SECTION 13 11 25 - POOL CENTRIFUGAL PUMPS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Pumps

B. Strainers

C. Gauges

D. Flow meters

1.2 RELATED DOCUMENTS

A. Drawings and Contracting Requirements, including General and Supplementary Conditions and Division 01 - General Requirements, apply to this Section.

1.3 REFERENCES

A. The following latest edition reference specifications, guides and standards shall become part of this Specification as if herein written. If provisions conflict, the more stringent provisions shall apply.
   1. Hydraulic Institute Standards
   2. Institute of Electrical and Electronics Engineers Standards (IEEE)
   3. National Electrical Manufacturers Association Standards (NEMA)
   4. Occupational Safety and Health Administration Rules and Regulations (OSHA)
   5. National Sanitary Foundation (NSF)
   6. American Society for Testing and Materials Standards (ASTM)
   7. American Iron and Steel Institute (AISI)
   8. American National Standards Institute (ANSI)
   9. ASTM A48 – Standard Specification for Gray Iron Castings
   10. ASTM B584 – Standard Specification for Copper Allow Sand Castings for General Applications
   11. AISI 1045
   12. ASTM B62 – Standard Specification for Composition Bronze or Ounce Metal Castings

1.4 DESCRIPTION OF WORK

A. The pumping units shall be installed in accordance with the instructions of the manufacturer and as shown on the drawings by the Pool Engineer.

B. Pump capacity, horsepower, TDH (Total Dynamic Head), speed, suction and discharge diameters, type, and other requirements shall be as shown on the drawings and shall comply with the requirements as specified herein. The General Conditions shall apply to this Section as fully as if repeated herein.

1.5 QUALITY ASSURANCE

A. To assure a properly integrated and compatible system, all equipment described in this section shall be furnished by the Pump Manufacturer, who shall assume full responsibility for the warranty and proper operation of the pumps and associated equipment.

B. All pumps shall be NSF50 certified as provided, including required coatings and shall be labeled as such on the serial number identification tag.

1.6 SUBMITTALS

A. Refer to General Requirements and Division 01.

B. Submit complete motor and pump data together with shop drawings for the driven machine. All material is to be collated in a card stock binder, with pockets for large drawings, and with index. This data shall be prepared by the motor and/or pump manufacturer and shall include:
1. Pump manufacturer and model number, name of motor manufacturer, type of pump and motor with dimensioned drawings.
2. Characteristic curves at full load motor speed showing flow, TDH, efficiency, horsepower, and NPSH required. For all VFD applications include a family of performance curves, separate of the full load motor speed curve, for speeds of 105%, 100%, 89%, 83%, 66%, and 50% of the scheduled RPM.
3. Nominal motor horsepower, speed at full load, frame size, enclosure construction, winding insulation class and treatment, temperature rise at nominal horsepower, service factor, voltage rating (indicate if dual voltage), number of phases, frequency rating, full-load amperes at nominal horsepower for application voltage, starting code letter, or locked rotor KVA or amperes.
4. Complete pump description plus material list including casings, impellers, seals, shaft, bearing frame, motor mounts, guards, base plate, exterior coating type and mill thickness.
5. Installation Instruction and Operation and Maintenance Manuals shall include recommended protection and maintenance required for storage prior to putting pumps in service, and may be submitted anytime before shipment of the pumps.

1.7 SUBSTITUTIONS

A. Refer to General Requirements and Division 01.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Refer to General Requirements and Division 01.

1.9 WARRANTIES

A. Manufacturer's standard pump warranty. Warranty on mechanical seals covering 100% of the cost on all parts and labor extending over the same time period as the standard pump warranty.
B. End Suction Pumps
1. Pump failure of any pump component directly attributable to materials and/or workmanship within 1 year after shipment shall be repaired or replace FREE of charge by the pump manufacturer.
2. Motor failure of any motor component directly attributable to materials and/or workmanship within 3 years after shipment shall be repaired or replace FREE of charge by the pump manufacturer.

PART 2 PRODUCTS

2.1 PUMPS

A. General

1. Pump performance shall be optimized with provision of variable speed drives where designated in the drawings.
2. Operational Pump Characteristics
   a. Engineer has the right to reject any pump with a pump curve having a design point operating efficiency more than 5% below the operating efficiency of the scheduled pump provided on the drawings.

B. Horizontal, Close-Coupled, Self-Priming End Suction Centrifugal Pumps.

1. Furnish and install self priming centrifugal pumps as specified on the Contract Drawings or as pre-approved by the Architect/Engineer.

2. Motor

   a. The motor shall have a service factor of a least 1.15. The service factor is reserved for variations in voltage and frequency.
   b. Motor must be inverter duty meeting NEMA MG1 Part 30.
   c. The motor shall have a sufficient horsepower rating to operate the pump at any point on the pump's head capacity curve at full load speed (60 Hz) regardless of selected operating speed without overloading the nameplate horsepower rating of the motor, regardless of service factor. Vendor shall confirm that motor current does not exceed allowable full load amperage at reduced frequency. Vendor shall verify scheduled horsepower meets above requirements. In no case shall the horsepower be les than indicated on the Drawings without specific approval form the Engineer.
   d. Electrical requirements including phase, frequency, and voltage are indicated on the Drawings.
   e. The motor shall be compatible for use with VFD's

1.2 PUMP STRAINERS

A. Unless the pump has an integral hair and lint strainer, supply and install strainers equal to those manufactured by Mer-Made Filter or Neptune Benson. Provide each strainer with two strainer baskets. **Alternate Activity Pumps** require custom self priming manufactured strainers with a 1/8" or 1 mm mesh opening acceptable to the pump manufacturer. The contractor shall provide the custom strainer manufacturer with all required information as needed for fabrication.

1.3 GAUGES

A. Provide compound gauges where called for on Drawings and as required by Code. Compound gauges shall be Liquid Filled, 30 Hg to 60 PSI with gauge cock and snubber as manufactured by Weksler, Marsh, Winters or equal.

1.4 FLOWMETERS

A. Provide Signet flow meters where called for on the Drawings and as required by Code on main lines and on branch lines of flow ranges indicated.

PART 3 - EXECUTION

3.1 PUMP INSTALATION

A. The pumping units shall be installed in accordance with the instructions of the manufacturer and as shown on the drawings by the Pool Engineer.

B. Ensure that the pumps and motors are properly installed with no pipe strain transmitted to the pump casing.

C. Installation shall include furnishing the required oil and grease for initial operation. The grades of oil and grease shall be in accordance with the manufacturer's recommendations.

3.2 FACTORY TRAINED REPRESENTATIVE

A. Provide a factory-trained representative for the purpose of supervising installation, start-up, final field acceptance testing, and providing instruction to the owner's operating personnel in the proper operation and maintenance of the equipment in this section.

END OF SECTION