**SCOPE**

Furnish (QTY____) Stancor SG-200 electric submersible grinder type wastewater pump(s) capable of delivering a maximum capacity of____ GPM at____ feet of TDH when operated by 2 HP, 3450 RPM____ volt, ____ phase, 60Hz motor, 1 ¼ " discharge. Each pump unit shall have __33_feet of power cable. The pump assembly shall have CSA U.S. 214705 approval.

**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.

**PUMP CONSTRUCTION**

Major pump components shall be of FC-20 Cast Iron 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, semi-open grinder impeller with shredding ring design. 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. Discharge flange design shall permit attachment to standard 1 ¼" NPT pipe fittings.

**Grinder Mechanism:**

The grinder mechanism shall consist of two circular, hardened cutter elements, one rotating and one stationary. The cutter material shall be of high Chrome Alloy with a hardness of Rockwell C 55-58. The rotating element shall be secured to the end of the pump shaft directly below the impeller by a stainless steel bolt which is mechanically prevented from loosening by a stainless steel nut. It shall be keyed to the impeller so that it rotates with the motor.
The stationary element shall be secured to the cutter bracket and positioned so that it is concentric to and aligned with the rotating element. The stationary elements shall incorporate a vertical spline pattern at the grinding interface to create a shearing and cutting action between the elements as the rotating cutter spins. The rotating cutter shall incorporate an integrated solids deflector to prevent items such as plastic bags from covering the grinder assembly and starving the pump. All wastewater being pumped by the impeller shall be drawn through the grinder mechanism by the natural suction of the pump impeller and reduced to a particle size approximately 1/8 inch. The grinder mechanism shall not require routine adjustments throughout the life of the grinder assembly.

**Shaft & Rotating Assembly:** The common motor/pump shaft shall be of Stainless Steel-410 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.

**Seal System:** Each pump shall be equipped with a single mechanical shaft seal system consisting of 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 a chamber which is completely separate from the motor chamber. The seal faces shall be SiC/Sic. Metallic components of the mechanical seal shall be constructed of 300 series stainless steel.

**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.



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**Motor:** The motor housing shall be 316 stainless steel and the top cover of 316 SS. 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 33 feet. The stator windings and stator leads shall be insulated with moisture resistant Class F insulation rated for 155ºC (311º F). The motor shall be capable of operating continuously, submerged in liquid of 40ºC (104 ºF) 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.