

**SCOPE:** Furnish and install \_\_\_\_\_ submersible non-clog sewage pump (s). Each pump shall be capable of delivering the following performance points, \_\_\_\_\_ U.S. GPM at \_\_\_\_\_ TDH ; \_\_\_\_\_ U.S. GPM at \_\_\_\_\_ TDH; \_\_\_\_\_ U.S. GPM at \_\_\_\_\_ TDH, with a shut off head of \_\_\_\_\_ TDH (minimum) : \_\_\_\_\_ U.S. GPM at \_\_\_\_\_ TDH (operating point). The pump motor speed shall be 3450RPM, 1/2 HP (maximum) , Single Phase, 60 Hertz, \_\_\_\_\_ Volts. The pump (s) shall be manufactured by a company regularly engaged in the manufacture and assembly of similar units for a minimum of five (5) years. The pump (s) shall be Champion Pumps model \_\_\_\_\_.

**PUMP DESIGN:** Each pump shall be capable of handling raw, unscreened domestic sewage consisting of water, fibrous materials, and two (3/4) inch diameter spherical solids. The pump (s) shall be capable of handling liquids with temperatures to 140 degrees F intermittent.

**PUMP CONSTRUCTION:** The upper volute, seal plates and motor housing shall be constructed of high quality ASTM A-48 class 20-30 cast iron. The pump (s) shall be painted with a water based air dry enamel of 2.0 mil minimum thickness. All exposed hardware shall be 300 series stainless steel. The pump construction shall contain no points of critical clearance nor require periodic adjustment or replacement to maintain operating efficiency. Discharge connection shall be a standard 2" inch NPT in the vertical position. All critical gaskets shall be of the point compression o-ring type eliminating critical slip fits and the possibility of damage during service associated with other sealing arrangements. This also ensures ease of procuring standard industry o-ring sizes.

The impeller shall be cast iron and of the vortex design with pump out vanes on the back side. The impeller shall be dynamically balanced to ISO G6.3 specifications.

The unit shall utilize a single mechanical Type 21 or equal shaft seal which will operate in an oil atmosphere. The seal shall be of the inboard seal design with a secondary exclusion V seal. The materials of construction shall be carbon for the rotating face and ceramic for the stationary face, lapped and polished to a tolerance of one light band, 300 series stainless steel hardware, and all elastomer parts to be of Buna-N. The seal shall be commercially available and not a proprietary design of the manufacturer.

The pump shall be designed to be non-overloading throughout the entire pump curve. The rotor and stator assembly shall be of the standard frame design and secured to the pump seal plate by four threaded fasteners allowing for easy serviceability. Motor designs incorporating shrink or press fit assembly between the stator and motor housing shall not be acceptable. The motor shall be constructed with the windings operating in a sealed environment containing clean dielectric oil, making it capable of operating in a totally, partially or non-submerged condition for extended periods of time without damage due to the heat being generated. Air-filled motors shall not be acceptable. The motor windings shall be of Class B insulation. The motor shall meet the standard NEMA design L. The motor shaft shall be of 416 stainless steel. The lower bearing shall be of the single ball type to accept radial and thrust loads, and the upper bearing of the single ball design, for radial loads. Bearings shall operate in an oil bath atmosphere for superior life. Permanently lubricated bearings are not acceptable.

Motors shall have an overload switch on the motor windings and do not require any external protection.

The pump shall be equipped with \_\_\_\_\_ ft. of type \_\_\_\_\_ power cable and connected to the motor via molded quick disconnect socket terminals. Crimp connected cords are not acceptable. A secondary molded rubber pressure flange shall be provided as an additional sealing point with stainless steel back plate that provides secure compression and strain relief at the point of cable entry. Cable entry designs utilizing compression grommets and terminal boards to connect power cord leads with motor leads shall not be acceptable. No exposure to the motor oil, motor chamber or motor winding leads, is acceptable when changing or servicing cord.

**PUMP TEST:** The pump manufacturer shall perform the following inspections and tests in accordance with SSPMA standards before shipment from the factory:

1. A check of the motor voltage and frequency shall be made as shown on the name plate.
2. A motor and cable insulation test for moisture content or insulation defects shall be made per UL/CSA criteria.
3. The pump shall be completely submerged and run.

**START-UP:** The pump(s) shall be tested at start-up by a qualified representative of the manufacturer. A start-up report as provided by the qualified representative shall be completed.

**DOCUMENTATION:** The manufacturer, if requested, will supply a minimum of \_\_\_\_\_ sets of standard submittal data;

Standard submittal data consist of:

- a. Pump catalog data;
- b. Pump performance curve;
- c. Typical installation drawing;
- d. Installation & Operation Manuals.