

AXIAL FLOW - LINESHAFT PUMPS

1.0 Scope:

This specification covers vertical, single-stage, single end suction, product lubricated axial flow impeller pumps, and electric motor drives. The pump(s) shall be as manufactured by MWI/COUCH Pump Corporation (201 N. Federal Hwy, Deerfield Bch., FL 33441, (954)426-1500).

2.0 Operating Conditions:

- 2.1 Quantity of Pump(s)
- 2.2 Design Capacity(each) _____ GPM
- 2.3 Minimum Bowl Efficiency _____ %
- 2.4 Maximum Speed _____ RPM
- 2.5 Design TDH _____ FT
- 2.6 The equipment to be furnished under this contract shall be made by a MANUFACTURER regularly engaged in such work, and who has furnished like equipment and specialties. The pumps themselves shall be ISO9001/2000 quality certified, no substitutions.

3.0 Pump Construction:

- 3.1 Pump Bowl: Pump bowl assembly shall be manufactured from cast iron and shall be designed for easy removal of the propeller and bearings. The intake bell shall be constructed of cast iron and shall be designed to minimize vortex tendencies by maintaining equal pressure and velocities across the bell entrance. The suction bell shall be bolted to the discharge bowl with heavy flanges accurately machined, faced and drilled.
- 3.2 Impeller: The impeller shall be manufactured from cast iron or stainless steel. The periphery of the blades shall be machined for a close running fit with the impeller casing. After manufacturing, the impeller shall be statically balanced for reduced vibration and wear.
- 3.3 Pump Column Assembly: Pump discharge column and elbow shall be manufactured from A-36 steel pipe of adequate wall thickness. Discharge flanges shall safely

withstand all operating heads without distortion or leakage. Discharge flange shall be ____ inches in diameter and conform to ANSI B16.1 bolt pattern and hardware.

- 3.4 Pump Shaft: The pump shaft shall be of sufficient diameter to transmit full load torque and to prevent vibration according to the ASME code for transmission shafting. The shaft shall be manufactured from AISI 1045 steel or 400 series stainless steel.
- 3.5 Bearings: Bearings shall be rubber cutless type, bronze or approved equal. Bowl bearings shall be pressed or bolted into the core of the bowl.
- 3.6 Pump Mounting Pad: The pump mounting pad shall be manufactured from ASTM A36 steel. It shall be of adequate thickness and strength to prevent excessive vibration and deflection. It shall have mounting holes for anchorage of the complete pump assembly. Anchor bolts shall be provided by the CONTRACTOR.
- 3.7 Welding: Pump and pipe welding shall be continuous and full penetration inside and out. All flanges shall be welded inside and out. All slag shall be removed and undercutting shall not exceed 15% of the material thickness.
- 3.8 Painting: The pump and pump parts shall be sandblasted and painted, inside and out, with coal tar epoxy.
- 3.9 Data Plates: All data plates shall be of stainless steel and suitably attached to the pump. Data plates shall contain the MANUFACTURER's name, pump size and type, serial number, speed, impeller diameter, capacity and head rating, and other pertinent data.
- 3.10 Hardware: All machine bolts, nuts and capscrews shall be of the hex head type and made from plated steel.

4.0 Drive Equipment:

- 4.1 Electric Motor: The pump MANUFACTURER shall provide the electric motors for the pumps. The motors shall be

assembled and mounted at the pump MANUFACTURER. The motors shall be rated HP at RPM. Voltage will be 460 volts at 3 phase and 60 HZ. Pumps and motors will be housed in an un-airconditioned building as shown in the drawings.

5.0 Discharge Piping:

5.1 Discharge Piping: Necessary discharge piping will be supplied by the CONTRACTOR as shown in the drawings.

6.0 Pump Controls:

Pump controls shall be provided by the CONTRACTOR under SECTION _____.

7.0 Shop Drawings:

Shop drawings, including installation and cross-sectional drawings, must be approved by the engineer prior to manufacture.

Complete installation, operation and maintenance instructions shall be sent to the CONTRACTOR when the pump is shipped. A technician of the PUMP MANUFACTURER shall be available to the CONTRACTOR for one(1) eight(8) hour day for startup supervision.

8.0 Vendor Qualifications:

Vendors not named in the specification will complete the following requirements no later than 14 days prior to the bid date.

Name and registration number of responsible testing engineer who will perform factory certified witness testing of the pumping system:

Certification by Chief Engineer that MANUFACTURER's pump testing facilities meet all requirements of the Hydraulic Institute Standards:

Specific acknowledgment that all testing shall be conducted in accordance with procedures described in the Hydraulic Institute Standards:

A representative list of MANUFACTURER's experience in the furnishing of mechanically driven axial flow and mixed flow pumps, _____" or larger, permanently installed and presently operating shall be furnished and include the names, addresses and telephone numbers of the consulting engineers, owners and operators of the systems. The dates of installations shall also be included.

Three (3) copies of certified pump performance curves of the unit will be furnished. The curve shall be stamped as certified (correct) by a Registered Professional Engineer in the state in which the pumps are tested and manufactured. The curve shall show the pump capacity, discharge head, speed and horsepower requirement.

Prospective bidders shall also submit for evaluation:

- A. Three complete copies of MANUFACTURER's complete engineering catalogs for pumps.
- B. Three descriptive brochures showing photographs and/or describing the pumping unit.
- C. Three copies of all pump "Bill of Materials" of the pump's construction, cut-a-way drawings, and dimensions as offered to confirm compliance with the specifications.

Prior to shipment, one(1) of the three(3) pumps shall be full size factory tested, in the vertical position, in an open sump at the MANUFACTURER's place of business by a Registered Professional Engineer. The ENGINEER and a representative of the OWNER shall witness the pump testing at the manufacturing facility. Testing will be in accordance with the Hydraulic Institute Standards. The pump MANUFACTURER shall be required to provide material certificates to the OWNER's and ENGINEER's satisfaction that all materials used in the manufacture of equipment and its performance meet and are being furnished as required by the specifications. The ENGINEER shall be notified by the MANUFACTURER no less than 14 days prior to the pump test. The MANUFACTURER will provide travel accommodations and security for testing performed outside of the United States of America.

9.0 Warranty:

The pumping system and controls as described shall be warranted for one (1) year by the MANUFACTURER against defects in material and workmanship under normal use and service from the date of shipment from the factory.

10.0 Delivery:

The pumps and drive equipment shall be delivered to the jobsite in a period of no later than 16 - 18 weeks after approval of submittals. The PUMP MANUFACTURER shall deliver to the jobsite and the CONTRACTOR shall unload.

11.0 Substitution of Materials, Equipment or Design:

Requests for review of substitute items of material, equipment or design will be accepted by ENGINEER from the CONTRACTOR 14 days(or earlier) before the specified bid date only. Requests made within 14 days of the bid date will be rejected automatically. If CONTRACTOR wishes to furnish or use a substitute item of material equipment or design, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and capable of performing the same function as that specified. ENGINEER will be the sole judge of the acceptability, and no substitute will be ordered or installed without ENGINEER's prior written acceptance