# SECTION 22 01 20

# DOMESTIC WATER SYSTEMS – PLUMBING

## PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the work specified in this Section.

1.2 DESCRIPTION OF WORK

A. This Section includes:

1. Domestic water piping systems work is indicated on drawings and schedules and by requirements of this section.

B. Applications for water piping systems include the following:

1. Domestic cold-water piping.
2. Domestic hot-water piping.
3. Domestic recirculating-water piping.

C. Insulation for domestic water piping as specified in Section 220030 is included as work of this section.

D. Trenching and backfill required in conjunction with exterior water piping as specified in Section 220000 is included as work of this section. Refer to Division 1.

1.3 REFERENCE STANDARDS

A. Refer to Section 220000 for a general description of requirements applying to this section.

1.4 QUALITY ASSURANCE

A. Refer to Section 220010 for a general description of requirements applying to this section.

1.5 SUBMITTALS

A. Submit shop drawings and product data in accordance with Section 220000.

B. Submit the following:

1. Product data on all specialties and systems equipment.

1.6 WARRANTY/GUARANTEE

A. All work and materials are subject to the general warranty as described in the General Conditions of the Contract and in Division 1, GENERAL REQUIREMENTS.

**PART 2 – PRODUCTS**

2.1 DOMESTIC WATER PIPING MATERIALS AND PRODUCTS

A. Provide piping materials and factory fabricated piping products of sizes, types, pressure ratings, temperature ratings, and capacities as indicated. Where not indicated, provide proper selection as determined by Installer to comply with installation requirements. Provide sizes and types matching piping and equipment connections; provide fittings of materials which match pipe materials used in domestic water piping systems. Where more than 1 type of materials or products are indicated, selection is Installer's option.

2.2 BASIC PIPE, TUBE AND FITTINGS

A. Provide pipe, tube, and fittings complying with Division 22 Basic Materials and Methods section "Pipe, Tube, and Fittings", in accordance with the following listing:

B. Interior Domestic Water Piping:

| | |
|---|---|
| Tube Size 4" and Smaller: | Copper tube. |
| Wall Thickness: | Type "L" hard-drawn temper. |
| Fittings: | Wrought-copper, solder-joints. |

C. Exterior Water Service Piping:

| | |
|---|---|
| Pipe Size 3" and Smaller: | Copper tube. |
| Wall Thickness: | Type "K" Soft Temper |
| Fittings: | Wrought copper solder joint. |

2.3 BASIC PIPING SPECIALTIES

A. Provide piping specialties complying with Section 220010 Basic Materials and Methods in accordance with the following listing:

Pipe escutcheons
Dielectric unions
Drip pans
Pipe sleeves
Sleeve seals

2.4 SPECIAL PIPING SPECIALTIES

A. Water Hammer Arresters: Provide bellows or piston type water hammer arresters, pressure rated for 250 psi, tested and certified in accordance with PDI Standard WH-201.

2.5 BASIC VALVES

A. Provide valves complying with applicable Division 22 sections "Valves", in accordance with the following listing:

B. Sectional Valves:

| | |
|---|---|
| 2-1/2" and Smaller: | Ball Valves.<br>Gate Valves. |
| 3” and Larger: | Ball Valves.<br>Butterfly Valves. |

C. Shutoff Valves:

| | |
|---|---|
| 2-1/2" and Smaller: | Ball Valves.<br>Gate Valves |
| 3" and Larger: | Ball Valves.<br>Butterfly Valves. |

D. Drain Valves:

| | |
|---|---|
| All | Hose End Threaded Gate or Ball Valves. |

E. Balancing Valves:

| | |
|---|---|
| 2" and Smaller: | Ball Valves (Circuit Setter Type).<br>(with Memory Stop) |

F. Check Valves:

| | |
|---|---|
| All Sizes: | Swing Check Valves. Horizontal Installations<br>Spring Check Valves. Vertical Installations |

2.6 SPECIAL VALVES

A. Special valves required for domestic water piping systems include the following types:

B. Hose Bibbs: Threaded end, renewable composition disc, tee handle, 3/4" NPT inlet, 3/4" hose outlet with vacuum breaker.

1. Finished Areas: Chrome plated.
2. Unfinished Areas: Bronze finish.

C. Wall Hydrants: Non-freeze, cast-bronze body, tee handle key, bronze casing, length to suit wall thickness, vacuum breaker, hinged locking cover, 3/4" inlet, hose outlet.

2.7 SYSTEMS EQUIPMENT MANUFACTURERS

A. Refer to Plumbing Fixture and Equipment Schedule for type, number, size and manufacturer of all equipment and accessories.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering equipment which may be incorporated in the work are limited to the following:

Shock Absorbers:
Zurn
Josam
Wade
Watts
Smith
PPP Inc.
MIFAB

Automatic Trap Primers
PPP Inc.
Sloan
Sioux Chief
MIFAB

Hose Bibbs
Nibco
Tanner
Central Brass
Wolverine

**PART 3 – EXECUTION**

3.1 INSTALLATION OF BASIC IDENTIFICATION

A. Install mechanical identification in accordance with Section 220010 Basic Materials and Methods.

B. Support vertical piping at floor levels using approved riser clamps. Clamp material shall be compatible with pipe material. Maximum vertical spacing shall be 10'-0". Domestic water piping shall be supported in accordance with the International Mechanical Code, Section 305 and Table 305.4 Spacing Intervals, or in accordance with MSS-SP-69. International Plumbing Code's latest edition, Section 308.5, accept as follows:

1. Copper tubing ½" to 1-1/4" nominal size, not to exceed 6 ft. horizontal intervals.
2. Copper tubing 1-1/2" and larger nominal size, not to exceed 10 ft. horizontal intervals.
3. Copper tubing ½" to 1-1/4" nominal size, not to exceed 10 ft. vertical intervals.
4. Copper tubing 1-1/2" and larger nominal size not to exceed 10 ft. vertical intervals.
5. CPVC pipe or tubing ¼" to 1" nominal size, not to exceed 3 ft. horizontal spacing.
6. CPVC pipe or tubing 1-1/4" and larger nominal size not to exceed 4 ft. horizontal spacing.
7. CPVC pipe or tubing ¼" to 1" nominal size not to exceed 10 ft. vertical.
8. CPVC pipe or tubing 1-1/4" and larger nominal size not to exceed 10 ft. vertical."
   *Mid-Story Guide.

3.2 INSTALLATION OF PIPING SPECIALTIES

A. Install piping specialties in accordance with Section 220010 Basic Materials and Methods.

B. Water Hammer Arresters: Install in upright position, in locations and of sizes in accordance with PDI Standard WH-201, and elsewhere as indicated.

3.3 INSTALLATION OF VALVES

A. Install valves in accordance with Division 22 Basic Materials and Methods section, "Valves".

B. Sectional Valves: Install on each branch and riser, close to main, where branch or riser serves 2 or more fixtures, equipment connections, and elsewhere as indicated.

C. Shutoff Valves: Install on inlet of each plumbing equipment item, and on inlet of each plumbing fixture, and elsewhere as indicated.

D. Drain Valves: Install on each plumbing equipment item located to completely drain equipment for service or repair. Install at base of each riser, at base of each rise or drop in piping system, and elsewhere where indicated or required to completely drain domestic water piping system.

E. Check Valves: Install on discharge side of each pump, and elsewhere as indicated.

F. Balance Cocks: Install in main recirculating loop and in each branch hot water recirculating loop. Install a ball valve and check valve at each balance valve installation.

G. Hose Bibbs: Install on exposed piping where indicated, with vacuum breaker.

3.4 EQUIPMENT CONNECTIONS

A. Piping Runouts to Fixtures: Provide hot and cold water piping runouts to fixtures of sizes indicated, but in no case smaller than required by International Plumbing Code.

B. Equipment furnished by the Owner or Contractors other than this Contractor: After equipment has been set in place, this Contractor shall furnish all labor and material required to make final connections, between roughing-in and the equipment. Install valves, fittings, trim and appurtenances furnished with the equipment. All exposed piping in the kitchen areas shall be chrome plated. Piping in other areas shall be of the same material as the system to which it connects.

3.5 AUTOMATIC TRAP PRIMERS

A. Install units in accordance with manufacturer's written instructions.

B. Cap-off all unused tube connections not to be used for discharge procedures.

C. Units installed in Mechanical Room shall be surface mounted. All others shall be arranged for recessed installation and shall include a 14"x16" access door #D-1416SS.

D. All discharge tubing from the tube connectors to the floor drain connection shall be minimum Type "M" copper for above floor slab installations. Where discharge piping runs below the floor slab, the piping may be PVC grade water piping. Ensure that all connections are properly made and leak-free.

E. Shield copper from direct contact with concrete, stone and sharp edges below slab.

3.6 SPARE PARTS

A. Furnish to Owner, with receipt, one valve key for each key operated hydrant, bibb, or faucet installed.

3.7 DOMESTIC HOT WATER RETURN

A. This Contractor shall install complete and operating hot water return system. The system shall be balanced and include a report as required in HVAC Specification Section 230950.

B. Balancing Valves are required in the system as hereinbefore specified. The system shall also include the installation of “air bleed” or “burp” valves to remove any trapped air in the system.

**END OF SECTION 22 01 20**