

SECTION 22 13 29
SANITARY SEWERAGE PUMPS

PART 1 - GENERAL**1.1 DESCRIPTION**

Sanitary sewerage pump, and associated electrical, plumbing, and vent connections.

1.2 RELATED WORK

- A. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.
- B. Section 26 29 11, LOW-VOLTAGE MOTOR STARTERS.
- C. Section 22 05 12, GENERAL MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT.
- D. Section 22 13 00, FACILITY SANITARY SEWERAGE.
- E. Section 33 00 00, SANITARY SEWERAGE UTILITIES.
- F. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.
- G. Section 26 05 21, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW).

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 W (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 connection 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 (R2001).....Industrial Control and Systems Enclosures
250-03.....Enclosures for Electrical Equipment (1000 Volts Maximum)
- C. Underwriters' Laboratories, Inc. (UL):
508-99 (R2002).....Safety Industrial Control Equipment

PART 2 - PRODUCTS**2.1 SANITARY SEWERAGE PUMP**

- A. E-One IH 091 Indoor Grinder Pump System, or approved equivalent.
- B. Pump to be capable of 15 gpm at 0 psig, and 7.8 gpm at 80 psig. Pump must be capable of operating without damage at negative head.
- C. Motor to be a 1 hp, 1725 rpm, 240 V, 60 Hz, 1 Phase motor with starting current not to exceed 30 A and high starting torque of 8.4 foot-pounds.
- D. Pump to include 91 gallon tank, electrical quick disconnect, check valve, anti-siphon valve, and pump cover.
- E. Controls shall include level sensing and a NEMA 4X UL-listed alarm panel.
- F. A Run-time/hour meter and an event/cycle counter shall be provided.
- G. A low voltage, run dry, and high system pressure protection package shall be provided.
- H. The pump shall be on its own circuit.
- I. A battery backup for 24 hours of use shall be provided.
- J. Automatic Control and Level Alarm: Furnish a control panel in a Nema 1 enclosure for indoors or 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 may be float type switches, ultrasonic level sensors, transducers, or other appropriate equipment. 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 alarming to the Energy Control Center (ECC). The circuitry of the control panel shall include:
- Power switch to turn on/off the automatic control mechanism
 - HOA switches to manually override automatic control mechanism

- Run lights to indicate when pumps are powered up
 - Level status lights to indicate when water in sump has reached the predetermined on/off and alarm levels
 - Magnetic motor contactors
 - Disconnect/breaker for each pump
 - Automatic motor overload protection
1. 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 of one minute. Sensors shall be located to activate the alarm adequately before the water level rises to the inlet pipe.
 2. Provide two separate power supplies to the control panel, one for the control/alarm circuitry and one for power to 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. 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.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install the pump unit in accordance with the manufacturer's instructions. Connect to vent pipe, incoming waste pipe, external sanitary sewer, and power supply, in accordance with the plumbing and electrical specifications.

3.1 TEST

- A. Make tests as recommended by product manufacturer and listed standards and under actual or simulated operating conditions and prove full compliance with design and specified requirements. Tests of the various items of equipment shall be performed simultaneously with the system of which each item is an integral part.
- B. When any defects are detected, correct defects and repeat test.

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