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## X64HD HAZARDOUS LOCATION SERIES

### CLASS I, DIVISION 1, GROUPS C & D

### SUBMERSIBLE PUMP GUIDE SPECIFICATIONS

#### 25 - 60 BHP

#### Solids Handling Pumps



#### 1.01 GENERAL

Contractor shall furnish all labor, material, equipment and incidentals required to provide \_\_\_\_\_ (QTY.) solids handling submersible centrifugal sewage pump(s) rated for Class I, Division 1, Group C or D locations.

#### 2.01 OPERATING CONDITIONS

Each submersible pump shall be rated at \_\_\_\_\_ HP, \_\_\_\_\_ volts, \_\_\_\_\_ phase, 60 Hz, 1725 RPM. The unit shall produce \_\_\_\_\_ GPM at \_\_\_\_\_ feet of TDH.

The submersible pump shall have a UL and CSA listed motor rated for Class I, Division 1, Group C & D hazardous location per the National Electrical Code and OSHA.

The submersible pump shall be non-overloading throughout the length of the impeller curve and be capable of operating continuously partially submerged without damaging the motor. The reserve service factor shall be a minimum of 1.15. The submitted performance curve shall show, in addition to the head and capacity performance, the efficiency, and motor rating curve. The curve data shall be per the SWPA (Submersible Wastewater Pump Assoc.) approved curve format.

The pump housing shall have a:

\_\_\_\_ 4" Flanged discharge passing a 3.125" spherical solid

(or)

\_\_\_\_ 6" Flanged discharge passing a 4" spherical solid

#### 3.01 CONSTRUCTION

Each pump shall be of the close coupled Model \_\_\_\_\_ submersible type as manufactured by Zoeller Engineered Products of Louisville, Ky. (800-928-7867). The castings shall be constructed of epoxy coated Class 25 or better cast iron. The motor housing shall be air-filled and designed for continuous operation when either partially or completely submerged without damage to the motor. All external-mating parts shall be machined and sealed with a Buna-N o-ring. All fasteners exposed to the liquid shall be 316 series stainless steel. The motor shall be protected on the topside with a Buna-N grommet with epoxy sealed leads and butt spliced connectors, which prevents moisture wicking into the motor housing. The motor shall be protected on the lower side with a tandem mechanical seal arrangement with each seal having a separate spring assembly. The oil-filled seal chamber located between the two mechanical seals shall contain 2 probes to detect seal leakage. The upper and lower ball bearings shall be capable of handling all thrust loads. The pump housing shall be of the concentric design thereby equalizing the pressure forces inside the housing, which will extend the service life of the seals and bearings. The pump shall have cast iron lifting lugs and threaded conduit connection.

#### 4.01 ELECTRICAL POWER CORD

The pump shall be supplied with \_\_\_\_ 25' \_\_\_\_ 50' of multiconductor power cord. It shall be SO type cord capable of continued exposure to the pumped liquid. Power cord shall be sized for the rated full load amp loading of the pump in accordance with the National Electrical Code. Anti-wicking control shall be provided by a molded cap containing epoxy sealed leads and sliced butt connectors which prevent leakage into the motor housing. Further cord protection shall be provided with a threaded conduit connection machined into the cap.

#### 5.01 MOTOR

The motor shall be listed by UL and CSA for Class I, Division 1, Group C or D hazardous location. The motor shall be air-filled and have a NEMA Class F winding insulation. Thermal protection shall be provided inside the motor housing to prevent overheating.

#### 6.01 BEARINGS AND SHAFT

Upper and lower ball bearings made of high carbon chromium steel shall be provided to prevent shaft deflection by withstanding all thrust and radial loads. The motor shaft shall be made of 416 SS and have a minimum diameter of 1.75".

## **7.01 SEALS**

Pump shall have a dual mechanical seal configuration with the seals mounted in tandem. Each seal assembly having carbon rotary and ceramic stationary faces with Buna-N elastomer and 316 SS spring. It shall be equal to a Crane Type 21 configuration. Double seals with a common intermediate spring shall not be considered equal.

Optional seal faces shall be tungsten carbide / tungsten carbide \_\_\_\_\_ Lower / \_\_\_\_\_ Upper.

## **8.01 IMPELLER**

The impeller shall be a fully balanced 2-vane enclosed design made from ductile iron and capable of passing solids found in wastewater. It shall have pump out vanes located on the back shroud to keep debris away from the seal area. It is to be keyed and bolted to the motor shaft. Attempts to improve efficiency by coating impeller shall not be allowed.

\_\_\_\_\_ Optional impeller design shall be \_\_\_\_\_ "impeller trim- \_\_\_\_\_ GPM @ \_\_\_\_\_ feet of TDH

## **9.01 PAINTING**

The pump shall be painted with a green solvent based epoxy coating of 4 mils thickness.

## **10.01 SERVICEABILITY**

Components required for the repair of the pump shall be readily available. Components such as mechanical seals and bearings shall not be of a proprietary design and be available from local industrial supply houses. Special tools shall not be required to service the pump. A network of Authorized Warranty and Customer Care Centers shall be available nationwide.

## **11.01 SUPPORT**

The pump shall have cast iron support legs enabling it to be a freestanding unit.

For installations enabling the pump to be installed and removed from outside the basin, provide:

- \_\_\_\_\_ Non-sparking rail system with pump suspended from a powder coated ductile iron elbow by means of a sealed ductile iron adaptor plate attached to the pump. Rail brackets shall be SS. 2" rail pipes are provided by others.
- \_\_\_\_\_ SS intermediate stabilizer required for rail systems used where basin depths are greater than 12 feet.
- \_\_\_\_\_ Rigid SS Lifting bail.
- \_\_\_\_\_ SS lifting cable, \_\_\_\_\_ long.

## **12.01 TESTING**

Each pump shall have a complete operational test before shipment. The test shall be conducted with the pump submerged in a tank thereby duplicating its actual performance. A computer-generated report shall be available following this test. The report will show pump performance, amp draws, efficiencies and power consumption at various performance points for each pump supplied.

\_\_\_\_\_ An optional certified test based on the Hydraulic Institute Test Standard for submersible pumps is to be supplied.

## **13.01 WARRANTY**

Standard warranty shall be 12 months from date of installation or 18 months from date of manufacture, whichever comes first. Additionally, upon receipt and approval of a start up report, a prorated warranty for permanent municipal wastewater lift station installations shall be in effect for up to 60 months or 10,000 hours of operation, whichever comes first.

\_\_\_\_\_ Start up services at the job site by an authorized representative of Zoeller Engineered Products shall be required. Start-up report form ZM1074 should be completed in the presence of the installers and returned to the Project Engineer or Zoeller Engineered Products.