

SECTION 22 11 19

PLUMBING SPECIALTIES

PART 1 - GENERAL

1.1 WORK INCLUDED

A. PLUMBING SPECIALTIES consists of furnishing transportation, labor, materials, and equipment to furnish and install the following plumbing specialties:

1. Backflow preventers.
2. Water pressure reducing valves.
3. Temperature-actuated water mixing valves.
4. Strainers.
5. Wall hydrants.
6. Drain valves.
7. Air vents.
8. Trap seal primer valves.
9. Miscellaneous piping specialties.
10. Access Panels.
11. Flashing materials.
12. Cleanouts.
13. Drains.
14. Water Hammer Arrestors.

1.2 RELATED WORK

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1, apply to this Section.

B. COMMON WORK RESULTS FOR PLUMBING Section 220500

1.3 REFERENCES

- A. American Water Works Association (AWWA)
- B. American Society of Testing and Materials (ASTM)
- C. American Society of Sanitation Engineers (ASSE)
- D. American Society of Mechanical Engineering (ASME)

1.4 PERFORMANCE REQUIREMENTS

- A. Provide components and installation capable of producing piping systems with following minimum working-pressure ratings, unless otherwise indicated:
 - 1. Domestic Water Piping: 125 psig.
 - 2. Sanitary Waste and Vent Piping: 10-foot head of water.
 - 3. Storm Drainage Piping: 10-foot head of water.

1.5 QUALITY ASSURANCE

- A. Codes and Standards:
 - 1. All governing Codes, Ordinances and Agencies, in accordance with the provisions of Division 1 of these specifications.
 - 2. Comply with NSF 61-G and California Lead Free Law for potable domestic water piping and components.

1.6 SUBMITTALS

- A. Product Data:
 - 1. Backflow preventers.
 - 2. Balancing valves and strainers.
 - 3. Water hammer arresters, air vents, and trap seal primer valves and systems.
 - 4. Hose bibbs.
 - 5. Cleanouts, floor drains, open receptors and roof drains.
 - 6. Vent caps, vent terminals, and roof flashing assemblies.
 - 7. Sleeve penetration systems.
- B. Operation and Maintenance Data:
 - 1. Backflow preventers.
 - 2. Trap seal primer valves and systems.
 - 3. Balancing Valves.
 - 4. Hose bibbs.

PART 2 - PRODUCTS

2.1 BACKFLOW PREVENTERS

- A. Manufacturers:
 - 1. Wilkins.
 - 2. Watts.
 - 3. Cla-Val Co.
- B. General: ASSE standard, backflow preventers.
 - 1. NPS 2 and Smaller: Bronze body with threaded ends.
 - 2. NPS 2-1/2 and Larger: Bronze, cast-iron, steel, or stainless-steel body with flanged ends.

- a. Interior Lining: AWWA C550 or FDA-approved, epoxy coating for backflow preventers having cast-iron or steel body.
 - 3. Interior Components: Corrosion-resistant materials.
 - 4. Exterior Finish: Polished chrome plate if used in chrome-plated piping system.
 - 5. Strainer: On inlet.
- C. Reduced-Pressure-Principle Backflow Preventers: ASSE 1013, suitable for continuous pressure application. Include ball valves on inlet and outlet, and strainer on inlet; test cocks; and pressure-differential relief valve with ASME A112.1.2 air-gap fitting Model AG-8 located below device. Wilkins Model 975. Pipe full size drain to nearest indirect waste receptor.

2.2 WATER PRESSURE-REDUCING VALVES

- A. 3 in. and smaller: Wilkins Model 500XL-YsBR-XL, lead free, bronze, stainless steel seat and strainer.

2.3 TEMPERATURE-ACTUATED WATER MIXING VALVES

- A. Lead free bronze body, integral check valves on hot and cold inlets, 0.5 gpm min. flow, 125 PSI max. pressure, ASSE 1017 certified. Leonard 270-LF or equivalent.

2.4 STRAINERS

- A. Strainers: Lead free Y-pattern, unless otherwise indicated, and full size of connecting piping. Include ASTM A 666, Type 304, stainless-steel screens with 3/64-inch round perforations, unless otherwise indicated. Wilkins model YBS-XL.
 - 1. Pressure Rating: 125-psig minimum working pressure, unless otherwise indicated.
 - 2. NPS 3 and Smaller: Bronze body, with female threaded ends.

2.5 WALL HYDRANTS

- A. Nonfreeze Wall Hydrants (HB-1):
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Acorn Engineering: Light Commercial Operation #8151.
 - 2. Standard: ASME A112.21.3M for concealed-outlet, self-draining wall hydrants.
 - 3. Pressure Rating: 125 psig.
 - 4. Operation: Removable wheel handle.
 - 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 and garden-hose thread complying with ASME B1.20.7.
 - 8. Box: Deep, flush mounting with cover.
 - 9. Box and Cover Finish: Stainless steel.

10. Outlet: Exposed, with integral vacuum breaker and garden-hose thread complying with ASME B1.20.7
11. Nozzle and Wall-Plate Finish: Nickel bronze.
12. Operating Key(s): One with each wall hydrant.

B. Nonfreeze Roof Hydrants (HB-2)

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Acorn Engineering, Light Commercial Group #8126.
2. Pressure Rating: 125 psig.
3. Operation: Removable wheel handle.
4. Inlet: NPS 3/4".
5. Outlet: Exposed with integral vacuum breaker and garden hose thread, complying with ASME 131.20.7.
6. Nozzle Finish: Chrome plated, rough.

2.6 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.

2.7 WATER HAMMER ARRESTORS

A. Water Hammer Arrestors:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 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.
4. Size: ASSE 1010, Sizes AA and A through F or PDI-WH 201, Sizes A through F.

2.8 AIR VENTS

A. Bolted-Construction Automatic Air Vents:

1. Body: Bronze.
2. Pressure Rating: 125-psig minimum pressure rating at 140 deg. F.
3. Float: Replaceable, corrosion-resistant metal.
4. Mechanism and Seat: Stainless steel.
5. Size: NPS 1/2 minimum inlet.
6. Inlet and Vent Outlet End Connections: Threaded.

B. Welded-Construction Automatic Air Vents:

1. Body: Stainless steel.
2. Pressure Rating: 150-psig minimum pressure rating.
3. Float: Replaceable, corrosion-resistant metal.
4. Mechanism and Seat: Stainless steel.
5. Size: NPS 3/8 minimum inlet.
6. Inlet and Vent Outlet End Connections: Threaded.

2.9 TRAP SEAL PRIMER VALVES (TP-1)

A. Electronic and Piston Operated Trap Seal Primer Valves: ASSE 1018, electronic and pressure drop activated, with distribution unit as required.

1. Manufacturers:
 - a. TP-1: Precision Plumbing Products Model: P-1 or P-2, or equal.
 - b. TP-2: Precision Plumbing Products Model: Mini-Prime #MP-500-115V trap primer.
2. Provide for drains and floor sinks where trap primer is not provided from a water closet and as indicated and specified, each including trap primer valve, standpipe, and distribution unit(s) required for the specified distribution. Provide each concealed assembly with access panel, 8 in. by 8 inch size when distribution units are not required and 12 inches by 12 inches size when one or two distribution units are required. Provide trap primer piping same as specified for domestic water, including pipe wrapping.

2.10 MISCELLANEOUS PLUMBING SPECIALTIES

A. Access Panels:

1. Access Panels in Plaster Walls and Ceilings: Karp #DSC214PL, Elmdor PW, 24x24 in. with metal access door and frame, prime coated steel and painted to match adjacent surfaces. For fire rated areas use Karp #KRP-150 FR 1-1/2 hour "B" Label access panels, U.L. listed.

2. Access Panels in Acoustic Tile Ceilings: Karp #DSC-210, Elmdor AT, 24x24 in. with metal access door and frame, 24x24 in. minimum size, prime coated steel, recessed to accept standard tile in full opening door.
 3. Access Panels in Ceramic Tile Walls: Karp #DSC214M, Smith 4730, chrome-plated cover and frame of suitable size for purpose intended, but not less than 8x8 in. size. For fire rated areas use Karp #FRP-150 FR 1-1/2 hour "B" Label access panels, U.L. listed.
- B. Roof Flashing Assemblies: Manufactured assembly made of 4 pounds per square foot, 0.0625-inch- thick, one-piece lead flashing collar and skirt extending at least 6 inches from pipe with galvanized steel boot reinforcement, and counterflashing fitting.
1. Manufacturers:
 - a. Semco Model 1100.
 2. Low-Silhouette Vent Cap: With vandal-proof vent cap.

2.11 SLEEVE PENETRATION SYSTEMS

- A. Fire-rated wall and floor penetrations installed in conformance with manufacturer's directions. Pro Set, Hilti, Nelson.
- B. Description: UL 1479, through-penetration firestop assembly through fire rated walls and floors.
- C. Provide at concrete or masonry exterior bearing walls, Adjust-to-Crete, Paramount, or Sperzel Cretesleeve. Wall sleeves shall be flush with finished surface. Sleeves shall be sized to allow 1/2 in. clearance around pipe or insulation. Insulation and covering shall be continuous through sleeves.
- D. At exterior walls below grade provide a modular mechanical seal consisting of interlocking EPDM rubber links shaped to continuously fill the annular space between the pipe and the wall opening with a molded high density polyethylene sleeve water-stop ring, end caps and reinforcing ribs. ASTM B117, ISO 9002. Mechanical seals shall be "Thunderline" Link Seal.

2.12 CLEANOUTS

- A. For cast-iron soil pipe, iron body with extra heavy bronze plugs screwed into caulking ferrules; for steel pipe, extra heavy bronze plugs; and for vitrified clay pipe, vitrified clay plugs. Where cleanouts occur in finished interior walls, provide access panels, plates, and frames for flush mounting. Exposed parts of floor cleanouts shall have adjustable top. All cleanouts and cleanout plugs shall be accessible. Cleanout shall be the following:
 1. In finished floors: Cast-iron with polished nickel bronze round top, non-skid diamond tread set flush with the floor. Provide with carpet marker when located in future carpeted areas and flashing flange when used with waterproofing membrane.
 - a. Smith - 4023
 - b. Wade - W-6000
 - c. Zurn - ZN-1420-2

2. In mechanical equipment areas: Cast-iron with heavy cast-iron round top, non-skid diamond tread set flush with the floor. Provide flashing flange when used with waterproofing membrane.
 - a. Smith - 4223
 - b. Wade - W-6000
 - c. Zurn - Z-1400
3. In walls: Cleanout tee with squared polished nickel bronze access plate with vandalproof screws and frames. Opening 8 inches by 8 inches minimum.
 - a. Smith - 4558-U
 - b. Wade - W-8460-S
 - c. Zurn - ZN-1447
4. In exterior grades: Cast-iron body, vandalproof cover, non-skid diamond tread, set flush with grade or finished surface. In non-surfaced area, they shall be cast in a concrete block 14 inches by 14 by 6 inches deep.
 - a. Smith - 4248
 - b. Wade - 6010-Z-75

2.13 FLOOR DRAINS AND FLOOR SINKS

A. Floor Drain (FD-1): Foot traffic.

1. Cast-iron double drainage drain with clamping flange, bottom outlet and 5 inch round polished stainless steel adjustable strainer and trap primer tapping.
 - a. Zurn - Z-415
 - b. Smith - 2005-B

B. Floor Sink (FS-1)

1. 8-1/2 inch square, 6 inch deep acid-resisting enameled cast-iron drain with stainless steel rim and grate, sediment bucket and anchor flange with membrane clamp. Provide partial grate for discharge pipes.
 - a. Zurn - Z-1900 per submittal

C. Roof Receptor (RR-1): Science Building

1. 8 inch diameter, cast-iron drain, 2-inch high solid water dam, cast-iron bottom dome strainer, sump receiver.
 - a. Zurn - Z-127
 - b. Smith - 3960-Y

2.14 ROOF DRAINS

A. Roof Drain (RD-1):

1. Cast-iron drain, adjustable extension sleeve, flashing collar, gravel stop cast-iron dome strainer, sump receiver and underdeck clamp.
 - a. Zurn - Z-100-ERC

b. Smith – 1010-ERC

B. Overflow Drain (OD-1):

1. Cast-iron drain, extension sleeve, flashing collar, 2 inch high water dam, cast-iron dome strainer, sump receiver and underdeck clamp.

a. Zurn – Z-100-W2

b. Smith – 1080-Y

C. Trench Drain (TD-1):

1. Fabricated 16 gauge type 304 stainless steel trench drain system with pre-sloped modular trench drain body sections, bolting end plates, 4" no-hub bottom outlet at low end, supplied with secured stainless steel 9870-451-SSPA Perforated stainless steel heel proof grate.

a. J.R. Smith – 9660-1 thru 9660-6.

D. Area Drain (AD-1):

1. Duco cast iron body and flashing clamp with seepage openings, sump receiver, underdeck clamp and secured square hole light duty heel proof grate with 1 /2" max. openings in all directions.

a. J.R. Smith – 1470-Y.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Refer to COMMON WORK RESULTS FOR PLUMBING Section 220500 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 as indicated on plans.

2. Install drain for backflow preventers with fixed air-gap fitting, or equivalent positive pipe separation of at least two pipe diameters in drain piping and pipe to receptor. 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.

C. Install pressure regulators with inlet and outlet shutoff valves. Install pressure gages on inlet and outlet.

D. Install strainers on supply side of each pressure regulator.

E. Install outlet boxes recessed in wall. Install 2 x 4 inch fire-retardant-treated-wood blocking wall reinforcement between studs. Fire-retardant-treated-wood blocking is specified in Division 6 Section "Rough Carpentry".

F. Install water hammer arrestors in water piping according to PDI-WH201.

G. Install air vents at high points of water piping.

- H. Install 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.
- I. Install cleanout deck plates with top flush with finished floor for floor cleanouts on piping below floors.
- J. Install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall, for cleanouts located in concealed piping.
- K. Install flashing flange and clamping device with each stack and cleanout passing through floors with waterproof membrane.
- L. Install vent flashing sleeves on stacks passing through roof. Secure over stack flashing according to manufacturer's written instructions.
- M. Install drains at low points of surface areas to be drained as indicated on the architectural drawings. Set grates of drains flush with finished floor, unless otherwise indicated.
- N. Install roof drains at low points of roof areas as indicated on the architectural Drawings.
- O. Fasten wall-hanging plumbing specialties securely to supports attached to building substrate if supports are specified and to building wall construction if no support is indicated.
- P. Fasten recessed-type plumbing specialties to reinforcement built into walls.
- Q. Install blocking reinforcement for wall-mounting and recessed-type plumbing specialties.
- R. Install individual shutoff valve in each water supply to plumbing specialties. Use ball, gate, or globe valve if specific valve is not indicated. Install shutoff valves in accessible locations. See GENERAL-DUTY VALVES Section 220523 for general-duty ball, butterfly, check, gate, and globe valves.
- S. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.
- C. Connect plumbing specialties to piping specified in other Division 22 Sections.
- D. Connect plumbing specialties and devices that require power conforming to Division 22 Sections.

3.3 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Department maintenance personnel to adjust, operate, and maintain plumbing specialties.

3.5 FIELD QUALITY CONTROL

A. Remove and replace malfunctioning domestic water piping specialties and retest.

3.6 ADJUSTING

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

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

END OF SECTION