

## SECTION 22 1119 - PLUMBING SPECIALTIES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 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. Temperature-actuated water mixing valve stations.
6. Electronic water mixing valve stations.
7. Strainers.
8. Hose bibbs.
9. Wall hydrants.
10. Drain valves.
11. Water hammer arresters.
12. Trap-seal primer valves.

- B. Related Sections include the following:

1. Division 21 sections where water supply to fire suppression systems is required.
2. See all other Division 22 Sections.

#### 1.3 PERFORMANCE REQUIREMENTS

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

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.
- C. Operation and maintenance data.
- D. At closeout, Northwestern University Maintenance Requirement Forms, see Division 01 for more information.

## 1.5 QUALITY ASSURANCE

- A. Comply with California Health and Safety Code 116875 (AB 1953) - 2010, for 25% low lead content of piping, pipe fittings, and faucets for water intended for human consumption, and NSF/ANSI Standard 61, including Annex G-2010 - Drinking Water System Components - Low Lead Content Requirement.
- B. Other NSF Compliance:
  - 1. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic domestic water piping components.

## 1.6 SPECIAL WARRANTIES

- A. Five (5) years, see Division 01 for more information.

## PART 2 - PRODUCTS

## 2.1 BACKFLOW PREVENTERS &amp; VACUUM BREAKERS

- A. Manufacturers: Subject to compliance with requirements, provide products by Conbraco, no others allowed.
- B. Pipe-Applied, Atmospheric-Type Vacuum Breakers for Plumbing Use:
  - 1. Standard: ASSE 1001.
  - 2. Size: As required to match connected piping.
  - 3. Body: Bronze.
  - 4. Finish: Rough bronze.
  - 5. Lead free NSF/ANSI 61 compliant
- C. Intermediate Atmospheric-Vent Backflow Preventers for Vending and Coffee Stations:
  - 1. Standard: ASSE 1012.
  - 2. Operation: Continuous-pressure applications.
  - 3. Body: Bronze.
  - 4. Finish: Rough bronze.
  - 5. Lead free NSF/ANSI 61 compliant
- D. Reduced-Pressure-Principle Backflow Preventers for Plumbing Use:
  - 1. The reduced pressure zone assembly shall be C89836 lead-free and consist of two independent torsion spring check modules, a differential pressure relief valve located between and below the two modules, two drip tight shutoff valves, and required torsion spring check modules and relief valve shall be contained with a sleeve accessible single housing constructed from stainless steel in sizes 2.5" -8", and from FDA epoxy coated ductile iron for 10" and 12" sizes. Provide with NRS gate or OSY gate valves with either flanged or grooved end pipe connections on larger sizes, but smaller sizes to have ball valves with stainless balls and stems if available. Butterfly valves are not acceptable.

2. Torsion spring checks shall have replaceable chloramine resistant silicone discs and in operation, produce drip tight closure against the reverse flow of liquid caused by backpressure or back-siphonage.
3. ASSE 1047 approved.
4. Basis of Design - Conbraco RPDALF4 .

E. Reduced Pressure Detector Backflow Preventers for Supply of Fire Suppression Systems:

1. See applicable Division 21 sections. Backflow preventers for supply of fire suppression systems are furnished and installed by the project Plumbing Contractor. Conbraco only for manufacturer.

F. Backflow-Preventer Test Kits:

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

## 2.2 WATER PRESSURE-REDUCING VALVES

A. Water Regulators:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Conbraco
  - b. NIBCO
  - c. Bell & Gossett
2. Standard: ASSE 1003.
3. Pressure Rating: Initial working pressure of 150 psig.
4. Body: Bronze with chrome-plated finish 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. Valves for Dishwasher Booster Heater Water Supplies: Include integral bypass.
6. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.
7. Lead free NSF/ANSI 61 compliant

## 2.3 BALANCING VALVES

A. Memory-Stop Balancing Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Conbraco
  - b. NIBCO
  - c. Bell & Gossett
2. Standard: MSS SP-110 for two-piece, copper-alloy ball valves.
3. Pressure Rating: 400-psig minimum CWP.
4. Size: NPS 2 or smaller.
5. Body: Copper alloy.
6. Port: Standard or full port.
7. Ball: Chrome-plated brass.

8. Seats and Seals: Replaceable.
9. End Connections: Solder joint or threaded.
10. Handle: Vinyl-covered steel with memory-setting device.
11. Lead free NSF/ANSI 61 compliant

## 2.4 TEMPERATURE-ACTUATED WATER MIXING VALVE STATIONS

### A. Primary, Thermostatic, Water Mixing Valve Stations:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Holby.
  - b. Or approved equal.
2. Description: Complete factory preassembled, high/low, ASSE 1017, lead free, water temperature control station mounted on heavy duty welded strut frame for wall mounting including piping, valving, and gages.
  - a. Type: Exposed-mounting, thermostatically controlled water mixing valve assembly.
  - b. Materials: Bronze body with corrosion-resistant interior components, and copper piping.
  - c. Connections: Threaded or soldered.
  - d. Accessories/features: Manual adjustments, bi-metal thermostat, color coded dials, locking temperature regulating valves, adjustable limit stops, check stops on hot- and cold-water supplies, outlet ball valves, factory tested, and temperature gauge.
  - e. Valve Pressure Rating: 125 psig minimum, unless otherwise indicated.  
**Delete line below only if flow rate is indicated on Drawings.**
  - f. Tempered-Water Design Flow Rate: See drawings.
  - g. Valve Finish: Rough bronze.
  - h. Controls: Aquastat and wiring box including red and green operating lights, GFCI switch.
  - i. If called for on drawings, provide with stainless steel cabinet, building management system interface, and/or test connection piping on outlet.
  - j. Install a valved bypass around mixing assembly.
  - k. Install ball valves, check valves, strainers, and unions on cold and hot water inlet piping.
  - l. Lead free NSF/ANSI 61 compliant

## 2.5 ELECTRONIC WATER MIXING VALVE STATIONS

### A. Primary, Thermostatic, Water Mixing Valve Stations:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Armstrong Brain.
  - b. Metropolitan Metromix
  - c. Or approved equal.

2. Description: Complete factory preassembled, high/low, ASSE 1017, lead free, water temperature control station mounted on heavy duty welded strut frame for wall mounting including piping, valving, and gages.
  - a. Type: Exposed-mounting, thermostatically controlled water mixing valve assembly.
  - b. Materials: Bronze body with corrosion-resistant interior components, and copper piping.
  - c. Connections: Threaded or soldered.
  - d. Accessories/features: Manual adjustments, bi-metal thermostat, color coded dials, locking temperature regulating valves, adjustable limit stops, check stops on hot- and cold-water supplies, outlet ball valves, factory tested, and temperature gauge.
  - e. Valve Pressure Rating: 125 psig minimum, unless otherwise indicated.  
**Delete line below only if flow rate is indicated on Drawings.**
  - f. Tempered-Water Design Flow Rate: See drawings.
  - g. Valve Finish: Rough bronze.
  - h. Controls: Aquastat and wiring box including red and green operating lights, GFCI switch.
  - i. If called for on drawings, provide with stainless steel cabinet, building management system interface, and/or test connection piping on outlet.
  - j. Install a valved bypass around mixing assembly.
  - k. Lead free NSF/ANSI 61 compliant

## 2.6 HOSE BIBBS

### A. Hose Bibbs (**HB**):

1. Manufacturers: Subject to compliance with requirements, provide the product indicated on the drawings or a comparable product by one of the following:
  - a. Chicago.
  - b. Arrowhead Brass Products, Inc.
  - c. Woodford Manufacturing Company.
2. Description:
  - a. Standard: ASME A112.18.1 for sediment faucets.
  - b. Body Material: Bronze.
  - c. Seat: Bronze, replaceable.
  - d. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
  - e. Vacuum Breaker: Integral nonremovable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
  - f. Finish: Chrome plated.

## 2.7 WALL HYDRANTS

### A. Non-Freeze Wall Hydrants (**WH**):

1. Manufacturers: Subject to compliance with requirements, provide the product indicated on the drawings or a comparable product by one of the following:
  - a. Josam Company.
  - b. Smith, Jay R. Mfg. Co.

- c. Tyler Pipe; Wade Division.
  - d. Zurn Plumbing Products Group.
2. Standard: ASME A112.21.3M for concealed-outlet, self-draining wall hydrants.
  3. Pressure Rating: 125 psig.
  4. Operation: Loose key. (One with each wall hydrant.)
  5. Casing and Operating Rod: Of length required to match wall thickness with wall clamp.
  6. Inlet: NPS 3/4.
  7. Outlet: Concealed, with integral vacuum breaker and ASME B1.20.7 garden-hose thread.
  8. Box: Deep, flush mounting with polished nickel bronze cover

## 2.8 DRAIN VALVES

### A. Ball-Valve-Type, Hose-End Drain Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Conbraco.
2. Standard: MSS SP-110 for standard-port, two-piece ball valves.
3. Size: NPS 3/4.
4. Ball: Chrome-plated brass.
5. Seats and Seals: Replaceable.
6. Outlet: Threaded, short nipple with garden-hose thread complying with ASME B1.20.7 and cap with brass chain.
7. GHT Hose Connection: provide on all drain valves.

## 2.9 WATER HAMMER ARRESTERS

### A. Water Hammer Arresters:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Josam Company.
  - b. PPP Inc.
  - c. Smith, Jay R. Mfg. Co.
  - d. Zurn Plumbing Products Group.
2. Description:
  - a. Standard: ASSE 1010 or PDI-WH 201.
  - b. Type: Metal bellows.
  - c. Size: In accordance with PDI-WH 201.

## 2.10 TRAP-SEAL PRIMER VALVES

### A. Supply-Type, Trap-Seal Primer Valves:

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

- a. PPP Inc.
  - b. Smith, Jay R. Mfg. Co.
  - c. Watts Industries
2. Standard: ASSE 1018.
  3. Pressure Rating: 125 psig minimum.
  4. Body: Bronze.
  5. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
  6. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
  7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

## 2.11 STRAINERS FOR DOMESTIC WATER PIPING

### A. Y-Pattern Strainers:

1. Pressure Rating: 125 psig minimum, unless otherwise indicated.
2. Body: Bronze for NPS 2 and smaller; cast iron, FDA-approved, **[with epoxy coating]** 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:
  - a. Strainers NPS 2 and Smaller: 0.020 inch.
  - b. Strainers NPS 2-1/2 to NPS 4: 0.045 inch.
  - c. Strainers NPS 5 and Larger: 0.10 inch.
6. Drain: Pipe plug.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Refer to Division 22 Section "Common Work Results for Plumbing" for piping joining materials, joint construction, and basic installation requirements.
- B. 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 not acceptable for this application.
  3. Do not install bypass piping around backflow preventers.
  4. **At domestic water services 3" 2-1/2" and larger that contain a backflow preventer shall have two backflows for redundancy.**
- C. Install water pressure regulators with inlet and outlet shutoff valves and bypass with memory-stop balancing valve. Install pressure gages on inlet and outlet.

- D. Install balancing valves in locations where they can easily be adjusted.
- E. Install temperature-actuated water mixing valve stations in accordance with manufacturers instructions.
- F. Install Y-pattern strainers for water on supply side of each control valve, water pressure-reducing valve, solenoid valve, and pump.
- G. Install water hammer arresters in water piping according to PDI-WH 201.
- H. Install water hammer arresters in an accessible location. If a water hammer arrester is located inside a wall, locate it within twelve inches (1'-0") of an access panel.
- I. Install supply-type, trap-seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.
- J. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping and specialties.
- K. 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 22 Section "Identification for Plumbing Piping and Equipment."
- L. For systems that require a water supply, but are not designed to operate all year long, provide a shutoff valve, and a drain down valve. Locate both the shut off valve and the drain down valve within twenty-four (2'-0") of the main water line. Install piping with a slope of not less than 1/4" per foot to allow piping to be drained.

### 3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and prepare test reports:
  - 1. Test each reduced-pressure-principle backflow preventer and double-check backflow-prevention assembly according to authorities having jurisdiction and the device's reference standard.
- B. Remove and replace malfunctioning domestic water piping specialties and retest as specified above.

### 3.3 ADJUSTING

- A. Set field-adjustable pressure set points of water pressure-reducing valves.
- B. Set field-adjustable flow of balancing valves.
- C. Set field-adjustable temperature set points of temperature-actuated water mixing valves.

**END OF SECTION 22 1114**