

**SECTION 22 14 33**  
**PACKAGED, PEDESTAL DRAINAGE 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 pedestal drainage pump units.
- B. A complete listing of all acronyms and abbreviations are included in Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

**1.2 RELATED WORK**

- A. //Section 01 00 01, GENERAL REQUIREMENTS (Major NCA Projects).//
- B. //Section 01 00 02, GENERAL REQUIREMENTS (Minor NCA Projects).//
- C. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- D. Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.
- E. //Section 01 91 00, GENERAL COMMISSIONING REQUIREMENTS.//
- F. //Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS: Seismic Restraint.//
- G. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.
- H. Section 22 05 12, GENERAL MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT.
- I. //Section 22 08 00, COMMISSIONING OF PLUMBING SYSTEMS.//
- J. Section 26 29 11, MOTOR CONTROLLERS.

**1.3 APPLICABLE PUBLICATIONS**

SPEC WRITER NOTE: Make material requirements agree with applicable requirements specified in the referenced Applicable Publications. Verify and update the publication list to that which applies to the project, unless the reference applies to all plumbing systems. Publications that apply to all plumbing systems may not be specifically referenced in the body of the specification, but, shall form a part of this specification. Verify and assure that the electrical characteristics specified below are clearly shown on the proper drawings.

- 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
  - 250-2014.....Enclosures for Electrical Equipment (1000 Volts Maximum)
- C. Underwriters' Laboratories, Inc. (UL):
  - 508-1999 (R2013).....Standards for Industrial Control Equipment
  - 778-2010 (R2014).....Standard for Motor-Operated Water Pumps

**1.4 SUBMITTALS**

- A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Information and material submitted under this section shall be marked "SUBMITTED UNDER SECTION 22 14 33, PACKAGED, PEDESTAL DRAINAGE PUMP UNITS", with applicable paragraph identification.
- C. Manufacturer's Literature and Data including: Full item description and optional features and accessories. Include dimensions, weights, materials, applications, standard compliance, model numbers, size, and capacity.
  - 1. Pump:
    - a. Manufacturer and model.
    - b. Operating speed (rpm).
    - c. Capacity.
    - d. Characteristic performance curves.
  - 2. Electric Motor:
    - a. Manufacturer.
    - b. Speed.
    - c. Current Characteristics and W (HP).
    - d. Efficiency.
  - 3. Control panel.
- D. Certified copies of all the factory and construction site test data sheets and reports.
- E. Complete operating and maintenance manuals including wiring diagrams, technical data sheets and information for ordering replacement parts:
  - 1. Include complete list which indicates all components of the system.

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, and troubleshooting.
- F. //Completed System Readiness Checklist provided by the CxA 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.//
- G. //Submit training plans and instructor qualifications in accordance with the requirements of Section 22 08 00, COMMISSIONING OF PLUMBING SYSTEMS.//

### 1.5 QUALITY ASSURANCE

- A. Bio-Based Materials: For products designated by the USDA's Bio-Preferred Program, provide products that meet or exceed USDA recommendations for bio-based content, so long as products meet all performance requirements in this specifications section. For more information regarding the product categories covered by the Bio-Preferred Program, visit <http://www.biopreferred.gov>.
- B. Guaranty: Warranty of Construction, FAR clause 52.246-21.

### 1.6 AS-BUILT DOCUMENTATION

SPEC WRITER NOTE: Coordinate O&M Manual requirements with Section 01 00 00, GENERAL REQUIREMENTS. O&M manuals shall be submitted for content review as part of the close-out documents.

- A. Submit manufacturer's literature and data updated to include submittal review comments and any equipment substitutions.
- B. Submit operation and maintenance data updated to include submittal review comments, substitutions and construction revisions shall be // in electronic version on compact disc or DVD // inserted into a three ring binder. All aspects of system operation and maintenance procedures, including piping isometrics, wiring diagrams of all circuits, a written description of system design, control logic, and sequence of operation shall be included in the operation and maintenance manual. The operations and maintenance manual shall include troubleshooting techniques and procedures for emergency situations. Notes on all special systems or devices such as damper and door closure interlocks shall be included. A List of recommended spare parts

(manufacturer, model number, and quantity) shall be furnished.

Information explaining any special knowledge or tools the owner will be required to employ shall be inserted into the As-Built documentation.

- C. The installing contractor shall maintain as-built drawings of each completed phase for verification; and, shall provide the complete set at the time of final systems certification testing. As-built drawings are to be provided, and a copy of them in Auto-CADD version //\_\_\_\_// provided on compact disk or DVD. Should the installing contractor engage the testing company to provide as-built or any portion thereof, it shall not be deemed a conflict of interest or breach of the 'third party testing company' requirement.
- D. Certification documentation shall be provided to COR 10 working days prior to submitting the request for final inspection. The documentation shall include all test results, the names of individuals performing work for the testing agency on this project, detailed procedures followed for all tests, and certification that all results of tests were within limits specified.
- E. Guaranty: Warranty of Construction, FAR clause 52.246-21.

## **PART 2 - PRODUCTS**

### **2.1 PEDESTAL DRAINAGE PUMP**

- A. Centrifugal, vertical, designed for // 60 // 82 // degrees C (//140 // 180 // degrees F) maximum water temperature. Pump shall have a capacity of \_\_\_\_ LPM (\_\_\_\_ GPM) at \_\_\_\_ meters of head (\_\_\_\_ feet of head) when driven by a // 1/3 // 1/2// HP electric motor. Driver shall be electric motor. Provide perforated suction strainer. Systems may include one or two pumps with alternator as required by the Contract Documents. Pump housings may be cast iron or stainless steel. Cast iron housings for submersible pumps shall be epoxy coated. Bio-based materials shall be utilized when possible.
- B. Impeller: Cast iron or stainless steel.
- C. Shaft: Cast iron, stainless steel, or other approved corrosion resisting metal.
- D. Bearings: As required to hold shaft alignment, anti-friction type for thrust permanently lubricated.
- E. Motor NEMA 4: Maximum 40 degrees C (104 degrees F) ambient temperature rise above the maximum fluid temperature being pumped, drip-proof,

hermitically sealed, lifting eye, capacitor start type, voltage and phase as shown in schedule on Electrical drawings conforming to NEMA // Type 1 // Type 4X //. Motor shall be non-overloading over the entire pump curve. Refer to Section 22 05 12, GENERAL MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT.

- F. Float Rod: Plated steel.
- G. Float: Chemical resistant polyethylene.
- H. Switch: Positive displacement.
- I. Power Cord: Minimum 2.1 m (7 feet), water-proof, UL Listed 3-wire cord with grounding plug and cable-sealing assembly for connection at pump.
- J. Alternator System and High Level Alarm: Furnish a 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 shall include sensors in the sump that detect the high level of the liquid. The high water alarm shall have a flashing red light at the control panel and a buzzer. The alarm shall have a silencing switch. Provide auxiliary contacts for remote communication with, and alarming monitoring to, the BAS using a BACnet compatible open-protocol type interface to DDC Controls System. The circuitry of the control panel shall include:
  - 1. Built-in rechargeable battery for LED lights and alarm
  - 2. Run lights to indicate when pumps are powered up
  - 3. Pump failure alarm operation
  - 4. Alternates two pump, 12 amps each, 115 volts, single phase
  - 5. High water alarm
  - 6. Continuous pump run operation
  - 7. Breaker tripped alarm operation
- K. For a duplex system provide alternating automatically.
- L. Sump: Furnish cast iron // fiberglass // or // high density polyethylene (HDPE)// basin with gas tight covers. Covers shall have 275 mm by 381 mm (11 inch by 15 inch) manhole with a bolted cover to inspect and service the pumps, vent connection, and openings for pumps and controls. Sump shall be sized to allow an adequate volume of water to accumulate for a minimum one-minute cycle of pump operation.

- M. Provide a union, sewage check valve, and sewage ball valve in the discharge of each pump. Material shall be // PVC // bronze // ductile iron //.
- N. Support: Support shall be substantial rigid type with column heights available from 710mm (28 inches) to 1,220mm (48 inches) long.

**PART 3 - EXECUTION**

**PART 1 -**

**PART 2 -**

**PART 3 -**

**3.1 STARTUP AND TESTING**

- A. Make tests as recommended by product manufacturer and listed standards and under actual or simulated operating conditions. Tests of the various items of equipment shall be performed simultaneously with the system of which each item is an integral part.
- B. Tests shall include system capacity and all control and alarm functions.
- C. When any defects are detected, correct defects and repeat test at no additional cost or time to Government.
- D. The CxA will observe startup and contractor testing of selected equipment. Coordinate the startup and contractor testing schedules with the COR and CxA. Contractor shall provide a minimum of 10 working days prior to startup and testing.

**3.2 //COMMISSIONING**

- A. Provide commissioning documentation in accordance with the requirements of Section 22 08 00, COMMISSIONING OF PLUMBING SYSTEMS.
- B. Components provided under this section of the specification will be tested as part of a larger system.//

**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 the system.
- 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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