SCOPE

Furnish (QTY____) Stancor™ 100LX63.7 electric submersible non-clog wastewater pump(s) capable of delivering a maximum capacity of____ GPM at____ feet of TDH when operated by 5 HP, 1800 RPM____ volt, ____ phase, 60Hz motor, 4" discharge. Each pump unit shall have __33_feet of power cable.

PUMP DESIGN

The pump(s) shall be designed to handle, without clogging, clean water, contaminated water, wastewater effluent, storm water, and other similar corrosive liquids which may contain small solids. The pump shall have integrated feet allowing it to stand on a hard bottom wet well. The pump shall also be capable of mounting on a Guide Rail System allowing the pump to be removed from the wet well without disturbing the discharge piping or requiring personnel to enter the wet well.

PUMP CONSTRUCTION

Major pump components shall be of Cast Iron (FC-200) with smooth surfaces devoid of porosity or other irregularities. All exposed fasteners shall be AISI type 316 stainless steel. Critical mating surfaces where a watertight seal is required shall be machined and fitted with NBR o-rings. Sealing will be the result of controlled compression of rubber o-rings without requiring a specific torque on fasteners to accomplish sealing. Rectangular cross sectioned gaskets requiring specific fastener torque to achieve compression shall not be considered adequate or equal. No secondary sealing compounds shall be used or required.

Impeller: The impeller shall be a non-clogging, dynamically balanced, single channel design, capable of passing a 76mm diameter spherical solid. The impeller shall have a precision machined slip fit onto the motor shaft and drive key, and shall be fastened to the shaft by a stainless steel impeller nut. The use of adjustable bottom plates to maintain efficiency shall not be considered equal.

Pump Volute: The pump volute shall be a single piece design with vertical discharge. Passages shall be smooth and large enough to pass any solids which may enter the impeller. Volute inlet opening shall be 95mm. Discharge flange design shall be compatible with a 4" class 125 F.F.

Shaft & Rotating Assembly: The common motor/pump shaft shall be of 304 stainless steel material that is in contact with pump's mechanical seals and shall have a polished finish and accurately machined shoulders to accommodate bearings, seals and impeller. Carbon steel shafts shall not be considered adequate or equal. The rotating assembly (impeller, shaft and rotor) shall be dynamically balanced such that undue vibration or other unsatisfactory characteristics will not result when the pump is in operation.

Triple Seal System: Each pump shall be equipped with a tandem mechanical shaft seal system consisting of two independent seal assemblies with a common spring between them and a radial lip seal; providing three complete levels of sealing between the pump wet end and the motor. The mechanical seals shall operate in an oil filled chamber which is completely separate from the motor chamber. The seal faces shall be SiC/SiC for the lower seal and Carbon/Ceramic for the upper seal. Metallic components of the mechanical seal shall be constructed of 300 series stainless steel. The seal system shall not rely upon the pumped media for lubrication and shall not be damaged when the pump is run dry. A readily accessible inspection screw shall be provided for inspecting the condition of the seal chamber oil during routine maintenance.

Seal Failure Warning System: An electrical probe shall be provided in the oil chamber between the primary and secondary mechanical seals to detect water ingress. A solid-state relay mounted in the pump control panel or in a separate enclosure shall send a low voltage, low amperage signal to the probe, continuously monitoring the conductivity of the liquid in the oil chamber. If sufficient water enters the sensing chamber through the primary mechanical seal, the probe shall sense the increase in conductivity and signal the relay in the control panel. The relay shall then energize a warning light on the control panel, or optionally shut down the pump. Systems utilizing float switches or any other monitoring devices located in the stator housing rather than in a sensing chamber between the mechanical seals are not considered to be early warning systems and shall not be considered equal.

Bearings: The pump shaft shall rotate on permanently lubricated, greased bearings. The upper bearing shall be a single row deep grooved ball bearing. The lower bearing shall be a heavy duty single row, deep grooved ball bearing. Upper and lower bearings shall be of sufficient size and properly spaced to transfer all radial and axial loads to the pump housing and minimize shaft deflection. B-10 bearing life shall be a minimum of 30k hr at BEP. Pump designs utilizing other than ball bearings, or those requiring supplemental guide bushings for the shaft or impeller shall not be considered acceptable.

Motor: The motor housing shall be Cast Iron (FC-200) and the top cover of Cast Iron (FC-200). The motor shall be of the squirrel-cage induction design with copper windings, housed in an air filled, water tight chamber. The motor shall be capable of continuous submerged operation under water to a depth of 26 feet. The stator windings and stator leads shall be insulated with moisture resistant Class F insulation rated for 155°C (311°F). The motor shall be capable of operating continuously, submerged in liquid of 40°C (104 °F) without overheating. The motor shall be capable of handling up to 10 evenly spaced starts per hour. All motors shall have a voltage tolerance of +/- 10% from nominal name plate rating.

Power Cable: The power cable shall be sized according to NEC and CSA standards and shall be of sufficient length to reach the junction box without requiring splices. The outer jacket of the cable shall be oil and water resistant thermoplastic elastomer. The power cable shall be fitted to the motor using an epoxy potted water tight cable entry system with a rubber grommet as the secondary seal and strain relief.