

SECTION 22 13 29
SANITARY SEWERAGE PUMPS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Grinder type sewage pumps utilizing an integral stainless steel cutting device system.
- B. Pump capacity. See schedule on Drawing.
- C. Low voltage starters

1.2 RELATED WORK

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

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.
 - 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 list indicating all components of the systems.

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.

E. Completed System Readiness Checklist provided by the Commissioning Agent and completed by the contractor, signed by a qualified technician and dated on the date of completion, in accordance with the requirements of Section 22 08 00 COMMISSIONING OF PLUMBING SYSTEMS.

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):

ICS 6-1993 (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 SANITARY SEWERAGE PUMP

A. Grinder type designed for 60 degrees C (140 degrees F) maximum water service. Driver shall be electric motor. Support shall be rigid type. Systems to include pumps as required by the Contract Documents.

1. Pump housings may be cast iron, bronze, or stainless steel. Cast iron housings for submersible pumps shall be epoxy coated.

B. Impeller: Brass, bronze or cast iron, non-clog, to accommodate 50 mm (2") solids.

C. Shaft: Stainless steel or other approved corrosion-resisting metal.

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

E. Characteristics: Head capacity characteristics shall not permit overloading at any point of the pump curve.

- F. Motor: Maximum 40 degrees C (104 degrees F) ambient temperature rise, drip-proof, voltage and phase as shown in schedule on Electrical drawings conforming to NEMA 250-Type 4. Size the motor capacity to operate pump without overloading the motor at any point on the pump curve.
- G. Starting Switch: Manually-operated, tumbler type.
- H. Automatic Control and Level Alarm: Provide control panel in a NEMA 1 enclosure for indoors. 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. 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
 8. Provide auxiliary contacts for remote alarming to the Energy Control Center and BAC net compatible open-protocol type interface to DDC Controls System.
- 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 time, as recommend by the pump manufacturer. Sensors shall be located to activate the alarm adequately before the water level rises to the inlet pipe.

J. 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.

K. Provide a union, check and ball valve in the discharge from each pump.

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 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. The tests shall include system capacity and all control and alarm functions.
- C. When any defects are detected, correct defects and repeat test.
- D. The commissioning Agent will observe startup and contractor testing of selected equipment. Coordinate the startup and contractor testing schedules with the Resident Engineer and Commissioning Agent. Provide a minimum of 7 days prior to notice.

3.2 COMMISSIONING

- A. Provide commissioning documentation accordance with the requirements of Section 22 08 00 - COMMISSIONING OF PLUMBING SYSTEMS for all inspection, startup, and contractor testing required above and required by the System Readiness Checklist provided by the Commissioning Agent.
- B. Components provided under this section of the specification will be tested as part of a larger system. Refer to Section 22 08 00 - COMMISSIONING OF PLUMBING SYSTEMS and related sections for contractor responsibilities for system commissioning.

3.3 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 in accordance with the requirements of Section 22 08 00 COMMISSIONING OF PLUMBING SYSTEMS.

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