

General Pump Specifications -- Howard Marsh Metropark

1. DESCRIPTION OF WORK

- A. Contractor shall provide all labor, materials, tools and equipment to furnish and install all pumps and motors under this section as shown in the Contract Drawings
- B. The pumps shall include all the drives, drive shafts, couplings, drive bases, pump bases, anchor bolts and other appurtenances for a complete installation.
- C. All work performed shall be in accordance with all approved trade practices and manufacturer's recommendations.

2. SUBMITTALS

- A. The Contractor shall submit as a minimum, the following information:
 - 1. Manufacturers Certificates, including certified test curves with the design points clearly marked. Performance curves shall be submitted for each pump installed.
 - 2. Motor data, including starting Kva, starting torque, full load current, full load torque efficiency curves and power factor curves.
 - 3. Where required, verification that the variable speed drive is capable of delivering the required torque and power over the entire speed range of the pump.
 - 4. Materials of construction for all components.

3. PUMP SPECIFICATIONS

- A. Type: Vertical, centrifugal, single stage, short coupled, below the floor discharge.
- B. Pump Head: High grade cast iron conforming to ASTM A48, Class 30 rated for 250 psig or 1.20 times actual discharge working pressure, designed to support the entire column and bowl assembly, cast iron base plate, steel sub-base plate, seal flush connection, and drain plug.
- C. Pump Bowl Assembly: Close- grained cast iron with 30,000 psi minimum tensile strength, smooth vitreous enamel or fusion-bonded epoxy coating on bowl interior, impeller seal ring, lateral bowl wearing rings or replaceable bronze wearing rings, bell mouth suction bowl with guide vanes; discharge bowl with diffusion vanes, rod type intake strainer and hydraulic bypass port.
- D. Propeller: Cast bronze, accurately machined and finished, dynamically balanced, keyed to shaft or secured with lock nut, securely fastened to the shaft with a tapered bushing, adjustable vertically by means of a shaft nut at the top of the motor or an adjusting type rigid coupling located between the pump and the motor.
- E. Propeller Shaft: Stainless steel of not less than 12 percent chrome, water- lubricated fluted rubber bearings.
- F. Column Assembly: Steel pipe sections a maximum of 5 feet in length with a wall thickness of .375 inches, interchangeable sections, flanged ends connected with stainless steel bolts and washers, butted joints to ensure perfect alignment after assembly, flanged bearing housing retainers with water-lubricated fluted rubber bearings designed for vertical propeller pump service.

- G. Line Shaft: Turned, ground and polished Type 416 stainless steel a maximum of 5 feet in length, interchangeable with Type 303 stainless steel couplings machined from solid bar stock. Coupled to facilitate easy removal and replacement of the driver. Provide shafting of ample size to operate the pump without distortion or vibration.

4. MOTORS AND CONTROLS

- A. Electrical Service: As noted on Drawings
- B. Visible nameplate: Indicate motor rated horsepower, rated voltage, number of phases, rated frequency, rated full load speed, full load amps, code letter, manufacturer's name, model number, serial number or date code, service factor, rated temperature rise or the insulation system class, time rating, power factor, efficiency.
- C. Motors shall be variable speed, rated for outdoor location and continuous duty operation in an all-weather environment.
- D. Vertical motors shall be provided with thrust bearings adequate for all thrusts to which they can be subjected in operation.
- E. Control panel enclosure shall be NEMA rated for outdoor use and have heat tape or equivalent as part of installation to prevent condensation on the inside of the control panel. Dead front with hinged inside panel for support of inner door-mounted components. Provide door with quick disconnect latches, lock hasp, lock and five keys.
- F. Controls shall consist of a separate, external main shut off, control transformer, variable speed frequency drive with self-adjusting flow rate capabilities, speed control knob, external run and fault lights, backup float system for low water level shutdown, circuit breakers for heat tape or equivalent, 120 VAC lighting fixture, duplex outlet and two spare 15 ampere, single pole circuit breakers.
- G. Power, as required for the application, shall be supplied by the Contractor. The contractor must connect power to the control panel in accordance with all local, state and federal requirements.
- H. Provide anti-cycling time delay relay to prevent pump from restarting within the first 3 minutes after it has shut down.
- I. All pumps and motors shall be provided with a complete factory finish using the manufacturer's standard industrial grade coating. Otherwise protect all metal surfaces subject to corrosion whose use prohibits factory finishing.

5. INSTALLATION, STARTUP, AND TESTING

- A. All pumps and motors shall be installed in accordance with the manufacturer's recommendations.
- B. Pump supplier and Contractor shall both have a representative present during installation and initial startup. The representative shall instruct the Owner's personnel in the operation and maintenance of both pump and motor.

- C. Certified performance data based upon tests of each actual pump proposed to be furnished shall be submitted to the Engineer for acceptance. Tests shall be performed in accordance with the Test Code of the Hydraulic Institute Standards and shall demonstrate compliance with the operating conditions specified. The Engineer shall be afforded the opportunity to witness the test.
- D. All motors shall be tested in accordance with the American Standard Test Code. A certified report of the short commercial test of each actual motor proposed to be furnished shall be submitted to the Engineer for acceptance.
- E. Initial lubrication required for startup and field tests operations shall be furnished and applied in accordance with the manufacturer's recommendations.
- F. The manufacturer shall make all final adjustments to ensure safe and proper operation prior to acceptance by the Engineer.
- G. Operation and maintenance manuals shall be provided in their entirety prior to or upon delivery of the equipment. These manuals shall include instructions on storage, installation, startup, operation and maintenance together with a complete parts list and a recommended spare parts list.

Potential pump manufacturers:

- 1. Cascade Pump Co.
- 2. Peerless Pump Co.
- 3. Layne Vertiline Pump Co.
- 4. Fairbanks Nijhuis Pumps

External Pump Specs. – Howard Marsh Phase 2

1. Submersible Non-Clog
2. Voltage: 115Volts, 60 Hz.
3. Upper and Lower Ball bearings Permanently Lubricated
4. Maximum Head: 25'
5. Switch Type: Automatic
6. Discharge Pipe Size: 4"
7. Maximum Solids Handling: 2"
8. Impeller Type: Cast Iron, Open, Double Vane
9. Cord Length; 30'
10. Cord Type: 14/3 SJTOW
11. Body Construction: Cast Iron

Acceptable pump manufacturers: Barmesa Pumps

ADS Co.

Barnes Pumps