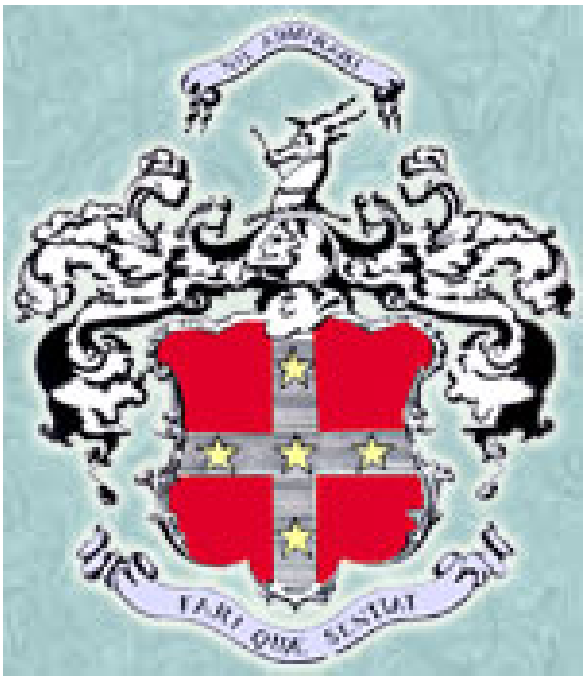

Regulations Governing the Installation and Maintenance of the Public Water System in the Town of Randolph, Massachusetts

4/28/2009

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Wastewater Use Ordinance
Town of Randolph, Massachusetts

An ordinance regulating the use of public and private water systems, the installation and connection of private water systems and building services, and providing penalties for violations thereof: In the Town of Randolph, County of Norfolk, Commonwealth of Massachusetts.

Be it ordained and enacted by the Board of Public Works of the Town of Randolph, Commonwealth of Massachusetts as follows:

Definitions

Unless the context specifically indicates otherwise, the meaning of terms used in this ordinance shall be as follows:

“Agent” - Shall mean any individual, firm or corporation hired by the applicant or owner to install a building water service.

“Applicant” - Shall mean any person(s) requesting permission to withdraw water from the water works of the Town of Randolph.

“Available” - A public/private water system shall be considered available when the property upon which a building is situated abuts a street, easement, or right of way in which a public/private water system is located. If said building is more than one hundred fifty feet (150’) from the nearest public water system, application may be made in writing requesting a declaration that public water system “is not available”.

“Board” - Shall mean the Randolph Board of Public Works, or their duly authorized deputy, agent or representatives(s).

“Building Service” - Shall mean the extension from the building water service commencing at the inner face of the building wall and extending to the public/private water system or other place of connection.

“Cross Connection” means any actual or potential physical connection or arrangement between a pipe conveying potable water from a public water system and any non-potable water supply, piping arrangement or equipment including, but not limited to, waste pipe, soil pipe, sewer, drain, other unapproved sources.

“Distribution System” means a system of conduits (laterals, distributors, pipes, mains, and their appurtenances, and in some cases includes interior plumbing) by which potable water is distributed to consumers. The distribution system may include booster pumping stations, storage tanks and reservoirs, and chlorination and/or disinfection facilities.

“DPW” – Shall mean Randolph Department of Public Works.

“Easement” - Shall mean a certain area of land designated by the Board for maintenance of the water system. The owner is required to keep this “Easement” accessible and free and clear to the DPW.

“Hydrant” - Shall mean the above ground appliance (as defined by the National Fire Protection Association (NFPA)) used to provide a water supply to fire apparatus in the event of a fire or other emergency.

“Hydrant maintenance” – Shall mean regular maintenance (in accordance with the American Water Works Association (AWWA M-17)) of a fire hydrant includes a detail inspection,

lubrication, repairs (if needed), flow test, and record keeping and should be done at least once a year. This is done to determine its capability to provide the desired water supply for which it was designed.

“Hydrant owner” – Shall mean the person on entry (or their designee) of record, according to Town records, that is responsible for tax payments (or other payment to the Town) for the property on which the hydrant is installed.

“Illicit Connection” – Shall mean any connection to the public water system which has not been approved by the Board.

“Inspection” means an on-site inspection and survey by a qualified individual to determine the existence and location of cross connections and/or the physical examination and testing of an installed backflow prevention device to verify that the backflow prevention device is functioning properly.

“May” - is permissive.

“Ordinance” - Shall mean Regulations Governing the Installation and Maintenance of the Public Water System in the Town of Randolph, Massachusetts.

“Owner” means any person maintaining a cross connection installation or owning or occupying premises on which cross connections can or do exist.

“Owner's Agent” means any person or body designated by the owner to act as his or her representative.

“Parcel” – Shall mean an area of land as marked on the assessment drawings on file in the office of the Town Assessor, Randolph, Massachusetts.

“Permit” - Shall mean the written application for either residential, commercial, or industrial water service from the Board or Authority.

“Person” – Shall mean any individual, for company, association, society, corporation, group, or partnership.

“Potable Water” means water from any source that has been approved by the Department for human consumption.

“Private Water System” - Shall mean a water system which the public authority has not accepted control or ownership rights, or maintenance responsibilities.

“Public Water” – Shall mean any portion of the municipal water system in which all owners of abutting properties have equal rights, and which is controlled by municipal authority.

"Public Water System" – Shall mean the public system of water mains installed by the Town of Randolph pursuant to the authority conferred by Acts of 1955, Chapter 273.

"Regulations" – Shall mean Regulations Governing the Installation and Maintenance of the Public Water System in the Town of Randolph, Massachusetts.

"Shall" - is mandatory, "May" is permissive.

"Town" – Shall mean the Town of Randolph in the County of Norfolk, Commonwealth of Massachusetts.

"Tri-Town" - Shall mean the Tri-Town Board of Water Commissioners serving the towns of Randolph, MA; Holbrook, MA; and Braintree, MA.

Section 1
General Information

1.1 Connection to Public/Private Water System

A. The owner(s) of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the Town and abutting on any Street, easement, alley, or right-of-way in which there is now located or may in the future be located a public water system of the Town, is hereby required at the owner(s)' expense to install suitable plumbing facilities therein, and to connect such facilities directly with the proper public water system in accordance with the provisions of this ordinance, plumbing rules and regulations, or any other applicable rules and regulations of the Town, within 60 days after date of official notice to do so by the Board.

B. The plumbing shall be so arranged as to prevent cross-connections within the water distribution system.

1.2 General Information

A. All water customers are responsible for cleaning, maintaining, repairing or replacing any particular water main or service connection from their property line to their building that fronts on a public way. All customers on a private way are responsible for all services, distribution pipes and pump stations from the public way. The Town assumes the liability when located in the public way.

B. Any person proposing a change in a private water system or a new connection to the public system shall notify the Board at least forty-five (45) days prior to the change or connection.

C. No unauthorized person(s) shall maliciously, willfully, or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the water works. Any person(s) violating this provision shall be subject to immediate arrest under charges of disorderly conduct.

D. No unauthorized person shall enter or remain in or upon any land or structure of the Water and Sewer works. Any person violating this provision shall be subject to charges of trespass.

E. The Town of Randolph is a member of the Tri-Town Board of Water Commissioners, (the Town of Randolph , Board of Public Works; Holbrook Board of Selectmen/Board of Public Works; Braintree Department of Public Works). The Tri-Town Board of Water Commissioners oversees all issues of the reservoir system, water use, water bans, etc.

1.3 Water Use and Water Bans

A. The following are the Water Use Phases for the Tri-Town Board of Water Commissioners:

Phase One
The use of all automatic watering devices and soaker hoses is prohibited. Only the use of hand held hoses with shutoff nozzle shall be allowed. No organized car washes shall be allowed from June 1 to September 1 of the year. The filling of in-ground or above-ground swimming pools from the municipal water supply shall be prohibited after June 1 of the year. This phase is in effect at times when further restrictions are not required.

Phase Two (includes Phase One)
When reservoirs are below 80% full a further restriction shall be implemented as follows: Outside water use is restricted to the hours of 7:00 A.M - 10:00 A.M. and 6:00 P.M. - 9:00P.M.

Phase Three (includes Phase Two)
When reservoirs are below 70% full (with incoming water) a further restriction shall be implemented as follows: Outside water of Phase 2, the hours would be reduced to 6:00 P.M.- 9:00 P.M. only.

Phase Four (Includes Phase Three)
When reservoirs are below 70% full (with no incoming water) a further restriction shall be implemented as follows: There shall be no outside use of water.

Phase Five (Includes Phase Four)
When Reservoirs are between 50% and 40% full a further restriction shall be implemented as follows: All outside watering shall be prohibited as in Phase 4 and all use of nonessential water is prohibited.

1.4 Water Emergency and Conservation

A. Whenever a declaration of a state of water supply emergency or resulting order is legally declared and imposed on the Town of Randolph by an appropriate state or federal agency, or a water conservation emergency declared by the Tri-Town Board of Water Commissions, (the Town of Randolph , Board of Public Works; Holbrook Board of Selectmen/Board of Public Works; Braintree Department of Public Works), the Board is authorized to promulgate such reasonable rules and regulations as are necessary to implement said declaration, order or water conservation emergency.

1.5 Penalties

A. Any person found to be violating any provision of this Regulation, shall be served by the Town with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations.

B. Any person who shall continue any violation beyond the time limit provided shall be charged to the fullest extent of the law. Each day in which any such violation shall continue shall be deemed a separate offense. If the violation continues, the Board shall direct Town Counsel to seek an injunction in the Superior Court of the Commonwealth of Massachusetts requiring the offender to cease all violations.

C. Any person violating any of the provisions of these Regulations shall become liable to the Town for any expense, loss, or damage occasioned by the Town by reason of such violation.

D. Penalties are for a misdemeanor offense and shall be $200.00 for every illicit connection per day per violation. All other violations of these regulations are subject to a penalty of $100 per day of violation.

1.6 Application of Regulations

A. The validity of any section, clause, sentence, or provision of these Regulations shall not affect the validity of any other part of these Regulations which can be given effect without such invalid part or parts.

B. The Board may from time to time, add to, delete from, change or clarify any of these rules and regulations. Any request for amendment of these rules and regulations must be submitted in writing, with the reasons therefore, to the Board for its approval. Said amendment shall be in force only after its passage, approval, recording and publication as provided by the law.

C. In addition to the rules and regulations set forth in this Regulation, all persons shall comply, in full, with the Tri-Town Board of Water Commissioners and Randolph/Holbrook Joint Water Board.

D. These Regulations shall supersede any and all previous Rules and Regulations and shall be in full force and effect from and after passage, recording, and publication as provided by law.

1.7 Submittals

A. The developer may be required by the Board to submit plans for review and approval of proposed subdivisions and/or private water systems. All plans shall conform to the following parameters:

- All plans must be standard 24" x 36". Scaling shall be 40 (horizontal).
- Stamped by a Registered Professional Engineer in Massachusetts.

B. Plans shall depict the following information, if applicable:
   - Water main plan.
   - Datum.
   - Bench elevations.
   - Locations of existing utilities including pipe size and material (sewer, water, drain, gas, telephone, etc). Existing utilities must be clearly marked "Existing" with flags and/or broken lines. Proposed utilities must be clearly marked "proposed" with flags and/or solid lines.
   - Site plan of booster pump station, pumps, controls, generator, fence, etc.
   - North arrow.
   - Water bodies.
   - Wetlands, wetland flags, and buffer zones.
   - Easement boundaries.
   - Boring locations.
   - The Title Block must describe the location with reference to existing streets, some known place, or other approved plan.

C. The following information, if applicable, shall be submitted to the Board for review and approval:
   - Amount of water to be used from water system (gallons/day).
   - Calculations showing that all pipes can provide flows needed by the development.
   - Boring logs.
   - Booster pump station design points.
   - Pump curves.
   - Methodology of pump station construction.
   - Size of pump station emergency generator (auxiliary power must be provided with automatic transfer).
   - Pump station alarm system.

D. The proposed design shall conform to the following requirements:
   - Vavles, pipe, fittings, and appurtenances shall conform with the materials specified in these Regulations.
   - Minimum cover on DI pipe is 5-feet depending on geology and location.
   - Minimum cover on copper pipe is 4-feet depending on geology and location.

E. The developer shall comply with the following general requirements:
   - The developer will obtain all necessary permits and permission to do work on Federal, State and Town property, also the cost for easements, rights, permits and/or bonds will be paid for by the developer.
   - Construction and maintenance costs do not exclude developer or future owner from water assessment for tying into the public water system and use of the public system.

- Only a licensed Drain Layer or Water Contractor shall be approved as the General Contractor.
- All cost of construction and maintenance of the new private system shall be paid for by the developer.
- Only original plans (on mylar) may be submitted for review and approval. These will be held by DPW. Prints and working drawings may be submitted for discussion.
- No construction shall start until permission is given in writing by the Board, and a permit is granted.
- Construction can be stopped at any time, when in the opinion of the Board, the work is not satisfactory or it is in the best interest of the Town to do so.
- No changes shall be made to the original approved plan accepted by the Board. Any changes that are to be made must have the Board's approval.
- Record drawings must be submitted at the completion of the project construction. Record drawings will show center of all gate valve covers, sizes and depths of water pipes and fittings, bends, tees, etc. A minimum of three ties to permanent structures will be provided to determine their location. All houses, lot numbers, property lines, roadways and any easements shall be shown.
- If the property is sold, the agreement between the Town and original owner shall be conveyed to the new owner regarding the bonds, permits, fees, maintenance, etc.

Section 2
Licensing

2.1 Master Drain Layers Licensure

A. Master plumbers, journeyman plumbers and drain layers of established reputation and experience will be licensed by the Board as Master Drain Layers authorized to perform work, subject to compliance with the following requirements:

1. Applicants for licenses are required to pay a filing fee in accordance with the fee schedule adopted by the Board annually as Master Drain Layer, payable to the Town, all of which will be refunded to the applicant if his application is rejected.

2. If approved by the Board, applicants for licenses shall file with the Board a proper and acceptable Performance and Guarantee Bond in the amount of $2,000.00, which shall remain in full force and effect for a period of one year from the date of application.

3. Applicants for licenses, after approval by the Board, shall file with the Board a Certificate of Insurance in the sums of $100,000 - $300,000 to cover Public Liability and Certificate of Insurance in the sum of $50,000 covering Property Damage, including explosion, underground, and collapse. In addition, a Certificate of Insurance covering Workmen's Compensation shall be filed, all of which shall remain in full force and effect for a period of at least one year from the date of approval. Said insurance shall indemnify the Board and the Town of Randolph against any and all claims, liability or action for damages, incurred in or in any way connected with the performance of the work by a Master Drain Layer, and for or by reason of any acts of omission of said Master Drain Layer in the performance of the work by a Master Drain Layer, and for or by reason of any acts or omission of said Master Drain Layer in the performance of his work.

B. The Board will license Master Plumbers, Journeyman Plumbers and Drain Layers who are personally engaged in the installation of water mains and service connections upon payment of a license fee in accordance with the fee schedule adopted by the Board annually.

C. All licenses expire on December 31st at midnight and no licenses are transferable. The fee for each renewal thereof shall be in accordance with the fee schedule adopted by the Board annually which shall be due and payable on or before January 15th.

D. Failure to renew said license by January 15th will require the filing of a new application for a license.

E. The business address of all licensed drain layers must be registered with and immediate notice of change therein given to the Board.

F. The Board reserves the right to revoke any license if any provision of said license is violated.

G. All licenses are required to give personal attention and be present during all installations and shall employ only competent workers.

H. No person, firm or corporation, except a duly licensed Master Drain Layer shall make connection to any public water system.

I. All agents shall agree to perform work according to all rules, regulations and conditions of the Board prior to any work done in the Town. The agent shall be fully insured and shall indemnify the Town against any and all claims, liabilities, or actions for damages incurred in, or in any way connected with, the performance of the work on the building water service, or by reason of any acts of omission in the performance of his work.

Section 3
Permits and Fees

3.1 Preamble

A. The applicant agrees to pay to the Town of Randolph, all the costs, past and present, to connect with the common water main in said street including all labor and materials or any other expense incurred necessary for the proper water connections. The applicant further agrees for himself, his heirs, devises and assignees that the said Board shall have access at all reasonable hours to the said premises to see that all laws, ordinances, rules and regulations relating to the water are complied with. The applicant further agrees to strictly conform to the laws and ordinances relating to the water system and to the rules and regulations that are now in force or may be adapted in relation thereto and also to the plumbing laws and ordinances so far as they relate thereto.

3.2 Prohibitions

A. No unauthorized person shall uncover, make any connections with or opening into, use, alter or disturb any public or private water main or appurtenance thereof without first obtaining a written permit from the Board or their duly authorized representatives(s). Any person proposing a new connection to the water works shall notify the Board at least forty-five days (45) prior to the proposed change or connection in order to obtain approval.

B. No person shall break, cut or remove any pipe of the public/private water system or make or cause to be made any connection to said water system except through the service connection branches provided for that purpose unless, in another manner, approved by the Board.

C. Drain layers shall only install building service connections or private water systems during the normal working hours of the Water Department. Emergency working hours shall be approved in writing by the Board.

3.3 Permits

A. The owner or his agent shall file an application on a special form titled “Application for Connection to Water Distribution System” furnished by the DPW. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Board. A permit inspection fee shall be paid to the Town of Randolph at the time the application is filed in accordance with the fee schedule adopted by the Board annually.

B. For any permits, if said permit is granted, the permit shall be valid for no more than thirty (30) calendar days from the date of issue. If the project does not commence within this time period, the permit shall become invalid.

C. The owner or his agent shall give the Water Department, Sewer Department, and gas company a minimum of 48-hours written notice prior to water service construction.

D No licensed drain layer shall have more than five permits outstanding at any time.

E. One copy of the permit shall at all times be available for inspection at the site of the work.

F. All costs and expenses incidental to the installation, inspected by the Water Department, and connection of the building water service to the public/private water system shall be borne by the owner or his agent. The owner shall indemnify the Town from any loss or damage that may directly or indirectly be occasioned by the installation and connection of the building water service connection.

3.4 New Service Connection Fees

A. If the owner is seeking a new service connection for residential, commercial, or industrial use onto an existing water main, the owner shall pay a fee to have the Town install the service from the existing water main to the owner's property line. Fees paid to Town of Randolph shall be in accordance with the fee schedule adopted by the Board annually.

B. This fee shall be paid at the time the application is filed and shall be considered in addition to the permit inspection fee.

3.5 New Water Meter Fees

A. All water meters installed in the Town of Randolph shall be installed in accordance with American Water Works Association standards. Sizing of the meter shall be determined by the Town's Department of Public Works. Fees for new meters paid to Town of Randolph shall be in accordance with the fee schedule adopted by the Board annually

3.6 Hydrants Usage Fees

A. All hydrant usage (with the exception of emergency situations) shall be coordinated with and approved be the Department of Public Works prior to the hydrant usage. Fees for hydrant usage shall be in accordance with the fee schedule adopted by the Board annually.

Section 4
Water Shut-off Policy

A. All water bill payments are due within thirty (30) days. If payment is not received within thirty (30) days interest will accrue from the date of mailing at the rate of twelve percent (12%) per annum.

B. The town may shut off the flow of water from its mains or pipes to the premises of any customer who has failed or refused to pay the lawful charges of the Town for water previously consumed. The employees of the Department of Public Works may, upon any business day between the hours of 8:00 A.M. and 4:00 P.M., enter upon the premises of a customer whose payments are in arrears and close a valve, remove or disconnect a meter pipe or fitting, if necessary, for the purpose of shutting off the flow of water as above authorized, provided that the customer has been given thirty-six hours notice in person or by registered or certified mail directed to his last address furnished to the Town. If such address is different from the address of the premises affected a copy of such notice shall also be so mailed to the address thereof. Upon entering the premises to shut off water, the Town representative shall, before shut-off, state to an occupant, if present, that service is to be shut off.

C. The Town shall not intentionally shut off the water service to any domicile occupied by a person who is seriously ill if the Town receives written notice from the Town Health Department or a registered physician verifying the fact of such illness. Such certificates must be renewed monthly during the course of such illness.

D. The Town shall not intentionally shut off service to any domicile occupied by a child under the age of 12 months if the Town receives certification from the Town Health Department, Clergy, Registered Physician, Hospital or Government Official, or Birth Certificate. The Town shall not intentionally shut off service to any domicile in which all occupants are age 65 or older.

E. The Town shall not shut off the flow of water to any residential building in which the occupant thereof is not the customer of record of the Town, without first complying with the notice provision of Paragraph (B.), and also providing notice to each affected dwelling unit in the manner prescribed by the Water and Sewer Department regulations. Such notice shall contain the following information:

The amount then due and payable for such water service;

The date on or after which such service will be shut off, such date to be not less than fifteen (15) nor more than thirty (30) days after the day on which such notice is first given;

The date on which said notice is given; and the right of the occupants of such building to pay the amount due or portion thereof as is prescribed by regulation and thereby avoid a

cessation of service. Any employee of the Town may at any reasonable time enter the common hallways of such building to post or deliver said notice.

E. Service may be terminated only if:

A bill is not paid within 90 days from receipt; and the Town, not earlier than 45 days after the rendering of the bill (i.e. first request for payment) renders a second request for payment, stating its intention to terminate on a date not earlier than 92 days after the receipt of the original bill; and

The Town renders a final notice of termination not earlier than 90 days after receipt of the bill. Such notice must be rendered at least 36 hours, but not more than 14 days, prior to termination; and

The bill remains unpaid on the termination date indicated on the notice.

In no event shall service to a customer be terminated for failure to pay a portion of any bill which is subject of a dispute which has been made with the Town in accordance with any applicable regulations. However, a customer shall be responsible for and accordingly shall be subject to termination for non-payment of any portion of any bill which is not the subject of a dispute. All second requests and termination notices shall be accompanied by a brief explanation of customer rights.

F. There shall be a fee for the restoration of Water Service after service has been terminated pursuant to this bylaw. Said fee and unpaid Water and Sewer bill to be paid or a suitable payment plan entered into with the Town Treasurer prior to the reconnection of water service. The fee for each restoration thereof shall be in accordance with the fee schedule adopted by the Board annually.

Section 5
Private System and Building Connection Requirements

5.1 General Requirements

A. All particular private water systems, water services or building connections shall be of such type and size, laid at such depth, and in such location as provided by a Massachusetts registered Professional Engineer and approved by the Board.

B. A separate and independent building water service shall be provided for every building; except where one building stands at the rear of another on an interior lot and no private building water service is available or can be constructed to the rear building through an adjoining alley, court, yard, or driveway, the building water service from the front building may be extended to the rear building and the whole considered as one building water service with the written approval of the Board.

C. All necessary easements for water service connections shall be obtained by the property owner and recorded in the Registry of Deeds or Land Court.

D. Old building water services may be used in connection with new buildings only when, on examination and test authorized by the Board, they are found to meet all requirements of these Regulations.

E. The applicant for the building water service permit shall notify the Board when the building water service is ready for inspection and connection to the public/private water system. The connection shall be made under the supervision of the Board or their representative. No building water service connection shall be backfilled without inspection.

F. Notification of the completion of the work with certification that all conditions have been complied with shall be filed in writing with the Board within 24 hours after the completion of the work covered in each permit.

5.2 Installation Requirements

A. The size and material of the building water service shall be subject to the approval of the Board, but in no event shall the diameter be less than 3/4-inch and laid with a minimum depth of cover of 60-inches.

B. The size and material of the private water mains shall be subject to the approval of the Board, but in no event shall the diameter be less than 8-inch and laid with a minimum depth of cover of 60-inches.

C. The alignment, materials of construction of a building water service or private water system and the methods to be used in excavating, placing of the pipe, jointing, testing and backfilling the trench, shall all conform to the requirements set forth in appropriate

specifications of the American Society of Testing Materials (ASTM) and American Water Works Association Standards.

D. Whenever possible, the building water service shall be brought to the building at an elevation below the basement floor. The depth shall be sufficient to afford protection from frost. The building water service shall be laid at uniform grade and in straight alignment insofar as possible.

E. The connection of the building water service into the public/private water system shall be made at the corporation stop, if such a stop is available at a suitable location. If no corporation stop is available, a connection may be made by tapping the existing water main by an approved method as approved by the Board, and then inserting a corporation stop and saddle.

F. The connection of a private water system into the public water system shall be made at a tee, if such a tee is available at a suitable location. If no tee is available, a connection may be made by using a tapping sleeve on the existing water main by an approved method as approved by the Board.

G. At all times when pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs or by other approved means.

H. All joints between pipes of different materials shall be made with approved couplings.

I. The Board may require, at any time, for such curb stops, to be installed as it may deem necessary for the proper maintenance of said particular water service.

J. The Board may require, at any time, for such gate valves, to be installed as it may deem necessary for the proper maintenance of said particular private water system.

K. All water service connections or water mains shall be installed in separate trenches from other utilities, 10-feet apart and 18-inches above sewer pipe(s) as provided by Title V, unless submitted and approved by the Board.

L. No building service connection shall be laid parallel to and within 5-feet of any bearing wall.

M. The owner shall inspect each pipe and fittings before being installed. No pipe shall be laid unless it is generally straight and free from defects. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a sound unit at the owner's expense.

N. All excavations for building water service or water main installations shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored at the owner's expense, in a manner satisfactory to the Town.

Temporary bridges shall be installed over trenches when deemed necessary in the judgment of the Board, to provide convenient public travel.

O. All excavations required for the installation of a building water service or water mains shall be open trench work unless otherwise approved by the Board. Pipe laying and backfill shall be performed in accordance with ASTM Specifications except that no backfill shall be placed until the work has been inspected.

P. Material for backfilling the trench, except for sub-base (top 17-inches) shall be obtained from excavated trench material, if approved by the Board. Otherwise, the owner shall backfill with processed gravel borrow material. The compaction process will be gravel placed in 8-inch layers and thoroughly compacted by mechanical rammers, vibrators or a jetting process.

Q. When water is present in a trench a sump of crushed stone shall be constructed, and water shall be pumped at all times. The trench shall be kept dry at all times during construction.

R. After laying of the pipe is completed, the interior of the water service shall be thoroughly cleaned from construction debris.

5.3 Inspections

A. The owner shall grant the Board and other duly authorized agents of the Town permission to enter, at reasonable times, all properties for the purposes of inspection, observation, measurement, repair, maintenance, sampling, and testing in accordance with the provisions of this Regulation. All entry and subsequent work, if any, on said easement, shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

B. While performing the necessary work on private properties, the Board or duly authorized agents of the Town shall observe all safety rules applicable to the premises established by the owner. The owner shall be held harmless for injury or death to the Town employees, and the Town shall indemnify the owner against loss or damage to its property by Town employees and against liability claims and demands for personal injury or property damage asserted against the owner and growing out of the gauging and sampling operation, except as such may be caused by negligence or failure of the owner to maintain safe conditions.

5.4 Pressure and Leakage Testing

A. Except as otherwise directed, all pipelines shall be given combined pressure and leakage tests in sections of approved length.

B. The Contractor shall furnish and install suitable temporary testing plugs or caps; all necessary pressure pumps, pipe connections, meters, gages, relief valves, and other necessary equipment; and all labor required, to test the pipe specified in this Section.

C. 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 shall coordinate with the Engineer in advance of testing.

D. However, pipelines in excavation or embedded in concrete shall be tested prior to the backfilling of the excavation or placing of the concrete and exposed piping shall be tested prior to field painting.

E. 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 excavations and do the necessary backfilling and make the necessary taps at such points and shall plug said holes after completion of the test. Payment for this work shall be covered under the water main pipe item.

F. 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.

G. The pressure and leakage test shall consist of first raising the water pressure (based on the elevation of the lowest point of the section under test and corrected to the gage location) to a pressure in pounds per square inch numerically equal to the pressure rating of the pipe or valves but not to exceed 200 psi. Care shall be taken not to apply this pressure to items of equipment known to be incapable of withstanding such pressure.

H. If the Contractor cannot maintain the specified pressure with +/- 5 psi for a period of two hours with no additional pumping, the section shall be considered as having failed to pass the test. Allowable leakage over the 2 hour period shall be calculated as AWWA Allowable C-600 as summarized in the following table:

Hydrostatic Testing Allowance per 1,000 ft. of Pipe
(Loss in U.S. Gallons Following a 2 Hour Test)

	Nominal Pipe Diameter					
Avg. Pipe Press. (psi)	**6 in.**	**8 in.**	**12 in.**	**16 in.**	**24 in.**	**36 in.**
150	1.10	1.48	2.20	2.94	4.42	6.61
175	1.18	1.60	1.38	3.18	4.76	7.16
200	1.28	1.70	2.56	3.40	5.10	7.64

I. 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, or joint, all at his own expense and without extension of time for completion of the work. Additional tests and repairs shall be made until the section passes the specified test and is considered acceptable by the Engineer.

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

K. The Contractor shall be allowed a maximum of 2 weeks to locate and repair any leaks detected during pressure testing. The Contractor shall pay for all additional engineering, inspection and police details required with locating and repairing leaks beyond the 2 week allowance.

5.5 Disinfecting and Flushing

A. The Contractor shall disinfect all lines carrying potable water

B. The Contractor shall flush mains in accordance with AWWA standards. The Contractor shall flush all mains with water moving at a minimum velocity of 3.5 fps and shall provide calculations and shall measure the flow from flushing hydrants to demonstrate the velocities have been achieved.

C. The Contractor shall furnish all equipment and materials necessary to do the work of disinfecting, and shall perform the work in accordance with procedures outlined in the AWWA Standard for Disinfecting Water Mains, Designation C651, except as otherwise specified herein.

D. The preferred method of disinfection is the "continuous-feed method" as outlined in AWWA C651.

E. The existing system shall be protected at all times against chlorine/bacteriological contamination.

F. The dosage shall be such as to produce not less than 10 PPM after a contact period of not less than 24 hours.

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

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

I. The Contractor shall dispose of the water used in disinfecting and flushing in an approved manner according to AWWA standards.

J. All pipe used in repairs and connections to existing water mains beyond the limits of chlorination shall be cleaned of all debris and swabbed with a 1% to 5% hypochlorite disinfecting solution prior to activation.

5.6 Sampling

A. After final flushing of the new water main and before the new main in connected to the distribution system, two consecutive sets of samples taken 24 hours apart shall be taken at convenient locations every 1,000 of main and at every point of entry to the existing system.

B. All samples shall be taken in accordance with the most recent edition of *Standard Methods for the Examination of Water and Wastewater*.

C. Test results shall demonstrate that all samples have a total coliform count of zero and a heterotrophic plate count (HPC) of less than 100 per ml above the HPC of the existing system. In no case shall the total HPC exceed 500 per ml.

D. The cost for chlorination, flushing, dechlorination, sampling and analysis shall be paid for by the Contractor.

5.7 Private Hydrant by-law

A. Inspection and condition of hydrants shall be in accordance with American Water Works Association (AWWA) Manual M-17-Installation, Maintenance and Field Testing of Fire Hydrants.

B. The owner of a private hydrant shall have each such hydrant maintained by a qualified water supply contractor (DPW keeps a list of qualified contractors) or contract with the DPW to conduct the maintenance annually between April 1 and June 30. The result of the maintenance shall be forwarded to the Randolph Water Division of the Department of Public Works. The Water Division shall be notified in writing at least 3 business days prior to the annual maintenance.

C. The accepted purpose of maintenance is to determine the hydrant's capability to furnish the volume of water available from the Town's water supply to that hydrant to be used in the event of fire. It is understood that additional water flow tests may be required of the owner by their insurance companies or others with and interest in the property.

D. If any hydrant cannot successfully pass the maintenance procedures required by this bylaw, the hydrant owner is responsible to immediately notify in writing the Randolph Fire Department (RFD) and Randolph Department of Public Works (RDPW) of such findings. The hydrant shall immediately be marked as being "out of service" (OOS), using a system of marking the "Out of Service" hydrant in a way that is acceptable to the Water Division. The Hydrant owner shall furnish the RDPW with a written plan for repair of any OOS hydrants; including the reason the hydrant is OOS and a timetable for needed repairs to be made. All repairs and/or replacement shall be made within a 30 day period of such notification unless the RDPW extends that period due to cold weather consideration or other acceptable reasons. Upon completion of the repairs, the RDPW and RFD shall be notified in writing of such repairs and the placement of the hydrant into service.

E. The Maintenance will be as followed:

DRY-BARREL HYDRANT MAINTENANCE PROCEDURE

1. Check the hydrant's appearance. Remove obstructions around it. If paint is needed, either paint the hydrant or schedule it for painting. Check to see whether the hydrant needs to be raised or lowered because of a change in the ground-surface grade. If adjustments are needed, schedule the work.

2. On traffic-model hydrants, check the breakaway device for damage.

3. Remove one outlet-nozzle cap and use a listening device to check for main valve leakage.
4. Check for the presence of water or ice in the hydrant barrel, by dropping a plumb bob into the hose nozzle, and into the hydrant barrel.
5. Attach a section of fire hose or other deflector to protect the street, traffic, and private property from water expelled at high velocity.
6. Open the hydrant and flush to remove foreign material from the interior and lead.
7. Close the hydrant. Remove the deflector and check the operation of the drain valve by placing the palm of one hand over the outlet nozzle. Drainage should be sufficiently rapid to create noticeable suction. For no-drain hydrants, pump the water from the barrel.
8. Using a listening device, check the main valve for leakage.
9. Replace the outlet-nozzle cap. Leave it loose enough to allow air to escape.
10. Open the hydrant only a few turns. Allow air to vent from the outlet nozzle cap.
11. Tighten the outlet-nozzle cap.
12. Open the hydrant fully. Check for ease of operation. Certain water conditions may cause hard-water buildup on the stem threads of toggle and slide-gate hydrants and on the threads of wet-top hydrants. Opening and closing the hydrant repeatedly usually removes this buildup. If the hydrant has no threads in the water, but operates with difficulty, check the lubrication before proceeding with the inspection. Other problems that may make operation difficult are stuck packing and bent stems.
13. With the hydrant fully open, check for leakage at flanges, around outlet nozzles, at packing or seals, and around the operating stem. Repair as needed.
14. Partially close the hydrant so the drains open and water flows through under pressure for about 10 sec, flushing the drain outlets.
15. Close the hydrant completely. Back off the operating nut enough to take pressure off of the thrust bearing or packing.
16. Remove all outlet-nozzle caps, clean the threads, check the condition of the gaskets, and lubricate the threads. (Graphite powder in oil works well, as do

several of the never-seize compounds.) Check the ease of operation of each cap.

17. Check outlet-nozzle-cap chains or cables for free action on each cap. If the chains or cables bind, open the loop around the cap until they move freely. This will keep the chains or cables from kinking when the cap is removed during an emergency.

18. Replace the caps. Tighten them, and then back off slightly so they will not be excessively tight. Leave them tight enough to prevent their removal by hand.

19. Check the lubrication of operating-nut threads. Lubricate per the manufacturer's recommendations.

20. Locate and exercise the auxiliary valve. Leave it in the open position.

21. If the hydrant is inoperable, tag it with a clearly visible mark and notify the fire department and water division of the DPW. Schedule the hydrant for repair.

WET-BARREL HYDRANT MAINTENANCE PROCEDURE

1. Check the hydrant's appearance. Remove obstructions around it. If paint is needed, either paint the hydrant or schedule it for painting. Check to see whether the hydrant needs to be raised because of a change in the ground - surface grade. If adjustments are needed, schedule the work.

2. Remove outlet-nozzle caps and check for valve-washer leakage.

3. Install a test outlet-nozzle cap.

4. Open each valve and test for ease of operation. If stem action is tight, open and close several times until opening and closing actions are smooth and free.

5. Clean the cap and nozzle threads. Inspect and replace damaged cap gaskets. Lubricate the nozzle threads. (Graphite powder in oil works well, as do several of the never-seize compounds.)

6. Check the outlet-nozzle-cap chains and cables for free action on each cap. If the chains or cables bind, open the loop around the cap until they move freely. This will keep the chains or cables from kinking when the cap is removed during an. emergency.

7. Replace the caps. Tighten them, and then back off slightly so they will not be excessively tight. Leave them tight enough to prevent their removal by hand.

8. Locate and exercise the auxiliary valve. Leave it in the open position.

9. If the hydrant is inoperable, tag it with a clearly visible mark and notify the fire department. Schedule the hydrant for repair

LUBRICATION

1. Determine if the hydrant uses oil or grease on the operating threads. If the threads are exposed to water, the grease should not be water soluble.

2. To lubricate the threads on toggle-type hydrants, the entire operating mechanism must be removed.

3. In climates where moisture in the air will freeze the outlet-nozzle caps and operating nut, a common solution is to coat the threads and nut with antifreeze. The antifreeze should be made of a nontoxic, noncorrosive compound that is approved by the drinking water authority that has jurisdiction over potable water. NOTE: Placing antifreeze into the barrel section of the hydrant is prohibited.

F. All hydrants shall have marking system attached (flag-style similar to those used on Town maintained hydrants) in order that the hydrant is identifiable at night and in the event of snow covering the hydrant. Such marking system shall not interfere with the expedient use of the hydrant during an emergency. In no case shall snow be pile against or otherwise be allowed to accumulate on hydrants, making them unusable or creating delayed access for their use. After a snowstorm all hydrants shall be cleared of snow within a 6' radius within 12 hours.

G. All hydrants shall be free from planting and other landscape features in order to ensure full access and use of the hydrant. The Fire Department shall have final authority on an owner's compliance on this matter.

H. All hydrants shall be kept accessible for emergency use at all times. RFD and RDPW shall immediately be notified of any hydrants that are un-accessible or unusable for any reason.

I. The penalty/fines for violation of this bylaw shall be as follow:

Failure to have hydrants maintained annually	$500
Failure to notify RDPW and RFD of failed hydrants and furnish repair plan	$500

Failure to mark and/or clear snow from hydrants	$200
Failure to remove landscape material from hydrant	$400
Failure to notify RDPW 3 business day period to maintenance procedure	$200

J. The property owner shall be given a 10 day written notice to comply with the bylaw before a finding of bylaw violation shall begin under Massachusetts General Laws (MGL) Ch. 40. Each day and each hydrant found to be in violation of this bylaw shall be considered a separate offense. All penalties and fines shall be payable to the Town's General Fund. Failure to pay any penalties and/or fines associated with this bylaw shall be enforced pursuant to MGL 40, sec. 21D. Revisions to the Penalties and Fines schedule shall be authorized by a vote of the Board of Public Works as needed, or as otherwise regulated by MGL. This bylaw shall be enforceable by either the Superintendent of Public Works (or designee) of the Fire Chief (or designee).

Section 6
Materials

6.1 General Requirements

A. All material used shall be approved before installation by the Board and shall be installed in accordance with the manufacturer's recommendations.

B. Where standards are referenced in these regulations, they shall be the latest standards in effect at the date a permit is granted.

6.2 Submittals

A. Two sets of shop drawings and/or catalog cuts of valves, bends, tees, fittings, pipe, pipe fittings, and sealing materials to be utilized and any other sewer work material shall be submitted for approval by the Board.

6.3 Pipe

A. Ductile Iron Pipe

1. All ductile iron pipe shall be designed in accordance with ANSI A21.50 and shall be manufactured in accordance with ANSI A21.15 or ANS A21.51.
2. Unless otherwise indicated or specified, ductile-iron pipe shall be at least thickness Class 52 for all sizes.

B. Pipe For Use With Couplings

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

6.4 Fittings

A. General

1. Fittings shall conform to the requirements of ANSI/AWWA C153/A21.53 and shall be at least Class 350 for pressurized pipe 3" – 24" and Class 250 for pipe > 24", unless otherwise indicated.
2. Push-on or mechanical-joint fittings shall be all-bell fittings unless otherwise indicated or specified.

B. Nonstandard Fittings

1. Fittings having nonstandard dimensions and cast especially for this project shall be of acceptable design. They shall be manufactured to meet the requirements of the same specifications and shall have the same diameter and thickness as standard fittings, but their laying lengths and types of ends shall be determined by their positions in the pipelines and by the particular piping to which they connect.

6.5 Adapters

A. Where it is necessary to joint pipes of different type, the Contractor shall furnish and install the necessary adapters including solid sleeves as indicated on the drawings or permitted. 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 jointing.

6.6 Joints

A. Restrained

1. Restrained joints shall be mechanical joint restrainer glands as manufactured by EBAA Iron Co. or equal and shall be rated for 350 psi.
2. Restraining wedges shall distribute equal, balanced forces around the entire circumference of the pipe.

B. Push-On and Mechanical

1. Joints for push-on and mechanical-joint pipe shall conform to ANSI A21.11.
2. The plain end of push-on pipe shall be factory machined to a true circle and chamfered to facilitate fitting the gasket.
3. Push-on and mechanical-joint pipe and fittings shall be provided with sufficient quantities of accessories conforming to ANSI A21.11.
4. At Contractors option, joints in buried pipelines shall be either push on joints or mechanical joints.

C. Gaskets

1. Gaskets shall be of a composition suitable for exposure to the product which the pipe is intended.

6.7 Couplings

A. Flexible Connections

1. Where flexible connections in the piping are specified or indicated on the drawings, they shall be obtained by the use of sleeve-type couplings, split couplings, or mechanical-joint pipe and/or fittings as herein specified.

B. Sleeve-Type Couplings

1. To ensure correct fitting of pipe and couplings, all sleeve-type couplings and accessories shall be furnished by the supplier of the pipe and shall be of a pressure rating at least equal to that of the pipeline in which they are to be installed.
2. Sleeve-type couplings shall be style 38 or 138, made by Dresser Mfg. Div., Bradford, Pa.; or be acceptable equivalent products.
3. All couplings shall be furnished with the pipe stop removed.
4. All couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.
5. All gaskets provided with metallic tips for electrical continuity through joints.

6.8 Resilient Seat Wedge Valves

A. Manufactured by Mueller Co., Decatur, I11.; U.S. Pipe and Foundry Co., Birmingham, Ala.; M&H Valve, Anniston, AL; or acceptable equivalent.

B. General

1. Gates shall conform to all applicable sections of AWWA C509.

2. Valve bodies shall be manufactured of ductile iron.

3. **Gate valves shall be open right (clockwise).**

4. All valves shall be provided with "O" rings while the valve is under pressure in a fully-opened position.

5. Exterior surfaces of all valves shall be coated with epoxy coated solution, on a rust-free casting, prior to shipment. Valve interiors shall have a two-part thermostat epoxy-protective coating system and meet all requirements of AWWA C550. The epoxy coating shall not impart taste or odors to the water. The coating shall be a product acceptable to the NSF for use in potable water and shall be so listed in the most current NSF summary of approved products (ANSI/NSF Standard 61). The coating shall be applied and cured in strict conformance with the coating manufacturer's cautions and instructions. The coating shall be applied by the valve manufacturer under controlled factory conditions, and field application is strictly prohibited.

C. Valves shall be designed for working water pressures as follows:

Valve Size (Diameter)	Pressure
3 to 12 inches	250 psi
14 to 24 inches	200 psi

D. Buried Valves:

1. Buried valves shall be of the inside-screw type with mechanical-joint ends. An operating nut and extension stem shall be in lieu of hand wheel.

2. The Contractor shall provide the gate boxes, steel extension stems or universal-joint operating rods with 2-in. square operating nut at the upper end with coupling connected to the valve stem as required.

6.9 Double Disc Gate Valves

A. Manufactured by Mueller Co., Decatur, Ill.; U.S. Pipe and Foundry Co., Birmingham, Ala.; or acceptable equivalent.

B. General

1. Gates shall conform to AWWA C500.

2. Bronze gate-rings shall be fitted into grooves of dovetail or similar shape. For other shapes, rings shall be attached with bronze rivets. Operating nuts shall open right (clockwise) and an arrow shall indicate the open direction. Provide steel bolts and bronze nuts for stuffing box follower. O-ring stuffing boxes will be acceptable.

3. **Gate valves shall be open right (clockwise).**

4. Valves shall be capable of being repacked under line pressure.

C. Valves shall be designed for working water pressures as follows:

Valve Size (Diameter)	Pressure
3 to 12 inches	250 psi
14 to 24 inches	200 psi

D. Buried Valves:

1. Buried valves shall be of the inside-screw type with mechanical-joint ends. An operating nut and extension stem shall be in lieu of hand wheel.

2. The Contractor shall provide the gate boxes, steel extension stems or universal-joint operating rods with 2-in. square operating nut at the upper end with coupling connected to the valve stem as required.

6.10 Butterfly Valves

A. Manufactured by B.I.F., Providence, RI; H. Pratt Co., Aurora, Ill., Allis-Chalmers, Inc., York, PA; or acceptable equivalent.

B. General

1. **Gate valves shall be open right (clockwise).**

C. Valve Provisions:

1. Valves shall conform to the requirements as specified in the AWWA Standard for Rubber-Seated Butterfly Valves AWWA C504, except as modified or supplemented herein.

2. The valve design shall utilize a continuous rubber lining on the internal body surfaces and extending over the flanges. A disk which seats at an angle to the axis of the pipe, will not be acceptable.

3. Mechanical-joint-end type valves shall be utilized, and shall be constructed of ASTM A536, grade 65-45-12 ductile iron.

4. Valves shall be designed for 200 psi working pressure.

D. The valve shall utilize body mechanical joint ends in accordance with AN Standard of Rubber Gasket Joints for Cast Iron and Ductile Iron pressure pipe and fittings (A21.11).

E. Seat Provisions:

1. The valve shall utilize a molded natural rubber or synthetic rubber seat on the disk or in the body, and be mechanically fastened, not penetrated by the shaft. Type 316 stainless steel shall be utilized in the mating-seat. The seat shall be replaceable on 12-in. through 24-in. without removing the disk. It shall be mounted securely for complete immobility under operating conditions.

2. If the seat is on the disk, use a Class 40 cast iron disk conforming to ASTM A48, or a Grade 60-40-18 ductile iron conforming to ASTM A536.

3. If the seat is on the body, use a Class 40 cast iron disk conforming to ASTM A48, or a Grade 60-40-18 ductile iron conforming to ASTM A536, with a Type 316 stainless-steel seating edge, or all Type 316 stainless steel. The stainless-steel edge on cast iron or ductile iron disks shall be either mechanically secured or heat shrunk to the edge of the disk or welded overlay.

F. Disk Provisions: The disk shall rotate 90 degrees from full open to full close position.

G. Shaft Provisions: The shaft shall be manufactured from either Type 304 or Type 316 stainless steel. It must be a one-piece unit extended completely through the valve disk.

H. Miscellaneous Provisions: Type 304 stainless steel, taper pins, lock washers and nuts shall be utilized. The packing gland shaft seal shall be a one-piece cast-iron gland follower with bronze nuts. It shall be self-adjusting, split V-type, packing. The valve shall have a position indicator with pointer and scale plate.

I. Valve Operator Provisions: Buried valves shall be provided with gate boxes and operating wrenches as hereinafter specified. Where necessary, valves shall be furnished with steel extension stems or universal joint operating rods with 2-in. square operating nuts at the upper end and a suitable coupling to connect to the valve stem. Operating nuts for buried valves shall be turned right (clockwise) to open.

J. Buried or Submerged Service Provisions: Valves shall have permanent chevron "V" type packing requiring no adjustment, with self-compensating and self-adjusting seals, under pressure, for buried and submerged service.

6.11 Tapping Sleeves and Valves

A. Tapping sleeves and tapping type gate valves shall be manufactured by Mueller Co., Decatur, Ill., U.S. Pipe and Factory Co., Birmingham, Ala.; or an acceptable equivalent.

B. Provisions: Tapping sleeves and valves shall consist of a split cast-iron sleeve tee with mechanical joint ends on the main, a flange end on the branch, and a tapping type gate valve with one flange end and one mechanical joint end. The valve shall conform to the requirements herein before specified for gate valves and shall be furnished with a 2-in. square operating nut.

6.12 Hydrants

A. Hydrants shall be Mueller Centurion 250, which has been standardized by the Town.

B. Provisions:

1. Hydrant design shall be in accordance with AWWA C502, be suitable for buried depth as indicated and be of positive automatic drain type to prevent freezing.

2. The hydrant shall have a 5-1/4-in. valve opened by turning the operating unit in the clockwise direction. The hydrant shall have one 4-1/2-in. pumper and two 2-1/2-in. hose connections. The hose and pumper connections shall have National Standard Thread. The operating nuts shall be pentagonal in shape, 1-1/2-in. from point to

opposite flat and shall **open right (clockwise).** The hydrant shall be the hub or mechanical-joint type having a 6-in. pipe connection.

6.13 Valve Boxes

A. Provisions:

1. Valve boxes shall be adjustable, telescoping, heavy-pattern type with the lower part manufactured of cast iron and the upper part of steel or cast iron. The valve box shall be designed and constructed to prevent direct transmission of traffic loads to the pipe or valve. Boxes shall be adjustable through at least 6 in. vertically without reduction of lap between sections to less than 4 in. inside diameter of boxes for valves at least 4-1/2 in. and at least 3-in. for stops, and lengths as necessary for depths of the valves or stops with which the boxes are to be used. The top of the cover shall be flush with the top of the box rim. A cast arrow and the word open shall be on the cover to indicate direction of turning to open the valve in top of valve covers.

6.14 T-Handle Operating Wrenches

A. Provisions: A T-handle operating wrenches shall be provided in the number and lengths required, but not exceeding 8-ft., to permit operation of all valves and stops by operators of average height working in normal positions.

6.15 Service Connections

A. All services shall be copper type K tubing.

6.16 Curb Stops

A. Curb stops shall be manufactured by Clow Corporation, Chicago, IL; Mueller Co., Decatur, IL; Red Hed Mfg. Co., Boston, MA; A.Y. McDonald MFG. Co., Dubuque, IA; or an acceptable equivalent.

B. Curb Stops shall be manufactured in accordance with AWWA C-800.

1. Brass goods furnished under this specification shall be new and unused. Except where noted, all fitting shall conform to ANSI/AWWA Standard C800, latest edition. However, components must be similar material to that specified in paragraph two to prevent galvanic corrosion.
2. Any metal past of the fitting in contact with the water must be made of Sebiloy II per ASTM B584 (UNS Alloy C89520). Brass alloys not assigned an ASTM/UNS alloy designation are not acceptable. Plated components in contact with the water not made of Sebiloy II are not approved.
3. Metal components that do not contact the water shall comply with the requirements of ASTN B62 or ASTM B584 copper alloy number C83600.

4. All seats/seals must be of an elastomeric material that has verifiable experience in water systems using chloramines for disinfection. Fluoroelastomers such as unfilled Teflon that exhibit poor tear and cut growth characteristics are not approved.
5. All service fitting shall be certified as suitable for contact with drinking water by an ANSI accredited organization in accordance with ANSI/NSF Standard 61, Drinking Water Systems Components – Health Effects.
6. All fittings shall be stamped or embossed with a mark or name indicating that the product is manufactured from the low-lead alloy as specified in paragraph two.

C. Provisions: Stops shall be ball valve style and have ends as required to suit type of pipe or tubing to be connected, and a combined cap and tee handle. Stops shall also have an adjustable buffalo style box for operation. Curb Stops shall be open right (clockwise).

6.17 Corporation Stops

A. Corporation stops shall be manufactured by Clow Corporation, Chicago, IL; Mueller Co., Decatur, IL; Red Hed Mfg. Co., Boston, MA; A.Y. McDonald MFG. Co., Dubuque, IA; or an acceptable equivalent.

B. Corporation Stops shall be manufactured in accordance with AWWA C-800.

1. Brass goods furnished under this specification shall be new and unused. Except where noted, all fitting shall conform to ANSI/AWWA Standard C800, latest edition. However, components must be similar material to that specified in paragraph two to prevent galvanic corrosion.
2. Any metal past of the fitting in contact with the water must be made of Sebiloy II per ASTM B584 (UNS Alloy C89520). Brass alloys not assigned an ASTM/UNS alloy designation are not acceptable. Plated components in contact with the water not made of Sebiloy II are not approved.
3. Metal components that do not contact the water shall comply with the requirements of ASTN B62 or ASTM B584 copper alloy number C83600.
4. All seats/seals must be of an elastomeric material that has verifiable experience in water systems using chloramines for disinfection. Fluoroelastomers such as unfilled Teflon that exhibit poor tear and cut growth characteristics are not approved.
5. All service fitting shall be certified as suitable for contact with drinking water by an ANSI accredited organization in accordance with ANSI/NSF Standard 61, Drinking Water Systems Components – Health Effects.
6. All fittings shall be stamped or embossed with a mark or name indicating that the product is manufactured from the low-lead alloy as specified in paragraph two.

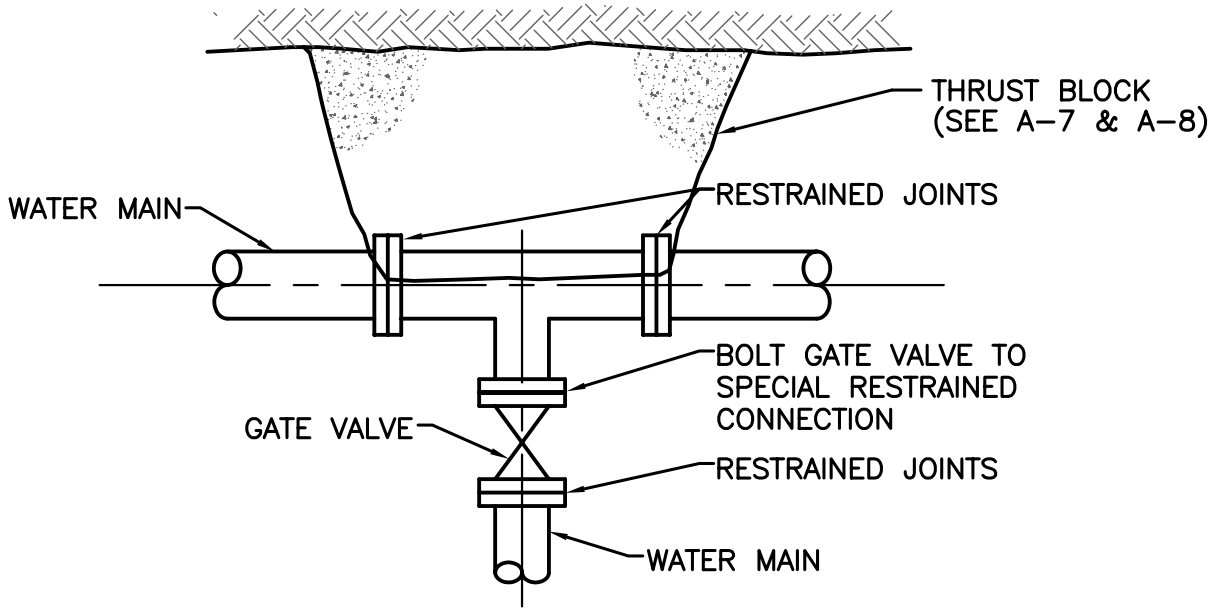
C. Provisions: Stops shall be ball valve style. The inlet thread shall be of the steep taper type. Outlet connections shall be of the type required to suit the pipe or tubing connected. Corporation Stops shall be open right (clockwise).

6.18 Fittings/Unions

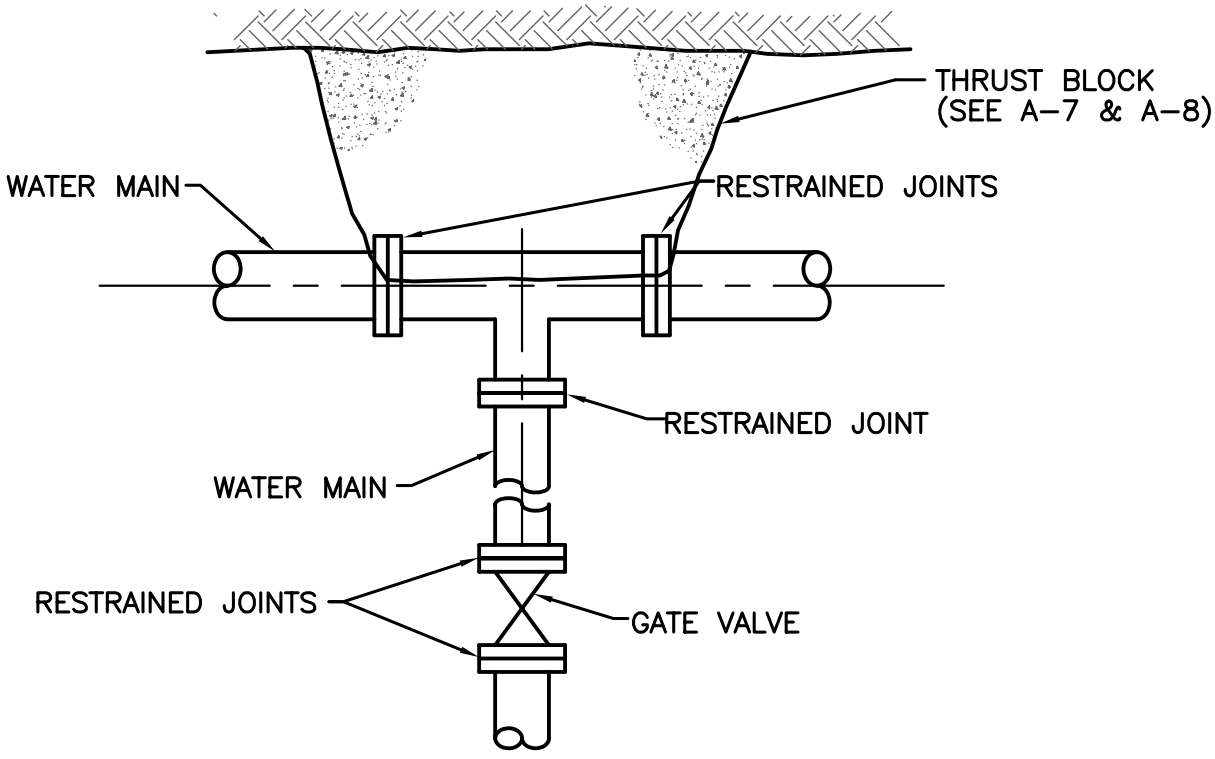
A. Fittings shall be manufactured by Clow Corporation, Chicago, IL; Mueller Co., Decatur, IL; Red Hed Mfg. Co., Boston, MA; A.Y. McDonald MFG. Co., Dubuque, IA; or an acceptable equivalent.

B. Fittings shall be manufactured in accordance with AWWA C-800.

1. Brass goods furnished under this specification shall be new and unused. Except where noted, all fitting shall conform to ANSI/AWWA Standard C800, latest edition. However, components must be similar material to that specified in paragraph two to prevent galvanic corrosion.
2. Any metal past of the fitting in contact with the water must be made of Sebiloy II per ASTM B584 (UNS Alloy C89520). Brass alloys not assigned an ASTM/UNS alloy designation are not acceptable. Plated components in contact with the water not made of Sebiloy II are not approved.
3. Metal components that do not contact the water shall comply with the requirements of ASTN B62 or ASTM B584 copper alloy number C83600.
4. All seats/seals must be of an elastomeric material that has verifiable experience in water systems using chloramines for disinfection. Fluoroelastomers such as unfilled Teflon that exhibit poor tear and cut growth characteristics are not approved.
5. All service fitting shall be certified as suitable for contact with drinking water by an ANSI accredited organization in accordance with ANSI/NSF Standard 61, Drinking Water Systems Components – Health Effects.
6. All fittings shall be stamped or embossed with a mark or name indicating that the product is manufactured from the low-lead alloy as specified in paragraph two.

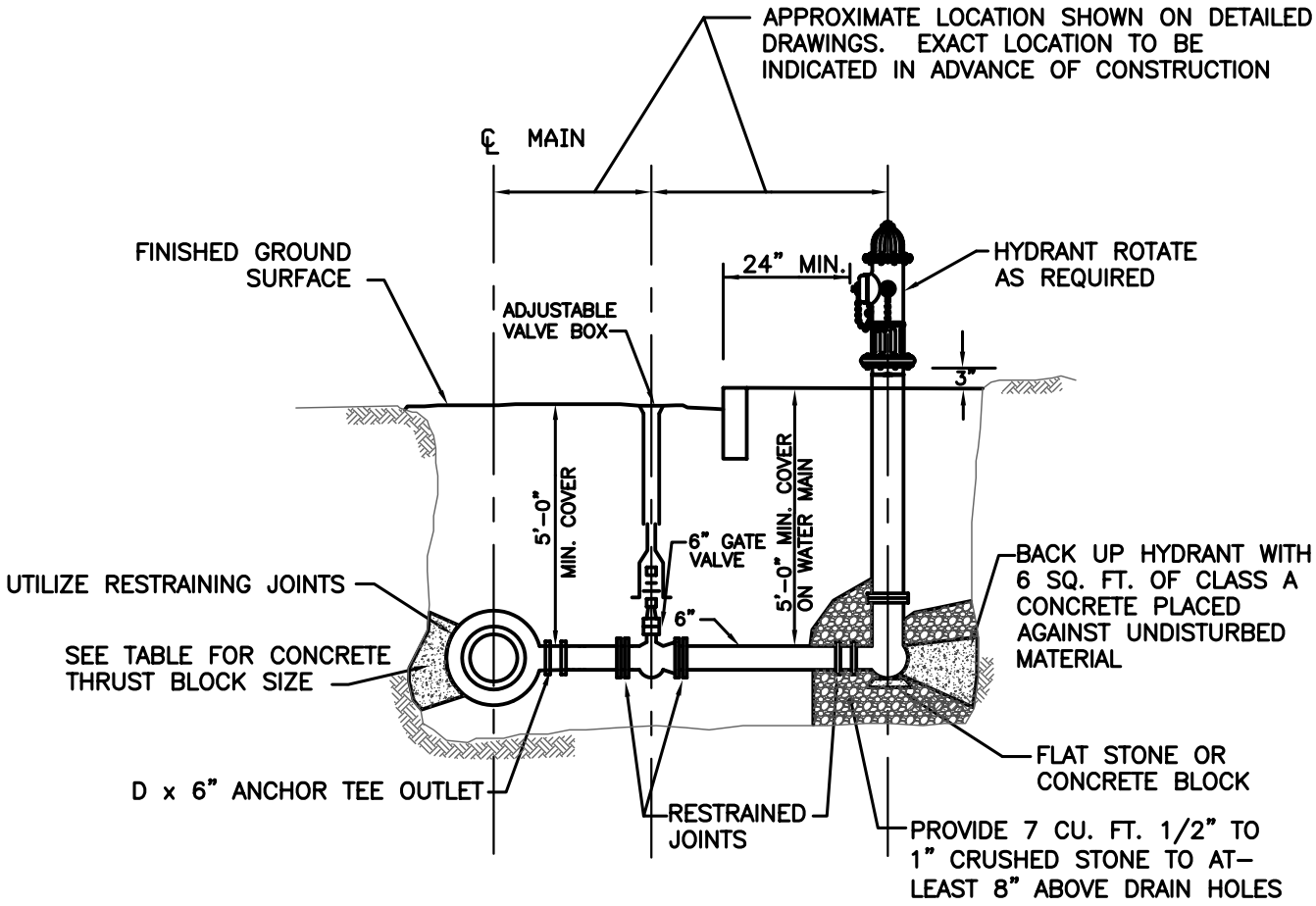


ANCHOR TEE BRANCH



STANDARD BRANCH

May 27th, 2008	DUCTILE IRON WATER MAIN BRANCHES (TYP.)	NOT TO SCALE	SKETCH No. A-1

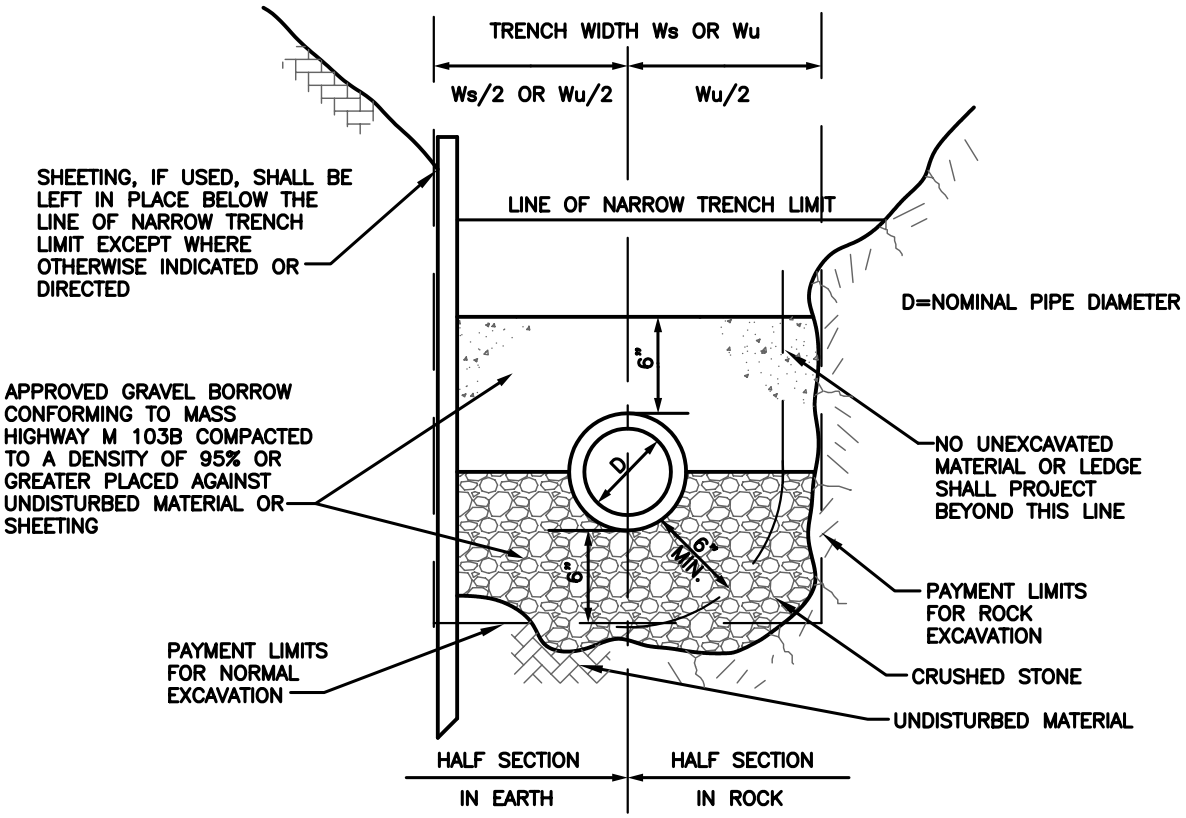


SECTION

NOTE: JOINT TYPE AS SPECIFIED

NOTES
1. HYDRANT SHALL BE MUELLER CENTURION 250 AND SHALL OPEN RIGHT.
2. SEE TABLE ON THRUST BLOCK BEARING AREAS FOR THE AREA OF CONCRETE REQUIRED. FLANGED END GATE VALVE ATTACHED TO FLANGED TEE OUTLET IS PERMITTED.

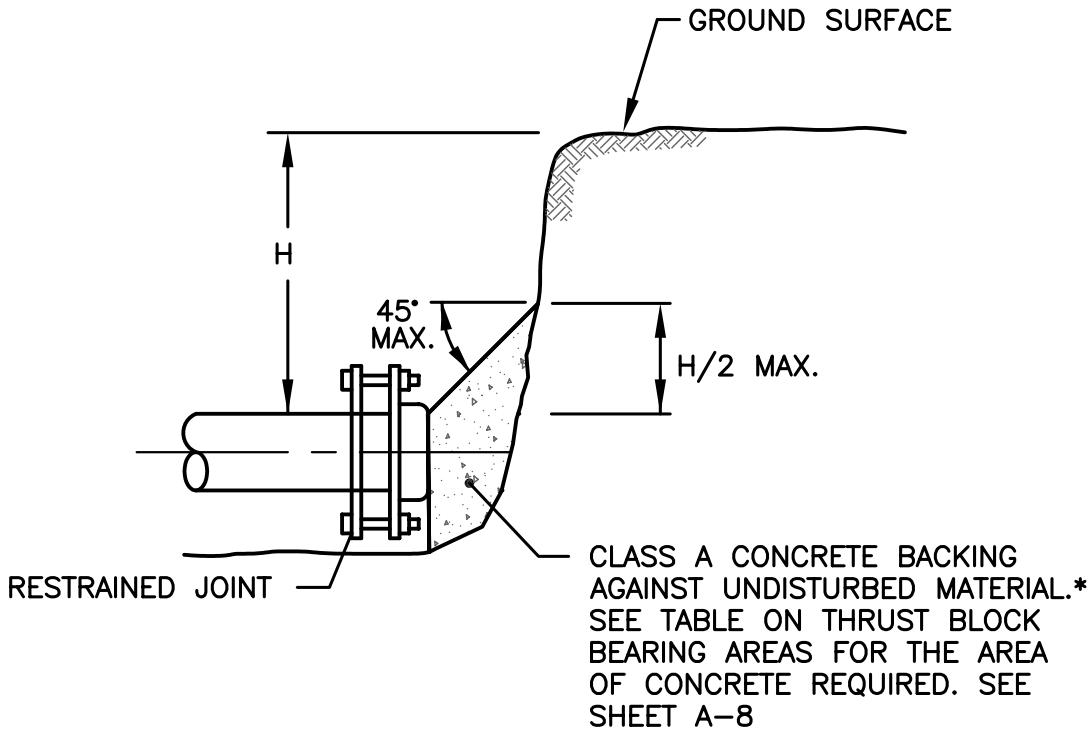
May 27th, 2008	**HYDRANT ASSEMBLY (TYP.)**	NOT TO SCALE	SKETCH No. **A-2**



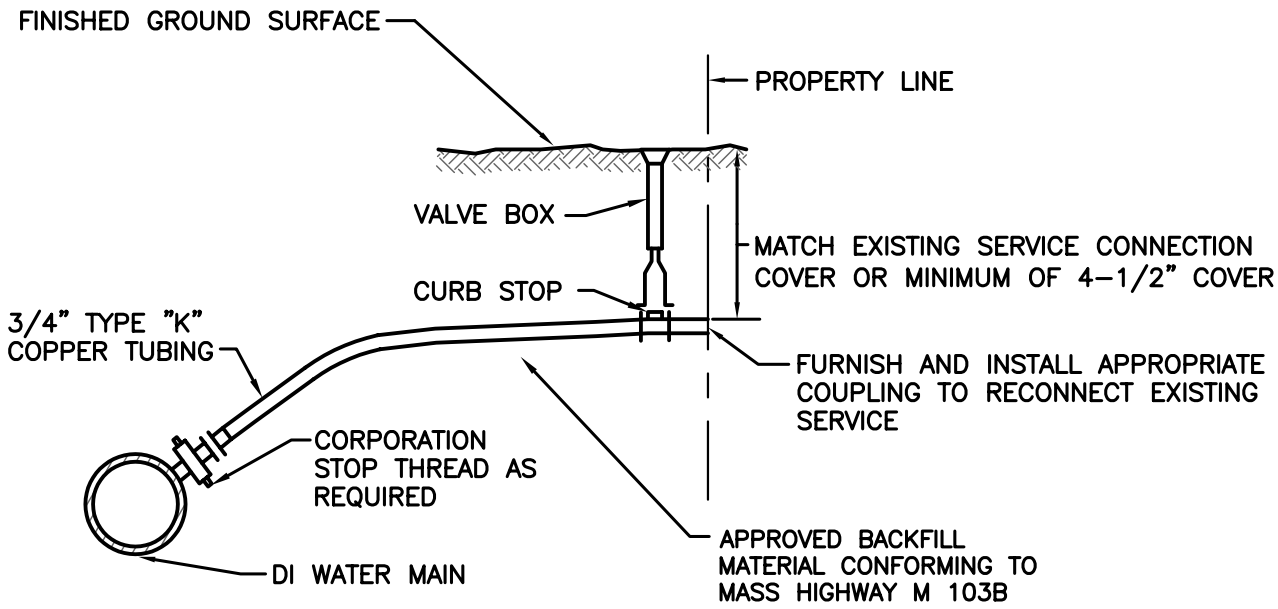
BACKFILL MATERIAL AND METHODS FOR STATE ROADS SHALL MEET ALL OF THE REQUIREMENTS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT PERMIT AND THE SIEVE ANALYSIS BELOW

SIEVE DESIGNATION	PERCENT PASSING
12.5 mm	50–85
4.75 mm	40–75
300 µm	8–28
75 µm	0–10

May 27th, 2008	TRENCH SECTION FOR DUCTILE IRON PRESSURE PIPE UP TO 24" DIAMETER (TYP.)	NOT TO SCALE	SKETCH No. A-3

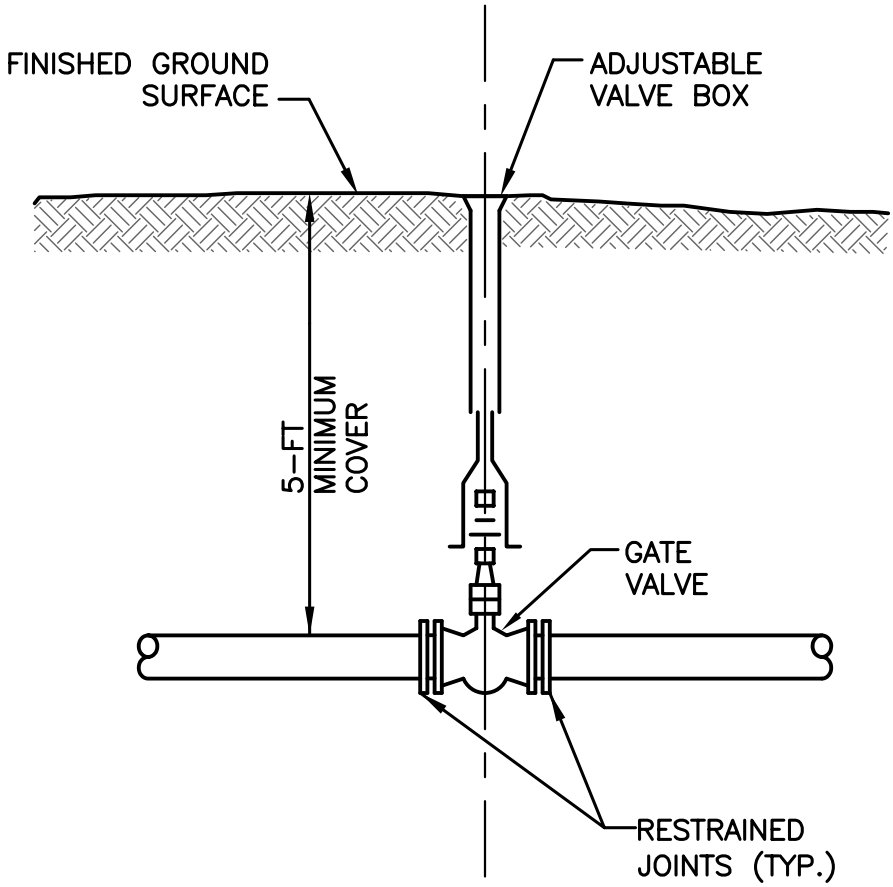


May 1st, 2008	DI PIPE CAP WITH THRUST BLOCK (TYP.)	NOT TO SCALE	SKETCH No. A-4



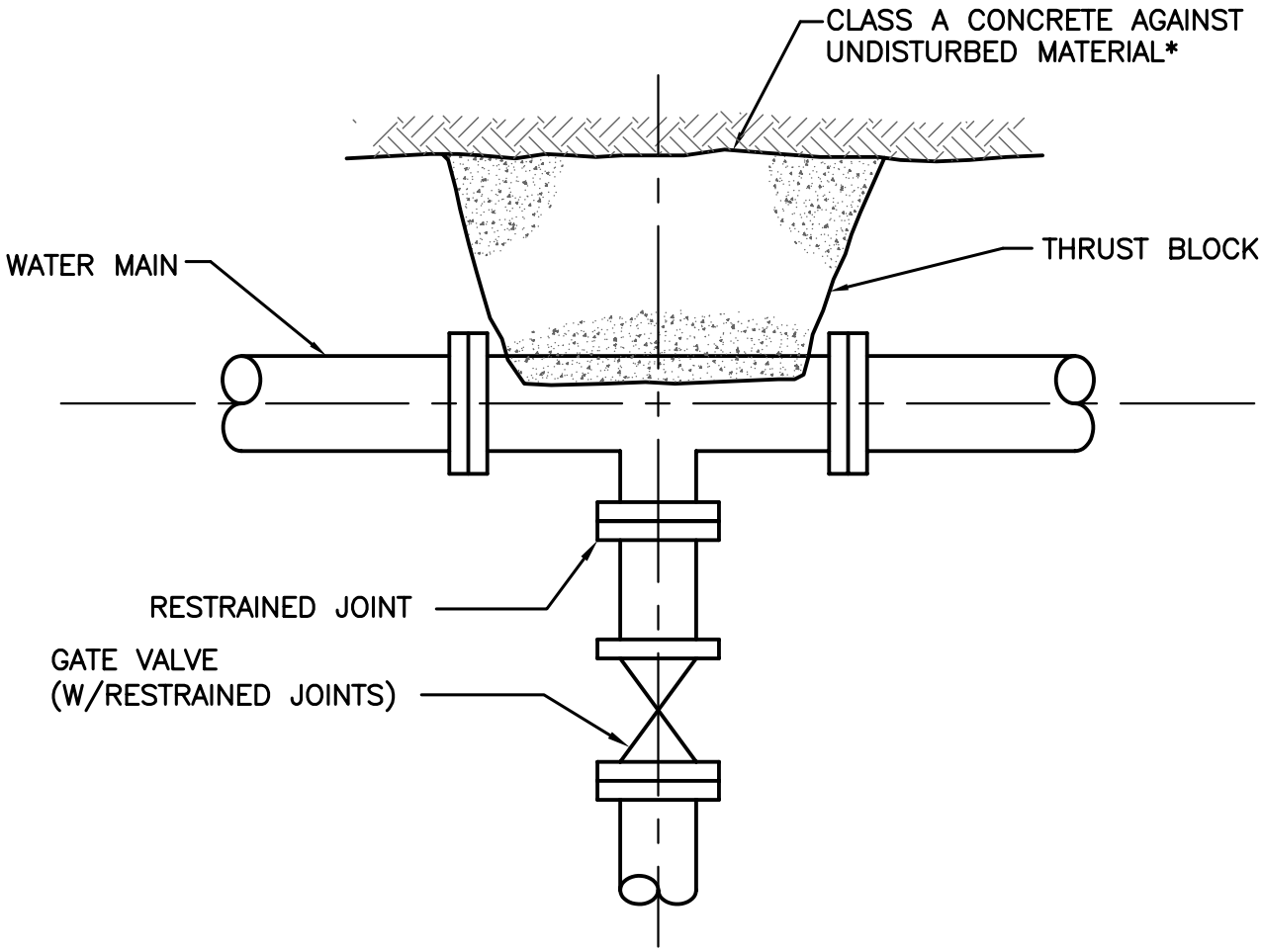
NOTE:
DETAIL APPLICABLE TO REPLACED OR REPAIRED CONNECTIONS

May 1st, 2008	**WATER MAIN SERVICE CONNECTION (TYP.)**	NOT TO SCALE	**SKETCH No. A-5**



SECTION

May 1st, 2008	**WATER GATE VALVE (TYP.)**	NOT TO SCALE	SKETCH No. **A-6**



PLAN

* SEE TABLE ON THRUST BLOCK BEARING AREAS FOR THE AREA OF CONCRETE REQUIRED.

** HYDRANTS, VALVES AND TEES SHALL USE BOTH MEGALUGS AND THRUST RESTRAINTS

May 1st, 2008	WATER MAIN INTERSECTION WITH TEE AND GATE VALVE (TYP.)	NOT TO SCALE	SKETCH No. A-7

NOMINAL PIPE SIZE (INCHES)	MAXIMUM PIPE OD (INCHES)	REQUIRED BEARING AREA (SQ FT)					
		TEES& CAPS	90 DEG	45 DEG	30 DEG	22.5 DEG	11.25 DEG
4	4.80	1.3	1.8	1.0	0.8	0.7	0.5
6	6.90	2.6	3.7	2.0	1.6	1.0	0.7
8	9.05	5.0	6.4	3.5	2.7	1.8	1.0
10	11.10	7.0	10.0	5.2	4.2	2.7	2.0
12	13.20	9.5	13.4	7.3	5.8	4.0	3.0

THRUST BLOCK BEARING FOR DI CL52 WATER MAIN

8–INCH

END	90° BEND	45° BEND	22.5° BEND	8X6 RED.
91 FT	95 FT	28 FT	7 FT	35 FT

12–INCH

END	90° BEND	45° BEND	22.5° BEND	12X8 RED.
132 FT	132 FT	39 FT	10 FT	98 FT

LENGTHS APPLY TO BOTH SIDES OF BENDS

RESTRAINED JOINT LENGTHS FOR DI CL52 WATER MAIN

May 1st, 2008	EXAMPLE THRUST BLOCK BEARING AREA AND RESTRAINED JOINTS LENGTH CHARTS	NOT TO SCALE	SKETCH No. A-8