SERIES 110
REGENERATIVE TURBINE PUMPS

PART I - GENERAL

1.01 DESCRIPTION

The Contractor shall furnish materials, equipment and labor to furnish, install and test the pumping system complete with the pumps, motors, mounting bases, piping, valves and appurtenances, as indicated on the contract drawings and as herein specified.

1.02 INSTALLATION

The Contractor shall insure that the pumps and motors are properly installed with no pipe strain transmitted to the pump casing.

1.03 RESPONSIBILITY

To assure a properly integrated and compatible system, all equipment described in this section shall be furnished by the Pump Manufacturer, who shall assume full responsibility for the proper operation of the pumps and associated equipment.

1.04 SUPERVISION

The Contractor shall arrange for the Pump Manufacturer to provide a factory-trained representative as required for the purpose of supervising installation, start-up, final field acceptance testing, and providing instruction to the owner's operating personnel in the proper operation and maintenance of the equipment in this section.

1.05 REFERENCE STANDARDS

The work in this section is subject to the requirements of applicable portions of the following standards:

Hydraulic Institute Standards
IEEE Standards
NEMA Standards
OSHA Rules and Regulations

PART II - PRODUCTS

2.01 GENERAL DESCRIPTION

The pump shall be a flexible coupled horizontal regenerative turbine, series 110, as manufactured by Aurora Pump or pre-approved equal. Pre-approval must be obtained a minimum of ten days before bid date.

2.02 MATERIALS OF CONSTRUCTION

Casing.....Cast Iron (ASTM A48)
Impeller.....Bronze (ASTM B62)

Shaft.....Stainless Steel (AISI 416)
Channel Rings.....Cast Iron (ASTM A48)
Bearing Covers.....Cast Iron (ASTM A48)

2.03 CASING

The casing shall have a top side suction inlet and a centerline discharge outlet for single stage pumps. Two stage pumps shall have a bottom side suction inlet and a centerline discharge outlet. Suction connections of 2" or less and discharge connections of 1 - 1/2" or less shall be NPT threaded. Suction connections of 2 - 1/2" or greater and discharge connections of 2" or greater shall be flanged. Mounting feet shall be integrally cast with the casing.

2.04 IMPELLER(S)

The impeller(s) shall be of the regenerative turbine or periphery vane type, with the pumping vanes machined on both sides of the impeller to balance hydraulic thrust. The impeller(s) shall be keyed to the shaft, but not locked in place, to allow the impeller(s) to self-balance between the channel rings. Balancing holes shall be machined into the impeller(s) to facilitate this floating action as required.

2.05 SHAFT

The shaft shall be turned and polished, and have a keyway machined on the inboard extension to accept a coupling half. The outboard extension of the shaft shall be threaded to accept a shaft nut to prevent excessive lateral shaft movement.

2.06 CHANNEL RINGS

The channel rings shall have an individual water passageway machined, and cleaned of all burrs, trimmings and irregularities. The channel rings shall be pinned to the bearing covers to prevent rotation.

2.07 BEARING COVERS

The bearing covers shall bolt to the casing, with an O-ring seal between the casing and the bearing cover. The bearing cover shall include a stuffing box of adequate size to accept either mechanical seals or packing rings. Tapped and plugged openings for external flushing to the stuffing box shall be provided. Each bearing cover for packed pumps shall incorporate the bearing housing with a single-row regreaseable ball bearing, with grease fittings provided. An adjusting nut shall be provided to allow inspection and replacement of bearings without complete disassembly of the pump. A water slinger shall be provided on both the inboard and outboard sides of the pump between the stuffing box gland and bearing housing. The bearing cover shall incorporate a reservoir area for the accumulation of weepage, and an opening for connection to a drain.

2.08 MECHANICAL SEAL

Shaft sealing shall be accomplished by means of a mechanical seal with a Ni-Resist seat, carbon washer, Buna-N elastomers, and stainless steel metal parts.

2.09 SEAL GLAND

The bearing cover shall be machined to accept the seal cup to assure positive alignment of the seal faces and eliminate the need for a separate seal gland.

2.10 COUPLING

A flexible coupling shall be provided to connect the pump shaft to the motor shaft. The coupling shall be of an all metal type with a flexible rubber insert. The entire rotating coupling assembly shall be enclosed by a coupling guard.

2.11 BASEPLATE

The pump and the motor shall be mounted on a groutable formed steel baseplate or a driprim baseplate with integral drip channels incorporated on each side. Each channel shall include an NPT drain connection and plug. The base shall be sufficiently rigid to support the pumps and the motor without the use of additional supports or members.

2.12 MOTOR

The motor shall be horizontal and in accordance with the latest NEMA standards, and shall have the following characteristics:

Enclosure.....Open Drip Proof/TEFC/X-Proof
Number of Phases.....Three
Cycles.....60 Hz
Voltage.....230/460 volt
Speed.....3600 RPM
Horsepower.....? hp

Each motor shall have a sufficient horsepower rating to operate the pump at any point on the pump's head-capacity curve without overloading the nameplate horsepower rating of the motor regardless of service factor. The motor shall have a service factor of 1.15. The service factor is reserved for variations in voltage and frequency.

PART III - PERFORMANCE

3.01 CONDITIONS OF SERVICE

The following conditions of service shall be strictly adhered to:

Number of Units.....?
Type of Drive.....? (variable or constant)
Discharge Size.....1.25 in, minimum
Suction Size.....1.25 in, minimum
Design Capacity..... US gpm

Design Head..... ft
Efficiency at Design..... %, minimum
Rotative Speed.....3500 RPM, maximum
Shut-off Head.....717 ft, minimum
Driver Horsepower.....1.99, minimum
NPSHR at Design..... ft, maximum

3.02 INSPECTION AND FACTORY TESTS

Each regenerative turbine pump furnished under these specifications shall be tested at the factory to verify individual performance (VIP). Certified copies of all test reports shall be submitted to the Engineer for approval prior to shipment.

3.03 INSTALLATION AND ACCEPTANCE TESTS

A. The pumping units shall be installed in accordance with the instructions of the manufacturer and as shown on the drawings by the Contractor.

B. Installation shall include furnishing the required oil and grease for initial operation. The grades of oil and grease shall be in accordance with the manufacturer's recommendations.

NOTES: Teflon is a registered trademark of E.I. DuPont.

Additional information is available from any Aurora Pump authorized distributor.

Aurora Pump reserves the right to make revisions to its products and their specifications without notice.