

## **1 General**

### **1.1 REFERENCES**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

### **1.2 SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and data sheet for fixtures and equipment.
  - .2 Submit WHMIS MSDS to Departmental Representative for each hazardous material prior to bringing hazardous material to site. Indicate VOC's for adhesive and solvents during application and curing.
- .3 Shop Drawings.
  - .1 Submit shop drawings to indicate:
    - .1 Equipment, including connections, fittings, control assemblies and ancillaries. Identify whether factory or field assembled.
    - .2 Wiring and schematic diagrams.
    - .3 Dimensions and recommended installation.
    - .4 Pump performance and efficiency curves.
    - .5 Operating and Maintenance Clearances.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Instructions: submit manufacturer's installation instructions.
- .6 Manufacturers' Field Reports: manufacturers' field reports specified.
- .7 Closeout submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals, include:
  - .1 Manufacturers name, type, model year, capacity and serial number.
  - .2 Details of operation, servicing and maintenance.
  - .3 Recommended spare parts list with names and addresses.

### **1.3 QUALITY ASSURANCE**

- .1 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

### **1.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Waste Management and Disposal:
    - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
    - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
    - .3 Collect and separate for disposal paper packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
    - .4 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.
    - .5 Unused sealant materials must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
    - .6 Fold up metal banding, flatten and place in designated area for recycling.
-

## **2 Products**

### **2.1 DOMESTIC HOT WATER CIRCULATING PUMPS**

- .1 Capacity: as indicated on Equipment Schedules, found on Drawings.
- .2 Construction: closed-coupled, in-line centrifugal, all bronze or stainless steel construction, stainless steel shaft, stainless steel or bronze shaft sleeve, two oil lubricated bronze sleeves or ball bearings. Design for 860 kPa and 105°C continuous service.
- .3 Motor: drip-proof, with thermal overload protection.
- .4 Supports: provide as recommended by manufacturer

## **3 Execution**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

### **3.2 INSTALLATION**

- .1 Make piping and electrical connections to pump and motor assembly and controls as indicated.
- .2 Ensure pump and motor assembly do not support piping.
- .3 Align vertical pit mounted pump assembly after mounting and securing cover plate.
- .4 Place 150 mm sand under sump pit tank.

### **3.3 FIELD QUALITY CONTROL**

- .1 Site Tests/Inspection:
  - .1 Check power supply.
  - .2 Check starter protective devices.
- .2 Start-up, check for proper and safe operation.
- .3 Adjust flow from water-cooled bearings.
- .4 Adjust impeller shaft stuffing boxes, packing glands.

### **3.4 START-UP**

- .1 General:
  - .1 In accordance with Section 01 91 13 - General Commissioning Requirements, supplemented as specified herein.
  - .2 Procedures:
    - .1 Check power supply.
    - .2 Start pumps, check impeller rotation.
    - .3 Check for safe and proper operation.
    - .4 Test operation of alternator.
    - .5 Adjust leakage through water-cooled bearings.
    - .6 Adjust shaft stuffing boxes.
    - .7 Adjust leakage flow rate from pump shaft stuffing boxes to manufacturer's recommendations.
    - .8 Run-in pumps for 12 continuous hours.
    - .9 Check installation, operation of mechanical seals, packing gland type seals. Adjust as necessary.
    - .10 Adjust alignment of piping and conduit to ensure full flexibility.
    - .11 Eliminate causes of cavitation, flashing, air entrainment.

.12 Verify lubricating oil levels.

**3.5 DOMESTIC HW CIRCULATING PUMPS**

.1 Balance flows using circuit setter balancing valve or lock shield globe valve.

**3.6 REPORTS**

.1 In accordance with Section 01 91 13 - General Commissioning Requirements: reports, supplemented as specified.

.2 Include:

.1 PV results on approved PV Report Forms.

.2 Product Information report forms.

.3 Pump performance curves (family of curves) with final point of actual performance.

**3.7 TRAINING**

.1 In accordance with Section 01 91 13 - General Commissioning Requirements.

**END OF SECTION**

---