Copper

Service Pipe:

The service pipe shall be Type “K”, or Type “L” hard-drawn seamless copper tubing to ASTM B-88 and WWT-799. Refrigerant piping shall meet ASTM B-280, Type ACR and ASME 31.5. Straight lengths of piping will be supplied in 20 ft. lengths with 6” of piping exposed at each end for field joint fabrication.

Insulation: *

The insulation shall be a foamed-in-place closed-cell polyurethane that completely fills the annular space between the carrier pipe and the exterior casing. The insulation shall have the following physical properties:

- Minimum Density (lb./cu. ft.) 2.0 ASTM D-1621
- 90-95 % Closed Cell ASTM D-2856
- “K” Factor BTU/Hr. sq. ft. °F/in. . . .147 ASTM C-177

Exterior Casing: **

The exterior casing shall be:
(1) Seamless, extruded white PVC Type 1, Grade 1 Class 12454-B per ASTM D-1784
or
(2) High Density Polyethylene (H.D.P.E.) ASTM D-1248 with the following physical properties:

- ASTM D-3350…Resin Type III, Grade P34
- ASTM D-638…Ultimate Elongation 850%
- ASTM D-638…Tensile Yield Strength 3300 psi
- ASTM D-790…Tangent Flexural Modules 175,000 psi

No polyethylene tape casings will be allowed.

Sub-Assemblies:

All fittings, anchors, end seals, and other accessories shall be prefabricated or field fabricated dependent upon the engineer’s option and/or site conditions.

Field Joints:

After welding and hydrostatic testing, PVC jacketed straight field joints shall be insulated with polyurethane foam to the thickness specified, PVC sleeve, and pressure-sensitive tape. HDPE jackets will use polyurethane foam and a heat-shrinkable sleeve.

Expansion/Contraction 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. External expansion compensation can be provided with the use of flexible foam bolsters.

Installation:

No Piping shall be installed in standing water. Trenches shall be maintained dry until final field closure is complete. The installation 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 test shall be maintained for a minimum time of 1 hour. EXERCISE DUE CARE WHEN INSTALLING AND TESTING THE PIPING SYSTEM.

Backfill:

A 4-inch layer of sand or fine gravel shall be placed and tamped in the trench to provide stable and uniform bedding for the piping system. Once the system is in place, the trenches shall be carefully backfilled, and hand tamped in 6” layers until a cover of at least 24” from the top of the pipe has been achieved. The first 12” of backfill shall be sand or fine gravel less than ½” in diameter. The remainder of the backfill shall be void of rocks, frozen earth and foreign material over 2 ” in diameter. The trench shall be compacted to comply with H-20 Highway loading.

Accessories:

- Heat Tracing

System Options:

- *Optional metallic casings for above-ground applications include Spiral Lockseam in Galvanized, Aluminum, or Stainless Steel.

- *Optional non-metallic casings for below grade offered include, Filament Wound FRP.
- *Insulation thickness will vary depending on the type of insulation specified and the operating temperature.