

**A. SECTION 15010 GENERAL MECHANICAL PROVISIONS**

**1. CONFORMANCE**

- .1 Conform to terms and conditions of the General Contract Document.

**2. SCOPE**

- .1 Replace an existing exhaust fan.
- .2 Install door grilles in washroom doors.
- .3 Provide complete, fully tested and operational mechanical systems to meet the requirements described herein and in complete accordance with applicable codes and ordinances.
- .4 Contract documents of this division and drawings are diagrammatic and approximately to scale unless detailed otherwise. They establish scope, material and installation quality and are not detailed installation instructions.
- .5 Follow manufacturer's recommended installation details and procedures for equipment, supplemented by requirements of contract documents.
  - .1 Install equipment generally in locations and routes shown close to building structure with minimum interference with other services or free space. Remove and replace improperly installed equipment to the satisfaction of the Consultant at no extra cost.
  - .2 Connect to equipment specified in other sections and to equipment supplied and installed by other contractors or by the owner. Uncrate equipment, move in place and install complete; start-up and test.
- .6 Connect into existing systems with minimum disruption to the existing systems.
- .7 Work shall be coordinated with the owner seven days prior to work commencing.
- .8 Field verify all building and site dimensions prior to any fabrication and installation of equipment or materials. No additional charge shall be entertained for failure to verify these dimensions on site.

**3. MATERIALS**

- .1 Materials and equipment installed shall be new, full weight and of quality specified. Use same brand or manufacturer for each specified application.
- .2 Statically and dynamically balance rotating equipment for minimum vibration and low operating noise level.
- .3 Each major component of equipment shall bear manufacturer's name, address,

catalog and serial number in a conspicuous place.

- .4 Equipment shall be CSA listed and ULC approved.

**4. TESTING**

- .1 Perform necessary tests on equipment including those required by authorities having jurisdiction and certificate of approval obtained.

**5. CUTTING AND PATCHING**

- .1 Provide holes and sleeves, cutting and fitting required for mechanical work. Relocate improperly located holes and sleeves.
- .2 Repair building where damaged from equipment installation, improperly located holes, etc., by this section of the work. The specialist trade at the expense of this section of work shall carry out this repair. Use matching materials as specified in the respective sections.

**6. SHOP DRAWINGS**

- .1 Submit shop drawings for every piece of mechanical equipment.
- .2 Identify materials and equipment by manufacturer, trade name and model number. Include copies of applicable brochure or catalog material. Do not assume applicable catalogues are available in the consultant's office. Maintenance and operating manuals are not suitable submittal material.
- .3 Clearly mark submittal material using arrows, underlining or circling to show differences from specified, e.g. Ratings, capabilities and options being proposed. Cross out non-applicable material. Specifically note on the submittal specified features such as special tank linings, pumps, seals, material, or painting.
- .4 Include dimensional and technical data sufficient to check if equipment meets requirements. Include wiring, piping, and service connection data and motor sizes.
- .5 Installed materials and equipment shall meet specified requirements regardless of whether or not shop drawings are reviewed by the Consultant.
- .6 Shop drawings not requested will not be reviewed and processed by the Consultant.
- .7 Do not order equipment or material until the Consultant has reviewed and returned shop drawings.
- .8 Shop drawings shall be endorsed by the General Contractor and Mechanical Sub-Contractor indicating that the shop drawings have been reviewed and submitted without qualifications.

- .9 Submit one electronic (pdf) copy of shop drawings within fourteen (14) days after award of contract.

**7. STANDARDS OF MATERIALS, EQUIPMENT AND INSTALLATION**

- .1 Equipment used shall not exceed space limitations in any dimension. Replace any equipment or apparatus that does not meet this specification at no cost. Assume full responsibility for the expense of redesign and adjustment to other parts of the building when proposing the use of approved equal or alternate equipment.
- .2 Provide equipment from the specified manufacturers. All mechanical equipment shall have the approved manufacturers name permanently affixed to it.
- .3 Equipment on alternate & approved manufacturers list must be equal in quality and performance to the model specified. Equipment, which is not equal, will be replaced with the specified equipment at no cost to the Owner.
- .4 The equipment manufacturer shall ensure that the strength and anchorage of the internal components of the equipment exceeds the force level used to restrain and anchor the unit itself to the supporting structure.
- .5 Provide following when required:

**ITEMS**

**APPROVED MANUFACTURER**

Fans

Greenheck, Delhi, Penn, Cook, Acme, Twin City

Grilles, Diffusers & Registers

E.H. Price, Nailor, Titus

**8. PERFORMANCE VERIFICATION OF INSTALLED EQUIPMENT**

- .1 Installed mechanical equipment whose performance is questioned by the Consultant, may be subject to performance verification as specified herein.
- .2 When performance verification is requested, equipment shall be tested to determine compliance with specified performance requirements.
- .3 The Consultant shall approve testing procedures.
- .4 Should test results reveal that equipment does not meet specified performance requirements, equipment will be rejected and the following shall apply:
- .5 Remove rejected equipment. Replace with equipment that meets requirements of contract documents including specified performance requirements.
- .1 Replacement equipment will be subject to performance verification as

well, using same testing procedures on originally installed equipment.

- .2 Contractor shall pay all costs resulting from performance verification procedure.

## **9. PAINTING AND IDENTIFICATION**

- .1 Each piece of equipment shall be identified by stenciled lettering at least 25 mm high and shall be governed by the size of the equipment.

## **10. EQUIPMENT PROTECTION AND CLEAN-UP**

- .1 Protect equipment and material in storage on site and after installation until final acceptance. Leave factory covers in place. Take special precautions to prevent entry of foreign material into working parts of piping and duct systems.
- .2 All mechanical equipment stored on site shall be kept in a dry, heated and ventilated storage area.

## **11. LIABILITY**

- .1 Assume full responsibility for laying out the work and for any damage caused to the owner of other trades by improper location, or carrying out of the work.
- .2 Be responsible for prompt installation of his work in advance of concrete pouring or similar work. Provide and set sleeves where required. Should any cutting or repairing of either unfinished or finished work be required, this contractor shall direct the particular sub-contractor whose work is involved to do such cutting and repairing without expense to the owner. Before being undertaken, such work shall be laid out for the consultant's review.
- .3 Examine the site and the local conditions affecting work under this contract. Examine carefully the mechanical, electrical, structural and architectural drawings and confirm that the work under this contract can be satisfactorily carried out without changes to the building as shown on these plans. Before commencing the work, examine the work of the other trades and report at once any defect of interference affecting the work of this section, of the guarantee of same. No extras will be subsequently allowed to cover any such error, omission or oversight on the thorough inspection of the grounds, building, conditions, etc.
- .4 Arrange work in co-operation with other trades in the building in such a manner as not to interfere with other work being carried on in the building and places where other pipes and equipment be installed along with the pipes and ducts pertaining to this trade. Co-operate with the other trades to get all the pipes, ducts, conduit, etc., installed to the best advantage.
- .5 Where any pipes, ducts and equipment must be built into the work of other trades such as masonry, structural, or plastering, be responsible for supplying the equipment to be built in or measurements to allow the necessary openings to be left. All pipes and ducts which are to be concealed shall be installed neatly

and closely to the building structure so that the necessary furring can be kept as small as possible. Any pipes, ducts, or other work which are not, in the opinion of the consultant, installed as they should be, shall be taken out and replaced without cost to the owner.

- .6 Protect finished and unfinished work from damage due to the carrying out of his work, giving special attention to the protection of building vapour barriers, waterproof membranes, etc. Cover floors and other parts of the building with tarpaulins, etc., and repair all damage to the satisfaction of the owner and the consultant. During freezing weather, protect all his materials in such a manner that no harm can be done to installation already made and/or to materials and equipment on the job.
- .7 Be responsible for the condition of all materials and equipment supplied and shall provide all necessary protection for same.
- .8 Be responsible for the protection and maintenance of the work of this section until the building has been completed and accepted by the Owner. Be responsible for the sorting of his material inside and out of the way, and to clean up all refuse caused by his work to meet Consultant's review.
- .9 On completion of the work, all tools, surplus and waste materials shall be removed and the work left in a clean condition.

## **12. LIABILITY INSURANCE**

- .1 This contractor shall maintain such insurance as will fully protect both the owner and himself from any and all claims, all as noted within the general conditions and supplementary general conditions. When requested the contractor shall provide and show proof of, at his expense, comprehensive general liability insurance of not less than \$2,000,000.00 Including non-owned car coverage, contractual liability and containing a cross liability clause. Coverage shall include loss or damage the contractor may cause to any work, building, equipment, and structural, on the owner's property. The insurance may contain a deductible cause not to exceed \$500.00.
- .2 The Contractor shall carry full employee's liability insurance for the whole of the work in accordance with the workers' compensation act.

## **13. GUARANTEE WARRANTY**

- .1 This contractor shall furnish a warranty for all work executed under this division will be free from defects of material and workmanship for a period of one (1) year from the date of substantial performance, which shall include one (1) complete summer and one (1) complete winter of uninterrupted operation. Warranty shall include any part of equipment, units or structures furnished hereunder that show the works under normal operating conditions and/or for the purpose of which they were intended.
- .2 The Contractor shall, at his own expense, promptly investigate any mechanical

or control malfunction, and repair or replace all such defective work, and all other damages thereby which becomes defective during the time of the guaranty-warranty.

**14. HOISTS AND SCAFFOLDS**

- .1 Provide interior movable or roller scaffolds for the installation of the mechanical work. All other hoists, scaffolds, temporary elevators, ladders, runways, etc., shall be the responsibility of this contractor.

**15. SUBSTANTIAL PERFORMANCE INSPECTION**

- .1 Prior to the Contractor requesting an inspection for substantial performance all the following items must be provided to permit beneficial use by the Owner.
  - .1 Comply with requirements in General Contract conditions.
  - .2 A complete list of items that the Contractor has not finished, or are deficient, shall be provided. If in the opinion of the consultant, this list indicates the project is excessively incomplete, a substantial completion inspection will not be performed.
  - .3 The Contractor shall be fully responsible to accumulate all necessary data from his sub-trades and suppliers and present same in the specified format for the approval by the consultant.

**16. LAWS, NOTICES, PERMITS AND FEES**

- .1 Give all necessary notices, obtain all necessary permits and pay all fees in order that the work specified may be carried out, and furnish any certificates necessary as evidence that the work installed conforms with the law and regulations of all authorities having jurisdiction.
- .2 All work shall be in accordance with the regulations of the following authoritative bodies, the codes in effect at the time of tender, and any others having jurisdiction:
  - .1 Worker's Compensation Board
  - .2 Canadian Standards Association
  - .3 Underwriters' Laboratories of Canada

**17. DEMONSTRATION AND INSTRUCTION TO OWNER**

- .1 Demonstrate to and instruct the representative designated by the Owner on the complete systems operating and maintenance procedures.

**18. INSPECTION**

- .1 The Consultant or his representative may choose to inspect all work prior to it

being concealed. All work shall be approved by any other regulatory body having jurisdiction. All piping below ground must be approved prior to covering. All piping in wall spaces must be approved prior to boarding. All openings shall be sealed appropriately in particular in fire rated walls and floors. Sealing shall be approved prior to covering.

- .2 Provide a minimum of 48 hours notice to consultant for required inspection.

**B. SECTION 15500 HEATING, VENTILATION AND AIR CONDITIONING**

**1. SCOPE OF WORK**

.1 Exhaust Fan:

- .1 Remove existing roof mounted exhaust fan.
- .2 Install the following fan:
  - .1 Manufacturer: Greenheck
  - .2 Model: G-080-D
  - .3 Description: Room exhaust fan with aluminum housing, direct drive motor.
  - .4 Performance: 70L/s @ 125Pa
  - .5 Motor: 1/20hp, 115V/60Hz/1ph
- .3 Mount on exhausting roof curb and provide aluminum transition curb complete with stainless steel screws.

.2 Door Grilles:

- .1 Install door grilles on male and female washroom doors, typical of two.
- .2 Cut opening in door to suite new door grille.
- .3 Install backing in door as required at cut.
- .4 Install the following grille:
  - .1 Manufacturer: Price
  - .2 Model: STG1/BG/B15
  - .3 Size: 400mmx200mm
  - .4 Description: Heavy duty steel door grille with 33mm flat border, two sides, counter sunk screw holes and aluminum powder coat finish.

**2. DUCTING**

- .1 Provide flashing, curb and counter flashing for all ducting passing through roof and external envelope of the building.
- .2 All ductwork and equipment installed shall be free of scale, debris and dirt. During construction, cover all duct and equipment openings with polyethylene or equivalent to prevent the entry of dirt or dust. Any ductwork or equipment which is not sufficiently clean shall be cleaned using vacuum cleaners, brushes,

Mactaquac Biodiversity Facility

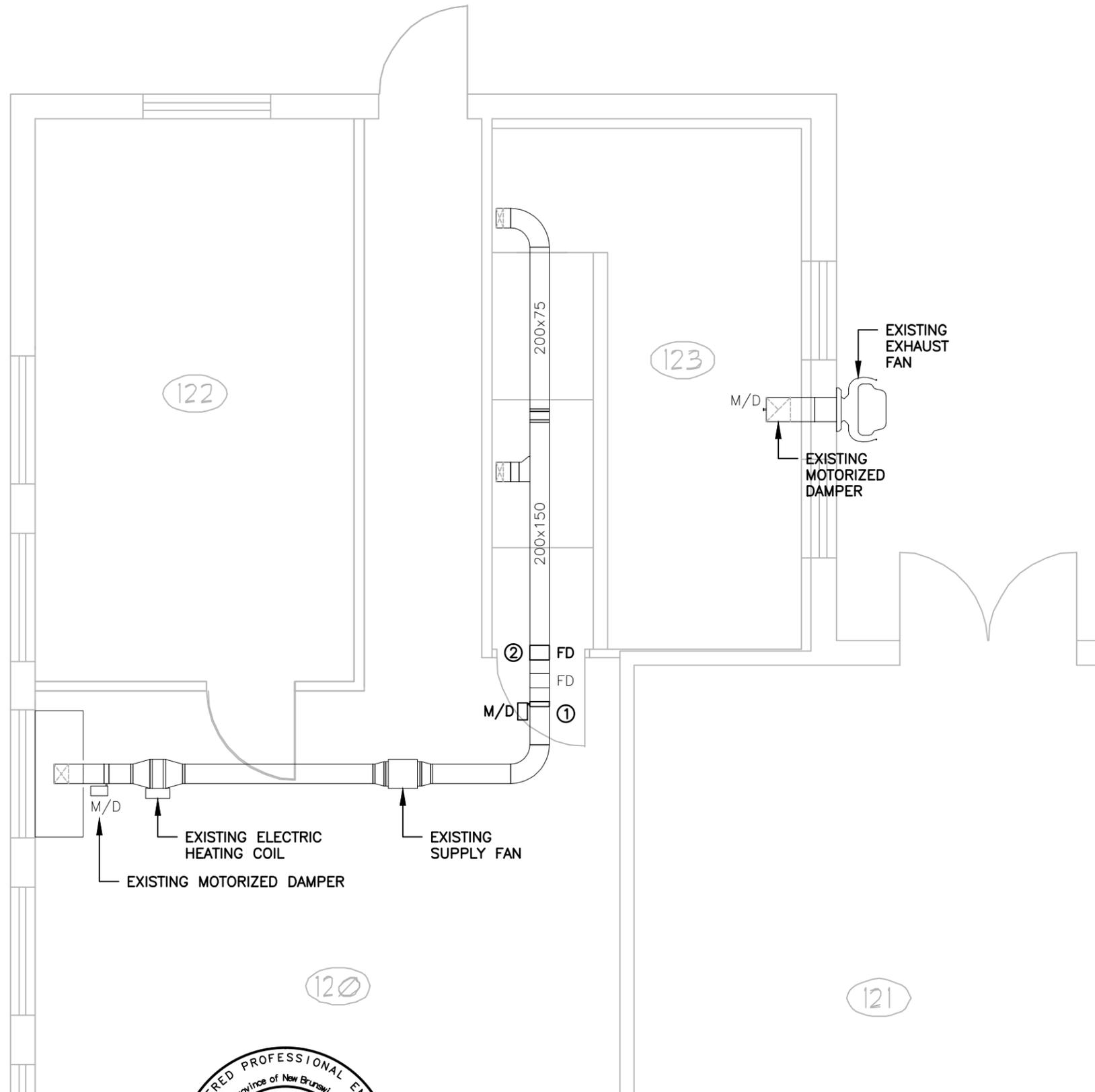
**Washroom Ventilation Upgrade in Administration Building**

March 31, 2016

and/or non-toxic solvents. Ensure duct dust covers are removed prior to system startup.

END OF RFQ

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**GENERAL NOTES:**

- TEST OPERATION OF SYSTEM INCLUDING: MOTORIZED DAMPER AT INLET, DUCT HEATER, SUPPLY FAN, NEW MOTORIZED DAMPER, EXHAUST MOTORIZED DAMPER, AND EXHAUST FAN. ENGINEER TO WITNESS TEST.
- REBALANCE SUPPLY TO 10% LESS THAN EXHAUST.

SYMBOL LEGEND	
	EXISTING SUPPLY AIR DUCT UP
	EXISTING SUPPLY AIR DUCT DOWN
	MOTORIZED DAMPER
	FIRE DAMPER
	EXHAUST AIR
	NOT TO SCALE
	OPEN ENDED DUCT
	THERMOSTAT
	GRILLE TYPE
	NECK/GRILLE SIZE
	AIR VOLUME
	EQUIPMENT/FIXTURE TYPE
	KEYNOTE
	DRAWING REVISION

KEYNOTES	
①	INSTALL NEW SPRING RETURN, NORMALLY CLOSED MOTORIZED DAMPER IMMEDIATELY BEFORE THE FIRE DAMPER. NEW MOTORIZED DAMPER TO BE CONTROLLED BY THE DELTA CONTROL SYSTEM TO OPEN UPON ACTIVATION OF SUPPLY FAN.
②	REMOVE EXISTING FIRE DAMPER AND INSTALL NEW FIRE DAMPER IN WALL COMPLETE WITH ACCESS DOOR.



Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
APR 01/16	1:50	MP	PA	MP	MP	162810.00	-
							Drawing
CHEMICAL STORAGE ROOM							<b>M1</b>
FLOOR PLAN							
No.	Description						
0	ISSUED FOR TENDER						





REMOVE EXISTING WINDOW AND FRAME AND REPLACE WITH EXHAUST LOUVRE

L-1  
1250x150  
710

M/D

EF-1

1250x900 STAINLESS STEEL INLET HOOD C/W 15mm x 15mm STAINLESS STEEL SCREEN ON INLET

M/D

122

REMOVE EXISTING WINDOWS AND REPLACE WITH INLET HOOD

EXISTING DELTA CONTROLLER

Ⓣ

123

**GENERAL NOTES:**

1. FIELD MEASURE EXISTING WINDOW OPENINGS.
2. FLASH AND SEAL AROUND NEW INLET HOOD AND EXHAUST LOUVRE.
3. CONTROLS:
  - .1 EXHAUST FAN TO BE CONTROLLED BY DELTA CONTROL SYSTEM.
  - .2 SEQUENCE:
    - a. FAN TO BE NORMALLY OFF AND DAMPERS CLOSED.
    - b. WHEN TEMPERATURE RISES TO 27°C, THE FAN SHALL START AND THE DAMPERS SHALL OPEN.
    - c. THE FAN SHALL START/STOP TO MAINTAIN THE TEMPERATURE AT 27°C.
  - .3 PROVIDE STATUS AND ROOM TEMP ON DELTA GRAPHICS.
4. FAN TO BE WIRED FROM PANEL 'A' COMPLETE WITH NEW 20A-1P BREAKER.
5. ALL WIRING TO BE IN EMT.

SYMBOL LEGEND	
	EXHAUST AIR DUCT UP
	EXHAUST AIR DUCT DOWN
	MOTORIZED DAMPER
	CONTROL WIRING
E/A	EXHAUST AIR
NTS	NOT TO SCALE
OED	OPEN ENDED DUCT
	THERMOSTAT
	GRILLE TYPE
	NECK/GRILLE SIZE
	AIR VOLUME
	EQUIPMENT/FIXTURE TYPE
	KEYNOTE
	DRAWING REVISION

LOUVER SCHEDULE			
SYMBOL	MFGR/MODEL	SERVICE	REMARKS
L-1	AIROLITE K6774	SUPPLY/EXHAUST	EXTRUDED ALUMINUM LOUVER c/w BIRD SCREEN & ANODIZED ALUMINUM FINISH.

FAN SCHEDULE									
UNIT NO.	MFGR	MODEL	TYPE	FLOW (L/S)	E.S.P. (PA)	FAN SPEED (RPM)	ELECTRICAL MOTOR		REMARKS
							WATTS	V/φ	
EF-1	GREENHECK	CSP-A2150	CEILING MOUNTED CABINET FAN	710	125	1,100	735	115/1	DIRECT DRIVE CABINET FAN C/W GALVANIZED STEEL HOUSING WITH DUCT COLLARS, AND FACTORY DISCONNECT. ACCEPTABLE MANUFACTURERS: GREENHECK, ACME MFG. & ENG. CO. PENNBARRY, TWIN CITY, LOREN COOK



Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
APR 01/16	1:50	MP	PA	MP	MP	162810.00	-
						ELECTRICAL ROOM COOLING	
						FLOOR PLAN	
							Drawing
							<b>M1</b>

No.	Description
0	ISSUED FOR TENDER



- .2 REPAINT ALL MARRED FACTORY FINISHED EQUIPMENT, WHICH IS NOT SCHEDULED TO BE REPAINTED, TO MATCH THE ORIGINAL FACTORY FINISH.
- .3 EACH PIECE OF EQUIPMENT SHALL BE IDENTIFIED BY LAMACOID LABELS PERMANENTLY ADHERED TO THE EQUIPMENT AND SHALL BE GOVERNED BY THE SIZE OF THE EQUIPMENT.
- .4 EACH TRADE SHALL PREPARE A LIST DETAILING THE VALVES, LOCATION; NORMAL POSITION, AND PURPOSE SERVED. TRADES SHALL CO-OPERATE IN PREPARING A WHITE PRINT CHART SHOWING LOCATION OF ALL VALVES.

12. EQUIPMENT PROTECTION AND CLEAN-UP

- .1 PROTECT EQUIPMENT AND MATERIAL IN STORAGE ON SITE AND AFTER INSTALLATION UNTIL FINAL ACCEPTANCE. LEAVE FACTORY COVERS IN PLACE. TAKE SPECIAL PRECAUTIONS TO PREVENT ENTRY OF FOREIGN MATERIAL INTO WORKING PARTS OF PIPING AND DUCT SYSTEMS.
- .2 ALL MECHANICAL EQUIPMENT STORED ON SITE SHALL BE KEPT IN A DRY, HEATED AND VENTILATED STORAGE AREA.
- .3 THOROUGHLY CLEAN PIPING, DUCTS AND EQUIPMENT OF DIRT, CUTTINGS, AND OTHER FOREIGN MATERIAL.
- .4 PROTECT BEARINGS AND SHAFTS DURING INSTALLATION. GREASE SHAFTS AND SHEAVES TO PREVENT CORROSION. SUPPLY AND INSTALL NECESSARY EXTENDED NIPPLES FOR LUBRICATION PURPOSES.
- .5 ENSURE THAT EXISTING EQUIPMENT IS CAREFULLY DISMANTLED AND NOT DAMAGED OR LOST. DO NOT REUSE EXISTING MATERIALS AND EQUIPMENT UNLESS SPECIFICALLY INDICATED.

13. LIABILITY

- .1 ASSUME FULL RESPONSIBILITY FOR LAYING OUT THE WORK AND FOR ANY DAMAGE CAUSED TO THE OWNER OF OTHER TRADES BY IMPROPER LOCATION, OR CARRYING OUT OF THE WORK.
- .2 BE RESPONSIBLE FOR PROMPT INSTALLATION OF HIS WORK IN ADVANCE OF CONCRETE POURING OR SIMILAR WORK. PROVIDE AND SET SLEEVES WHERE REQUIRED. SHOULD ANY CUTTING OR REPAIRING OF EITHER UNFINISHED OR FINISHED WORK BE REQUIRED, THIS CONTRACTOR SHALL DIRECT THE PARTICULAR SUB-CONTRACTOR WHOSE WORK IS INVOLVED TO DO SUCH CUTTING AND REPAIRING WITHOUT EXPENSE TO THE OWNER. BEFORE BEING UNDERTAKEN, SUCH WORK SHALL BE LAID OUT FOR THE CONSULTANT'S REVIEW.
- .3 EXAMINE THE SITE AND THE LOCAL CONDITIONS AFFECTING WORK UNDER THIS CONTRACT. EXAMINE CAREFULLY THE MECHANICAL, ELECTRICAL, STRUCTURAL AND ARCHITECTURAL DRAWINGS AND CONFIRM THAT THE WORK UNDER THIS CONTRACT CAN BE SATISFACTORILY CARRIED OUT WITHOUT CHANGES TO THE BUILDING AS SHOWN ON THESE PLANS. BEFORE COMMENCING THE WORK, EXAMINE THE WORK OF THE OTHER TRADES AND REPORT AT ONCE ANY DEFECT OF INTERFERENCE AFFECTING THE WORK OF THIS SECTION, OF THE GUARANTEE OF SAME. NO EXTRAS WILL BE SUBSEQUENTLY ALLOWED TO COVER ANY SUCH ERROR, OMISSION OR OVERSIGHT ON THE THOROUGH INSPECTION OF THE GROUNDS, BUILDING, CONDITIONS, ETC.
- .4 ARRANGE WORK IN CO-OPERATION WITH OTHER TRADES IN THE BUILDING IN SUCH A MANNER AS NOT TO INTERFERE WITH OTHER WORK BEING CARRIED ON IN THE BUILDING AND PLACES WHERE OTHER PIPES AND EQUIPMENT BE INSTALLED ALONG WITH THE PIPES AND DUCTS PERTAINING TO THIS TRADE. CO-OPERATE WITH THE OTHER TRADES TO GET ALL THE PIPES, DUCTS, CONDUIT, ETC., INSTALLED TO THE BEST ADVANTAGE.
- .5 WHERE ANY PIPES, DUCTS AND EQUIPMENT MUST BE BUILT INTO THE WORK OF OTHER TRADES SUCH AS MASONRY, STRUCTURAL, OR PLASTERING, BE RESPONSIBLE FOR SUPPLYING THE EQUIPMENT TO BE BUILT IN OR MEASUREMENTS TO ALLOW THE NECESSARY OPENINGS TO BE LEFT. ALL PIPES AND DUCTS WHICH ARE TO BE CONCEALED SHALL BE INSTALLED NEATLY AND CLOSELY TO THE BUILDING STRUCTURE SO THAT THE NECESSARY FURRING CAN BE KEPT AS SMALL AS POSSIBLE. ANY PIPES,

DUCTS, OR OTHER WORK WHICH ARE NOT, IN THE OPINION OF THE CONSULTANT, INSTALLED AS THEY SHOULD BE, SHALL BE TAKEN OUT AND REPLACED WITHOUT COST TO THE OWNER.

- .6 PROTECT FINISHED AND UNFINISHED WORK FROM DAMAGE DUE TO THE CARRYING OUT OF HIS WORK, GIVING SPECIAL ATTENTION TO THE PROTECTION OF BUILDING VAPOUR BARRIERS, WATERPROOF MEMBRANES, ETC. COVER FLOORS AND OTHER PARTS OF THE BUILDING WITH TARPULINS, ETC., AND REPAIR ALL DAMAGE TO THE SATISFACTION OF THE OWNER AND THE CONSULTANT. DURING FREEZING WEATHER, PROTECT ALL HIS MATERIALS IN SUCH A MANNER THAT NO HARM CAN BE DONE TO INSTALLATION ALREADY MADE AND/OR TO MATERIALS AND EQUIPMENT ON THE JOB.
- .7 BE RESPONSIBLE FOR THE CONDITION OF ALL MATERIALS AND EQUIPMENT SUPPLIED AND SHALL PROVIDE ALL NECESSARY PROTECTION FOR SAME.
- .8 BE RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF THE WORK OF THIS SECTION UNTIL THE BUILDING HAS BEEN COMPLETED AND ACCEPTED BY THE OWNER. BE RESPONSIBLE FOR THE SORTING OF HIS MATERIAL INSIDE AND OUT OF THE WAY, AND TO CLEAN UP ALL REFUSE CAUSED BY HIS WORK TO MEET CONSULTANT'S REVIEW.
- .9 ON COMPLETION OF THE WORK, ALL TOOLS, SURPLUS AND WASTE MATERIALS SHALL BE REMOVED AND THE WORK LEFT IN A CLEAN CONDITION.

14. LIABILITY INSURANCE

- .1 THIS CONTRACTOR SHALL MAINTAIN SUCH INSURANCE AS WILL FULLY PROTECT BOTH THE OWNER AND HIMSELF FROM ANY AND ALL CLAIMS, ALL AS NOTED WITHIN THE GENERAL CONDITIONS AND SUPPLEMENTARY GENERAL CONDITIONS. WHEN REQUESTED THE CONTRACTOR SHALL PROVIDE AND SHOW PROOF OF, AT HIS EXPENSE, COMPREHENSIVE GENERAL LIABILITY INSURANCE OF NOT LESS THAN \$2,000,000.00 INCLUDING NON-OWNED CAR COVERAGE, CONTRACTUAL LIABILITY AND CONTAINING A CROSS LIABILITY CLAUSE. COVERAGE SHALL INCLUDE LOSS OR DAMAGE THE CONTRACTOR MAY CAUSE TO ANY WORK, BUILDING, EQUIPMENT, AND STRUCTURAL, ON THE OWNER'S PROPERTY. THE INSURANCE MAY CONTAIN A DEDUCTIBLE CAUSE NOT TO EXCEED \$500.00.
- .2 THE CONTRACTOR SHALL CARRY FULL EMPLOYEE'S LIABILITY INSURANCE FOR THE WHOLE OF THE WORK IN ACCORDANCE WITH THE WORKERS' COMPENSATION ACT.

15. GUARANTEE WARRANTY

- .1 THIS CONTRACTOR SHALL FURNISH A WARRANTY FOR ALL WORK EXECUTED UNDER THIS DIVISION WILL BE FREE FROM DEFECTS OF MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL PERFORMANCE, WHICH SHALL INCLUDE ONE (1) COMPLETE SUMMER AND ONE (1) COMPLETE WINTER OF UNINTERRUPTED OPERATION. WARRANTY SHALL INCLUDE ANY PART OF EQUIPMENT, UNITS OR STRUCTURES FURNISHED HEREUNDER THAT SHOW THE WORKS UNDER NORMAL OPERATING CONDITIONS AND/OR FOR THE PURPOSE OF WHICH THEY WERE INTENDED.
- .2 THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROMPTLY INVESTIGATE ANY MECHANICAL OR CONTROL MALFUNCTION, AND REPAIR OR REPLACE ALL SUCH DEFECTIVE WORK, AND ALL OTHER DAMAGES THEREBY WHICH BECOMES DEFECTIVE DURING THE TIME OF THE GUARANTY-WARRANTY.

16. SUBSTANTIAL PERFORMANCE INSPECTION

- .1 PRIOR TO THE CONTRACTOR REQUESTING AN INSPECTION FOR SUBSTANTIAL PERFORMANCE ALL THE FOLLOWING ITEMS MUST BE PROVIDED TO PERMIT BENEFICIAL USE BY THE OWNER.
  - .1 COMPLY WITH REQUIREMENTS IN GENERAL CONTRACT CONDITIONS.
  - .2 MAINTENANCE AND OPERATING MANUALS TO BE SUBMITTED AND APPROVED.
  - .3 RECORD DRAWINGS.

- .4 A COMPLETE LIST OF ITEMS THAT THE CONTRACTOR HAS NOT FINISHED, OR ARE DEFICIENT, SHALL BE PROVIDED. IF IN THE OPINION OF THE CONSULTANT, THIS LIST INDICATES THE PROJECT IS EXCESSIVELY INCOMPLETE, A SUBSTANTIAL COMPLETION INSPECTION WILL NOT BE PERFORMED.
- .5 STARTUP REPORTS.
- .2 THE CONTRACTOR SHALL BE FULLY RESPONSIBLE TO ACCUMULATE ALL NECESSARY DATA FROM HIS SUB-TRADES AND SUPPLIERS AND PRESENT SAME IN THE SPECIFIED FORMAT FOR THE APPROVAL BY THE CONSULTANT.

17. LAWS, NOTICES, PERMITS AND FEES

- .1 GIVE ALL NECESSARY NOTICES, OBTAIN ALL NECESSARY PERMITS AND PAY ALL FEES IN ORDER THAT THE WORK SPECIFIED MAY BE CARRIED OUT, AND FURNISH ANY CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH THE LAW AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.
- .2 ALL WORK SHALL BE IN ACCORDANCE WITH THE REGULATIONS OF THE FOLLOWING AUTHORITATIVE BODIES, THE CODES IN EFFECT AT THE TIME OF TENDER, AND ANY OTHERS HAVING JURISDICTION:
  - .1 FIRE MARSHALL
  - .2 CANADIAN ELECTRICAL CODE
  - .3 NEW BRUNSWICK BUILDING CODE AND LOCAL BUILDING BY-LAWS
  - .4 WORKER'S COMPENSATION BOARD
  - .5 CANADIAN STANDARDS ASSOCIATION
  - .6 CANADIAN GAS CODE B-149.1
  - .7 NATIONAL PLUMBING CODE
  - .8 UNDERWRITERS' LABORATORIES OF CANADA
  - .9 NATIONAL FIRE PROTECTION ASSOCIATION

18. DEMONSTRATION AND INSTRUCTION TO OWNER

- .1 DEMONSTRATE TO AND INSTRUCT THE REPRESENTATIVE DESIGNATED BY THE OWNER ON THE COMPLETE SYSTEMS OPERATING AND MAINTENANCE PROCEDURES.

19. INSPECTION

- .1 THE CONSULTANT OR HIS REPRESENTATIVE MAY CHOOSE TO INSPECT ALL WORK PRIOR TO IT BEING CONCEALED. ALL WORK SHALL BE APPROVED BY ANY OTHER REGULATORY BODY HAVING JURISDICTION. ALL PIPING BELOW GROUND MUST BE APPROVED PRIOR TO COVERING. ALL PIPING IN WALL SPACES MUST BE APPROVED PRIOR TO BOARDING. ALL OPENINGS SHALL BE SEALED APPROPRIATELY IN PARTICULAR IN FIRE RATED WALLS AND FLOORS. SEALING SHALL BE APPROVED PRIOR TO COVERING.
- .2 PROVIDE A MINIMUM OF 48 HOURS NOTICE TO CONSULTANT FOR REQUIRED INSPECTION.



Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
APR 01/16	NTS	MP	PA	MP	MP	162810.00	-
						Drawing	
						ELECTRICAL ROOM COOLING	
						SPECIFICATIONS (2 OF 3)	
						M3	
No.	Description						

0	ISSUED FOR TENDER
No.	Description

**B. SECTION 15500 HEATING, VENTILATION AND AIR CONDITIONING**

**1. DUCTING**

- .1 DUCTWORK SHALL BE GALVANIZED STEEL, LOCK FORMED 2" W.G. SMACNA STANDARD FOR LOW VELOCITY AND MEDIUM VELOCITY DUCTWORK QUALITY. FABRICATED IN ACCORDANCE WITH SMACNA DUCT MANUALS AND ASHRAE HANDBOOKS. DUCTWORK SHALL MEET THE REQUIREMENTS OF NFPA 90A, 91 AND 96 AND CONFORM TO APPLICABLE CODES.
- .2 PRIOR TO FABRICATION OF DUCTWORK, CHECK ALL CEILING SPACES AND HEIGHTS AND CONFLICTS WITH OTHER TRADES. INCLUDE AND PROVIDE NECESSARY OFFSET TO MAINTAIN CEILING HEIGHT, HEADROOM ETC.
- .3 ALL FANS AND AIR CONDITIONING UNITS SHALL BE MOUNTED WITH VIBRATION ISOLATION.
- .4 ALL FANS AND AIR MOVING HVAC UNITS SHALL HAVE FLEXIBLE CONNECTIONS.
- .5 PROVIDE GALVANIZED STEEL SCREEN, 12 MM SQUARE MESH FOR EXTERIOR INTAKE & EXHAUST OUTLETS UNLESS OTHERWISE NOTED.
- .6 PROVIDE FLASHING, CURB AND COUNTER FLASHING FOR ALL DUCTING PASSING THROUGH ROOF AND EXTERNAL ENVELOPE OF THE BUILDING.
- .7 ALL DUCTWORK AND EQUIPMENT INSTALLED SHALL BE FREE OF SCALE, DEBRIS AND DIRT. DURING CONSTRUCTION, COVER ALL DUCT AND EQUIPMENT OPENINGS WITH POLYETHYLENE OR EQUIVALENT TO PREVENT THE ENTRY OF DIRT OR DUST. ANY DUCTWORK OR EQUIPMENT WHICH IS NOT SUFFICIENTLY CLEAN SHALL BE CLEANED USING VACUUM CLEANERS, BRUSHES, AND/OR NON-TOXIC SOLVENTS. ENSURE DUCT DUST COVERS ARE REMOVED PRIOR TO SYSTEM STARTUP.



Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
APR 01/16	NTS	MP	PA	MP	MP	162810.00	-
		ELECTRICAL ROOM COOLING				Drawing <b>M4</b>	
		SPECIFICATIONS (3 OF 3)					
No.	Description						
0	ISSUED FOR TENDER						

 <b>CBCL LIMITED</b> Consulting Engineers	ELECTRICAL ROOM COOLING		Drawing <b>M4</b>
	SPECIFICATIONS (3 OF 3)		

You are being invited to submit a quote for the following work located at the Mactaquac Biodiversity Facility.

**A. SECTION 15010 GENERAL MECHANICAL PROVISIONS**

**1. CONFORMANCE**

.1 Conform to terms and conditions of the General Contract Document.

**2. SCOPE**

.1 Door Grilles: Install door grille on Formaldehyde Room.

.2 Provide complete, fully tested and operational mechanical systems to meet the requirements described herein and in complete accordance with applicable codes and ordinances.

.3 Contract documents of this division. They establish scope, material and installation quality and are not detailed installation instructions.

.4 Follow manufacturer's recommended installation details and procedures for equipment, supplemented by requirements of contract documents.

.5 Work shall be coordinated with the owner seven days prior to work commencing.

.6 Field verify all building and site dimensions prior to any fabrication and installation of equipment or materials. No additional charge shall be entertained for failure to verify these dimensions on site.

**3. MATERIALS**

.1 Materials and equipment installed shall be new, full weight and of quality specified. Use same brand or manufacturer for each specified application.

.2 Each major component of equipment shall bear manufacturer's name, address, catalog and serial number in a conspicuous place.

.3 Fittings shall be of approved materials and meet codes having jurisdiction.

.4 Pipe and fittings shall be CSA listed and ULC approved.

**4. CUTTING AND PATCHING**

.1 Repair building where damaged from equipment installation, improperly located holes, etc., by this section of the work. The specialist trade at the expense of this section of work shall carry out this repair. Use matching materials as specified in the respective sections.

**5. SHOP DRAWINGS**

- .1 Submit shop drawings for every piece of mechanical equipment.
- .2 Identify materials and equipment by manufacturer, trade name and model number. Include copies of applicable brochure or catalog material. Do not assume applicable catalogues are available in the consultant's office. Maintenance and operating manuals are not suitable submittal material.
- .3 Clearly mark submittal material using arrows, underlining or circling to show differences from specified, e.g. Ratings, capabilities and options being proposed. Cross out non-applicable material. Specifically note on the submittal specified features such as special tank linings, pumps, seals, material, or painting.
- .4 Include dimensional and technical data sufficient to check if equipment meets requirements. Include wiring, piping, and service connection data and motor sizes.
- .5 Installed materials and equipment shall meet specified requirements regardless of whether or not shop drawings are reviewed by the Consultant.
- .6 Shop drawings not requested will not be reviewed and processed by the Consultant.
- .7 Do not order equipment or material until the Consultant has reviewed and returned shop drawings.
- .8 Submit one electronic copy of shop drawings within fourteen (14) days after award of contract.

## **6. STANDARDS OF MATERIALS, EQUIPMENT AND INSTALLATION**

- .1 Equipment used shall not exceed space limitations in any dimension. Replace any equipment or apparatus that does not meet this specification at no cost. Assume full responsibility for the expense of redesign and adjustment to other parts of the building when proposing the use of approved equal or alternate equipment.
- .2 Provide equipment from the specified manufacturers. All mechanical equipment shall have the approved manufacturers name permanently affixed to it.
- .3 Equipment on alternate & approved manufacturers list must be equal in quality and performance to the model specified. Equipment, which is not equal, will be replaced with the specified equipment at no cost to the Owner.
- .4 The equipment manufacturer shall ensure that the strength and anchorage of the internal components of the equipment exceeds the force level used to restrain and anchor the unit itself to the supporting structure.
- .5 Provide following when required:

**ITEMS**

**APPROVED MANUFACTURER**

Grilles, Diffusers &  
Registers

E.H. Price, Nailor, Titus

## **7. PERFORMANCE VERIFICATION OF INSTALLED EQUIPMENT**

- .1 Installed mechanical equipment whose performance is questioned by the Consultant, may be subject to performance verification as specified herein.
- .2 When performance verification is requested, equipment shall be tested to determine compliance with specified performance requirements.
- .3 The Consultant shall approve testing procedures.
- .4 Should test results reveal that equipment does not meet specified performance requirements, equipment will be rejected and the following shall apply:
  - .1 Replacement equipment will be subject to performance verification as well, using same testing procedures on originally installed equipment.
  - .2 Contractor shall pay all costs resulting from performance verification procedure.
- .5 Remove rejected equipment. Replace with equipment that meets requirements of contract documents including specified performance requirements.
  - .1 Replacement equipment will be subject to performance verification as well, using same testing procedures on originally installed equipment.
  - .2 Contractor shall pay all costs resulting from performance verification procedure.

## **8. CONNECTION AND INTERRUPTION TO EXISTING SYSTEMS**

- .1 Coordinate with owner all shut downs and connections to existing equipment.

## **9. ACCESS OF EQUIPMENT**

- .1 Make all arrangements to ensure that access into the building is available for all mechanical equipment.

## **10. LIABILITY**

- .1 Assume full responsibility for laying out the work and for any damage caused to the owner of other trades by improper location, or carrying out of the work.
- .2 Be responsible for prompt installation of his work in advance of concrete pouring or similar work. Provide and set sleeves where required. Should any cutting or repairing of either unfinished or finished work be required, this contractor shall direct the particular subcontractor whose work is involved to do such cutting and repairing without expense to the owner. Before being undertaken, such work shall be laid out for the consultant's review.
- .3 Examine the site and the local conditions affecting work under this contract. Examine carefully the mechanical, electrical, structural and architectural drawings and confirm that the work under this contract can be satisfactorily carried out without changes to the building

as shown on these plans. Before commencing the work, examine the work of the other trades and report at once any defect of interference affecting the work of this section, of the guarantee of same. No extras will be subsequently allowed to cover any such error, omission or oversight on the thorough inspection of the grounds, building, conditions, etc.

.4 Arrange work in co-operation with other trades in the building in such a manner as not to interfere with other work being carried on in the building and places where other pipes and equipment be installed along with the pipes and ducts pertaining to this trade. Co-operate with the other trades to get all the pipes, ducts, conduit, etc., installed to the best advantage.

.5 Where any pipes, ducts and equipment must be built into the work of other trades such as masonry, structural, or plastering, be responsible for supplying the equipment to be built in or measurements to allow the necessary openings to be left. All pipes and ducts which are to be concealed shall be installed neatly and closely to the building structure so that the necessary furring can be kept as small as possible. Any pipes, ducts, or other work which are not, in the opinion of the consultant, installed as they should be, shall be taken out and replaced without cost to the owner.

.6 Protect finished and unfinished work from damage due to the carrying out of his work, giving special attention to the protection of building vapour barriers, waterproof membranes, etc. Cover floors and other parts of the building with tarpaulins, etc., and repair all damage to the satisfaction of the owner and the consultant. During freezing weather, protect all his materials in such a manner that no harm can be done to installation already made and/or to materials and equipment on the job.

.7 Be responsible for the condition of all materials and equipment supplied and shall provide all necessary protection for same.

.8 Be responsible for the protection and maintenance of the work of this section until the building has been completed and accepted by the Owner. Be responsible for the sorting of his material inside and out of the way, and to clean up all refuse caused by his work to meet Consultant's review.

.9 On completion of the work, all tools, surplus and waste materials shall be removed and the work left in a clean condition.

## **11. LIABILITY INSURANCE**

.1 This contractor shall maintain such insurance as will fully protect both the owner and himself from any and all claims, all as noted within the general conditions and supplementary general conditions. When requested the contractor shall provide and show proof of, at his expense, comprehensive general liability insurance of not less than \$2,000,000.00 Including non-owned car coverage, contractual liability and containing a cross liability clause. Coverage shall include loss or damage the contractor may cause to any work, building, equipment, and structural, on the owner's property. The insurance may contain a deductible cause not to exceed \$500.00.

.2 The Contractor shall carry full employee's liability insurance for the whole of the work in accordance with the workers' compensation act.

## **12. GUARANTEE WARRANTY**

.1 This contractor shall furnish a warranty for all work executed under this division will be free from defects of material and workmanship for a period of one (1) year from the date of substantial performance, which shall include one (1) complete summer and one (1) complete winter of uninterrupted operation. Warranty shall include any part of equipment, units or structures furnished hereunder that show the works under normal operating conditions and/or for the purpose of which they were intended.

.2 The Contractor shall, at his own expense, promptly investigate any mechanical or control malfunction, and repair or replace all such defective work, and all other damages thereby which becomes defective during the time of the guaranty-warranty.

## **13. SUBSTANTIAL PERFORMANCE INSPECTION**

.1 Prior to the Contractor requesting an inspection for substantial performance all the following items must be provided to permit beneficial use by the Owner.

- .1 Comply with requirements in General Contract conditions.
- .2 A complete list of items that the Contractor has not finished, or are deficient, shall be provided. If in the opinion of the consultant, this list indicates the project is excessively incomplete, a substantial completion inspection will not be performed.
- .3 The Contractor shall be fully responsible to accumulate all necessary data from his sub-trades and suppliers and present same in the specified format for the approval by the consultant.

## **14. LAWS, NOTICES, PERMITS AND FEES**

.1 Give all necessary notices, obtain all necessary permits and pay all fees in order that the work specified may be carried out, and furnish any certificates necessary as evidence that the work installed conforms with the law and regulations of all authorities having jurisdiction.

.2 All work shall be in accordance with the regulations of the following authoritative bodies, the codes in effect at the time of tender, and any others having jurisdiction:

- .1 Fire Marshall
- .2 Canadian Electrical Code
- .3 Worker's Compensation Board
- .4 Canadian Standards Association
- .5 National Plumbing Code

## **15. INSPECTION**

.1 The Consultant or his representative may choose to inspect all work prior to it being concealed. All work shall be approved by any other regulatory body having jurisdiction. All piping below ground must be approved prior to covering. All piping in wall spaces must be

approved prior to boarding. All openings shall be sealed appropriately in particular in fire rated walls and floors. Sealing shall be approved prior to covering.

.2 Provide a minimum of 48 hours notice to consultant for required inspection.

**B. SECTION 15500 HEATING, VENTILATION AND AIR CONDITIONING**

**1. DOOR GRILLE**

- .1 Install door grille on Formaldehyde Room.
- .2 Cut opening in door to suite new door grille.
- .3 Install backing in door as required at cut.
- .4 Install the following grille:
  - .1 Manufacturer: Price
  - .2 Model: ATGH/BF/B15
  - .3 Size: 500mmx400mm
  - .4 Description: Heavy duty aluminum door grille with 33mm flat border, two sides, counter sunk screw holes and aluminum powder coat finish.

**2. DUCTING**

.1 Ductwork shall be galvanized steel, lock formed 2" W.G. SMACNA Standard for low velocity and medium velocity ductwork quality. Fabricated in accordance with SMACNA duct manuals and ASHRAE handbooks. Ductwork shall meet the requirements of NFPA 90A, 91 and 96 and conform to applicable codes.

.2 All ductwork and equipment installed shall be free of scale, debris and dirt. During construction, cover all duct and equipment openings with polyethylene or equivalent to prevent the entry of dirt or dust. Any ductwork or equipment which is not sufficiently clean shall be cleaned using vacuum cleaners, brushes, and/or non-toxic solvents. Ensure duct dust covers are removed prior to system startup.

END OF RFQ

**A. SECTION 15010 GENERAL MECHANICAL PROVISIONS**

**1. CONFORMANCE**

- .1 Conform to terms and conditions of the General Contract Document.

**2. SCOPE**

- .1 Replace existing faucet on janitor's sink as indicated herein.
- .2 Provide complete, fully tested and operational mechanical systems to meet the requirements described herein and in complete accordance with applicable codes and ordinances.
- .3 Contract documents of this division are diagrammatic and approximately to scale unless detailed otherwise. They establish scope, material and installation quality and are not detailed installation instructions.
- .4 Follow manufacturer's recommended installation details and procedures for equipment, supplemented by requirements of contract documents.
- .1 Install equipment generally in locations and routes shown close to building structure with minimum interference with other services or free space. Remove and replace improperly installed equipment to the satisfaction of the Consultant at no extra cost.
- .5 Connect into existing systems with minimum disruption to the existing systems.
- .6 Work shall be coordinated with the owner seven days prior to work commencing.
- .7 Field verify all building and site dimensions prior to any fabrication and installation of equipment or materials. No additional charge shall be entertained for failure to verify these dimensions on site.

**3. MATERIALS**

- .1 Materials and equipment installed shall be new, full weight and of quality specified. Use same brand or manufacturer for each specified application.
- .2 Each major component of equipment shall bear manufacturer's name, address, catalog and serial number in a conspicuous place.
- .3 Equipment, pipe and fittings shall be CSA listed and ULC approved.

**4. TESTING**

- .1 Perform necessary tests on equipment including those required by authorities having jurisdiction and certificate of approval obtained.

## **5. SHOP DRAWINGS**

- .1 Submit shop drawings for every piece of mechanical equipment.
- .2 Identify materials and equipment by manufacturer, trade name and model number. Include copies of applicable brochure or catalog material. Do not assume applicable catalogues are available in the consultant's office. Maintenance and operating manuals are not suitable submittal material.
- .3 Clearly mark submittal material using arrows, underlining or circling to show differences from specified, e.g. Ratings, capabilities and options being proposed. Cross out non-applicable material.
- .4 Include dimensional and technical data sufficient to check if equipment meets requirements.
- .5 Installed materials and equipment shall meet specified requirements regardless of whether or not shop drawings are reviewed by the Consultant.
- .6 Shop drawings not requested will not be reviewed and processed by the Consultant.
- .7 Do not order equipment or material until the Consultant has reviewed and returned shop drawings.
- .8 Shop drawings shall be endorsed by the General Contractor and Mechanical Sub-Contractor indicating that the shop drawings have been reviewed and submitted without qualifications.
- .9 Submit one electronic (pdf) copy of shop drawings within fourteen (14) days after award of contract.

## **6. STANDARDS OF MATERIALS, EQUIPMENT AND INSTALLATION**

- .1 Equipment used shall not exceed space limitations in any dimension. Replace any equipment or apparatus that does not meet this specification at no cost. Assume full responsibility for the expense of redesign and adjustment to other parts of the building when proposing the use of approved equal or alternate equipment.
- .2 Provide equipment from the specified manufacturers. All mechanical equipment shall have the approved manufacturers name permanently affixed to it.
- .3 Equipment on alternate & approved manufacturers list must be equal in quality and performance to the model specified. Equipment, which is not equal, will be replaced with the specified equipment at no cost to the Owner.
- .4 Provide following when required:

<b><u>ITEMS</u></b>	<b><u>APPROVED MANUFACTURER</u></b>
Plumbing Trim	Cambridge, Delta, Moen, Chicago
<b>7. CONNECTION AND INTERRUPTION TO EXISTING SYSTEMS</b>	
.1 Coordinate with owner all shut downs and connections to existing equipment.	
<b>8. LIABILITY</b>	
.1 Assume full responsibility for laying out the work and for any damage caused to the owner of other trades by improper location, or carrying out of the work.	
.2 Be responsible for prompt installation of his work in advance of concrete pouring or similar work. Provide and set sleeves where required. Should any cutting or repairing of either unfinished or finished work be required, this contractor shall direct the particular sub-contractor whose work is involved to do such cutting and repairing without expense to the owner. Before being undertaken, such work shall be laid out for the consultant's review.	
.3 Examine the site and the local conditions affecting work under this contract. Examine carefully the mechanical, electrical, structural and architectural drawings and confirm that the work under this contract can be satisfactorily carried out without changes to the building as shown on these plans. Before commencing the work, examine the work of the other trades and report at once any defect of interference affecting the work of this section, of the guarantee of same. No extras will be subsequently allowed to cover any such error, omission or oversight on the thorough inspection of the grounds, building, conditions, etc.	
.4 Arrange work in co-operation with other trades in the building in such a manner as not to interfere with other work being carried on in the building and places where other pipes and equipment be installed along with the pipes and ducts pertaining to this trade. Co-operate with the other trades to get all the pipes, ducts, conduit, etc., installed to the best advantage.	
.5 Where any pipes, ducts and equipment must be built into the work of other trades such as masonry, structural, or plastering, be responsible for supplying the equipment to be built in or measurements to allow the necessary openings to be left. All pipes and ducts which are to be concealed shall be installed neatly and closely to the building structure so that the necessary furring can be kept as small as possible. Any pipes, ducts, or other work which are not, in the opinion of the consultant, installed as they should be, shall be taken out and replaced without cost to the owner.	
.6 Protect finished and unfinished work from damage due to the carrying out of his work, giving special attention to the protection of building vapour barriers, waterproof membranes, etc. Cover floors and other parts of the building with tarpaulins, etc., and repair all damage to the satisfaction of the owner and the	

consultant. During freezing weather, protect all his materials in such a manner that no harm can be done to installation already made and/or to materials and equipment on the job.

- .7 Be responsible for the condition of all materials and equipment supplied and shall provide all necessary protection for same.
- .8 Be responsible for the protection and maintenance of the work of this section until the building has been completed and accepted by the Owner. Be responsible for the sorting of his material inside and out of the way, and to clean up all refuse caused by his work to meet Consultant's review.
- .9 On completion of the work, all tools, surplus and waste materials shall be removed and the work left in a clean condition.

#### **9. LIABILITY INSURANCE**

- .1 This contractor shall maintain such insurance as will fully protect both the owner and himself from any and all claims, all as noted within the general conditions and supplementary general conditions. When requested the contractor shall provide and show proof of, at his expense, comprehensive general liability insurance of not less than \$2,000,000.00 Including non-owned car coverage, contractual liability and containing a cross liability clause. Coverage shall include loss or damage the contractor may cause to any work, building, equipment, and structural, on the owner's property. The insurance may contain a deductible cause not to exceed \$500.00.
- .2 The Contractor shall carry full employee's liability insurance for the whole of the work in accordance with the workers' compensation act.

#### **10. GUARANTEE WARRANTY**

- .1 This contractor shall furnish a warranty for all work executed under this division will be free from defects of material and workmanship for a period of one (1) year from the date of substantial performance, which shall include one (1) complete summer and one (1) complete winter of uninterrupted operation. Warranty shall include any part of equipment, units or structures furnished hereunder that show the works under normal operating conditions and/or for the purpose of which they were intended.
- .2 The Contractor shall, at his own expense, promptly investigate any mechanical or control malfunction, and repair or replace all such defective work, and all other damages thereby which becomes defective during the time of the guaranty-warranty.

#### **11. SUBSTANTIAL PERFORMANCE INSPECTION**

- .1 Prior to the Contractor requesting an inspection for substantial performance all the following items must be provided to permit beneficial use by the Owner.

- .1 Comply with requirements in General Contract conditions.
- .2 A complete list of items that the Contractor has not finished, or are deficient, shall be provided. If in the opinion of the consultant, this list indicates the project is excessively incomplete, a substantial completion inspection will not be performed.
- .3 The Contractor shall be fully responsible to accumulate all necessary data from his sub-trades and suppliers and present same in the specified format for the approval by the consultant.

## **12. LAWS, NOTICES, PERMITS AND FEES**

- .1 Give all necessary notices, obtain all necessary permits and pay all fees in order that the work specified may be carried out, and furnish any certificates necessary as evidence that the work installed conforms with the law and regulations of all authorities having jurisdiction.
- .2 All work shall be in accordance with the regulations of the following authoritative bodies, the codes in effect at the time of tender, and any others having jurisdiction:
  - .1 Worker's Compensation Board
  - .2 Canadian Standards Association
  - .3 National Plumbing Code

## **13. DEMONSTRATION AND INSTRUCTION TO OWNER**

- .1 Demonstrate to and instruct the representative designated by the Owner on the complete systems operating and maintenance procedures.

## **14. INSPECTION**

- .1 The Consultant or his representative may choose to inspect all work prior to it being concealed. All work shall be approved by any other regulatory body having jurisdiction. All piping below ground must be approved prior to covering. All piping in wall spaces must be approved prior to boarding. All openings shall be sealed appropriately in particular in fire rated walls and floors. Sealing shall be approved prior to covering.
- .2 Provide a minimum of 48 hours notice to consultant for required inspection.

## **B. SECTION 15400 PLUMBING**

- .1 Scope of Work:
  - .1 Remove existing faucet.
  - .2 Install the following faucet:
    - .1 Chicago Faucets

Mactaquac Biodiversity Facility  
**Janitors Room Faucet Replacement**  
March 31, 2016

.2	895-L8BVVE2-2CP
.3	Description: deck mounted, 100mm fixed centre sink faucet with 200mm L-type swing spout with vacuum breaker, 60mm (2-3/8") lever handles, compression cartridge.
.2	To comply with National Plumbing Code and local municipality requirements.
.3	Inform the engineer immediately if any changes are required.
.4	Provide stop valve to all equipment and plumbing fixture connection. Provide stop valve to base of water risers.

END OF RFQ









**B. SECTION 15500 HEATING, VENTILATION AND AIR CONDITIONING**

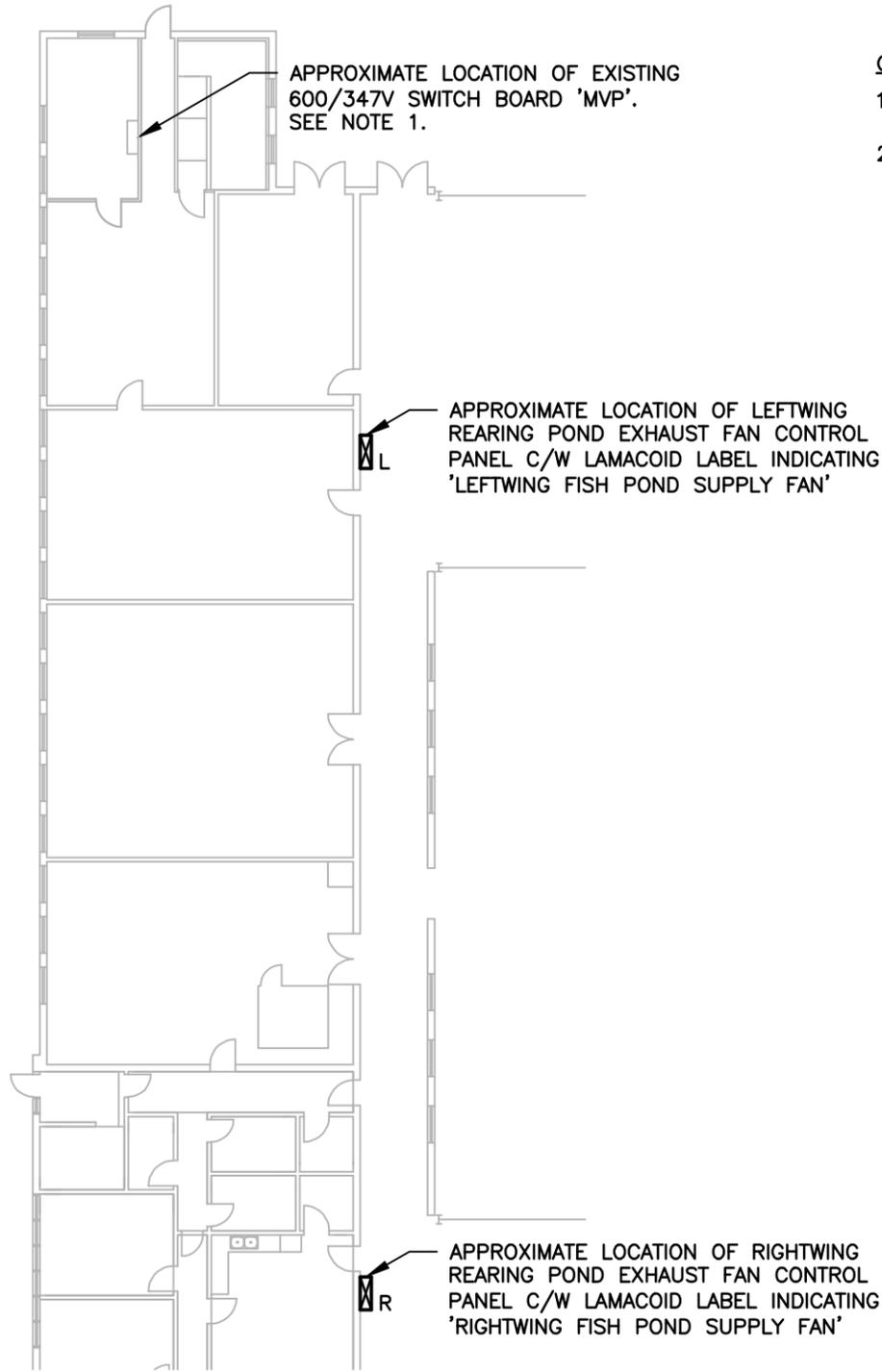
**1. DUCTING**

- .1 DUCTWORK SHALL BE GALVANIZED STEEL, LOCK FORMED 2" W.G. SMACNA STANDARD FOR LOW VELOCITY AND MEDIUM VELOCITY DUCTWORK QUALITY. FABRICATED IN ACCORDANCE WITH SMACNA DUCT MANUALS AND ASHRAE HANDBOOKS. DUCTWORK SHALL MEET THE REQUIREMENTS OF NFPA 90A, 91 AND 96 AND CONFORM TO APPLICABLE CODES.
- .2 PRIOR TO FABRICATION OF DUCTWORK, CHECK ALL CEILING SPACES AND HEIGHTS AND CONFLICTS WITH OTHER TRADES. INCLUDE AND PROVIDE NECESSARY OFFSET TO MAINTAIN CEILING HEIGHT, HEADROOM ETC.
- .3 ALL DUCTWORK PENETRATING FIRE RATED FLOOR SLABS ABOVE AND BELOW OR FIRE SEPARATIONS SHALL BE COMPLETE WITH FIRE DAMPERS AND ACCESS DOORS.
- .4 PROVIDE BALANCING DAMPERS WHERE INDICATED ON DRAWINGS AND AT ALL DUCT BRANCHES. SUCH DAMPER LOCATION MAY NOT BE SHOWN ON DRAWINGS.
- .5 SIZE ROUND DUCTS, INSTALLED IN PLACE OF RECTANGULAR DUCTS, FROM ASHRAE TABLE OF EQUIVALENT RECTANGULAR AND ROUND DUCTS. NO VARIATION OF DUCT CONFIGURATION OR SIZES PERMITTED EXCEPT BY PERMISSION FROM CONSULTANT.
- .6 ALL FANS AND AIR CONDITIONING UNITS SHALL BE MOUNTED WITH VIBRATION ISOLATION.
- .7 PROVIDE BACK DRAFT DAMPER TO ALL EXHAUST OUTLETS TO EXTERIOR.
- .8 PROVIDE STAINLESS STEEL SCREEN, 12 MM SQUARE MESH FOR EXTERIOR INTAKE & EXHAUST OUTLETS UNLESS OTHERWISE NOTED.
- .9 PROVIDE FLASHING, CURB AND COUNTER FLASHING FOR ALL DUCTING PASSING THROUGH ROOF AND EXTERNAL ENVELOPE OF THE BUILDING.
- .10 ALL DUCTWORK AND EQUIPMENT INSTALLED SHALL BE FREE OF SCALE, DEBRIS AND DIRT. DURING CONSTRUCTION, COVER ALL DUCT AND EQUIPMENT OPENINGS WITH POLYETHYLENE OR EQUIVALENT TO PREVENT THE ENTRY OF DIRT OR DUST. ANY DUCTWORK OR EQUIPMENT WHICH IS NOT SUFFICIENTLY CLEAN SHALL BE CLEANED USING VACUUM CLEANERS, BRUSHES, AND/OR NON-TOXIC SOLVENTS. ENSURE DUCT DUST COVERS ARE REMOVED PRIOR TO SYSTEM STARTUP.



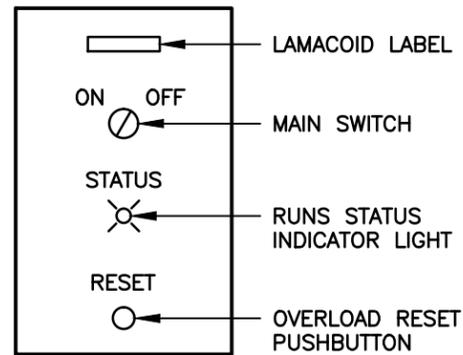
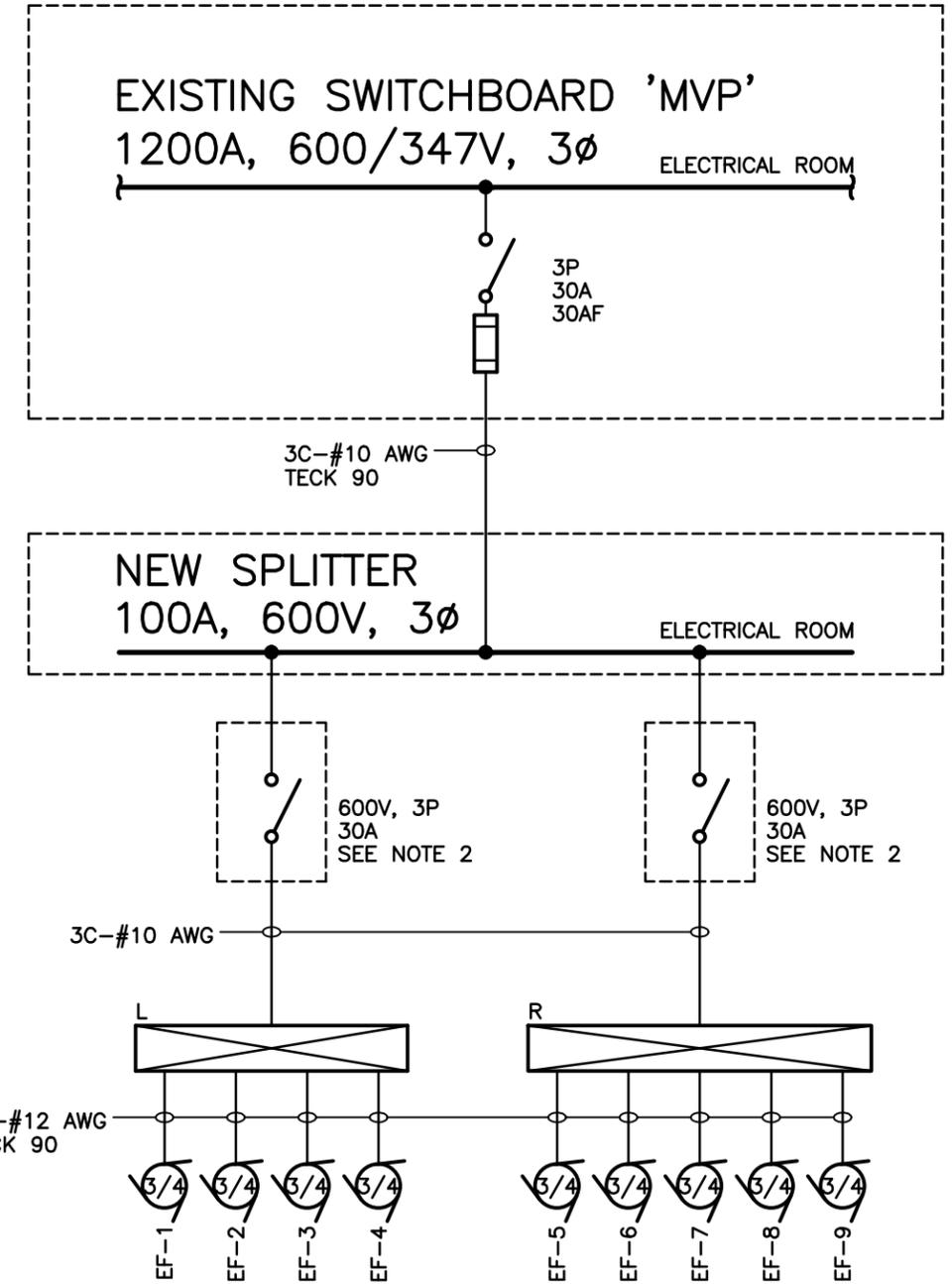
Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
APR 01/16	NTS	MP	PA	MP	MP	162810.00	-
						Drawing	
						M5	
FISH POND VENTILATION UPGRADE						SPECIFICATIONS (3 OF 4)	
0 ISSUED FOR TENDER							
No.	Description						





**GENERAL NOTES:**

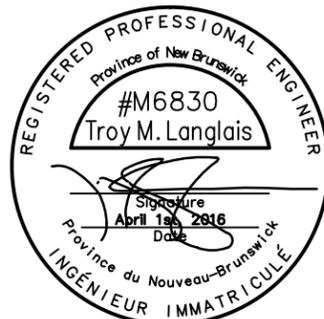
1. USE THE EXISTING SPARE 30A 3P FUSED SWITCH TO FEED THE NEW EXHAUST FANS.
2. LOCATE IN ELECTRICAL ROOM.



**PLAN—ADMINISTRATION BUILDING**  
1:250

**1** TYPICAL FAN CONTROL PANEL  
E1

**2** SINGLE LINE  
E1

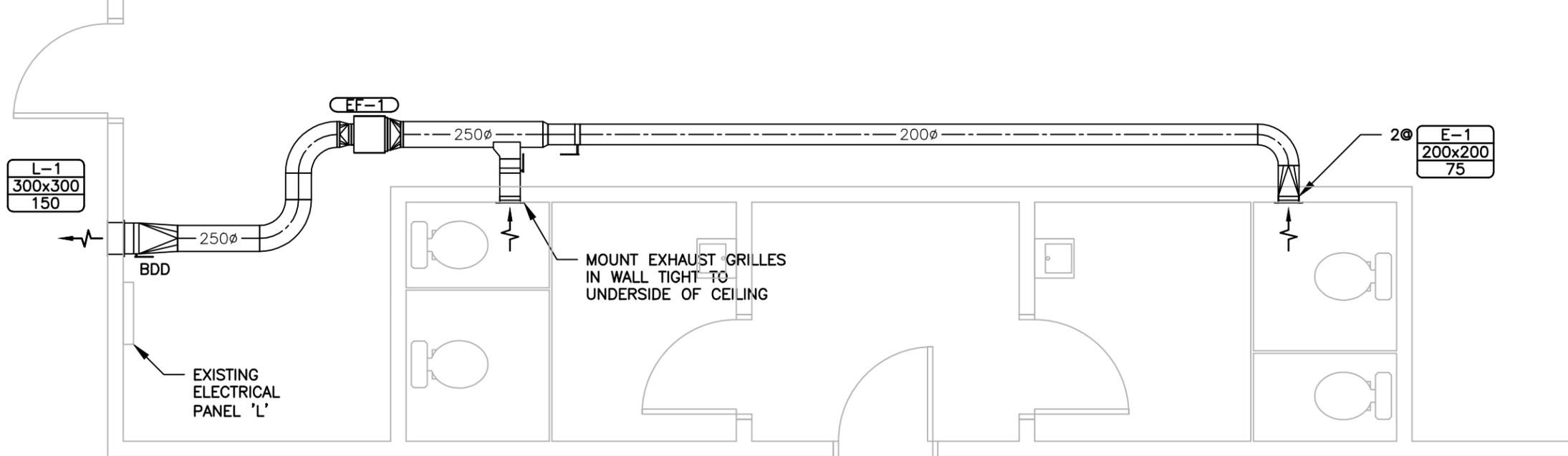


No.	Description
0	ISSUED FOR TENDER

Date APR 01/16	Scale AS NOTED	Designed TL	Drawn PA	Checked MP	Approved MP	CBCL No. 162810.00	Contract -
<b>CBCL LIMITED</b> Consulting Engineers						FISH POND VENTILATION UPGRADE	
<b>ELECTRICAL PLAN &amp; DETAILS</b>						<b>E1</b>	



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SYMBOL LEGEND	
	EXHAUST AIR DUCT UP
	EXHAUST AIR DUCT DOWN
	BDD BACKDRAFT DAMPER
E/A	EXHAUST AIR
NTS	NOT TO SCALE
OED	OPEN ENDED DUCT
	THERMOSTAT
	GRILLE TYPE
	NECK/GRILLE SIZE
	AIR VOLUME
	EQUIPMENT/FIXTURE TYPE
	KEYNOTE
	DRAWING REVISION

**GENERAL NOTES:**

- FANS TO BE COMPLETE WITH DISCONNECT AND 7-DAY, 24HR PROGRAMMABLE TIMER. SET TIMER TO RUN:  
 MON - FRI 8:00 - 5:00  
 SAT - SUN 12:00 - 5:00
- WIRE FAN TO PANEL 'L' COMPLETE WITH NEW 15A-1P BREAKER.

LOUVER SCHEDULE			
SYMBOL	MFGR/MODEL	SERVICE	REMARKS
L-1	AIROLITE K6774	EXHAUST	EXTRUDED ALUMINUM LOUVER c/w BIRD SCREEN & ANODIZED ALUMINUM FINISH.
E-1	E.H.PRICE 70/F/L/A/B12	EXHAUST	ALUMINUM AIRFOIL EXHAUST GRILLE, DRYWALL MOUNTING, WHITE POWDER COAT FINISH

FAN SCHEDULE									
UNIT NO.	MFGR	MODEL	TYPE	FLOW (L/S)	E.S.P. (PA)	FAN SPEED (RPM)	ELECTRICAL MOTOR		REMARKS
							WATTS	V/ø	
EF-1	GREENHECK	CSP-A390	CEILING MOUNTED CABINET FAN	150	125	1,350	140	115/1	DIRECT DRIVE CABINET FAN C/W GALVANIZED STEEL HOUSING WITH DUCT COLLARS, AND FACTORY DISCONNECT. ACCEPTABLE MANUFACTURERS: GREENHECK, ACME MFG. & ENG. CO. PENNBARRY, TWIN CITY, LOREN COOK



Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
APR 01/16	1:50	MP	PA	MP	MP	162810.00	-
						SPAWNING BUILDING WASHROOM VENTILATION UPGRADE	
						Drawing <b>M1</b>	
No.	Description						
0	ISSUED FOR TENDER						
	FLOOR PLAN						





