Contractor shall disinfect the lines carrying potable water.

The contractor shall furnish and install all equipment and materials necessary to do the work of disinfecting, and shall perform the work in accordance with the procedure outlined in the AWWA Standard for Disinfecting Water Mains, Designation C-651. The method used shall be as described in Section 5.2 of the AWWA Standard C-651. Chlorine shall not be placed in mains prior to installation.

The dosage shall be such as to produce not less than 10 ppm. concentration of free chlorine after a contact period of not less than 24 hours.

Chlorine shall not be left in mains for more than 48 hours.

After treatment, the main shall be flushed with clean water until the residual chlorine content does not exceed 0.2 ppm.

During the disinfection period, care shall be exercised to prevent contamination of water in existing mains.

The Contractor shall de-chlorinate the water used for disinfecting and flushing prior to disposal and shall dispose of such water in an approved manner.

Water samples for analysis shall be taken from the new main at the entry point from the existing system and at locations approved by the District. It is not recommended to use hydrants to obtain samples. The samples shall be analyzed by a laboratory approved by the Department of Environmental Protection. Samples must be received by the approved laboratory no more than 24 hours after they are taken from the main.

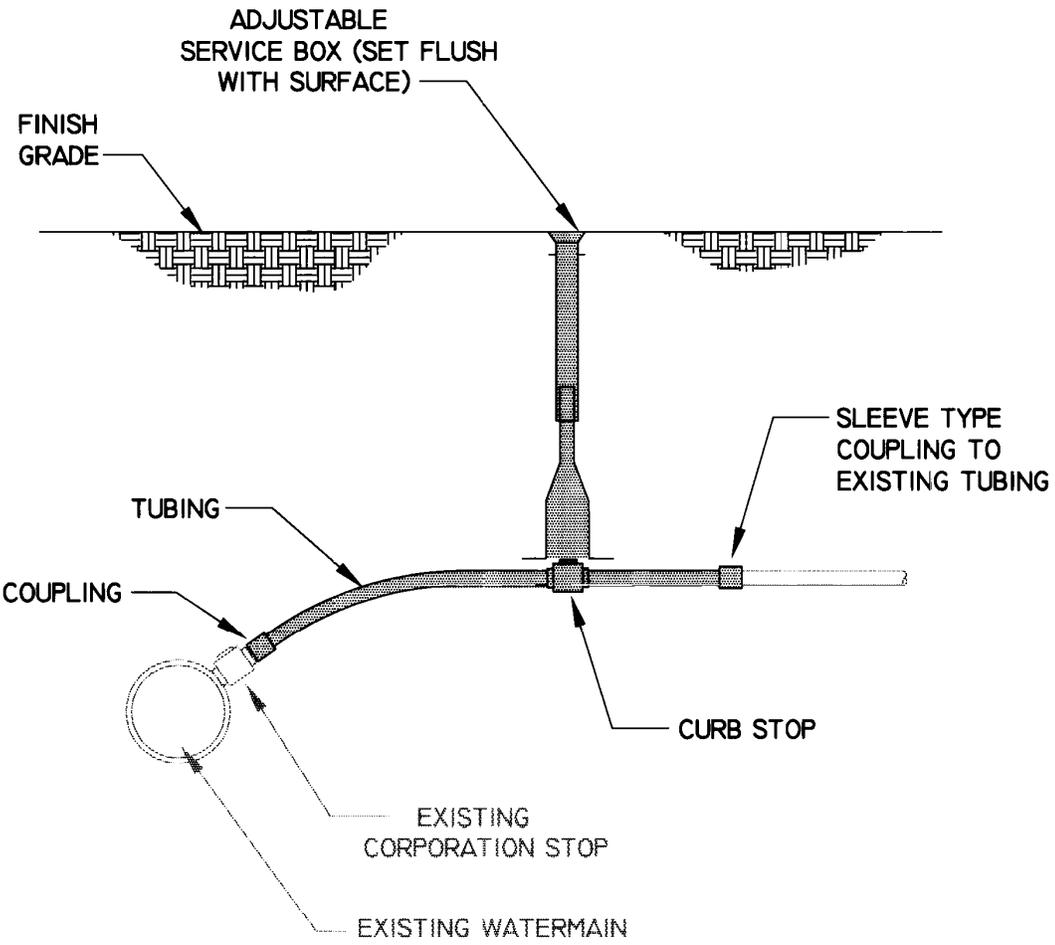
The contractor shall provide an affidavit of compliance on the approved form for the bacteriological test results certifying all water sampled from the water main to be free from coliform bacteria contamination and to have a Heterotrophic Plate Count of less than 200 colonies.

RESTRAINED JOINTS

Restrained joints shall be used for thrust restraint where indicated on the drawings and where concrete thrust blocks are insufficient due to conditions or proximity to existing utilities. The number of restrained joints other than those shown on the drawings shall be approved by the Owner for each application.

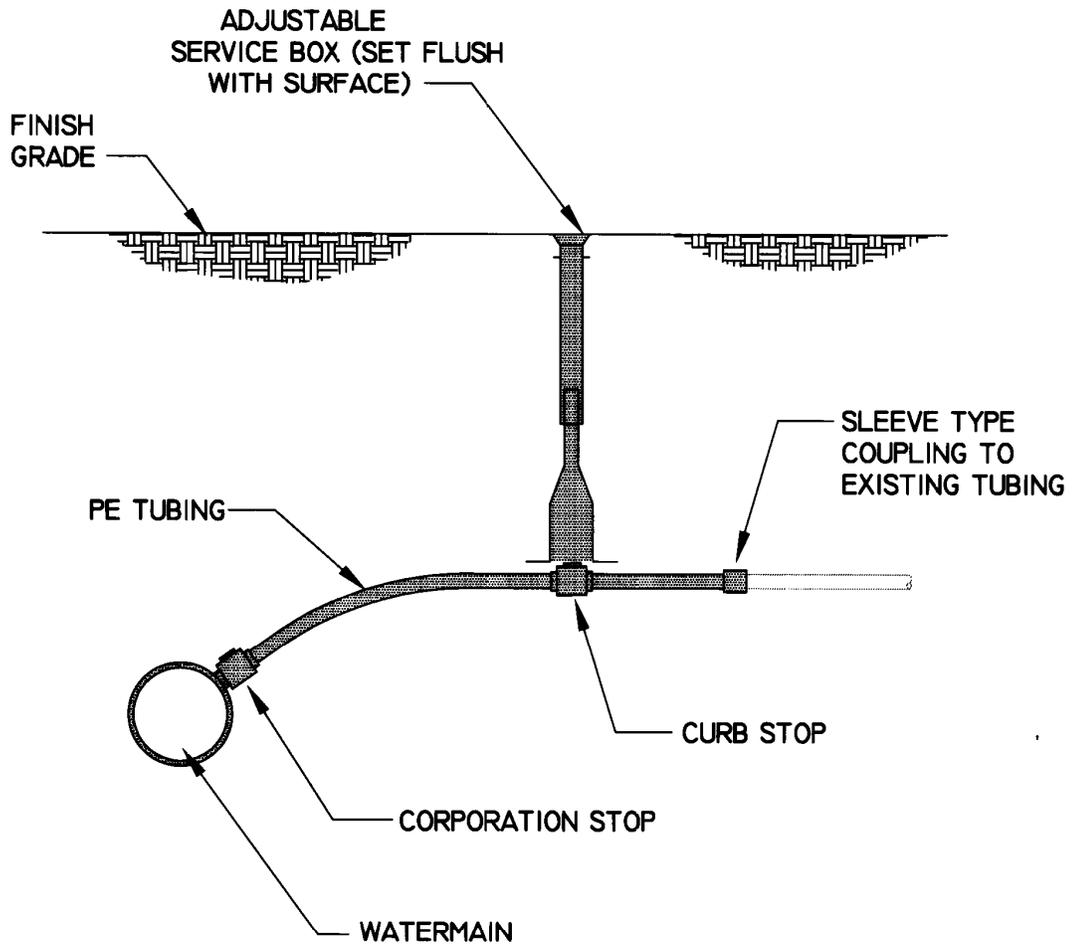
Where Meg-a-Lug restrained joints are indicated on the drawings or specified, retainer glands shall be MEGALUG (Series 1000) or manufactured by EBBA-Iron, Inc., Eastland, Texas.

STANDARD DETAILS



SERVICE RENEWAL - EXISTING MAIN.

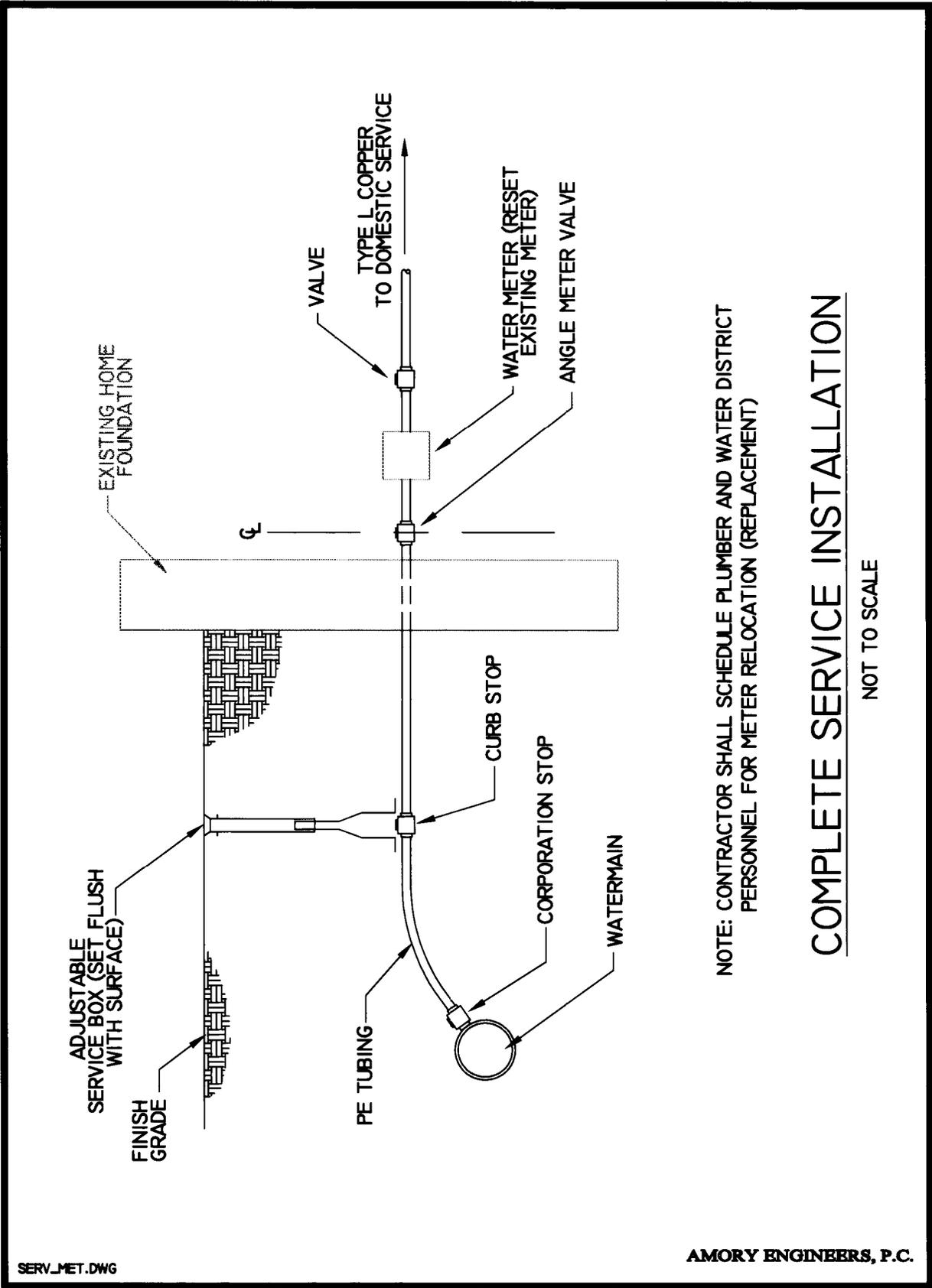
NOT TO SCALE



NOTE: REFER TO SECTION 13H, VALVES & APPURTENANCES OF THE CONTRACT SPECIFICATIONS FOR DETAIL SPECIFICATIONS.

SERVICE RENEWAL - NEW MAIN

NOT TO SCALE



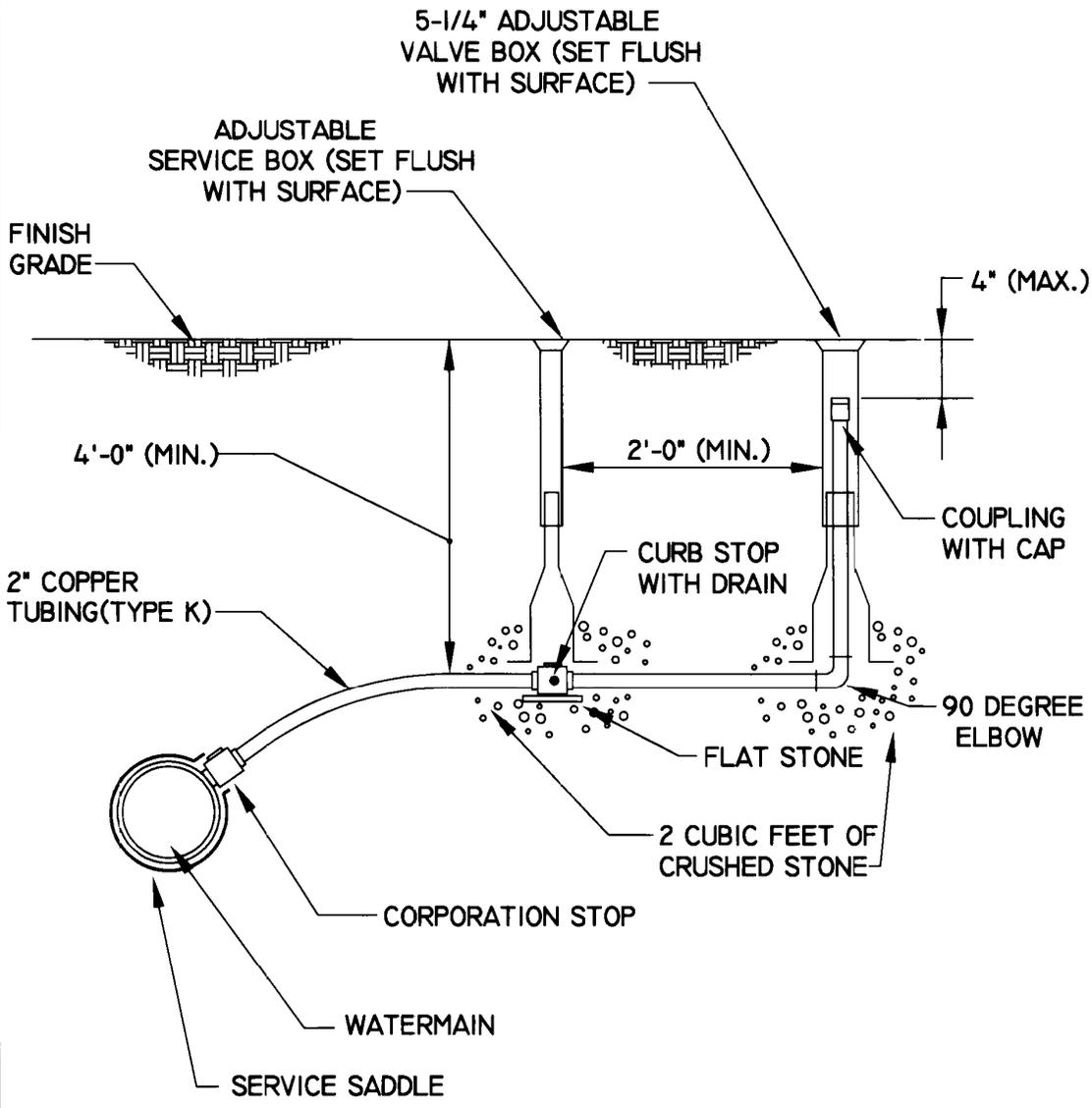
SERV_MET.DWG

AMORY ENGINEERS, P.C.

NOTE: CONTRACTOR SHALL SCHEDULE PLUMBER AND WATER DISTRICT PERSONNEL FOR METER RELOCATION (REPLACEMENT)

COMPLETE SERVICE INSTALLATION

NOT TO SCALE



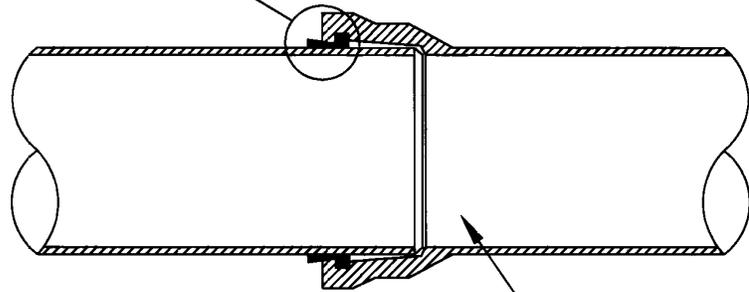
2" BLOWOFF DETAIL

NOT TO SCALE

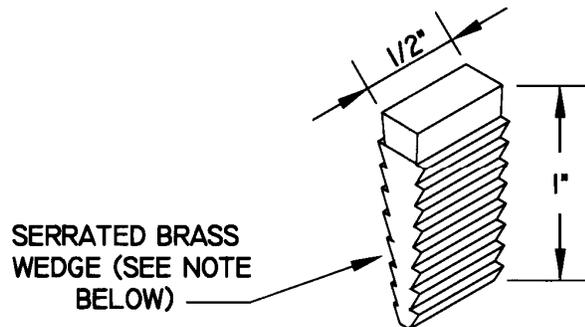
NOTES:

1. ALL JOINTS SHALL BE COMPRESSION TYPE.
2. COPPER TUBING TO BE BACKFILLED WITH SAND BY HAND TO 6" ABOVE TUBING.

INSTALLED SERRATED
BRASS WEDGE (SEE
DETAIL BELOW)



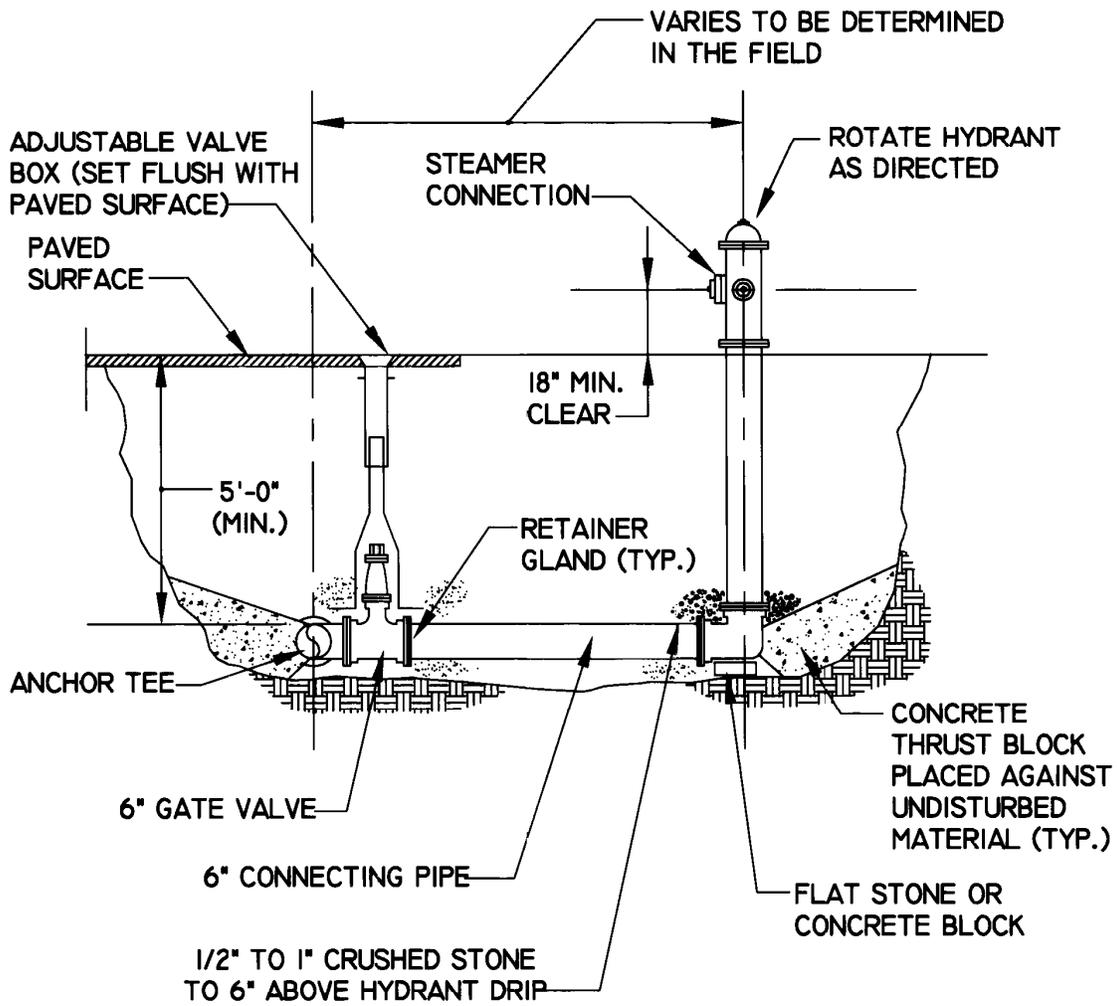
DUCTILE-IRON
PIPE



NOTE:
BRASS WEDGES ARE TO BE INSTALLED ON ALL DUCTILE-IRON, PUSH-ON
PIPING, INCLUDING HYDRANT BRANCHES, ETC; TO PROVIDE FOR ELECTRICAL
THAWING. FOR 2" THROUGH 12" PIPE, TWO WEDGES SHALL BE USED PER
JOINT; FOR LARGER DIAMETER PIPE FOUR WEDGES SHALL BE USED PER
JOINT. EACH WEDGE IS DRIVEN INTO THE OPENING BETWEEN THE PLAIN
END AND THE BELL UNTIL SNUG. WHEN FOUR WEDGES ARE USED, THEY
ARE INSTALLED SIDE BY SIDE, IN PAIRS.

SERRATED BRASS WEDGE DETAIL

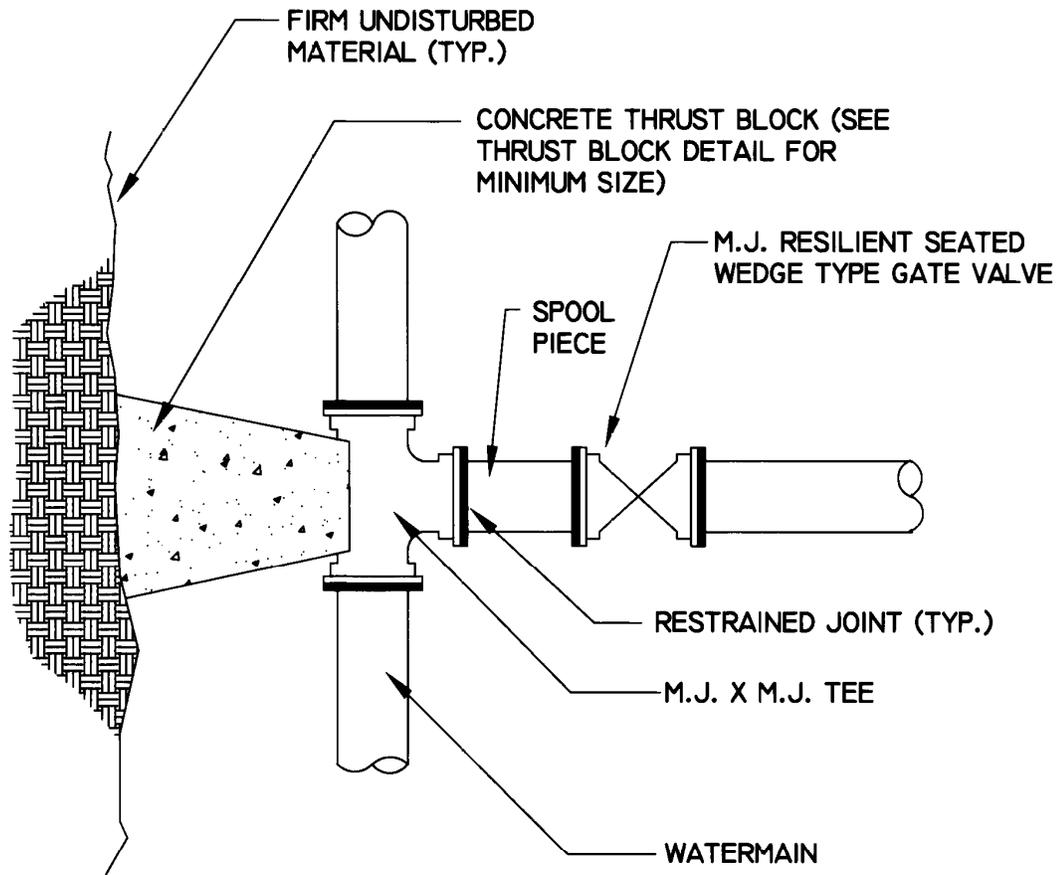
NOT TO SCALE



NOTE: DEPTH OF HYDRANT BURY TO SUIT INSTALLED DEPTH OF COVER OVER WATERMAIN.

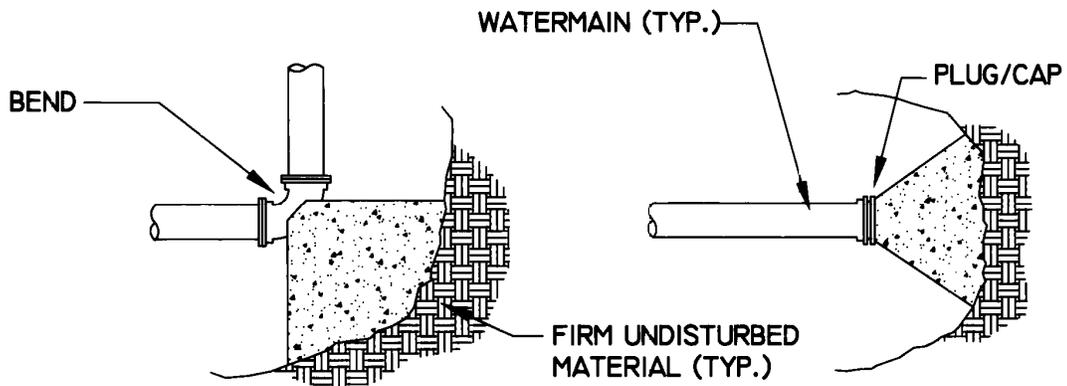
HYDRANT ASSEMBLY DETAIL

NOT TO SCALE



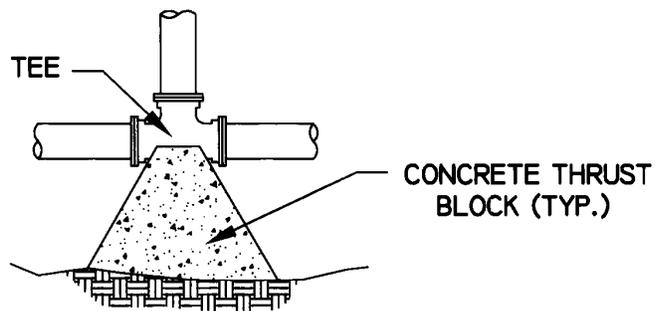
TYPICAL VALVE CONNECTION DETAIL

NOT TO SCALE



(TYP.) BEND-PLAN

PLUG/CAP-PLAN



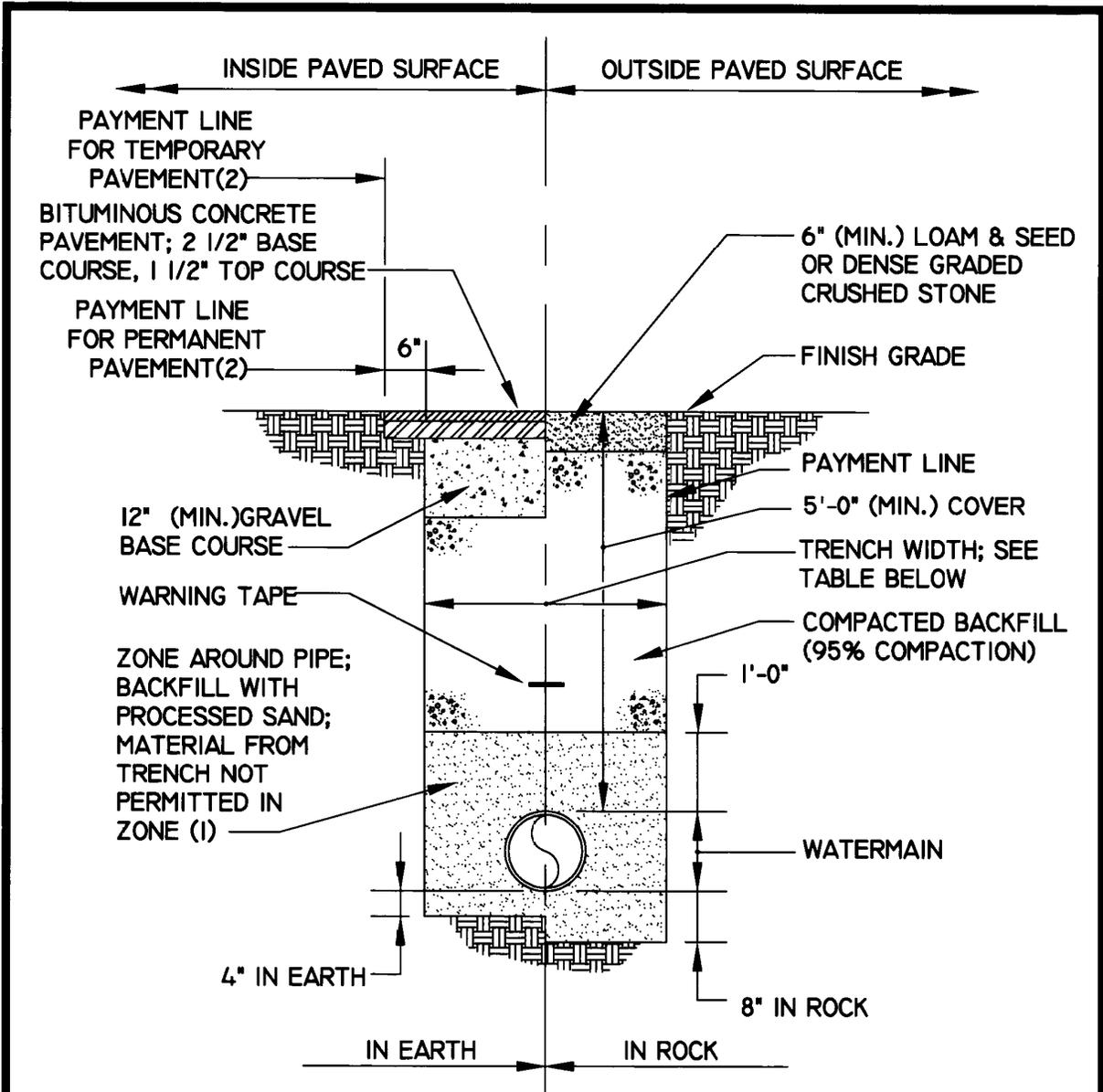
TEE-PLAN

TABLE OF BEARING AREAS (S.F.)			
SIZE OF MAIN (IN.)	BEND (90)	BENDS (45 & UNDER)	TEES, CAPS OR PLUGS
8 & UNDER	6	3	4
10 & 12	12	6	9
16	22	12	16

- NOTES: 1. CONCRETE FOR THRUST BLOCKS SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS.
2. THRUST BLOCK BEARING AREAS TOO BE IN ACCORDANCE WITH TABLE, UNLESS DETERMINED OTHERWISE BY THE ENGINEER BECAUSE OF SOIL CONDITIONS.
3. THRUST BLOCK SIDES SHALL BE FORMED WITH PLYWOOD.

THRUST BLOCK DETAILS

NOT TO SCALE

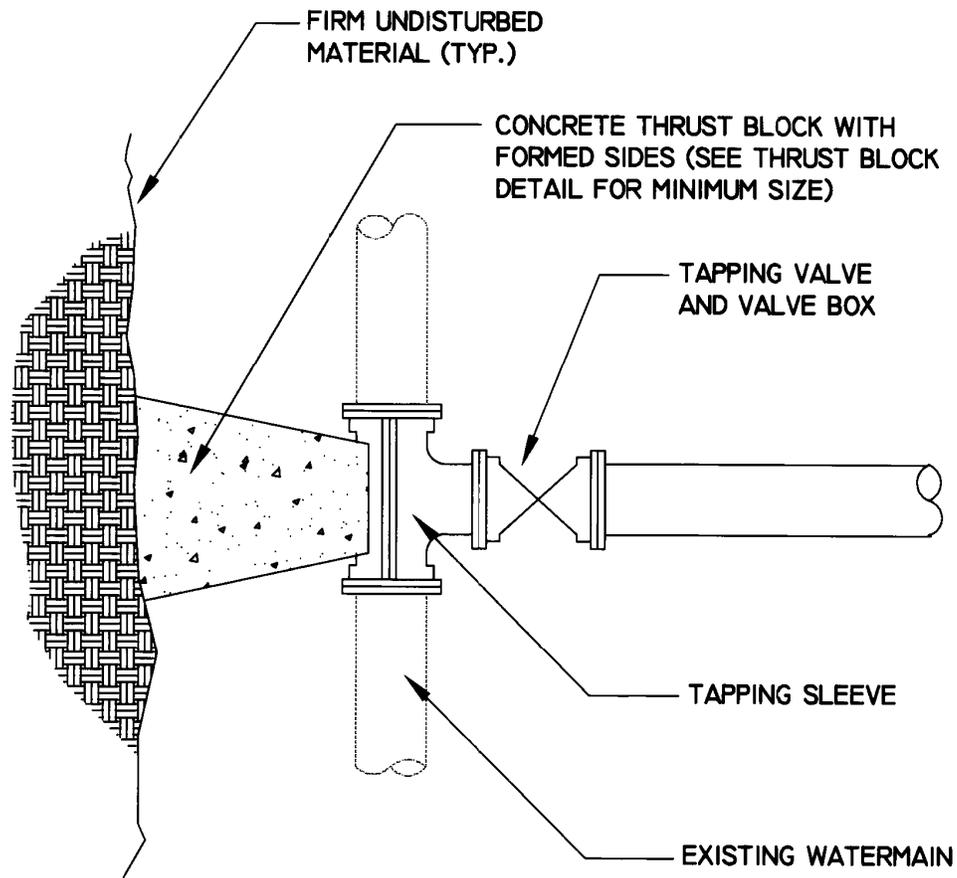


TRENCH WIDTH TABLE		
PIPE DIA.	12" & UNDER	16"
TRENCH WIDTH	3'-0"	3'-4"

NOTE: PAYMENT FOR PAVEMENT INSTALLED BEYOND PAYMENT LINE WILL BE MADE ONLY WHEN SUCH INSTALLATION IS APPROVED BY THE ENGINEER.

WATERMAIN TRENCH DETAIL

NOT TO SCALE



NOTE: CONTRACTOR TO VERIFY OUTSIDE DIAMETER OF EXISTING MAIN.

TAPPING SLEEVE & VALVE DETAIL

NOT TO SCALE