

SECTION 15410 - PLUMBING - GENERAL PURPOSE

PART 1 - GENERAL

1.1 SUMMARY

Furnish all labor, equipment, materials, and tools and perform all operations in connection with the renovations and additions to the installation of a complete plumbing system. Comply with all codes and authorities having jurisdiction, preparation of Record Drawings and Owner's Manuals, guarantees and warranties, protection of work and quality assurance of workmanship.

A. Section Includes:

1. All inside acid-resistant waste & vent.
2. Acid resistant floor drains.
3. Provide tailpieces, traps, adapters and make all final connections to fixtures and equipment provided either by the Owner or under other sections of these specifications.
4. Cleaning, sterilizing and testing of the piping systems and all related equipment.

B. Related Sections:

1. Section 07841: Through-Penetration Firestop Systems.
2. Section 15010: Common Work Results for HVAC.
3. Section 15190: Mechanical Identification.
4. Section 15260: HVAC Insulation.

1.2 SUBMITTALS

A. Shop Drawings:

1. Prepare and submit Shop Drawings in accordance with the requirements of Section 01330, and obtain the Architect's approval before proceeding with the fabrication and work.
2. Show plans, elevations, details and job conditions, relationship to other work, and indicate finishes.
3. All floor drains and cleanouts shall be of the same manufacturer.
4. Shop Drawings and catalog cuts shall indicate Specification Section and paragraph requiring equipment submitted.
 - a. Floor drains.
 - b. Valves.
 - c. Cleanouts.

B. Samples: Submit all samples as requested by the Architect of materials specified herein in accordance with requirements of the Conditions of Contract, and before ordering materials, obtain written approval from the Architect.

C. Product Guarantees and Warranties: Provide manufacturers standard guarantee/warranty for all products provided in this section.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

All product model numbers used reference the first manufacturer listed for the appropriate item.

- A. Floor Drains: Watts, Zurn, Josam, or J. R. Smith.
- B. Cleanouts: Watts, Zurn, Josam, or J. R. Smith.
- C. Traps:
 - 1. Science and Prep Rooms: Watts or equal.
- D. Chemical resistant piping: Orion or equal.

2.2 MATERIALS

- A. Laboratory Chemical Resistant Waste and Vent Piping:
 - 1. Orion polypropylene piping and fittings, or equal. PP piping and fittings shall be Schedule 40 flame retardant with socket heat fusion type joints. Fittings shall be of the drainage pattern. Provide square head PP cleanouts plugs. Traps shall be as described later in this spec.
 - 2. Double branch drainage connections 2" and smaller shall be made with double wye fittings.
- B. Floor Drains: Acid resistant PVC body with 5" stainless steel strainer.
 - 1. Watts FD-1102-A5-60, with a 5" stainless steel strainer. Provide additional solid, gasketed nickel bronze top.
- C. Cleanouts:
 - 1. Cleanouts shall be installed for drainage piping at base of risers, at changes in direction, where shown, and as required by Code. All cleanouts shall be furnished with acid resistant plugs.
 - 2. At the completion of the work, remove cleanout covers, flush lines and grease threads.
- D. Hangers (Individual):
 - 1. All hangers shall be of the adjustable split ring type with shields for plastic piping and all insulated piping. Vertical pipe clamps for copper piping shall be copper, bronze or bronze plated construction; all other vertical clamps and all horizontal pipe hangers shall be all steel construction.
 - 2. All piping below ground shall be continuously supported on undisturbed bearing soil or on engineered compacted fill.
 - 3. Horizontal above ground piping shall be supported as follows:
 - a. Polypropylene, P.V.C.: All Sizes: Every 4'-0".
 - 4. Vertical above ground piping shall be supported as follows:
 - a. Polypropylene, P.V.C.: All Sizes: Every 4'-0".
 - 5. Provide hangers within 1'-0" each way of each change of direction except at expansion loops which shall have hangers before, after and at the mid-point of each loop.
 - 6. All hanging supports shall be attached to the top chord of the building framing system.

- E. Hangers (trapeze):
1. Model P1001, 12 gage 1 5/8" wide by 3 1/4" deep channel designed for both top and bottom clamping. The channel shall be capable of supporting no less than 950 pounds uniform load over a 8'-0" span at a deflection of L/240. Space channels by the lowest applicable value in Item 2.02 M 3. above.
 2. Support each channel with a minimum of two 1/2" dia. threaded rods. Attach rods with beam clamps to either the top chord of joists at the panel points or the top flange of the beams. Rods shall be spaced no more than 8'-0" along the channel. A pipe may be attached to a cantilevered side of the channel within 12" of a hanger rod.
 3. Provide Acush-a-clamp assemblies with shoulder bolted stainless steel clamps and thermoplastic elastomer cushion for gas piping. For all other pipes provide #P2024 thru #P2070-84 shoulder bolted stainless steel clamp assemblies with insulation shields.
- F. Sleeves:
1. Pipes Through Floors: Form with Schedule 40 (galvanized) steel pipe and extend 1" above surrounding floor.
 2. Pipes Through Interior Partitions: Form with steel pipe or 16 gauge galvanized steel.
 3. Pipes Through Exterior Building Walls, Concrete Walls or Footing: Form with Schedule 40 (galvanized) steel pipe.
 4. Size: The minimum sleeve diameter shall be either 2 pipe sizes or 2" in diameter larger than the outside diameter of the pipe. The outside diameter of insulated piping shall be measured at the insulation jacket.
- G. Escutcheon plates shall be installed where piping passes through walls, partitions, floors, ceilings, etc. Escutcheon plates shall be all metal construction and of standard one piece design. In finished areas, they shall be chrome plated; in unfinished areas, they shall have prime coat of paint. Hangers extended through finished ceilings shall have chrome-plated washers.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Study all drawings and specifications, visit the site and become acquainted with existing conditions and the requirements of the plans and specifications. No claim will be recognized for extra compensation due to failure to become familiarized with the conditions and extent of proposed work.

3.2 ERECTION, INSTALLATION AND APPLICATION

- A. Piping shall be run concealed in walls or above ceilings. Where two or more pipes are to be run parallel, they shall be located as close as practical to each other.
1. All vent piping shall be run at a positive pitch to drain back to the drainage connections.
 2. Acid Resistant Waste drainage piping under 4" size shall be run at 1/4" per foot.
 3. Acid Resistant Waste drainage piping 4" and larger shall be run at 1/8" per foot.
- B. All floor drains and floor cleanouts shall be set parallel to and flush with the surrounding floor.
- C. Provide 3'-0" minimum service space in front of all control panels, access panels, motors and equipment which requires periodic maintenance and/or adjustment.

- D. The entire plumbing system shall be installed in accordance with the State of Maine Internal Plumbing Rules, and all local Codes.

3.3 TESTS

- A. Test and prove tight all piping systems in the building. Invite the local Plumbing Inspector and the Owner's Representative to witness each test a minimum of 2 working days prior to the commencement of the test. Submit to the Architect documentation of each test identifying the system being tested, the starting and finishing day and time of the test, the starting and finishing test pressures, the test liquid or gas used and signed by the party responsible for conducting the test.
 1. Rough drainage and venting systems shall be tested with water to the roof.
 2. Finished drainage and vent systems shall be tested, after all fixtures are set and all traps are filled with water, with 1" of air pressure.
 3. All tests will be conducted for 2 hours minimum with no pressure drop in the respective systems.

3.4 CLEANING

- A. At the completion of work all fixtures and equipment shall be cleaned in accordance with the appropriate manufacturer's recommendations. All exposed unchromed piping shall be cleaned of all dirt, grease, oils, etc., suitable to accept a prime coat of paint.

END OF SECTION 15410