

## SECTION 221119 - PLUMBING SPECIALTIES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Related Sections include the following:
  - 1. Division 22 Section "Common Work Results for Plumbing"

## 1.2 SUMMARY

- A. This Section includes plumbing specialties.

## 1.3 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.

## 1.4 SUBMITTALS

- A. Product Data: Include rated capacities and shipping, installed, and operating weights. Indicate materials, finishes, dimensions, required clearances, and methods of assembly of components; and piping and wiring connections.
- B. Field test reports.
- C. Maintenance Data: For plumbing specialties to include in maintenance manuals. Include the following:

## 1.5 QUALITY ASSURANCE

- A. Plumbing specialties shall bear label, stamp, or other markings of specified testing agency.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with the UPC 2009 edition, subject to the exclusions and amendments set forth by the Maine Plumbers Examining Board.
- D. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for piping materials and installation.

- E. NSF Compliance: Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic domestic water piping components. Include marking "NSF-pw" on plastic potable-water piping and "NSF-dwv" on plastic drain, waste, and vent piping. Comply with NSF 61, "Drinking Water System Components--Health Effects, Sections 1 through 9," for potable domestic water plumbing specialties.

## PART 2 - PRODUCTS

### 2.1 ACCESS PANELS

- A. Provide access panels to concealed valves, cleanouts, and components that require service access. All components shall have proper access in accordance with manufactures' recommendations. Refer to Section 220500.

### 2.2 BACKFLOW PREVENTERS

- A. Manufacturers:

1. Ames Co., Inc.
2. Cla-Val Co.
3. Apollo
4. CMB Industries, Inc.; Febco Backflow Preventers.
5. Conbraco Industries, Inc.
6. Watts Industries, Inc.; Water Products Div.
7. Zurn Industries, Inc.; Wilkins Div.

- 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.
3. Interior Components: Corrosion-resistant materials. AWWA C550 or FDA-approved
4. Exterior Finish: manufacturer's standard.
5. Strainer: On inlet.
6. Backflow preventers for hot water over 110F shall be a listed type for that application.

- C. Atmospheric-Type Vacuum Breakers: ASSE 1001, with floating disc and atmospheric vent.

- D. Double-Check Backflow Prevention Assemblies:

1. Watts Series 007 (2-1/2" and smaller)
2. Watts Series 709 (3" and larger)
3. ASSE 1015, suitable for continuous pressure application. Include shutoff valves on inlet and outlet, and strainer on inlet; test cocks; and two positive-seating check valves. Pressure Loss: 5 psig maximum, through middle 1/3 of flow range.

### 2.3 WATER PRESSURE REGULATORS

- A. Manufacturers:

1. Cashco, Inc.
2. Cla-Val Co.
3. Conbraco Industries, Inc.

4. FLOMATIC Corp.
5. Honeywell Braukmann.
6. IMI Cash Valve.
7. Watts Industries, Inc.; Water Products Div.
8. Zurn Industries, Inc.; Wilkins Div.

B. General: ASSE 1003, water regulators, rated for initial working pressure of 150 psig minimum. Include integral factory-installed or separate field-installed, Y-pattern strainer.

1. General-Duty Service: Single-seated, direct operated, unless otherwise indicated. Booster Heater Water Supply: Single-seated, direct operated with integral bypass.
2. Include AWWA C550 or FDA-approved, interior epoxy coating for regulators with cast-iron body.
3. Type: Pilot-operated, single- or double-seated, cast-iron-body main valve, with bronze-body pilot valve.
4. Interior Components: Corrosion-resistant materials.
5. Exterior Finish: Polished chrome plate if used in chrome-plated piping system.

#### 2.4 THERMOSTATIC WATER MIXING VALVE PACKAGE

A. Manufacturers:

1. Lawler Manufacturing Company, Inc.
2. Leonard Valve Company.
3. Powers
4. Symmons Industries, Inc.
5. T & S Brass and Bronze Works, Inc.

B. Basis of Design: Leonard Megatron TM-26 Complete Water Temperature Control Station, sized for the fixtures shown on the food service and plumbing drawings.

C. Furnished complete with:

1. 3/4" bottom inlet connections (copper tube)
2. 3/4" top outlet connection (copper tube)
3. 3/4" return line size with piping method #2 (8 GPM maximum flow) see page 5 for piping options.
4. Thermostatic water mixing valve with DURA-trol□ solid bimetal thermostat (with Extended 7 Year Limited Warranty) directly linked to hot and cold valve porting, adjustable high temperature limit stop set for 120F, color-coded dial: C-H, locking temperature regulator, integral checkstops.
5. Full port ball valve, pressure gauge on mixed water outlet piping of large mixing valve.
6. Dial thermometer (range:0 to 140F and pressure gauge on mixed water outlet of the system.
7. Outlet Test Connection with ball valve and 3/4" hose connection with cap
8. Full port ball valve mounted downstream of test connection on mixed water outlet of the system
9. Inlet piping manifold with full port ball valves and dial thermometers (20 to 240F on hot supply, 0 to 140F cold supply) on hot and cold supply inlets
10. Return piping, 3/4", with aquastat, circulator, dial thermometer (0 to 140F), balancing valve (with positive shutoff) to balance system, and check valve
11. Aquastat with temperature differential of 5 to 30F.
12. Circulator wiring box to include a GFCI switch, red and green lights. The GFCI switch will be used to turn the circulator on or off for setup. Green light will indicate when circulator is running and red light will indicate when circulator is not running because of a temperature rise.
13. Bypass piping, 3/4", with check valve and isolation ball valve to bottom port of small mixing valve
14. System mounted on strut, galvanized. Strut shall be assembled with three hole flat angle plate on corners, four hole tee plates or two hole flat plate connectors on all other support pieces using 3/8" grip lock nuts and 3/8"x 1" hex head cap screws, washers and lock washers.

15. Factory pre-assembled and tested as a complete system
16. Contractor shall provide field-required electrical connections.

D. Circulator Pump shall be designed specifically for Hot Water Recirculation applications. Pump shall be by Grundfos, Wilo, Taco, or Bell & Gossett. Provide the following features:

1. Refer to plumbing pump schedule on the plans.
2. Wet rotor design for quiet, maintenance free operation.
3. Stainless Steel rotor cladding and canister construction to prevent corrosion.
4. Composite impeller design for optimal application performance.
5. Built-in 6 foot, 115 volt ac line cord with a NEMA, 3 prong male plug.
6. Built-in 24 hour programmable timer..
7. UL Recognized strain relief and wire connections.
8. Fully UL Recognized.
9. Each unit shall be run and High Pot. tested.
10. Bronze sweat connections.
11. Provide circuit setter for balancing.

## 2.5 STRAINERS

A. Strainers: 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.

1. Pressure Rating: 125-psig minimum working pressure, unless otherwise indicated.
2. Screwed screen retainer with centered blow-down. Drain: Field-installed, hose-end drain valve.
3. NPS 2 and Smaller: Bronze body, with female threaded ends.

## 2.6 WATER HAMMER ARRESTORS

A. Water Hammer Arresters: Zurn Z-1700 Shoktrols, comply with ASSE 1010, PDI-WH 201, and ANSI A112.26.1M; Type 304SS metal-bellows type with pressurized metal cushioning chamber. Sizes indicated are based on ASSE 1010 or PDI-WH 201, Sizes A through F. Maximum working pressure: 125 psi.

## 2.7 MISCELLANEOUS PIPING SPECIALTIES

A. Hose-End Drain Valves: MSS SP-110, NPS 3/4 ball valve, rated for 400-psig minimum CWP. Include two-piece, copper-alloy body with standard port, chrome-plated brass ball, replaceable seats and seals, blowout-proof stem, and vinyl-covered steel handle.

1. Inlet: Threaded or solder joint.
2. Outlet: Short-threaded nipple with ASME B1.20.7, garden-hose threads and cap.

## 2.8 CLEANOUTS

A. Manufacturers

1. Zurn
2. Smith, Jay R. Mfg. Co.
3. Josam Co.

4. Tyler Pipe, Wade Div.
  5. Watts Industries, Inc., Drainage Products Div.
  6. Mifab
- B. Cleanouts shall be easily accessible and shall be gastight and watertight. Provide a minimum clearance of 24 inches for the rodding. Size of cleanout shall be same as pipe size through 4". Pipes 4" and larger shall have 4" cleanouts.
- C. Floor Cleanouts: Mifab C1000 Series floor cleanout with heavy-duty nickel-bronze or stainless steel adjustable top.
1. Compliance: ANSI/ASME A112.36.2M.
  2. Load Rating: Up to 7,499 pounds.
  3. Body: A1, 8-inch diameter body. Lacquered, ASTM A 48, Class 25 cast iron body with anchor flange. O-ring secondary gasket seal. 4-inch; 4"NPS machined integral body threads.
  4. Combined Access Cover and Plug Top Assembly: Heavy-duty, round, 5-inch diameter; square, 5-inch by 5-inch (for tile insertion), adjustable, Type 304 stainless steel top assembly with No. 4 satin finish. Neoprene primary gasket seal. Vandal-resistant stainless steel screws.
  5. When a waterproof membrane is used in the floor system, provide clamping collars on the cleanouts.
- D. Cleanouts shall consist of "Y" fittings and (1/8 inch) bends with brass or bronze screw plugs.
- E. Provide cleanouts at or near the base of the vertical stacks with the cleanout plug located approximately 24 inches above the floor. If there are no fixtures installed on the lowest floor, the cleanout shall be installed at the base of the stack Cleanout shall consist of sanitary tees. . Extend the cleanouts to the wall access cover; Mifab 1400 Series.
- F. In horizontal runs above grade, cleanouts shall consist of cast brass tapered screw plug in fitting or caulked/no hub cast iron ferrule. Plain end (no-hub) piping in interstitial space or above ceiling may use plain end (no-hub) blind plug and clamp.

## 2.9 FLOOR DRAINS

- A. Manufacturers
1. Zurn Industries, Inc
  2. Jay R. Smith Mfg. Co.
  3. Tyler Pipe, Wade Div.
  4. Watts Industries, Inc
  5. Mifab
- B. Floor drains shall comply with ASME A112.21.1M.
- C. Provide outlet type as required by piping system used.
- D. Provide ½" trap primer connection as indicated on plans.
- E. Mechanical Room Floor Drains: Zurn Z508-Y
1. Cast iron 9" diameter drain
  2. Heavy duty cast iron deep flange slotted grate
  3. Sediment bucket

- F. Kitchen Floor Sinks (**FS**): Zurn ZN1901-K-2-23; Cast iron 12 1/2" square drain, 8" deep; acid resistant coated interior, Nickel bronze rim and 1/2" grate, Slotted aluminum sediment bucket, flashing clamp in membrane floors
- G. Floor Troughs: furnished by Food Service Contractor, Item #20. Install per manufacturers recommendations.

## 2.10 TRAP SEAL PRIMER VALVES

- 1. Manufacturers:
  - a. Precision Plumbing Products, Inc.
  - b. Josam Co.
  - c. Watts Industries, Inc.; Water Products Div.
  - d. Zurn Industries, Inc.; Jonespec Div.
- B. Water-saver trap primer designed to be used in conjunction with a 1-1/4" sink outlet, to divert drain water: Zurn Z1021, chrome-plated polished cast brass body with cleanout, ground joint elbow with 1-1/2" NPT outlet, 1-1/2" slip nuts and washers, flexible primer tubing and compression fitting, and escutcheons.
- C. Supply-Type Trap Seal Primer Valves (**TP**): Mifab Model MR-500 pressure drop activated, brass, trap seal primer.
  - 1. Tested and Certified: ASSE 1018.
  - 2. Listed: IAPMO and CSA.
  - 3. Operating Range: 20 to 125 psi.
  - 4. Line Pressure Drop to Activate: 3 psi.
  - 5. Inlet Opening: 1/2-inch male NPT.
  - 6. Outlet Opening: 1/2-inch female NPT.
  - 7. View Holes: 4.
  - 8. Filter Screen: Removable, fine mesh brass.
  - 9. Seals: O-rings.
  - 10. Floor Drain Traps Served: Maximum of 6
  - 11. Requires no adjustments and no air pre-charge.
  - 12. Can be disassembled in field.

## 2.11 GREASE INTERCEPTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - 1. Schier Products Company.
  - 2. Ashland Trap Distribution Co.
  - 3. Bio-Microbics, Inc.
  - 4. Canplas LLC.
  - 5. Zurn Plumbing Products Group.
- B. Description: Schier Great Basin™ grease interceptor Model 250 shall be lifetime guaranteed and made in USA of seamless, rotationally-molded High Density Polyethylene with minimum 3/8" uniform wall thickness. Interceptor shall be furnished for below grade installation. Interceptor shall be built in accordance to ASME A112.14.3 (type C), with field adjustable riser system, factory-installed built-in flow control, built in test caps and three outlet options.

1. UPS approved, PDI certified.
2. Body Material: seamless, rotationally-molded high density polyethylene with minimum 3/8" uniform wall thickness.
3. Body Extension: field adjustable risers for extending covers to grade.
4. Cover: water/gas-tight seal, highway-rated pickable cover. Cover placement shall allow full access to tank for proper maintenance.
5. Unit shall be designed to not need a plumbing vent.
6. Integral air relief/anti-siphon.
7. Mounting: locate in place of existing manhole
8. Provide clamping collar kit.
9. Provide anchor kit.

C. Capacity

1. Interceptor grease capacity shall be 1,076 lbs.
2. GPM flow capacity: 100
3. Liquid Gallons: 250

## 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. Access shall be provided for testing, maintenance and repair. Locate backflow preventer between 2 feet and 5 feet above floor.
  5. Test of Backflow Prevention Assemblies: Backflow prevention assembly shall be tested using gauges specifically designed for the testing of backflow prevention assemblies. Gauges shall be tested annually for accuracy in accordance with the University of Southern California's Foundation of Cross Connection Control and Hydraulic Research or the American Water Works Association Manual of Cross Connection (Manual M-14). Report form for each assembly shall include, as a minimum, the following:
    - a. Data on Device Data on Testing Firm
    - b. Type of Assembly Name
    - c. Manufacturer Address
    - d. Model Number Certified Tester
    - e. Serial Number Certified Tester No.
    - f. Size Date of Test
    - g. Location
    - h. Test Pressure Readings Serial Number and Test Data of Gauges
    - i. If the unit fails to meet specified requirements, the unit shall be repaired and retested.

- C. Install pressure regulators with inlet and outlet shutoff valves and balance valve bypass. Install pressure gages on inlet and outlet.
- D. Install strainers on supply side of each control valve, pressure regulator, and solenoid valve.
- E. Trap primers:
  - 1. Install trap seal primers in accordance with manufacturer's instructions.
  - 2. Cycle trap seal primers a minimum of 6 times to ensure optimum performance.
  - 3. Ensure flux and other debris is removed.
  - 4. Use only Teflon tape around threads. Do not use pipe dope or paste.
  - 5. Do not solder fittings directly onto inlet or outlet of primer.
  - 6. Do not install trap seal primers closer than 40 feet apart when using same potable water supply line.
  - 7. Mount trap seal primers in a vertical position 1 foot above finished floor for every 20 feet of floor drain trap make-up water line.
  - 8. Install union connection above trap seal primers.
  - 9. Install line shut-off valve upstream of trap seal primers to shut off water supply when performing maintenance on trap seal primers.
  - 10. Avoid direct installation to prevent foreign material from entering directly into trap seal primers.
- F. Cleanouts:
  - 1. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated: Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated. Locate at each change in direction of piping greater than 45 degrees. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping. Locate at base of each vertical soil and waste stack.
  - 2. Install cleanout deck plates with top flush with finished floor, for floor cleanouts for piping below floors.
  - 3. Install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall, for cleanouts located in concealed piping.
  - 4. Install flashing flange and clamping device with each stack and cleanout passing through floors with waterproof membrane.
- G. Install floor drains in accordance with manufacturer's instructions at locations indicated on the drawings.
  - 1. Protect installed floor drains from damage during construction.
  - 2. Install floor drains at low points of surface areas to be drained.
  - 3. Install floor drains plumb, level, and to correct elevation.
  - 4. Ensure top of floor drains are flush with top of finished floor.
  - 5. Install floor drains using manufacturer's supplied hardware.
  - 6. Coordinate depressed/pitched slab with concrete contractor.
  - 7. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
  - 8. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.
- H. Grease Interceptor:
  - 1. Provide interceptors according to manufacturer's instructions and authorities having jurisdiction and with clear space for servicing.
  - 2. Set unit in accordance with manufacturer's recommendations. Must be level.
  - 3. Install cleanout immediately downstream from interceptors not having integral cleanout on outlet.
  - 4. Provide a leak and seal test of grease trap and riser per manufacturers instructions.



5. Excavation
  - a. Width and length of excavation shall be minimum 12" greater than the tank on all sides.
  - b. Depth of excavation shall be 6" deeper than tank bottom.
  - c. Set the tank in well-packed crushed aggregate material approximately 3/4" size rock, or sand, with no fines.
  - d. Provide the anchor kit to prevent float out.
  
6. Backfilling & Finished Concrete Slab
  - a. Stabilize and compact sub grade to 95% proctor.
  - b. Fill tank with water before backfilling to prevent float out during piping installation.
  - c. Before backfilling and pouring of slab secure covers and risers to the units.
  - d. Backfill using crushed aggregate material approximately 3/4" size rock, or sand, with no fines.
  - e. Place 6" aggregate base under slab. Aggregate should be 3/4" size rock, or sand, with no fines.
  - f. Concrete to be 28 day compressive strength to 4000 PSI.
  - g. NO. 4 rebar (1/2") grade 60 steel per ASTM A615: connected with tie wire.
  - h. Rebar to be 2 1/2" from edge of concrete.
  - i. Rebar spacing 12" grid. 4" spacing around access openings.
  - j. All pipe penetrations shall be sleeved or have slip connections.
  
- I. 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.
- J. Fasten recessed-type plumbing specialties to reinforcement built into walls.
- K. Install wood-blocking reinforcement for wall mounting and recessed-type plumbing specialties.
- L. Install individual shutoff valve in each water supply to plumbing specialties. Install shutoff valves in accessible locations.
- M. Install air vents at piping high points. Include ball valve in inlet.
- N. Install traps on plumbing specialty drain outlets.
- O. Water hammer arrestors shall be installed at commercial dishwashers, solenoid valves, as shown on the plans, and as recommended by Plumbing & Drainage Institute Standard PDI-WH-201. Locate units at the end of branch lines, between the last two fixtures served. Size units based on fixture unit total of branch.
- P. 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 according to Electrical Specification Sections.
- E. Provide the following for food service appliances:
  - 1. Rough-in
  - 2. Piping for supply and waste lines.
  - 3. Traps, grease traps, line strainers, tail pieces, valves, stops, shutoffs, and miscellaneous fittings required for complete installation.
  - 4. Final connection, including mounting of foodservice equipment contractor supplied faucets and waste assemblies.

### 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.

END OF SECTION 221119