SP-157183
(New)

SPECIAL PROVISIONS
FOR
VALVES, FIRE HYDRANTS, AND APPURTENANCES

Linn County
TAP-U-1187(792)--8I-57

Effective Date
November 16, 2021

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Gate Valves

B. Tapping Valve Assemblies

C. Fire Hydrant Assemblies

D. Flushing Devices (Air Releases, Blow-offs, and Post Hydrants)

E. Valve Boxes

1.01 DESCRIPTION OF WORK
Install valves, fire hydrants, and appurtenances for water mains.

1.02 DELIVERY, STORAGE, AND HANDLING

A. 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 Engineer.
B. Store material in accordance with the manufacturers' recommendations and in locations that will minimize the interference with operations, minimize environmental damage and protect adjacent areas from flooding, runoff and sediment deposition.

1.03 SPECIAL REQUIREMENTS

A. The Water Division will furnish the following materials unless otherwise noted in the contract documents:

1. Fire hydrant assemblies including:
   a. Isolation valve or isolation tapping valve assembly.
   b. Valve box.
   c. Fire hydrant.

2. Mainline valves and valve boxes including:
   a. Gate valves.
   b. Butterfly valves.
   c. Tapping valve assembly.
   d. Dead-end plug and blow-off assembly.
   e. Post hydrant assembly.

B. The Water Division will furnish all labor and equipment to operate water system valves and fire hydrants in conjunction with the work. The Water Division does not guarantee that a water shut-down will be water-tight without leak-through or occur within a specified time frame. No monetary or time compensation will be made if a water shut-down does not go as planned.

1.04 MEASUREMENT AND PAYMENT

A. Installation of Valve (Butterfly or Gate) - Contracting Authority Supplied:

1. Measurement: Each type and size of valve and box supplied by the Contracting Authority will be counted.

2. Payment: Payment will be at the unit price for each supplied valve and box installed.

3. Includes: Unit price includes, but is not limited to, pick-up and delivery of material to the jobsite, installation of valve and box, all components attached to the valve or required for its complete installation, including underground or above ground operators, extensions, joint restraints, valve box, and adjustment of valve box to final grade.

C. Excavate and Rebuild Tapping Valve Assembly:

1. Measurement: Each type and size of tapping valve assembly rebuilt will be counted.

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

3. Includes: Unit price includes, but is not limited to, excavation and rebuilding of each assembly, including bolts, seals, gaskets, O-rings, and packing, all components required for complete rebuild, adjustment of valve box to final grade, backfill, compaction, and surface restoration to match the surrounding area.

D. Installation of Fire Hydrant Assembly - Contracting Authority Supplied:

1. Measurement: Each fire hydrant assembly supplied by the Contracting Authority will be counted.

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

3. Includes: Unit price includes, but is not limited to, installation of assembly and supplied materials, including anchoring pipe, fittings, thrust blocks, cast in-place thrust blocks, mechanical joint restraint, pea gravel or porous backfill material, and other materials necessary for installation and adjustment of assembly to final grade.

E. Removal of Flushing Device (Air Releases, Blow-offs, and Post Hydrants):

1. Measurement: Each flushing device removed will be counted.

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

3. Includes: Unit price includes, but is not limited to, removal and disposal or delivery to Water Division, disposal of miscellaneous fittings, capping or plugging the water main, repairs to the polyethylene wrap and/or tracer wire, and backfill.

F. Removal of Fire Hydrant Assembly:

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: Unit price includes, but is not limited to, excavation and removal of couplings and auxiliary valves, replacing the removed valve with pipe and connections if required, or capping the former valve connection, disposal or delivery of the assembly to the Water Division (as specified), backfill, compaction, and surface restoration to match the surrounding area.

G. Removal of Valve:

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

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

3. Includes: Unit price includes, but is not limited to, excavation and removal of each valve and valve box, replacing the removed valve with pipe and connections if required or capping the former valve connection, fittings, disposal or delivery of the valve to the Water Division (as specified), backfill, compaction, and surface restoration to match the surrounding area.

PART 2 – PRODUCTS

2.01 VALVES

A. General

1. Valve must be same size as pipeline on which it is installed, unless otherwise noted on drawings.

2. Must be approved for buried service.

3. All valves must be factory tested to twice the rated working pressure.

4. Gaskets: Unless otherwise specified match water main gasket material.

5. Valve Body: Manufacturer’s name and pressure rating cast on valve body.

6. Direction of Opening:
   a. Open when turned clockwise as viewed from the top. Opening direction arrow shall be cast on the operating nut.
   b. All valve operators to be supplied by valve supplier.

7. Joints:
   a. For buried service: mechanical joints per AWWA C111. Comply with Special Provisions for Water Main Pipe and Fittings for joint nuts and bolts.

b. For service within structures: flanged joints with dimensions and drillings according to AWWA C110 or ANSI B16.1 Class 125, unless noted otherwise. All valve operators to be supplied by valve supplier.

B. Gate Valves:
Gate valves are to be used on water main 12 inches in diameter and less, unless otherwise approved by the Engineer.

1. Standards:
   a. Comply with AWWA C509 (gray or ductile iron) or AWWA C515 (ductile iron) and NSF 61.
   b. Pressure rating of 200 psi working pressure up to and including 12 inch and 150 psi over 12 inch.
   c. Body, Bonnet and Gate: Cast iron per ASTM A126 Class B or ductile iron per ASTM A536.
   d. Exterior Finish: Fusion bonded epoxy per AWWA C550.
   e. Interior Finish: In accordance with AWWA C550.
   f. Type: Resilient seat.

2. Stem:
   a. Comply with ANSI/AWWA C509.
   b. 2 inch square operating nut.
   c. Non-rising stem.
   d. Stem and spindle: solid bronze bearing against bronze surface. Lead content must comply with current regulations and standards.

3. Stem Seals: Double O-ring seal permanently lubricated between seals. Lubricant certified for use in potable water.

4. Approved Manufacturers:
   a. Mueller (Decatur, IL).
   b. Clow (Oskaloosa, IA).
   c. Kennedy (Elmira, NY).
   d. M&H (Anniston, AL).
   e. American Flow Control (Birmingham, AL).

5. External Bolts and Hex Nuts: Stainless steel according to ASTM A240, Type 304.

C. Tapping Valve Assemblies:

1. Tapping valve complying with Article 2.01 of this specification and AWWA C509 or AWWA C515.

2. Tapping sleeves for all water main diameters and tap sizes:
   a. Stainless steel according to ASTM A240, Type 304.
   b. Minimum 14 gauge.
   c. Gasket shall be NSF-61 approved NBR nitrile rubber.
   d. Tapping sleeve and gasket must fully surround pipe.
   e. Working pressure 150 psi.
   f. Equipped with 3/4 inch test port with stainless steel plug installed.
   g. Flanged to accept tapping valve with dimensions and drillings according to AWWA C110, ANSI B16.1 class 125, or ANSI B16.5 class 150.
   h. Approved Manufacturers:
      1) Romac SST III.
      2) Total Piping Solutions Triple Tap.
      3) Approved equal.

3. Tapping sleeves for water main greater than 12 inches in diameter and with a tap size less than half the nominal pipe size:
   a. Carbon steel according to ASTM A283, Grade C with fusion bonded epoxy coating per AWWA C213, interior and exterior.
   b. Gasket shall be NSF-61 approved NBR nitrile rubber.
   c. Tapping sleeve must fully surround pipe.
   d. Working pressure 150 psi.
   e. Equipped with 3/4 inch test port with stainless steel plug installed.
   f. Flanged to accept tapping valve with dimensions and drillings according to AWWA C110, ANSI B16.1 class 125, or ANSI B16.5 class 150.
   g. Approved Manufacturers:
      1) Romac FTS420.
      2) Smith Blair 622.
      3) Approved equal.

4. Tapping sleeves fabricated from cast or ductile iron according to ASTM A536 will be allowed only with approval of the Engineer.

5. Hex Nuts and Bolts: Stainless steel according to ASTM A240, Type 304.

2.02 FIRE HYDRANT ASSEMBLY

A. Material: Comply with ANSI/AWWA C502 as modified.

B. Manufacturers:

1. Clow Medallion.

2. Kennedy Guardian K81-D.

3. Mueller Super Centurion 250.

4. Waterous Pacer.

C. Features:

1. Main Valve Size: 5 1/4 inch.

2. Inlet Connection Type 6 inch MJ.

3. Direction of Opening: Right (clockwise).

4. Pumper Nozzle Size: 5 inch Storz Connection.
   a. Storz connection shall have brass metal face and hard anodized aluminum Storz ramps and lugs.
   b. Cap shall have hard anodized aluminum Storz ramps and lugs and be connected to the fire hydrant with 0.125 inch vinyl coated aircraft cable.
   c. Text “OPEN” and arrow cast on top.
   d. Bronze drain ring, valve seat ring, and upper and lower valve plates.

5. Pumper Nozzle Thread 5.562 inch OD with 6 turns per inch.

6. Hose Nozzle Number/Size: Two, each 2 1/2 inches in diameter.

7. Hose Nozzle Thread: 3.065 inch OD with six turns per inch.

8. Operating Nut: 1 inch square.

9. Nominal Depth of Bury: 6 feet.

10. Breakaway Items: Stem coupling and flange.

11. Stem: Upper stem, safety coupling, and lower stem to be stainless steel, Type 304, turned, ground, and polished.

D. Painting:

1. Shop coating according to ANSI/AWWA C502.

2. Exterior below grade: Asphaltic coating.

3. Exterior above grade: 9 mil epoxy plus two coats enamel. Color: RAL 6005.

E. External Bolts and Hex Nuts: Stainless steel according to ASTM A193, Grade B8.

F. Auxiliary Gate Valve: Comply with Article 2.01 of this specification.

G. Pipe and Fittings: Comply with Special Provisions for Pipe and Fittings.

2.03 APPURTENANCES

A. Flushing Device: As specified in the contract documents. All pipe fittings shall have National Pipe Thread pattern.

1. Air Release Assemblies nominal size: 1 inch minimum.

2. Blow-off Assemblies nominal size: 2 inch minimum.

3. Post Hydrants:
   a. Nominal size: 2 inch minimum.
   b. Manufacturer: Kupferle Foundry, MainGuard #77

B. Valve Box:

1. Applicability: For all buried gate, butterfly, or tapping valves.

2. Manufacturer:
   a. East Jordan Iron Works 8560.
   b. Tyler Model 6860D HD, Domestic Heavy Duty.
   c. Bingham Taylor.
   d. Approved equal.

3. Type:
   a. In paved areas, use a slide type.
   b. In all other areas, use a screw extension type.
   c. Locking lids are to be used for valve boxes in sidewalk.

4. Material: Gray iron.

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

6. Wall Thickness: 1/4 inch, minimum.

7. Inside Diameter: 5 1/4 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: For buried valves over 7 feet deep, provide extension as necessary to raise 2 inch operating nut to within 4 to 6 feet of the finished grade.

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 in paved areas and 2 inches below finished grade in non-paved areas unless otherwise directed by the Engineer. Valve boxes shall be plumb and free from debris.

D. Check the working order of all valves by opening and closing through entire range. Operate valves only under direction of Water Division personnel.

E. Measure the outside diameter of the existing pipe at the location being connected to or tapped prior to receiving Water Division furnished materials as specified in Article 1.06A of this specification.

F. 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 DEVICES (Air Releases, Blow-offs, and Post Hydrants)

A. Install and construct as specified in the contract documents. If not specified, install flushing devices as directed by the Engineer.

B. Install gravel backfill.

C. Install thrust block, bearing on perpendicular excavation face of undisturbed earth.

D. Drain-back holes are not allowed.

3.03 FIRE HYDRANT

A. Install according to Figure CR 5020.993. Ensure a 3 foot clear space around the circumference of the fire hydrant.

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.

E. Coordinate installation with tracer wire installation.

F. Orient fire hydrant with pumper nozzle facing roadway, or as directed by the Engineer.

G. Tee, isolation valve, and associated piping (but not barrel) shall be wrapped with polyethylene wrap.

H. When determined by the Engineer, scratches, chips, cracks, pits or mars to the finish will require the entire exposed portion of the fire hydrant to be re-painted as follows:

1. Prepare surface per paint manufacturer's directions for surface preparation, primer, temperature and humidity and application.

2. Remove all debris on hydrant, including but not limited to, hydroseed, spray mulch, mud and dirt with sandpaper, an abrasive pad or wire brush.

3. Surface shall be clean, dry and free from oil, grease or other contaminants.

4. Paint all base metal with one coat of recommended primer.

5. Paint: A mineral spirits based 200 Series Silicone Alkyd Enamel containing no lead or chromium compounds and having superior UV resistance for brush, roller or spray application. Color to match RAL 6005.

3.04 ADJUSTMENT OF EXISTING VALVE BOX OR FIRE HYDRANT

A. 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. Fire Hydrant Adjustment:

1. Fire hydrant extensions will be allowed only with approval of the Engineer. If possible, adjust height by deflection of joints. If necessary, adjust height by use of fittings.

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

3.05 ABANDONMENT OF EXISTING VALVES

A. Removal of valve box includes removal of the top two sections of a three piece valve box or removal to a minimum of 5 foot below top of grade.

B. Fill void after removal with sand, crushed stone, or flowable mortar.