SECTION 11215 - ROTARY LOBE PUMPS

City of San Diego, CWP Guidelines

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

A. The WORK of this Section includes providing rotary lobe pumps, including electric motors and all appurtenant work, complete and operable.

1.2 RELATED SECTIONS

A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 11175 Pumps, General

PART 2 -- PRODUCTS

2.1 PUMP NAME: [ ] - (P-[ ] through P-[ ])

A. **General:** The CONTRACTOR shall furnish [ ] rotary lobe positive displacement, self-priming, tri-lobe pumps with air gap between fluid and drive end of pump, as indicated in this Section, to conform to the following requirements:

1.	Number of pumping units	-[ ]
2.	Location	-[ ]
3.	Service	-[ ]
4.	Operation (hours per day)	-[ ]
5.	Drive	-[Constant] [variable] speed

B. **Operating Conditions:**

1.	Capacity (gpm)	-[ ]
2.	NPSH available at suction (ft)	-[ ]
3.	Pump head (TDH-ft)	-[ ]
4.	Total discharge head (ft)	-[ ]
5.	Liquid to be pumped	-[ ]

6.	Specific gravity of liquid	-[ ]
7.	Liquid temperature (degrees F)	-[ ]
8.	Viscosity of liquid	-[ ]
9.	Max pump speed (rpm)	-[ ]
10.	Max motor speed (rpm)	-[ ]
11.	Min motor size (hp)	-[ ]
12.	Solids concentration (percent)	-[ ]

C. **Pump Dimensions:**

1.	Suction flange, min size (in)	-[ ]
2.	Discharge flange, min size (in)	-[ ]
3.	Flange rating (psi)	-[ ]
4.	Seal water connection (in NPT)	-[ ]

2.2 PUMP REQUIREMENTS

A. **Construction:** Rotary lobe pumps shall conform to the following requirements:

1.	Casing and End Cover hardness	-Ductile Iron ASTM A 536, 140 to 190 Brinell
2.	Shafts	-Carbon steel, ASTM A 470
3.	Shaft sleeve	-Stellite-coated stainless steel
4.	Rotor Material	-[Cast iron core with urethane bonded covering, shore hardness 65-72 degrees, ASTM E 448]
5.	Number of Rotors	-2
6.	Number of Lobes per Rotor	-3
7.	Stuffing Box Configuration	-Water lubricated with split packing gland, graphite-impregnated packing, and split Teflon lantern ring.
8.	Bearings -	Two sets of high-quality ball bearings, the inboard set being single-ball race and the outboard set being dual-ball race, all with L-10 life of 40,000 hours.

9. Lubrication -External grease fittings

$# _____

NTS: Select one of the drive options below.

_____ #$

[B. **Driver:** [Constant Speed Option] Pumps shall have a belt drive with TEFC horizontal, heavy duty, electric motor in compliance with Section 16040, with sliding base, suitable for 480-volt, 3-phase, 60-Hz power supply. The motor shall have a load-sensing control which shall sense high torques caused by either jams or overpressure. When a jam or overpressure occurs, the control shall stop the pump instantly, then pause in neutral for a period of 0-10 seconds (adjustable), then restart in the forward mode. If the pump then jams again, the control shall shut the unit down. A signal for remote alarm shall be provided.]

[B. **Driver:** Pumps shall have a [hydrostatic] variable speed drive with TEFC horizontal, heavy duty, electric motor in compliance with Section 16040, suitable for 480-volt, 3-phase, 60-Hz power supply and shall meet the following requirements:

1. The drive shall be coated inside and out with a copolymer epoxy coating. All external fasteners, control shafts, motor adjustment bolts, input shaft and output shaft shall be stainless steel.

2. The drive shall have input and output bearing housings containing 2 grease sealed ball bearings and shall be of a design which isolates the hydraulic pump and motor from thrust and radial loads. The bearing housings shall be double sealed and shall allow shaft removal without draining of the sump. The ball bearings shall not be lubricated by the transmission fluid.

3. The drive shall have an axial flow, unidirectional, propeller-type cooling fan affixed to its input shaft.

4. The drive shall be supplied with an external bulk-head mounted cartridge filter with no external hoses or connections. The replacement cartridge shall be of the spin-on type and shall be easily accessible.

5. A combined oil temperature and level gauge shall be mounted on the side of the drive.

6. The drive shall have stainless steel drain plugs at each corner for easy access.

7. The drive shall have pressure compensation for overload protection, it shall be fan-cooled and the temperature rise shall not exceed 60 degrees F. The hydraulic pump and motor shall have a combined minimum overall efficiency of 80 percent at full speed and 70 percent at half speed. [The drive speed shall be controlled locally and from a remotely located control board.]

8. The drive shall have a load-sensing control which shall sense high torques caused by either jams or overpressure. When a jam or overpressure occurs, the control shall stop the pump

instantly, then pause in neutral for a period of 0-10 seconds (adjustable), then restart in the forward mode. If the pump then jams again, the control shall shut the unit down and a signal for a remote alarm shall be provided.

9. The output speed of the variable-speed drive units shall be controlled by a geared, 115-volt servo-motor. Output speed shall be varied in proportion to a manually set potentiometer. Adjustable limit switches shall be provided to limit minimum and maximum output speed.]

[C. Each drive shall be furnished with speed remote indicator and remote potentiometer. The remote potentiometer and indicator shall be furnished loose to be installed in the [ ] local control board as indicated.]

D. **Local Control Panel:** A local control panel shall be provided for each pump by the pump manufacturer. Each LCP shall provide the following:

1. Circuit breaker type power disconnect with "power on" status light.

2. A relay control logic to shut down each pump due to jams or overpressure.

3. One red status light for jam or overpressure indication.

[4. Logic circuits for remote indication and speed control. The LCP shall be provided with dry contacts to relay the following control signals to equipment indicated below:

a. Jam or overpressure shutdown signal to annunciator panel at [ ].

b. Speed-position feedback signal to [ ] for speed indicating on a meter.]

[5. The LCP control logic shall be designed to receive the following signals.

a. Speed control signals (by potentiometer) from [ ].]

E. **Accessories:** Rupture discs set for [ ] psi shall be provided for each pump. They shall be suitable for installation in a [ ]-in ductile iron pipe.

2.3 NAMEPLATES, TOOLS AND SPARE PARTS

A. **Spare Parts**: The WORK includes the following spare parts for each pump:

1. 2 sets of all gaskets and O-rings
2. 2 sets of all pump and motor bearings
3. 2 sets of all packings and lantern rings
4. 2 sets of all shaft sleeves
5. 2 sets of rotors
[6. 2 sets of V-belts]

Spare parts shall be stored in tool boxes and identified with the equipment number by means of stainless steel or solid plastic name tags attached to the boxes.

2.4 MANUFACTURERS

A. Pumps of the type indicated shall be manufactured by one of the following (or equal):

1. Lobeflo Pumps, Mono Group, Inc.
2. [ ]

PART 3 -- EXECUTION

3.1 INSTALLATION

A. **General**: Pumping equipment shall be installed in accordance with the manufacturer's written instructions.

B. General installation requirements shall be as indicated in Section 11175.

3.2 FIELD TESTING

A. Field testing of the pumps shall be performed in compliance with Section 11175.

** END OF SECTION **