SECTION 22 11 19
DOMESTIC WATER PIPING SPECIALTIES

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ASME B1.20.7 - Hose Coupling Screw Threads (Inch); 1991 (Reaffirmed 2024).

B. ASSE 1048 - Performance Requirements for Double Check Detector Backflow Prevention Assemblies; 2021e.

C. ASSE 1052 - Performance Requirements for Hose Connection Backflow Preventers; 2023.

D. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings; 2017.

E. AWWA C550 - Protective Interior Coatings for Valves and Hydrants; 2024.

F. MSS SP-80 - Bronze Gate, Globe, Angle, and Check Valves; 2019.

G. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010, with Errata .

H. NSF 14 - Plastics Piping System Components and Related Materials; 2023.

I. NSF 61 - Drinking Water System Components - Health Effects; 2024.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
   1. SUMMARY Section Includes:
      a. Vacuum breakers.
      b. Backflow preventers.
      c. Water pressure-reducing valves.

1.03 ACTION SUBMITTALS

A. The Work shall consist of providing all materials, labor, tools, related services and incidental items required, in accordance with the Contract Documents, for the execution of this Contract.

B. Product Data: For each type of product.

C. Shop Drawings: For domestic water piping specialties.
   1. Include diagrams for power, signal, and control wiring.

D. Sustainable Design Submittals:
   1. Product Data: For water consumption.

1.04 INFORMATIONAL SUBMITTALS

A. Field quality-control reports. CLOSEOUT SUBMITTALS

B. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 GENERAL

2.01 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Potable-water piping and components shall comply with NSF 61 Annex G and NSF 14. Mark "NSF-pw" on plastic piping components.

2.02 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig unless otherwise indicated.

2.03 BACKFLOW PREVENTERS

A. Double-Check, Detector-Assembly Backflow Preventers:
   1. Standard: ASSE 1048 and is FM Global approved or UL listed.
   2. Operation: Continuous-pressure applications.
   3. Pressure Loss: 5 psig maximum, through middle third of flow range.
   4. Body: Cast iron with interior lining that complies with AWWA C550 or that is FDA approved, Steel with interior lining that complies with AWWA C550 or that is FDA approved, Stainless steel.
   5. End Connections: Flanged.
   6. Configuration: Designed for horizontal, straight-through, vertical-inlet, horizontal- center-section, and vertical-outlet, vertical flow.
   7. Accessories:
      a. Valves: Outside-screw and yoke-gate type with flanged ends on inlet and outlet.
      b. Bypass: With displacement-type water meter, shutoff valves, and reduced- pressure backflow preventer.

B. Hose-Connection Backflow Preventers:
   1. Standard: ASSE 1052.
   2. Operation: Up to 10-foot head of water (30-kPa) back pressure.
   3. Inlet Size: NPS 1/2 or NPS 3/4 (DN 15 or DN 20).
   4. Outlet Size: Garden-hose thread complying with ASME B1.20.7.
   5. Capacity: At least 3-gpm (0.19-L/s) flow.

C. Backflow-Preventer Test:
   1. Description: Factory calibrated, with gages, fittings, hoses, and carrying case with test-procedure instructions.

2.04 DRAIN VALVES

A. Ball-Valve-Type, Hose-End Drain Valves:
   1. Standard: MSS SP-110 for standard-port, two-piece ball valves.
   2. Pressure Rating: 400-psig (2760-kPa) minimum CWP.
   3. Size: NPS 3/4 (DN 20).
   4. Body: Copper alloy.
   5. Ball: Chrome-plated brass.
   6. Seats and Seals: Replaceable.
   7. Handle: Vinyl-covered steel.
   8. Inlet: Threaded or solder joint.
   9. Outlet: Threaded, short nipple with garden-hose thread complying with ASME B1.20.7 and cap with brass chain.

B. Gate-Valve-Type, Hose-End Drain Valves:
   1. Standard: MSS SP-80 for gate valves.
   2. Pressure Rating: Class 125.
   3. Size: NPS 3/4 (DN 20).
   4. Body: ASTM B62 bronze.
   5. Inlet: NPS 3/4 (DN 20) threaded or solder joint.
   6. Outlet: Garden-hose thread complying with ASME B1.20.7 and cap with brass chain.

C. Stop-and-Waste Drain Valves:
   1. Standard: MSS SP-110 for ball valves or MSS SP-80 for gate valves.

2. Pressure Rating: 200-psig (1380-kPa) minimum CWP or Class 125.
3. Size: NPS 3/4 (DN 20).
4. Body: Copper alloy or ASTM B62 bronze.
5. Drain: NPS 1/8 (DN 6) side outlet with cap.

2.05 SPECIALTY VALVES

A. Comply with requirements for general-duty metal valves in Section 220523.12 "Ball Valves for Plumbing Piping," Section 220523.13 "Butterfly Valves for Plumbing Piping," Section 220523.14 "Check Valves for Plumbing Piping," and Section 220523.15 "Gate Valves for Plumbing Piping."

2.06 FLEXIBLE CONNECTORS

A. Bronze-Hose Flexible Connectors: Corrugated-bronze tubing with bronze wire-braid covering and ends brazed to inner tubing.
   1. Working-Pressure Rating: Minimum 200 psig, 250 psig.
   2. End Connections NPS 2-1/2 (DN 65) and Larger: Flanged copper alloy.

B. Stainless-Steel-Hose Flexible Connectors: Corrugated-stainless-steel tubing with stainless-steel wire-braid covering and ends welded to inner tubing.
   1. Working-Pressure Rating: Minimum 200 psig, 250 psig.
   2. End Connections NPS 2-1/2 (DN 65) and Larger: Flanged steel nipple.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install backflow preventers in each water supply to mechanical equipment and systems and to other equipment and water systems that may be sources of contamination. Comply with authorities having jurisdiction.
   1. Locate backflow preventers in same room as connected equipment or system.
   2. Install drain for backflow preventers with atmospheric-vent drain connection with air-gap fitting, fixed air-gap fitting, or equivalent positive pipe separation of at least two pipe diameters in drain piping and pipe-to-floor drain. Locate air-gap device attached to or under backflow preventer. Simple air breaks are unacceptable for this application.
   3. Do not install bypass piping around backflow preventers.

B. Install water regulators with inlet and outlet shutoff valves and bypass with memory- stop balancing valve]. Install pressure gages on inlet and outlet.

C. Install water-control valves with inlet and outlet shutoff valves and bypass with globe valve. Install pressure gages on inlet and outlet.

D. Install balancing valves in locations where they can easily be adjusted.

E. Install outlet boxes recessed in wall or surface mounted on wall. Install 2-by-4-inch (38- by-89-mm) fire-retardant-treated-wood blocking, wall reinforcement between studs.

F. Install hose stations with check stops or shutoff valves on inlets and with thermometer on outlet.
   1. Install cabinet-type units recessed in or surface mounted on wall as specified. Install 2-by-4-inch (38-by-89-mm) fire-retardant-treated-wood blocking, wall reinforcement between studs. Comply with requirements for fire-retardant- treated-wood blocking in Section 061000 "Rough Carpentry."

G. Install ground hydrants with 1 cu. yd. (0.75 cu. m) of crushed gravel around drain hole. Set ground hydrants with box flush with grade.

H. Install draining-type post hydrants with 1 cu. yd. (0.75 cu. m) of crushed gravel around drain hole. Set post hydrants in concrete paving or in [1 cu. ft. (0.03 cu. m of concrete block at grade.

I. Set nonfreeze, nondraining-type post hydrants in concrete or pavement.

J. Set freeze-resistant yard hydrants with riser pipe in concrete or pavement. Do not encase canister in concrete.

3.02 CONNECTIONS

A. Comply with requirements for ground equipment in Section 260526 "Grounding and Bonding for Electrical Systems."

B. Fire-retardant-treated-wood blocking is specified in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for electrical connections.

3.03 LABELING AND IDENTIFYING

A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
   1. Double-check, backflow-prevention assemblies.
   2. Double-check, detector-assembly backflow preventers.

B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.04 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:
   1. Test each pressure vacuum breaker, double-check, backflow-prevention assembly according to authorities having jurisdiction and the device's reference standard.

B. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.05 ADJUSTING

A. Set field-adjustable pressure set points of water pressure-reducing valves.

B. Set field-adjustable flow set points of balancing valves.

C. Set field-adjustable temperature set points of temperature-actuated, water mixing valves.

END OF SECTION 22 11 19 22 11 19