**ROV**an**CO**

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***Piping Systems, Inc*.**

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**Part 1 – General**

**1.01 Insul-8® Below Ground – HDPE x Foam x HDPE**

**1.02 This system** shall be **Pre-insulated with Polyisocyanurate Foam HDPE x HDPE Piping System with Leak Detection & optional RhinoJoints** as manufactured by **Rovanco Piping Systems** of Joliet, Illinois.

**Part 2 - Products**

**2.01 Carrier Pipe** shall be SDR 11 HDPE, pressure is rated to 160 psi. All fittings shall be injection molded HDPE and shall have the same thickness and pressure rating as the piping.

**2.02 Carrier Pipe Insulation:** Carrier pipe insulation shall be a polyisocyanurate high temp foam injected with one shot into the annular space between carrier pipe and jacket. Insulation shall be rigid, >90% closed cell polyisocyanurate with a minimum 2.0 lbs per foot3 density, compressive strength of 30 psi @ 75˚F, a thermal conductivity K factor no higher than 0.14 @ 75˚F per ASTM C-518 and an E84 25/50 passive fire resistance rating. Maximum continuous operating temperature of polyisocyanurate foam shall not exceed 300˚F, except for intermittent spikes of 350˚F.

**2.03 Outer Jacketing Material:** The outer casing shall be high density polyethylene (HDPE) conforming to ASTM D3350, Type III, Category 5, Class C and Grade P23/P34. With a minimum of 2% by weight of carbon black. 175 mil minimum Seamless HDPE casing required. No FRP overwrap or sprayed jacketing will be allowed. Minimum jacket thickness shall be in accordance with Table 1.

Table 1:

|  |  |  |  |
| --- | --- | --- | --- |
| Nominal Pipe Size in Inches | Min. Insulation Thickness (inches) | Jacket Size (OD) in Inches | Jacket Thickness in Mills |
| 1 | 1.43 | 4.53 | 175 |
| 2 | 1.95 | 6.63 | 175 |
| 4 | 1.61 | 8.06 | 175 |
| 6 | 1.55 | 10.07 | 175 |
| 8 | 1.77 | 12.52 | 175 |
| 10 | 1.53 | 14.16 | 175 |
| 12 | 1.44 | 15.98 | 175 |
| 14 | 1.80 | 17.95 | 175 |
| 16 | 1.77 | 19.94 | 200 |
| 18 | 1.97 | 22.33 | 200 |
| 20 | 1.86 | 24.17 | 225 |
| 22 | 1.99 | 26.44 | 230 |
| 24 | 1.86 | 28.27 | 275 |
| 26 | 1.83 | 30.26 | 300 |

\*Larger pipe sizes are available upon request.

**2.04 Fittings:** All fittings will conform to pipe type and will be insulated and jacketed with materials supplied by the system supplier as per manufacturer’s standard procedure. Project will be “spooled out” and submitted to engineer with field joints located.

**2.05 RhinoJoints (optional):** After welding and testing, all joints on outer polyethylene joint shall be certified EN 489, RhinoJoint by Rovanco or equal. Certification required during submittal. Joints must be air tested in a way that the polyethylene is not drilled into. Air test from the side of joint is recommended. Contractor to log each joint and present to owner at time of final test.

**2.06 Leak Detection (optional):** Shall be a pair of Blue Leak Detection cables. Each cable will consist of 2 single strand, parallel copper wires insulated to resist high temperature & oil. Loop resistance will be 30 ohm per 1 km of cable. Leak location will be accurate within 3 feet and utilize TDR (time Domain Reflectometer) via monitoring/alarm unit which communicates using IoT. Bare copper wires are not allowed as well as alarm panels without a TDR. Coated copper wiring and leak detection box must meet specifications and be submitted at bid time.

**2.07 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.

**2.08 Manufacturer’s Assistance:** Rovanco will provide a field service man on-site to properly train the installing personnel in all phases of installation. 10-year warranty included.

**2.09 Approved Vendors:** HDPE jacketed Steel Pipe System with Blue Detect Leak Detection 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.