SECTION 13 1502 – WATER FEATURE PUMPS AND MOTORS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes the following:
 - 1. Pump Performance
 - 2. Fresh Water Pumps
 - a. End Suction, Close Coupled, Centrifugal Pumps
- B. Related Sections:
 - 1. SECTION 13 1401 WATER FEATURE PIPE AND FITTINGS
 - 2. SECTION 13 1403 WATER FEATURE PIPE HANGERS, SUPPORTS, AND ANCHORS
 - 3. SECTION 13 1404 WATER FEATURE WHITE GOODS
 - 4. SECTION 13 1501 WATER FEATURE MECHANICAL IDENIFICATION
 - 5. SECTION 13 1503 WATER FEATURE FILTERS
 - 6. SECTION 13 1504 WATER FEATURE CHEMICAL FEED SYSTEMS
 - 7. SECTION 13 1505 WATER FEATURE OZONE GENERATION AND INJECTION
 - 8. SECTION 13 1507 WATER FEATURE HEATERS
 - 9. SECTION 13 1511 WATER FEATURE VALVES, GAUGES, AND METERS
 - 10. SECTION 13 1602 WATER FEATURE CONTROLS
 - 11. SECTION 13 1609 WATER FEATURE DISCONNECTS, MCC, AND STARTERS
- C. References:
 - 1. ANSI B16.5 STANDARDS OF PIPES AND FITTINGS
 - 2. ASTM A48 STANDARD SPECIFICATION FOR GRAY IRON CASTING
 - 3. ASTM A53 STANDARD SPECIFICATION FOR PIPE, STEEL, BLACK AND HOT-DIPPED, ZINC-COATED, WELDED AND SEAMLESS
 - 4. ASTM A108 STANDARD SPECIFICATION FOR STEEL BAR, CARBON AND ALLOY
 - 5. ASTM A242 STANDARD SPECIFICATION FOR HIGH-STRENGTH LOW ALLOY STRUCTURAL STEEL
 - 6. ASTM B108 STANDARD SPECIFICATION FOR ALUMINUM-ALLOY PERMANENT MOLD CASTING
 - 7. AMERICAN WATER WORKS ASSOCIATION (AWWA) SPECIFICATION E101-88
 - 8. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70 or NATIONAL ELECTRICAL CODE (NEC)
 - 9. NATIONAL SANITATION FOUNDATION (NSF) STANDARD 50
 - 10. Occupational Safety and Health Administration (OSHA) Regulations
 - 11. UNDERWRITERS LABORATORIES (UL)

1.2 SUBMITTALS FOR REVIEW

- A. SECTION 01 3300 SUBMITTAL PROCEDURES
- B. Product Data: Submit manufacturer's literature including pump and motor general assembly, dimensions, weights, clearances, service connections, wiring diagrams and controls.
 - 1. Provide pump curves showing performance characteristics of pump and system, operating point indicated, required NPSH and efficiency curves.
 - 2. Provide name plate data and ratings.
- C. Shop Drawings: Indicate layout, clearances, and methods of assembly and installation.
- D. Operation and Maintenance Data: Provide manufacturer's installation instructions, and specifications, start-up procedures, assembly drawings, troubleshooting check lists, scheduled maintenance recommendations, replacement parts list and repair data.
- E. Warranty: Submit manufacturer's warranty and ensure forms have been completed in the owner's name and registered with the manufacturer.

- F. Manufacturer's Certification: Submit documentation from the manufacturer certifying that pumps conform with NSF 50 guidelines.
- 1.3 QUALITY ASSURANCE
 - A. Installer Qualifications: Company specializing in performing the Work of this Section with a minimum five (5) years documented experience.
 - B. Comply with all applicable requirements of Division 16 Sections.
 - C. Comply with NFPA 70 and local energy codes.
 - D. Comply with BSEN and local energy codes.
- 1.4 DELIVERY, STORAGE, AND HANDLING
 - A. Coordinate delivery with installation time to assure minimum holding time.
 - B. Accept pumps and components on site in factory packaging. Immediately upon receipt of shipment, inspect, and check for damage.
 - C. Protect pumps and components from physical damage including effects of weather, water, and construction debris.
 - D. Store pumps in accordance with Manufacturer's recommendations.
- PART 2 PRODUCTS
- 2.1 PUMP PERFORMANCE
 - A. Provide pumps matching discharge, electrical, and performance characteristics as shown on the equipment schedules on the Contract Documents.
- 2.2 FRESH WATER PUMPS
 - A. End Suction, Close Coupled, Centrifugal Pumps
 - 1. Acceptable Manufacturers
 - a. Pentair
 - b. Hayward
 - c. Herborner
 - 2. Casing
 - a. Molded from glass reinforced, corrosion-resistant thermoplastic with Bronze Wear Ring.
 - 3. Impeller
 - a. Polycarbonate
 - 4. Mechanical Seal
 - a. Ceramic
 - 5. Shaft and Shaft Sleeve
 - a. Stainless steel with neoprene sleeve.
 - 6. Pump and Motor Assembly
 - a. Mounted on molded glass reinforced, corrosion resistant thermoplastic supporting both pump and motor ends.
 - b. Motor to have Class F insulation with temperature rise as specified by NEMA Standards for class of insulation used and shall have a 1.15 service factor.
 - c. Motor noise level to be less than 80-dBa at 3-feet (1m) or provided with a sound shroud.

- 7. Basket Strainer
 - a. Body to be integral with pump housing.
 - b. Transparent acrylic or Plexiglas lid with an ethylene propylene "O" ring.
 - c. Quick release to allow strainer basket to be removed quickly and easily.
 - d. 304 stainless-steel basket with 3/16-inch (5mm) rectangular holes and 75-percent open area. Holes in basket shall not be larger than 50-percent of minimum size of the pump it is protecting.
 - e. Provide 1/4-inch (6mm) Ball Cock Valve to be installed in top of the strainer or lid to relieve trapped air.

PART 3 - EXECUTION

- 3.1 EXAMINATION
 - A. Examine surfaces, substrates, and conditions for compliance with requirements of other sections in which the related Work is specified, and determine if surfaces, substrates, and conditions affecting performance of the Work of this Section are satisfactory. Do not proceed with the Work of this Section until unsatisfactory conditions have been corrected in a manner acceptable to the Installer. Starting installation shall constitute acceptance of surfaces, substrates, and conditions.

3.2 INSTALLATION

- A. Install pumps and motors in strict compliance with the manufacturer's recommendations to ensure manufacturer's warranty conditions are met.
- B. Locate pumps in locations indicated on the Contract Documents. Mount pumps on concrete housekeeping pads with embedded anchor bolts. Build templates for pump mounting from actual base plates delivered to site with pump and motor.
- C. Inspect pumps and remove any dirt or foreign material from the pump suction and discharge. Check motor to make sure no foreign objects have entered through fan and cooling openings.
- D. Verify clearances around the pump meet the manufacturer's recommendations.
- E. Pump and motor shall be leveled and grouted in place.
- F. Piping connected to pump suction must be eccentric and aligned with the pump inlet. Piping connected to pump discharge must be concentric and aligned with the pump outlet.
- G. Pipe enlargements at the pump suction and discharge must be made with reducer fittings. Bushing type fittings are not acceptable and will be replaced with eccentric or concentric reducers.
- H. Check pump for alignment, lubrication, and rotation.
- I. Provide drains for bases and seals, piped to and discharging into floor drains.
- J. Provide connection to electrical service in accordance with all applicable sections of Division 16.
- 3.3 FIELD QUALITY CONTROL
 - A. Test entire system with pump manufacturer's representative present.
 - B. Test to include three-point pump performance by measuring the amp draw and voltage, the discharge pressure, and the rate of flow.
 - C. Rate of flow must be within 10-percent above the approved curve for acceptance.
 - D. Discharge pressure head must be within 5-percent above the approved curve for acceptance.
 - E. Submit three (3) copies of the test results to the Engineer.

END OF SECTION