

**SP-121033
(New)**



Iowa Department of Transportation

**SPECIAL PROVISIONS
FOR
WATER MAIN**

**Polk County
STP-U-1945(746)--70-77**

**Effective Date
June 18, 2013**

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING ADDITIONS AND MODIFICATIONS. THESE ARE SPECIAL PROVISIONS AND SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

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Part 1 General

1.1 Summary of Work

This Section includes transferring existing water services from existing water mains to new water mains to the extent shown in the plans.

1.2 Related Sections

- A. Section 02675 – Disinfection of Water Distribution Systems.

1.3 References

- A. American Society of Mechanical Engineers (ASME) B16.26 – Cast Bronze Fittings for Flared Copper Tubes.
- B. American Society for Testing and Materials (ASTM) B62 – Standard Specifications for Composition Bronze or Ounce Metal Casting.
- C. American Society for Testing and Materials (ASTM) B88 – Standard Specifications for Seamless Copper Water Tube.
- D. American Water Works Association (AWWA) C151 – Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids.
- E. American Water Works Association (AWWA) C800 – Underground Service Line Valves and Fittings.

1.4 Submittals

- A. In addition to those submittals identified in the General Provisions, the following items shall also be submitted for materials provided by the Contractor:
 - 1. Manufacturer's certification that materials furnished is in compliance with the applicable requirements of the referenced standards and this specification.
 - 2. Drawings and manufacturer's data showing details of the pipe and fittings to comply with this specification.
- B. Provide dimensional drawings, fabrication details, functional description, and properly identified catalog data on all equipment to prove complete compliance with Drawings and specifications.

1.5 Measurement and Payment

- A. Per Plans.
- B. All work related to water service transfer shall be considered incidental to the installation of the water service transfer.

Part 2 Products

2.1 Corporation Valves

- A. Type: one-quarter-turn ball valve in accordance with AWWA C800.
- B. Inlet Threads: Standard AWWA corporation valve inlet threads.
- C. Outlet Threads: for flared copper connection.
- D. Corporations to be used on iron pipe shall be provided with a dielectric insulator, which prevents the passage of electric current. Ford service insulator, or approved equal.
- E. Pressure Class: high – 150 psi.
- F. Material: copper alloy containing nominally 85% copper, 5% tin, 5% lead, and 5% zinc per ASTM B62.

2.2 Copper Pipe and Fittings

- A. Copper Tubing: ASTM B88, Type K, annealed.
- B. Fittings: ASME B16.26, cast bronze.
- C. Joints: flared.

2.3 Curb Stop

- A. Type: "T" handle, quarter-turn, Minneapolis pattern ball valves conforming to AWWA C800, with AWWA standard inlet threads and flared copper outlet connection.
- B. Provide pre-drilled valve head for attaching stationary shutoff rod.

- C. Provide valve head checks that limit rotation to 90 degrees. Valve head parallel to valve body when open, valve head perpendicular to valve body when closed (Operate right to shut off).
- D. Material: copper alloy containing nominally 85% copper, 5% tin, 5% lead, and 5% zinc per ASTM B62.

2.4 Curb Box

- A. Body
 - 1. Base section: Arch base pattern, with telescoping 1 inch upper section, stainless steel rod and pin, and lid.
 - 2. Adjust to accommodate:
 - a. 5 foot minimum service depth.
 - b. 7 foot maximum service depth.
 - 3. Provide a positive means of preventing rotation of upper section during removal of lid.
- B. Lid
 - 1. Material: cast iron.
 - 2. Style: two hole Erie pattern, to fit spanner wrench.
 - 3. Provide 1 inch NPT female-threaded brass bushing to screw onto curb box with 1 inch diameter upper section. Bushing shall be secure and rotate integrally with lid.
 - 4. Acceptable lids:
 - a. 5601L (A.Y. McDonald Mfg. Co., Dubuque, Iowa).
 - b. Type HS (The Ford Meter Box Company, Inc., Wabash, Indiana).
 - c. Part No. 89982 (Mueller Co., Decatur, Illinois).
 - d. Approved equal.
- C. Stationary Shutoff Rod
 - 1. Material: 304 stainless steel, single-piece construction.
 - 2. Diameter: approximately 1/2 inch.
 - 3. Rod shall:
 - a. Self-center in curb box.
 - b. Extend above curb box joint. Distance between top of rod and top of box shall be:
 - 1) No less than 12 inches.
 - 2) No greater than 24 inches.
 - 4. Provide a blade at the upper end of rod in a plane parallel to the curb stop valve head with thickness appropriate for operation using a stationary rod key.
 - 5. Provide a fork at the lower end of rod to fit over and operate the valve head of a standard curb stop. Provide holes in fork to align with hole in curb stop valve head.
 - 6. Connect rod to curb stop using stainless steel cotter pin, or approved equal, inserted through holes in rod fork and curb stop valve head.

Part 3 Execution

3.1 General

- A. Qualifications
 - 1. Plumbing work covered by this Section shall be completed by a plumber who is bonded with Des Moines Water Works and licensed in accordance with local plumbing codes.
 - 2. Contractors will not be permitted to make their own 1-inch direct taps on mains installed under this Contract. Contact Des Moines Water Works 24 hours in advance to schedule taps.
- B. Plumbing Permits and Inspections
 - 1. Obtain permits necessary for service transfers.

2. Arrange for and schedule required plumbing inspections in accordance with local plumbing codes.

C. Scheduling

Install services only after the new water main passes pressure test and disinfection per Section 02675.

3.2 Examination

- A. Install services only after new water main has passed pressure test and disinfection as specified in Section 02675.
- B. Confirm location / alignment of new service line prior to start of excavating.

3.3 Size of Service Lines and Taps

- A. Transfer water service lines according to plans and specifications as follows:
Complete 1/2 inch, 3/4 inch, and 1 inch service transfers with 1 inch taps and 1 inch pipe needed to make connection.
- B. Complete 4 inch and larger service transfers with valve, pipe, and fittings needed to make connection.

3.4 Preparation

- A. Excavate trench in accordance with Section 2552 of the Standard Specifications.
- B. Cut pipe ends square, ream tube ends to full pipe diameter, and remove burrs.
- C. Remove scale and dirt on inside and outside before assembly.

3.5 Installation

- A. Schedule taps to be made by Contracting Authority a minimum of 24 hours in advance. Such taps will be made only between the hours of 8 a.m. and 3:30 p.m. and only on the Contracting Authority's normal work days. Shore excavations for taps to be made by Contracting Authority according to OSHA Trench Shoring Standards. Provide 12 inch clear behind and below main to be tapped for 24 inches along the main. Provide 48 inch clear in front of the main to be tapped.
- B. Install service lines in accordance with local plumbing codes.
- C. Use trenchless construction methods when installing water service lines underneath roads, driveways, shoulders, or other traffic-carrying surfaces.
- D. Corporation:
 1. Install corporations no closer than 1 foot from a pipe joint or other corporation.
 2. 1 inch corporations will be installed at a 45 degree angle above horizontal; 2 inch corporations will be installed horizontal.
 3. Corporation shall face the property to be served.
 4. Corporation taps will not be allowed on dry mains.
- E. Pipe:
 1. Maintain minimum separation between water piping and sewer piping in accordance with Iowa DNR requirements.

2. Maintain 5 foot minimum cover below final grade. Do not exceed 7 foot cover without Engineer's authorization.

F. Curb Stop:

1. Set curb stop on solid bearing.
2. Center and plumb curb box over curb stop.
3. Install stationary shutoff rod. Attach shutoff rod to curb stop as specified above.
4. Set box cover flush with finished grade and plumb.
5. Location:
 - a. In public right-of-way.
 - b. 1 foot to 6 feet from property line in the City of Des Moines.
 - c. 1 foot from property line in Polk County.
 - d. Not within driveway or sidewalk.

- G. Repair leaks that develop in new service lines or water mains due to water service installation operations.

- H. Coordinate necessary inspections to satisfaction of Contracting Authority for water service lines.

3.6 Backfill and Compaction

Excavations shall be backfilled and compacted as specified in Section 2552 of the Standard Specifications.

3.7 Restoration

Restore affected areas as specified elsewhere and as shown on plans.

**** END OF SECTION ****

SECTION 02675 DISINFECTION OF WATER DISTRIBUTION SYSTEMS
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Part 1 General

1.1 Summary of Work

Disinfect water mains and water services in accordance with this Section.

1.2 Related Sections

- A. SECTION 02660 WATER SERVICE TRANSFERS

1.3 References

- A. American Water Works Association (AWWA) B300 – Standard for Hypochlorites.
- B. American Water Works Association (AWWA) B301 – Standard for Liquid Chlorine.
- C. American Water Works Association (AWWA) C651 – Standard for Disinfecting Water Mains.

1.4 Quality Assurance

- A. Perform Work in accordance with AWWA C651.
- B. Bacteriological samples will be taken and tested by DMWW to ensure satisfactory disinfection.

1.5 General

- A. Contractor shall provide all equipment and materials necessary to complete chlorination.
- B. Water for disinfection will be provided by DMWW for two disinfection attempts. If additional attempts are necessary, the Contractor will be billed for water used at the normal rate set for industrial customers.

Part 2 Products

2.1 Chlorine

- A. Calcium hypochlorite granules conforming to AWWA B300.
- B. Liquid chlorine conforming to AWWA B301.

Part 3 Execution

3.1 Examination

- A. Water for disinfection will be provided by the Contracting Authority for two disinfection attempts. If additional attempts are necessary, the Contractor will be billed for water used at the normal rate set for industrial customers.
- B. Disinfection of piping shall take place only after satisfactory pressure testing.
- C. Ensure piping to be disinfected is isolated from portion of the distribution system that is in service.
- D. Review procedures and coordinate disinfection with the Contracting Authority.
- E. Perform Work in accordance with AWWA C651.
- F. Bacteriological samples shall be taken and tested by the Contracting Authority to ensure satisfactory disinfection.

3.2 Chlorination of Piping

- A. Use the continuous feed method as outlined in Section 5.2 of AWWA C651.
- B. Prior to feeding chlorine, fill and flush new piping to remove trapped air and particulates. Provide equipment and materials necessary to obtain a minimum flushing velocity of 2.5 feet per second in piping to be disinfected.
- C. Induce flow of potable water through the new piping at required flushing velocity. Make provisions for diverting and disposing of flushing water in manner that does not damage surroundings. Repair any damage caused by flushing activities.
- D. At a point within five pipe diameters of the connection to the existing distribution system, introduce highly chlorinated water in sufficient quantity to provide at least 25 mg/L free chlorine in the new piping. Provide all metering and feed equipment and temporary chlorination taps. Remove the temporary chlorination taps and cap the main once the main passes.
- E. Introduce highly chlorinated water continuously until the entire section of new piping contains a minimum of 25 mg/L free chlorine. Do not exceed 100 mg/L free chlorine.
- F. Isolate the newly chlorinated piping for a contact period of at least 24 hours, and not more than 48 hours, taking care not to backflow chlorinated water into the existing potable water system.
- G. After the contact period, water in the new piping must have a residual-free chlorine content of not less than 10 mg/L. If the residual is less than 10 mg/L, rechlorinate as outlined in Part 3.2.

3.3 Flushing Chlorinated Piping

- A. After the contact period, flush the recently chlorinated piping with potable water.
- B. Continue flushing until the chlorine residual in the new piping is equal to the chlorine residual in the existing distribution system.
- C. Isolate the new piping from the existing distribution system for a period of not less than 24 hours.
- D. Chlorinated water, which is flushed from the new piping, shall be dechlorinated and disposed of so not to cause damage to the environment. Conform to state and federal requirements.
- E. De-chlorinate all water from flushing activities and testing before it is released into the ground or storm sewers. Method to be approved by the Contracting Authority prior to any flushing activities.

3.4 Bacteriological Testing

- A. Immediately following flushing of pipelines and again at least 24 hours after flushing pipelines and first sampling, samples shall be taken and tested by the Contracting Authority.
- B. The Contracting Authority reserves the right to take and test additional samples 48 hours after flushing.
- C. Approximately one sample will be taken for each 1200 feet of new water main.
- D. Additional samples may be taken at the discretion of the Contracting Authority.
- E. Samples must show the absence of coliform organisms and other contaminants and meet requirements of the Iowa DNR to be considered acceptable.
- F. If any sample is not satisfactory with either sampling, the piping represented by that sample must be flushed and rechlorinated by the Contractor at the discretion of, and as directed by, the Contracting Authority.

*** END OF SECTION ***