SECTION 22 13 36
PACKAGED, WASTEWATER PUMP UNITS

SPEC WRITER NOTES:
1. Use this section only for NCA projects.
2. Delete between //----// if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.

PART 1 - GENERAL

1.1 DESCRIPTION
A. Packaged wastewater pump units.

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.

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

1.5 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):
   250-2008 ................. Enclosures for Electrical Equipment (1000 Volts Maximum)
C. Underwriters' Laboratories, Inc. (UL):
   508-08 .................. Industrial Control Equipment
PART 2 – PRODUCTS

SPEC WRITER NOTES: Make material requirements agree with applicable requirements specified in the referenced Applicable Publications. Update and specify only that which applies to the project. Coordinate and assure that the electrical characteristics specified below are clearly shown on the proper drawings.

2.1 WASTEWATER PUMP UNITS

SPEC WRITER NOTES: Coordinate and assure that the electrical characteristics specified below are clearly shown on the proper drawings.

A. Centrifugal, vertical, designed for 40 degrees C maximum water service. Driver shall be electric motor. Support shall be substantial rigid type. Systems may include one, two, or more pumps as required by conditions. Where needed grinder pumps may be installed.

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

B. Impeller: Brass or bronze, non-clog, to accommodate 65 mm (2-1/2 inch) solids except for grinder pumps.

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

D. Bearings: As required to hold shaft alignment, anti-friction type for thrust. For vertical sump pumps, if bearings for shaft in sump require lubrication, provide a method to lubricate bearings without opening the sump or removing the pump.

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

SPEC WRITER NOTES: Use NEMA 4 for dripproof (vertical) or NEMA 6P for completely enclosed (submersible).

F. Motor: Maximum 40 degrees C (104 degrees F) ambient temperature rise, dripproof, voltage and phase as shown in schedule on Electrical drawings conforming to NEMA 250-Type 4. Motor capacity to operate pump without overloading the motor. Refer to Section 22 05 12, GENERAL MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT.

G. Starting Switch: Manually-operated, tumbler type, as specified in Section 26 29 11, LOW-VOLTAGE MOTOR STARTERS.

H. 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. 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

I. 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.

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.

J. Provide a check valve and gate valve in the discharge from each pump.

PART 3 - EXECUTION

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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