

SECTION 22 41 10 - WASTE WATER SYSTEMS

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Provide labor, materials, equipment and services to perform operations required for the complete installation and related Work as required in Contract Documents.

1.2 SUBMITTALS

- A. Submit shop drawings for all items specified under "Part 2 - Products" of this Section.

PART 2 - PRODUCTS

2.1 PLUMBING DRAINAGE SYSTEM

- A. Refer to Section 220600 - "Piping Systems and Accessories" for piping materials.

PART 3 - EXECUTION

3.1 GENERAL

- A. Prior to commencing work, the Contractor shall verify all inverts and locations. Any discrepancy between the plans and field conditions shall be reported in writing to the Owner and Engineer within three (3) days of discovery. No work shall start until all discrepancies have been resolved. All costs related to Contractor's failure to verify and/or report discrepancies or problems will be borne by the Contractor.

3.2 FLASHING

- A. For all Roof Drains (RD), Vents Through Roof (VTR), and Floor Drains (FD):
 - 1. Cooperate closely with the General or Construction Contractor (GC or CC).
 - 2. Division 22 Contractor responsible for tightness.
 - a) Roof drains: 36 inch square, 4 pounds per square foot lead sheet or 16 ounce per square foot soft copper sheet, held by clamping ring; set slightly lower than roof to insure being at low point.
- B. SINGLE PLY ROOFS:

1. Roof drains: To be clamped into single ply membrane.
 2. Vent piping: Extend vent a minimum of 18 inches above top of roof membrane or ballast, or as shown. Provide vent cap (refer to Section 22450 - "Equipment"). Provide 4 pounds per square foot lead sleeve soldered to a 36 inch square 4 pounds per square foot lead sheet or a 16 ounce per square foot copper sleeve soldered to 36 inch square copper sheet, extend up to 1/2 inch above pipe.
- C. SINGLE PLY ROOFS:
1. Vent piping: Provide elastomeric cone with stainless steel clamp of same manufacturer as single ply membrane. Provide vent cap (refer to Section 22450 - "Equipment")
 2. Floor drains: 24 inch square, 4 pounds per foot lead sheet, held by clamping ring. No flashing required for floor drains in slabs on grade. Coordinate location of toilet room floor drains with partition layout. Coordinate location of drains for equipment with locations of pads, equipment and machinery.

3.3 INTERIOR PIPING INSTALLATION

- A. Minimum Pitch: Piping 3 inches and under - 1/4 inch per foot, 4 inches and larger - 1/8 inch per foot.
- B. Urinal Waste: Copper is not allowed.
- C. Paint exposed waste and vent piping 2 inches and over with chromium paint.
- D. Thermoplastic Sewer Pipe:
 1. Protect plastic pipes passing through concrete floors with one half inch (1/2 in.) of insulation material inside sleeve.
 2. Fire walls shall not be penetrated by plastic pipe.
 3. Pipe shall not be installed when the temperature is below 20°F.
 4. Install pipe on firm, stable and uniform trench bottom and compacted to a point three pipe diameters above the bottom of the pipe. Backfill to a depth of 1 ft. - 0 in. above the top of the pipe shall be free of stones greater than 1 in. diameter.
 5. When used for inside rain leader piping, a five foot minimum horizontal offset made at a 90° angle shall be installed between the roof drain and the vertical rain leader.

3.4 EXTERIOR PIPING INSTALLATION

- A. Minimum Pitch: Maximum grade between manholes; verify all inverts given.

- B. Inspect piping before installation to detect apparent defects. Remove all defective piping from the site.
- C. Lay piping beginning at low point of system, true to grades and alignment indicated, with unbroken continuity of invert.
- D. Install gaskets in accordance with manufacturer's recommendations for use of lubricants, cements, and other special installation requirements.
- E. Clean interior of piping of dirt and other superfluous material as work progresses.
 - 1. Place temporary plugs in the ends of all pipes at end of each work day or whenever work stops.
 - 2. Flush all lines between manholes to remove collected debris.
- F. Inspect piping to determine whether line displacement or other damage has occurred.
 - 1. Make inspections after lines between manholes, or manhole locations, have been installed and approximately 2 ft. of backfill is in place, and again at completion of project. If inspection indicates poor alignment, debris, displaced pipe, infiltration, or other defects, correct such defects, and re-inspect.
- G. Thermoplastic Pipe: Pipe shall not be installed within 4 ft. of finished grade or when the temperature is below 20°F.

3.5 ARRANGEMENTS

- A. Provide for application to and approval of local sewer departments for connections made to municipal sewer services. Pay all costs for same.

3.6 TESTING

- A. Provide necessary items to complete proper testing of Work.
 - 1. Test all sections of storm, sanitary, waste and vent piping installed by this Project. Test existing piping as called for.
 - 2. Maintain 10 feet head of water above highest point of section being tested for six hours.
 - 3. For interior piping, leaks of any volume detected in sewers or in floors or walls of appurtenant structures shall be permanently stopped. Should any leaks, defective joints or defective construction be found, they shall be promptly made good. Should any defective pipes or specials be discovered, they shall be removed and replaced with sound pipes or specials in a satisfactory manner at the Contractor's expense.
 - 4. Air test not acceptable as final test.

5. Pay all costs of test.
6. Provide written certification that tests have been conducted and successfully completed. Submit to Owner's Representative.

END OF SECTION