

WISCONSIN CONSTRUCTION SPECIFICATION

6. CORRUGATED METAL PIPE CONDUITS

1. SCOPE

The work shall consist of furnishing and placing circular, arched, or elliptical corrugated metal pipe and the necessary fittings.

2. MATERIALS AND FABRICATION

Steel pipe and fittings shall be zinc-coated, aluminum-coated, or aluminum-zinc alloy-coated conforming to the current requirements of ASTM A 742, A 760, A 761, A 762, A 849, A 875, A 885, A 929, or AASHTO M 218 and M 274 as appropriate for the coating specified.

Clad aluminum pipe and fittings shall conform to the current requirements of ASTM B 745, B 746, or B 790 or AASHTO M 197.

The thickness of the corrugated metal shall be as shown on the drawings.

Pipe Conduit

Unless otherwise specified, all riveted corrugated metal pipe used in conduits shall be close-riveted with caulked seams. Close-riveted pipe shall be fabricated so that the rivet spacing in the circumferential seams shall not exceed 3 inches, except that 12 rivets will be sufficient to secure the circumferential seams in 12-inch pipe. In those portions of the longitudinal seams that will be covered by coupling bands, the rivets shall have finished flat heads or the holes and rivets shall be omitted and the seams connected by welding to provide a minimum of obstruction to the seating of the coupling bands.

The caulking compound shall consist of a mastic combined with fibers and other inert filler material to form a heavy-bodied compound that will not sag or run out of the seam. The compound shall contain a minimum of 60 percent solids by weight.

The caulking of riveted seams shall be accomplished by applying a uniform bead (1/4-inch minimum diameter) of the mastic compound to the inner lap surface before riveting such that when the rivets are in place, all voids are filled and a coating of mastic is between the lap surfaces.

Coupling Bands and Hardware

Hardware consisting of coupling bands and band fastening devices such as connecting bolts, rods, lugs, and angles used in conjunction with zinc-coated iron or steel pipe shall be galvanized by the hot-dip method. Hardware used in conjunction with aluminum pipe and aluminum or aluminum-zinc alloy-coated iron and steel pipe shall be of the same material as the pipe except that hot-dip galvanized or cadmium plated fasteners may be used.

Watertight coupled joints shall use a rod and lug band and provide joint sealing by using one of the following materials.

- Caulking compound as specified above.
- A butyl rubber compound that will not sag or run out of the seam. The compound shall contain a minimum of 60 percent solids by weight.
- A sleeve or strip of 3/8 inch thick flat closed cell neoprene installed between the conduit and coupling band. The sleeve(s) or strip(s) shall envelop the conduit for the full width of the coupling band.

3. LAYING AND BEDDING THE PIPE

The Contractor shall furnish equipment necessary to place the pipe without damaging the pipe or coatings. The pipe shall be transported and handled in a manner to prevent damage to the pipe or coating.

Pipe shall be installed to the grades shown on the drawings. The pipe shall be laid with the outside laps of the circumferential joints pointing upstream and with longitudinal laps at the sides at about the vertical mid-height of the pipe. Field welding of corrugated galvanized iron or steel pipe will not be permitted. Unless otherwise specified, the pipe sections shall be joined with watertight coupling bands and caulked as specified on the drawings. The pipe shall be firmly and uniformly bedded throughout its entire length to the depth and in the manner specified on the drawings.

Coupling bands shall be installed to provide straight alignment of the connecting pipe ends. The bands shall be positioned to overlap adjacent pipe ends equally. The coupling bands shall be corrugated to match the corrugations of the pipe section ends being connected.

Perforated pipe shall be laid with the perforations down and oriented symmetrically about a vertical centerline. Perforations shall be clear of any obstructions at the time the pipe is laid.

Unless otherwise specified, earth backfill shall be placed in the manner stated in Wisconsin Construction Specification 3, Earthfill, for fill adjacent to structures. Special care shall be taken to prevent lifting the pipe from the bedding by pressures exerted by tamping material under the haunches of the pipe.

4. REPAIR OF DAMAGED COATINGS

When the metallic coating is damaged in any individual area larger than 12 square inches, or if more than 0.2 percent of a total surface area of a length of pipe is damaged, that section of pipe will be rejected.

Any damage to the metallic coating shall be repaired by cleaning the damaged surface area to bright metal by sand blasting, power disk sanding, or wire brushing. All loose and cracked coating, dirt, oil or grease, and any products of corrosion shall be removed prior to the application of two (2) coats of the paint noted below. The surface shall be clean and dry during the painting period and until the coating has dried.

Aluminum pipe shall be painted with a chromate-rich primer.

Painting steel pipe shall be accomplished by one of the following options based upon installed exposure conditions of the pipe as approved by the Engineer.

Normal exterior or interior atmospheric exposure:

- a. Zinc dust - zinc oxide primer, ASTM D 79 and D 520.
- b. Single package, moisture cured urethane primer in silver metallic color, or
- c. Zinc-rich cold galvanized compound, brush, or aerosol application.

Submergence in water exposure:

- a. Zinc dust - zinc oxide primer, ASTM D 79 and D 520
- b. Zinc dust paint, ASTM D 4146