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***Piping Systems, Inc*.**

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**Part 1 – General**

**1.01 Galva-CoatTM High Temperature Conduit Piping with Pyrogel®**

**1.02 This system** shall be **Galva-CoatTM Hot Dipped Galvanized High Temperature Conduit System** with **Pyrogel® XT-e for Steam, Hi-Temp Hot Water, Condensate, etc.** as manufactured by **Rovanco Piping Systems** of Joliet, Illinois.

**Part 2 - Products**

**2.01 Carrier Pipe:** Shall be A53B Black Steel pipe, Seamless or ERW, in pre-cut lengths. Pipe 10” and smaller shall be Schedule 40. Pipe 12” and larger shall be .375” wall (Schedule 80 shall be used for condensate lines). Other metallic pipe available.

* 1. **Carrier Pipe Insulation:** Shall be Pyrogel® XT-e as manufactured by Aspen Aerogels.

Pyrogel® XT-e is a high temp insulation blanket formed of silica aerogel and reinforced with   
a non-woven, glass-fiber batting. Sectional insulation shall be banded on pipe with aluminum banding on 18” centers. Insulation thickness shall be as specified.

**2.04 Inner Pipe Supports:** Shall be aligned and supported within the outer casing with galvanized steel supports spaced on centers approximately 10’0”. The insulated inner pipe shall bear directly on the steel support. The support shall be designed as to permit drainage and free air passage. All pipe passing through supports shall be insulated. Concrete type pipe supports will not be allowed.

* 1. **Outer Conduit Casing:** Outer casing shall be black steel. Casing up through 24” shall be

10 gauge. Casing 26” and larger shall be 6 gauge. The interior surface shall be smooth to permit free moisture drainage and removability of the inner assembly. The outer casing shall be sized to provide adequate annular space between the outer surface of the insulation material and the interior surface of the casing.

The exterior surface shall be hot dipped galvanized for corrosion resistance with industry standard mil thickness per ASTM A123. No glasswrap or filler materials shall be used. All exterior conduit surfaces shall be shot-blasted prior to the hot dipped galvanized coating being applied.

Outer conduit casing closures shall consist of 10-gauge steel suitably rust proofed and in cylindrical form with a single horizontal split and shall be field welded over adjacent units. After tests all exposed closures shall be covered in the field with a polyethylene heat shrink material with a minimum thickness of 60 mils.

**2.06 Expansion Loop & Elbows:** Expansion Loops or expansion elbows shall be furnished and enclosed in the same type of casing as those furnished to the standard section of the piping system. mage to the insulation material. They will be of a size to permit the inner pipe or pipes to move without damage to the insulation material. All expansion loops or expansion elbows shall be pre-fabricated and shipped to the job site in as few pieces as possible (manufacturers’ recommendation to govern). All inner pipe loops and expansion bends shall be cold sprung in the field

by the contractor as required.

**2.07 Weld Fittings:** All changes in direction shall be made with bent or weld fittings. Where tee branches are smaller than the mains they join, weld-o-lets may be used. All weld fittings shall be long radius and shall be the same wall thickness as adjacent piping.

**2.08 Anchors** shall be prefabricated onto the piping units and shall be equipped with drainage and vent openings at the top and bottom of the anchor plate. Anchor plates shall be made of ½” steel plate. Anchors will be galvanized.

**2.09 End Seals & Gland Seals:** Terminal ends of conduits inside manholes, pits, or building walls shall be equipped with end seals consisting of a steel bulkhead plate welded to the pipe conduit. Where there is no anchor within five feet of a terminal end, conduits shall be equipped with gland seals consisting of a packed stuffing box and gland follower mounted on a steel plate welded to end of conduit. Will be galvanized.

**2.10 End Seals or Gland Seals:** Shall be made of ½” steel plate with drain and vent openings located diametrically opposite on the vertical center line of the mounting plate and shall be shipped to the job site with plugs in place. Terminate all conduits 2 inches beyond the inside face of building walls to protect any exposed piping insulation from damp wall condensation. Will be galvanized.

**2.11 Field Tests:** The inner pipes of this system shall be tested hydrostatically to 1-1/2 times the working pressure of the line. If a leak is found, it shall be repaired and the test repeated. The outer casing shall be tested with air at 15psig and a soap solution shall be applied to the field joints to locate leaks. If leaks occur, they shall be repaired and the test repeated. After approved by test, all field joints shall be coated by the contractor. Before backfilling, the contractor shall test the conduit coating with an electric holiday detector. Any breaks in the coating system will be repaired and the test repeated by the contractor.

**2.12 Backfill:** Should be tamped compactly in place to assure a stable surface. No rock should be used in first foot of backfill. 24 inches, from top of pipe to grade, of compacted fill shall meet   
H-20 Highway Loading.

**2.13 Installation:** Shall be made in accordance with plans and specifications, and manufacturer’s installation instructions. Pre-insulator will provide a field service instructor on site to train the contractor on all phases of installation.

**2.14 Approved Vendors:** Galva-CoatTM Hot Dipped Galvanized High Temperature Conduit System with Pyrogel® XT-e by Rovanco, Joliet, Illinois, or approved, ISO Certified, equal. Any alternate supplier must submit their technical data to the engineer 10 days prior to bid date to be approved in writing as equal.