MULTI-THERM® 750 SUPREME

Guide Specification

GENERAL

All underground distribution lines as shown on the contract drawings shall be MULTI-THERM 750 SUPREME as manufactured by PERMA-PIPE. The system supplier shall have at least ten years' experience fabricating underground high temperature distribution systems. All straight sections, fittings, anchors and other accessories shall be factory prefabricated to job dimensions. Each system layout shall be computer analyzed by the piping system manufacturer to determine stresses and movements of the service pipe. The system design shall be in strict conformance with ANSI B31.1, latest edition, and stamped by a Registered Professional Engineer.

SERVICE PIPE

Internal piping shall be standard weight carbon steel, except for condensate piping which shall be schedule 80. Pipe shall be butt welded for sizes 2.5 inches and larger and socket welded for 2 inches and below. Where possible, straight sections shall be supplied in 40 foot random lengths with 6 inches of piping exposed at each end for field joint fabrication.

SUBASSEMBLIES

End seals, gland seals and anchors shall be designed and factory prefabricated to prevent the ingress of moisture into the system. All subassemblies shall be designed to allow for complete draining and drying of the conduit system.

SERVICE PIPE INSULATION

Service pipe insulation shall be Pyrogel® XT as manufactured by Aspen Aerogels. Pyrogel® XT is a high temperature insulation blanket formed of silica aerogel and reinforced with a non-woven, glass-fiber batting. The insulation shall be held in place by stainless steel bands or staples installed not more than 18 inches apart.

PIPE SUPPORTS

All outer conduit shall be supported to allow for continuous drainage of the conduit in place. Supports shall be the type where Pyrogel® XT insulation thermally isolates the service pipe from the outer conduit. No calcium silicate or other type of insulation shall be allowed. The surface of the support insulation shall be protected by a steel sleeve not less than 12 inches long.

OUTER CONDUIT

The steel conduit casing shall be smooth wall, welded steel conduit of the thicknesses specified below:

Conduit Size	Conduit Thickness
6”-26”	10 Gauge
28”-36”	6 Gauge
38”-42”	4 Gauge

Changes in casing size, as required at oversized casing to allow for service pipe expansion shall be accomplished by eccentric and/or concentric fittings and shall provide for continuous drainage.

OUTER CONDUIT COATING

The exterior steel conduit surface shall be abrasive blast-cleaned to a minimum of a near white surface, SSPC-SP10-63T. Profile must be a minimum of 1.5 mil peak to valley range. Any areas of rust bloom or oil shall be wiped and reblasted.

After blasting, the steel conduit shall be coated with (choose one option) (Epoxy) (Urethane Elastomer) (Zinc)

The epoxy coating shall be a two part coating consisting of a base material and curing agent spray applied to a minimum thickness of 8-12 mils. The coated conduit shall be holiday tested at 1,000 volts to ensure a void free coating. Areas of the conduit not passing the holiday test shall be patch coated and retested.

The urethane elastomer coating shall be a sprayable two component, aromatic, corrosion protection elastomeric coating applied to a minimum thickness of 20 mils. The coated conduit shall be holiday tested at 2,500 volts to ensure a void free coating. Areas of the conduit not passing the holiday test shall be patch coated and retested.

The zinc coating shall be a high solids inorganic zinc rich coating that protects the steel galvanically, thus eliminating sub-film corrosion. The zinc coating shall be a two part sprayable coating consisting of a liquid base portion and a dry powdered metal. The two components when mixed together can be spray applied. The dry film thickness shall be in a range of 2 to 4 mils.

OUTER CONDUIT INSULATION AND JACKET

Conduit insulation shall be spray applied polyurethane foam having a minimum density of 2 lbs/ft^3 for the straight lengths and fittings. The insulation thickness shall be 1 inch maximum. The polyurethane foam shall have a maximum initial K value of 0.18, minimum density of 2 lbs/ft^3 and a minimum closed cell content of 90%

The outer jacket shall be fiberglass reinforced polymer (FRP) and shall be applied directly onto the urethane foam insulation. No PVC or polyethylene jacket shall be allowed. All straights and fittings shall be factory jacketed.

DIFFUSION BARRIER

An aluminum diffusion barrier shall be applied on the outside of the insulation before application of the outer jacket. The barrier shall prevent the diffusion of the blowing agent out of the foam to prevent the foam from aging. The diffusion barrier shall be of composite construction with a minimum 12 micron aluminum layer sandwiched between two layers of polyethylene each a minimum of 50 microns thick. The polyethylene layers shall be corona treated to guarantee bonding between the foam insulation and the outer jacket.

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