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***Piping Systems, Inc*.**

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**Part 1 – General**

* 1. **Below Ground Fiberglass (FRP) Double Wall Containment Piping**

**1.02 This system** shall be **Below Ground Fiberglass (FRP) Double Wall Containment Piping System** manufactured by **Rovanco Piping Systems** of Joliet, Illinois.

**Part 2 - Products**

**2.01 Carrier Pipe:** Shall be PVC schedule 40 or schedule 80 solvent weld, Type K or L Hard Drawn Copper Tubing conforming to ASTM B-88, A-53 Grade B ERW or Seamless Steel.

**2.02 Fiberglass:** Shall be Series 2000 Bondstrand\* filament wound fiberglass reinforced epoxy, bell and spigot, designed to withstand 250˚F. Pipe to be in conformance with MIL-SPEC P28584A and P22245A.

Series 3000 Bondstrand\* filament wound fiberglass reinforced epoxy, bell, and spigot, designed to withstand 210˚F. Pipe to be in conformance with MIL-SPEC P29206A.

Other carrier pipe types are available upon request.

Factory fabricated and pre-engineered to actual field dimensions.

**2.03 Containment Material:** Shall be Filament wound fiberglass pipe constructed of continuous glass fibers in a matrix of aromatic amine cured epoxy resin. In a dual angle pattern that takes the optimum advantage of the tensile strength of the filaments. Incorporating an integral liner rated for 150 psi at 210˚F and manufactured to ASTM-D2996 standards. Classified ASTM-D2310, Type 1, Grade 1 and Class F.

**2.04 Inner Pipe supports:** All pipe shall be aligned and supported within the outer casing with nonmetallic pipe supports designed to allow free air and fluid movement within the containment pipe. The supports will be designed and spaced to carry the weight of the carrier pipe full of fluid with a 50% safety factor while allowing the carrier pipe to expand and contract.

**2.05 Joining Method:** Pipe and fittings will be joined using a thermosetting epoxy resin. Mechanical joints or O-Ring seals will not be allowed.

**2.06 Fittings:** Will be filament wound, heavy duty, bell & spigot type in conformance with   
MII-P28584A and MIL-P22245A. 90˚ elbows will be long radius only.

**2.07 End Seals:** Terminal ends of containment inside manholes, pits, or building wall shall be equipped with end seals. End seals with drain or 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 containment 2 inches beyond the inside face of building walls or 6 inches below finished floor.

**2.08 Anchors:** FRP pipe should be joined to steel systems inside buildings with flanges. All steel systems should be anchored within five feet of connection point to eliminate any thrust, stress, or torque from the steel pipe being transferred to the FRP. Steel flanges should be 150# flat faced.

**2.09 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 5 psig max. and a soap solution shall be applied to the field joints to locate leaks. If leak occurs, they shall be repaired and the test repeated.

**2.10 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.

**2.11 Manufacturer’s Assistance:** Rovanco will provide a field service man on-site to properly train the installing personnel in all phases of installation.

**2.12 Approved Vendors:** FRP Containment Pipe System by Rovanco, Joliet, Illinois or approved, ISO Certified, equal. Any alternate supplier must submit their technical data to the engineer ten days prior to bid date to be approved in writing as an equal.