## **SECTION 22 14 29 - SUMP PUMPS**

# **PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following sump pumps and accessories, inside the building, for building drainage systems:
  - 1. Submersible sump pumps.
  - 2. Sump pump pits.
  - 3. Packaged, submersible, drainage pump units.
- B. Related Sections include the following:
  - 1. Division 22 Section "Plumbing Piping and Valves" for application in sanitary drainage systems.

## 1.3 SUBMITTALS

- A. Product Data: For each type and size of sump pump specified. Include certified performance curves with operating points plotted on curves, and rated capacities of selected models, furnished specialties, and accessories.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Operation and Maintenance Data: For each sump pump to include in emergency, operation, and maintenance manuals.

# 1.4 QUALITY ASSURANCE

- A. Retain first paragraph below to allow drawing details based on one manufacturer's product to establish requirements and still allow competition. Coordinate with Division 01 requirements.
- B. Product Options: Drawings indicate size, profiles, and dimensional requirements of sump pumps and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

# 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Retain shipping flange protective covers and protective coatings during storage.
- B. Protect bearings and couplings against damage.
- C. Comply with pump manufacturer's written rigging instructions for handling.

## 1.6 COORDINATION

A. Coordinate size and location of concrete bases and pits.

## **PART 2 - PRODUCTS**

## 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

## 2.2 SUBMERSIBLE SUMP PUMPS

- A. Manufacturers:
  - 1. ABS Pumps, Inc.
  - 2. Aermotor Pumps, Inc.
  - 3. Barnes; Crane Pumps & Systems.
  - 4. Bell & Gossett Domestic Pump; ITT Industries.
  - 5. BJM Corporation.
  - 6. EBARA International Corporation; Standard Pump Division.
  - 7. Federal Pump Corp.
  - 8. Gorman-Rupp Company (The).
  - 9. Goulds Pumps; ITT Industries.
  - 10. Grundfos Pumps Corp.
  - 11. Liberty Pumps.
  - 12. Little Giant Pump Co.
  - 13. McDonald, A. Y. Mfg. Co.
  - 14. Metropolitan Industries, Inc.
  - 15. Myers, F. E.; Pentair Pump Group (The).
  - 16. Paco Pumps, Inc.
  - 17. Stancor, Inc.
  - 18. Sta-Rite Industries, Inc.

- 19. Swaby Manufacturing Co.
- 20. Weil Pump Company, Inc.
- 21. Weinman Div.; Crane Pumps & Systems.
- 22. Zoeller Company.
- B. Description: Factory-assembled and -tested, simplex, single-stage, centrifugal, end-suction, submersible, direct-connected sump pumps complying with UL 778 and HI 1.1-1.2 and HI 1.3 for submersible sump pumps.
- C. Casing: Cast iron; with cast-iron inlet strainer, legs that elevate pump to permit flow into impeller, and vertical discharge with companion flange for piping connection.
- D. Impeller: ASTM A 48/A 48M, Class No. 25 A or higher cast iron; statically and dynamically balanced, semi open nonclog design, overhung, single suction, keyed and secured to shaft.
- E. Retain two paragraphs above or first two paragraphs below for conventional sump pumps.
- F. Retain two paragraphs below for either conventional or economy sump pumps.
- G. Pump and Motor Shaft: Steel, with factory-sealed, grease-lubricated ball bearings and double-mechanical seals.
- H. Motor: Hermetically sealed, capacitor-start type, with built-in overload protection; three-conductor waterproof power cable of length required, and with grounding plug and cable-sealing assembly for connection at pump. Comply with requirements in Division 22 Section "Common Motor Requirements for Plumbing Equipment."
  - 1. Moisture-Sensing Probe: Internal moisture sensor with moisture alarm.
- I. Pump Discharge Piping: Factory or field fabricated ASTM A 53 /A 53 M, Schedule 40, galvanized-steel pipe.
- J. Controls: Provide oil sensing unit with pump. See equipment schedule.
- K. Capacity and Characteristics: See equipment schedule.

## 2.3 SUMP PUMP PITS

A. As per structural drawings. Provide fiberglass grate over sump to be flush with floor. Grate shall be rated for a minimum of 300 lb. load and have openings for discharge pipe and power/control wiring.

## 2.4 PACKAGED DRAINAGE PUMP UNITS

- A. Submersible Units: Factory-assembled and -tested, single-stage, centrifugal, end-suction, automatic-operation, submersible, drainage pump unit.
  - 1. Manufacturers:
    - a. ABS Pumps, Inc.
    - b. Bell & Gossett Domestic Pump; ITT Industries.
    - c. Goulds Pumps; ITT Industries.

- d. Grundfos Pumps Corp.
- e. Liberty Pumps.
- f. Little Giant Pump Co.
- g. McDonald, A. Y. Mfg. Co.
- h. Myers, F. E.; Pentair Pump Group (The).
- i. Sta-Rite Industries, Inc.
- j. Zoeller Company.
- 2. Pump Body: Metal.
- 3. Impeller: Brass.
- 4. Retain two subparagraphs above or first two subparagraphs below.
- 5. Pump Body: Plastic.
- 6. Impeller: Plastic.
- 7. Pump Seals: Mechanical type.
- 8. Motor: Hermetically sealed, capacitor-start type, with built-in overload protection. Comply with requirements in Division 22 Section "Common Motor Requirements for Plumbing Equipment."
- 9. Power Cord: Three-conductor, waterproof cable of length required but not less than 72 inches, with grounding plug and cable-sealing assembly for connection at pump.
- 10. Control: Motor-mounted float switch. Enclosure: NEMA 250, Type 4X; wall-mounted.
- 11. Basin: Plastic.
  - a. Capacity: See equipment schedule.
  - b. Inlet Connection: See equipment schedule.
- B. Capacity and Characteristics: See equipment schedule.

# 2.5 FLEXIBLE CONNECTORS

#### A. Manufacturers:

- 1. Anamet, Inc.
- 2. Flex-Hose Co., Inc.
- 3. Flexicraft Industries.
- 4. Flex-Pression, Ltd.
- 5. Flex-Weld, Inc.
- 6. Hyspan Precision Products, Inc.
- 7. Mercer Rubber.
- 8. Metraflex, Inc.
- 9. Proco Products, Inc.
- 10. Tozen America Corporation.
- 11. Unaflex Inc.

- B. Description: 125-psig minimum working-pressure rating and ends matching pump connection:
  - 12. Bronze Flexible Connectors: Corrugated, bronze inner tubing covered with bronze wire braid. Include copper-tube ends or bronze flanged ends, braze welded to tubing.
  - 13. Stainless-Steel Flexible Connectors: Corrugated, stainless-steel inner tubing covered with stainless-steel wire braid. Include stainless-steel nipples or flanges, welded to tubing.

## 2.6 BUILDING AUTOMATION SYSTEM INTERFACE

- A. Provide auxiliary contacts in pump controllers for interface to building automation system. Include the following:
  - 1. On-off status of each pump.
  - 2. Alarm status.

#### **PART 3 - EXECUTION**

## 3.1 EXAMINATION

A. Examine roughing-in of plumbing piping to verify actual locations of storm drainage piping connections before sump pump installation.

## 3.2 CONCRETE

- A. Install concrete bases of dimensions indicated for pumps and controllers. Refer to Division 22 Section "Common Work Results for Plumbing."
  - 1. Revise four subparagraphs below based on installed equipment. Indicate dowel rod quantity, size, and spacing on Drawings.
  - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around full perimeter of base.
  - 3. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
  - 4. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 5. Install anchor bolts to elevations required for proper attachment to supported equipment.

# 3.3 SUMP PUMP INSTALLATION

- A. Install sump pumps according to applicable requirements in HI 1.4.
- B. Install pumps and arrange to provide access for maintenance including removal of motors, impellers, couplings, and accessories.
- C. Retain first paragraph below for wet-pit-mounted, vertical sump pumps.

- D. Set submersible sump pumps on sump floor. Make indirect connections to sanitary drainage piping.
- E. Install packaged, submersible, drainage pump unit basins on floor or concrete base unless recessed installation is indicated. Make direct connections to storm drainage piping.
- F. Support piping so weight of piping is not supported by pumps.

## 3.4 CONNECTIONS

- A. Coordinate piping installations and specialty arrangements with schematics on Drawings and with requirements specified in piping systems. If Drawings are explicit enough, these requirements may be reduced or omitted.
- B. Install piping adjacent to sump pumps to allow service and maintenance.
- C. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- D. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

# 3.5 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
  - 1. Complete installation and startup checks according to manufacturer's written instructions.
  - 2. Verify bearing lubrication.
  - 3. Disconnect couplings and check motors for proper direction of rotation.
  - 4. Verify that each pump is free to rotate by hand. If pump is bound or drags, do not operate until cause of trouble is determined and corrected.
  - 5. Verify that pump controls are correct for required application.
- B. Start pumps without exceeding safe motor power:
  - 1. Start motors.
  - 2. Open discharge valves slowly.
  - 3. Check general mechanical operation of pumps and motors.
- C. Test and adjust controls and safeties.
- D. Remove and replace damaged and malfunctioning components.
  - 1. Pump Controls: Set pump controls for automatic start, stop, and alarm operation as required for system application.
  - 2. Set field-adjustable switches and circuit-breaker trip ranges as indicated, or if not indicated, for normal operation.
- E. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project outside normal occupancy hours for this purpose.

# 3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain controls and pumps. Refer to Division 01 Section "Demonstration and Training."

# **END OF SECTION**

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