

## **SECTION 22 41 00 - WATER SUPPLY**

### **PART 1 - GENERAL**

#### **1.1 WORK INCLUDED**

- A. Provide labor, materials, equipment and services to perform operations required for the complete installation and related Work as required in Contract Documents.

#### **1.2 QUALITY ASSURANCE**

- A. Follow all requirements, recommendations and appendices of the following publications, codes, standards, and listings:
  - 1. AWWA / ANSI C600: American Water Works Association - Standard for Installation of Ductile Iron Water Mains and Their Appurtenances.
  - 2. NFPA 24: National Fire Protection Association - Standard for the Installation of Private Fire Service Mains and Their Appurtenances.
  - 3. New York State Health Department: Cross Connection Control Manual

#### **1.3 SUBMITTALS**

- A. All items specified under "Part 2 - Products" of this Section.

### **PART 2 - PRODUCTS**

#### **2.1 DOMESTIC WATER AND FIRE PROTECTION SYSTEMS PIPING**

- A. Refer to Section 220600 - "Piping Systems and Accessories" for piping materials.

#### **2.2 WATER METER**

- A. MCWA to provide 1 ½" MACH 10 water mete. Provide the following the devices and accessories on the water service meter arrangement:
  - 1. Bypass with valves (OS & Y or ball type), as indicated on the Contract Drawings.
  - 2. Isolation valves (OS & Y or ball type) and unions or flanges on each side of meter.
  - 3. Strainer on inlet side of meter (type as noted on Contract Drawings).
  - 4. Pressure gauge on downstream side of meter and bypass.

5. Thermometer on downstream side of meter and bypass.
6. Concrete pad under meter, for support. Size of pad as indicated on the Contract Drawings.
7. Fire Service: Full flow waterway; same size as service piping, FM approved. Manufactured by Hersey or Neptune - Trident. Make: Hersey Model FM or Neptune - Trident Protectus.

## 2.3 BACKFLOW PREVENTORS

- A. Reduced pressure zone (RPZ) type:
  1. Provide where indicated.
    - a) Approved for use and listed as an acceptable device by the New York State Department of Health. Relief air shall not enter the same opening in the device as the relief water discharge.
    - b) Sizes ½ inch through 2 inches: All bronze body construction. Sizes 2½ and larger: Cast iron body with epoxy coating. All devices shall have stainless steel nuts and bolts and stainless steel internal parts.
    - c) Easily removed from line for service; flanges or unions on each side of device.
    - d) Four test cocks, strainer and isolation resilient wedge valves. Provide one test cock on the inlet side of the upstream valve.
    - e) Provide drain assembly from each device with air gap fitting and full size indirect waste line to the nearest floor drain or to the exterior.
    - f) Provide heavy duty flap gates, equal to Agri Drain, on RPZ relief valve discharge pipe > 4-inches when draining to the building's exterior.
    - g) Provide Type D shock absorber on outlet side of device (refer to Section 15B450).
    - h) Make: ¾ inches through 2 inches - Watts LF909-S-QT-HW Series. Sizes 2½ and larger - Watts LF957 (provide with splash guard).
    - i) By-passes around backflow preventers are prohibited.
    - j) For fire service: UL listed and FM approved; same size as fire service; Watts 957RPDA (provide with splash guard).
  2. Provide for all make-up water lines.

- a) Make: Watts LF909-S-QT-HW Series with isolation valves (same size as line). Coordinate with Mechanical drawings.
  - b) Provide cap down stream of RPZ for HVAC contractor.
  - c) Mount as high as possible in Mechanical/Boiler Room.
  - d) Provide 1-1/2" drain from RPZ's relief valve and terminate at nearest floor drain.
- B. Provide for all beverage and ice machines.
- a) Make: Watts 9BD, in supply line as required by code.
- C. In-line continuous pressure type (vacuum breakers): No back-pressure
- a) Watts No. N9C with polished chrome finish.
  - b) Watts Series 800M4QT.
- D. Atmospheric type (vacuum breakers):
- a) Watts Series 288A, brass.

## **2.4 PRESSURE REDUCING VALVES (PRV)**

- A. Provide where indicated on the Contract Drawings:
- 1. Standard capacity, all bronze body, renewable stainless steel seat, stainless steel strainer, and thermal expansion bypass feature.
  - 2. Valve parts shall be replaceable without dismantling or removing the valve from the line being served.
  - 3. Valve shall be rated for a maximum temperature of 160 degrees Fahrenheit and be rated for an initial pressure of 300 pounds maximum. The adjustable pressure range shall be from 25 psi to 75 psi.
  - 4. Provide 160 pound gauge and tapping on valve body.
  - 5. Provide isolation valves on each side of PRV as indicated by the Contract Drawings.
  - 6. Make: Watts or approved equal.

Valves 1/2" – 1" Watts model LFU5B-GG

Valves 1-1/2" – 2" Watts model LF25AUB

Valves 2-1/2" – 3" Watts model LFN223BS

Valves 4" – Watts model LF115 with LF223 PRV Bypass

7. Provide where indicated on the Contract Drawings.

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. Installation shall conform to Article 1.2 of this section and shall be provided in a workmanlike manner as determined by the Owner's Representative and the Contract Specifications.

#### **3.2 WATER SERVICE**

- A. Install all water piping on a firm bed, using caution where piping passes over all excavations. Install concrete thrust blocks at all changes in direction and where indicated on the Contract Documents (not required for type K copper installations). Provide mechanical joint retainer glands for all water piping joints unless otherwise noted. Coat all clamps, rods, nuts, etc., with two coats bitumastic coal tar type coating.
- B. Minimum cover for any water or fire service shall be 5 feet - 0 inches unless otherwise noted.
- C. Where an underground water or fire main crosses (over or under) a sanitary or storm sewer, and is within 1 foot - 6 inches vertical distance from the sewer, encase the main in a 4 inch thick concrete casing for a distance of 10 foot - 0 inch on each side of the crossing. Provide curb valve and box.
- D. Provide curb valves and boxes where noted. Refer to Section 221000.
- E. Provide polyethylene encasement of all piping and appurtenances in accordance with ANSI / AWWA C105/A21.5.

#### **3.3 WATER METER**

- A. Verify all water meter requirements with local water authority before ordering equipment.

#### **3.4 PIPING**

- A. Run all water piping slightly off level to low points. Provide drain valves and caps at all low points in the domestic water system.
- B. Provide water hammer arrestors where shown or specified. Provide water hammer arrestors where solenoid or quick closing valves are installed.
- C. Branch headers serving flush valves and fixtures shall be run full size to the last

fixture being served unless otherwise noted.

- D. All exposed water piping in kitchens shall be chrome plated brass from insulation to fixture or equipment connection.
- E. All exposed water piping under fixtures shall be chrome plated brass.
- F. Provide dielectric pipe fittings when connecting systems of dissimilar metals. Refer to Section 220600.
- G. Supply piping to all fixtures, faucets, shower accessories, hydrants and flush valves shall be anchored to prevent movement. Provide additional structural members and supports as required.

### **3.5 ASBESTOS PIPE**

- A. General: Existing water main and fire protection main piping may contain asbestos. Cutting, drilling or other disturbance of this material shall be conducted as specified by New York State Department of Labor, Industrial Code Rule No. 56 "Asbestos". The methods and procedures specified in New York State Department of Labor, Industrial Code Rule 56 shall constitute minimum measures and shall in no way relieve the Contractor of sole responsibility for the means, methods, techniques, sequences or safety measures taken in connection with the work.

### **3.6 ARRANGEMENTS**

- A. Provide for application to and approval of local water department for connection to municipal systems; pay all costs for same.

### **3.7 STERILIZATION**

- A. Provide sterilization of water and fire piping in accordance with all requirements of the New York State Health Department, Public Water Supply Guides, Division of Sanitary Engineering, Bureau of Public Water Supply.

### **3.8 TESTS AND FLUSHING**

- A. Provide all necessary items to complete proper testing of all domestic and fire protection water piping. Isolate existing systems as required.
- B. Flush all water and fire protection piping to remove debris, sediment, dirt, rust, corrosion and other foreign material. Flush all piping before connecting to fixture faucet and flush valves. Refer to Section 224400. Utilize open pipe ends wherever possible.
- C. Piping Supplying Domestic Water Only - Test at 125 psi hydrostatic pressure for two hours. All tests shall be witnessed by Engineer or Owner's Representative.
- D. Piping Supplying Fire Protection Water Only - Test at 200 psi hydrostatic for two

hours. All tests shall be witnessed by the Engineer or the Owner's Representative.

- E. For all Exterior Piping:
  - 1. Joints in pipelines shall not be covered with backfill until after successful completion of leakage tests and observance of the tests by the Engineer or the Owner's Representative.
- F. A successful air test is not acceptable as the final test; however, the Division 22 contractor shall provide interim air testing of piping as construction progresses.
- G. Make all leaks tight. No caulking of leaks shall be permitted. Remove and replace all defective fittings, piping and connections.
- H. Pay all costs of tests. Perform all tests in a safe manner. Remove all discharged water resulting from testing procedures.
- I. Certify in writing that all required domestic and fire protection water tests have been conducted and successfully completed. Use Material and Test Certificates of NFPA 24 format for fire protection piping systems. Submit all certifications to the Owner's Representative.

**END OF SECTION**