# Taunton Water Division

# Water System Installation and Materials Specifications

## Effective January 1, 2017

## General

All plans for new construction are subject to final approval by the Taunton DPW Water Division with regards to size and location of all Water Mains, Gate valves, Fire Hydrants, Water Services, and Water Meters.
These standards may be amended from periodically to meet current safety and design standards.

## Water Main Size:

The minimum size of all new water mains for new construction shall be 8 inch. Water Mains will be installed on the same side of the street for the entire length of the street. The size of the water mains installed within any development Public or Private must provide the following:

- The water main design must also provide for a minimum of 20 PSI during fire flow conditions at peak demand times. The flow rates shall meet or exceed the minimum ISO (Insurance Services Office) requirements for the applicable construction.
- No Dead end water main shall be more than 1000 feet in length without looping back to the water system to allow for adequate flow to maintain water quality.

## Water Services:

The minimum size pipe for a new water service shall be 1 inch. However, larger sizes may be required to meet minimum flow and pressure requirements. The city will use the chart on located on **Appendix A** to determine if a larger service is required. The size of the service will be determined by the city.

- All curb stops will be set at the property line of the building being served.
- During peak usage provide the customer with a minimum of 15 Gallons per minute at 40 Pounds per square inch (PSI) of pressure on the first floor of each residence or commercial property.
- Water services cannot be run along a public roadway, if the premises to be served is beyond the end of an existing water main, the water main will have to be extended to the farthest property line of the premises.
- All Buildings, single family homes, duplexes, triplexes, commercial, Industrial buildings etc. must each have their own water service tapped at the water main.
- On ductile Iron or Cast Iron water main, 1" Service taps will be the directly tapped into the water main. On PVC or AC (Transite) pipe all taps will require the use of a saddle. All 1 ½" and 2" taps on all pipe types require service saddles.
- Domestic water services cannot be tapped off a fire line. They must originate at the water main, no exceptions.

## Water Main Gate Valves:

All water gates that connect to the city's water system shall meet the city minimum specifications. - The maximum distance between inline water main gates is 1000 feet.

- Each intersection will have either a three way gate assembly for a side street, or a four way gate for a cross street.
- All water main gates must be within public ways.

**Fire Hydrants:**

Fire hydrants shall be installed as follows

- Fire Hydrants shall be no more than 500 feet apart.
- The first Fire hydrant on a new road shall be located no farther than 500 feet from the nearest Fire hydrant in the existing water system.
- Fire hydrants will be installed on the same side of the road as the water main unless otherwise approved by the water department. All fire Hydrants will be installed using anchor tees with the auxiliary Fire hydrant gate mounted directly to the tee. The breakaway flanges must be 3 to 5 inches from ground level. Fire hydrants installed within a sidewalk shall be set so the bolts on the breakaway flange can be accessed without cutting the sidewalk. All Fire Hydrants will be red in color.
- Fire hydrants must be installed on dead end line.
- On dead end installations the Fire hydrant should be connected using a reducer with a 6" auxiliary valve. Mega Lug style retainer glands shall be used on the reducer, auxiliary gate, and Fire Hydrant. Depending on ground conditions a thrust block may be needed.
- Fire hydrants will have a minimum of 1/3 cubic yards or ½" to ¾" crushed stone to allow for proper drainage.
- All Fire Hydrants will be installed per manufactures instructions.

**Pipe & Joint Restraints**

All new construction will be required to use restraining glands similar to the EBBA Iron Mega lug system, on all Tee's bends reducers/increasers, gate valves (including inline valves), and Fire Hydrants.

Upon approval from the water department where necessary the city may allow the use of threaded rod for the installation of Fire risers. Fire risers shall also have a thrust block poured and tied to bend to prevent movement.

**Thrust Blocks**

Thrust blocks are required on bends and tees. Thrust Blocks will be properly sized based on ANSI/AWWA C150/21.50 or latest revision for ductile Iron Pipe

## Plans for proposed extension to the water system:

All proposed plans shall be drawn and stamped by a Massachusetts registered engineer, and include the following:

- Plans can either be submitted on 24" x 36" sheets or 22" x 34" sheets.
- The plans must show all proposed water mains, gates, Fire Hydrants, proposed water services.

- All Plans must be approved by the Water Division prior to installation. The water department generally requires 72 hours for approval but may take longer for more complex designs.
- Fire services require a fire flow test as close as possible to the connection point.
- The proponent of the new connection must prove there will be no negative effect on the existing water system. A negative impact on the existing system may trigger the proponent to make upgrades within the water system as part of the approval should they decide to proceed with the project. The city's water division if needed will use its consulting engineer to review the information supplied to make this determination.

## Cross Connections

The City of Taunton Water Division is responsible under Commonwealth of Massachusetts Drinking Water Regulations 310 CMR 22.22 is required to make sure that there is no possibility of a Potable water source coming in contact with a Non Potable Source without the proper backflow devices installed.

All new facilities where a cross connection may exist must submit a backflow device plan to the city as along with their plans. The plan must show the proposed locations for all the devices within the facility. While the proper installation of each device is overseen by the Plumbing inspector, the Water division is responsible for the location of each device to make sure the water supply is properly protected from water source to point of domestic use per the US EPA and Massachusetts DEP. The city must survey all new commercial facilities to track compliance.

## Pressure testing:

All new water mains will be tested to according to AWWA C-600 latest revision. The pressure test will be completed by a third party approved by the Water Division and witnessed by the Water Division.

- Pressure testing shall be done prior to the chlorination of the new lines.
- The Water division shall be notified of the date and time of the test (a minimum of 48 hours)
- The initial flooding of the mains will be controlled by the city. Once flooded the company preforming the pressure test may flush the lines to remove air from the lines. At no time will the contractor use a flow rate of more than 500 GPM to remove air.
- All hydrant branches within the test area must be open during the pressure test.
- The test pressure shall be 150 PSI and be held for 2 hours
- Any leakage if any shall be equal to or less than the amount as determined in AWWA C-600 or latest revision, Section 4.2. Any section of water main shall be considered unsuitable if the leakage is greater than the amount in the AWWA C-600 or latest revision, section 4.2.
- A failed pressure/leakage test will result in the installation contractor having to locate and repair the leak in a method approved by the city. The pressure test must then be redone and pass the test.
- Upon completion a written report of the test preformed must be supplied by the third party preforming the testing. The report should include at a minimum the date and time

of the pressure test, pipe diameter, and length tested, any problems, leaks encountered during the test. If for any reason the AWWA C-600 leakage calculations are used, the calculation and result must be included on the test report. The leakage calculations are subject to review prior to the city accepting the pressure test as having passed.

**New Water Line Disinfection:**

All new water lines installed within the distribution system must be disinfected in strict accordance with AWWA standard C-651 latest revision.

- Disinfection must be performed using Calcium Hypochlorite granules dissolves in water drawn from the distribution system and pumped continuously into the new water line until a chlorine residual is seen at the blow off location.
- Chlorination shall be performed by a third party approved by the city and witnessed by a city official. Disinfection companies may under the supervision of the city operate the water gates & Fire hydrants in the water line being treated to allow proper distribution of the chlorine.
- Before chlorination is begins, the lines should be flushed at a rate of 500 GPM until the water runs clear of discolored water and debris. Only one Fire hydrant will be allowed to be opened at a time for flushing new mains.
- Sampling and chlorination taps will be through a corporation stop in the water main with either copper or Polyethylene tuning to chlorinate and sample from. **No** Fire Hydrants or hoses will be used for chlorination or sampling of the mains. Sample locations along new water main shall be no more than 1000' apart.
- Prior to scheduling the pressure test, the contractor should notify the City's water treatment plant to schedule a time to draw the water samples. The City will take the samples Monday thru Thursday from 8AM to 2:30PM. Once taken the samples take 48 hours to process for Coliform and HPC's as required by DEP.
- If a line should fail the bacteria testing, the contractor will have to re-chlorinate & flush the lines that failed and be resampled by the city.
- No lines will be allowed to be put into service without passing the bacteria test.
- The third party contractor shall submit a written copy of the chlorination of the water main which should include at a minimum; the date and time of the chlorination, the pipe length and diameter, the location of the chlorination point and bleeder / test points, the amount of chlorine used, the chlorines % strength, and verification that 50 ppm chlorine residual was reached at each test point.

**Water Mains being put into service:**

Prior to a new water main being placed into service, the new lines must pass both a Leak test and Bacteria testing.

- The Water division or its agent must have witnessed all the work relating to the construction to make sure all the construction has been done in accordance with the city's installation requirements.
- The engineer will supply an as-built plan including a PE stamp which will show all new piping and the certification points. The plan must also include three tie points for each

water main gate and service box. On Water Mains 12" and larger as-built plans will include depth profiles including the location and depth of all other utilities that cross the water main. This plan is subject to review buy the Taunton Water Division prior to acceptance.

## Water Services:

New water services will not be put into service until the water line has been inspected and an inspection card has been issued. All water service installations must be inspected prior to backfilling. The request for inspection must be made at least 24 hours advance notice. Monday inspections must be requested by Friday at noon. All water services must be installed with a single continuous piece of pipe. On long services (over 300 ft.) any couplings installed must be indicated on the as built drawing. The water Service Acceptance card must be signed at the time of inspection. The inspection card will be required at the time a meter is requested.

## Pipe Installation

All water mains and appurtenances shall be installed according to the attached details. Water piping shall be installed with a minimum of 5 feet of cover and no more than 7 feet without prior approval of the Water Division. Horizontal clearance from other utilities must have a minimum of 10 feet Per Mass Department of Chapter 9 regulations. A vertical clearance of at least 18 inches shall be maintained when crossing other utilities. All water lines must be installed over drain and sewer lines Per Mass Department of Chapter 9 regulations. In the event that a water line has to pass under a sewer or drain line the sewer or drain line must be placed in a sleeve with a water tite seal at either end.

At no time will a water line share the same trench with another utility. Shelving a trench for another utility is not permitted for any reason. Where a water service line and sewer lateral must cross the water line must be located above the sewer line.

Fire hydrants will not be used during construction without the use of a backflow control device and water meter. People wishing to use a hydrant for construction purposes are required to go to the water department to fill out a rental agreement and pay a deposit for the equipment along with and initial water usage fee.

### Approval of Materials

Only new materials shall be incorporated into the work. All materials shall be supplied by the contractor and are subject to the approval of the Taunton Water Division.

Prior to beginning work, the contractor shall submit to the Water Division specification sheets for the materials and related equipment to be used in the construction of the new water line. Such data shall contain enough detail to allow the city to form an opinion as to the materials conformity to the specification contained within this. This information shall be submitted no

later than 5 days prior to the start of the work so the city has sufficient time to review the materials.

The materials on the job shall be free from defects and conform to the approved specifications.

All materials which do not conform to the specifications provided or have been damaged in shipment shall be promptly removed from the construction site.

# Materials Specifications

## General:

The Taunton Water Division is willing to review requests for the use of "or equal" materials. The Water Division has the sole right to decide whether materials are equal to what is listed in the specification, and will do so with the following stipulations:

1) It is the sole responsibility of the person/company making the request to supply all necessary documentation to prove the materials will serve the function equally or better, and are of equal or better design and quality. The city may request additional information if it deems necessary to properly review new products.
2) The Water Division may retain professional services to review these requests.
3) Sufficient time must be given to the water Division to perform the review.

All materials regardless of the manufacturer must meet all applicable ANSI/AWWA standards as well as NSF standards for materials to be used with drinking water.

## Pipe for Water Main

All new water main shall be ductile iron pipe and shall conform to AWWA standard C-151 latest revision, Class 52 manufactured by US Pipe, Griffin Pipe Co., Atlantic States pipe or approved equal.

Polyvinyl chloride (PVC) and Fused High Density Polyethylene Pipe (HDPE) water Main may be used in special circumstances may only be used under special approval in applications where Ductile Iron may not be suitable. PVC pipe shall conform to AWWA C-900 latest revision, Class 150, with Cast iron outside diameters. PVC shall be free from any visible UV deterioration. Any signs of deterioration will be grounds denying the use of the pipe. All PVC pipe is subject to approval prior to use. HDPE pipe shall meet the latest version of AWWA C901/C906, ASTM D2239, ASTM D2737, ASTM D3035, and F714.

## Fittings

All fitting shall conform to AWWA standard C-153 latest revision, Made of ductile iron, compact, Mechanical Joint, double cement lined, and bitumen coated, Manufactured by US Pipe, American Cast Iron Pipe, SIMGA, or approved equal. All gland bolts must be ductile iron

**Restrained Joints**

Retainer glands shall be Meg-A-Lug type as manufactured by EBBA Iron, Series 2100, or approved equal. Restrained Joints may be used for some thrust applications. Some applications may require thrust blocks in place of or in addition to the retainer glands.

## Gate Valves

All gate valves will meet AWWA standard C509 latest revision, be mechanical joint, have O-ring stem seals, and have an epoxy coated body. All Gates must be **OPEN RIGHT.** All gates from 4" through 16" will be designed vertical installation. Gates Larger than 20" through 36" will be the horizontal design with a bypass valve. The larger Gates will have a geared reduction to assist in opening and closing.

## Butterfly Valves

Butterfly valves of any size **WILL NOT** be allowed within the City's water distribution system.

## Water Gate Valve Boxes

Every Gate valve will gave a gate box equal to Bibby STE-Croix or Bingham & Taylor 2 piece 5-¼", sliding type adjustable top, roadway gate boxes with 13 lb. covers with "WATER" label in the casting. If extensions are needed to bring the casting to grade, the intermediate style sliding extension must be used. There must be a minimum of 6" of overlap between the top and bottom sections of all gate boxes.

## Corporation Stops

1", 1 ½", and 2" Corporation Stops will conform to AWWA C800 Standards (ASTM B584) Certified to be lead free and meet NSF/ANSI standards 61. All corporation stops will be **OPEN RIGHT,** be the ball valve type with the AWWA CC standard thread with pack joint suitable for use with copper tubing or copper tubing sized plastic pipe (CTS). All corporations will be rated for 300 PSI and include any needed restraints. Corporation stops shall be equal to Mueller 300 series, Ford Brass FB 1000, or approved equal.

## Curb Stops

1", 1 ½", and 2" Curb Stops will conform to AWWA C800 Standards (ASTM B584) Certified to be lead free and meet NSF/ANSI standards 61. All corporation stops will be **OPEN RIGHT,** be the ball valve type with pack joints on both ends suitable for use with copper tubing or copper tubing sized plastic pipe (CTS). All corporations will be rated for 300 PSI and include any needed restraints. Curb Stops will **NOT** have drains. Curb Stops will include a hole drilled in the Key to allow for the attachment of a curb box rod. Curb stops will be equal to the Mueller 300 series with Mueller 110 compression connections, Ford Brass B44 series with locking pack joint nuts, or approved equal.

## Curb Boxes

Each curb Box will have an Erie Style Curb Box with an arch style base and include and include a 36" long rod with brass cotter pin for attachment. Boxes shall have a bituminous coating for corrosion resistance. Curb Boxes shall have the two hole top with the "WATER" label cast in the top. For 1 ½" or 2" curb Stops a curb box base adapter will be used. Boxes and adapters shall be manufactured by Ford meter box, Bibby Ste-Croix or approved equal.

## Meter Valves

All 1" meter valves will be Angle ball valve type with handle. Valves will have copper tube sized compression fitting with a meter nut corresponding to the meter size (5/8", ¾" 1"). All valves will Brass meeting AWWA/ANSI C800 Lead free, meeting NSF61 for potable water use.

Larger valves will be approved by the city depending on the installation. In all cases the valves supplied will need to meet the AWWA/ANSI C800, lead free, meeting NSF61 standard for potable water use.

## Water Meters

All water meters up to 2" will be supplied by the Taunton water division. Meters 3" and larger will be purchased and by the contractor in accordance with the Water Divisions meter specification. Prior to the installation of the water meter the plumber must have the meter spacer and coupling in place. Meter spacers are available from the water department. Depending on the plumbing arrangement below is a table of approximate laying lengths for the meter and tail pieces.

## Service Saddles

Service saddles shall be Ductile Iron with 12 Mill Epoxy Coating with 2 Stainless Steel Straps. The Saddle will meet AWWA/ANSI Standard C800 and NSF61 for use in potable water. All saddles shall have the AWWA CC standard thread. Saddles shall be manufactured by Smith-Blair series 317, Mueller DR 2S series, or approved equal.

## Tapping Sleeves

For 4 inch or larger wet taps on existing water mains, a full diameter ductile iron mechanical joint sleeve must be used. Tapping sleeves will be made of Ductile Iron constructed to ASTM A536 standards mechanical joint rated for 250 PSI. All sleeves must have a test port for air testing. Tapping sleeves shall be manufactured by American flow control series 2800, Mueller H-615, or approved equal.

## Tapping Valves

Tapping valves shall conform to AWWA/ANSI C515, NSF61 approved for potable water. All valves will be **Open Right,** epoxy coated, with resilient wedge. The valve will have one side flanged and one side mechanical Joint. Tapping valves must be supplied by the same manufacturer as the tapping sleeve to be used. Tapping sleeves shall be manufactured by American Flow Control, Mueller, or approved equal.

## Fire Hydrants

Fire Hydrants shall conform to AWWA C502, FM 1510, and UL 246 listed. The hydrant main valve will be 5-1/4", **OPEN LEFT**. All hydrants will have two 2-1/2" NST and one 4 1/2" NST pumper nozzle. Fire hydrants will be equipped with a break away traffic flange which is field repairable. Fire hydrants will have bury depth to match the finished grade. Hydrants will have a 6" mechanical joint connection. All fire hydrants shall be from one of the following manufacturers, Mueller Super Centurion 250, or the American Darling B-84-B5 by American Flow Control.

## Water Service Tubing

All water service tubing will be a minimum of 1" in diameter. All copper water service tubing will be Lead free, Type K, with Soft Temper meeting ASTM standard B-88.

Polyethylene Water service pipe meeting AWWA C901-08 Standard for copper tubing sized (CTS) pipe rated for 200 PSI. The tubing must be ANSI/NSF 61 certified for use with potable water.