

## **SECTION 22 40 00**

### **PLUMBING**

#### **PART ONE - GENERAL:**

##### **1.01 APPLICABLE PROVISIONS:**

- A. General and Supplemental Conditions are a part of this Section of the specifications and shall be consulted in detail for information pertaining to the work under this Section. Conditions of Specification Sections 23 01 00, 23 02 00, 23 03 00, shall be a part of this Section also. Provide seismic support for plumbing systems per specification section 23 05 28.
- B. Drawings and specifications are complementary, and what is called for by either shall be as binding as if called for by both.
- C. Contractor shall provide complete submittal to comply with Specification Section 23 03 00, Paragraph 2.02. Partial submittals will be disapproved.

##### **1.02 SCOPE:**

- A. Provide all plant, labor, equipment, material, and operations required for the installation of a complete, safe, and quietly operating sanitary system in accordance with specifications and drawings and subject to terms and conditions of the contract.
- B. All permit, and inspection fees shall be included in this contract. All tap, meter, and impact fees are not to be included.

##### **1.03 QUALITY ASSURANCE:**

- A. Before construction of project starts, check locations and inverts of existing and proposed pipes, sewers, and mains. Review other drawings for project; check grades, elevations, location of structural elements, locations and sizes of chases, type and methods of existing and new construction of floors, walls, partitions, etc. Report to Architect before start of construction any unsatisfactory condition or conflict between plumbing and other trades. No extra charge will be approved after start of construction for work resulting from failure to follow these instructions.
- B. Unless otherwise shown, piping to be installed concealed, straight without sags or pockets, and graded for drainage. Cut pipe ends square and ream; before assembly, clean of all dirt, scale, and chips. Solder joints according to fittings manufacturer's recommendations. Apply pipe compound to external threads only. Run cold water pipe at least 12 inches away from the source of heat. Make adequate provision for expansion and contraction of pipes.
- C. Liability for damages to buildings, contents of buildings, or site property during construction and guarantee period resulting from workmanship, materials or equipment supplied under this specification is a part of this contract.

- D. Plumbing Contractor shall coordinate the location of all drain lines below slab with the Prime Contractor. The Plumbing Contractor shall install drain lines to avoid all column footings, grade beams, and pile caps. Sleeve all pipes thru walls or footings. Piping under footings shall also be sleeved.
- E. Plumbing Contractor shall patch solid or pour concrete for any foundation block removed or broken out for the installation of this work.

#### 1.04 PROTECTION OF FIXTURES, EQUIPMENT, AND MATERIALS:

- A. Protect against theft and damage.
- B. Protect pipe openings and drains by plugs or caps. Clear all stoppages.
- C. Protect finish on all fixtures and chrome trim during construction and cleanup. Avoid any exposure to acid fumes on the chrome.

#### 1.05. SOLDER:

- A. Any pipe, solder, or flux used shall be "lead free". The Federal Safe Drinking Water Act defines "lead free" as: "less than 0.2 percent lead in solder and flux, and less than 8.0 percent lead in pipes and fittings." See Section 22 40 50, 1.01, F.4 for allowed products.

#### 1.06 LAYOUT:

- A. The Contractor shall make layout drawings for work that is to be installed under this Division of the Contract. The Contractor shall be responsible for all dimensions and space conditions. The Contractor shall coordinate his work with that of all trades. Particular care shall be exercised over lay-in and gypsum board ceilings, location of sleeves, and fixture spacing
- B. All work and testing of piping above ceiling areas shall be completed before installation of ceiling tile or carpet.

#### 1.07 PAINTING:

- A. Clean and prepare exposed un-plated metal surfaces for painting. Pickle galvanized surfaces.
- B. Except for asphalt-coated metal, apply two coats of oil paint for all exposed un-plated metal surfaces. Apply to exposed asphalt-coated metal surface two coats of paint manufactured for application to this type surface. Colors shall be selected by Architect.
- C. Size insulation jackets that are in exposed locations and apply two coats of oil paint of colors selected by Architect.
- D. Touch up factory finish on heaters, burners, pumps, etc. to match; sand, prime and cover all scratches or rust.

#### 1.08 EQUIPMENT FOUNDATIONS:

- A. Set all floor mounted equipment on 6" high concrete pads reinforced with 6 x 6, 10/10 Mesh. Pads shall be approximately 6" larger than equipment base and have 1" x 1" chamfer on all edges. Pads to have carborundum brick rubbed finish. Surface finish shall be uniformly smooth. All water heaters shall be provided with a 16 gauge, galvanized steel drain pan with welded watertight seams. Drain pan shall be provided with a ¾" ball valve and piped to funnel drain. See water heater schedule.
- B. See detail on plans.

#### 1.09 CONSTRUCTION WATER:

- A. Plumbing Contractor may use and maintain water at locations directed on site by Prime Contractor.

#### 1.10 WATER SERVICE:

- A. Connect to the existing water main at location indicated on drawings. New piping shall be type "K" copper below grade.
- B. Backflow preventer shall be furnished and installed as indicated on drawing.

#### 1.11 ACCESS DOOR AND PANELS:

- A. Furnish to Prime Contractor factory fabricated doors and panels for installation at all places where specialties, valves, equipment, shock arrestors, etc., are inaccessible. Access means to be of adequate size for intended service and of approved manufacture, finish and type. Instruct Prime Contractor where to install access means and check for proper location. Panels installed in fire-rated ceiling or wall shall have same hourly fire ratings.
- B. Access doors to be a minimum 14 gauge steel, in prime coat, with concealed hinges and flush key operated locking device. Doors shall be furnished to suit specific building construction. Size to suit specific requirements (minimum size of 12" x 12"). Submit shop drawings for approval.
- C. Note the Water Piping Plans for some locations in suspended gypsum ceiling and/or chase walls of the gang toilets.

#### 1.12 INSTALLATION PROCEDURE:

- A. Prior to starting installation, furnish to the Prime Contractor and all Sub-Contractors concerned copies of approved shop drawings showing location of equipment, piping, etc.
- B. Schedule meetings with other trades before and during installation to avoid conflicts and assure that pipes and equipment are installed in the best manner, taking into consideration head-room, maintenance, appearance, and replacement.

#### 1.13 TESTS:

- A. Leak test hot and cold water pipes at 150 psi hydrostatic pressure before covering.

Block off equipment and accessories not designed for test pressure.

- B. Test entire drainage and venting system by plugging all necessary openings and filling system with water to the level of the top of the highest vent stack. Not less than 10 feet of water pressure will be acceptable.
- C. Notify Architect/Engineer 24 hours in advance of all planned tests so Representative may be present.
- D. Contractor shall test the entire drainage and vent system by means of a "smoke test" at the time of final inspection. Contractor shall use the manhole at front entry and grease trap where applicable as means to introduce "smoke" into DWV system.

**END OF SECTION**