



TOWNSHIP OF SEVERN

REQUEST FOR TENDER (PW2017-30)

Generator Building HVAC Modifications

Sealed Tenders, in an envelope clearly labelled "**PW2017-030 GENERATOR BUILDING HVAC MODIFICATIONS**", on forms supplied by the Township of Severn will be received by the undersigned at the Township Office until:

**10:00 A.M. Local Time
Tuesday, September 19, 2017**

Any questions regarding this tender should be directed to:

Anthony Drouin
Utilities Supervisor
Township of Severn
P.O. Box 159
1024 Hurlwood Lane
Orillia, Ontario
L3V 6J3

Telephone: (705) 325-2315 Extension 223

Lowest or any quotation not necessarily accepted.
Final awarding of this tender shall be at the approval of Council.
Anticipated date of Council decision will be October 4, 2017

Issued Aug 29, 2017

TENDERING REQUIREMENTS

BIDDER'S RESPONSIBILITY

A bidder who has already submitted a bid may submit a further bid at any time up to the official closing time. The last bid received will supersede and invalidate all bids previously received from that bidder.

A bidder may withdraw a submitted bid at any time up to the official closing time by letter bearing their signature.

Any tender received after the deadline shall be initialed, dated and time stamped. It shall be returned immediately or as soon as possible thereafter to the representative of the firm advising that the tender was received after the deadline. The tender shall not be opened.

Bids may be rejected for any of the following reasons:

- Bids received after the specified closing date and time as specified in the bid document. No exceptions.
- Bid does not comply with the requirements at time of closing as specified in the bid document. No exceptions.
- Bids are incomplete, conditional or obscure, or which contain additions not called for, erasures, alterations or irregularities of any kind.
- Does not meet specification requirements.

LIABILITY INSURANCE

The Contractor shall take out and keep in force until the date of acceptance of the entire work by the Municipality, a comprehensive policy of public liability and property damage insurance acceptable to the Municipality providing insurance coverage in respect of any one accident to the limit of at least \$5,000,000.00 exclusive of interest and cost, against loss or damage resulting from bodily injury to, or death of one or more persons and loss of or damage to property and such policy shall name the Municipality as an additional insured thereunder and shall protect the Municipality against all claims for all damage or injury including death to any person or persons and for damage to any property of the Municipality or any other public or private property resulting from or arising out of any act or omission on the part of the Contractor or any of his servants or agents during the execution of the contract and the Contractor shall forward a certified copy of the policy or certificate thereof to the Municipality before work is started.

The Contractor shall be responsible for any and all damages or claims for damages, injuries or accidents done or caused by him or his employees, or resulting from the

prosecution of the works or any of his operations, caused by reason of the existence or location or condition of works or of any materials, plant or machinery used thereon or arising from any failure, neglect or omission on his part, or on the part of any of his employees, to do or perform any or all of the several acts or things required to be done by him or them under and by these conditions, and covenants and agrees to hold the Corporation of the Township of Severn harmless and indemnified for all such damages and claims for damage.

W.S.I.B. CERTIFICATE

The Contractor must maintain coverage with the Workplace Safety and Insurance Board throughout the term of this contract and shall provide the Township of Severn with a Certificate of Clearance from the Workplace Safety and Insurance Board prior to performing any work.

HEALTH AND SAFETY STATEMENT

The Contractor shall certify to the Township the establishment and maintenance of a health and safety program, with objectives and standards consistent with applicable legislation and this Corporation's health and safety policy and requirements.

The Contractor shall include health and safety provisions in their management system to reach and maintain a consistently high level of health and safety.

The Contractor shall ensure the workers in their employ are aware of the hazardous substances that may be in use at the workplace and wear the appropriate personal protective equipment required for the area.

The Contractor shall be required to enter into a Contractor Health & Safety Responsibility Agreement with the Township of Severn.

HOURS OF OPERATION

Working hours for Construction and installation shall be between 7:00 am and 4:00 pm. Hours of work may be extended with Utilities Supervisor approval.

COMPLETION

Bidders shall be advised that awarding of this tender shall be at the approval of Council. Anticipated date of award will follow the Council meeting on October 4, 2017. It is a requirement of this contract that the work be completed no later than December 10, 2017.

PAYMENTS

Payment of the contract price shall be compensation in full for performing the work specified in the quoted item and for the supply of all labour, equipment and material necessary to complete the work to the satisfaction of the Director of Public Works.

DAMAGE BY VEHICLES AND OTHER EQUIPMENT

If at any time, in the opinion of the Director of Public Works, damage is being done or is likely to be done to any highway or any improvement thereof, other than such portions as are part of the work, by the Contractor's vehicles or other equipment whether licensed or unlicensed, the contractor shall, on the direction of the Director of Public Works and at the contractor's own expense make changes in or substitutions for such vehicles or other equipment or shall alter loadings or shall in some other manner remove the cause of such damage to the satisfaction of the Director of Public Works.

LOADING OF MOTOR VEHICLES

Where a vehicle is hauling material for use on the work under the contract, in whole or in part upon a public highway and where motor vehicle registration is required for such vehicle, the Contractor shall not cause or permit such vehicle to be loaded beyond the legal limit as specified in The Highway Traffic Act, whether such vehicle is registered in the name of the contractor or otherwise.

WORK

The scope of this contract is to supply the labour and equipment necessary to Complete the Coldwater generator building HVAC modifications. The scope of work is providing designed air supply to equipment operating within the Mechanical room. Primary and secondary air supply for generator backup power and MCC panels is the focus. The system will operate in series with generator operations. Design and operations are outline C.C Tatham project No. 316841-2 located in "APPENDIX A".
All work performed must meet local codes, regulations and standards.

PART 1 - GENERAL**1.1. SCOPE**

- .1 This Section covers the supply and installation of all heating and ventilation systems, as indicated on the Contract Drawings or as reasonably implied by the Contract Drawings and these Specifications. This shall include, but not be limited to the following:
 - Visit the Site and become familiar with Scope of Work
 - Remove and dispose of existing Louvre LV-3
 - Supply and install new Louvres LV-3, LV-4, LV-5 and LV-6
 - Remove and dispose of existing damper actuators MDA-1, MDA-2, MDA-3, MDA-4.1, and MDA-4.2
 - Supply and install new Damper Actuators MDA-1, MDA-2, MDA-2.1, MDA-3, MDA-3.1, MDA-4.1, MDA-4.2, MDA-4.3, and MDA-4.4
 - Supply and install new Motorized Dampers MD-1, MD-2, MD-2.1, MD-3, MD-3.1, MD-4.1, MD-4.2, MD-4.3, and MD-4.4
 - Supply and install new Exhaust Fan EF-1.1
 - Supply and install new controls and control sequences for the Standby Generator from room thermostat Tg, and new controls and control sequences for the Generator room ventilation from room thermostat Tv
 - Supply and install new Electric Unit Heater UH-10.1 adjacent to existing UH-10
 - Relocate and rewire noted duplex outlets (2)
 - Reposition Emergency Lights near Louvre LV-1 to accommodate new Louvre LV-5
 - Startup, testing and demonstration of specified performance of all systems

1.2. GENERAL

- .1 All products shall be new, protected before and during site installation, and cleaned prior to painting and startup.
- .2 Install all work to requirements of Authorities who have jurisdiction.
- .3 Carry out all tests including required witnessing and approvals during installation.

1.3. REFERENCE STANDARDS

- .1 SMACNA Duct Construction Standards, Metal and Flexible, 2000.
- .2 ASHRAE Handbook, Systems and Fundamentals Volumes.

1.4. SUBMITTALS

- .1 Submit the following shop drawings and product data:
 - .1 Louvres
 - .2 Exhaust Fans
 - .3 Motorized Dampers
 - .4 Thermostats, Sensors and Control Devices
 - .5 Damper Actuators
 - .6 Schematic Wiring Diagrams

1.5. OPERATION AND MAINTENANCE MANUAL

- .1 Provide operation and maintenance data, and furnish a list of Manufacturers' recommended spare parts for equipment such as bearings, seals, addresses of suppliers, etc., as well as a list of any specialized tools that are necessary for adjusting, repairing or replacing, for incorporation into Operation and Maintenance Manual.

1.6. ELECTRICAL WIRING

- .1 Supply and install all required Manual and Magnetic Starters and any required 120v or 24v relays for interlocking or to activate holding coil circuits.
- .2 Required wiring, conduit and receptacle boxes shall match existing site components and comply with all Authorities who have jurisdiction.
- .3 Rewiring of existing duplex outlets on walls (2) that contain new Louvres LV-4 and LV-5.
- .4 Supply and install all required wiring for all components specified herein.

PART 2 - PRODUCTS

2.1. DUCTWORK

- .1 Supply galvanized steel low-pressure ductwork to current ASHRAE and SMACNA standards.
 - .1 Ductwork plenum from new Louvres (LV-3, LV-4, LV-5 and LV-6) shall slope towards the Louvre. Caulk all duct joints.
 - .2 Supply and install flexible connections of Durilon fabric at all Fans connections to discharge and/or exhaust air ductwork or plenums including Generator.
 - .3 Supply and install ULC listed fusible link fire dampers in all ductwork passing through fire separations.

2.2. INSULATION

- .1 Insulate interior of Standby Generator ductwork with 25mm (one inch) thickness acoustic insulation secured with metal fasteners and speed washers, butt all joints and secure with approved scrim tape.

.2

<u>Service</u>	<u>Type</u>	<u>Thickness</u>
Air supply -rectangular	rigid	R=3.3
Air supply- round	flexible	R=3.3
Exhaust - rectangular	rigid	R=5.0
Exhaust – round	flexible	R=5.0
Fresh air intake-rectangular	rigid	R=5.0
Fresh air intake-round	flexible	R=5.0

Apply to Intake Louvres LV-4 and LV-5 and Exhaust LV-6 Plenums that extend into conditioned space and that house motorized dampers.

2.3. EXHAUST AIR FAN, EF-1.1

- .1 Inspect existing Greenheck model SE2-16-435-B6 wall exhaust fan and supply and install a year 2017 matching model to handle 677 L/s (1,435 CFM) at 6mm (0.25 inches of water) ESP including motorized damper MD-3.1, removable Insect Screen and prefinished storm Louvre LV-6
- .2 Supply and install Magnetic Starter with cover mounted HOA and power wiring back to MCC containing rated breaker or alternately from a dedicated breaker in a Lighting Panel.

2.4. ELECTRIC UNIT HEATER

- .1 Inspect existing wall mounted unit heater UH-10 rated at 5kW. Supply and install a new 5kW unit heater (UH-10.1) mounted adjacent to UH-10. Dual installation shall include mounting so that UH-10 and UH-10.1 give coverage to intake air flow through new Louvres LV-4 and LV-5. Thermostat may be unit or wall mount type.
- .2 Supply and install power wiring from MCC.

2.5. LOUVRES

- .1 Supply and install acoustic aluminum storm proof louvres as noted for LV-3, LV-4 and LV-5. The nominal free area shall be not more than 23.3% of the louvre gross area. Construction shall be welded aluminum with exposed joints ground flush and smooth. Note Louvre LV-6 shall be a storm rated louvre supplied as part of new Exhaust Fan EF-1.1
- .2 Blades shall be 300 deep (12 inches) of storm proof pattern.
- .3 Frame, head, sill and jam shall be 150mm deep aluminum, minimum 3mm thick with caulking slot integral to unit.
- .4 Fastenings shall be stainless steel including nuts with neoprene washers.
- .5 Removable Screen shall be 19mm mesh with 2mm diameter aluminum wire on inside face of louver.
- .6 Select Louvre length and width to match even exterior concrete block and/or framing dimensions as noted on the Contract Drawings.
- .7 Generator Exhaust Louvre LV-3 shall be one section 2,400 high x 2,030 wide (96 inches high x 81 inches wide), and with a total minimum free area of 1.32 m² (14.28 ft²).

The total air flow through LV-3 shall be 9,340 L/s (19,800 CFM). Maximum pressure drop through Louvre LV-3 plus the related motorized dampers MD-1, shall not exceed 55 Pa (0.22 inches of water)

- .8 Intake Louvre LV-4 shall be one section 2,400 high x 1,520 wide (96 inches high x 60 inches wide), with a minimum free area 0.96m² (10.39 ft²) and based on an intake air flow of 5,762 L/s (12,217 CFM). Maximum pressure drop through Louvre LV-4, plus the motorized dampers MD-4.4 shall not exceed 35 Pa (0.14 inches of water).
- .9 Intake Louvre LV-5 shall each be one section 1,200 high x 1500 wide (48 inches high x 60 inches wide) with a minimum free area of 0.414 m² (4.45 ft²). The air flow through L-3 shall be 2,468 L/s (5,232 CFM). The pressure drop through components LV-5 and motorized dampers MD-4.3 shall not exceed 45 Pa (0.18 inches of water)

ITEM	DUTY	NO	W	H	FREE AREA	CFM PER LOUVRE	DAMPERS	TOTAL PD INCHES
LV-3	NEW GEN EXHAUST	1	81	96	14.28	19,800	MD-1	0.22
LV-4	NEW GEN INTAKE	1	60	96	10.39	12,217	MD-4.4	0.14
LV-5	NEW GEN INTAKE	1	60	48	4.45	5,232	MD-4.3	0.18
LV-1	EXISTING GEN INTAKE	1	42	48.8	3.02	3,551	MD-4.1 MD-4.2	0.17

- .10 Acoustic Louvres (LV-3, LV-4 and LV-5) shall be Construction Specialties Model A 12370.

2.6. MOTORIZED DAMPERS

- .1 Dampers MD-4.1 (Genset Combustion Air), MD-4.2 (Genset Ventilation), MD-4.3 (Genset Ventilation), MD-4.4 (Genset Ventilation), MD-3.1 (EF-1.1 New Exhaust Air), shall be Parallel Blade, 2 position.
- .2 Dampers MD-1 (Genset Exhaust), MD-2 (Genset Recirculation), and MD-2.1 (Genset Recirculation), shall be opposed blade modulating design.

- .3 Dampers shall be aluminum thermal break type, complete with rigid aluminum frames, steel linkage, and neoprene head and jamb seals.
- .4 Refer to Louvre Specifications to size for maximum pressure drop requirements.
- .5 Dampers shall be as follows:

DAMPER	SYSTEM	DIA MI N	H IN	W IN	CFM	PB/OB
MD-1	LV-3 GEN EXH	N.A	96	81	19,800	OB
MD-2	LV-3 GEN RECIRC	N.A	36	72	9,900	OB
MD-2.1	LV-3 GEN RECIRC	N.A	36	72	9,900	OB
MD-4.1 (a)	LV-1 GEN COMB AIR	N.A	12	48	1,200	PB
MD-4.2 (a)	LV-1GEN VENTILATION	N.A	36.8	42	2,351	PB
MD-4.3	LV-5GEN VENTILATION	N.A	48	60	5,232	PB
MD-4.4	LV-4GEN VENTILATION	N.A	96	60	12,217	PB
MD-3.1 (b)	EF-1.1	N.A	18	18	1,435	PB

- (a) Existing dampers in existing Louvre LV-1 to be site measured. If MD-4.1 is smaller than noted then it shall be replaced with noted with a new MD-4.1 of noted size and MD-4.2 shall be a new motorized damper sized to fit the remaining LV-1 area.
- (b) This damper shall be coordinate with the new EF-1.1 fan supplier and can be an integral part of this fan assembly.

- .6 Dampers shall be Arrow United Industries Type AFDTI-25 Thermal Break Design.
- .7 Acceptable actuators: T. A. Morrison & Co., Honeywell, Johnson or Belimo.

2.7. THERMOSTATS AND CONTROL DEVICES

- .1 Supply and install an Outdoor Air Controller (TOA-1) for System EF-1 and EF-1.1. Controller shall have remote bulb sensors (and vandal proof enclosure for remote bulb). Controllers shall have a range of 0 to 40 deg C.

-
- .2 Supply and install a wall mounted thermostat (Tv) for the control of the new Exhaust Fan EF-1.1 and existing Exhaust Fan EF-1 and related dampers MD-3, MD-3.1 and MD-4.3 including required relays for Magnetic Starter for new EF-1.1 and existing EF-1. Damper MD 4.3 opens to admit air being exhausted by either of EF-1 and/or EF1.1
 - .3 Supply and install a 120V or 24 V wall mounted thermostat (Tg) for the control of the Standby Generator modulating dampers MD-1, MD-2 and MD-2.1 and related Ventilation Dampers MD-4.2, MD-4.3 and MD-4.4. Note Damper MD-4.1 (parallel blade) is the combustion air damper and is actuated by a no power signal
 - .4 Supply and install 120V and/or 24V exhaust and outdoor air damper actuators for motorized dampers listed in the table in Item 2.6. Wire these devices through a suitable 1/60/600V to 120V (or 24V) transformer. Provide all required line voltage (120V) or low voltage (24V) control relays. Actuator MDA-4.1 shall be NC with spring to open on power failure. Each actuator to be supplied with a minimum of two (2) end switches. One End Switch shall be related to the starting of the designated fan motor. The second end switch will be used now or in the future to report back to a Building Alarm System.
 - .5 Digital Timers TM-1, shall be front mount design and installed in a hinged NEMA rated enclosure, designed to display the set points and the entry pad of each timer with enclosure cover in the closed position. Timer enclosure shall have a labeled manual override switch for ON/OFF operation of respective exhaust fans EF-1 and EF-1.1 Enclosure shall incorporate:
 - .1 TOA-1 and TM-1 for EF-1 / EF1.1 and labeled MP-1
 - .6 Acceptable Timer Products: Koyo K7 series and Fuji CT7 series
 - .7 Provide lamaricoid labels to identify control equipment including the design set points of the equipment.
 - .8 Acceptable Thermostat (Tg, and Tv) and Outdoor Air Sensor/Controller (TOA-1) products are: Johnson Controls, Honeywell or White Rodgers.
 - .9 Acceptable Damper Actuator Products: Johnson Controls, Honeywell or Belimo.
 - .10 Acceptable Low Voltage Relay Products: Honeywell, White Rodgers, Johnson Controls.

2.8. SEQUENCE OF OPERATIONS

- .1 Prepare and submit a Control Wiring Shop Drawing for review for the following sequence of operations for the heating and ventilation systems:
 - .1 Electric Unit Heaters UH-10 and UH-10.1
 - .2 These shall operate from the thermostats (T) to maintain a space temperature setting of 13 deg C.
- .2 Refer to Contract Drawings for items in the control sequences below
- .3 The Generator Room
 - .1 With the Emergency Generator OFF, Motorized Dampers MD-1, MD-2, MD-2.1, MD-3, MD-3.1, MD-4.1, MD-4.2, MD-4.3 and MD-4.4 shall be 100% closed, and EF-1 and EF-1.1 shall be OFF. MD-4.1 (Generator combustion air) shall be a NC spring opening design. Room thermostat Tv shall open MD-4.3, and an end switch on MD-4.3 (ES-1) shall start EF-1 and EF-1.1. With Temperature Controller (TOA-1) sensing a value greater than 13 deg C, EF-1 and EF-1.1 shall continue to run until Tv is satisfied. With Temperature Controller (TOA-1) sensing a value less than 13 deg C, EF-1 shall be controlled by timer TM-1 (adjustable from 1 to 60 minutes).
 - .2 Upon a signal to start the Emergency Generator, MD-3 and MD-3.1 shall close and an end switch on MD-3 (ES-2) shall stop EF-1 and EF-1.1 The Combustion Air Damper MD-4.1 (spring) shall open and MD-4.2, MD-4.3 and MD-4.4 (Generator Ventilation) shall open, Generator Exhaust (MD-1) shall go the 100% open position, and Generator Recirculation Dampers MD-2 and MD-2.1 shall go to the 100% open position. Generator Room Thermostat Tg shall modulate MD-1, MD-2 and MD-2.1 to maintain a maximum set point of 32 C (adjustable).

PART 3 - EXECUTION

3.1. TESTING AND BALANCING

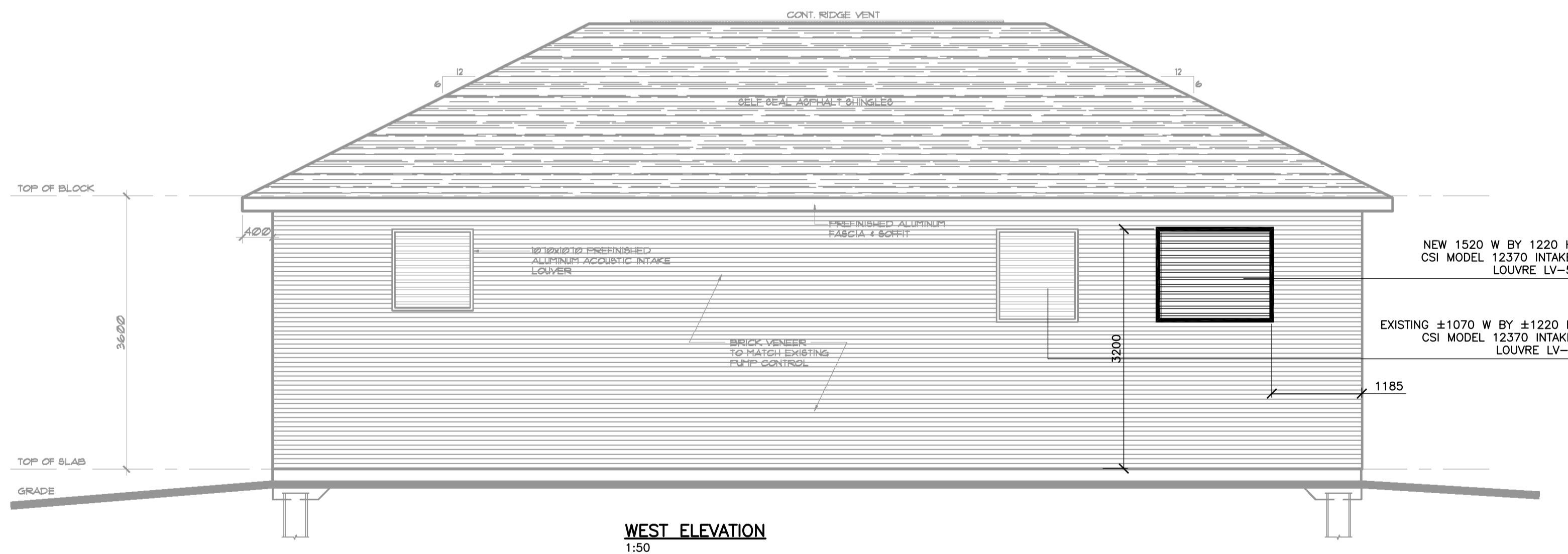
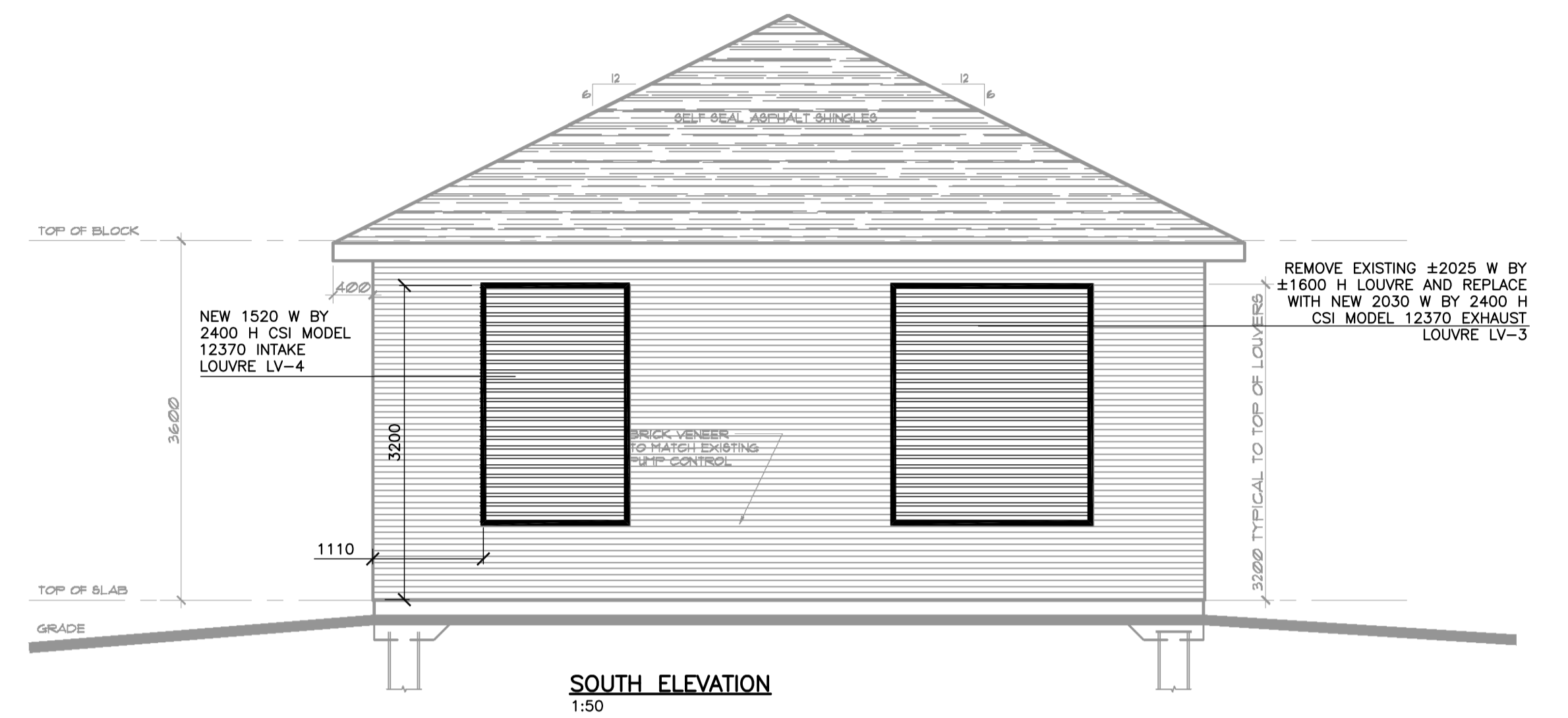
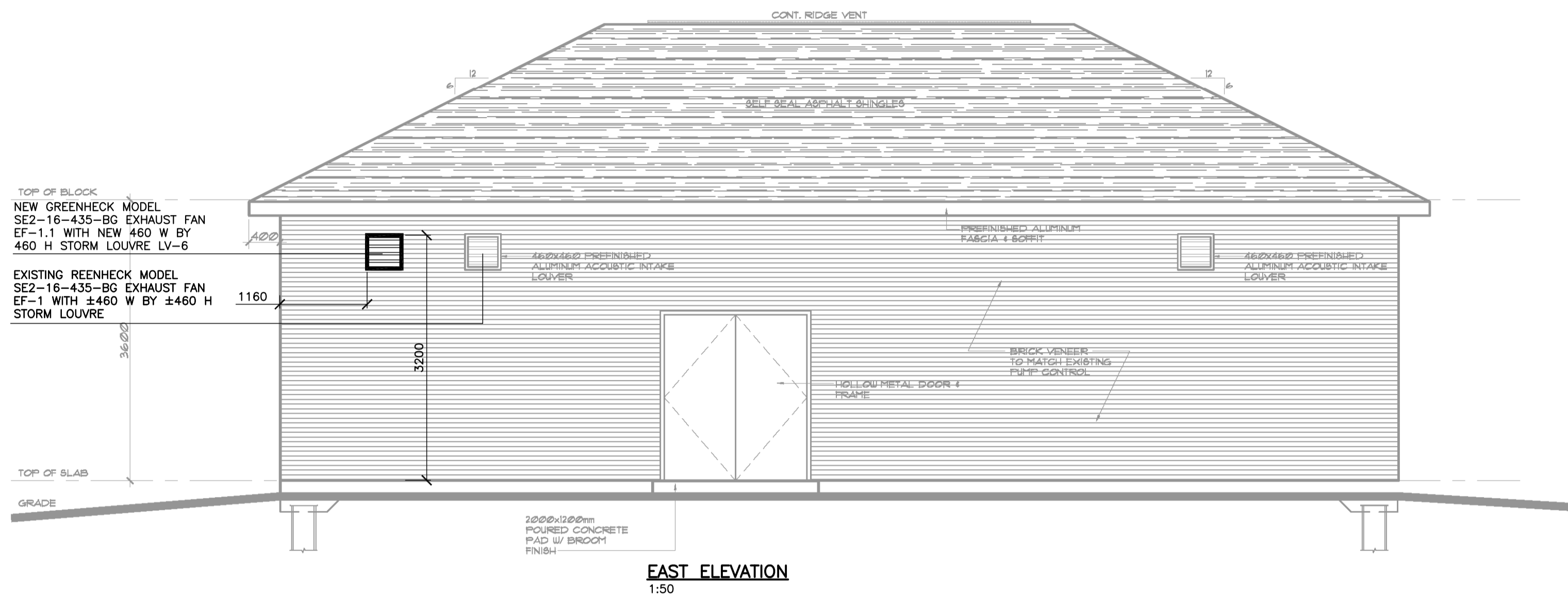
- .1 Retain qualified personnel to test and record the exhaust, outdoor and re-circulation air dampers and control systems. Also set up and test the Heating and Ventilating Systems, including Units EF-1 and EF-1.1 including all related dampers and controls.

- .2 Demonstrate operation of specified components on Critical Power.
- .3 The calibrated instrumentation to be used shall include, but not be limited to, a clamp-on ammeter and Pitot tube / Manometer Instruments with proper ranging.
- .4 Submit 5 copies of the Balancing Report for approval. Report shall confirm capacities including:
 - .1 CFM, static pressure and amperage of EF-1, and EF-1.1
- .5 A single line system sketch noting the location and duty of each component

3.2. **INSTALLATION – GENERAL**

- .1 In accordance with manufacturer's and SMACNA recommendations.
- .2 Mount all control devices, thermostats etc. 1200mm from floor.
- .3 Wiring, conduit, fittings and boxes to the NORMAL requirements of Division 16 work
- .4 Mount, set, adjust and calibrate Thermostat/Sensors (Tg, Tv, and TOA-1); all motorized damper actuators, End Switches; timer TM-1, HOA switches to achieve the specified performance.
- .5 Leave all areas broom clean, and remove all construction dirt from equipment and control devices.

END OF SECTION



NOTES

1. ALL DIMENSIONS ARE APPROXIMATE.
2. FOR NEW LINTELS ABOVE NEW LOUVRE OPENINGS, SEE DWG. S-1.

LEGEND
CONTRACT DRAWINGS
CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.
C.C. TATHAM & ASSOCIATES LTD. CLAIMS COPYRIGHT TO THIS DOCUMENT WHICH MAY NOT BE USED FOR ANY PURPOSE OTHER THAN THAT PROVIDED IN THE CONTRACT BETWEEN THE OWNER/CLIENT AND THE ENGINEER WITHOUT THE EXPRESS CONSENT OF C.C. TATHAM & ASSOCIATES LTD.

NOTE:
EXISTING STRUCTURAL AND MECHANICAL INFORMATION FOR THE EXISTING COLDWATER WATER POLLUTION CONTROL PLANT WAS OBTAINED FROM AS CONSTRUCTED DRAWINGS BY TOTTEN SIMS HUBICKI (1997) LIMITED, DATED JULY 2008.
EXISTING ARCHITECTURAL INFORMATION FOR THE EXISTING COLDWATER WATER POLLUTION CONTROL PLANT WAS OBTAINED FROM ISSUED FOR CONSTRUCTED DRAWINGS BY PETER ARCHER AND ASSOCIATES, ARCHITECT, DATED OCTOBER 2006.
CCTA DOES NOT GUARANTEE THE ACCURACY OF THE INFORMATION OBTAINED FROM THOSE DRAWINGS.

NO.	REVISIONS	DATE	INITIAL
1	ISSUED FOR TENDER	AUG/17	JJ/LSM

APPROVED

**COLDWATER WPCP
GENERATOR HVAC MODIFICATIONS
1130 UPPER BIG CHUTE ROAD, COLDWATER**

ELEVATIONS

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie Ottawa

SCALE: AS NOTED	JOB NO. 316841-2
DESIGN: PC/LSM	CHECKED: JJ/LSM
DRAWN: WHG	DATE: MAY/17
DWG. S-2	

PW2017-030-Generator Building HVAC Modifications

The Contractor has carefully examined the provisions, plans, specifications and conditions attached to this tender and have carefully examined the scope of work. The Contractor understands and accepts the said provisions, plans, specifications and conditions, and for the price set forth in this quote, hereby offers to furnish all machinery, tools, apparatus and other means of construction, furnish all materials, except as otherwise specified in the Contract, and to complete the work in strict accordance with the provisions, plans, specifications and conditions attached to this quote.

.I/We (the Contractor) promise to commence work on _____

_____ and to diligently perform the work
(completed by Contractor)

continuously without undue delay and further promise to complete the work by

BY _____
(Name of Firm or Individual hereafter referred to as "The Contractor")

ADDRESS _____

NAME OF PERSON SIGNING FOR FIRM _____
(Please Print)

(Date)

(Signature)

(Title)