

PART 1 - GENERAL

1.1 REFERENCES

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

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Coordinate submittal requirements and provide submittals required by Section 01 33 00 - Submittal Procedures.
- .3 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet for fixtures and equipment.
 - .2 Submit WHMIS MSDS in accordance with Section 01 33 - Submittal Procedures and Section 02 81 01 - Hazardous Materials. Indicate VOC's for adhesive and solvents during application and curing.
- .4 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 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .6 Instructions: submit manufacturer's installation instructions.
- .7 Manufacturers' Field Reports: manufacturers' field reports specified.

1.2 ACTION AND
INFORMATIONAL
SUBMITTALS
(Cont'd)

- .8 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.
 - .2 Construction requirements: in accordance with Section 01 35 21 - LEED Requirements.
 - .3 Verification: contractor's verification in accordance with Section 01 35 21 - LEED Requirements.

1.4 DELIVERY,
STORAGE AND
HANDLING

- .1 Store and manage hazardous materials in accordance with Section 01 35 21 - LEED Requirements.
- .2 Waste Management and Disposal:
- .1 Separate waste materials for reuse and recycling in accordance with Section 01 47 19 - Construction/Demolition Waste Management and Disposal.
 - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
 - .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
 - .4 Divert unused materials from landfill to recycling facility as approved by Departmental Representative.
 - .5 Unused sealant materials must not be disposed of into sewer system, into streams,

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| <u>1.4 DELIVERY,
STORAGE AND
HANDLING
(Cont'd)</u> | <p>.2 Waste Management and Disposal: (Cont'd)</p> <p>.5 (Cont'd)</p> <p>lakes, onto ground or in other location where it will pose health or environmental hazard.</p> <p>.6 Fold up metal and plastic banding, flatten and place in designated area for recycling.</p> |
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PART 2 - PRODUCTS

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| <u>2.1 MATERIALS</u> | <p>.1 Materials and resources in accordance with Section 01 35 21 - LEED Requirements.</p> |
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| <u>2.2 DOMESTIC HOT
WATER CIRCULATING
PUMP</u> | <p>.1 Capacity: as indicated on schedule drawings.</p> <p>.2 Construction: in-line centrifugal, all bronze construction, ceramic shaft, stainless steel or bronze shaft sleeve, two oil lubricated bronze sleeves or ball bearings. Design for 24 kPa and 105 degrees C continuous service.</p> <p>.3 Motor: 125 W, drip-proof, with thermal overload protection.</p> <p>.4 Supports: provide as recommended by manufacturer.</p> |
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| <u>2.3 SUMP PUMP
SUBMERSIBLE</u> | <p>.1 Capacity: as indicated on schedule drawings.</p> <p>.2 Construction: simplex CSA approved, housing epoxy coated cast iron, bronze fitted, stainless steel, all bronze, stainless steel shaft, non-clog bronze impeller, mechanical shaft seal, strainer, lifting mechanism to allow extraction of pump from top of sump pump pit.</p> <p>.3 Motor: hermetically sealed, with automatic overload protection.</p> <p>.4 Control: buoyant case and switch.</p> |
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2.3 SUMP PUMP SUBMERSIBLE (Cont'd) <u>PART 3 - EXECUTION</u>	.5	Acceptable product: Myers Model MCI 033, 1/3 HP, 120 V, 9.8A. Alternative Manufacturer's include: Flygt, Zoeller and Liberty.
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.
3.3 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	Check settings and operation of hand-off-auto selector switch, operating, safety and limit controls, audible and visual alarms, over-temperature and other protective devices.
	.4	Adjust flow from water-cooled bearings.
	.5	Adjust impeller shaft stuffing boxes, packing glands.
	.6	Verification requirements in accordance with Section 01 35 21 - LEED Requirements include: .1 Materials and resources. .2 Storage and collection of recyclables. .3 Construction waste management. .4 Resource reuse. .5 Recycled content. .6 Local/regional materials. .7 Certified wood.

3.3 FIELD QUALITY .6 (Cont'd)
CONTROL .8 Low-emitting materials.
(Cont'd)

3.4 START-UP .1 General:

- .1 In accordance with Section 01 91 13 - General Commissioning (Cx) Requirements: General Requirements, supplemented as specified herein.
- .2 Procedures:
 - .1 Check power supply.
 - .2 Check starter O/L heater sizes.
 - .3 Start pumps, check impeller rotation.
 - .4 Check for safe and proper operation.
 - .5 Check settings, operation of operating, limit, safety controls, over-temperature, other protective devices.
 - .6 Test operation of hands-on-auto switch.
 - .7 Test operation of alternator.
 - .8 Adjust leakage through water-cooled bearings.
 - .9 Adjust shaft stuffing boxes.
 - .10 Adjust leakage flow rate from pump shaft stuffing boxes to manufacturer's recommendations.
 - .11 Check base for free-floating, no obstructions under base.
 - .12 Run-in pumps for 12 continuous hours.
 - .13 Check installation, operation of mechanical seals, packing gland type seals. Adjust as necessary.
 - .14 Adjust alignment of piping and conduit to ensure full flexibility.
 - .15 Eliminate causes of cavitation, flashing, air entrainment.
 - .16 Measure pressure drop across strainer when clean and with flow rates as finally set.
 - .17 Replace seals if pump used to degrease system or if pump used for temporary heat.
 - .18 Verify lubricating oil levels.

3.5 DOMESTIC HOT
WATER CIRCULATING
PUMPS

- .1 Balance flows using circuit setter valve.

3.6 REPORTS

- .1 In accordance with Section 01 91 13 - General
Commissioning (Cx) 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 (Cx) Requirements: Training of
O&M Personnel, supplemented as specified.