

**Part 1        General****1.1        SYSTEM DESCRIPTION**

- .1        Installation and commissioning of City supplied pumps and motors.
- .2        Provide installation, testing, transportation, demonstration, and commissioning.

**1.2        REFERENCE STANDARDS**

- .1        Pumping units shall generally comply with the requirements of the Hydraulic Institute Standards.
- .2        Pumping unit wiring shall conform to Division 26.
- .3        Pumping unit shall be CSA approved.

**1.3        STANDARDS**

- .1        Have equipment comply with the latest edition of the applicable codes and regulations including, but not limited to, the following:
  - .1        American Society of Mechanical Engineers (ASME)
  - .2        Canadian Standards Association (CSA)
  - .3        Canadian Electrical Manufacturers Association (CEMA)
  - .4        National Electrical Manufacturer's Association (NEMA)
  - .5        American Society for Testing and Materials (ASTM)
  - .6        American National Standard Institute (ANSI)
  - .7        Electrical Electronics Manufacturing Association of Canada (EEMAC)
  - .8        Electrical Safety Association (ESA)
- .2        Have all electrical equipment comply in every respect with the rules and regulations of Manitoba Hydro and be acceptable to their local inspector.
- .3        In cases of any conflict between these specifications and any of the above standards, the most stringent standard will have precedence.

**1.4        SUBMITTALS**

- .1        Submit operation and maintenance manuals in accordance with Section 01 78 00 – Closeout Submittals.

**1.5        DELIVERY, STORAGE AND HANDLING**

- .1        Prepare, crate, and protect equipment against shipping and storage damage.
- .2        Contractor to provide loading, transportation and offloading of equipment from:  
598 Plinguet  
Winnipeg, Manitoba  
R2J 2W7

**Part 2        Products****2.1        CENTRIFUGAL PUMPS**

- .1        General:

- .1 Installation of three (3) City supplied close coupled centrifugal vertical shaft pumps as detailed in this specification and shop drawings.
- .2 The pump is supplied complete with:
  - .1 Motor
  - .2 Base (4 legged)
  - .3 Flanged suction and discharge piping connections
  - .4 Drives
  - .5 Couplings
- .2 Operating requirements:
  - .1 Pump will provide 38 L/s of flow at 7.4 m total head.

## **2.2 QUALITY CONTROL**

- .1 Assist the equipment supplier with installation verification.

## **Part 3 Execution**

### **3.1 INSTALLATION**

- .1 Install equipment in accordance with manufactures specifications.
- .2 Provide installation, start-up, and commissioning assistance to the equipment supplier contractor.

### **3.2 TRAINING**

- .1 Coordinate with the equipment supplier to provide demonstration and training to City staff.

### **3.3 LUBRICATION, GREASE, OIL AND FUEL**

- .1 Perform the complete initial lubrication of all equipment in accordance with the manufacturer's instructions. Provide all grease, oil, lubricants, etc., as required for the initial operation of the equipment.

### **3.4 SUPERVISION OF INSTALLATION**

- .1 All equipment and material shall be installed in a workmanlike manner, in accordance with the manufacturer's recommendations.
- .2 The Contractor shall install the equipment where shown on the Drawings and in strict accordance with the manufacturer's instructions and in compliance with applicable local, provincial and federal codes and regulations.
- .3 The Contractor shall provide concrete and grout, final piping and electrical connections and other appurtenances not herein or elsewhere specifically mentioned or included, but necessary for the installation, operation and testing of the equipment, without additional payment.
- .4 All possible precautions should be taken to ensure proper alignment of equipment shafts and pipe connections to avoid transmission of piping weight reactions to the equipment at pipe connections or equipment damage due to misalignment.

- .5 The manufacturer will provide a competent representative to supervise the installation of the equipment and materials.
- .6 After the equipment has been installed and prior to final acceptance, protect the equipment from damage. Ensure that protection measures are to the satisfaction of the Contract Administrator.
- .7 Co-ordinate the placement of all cast-in anchor bolts with Division 3.
- .8 Set anchor bolts for equipment at least 150 mm into the concrete base.
- .9 Comply with requirements of Hydraulic Institute Standards for installation of all pumps.
- .10 The manufacturer will provide a Certificate of Installation in accordance with to the Contract Administrator when the equipment has been satisfactorily installed.
- .11 Before acceptance of the equipment by the City, it will be inspected and final adjustments made by a qualified, competent representative of the manufacturer.
- .12 The manufacturer will provide a Certificate of Installation to the Contract Administrator when the equipment has been satisfactorily installed in accordance with Section 01 33 00.

### **3.5 COMMISSIONING**

- .1 Provide two (2) weeks' notice to the Contract Administrator prior to commencement of commissioning to witness the activities.
- .2 The Equipment Manufacturer's Technical Representative or approved alternate shall inspect the pump installation to ensure that the equipment has been installed in accordance with the manufacturer's requirements. If the installation is not in order, Equipment Manufacturer's Technical Representative shall provide instruction for the installation Contractor. The equipment shall be started and run, and adjustments made at this time.
- .3 The Manufacturer's Technical Representative, installation Contractor and Contract Administrator shall jointly commission the works in accordance with the written procedure for commissioning. The installation Contractor shall provide sufficient manpower for the duration of the commissioning period. The installation Contractor shall make necessary adjustments during commissioning to put the works into continuous operation.
  - .1 The Contract Administrator will request that the equipment be operated to demonstrate that it performs as specified. If the Contract Administrator notes deficiencies, the deficiency shall be corrected immediately by the installation Contractor. The installation Contractor shall advise the Contract Administrator, in writing, when the deficiencies have been corrected.

### **1.1 PUMP TESTING**

- .1 Assist Manufacturer's Representative in conducting field testing by operating the single pump for approximately 30 minutes (when system conditions permit) and readings taken of head, flow, power and speed.

**END OF SECTION**