SPECIFICATIONS – CIRCULATION PUMP

1. The pumps shall be end suction, close coupled, foot mounted, single stage, centrifugal, vertical split case design, in stainless steel fitted construction specifically designed for quiet operation. Suitable standard operations at 175 PSIG working pressure.
2. Pump shall be designed to allow for true back pull-out access to the pump's working components for ease of maintenance. Pump shall be of a maintainable design and for ease of maintenance should use machine fit parts and not press fit components. Pump internals shall be capable of being serviced without disturbing piping connections.
3. Pumps shall be manufactured by **Xylem Inc.** under base bid. Equivalent units as manufactured by others may be submitted as deduct alternates. Pumps shall meet types, sizes, capacities, and characteristics as scheduled on the Equipment Schedule drawings.
4. Pump manufacturer shall be ISO-9001 certified.
5. Each pump shall be factory hydrotested and name-plated before shipment.
6. Pump shall be equipped with an internally flushed mechanical seal assembly installed in an enlarged tapered seal chamber. Seal assembly shall have a brass housing, Buna bellows and seat gasket, stainless steel spring, and be of a carbon ceramic design with the carbon face rotating against a stationary ceramic face.
7. Pump and motor shall be factory-tested and affixed with manufacturer's data plate.
8. Volute shall be of a cast iron ASTM A48 Class 30B or ductile iron design, rated for 175 PSIG with integral cast iron flanges drilled for 125# ANSI companion flanges with replaceable stainless steel wear ring. Volute shall include gauge ports at nozzles, and vent and drain ports.
9. All wetted cast iron volute surfaces shall have a fusion-bonded epoxy coating. Thickness of coating shall be 8 to 12 mils. Coating shall be Scotchkote 134.
10. Impeller shall be an enclosed, single-piece 304 stainless steel component, completely machined on all outside surfaces. Impeller shall be dynamically balanced at time of pump assembly. The impeller shall be keyed to the shaft and securely fastened with a vibration-resistant lock screw and washer, both 304 stainless steel. The impeller shall not contact the suction wear ring under any operating load condition.
11. Pump and motor shall be connected by an ASTM 48, Class 30, cast iron bracket with a slinger to prevent moisture from entering the front motor bearing. Pump shall be of back pullout design to permit removal of the motor and all rotating parts without breaking the suction and discharge connections.
12. Shaft shall be a solid SAE1144 carbon steel shaft that is integral to the motor.
13. Shaft sleeve shall be ASTM A312 Grade TP304 stainless steel, employed to completely cover the wetted area under the seal.
14. Motors shall meet scheduled horsepower, speed, and voltage. Motors shall have heavy-duty grease lubricated ball bearings to offset the additional bearing loads associated with the closed coupled pump design. Motors shall be non-overloading at any point on the pump curve and shall meet NEMA specifications. Motors shall be totally enclosed, fan-cooled.

15. Motor bearings shall support the shaft via heavy-duty grease lubricated ball bearings. The motor shall be close coupled type. Motor bearings shall be selected to withstand thrust loads and have a minimum life of 100,000 average L10 hours. Motors shall meet or exceed the minimum full load efficiencies as per NEMA MG-1, Table 12-11.
16. Pump and motor shall meet minimum Department of Energy requirements and have a PEicl value less than 1.

REGULATORY REQUIREMENTS:

A. Conform to NSF 50

B. Conform to National Electric Code NFPA 70

C. Conform to International Mechanical Code

D. Conform to BOCA National Building Code

E. Conform to BOCA National Fire Protection Code

F. Conform to ANSI/HI 9.6.3.1 standard for Preferred Operating Region (POR) unless otherwise approved by the engineer. The pump NPSH shall conform to the ANSI/HI 9.6.1-1997 standards for *Centrifugal and Vertical Pumps for NPSH Margin*.

G. Motors: Listed and classified by UL (Underwriters Laboratories, Inc.) as suitable for the purpose specified and indicated.