

**SECTION 15158 - ACID WASTE PIPING SPECIALTIES****PART 1 - GENERAL****1.1 SUMMARY**

A. This Section includes the following storm drainage piping specialties:

1. Cleanouts.
2. Acid neutralization tanks.

B. Related Sections include the following:

1. Division 7 Sections for roof materials and flashings.
2. Division 15 Section "Common Work Results for Plumbing."
3. Division 15 Section "Sanitary Waste and Vent Piping."
4. Division 15 Section "Acid Waste and Vent Piping."

**1.2 SUBMITTALS**

A. Product Data: For each type of product indicated.

**1.3 QUALITY ASSURANCE**

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

**PART 2 - PRODUCTS****2.1 CLEANOUTS**

A. Cleanout Test Tee, Cleanout Plugs or In-Line Cleanouts on Piping:

1. Available Manufacturers: Subject to compliance with requirements for specified items, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Enfield.
  - b. Orion.
2. Standard: ASME A112.36.2M.
3. Material and Size: Same as connected drainage piping, unless indicated otherwise.
4. Body Material: As required to match connected piping.
5. Closure: Countersunk, raised-head or cast-iron plug.
6. Closure Plug Size: As required to match connected piping.

**B. Acid Neutralization Tanks:**

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Enfield.
  - b. Orion.
2. High density polyethylene neutralization tank conforming to ASTM D1248 for polyolefin materials.
3. Tank shall be rotationally molded, seamless construction, flanged top and bolted down cover, approved for 180 degF continuous service, intermittent use of 212 degF.
4. Conform to ASTM D1248.
5. Integral limestone chips in tank for neutralization 1 inch to 3 inches in diameter size range, calcium carbonate content in excess if 90 percent.
6. Approximate Overall Height for Tank #1 and #2 as Follows: 11 inch diameter x 16-1/4 inches high, 1-1/2 inch side inlet, 2 inch side outlet, 1-1/2 inch vent on side, 1-1/2 inch vent on top; Tank #2 typical to Tank #1, except with 2 inch inlet and outlet, 15-1/2 inches high x 17-1/4 inch diameter. All connections and locations at standard locations and heights.

**2.2 SLEEVE FLASHING DEVICE**

- A. Description: Manufactured, cast-iron fitting, with clamping device, that forms sleeve for pipe floor penetrations of floor membrane. Include galvanized-steel pipe extension in top of fitting that will extend 2 inches (51 mm) above finished floor and galvanized-steel pipe extension in bottom of fitting that will extend through floor slab.

1. Size: As required for close fit to riser or stack piping.

**B. Stack Flashing Fittings:**

1. Description: Counterflashing-type, cast-iron fitting, with bottom recess for terminating roof membrane, and with hub top for extending vent pipe.
2. Size: Same as connected stack vent or vent stack.

**2.3 FLASHING MATERIALS**

- A. Lead Sheet: ASTM B 749, Type L51121, copper bearing, with the following minimum weights and thicknesses, unless otherwise indicated:

1. General Use: 4.0-lb/sq. ft. (20-kg/sq. m), 0.0625-inch (1.6-mm) thickness.
2. Vent Pipe Flashing: 3.0-lb/sq. ft. (15-kg/sq. m), 0.0469-inch (1.2-mm) thickness.
3. Burning: 6-lb/sq. ft. (30-kg/sq. m), 0.0938-inch (2.4-mm) thickness.

- B. Fasteners: Metal compatible with material and substrate being fastened.

- C. Metal Accessories: Sheet metal strips, clamps; anchoring devices, and similar accessory units required for installation; matching or compatible with material being installed.
- D. Solder: ASTM B 32; 95/5 lead-free alloy.
- E. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic.

#### 2.4 ACID WASTE MONITORING SYSTEM

- A. Available Manufacturers: Subject to compliance with requirements for specified items, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Enfield.
  - 2. Orion.
- B. The pH monitoring system shall be a Monitor I as manufactured by Orion Fittings, Inc. System shall be complete and consist of the following:
  - 1. One (1) 5 gallon sample tank.
  - 2. One (1) pH probe.
  - 3. One (1) control panel.
  - 4. The 5 gallon sampling tank shall be constructed of high density polyethylene (HDPE). Tank shall be 11 inch diameter by 16-1/2 inch high with a bolted and gasket cover. Nuts and bolts shall be stainless steel. The cover shall have a threaded female fitting to accept a pH probe. Sampling tank shall have an inlet and an outlet. The inlet and outlet fitting above grade only shall be acid waste piping, see Division 15 Section "Acid Waste and Vent Piping."
  - 5. pH probe shall be constructed of CPVC, with Viton O-rings. It shall be suitable for a temperature range of 32 to 185 degF. The pH probe electrode shall be double junction, and compensate automatically for temperature changes. The pH probe preamplifier shall convert probe signals to a level that allows wiring up to distance of 400 feet. Probe shall have 25 feet of shielded cable attached.
  - 6. Control panel shall be NEMA 4, thermoplastic, completely prewired and pretested. Electrical power to the panel shall be 120 volts. The control panel shall be complete with the following components:
    - a. A pH monitor to analyze waste water pH. The pH monitor shall have a 0-14 display. Monitor shall have low and high pH lights and contain two (2) adjustable alarm pH set points. The monitor shall provide a 4 to 20 mA output signal to drive a strip recorder.
    - b. A single pen strip chart recorder shall be provided to maintain a 30 day pH record. Chart recorder shall operate on 120 volt power. Recorder pen movement shall be in response to a 4-20 mA input signal from the pH monitor.
    - c. Audible alarm and silence button.
    - d. Power on-off switch and light.
    - e. Common alarm contact.
    - f. Standard 15 feet of conduit.

**PART 3 - EXECUTION****3.1 INSTALLATION**

- A. Refer to Division 15 Section "Common Work Results for Plumbing" for basic installation requirements and in accordance with manufacturer's instructions.
- B. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
  - 1. Size same as drainage piping up to NPS 4 (DN 100). Use NPS 4 (DN 100) for larger drainage piping unless larger cleanout is indicated.
  - 2. Locate at each change in direction of piping greater than 45 degrees.
  - 3. Locate at minimum intervals of 50 feet (15 m) for piping NPS 2 (DN 50) and smaller and 100 feet (30 m) for larger piping.
- C. For cleanouts located in concealed piping, key operated access panels are required, see drawings.
- D. Install roof flashing assemblies on acid waste vents stacks that extend through roof.
- E. Install flashing fittings on acid waste vent stacks that extend through roof.
- F. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.
- G. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

**3.2 CONNECTIONS**

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.

**3.3 FLASHING INSTALLATION**

- A. Fabricate flashing from single piece unless large pans, sumps, or other drainage shapes are required. Join flashing according to the following if required:
  - 1. Lead Sheets: Burn joints of lead sheets 6.0-lb/sq. ft. (30-kg/sq. m), 0.0938-inch (2.4-mm) thickness or thicker. Solder joints of lead sheets 4.0-lb/sq. ft. (20-kg/sq. m), 0.0625-inch (1.6-mm) thickness or thinner.

- B. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.
  - 1. Pipe Flashing: Sleeve type, matching pipe size, with minimum length of 10 inches (250 mm), and skirt or flange extending at least 8 inches (200 mm) around pipe.
  - 2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches (200 mm) around sleeve.
  - 3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches (200 mm) around specialty.
- C. Set flashing on floors and roofs in solid coating of bituminous cement.
- D. Secure flashing into sleeve and specialty clamping ring or device.
- E. Install flashing for piping passing through roofs with counterflashing or commercially made flashing fittings, according to Division 7.
- F. Extend flashing up acid vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.

#### 3.4 PROTECTION

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 15158