Steel-Con Plus

Service Pipe:

Carbon steel service pipe shall be standard weight A53 ERW or A106 seamless, beveled for welding. Stainless Steel piping shall be type 304L or 316L, Sch. 40 or Sch. 80, welded or seamless, to ASTM A312/A312M. Condensate return piping shall be Schedule 80. All joints for pipe 2½" and larger in size shall be butt-welded. Sizes 2" and smaller shall be socket welded. Straight lengths of piping will be supplied with 6" of piping exposed at each end for field joint fabrication. Pipe lengths shall be supplied in 21-42 ft. lengths.

Insulation: (Inner Layer)*

The service pipe insulation shall be fiberglass, mineral wool, calcium silicate, cellular glass, or aerogel®. The insulation will be held in place by stainless steel bands on 18-inch centers. The insulation shall be applied to a thickness as specified on the contract drawings.

Service Pipe Supports:

The service pipe within the inner conduit shall be supported at not more than 10-foot intervals. The supports shall be designed to allow for continuous airflow and draining of the conduit system. The insulated service pipe shall not bear directly on the steel support and shall be insulated throughout.

Outer Conduit:

The outer conduit shall be a smooth-walled, spiral-welded or electric resistance welded steel pipe conforming to ASTM Specification A-139/A-135. The conduit shall be of the thickness as listed below.

Insulation: (Outer Layer)*

The outer layer of insulation shall be foamed-in-place closed-cell polyurethane, completely filling the annular space between the service pipe and the exterior casing. The insulation shall have the following physical properties:

- Minimum Density (lb./cu. ft.) 2.0 ASTM D-1622
- 90-95% Closed Cell ASTM D-6226
- “K” Factor BTU/Hr. sq. ft F/in… .16 ASTM C-591
- Compressive Strength ASTM D-1621

Exterior Casing:**

The exterior casing shall be seamless, extruded High Density Polyethylene (H.D.P.E.) to ASTM D-3350-12, with the following physical properties:

- ASTM D-3350…Minimum Cell Classification Grade PE334363C
- ASTM D-638…Ultimate Elongation 8200%
- ASTM D-638…Tensile Yield Strength 2500 psi

No polyethylene tape casings will be allowed.

Field Joint Closures:

Field joint closures shall consist of the specified inner insulation, a cylindrical 10-gauge sleeve having two (2) horizontal splits, an outer insulation layer of polyurethane foam, a heat-shrinkable sleeve, and a rock shield.

Sub-Assemblies:

All fittings, anchors, end seals, and other accessories shall be prefabricated to prevent the ingress of moisture into the system, allowing for complete draining, drying, and testing of the conduit system. No field fabrication of fittings, anchors or end seals will be allowed. Fittings 2½” and larger to be butt weld, conforming to ASTM A234 WPB & ASME B 16.9. Fittings 2” and smaller to be socket weld, conforming to ASTM B 16.11. All factory prefabricated fittings shall be welded to ANSI B 31.1.

Expansion Compensation:

Expansion and contraction within the piping system shall be accommodated with factory prefabricated internal expansion elbows, z-bends, expansion loops, and anchors specifically designed for each application. Internal expansion shall be designed to permit thermal movement of the service pipe without damage to the insulation.

Installation:

No Piping shall be installed in standing water. Trenches shall be maintained dry until final field closure is complete. The installing contractor shall handle the piping system in accordance with the directions furnished by the manufacturer and as approved by the architect and engineer. The service piping shall be hydrostatically tested to 1-1/2 times the operating pressure, or as specified in the contract documents. The inner conduit shall be air tested at 15 psig. The test shall be maintained for a minimum time of 1 hour. Holiday testing of the conduit coating shall be the responsibility of the installing contractor and will be done in accordance with directions furnished by the manufacturer. All holidays shall be repaired and retested. EXERCISE DUE CARE WHEN INSTALLING AND TESTING THE PIPING SYSTEM.

Backfill:

A 6-inch layer of sand or fine gravel, less than ½" in diameter, shall be placed and tamped in the trench to provide uniform bedding for the Steel-Con Plus system. Once the system is in place, the trenches shall be carefully backfilled with similar material and hand tamped in 6" layers until a minimum of 12" above the top of the pre-insulated pipe has been achieved. The remainder of the backfill shall be void of rocks, frozen earth and foreign material. The trench shall be compacted to comply with H-20 Highway loading.

Accessories:

- Heat Tracing
- Leak Detection

System Options:

* Insulation thickness will vary depending on the operating temperature and type of insulation specified.
** Optional Fusion Bonded Epoxy or Hot Dipped Galvanized coatings available for the 10-Ga. steel conduit
*** Optional non-metallic casings for below grade include Filament Wound FRP.