SECTION 22 14 33
PACKAGED, PEDESTAL DRAINAGE PUMP UNITS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Packaged pedestal drainage pump units.

1.2 RELATED WORK

A. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

B. Section 22 05 12, GENERAL MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT.

C. Section 26 29 11, MOTOR CONTROLLERS.

1.3 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data:

1. Pump:
   a. Manufacturer and model.
   b. Operating speed.
   c. Capacity.
   d. Characteristic performance curves.
2. Motor:
   a. Manufacturer, frame, and type.
   b. Speed.
   c. Current Characteristics and HP.
   d. Efficiency.

C. Certified copies of all the factory and construction site test data sheets and reports.

D. Complete operating and maintenance manuals including wiring diagrams, technical data sheets and information for ordering replaceable parts:

1. Include complete list which indicates all components of the system.
2. Include complete diagrams of the internal wiring for each item of equipment.
3. Diagrams shall have their terminals identified to facilitate installation, operation and maintenance.

1.4 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. National Electrical Manufacturers Association (NEMA):

ICS6-93 (R2006).....Industrial Control and Systems Enclosures

250-2008.....Enclosures for Electrical Equipment (1000 Volts Maximum)

C. Underwriters' Laboratories, Inc. (UL):
508-99 (R2008)..... Standards For Industrial Control Equipment

PART 2 - PRODUCTS

2.1 PACKAGED, DUPLEX PEDESTAL DRAINAGE PUMP UNIT

A. Packaged, duplex pedestal drainage pump units shall be complete duplex pump units provided by Myers Equipment or approved equal. Unit shall consist of the following:
1. Two (2) Aurora 520 Series 1.5x2x6, 1/2 HP, 115V, 1-Phase vertical sump pumps with strainers and steel mounting plates.
2. One (1) duplex pump control panel, Myers or approved equal, in a NEMA 4x fiberglass enclosure. Includes alarm light and bell, elapse time meters, remote alarm contact, United Alarm Products AD-2000 alarm dialer or approved equal, HOA switches, and IEC motor starters.
3. One (1) 48"x60" fiberglass basin with anti-flotation collar and 8" cast iron inlet hub(s).
4. Four (4) float switches.
5. One (1) stainless steel float rack.
6. Two (2) 1-1/2" pipe unions.
7. Two (2) 1-1/2" ball valves.
8. Two (2) 1-1/2" ball check valves.

2.2 PEDESTAL DRAINAGE PUMP

A. Centrifugal, vertical, designed for 140 degrees F maximum water temperature. Pump shall have a capacity of 50 GPM at 16 feet of head when driven by a 1/2 HP 120 volt 1 phase electric motor. Driver shall be electric motor. Provide perforated suction strainer. System shall include two pumps with alternator as required by the Contract Documents:
1. Pump housings may be cast iron, bronze, aluminum or stainless steel.

B. Impeller: Bronze.

C. Shaft: Bronze, stainless steel or other approved corrosion-resisting metal.

D. Bearings: As required to hold shaft alignment, anti-friction type for thrust permanently lubricated.

E. Motor NEMA 4: Maximum 104 degrees F ambient temperature rise, drip proof , voltage and phase as shown in schedule on Electrical drawings conforming to NEMA 250-Type 4. Motor shall be non-overloading over the entire pump curve. Refer to Section 22 05 12, GENERAL MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT.

F. Starting Switch: Manually-operated, tumbler type, as specified in Section 26 29 11, MOTOR CONTROLLERS.

G. Automatic Control and Level Alarm: Furnish a control panel in a Nema 4X enclosure for outdoors. The controls shall be suitable for operation with the electrical characteristics listed on the Electrical drawings. The control panel shall have a level control system with switches to start and stop pumps automatically, and to activate a high water alarm. The level control system will include sensors in the sump that detect the level of the liquid. The sensors shall be float type switches. The high water alarm shall have a red beacon light at the control panel and a buzzer, horn, or bell. The alarm shall have a silencing switch. Provide auxiliary contacts for remote dial-out connection to the telephone system. The circuitry of the control panel shall include:
   1. power switch to turn on/off the automatic control mechanism
   2. HOA switches to manually override automatic control mechanism
   3. run lights to indicate when pumps are powered up
   4. level status lights to indicate when water in sump has reached the predetermined on/off and alarm levels
   5. magnetic motor contactors
   6. disconnect/breaker for each pump
   7. automatic motor overload protection

H. For a duplex system, provide an alternating relay to automatically alternate leadoff and standby duties of each pump of a duplex unit at the end of each pumping cycle. Standby pump shall start when water level in sump rises to a predetermined level that indicates excessive inflow or failure of the lead pump.

I. Sensors that detect the level of water in the sump shall be so arranged as to allow the accumulation of enough volume of liquid below the normal on level that the pump will run for a minimum cycle as recommended by pump manufacturer to prevent short cycling. Sensors shall be located to activate the alarm adequately before the water level rises to within 1 foot of the sump cover.

J. Provide three separate power supplies to the control panel, one for the control/alarm circuitry and one for power to each of the pump motors. Each power supply is to be fed from its own breaker so that if a pump overload trips a breaker, the alarm system will still function. Each power supply is to be wired in its own conduit.

K. Wiring from the sump to the control panel shall have separate conduits for the pump power and for the sensor switches. All conduits are to be sealed at the basin and at the control panel to prevent the intrusion of moisture and of flammable and/or corrosive gases.

L. Sump: Furnish fiberglass basin with integral anti-flotation collar at the base and steel covers. Covers shall have a manhole with a bolted cover of minimum size to inspect and service the pumps, vent connection, and openings for pumps and controls. Sump shall be sized to allow an adequate volume of water to accumulate for a minimum one minute cycle of pump operation.

M. Provide a union, check and ball valve in the discharge piping of each pump.

N. Removal/Disconnect System: A removal/disconnect system shall be provided. Where the sump depth is greater than five feet or other conditions exist to make the removal of the pump difficult or hazardous, the system shall include a rail guided disconnect apparatus to allow the pump to be pulled up out of the sump without workers entering the sump.

PART 3 - EXECUTION

3.1 STARTUP AND TESTING

A. Make tests as recommended by product manufacturer and listed standards and under actual or simulated operating conditions. Tests of the various items of equipment shall be performed simultaneously with the system of which each item is an integral part.

B. Tests shall include system capacity and all control and alarm functions.

C. When any defects are detected, correct defects and repeat test.

D. The COR will observe startup and contractor testing of selected equipment. Coordinate the startup and contractor testing schedules with the COR. Provide a minimum of 7 days prior to notice.

3.2 DEMONSTRATION AND TRAINING

A. Provide services of manufacturer’s technical representative for four hours to instruct VA Personnel in operation and maintenance of units.

B. Submit training plans and instructor qualifications to COR.

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