SP-151082
(New)

SPECIAL PROVISIONS
FOR
VALVES, HYDRANTS, AND APPURTENANCES

Polk County
STBG-SWAP-8260(651)--SG-77

Effective Date
January 20, 2021

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Butterfly Valves

B. Gate Valves

C. Tapping Valve Assemblies

D. Fire Hydrant Assemblies

E. Flushing Devices (Blowoffs)

F. Valve Boxes

1.02 DESCRIPTION OF WORK

Install valves, fire hydrants, and appurtenances for water mains.

1.03 DELIVERY, STORAGE, AND HANDLING

Remove valves, fire hydrants, and appurtenances contaminated with mud and surface water from the site. Do not use in construction unless thoroughly cleaned, inspected, and approved by the owner.

1.04 SPECIAL REQUIREMENTS

A. TAPPING SLEEVE AND VALVES

1. Water Works will perform the side cut for 12 inch diameter and smaller pipes.

2. The Contractor shall perform all side cuts larger than 12 inch diameter.

3. Contact the Water Works a minimum of 1 working day prior to installation to schedule crews.

B. Tapping Sleeve Pressure Test: Water Works staff shall witness the pressure test performed by the Contractor on all tapping sleeves and valves prior to allowing the side cut. Perform pressure test in accordance with manufacturer's recommendations or manufacturer provided installation instructions.

1.05 MEASUREMENT AND PAYMENT

A. Valve (Butterfly or Gate)

1. **Measurement:** Each type and size of valve will be counted.

2. **Payment:** Payment will be at the unit price for each type and size of valve.

3. **Includes:** Unit price includes, but is not limited to, tapping sleeve, tapping valve, hydrostatic pressure test, valve box and cover, valve box extension, and valve stem extension.

B. Tapping Valve Assembly

1. **Measurement:** Each size of tapping valve assembly will be counted.

2. **Payment:** Payment will be at the unit price for each tapping valve assembly.

3. **Includes:** Unit price includes, but is not limited to, tapping sleeve, tapping valve, the tap, valve box and cover, valve box extension, and valve stem extension.

C. Fire Hydrant Assembly

1. **Measurement:** Each fire hydrant assembly will be counted.

2. **Payment:** Payment will be at the unit price for each fire hydrant assembly.

3. **Includes:** Unit price includes, but is not limited to, the fire hydrant, barrel extensions sufficient to achieve proper bury depth of anchoring pipe and height of fire hydrant above finished grade, and components to connect the fire hydrant to the water main, including anchor tee, anchor pipe, fittings, thrust blocks, porous backfill material, and fire hydrant gate valve and appurtenances, except tapping valve assembly if used.

D. Flushing Device (Blowoff)

1. **Measurement:** Each size of flushing device will be counted.

2. **Payment:** Payment will be at the unit price for each flushing device

E. Valve Box Adjustment, Minor: Measurement and payment for minor adjustment of an existing valve box by raising or lowering the adjustable valve box is incidental.

F. Valve Box Extension

1. **Measurement:** Each existing valve box adjusted to finished grade by adding a valve box extension will be counted.

2. **Payment:** Payment will be at the unit price for each valve box extension.

G. Valve Box Replacement

1. **Measurement:** Each existing valve box replaced with a new valve box will be counted.

2. **Payment:** Payment will be at the unit price for each valve box replacement.

3. **Includes:** The unit price for each valve box replacement includes, but is not limited to, removal of existing valve box; excavation; furnishing and installing new valve box; backfill; compaction; and all other necessary appurtenances.

H. Fire Hydrant Adjustment

1. **Measurement:** Each existing fire hydrant adjusted to finished grade by addition of an extension barrel section and stem will be counted.

2. **Payment:** Payment will be at the unit price for each adjustment of an existing fire hydrant.

3. **Includes:** The unit price for each adjustment of an existing fire hydrant includes, but is not limited to, removal and reinstallation of the existing fire hydrant; furnishing and installing the extension barrel section and stem; and all other necessary appurtenances.

I. Fire Hydrant Assembly Removal

1. **Measurement:** Each fire hydrant assembly removed will be counted.

2. **Payment:** Payment will be made at the unit price for each fire hydrant assembly removed.

3. **Includes:** Excavation, backfill, and surface restoration. Water Works reserves the first right of refusal on removed hydrant and appurtenances. Work also includes all labor, equipment and materials necessary to remove fire hydrant, shoe, valve box, and hydrant lead. When main is to remain in service, this item also includes the removal of the anchoring tee and replacement with straight pipe.

J. Valve Removal

1. **Measurement:** Each size of valve removed will be counted.

2. **Payment:** Payment will be made at the unit price for each size of valve removed.

3. **Includes:** The unit price includes, but is not limited to, excavation, removal of each valve, replacing the removed valve with pipe and connections if required or capping the former valve connection, delivery of the valve to the Contracting Authority (if specified), backfill, compaction, and surface restoration to match the surrounding area.

K. Valve Box Removal

1. **Measurement:** Each valve box removed will be counted.

2. **Payment:** Payment will be made at the unit price for valve box removed.

3. **Includes:** The unit price includes, but is not limited to, excavation, removal of each valve box, delivery of the valve box to the Contracting Authority (if specified), backfill, compaction, and surface restoration to match the surrounding area.

L. Abandon Existing Water Valve

1. **Measurement:** Each abandoned valve will be counted.

2. **Payment:** Payment will be at the unit price for each type of abandonment.

3. **Includes:** Excavation, backfill, and surface restoration. Water Works reserves the first right of refusal on removed valve and appurtenances. Work also includes all labor, equipment and materials necessary for the following:
   a. Valves – Remove valve box
   b. Valve Manhole – Remove valve manhole

PART 2 - PRODUCTS

2.01 VALVES

A. General

1. **Valve Body:** Manufacturer's name and pressure rating cast on valve body.

2. **Direction of Opening:** The opening direction is counterclockwise as viewed from the top.

3. **Joints:**
   a. For buried installations, use mechanical joints per AWWA C111. Comply with Section 5010 for joint type, nuts and bolts.
   b. For installation within structures, flanged with dimensions and drillings according to AWWA C110 or ANSI B16.1 class 125.

B. Gate Valves

1. **Standards:** Comply with AWWA C509 (gray iron or ductile iron) or AWWA C515 (ductile iron) and NSF 61.
   a. **Manufacturers:** Approved gate valves
      1. American Flow Control Series 2500
      2. Clow – Model 2638
      3. Other manufacturers may be considered on a case-by-case basis at the sole discretion of Water Works. Submit supporting materials for approval prior to bid.

2. **Stem Seals:** Double O-rings permanently lubricated between seals. Lubricant certified for use in potable water.

3. **External Bolts and Hex Nuts:** Stainless steel according to ASTM A 240, Type 304.

C. Butterfly Valves

1. **Standards:** Comply with AWWA C504 class 150B (gray iron or ductile iron) and NSF 61.

2. **Stem:** Stainless steel according to ASTM A 240, Type 304, turned, ground, and polished.

3. **For Seat on Body Valves:**
   a. **Disc:** Ductile iron or gray iron with plasma applied nickel-chromium edge or stainless steel edge according to ASTM A 240, Type 316, and mechanically fixed stainless steel pins.
   b. **Seat:** Synthetic rubber compound mechanically retained to the body.

4. **For Seat on Disc Valves:**
   a. **Disc:** Ductile iron according to ASTM A 536 with synthetic rubber compound seat mechanically retained to the disc.
   b. **Seat:** Continuous Type 316 stainless steel seat.

5. **External Bolts and Hex Nuts:** Stainless steel according to ASTM A 240, Type 304.

D. Tapping Valve Assemblies

1. **Tapping Valve:** Gate valve complying with AWWA C509 or AWWA C515.

2. **Sleeve:**
   a. Minimum 14 gauge.
   b. Stainless steel according to ASTM A 240, Type 304.
   c. Working pressure 150 psi.
   d. Must fully surround pipe.

3. **Minimum Sleeve Length:** Comply with the following table.

Table 5020.01: Minimum Sleeve Length

Outlet Flange Size	Minimum Sleeve Length
4”	15”
6”	15”
8”	20”
10”	25”
12”	25”
Over 12”	As approved by the Engineer

4. **Gasket:**
   a. To completely surround pipe.
   b. Minimum thickness 0.125 inch.
   c. Use nitrile rubber.

5. **Outlet:** Mechanical Joint (MJ)

6. **Hex Nuts and Bolts:** Stainless steel complying with ASTM A 240, Type 304.

7. **Tapping Valve Assemblies:** Use only where specified in the contract documents.

2.02 FIRE HYDRANT ASSEMBLY

A. Material: Comply with AWWA C502.

B. Manufacturers: Approved fire hydrants (alphabetical by manufacturer)

1. **Clow –** Medallion

2. **Waterous –** Pacer Model WB-67-250

C. Features

1. **Breakaway Items:** Stem coupling and flange.

2. **Inlet Nominal Size:** 6 inch diameter.

3. **Inlet Connection Type:** Mechanical joint.

4. **Hose Nozzles:** Two, each 2 1/2 inches in diameter.

5. **Direction of Opening:** Counterclockwise, unless otherwise specified.

6. **Items to be Specified:**
   a. **Operating Nut:** Pentagon shaped, 1 1/2 inch point to flat operating nut.
   b. **Pumper Nozzle:** One, 4 1/2 inches in diameter
   c. **Nozzle Threads:** National Standard threads
   d. **Main valve nominal opening size:** 5 1/4 inch diameter
   e. **Bury Depth:** Match water main depth, but not less than five feet.
   f. **Internal parts:** All threaded internal parts exposed to water shall consist of bronze. All cotter pins, drive pins, bolts, and screws exposed to water shall consist of stainless steel or brass.
   g. **Other Items**
      1) Do not furnish chains with nozzle caps.
      2) Furnish hydrant and hydrant extension bury tags.
      3) A maximum of one hydrant extension shall be allowed per hydrant

D. Painting

1. Shop coating according to AWWA C502. Hydrants to be delivered to the site in a factory applied yellow finish. Hydrants delivered in another color shall be rejected by the Water Works.
2. Above grade exterior coating to be Sherwin Williams High Performance Acrylic paint – SHER-CRYL HPA, B66-300 series, Gloss Safety Yellow.

E. External Bolts and Hex Nuts

1. Below Grade – Stainless steel according to ASTM A 193, Grade B 8.

2. Above Grade – Plated steel per manufacturer's recommendation.

F. Gate Valve: Comply with SP-151082, 2.01.

G. Pipe and Fittings: Comply with SP-151081, Water Mains.

2.03 APPURTENANCES

A. Flushing Device (Blowoff): As specified in the contract documents.

B. Valve Box

1. **Applicability:** For all buried valves.

2. **Manufacturer:** As allowed by the Jurisdiction or specified in the contract documents.

3. **Type**
   a. In paved areas, use a slide type.

b. In all other areas, use a screw extension type.

4. **Material:** Gray iron.

5. **Cover:** Gray iron, labeled "WATER"

6. **Wall Thickness:** 3/16 inch, minimum.

7. **Inside Diameter:** 5 inches, minimum.

8. **Length:** Adequate to bring top to finished grade, including valve box extensions, if necessary.

9. **Factory Finish:** Asphalt coating.

10. **Valve Box Centering Ring:** Include in installation.

C. Valve Stem Extension: Where used, West Des Moines Water Works will provide valve stems for contractor installation. Contractor shall provide 3 weeks notice to the Water Distribution Manager (515.222.3465) to allow for ordering of extensions. Notice shall include calculated depth of valve from top of nut to finished grade. Stem extensions to be installed by the contractor.

1. Do not use valve stem extensions on valves which measure less than 10 feet from top of nut to finished grade.

2. Install valve stem extensions on all valves which measure more than 10 feet from top of nut to finished grade. Where used, top of valve stem extension shall between one and three feet from finished grade. Install stem extension within a section of 8-inch diameter PVC C900 pipe used as a valve box

PART 3 - EXECUTION

3.01 GENERAL

A. Install according to the contract documents.

B. Apply polyethylene wrap to all iron pipe, valves, fire hydrants, and fittings.

C. Set tops of valve boxes to finished grade, unless otherwise directed by the Engineer.

D. Check the working order of all valves by opening and closing through entire range. Before opening the valves, check with the Jurisdiction on operating requirements.

E. Test and disinfect all valves, fire hydrants, and appurtenances as components of the completed water main according to Special Provisions for Testing and Disinfection.

3.02 FLUSHING DEVICE (BLOWOFF)

Install and construct as specified in the contract documents.

3.03 FIRE HYDRANT

A. Install according to the contract documents. Use the “Typical Plan” unless “Alternate Plan” is indicated

B. If the fire hydrant valve is positioned adjacent to the water main, attach it to an anchor tee.

C. If the fire hydrant valve is positioned away from the water main, restrain all joints between the valve and water main.

D. Fire Hydrant Depth Setting

1. Use adjacent finished grade to determine setting depth.

2. Set bottom of breakaway flange between 2 and 5 inches above finished grade.

3. If finished grade is not to be completed during the current project, consult with the Engineer for proper setting depth.

4. Ensure that break flange and break coupling are at joint between barrel and nozzle section when extensions are installed.

E. Coordinate installation with tracer wire installation.

F. Orient fire hydrant nozzles as directed by the Engineer.

G. After hydrant is installed and is ready for use, touch up paint as necessary to cover paint damaged during installation.

3.04 ADJUSTMENT OF EXISTING VALVE BOX OR FIRE HYDRANT

A. Minor Valve Box Adjustment: For existing adjustable boxes that have sufficient adjustment range to bring to finished grade, raise or lower valve box to finished grade.

B. Valve Box Extension: For existing valve boxes that cannot be adjusted to finished grade, install valve box extensions as required.

C. Valve Box Replacement: For existing valve boxes that cannot be adjusted to finished grade, remove and replace the valve box.

D. Fire Hydrant Adjustment

1. Add extension barrel sections and stems as necessary to set existing fire hydrant at finished grade.

2. Paint exterior of new barrel section to match existing fire hydrant unless otherwise specified.