SECTION 221119

DOMESTIC WATER PIPING SPECIALTIES

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**NOTE TO SPECIFIER**

*Use this Specification Section for Mail Processing Facilities.*

***This is a Type 1 Specification with completely editable text; therefore, any portion of the text can be modified by the A/E preparing the Solicitation Package to suit the project.***

*For Design/Build projects, do not delete the Notes to Specifier in this Section so that they may be available to Design/Build entity when preparing the Construction Documents.*

*For the Design/Build entity, this specification is intended as a guide for the Architect/Engineer preparing the Construction Documents.*

*The MPF specifications may also be used for Design/Bid/Build projects. In either case, it is the responsibility of the design professional to edit the Specifications Sections as appropriate for the project.*

*Text shown in brackets must be modified as needed for project specific requirements.* *See the “Using the USPS Guide Specifications” document in Folder C for more information.*

*The last date that USPS revised this standard specification section occurs in two places, at the end of this section and in the Table of Contents. If the date in this section matches the date in the Table of Contents, then you are using the latest version. Do not delete or revise the “last revised” date at the end of the section during the development of the Project Manual.*

*The footer in this section should be edited to replace the text, “USPS MPF SPECIFICATION” with the project name, and the blank date in the center should be replaced with the submission date, for interim design reviews, or the issue date of the completed Project Manual.*

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1. GENERAL
	1. SUMMARY
		1. 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 valves.
			6. Strainers.
			7. Hose bibbs.
			8. Wall hydrants.
			9. Drain valves.
			10. Water hammer arresters.
			11. Trap-seal primer valves.
		2. See Division 22 Section "Domestic Water Piping" for water meters.
		3. See Division 22 Section "Drinking Fountains and Water Coolers" for water filters for water coolers.
	2. PERFORMANCE REQUIREMENTS
		1. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig, unless otherwise indicated.
	3. SUBMITTALS
		1. Product Data: For each type of product indicated.
		2. Field quality-control test reports.
		3. Operation and maintenance data.
	4. QUALITY ASSURANCE
		1. NSF Compliance:
			1. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic domestic water piping components.
			2. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9."
2. PRODUCTS
	1. VACUUM BREAKERS
		1. Pipe-Applied, Atmospheric-Type Vacuum Breakers:
			1. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. Ames Co.
				2. Cash Acme.
				3. Conbraco Industries, Inc.
				4. FEBCO; SPX Valves & Controls.
				5. Rain Bird Corporation.
				6. Toro Company (The); Irrigation Div.
				7. Watts Industries, Inc.; Water Products Div.
				8. 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: Chrome plated.
	2. BACKFLOW PREVENTERS
		1. Intermediate Atmospheric-Vent Backflow Preventers:
			1. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. Cash Acme.
				2. Conbraco Industries, Inc.
				3. FEBCO; SPX Valves & Controls.
				4. Honeywell Water Controls.
				5. Legend Valve.
				6. Watts Industries, Inc.; Water Products Div.
				7. Zurn Plumbing Products Group; Wilkins Div.
			2. Standard: ASSE 1012.
			3. Operation: Continuous-pressure applications.
			4. Size: As indicated on drawings.
			5. Body: Bronze.
			6. End Connections: Union, solder joint.
			7. Finish: Rough bronze.
		2. Reduced-Pressure-Principle Backflow Preventers:
			1. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. Ames Co.
				2. Conbraco Industries, Inc.
				3. FEBCO; SPX Valves & Controls.
				4. Flomatic Corporation.
				5. Watts Industries, Inc.; Water Products Div.
				6. Zurn Plumbing Products Group; Wilkins Div.
			2. Standard: ASSE 1013.
			3. Operation: Continuous-pressure applications.
			4. Pressure Loss: 7 psig maximum, through middle 1/3 of flow range.
			5. Size: As indicated on drawings.
			6. 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.
			7. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.
			8. Accessories:
				1. 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.
				2. Air-Gap Fitting: ASME A112.1.2, matching backflow-preventer connection.
		3. Double-Check Backflow-Prevention Assemblies:
			1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. Ames Co.
				2. Conbraco Industries, Inc.
				3. FEBCO; SPX Valves & Controls.
				4. Flomatic Corporation.
				5. Watts Industries, Inc.; Water Products Div.
				6. Zurn Plumbing Products Group; Wilkins Div.
			2. Standard: ASSE 1015.
			3. Operation: Continuous-pressure applications, unless otherwise indicated.
			4. Pressure Loss: 4 psig maximum, through middle 1/3 of flow range.
			5. Size: As indicated on drawings.
			6. 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.
			7. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.
			8. Accessories:
				1. 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.
	3. WATER PRESSURE-REDUCING VALVES
		1. Water Regulators [Insert drawing designation if any]:
			1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. Cash Acme.
				2. Conbraco Industries, Inc.
				3. Honeywell Water Controls.
				4. Watts Industries, Inc.; Water Products Div.
				5. Zurn Plumbing Products Group; Wilkins Div.
			2. Standard: ASSE 1003.
			3. Pressure Rating: Initial working pressure of 150 psig.
			4. Size: As indicated on drawings.
			5. 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 NPS 3.
			6. Valves for Booster Heater Water Supply: Include integral bypass.
			7. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and NPS 3.
	4. BALANCING VALVES
		1. Memory-Stop Balancing Valves:
			1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. Conbraco Industries, Inc.
				2. Crane Co.; Crane Valve Group; Crane Valves.
				3. Crane Co.; Crane Valve Group; Jenkins Valves.
				4. Crane Co.; Crane Valve Group; Stockham Div.
				5. Hammond Valve.
				6. Milwaukee Valve Company.
				7. NIBCO INC.
				8. Red-White Valve Corp.
			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.
		2. Primary, Thermostatic, Water Mixing Valves:
			1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. Armstrong International, Inc.
				2. Lawler Manufacturing Company, Inc.
				3. Leonard Valve Company.
				4. Powers; a Watts Industries Co.
				5. Symmons Industries, Inc.
			2. Standard: ASSE 1017.
			3. Pressure Rating: 125 psig.
			4. Type: Cabinet-type, 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. Valve Finish: Chrome plated or rough bronze.
			10. Piping Finish: Copper.
			11. Cabinet: Factory-fabricated, stainless steel, for mounting and with hinged, stainless-steel door.
	5. STRAINERS FOR DOMESTIC WATER PIPING
		1. Y-Pattern Strainers:
			1. Pressure Rating: 125 psig minimum, unless otherwise indicated.
			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:
				1. Strainers NPS 2 and Smaller0.033 inch.
				2. Strainers NPS 2-1/2 to NPS 4: 0.062 inch.
				3. Strainers NPS 5 and Larger: 0.125 inch.
			6. Drain: Pipe plug or factory-installed, hose-end drain valve.
	6. HOSE BIBBS
		1. Hose Bibbs:
			1. Standard: ASME A112.18.1 for sediment faucets.
			2. Body Material: Bronze.
			3. Seat: Bronze, replaceable.
			4. Supply Connections: NPS 1/2 or NPS 3/4 threaded or solder-joint inlet.
			5. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
			6. Pressure Rating: 125 psig.
			7. Vacuum Breaker: Integral nonremovable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
			8. Finish for Equipment Rooms: Rough bronze, or chrome or nickel plated.
			9. Finish for Service Areas: Chrome or nickel plated.
			10. Finish for Finished Rooms: Chrome or nickel plated.
			11. Operation for Equipment Rooms: Wheel handle or operating key.
			12. Operation for Service Areas: Operating key.
			13. Operation for Finished Rooms: Operating key.
			14. Include operating key with each operating-key hose bibb.
			15. Include integral wall flange with each chrome- or nickel-plated hose bibb.
	7. WALL HYDRANTS
		1. Nonfreeze Wall Hydrants where local climate conditions require:
			1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. Josam Company.
				2. MIFAB, Inc.
				3. Prier Products, Inc.
				4. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
				5. Tyler Pipe; Wade Div.
				6. Watts Drainage Products Inc.
				7. Woodford Manufacturing Company.
				8. Zurn Plumbing Products Group; Light Commercial Operation.
				9. Zurn Plumbing Products Group; Specification Drainage Operation.
			2. Standard: ASME A112.21.3M for concealed-outlet, self-draining wall hydrants.
			3. Pressure Rating: 125 psig.
			4. Operation: Loose key.
			5. Casing and Operating Rod: Of length required to match wall thickness. Include wall clamp.
			6. Inlet: NPS 3/4.
			7. Outlet: Concealed, with integral vacuum breaker or nonremovable hose-connection vacuum breaker complying with ASSE 1011; and garden-hose thread complying with ASME B1.20.7.Box: Deep, flush mounting with cover.
			8. Box and Cover Finish: Polished nickel bronze.
			9. Nozzle and Wall-Plate Finish: Polished nickel bronze.
			10. Operating Keys(s): Two with each wall hydrant.
		2. Moderate-Climate Wall Hydrants where local climate conditions allow:
			1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. Josam Company.
				2. MIFAB, Inc.
				3. Prier Products, Inc.
				4. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
				5. Tyler Pipe; Wade Div.
				6. Watts Drainage Products Inc.
				7. Woodford Manufacturing Company.
				8. Zurn Plumbing Products Group; Light Commercial Operation.
				9. Zurn Plumbing Products Group; Specification Drainage Operation.
			2. Standard: ASME A112.21.3M for concealed-outlet, self-draining wall hydrants.
			3. Pressure Rating: 125 psig.
			4. Operation: Loose key.
			5. Inlet: NPS 3/4.
			6. Outlet: Concealed, with integral vacuum breaker or nonremovable hose-connection vacuum breaker complying with ASSE 1011; and garden-hose thread complying with ASME B1.20.7.
			7. Box: Deep, flush mounting with cover.
			8. Box and Cover Finish: Polished nickel bronze.
			9. Nozzle and Wall-Plate Finish: Polished nickel bronze.
			10. Operating Keys(s): Two with each wall hydrant.
	8. DRAIN VALVES
		1. 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.
	9. WATER HAMMER ARRESTERS
		1. Water Hammer Arresters [Insert drawing designation if any]:
			1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. AMTROL, Inc.
				2. Josam Company.
				3. MIFAB, Inc.
				4. PPP Inc.
				5. Sioux Chief Manufacturing Company, Inc.
				6. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
				7. Tyler Pipe; Wade Div.
				8. Watts Drainage Products Inc.
				9. Zurn Plumbing Products Group; Specification Drainage Operation.
			2. Standard: ASSE 1010 or PDI-WH 201.
			3. Type: Metal bellows.
			4. Size: ASSE 1010, Sizes AA and A through F or PDI-WH 201, Sizes A through F.
	10. TRAP-SEAL PRIMER VALVES
		1. Supply-Type, Trap-Seal Primer Valves:
			1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
				1. MIFAB, Inc.
				2. PPP Inc.
				3. Sioux Chief Manufacturing Company, Inc.
				4. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
				5. Watts Industries, Inc.; Water Products Div.
			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.
3. EXECUTION
	1. INSTALLATION
		1. Refer to Division 22 Section "Common Work Results for Plumbing" for piping joining materials, joint construction, and basic installation requirements.
		2. 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.
		3. Install water regulators with inlet and outlet shutoff valves. Install pressure gages on inlet and outlet.
		4. Install balancing valves in locations where they can easily be adjusted.
		5. Install Y-pattern strainers for water on supply side of each control valve, water pressure-reducing valve, solenoid valve, and pump.
		6. Install water hammer arresters in water piping according to PDI-WH 201.
		7. 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.
		8. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping and specialties.
		9. 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."
	2. FIELD QUALITY CONTROL
		1. 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.
		2. Remove and replace malfunctioning domestic water piping specialties and retest as specified above.
	3. ADJUSTING
		1. Set field-adjustable pressure set points of water pressure-reducing valves.
		2. Set field-adjustable flow of balancing valves.
		3. Set field-adjustable temperature set points of temperature-actuated water mixing valves.

END OF SECTION

USPS MPF Specification Last Revised: 10/1/2022