

PART 1 - GENERAL

- 1.1 SUBMITTALS
- .1 Submittals: in accordance with Section 01 33 00- Submittal Procedures.
 - .2 Shop drawings; submit drawings stamped and signed by professional engineer registered or licensed in Canada.
 - .3 Shop drawings to show:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance clearances.
 - .4 Shop drawings and product data accompanied by:
 - .1 Detailed drawings of bases, supports, and anchor bolts.
 - .2 Acoustical sound power data, where applicable.
 - .3 Points of operation on performance curves.
 - .4 Manufacturer to certify current model production.
 - .5 Certification of compliance to applicable codes.
 - .5 In addition to transmittal letter referred to in Section 01 33 00 - Submittal Procedures: use MCAC "Shop Drawing Submittal Title Sheet". Identify section and paragraph number.
 - .6 Closeout Submittals:
 - .1 Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
 - .2 Operation and maintenance manual approved by, and final copies deposited with, Departmental Representative before final inspection.
 - .3 Operation data to include:
 - .1 Control schematics for systems including environmental controls.
 - .2 Description of systems and their controls.
 - .3 Description of operation of systems at various loads together with reset schedules and seasonal variances.
 - .4 Operation instruction for systems and component.
 - .5 Description of actions to be taken in event of equipment failure.
 - .6 Valves schedule and flow diagram.
 - .7 Colour coding chart.
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1.1 SUBMITTALS
(Cont'd)

- .6 Closeout Submittals: (Cont'd)
 - .4 Maintenance data to include:
 - .1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
 - .2 Data to include schedules of tasks, frequency, tools required and task time.
 - .5 Performance data to include:
 - .1 Equipment manufacturer's performance datasheets with point of operation as left after commissioning is complete.
 - .2 Equipment performance verification test results.
 - .3 Special performance data as specified.
 - .6 Approvals:
 - .1 Submit 2 copies of draft Operation and Maintenance Manual to Departmental Representative for approval. Submission of individual data will not be accepted unless directed by Departmental Representative.
 - .2 Make changes as required and re-submit as directed by Departmental Representative.
 - .7 Additional data:
 - .1 Prepare and insert into operation and maintenance manual additional data when need for it becomes apparent during specified demonstrations and instructions.
 - .8 Site records:
 - .1 Departmental Representative will provide 1 set of reproducible mechanical drawings. Provide sets of white prints as required for each phase of work. Mark changes as work progresses and as changes occur. Include changes to existing mechanical systems, control systems and low voltage control wiring.
 - .2 Transfer information weekly to reproducibles, revising reproducibles to show work as actually installed.
 - .3 Use different colour waterproof ink for each service.
 - .4 Make available for reference purposes and inspection.
 - .9 As-built drawings:
 - .1 Prior to start of Testing, Adjusting and Balancing for HVAC, finalize production of as-built drawings.
 - .2 Identify each drawing in lower right hand corner in letters at least 12 mm high as follows: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW

1.1 SUBMITTALS
(Cont'd)

- .6 Closeout Submittals:(Cont'd)
- .9 As-built drawings:(Cont'd)
- MECHANICAL SYSTEMS AS INSTALLED"
(Signature of Contractor) (Date).
- .3 Submit to Departmental
Representative for approval and make
corrections as directed.
- .4 Perform testing, adjusting and
balancing for HVAC using as-built
drawings.
- .5 Submit completed reproducible
as-built drawings with Operating and
Maintenance Manuals.
- .10 Submit copies of as-built drawings for
inclusion in final TAB report.

1.2 QUALITY
ASSURANCE

- .1 Quality Assurance: in accordance with Section
01 45 00 - Quality Control.
- .2 Health and Safety Requirements: do
construction occupational health and safety in
accordance with Section 01 35 29.06 - Health
and Safety Requirements.

1.3 MAINTENANCE

- .1 Furnish spare parts in accordance with
Section 01 78 00 - Closeout Submittals as
follows:
 - .1 One set of packing for each pump.
 - .2 One casing joint gasket for each size
pump.
 - .3 One glass for each gauge glass.
- .2 Provide one set of special tools required to
service equipment as recommended by
manufacturers and in accordance with Section
01 78 00 - Closeout Submittals.
- .3 Furnish one commercial quality grease gun,
grease and adapters to suit different types of
grease and grease fittings.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

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| <u>3.1 PAINTING
REPAIRS AND
RESTORATION</u> | .1 | Repaint as specified on mechanical drawings. |
| | .2 | Prime and touch up marred finished paintwork to match original. |
| | .3 | Restore to new condition, finishes which have been damaged. |
| <u>3.2 CLEANING</u> | .1 | Clean interior and exterior of all systems including strainers. Vacuum interior of ductwork and air handling units. |
| <u>3.3 FIELD QUALITY
CONTROL</u> | .1 | Manufacturer's Field Services: .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
.3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE. |
| <u>3.4 DEMOLITION</u> | .1 | Comply with National Building Code, Part 8, Construction Safety Measures at Construction and Demolition sites, and Provincial requirements. |
| | .2 | Comply with National Fire Code, Part 5, Section 5.6. |
| | .3 | Demolition of asbestos can be hazardous to health. Should materials resembling asbestos be encountered, stop work and notify Departmental Representative immediately. Do not proceed until written instructions have been received from Departmental Representative. |
| | .4 | Prevent movement, settlement, or other damage to adjacent structures, utilities, and parts of building to remain in place. Provide bracing and shoring required. |
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3.4 DEMOLITION
(Cont'd)

- .5 Protect building systems, services and equipment.
- .6 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .7 Notify Departmental Representative before disrupting building access or services.
- .8 Remove existing control panel, panel brackets, floats/wires, access hatches, horizontal float hangers, discharge piping/valves/fittings, guide bars, guide bar holders, lifting chains, discharge connections and other components noted in other sections and drawings.
- .9 Dispose of or recycle removed materials, except where specified otherwise, in accordance with authority having jurisdiction.

3.5 DEMONSTRATION

- .1 Departmental Representative will use equipment and systems for test purposes prior to acceptance. Supply labour, material, and instruments required for testing.
 - .2 Trial usage to apply to following equipment and systems:
 - .1 Boiler circulation Pump 1 and Pump 2
 - .2 New boilers
 - .3 Deep well domestic water system
 - .4 Pumphouse domestic water system
 - .5 Fire pump controller
 - .6 Hot air furnace
 - .7 Alarms
 - .3 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.
 - .4 Use operation and maintenance manual, as-built drawings, and audio visual aids as part of instruction materials.
 - .5 Instruction duration time requirements as specified in appropriate sections.
 - .6 Departmental Representative may record these demonstrations on video tape for future reference.
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- 3.6 PROTECTION .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.