SECTION 230534 - GLYCOL HEAT TRANSFER FLUID AND FEED SYSTEM

PART 1-GENERAL

1.1 SECTION INCLUDES

A. Pre-mixed propylene glycol solution for the closed loop heating water systems, and chilled water systems.

B. Glycol Feed System

1.2 SUBMITTALS

A. Submit shop drawings and product data per applicable Division I Specification.

B. Shop drawings shall include product data, system capacity adjustments, MSDS sheets, and requirements for installation.

1.3 QUALITY ASSURANCE

A. Chemical shall meet all state and local pollution control regulations.

B. Heat transfer solution shall be inhibited and specifically for use in commercial HVAC systems.

C. System shall have a minimum 8-inch by 10-inch metal system nameplate denoting the following

1. Date of original HTF charge.
2. Description of heat transfer fluid.
3. Manufacturer’s name, address, and telephone.
4. Percent ethylene glycol.
5. Freeze point and burst point.
6. Total system gallons.
7. Reference to material safety sheet.
8. Instruction for sampling of fluid.
9. Month for annual sampling.
10. Mailing instructions.

1.4 WARRANTY

A. Contractor shall warranty entire systems and equipment for a period of one (1) year.

PART 2-PRODUCTS

2.1 PROPYLENE GLYCOL-BASED PRODUCT

A. MANUFACTURERS

1. Dow

2. Thermal Fluids Inc.

3. Dynalene

4. Coldflow HTP Covalent laboratories

5. Interstate Chemical

B. Provide a 30% by volume (as installed) concentration of industrial grade inhibited propylene glycol heat transfer fluid as manufactured by the Dow Chemical Company (DOWFROST HD). The solution shall provide burst protection to –13ºF. The propylene glycol solution as supplied by the manufacturer shall contain corrosion inhibitors specially formulated for cool storage services to keep internal surfaces free from corrosion and fouling and shall include buffers, reserve alkalinity agents, antifoaming additives, and a fluorescent dye to aid in leak detection. The solution shall be easily re-inhibited using specially formulated inhibitor readily available from the field manufacturer. The manufacturer shall provide at no cost propylene glycol yearly solution laboratory analysis. The analysis shall accurately report propylene glycol concentration, freeze point temperature, inhibitor level, alkalinity, particulate and recommended additions of glycol, inhibitor and buffers to ensure 20 Year minimum life. The fluid shall pass the ASTM D-1 384 test with less than 0.5 mils penetration per year.

C. Automotive antifreeze or any solution containing silicates will not be acceptable.

D For systems volume of 1000 gallons or more, propylene glycol shall be supplied prediluted with water. For smaller systems propylene glycol concentrate shall be mixed with good quality water with less than 25 PPM of chloride and sulfate and less than 50 PPM of hard water ions (Ca++, Mg++). If good quality is unavailable supply pre-diluted solution.

2.2 GLYCOL FEED SYSTEM

A. MANUFACTURERS

1. Neptune Chemical Pump Company, Inc.

2. Advantage Control

3. IAT Construction Services, Inc.

4. John Wood Company

B. General – Provide a completely, preassembled package Glycol Feed System as manufactured by Neptune Chemical Pump Company. Size and capacity as noted on drawings.

C. Pump – Provide dual pump system with separate discharge and pressure switches to feed two independent systems from same tank. The pumps shall be a bronze rotary gear pump with a capacity of 1.5 gpm at a pressure of 100 psi. Pumps shall be mounted below the tank.

D. Tank – The tank shall be constructed of polyethylene and be provided with a four-leg carbon steel stand with four bolt pads. The tank stand shall have upper and lower steel support banding to insure tank stability. Tank stand shall be painted with a two-coat system consisting of an oxide primer and alkyd enamel finish.

E. Piping – Pump suction piping shall be piped using PVC fittings and tubing.

F. A PVC ball valve and a cast iron "Y" strainer shall be provided in the pump suction piping.

G. Pump discharge manifold shall be piped using Schedule 40 brass fittings suitable for chilled or hot water service. A pressure switch, ball valve, brass check valve and brass relief valve shall be mounted on the pump discharge assembly manifold. Piping shall be supported at both the top and bottom of the tank frame. The brass relief valve shall be piped back to the tank using PVC tubing and fittings. A pressure gauge shall be mounted in the discharge piping.

H. Panel – A 115 Volt control panel with NEMA 4X enclosure consisting of the following shall be provided: H-O-A selector switch with running light and magnetic starter for feed pump. In AUTO, the pump is operated by the skid-mounted differential (adjustable) pressure switch and interlocked to a low- level float switch mounted in the side of the tank. Level switch also energizes a low- level audible alarm with silence push button for alarm acknowledgement. Panel shall also be equipped with an 8' power cord with rounded plug. Panel shall be mounted to the tank frame and positioned at eye level for ease of operation. Panels mounted on tank lids or mounted below the tank are unacceptable. All electrical components (pressure switch, level switch, and pump) shall be wired in conduit to control panel. Loose, exposed, unprotected wire is unacceptable.

PART 3-EXECUTION

3.1 INSTALLATION

A. Install fluid on suction side of system pump. Provide all piping and valving per manufacturers recommendations.

3.2 HYDRONIC SYSTEMS FLUSHING

A. Hydronic systems shall be thoroughly flushed with approved pre-cleaning agent prior to being placed into service.

END OF SECTION 230534

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