

WATER SUPPLIES DEPARTMENT

STANDARD SPECIFICATION M-05-01

SUBMERSIBLE DEWATERING PUMPS

November 2009

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SUBMERSIBLE DEWATERING PUMPS

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SUBMERSIBLE DEWATERING PUMPS

1. GENERAL

This Standard Specification shall be read in conjunction with the following WSD Standard Specifications:

- | | |
|---------|--|
| M-00-03 | General Specification for Supply of Mechanical Plant |
| E-51-06 | Submersible Motors below 40 kW |

2. TYPE AND CONSTRUCTION OF PUMP

The pump shall be of submersible vertical centrifugal type of robust construction for handling a mixture of water and sand, sludge and other small solid particles. The pump shall be of non-clogging type impeller design, allowing free passage of solids up to the size as specified in the Particular Specification.

3. DUTIES AND CHARACTERISTICS

The flow rate and minimum submergence for continuous operation and the maximum allowable continuous dry running period of the pump shall be stated in the Tender unless otherwise specified in the Particular Specification.

Manufacturer's type test certificate on the pump supplied shall be provided and the Contractor must guarantee that the performance shall be same as that shown on the test certificate.

4. MATERIAL OF CONSTRUCTION

The pumpset and its accessories shall be manufactured from the following materials or other superior suitable materials:

Item	Materials of Construction
Casing	High Quality Grey Cast Iron to BS EN 1561 Designation EN-GJL-250
Impeller	Stainless Steel to BS EN 10088 Designation 1.4401
Pump Shaft	Stainless Steel to BS EN 10088 Designation 1.4057
Pedestal Discharge Elbow	High Quality Gray Cast Iron to BS EN 1561 Designation EN-GJL-250
Guide Rails	Stainless Steel to BS EN 10088 Designation 1.4401
Lifting Chain	
Hold Down Bolts,	
Nuts & Washers	

5. **SHAFT SEAL**

The pump shall employ two independent mechanical shaft seals running in an oil chamber. The lower seal shall prevent the pumping fluid from entering the oil chamber and the upper one for stopping the oil from entering the motor compartment. The sealing rings of the mechanical seals shall be of tungsten carbide or other superior materials suitable for the rotating speed and system pressure.

6. **BEARING**

Ball and roller type bearings shall be well sealed and oil lubricated-for-life. These bearings shall have metric dimensions and conform to BS ISO 10317. Special bearings and imperial size bearings are not acceptable.

7. **WIRE ROPE AND CLAMPS FOR CABLES**

Stainless steel wire rope and clamps with resilient felt shall be supplied to the power and control cables. The clamps shall be used for holding the cables onto the wire rope by which the weight of the cables is to be evenly taken up. The stainless steel wire rope shall be held at high level for retrieval of the pump and cables altogether.

8. **LIFTING FACILITIES FOR FIXED INSTALLTION**

Where specified in the Particular Specification, a dedicated guide rail lifting system for raising and lowering of the pumpset shall be supplied. The guide rail lifting system shall include guide rails, pumpset pedestal discharge elbow, holding down bolts, lifting chain and all mounting brackets.

An attachment anchor shall be designed to the pumpset discharge flange for engaging to the connecting flange of the pedestal discharge elbow while lowering the pumpset. The mating part of the pedestal discharge elbow and the discharge flange of the pump shall truly align and form a perfect match without the requirement of bolting. The weight of the pumpset shall be supported by the pedestal. No portion of the pumpset shall rest on the floor. Sealing at the discharge connection shall be accomplished by metal to metal contact of machine faces or a suitable gasket. Leakage of pumping medium from the discharge connection during operation of the pump shall not be accepted. When the pump is lifted, it shall be easily detached from the pedestal discharge elbow.

Lifting chain shall have safe working load not less than the weight of the pumpset. The lifting chain shall comprise closed lifting rings at its ends. The lifting ring at the lower end shall attach to the lifting eye or handle of the pump by shackle(s) whereas the upper ring shall normally be hung onto the guide rail mounting bracket. Certificate of test and thorough examination of the lifting facilities in compliance with statutory requirements shall be supplied with the equipment. Typical arrangement of the rail lifting system is shown in Sketch A.

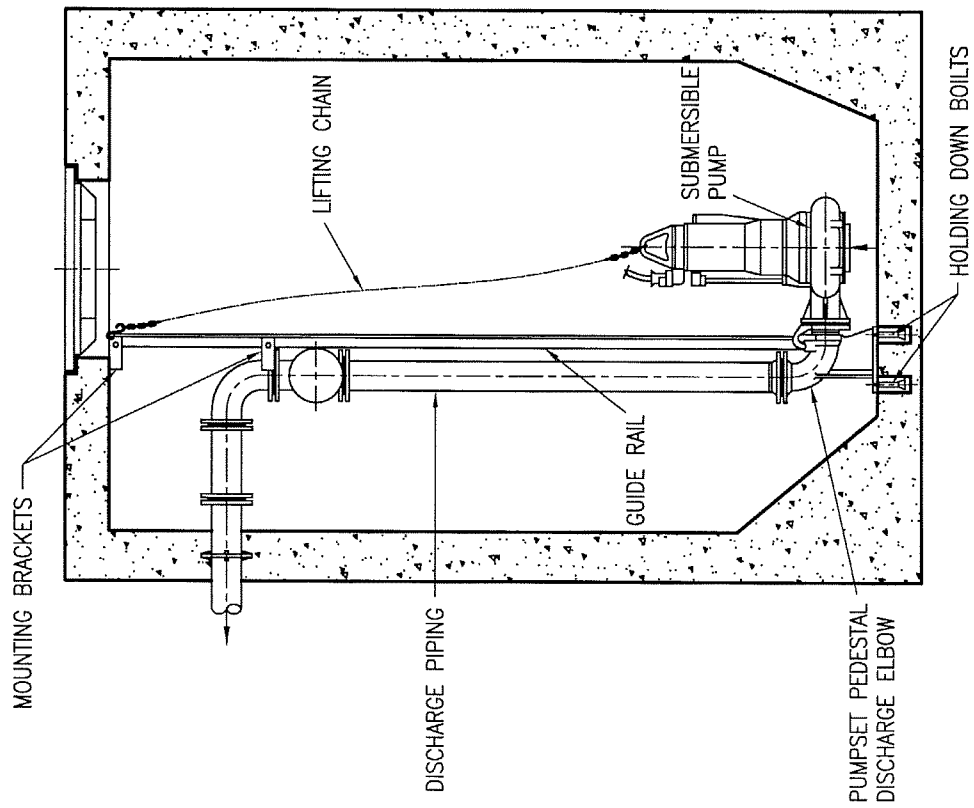
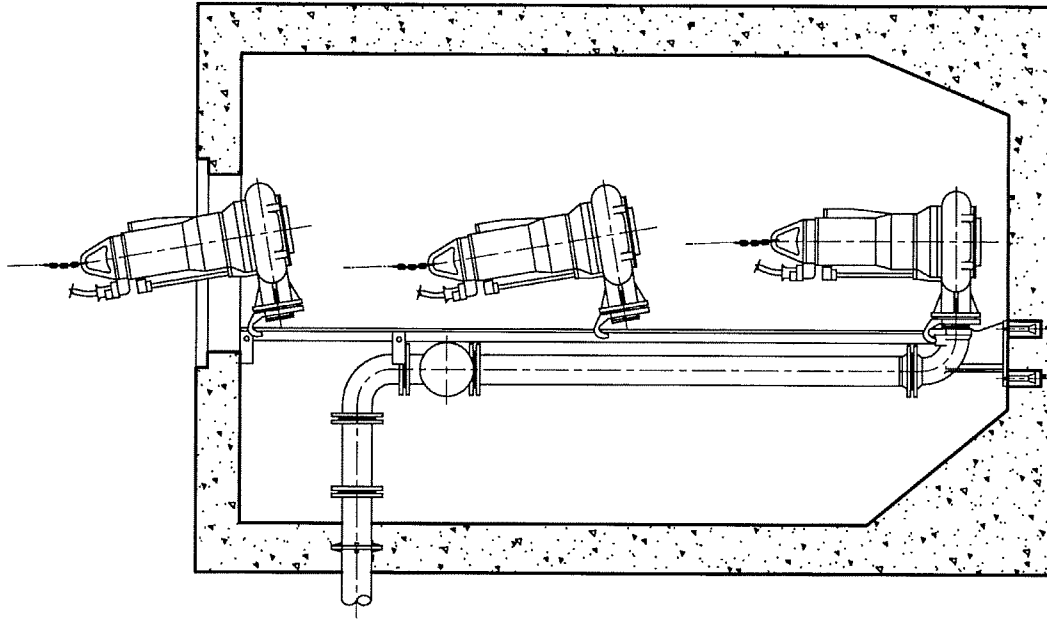
Sizing calculation of the holding down bolts and installation drawing of the pedestal discharge elbow and guide rail lifting system shall be submitted for approval prior to manufacture. Alternative design of the lifting system proposed by the Contractor may be considered.

9. **MAINTENANCE TOOLS AND SPARES**

An itemised and priced list of recommended maintenance tools and spares for 1 years service shall be supplied.

- End of Specification -

Sketch A



RAIL LIFTING SYSTEM FOR
SUBMERSIBLE DEWATERING PUMP

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