

## SECTION 221429 - SUMP PUMPS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Submersible sump pumps.
  - 2. Wet-pit-volute sump pumps.
  - 3. Sump-pump basins and basin covers.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Wiring Diagrams: For power, signal, and control wiring.
- C. Operation and maintenance data.

#### 1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. UL Compliance: Comply with UL 778 for motor-operated water pumps.

### PART 2 - PRODUCTS

#### 2.1 SUBMERSIBLE SUMP PUMPS

- A. Submersible, Fixed-Position, Single-Seal Sump Pumps:
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Barnes; Crane Pumps & Systems.
    - b. Bell & Gossett Domestic Pump; ITT Corporation.
    - c. Flo Fab inc.
    - d. Glentronics, Inc.
    - e. Goulds Pumps; ITT Corporation.
    - f. Grundfos Pumps Corp.
    - g. Liberty Pumps.
    - h. Little Giant Pump Co.
  
    - i. McDonald, A. Y. Mfg. Co.
    - j. Pentair Pump Group; Hydromatic Pumps.

- k. Pentair Pump Group; Myers.
  - l. Stancor, Inc.
  - m. Sta-Rite Industries, Inc.
  - n. Weil Pump Company, Inc.
  - o. Weinman Division; Crane Pumps & Systems.
  - p. Zoeller Company.
2. Description: Factory-assembled and -tested sump-pump unit.
3. Pump Type: Submersible, end-suction, single-stage, close-coupled, overhung-impeller, centrifugal sump pump as defined in HI 1.1-1.2 and HI 1.3.
4. Pump Casing: Cast iron, with strainer inlet, legs that elevate pump to permit flow into impeller, and vertical discharge for piping connection.
5. Impeller: Statically and dynamically balanced, ASTM A 532/A 532M, abrasion-resistant cast iron and ASTM B 584, cast bronze, semiopen design for clear wastewater handling, and keyed and secured to shaft.
6. Pump and Motor Shaft: Stainless steel or steel, with factory-sealed, grease-lubricated ball bearings.
7. Seal: Mechanical.
8. Motor: Hermetically sealed, capacitor-start type; with built-in overload protection; lifting eye or lug; and three-conductor, waterproof power cable of length required and with grounding plug and cable-sealing assembly for connection at pump.
- a. Motor Housing Fluid: Oil.
9. Controls:
- a. Enclosure: NEMA 250, Type 1
  - b. Switch Type: Pedestal-mounted float switch with float rods and rod buttons.
  - c. Automatic Alternator: Start pumps on successive cycles and start multiple pumps if one cannot handle load.
  - d. Float Guides: Pipe or other restraint for floats and rods in basins of depth greater than 60 inches (1500 mm).
  - e. High-Water Alarm: Cover-mounted, compression-probe alarm, with electric bell; 120-V ac, with transformer and contacts for remote alarm bell.
10. Controls:
- a. Enclosure: NEMA 250, Type 1 ; wall-mounted.
  - b. Switch Type: Mechanical-float type, in NEMA 250, Type 6 enclosures with mounting rod and electric cables.
  - c. Automatic Alternator: Start pumps on successive cycles and start multiple pumps if one cannot handle load.
  - d. High-Water Alarm: Rod-mounted, NEMA 250, Type 6 enclosure with mechanical-float, mercury-float, or pressure switch matching control and electric bell; 120-V ac, with transformer and contacts for remote alarm bell.
11. Control-Interface Features:
- a. Remote Alarm Contacts: For remote alarm interface.
  - b. Building Automation System Interface: Auxiliary contacts in pump controls for interface to building automation system and capable of providing the following:

- 1) On-off status of pump.
- 2) Alarm status.

## 2.2 WET-PIT-VOLUTE SUMP PUMPS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Alyan Pump Company.
  2. Armstrong Pumps Inc.
  3. Chicago Pump Company; a division of Yeomans Chicago Corporation.
  4. Federal Pump Corp.
  5. Flo Fab inc.
  6. PACO Pumps; Grundfos Pumps Corporation, U.S.A.
  7. Peerless Pump, Inc.
  8. Pentair Pump Group; Aurora Pump.
  9. Swaby Manufacturing Company.
  10. Tramco Pump Company.
  11. Vertiflo Pump Company.
  12. Weil Pump Company, Inc.
  13. Weinman Division; Crane Pumps & Systems.
  14. Yeomans Chicago Corporation.
- B. Description: Factory-assembled and -tested sump-pump unit.
- C. Pump Type: Wet-pit-volute, single-stage, separately-coupled, overhung-impeller, centrifugal sump pump as defined in HI 1.1-1.2 and HI 1.3.
- D. Pump Casing: Cast iron, with strainer inlet and threaded connection for NPS 2 (DN 50) and smaller and flanged connection for NPS 2-1/2 (DN 65) and larger discharge piping.
- E. Impeller: Statically and dynamically balanced, ASTM A 532/A 532M, abrasion-resistant cast iron and ASTM B 584, cast bronze, semiopen design for clear wastewater handling, and keyed and secured to shaft.
- F. Sleeve Bearings: Bronze. Include oil-lubricated, intermediate sleeve bearings at 48-inch (1200-mm) maximum intervals if basin depth is more than 48 inches (1200 mm), and grease-lubricated, ball-type thrust bearings.
- G. Pump and Motor Shaft Coupling: Flexible, capable of absorbing torsional vibration and shaft misalignment.
- H. Pump Discharge Piping: Factory or field fabricated, galvanized, ASTM A 53/A 53M, Schedule 40, steel pipe with ASME B16.1, Class 125, cast-iron flanges and flanged fittings or ASME B16.4, Class 125, gray iron threaded fittings .
- I. Support Plate: Cast iron or coated steel and strong enough to support pumps, motors, and controls. Refer to Part 2 "Sump-Pump Basins and Basin Covers" Article for requirements.
- J. Shaft Seal: Stuffing box, with graphite-impregnated braided-yarn rings and bronze packing gland.

- K. Motor: Single-speed; grease-lubricated ball bearings and mounting on vertical, cast-iron pedestal.
- L. Controls:
  - 1. Enclosure: NEMA 250, Type 1
  - 2. Switch Type: Pedestal-mounted float switch with float rods and rod buttons.
  - 3. Automatic Alternator: Start pumps on successive cycles and start multiple pumps if one cannot handle load.
  - 4. Float Guides: Pipe or other restraint for floats and rods in basins of depth greater than 60 inches (1500 mm).
  - 5. High-Water Alarm: Cover-mounted, compression-probe alarm, with electric bell; 120-V ac, with transformer and contacts for remote alarm bell.
- M. Controls:
  - 1. Enclosure: NEMA 250, Type 1 wall-mounted.
  - 2. Switch Type: Mechanical-float type, in NEMA 250, Type 6 enclosures with mounting rod and electric cables.
  - 3. Automatic Alternator: Start pumps on successive cycles and start multiple pumps if one cannot handle load.
  - 4. High-Water Alarm: Rod-mounted, NEMA 250, Type 6 enclosure with mechanical-float, mercury-float, or pressure switch matching control and electric bell; 120-V ac, with transformer and contacts for remote alarm bell.
- N. Control-Interface Features:
  - 1. Remote Alarm Contacts: For remote alarm interface.
  - 2. Building Automation System Interface: Auxiliary contacts in pump controls for interface to building automation system and capable of providing the following:
    - a. On-off status of pump.
    - b. Alarm status.

### 2.3 SUMP PUMP CAPACITIES AND CHARACTERISTICS

- A. Unit Capacity: Refer to drawings.
- B. Number of Pumps: One .
- C. Each Pump:
  - 1. Capacity: Refer to drawings.
  - 2. Total Dynamic Head: Refer to drawings.
  - 3. Speed: Refer to drawings
  - 4. Discharge Size: Refer to drawings
  - 5. Electrical Characteristics:
    - a. Motor Horsepower: Refer to drawings
    - b. Volts: 120.
    - c. Phases: Single.
    - d. Hertz: 60.

- D. Unit Electrical Characteristics: Refer to drawings.

## 2.4 MOTORS

- A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 22 Section "Common Motor Requirements for Plumbing Equipment."
  - 1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
  - 2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Division 26 Sections.
- B. Motors for submersible pumps shall be hermetically sealed.

## PART 3 - EXECUTION

### 3.1 EARTHWORK

- A. Excavation and filling are specified in Division 31 Section "Earth Moving."

### 3.2 INSTALLATION

- A. Pump Installation Standard: Comply with HI 1.4 for installation of sump pumps.

END OF SECTION 221429