

**SUPPLEMENTAL SPECIFICATIONS**  
**TO STANDARD SPECIFICATIONS FOR**  
**WATER MAIN AND SERVICE LINE INSTALLATION**  
**NO. 2611**

Water Main and Service Line Installation shall be in accordance with the Standard Utilities Specifications published by the City Engineers Association of Minnesota, 2013 Edition, Specification No. 2611, except as modified herein:

**2611.2 MATERIALS**

The Contractor shall submit at the preconstruction conference for Engineer's approval prior to any utility work:

- List of materials and suppliers
- Certificate of Compliance

**A. Water Pipe Materials**

The City of St. Cloud requires ductile iron pipe and ductile iron fittings with a minimum working pressure of 250 psi for all water main and service lines four inches and greater.

**A1. Ductile Iron Pipe and Ductile Iron and Gray Iron Fittings**

All pipe eight inches in diameter and smaller shall be thickness Class 52. All pipe ten inches in diameter and greater shall be thickness Class 50.

All ductile iron pipe shall be manufactured in the United States. The exterior of ductile iron pipe shall be arc-sprayed zinc coated per ISO 8179 Standard of 200 g/m<sup>2</sup>. The material supplier and/or contractor shall furnish data certified by the manufacturer that all pipe is of domestic manufacture. All water main pipe shall be SMaRT Certified by the Institute for Market Transformation to Sustainability.

The list of approved pipe manufacturers is as follows:

1. American Cast Iron Pipe Company
2. McWANE Ductile
3. United States Pipe and Foundry Company

The list of approved fitting manufacturers is as follows:

1. American Cast Iron Pipe Company
2. Sigma Corporation
3. Tyler Union Foundry
4. United States Pipe and Foundry Company
5. Star Pipe Products

All ductile iron pipe and fittings for buried service shall be mechanical joint or push-on joint. Ductile iron pipe and fittings for above ground installation shall be flanged joint.

Electrical conductivity shall be provided across all pipe and fitting joints. Conductive gaskets as manufactured by American Cast Iron Pipe Company or approved copper strap conductors welded to the pipe and connected with silicone bronze bolts and nuts shall be used. The connection shall be capable of withstanding 600 amperes of current and must be approved by the Engineer and/or Owner.

**B. Fire Hydrants**

- (11) Fire Hydrants shall be of American Waterous Pacer WB67 (City Specification: St. Cloud) or Mueller A403, Option #B09. The lower valve shall be of a synthetic rubber material. All hydrants shall have mechanically removable nozzles.
- (12) Type of thread for hose connections shall be equal to Waterous #7532 Nat. Std. threads, 3-1/16" O.D., 7-1/2 threads per inch.
- (13) Type of thread for the 4-1/2" pumper connection shall be equal to Waterous #TP40519, 5-19/32" O.D., 4 threads per inch.
- (14) All hydrants shall be designed for a minimum of an nine foot bury depth and shall have a traffic flange feature.
- (15) Fire hydrants shall be manufactured for a minimum working pressure of 250 psi.
- (16) Hydrant marker shall be flexible metal or fiberglass w/alternating red and white reflective weatherproof tape providing 100% coverage, and a minimal overall length of 60 inches.

**C1. Valve Housings**

Gate valve box housings shall be “G” box, Tyler Model No. 6860 with a No. 6 base (No. 5 base for butterfly valve box), or East Jordan Ironworks Model No. 8560 with a No. 6 base (No. 5 base for butterfly valve box) or approved equal; the material supplier and/or contractor shall furnish data certified by the manufacturer that all parts of the “G” box are of domestic manufacture.

The material supplier and/or contractor shall furnish data certified by the manufacturer that all parts of the butterfly valve box housing are of domestic manufacture.

**C2. Gate Valves**

Gate valves shall be manufactured for a minimum working pressure of 250 psi.

**C3. Butterfly Valves**

Butterfly valves shall be manufactured for a minimum working pressure of 250 psi.

**D. Water Service Pipe and Fittings**

The curb stops shall be to AWWA Standards, e.g. A Y McDonald #6104 (1" - 1 1/2" service), Ford B22-444M (1" service) and Ford B22-666M (1-1/2" service), or approved equal.

The curb box thread, Minneapolis Pattern, shall be supported by at least 3/4 of its thread diameter on the body of the curb stop. The curb box shall comply with AWWA Standards, e.g. A Y McDonald #5614, Ford Em2-80-56 (1" curb stop), and A Y McDonald #5615, Ford Em2-85-57 (1-1/2" curb stop), or approved equal. The curb box shall be 8½ feet long at full extension. The curb box shall not have a stationary rod.

Water main tapping materials (Corporation Stops, Tapping Saddles) shall be as follows or approved equal:

NL Ball Style Corporation Stop (Corps) CC x Copper Flare – NSF/ANSI 61 and NSF/ANSI 372

- AY McDonald -74701B
- Ford – FB600
- Mueller – B25000N

Tapping Saddle(s) - ANSI/NSF 61

- Powerseal - 3412 (SS)
- Smith Blair - 372 (SS) or 313 Double Bale (Cast Iron)
- Romac - 202NS (SS)

**F. Mechanical Joint Restraint**

Mechanical joint restraint shall be manufactured for a minimum working pressure of 250 psi.

All components shall be manufactured and assembled in the United States. The purchaser shall, with reasonable notice, have the right to plant visitation at his/her expense.

Mechanical joint restraint shall be Sigma ONE-LOK Series SLDE, Megalug Series 1100, produced by EBAA Iron Inc. or approved equal.

**2611.3 CONSTRUCTION REQUIREMENTS**

**A. Installation of Pipe and Fittings**

Unless otherwise specified, installation of water main shall be such as to provide for not less than eight feet of cover over the top of the pipe.

No existing valves and hydrants shall be operated by individuals other than personnel from the City of St. Cloud Public Utilities Department. Only under emergency conditions or after specific authorization is given by the Authorized City Representative shall the Contractor operate valves or hydrants.

Water Main Shut Off: The Contractor shall notify the Public Utilities Department 24 hours in advance as to which gate valve is to be shut off and when. For any shut off that needs to be performed outside the normal operating hours, the Contractor shall notify the Public Utilities Department 48 hours in advance. Prior to the Public Utilities Department shutting off the water, the Contractor shall notify in writing all affected property owners at least 24 hours before discontinued service. Temporary service shall be provided by the Contractor, at no additional compensation, for businesses that are dependent on City water supply, and if water service is not restored within four to six hours from the time that service has been discontinued.

**A4. Blocking and Anchoring of Pipe**

In addition to requirements set in City Engineers Association of Minnesota, Section 2611.3 A4, "Blocking and Anchoring of Pipe," mechanical joint restraints may be used on ductile iron pipe for blocking and anchoring of pipe. All material and labor required for furnishing and installation of mechanical joint restraints is incidental to bid items, and no direct compensation shall be made thereof.

**C. Water Service Installations**

No reconnection of existing services is allowed prior to hydrostatic testing and bacterial testing results being accepted by the Authorized City Representative.

The water main shall be disinfected, pressure tested, flushed and bacteriological analysis shown negative of bacteria, prior to installing service taps.

The Public Utilities Department shall be notified 24 hours in advance as to how many taps will be made and where. The Authorized City Representative must be present during installation of water main tap(s).

Unless otherwise specified, installation of water service lines shall be such as to provide for not less than eight feet of cover over the top of the service pipe.

The Contractor shall furnish and set a 2 x 2 inch wooden stake or approved steel post to mark the exact end of pipe. This stake or post shall be set vertically and shall extend from the service pipe to the ground surface.

Existing water services shown on the plans to be replaced shall be replaced with 1" type K copper pipe from the water main to the right-of-way line unless otherwise directed by the Engineer. The Contractor shall install 3 feet of 1-inch copper pipe past the curb box and connect to the existing service pipe with a coupling approved by the Engineer.

All curb boxes and gate valves boxes, both existing and new, shall be adjusted to finished grade after turf restoration has been completed. No direct compensation will be made for this work.

**C2. Tapped Service Lines**

Unless otherwise directed by the Engineer, curb boxes shall be installed on the back side of the utility easement.

Following installation of the curb stop on the service line, the service line shall be flushed by operating the curb stop valve and the corporation stop. The corporation stop shall be turned on prior to backfilling.

Tapping Guidelines

Tapping service lines greater than 2" will be done by the City.

WATER MAIN SIZE	TAPPING SERVICE LINES		
	1"	1.5"	2"
6"	Saddle Tap	Saddle Tap	Saddle Tap
8"	Direct Tap	Saddle Tap	Saddle Tap
>10"	Direct Tap	Direct Tap	Direct Tap

**D. Setting Valves, Hydrants, Fittings and Specials**

Hydrants shall be installed so that the distance from finished ground to the center of the hose connections is 30" minimum. Hydrant shall be protected during installation to prevent damage to paint and/or coatings.

All valve boxes shall be installed upon the valve with the use of a Valve Adaptor as manufactured by Adaptor Inc., or an approved equal. Valve Adaptor shall be 1/4" steel with UV polyurethane protective coating and a 3/4" rubber gasket attached to the adaptor. The adaptor shall be incidental to the valve and box assembly.

All valve boxes within the construction area, whether installed on the project or existing gate valve boxes that will remain in place, shall be plumbed such that, when a 4-1/2" rigid steel conduit with a 3" long insert at the bottom, conforming to the size and shape of the valve operating nut, is inserted in the valve box and placed on the operating nut, a valve box cover with a concentric cut out conforming to the outside diameter of the steel conduit can be placed on the conduit and positioned in the top of the valve box. The Contractor shall furnish equipment approved by the Engineer for obtaining valve box plumb.

Immediately prior to constructing bituminous pavement, the Contractor shall verify, to the satisfaction of the Engineer, using equipment specified above.

**E. Disinfection of Water Mains**

After the Contractor has disinfected the water main, it will be flushed and tested for bacteriologic quality by the Public Utilities Department.

The Contractor shall notify the Public Utilities Department at least 24 hours in advance of water main flushing. During periods of high-water demand and/or low water supply, the City reserves the right to schedule such work during off-peak hours.

On dead-end water mains up to 8 inches, the Contractor shall excavate and install a plug with a 2" threaded corp. The Contractor shall then install a 2" copper pipe in accordance with the requirement of the Public Utilities Department. After the bacteria test has passed, the Contractor shall remove the 2" copper pipe and plug the corp. Refer to AWWA C651-14, Section 4 Table 3, for suggested temporary flushing/testing connection for water mains greater than 8 inches.

Disinfection Procedures When Cutting into Existing Water Mains:

Where pipe, valves and fittings installed at connections to existing mains cannot be flushed and sterilized same as new installations, the Contractor shall use the following procedures:

1. After existing pipe, valve and fittings are exposed and plug removed, Contractor shall wash the existing bell clean with not less than two generous applications of 25 percent solution of sodium hypochlorite.
2. Contractor shall clean and wash with potable water each new fitting, valve and pipe section to remove foreign materials that could cause contamination. After cleaning and prior to lowering into the trench, wash with two applications of 25 percent solution of sodium hypochlorite. Joint material shall be sterilized before use. When making the installation, the Contractor shall avoid contaminating surfaces that will come into contact with the potable water supply when the installation is restored to service.

Verification

After disinfection by Contractor and flushing by Public Utilities Department and prior to bacteria sampling, the water main shall sit for a minimum of 16 hours without water use. After 16 hours, the first sample will be collected without flushing the main, leaving the sample tap running, a second sample will be

collected no less than 15 minutes later. Both samples must pass for the main to be approved for service.

In the event of a failure of the bacteria test, the water main shall be re-chlorinated by the Contractor, and thereafter the flushing and bacteriologic testing procedure repeated. The initial flushing and testing will be accomplished by the City at no cost to the Contractor. However, the cost of necessary additional flushing/testing, including the cost of water and City personnel time, shall be charged to the Contractor.

**H. Ductile and Gray Iron Fittings**

Fitting weights for estimated quantity and bidding purposes were taken from the *Online Edition of the Out of Print 19th Edition of the American Pipe Manual, Section 5, "American Ductile Iron Mechanical Joint Fittings"*, using the weights under the ANSI/AWWA C153/A21.53 Fittings Chart.

Mechanical joint fittings will be measured by the pound of fitting "body" weight in accordance with the approved mechanical joint fitting manufacturer's specifications.

Manufacturer's specifications shall be submitted to the Engineer for approval.

The cost of bolts, nuts, glands, linings and other accessories required to furnish and install fittings complete in-place shall be included in the Contract bid price for pounds of fittings, and no direct compensation will be made therefor.