

**Rules & Regulations
Of
Orange Water Department**

Adopted July 28, 2008

SECTION 1 DEFINITIONS

1.1 COMMISSIONERS

The “Commissioners” are the elected officers of the Orange Water Department.

1.2 SYSTEM DEVELOPMENT CHARGE

The “system development charge” is a fee chargeable to applicants for new services that grants the owner the right to connect to the Water Department’s system and only the right to connect. Other charges for connection, not included in the system development charge, such as the meter fee, cost of labor and materials may also apply.

1.3 CROSS CONNECTION

The term “cross connection” shall mean any actual or potential connection between a potable water system and any waste pipe, soil pipe, sewer, drain or other unapproved source.

1.4 OWNER

The term “owner” shall mean the individual, firm, or corporation listed as the owner of the property to which water is supplied. The owner is the party responsible for payment for water use and other water-related charges.

1.5 PUBLIC versus PRIVATE WATER MAINS (EXCLUDING FIRE SERVICES)

“Public Water Mains” shall be determined as follows:

- a. Water mains located in Town-accepted public roadways are public water mains;
- b. Water mains located in roadways with unrestricted public access that are owned by all landowners directly abutting the roadway are public water mains;
- c. Water mains located in roadways or easements with unrestricted public access that connects to Town water mains in two or more locations (looped) are public water mains.
- d. Water mains located in private ways or property, which are the sole connection to Town owned infrastructure.

“Private Water Mains” shall be determined as follows:

- a. Water mains located on any single privately-owned property;
- b. Water mains located on any property with restricted access.

1.6 REGULATIONS

“Regulations” refers to the document adopted, and as amended to date, by the Commissioners of the Orange Water Department entitled “Water Regulations”.

1.7 SERVICE

“Service” shall mean pipe, fittings and appurtenances from the curb stop and box at the property line to, and including, all piping on the owner’s property to which Public water is supplied. The meter attached to service piping within the building or in a meter pit is the Water Department’s property. All other service materials are the owner’s property and responsibility.

1.8 SUPERINTENDENT

The term “Superintendent” shall mean the Superintendent of the Water Department.

1.9 WATER DEPARTMENT

The term “Water Department” shall mean the Orange Water Department, the water supplier.

1.10 USER

The term “user” shall mean any person, owner or otherwise, who uses water supplied by the Water Department through an authorized service.

1.11 WATER MAIN

A “water main” shall mean the supply pipe laid in the street, right-of-way or easement to which service connections are made.

“Fire Service” shall mean the service for fire systems including backflow prevention device, fire service meter, hydrants on private premises and appurtenances. Fire services are the owner’s property and responsibility.

SECTION 2 GENERAL PROVISIONS

2.1 APPLICATION FOR TOWN WATER

Application for Town water shall be made on the Water Department's standard form available at the Department Office, 16 West Myrtle St., Orange, MA. The applicant shall be the property owner or the owner's authorized agent. The applicant shall state fully the primary use to which water is to be applied. Should water subsequently be required for other purposes, the owner must submit a new application.

All applications for Town water shall be approved by the Superintendent. All Water Department permits and applications shall be received and all fees for water use shall be paid before water is supplied.

2.2 RESPONSIBILITY FOR CHARGES

The owner of a water service shall be charged, and held responsible, for all water passing through the service meter until such time as the Water Department is notified in writing that Town water is no longer desired. In case of the sale of the property, the owner shall request a final meter reading and notify the Water Department of the name of the new owner.

2.3 PRIVATE WELLS

There shall be no interconnection of private water systems with the Town system. All owners using Town water who also have private wells shall register the wells with the Orange Water Department and shall install backflow prevention devices on the Town water service. Owners shall permit periodic Water Department inspection of Town and private water systems.

Owners shall comply with section 310 of Code of Massachusetts Regulations 22 as amended to date.

2.4 EXTENDED USE

No water user shall supply water purchased from the Water Department to parties not entitled to its use except by written permission of the Commissioners.

2.5 UNUSUAL CONSTRUCTION

Owners of property desiring Town water for any construction, alterations or attachments shall submit plans and specifications for the proposed work to the Superintendent for approval. The Water Department shall determine whether Town water for the proposed work is permissible and the terms, charges and conditions under which the proposed use shall be permitted.

2.6 RIGHT OF ENTRY

Owners or occupants of commercial, industrial or residential properties served by the Water Department shall, upon presentation by Water Department personnel of their credentials, authorize entry without a warrant to inspect the water service or to remove, repair, or replace any water meter at any time the Water Department deems necessary. Water service apparatus shall be readily accessible. Should access be refused, the water may be shut off and may not be turned on until such access has been allowed and appropriate fees paid.

2.7 FIRES

Whenever a fire occurs in areas served by the Water Department, it is the duty of users to discontinue all unnecessary use of water.

Only Water Department personnel may operate fire hydrants except in the case of a fire.

Fire Department personnel may operate fire hydrants only during a fire and shall notify the Water Department of any hydrants used during a fire.

2.8 CONDITIONS FOR WATER USE

The Water Department shall endeavor to provide constant and uninterrupted supply of water to its users with quality that meets or exceeds the levels set forth by the United States Environmental Protection Agency and the Massachusetts Department of Environmental Protection.

Because conditions within a water system vary, the Water Department cannot guarantee volume of water or constant pressure.

2.9 LIABILITY FOR LOSS OF SUPPLY

The Water Department shall have the right to interrupt water supply as necessary for system maintenance, repair or other cause beyond the Water Department's control. No user shall be entitled to damages or to payment refund for any interruption of supply or water quality.

2.10 LIABILITY FOR LOSS OF PRESSURE

The Water Department reserves the right at any time and without notice to shut off the water in the mains for necessary purposes. Users having appliances dependent on routine pressure for proper operations are CAUTIONED that they should provide, at their own expense, safety features to protect the appliances.

The Water Department is not liable for any damage resulting from loss of pressure, whether through accident or necessity.

2.11 OUTSIDE WATER USE

The Commissioners reserve the right to regulate or ban outside water use in order to insure adequate volume and pressures for essential use.

The Commissioners may also issue water use restrictions in accordance with Section 7.3 of the Regulations.

SECTION 3 SERVICES AND FIXTURES

3.1 SERVICES

Application for use of Public water must be made to the Water Department in writing on the Water Department form for new services.

The Water Department shall furnish and install and shall own materials between the water main and curb stop. The curb stop shall be installed at the property line.

Services beyond the curb stop are furnished, owned and maintained by the property owner. Services include piping, valves and fittings, including meter pit if applicable, on the owners property.

Owners shall properly construct and maintain private watermains, services and fixtures at their own expense.

Buildings occupied by more than one tenant, when the property is divided or separated by a perpendicular division wall, shall have a separate water service and meter connection for each tenant. Each water service will be in a separate trench.

In no case shall water be supplied to two (2) or more separate properties through a single tap.

Existing multi-dwelling services may continue on line but each individual property owner served by the tap must pay all fees due the Water Department as if served by individual tap. If a multi-dwelling service line fails, it shall not be repaired in kind. A new tap and new service(s) shall be installed so that each dwelling will have its own service connection. The property owner(s) shall be responsible for all costs associated with new service connection(s).

Upon installation, the owner shall provide the Water Department an as-built plan of the service(s).

3.2 SERVICES TO BE INSPECTED

The Water Department shall inspect all services before trench backfilling. Materials and installation shall meet Water Department requirements.

3.3 CONNECTIONS TO SERVICES

Connections to services shall be brought to the curb stop, at the owner's property line, at the expense of the owner.

3.4 REPAIR OF SERVICES

It is the duty of the owner to maintain and repair services on their property. Maintenance and repairs shall be done at the owner's expense. The Water Department may turn off any service until such time as the work has been satisfactorily completed and inspected.

Service pipes between the curb stop and meter shall be repaired or replaced, as directed by the Water Department, for protection of water supply and prevention of waste. When requested, the Water Department may assist in the detection of a service leak, but **will not** repair services beyond the curb stop. The Water Department may charge the owner for leak detection assistance. The Water Department will furnish the materials for the repair and oversee the service repair. The owner will be billed for all materials used in the repair.

3.5 REPAIR OR LOSS OF METER

Any meter damaged or lost due to any cause shall be repaired or replaced by the Water Department at the expense of the owner.

3.6 TURNING ON OR SHUTTING OFF SERVICES

Turning on or shutting off services shall be requested a minimum of 48 hours in advance (weekends and holidays excluded), except in case of an emergency. Owners shall be charged in accordance with the rate schedule. Only the Water Department shall open or close curb stops.

3.7 SEASON FOR SERVICE INSTALLATION

All new service installations will only be installed between April 1st and November 15th.

3.8 SERVICE PIPE TRENCHES

Service pipes shall not be placed within 10 feet of any other utility, except as specifically approved by the Water Department.

3.9 CROSS CONNECTION CONTROL

The Water Department's Cross Connection Control Program Regulations as amended to date can be found in the Appendix to Water Regulations.

3.10 TEMPORARY WATER USE

The Water Department will accept application for temporary water use. A surety must be provided to ensure payment of charges as well as restoration of any disturbed areas due to the temporary use.

SECTION 4 FIRE SERVICES

4.1 GENERAL

The Water Department may authorize services to private property for private fire protection purposes. All equipment shall be installed entirely at the expense of the owner and with the approval of the Superintendent. The entire installation and upkeep of such equipment shall be at the owner's expense.

The owner of the property or his authorized agent shall make applications. The owner will be subject to all the provisions and charges described herein, as applicable.

The Water Department does not guarantee the adequacy of available water supply to meet the needs of the fire service.

4.2 APPLICATION

The owner shall demonstrate the need for a fire service.

The owner shall submit for approval two complete sets of drawings and specifications for the fire service. The drawings shall show the property to be served, together with location of all valves, pipes, hydrants, tanks, sprinkler heads and other appurtenances. The plans will remain the property of the Water Department.

Prior to construction, the owner shall conduct a hydrant flow test to determine the available volume and pressure at the location of the fire service. The test shall be conducted by the Water Department or approved representative and scheduled in advance with the Water Department. The owner shall be responsible for all charges related to the flow test and shall submit a flow test report as part of the application.

The completed service shall pass pressure and bacteriological testing and shall be inspected and approved by the Water Department prior to activation.

The owner also agrees to furnish the Water Department two sets of record drawings showing piping and appurtenances as constructed, upon completion of the installation and prior to activation of the service.

4.3 CONNECTION TO DOMESTIC SERVICE PROHIBITED

No connection shall be made at any time between the fire system and the domestic service.

4.4 NUMBER OF SERVICES

Only one service will be allowed for any one building, unless evidence prepared by a qualified engineer is presented to the Water Department that more than one service is necessary for proper protection. Where two or more services are allowed for one building, they shall be kept separate, unless permission is granted by the Water Department to interconnect multiple systems.

4.5 PRIVATE HYDRANTS

Fire hydrants on private property shall be the property of the owner but may be inspected and serviced once every two years by the Water Department, for a fee payable by the owner. Any repairs necessary for proper operation of hydrants shall be the responsibility of the owner and shall be completed within thirty days after notice in writing has been given to the owner by the Water Department.

4.6 INSPECTION

The Water Department shall subject all fire services to periodic inspection. The owner shall provide service information and reasonable access for inspection. Inspection shall be made for compliance with Water Regulations only.

4.7 BACKFLOW PREVENTER

Every fire service shall be fitted with a backflow preventer. The Water Department's Cross Connection Control Program Regulations as amended to date can be found in the Appendix to Water Regulations.

4.8 USE OF SERVICE

No water shall be drawn from fire services except for fire fighting, fire system testing or system maintenance. No water shall be taken or used through fire services for the purpose of testing or maintenance unless the Water Department issues written permission. Such testing or maintenance shall be conducted only under the supervision of the Water Department.

4.9 ILLEGAL USE

When the owner or any occupant is found to be using water from a fire service for purposes other than fire fighting, testing or maintenance, the water shall be shut off until the owner has given assurance to the Water Department that the offense will not be repeated and has paid all fees.

4.10 VIOLATION OF RULES

For any violation of the rules governing fire service or illegal use of water, the Water Department has the authority to assess a fee and to discontinue supplying the fire service.

SECTION 5 METERS

5.1 METER INSTALLATION

All water supplied by the Water Department shall be metered through a Water Department approved meter. Only one meter will be installed on the owner's property unless otherwise approved by the Superintendent. The meter will be located in an accessible area within the building served except where a meter pit is allowed or required by the Water Department.

Every service shall have an approved ball valve immediately upstream and downstream of the meter. Services without these manual shut-off valves shall be required to immediately have them installed at the owner's expense. If the owner requests, the Water Department will turn off the service, remove the meter, inspect the service, reinstall the meter and turn on the service, all at the Owner's expense.

All meters shall be fitted with a Water Department approved Radio Read Register and R900 Radio Transmitter.

No water service will be activated without proper meter installation or without payment of all charges due.

5.2 OWNERSHIP OF METERS

All meters up to 1" in size shall be furnished and owned by the Water Department and installed at the expense of the owner. All meters over 1" in size may be furnished and installed by the Water Department at the owner's expense and owned by the Water Department.

The installation of all meters shall be done by the Water Department.

5.3 DEFECTIVE METERS

The Water Department has the right at any time to remove, test, repair or replace any meter at its expense.

If an owner requests the meter serving his property be tested or replaced, and such meter is found to be defective, the Water Department shall pay costs associated with the work. If the meter is found not to be defective, a fee shall be paid by the owner to cover the cost of testing, labor, materials and reinstallation in accordance with the "Fees and Rate Schedule".

Meters damaged by accident or neglect by the owner or occupant of the property shall be repaired or replaced at the owner's expense.

5.4 METER INSTALLATION

The Water Department shall have the right to inspect all meters that have been installed, removed, repaired or replaced.

5.5 METER TAMPERING

Tampering with water meters by any person shall be subject to a fee. Necessary repairs or replacement shall be at the owner's expense.

5.6 METER SIZE

The size and type of meter required for any service shall be 5/8-inch unless the owner requests a larger meter in writing. The request shall include proposed use, estimated peak flow and other requirements necessary for a larger meter. The request shall be included with the application for service and will be reviewed by the Water Department for approval. The Water Department shall determine meter size.

5.7 RIGHT TO CHANGE METERS

If, in the opinion of the Water Department, a meter does not fit the conditions of the service installation, the Water Department has the right to require such meter to be changed. Such change shall be made in accordance with Water Department regulations and paid for by the owner.

5.8 ACCESS TO THE METER

The owner of the premises shall ensure accessibility to meters at all times. Failure to remove any obstruction to meter accessibility within three (3) days after being notified by the Water Department may result in the water service being shut off until all obstructions are removed, all regulations complied with and all charges for shutting off and turning on the water are paid.

5.9 METER PITS

Meter pits are required for services longer than 300 feet between curb stop and service entrance to buildings, unless determined otherwise by the Superintendent. Meter pits shall be installed at the property line and shall be the owner's property. Installation and maintenance of meter pits, as required by the Water Department, shall be at the owner's expense.

5.10 SEASONAL METERS

The Water Department shall remove meters, which are for seasonal use, at the request of the owner and only in the presence of the owner or authorized agent. The owner shall be responsible for all fees for shutting off the service, removing the meter, reinstalling the meter and turning on the service in accordance with the "Fee Schedule".

SECTION 6 CHARGES

6.1 GENERAL

The Water Department shall charge owners for water use as stipulated in the Fees and Rate Schedule.

6.2 OWNER'S LIABILITY TO PAY

A minimum charge shall be assessed to the owner for active water services whether or not water is used.

6.3 COLLECTION OF CHARGES

The Water Department will send each service owner a water usage bill at intervals determined by the Commissioners.

Additional charges for labor, material, fees or violations billable to an owner shall be billed separately and are subject to the same conditions as bills for water use.

6.4 CLAIMS FOR ADJUSTMENT ON BILLS

To be considered, all claims for adjustments of water bills must be made within thirty (30) days of billing date.

6.5 PAYMENT FOR WATER USE

Owners must pay for all metered water use.

6.6 FAILED METER

If a meter fails to register correctly, the charge for water use shall be based on average daily use, as shown by records when the meter was in order, for the corresponding period of the preceding year.

Failed meters must be replaced per Section 5.3 of the Regulations.

6.7 PAYMENT

All bills for water use must be paid within thirty (30) days of billing date. Overdue bills will immediately become delinquent. The Water Department will impose interest in accordance with the Rate Schedule for the balance owed on all delinquent bills. The Water Department shall notify the owner regarding overdue bills and issue a shut-off notice. If payment is not received within thirty (30) days from the date the shut-off notice is rendered, the Water Department

may shut off the service without further notice in accordance with Massachusetts General Laws Chapter 40 Section 42b. All charges and additional fees associated with the collection of payments, including but not limited to legal fees, shall be paid in full prior to the Water Department turning on the service.

The Water Department has adopted Chapter 40, Sec. 42A through F of the Massachusetts General Laws Relating to the Imposition of Liens Against Delinquent Accounts.

Accounts delinquent over sixty (60) days may be turned over to the Collector of Taxes and placed into Lien.

SECTION 7 VIOLATIONS

7.1 VIOLATIONS OF REGULATIONS

Any violation of the Rules and Regulations may result in shutting off the water service to the violator's property in accordance with the Massachusetts General Laws (M.G.L.) Chapter 40 Section 42b as amended to date. When the water has been shut off for violation, it shall not be turned on until the Water Department is satisfied that there shall be no further violation and until all fees have been paid.

7.2 ADULTERATION OF SUPPLY

Intentional introduction of foreign materials that allows adulterated water to enter the Public water system shall be subject to prosecution.

7.3 MANDATORY WATER USE RESTRICTIONS

The Commissioners have the authority to implement mandatory water use restrictions, when it is deemed by the Commissioners to be in the interest of the Department, and to assess fines for water use restriction violations in accordance with the Water Department Rules & Regulations as amended to date. The owner of any service found in violation of a mandatory water use restriction shall be assessed the following fines:

First Offense – \$50.00 fine

Any Subsequent Offense – \$100.00 fine

In addition, the Massachusetts Department of Environmental Protection has authority to declare a state of water emergency (M.G.L. Chapter 21G) and assess fines for violations.

7.4 UNAUTHORIZED WATER USE

Any user who intentionally damages a water meter, prevents accurate registration of the quantity of water supplied, or uses or causes water to be used without consent of the Water Department, may be billed \$500.00 for each offense, charged a minimum of 13,300 cubic feet of usage per billing cycle and required to pay for replacement and installation of a new meter.

SECTION 8 WATER MAINS AND SERVICES

8.1 GENERAL

Water main extensions shall be approved by the Water Department. Prior to initiation of water main construction, an updated set of three prints of plans showing water main extensions shall be submitted to the Water Department for review. The Applicant shall pay the cost of review.

All plans approved by the Water Department shall be valid for one year. At the end of one year, plans for any water main extension not under construction shall be deemed null and void and new plans submitted for review.

The Applicant shall submit four (4) sets of construction shop drawings to the Water Department, detailing the materials to be used during construction and the suppliers of the materials being used. Local contact information for all material suppliers shall be provided in the submittal.

All permits required to perform the work and 24-hour emergency contact shall be received prior to any work being started.

On completion of the water main extension, AutoCAD as-built plans (CD, 3 prints) shall be submitted to the Water Department. The as-built plans shall include locations of service taps in the main, curb stops, gate valves, tees, caps, reducers, hydrants and blow-offs. Tie sheets shall be provided to the Water Department with a minimum of two oblique ties to permanent structures for each curb stop and for each service tap, gate valve, tee, cap, reducer, hydrant and blow-off in the main.

Construction and pressure and disinfection testing of all water main extensions shall be inspected. Inspections shall be contracted for by the Water Department and paid for by the Applicant in full. Inspection of construction and pressure and disinfection testing shall be completed before water main extensions are activated. The Water Department will not accept water main extensions until all work has been completed, all expenses paid and as-built plans submitted.

All public water main piping, valves, hydrants, services and appurtenances included with construction of water main extensions shall become the absolute property of the Orange Water Department and the Applicant shall have no right, title or interest therein after acceptance. The Water Department retains the right of access for maintenance, repair and inspection of water main extensions.

Water mains shall be a minimum of 8-in., looped to prevent dead-ends wherever possible, with isolation valves at water main intersections. Stubs left during construction for future use shall have two valves with roadway boxes. One valve shall be installed at the water main tee and one at the property line.

Liability insurance shall be provided in the minimum amount of \$1,000,000 and the "Orange Water Department" shall be listed as additionally insured.

8.2 WATER MAIN REQUIREMENTS

Inspection and Testing. The Applicant shall supply the Water Department with certificates of compliance with water main specifications and certification that each piece of ductile iron pipe has been tested at the foundry for ductility by test methods approved by the Ductile Iron Pipe Research Association.

Handling and Cutting Pipe. Care shall be taken in handling and laying 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 fracture can be seen, shall be marked as rejected and removed at once from the job 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 caused by cutting.

Cut ends shall be carefully chamfered to prevent cutting the gasket when the pipe is laid.

Installing Pipe and Fittings. 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.

The pipe shall be installed with a minimum cover of 5'0" and a maximum of 7'0". The Superintendent may waive this requirement if necessary.

The deflection of alignment at a joint shall not exceed the appropriate permissible deflection as specified in the following tabulation:

PIPE DEFLECTION ALLOWANCES Maximum permissible deflection (inches) *

<u>Size of pipe</u>	<u>Push-on Joint</u>	<u>Mechanical Joint</u>
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-ft. length; maximum permissible deflections for other lengths shall be in proportion of such lengths to 18 ft.

Temporary Plugs. At all times when pipe laying is not actually in progress, the open ends of pipe shall be closed by temporary watertight plugs to keep the interior of water mains clear of dirt, water, animals and other sources of possible contaminations at all times. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has been eliminated.

Pressure and Leakage Tests. A test company approved by the Water Department shall conduct all acceptance tests in the presence of a Water Department representative. Scheduling with the Water Department shall be at least 48 hours in advance of all acceptance tests. All pipelines shall be given combined pressure and leakage tests.

The test shall be conducted as soon as possible after completion of each pipeline section, Hydrant laterals shall be included in all pressure tests. The Applicant shall furnish and install suitable temporary testing plugs or caps; blowoffs and all necessary pressure pumps, pipe connections, meters, gages, and other similar equipment; and all labor required. The Water Department representative shall inspect all pressure gages prior to tests.

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

The section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If hydrants or blowoffs are not available at high points for releasing air, the Applicant 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, unless otherwise specified on the approved drawings.

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 200 pounds per square inch, or as directed by the Water Department. While maintaining this pressure for two hours, the Applicant shall make a leakage test by metering the flow of water into the pipe. If the average leakage during the two-hour period exceeds a rate of 0.833 gallons per inch of diameter per mile, the section shall be considered as having failed the test.

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

8.3 DISINFECTING AND FLUSHING.

The Applicant shall furnish all equipment and materials necessary to do the work of disinfecting, and shall perform the work in accordance with the procedure outlined in the AWWA Standard for Disinfecting Water Mains, Designation C-651 and C-651a as amended to date. The method used shall be that described in Section 5.2 of the AWWA Standard as amended to date.

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

Chlorine shall not be left in the mains for more than 48 hours. After treatment, the main shall be flushed with clean water until the residual chlorine content does not exceed current residuals of the Water Department.

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

Water used for disinfecting and flushing shall be dechlorinated prior to disposal and shall be disposed of in an approved manner.

After final flushing bacteria samples will be taken, the number and location of the samples to be determined by the Water Department. Hoses may not be used for the collection of samples.

Consecutive sampling shall be repeated for any failure until both samples within each set meet the acceptance criteria described below.

A laboratory certified by the State and approved by the Water Department shall analyze the samples. A State-approved laboratory must receive samples, properly preserved, no more than 8 hours after they are taken from the main. Test results shall demonstrate that all water sampled from the watermain has a total-coliform count of zero.

8.4 RESTRAINED JOINTS. A restrained mechanical gland shall be used for all mechanical joints.

8.5 HYDRANT CONNECTIONS.

Hydrant connections shall be 6-in minimum and of the mechanical-joint type with a maximum spacing of 500 feet. Ductile-iron restrained joints and anchor tees shall be provided.

8.6 SERVICE CONNECTIONS.

Service connections shall consist of a corporation stop, curb stop, curb box, service saddle (for services larger than 1-in.), PE tubing and splicing couplings as necessary. Meter pits shall be required for services as prescribed in Section 5.9 of the Regulations. All service taps must be wet taps done under static pressure. The only dry tap allowed will be a chlorination tap for disinfecting the water main.

8.7 GENERAL CONSTRUCTION REQUIREMENTS.

The following General Requirements of construction shall apply.

The Applicant shall notify Dig-Safe prior to the start of construction and shall comply with all Federal, State and Local regulations including but not limited to safety.

The Applicant shall handle groundwater in a manner consistent with all federal, state and local laws, regulations and by-laws as amended to date.

The Applicant shall restore areas disturbed by construction to original pre-construction condition.

The Applicant shall verify the location of underground utilities, including services, with utility owners and shall comply with their requirements for protection of utilities.

The Applicant shall immediately repair any damage to existing utilities (Town owned or otherwise) resulting from his work, at no expense to the Water Department.

Except where otherwise directed, twelve (12) inch minimum clearance shall be provided between the exterior of water mains and other utilities. Where new mains pass under utilities, they shall cross without use of bends. When new mains cross an existing sewer, it shall be done without the use of bends and/or joints.

All fittings shall be backed with concrete thrust blocks as indicated on the standard details. Thrust block sides shall be formed with plywood and bearing areas shall be not less than indicated in the Appendix.

All trenches shall be rolled and/or mechanically tamped to achieve compaction in excess of 95%.

The following standard details are included in the Appendix:

- Water Main Trench Detail
- Gate Valve Detail
- Hydrant Assembly Detail
- Service Connection Detail
- Thrust Block Details

STANDARD MATERIAL FOR WATER MAIN CONSTRUCTION

GENERAL

The standard materials set forth are the current Water Department requirements for water main construction and shall be subject to review and change periodically by the Commissioners.

WATER MAIN MATERIALS

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
- A21.11 Rubber-Gasket Joints for Cast-Iron and Ductile-Iron Pressure Pipe and Fittings
- A21.51 Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids
- A21.53 Ductile-Iron Compact Fittings, 3-in. through 16-in. for Water and Other Liquids

PIPE

Unless otherwise indicated or specified, ductile-iron pipe shall be at least thickness Class 52 for pipe 12-in. and smaller and at least thickness Class 51 for pipe 14-in. and larger. Pressure class pipe will not be accepted. Pipe shall be U.S. Pipe or Griffin.

Fittings. Fittings shall conform to the requirements of the above-mentioned ANSI A21.53 and shall have a pressure rating of 350 pounds per square inch. All fittings will be cast of ductile iron and shall be mechanical joint. They will be restrained with the Mega-Lug retainer gland.

Joints. Joints for push-on and mechanical-joint pipe shall conform to ANSI A21.11. Ring-type gaskets, suitable for exposure to the liquid within the pipe, shall be used. Bolts for any joint shall be of the high-strength low-alloy steel type, except as otherwise noted. All mechanical-joints shall be formed using a restrained mechanical gland.

Restrained Mechanical Gland. Restrained Mechanical Gland shall be EBAA Iron's Mega-Lug ® retainer gland or other non-set-screw type retainer gland that will not void the warrantee of the pipe manufacturer.

Couplings. Couplings shall be HYMAX. The couplings shall be provided with high strength, low alloy, corrosion resistant bolts and nuts.

Couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.

Lining and Coating. The inside of pipe and fittings shall be given a cement lining and bituminous seal coat in accordance with ANSI A21.4. Particular care shall be used to insure proper bonding of the seal coat. Lining shall be double thickness.

The outside of buried pipe and fittings shall be coated with the standard bituminous coating specified under the appropriate ANSI Standard Specification for the pipe and fittings.

Joint Lubrication. Joint lubrication for gaskets shall be suitable for lubricating the parts of the joint assembly. The lubricant shall be non-toxic, shall not support the growth of bacteria, and shall have no deteriorating effects on the gasket material. It shall not impart taste or odor to water in the pipe. The lubricant containers shall be labeled with the trade name or trademark and the pipe manufacturer's name. The lubrication shall be only that recommended by the pipe and fitting manufacturers. No other lubricant is acceptable.

VALVE, HYDRANT AND SERVICE CONNECTIONS

Gate Valves. Gate valves shall be 150-lb. nonrising stem, iron-body, bronze-mounted, resilient-seated wedge type gate valves having mechanical-joint ends, and shall conform to the AWWA Standard for Gate Valves for Water and Other Liquids, Designation C509. Gate valves shall open right (clockwise) and be M&H, Clow or U.S. Pipe.

Hydrants. Hydrants shall conform in design and manufacture to the latest issue of AWWA Standard C502 "Dry Barrel Fire Hydrants". Hydrants shall be M&H 929.

Hydrants shall comply with the following:

- a. Main Valve Opening: 5.25 inches
- b. Outlets: 2 – 2.50 inch hose connections
1 – 4.50 inch steamer connection
- c. Operating Nut Size: Pentagon 1.50 inches point to flat
- d. Direction of Opening: Clockwise (OPEN RIGHT)
- e. Bury Length: 5.5 feet
- f. Sub-Seat Material: Bronze
- g. Model: Traffic (breakaway design)
- h. Color: Match Service Zone Fire Hydrant Standards

Valve Boxes. Valve boxes shall be of rough, even-grained cast-iron and of the adjustable, slip, heavy-pattern Buffalo 64 type. The boxes shall be adjustable through at least 6-in. vertically without reduction of the lap between sections to less than 4-in. Valve boxes shall be of North American origin. Valve box covers shall be labeled "WATER".

Service Connections

The corporation stop shall be all bronze construction 1" with a Teflon coated ball and AWWA-type (CC) inlet threads with compression outlet. 200 PSI working pressure. Corporations shall be Mueller, Ford, Red Hed or McDonald T Compression.

The curb stop without drain shall be all bronze construction 1" with a Teflon coated ball suitable for PE tubing compression connections. 200 PSI working pressure. Curb Stops shall be Mueller, Ford, Red Hed or McDonald T Compression.

The curb box shall be of the telescoping type and be of North American origin. Curb box covers shall be labeled "WATER".

Plastic tubing shall be PE Type, rated for 200 PSI working pressure.

The service saddle shall be enamel coated ductile iron or bronze with double band stainless steel straps. Saddle shall have an NBR gasket for use with potable water. Saddles shall be Dresser, Smith Blair, Mueller, Romac or Ford.

Meter Pit shall conform to AWWA Standard C800 (ASTM B-62) and shall include a Cast Iron double lid cover with an asphalt black paint conforming to ASTM A48-92, Class 25 as manufactured by the Ford Meter Box Company or an approved equal.

APPENDIX

Fees and Rate Schedule
Specifications
Cross Connection Control Program Regulations

Water Main Trench Detail
Gate Valve Detail
Hydrant Assembly Detail
Service Connection Detail
Thrust Block Detail



Orange Water Department

16 West Myrtle Street
Orange, Massachusetts 01364
Telephone: 978-544-1115 • Fax: 978-544-1122

**Water
Commissioners**
Donald Barnes
Donald Priestley
Richard Kilhart

Superintendent
Michael A. Heidorn

Regular Meetings
2nd Monday
3:15pm

Rates & Fees Schedule

Effective July 1, 2011

Rates

General Water Rate	\$3.50/100 Cubic Feet
Over 25,000 Cubic Feet	\$3.60/100 Cubic Feet
Tully Water Rate	\$4.25/100 Cubic Feet

Fees

Turn On Fee	\$50.00
Turn Off Fee	\$50.00
Final Meter Reading Fee	\$50.00
Hydrant Meter Fee	\$50.00 Plus Water Used
Fire Service Fee	\$25.00/Quarter
Inspection Fee	\$25.00/Hour
Equipment Rental Fee	\$60.00/Hour
System Development Charge	\$2,000.00/Inch
Service Call – After Hours	\$130.00



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Richard Kilhart

Superintendent
Bruce A. Merriam

Regular Meetings
2nd & 4th Mondays
7:00pm

SPECIFICATIONS

Pipe	All pipe will be class 52 double cement lined ductile iron pipe. U.S. Pipe or Griffin. Tyton Push On Gasket Joints.
Hydrants	M&H Dresser 929, 5 1/4" barrel, (2) 2 1/2" nozzles, (1) 4 1/2" steamer nozzle all must have National Standard Thread. Hydrants shall be OPEN RIGHT with break flange. Hydrants shall have drain valve.
Gate Valves	M&H, Clow, or US Pipe resilient seated wedge valves. Butterfly valves will be required on valves 16" or larger. Valves shall be OPEN RIGHT .
Fittings	All fittings will be cast of ductile iron and shall be mechanical joint. They shall be restrained with the (MEGA LUG) retainer gland.
Repair Couplings	Hymax
Saddles	Dresser, Smith Blair, Mueller, Romac, Ford. ALL SADDLES MUST BE DOUBLE BAND, STAINLESS STEEL.
Service Corporations	Mueller, Ford, Red Hed, McDonald T Compression. All corporations must be ball type and CC Thread x Compression.
Curb Stops	Mueller, Ford, Red Hed, McDonald T Compression. Compression x Compression.



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Plastic Tube	Must be rated for 200 PSI. Sizes 3/4", 1", 1 1/2", 2" ONLY .
Copper Tube	Type K copper ONLY .
Ball Valves	Ford ball valves with compression grip ring. Must be supplied with handles.
Service Repair Couplings	Mueller, Ford, Dresser, McDonald T Compression.
Water Meters	Trident-10 with low flow indicator. Measurement must be in cubic feet. R-900 Radio remote for outside reading. Meters larger than 1" are to be purchased by the customer and upon installation become property of the Orange Water Department.
Meter Connectors	Ford, Mueller, McDonald.
Repair Sleeves	"Wrap Around" Stainless steel in all sizes.
Curb Boxes	Shall be made in North America. Box cover shall be marked Water . 2 1/2" Shaft with overall length of 5' 6".
Valve Boxes	Shall be made in North America. Box cover shall be marked Water . 6 1/8" Top section, 5 1/4" bottom section. No three piece combinations. Note: All boxes shall be cast iron, asphalt coated, and adjustable sliding type.



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REGULATIONS FOR THE CONTROL OF BACKFLOW AND CROSS-CONNECTIONS

SECTION 1. CROSS-CONNECTION CONTROL AUTHORITY

Under public law 93-523 the Safe Drinking Water Act of 1974, and Mass. Reg. 310 OMR, Section 22.22 Protection of Sources of Water, the water purveyor has the primary responsibility for preventing water from unapproved sources, or any other substances, from entering the public potable water system.

SECTION 2. CROSS-CONNECTION CONTROL – GENERAL POLICY

2.1 **PURPOSE.** The purpose of this regulation is:

2.1.1 To protect the public potable water supply of the area served by the Orange Water Department from the possibility of contamination or pollution by isolating within its customer's internal distribution system(s) or its customer's private water system(s) such contaminants or pollutants which could backflow or back-siphon into the public water supply system; and

2.1.2 To promote the elimination or control of existing cross-connections, actual or potential, between its customer's in-plant potable system(s) and non-potable systems, plumbing fixtures and industrial piping systems; and

2.1.3 To provide for the maintenance of a continuing program of cross-connection control which will systematically and effectively prevent the contamination or pollution of all potable water systems by cross-connection.

The Town of Orange is an equal opportunity provider.

2.2 **RESPONSIBILITY.** The Water Superintendent shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the backflow or back-siphonage of contaminants or pollutants through the water service connection. If, in the judgement of said Water Superintendent an approved backflow prevention device is required, at the Town's water service connection to any customer's premises, for the safety of the water system, the Superintendent or his designated agent shall give notice in writing to said customer to install such an approved backflow prevention device at each service connection to his premises. The customer shall, within 30 days, install such approved device or devices at his own expense, and failure, refusal or inability on the part of the customer to install said device or devices within 30 days shall constitute a ground for discontinuing water service to the premises until such device or devices have been properly installed.

SECTION 3. DEFINITIONS

3.1 Water Superintendent – The Superintendent, or his designated agent, in charge of the Orange Water Department is invested with the authority and responsibility for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this ordinance.

3.2 Approved – Accepted by the Superintendent as meeting an applicable specification stated or cited in this regulation, or as suitable for the proposed use.

3.3 Auxiliary Water Supply – Any water supply on or available to the premises other than the purveyor's approved public potable water supply.

3.4 Backflow – The flow of water or other liquids, mixtures, or substances under pressure into the distributing pipes of a potable water supply system from any source or sources other than its intended source.

3.5 Back-Siphonage – The flow of water or other liquids, mixtures or substances into the distributing pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.

3.6 Backflow Preventer – A device or means designed to prevent backflow or siphonage.

- 3.6.1 Air Gap** – The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood rim of said vessel. An approved air-gap shall be as required by Water Department standards.
- 3.6.2 Reduced Pressure Principle Device** – An assembly of two independently operating approved check valves with an automatically operating differential relief valve between the two check valves, tightly closing shut-off valves on either side of the check valves, plus properly located test cocks for the testing of the check and relief valves.
- 3.6.3 Double Check Valve Assembly** – An assembly of two independently operating approved check valves with tightly closing shut-off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve.
- 3.6.4 Pressure Vacuum Breakers** – A device containing one or two independently operating loaded check valves and an independently operating loaded air inlet valve located on the discharge side of the check or checks.
- 3.7 Contamination** – An impairment of the quality of the potable water by sewage, industrial fluids or waste liquids, compounds or other materials to a degree which creates an actual hazard to the public health through poisoning or through the spread of disease.
- 3.8 Cross-Connection** – Any physical connection or arrangement of piping or fixtures between two otherwise separate piping systems one of which contains potable water and the other non-potable water or industrial fluids of questionable safety, through which, or because of which, back-flow or back-siphonage may occur into the potable water system.
- 3.9 Cross-Connection – Controlled** – A connection between a potable water system and a non-potable water system with an approved backflow prevention device properly installed that will continuously afford the protection commensurate with the degree of hazard.
- 3.10 Cross-Connection Control By Containment** – The installation of any approved backflow prevention device at the water service connection to any customer's premises, or the installation of an approved back-flow prevention device on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross-connections which cannot be effectively eliminated or controlled at the point of cross-connection.

3.11 Hazard, Degree of – The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

3.11.1 Hazard – Health (High Hazard) – Any condition, device, or practice in the water supply system and its operation which could create, or, in the judgement of the Water Superintendent, may create a danger to the health and well being of the water consumer.

3.11.2 Hazard – Plumbing (High Hazard) – A plumbing type cross-connection in a consumer's potable water system that has not been properly protected by a vacuum breaker, air-gap separation or backflow prevention device. Unprotected plumbing type cross-connections are considered to be a health hazard.

3.11.3 Hazard – Pollutonal (Low Hazard) – An actual or potential threat to the physical properties of the water system or to the potability of the public or the consumer's potable water system but which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.

3.12 Industrial Fluids System – Any system containing a fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, pollution or plumbing hazard if introduced into an approved water supply.

3.13 Pollution – The presence of any foreign substance (organic, inorganic, or biological) in water which tends to degrade its quality so as to constitute a hazard or impair the usefulness of quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.

3.14 Water – Potable – Water from a source which has been approved by the Mass D.E.P. for human consumption.

3.15 Water – Non-Potable – Water which is not safe for human consumption or which is of questionable potability.

3.16 Water – Service Connections – The terminal end of a service connection from the public potable water system; i.e., where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the

meter. Service connection shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the public potable water system.

3.17 Water – Used – Any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the water purveyor.

SECTION 4. REQUIREMENTS

4.1 WATER SYSTEM

4.1.1 The water system shall be considered as made up of two parts: the utility system and the customer system.

4.1.2 Utility system shall consist of the source facilities and the distribution system; and shall include all those facilities of the water system under the complete control of the utility, up to the point where the customer's system begins.

4.1.3 The source shall include all components of the facilities utilized in the production, treatment, storage, and delivery of water to the distribution system.

4.1.4 The distribution system shall include the network of conduits used for the delivery of water from the source to the customer's system.

4.1.5 The customer's system shall include those parts of the facilities beyond the termination of the utility distribution system which are utilized in conveying utility-delivered domestic water to points of use.

4.2 POLICY

4.2.1 No water service connection to any premises shall be installed or maintained by the Water Department unless the water supply is protected as required by Massachusetts state law and this regulation. Service of water to any premises shall be discontinued by the Water Department if a backflow prevention device required by this regulation is not installed, tested and maintained, or if it is found that a backflow prevention device has been removed, by-passed, or if an unprotected cross-connection exists on the premises. Service will not be restored until such conditions or defects are corrected.

4.2.2 The customer's system should be open for inspection at all reasonable times to authorized representatives of the Water Department to determine whether cross-connections or other structural or sanitary hazards, including violations of this

regulation, exist. When such a condition becomes known, the superintendent shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the condition(s) in conformance with State and City statutes relating to plumbing and water supplies and the regulations adopted pursuant thereto. All expenses relating to the disconnection and reconnection shall be at the customer's expense.

4.2.3 An approved backflow prevention device where required shall be installed on each service line to a customer's water system at or near the property line or immediately inside the building being served; but, in all cases, before the first branch line leading off the service line wherever the following conditions exist:

4.2.3A In the case of premises having an auxiliary water supply which is not or may not be of safe bacteriological or chemical quality and which is not acceptable as an additional source by the D.E.P., the public water system shall be protected against backflow from the premises by installing a backflow prevention device in the service line appropriate to the degree of hazard.

4.2.3B In the case of premises on which any industrial fluids or any other objectionable substance is handled in such a fashion as to create an actual or potential hazard to the public water system, the public water system shall be protected against backflow from the premises by installing a backflow prevention device in the service line appropriate to the degree of hazard.

4.2.3C In the case of premises having (1) internal cross-connection that cannot be permanently corrected and controlled, or (2) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross-connections exist, the public water system shall be protected against backflow from the premises by installing a backflow prevention device in the service line.

4.2.4 The type of protective device required under subsections 4.2.3A, B, and C shall depend upon the degree of hazard which exists as follows:

4.2.4A In the case of any premises where there is an auxiliary water supply as stated in subsection 4.2.3A of this section; or

4.2.4B Where there is any material dangerous to health which is handled in a fashion as to create an actual or potential hazard to the public water system; or

4.2.4C Where there are "uncontrolled" cross-connections, either actual or potential, the public water system shall be protected by an approved air-gap separation or an approved reduced pressure principal backflow prevention device at the service connection.

4.2.4D In the case of any premises where there is water or a substance that would be objectionable but not hazardous to health, if introduced into the public water system, the public water system shall be protected by an approved double check valve assembly.

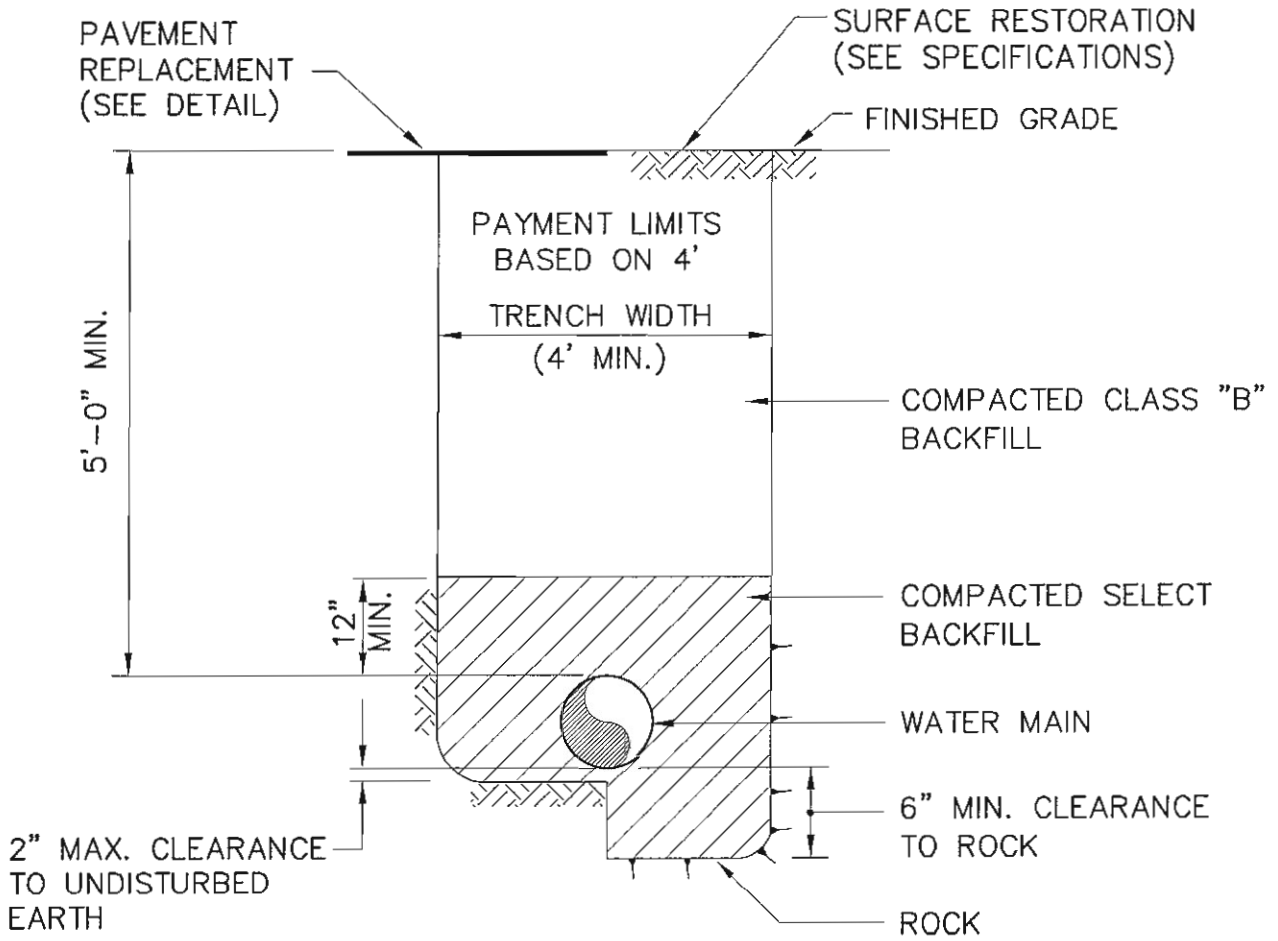
4.2.4E In the case of any premises where, because of security requirements or other prohibitions or restrictions it is impossible or impractical to make a complete in plant cross-connection survey, the public water system shall be protected against backflow or back-siphonage from the premises by the installation of a backflow prevention device in the service line. In this case, maximum protection will be required; that is, an approved air-gap separation or an approved reduced pressure principal backflow prevention device shall be installed in each service to the premises.

4.2.5 Any backflow prevention device required herein shall be of a model and size approved by the Water Superintendent. The term "approved backflow prevention device" shall mean a device that is on the "approved list of backflow preventers and double check valves" as revised by the N.H. Water Supply and Pollution Control Commission, or is on the University of Southern California approval list. Said approval lists have been adopted by the Water Superintendent.

4.2.6 It shall be the duty of the customer/user at any premise where backflow prevention devices are installed to have certified inspections and operational tests made at least once per year as required under Massachusetts regulations and this regulation. The Water Department will conduct testing on these devices twice a year. The owner of the device will be charged for these tests. The Water Department may have these tests performed by a designated representative. In those instances where the Water Superintendent deems the hazard to be great enough, he may require certified inspections at more frequent intervals. These inspections and tests shall be at the expense of the water user and shall be performed by Water Department Personnel or by a certified tester approved by the Water Superintendent and approved by the State of Massachusetts. It shall be the duty of the Water Superintendent to see that these timely tests are made. The Water Superintendent shall notify the customer/user in advance when the tests are to be undertaken so that he or his representatives may witness the test if so desired. These devices shall be repaired, overhauled or replaced at the expense of the customer/user whenever said devices are found to be defective. Records of such tests shall be kept by the Water Superintendent.

4.2.7 All decisions relating to determination of backflow devices will be made by the Orange Water Department. Failure to comply with any directive from this office will result in termination of service.

4.2.8 All testing and/or maintenance performed on backflow devices by the Water Department or its agent will be charged to the owner of the device.

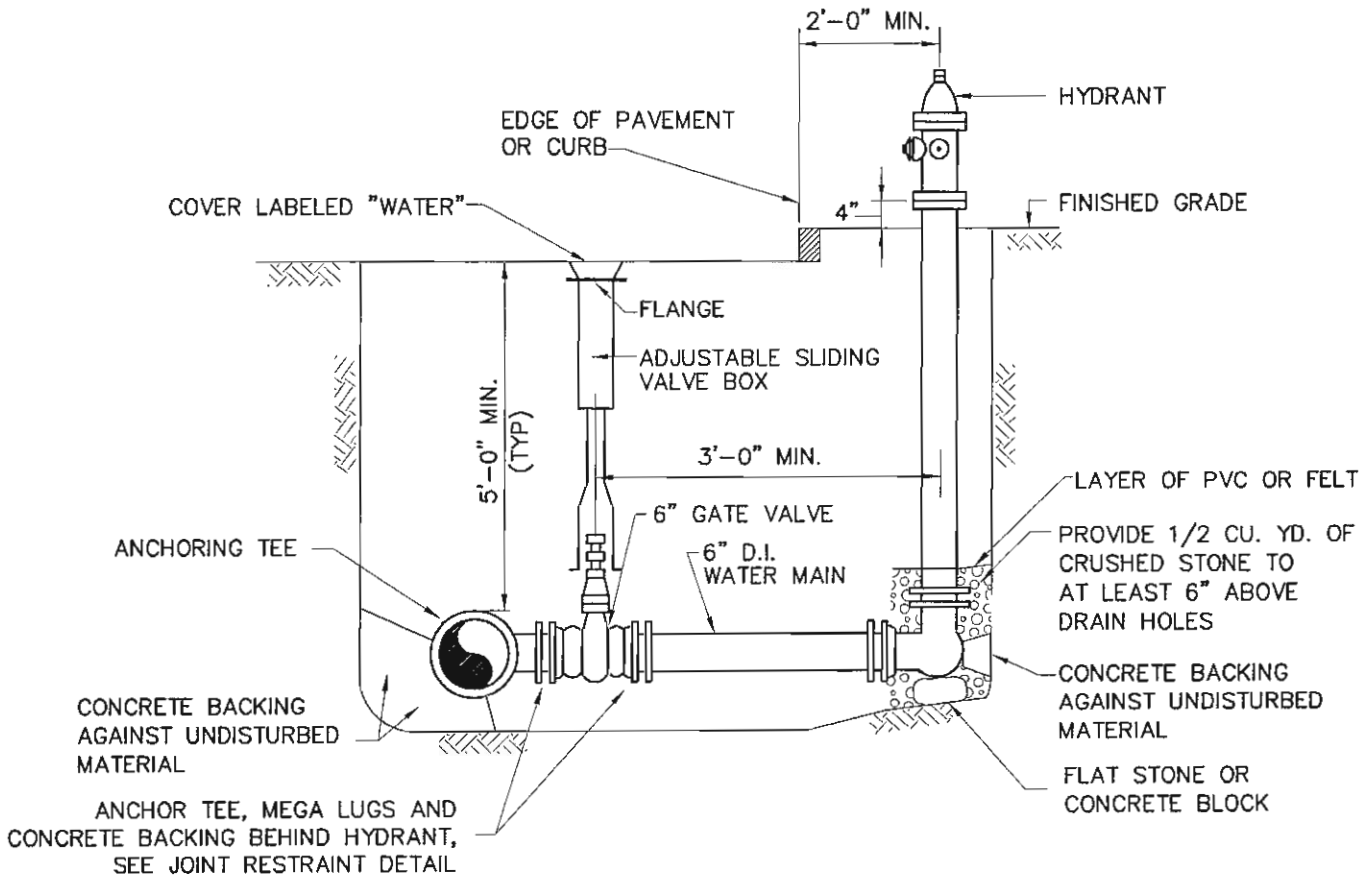


WATER MAIN TRENCH DETAIL

Standard Details

Town of Orange Water Department

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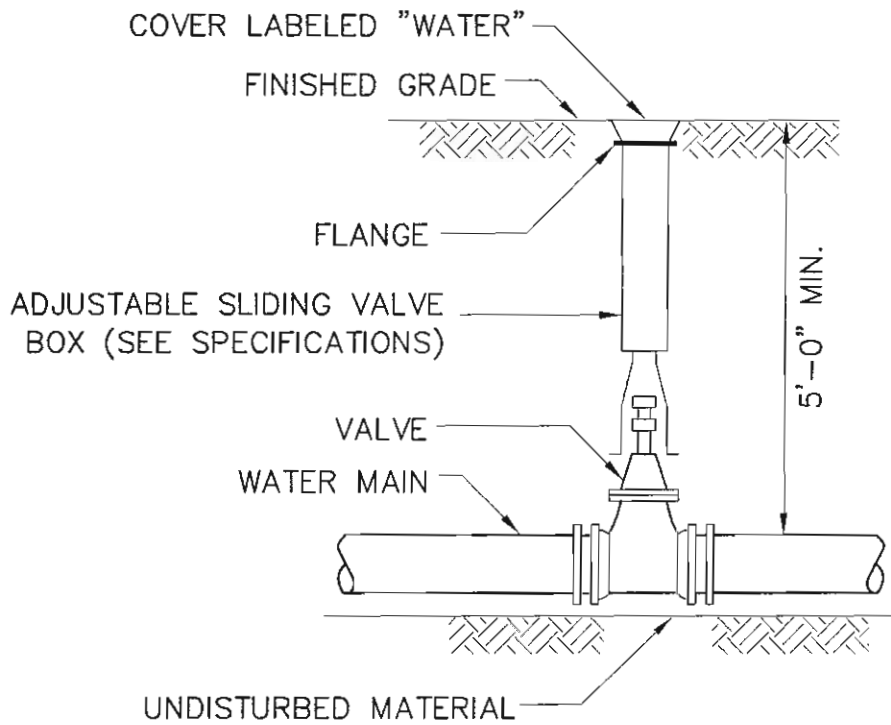


HYDRANT ASSEMBLY DETAIL

Standard Details

Town of Orange Water Department

N.T.S.

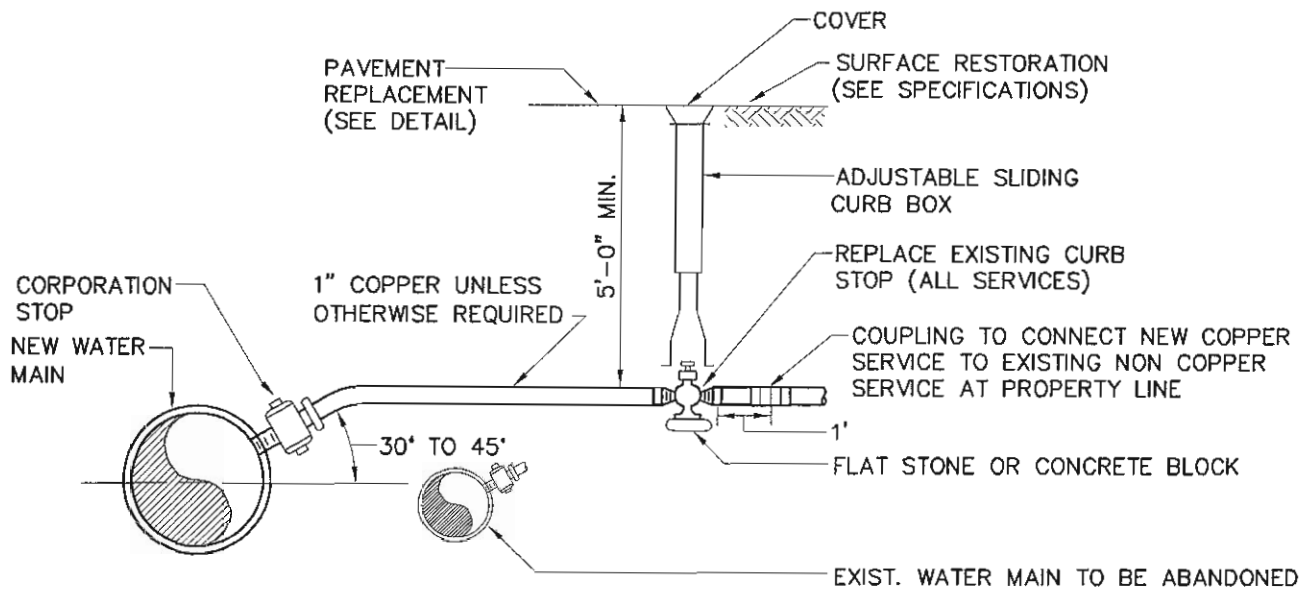


VALVE AND BOX DETAIL

Standard Details

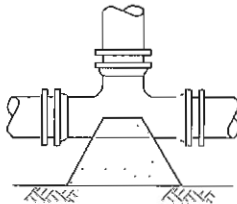
Town of Orange Water Department

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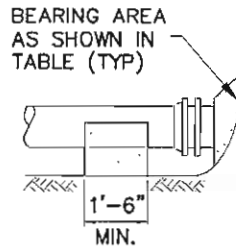


- NOTE:**
1. PROVIDE SADDLE FOR ALL AC AND PVC MAINS AND ALL 2" STOPS
 2. CURB STOPS TO BE PLACED AT BACK OF SIDEWALK WHERE PRESENT

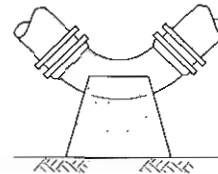
WATER SERVICE TRANSFER DETAIL
Standard Details
 Town of Orange Water Department
 N.T.S.



TEE DETAIL
(PLAN VIEW)



**CAP DETAIL
(PLUG SIMILAR)**
(SECTION VIEW)



BEND DETAIL
(PLAN VIEW)

TABLE OF CONCRETE THRUST RESTRAINT MINIMUM BEARING AREAS IN SQUARE FEET AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS

SIZE OF MAIN	90° BENDS, TEES, CAPS AND PLUGS	45° BENDS AND WYES	22-1/2° BENDS	11-1/4° BENDS
6", 8"	5	4	2	2
10", 12"	12	9	5	2
16"	20	15	8	4
20"	36	24	13	7

- NOTES:**
1. ALL WATER MAIN FITTINGS SHALL HAVE CONCRETE BACKING FOR THRUST RESTRAINT UNLESS OTHERWISE SPECIFIED.
 2. CONTRACTOR SHALL USE CARE TO AVOID PLACEMENT OF CONCRETE ON THE FITTING JOINTS

CONCRETE THRUST RESTRAINT FOR FITTINGS

Standard Details

Town of Orange Water Department

N.T.S.