

SECTION 11209 - SUBMERSIBLE SUMP PUMPS

City of San Diego, CWP Guidelines

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing submersible nonclog centrifugal sump pumps with motors, flanges, cables, lifting chains and accessories.

1.2 RELATED SECTIONS

- A. The WORK of the following Section 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 GENERAL

- A. **Selection:** Pumps shall be selected so that rated operation lies within 5% (based on capacity) of maximum efficiency.

2.2 ENVIRONMENTAL CONDITIONS

- A. Pumps and motors shall be recommended by the manufacturers for the service indicated and shall be submerged continuously and operated while submerged. The pumped fluid temperature shall range from [] degrees F to [] degrees F.

2.3 MATERIALS

- A. Pump materials shall comply with the following:

<u>Component</u>	<u>Material</u>
Pump and motor	Cast iron, ASTM A48
Casing discharge	Cast iron, ASTM A48
Impeller	Cast iron, ASTM A48
Exposed nuts and bolts	Stainless steel, ASTM A276 Type 304
Shaft	Stainless steel, ASTM A276 Type 303
All wetted parts of pump	Epoxy coated according to Section 09800

2.4 EQUIPMENT

- A. **Impellers:** Impellers shall be statically and dynamically balanced and designed to be nonclog with ability to pass 3-inch solids and to pass stringy material.

- B. **Bearings:** Bearings shall be heavy-duty permanently oil lubricated ball bearings. Bearings for pumps 3-inch diameter discharge and larger shall be designed for an L-10 life of 20,000 hours heavy-duty service without additional lubrication.
- C. **Pump and Motor Casing:** Casings shall be constructed of corrosion resistant cast iron with bottom inlet and shall be designed to allow removal of all rotating parts from the motor end of the pumps. Mating surfaces where watertight sealing is required shall be machined and fitted with nitrile O-rings. Except as otherwise indicated, pump volute shall have vertical discharge.
- D. **Mechanical Seals:** Pumps shall be provided with tandem carbon and ceramic faced inner and tungsten-carbide outer mechanical seals.
- E. **Motor:** Motor shall be designed to be non-overloading over the entire pump curve. Motor housings shall be of submersible construction with the windings operating in a sealed environment. Motors shall be either air-cooled or dielectric oil filled with built-in automatic reset overload protection. Motors shall comply with the requirements of Section 16040.
- F. **Cable:** Pump motors and detector cables shall be suitable for submersible pump applications. Power for motors shall be carried by a heavy-duty, flexible, water resistant, plastic covered, portable cable, sealed at the motor bell and of sufficient length to connect to the junction box or the plug outlet where indicated. The cable entry shall prevent water from leaking into the motor due to capillary action even if cable is cut or damaged.
- G. **Moisture Protection:** Two moisture sensing probes shall be located between the mechanical seals to detect any influx of conductive fluid and signal outer seal failure.
- H. **Lifting Chain:** A [] feet stainless steel (Type 304) lifting chain with bracket shall be provided for each pump.

2.5 CONTROLS

- A. The CONTRACTOR shall provide a complete control system housed in a [weatherproof] cabinet with hinged, gasketed door and mounting brackets or pedestal and all necessary components to provide the following functions [for each pump]:
 1. Magnetic starter
 2. Circuit breaker
 3. Hand-off-automatic switch
 4. Pilot light
 5. High water alarm with contact and bell [one, only]
 - [6. Moisture intrusion alarm with contact and bell [one, only]]
 7. Alarm reset switch [one, only]
 8. Mercury level control switches with sealed cables and stainless steel wall bracket
 9. Electric alternator (one, only)]

10. Low water level cutoff

11. Lag pump automatic starter when lead pump fails (duplex pumps only)]

2.6 TOOLS AND SPARE PARTS

- A. **Tools:** The WORK includes special tools necessary for maintenance and repair; tools 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 box.
- B. **Spare Parts:** The following spare parts shall be provided for each pump:
1. 2 sets all gaskets and O-rings
 2. 2 sets all bearings

Spare parts shall be packaged and boxes as indicated in Section 11000.

2.7 PUMP SCHEDULE

- A. Pumps shall comply with the following:

<u>Equipment Number</u>	<u>Rated Capacity, gpm at BEP</u>	<u>Design Head, Feet</u>	<u>Max. Speed, rpm</u>	<u>Voltage & Phase</u>	<u>Max. Horse- Power</u>	<u>Discharge Pipe Size, Inches</u>	<u>Max. Sphere Passage Size, Inches</u>
[]	[]	[]	[]	[]	[]	[]	[]

2.8 MANUFACTURERS

- A. Products shall be manufactured by one of the following (or equal):
1. Crane Deming
 2. Goulds Pumps, Inc. (Morris)

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. Installation shall comply with Section 11175.

** END OF SECTION **