SECTION 22 11 19 - DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following domestic water piping specialties:

1. Vacuum breakers.
2. Backflow preventers.
3. Water pressure-reducing valves.
4. Balancing valves.
5. Thermostatic water mixing valves.
6. Strainers.
7. Drain valves.
8. Water hammer arresters.
9. Water filters.
10. Flexible Connectors.

1.2 PERFORMANCE REQUIREMENTS

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

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

C. Operation and maintenance data.

1.4 QUALITY ASSURANCE

A. NSF Compliance: Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9."

B. Vacuum Breakers and Backflow Preventers: Manufacturers shall be listed in “Backflow Prevention Assemblies Approved for Installation in Washington State.”

PART 2 - PRODUCTS

2.1 VACUUM BREAKERS

A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:
      a. Ames Co.
      b. Cash Acme.
      c. Conbraco Industries, Inc.
      d. FEBCO; SPX Valves & Controls.
      e. Watts Industries, Inc.; Water Products Div.
      f. Zurn Plumbing Products Group; Wilkins Div.
   2. Standard: ASSE 1001.
   3. Size: NPS 1/4 to NPS 3, as required to match connected piping.
   4. Body: Bronze.
   5. Inlet and Outlet Connections: Threaded.
   6. Finish: Rough bronze for installation in unfinished spaces and chrome plated for installations in finished spaces.

B. Hose-Connection Vacuum Breakers:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:
      a. Cash Acme.
      b. Conbraco Industries, Inc.
      c. MIFAB, Inc.
      d. Watts Industries, Inc.; Water Products Div.
      e. Woodford Manufacturing Company.
      f. Zurn Plumbing Products Group; Light Commercial Operation.
      g. Zurn Plumbing Products Group; Wilkins Div.
   2. Standard: ASSE 1001.
   3. Body: Bronze, nonremovable, with manual drain.
   4. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
   5. Finish: Chrome or nickel plated.

C. Vacuum Breakers: for Operating Pressures under 150 psig and Temperatures under 366 deg F:
   1. Manufacturer: Hoffman Specialties Model 62 or approved equal.
   2. Unit shall be adjustable from 1/4 inch to 20 inch Hg vacuum.

2.2 BACKFLOW PREVENTERS

A. Reduced-Pressure-Principle Backflow Preventers:

1. Manufacturers: Subject to compliance with requirements, provide Watts No. 009 QT, a comparable product by one of the following or approved equal:

    a. Ames Co.
    b. Conbraco Industries, Inc.
    c. FEBCO; SPX Valves & Controls.
    d. Zurn Plumbing Products Group; Wilkins Div.

2. Standard: ASSE 1013.
3. Operation: Continuous-pressure applications.
4. Body: Bronze for NPS 2 and smaller; cast iron with interior lining complying with AWWA C550 or that is FDA approved for NPS 2-1/2 and larger.
5. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.
6. Accessories:

    a. Valves: Ball type with threaded ends on inlet and outlet of NPS 2 and smaller; outside screw and yoke gate-type with flanged ends on inlet and outlet of NPS 2-1/2 and larger.
    b. Air-Gap Fitting: ASME A112.1.2, matching backflow-preventer connection.

B. Double-Check Backflow-Prevention Assemblies:

1. Manufacturers: Subject to compliance with requirements, provide Watts No. 709 DCDA or a comparable product by one of the following or approved equal:

    a. Ames Co.
    b. Conbraco Industries, Inc.
    c. FEBCO; SPX Valves & Controls.
    d. Zurn Plumbing Products Group; Wilkins Div.

2. Standard: ASSE 1015.
3. Operation: Continuous-pressure applications, unless otherwise indicated.
4. Body: Bronze for NPS 2 and smaller; cast iron with interior lining complying with AWWA C550 or that is FDA approved for NPS 2-1/2 and larger.
5. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.
6. Accessories:

    a. Valves: Ball type with threaded ends on inlet and outlet of NPS 2 and smaller; non rising stem gate-type with flanged ends on inlet and outlet of NPS 2-1/2 and larger.

2.3 WATER PRESSURE-REDUCING VALVES

A. Water Regulators:

1. Manufacturers: Subject to compliance with requirements, provide Watts F-115-A or a comparable product by one of the following or approved equal:

   a. Cash Acme.
   b. Conbraco Industries, Inc.
   c. Zurn Plumbing Products Group; Wilkins Div.

2. Standard: ASSE 1003.
3. Pressure Rating: Initial working pressure of 150 psig.
4. Body: Bronze for NPS 2 and smaller; cast iron with interior lining complying with AWWA C550 or that is FDA approved for NPS 2-1/2 and larger.
5. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.

2.4 BALANCING VALVES

A. Bronze, Calibrated-Orifice, Balancing Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:

   a. Armstrong Pumps, Inc.
   b. Bell & Gossett Domestic Pump; a division of ITT Industries.
   c. Flow Design Inc.
   d. Gerand Engineering Co.
   e. Griswold Controls.
   f. Taco.
   g. Tour & Andersson; available through Victaulic Company of America
   h. Red-White Valve Corp.

2. Body: Bronze, globe type with calibrated orifice or venturi.
3. End Connections: Threaded or socket.
4. Pressure Gage Connections: Integral seals for portable differential pressure meter. Include graduated scale.
5. Handle Style: Lever, with memory stop to retain set position.
6. CWP Rating: Minimum 125 psig.
7. Maximum Operating Temperature: 250 deg F.

2.5 THERMOSTATIC WATER MIXING VALVES

A. Primary, Thermostatic, Water Mixing Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:

   a. Armstrong International, Inc.
   b. Lawler Manufacturing Company, Inc.
   c. Leonard Valve Company.
   d. Powers; a Watts Industries Co.
   e. Symmons Industries, Inc.

2. Standard: ASSE 1017.
3. Pressure Rating: 125 psig.
4. Type: Exposed-mounting or cabinet-type as shown on the drawings, thermostatically controlled water mixing valve.
5. Material: Bronze body with corrosion-resistant interior components.
6. Connections: Threaded union inlets and outlet.
7. Accessories: Manual temperature control, check stops on hot- and cold-water supplies, and adjustable, temperature-control handle.
8. Valve Pressure Rating: 125 psig minimum, unless otherwise indicated.
9. Tempered-Water Setting: As shown on the drawings.
10. Tempered-Water Design Flow Rate: As shown on the drawings.
11. Selected Valve Flow Rate at 45-psig Pressure Drop: As shown on the drawings.
12. Valve Finish: Polished, chrome plated for installation in finished spaces and rough bronze for installation in unfinished spaces.
13. Piping Finish: Chrome plated for installation in finished spaces and copper for installation in unfinished spaces.
14. Cabinet: Factory-fabricated, stainless steel, for recessed or surface mounting as shown on the drawings and with hinged, stainless-steel door.

2.6 STRAINERS FOR DOMESTIC WATER PIPING

A. Y-Pattern Strainers:

1. Manufacturer:

   a. Operating Pressure under 250 psig: Hoffman Specialties Model 415 C or approved equal with threaded end connections and Models 460 A or 460 B or approved equal with flanged end connections.
   b. Operating Pressure under 125 psig: Hoffman Specialties Model 450 C or approved equal with flanged end connections.

2. Body: Bronze for NPS 2 and smaller; cast iron with interior lining complying with AWWA C550 or FDA-approved, epoxy coating and for NPS 2-1/2 and larger.
3. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.
4. Screen: Stainless steel with round perforations, unless otherwise indicated.

5. Perforation Size: 0.045 inch.
6. Drain: Factory-installed, hose-end drain valve.

2.7 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 minimum CWP.
3. Size: NPS 3/4.
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.

2.8 WATER HAMMER ARRESTERS

A. Water Hammer Arresters:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:

   a. AMTROL, Inc.
   b. Josam Company.
   c. MIFAB, Inc.
   d. PPP Inc.
   e. Sioux Chief Manufacturing Company, Inc.
   f. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
   g. Tyler Pipe; Wade Div.
   h. Watts Drainage Products Inc.
   i. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Standard: ASSE 1010 or PDI-WH 201.
3. Type: Metal bellows or copper tube with piston.
4. Size: ASSE 1010, Sizes AA and A through F or PDI-WH 201, Sizes A through F.

2.9 WATER FILTERS

A. Cartridge type, including housing, fittings, filter cartridges and cartridge end caps.

2.10 FLEXIBLE CONNECTORS

A. Body: Stainless-steel bellows with woven, flexible, bronze, wire-reinforcing protective jacket.

B. End Connections: Threaded or flanged to match equipment connected.

C. Performance: Capable of 3/4 inch misalignment.

D. CWP Rating: 150 psig.

E. Maximum Operating Temperature: 250 deg F.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Refer to Division 23 Section "Common Work Results for Mechanical" for piping joining materials, joint construction, and basic installation requirements.

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

C. Install thermostatic water mixing valves with check stops or shutoff valves on inlets and with shutoff valve on outlet.

1. Install thermometers and water regulators if specified.
2. Install cabinet-type units recessed in or surface mounted on wall as specified.

D. Install Y-pattern strainers for water on supply side of each control valve.

E. Install water hammer arresters in water piping according to PDI-WH 201.

F. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping and specialties.

G. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each primary, thermostatic, water mixing valves.

H. 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 Division 23 Section "Identification for Mechanical Piping and Equipment."

3.2 FIELD QUALITY CONTROL

A. Remove and replace malfunctioning domestic water piping specialties and retest as specified above.

3.3 ADJUSTING

A. Set field-adjustable flow of balancing valves.

B. Set field-adjustable temperature set points of thermostatic water mixing valves.

END OF SECTION 22 11 19