SECTION 232123

HVAC PUMPS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. In-line circulators.

B. Vertical in-line pumps.

C. Base mounted pumps.

1.2 RELATED SECTIONS

A. Division 03 - Cast-in-Place Concrete.

B. Section 23 05 13 - Motors.

C. Section 23 05 48 - Vibration Isolation.

D. Section 23 07 00 - Piping Insulation.

E. Section 23 07 16 - Equipment Insulation.

F. Section 23 21 13 - Hydronic Piping.

G. Section 23 21 16 - Hydronic Specialties.

H. Section 26 05 05 - Equipment Wiring Systems: Electrical characteristics and wiring connections.

1.3 REFERENCES

A. UL 778 - Motor Operated Water Pumps.

B. NFPA 70 - National Electrical Code.

1.4 PERFORMANCE REQUIREMENTS

A. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.

1.5 SUBMITTALS

A. Submit under the provisions of Division 01.

B. Product Data: Provide certified pump curves showing performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable. Include electrical characteristics and connection requirements.

C. Manufacturer's Installation Instructions: Indicate hanging and support requirements and recommendations.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

A. Submit under the provisions of Division 01.

B. Operation and Maintenance Data: Include installation instructions, assembly views, lubrication instructions, and replacement parts list.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacture, assembly, and field performance of pumps with a minimum of three (3) documented years' experience.

B. Alignment: Base mounted pumps shall be aligned by qualified millwright.

1.8 REGULATORY REQUIREMENTS

A. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose specified and indicated.

1.9 EXTRA MATERIALS

A. Furnish under the provisions of Division 01.

B. Provide one set of mechanical seals for each pump.

C. Provide two (2) sets of cartridges for each side-stream filter.

PART 2 PRODUCTS

2.1 SYSTEM LUBRICATED CIRCULATORS

A. Manufacturers:
   1. Bell & Gossett Model SLC-25.
   2. Other acceptable manufacturers offering equivalent products.
      a) Taco.
      b) Armstrong.
      c) Grundfos/PACO.

B. Type: Horizontal shaft, single stage, direct connected with multiple speed wet rotor motor for in-line mounting, for 140-psig maximum working pressure, 230 degrees F (110 degrees C) maximum water temperature.

C. Casing: Bronze with flanged pump connections.

D. Impeller, Shaft, Rotor: Stainless Steel.

E. Bearings: Metal Impregnated carbon (graphite) and ceramic.

F. Motor: Impedance protected, single speed.

2.2 IN-LINE CIRCULATORS

A. Manufacturers:
   1. Bell & Gossett Series 60.

2. Other acceptable manufacturers offering equivalent products.
    a) Taco.
    b) Armstrong.
    c) Grundfos/PACO.

B. Type: Horizontal shaft, single stage, direct connected, with resiliently mounted motor for in-line mounting, oil lubricated, for 175-psig maximum working pressure.

C. Casing: Cast iron, with flanged pump connections.

D. Impeller: Stamped brass or cast bronze, keyed to shaft.

E. Bearings: Two oil lubricated bronze sleeves.

F. Shaft: Alloy or stainless steel with copper or bronze sleeve, integral thrust collar.

G. Seal: Carbon rotating against a stationary ceramic seat, 225 degrees F maximum continuous operating temperature.

H. Drive: Flexible coupling.

2.3 VERTICAL IN-LINE PUMPS

A. Manufacturers:
1. Bell & Gossett Series 80.
2. Other acceptable manufacturers offering equivalent products.
    a) Taco.
    b) Armstrong.
    c) Grundfos/PACO.

B. Type: Vertical, single stage, close coupled, radially split casing, for in-line mounting, for 175-psig working pressure.

C. Casing: Cast iron, with suction and discharge gage port, casing wear ring, seal flush connection, drain plug, flanged suction, and discharge.

D. Impeller: Bronze, fully enclosed, keyed directly to motor shaft or extension.

E. Shaft: Carbon steel with stainless steel impeller cap screw or nut and bronze sleeve.

F. Seal: Carbon rotating against a stationary ceramic seat, 225 degrees F maximum continuous operating temperature.

2.4 BASE MOUNTED PUMPS

A. Manufacturers:
1. Bell & Gossett Series 1510.
2. Other acceptable manufacturers offering equivalent products.
    a) Taco.
    b) Armstrong.
    c) Grundfos/PACO.

B. Type: Horizontal shaft, single stage, direct connected, radially split casing, for 175-psig maximum working pressure.

C. Casing: Cast iron, with suction and discharge gage ports, renewable bronze casing wearing rings, seal flush connection, drain plug, flanged suction, and discharge.

D. Impeller: Bronze, fully enclosed, keyed to shaft.

E. Bearings: Grease lubricated roller or ball bearings.

F. Shaft: Alloy steel with copper, bronze, or stainless-steel shaft sleeve.

G. Seal: Carbon rotating against a stationary ceramic seat, 225 degrees F maximum continuous operating temperature.

H. Drive: Flexible coupling with OSHA approved coupling guard.

I. Baseplate: Cast iron or fabricated steel with integral drain rim.

PART 3 EXECUTION

3.1 PREPARATION

A. Verify that electric power is available and of the correct characteristics.

3.2 INSTALLATION

A. Install in accordance with the manufacturer's instructions.

B. Provide access space around pumps for service. Provide no less than minimum as recommended by manufacturer.

C. Decrease from line size with long radius reducing elbows or reducers. Support piping adjacent to pump such that no weight is carried on pump casings. For close coupled or base mounted pumps, provide support under elbows on pump suction and discharge line sizes 4 inches and over.

D. Provide line sized shut-off valve and pump suction fitting on pump suction, and line sized combination pump discharge valve on pump discharge.

E. Provide air cock and drain connection on horizontal pump casings.

F. Provide drains for bases and seals, piped to and discharging into floor drains.

G. Check, align, and certify alignment of base mounted pumps prior to start-up.

H. Install close coupled and base mounted pumps on concrete housekeeping base, with anchor bolts, set and level, and grout in place. Refer to Division 03.

I. Lubricate pumps before startup.

END OF SECTION