

SECTION 33 14 14

PUBLIC WATER SERVICE CONNECTIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Pipe and fittings for water service connections to small commercial, light industrial, and residential homes 2" service and smaller.
 2. Corporation stop assemblies.
 3. Curb stop assemblies.
 4. Backflow preventers.
 5. Meter setting equipment.
 6. Meter boxes.
 7. Trenching, bedding, and cover.
- B. Related Requirements:
1. CFPUA Material Specification Manual (MSM).
 2. Section 31 23 34.01 – Excavating, Trenching, Dewatering and Backfilling.
 3. Section 33 14 13 – Water Distribution Piping and Appurtenances.
 4. Section 33 14 13 – Water Distribution Valves and Fire Hydrants.
 5. Section 33 14 20 – Disinfection of Water Distribution Mains.
 6. Section 33 05 13 – Precast Concrete Manholes and Utility Structures.
- C. CFPUA provides potable water service which may be interrupted for repairs, system expansion, or other general requirements. CFPUA does not guarantee adequate fire flow for protection of life or property. There shall be no domestic use taps allowed on a dedicated fire line. Some facility owners choose to utilize this interruptible potable water supply from the CFPUA system for fire protection. If facility owners choose to utilize the potable water system for fire protection flow, the service for fire protection shall be configured according to Part 3 of this Section.

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials:
1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. American Society of Mechanical Engineers:
1. ASME B16.18 – Cast Copper Alloy Solder Joint Pressure Fittings.
 2. ASME B16.22 – Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- C. American Society of Sanitary Engineering:
1. ASSE 1012 – Performance Requirements for Backflow Preventers with an Intermediate Atmospheric Vent.

2. ASSE 1013 – Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers.

D. ASTM International:

1. ASTM B62 – Standard Specification for Composition Bronze or Ounce Metal Castings.
2. ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³).
3. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).
4. ASTM D2737 - Standard Specification for Polyethylene (PE) Plastic Tubing.
5. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
6. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

E. American Welding Society:

1. AWS A5.8/A5.8M - Specification for Filler Metals for Brazing and Braze Welding.

F. American Water Works Association:

1. AWWA C509 – Resilient-Seated Gate Valves for Water Supply Service.
2. AWWA C600 – Installation of Ductile-Iron Mains and Their Appurtenances.
3. AWWA C800 – Underground Service Line Valves and Fittings.
4. AWWA C901 – Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm), for Water Service.
5. AWWA M6 – Water Meters – Selection, Installation, Testing, and Maintenance.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Any event requiring a CFPUA representative to be present shall require a minimum of 2 business day notice to schedule the event.
- B. No valves are to be operated unless a CFPUA representative is present. Any valves operated without a CFPUA representative present, or a directive may be subject to penalties in accordance with CFPUA's ordinance.

1.4 SUBMITTALS

- A. Section 01 33 00 – Submittal Procedures.
- B. Informational Submittals:
 1. Product Data: Submit manufacturer information regarding pipe materials, pipe fittings, corporation stop assemblies, curb stop assemblies, meters, meter setting equipment, service saddles, backflow preventers, and accessories.
 2. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
 3. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

- C. Action Submittals:
 - 1. Test Reports: Submit all the results of the bacteriological tests to the CFPUA Engineering Inspector.
 - 2. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
 - 3. Qualifications Statement:
 - a. Submit qualifications for manufacturer.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 – Execution and Closeout Requirements.
- B. Project Record Documents: Record actual locations of piping mains, curb stops, connections, thrust restraints, pressure-pipe centerline elevations, and gravity-pipe invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Perform Work according to CFPUA standards and details.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 – Product Requirements.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store materials according to manufacturer instructions.
- D. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

PART 2 PRODUCTS

2.1 MATERIAL SPECIFICATION MANUAL

- A. Refer to CFPUA Material Specification Manual (MSM) for the following products:

MSM No.	Product
A	Polyethylene Service Tubing
F	Service Saddles/ Hinged Type for 2" PVC
F	Service Saddles/ Brass Alloy/ Stainless Steel Straps for Cast, Ductile & PVC Pipe
F	Service Saddles/ Ductile Iron/ Stainless Steel Straps for Cast, Ductile & PVC Pipe
F	Service Saddles/ Ductile Iron/ Stainless Steel Straps for HDPE Pipe
F	Service Saddles/ Hinged Type for 2" HDPE
G	Inline Valves
G	Straight Couplings (3/4" X 1")
G	Straight Couplings (1")
G	Meter Setters (5/8" X 3/4" Meter)
G	Meter Setters (1" Meter)
G	Meter Setters (1 1/2" & 2" Meter)
G	Dual Service U-Branch (5/8" X 3/4" Meter)
G	Dual Service U-Branch (1" METER)
G	Curb Stop Assemblies
J	Meter Box (5/8", 3/4", & 1") Single Service Non-Traffic Areas
J	Meter Box (5/8", 3/4", & 1") Dual Service Non-Traffic Areas
J	Meter Box (5/8", 3/4", & 1") Single Service Traffic Rated
J	Meter Box (5/8", 3/4", & 1") Dual Service Traffic Rated
J	Meter Box (1 1/2", & 2") Single Service Non-Traffic Areas
J	Meter Box (1 1/2", & 2") Single Service Traffic Rated
J	Lid Details (5/8", 3/4", & 1") Single Service Non-Traffic Areas
J	Lid Details (5/8", 3/4", & 1") Dual Service Non-Traffic Areas
J	Lid Details (5/8", 3/4", & 1") Single Service Traffic Rated
J	Lid Details (5/8", 3/4", & 1") Dual Service Traffic Rated
J	Lid Details (1 1/2" & 2") Single Service Non-Traffic Areas
J	Lid Details (1 1/2" & 2") Single Service Traffic Rated
L	Tracer Wire (Solid Copper)
L	Direct Bury Wire Splice Kit

2.2 CURB STOP ASSEMBLIES

- A. For 5/8-inch through 2-inch services provide a CTS inlet X Female iron pipe thread curb stop on CTS line 3" from inlet of meter setter.

2.3 WATER METERS SINGLE SERVICE

- A. Meter box shall be installed flush with grade. Box shall be sized and centered around the meter assembly to allow for access and future maintenance.

2.4 DUAL SERVICE

- A. Meter box shall be installed flush with grade. Box shall be sized and centered around the meter assembly to allow for access and future maintenance.
- B. U-branch shall be installed prior to meter setter.

- C. Meter setter shall be installed to allow three (3) to six (6) inches from top of meter from bottom of lid.
- D. Meter setter shall be installed in the upright position.

2.5 MATERIALS

- A. Bedding: As specified in Section 31 23 34.01 – Excavating, Trenching, Dewatering and Backfilling.
- B. Cover: As specified in Section 31 23 34.01 – Excavating, Trenching, Dewatering and Backfilling.
- C. Soil Backfill from Above Pipe to Finish Grade: As specified in Section 31 23 34.01 – Excavating, Trenching, Dewatering and Backfilling.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 – Execution and Closeout Requirements.
- B. Verify that building service connections and municipal utility water main sizes, locations, and inverts are as indicated on Shop Drawings.

3.2 PREPARATION

- A. Section 01 70 00 – Execution and Closeout Requirements.
- B. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs.
- C. Remove scale and dirt from inside and outside of piping before assembly.

3.3 INSTALLATION

- A. 1-inch Service Corporation Stop Assemblies:
 - 1. Make connection for each different kind of water main, using suitable materials, equipment, and methods as approved by Engineer.
 - 2. Provide service clamps for mains constructed of materials other than cast iron or ductile iron.
 - 3. Location:
 - a. Locate and stagger corporation stops at least 36 inches apart longitudinally.
 - 4. Plastic Pipe Mains:
 - a. Provide full support for service clamp for full circumference of pipe, with minimum 2-inch width of bearing area.
 - b. Exercise care against crushing or causing other damage to mains at time of tapping or installation of service clamp or corporation stop.

5. Use seals or other devices such that no leaks are present in mains at points of tapping.
 6. Do not backfill and cover service connections until installation has been approved by Engineer and CFPUA inspector.
- B. Bedding:
1. Excavate pipe trench as specified in Section 31 23 34.01 – Excavating, Trenching, Dewatering, and Backfilling.
 2. Placement:
 - a. Place bedding material as indicated on Drawings.
 - b. Level fill materials in one continuous layer not exceeding 8 inches of compacted depth.
 - c. Compact to 95 percent maximum density.
 3. Place fill materials as specified in Section 31 23 34.01 – Excavating, Trenching, Dewatering and Backfilling.
- C. Pipe and Fittings:
1. Maintain separation of water main from **sewer piping** according to code.
 2. Group piping with other Site piping Work whenever practical.
 3. Install pipe to allow for expansion and contraction without stressing pipe or joints.
 4. Install access fittings to permit disinfection of water system.
 5. Jointing of Pipe:
 - a. Connections between different types of pipe and accessories shall be made with transition fittings approved by CFPUA's representative.
 - b. Service laterals shall consist of a tapping saddle, corporation stop and a length of PE pipe with no joint installed between the main service tap and the service stop. Service laterals shall be installed perpendicular to the water main. Contractor shall install all material per the CFPUA Material Specification Manual allowing for meter installation at a later date by CFPUA personnel. Locator wire shall be installed as per specifications.
 6. Thrust Restraints: Form and place concrete for thrust restraints at each elbow or change of direction of pipe.
 7. Establish elevations of buried piping with not less than three (3) feet of cover.
 8. Pipe Markers: According to CFPUA MSM.
 9. Backfill trench as specified in Section 31 23 34.01 – Excavation, Trenching, Dewatering and Backfill for Pipes.
- D. Curb Stop Assemblies:
1. Set curb stops on 95% compacted soil.
- E. Water Meters: 2-inch and smaller shall be set by CFPUA.
- F. Backflow Preventers:
1. Install backflow preventers where indicated on Drawings and according to manufacturer instructions.
 2. Testing and Installation Requirements: Comply with CFPUA requirements and plumbing codes, see CFPUA's website under Departments, Environmental Management – Backflow and Cross Connections.
- G. Service Connections:

1. Install water service according to as indicated on Drawings.
2. Install water service to 18" of right-of-way and connect to building water service as specified in CFPUA details and referenced in CFPUA Material Specification Manual.
3. All meters installed on lines greater than 2-inch diameter must have a strainer and be installed in an appropriately sized, approved meter vault that provides sufficient access for reading, maintenance, and protection in accordance with Water Meter Vaults specification.

H. Service Intended for Fire Protection:

1. Two taps shall be installed, one for potable water and one for fire flow. The potable water tap shall be installed and metered in accordance with this Section. The fire flow tap shall not be metered, and the fire flow system shall be fully segregated from the potable system throughout the facility. A valve will be installed at the tap and the right-of-way or easement line denoting the CFPUA owned/privately owned boundary. A privately owned, privately maintained back-flow prevention device shall be installed in the line immediately after entering a structure in accordance with the North Carolina State Building Code and the CFPUA Cross Connection Control Ordinance.

I. Pipe Locator Wire: As specified in Section 33 01 12 – Identification for Utilities Piping.

J. Disinfection of Water Piping System: Flush and disinfect system as specified in Section 33 14 20 – Disinfection of Water Distribution Mains.

3.4 TOLERANCES

- A. Install pipe to indicated elevation to within tolerance of 1-inch.

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 – Quality Requirements.
- B. Pressure test water distribution system according to Section 33 05 05.31– Hydrostatic Testing of Water Distribution and Sanitary Sewer Force Mains.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

END OF SECTION