SUDBURY WATER DISTRICT SYSTEM RULES AND REGULATIONS

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UPDATED: DECEMBER 2015

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Pursuant to the authority granted by vote of the District at its Annual District Meeting of 1989, Sudbury Water District Board of Water Commissioners has established these rules and regulations for the good and welfare of the District and its members.

The following specifications are the minimum allowable standards for all water system installations within the Sudbury Water District. These specifications shall also pertain to any subdivisions or installations which wish to enter the District.

GENERAL REGULATIONS

1. No person will connect, or cause to be connected, any service pipe with the main or distribution pipes, except by order of the Board of Water Commissioners made on such application for new service and any alteration made to any service within the Sudbury Water District may only be made by the District or its authorized agents.
2. All locations where system apparatus is installed must be accessible at all reasonable times to the District for inspection.
3. No alterations shall be made to services installed by the District except by authorized agents of the District.
4. The District shall not in any way nor under any circumstances be held liable or responsible for any loss or damage from any excess or deficiency in the pressure. The District will undertake to use all reasonable care and diligence to avoid interruptions, but cannot and does not guarantee that such will occur.
5. The District will not be responsible for damages caused by discolored water resulting from the opening or closing of any gates, repairs or maintenance to the system, or the use of hydrants.
7. The District will attempt to notify as many consumers, in the areas expected to be affected, of any work or disruptions to service to prevent damage or inconvenience. Emergencies and breaks cannot be anticipated and therefore notice may not always be given.
8. The District will not assume liability for conditions in the consumer's plumbing or appliances, which may coincident with repairs made to any part for the supply system by the District.
9. Sudbury Water District reserves the right at any time without notice to shut off the water supply for purposes of making alterations, repairs or for other purposes whenever it may be necessary to shut off the supply to any section of the District or to any individual user. Water supply may

be shut off to any user or users for noncompliance with the rules, regulations and policies or with any District Bylaw or Town Bylaw enacted relative to water supply or usage, including failure to comply with any mandatory water restrictions, and for nonpayment of rates or charges.

10. When water has been shut off for or because of disregard of rules or Bylaws as aforesaid or for nonpayment, service will be restored when, in the sole discretion of the Board of Water Commissioners or their agent, there is satisfactory assurance that there will be no further cause of complaint and on the payment of the currently established service fee, such fee to be reviewed annually by the Board.

11. Sudbury Fire Department will have control of the hydrants in case of fire and for necessary practice. In any other case, no person will be allowed to handle hydrants or other water system apparatus without permission of the District.

12. Hydrants on private property shall be the responsibility of the property owner but must be inspected and serviced once every two years;

    The company who services the hydrant must notify the District and the Sudbury Fire Department prior to performing the work;

    A Certificate of Hydrant Maintenance will be completed and submitted by the owner and kept on record at the District business office;

    Private-hydrant maintenance will be a condition of providing public water service. Any repairs necessary for proper operation of private hydrants shall be the responsibility of the owner and shall be completed as soon as possible but no longer than thirty days after the inspection and servicing.

13. Sudbury Water District is not responsible for clearing snow accumulation from hydrants. Owners of property where hydrants are located are advised to clear snow from hydrants as it impacts public safety. The District encourages the participation in the Town of Sudbury's Adopt-A-Hydrant Program by residents, businesses and schools.

14. Service pipes or fixtures of any description that are connected with the mains of the District shall not, under any circumstances, be connected with any other source of water supply.

15. Owners shall notify the District to shut off water if the building becomes vacant. Water will be turned on again when the owner notifies the District, and upon payment of the turn on fee. See schedule of fees for current amount.

16. All new construction will require separate service connections, including curb stops and meters (commercial accounts will also need proper backflow protection), so that each water user can be denied water service without disrupting service to other owners.

17. No new underground lawn sprinkler systems serving residential uses may be tapped off the District's water mains or services. See Town of Sudbury General Bylaws, Article XXVII, In-Ground Irrigation Systems.

18. District personnel may make periodic inspection of the pipes to the meter. When equipment, including piping and connections is found to be defective, the property owner/water taker shall be responsible for undertaking the necessary repairs between the property line/curb stop and the meter and payment for all work and materials necessary for these repairs. District personnel must be present for and perform all testing and inspections of such repairs, and costs for such District personnel shall be assessed and paid by the property owner or water taker. Persons allowing their meter to be damaged by frost or otherwise will be responsible and therefore charged for costs associated and assessed by the District for repairs or replacement. The District is responsible for ordinary meter wear and tear or damage not caused by the property owner or water taker.

19. There shall be no obstruction or storage of other materials preventing access to the meter or associated valves. A minimum of two-feet of working clearance around such material is required at all times allowing for routine maintenance and inspection. At no time shall a permanent structure or enclosure be placed in front of or around the meter and associated valves. It is solely the homeowner's responsibility, expense and undertaking to disassemble or modify any obstruction preventing access. In the event a final water reading becomes necessary before the final statement is released these conditions shall be met to the full satisfaction of the Sudbury Water District.

20. The Board of Water Commissioners will regulate the use of water in such manner as they deem for the best interest of the District. The Commissioners may use any reasonable means as determined in their sole discretion to protect, preserve and maintain the public health, safety and welfare whenever they have determined there exists the need for a state of water supply conservation or state of water emergency.

21. Upon declaration of the need for water supply conservation by a majority of the Board of Water Commissioners or upon declaration of a state of water emergency by any authorized means, to the extent that the Board has determined that threat or shortage or actual shortage exists or that conservation measures are appropriate to ensure an adequate supply of water to all users, the following restrictions may be utilized by vote of the Commissioners:

A. Odd/even outdoor watering (allowing watering by houses with odd street numbers to water lawns on odd-numbered days and houses with even numbers to water lawns on even-numbered days).

B. Outdoor water ban or limitation (based on time of day or means of application).

C. Limitation or ban of automatic sprinkler use or filling of swimming pools.

Notification of water supply conservation or water emergency may be by publication in a newspaper of general circulation within the Town or such other means reasonably calculated to reach and inform all users. Notification of violation to individual users may be delivered to or posted at the premises as a notice of intent to enforce the applicable rules or regulations, including shut off of service.

22. Should a Drought Advisory or higher be declared for the region encompassing the Sudbury Water District at a minimum the following actions will be taken:

    Non-essential outdoor water use will be restricted to one day per week, outside of the hours of 9 am to 5 pm. The Town is divided into 5 Precincts. Use will be restricted by Precinct with Monday for Precinct 1, Tuesday for Precinct 2, Wednesday for Precinct 3, Thursday for Precinct 4, and Friday for Precinct 5 and all Commercial Connections.

    Failure to follow the Seasonal Demand Management Plan may result in termination of service.

23. The Commonwealth of Massachusetts Department of Environmental Protection may limit nonessential outdoor water use in the District from May 1st to September 30th based on streamflow in the Concord River. Nonessential outdoor water use may be restricted from 9 am to 5 pm during this time period. During the previous year, If the District's average per capita use was higher than 65 gallons per day and/or the unaccounted for water in the system was higher than 10% of the total water pumped from the wells, then the nonessential outdoor water use will be restricted to 2 days per week before 9am and after 5pm.

24. Any person violating any provision of these regulations shall be subject to a fine for each violation as determined by the District. Each day during which any violation exists shall be deemed a separate offense.

WATER IMPACT REPORT

Any person applying for water use having a design demand in excess of 2,500 gallons per day or a larger (over 2-inch) service line or that requires an extension to or addition to the water system will provide a Water Impact Report acceptable to the District. This report will contain the following:

1. Estimated impact of the project on the District's water demand.
2. Impact of the project on the District's existing supply system including the effect on water flow, speed and direction through the water mains proximate to the new service line and on maintenance of adequate fire flow.
3. Impact of the project on the District's Water Management Act Withdrawal Permit compliance.
4. Conditions and water conservation measures that will mitigate the effect of the project's impact (applicants should request from the District a list of possible mitigation measures).

The report will be reviewed and approved by the District. Costs associated with generating the report will be the responsibility of the applicant. Guidelines for the Water Impact Report are included in Appendix A.

QUALITY ASSURANCE

The quality of the furnished concrete lined ductile iron pipe (CLDI) and fittings, gate valves and hydrants shall be subject to the inspection and approval of the District, either at the place of manufacturer or at the site or both and the pipe shall be subject to rejection at any time due to failure to meet the requirements of the specification even though the sample pipes may have been accepted as satisfactory at the place of manufacturer. **All pipe and fittings shall be manufactured and tested in the United States**.

All installations shall be as specified in these regulations. Any deviations without prior approval of the District shall be subject to removal and reinstallation in an approved manner. Failure to comply will result in non-acceptance of the project by the District. Whenever the specifications are not clear or do not relate to a specific item, the decision of the District will be final.

SHOP DRAWINGS

Two copies of shop drawings shall be submitted to the District together with a letter of intention and include the following items:

1. Pipe and fittings, gate valves, corporation and curb stops, hydrants.
2. Location within the street layout:

   LOCATE MAINS AS FOLLOWS:

   a) THRU streets; northerly or easterly side.
   b) DEAD ENDS or ONE WAYS; the right side entering or opposite side of gas line.
   c) FIFTEEN (15)-FEET from CENTER line on the street.
3. Location of other utilities.
4. Elevation of topographical information.
5. Stationing.
6. Radius of turns.
7. Detailed cut sheets of typical; cross-section and installations.
8. Service connections in their approximate location (including corporation and curb stops).

9. Location of backflow devices (must be easily accessible during normal business hours to the District for testing as required by MassDEP regulations.)

10. Two sets of as-built plans of the water system installation shall be submitted to the Sudbury Water District showing the actual locations of all fittings, services and appurtenances. The method of location shall be by use of actual distance from three fixed objects (no trees allowed.) This shall be accomplished prior to Sudbury Water District excepting the project.

BONDS

A payment and performance bond or surety will be posted with either the Town of Sudbury or the Sudbury Water District in an amount to be determined prior to the start of the project.

MATERIALS AND CONSTRUCTION METHODS

The contractor shall furnish, lay, joint, pressure test and disinfect all ductile-iron pressure pipe, fittings (including special castings), and appurtenant materials and equipment, all as indicated on the drawings and as herein specified. All joints in buried exterior pipelines shall be either push-on joints or mechanical joints, except as indicated otherwise on the drawings. All joint bends, gates and castings will be mechanical. All bends require thrust blocks.

All pipe, fittings and accessories shall conform to the requirements of the latest edition of the following standard specifications as applicable:

AMERICAN NATIONAL STANDARDS INSTITUTE STANDARDS

A21.4	Cement-Mortar Lining for Cast-Iron and Ductile-Iron Pipe and Fittings for Water.
A21.10	Gray-Iron and Ductile-Iron Fittings, 2-inch through 48-inch for Water and Other Liquids.
A21.11	Rubber-Gasket Joints for Cast-Iron and Ductile-Iron Pressure Pipe and Fittings.
A21.15	Flanged Cast-Iron and Ductile-Iron Pipe with Threaded Flanges.
A21.50	Thickness Design of Ductile-Iron Pipe.
A21.51	Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.

All pipe shall be designed in accordance with the above mentioned ANS A21.50 and shall be manufactured in accordance with ANS A21.51. Mains shall be class 52 cement lined ductile iron pipe meeting the latest revisions of AWWA standards C-150, C-151, C-104, C-111.

Pipe for use with sleeve-type couplings shall be as specified above except that the ends shall be plain (without bells or beads). The ends shall be cast or machined at right angles to the axis.

Fittings shall conform to the requirements of the above mentioned ANS A21.10 and shall have a pressure rating of 250 pounds per square inch. Unless otherwise specified, fittings shall be all-bell fittings.

Where it is necessary to joint pipe of different type, the Contractor shall furnish and install the necessary adapters. Adapters shall have ends, conforming to the above specifications for the appropriate type of joint, to receive the adjoining pipe. Adapters joining two classes of pipe may be of the lighter class provided that the annular space in bell-and-spigot type joints will be sufficient for proper joints.

Couplings for buried pipe shall be of cast iron and shall be Dresser Style 253, Smith Blair Style 431, Ford FC1, or approved equal products. The couplings shall be provided with A606 Type 4 or A588 "Cor-Ten" bolts and nuts or approved equal. Couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.

All pipe fittings shall be lined and coated as specified. The inside of pipe and fittings shall be given a cement lining and bituminous seal coat to accordance with ANS A21.4. Particular care shall be used to insure proper bonding of the seal coat. Lining shall be double thickness. The outside of pipe and fittings shall be coated with the standard bituminous coating specified under the appropriate AN Standard Specification for the pipe fittings.

All pipe fittings shall be tested at the foundry as required by the standard specifications to which the material is manufactured. The Contractor shall furnish to the District sworn certificates of such tests upon request. In addition, the District reserves the right to have any or all pipe, fittings, and special castings inspected and/or tested at the Owner’s expense.

Care shall be taken in handling and laying of pipe and fittings to avoid damaging any part of the pipe or fittings. Any fitting or pipe showing a crack and any fitting or pipe which has received a severe blow that may have caused an incipient fracture, even though no such fractures can be seen, shall be marked rejected and removed at once from the work site. Except as otherwise approved, all cutting shall be done with a machine having rolling wheel cutters, or a mechanical saw. All cut ends shall be examined for possible cracks by cutting.

Cut ends to be used with push-on joints shall be carefully chamfered to prevent cutting the gasket when the pipe is laid or installed.

No defective pipe or fitting shall be laid or placed in the piping, and any piece discovered to be defective after having been laid or placed shall be removed and replaced by a sound and satisfactory piece.

Each pipe and fitting shall be cleared of all debris, dirt, etc., before being laid and shall be kept clean until accepted in the complete work.

Pipe and fittings shall be laid accurately to the lines and graded as indicated on the drawings or required. The deflection of alignment at a joint shall not exceed the appropriate permissible deflection as specified in the tabulation titled Pipe Deflection Allowances.

PIPE DEFLECTION ALLOWANCES

Maximum Permissible Deflection, Inches*

SIZE OF PIPE, INCHES	PUSH-ON JOINTS	MECHANICAL JOINT
4	17	28
6	17	24
8	17	18
10	17	18
12	17	18
14	10	12
16	10	12

* Maximum permissible deflection for 18-feet length; maximum permissible deflections for other lengths shall be in proportion of such lengths to 18-feet.

TRENCH SIZE

Trenches shall be excavated to the necessary width and depth for proper laying of pipe and shall have vertical depth for proper laying of pipe and shall have vertical sides. Minimum widths of trenches shall provide at least 12-inches clearance between the sides of the trench and the outside face of the pipe. The depth of trench shall be 6-inches below the bottom of the pipe barrel.

If the existing soil 6-inches below the bottom of the pipe barrel is found to be not suitable, the District may order extra excavation below the bedding grade and proper bedding installed.

EXTRA EXCAVATION

Whenever unstable soil that is incapable of properly supporting the pipe or structure is encountered below a depth of 6-inches below the bottom of the pipe barrel or below the bottom of a structure, as determined by the District, such soil shall be removed to the full width of the trench and refilled with

bank-run gravel material as hereinafter specified, placed 6-inch lifts and thoroughly compacted to 95 percent maximum dry density.

No excavating shall be made below the limits of the excavation called for on the Plans or herein specified without prior approval by the District.

BEDDING

Suitable bedding, as determined by the District, shall be placed to the full width of the trench and to a depth of 6-inches below the bottom of the pipe barrel. After a pipe is bedded, the trench shall be filled to the centerline of the pipe with gravel bedding except at the joint. After the joint is inspected by the District, that portion shall be filled in with gravel beddings. Material under and around the pipe shall be carefully and thoroughly tamped.

PLACEMENT OF BACKFILL ABOVE BEDDING

From the centerline of the pipe to a point 12-inches above the top of the pipe the fill shall be sand having a maximum size stone of 3/8-inches, hand tamped. Above this point, backfill shall be suitable material from excavation or, if ordered, bank-run gravel. This backfill shall be placed in layers 12-inches deep and each layer shall be compacted with mechanical tampers to the satisfaction of the District. This backfill shall be carried up to the bottom of materials specified to be placed for pavement surfacing requirements as specified by the Town of Sudbury Highway Department.

SUITABLE MATERIAL

Suitable material for trench backfill shall be the material excavated during the course of construction, but excluding debris, pieces of pavement, frozen material, organic matter, top soil, all wet or soft muck, peat or clay, ledge excavation and rocks over 6-inches in largest dimension, or any material which, as determined by the District will not provide sufficient support or maintain the completed construction in a stable condition. Minimum cover over water pipe shall be 5-feet 0-inches unless otherwise noted or directed by the District.

PIPELINE LAYOUT

Except where otherwise directed, 1-foot 0-inches minimum clearance shall be provide between exterior of water mains and other structures. Where new main passes under utilities, it shall cross without use of bends.

Every effort shall be made to place other utilities on the opposite side of the layout. When utilities must stay within close proximity, they shall have a minimum of 4-foot horizontal separation. Electrical and telephone conduits shall be placed in concrete.

PIPELINE FITTINGS

All fittings shall be backed up with concrete thrust blocks as indicated on the standard details. Where adequate backing cannot be obtained, suitable joint restraint shall be used. Thrust block sides shall be formed with plywood and bearing areas shall be not less than indicated in the standard detail.

Restrained joints shall be used for thrust restraint on bends less than 90 degrees only where concrete thrust blocks are unsatisfactory due to soil conditions or proximity to existing utilities. Restrained joints and thrust blocks shall be used on all tees, 90 degree bends, plugs and hydrants. Restraint shall be by locking type joints as produced by pipe manufacturers. The number and type of restrained joints shall be approved by the District for each application.

The following standard details are included in the Appendix B:

a. Trench Detail

b. Thrust Block Details

c. Tapping Sleeve and Valve Detail

d. Hydrant Assembly and Valve Detail

e. Service Connection Detail

The Contractor shall verify the size of all pipes where connections are to be made.

MECHANICAL JOINTS

Prior to the installation of sleeve-type couplings, the pipe ends shall be cleaned thoroughly for a distance of 8-inches. Soapy water may be used as a gasket lubricant. A follower and gasket, in that order, shall be slipped over each pipe to a distance of about 6-inches from the end, and the middle ring shall be placed on the already laid pipe end until it is properly centered over the joint. The other pipe end shall be inserted into the middle ring and brought to proper position in relation to the pipe already laid. The gaskets and followers will then be pressed evenly and firmly into middle ring flares. After the bolts have been inserted and all nuts have been made up finger tight, diametrically opposite nuts shall be progressively and uniformly tightened all around the joint, preferably by use of a torque wrench of the appropriate size torque for the bolts.

The correct torque as indicated by a torque wrench shall not exceed valves indicated in the tabulation title TORQUE.

TORQUE

NOMINAL PIPE SIZE/INCHES	BOLT DIAMETER INCHES	MAXIMUM TORQUE FT/LB
3-24	5/8	75
3-24	3/4	90

After assembly all installations shall be inspected by the District prior to backfill. All valves, fittings and appurtenances shall be set and jointed as indicated on the drawings. At all times when pipe laying is not actually in progress, the open ends of pipe shall be closed by temporary watertight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe had been eliminated.

PUSH JOINTS

Push-on joints shall be made up by first inserting the gasket into the groove of the bell and applying a thin film of special nontoxic gasket lubricant uniformly over the inner surface of the gasket which will be in contact with the spigot end of the pipe. The chamfered end of the plain pipe shall be inserted into the gasket and then forced past it until it seats against the bottom of the socket.

The Contractor shall furnish and install all support necessary to hold the piping and appurtenances in a firm, substantial manner at the lines and grades indicated on the drawing or specified.

TAPPING SLEEVE AND VALVE CONNECTION

Tapping sleeves and valves shall consist of split, cast-iron sleeve or stainless steel tee with mechanical joint ends on the main and a flange on the branch, and a tapping-type gate valve with one flange end and one mechanical joint end. Materials and Construction Methods for the valve and valve box shall, in general, conform to the requirements herein specified for gate valves and shall be furnished with a 2inch square operating nut. The Contractor shall be responsible for verifying the outside diameter of the pipe to be tapped. Tapping sleeves shall be as manufactured by Mueller Company, Decature, IL; Dresser Industries, Anniston, AL; or an approved equal.

GATE VALVES

Materials and Construction Methods:

Valves shall be installed as shown on the drawing but in no case shall they be spaced more than 1,000feet apart. The Contractor shall furnish, set, joint, test and disinfect all valves, including valve boxes and all incidental work thereto as herein specified. The valves shall conform to AWWA Standard for Resilient-Seated Gate Valves, Designation C509. Gate Valves shall open right (clockwise). Resilient-seat gate valves shall have a valve body with a 100 percent holiday-free epoxy coating in the waterway. The valve coating shall conform to AWWA Standard for Protective Interior Coatings for Valves and Hydrants, Designation C550, and AWWA Standard for Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines, Designation C213, insofar as applicable.

Each buried valve shall be provided with a valve box. Valve boxes shall be of rough, even-grained castiron and of the cast-iron and of the adjustable, slip, heavy-patterned type. They shall be designed and constructed so as to prevent the direct transmission of traffic loads to pipe or valve. The upper or

sliding section of the box shall be provide with a flange having sufficient bearing area to prevent undue settlement. The lower section of the box shall be designed to enclose the operating nut and stuffing box of the valve and fit over the gate valve bonnet or butterfly valve operator. The boxes shall be adjustable through at least 6-inches vertically without reduction of the lap between sections to less than 4-inches.

The inside diameter of the boxes shall be at least 5 ½- inches and the lengths shall be as necessary for the depth of the valves with which the boxes are to be used. Covers shall be close fitting and substantially dirt-tight. The top of the cover shall be flush with the top of the box rim.

Gates and gate boxes shall be set in the pipe lines as indicated and specified. All valves shall be carefully erected and supported in their respective positions free from all distortion and strain. Care shall be taken to prevent damage or injury to the valves and appurtenances during handling and installation. Care shall be taken to see that the spigot ends are securely seated in the bell ends. Each gate shall be tightly closed before being placed in the line and shall remain so until the joints on each side are completely made. Gate boxes shall be set for all gates. Valve boxes shall be set plumb and centered over the valve operating nut. They shall be carefully fitted together and to the gate and securely held during backfilling. The earth around them shall be thoroughly tamped in place and the cover set to the finished grade.

All material shall be carefully inspected for defects in workmanship and materials, all debris and foreign materials cleaned out of valves openings and seats, all operating mechanisms operated to check their proper functioning, and all nuts and bolts checked tightness. Valves and other equipment which do not operate easily or are otherwise defective shall be repaired or replaced at the Contractor's expense.

SERVICE CONNECTIONS

Materials and Construction Methods:

Any service connection shall be Polyethylene EndoTrace (traceable) or standard CTS 200 psi tubing with direct bury trace wire installed 3-feet below surface with Ford compression fitting or equal.

A service connection shall consist of a corporation stop, curb stop, curb box, PE tubing and service couplings. The corporation stop and curb stop shall have a fully diameter port, with Teflon or EPDM seat, Fluorocarbon-coated brass ball, and quarter-turn open-close control. The corporation stop shall be all-bronze or all-brass construction with lapped, ground key. Outlet connection shall be compressiontype, bronze or brass ball, suitable for copper tubing service. The corporation stops shall be Type FB1000 as manufactured by the Ford Meter Box Company; Wasbash, IN or equal.

The curb stop shall be all-bronze or all-brass construction with compression-type connections suitable for copper tubing service. The curb stop shall be as manufactured by the Ford Meter Box Co., Wabash, IN; Type B44 or equal. The curb stop shall have the optional stop and waste feature (SW).

The curb box shall be of the telescoping type, designed so that vehicle loads are not transmitted to the curb stop. The box shall be tar base enamel coated inside and out and shall be equipped with an operating extension rod no longer than 30 inches unless a longer rod is needed for deeper trenches.

Service shall be a 1-inch minimum, with Polyethylene tubing CTS 200 PSI at 73. F.

Service clamps shall be double strapped, and shall be heavily galvanized malleable iron bodies with flattened, forged-steel, cadmium-plated straps furnished with neoprene gasket. The rolled threads and steel nuts shall be heavily plated to resist corrosion.

Sleeve couplings and accessories shall be pressure rated at least equal to that of the pipe. Couplings shall be cast iron and shall be Dresser Style 253 or 153, Smith Blair Style 431, or approved equal. The couplings shall be provided with A606 Type 4 or A588 "Cor-Ten" bolts and nuts or approved equal.

HYDRANT ASSEMBLIES

Hydrants shall conform to AWWA Standard Specifications for Dry-Barrel Fire Hydrants, Designation C502. Hydrants shall be of the antifreeze type and shall have a depth of bury as indicated on the Drawings. Hydrants shall open right (clockwise). For standardization, the hydrants shall be 5 ¼" main valve, Mueller Super Centurion, or AVK. The connection shall be 6-inches and shall be of the mechanical joint type. Ductile-iron retaining glans and anchor tee shall be provided. Hydrants shall be properly supported and held plumb while the joints are being made during backfilling. One cubic foot of crushed stone or screened gravel stone shall be placed as directed to drain each hydrant drip. The hydrants shall be satisfactorily braced near the bottom of the stem. Hydrant assemblies shall consist of a 12-inch x 6inch anchor tee, 6-inch gate valve and 6-inch CLDI pipe to the hydrant.

Hydrants shall be set at the location as shown on the Drawings. Main shall have a hydrant placed at least every 500-feet and shall be bedded on a firm foundation. A drainage pit 3-feet in diameter and to the limits shown on the Drawings shall be filled with screened gravel and satisfactorily compacted. During the backfilling, additional screened gravel shall be brought up around and 6-inches over the drain port. Each hydrant shall be set in true vertical alignment and shall be properly braced and rodded to the 6-inch main. Concrete thrust block shall be placed between the back of the hydrant inlet and undisturbed soil at the end of the trench. Minimum bearing area shall be as shown on the plans. Felt paper shall be placed around the hydrant elbow prior to placing concrete. CARE MUST BE TAKEN TO INSURE THAT CONCRETE DOES NOT PLUG THE DRAIN PORTS.

TESTING AND DISINFECTION HOLDING

The main and appurtenances shall be installed and tested in accordance with the latest revision of AWWA C-600. The new water main shall be disinfected in accordance with the latest revision of AWWA standard C-651. Except as otherwise directed, all pipelines shall be given combined pressure and leakage tests by an approved agent. The initial pressure and leakage test shall be carried out on the

section of pipeline between the first two valves, not exceeding one-half-mile in length, to be laid and within three-days of the completion of the laying of the section. Thereafter, the combined pressure and leakage tests shall be carried out on sections of approved length of completed pipeline, which in any case shall not exceed one-mile in length. Each isolated section shall be tested upon completion. The Contractor shall furnish and install suitable temporary testing plugs or caps; all necessary pressure pump, pipe connections, meters, gages, and other similar equipment; and all labor required.

Apart from the initial test and 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.

Unless it has already been done, 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 blow offs are not available at high points for releasing air, the Contractor shall make the necessary taps 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 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 one and one-half times the static pressure up to 200 psi. While maintaining this pressure, the Contractor shall make a leakage test by metering the flow of water into the pipe. If the average leakage during a two-hour period exceeds a rate of 10-gallons per inch of diameter per 24-hours per mile of pipeline, the section shall be considered as having failed the test.

If the section fails to pass pressure and leakage test, the Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting, or joint all at his own expense and without extension of time for completion of the work. Additional test and repairs shall be made until the section passes the specified test.

If, in the judgement 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.

The Contractor shall furnish all equipment and materials necessary to do the work of disinfecting, and shall perform in accordance with the procedure outlined in the AWWA Standard for Disinfecting Water Mains, Designation C-651.

The dosage shall be such as to produce not less than 10 ppm after a contact period of not less than 24hours. After the 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 dispose of the water used in disinfecting and flushing in an approved manner. The Contractor shall provide as an affidavit of compliance the bacteriological test results certifying the water sampled from the water main to be free from coliform. The Contractor shall repeat the above procedure as often as necessary to rid the pipes of any evidence of contamination as determined by the bacteriological analysis. The District may require retesting if an extended period of time has passed between the original testing and the regular demand of water from the main.

METERS

The Sudbury Water District will provide and install all meters up to 1-inch. Meters 1½-inch and larger must be purchased and installed by the owner and shall contain upstream and downstream ports and downstream shutoff valve to allow for periodic testing. The installation shall be inspected and approved by the District.

The District utilizes an automatic meter reading system for billing purposes. Each meter is outfitted with a radio transmitter to allow the District to remotely read the water usage at each service. An Opt-out program is available for an additional fee.

Owners of Meters 1 ½ inch and larger must test the meter every 3 years and maintain and repair as necessary to record water according to current American Water Works Association standards.

Meters ¾-inch through 1 ½-inch shall be Neptune T-10 reading in gallons with R900 radio MIU.

Meters 2-inch and over shall be Neptune Compound reading in gallons with R900 radio MIU (Sensus meters may be substituted using Neptune R900 radio MIU).

Fire line meters shall be Neptune HP Protectus III reading in gallons with R900 radio MIU. (Sensus meters may be substituted using Neptune R900 radio MIU).

PRIVATE HYDRANTS

The purpose of this standard is to clarify the requirements for testing, inspection, maintenance and marking of private hydrants.

Any hydrant located on private property is the responsibility of the property owner and in accordance with the General Rules and Regulations of the Sudbury Water District the owner is responsible for the maintenance, inspection and service of private hydrants once every two years (biennially);

Prior to performing private hydrant maintenance the contracted hydrant-testing service must first notify Sudbury Water District (978) 443-6602 together with Sudbury Fire Department (978) 443-2239;

Biennial private hydrant maintenance may be conducted from April 1st thru June 30th or October 1st thru November 30th (weather permitting);

The hydrant-testing service must complete and submit a Private Hydrant Maintenance Report Form; All unsatisfactory/failed findings documented on the Private Hydrant Maintenance Report must be corrected prior to receiving certification status;

Certification status is obtained by receiving a passing mark on the Private Maintenance Report together with an official endorsement by a Sudbury Water District authorized agent;

Private-hydrant maintenance is a condition of providing public water service. Any repairs necessary for proper operation of private hydrants are the responsibility of the owner and shall be completed as soon as possible but no longer than thirty-days after the testing, inspection and maintenance.

Sudbury Water District is not responsible for clearing snow accumulation from hydrants; owners of property where private hydrants are located are strongly advised to clear snow from hydrants as it impacts public safety.

CROSS CONNECTION AND BACKFLOW PREVENTION

Per the Commonwealth of Massachusetts Drinking Water Regulations governing Cross Connections (310-CMR-22.22), all industrial and commercial establishments or residential units with fire protection systems attached to the Water District will be required to install, at the service entrance and immediately downstream of the meter, a reduced pressure (RP) back-flow device or other approved backflow prevention device. The device must be accessible to the Water District for testing during normal business hours. The device and its installation (including location) must be approved by the Water District and all costs including but not limited to repair, overhaul, replacement, and bi-annual testing will be paid by the owner to who the bills are so assigned. The term “approved backflow prevention device” will mean a device which is on the “approved list of backflow preventers and double check valves” as described in 310 CMR, 22.22, as the same may be amended from time to time. Said approval lists have been adopted by the District.

Charges generated as a result of annual testing, inspection and retesting of all backflow prevention devices for reasons of cross contamination control at residential units with fire protection shall be billed directly to the organization of unit owners for assessments as same may deem appropriate as part of common area expenses in proportion to the percentages set forth in the master deed on record of the undivided interests of the respective units in the common area and facilities;

Said charges are to be directed to and assumed directly by and shall become the responsibility of the organization of unit owners through its condominium association appointed trustee(s), its general contractor and/or management-company, or such other authority acting on its behalf.

Appendix A- Water Impact Report Guidance

Per Sudbury Water District Rules and Regulations, any person applying for water use having a design demand greater than 2,500 gallons per day (gpd), or a service line over 2-inches in diameter must provide a Water Impact Report to the Sudbury Water District, for approval by the Board of Water Commissioners.

This report must include the following:

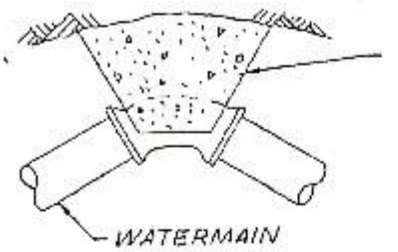
- Project name, applicant, and contact information
- Number of units
- Estimated project start/end dates including dates for any project phases, if applicable
  Estimated average day water demand and maximum day demand
- Expected impact of the project of the District's existing supply system, including effect on water flow speed and direction through water mains proximate to the new service or services, maintenance of adequate fire flows and impact of the project on the District's Water Management Act Withdrawal Permit compliance.
- Conditions and water conservation measures that will mitigate the effect of the project's impact (see menu on page 19 for suggestions):

Possible water conservation techniques for new developments/upgraded services that fall under Water Impact Report regulation.

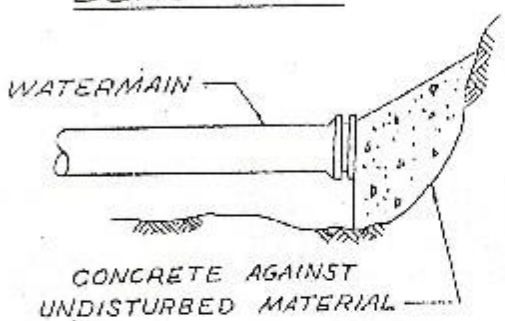
OUTDOOR CONSERVATION ACTION	Est. Water Savings Per Year for Average 4-Person Household
Natural Lawn and landscape (no supplemental irrigation):	81,600 gallons*
Utilize captured rainwater for irrigation needs:	Depends
Drip irrigation only:	Depends
Maximum total turf area of 4,000 sq. ft. (approx. 1/10 acre):	48,960 gallons*
Minimum 6 inches 10% organic soil added to landscaped/turf areas:	Depends
Fix all outdoor leaks (does not apply to new developments):	Depends
Use pool cover:	400 gallons
Devices to increase efficiency of irrigation system:	Depends
INDOOR CONSERVATION ACTION	Est. Water Savings Per Year for Average 4-Person Household
Replace all old toilets with ultra-low flow toilets (1.6 gpf) (does not apply to new developments):	Depends
Horizontal axis washing machines:	7,300 gallons
Use EPA Water Sense Labeled Fixtures (new development):	Depends
Use high efficiency spray nozzles and dishwashers:	Depends
Low flow aerators (1.2 gpm) on all faucets (does not apply to new developments):	5,200
All showerheads flow-restricted (2.5 gpm) (does not apply to new developments):	4,000 gallons
Fix all leaks (does not apply to new developments):	Depends

***** Assumed baseline: ¼ acre irrigated 1 inch per week for 3 months

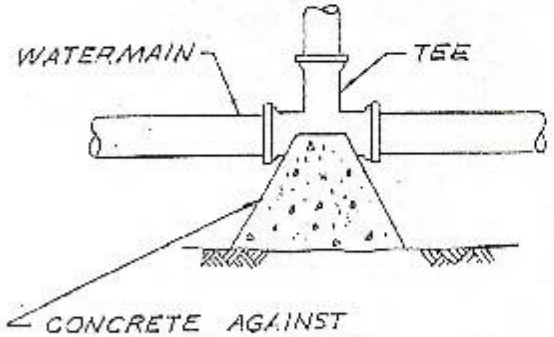
APPENDIX B - STANDARD DETAILS



BEND - PLAN



PLUG - ELEVATION



TEE - PLAN

NOTE:

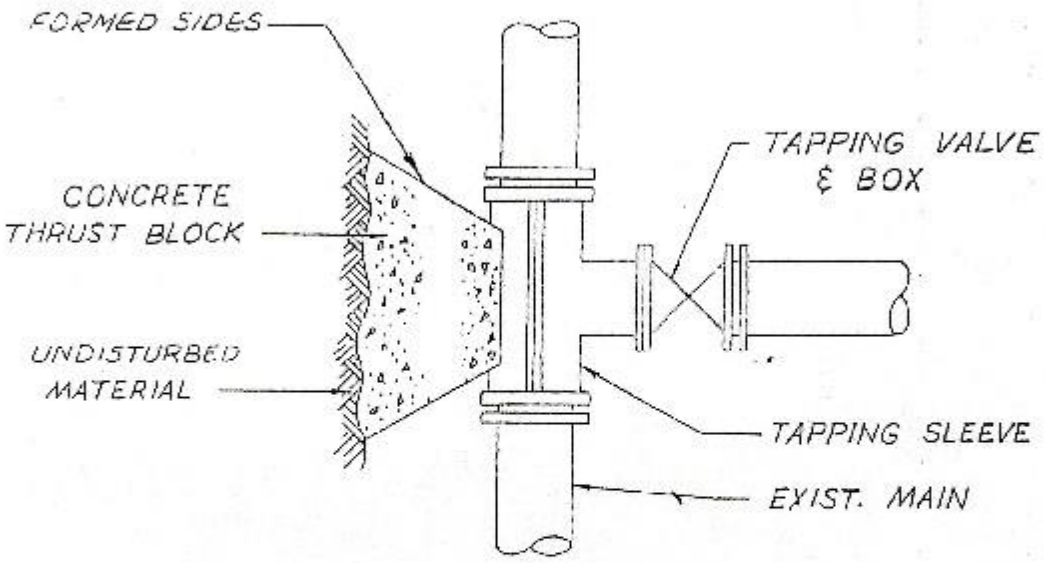
1. CONCRETE FOR THRUST BLOCKS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI AT 28 DAYS.

2. THRUST BLOCK BEARING AREAS TO BE IN ACCORDANCE WITH TABLE BELOW, UNLESS DETERMINED OTHERWISE BY THE ENGINEER BECAUSE OF SOIL CONDITIONS.

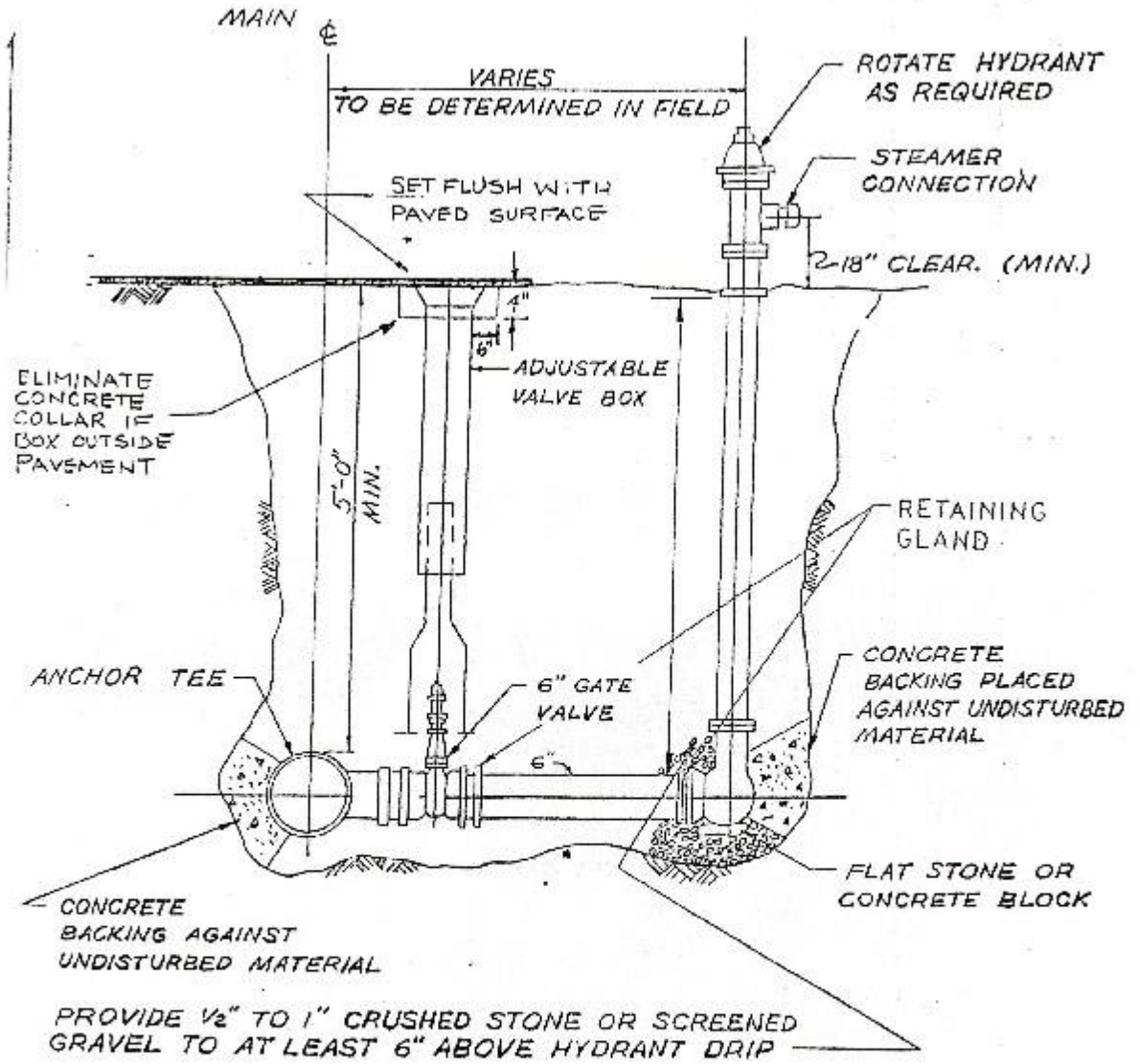
TABLE OF BEARING AREAS S.F			
SIZE OF MAIN (IN)	90° BEND	TEES AND PLUGS	45° BEND
8	6	4	2
6	4	3	2

THRUST BLOCK DETAILS

NO SCALE



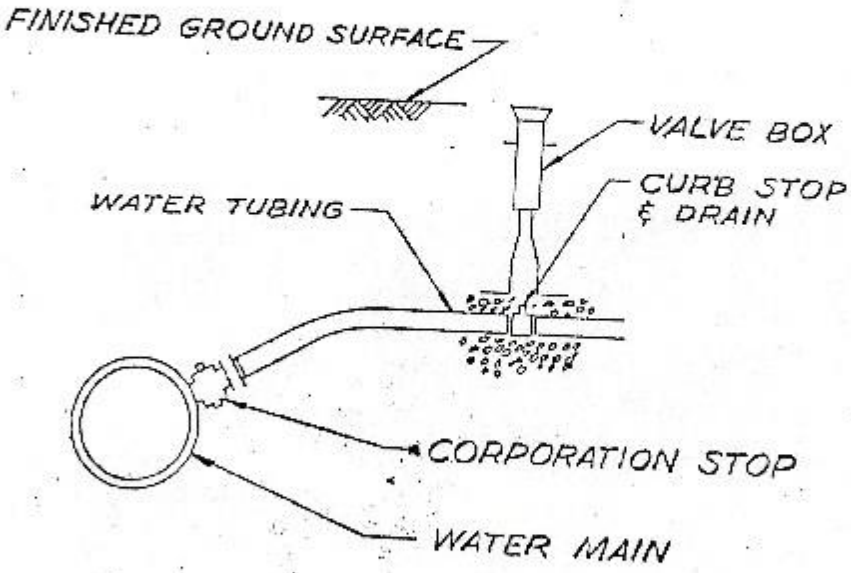
TAPPING SLEEVE & VALVE DETAIL
NO SCALE



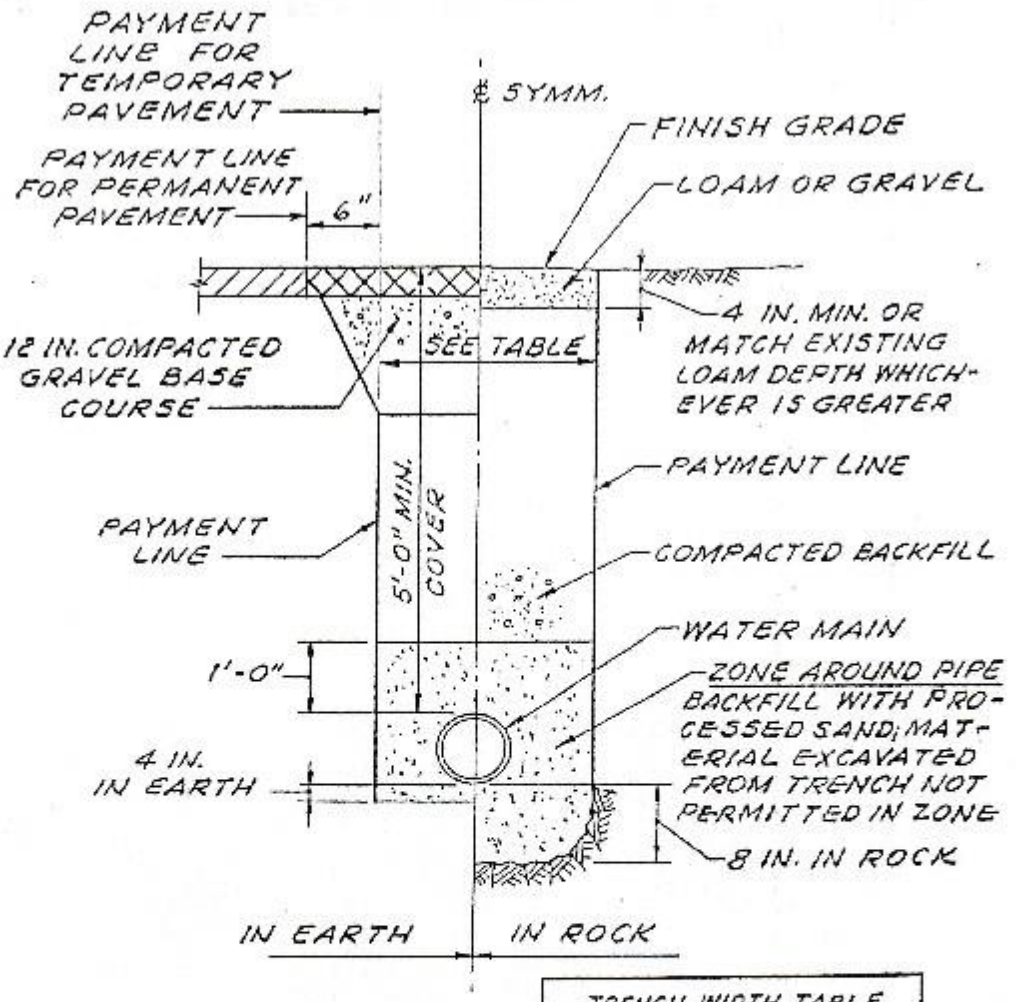
HYDRANT ASSEMBLY AND VALVE DETAIL

NO SCALE

NOTE: RETAINING GLANDS SHALL BE PROVIDED AS SHOWN



SERVICE CONNECTION DETAIL
NO SCALE



TRENCH WIDTH TABLE			
PIPE DIA. IN.	≤12	16	
TRENCH WIDTH IN.	48	52	

NOTE:

PAYMENT FOR PAVEMENT INSTALLED BEYOND PAYMENT LINE WILL BE MADE ONLY WHEN SUCH INSTALLATION IS SPECIFICALLY AUTHORIZED BY THE ENGINEER.

TRENCH DETAIL

NO SCALE