

## 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]:**
  - 2. Basis-of-Design Product: Subject to compliance with requirements, provide **[product indicated on Drawings]** or comparable product by one of 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.
3. Description: Factory-assembled and -tested sump-pump unit.
  4. 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.
  5. Pump Casing: Cast iron, with strainer inlet, legs that elevate pump to permit flow into impeller, and vertical discharge for piping connection.
  6. 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.
  7. Pump and Motor Shaft: Stainless steel[ or steel], with factory-sealed, grease-lubricated ball bearings.
  8. Seal: Mechanical.
  9. 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].
10. 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.
11. 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.
12. 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]:**
- B. Basis-of-Design Product: Subject to compliance with requirements, provide **[product indicated on Drawings]** or comparable product by one of 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.
- C. Description: Factory-assembled and -tested sump-pump unit.
- D. 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.
- E. 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.
- F. 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.
- G. 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.
- H. Pump and Motor Shaft Coupling: Flexible, capable of absorbing torsional vibration and shaft misalignment.

- I. 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**] .
  - J. 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.
  - K. Shaft Seal: Stuffing box, with graphite-impregnated braided-yarn rings and bronze packing gland.
  - L. Motor: Single-speed; grease-lubricated ball bearings and mounting on vertical, cast-iron pedestal.
  - M. 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.
  - N. 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**] **<Insert type>** switch matching control and electric bell; 120-V ac, with transformer and contacts for remote alarm bell.
  - O. 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