

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 Province of Newfoundland and Labrador, 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.
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- 1.1 SUBMITTALS (Cont'd)
- .6 Closeout Submittals: (Cont'd)
- .3 Operation data to include: (Cont'd)
- .5 Description of actions to be taken in event of equipment failure.
- .6 Valves schedule and flow diagram.
- .7 Colour coding chart.
- .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 As-built drawings:
- .1 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 MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (Date).
- .2 Submit to Departmental Representative for approval and make corrections as directed.
- .3 Submit completed reproducible as-built drawings with Operating and Maintenance Manuals.
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<u>1.2 QUALITY ASSURANCE</u>	.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 30 - Health and Safety Requirements.

<u>1.3 MAINTENANCE</u>	.1	Furnish spare parts in accordance with Section 01 78 00.
	.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.

<u>1.4 DELIVERY, STORAGE, AND HANDLING</u>	.1	Waste Management and Disposal: .1 Construction Waste Management and Disposal: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
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PART 2 - PRODUCTS

<u>2.1 VENTILATION</u>	.1	Ventilation for the building will be provided by a two sidewall mounted propeller exhaust fans complete with automatic gravity shutter, insect screen, wall sleeve, direct drive electric motor, and aluminum brake. Fans are capable of supplying 1200 L/s @ 70 Pa.
	.2	Two fresh air intake louvres complete with wall sleeve, insect screen and damper motor will provide fresh air supply to the space when the exhaust fans are in operation.
	.3	When the exhaust air fan is in operation the fresh air louvres will be open; it will close when the fan operation is stopped.
	.4	The exhaust fan, exhaust damper actuator, and fresh air damper actuator will be controlled by a carbon monoxide (CO)/Nitrous Dioxide (NO2) monitoring system. The monitoring system

2.1 VENTILATION
(Cont'd)

- .4 (Cont'd)
shall open the dampers and engage the fan if the levels of CO or NO2 exceed acceptable limits.
- .5 Exhaust fan, exhaust damper actuator, and fresh air damper actuator's will be provided with manual hand wound timer capable of activating system for up to 30 minutes to enable building occupants to activate ventilation system if required.
- .6 Reverse acting thermostat to be capable of activating ventilation system when space temperature exceeds 25°C.
- .7 The monitoring system will be equipped with audible and visual (lights) alarms to warn building occupants when the CO or NO2 levels are too high. The building occupants will be able to start the exhaust fan if general building ventilation is required.

2.2 HEATING

- .1 Heating for the building will be provided by electrical unit heaters (for more information please refer to the electrical section). The heating system will be designed for shell heat loss only; it will not be able to maintain space temperature set point at low ambient conditions if the ventilation system is in operation. Heating of this ventilation air would significantly increase the size of the heating system, and this is not considered necessary as the ventilation system is intended for sporadic use not continuous operation.

2.3 PLUMBING

- .1 The building will be served by a 25 mm domestic cold water service.
- .2 A reduced pressure principal backflow preventer will be installed at the DCW entrance.
- .3 The building will have one interior hose bibs (complete with vacuum breakers).

<u>2.3 PLUMBING (Cont'd)</u>	.4	The building will not have any floor drains or underground sanitary drain. The floor is to be sloped to the building's overhead doors.
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<u>2.4 Insulation</u>	.1	Insulate new cold water line from frost line (1800 mm below grade) up to backflow preventer.
	.2	Insulation to be 50 mm rigid fibre glass insulation.
	.3	All insulation to be complete with stainless steel cladding.
	.4	All joints to be sealed and caulked.
	.5	All below grade stainless steel cladding to have bituminous coating.
	.6	Refer to Electrical for heat tracing requirements.

PART 3 - EXECUTION

<u>3.1 PAINTING REPAIRS AND RESTORATION</u>	.1	Do painting in accordance with Section 09 91 23 - Interior Painting.
	.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.
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<u>3.3 FIELD QUALITY CONTROL</u>	.1	Site Tests: conduct following tests in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - SUBMITTALS. .1.
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- 3.3 FIELD QUALITY CONTROL
(Cont'd)
- .2 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.
- 3.4 DEMONSTRATION
- .1 Departmental Representative Engineer Consultant 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.
 - .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 Engineer Consultant will record these demonstrations on video tape for future reference.
- 3.5 PROTECTION
- .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.