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Nancy Sullivan, Office Manager
605 West Queen Street
P.O. Box 111
Southington, CT. 06489-0111
(860) 628-5593 -Fax (860) 621-0491

Southington Water Works Departments Water Main Specifications

The following water main materials shall be AMERICAN MADE PRODUCTS, purchased directly from a water works supply company and installed by a person with a valid Connecticut P-1 or P-7 license: ***Exemptions must be granted by the Southington Water Department on American Made Products.*** A Southington Water Department Inspector must be present for all work related to the installation of public/private water main.

Four-inch, six-inch, eight-inch, twelve-inch or sixteen-inch diameter ductile iron pipe, class 52 or better, tyton or mechanical joint, cement-lined, conforming to ASNI/AWWA C151/A21.51091, with two bronze wedges per joint and accessories, as manufactured by one of the following: McWane, Clow Water Systems Co., U.S. Pipe Co., or Griffin Pipe Co. The Southington Water Department shall determine all water main sizes and joint types. Only one brand of pipe will be allowed per extension. SBR Buna Gaskets shall be used in accordance with ANSI/AWWA C111/A21.11-95, ***Metallic warning tape shall be installed 12-24" above all pipe.*** (See Typical Water Main Trench Detail)

All gate valves and tapping valves shall be mechanical joint resilient-seated valves, non-rising stem, 200 p.s.i. working pressure, O-ring seals, iron body, stainless steel bolts with hexagonal heads, (***no*** Metric sizes allowed. Parallel seat ***OPEN RIGHT*** with accessories and shall meet or exceed ASNI/AWWA C509a-95(Ductile Iron), ASNI/AWWA C515 (Ductile Iron) or their latest revisions and shall be manufactured by one of the following: Kennedy Valve, American Flow Control / American Darling and Mueller.

The Southington Water Department requires that a main line gate valve be installed every 700 feet on any new water main installation. Under the Water Departments discretion if a gate valve is in close proximity to the 700 feet the Water Department has the right to waive the installation of said gate valve.

Tapping Water Mains:

All Materials and labor for water main taps shall be purchased from the Southington Water Department. All large tapping sleeves shall be full mechanical joint with accessories. Exemptions must be granted by the Southington Water Department. All large taps must be done in a minimum 10'x5' trench. There must be at least 12" inches of clearance below and behind water main. Trenches must be dewatered and in compliance with OSHA trench requirements.

All gate boxes shall be a minimum five (5) feet, cast-iron: two-piece slide top flanged top complete, 6" shaft diameter, bell-bottom only.

Tees, bends, and other fittings shall be ductile iron, class 250 or better cement lined; mechanical joint ends, bituminous seal-coated, complete with accessories and conforming to ANSI/AWWA C110/A21.10-93.

All Tees and Bends requires:

- 1) Multiple wedging action thrust restraint glands against the pipe which shall be EBAA Iron Inc., MEGALUG-series 1100 or approved equivalent.
- 2) **Poured thrust blocks** using 3000 p.s.i. concrete, rodding when required by the Water Department. Ductile Iron and Ductile Iron Compact Fittings are also allowed but must conform to ANSI/AWWA C153/A21.53-94. Thrust blocks must be allowed to cure for a minimum of three days, before the water main can be filled. If concrete is 3,000 lb. quick set (2% calcium/3" slump), the thrust block must be cured for at least one hour before filling the main or back filling (See Thrust Block Detail).

All joints on mains shall be restrained for 40 feet back from any caps or plugs. The restraints shall be **Field-lock gaskets** or be wedge action thrust restraint glands against the pipe. The glands shall be EBAA Iron Inc. MEGELLUGS series 1700, or approved equivalent. (See EBAA Itron MEGALUGS 1100 and 1700 series)

All materials should be kept clean as possible during construction. The use of plugs or equivalent on the open ends of pipe to prevent contamination of pipe at job sites. Joints should be cleaned of any grit and other foreign material which may promote leakage.

Separating Distance from Sources Pollution:

Parallel installation: water mains should be laid at least 10 feet horizontally, measured edge to edge, from any exiting or proposed sewer (sanitary, building/house storm). If 10-foot horizontal separating distance cannot be physically achieved, the water main may be installed closed provided that it is located in a separate trench or on an undisturbed shelf and at least 18 inches vertically, measured edge to edge, and 18 inches above the top of the sewer. Measured from crown to invert. There should be no reduction in the 10-foot horizontal separating distance for a sanitary sewer forced main. No water main should come in contact with any part of a sewer manhole.

Crossing: at sewer crossings a minimum vertical clearance of 18 inches, measured from crown to invert, should be maintained between the water main and the sewer with the preferred location of the water main above the sewer whenever possible. The water main should be centered at the sewer crossing such that the water main joints are spaced as far as possible from the sewer. (see sewer or drain crossing detail) There shall be no reduction in vertical separation distance of 18 inches for sanitary sewer forced main crossings. If the water main will cross under a sewer, special consideration should be given to the structural support of the sewer to prevent from settling or deflection of the sewer which may damage the water main. If the separating distance cannot be achieved the Water Department will evaluate alternatives, such as the sewer main be made of the water tight joints equivalent to water main pipe or the use of joint repair clamps on the water main to ensure watertight pipe joint.

For storm drain crossings see sewer or drain crossing detail.

Contractors must discuss and have approved of any alternatives from the Water Department prior to any crossing that doesn't meet Water Department Specifications.

Blow-offs/Air Relief Valves:

Blow-offs shall be 2" **Wedge Valves** (See blow-off details). Manual Air relief valves shall be 1" **Wedge Valves**, Automatic Air Relief Valves shall be minimum 2" (See air relief and manhole details). All shall conform to Department specifications and standards. Non-wedge valves are **NOT** acceptable.

Gate boxes for the Wedge Valves shall be minimum five (5) feet, cast iron; three-piece slide top-flanged top complete, 6" shaft diameter with a #6 box base.

All Hydrant Installation are as follows:

Hydrants must be installed every 500 feet in residential and 300 feet in commercial/industrial zoned areas.

One cast iron hydrant anchor tee, class 250 or better, mechanical joint ends, cement lined, bituminous seal coated, complete with accessories and conforming to ANSI/AWWA C110/S21.10-93 or Ductile Iron, Ductile Iron Compact Fittings conforming to ANSI/AWWA C153/A21.53.94. **Poured thrust blocks are required behind all hydrant tees** using 3000 p.s.i. concrete. Thrust blocks must be allowed to be cured for a minimum of three days before the water main can be filled. If concrete is 3000 lb. quick set (2% calcium/3" slump), the thrust block must cure for one hour.

All tees, plugs and bends must be wrapped in 8 mil polyethylene prior to pouring thrust blocks

Hydrants shall be secured with concrete hydrant blocks against undisturbed soil. A 6" wedge action joint retaining gland as manufactured by EBAA Iron Inc. MEGALUG series **1100** or approved equivalent, is required at both the hydrant tee and the hydrant. A drainage pit shall be backfilled with ¾" crushed stone not less than 6" high. Filter fabric must cover the crushed stone to keep out fines (See hydrant branch detail).

Hydrant drains should be located at least 10 feet from sanitary forced mains and any part of a subsurface sewage disposal system. Hydrant drains should be located a minimum of 18 inches from gravity sanitary and storm sewers. If the water-table in the area is known to be high, the drain ports should be plugged watertight and an operational plan should be implemented to pump the hydrant barrels dry during freezing weather.

A minimum of 6.5 feet of six-inch diameter ductile iron pipe, class 52, cement-lined, conforming to ANSI/AWWA C151/A21.21.51-91, shall be used between the hydrant and the secondary valve. Exception of length of pipe must be agreed upon by the Southington Water Department.

The **secondary valve** shall be a 6" mechanical joint resilient-seated valve, non-rising stem, 200 p.s.i. working pressure, O-ring seals, iron body, stainless steel bolts with hexagonal heads, (**no** Metric sizes allowed), parallel seat **OPEN RIGHT** with accessories, and shall meet or exceed ANSI/AWWA C509a-95 (Ductile Iron), ANSI/AWWA C515 (Ductile Iron) or their latest revisions and shall be manufactured by one of the following: Kennedy Valve, American Flow Control/American Darling **and** Mueller.

All hydrants shall have at least 5 ¼" main valve opening and shall be **Open Left**.

They shall have two 2 ½” hose nozzles which shall be at 90 degrees to the on **Locking 5” STORZ steamer nozzle**. The 2 ½” nozzles shall be national standard threads and the steamer nozzle shall be located 18” above final grade. Digging of swales will **not** be permitted. Hydrants will have a nominal 5” barrel, 6” inlet base with mechanical joint end, breakaway bolts of flange, and a minimum 5’6” bury. The actual bury will be determined in the field. All hydrants shall match our paint specifications and be one of the following approved models. (See hydrant branch detail)

Kennedy Guardian No. K-81-D
Mueller Centurion Super 200

Fire Hydrant Specifications:

Hydrant body shall be painted “**Safety Yellow**” (R245479). Hydrant bonnet paint is determined on how much flow the hydrant produces in gallons per minute (gpm). Below are paint classifications. **Any paint or painting done by other than SWD employees must get approval from the Water Department.**

- 1500 gpm or greater – Safety Blue (R245474)**
- 1000 gpm to 1499gpm – Safety Green (R245476)**
- 500 to 999 gpm – Safety Orange (R245477)**
- Less than 500 gpm – Safety Red (R245478)**

The substitution of equivalent materials not specified herein, must be applied for in writing stating the materials requested to be used. They must be accompanied by the manufacturer’s engineering transmittal drawings, written confirmation from reputable suppliers of availability of repair parts, replacement parts and repair service where applicable, and test for review by the Water Department’s Superintendent or designee whose decision shall be final.

The design of all water mains including the quantities, size and locations of all valves, hydrants and fittings shall be set by the Water Department’s Superintendent or designee whose decision shall be final.

All water mains shall be leakage tested by the installed at **200 p.s.i. for a two-hour duration**. Allowable leakage is not to exceed that specified in ANSI/AWWA C600-93 section 4.2.2 or its latest revision. Un-flanges may be used for a temporary plug during pressure testing of fire sprinkler lines. **A SWD Inspector must be present to verify test.**

All Bell Joint Clamps used in repairs must follow these material specifications

- 1. Bell – Spigot Ring: Ductile Iron per ASTM 536**
- 2. Gasket: Virgin SBR per AWWA C111, ASNI A2-11-91, ASTM D 2000 MBS 710, compound for water.**
- 3. Nuts and Bolts: Must comply with AWWA C111/ANSI A21-11-95**
- 4. Working Pressure: Minimum 150 psi**
- 5. Acceptable Mode is: Smith-Blair Model 274 – Romac Style 516**

All water main over 72 feet in length shall be disinfected by the installed in accordance with ANSI/AWWA C651A-90 or its latest revision using the continuous feed method as specified in section 5.2 and verified by the bacteriological testing specified in section 7. Main under 72 feet in length may be disinfected by the

bacteriological testing specified in section 7. Tablets that are stuck onto the pipe *must be a food-based adhesive. A SWD Inspector must be present to witness the collection of the bacteria samples.*

It shall be the contractor's responsibility to dispose of all chlorinated water used to disinfect a water main. This shall be accomplished in accordance with the federal CLEAN WATER Act and Connecticut D.E.E.P. standards for disposal. If there's a surface water body within 200 feet of the discharge, it *must involve containment* of the chlorinated water. *The Water Department must be notified prior to any dechlorinating operations.*

The Contractor must have permission from the Water Department prior to any shut down of a water service. It shall be the contractor's responsibility to notify any Southington Water Department customers of water shut downs caused by their work. This notification shall be in writing and delivered 24 hours prior to any shut down of water service. A copy of this notification must be given to the Southington Water Department for its approval.

The Contractor must have permission from the Water Department prior to the installation of any temporary water service. The contractor is responsible for all temporary water mains and services. Temporary water service must meet all Departments of Public Health Regulations that pertain to water that is ready for consumption. The Contractor must have final approval from the Water Department before any water is supplied for temporary service.

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