

SECTION 220000 - PLUMBING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The drawings and the specifications including Section 230500 "Supplemental General Mechanical Conditions" are hereby made a part of the work of this section.

1.2 DESCRIPTION

- A. The work covered by this Section of the specifications includes the furnishing of labor, materials, equipment, transportation, permits, inspections, and incidentals and the performing of operations required to provide a complete and functional plumbing system.
- B. Work shall be in accordance with the current edition of the Maine State Plumbing Code and applicable local ordinances.

1.3 SUBMITTALS

- A. Substitutions: Your attention is directed to Section 230500-"Substitutions", relative to competition and the (ONLY) notation. Familiarity with this section shall be achieved before reading the PRODUCTS section of this specification.
- B. The items for which the submittals paragraph in Section 230500, Supplemental General Mechanical Requirements, apply are as follows:
  - 1. Piping materials.
  - 2. Valves.
  - 3. Pipe hangers.
  - 4. Fixtures and trim.
  - 5. Miscellaneous equipment.
  - 6. Firestopping.

PART 2 PRODUCTS

2.1 PIPING MATERIALS

- A. Soil and Waste (Sanitary) and Vent Piping: Sanitary piping shall be cast iron "no Hub" (ONLY) above grade, service weight cast iron or schedule 40 PVC below grade. Vent piping may be Sched. 40 PVC at contractor's option, cast iron (ONLY) thru roof.
- B. Domestic Water Piping and Condensate Drain Piping: Type L hard copper tubing and cast bronze or wrought copper solder fittings.
- C. Exposed Water and Waste Piping at Fixtures: I.P.S. copper with cast brass fittings chrome plated finish, with deep one piece escutcheon plates at traverse points.
- D. Solder: Lead-free (ONLY), Englehard Silvabrite 100, 440°F melting point, ASTM B32.

2.2 NO HUB COUPLINGS

- A. For DWV piping, couplings shall be Clamp-All HI-TORQ125, shall maintain 15 PSI hydrostatic seal, constructed 304SS housing and ASTM C-564 neoprene gasket. Couplings shall meet FM 1680, the IBC and local codes and requirements.

### 2.3 VALVES

- A. Ball Valves: Copper alloy with stationary seat ring and chromium plated or stainless steel floating ball per Federal Specification WW-V-35B. Blowout proof stem, reinforced PTFE seal. Sizes 2" and larger shall have threaded ends. Provide lever handle with stem extension as required to allow operation without interfering with pipe insulation.
- B. Check Valves: Horizontal Swing, MSS SP-80, Type 3, Class 125.
- C. Drain Valves: Provide ball valves with 3/4" hose connection and brass cap.
- D. Fixture Service Stop Valves: Angle Wheel Handle Stop, ASME A112.18M.
  - 1. Each plumbing fixture shall have individual stop valves in the hot and cold supplies.
  - 2. Service stop valves exposed in finished areas shall be chrome-plated brass; in non-finished areas, ball valves shall be used in lieu of chromed supplies.

### 2.4 PIPE HANGERS

- A. Adjustable Swivel Hangers:
  - 1. Pipe sizes 2" and less: Carpenter and Paterson Fig. 800, oversize for insulated piping systems.
  - 2. Pipe sizes larger than 2": Carpenter and Paterson Fig. 100, oversize for insulated piping systems.
- B. Riser Clamp: Carpenter and Paterson Fig. 126 CT copper plated for copper piping, Fig. 126 for iron and PVC piping.
- C. Insulation Shields: 18 ga. galvanized steel, 180° wrap, Carpenter and Paterson Fig. 265P, Type H.
- D. All piping 20' upstream and downstream of pumps shall also have Mason Industries PC30N precompressed double deflection spring isolators installed.

### 2.5 FIXTURES AND TRIM

- A. (P-1) Water Closet: American Standard 'Yorkville' floWise RightHeight EL, floor mount, wall outlet, pressure assist type, high efficiency elongated bowl, white vitreous china, low consumption (1.1 GPF) compliant with ADA. See Architectural Drawings.
  - 1. Seat: Church Model 895SSC, fireproof thermoset, heavy weight solid plastic, open front, external check hinges, for elongated bowl, white color.

2. Total installed height of front edge of seat shall be 17" to 19" above finished floor. Final installation shall meet ADA guidelines and ANSI A117.1.
- E. (P-2) ADA Lavatory, Wall Hung: American Standard Comrade, 20"x18", self-rimming, white vitreous china, faucet holes on 4" centers.
1. Faucet: American Standard Colony Soft, single lever wrist operation handle, 0.5 GPM flow aerator, polished chrome finish, ceramic control cartridge.
  2. Drain: Pop-up drain assembly with bright metal finish.
  3. Trap: Chrome-plated, cast copper alloy, 1-1/4" P-trap with cleanout plug. Adjustable with connected elbow and nipple to wall.
  4. Installation shall be in accordance with ADA and ANSI A117.1.
- F. (P-3) Barrier Free Shower: Shall be Best Bath model 5LDS6030SD47T with 2" drain ABOVE the floor, unit shall be 60"x31"x85" overall dimensions, fiberglass laminate construction with gelcoat finish. Provide with ADA/ANSI compliant grab bars configured as standard for a 60" ADA shower unit and ADA compliant seat. Shower valve controls shall be on the back (long) wall.
1. Shower Controls: Symmons Temptrol packaged unit Model S-96-300-B30-L-V, polished chrome finish. Pressure-Balancing mixing valve with adjustable stop screw to limit handle turn. Lever handle volume control. Wall/hand shower (1.5gpm) with in-line vacuum breaker, 60" flexible metal hose, wall connection and flange, 30" slide bar for hand shower mounting.
  2. Installation of shower (other than threshold) and accessories shall meet UFAS requirements, ADA guidelines and ANSI A117.1.
- G. (P-4) ADA Kitchen Sink, Single Bowl: Elkay LRAD2521, stainless steel, 25"x21.25"x5.5" overall size, 4 faucet holes on 4" centers, fully sound deadened.
1. Faucet: Symmons Symmetrix Model S-23-2-10 wrist operation handle, 10-7/8" swing spout, polished chrome finish, 2.0 gpm ceramic control cartridge, single lever with pull-out side spray.
  2. Strainer: Removable basket and neoprene stopper.
  3. Sink installation shall be in compliance with the ADA guidelines.
  4. Exposed traps and supplies with Truebro Lavguard.

### PART 3 EXECUTION

#### 3.1 SURFACE CONDITIONS

- A. Inspection:

1. Prior to work of this Section, carefully inspect the installed work of other trades and verify that such work is complete to the point where this installation may properly commence.
2. Verify that plumbing may be installed in strict accordance with pertinent codes and regulations and the reviewed Shop Drawings.

### 3.2 INSTALLATION OF PIPING

- A. Provide and erect in accordance with the best practice of the trade piping shown on the drawings and as required to complete the intended installation. Make offsets as shown or required to place piping in proper position to avoid other work and to allow the application of insulation and finish painting to the satisfaction of the Architect.
- B. The size and general arrangements, as well as the methods of connecting piping, valves, and equipment, shall be as indicated, or so as to meet the requirements of the Architect.
- C. Piping shall be erected so as to provide for the easy and noiseless passage of fluids under working conditions.
- D. Install unions to facilitate removal of equipment.
- E. Copper pipe shall be reamed to remove burrs.
- F. Connections between copper and steel piping shall be made with brass fittings.
- G. Solder joints shall be made with lead free solder. Clean surfaces to be soldered and use a paste flux. Wash joints with sodium bicarbonate and water to remove corrosive effects of heated solder paste. Caution: Lead-bearing solder is not permitted.
- H. Pipe penetrations through walls, floors and ceilings shall be in accordance with Section 230500 "Supplemental General Mechanical Requirements". Traverse points of piping shall be escutcheoned with split chrome floor and ceiling plates and spring anchors, where visible to occupancy.
- I. Provide a cleanout in the vertical position at the base of each sanitary drop.
- J. Sanitary and vent piping shall be sized and installed at 1/4" per foot slope.

### 3.3 PIPE HANGERS

- A. Impact driven studs are prohibited.
- B. Copper Tubing: supported at intervals with rod sizes as follows, double nuts on hangers and on beam clips.

Copper Size	Hanger Intervals	Rod Sizes
1/2"	5'	3/8"
3/4"	6'	3/8"
1"	6'	3/8"
1-1/4"	8'	3/8"
1-1/2"	8'	3/8"

2"                                      10'                                      3/8"

- C. Cast Iron Pipe: Supported at intervals with rod sizes as follows, double nuts on hangers and on beam clips.

Cast Iron Size	Hanger Intervals	Rod Sizes
1-1/2"	5'	3/8"
2"	5'	3/8"
2-1/2"	5'	1/2"
3"	6'	1/2"
4"	7'	5/8"

- D. PVC Pipe: Supported at 4 foot intervals.
- E. Verticals: Supported by use of clamp hangers at every story height, and at not more than 6 feet intervals for copper piping 1-1/4" and smaller size.
- F. Spring Isolators: All pipe 20' upstream and downstream of pumps.

3.4 CLOSING IN UNINSPECTED WORK

- A. General: Cover up or enclose work after it has been properly and completely reviewed.
- B. If any of the work is covered or enclosed prior to required inspections and review, uncover the work as required for the test and review. After review, tests and acceptance, repairs and replacements shall be made by the appropriate trades with such materials as necessary for the acceptance by the Architect and at no additional cost to the Owner.

3.5 CLEANUP AND CORROSION PREVENTION

- A. Upon completion of the work thoroughly clean and flush piping systems to the sewer with water.
- B. Fixtures, piping and equipment shall be thoroughly cleaned. Dirt, dust, and debris shall be removed and the premises left in a clean and neat condition.
- C. Caulk around fixtures at floor and wall.
- D. Before covering is applied to piping systems, clips, rods, clevises and other hanger attachments, and before uncovered piping is permitted to be concealed, corrosion and rust shall be wire brushed and cleaned and in the case of iron products, a coat of approved protective paint applied to these surfaces. When corrosion is from the effects of hot solder paste, the areas shall be cleaned and polished and a wash of bicarbonate of soda and water used to neutralize the acid condition.

3.6 DISINFECTING

- A. After the entire potable water system is completed, cleaned and tested, and just before the building is ready to be occupied, disinfect the system as follows: After flushing the mains, introduce a water and chlorine solution for a period of not less than three hours before final flushing of the system.

3.7 TESTS

- A. Sanitary soil, waste and vent piping: Fill with water to top of vents, and test as required by Code.
- B. Water piping shall be tested to a pressure of 100 lbs. per square inch for at least 30 minutes. Pressure drop in this period shall not exceed two pounds per square inch. Leaks shall be repaired and system retested. Notify Architect 24 hours before test is to be performed.

### 3.8 INSTRUCTIONS

- A. On completion of the project, provide a competent technician to thoroughly instruct the Owner's representative in the care and operation of the system. The total period of instruction shall not exceed four (4) hours. The time of instruction shall be arranged with the Owner.

### 3.9 FIRESTOPPING

- A. Firestopping shall be performed in accordance with Specification Section 078400 "Firestopping". All penetrations of fire-rated assemblies including walls and floors by mechanical system components (piping, ductwork, conduits, etc.) shall be firestopped as specified.

\* END OF SECTION \*