



Township of Muskoka Lakes

Request for Tender

Contract # T-2024-04

**Port Carling Community Centre HVAC
System Upgrades**

TOWNSHIP OF MUSKOKA LAKES

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TENDER

TOWNSHIP OF MUSKOKA LAKES

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TOWNSHIP OF MUSKOKA LAKES

TENDER

PART I TENDER CALL

The Corporation of the Township of Muskoka Lakes (after this called the “Owner”) invites Tenders for:

Contract Number: Contract # T-2024-04

Described as Port Carling Community Centre HVAC

System Upgrades

Tenders shall be addressed and delivered to: **Township of Muskoka Lakes**
P.O. Box 129
1 Bailey Street
Port Carling, Ontario
P0B 1J0

Tenders shall be received until: 2:00 p.m. October 3, 2024

Tenders received by the time and date specified above shall be opened and read in public as soon as possible after that time. Public reading of a Tender does not imply any decision by the Owner as to whether a Tender is or is not irregular.

PART II TENDER CONDITIONS

TC-1 Completion and Submissions of Tenders

- 1.1 The Tenderer shall complete all documents pertaining to this Contract in ink or in type.
- 1.2 If the Tenderer is a corporation, an authorized officer of the corporation shall sign and seal the Form of Tender.
- 1.3 If the Tenderer is a partnership, a minimum of two partners shall sign the Form of Tender and signatures shall be witnessed.
- 1.4 If the Tenderer is a sole proprietorship, the sole proprietor shall sign the Form of Tender and the signature shall be witnessed.
- 1.5 The Tenderer shall submit its Tender by the date and time specified in Part I of the Tender.
- 1.6 The Tenderer shall submit to the Owner:
 - a) Part III – Form of Tender;
 - b) the tender deposit;
- 1.7 The Tenderer shall submit the Tender in a sealed and opaque envelope properly identified with the contract number, contract description, name of Tenderer, due date and time.
- 1.8 Tender irregularities will be dealt with in accordance with the Township of Muskoka Lakes Purchasing By-Law 2004-161, as amended.
- 1.9 All inquiries/questions regarding this Tender are to be sent via email to Corey Moore, Manager of Parks, Recreation, and Facilities at cmoore@muskokalakes.ca. Inquiries must be received no later than five (5) Business Days prior to the tender submission deadline specified in Part I of the Tender or as amended by addendum. Unless otherwise addressed through an addendum, all responses to bid inquiries shall not be incorporated as part of the Contract or in any way change the Contract.

TC-2 Tender Deposit

- 2.1 At the time of tendering, the Tenderer shall submit a tender deposit with its Tender, in the form any one of the following:
 - a) Bid bond signed and sealed by the Tenderer's Surety
 - b) Irrevocable letter of credit
 - c) Certified cheque
- 2.2 The tender deposit must be an original and shall equal at least ten percent (10%) of the Total Tender Price.

- 2.3 Tender Deposits shall be made to the order of or in favour of “The Corporation of the Township of Muskoka Lakes”.
- 2.4 The Owner shall not pay interest on Tender deposits.
- 2.5 The Owner shall retain the Tender deposit of the Tenderers with the first and second lowest acceptable bid until:
- a) the successful Tenderer has executed the Form of Agreement in accordance with Section TC-14 and TC-19 of the Tender; and
 - b) the successful Tenderer has provided all securities and other documents in accordance with Sections TC-12 and TC-19 of the Tender.
- 2.6 The Owner shall return the deposits of all other Tenderers within five (5) Business Days of tender opening.
- 2.7 If bid bonds are used as a Tender deposit, bonds must be from a Surety Company authorized by law to carry on business in the Province of Ontario.

TC-3 Basis of Award

- 3.1 The Township intends to award a contract to the Tenderer who submits the lowest acceptable bid (in accordance with the Township Procurement Policy By-law 2004-161, as amended) by Total Tender Price. Upon formal notification of award the Tenderer shall thereafter be known as the Contractor.

TC-4 Addenda

- 4.1 Addenda will be posted on the Township website (www.muskokalakes.ca) for viewing and shall be located in the same area of the webpage that the Tender documents are downloaded from.
- 4.2 The Township will not notify Tenderers of addendums and it is the responsibility of the Tenderer to monitor the webpage and retrieve posted addendums prior to submitting their bid.
- 4.3 The Tenderer shall ensure that all addenda that are issued are acknowledged and listed under Section FT-1 of the Tender.
- 4.4 The deadline for the posting of addenda is no later than three (3) Business Days prior to tender submission deadline as specified in Part I of the Tender or as amended by addendum.

TC-5 Irregular Tenders

- 5.1 The Owner shall be the sole judge of whether or not a Tender is irregular.

TC-6 Unbalanced Tenders

- 6.1 The Tenderer shall not submit an unbalanced Tender.
- 6.2 The Owner shall have the right to:
 - a) deem a Tender to be unbalanced; and
 - b) reject a Tender which it deems to be unbalanced.

TC-7 Collusion

- 7.1 The Tenderer shall not engage in collusion of any sort and, in particular, shall:
 - a) ensure that no person or other legal entity, other than the Tenderer, has any undisclosed interest in the Tenderer's Tender; and
 - b) prepare its Tender without any knowledge of, comparison of figures with or arrangement with any other person or firm preparing a Tender for the same work.

TC-8 Right to Accept or Reject Tenders

- 8.1 Notwithstanding any other provision in this Contract, the Owner shall have the right to:
 - a) accept any Tender;
 - b) reject any Tender; and
 - c) reject all Tenders.
- 8.2 Without limiting the generality of Section TC-8.1, the Owner shall have the right to:
 - a) accept an irregular Tender;
 - b) accept a Tender which is not the lowest Tender; and
 - c) reject a Tender even if it is the only Tender received by the Owner.
- 8.3 Acceptance of the Tender shall occur at the time the Owner awards the Tender and not necessarily at the time the award is communicated to the successful Tenderer.

TC-9 Contract Documents

- 9.1 The Tenderer shall obtain and review all Contract Documents as listed in the Form of Tender including all Addenda issued by the Owner pertaining to this Contract.

TC-10 Errors, Omissions and Discrepancies in the Contract Documents

- 10.1 If the Tenderer finds any errors or omissions in or discrepancies among the Contract Documents, it shall immediately notify the Owner at the address specified in Part I of the Tender.
- 10.2 No oral explanation or interpretation by any person shall modify any of the Contract Documents.

TC-11 Mandatory Site Meeting

11.1 The Tenderer shall be present for mandatory site meeting at 3 Bailey St, Unit 1, Port Carling on September 12, 2024, at 11am to walk the facility and understand the installation requirements.

TC-12 Irrevocability of Offer

12.1 The Tenderer shall not revoke its offer until after the expiration of sixty (60) days after the opening of Tenders by the Owner.

12.2 If the Tenderer revokes its offer prior to the expiration of sixty (60) days after the Tender opening, the Tenderer shall forfeit its Tender deposit but this shall not prohibit the Owner from pursuing any other legal remedy which it may have.

TC-13 Successful Tenderer - Securities

13.1 The successful Tenderer shall provide each in the amount of at least five percent (5%) of the Total Tender price:

- a) a performance security or bond signed and sealed by the Tenderer's Surety; and
- b) a labour and material payment bond signed and sealed by the Tenderer's Surety.

OR

The successful Tenderer may request the Owner to retain the 10% Tender Deposit from Section TC-2 in lieu of this bonding, provided that the Tender Deposit from Section TC-2 was not in the form of a Bid Bond.

13.2 The Surety of the successful Tenderer and the bonds referred to in Section TC-12.1(a) and TC-12.1(b) must be originals and shall be to the satisfaction of the Owner if this option is exercised.

TC-14 Successful Tenderer - WSIB Certificate of Clearance

14.1 The successful Tenderer shall provide the Owner with a valid Workplace Safety & Insurance Board Certificate of Clearance to the satisfaction of the Owner and in accordance with GC6.05 OPS General Conditions.

TC-15 Successful Tenderer - Execution of Form of Agreement

15.1 The successful Tenderer shall execute in accordance with TC-1, in triplicate, the Form of Agreement provided in the Contract Documents.

15.2 The successful Tenderer shall forward the executed Form of Agreement to the Owner.

TC-16 Successful Tenderer - Insurance

- 16.1 The successful Tenderer shall provide the Owner with an original Certificate of Insurance for each type of insurance coverage required by Section GC6.03 of the OPS General Conditions.
- 16.2 The successful Tenderer shall carry insurance, pursuant to Section GC6.03.02 of the OPS General Conditions in the amount of at least FIVE MILLION DOLLARS (\$5,000,000.00).
- 16.3 The successful Tenderer shall carry insurance, pursuant to Sections GC6.03 of the OPS General Conditions which names the following as additional insured:

The Corporation of the Township of Muskoka Lakes
P.O. Box 129, 1 Bailey Street
Port Carling, ON, P0B 1J0

TC-17 Successful Tenderer - Contractor’s Responsibilities Sign-Off Form

- 17.1 The successful Tenderer shall provide the Owner a completed and signed *Contractor’s Responsibilities Sign-Off Form* as per the Township of Muskoka Lakes Health and Safety Policy HS-007-PRO-B. A copy of the policy is available during bidding upon request to the Township contact identified in TC-1. The policy shall be provided to the successful Tenderer upon notification of award.

TC-18 Successful Tenderer - Time for Completion

- 18.1 The successful Tenderer shall complete the Work as defined in GC1.06 by September 1, 2024, and this shall be the date used for the calculation of Liquidated Damages as per TC-18.1.
- 18.2 The successful Tenderer acknowledges that time shall be deemed to be of the essence of the Contract. For the Tenderer’s purpose of establishing a schedule for the Work, it is anticipated that contract award will be complete within 30 calendar days after the opening of tenders by the Owner. Upon notice of award, the successful Tenderer will be required to complete submissions to the Owner as per TC-19.1. Upon receipt of all required submissions from the successful Tenderer, the Owner will return an executed Form of Agreement and a Purchase Order to the Tenderer within 10 Business Days. Authorization to commence work shall be provided by the Owner as detailed in the Special Provisions of this contract.
- 18.3 Milestone dates associated with the Contract will be adjusted, when possible, due to any delays to the anticipated award schedule caused by the Owner during the contract award and/or issuance of the authorization to commence work.

TC-19 Successful Tenderer - Liquidated Damages

19.1 Pursuant to Section GC 8.02.09 of the OPS General Conditions, the liquidated damages shall be in the amount of:
Five Hundred DOLLARS (\$ 500) per calendar day beyond the dates outlined for Completion, as determined in TC-17.

19.2 When applied, liquidated damages will be subtracted off the final submitted invoice prior to payment.

TC-20 Successful Tenderer - Submission of Documentation

20.1 The successful Tenderer shall submit the documentation required by Sections TC-12, TC-13, TC-14, TC-15 and TC-16 within seven (7) calendar days of the day the Owner notifies the successful Tenderer that the documentation should be sent to the Owner.

20.2 If the successful Tenderer fails to comply with Section TC-19.1 the Owner may, in its sole discretion, withdraw its acceptance of the Tender and the Tenderer shall have no recourse whatsoever against the Owner.

TC-21 Successful Tenderer - Commencement of the Work

21.1 The successful Tenderer shall not commence the Work until it has received authority to proceed with the work from the Owner as well as the fully executed Form of Agreement signed by both parties (Tenderer and Owner) and a Purchase Order issued by the Owner

TC-22 Successful Tenderer - Vendor Performance Management Notice

22.1 The contract resulting from this Tender may be subject to performance evaluation conducted by the Owner. The Owner reserves the right to consider the results of this performance evaluation in the award of future contracts and/or in the selection of vendors for future work. Performance evaluation will be managed in accordance with Township policy HS-007-POL, "Contractor Activities and Control Policy" and Township Procurement Policy By-law 2004-161, as amended.

TOWNSHIP OF MUSKOKA LAKES

PART III - FORM OF TENDER

Tender by:

NAME OF TENDERER

ADDRESS OF TENDERER

TELEPHONE NUMBER

FAX NUMBER

E-MAIL

after this called the “Tenderer”.

FT-1 Contract Documents

1.1 The Contract Documents for Contract Number T-2024-04 are:

- a) Tender
 - i) Part I - Tender Call
 - ii) Part II - Tender Conditions
 - iii) Part III - Form of Tender
- b) Form of Agreement
- c) OPS General Conditions
- d) Special Provisions – General
- e) Contract Drawings
- f) All Addenda issued pertaining to the Contract as acknowledged below:
 - Addendum No. ___ dated _____, 2024, No. of Pages ___
 - Addendum No. ___ dated _____, 2024, No. of Pages ___
 - Addendum No. ___ dated _____, 2024, No. of Pages ___
 - Addendum No. ___ dated _____, 2024, No. of Pages ___
 - Addendum No. ___ dated _____, 2024, No. of Pages ___
 - Addendum No. ___ dated _____, 2024, No. of Pages ___
 - Addendum No. ___ dated _____, 2024, No. of Pages ___

FT-2 Tenderer’s Declarations

2.1 The Tenderer declares that it has obtained and read the Contract Documents.

2.2 The Tenderer declares that it understands and agrees to be bound by the

Contract Documents.

- 2.3 Without limiting the generality of Section FT-2.2, the Tenderer declares that it has, at the time of tendering, fulfilled all of those obligations under the Contract which are required to be fulfilled by the time of tendering.
- 2.4 The Tenderer declares that all information which it has provided or will provide to the Owner is true.

FT-3 Tenderer's Offer

- 3.1 The Tenderer offers to do the work in accordance with the Contract Documents.
- 3.2 The Tenderer offers to do the work and to accept payment at the unit prices specified in the Schedule of Prices in Section FT-4 of the Tender, in accordance with the Contract Documents.
- 3.3 The Total Tender Price, based on the estimated quantities in the Schedule of Prices, is:

_____ DOLLARS
(\$_____)

FT-4 Schedule of Prices

- 4.1 The Schedule of Prices attached is Section FT-4.2 of the Tender.

This offer is made this _____ day of _____, 20_____

Signature of Witness
(only if required by TC-1)

Signature of Tenderer
(Corporate Seal if required by TC-1)

Signature of Tenderer
(Second Signature if required by TC-1)

Print Name of Tenderer(s)

FT-4.2 SCHEDULE OF PRICES

<p align="center">CONTRACT NUMBER Contract # T-2024-04 Port Carling Community Centre HVAC System Upgrades</p>						
Item	Spec. Code	Item Description	Unit	Quantity	Unit Price	Total
1	SP-F 1	RF-1 Return fan	Lump Sum	1		
2	SP-F 2	F/D Fire damper	Lump Sum	1		
3	SP-F 3	Control sensors, wiring and, controller	Lump Sum	1		
4	SP-F 4	Ductwork including hangers and supports	Lump Sum	1		
5	SP-F 5	Grilles and diffusers	Lump Sum	1		
6	SP-F 6	TAB Testing, adjusting, and balancing	Lump Sum	1		
7	SP-F 7	Electrical wiring, and breakers	Lump Sum	1		
8	SP-F 8	External shaft, not including ductwork	Lump Sum	1		
9	SP-F 9	Multi-Purpose Room Partition Wall Removal	Lump Sum	1		
10	SP-F 10	Miscellaneous	Lump Sum	1		
<p align="right">Total Tender Price (Transfer Amount to FT-3.3 of the Tender)</p>						

Tenderer's HST Registration Number:

- 4.3 All prices to be shown excluding HST.
- 4.4 It is understood that the estimated quantities in the foregoing schedule are solely for the purpose of facilitating the comparison of bids and the Tenderer's compensation will be computed upon the basis of the actual quantities in the completed work, whether they be more or less shown herein.
- 4.5 The quantities shown in this Tender are an estimate only and are not a guarantee of amount of material to be supplied under this contract. The Township of Muskoka Lakes reserves the right to adjust quantities without a change in the tendered unit price.
- 4.6 The unit price shall govern whenever the total amount bid for an item does not agree with the extension of the quantity and the unit price, and the total item amount from Section FT-4.2 and the Total Tender Price in Section FT-3.3 and FT-4.2 shall be corrected accordingly.

SECTION B

FORM OF AGREEMENT

TOWNSHIP OF MUSKOKA LAKES

FORM OF AGREEMENT

This Form of Agreement witnesses that a Contract was made as of the _____ day of _____, 20____.

BETWEEN:

(after this called the “Contractor”)

AND:

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

(after this called the “Owner”)

AND WITNESSES that the Contractor and the Owner agree as follows:

FA-1 The Contractor shall perform the following work:

Contract Number T-2024-04

Described as Port Carling Community Centre HVAC

System Upgrades

FA-2 The Contractor shall perform the work in accordance with the Contract Documents listed in the Tender.

FA-3 The Owner shall pay the Contractor in accordance with the unit prices in the Schedule of Prices in the Tender pursuant to the Contract Documents.

FA-4 The provisions of the Contract Documents shall endure to the benefit of and be binding upon the Contractor and the Owner and their respective heirs, legal representatives, successors and assigns.

IN WITNESS WHEREOF the Contractor and the Owner have executed, in the manner required by law, this Form of Agreement.

Signature *Date*

Contractor
(Corporate Seal if required by TC-1)

Signature *Date*

Director of Public Works
The Township of Muskoka Lakes

Signature *Date*

Contractor
(Second Signature if required by TC-1)

Signature *Date*

Witness
(Only if required by TC-1)

SECTION C

OPS

**GENERAL CONDITIONS
OF CONTRACT**

ONTARIO PROVINCIAL STANDARDS

GENERAL CONDITIONS OF CONTRACT

The Contractor acknowledges that the general conditions of this contract are the Ontario Provincial Standard “OPS General Conditions of Contract”. It is the responsibility of the Contractor to ensure that they have the correct document.

For this contract the following version of the OPS General Conditions of Contract shall apply:

OPS General Conditions November 2019 (OPSS.MUNI 100).

SECTION D

SPECIAL PROVISIONS -
GENERAL

TOWNSHIP OF MUSKOKA LAKES

SPECIAL PROVISIONS - GENERAL

Special Provisions - General are non-technical specifications, which can amend or extend the OPS General Conditions contained in Section C of the Tender documents. Special Provisions - General do not relate to any one specific tender item, but apply to either a number of tender items or the contract as a whole.

Special Provisions - General rank third (c) in the order of precedence, GC2.02.

The Contractor acknowledges that the Special Provisions - General as produced by the Township of Muskoka Lakes and listed herein are provisions of this Contract.

Clause No.	Special Provisions - General	Pages
SP-D-1	Special Provisions - General	D-1 to D-5

TOWNSHIP OF MUSKOKA LAKES
SPECIAL PROVISIONS – GENERAL

GENERAL WORK

SP-D 1. SCOPE OF WORK

The Contractor shall perform all the general work covered by the following specifications.

SP-D 2. LOCATION OF THE WORK

The location of the work is the Port Carling Community Centre located at 3 Bailey St, Unit 1, Port Carling, Port Carling.

SP-D 3. SCHEDULE OF WORK

Upon being awarded the Contract, the Contractor shall forthwith supply to the Owner for their approval a copy of their detailed planned Schedule of Work, showing clearly that the Work will be completed within the stipulated time. No work shall commence on the Contract until the Owner has approved the Schedule of Work.

The Schedule of Work shall indicate proposed progress in 1-week periods for at least the following work as applicable:

Installation of main floor transfer air duct.

Installation of basement return air fan (RF-1).

Installation of basement return air duct including fire damper up to kitchen ceiling.

Installation of control sensor, wiring, and controller.

Grilles and diffusers installation.

External shaft for ductwork.

Multi-purpose room partition wall removal.

Electrical wiring and energization of return fan (RF-1).

Testing, adjusting, and balancing.

SP-D 4. AUTHORIZATION TO START WORK

The Work shall not begin prior to approval by the Township of Muskoka Lakes and shall be completed by September 1, 2024 as identified in Part II Tender Conditions as the date used for the calculation of liquidated damages.

SP-D 5. HOURS OF WORK

No work shall occur outside of 7:00 am to 5:00 pm, Monday to Friday or on any Provincial and/or Federal statutory holidays (including Easter Monday and Civic Holiday) without prior written approval from the Contract Administrator.

SP-D 6. AFTER HOURS CONTACT

The contractor shall ensure that an authorized representative is available which can be contacted 24 hours a day, 7 days a week for emergency purposes.

SP-D 7. NO INTERRUPTION OF SERVICE

The Contractor shall make every effort to facilitate the ongoing activities/rentals of the community centre during the renovation.

SP-D 8. PERFORMANCE BOND & LABOUR AND MATERIALS PAYMENT BOND

The Contractor shall provide bonds in accordance with Part II Tender Conditions.

SP-D 9. GENERAL LIABILITY & AUTOMOBILE LIABILITY INSURANCE

The Contractor shall provide insurance in accordance with Part II Tender Conditions. Proof of this insurance must be provided to the Owner, prior to commencing the Work.

SP-D 10. PERMITS & FEES

The Contractor shall obtain all necessary permits and approvals required for this Contract and pay all respective fees.

SP-D 11. MATERIALS SUPPLIED BY THE CONTRACTOR

The Contractor shall base their Tender on the materials specified as to quality and price. The Contractor may, however, after acceptance of their Tender, request permission to substitute alternative material where "other approved" is allowed in the specification. Should the Owner not approve such alternative material, the Contractor shall have no claim whatsoever against the Owner. All material supplied by the Contractor shall be new, in no case remanufactured or factory reconditioned and in no case recycled from any site unless specifically approved and tested by the Owner.

SP-D 12. FENCING

Fencing shall be erected in areas where there exists, in the opinion of the Owner, a danger to pedestrians or vehicular traffic for the installation or removal of equipment to/from the site. No separate payment will be made for fencing but shall be part of the General Work of the Contract.

SP-E 13. SAFE WORKING PRACTICES AND CONTINGENCY PLANNING DURING COVID-19 PANDEMIC

Upon award of the Contract and prior to any work being undertaken, the Contractor shall provide the Contract Administrator with a detailed policy outlining the safe working practices to decrease potential hazards of exposure and/or contamination during the COVID-19 Pandemic. The policy may include, but is not limited to the following information:

- Responsibility of the Project Manager, Site Supervisors, Foreman, Operators and Labourers.
- Responsibility of all employees to be aware of all federal/provincial/municipal health authorities' policies, procedures and orders, as well as any relevant changes to the Occupational Health and Safety Act.
- Requirements for the use of applicable personal protective equipment, including a summary of the supplies and equipment that will be made available.
- Revisions to working protocol, as required to adhere with current federal or provincial guidelines, including, but not limited to separation requirements, disinfection of equipment, trailers, service vehicles, etc.
- Protocol for dealing with the public in the event it is required, such as the need for access to a home to confirm service locations.
- Changes to site or documentation protocol to protect the site in the event the site is shut down due to infection, government enforced shut down or other reasons associated with COVID-19.

The Contractor will be responsible for ensuring the protocol, expectations and requirements are strictly followed by all staff and visitors to the site.

The Contractor shall also provide a detailed contingency plan outlining how they will manage the site in the event that members of their project team or construction staff become infected with the COVID-19 virus or need to quarantine for any reason and/or in the event of a government or municipal enforced shut down. The contingency plan shall outline replacement staff and measures to be taken in the field to ensure the site is maintained and monitored in a safe condition.

The detailed COVID-19 safe working practices policy and contingency plan will be reviewed by the Contract Administrator and the Client and the Contractor shall update these documents to address comments and concerns throughout construction as required.

SP-D 14. MEASUREMENT & PAYMENT

No measurement of quantities will be made for the General Work. No direct payment will be

made for any of this General Work. The Contractor shall allow in their bid for all labour, material and equipment necessary for the general work described herein or specified elsewhere in the Contract.

SECTION E

Contract Drawings

TOWNSHIP OF MUSKOKA LAKES

Contract Drawings

The Contract Drawings do not relate to any one specific tender item, but apply to either a number of tender items or the contract as a whole.

The Contract Drawings rank fourth (d) in the order of precedence, GC2.02.

The Contractor acknowledges that the Contract Drawings as produced by Tatham Engineering Ltd for the Township of Muskoka Lakes and listed herein are provisions of this Contract.

Drawing No.	Contract Drawings	Pages
-	DRAWING INDEX	E-2
M1	SCHEDULES, LEGEND, AND SPECIFICATIONS	E-3
M2	BASEMENT HVAC DEMOLITION	E-4
M3	MAIN FLOOR HVAC DEMOLITION	E-5
M4	BASEMENT HVAC INSTALLATION	E-6
M5	MAIN FLOOR HVAC INSTALLATION	E-7
M6	ROOF HVAC INSTALLATION	E-8
M7	MECHANICAL DETAILS	E-9
S1	HVAC SUPPORT DETAIL	E-10
E1	LEGEND, SLD AND INSTALLATION NOTES	E-11
E2	FIRE ALARM	E-12
E3	ELECTRICAL SPECIFICATIONS	E-13

MECHANICAL DRAWING LIST	
DRAWING #	DRAWING TITLE
M1	SCHEDULES, LEGEND, AND SPECIFICATIONS
M2	BASEMENT HVAC DEMOLITION
M3	MAIN FLOOR HVAC DEMOLITION
M4	BASEMENT HVAC INSTALLATION
M5	MAIN FLOOR HVAC INSTALLATION
M6	ROOF HVAC INSTALLATION
M7	HVAC DETAILS

MECHANICAL SYMBOLS AND ABBREVIATIONS		
DUCT SYMBOLS	CONTROL/MONITORING SYMBOLS	
BALANCING DAMPER	THERMOSTAT	
LOUVER	SMOKE DETECTOR	
AIR FLOW DIRECTION	VARIABLE FREQUENCY DRIVE	
LOUVERED GRILLE	STATIC PRESSURE SENSOR	
SUPPLY DUCTING	DRAWING NOTATIONS	
EXHAUST DUCTING	DETAIL	
EXISTING DUCTING	SHEET NUMBER OF DETAIL LOCATION	
SUPPLY DUCT OR LOUVERED GRILLE	DEMOLITION	
RETURN DUCT OR RETURN EGGCRATE GRILLE	DIMENSIONS (MM)	
EXHAUST DUCT	AIRFLOW (L/S)	
CIRCULAR DUCT		
ROOF DRAIN		

DIFFUSERS, GRILLES & LOUVERS					
TAG	MAKE	MODEL	DESCRIPTION	SERVICE	ACCESSORIES/REMARKS
A	-	-	EXISTING SQUARE CONE DIFFUSER	SUPPLY AIR	-
B	-	-	EXISTING LOUVERED GRILLE	SUPPLY AIR	-
C	-	-	EXISTING EGG CRATE GRILLE	RETURN AIR	-
C1	E.H. PRICE	80	EGG CRATE GRILLE	RETURN AIR	-
D	-	-	EXISTING LOUVERED GRILLE	RETURN AIR	-
E	-	-	EXISTING EXTERIOR GRILLE	EXTERIOR	-
F	-	-	EXISTING TRANSFER GRILLE	TRANSFER AIR	-
G	-	-	EXISTING LINEAR DIFFUSER	SUPPLY AIR	-
H	E.H. PRICE	510Z	LOUVERED GRILLE	TRANSFER AIR	0° DEFLECTION
I	E.H. PRICE	510Z	LOUVERED GRILLE	RETURN AIR	0° DEFLECTION

EXISTING ROOFTOP UNIT SCHEDULE														
TAG	MAKE	MODEL	DESCRIPTION	SUPPLY AIR BLOWER				COOLING		HEATING		ELECTRICAL	ACCESSORIES/REMARKS	
				L/S	HP	ESP (Po)	CAPACITY (MBH)		HEATING GAS					
							TOT.	SENS.	MBH					
MUA-1 (EXISTING)	LUXAIRE	ZF240N32H2AAA	ROOFTOP UNIT	3774	943	-	-	240 (NOMINAL)	-	-	-	-	-	RESET ECONOMIZER TO PROVIDE 25% O/A (943 L/S) AT MINIMUM SETTING.
MUA-2 (EXISTING)	CARRIER	48TJF016-570QA	ROOFTOP UNIT	2702	675	3.7	200.0	185.76	133.76	300	243	208/3/60	-	RESET ECONOMIZER TO PROVIDE 25% O/A (675 L/S) AT MINIMUM SETTING.

FIRE DAMPER SCHEDULE				
TAG	MAKE	MODEL	ACCESSORIES/REMARKS	
FD	ALUMAVENT	5100D	DYNAMIC TYPE B, SELECT HORIZONTAL OR VERTICAL AS REQUIRED, REFER TO THE SIZE ON THE DRAWINGS, 1-1/2 HRS, PROVIDE EXPANSION CLEARANCE ON ALL SIDES PER THE MANUFACTURER'S REQUIREMENTS.	

FAN SCHEDULE										
TAG	LOCATION	DESCRIPTION	AIR FLOW (L/S)	ESP (Po)	ELECTRICAL			MAKE	MODEL	ACCESSORIES/REMARKS
					V/ø/Hz	HP	RPM			
RF-1	BASEMENT MECH/ELEC ROOM	INLINE FAN	2,265	125	208/1/60	2	1,798	GREENHECK	SQ-16-VG	C/W VARI-GREEN MOTOR, VARI-GREEN HOA CONTROLLER PN: 387186, VARI-GREEN CONSTANT PRESSURE CONTROLLER WITH INTEGRAL TRANSDUCER, DUCT STATIC PROBES, INTERLOCKED DUCT SMOKE DETECTOR, TIE INTO EXISTING 208V SWITCHBOARD LOCATED IN THE MECH/ELECTRICAL ROOM.
EF-6 (EXISTING)	ROOF	CENTRIFUGAL UPBLAST EXHAUST FAN	236	125	120/1/60	1/4	730	PENNBARRY	FX10B	ADJUSTABLE SHEAVES TO BE PROVIDED AND AIRFLOW TO BE BALANCED TO 500 CFM. CURRENT AIRFLOW FROM BALANCING REPORT IS 1,130 CFM.

GENERAL SPECIFICATIONS:

- REVIEW WORK AREA AND READ DRAWINGS IN CONJUNCTION WITH ALL DISCIPLINES BEFORE COMMENCING WORK. NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN PLANS AND POTENTIAL ISSUES ON WORK-SITE. NO ADDITIONAL PAYMENTS WILL BE MADE RELATED TO CLAIMS FOR ITEMS THAT WOULD HAVE BEEN APPARENT IF THE WORK AREA AND ALL PLANS WERE REVIEWED PRIOR TO PRICING THE WORKS.
- THE GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR NECESSARY PERMITS PERTAINING TO THE INSTALLATION OF THEIR WORK AND PROVIDE ANY CERTIFICATES AND SIGN-OFFS AS CIRCUMSTANCES REQUIRE.
- WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE ONTARIO BUILDING CODE, ONTARIO FIRE CODE, OCCUPATIONAL HEALTH AND SAFETY ACT, AND AUTHORITIES HAVING JURISDICTION. MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE CANADIAN STANDARDS ASSOCIATION, AND AUTHORITIES HAVING JURISDICTION. STANDARDS SET OUT IN DESIGN DRAWINGS SHALL NOT BE REDUCED BY CONFORMANCE TO APPLICABLE CODES AND STANDARDS. MAKE ALL MINOR MODIFICATIONS AS REQUIRED BY AUTHORITIES HAVING JURISDICTION AT NO COST TO THE OWNER.
- SUBMIT ELECTRONIC SHOP DRAWINGS FOR EQUIPMENT LISTED ON THE SCHEDULES FOR REVIEW PRIOR TO ORDERING. REVIEW OF SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITIES TO PROVIDE A COMPLETE WORKING SYSTEM CONSISTENT WITH THE INTENT OF THE DESIGN DRAWINGS. CONTRACTOR SHALL REVIEW DESIGN DRAWINGS, EQUIPMENT SCHEDULES AND SHOP DRAWINGS FOR ERRORS AND OMISSIONS AND ELEMENTS RELATING TO WORKS/ASSEMBLY ON-SITE.
- AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL PROVIDE MARKED UP RECORD DRAWINGS AND OPERATION AND MAINTENANCE MANUALS. THE FIRST PAGE OF THE OPERATION AND MAINTENANCE MANUAL SHALL BE A TYPE WRITTEN DOCUMENT EXPLAINING THE DETAILED MAINTENANCE REQUIREMENTS AND SCHEDULE FOR THE SYSTEM AND ANY OTHER INFORMATION THAT IS SPECIFIC TO THIS PROJECT. GENERIC OPERATIONS AND MAINTENANCE MANUALS WITH NO PROJECT SPECIFIC INFORMATION WILL NOT BE ACCEPTED.
- PROVIDE TRAINING FOR THE OPERATOR OR OWNER'S REPRESENTATIVE. PROVIDE COMMISSIONING SERVICES AS REQUIRED.
- LABEL ALL EQUIPMENT, PIPING, CONDUIT ETC.
- THE CONTRACTOR IS RESPONSIBLE FOR STORAGE AND SECURITY OF MATERIALS AND EQUIPMENT ON THE JOB SITE.
- THE OWNER'S PROPERTY MUST BE KEPT IN TIDY CONDITION. PROMPTLY REMOVE GARBAGE FROM THE SITE. CLEAN WORK AREA PRIOR TO ALL INSPECTIONS AND KEEP SITE IN A SAFE CONDITION.
- DESIGN DRAWINGS ILLUSTRATE THE GENERAL LAYOUT OF THE WORK ONLY. COORDINATE THE INSTALLATION OF WORK WITH OTHER TRADES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER LAYOUT OF EQUIPMENT AND MATERIALS AND ENSURING THERE ARE NO INTERFERENCES WITH OTHER SYSTEMS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF THEIR WORK.
- EQUIPMENT SHALL BE INSTALLED, STARTED, TESTED, AND ADJUSTED AS PER THE MANUFACTURERS' INSTRUCTIONS, AND AS NECESSARY TO ENSURE OPTIMUM PERFORMANCE. EQUIPMENT SHALL BE INSTALLED TO ALLOW FOR EASY ACCESS AND MAINTENANCE.
- THE CONTRACTOR SHALL GUARANTEE WORK PERFORMED UNDER THIS CONTRACT FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION. ENSURE THAT ALL EQUIPMENT IS WARRANTED BY THE MANUFACTURER FOR A MINIMUM OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
- MATERIALS AND EQUIPMENT SHALL BE NEW, TOP QUALITY AND SPECIFICATION GRADE, EXCEPT WHERE NOTED OTHERWISE.
- THIS SPECIFICATION SHALL BE CONSIDERED TO BE THE BASE BID SPECIFICATION AND CONTRACTORS MUST CARRY THE BASE BID MANUFACTURERS IN THEIR QUOTATION. ALTERNATE MANUFACTURERS OF EQUIPMENT CAN ONLY BE OFFERED AS PROPOSED ALTERNATES WITH THE CORRESPONDING PRICE REDUCTIONS PASSED ALONG TO OWNER.
- THE CONTRACTOR SHALL NOT WELD TO OR MAKE A HOLE IN A STRUCTURAL MEMBER WITHOUT REVIEW FROM THE STRUCTURAL ENGINEER. ATTACHMENTS TO STRUCTURAL MEMBERS SHALL BE MADE WITH SUITABLE CLAMPS OR CLIPS.
- THE GENERAL CONTRACTOR SHALL PROVIDE ALL OPENINGS AND REINFORCEMENT FRAMING AS REQUIRED.
- ALL MATERIALS IN CEILING SPACE USED FOR RETURN AIR PLENUM MUST BE PLENUM RATED.
- CONFIRM FIRE SEPARATIONS WITH ARCHITECTURAL DRAWINGS AND GENERAL CONTRACTOR. ALL PENETRATIONS THROUGH FIRE SEPARATIONS SHALL BE FITTED WITH EXPANSION SLEEVES AND ULC CERTIFIED FIRE STOPPING. ACCEPTABLE MATERIAL: HILTI OR APPROVED EQUIVALENT.
- THE OWNER RESERVES THE RIGHT TO MAKE MINOR ALTERATIONS TO THE LOCATION OF EQUIPMENT ETC AT NO ADDITION TO THE CONTRACT AMOUNT.
- THESE DRAWINGS ARE SCHEMATIC IN NATURE AND INTENDED TO SERVE AS A GUIDE SHOWING QUANTITIES AND GENERAL ARRANGEMENTS AND ARE NOT NECESSARILY WORKING DRAWINGS FROM WHICH MEASUREMENTS CAN BE TAKEN, EXCEPT WHERE DIMENSION FIGURES ARE SPECIFICALLY SHOWN. INFORMATION INVOLVING ACCURATE MEASUREMENTS OF BUILDING SHALL BE TAKEN FROM ARCHITECTURAL BUILDING DRAWINGS OR FROM THE SITE.
- MAINTAIN ADEQUATE LIABILITY INSURANCE TO PROTECT OWNER AND ALL CONTRACTORS.
- TEMPORARY LIGHTING AND POWER FOR CONSTRUCTION BY GENERAL CONTRACTOR.
- ALL EQUIPMENT, PIPING, CONDUIT, WIRING, JUNCTION BOXES, HARDWARE, ETC. INSTALLED IN OPEN CEILING SPACES SHALL BE INSTALLED IN AN INCONSPICUOUS AND AESTHETICALLY PLEASING MANNER UP TO THE SOLE DISCRETION OF THE OWNER AND ENGINEER. ALL EQUIPMENT, PIPING, CONDUIT, WIRING, JUNCTION BOXES, HARDWARE SHALL BE INSTALLED IN CHASES, ABOVE ADJACENT CEILINGS WHERE POSSIBLE.

GENERAL SPECIFICATIONS (CONTINUED):

- PAINT ALL EXPOSED DUCTWORK, PIPING, CONDUIT, CABLE TRAYS, JUNCTION BOXES, HANGERS, HARDWARE ETC. REFER TO ARCHITECT OR INTERIOR DESIGNER'S DRAWINGS.
- SUITABLE ACCESS DOORS MUST BE PROVIDED WHERE NECESSARY TO ACCESS VALVES, JUNCTION BOXES, CLEAN OUTS, FIRE DAMPERS, AND OTHER EQUIPMENT AND APPURTENANCES. ALL ITEMS REQUIRING ACCESS PANELS ARE NOT NECESSARILY SHOWN, CARRY A REASONABLE COST ALLOWANCE. COORDINATE EXACT LOCATION OF COMPONENTS REQUIRING ACCESS AND SELECT SIZES WHICH ARE SUITABLE FOR MAINTENANCE.
- FOR GYPSUM WALLS AND CEILINGS IN OCCUPIED AREAS, PROVIDE CONCEALED DOORS WITH 5/8" RECESS TO RECEIVE DRYWALL, ACCEPTABLE MATERIAL FOR STANDARD CEILINGS AND WALLS ACUDOR DW-5015 OR EQUIVALENT, FOR 90 MINUTE FIRE RATING ACUDOR FW(C)-5015 OR EQUIVALENT, FOR GREATER RATING, CONTACT ENGINEER AND ARCHITECT.
- FOR GYPSUM, PLASTER, MASONRY, OR TILE WALLS AND CEILINGS IN UTILITY AND STORAGE AREAS, PROVIDE UNIVERSAL FLUSH ACCESS DOOR, ACCEPTABLE MATERIAL FOR STANDARD CEILINGS AND WALLS ACUDOR UF-5000 OR EQUIVALENT, FOR 90 MINUTE FIRE RATING ACUDOR FW-5050, FOR GREATER RATING, CONTACT ENGINEER AND ARCHITECT.
- PAY FOR AND COORDINATE ALL UTILITY LOCATES AS REQUIRED.
- PROVIDE WATER-PROOFING OF BUILDING OPENINGS RELATED TO THE WORK OF ALL TRADES.

HVAC SEQUENCE OF OPERATION:

- RF-1, RETURN AIR FAN
 - AUTO MODE
 - RF-1 SHALL BE SUPPLIED WITH A CURRENT SENSING RELAY THAT IS CONNECTED TO EXISTING MUA-2 SUPPLY AIR FAN. WHEN FAN CONTROLLER IS SET TO AUTO, AND MUA-2 IS ENERGIZED, CURRENT SENSING RELAY SHALL CLOSE AND ENERGIZE RF-1.
 - RF-1 SHALL BE EQUIPPED WITH A VARI-GREEN CONSTANT PRESSURE CONTROLLER, TO MODULATE FAN SPEED USING AN INPUT SIGNAL FROM THE DUCT MOUNTED PRESSURE SENSOR. PRESSURE SENSOR SETPOINT TO BE SET BY THE AIR BALANCER.
 - WHEN MUA-2 SUPPLY FAN IS DE-ENERGIZED THE CURRENT SENSING RELAY SHALL BE DE-ENERGIZED AND RF-1 SHALL TURN OFF.
 - HAND MODE
 - RF-1 SHALL BE KEPT ON CONTINUOUSLY.
 - OFF MODE
 - RF-1 SHALL BE OFF.
 - SMOKE DETECTION
 - UPON DETECTION OF SMOKE, RF-1 DUCT MOUNTED SMOKE DETECTOR SHALL TURN RF-1 OFF. REFER TO ELECTRICAL DESIGN DRAWINGS FOR INTERCONNECTION OF SMOKE DETECTOR WITH EXISTING FIRE ALARM SYSTEM.

HVAC SPECIFICATIONS

- DUCTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE ONTARIO BUILDING CODE, ONTARIO FIRE CODE, AND THE ASHRAE AND SMACNA STANDARDS.
- HVAC EQUIPMENT MUA-2 (EXISTING), EF-6 (EXISTING), AND RF-1 SHALL BE BALANCED TO WITHIN 5% OF THE SPECIFIED VALUES SHOWN ON THE EQUIPMENT SCHEDULES. BALANCE AIR HANDLING UNITS PROVIDING VENTILATION TO THE VENTILATION LEVELS SHOWN. THE BALANCING MUST BE PERFORMED BY AN INDEPENDENT, NEBB CERTIFIED FIRM, SPECIALIZING IN THIS WORK. THE MECHANICAL CONTRACTOR SHALL TURN OVER THE BALANCING REPORT PRIOR TO SUBSTANTIAL COMPLETION BEING AWARDED.
- VOLUME DAMPERS MUST BE INSTALLED IN THE AIR DISTRIBUTION SYSTEMS AS SHOWN ON THE DRAWINGS AND AS NECESSARY TO ALLOW PROPER BALANCING.
- DUCTS MUST BE SEALED TO PREVENT AIR LEAKAGE. SEAL TO SMACNA AND ASHRAE 90.1 STANDARDS. FOR UNPAINTED DUCTS INSTALLED IN VISIBLE SPACES, THE DUCT MASTIC IS TO BE APPLIED TO THE INTERIOR OF DUCT JOINTS AND PENETRATIONS AND SHALL NOT BE VISIBLE FROM THE EXTERIOR. MASTIC MAY BE APPLIED TO THE EXTERIOR OF DUCTS ONLY IN AREAS WHERE IT IS NOT VISIBLE TO OCCUPANTS. EXPOSED MASTIC SHALL BE PAINTABLE AND IS TO BE APPLIED NEATLY WITH THE EXCESS REMOVED. REFER TO ARCHITECT'S DRAWINGS TO CONFIRM WHETHER OR NOT DUCTS ARE TO BE PAINTED.
- FLEXIBLE DUCT CONNECTIONS SHALL BE USED TO CONNECT FANS OR AIR HANDLERS TO RIGID DUCT TO REDUCE THE TRANSFER OF NOISE VIBRATION.
- FINAL CONNECTIONS TO DIFFUSERS SHALL BE MADE USING HARD ELBOWS CONNECTED TO FLEXIBLE ALUMINUM DUCTS TO MINIMIZE NOISE VIBRATION WHERE SHOWN. MAXIMUM 5' OF FLEXIBLE DUCT.
- INSULATE THE FIRST TEN FEET OF SUPPLY AND RETURN DUCTS INTERNALLY WITH 1/2" RIGID ACOUSTIC DUCT LINER.
- INSTALL FOIL BACKED VAPOUR RETARDANT FIBERGLASS INSULATION WITH JOINTS AND SEAMS SEALED WITH 3" FOIL TAPE ON DUCTS ACCORDING TO THE INSTALLED LOCATION.
- RF-1: PROVIDE R-8 INSULATION ON FULL LENGTH OF DISCHARGE DUCTING SECTION UP TO EXISTING ROOF TOP UNIT.
- INSTALL MINIMUM R12 RIGID FIBERGLASS BOARD INSULATION WITH ALUMAGARD CONTINUOUS VAPOUR BARRIER AND WEATHER PROOF COVERING ON EXTERIOR OF DUCTS EXPOSED TO THE OUTDOORS.
- PROVIDE TWO (2) SETS OF FILTERS FOR EQUIPMENT. ONE (1) SET FOR USE DURING CONSTRUCTION, AND ONE (1) SET TO BE INSTALLED IMMEDIATELY PRIOR TO BALANCING.
- INSTALLATION OF AIR CONDITIONING EQUIPMENT SHALL BE DONE BY A LICENSED CONTRACTOR IN ACCORDANCE WITH THE MANUFACTURERS' RECOMMENDATIONS.
- DUCT SIZES ARE SHOWN IN INCHES AND DO NOT INCLUDE FOR INTERNAL INSULATION.
- PIPES AND EQUIPMENT MUST BE INSTALLED SO AS TO MINIMIZE THE TRANSFER OF VIBRATION TO THE BUILDING AND ALSO TO ALLOW FOR EXPANSION AND CONTRACTION AS NECESSARY.
- EQUIPMENT SHALL BE ASHRAE 90.1 COMPLIANT.
- LINE VOLTAGE STARTERS, CONTROLS AND EQUIPMENT SAFETY SWITCHES SHALL BE SUPPLIED BY MECHANICAL CONTRACTOR AND INSTALLED BY ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED ON DESIGN DRAWINGS. LOW VOLTAGE STARTERS AND CONTROLS SHALL BE SUPPLIED AND INSTALLED BY MECHANICAL CONTRACTOR.
- ELECTRICAL WIRING, CONDUIT, JUNCTION BOXES, BACK BOXES, MOUNTING HARDWARE ETC. ABOVE 24V TO BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR. CONTROL WIRING, CONDUIT, JUNCTION BOXES, BACK BOXES, MOUNTING HARDWARE ETC. 24V AND BELOW TO BE INSTALLED BY MECHANICAL CONTRACTOR (MECHANICAL CONTRACTOR MAY SUB-CONTRACT THIS WORK TO ELECTRICAL CONTRACTOR).
- THE MECHANICAL CONTRACTOR SHALL INSTALL PIPE WITH SLEEVES IN ORDER TO PREVENT CONTACT WITH CONCRETE, MASONRY OR SIMILAR MATERIALS.
- ROOF CURBS AND FLASHINGS ARE TO BE SUPPLIED BY THE MECHANICAL CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR/ROOFER.
- ALL EQUIPMENT SHALL BE INSTALLED IN SUCH A MANNER THAT MANUFACTURER'S RECOMMENDED CLEARANCES ARE MAINTAINED. THE CONTRACTOR SHALL LAY OUT THE WORK BASED ON THE MANUFACTURER'S RECOMMENDED CLEARANCES AND ADVISE ENGINEER IMMEDIATELY IF ANY SITE CONDITIONS NEGATIVELY AFFECT THE PROPER INSTALLATION OF ALL EQUIPMENT.
- ALL DOOR UNDERCUTS INDICATED SHALL BE MIN 3/4". COORDINATE WITH GENERAL CONTRACTOR.
- THIS CONTRACTOR SHALL REVIEW AND CONFIRM ALL EXISTING INDOOR METALLIC PIPING SYSTEMS ARE BONDED. PROVIDE BONDING FOR ALL NEW INDOOR METALLIC PIPING SYSTEMS AND EXISTING SYSTEMS WITHOUT PROPER BOND. BONDING SHALL BE INSTALLED TO THE REQUIREMENTS OF OESC 10-406. THE GENERAL CONTRACTOR SHALL DETERMINE IF BONDING IS BY MECHANICAL OR ELECTRICAL.
- CLEAN ALL EXISTING GRILLES AND DIFFUSERS WHICH ARE SHOWN TO REMAIN.
- DUCTWORK CONNECTIONS TO ROOFTOP UNITS WITH HORIZONTAL DISCHARGE SHALL BE SLOPED AWAY FROM RTU AND WEATHER-TIGHT GASKETS AND FLASHING SHALL BE PROVIDED.

DISCLAIMER AND COPYRIGHT

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.

TATHAM ENGINEERING LIMITED CLAIMS COPYRIGHT TO THIS DRAWING 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 TATHAM ENGINEERING LIMITED.

BENCHMARKS

NOTES

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	AUG/24
2.	-	***/**
3.	-	***/**
4.	-	***/**
5.	-	***/**

ENGINEERS STAMP:

PORT CARLING COMMUNITY CENTRE
3 BAILEY ST, PORT CARLING, ON

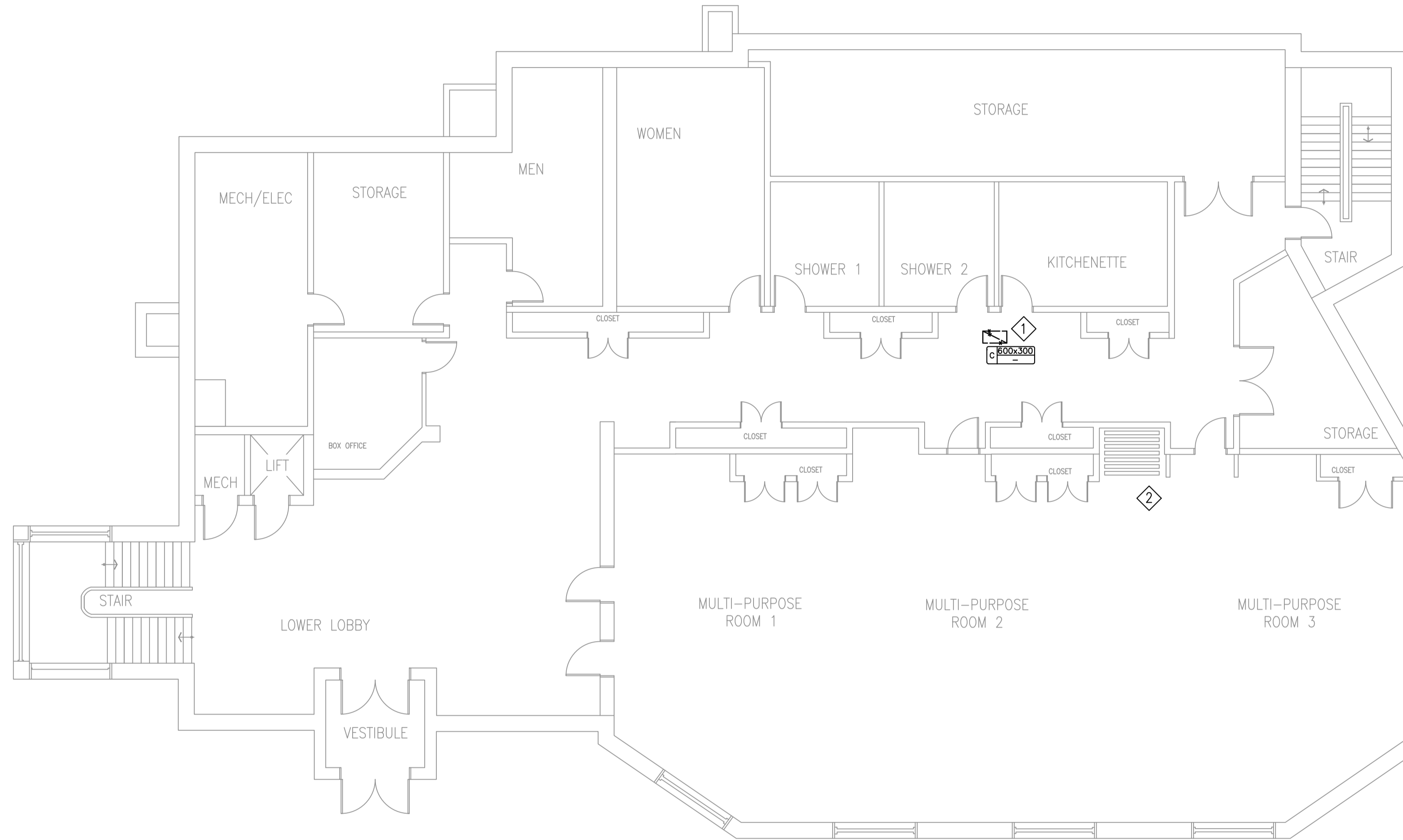
SCHEDULES, LEGEND, AND SPECIFICATIONS

TATHAM ENGINEERING

DESIGN: JT	FILE: 123080	DWG:
DRAWN: ML	DATE: FEB 2024	M1
CHECK: NW	SCALE: AS SHOWN	

DRAWING NOTES:

- ① REMOVE EXISTING RETURN AIR GRILLE AND FILL WITH CEILING TILE.
- ② REMOVE ACCORDION STYLE ROOM DIVIDER. COORDINATE REMOVAL WITH OWNER.



DISCLAIMER AND COPYRIGHT

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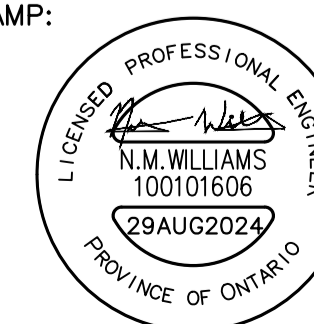
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ENGINEERS STAMP:



PORT CARLING COMMUNITY CENTRE
3 BAILEY ST, PORT CARLING, ON

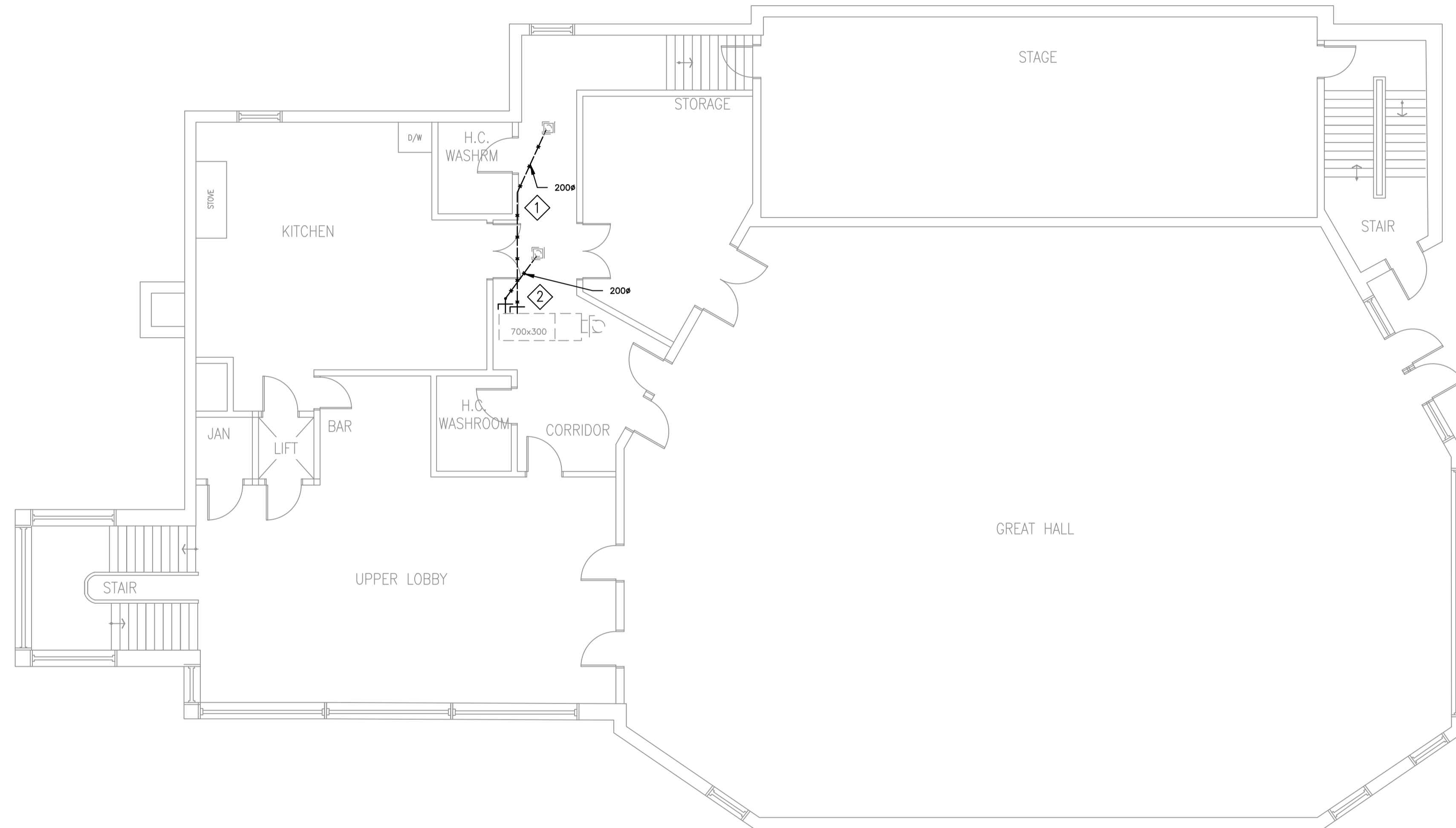
BASEMENT HVAC DEMOLITION



DESIGN: JT	FILE: 123080	DWG:
DRAWN: ML	DATE: FEB 2024	M2
CHECK: NW	SCALE: AS SHOWN	

DRAWING NOTES:

- ① REMOVE 200mm DIA. SUPPLY DUCTING. SUPPLY DIFFUSER TO REMAIN.
- ② REMOVE 200mm DIA. SUPPLY DUCTING AND DIFFUSER. RELOCATE SUPPLY DIFFUSER PER MECHANICAL DRAWING M5.



DISCLAIMER AND COPYRIGHT
 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.
 TATHAM ENGINEERING LIMITED CLAIMS COPYRIGHT TO THIS DRAWING 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 TATHAM ENGINEERING LIMITED.

BENCHMARKS

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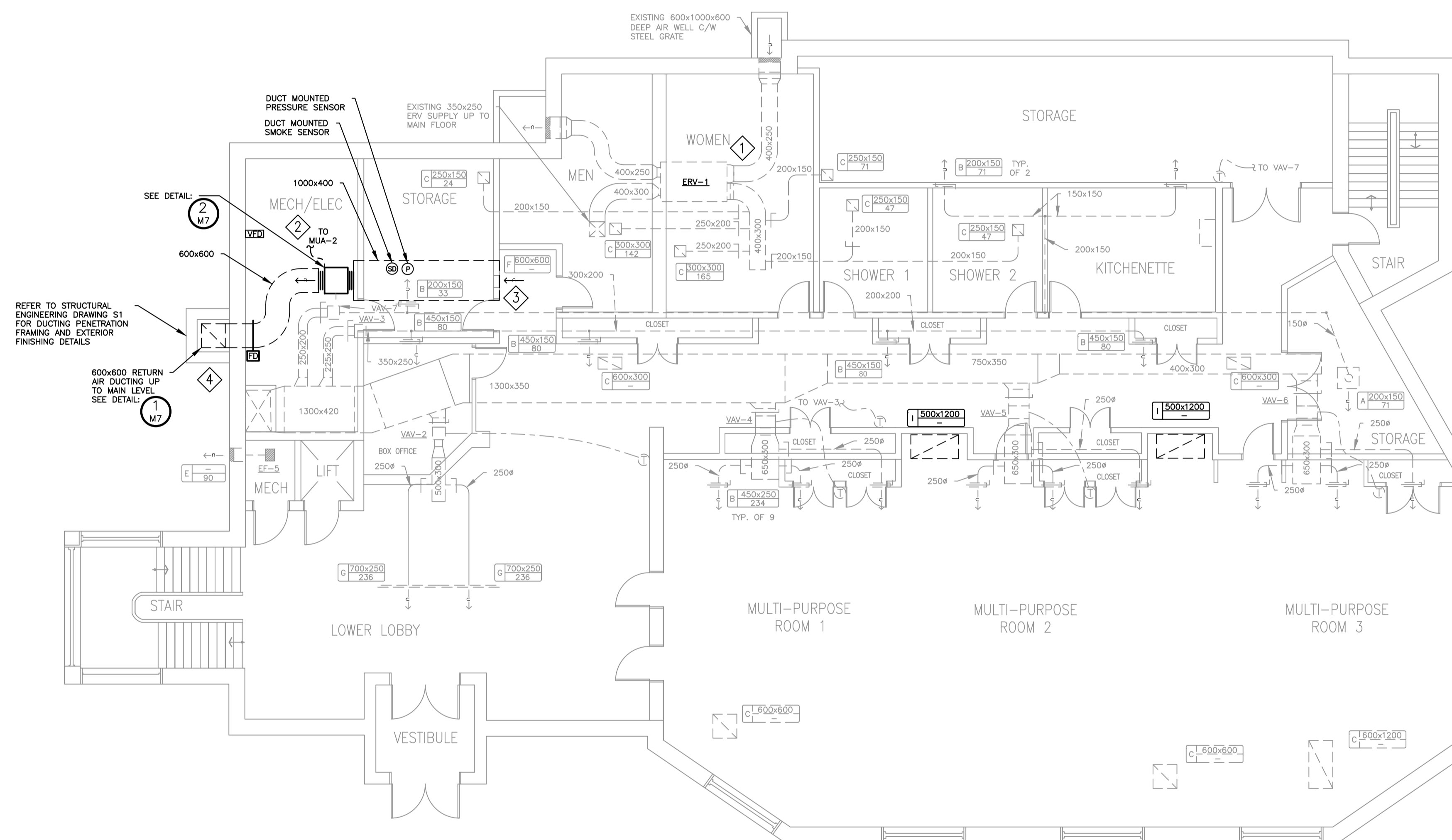
PORT CARLING COMMUNITY CENTRE
 3 BAILEY ST, PORT CARLING, ON
 MAIN FLOOR HVAC DEMOLITION

TATHAM ENGINEERING

DESIGN: JT	FILE: 123080	DWG: M3
DRAWN: ML	DATE: FEB 2024	
CHECK: NW	SCALE: AS SHOWN	

DRAWING NOTES:

- 1 ELECTRICIAN TO DISCONNECT ELECTRIC POWER SUPPLY TO ERV SUPPLY FAN ONLY. ERV EXHAUST FAN TO REMAIN IN OPERATION AND RUN CONTINUOUSLY.
- 2 ELECTRICIAN TO PROVIDE POWER CIRCUITING TO RF-1 FROM EXISTING 230V ELECTRICAL PANEL LOCATED IN MECH/ELEC ROOM.
- 3 OPEN ENDED DUCT TERMINATION IN CORRIDOR PLENUM SPACE.
- 4 PROVIDE TURNING VANES FOR 90 DEGREE, MITERED DUCTING ELBOWS.



DISCLAIMER AND COPYRIGHT
 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.
 TATHAM ENGINEERING LIMITED CLAIMS COPYRIGHT TO THIS DRAWING 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 TATHAM ENGINEERING LIMITED.

BENCHMARKS

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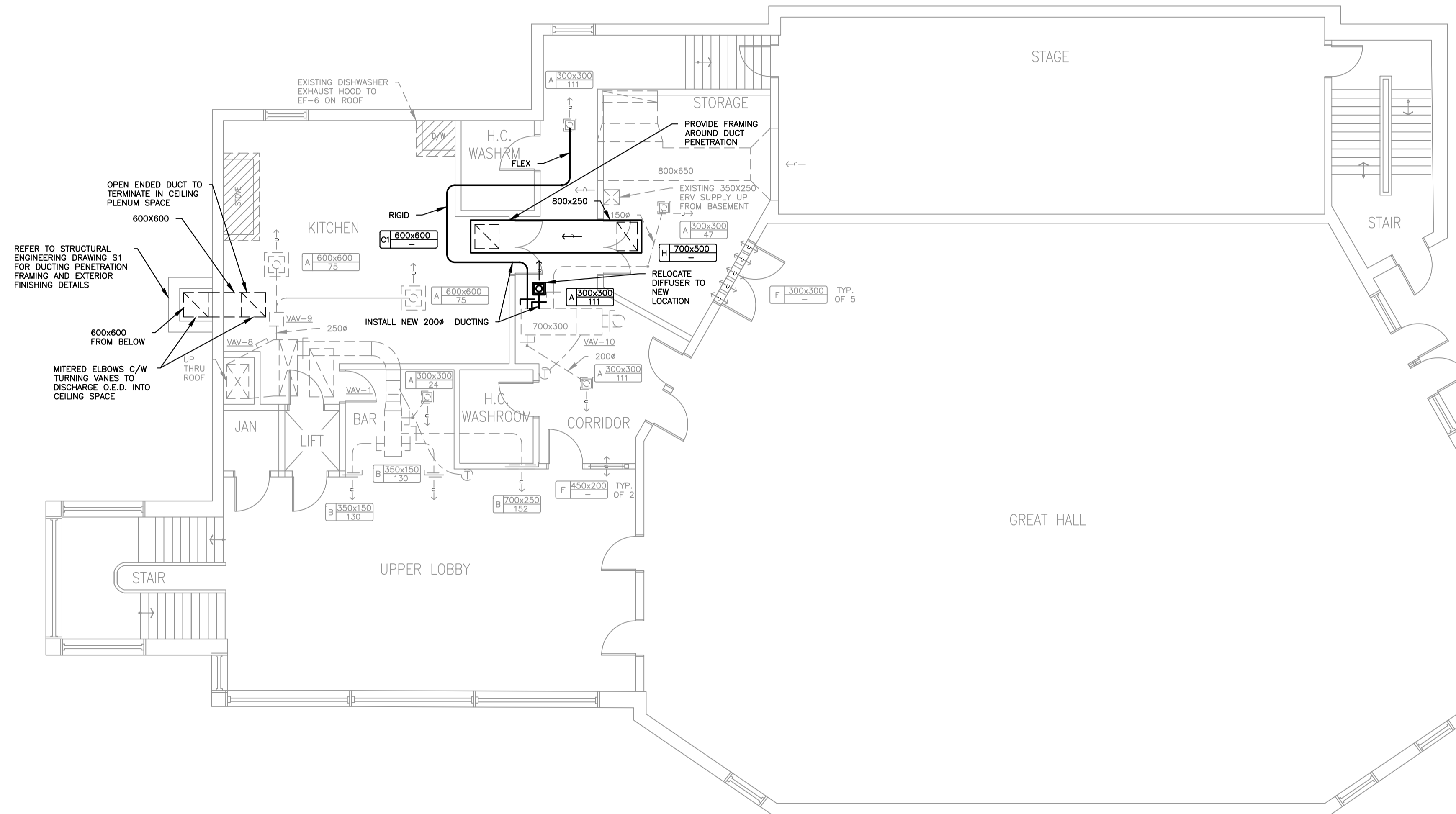
No.	REVISION DESCRIPTION	DATE
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ENGINEERS STAMP:

PORT CARLING COMMUNITY CENTRE
3 BAILEY ST, PORT CARLING, ON
BASEMENT HVAC INSTALLATION

TATHAM ENGINEERING

DESIGN: JT	FILE: 123080	DWG: M4
DRAWN: ML	DATE: FEB 2024	
CHECK: NW	SCALE: AS SHOWN	



DISCLAIMER AND COPYRIGHT
 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.
 TATHAM ENGINEERING LIMITED CLAIMS COPYRIGHT TO THIS DRAWING 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 TATHAM ENGINEERING LIMITED.

BENCHMARKS

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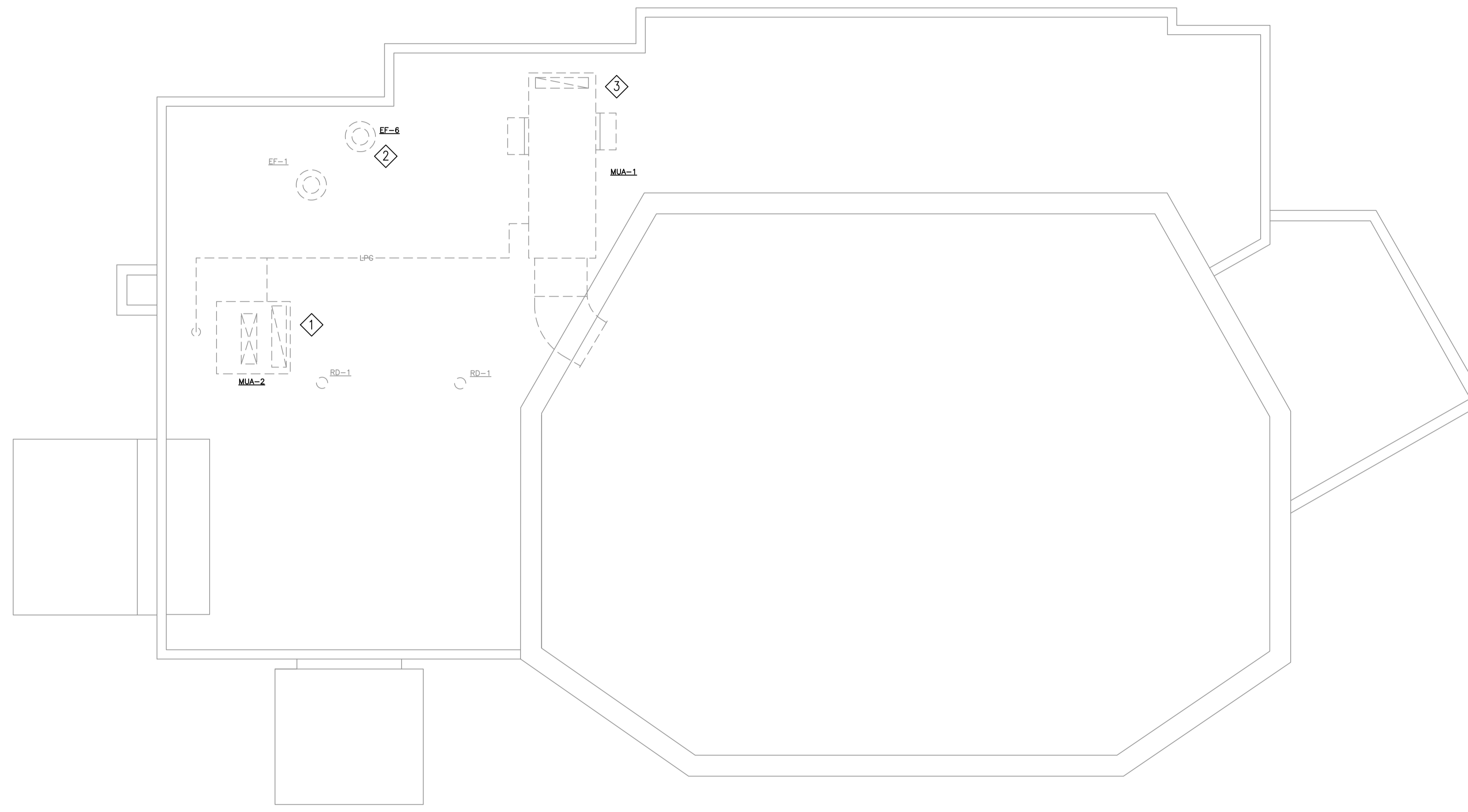
PORT CARLING COMMUNITY CENTRE
3 BAILEY ST, PORT CARLING, ON

MAIN FLOOR HVAC INSTALLATION

DESIGN: JT	FILE: 123080	DWG: M5
DRAWN: ML	DATE: FEB 2024	
CHECK: NW	SCALE: AS SHOWN	

DRAWING NOTES:

- ① SET EXISTING RTU MUA-2 ECONOMIZER TO 25% OPEN (675 L/S). MUA-2 TO BE RE-BALANCED TO THE SUPPLY FLOW RATE SHOWN ON THE DRAWING M1 EXISTING ROOFTOP UNIT SCHEDULE.
- ② EXISTING EXHAUST FAN EF-6 TO BE PROVIDED WITH ADJUSTABLE DRIVE SHEAVES AND RE-BALANCED TO THE AIR FLOW RATE SHOWN ON THE DRAWING M1 FAN SCHEDULE.
- ③ CONTRACTOR TO CONFIRM MINIMUM ECONOMIZER SETTING AND PROVIDE FEEDBACK TO ENGINEER. A MINIMUM 25% OPEN ECONOMIZER SETTING IS REQUIRED PER THE DRAWING M1 EXISTING ROOFTOP UNIT SCHEDULE.



DISCLAIMER AND COPYRIGHT
 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.
 TATHAM ENGINEERING LIMITED CLAIMS COPYRIGHT TO THIS DRAWING 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 TATHAM ENGINEERING LIMITED.

BENCHMARKS

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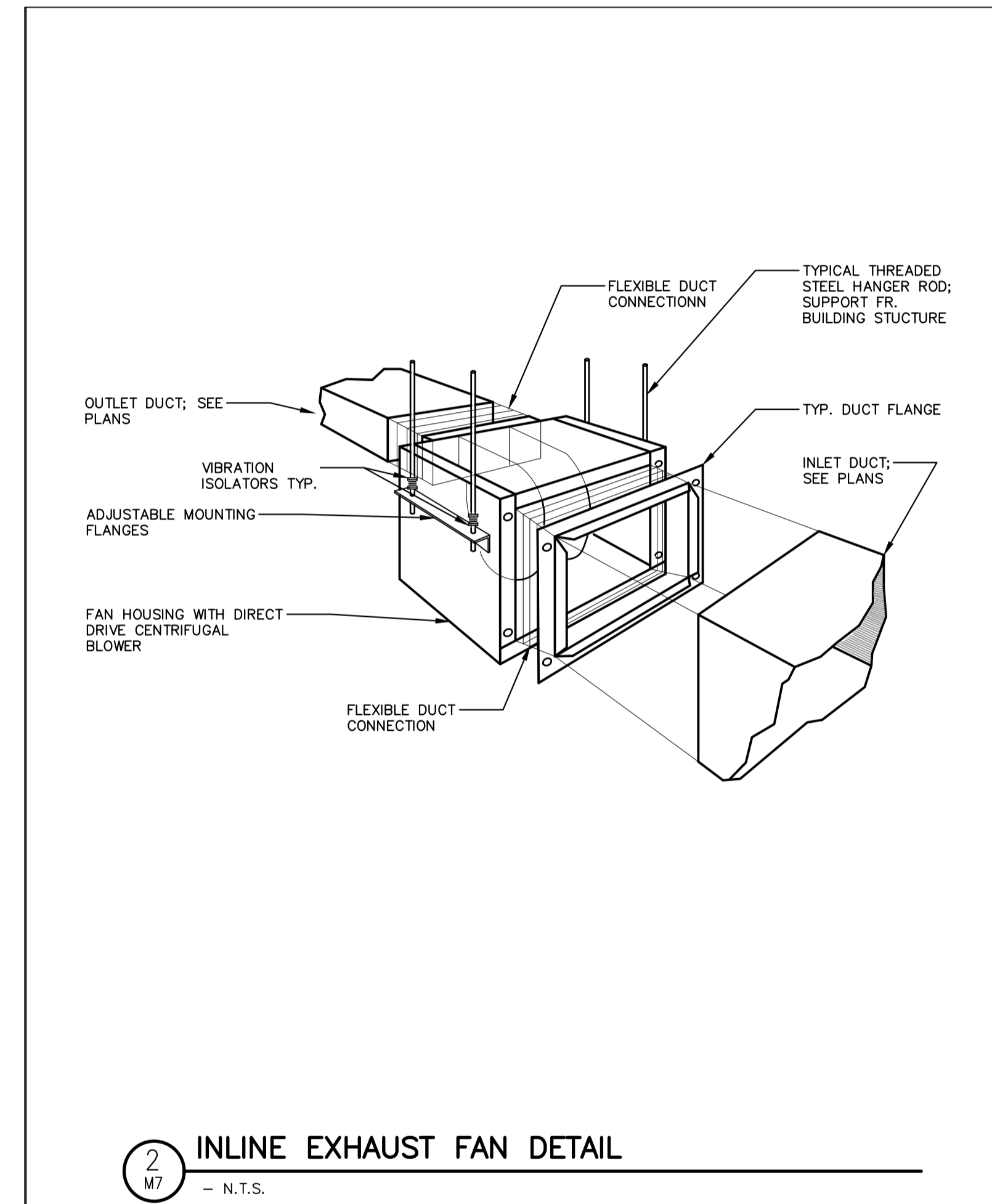
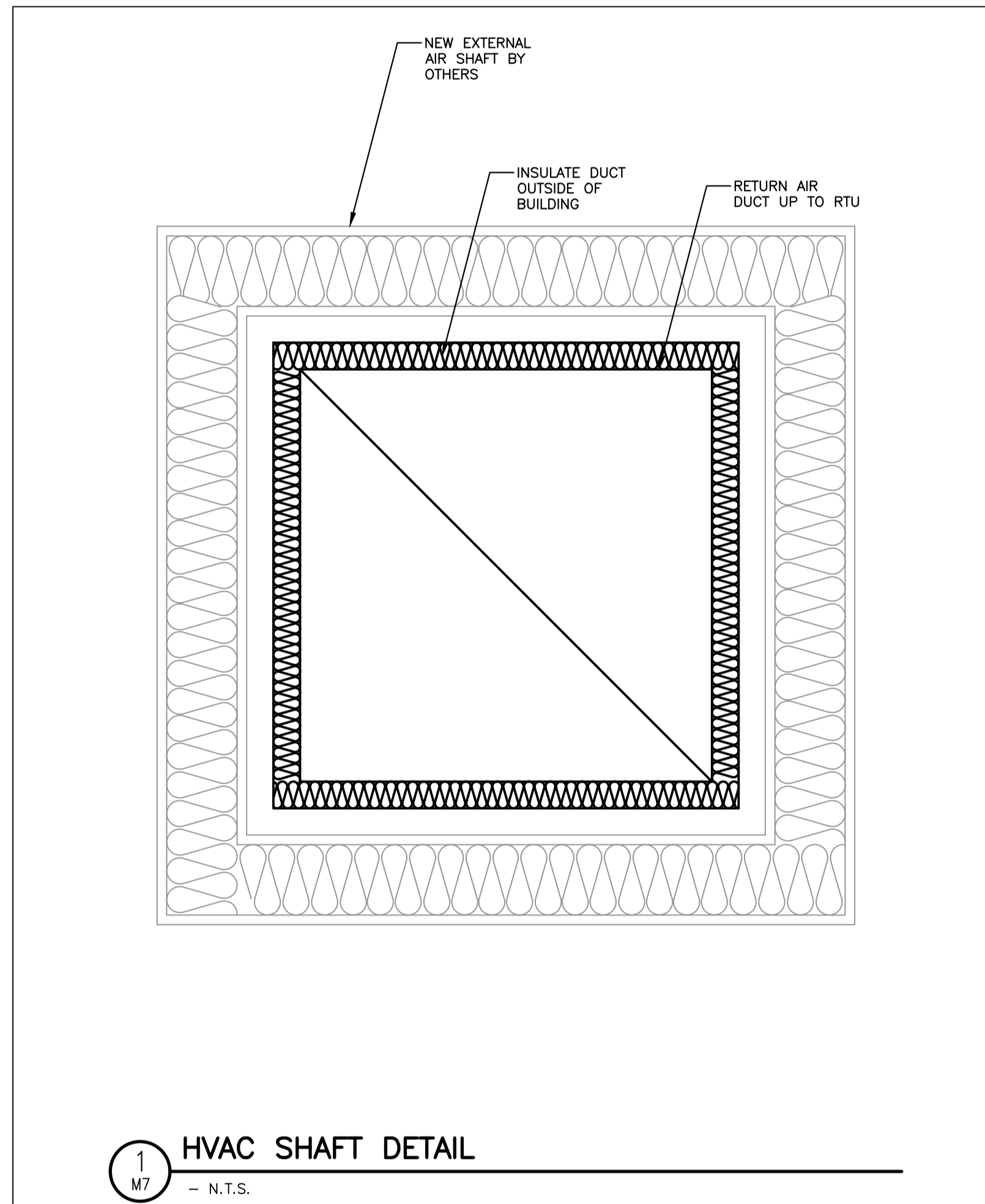
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ENGINEERS STAMP:

PORT CARLING COMMUNITY CENTRE
 3 BAILEY ST, PORT CARLING, ON

ROOF HVAC INSTALLATION

DESIGN: JT	FILE: 123080	DWG:
DRAWN: ML	DATE: FEB 2024	M6
CHECK: NW	SCALE: AS SHOWN	



DISCLAIMER AND COPYRIGHT
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.
TATHAM ENGINEERING LIMITED CLAIMS COPYRIGHT TO THIS DRAWING 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 TATHAM ENGINEERING LIMITED.

BENCHMARKS

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5.	-	***/**

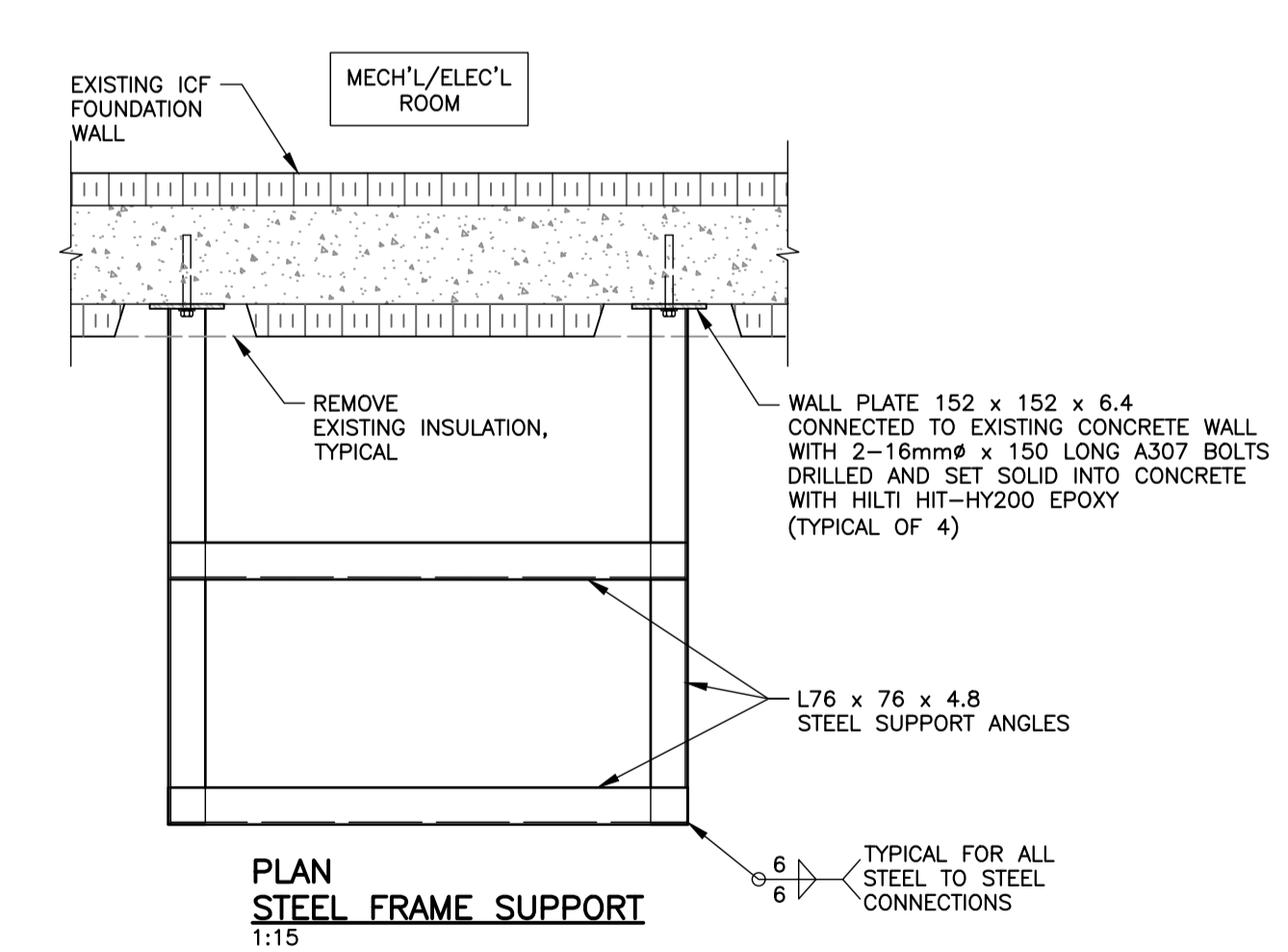
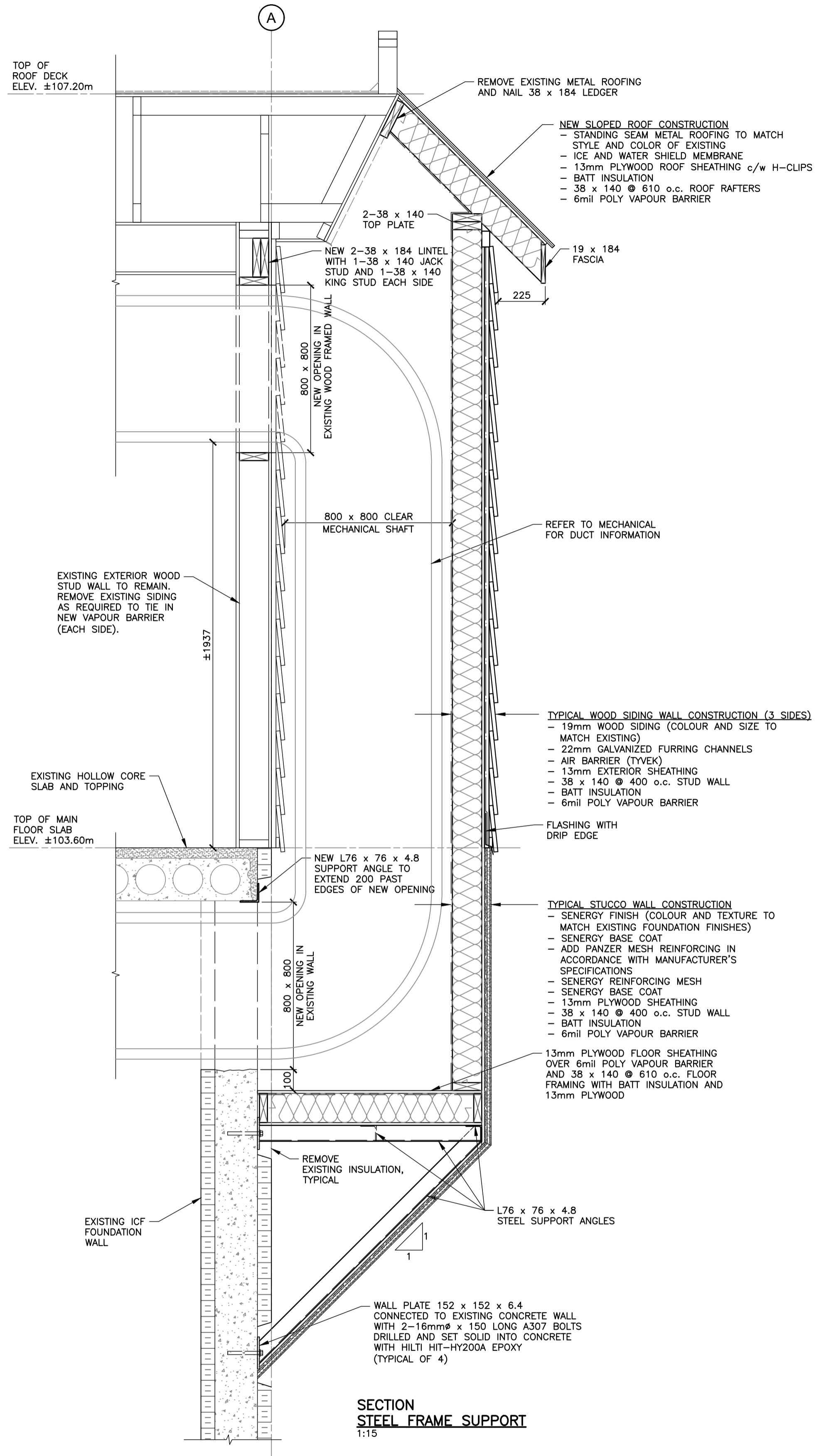
ENGINEERS STAMP:

PORT CARLING COMMUNITY CENTRE
3 BAILEY ST, PORT CARLING, ON

MECHANICAL DETAILS

TATHAM ENGINEERING

DESIGN: JT	FILE: 123080	DWG: M7
DRAWN: ML	DATE: FEB 2024	
CHECK: NW	SCALE: AS SHOWN	



GENERAL NOTES

1. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND THEIR RESPECTIVE SPECIFICATIONS.
2. ALL DIMENSIONS ARE IN mm EXCEPT AS NOTED OTHERWISE.
3. THE DRAWINGS SHOW THE COMPLETED STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY ON THE JOB SITE AND FOR DESIGN, INSTALLATION AND SUPERVISION OF ALL TEMPORARY BRACING AND FALSEWORK TO SUIT HIS CONSTRUCTION METHODS AND TO SUPPORT THE SUPERIMPOSED CONSTRUCTION LOADS.
4. ALL WORK AND MATERIALS SHALL CONFORM TO REQUIREMENTS SET OUT IN THE 2012 ONTARIO BUILDING CODE.
5. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT OF ONTARIO.
6. ALL DESIGN LOADS NOTED ON DRAWINGS ARE WORKING LOADS (UNLESS NOTED OTHERWISE):
 - A) ROOF/WALL DEAD LOAD = 1.00 kPa
 - B) GROUND SNOW LOAD = 3.1 kPa
 - C) IMPORTANCE CATEGORY = NORMAL
7. ALL CODES AND STANDARDS REFERENCED SHALL BE THE LATEST EDITION REFERENCED BY THE 2012 ONTARIO BUILDING CODE (DIV.B, 1.3.1.2).

WOOD FRAMING

1. ALL LUMBER SHALL BE MINIMUM GRADE S.P.F. No.1/2 IN ACCORDANCE WITH CAN-CSA-086. ALL LUMBER SHALL BE PRESSURE TREATED.
2. ALL CUTS, HOLES AND OTHER FIELD FABRICATIONS WHICH EXPOSE UNTREATED WOOD SURFACES SHALL BE FIELD TREATED WITH A COPPER NAPHTHENATE PAINT-ON PRESERVATIVE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
3. ALL NAILS, SPIKES AND STAPLES SHALL BE IN ACCORDANCE WITH OBC CLAUSE 9.23.3.
4. ALL BOLTS AND ACCOMPANYING HARDWARE SHALL BE IN ACCORDANCE WITH ASTM A307 - GRADE A, UNLESS NOTED OTHERWISE.
5. ALL WOOD SCREWS TO MEET REQUIREMENTS OF ASME B18.6.1 "WOOD SCREWS" AND COATED WITH AN ACQ APPROVED COATING FOR PRESSURE TREATED APPLICATIONS.
6. SPECIFIED CONNECTORS SHALL BE MANUFACTURED BY SIMPSON STRONG-TIE AND INSTALLED IN ACCORDANCE WITH WRITTEN SPECIFICATIONS. SUBSTITUTIONS SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL SHALL BE NEW STOCK AND CONFORM TO THE FOLLOWING GRADES AND STANDARDS:
 - A) CAN/CSA-G40.21 TYPE 350W UNLESS OTHERWISE NOTED
 - B) ANGLES AND PLATES: CAN/CSA-G40.21 TYPE 300W
2. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH CAN/CSA-S16.1.
3. ALL WELDING SHALL BE CARRIED OUT IN ACCORDANCE WITH CSA W59 BY A FABRICATOR FULLY APPROVED UNDER CSA W47.1. DIVISION No.1 OR No.2.
4. SPLICES IN STEEL MEMBERS OTHER THAN THOSE SHOWN ON THE DRAWINGS SHALL NOT BE PERMITTED.
5. CLEAN AND PREPARE SURFACES OF STRUCTURAL STEEL IN ACCORDANCE WITH CAN/CSA-S16.1.
6. ALL WELDS TO BE MINIMUM 6MM FILLET WELD ALL AROUND, UNLESS NOTED OTHERWISE.
7. CLEAN, PREPARE SURFACES AND SHOP PRIME STRUCTURAL STEEL IN ACCORDANCE WITH CAN/CSA-S16.1.
8. TOUCH UP SHOP PRIMER TO BOLTS, WELDS, AND BURNED AND SCRATCHED SURFACES AT COMPLETION OF ERECTION.

DISCLAIMER AND COPYRIGHT
 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.
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BENCHMARKS

NOTES

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	AUG/24

ENGINEERS STAMP:

PORT CARLING COMMUNITY CENTRE
 3 BAILEY ST, PORT CARLING, ON
HVAC SUPPORT DETAIL

TATHAM ENGINEERING

DESIGN: DD	FILE: 123080	DWG: S1
DRAWN: WHG	DATE: FEB 2024	
CHECK: MPS	SCALE: AS SHOWN	

SINGLE LINE SYMBOLS AND CONTROL DIAGRAMS

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER, MOULDED CASE WITH THERMAL & MAGNETIC TRIPS
	MOTOR CIRCUIT PROTECTOR (MCP) STYLE BREAKER, WITH MAGNETIC TRIPS ONLY
	NEMA SIZE 1 STARTER WITH THERMAL OVERLOAD TRIP
	VARIABLE FREQUENCY DRIVE, C/W BYPASS MOTOR STARTER/CONTACTOR AND CONTROL TRANSFORMER
	CURRENT TRANSFORMER
	CAPACITOR
	CONTROL POWER TRANSFORMER (CPT)
	FUSE
	FUSIBLE DISCONNECT SWITCH
	NON-FUSIBLE DISCONNECT SWITCH
	DRY-TYPE POWER TRANSFORMER (INDOOR)
	OIL-FILLED POWER TRANSFORMER (OUTDOOR)
	SEAL (EYS) FITTING C/W CHICO POWDER
	MOTOR STARTER (MS) COIL, WITH COIL SUPPRESSOR
	PILOT LIGHT, WHERE "X" INDICATES LENS COLOR: R=RED, W=WHITE, G=GREEN
	PUSH TO TEST STYLE PILOT LIGHT
	ELAPSE TIME METER, IN HOURS
	CONTROL RELAY (# DENOTES RELAY NUMBER)
	TERMINAL BLOCK
	SOLENOID VALVE
	CONTACT, N.O. AND N.C.
	TEMPERATURE SWITCH, N.O AND N.C.
	LIMIT OR POSITION SWITCH, N.O AND N.C.
	PRESSURE SWITCH, N.O AND N.C.
	LEVEL OR FLOAT SWITCH, N.O AND N.C.
	TORQUE SWITCH, N.O AND N.C.
	PUSHBUTTON DEVICE, N.O AND N.C.
	SELECTOR SWITCH, 2-POSITION & 3-POSITION

DRAWING LIST - ELECTRICAL

E-1	LEGEND, SLD AND INSTALLATION NOTES
E-2	FIRE ALARM
E-3	ELECTRICAL SPECIFICATIONS

LIGHTING AND POWER ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
	1'x4' FLUORESCENT LUMINAIRE. "X" DENOTES LUMINAIRE TYPE (REFER TO LUMINAIRE SCHEDULE).
	DENOTES SWITCH LEG
	DENOTES BRANCH CIRCUIT NUMBER
	DENOTES PANEL DESIGNATION
	2'x4' FLUORESCENT LUMINAIRE. "X" DENOTES LUMINAIRE TYPE (REFER TO LUMINAIRE SCHEDULE)
	CEILING MOUNTED LUMINAIRE - "X" DENOTES TYPE
	WALL MOUNTED LUMINAIRE - "X" DENOTES TYPE
	EXIT LIGHT - "X" DENOTES TYPE
	LIGHT SWITCH C/W BACK BOX: - "S" INDICATES 2-WIRE SWITCH - "S3" INDICATES 3-WIRE SWITCH - "S4" INDICATES 4-WIRE SWITCH - "D" INDICATES DIMMER (SIZE TO SUIT) - "T" INDICATES MANUAL TIMER - "M" INDICATES MOTION DETECTOR
	EMERGENCY REMOTE HEADS
	EMERGENCY BATTERY UNIT WITH REMOTE HEADS AND CHARGER (BU#)
	EXPLOSION PROOF - CLASS 1 DIV. 1&2
	ELECTRICAL PANEL/ENCLOSURE
	DUPLEX RECEPTACLE
	SINGLE RECEPTACLE
	GFI TYPE DUPLEX RECEPTACLE
	SPLIT DUPLEX RECEPTACLE
	DRYER RECEPTACLE
	WELDING RECEPTACLE
	SINGLE PHASE MOTOR
	THREE PHASE MOTOR
	SINGLE PHASE MANUAL STARTER SWITCH WITH LOCK-OFF AND PILOT LIGHT
	MANUAL STARTER SWITCH C/W PILOT LIGHT AND HAND/OFF/AUTO SELECTOR SWITCH
	CONTROL STATION OR PANEL
	DISCONNECT SWITCH, UN-FUSED, # DENOTES NUMBER OF POLES
	UNAUTHORIZED ENTRY KEYPAD UNIT
	MAGNETIC REED DOOR SWITCH
	MOTION SENSOR
	SMOKE DETECTOR
	TELEPHONE OUTLET
	DATA OUTLET
	JUNCTION BOX
	THERMOSTAT (VENTILATION)
	THERMOSTAT

GENERAL SYMBOLS

	DETAIL SYMBOL: X = DETAIL NUMBER YZ = DRAWING NUMBER
	EQUIPMENT SUPPLIED BY ANOTHER DIVISION, INSTALLATION, WIRING AND CONDUIT BY DIVISION 16
	EXISTING OR RELOCATED EQUIPMENT, NEW WIRING AND CONDUIT BY DIVISION 16
	SYMBOL INDICATES A DEVICE LOCATION, SEE BELOW (# DENOTES LOCATION NUMBER)
	SYMBOL INDICATES MODIFICATION OR NEW WORK NOTE (# DENOTES NOTE NUMBER)
	SYMBOL INDICATES A REMOVAL NOTE (# DENOTES NOTE NUMBER)

MASTER ELECTRICAL LEGEND

ALL SYMBOLS/DEVICES/ABBREVIATIONS LISTED MAY NOT APPLY

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.

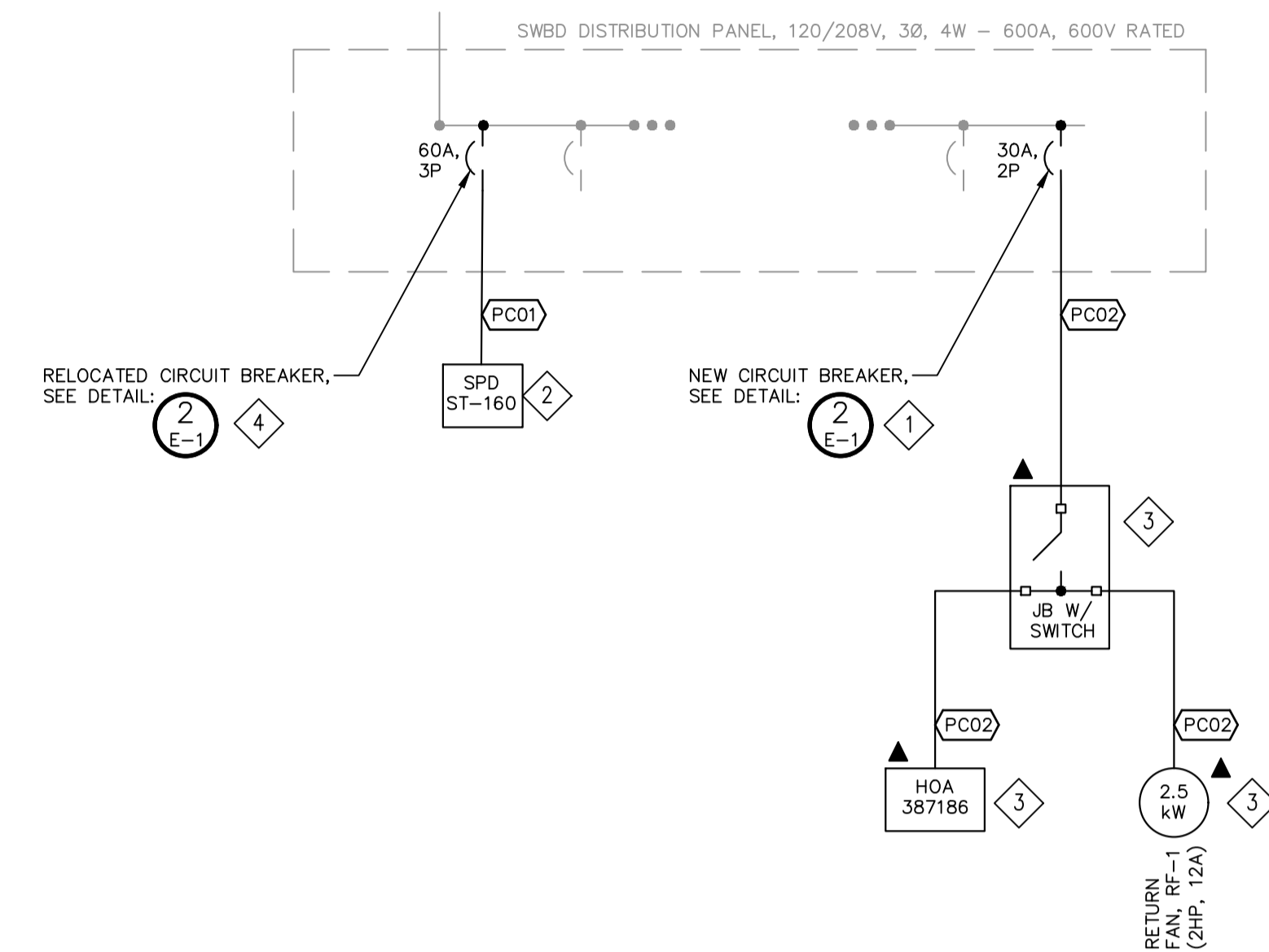
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STANDARD ABBREVIATIONS - ELECTRICAL

ABBREVIATION	DESCRIPTION
A	AMPERES (CONTINUOUS)
AC	ALTERNATING CURRENT
ASYM	ASYMMETRICAL
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AWG	AMERICAN WIRE GAUGE
BU	BATTERY UNIT (EMERGENCY)
°C	DEGREE CELSIUS
C	CONDUCTOR
CCT	CIRCUIT
CL	CENTERLINE
C/W	COMPLETE WITH
CPT	CONTROL POWER TRANSFORMER
CSA	CANADIAN STANDARDS ASSOCIATION
CT	CURRENT TRANSFORMER
Cu	COPPER
DC	DIRECT CURRENT
DISC	DISCONNECT
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
EEMAC	ELECTRICAL AND ELECTRONIC MANUFACTURERS ASSOCIATION OF CANADA
EP	EXPLOSION PROOF (SEE "CLASSIFICATION SUMMARY")
ETM	ELAPSED TIME METER
ESA	ELECTRICAL SAFETY AUTHORITY
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
Hz	HERTZ
IEEE	INSTITUTE OF ELECTRICAL & ELECTRONIC ENGINEERS
INST	INSTANTANEOUS
I/O	INPUT/OUTPUT
ISB	INTRINSIC SAFETY BARRIER
JB	JUNCTION BOX
KAIC	KILO-AMP INTERRUPTING CAPACITY
kVA	KILOVOLTAMPERE
kW	KILOWATT
kWh	KILOWATT HOUR
kV	KILOVOLT
LA	LIGHTNING ARRESTOR
LOR	LOCAL-OFF-REMOTE
LUC	LOCAL UTILITY COMPANY
MAN	MANUAL
MCC	MOTOR CONTROL CENTRE
MH	MANHOLE
mm	MILLIMETER
MOT	MOTOR
N	NEUTRAL
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N/A	NON AUTOMATIC
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED
NP	NAMEPLATE
NTS	NOT TO SCALE
OEESC	ONTARIO ELECTRICAL SAFETY CODE
O/H	OVERHEAD
O/L	OVERLOAD
OO	ON-OFF
PB	PUSHBUTTON
PDC	POWER DISTRIBUTION CENTRE
PH. OR Ø	PHASE OR DIAMETER
PLC	PROGRAMMABLE LOGIC CONTROLLER
REM	REMOTE
RGS	RIGID GALVANIZED STEEL
RPVC	RIGID PVC CONDUIT
SN	SOLID NEUTRAL
SPDT	SINGLE POLE DOUBLE THROW
SPMDD	STANDARD PROCTOR MAXIMUM DRY DENSITY
SPST	SINGLE POLE SINGLE THROW
SS	STAINLESS STEEL
SWBD	SWITCHBOARD
SW	SWITCH
SYM	SYMMETRICAL
TDC	TIME DELAY ON CLOSING
TDDO	TIME DELAY ON DROP-OUT (OR OFF TIMER)
TDO	TIME DELAY ON OPENING
TDPU	TIME DELAY ON PICK-UP
TYP.	TYPICAL
U/G	UNDERGROUND
VA	VOLT-AMPERE
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
316SS	316 STAINLESS STEEL

POWER CABLE SCHEDULE

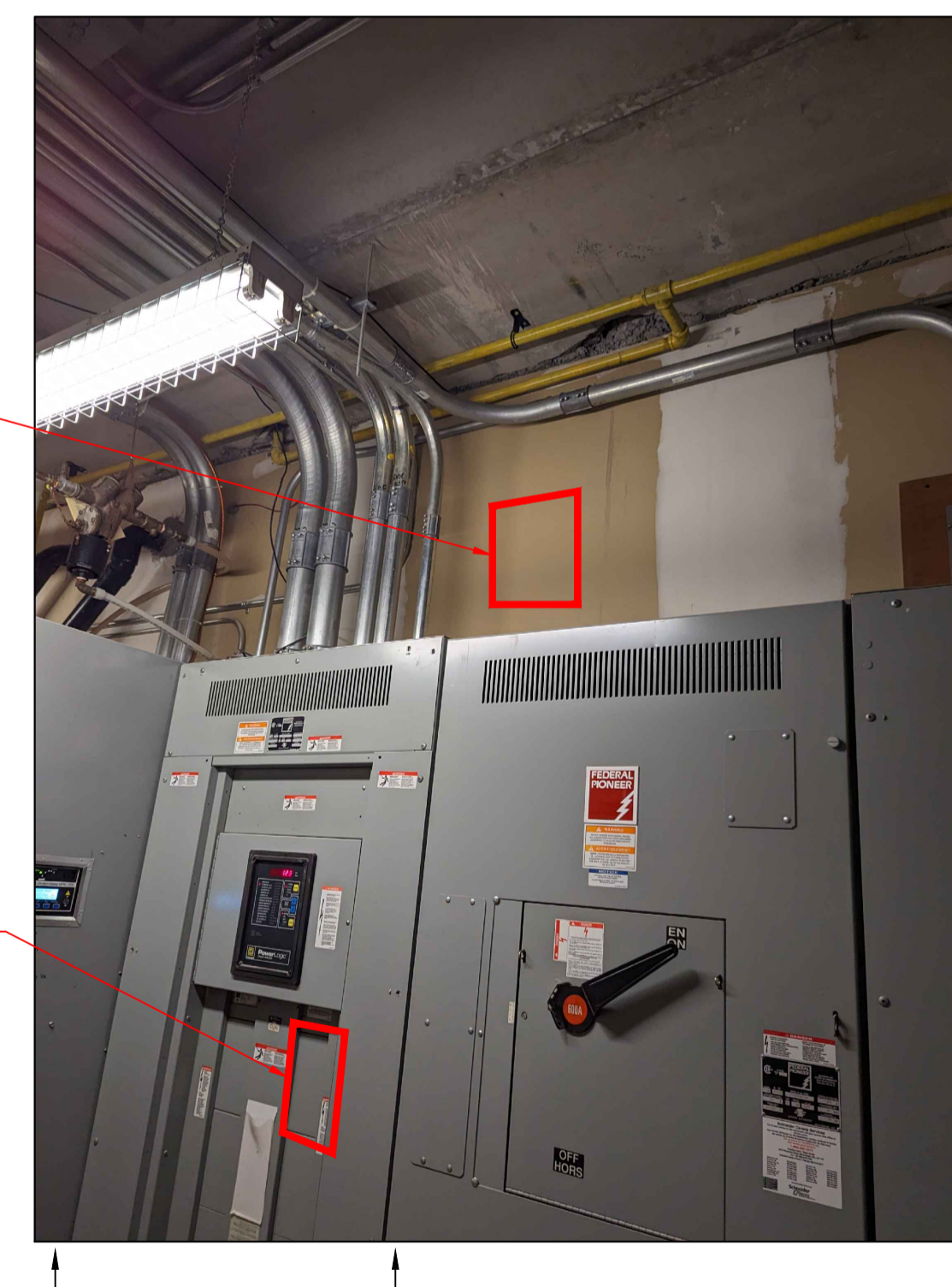
PC01	3C + GND LOW IMPEDANCE CABLE BY INNOSYS - TK-LIC-6Y-10
PC02	2C#10AWG + #12AWG GND, CU, RW90 IN RPVC



1 SWBD BREAKER PANEL - SINGLE LINE DIAGRAM

NOTES

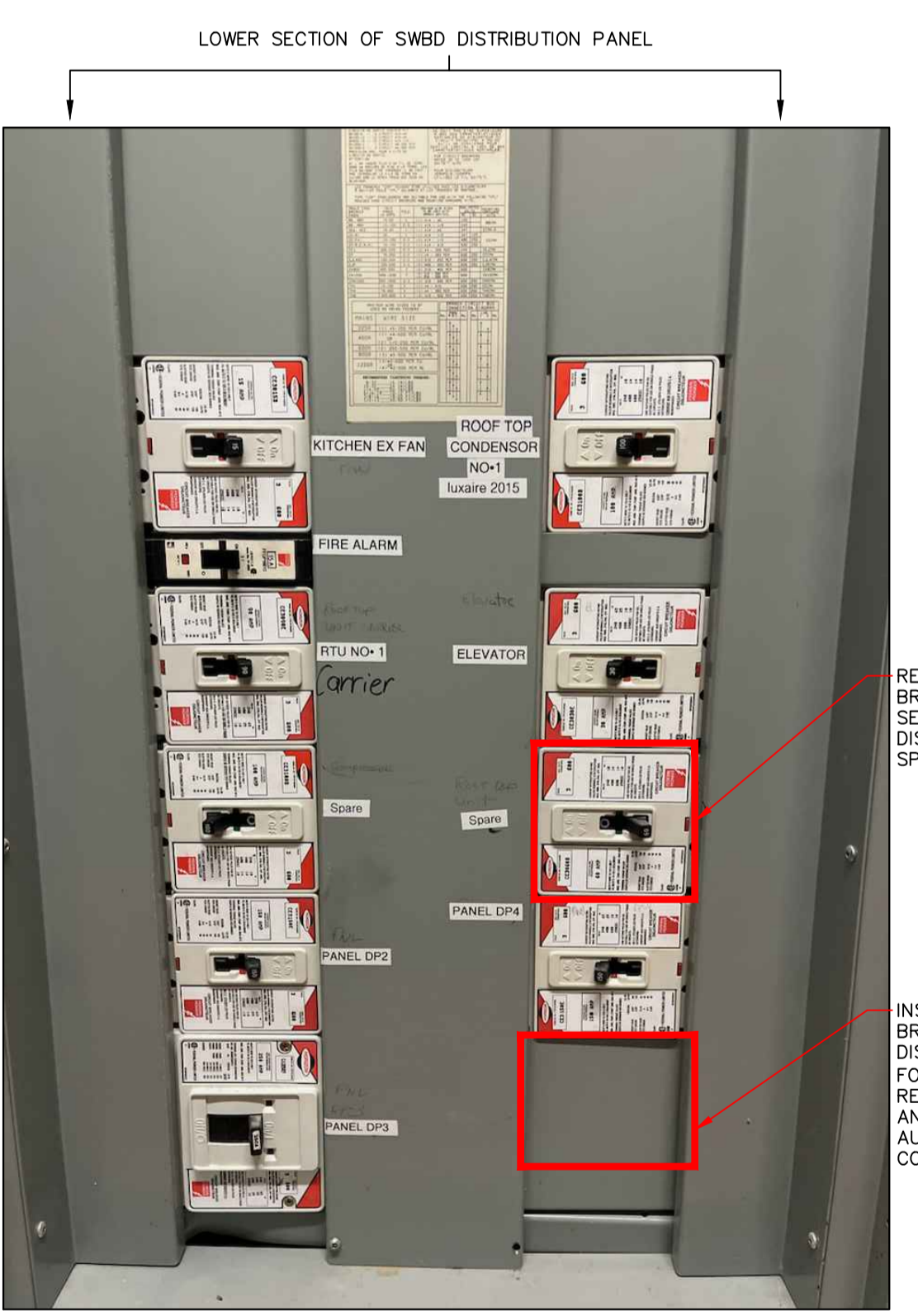
- 1 EXISTING SWBD DISTRIBUTION PANEL TO BE MODIFIED WITH NEW COMPATIBLE BREAKER AS PER SLD AND PHOTOS. COORDINATE INSTALLATION OF BREAKER WITH SWBD MANUFACTURER.
- 2 PROVIDE SURGE PROTECTION DEVICE AS FOLLOWS: INNOSYS POWER SERVICE TRACK SERIES WITH INTERNAL COMPONENT LEVEL FUSING AND NEMA TYPE 1 ENCLOSURE (PHONE NO. 1-877-775-7474). CONNECT POWER LEADS "AS SHORT AND STRAIGHT AS POSSIBLE" BETWEEN SWBD AND SPD. MODEL NUMBER: TK-ST160-SY208-FL
- 3 RF-1, HOA AND JB SUPPLIED AND INSTALLED AS PACKAGE BY MECHANICAL CONTRACTOR. PROVIDE POWER CABLES AS NECESSARY FROM SWBD TO JB AND FROM JB TO RF-1 AND HOA AS NECESSARY. CONTROL WIRING AND INTERLOCKS BY OTHERS.
- 4 EXISTING SWBD DISTRIBUTION PANEL TO BE MODIFIED AND EXISTING BREAKER TO BE RELOCATED AS PER SLD AND PHOTOS. COORDINATE RELOCATION OF BREAKER WITH SWBD MANUFACTURER.



2 MOUNT SPD ABOVE SWBD MAIN DISTRIBUTION PANEL

1 RELOCATE EXISTING 60A 3P BREAKER FROM LOWER SECTION OF SWBD MAIN DISTRIBUTION PANEL FOR SPD TO THIS LOCATION

UPPER SECTION OF SWBD DISTRIBUTION PANEL



RELOCATE EXISTING 60A 3P BREAKER TO UPPER SECTION OF SWBD MAIN DISTRIBUTION PANEL FOR SPD. SEE DETAIL ON LEFT.

INSTALL NEW 30A 2P BREAKER IN SWBD MAIN DISTRIBUTION PANEL FOR JB W/SWITCH, RETURN AIR FAN RF-1 AND HAND OFF AUTOMATIC HOA CONTROLLER

2 SWBD BREAKER PANEL - PHOTOS AND INSTALLATION NOTES

DISCLAIMER AND COPYRIGHT
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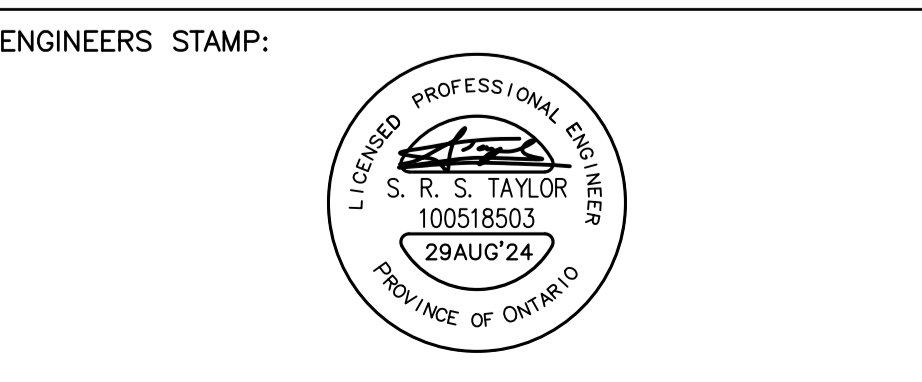
BENCHMARKS

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	AUG/24
2.	-	***/**
3.	-	***/**
4.	-	***/**
5.	-	***/**

NOTES

ENGINEERS STAMP:

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	AUG/24
2.	-	***/**
3.	-	***/**
4.	-	***/**
5.	-	***/**



PORT CARLING COMMUNITY CENTRE
3 BAILEY ST, PORT CARLING, ON

TATHAM ENGINEERING

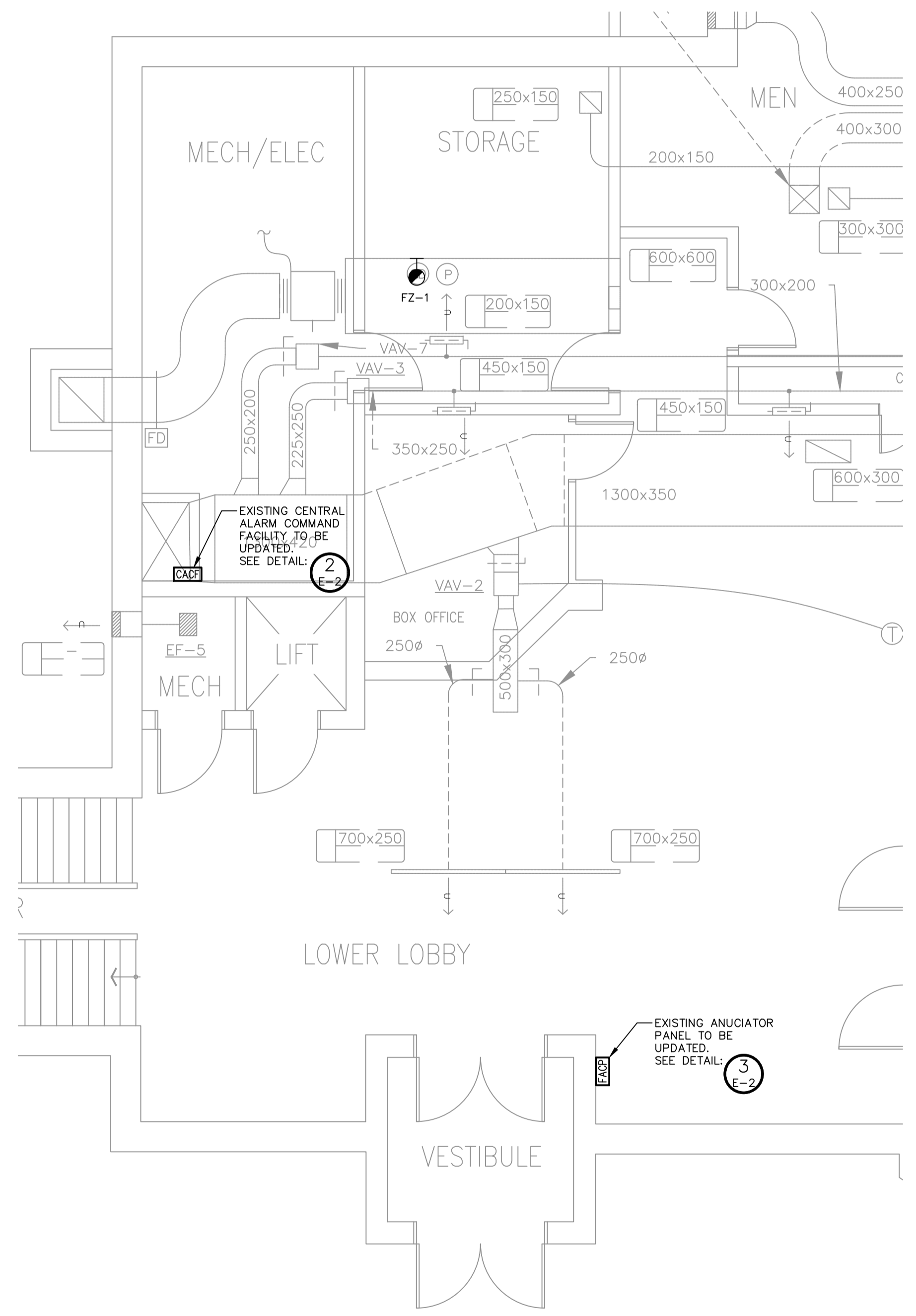
DESIGN: JES	FILE: 123080	DWG: E-1
DRAWN: JES	DATE: FEB 2024	
CHECK: SRT	SCALE: AS SHOWN	

FIRE ALARM ELECTRICAL SYMBOLS	
SYMBOL	DESCRIPTION
	ADDRESSABLE DUCT DETECTOR
	EXISTING CENTRAL ALARM COMMAND FACILITY (MECH/ELEC ROOM)
	EXISTING FIRE ALARM ANUNCIATOR PANEL (LOWER LOBBY)

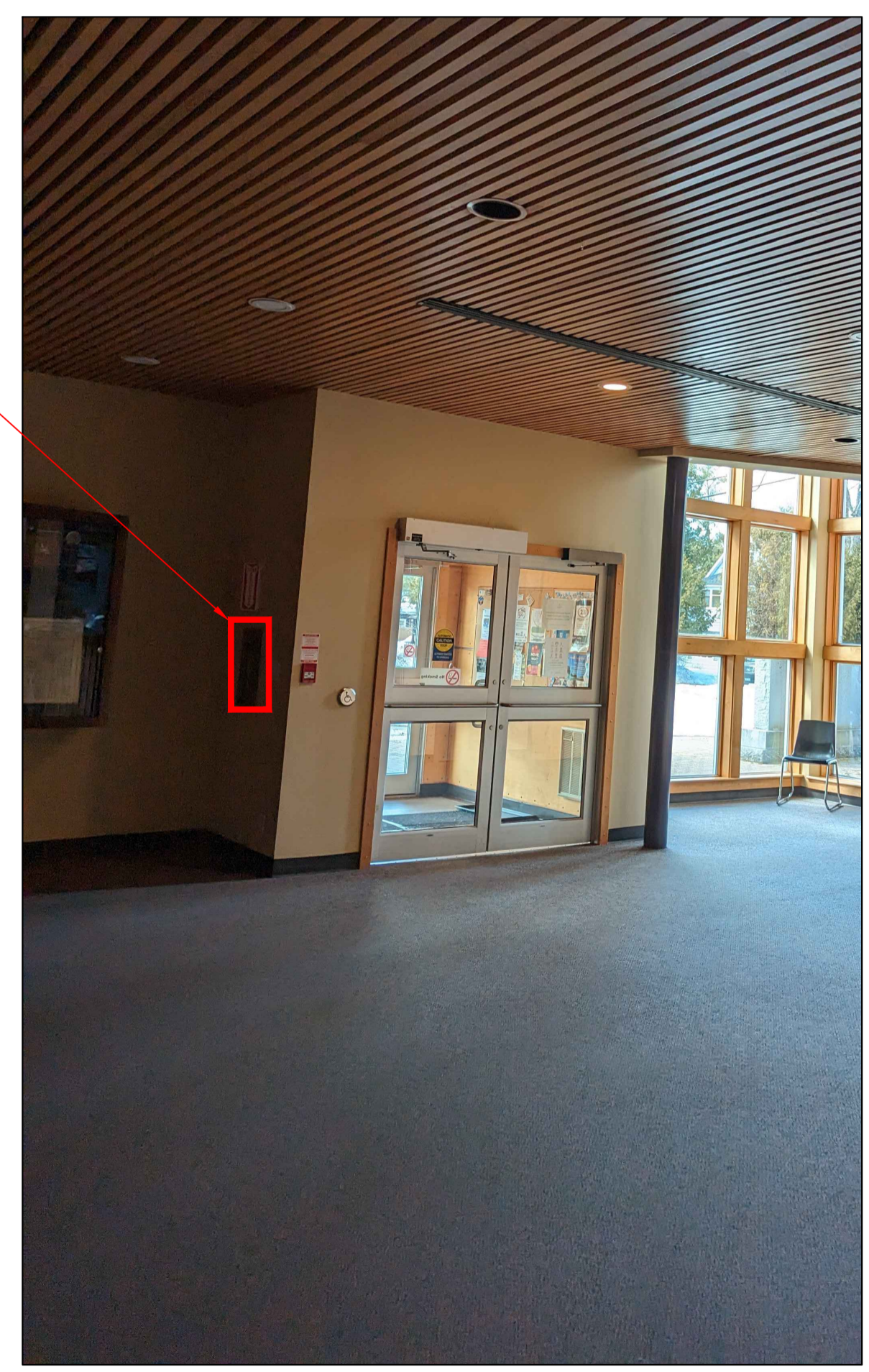
- FIRE ALARM GENERAL NOTES**
- COORDINATE INSTALLATION WITH FIRE ALARM SYSTEM INTEGRATOR. INCLUDE ALL COSTS FOR SUB-CONTRACTOR FIRE ALARM VERIFICATION INTEGRATOR.
 - PROVIDE ALL REQUIRED VERIFICATIONS TO SATISFY THE LATEST EDITION OF THE ONTARIO BUILDING CODE, ONTARIO FIRE CODE.
 - CONTRACTOR IS RESPONSIBLE FOR PROGRAMMING OF NEW FIRE ZONE INTO EXISTING FIRE ALARM SYSTEM AS NOTED. PROVIDE UPDATED LABELING OF FIRE ALARM SYSTEM IN MECHANICAL/ELECTRICAL ROOM AND REMOTE ANUNCIATOR IN LOWER LOBBY.
 - INSTALLED FIRE ALARM EQUIPMENT TO BE COMPATIBLE WITH CURRENT BUILDING SYSTEM. CONTRACTOR IS RESPONSIBLE FOR ALL MODIFICATIONS REQUIRED FOR ADDITIONAL TROUBLE ZONING INCLUDING MODIFICATIONS TO FIRE ALARM CONTROL AND ANUNCIATION PANELS. INCLUDE ALL COSTS ASSOCIATED. SUBMIT SHOP DRAWING TO ENGINEER FOR APPROVAL.
 - CONTRACTOR TO PROVIDE AN INSTALLATION WITH ALL NECESSARY WIRING, CONNECTIONS. CONTRACTOR IS RESPONSIBLE FOR ALL MODIFICATIONS REQUIRED FOR ADDITIONAL TROUBLE ZONING INCLUDING MODIFICATIONS TO FIRE ALARM CONTROL AND ANUNCIATION PANELS. INCLUDE ALL COSTS ASSOCIATED FOR FIRE ALARM SYSTEM RE-VERIFICATION AND CAN/ULC-S1001 INTEGRATED SYSTEMS TESTING OF FIRE PROTECTION.

FIRE ALARM SYSTEM SEQUENCE OF OPERATION MATRIX (ADDITIONS ONLY)	
NEW DUCT SMOKE DETECTOR	FIRE ALARM PANEL CLEAR
SHUT DOWN ERY-1 AND RF-1 ALLOW AUTOMATIC RESTART OF ERY-1 AND RF-1	

FIRE ALARM ZONE SCHEDULE (ADDITIONS ONLY)		
DESCRIPTION	FIRE ALARM ZONE	FIRE ALARM TROUBLE ZONE
NEW DUCT SMOKE DETECTOR	FZ-1	



2 CACF - PHOTO AND INSTALLATION NOTE



3 FACP - PHOTO AND INSTALLATION NOTES

1 FIRE ALARM UPGRADES - FLOOR PLAN VIEW

DISCLAIMER AND COPYRIGHT
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BENCHMARKS

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No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	AUG/24
2.	-	***/**
3.	-	***/**
4.	-	***/**
5.	-	***/**

ENGINEERS STAMP:

PORT CARLING COMMUNITY CENTRE
3 BAILEY ST, PORT CARLING, ON

FIRE ALARM

TATHAM ENGINEERING

DESIGN: JES	FILE: 123080	DWG: E-2
DRAWN: JES	DATE: FEB 2024	
CHECK: SRT	SCALE: AS SHOWN	

Electrical Specifications

Page 1 of 5

PART 1 - GENERAL

- 1.1 General**
- .1 In case of a discrepancy between statement(s) or value(s) in this section or contract drawing(s), the higher statement or value takes precedence and shall govern.
 - .2 "Local Inspector, Inspection Department or Authority" mean agents of any authority having jurisdiction over construction and safety standards associated with any part of electrical work on site, such as ESA for Ontario.
 - .3 "Power Supply Authority" or "LUC" means electrical local utility company responsible for delivery of electrical power to project site.
 - .4 "Electrical Code" or "OESC" means Ontario Electrical Safety Code C22.1 or code in force at project location, latest edition.
 - .5 "Indicated" means as shown on contract drawings or noted in contract documents.
 - .6 "Provide" means fabricate, supply, install, test and commission the electrical system and/or equipment.
 - .7 "Remove" or "Removed" means to disconnect, remove, and dispose of equipment, material or item.
- 1.2 Scope of Work**
- .1 Provide new 30A/2P breaker in existing switchboard and wiring to junction box, HOA and return fan RF-1 (supplied by mechanical contractor) as per contract drawings.
 - .2 Relocate existing 60A/3P breaker in existing switchboard. Provide low impedance cable and SPD as per contract drawings.
 - .3 Install new Duct Smoke Detector and integrate into existing Fire Alarm System as per contract drawings.
 - .4 Site Acceptance Testing (SAT) Assistance: When system is ready for service, provide assistance with operating instructions and start-up procedures during scheduled commissioning. Provide all necessary assistance to place the equipment into normal operating modes and train the Township operators.
 - .5 Contractor to provide all necessary protection to secure each area so that their no access during construction. Also, include all necessary "locates" prior to excavation.
 - .6 Coordinate construction schedule with the Township prior to commencing work.
 - .7 All conduit, fittings, outlets, field terminations, field wiring and cable as required, to provide a complete operating system.
 - .8 Include all necessary mounting hardware, channel supports and fasteners to provide a complete operating system.
 - .9 ESA Inspections throughout project construction stages. Final inspection certificate will be required for Substantial Performance.
- 1.3 Standards**
- .1 Provide all products and services in accordance with the latest addition of the following codes and standards:
 - .1 Ontario Electrical Safety Code, latest edition applicable.
 - .2 Canadian Standards Association.
 - .3 Ontario Building Code, Latest Edition.
 - .4 CAN/ULC
 - .5 Ontario Fire Code.

Electrical Specifications

Page 2 of 5

- 1.4 Permits, Fees and Inspection**
- .1 Arrange and pay for all required inspection(s), including but not limited to the Electrical Safety Authority.
 - .2 Upon completion of the Work, provide the Township with final, unconditional certificates of approval by the local inspection authorities.
- 1.5 Examination of the Site and Contract Documents**
- .1 Examine Drawings and Specifications of the complete Project and become familiar with all local site conditions.
 - .2 Submission of Tender confirms the Contractor accepts the Contract and site conditions without qualifications.
 - .3 Failure to determine the existing conditions or the nature of the construction shall not be a basis for granting compensation.
- 1.6 Construction Drawings**
- .1 The electrical drawings are diagrammatic, intended to convey the scope of work and indicate general arrangements of equipment. **Do not scale drawings unless a scale is identified.**
 - .2 Have the location all equipment shown in the drawings reviewed by the Township before proceeding with the installation. Inform the Township of significant changes in location of equipment to meet field conditions and receive their authorization before proceeding. Obtain from the Township the location of equipment not definitely located in the drawings.
 - .3 Locations of all material equipment indicated in the drawings are approximate and may be subject to revision found necessary or desirable by the Consultant at the time the work is installed. The Township may at their discretion request the relocation of electrical equipment within three metres of that shown prior to roughing in. This relocation shall be at no additional cost.
 - .4 Drawings do not generally indicate the number of wires within conduits for outlets and fixtures. Provide the correct wire size and quantity as required by the indicated circuitry and control diagrams.
- 1.7 Submissions**
- .1 Submit shop drawings in accordance with general Contract Conditions and include arrangement drawings, bill of materials, diagrams, nameplate drawings and product data as applicable for the following equipment:
 - .1 SPD and Low Impedance Cable
 - .2 Product data sheets shall include the name of the manufacturer and be clearly marked to show which items, features and options are offered.
 - .3 Shop drawings that are not presented as required will be returned for revision and resubmission.
 - .4 Submittal Procedure:
 - .1 The Contractor shall submit digital copies in PDF format to the Owner and Engineer via email. All drawings are to be submitted electronically in pdf format.
 - .2 The drawings will be returned to the Contractor stamped and marked "Conforms with Intended Design", "Conforms with Intended Design with Revisions Noted", or "Non-Conforming - Revise and Resubmit".
 - .3 When drawings are returned "Non-Conforming - Revise and Resubmit", make the necessary alterations and resubmit.
 - .4 When drawings are returned "Conforms with Intended Design with Revisions Noted", the drawings may be used to execute the work in compliance with the Contract Documents. No other alterations are to be made to the drawings by the Contractor subsequent to receipt of drawings stamped and marked as above. If further changes are made in addition to the Engineer's notations, then the drawings must be resubmitted for further review.

Electrical Specifications

Page 3 of 5

- .5 When drawings are returned "Conforms with Intended Design", the Contractor shall be responsible for distribution of additional copies of Shop Drawings as necessary and as requested by the Engineer..
 - .5 The review of shop drawings by the Township or Engineer does not relieve the Contractor of their responsibilities for compliance with the Contract Documents.
- 1.8 Construction Record Drawings**
- .1 Keep one set of all applicable contract (including updates) and shop drawings at the site.
 - .2 Ensure that the latest issue drawings are marked up to reflect the work as installed and have these available for the Township's review at site.
 - .3 Upon completion of the work, transfer all revisions to a clean set of prints and submit marked up drawings to the Consultant as part of the final job documentation.
- 1.9 Warranty**
- .1 All material to warrantied for material and labour for one (1) year upon substantial completion.
- PART 2 - PRODUCTS**
- 2.1 Basic Materials**
- .1 Provide all necessary mounting brackets, hangars, etc., as required for installation.
 - .2 Upon delivery of equipment on site and quantities accounted for, the contractor will assume liability for damaged, lost, stolen, etc..
 - .3 Contractor is responsible for all labour and material costs for equipment failures during the warranty period.
- 2.2 Circuit Breakers**
- .1 Feeder breakers must be series rated for 22kAIC and/or compatible ratings for existing switchboard.
 - .1 Breakers with thermal and magnetic tripping in panelboards except as indicated otherwise.
 - .2 Lock on devices as indicated.
 - .3 Bolt-on moulded case circuit breaker: quick-make, quick-break type, for manual and automatic operation with temperature compensation for 40°C ambient.
 - .4 Common-trip breakers: with single handle for multi-pole applications.
- 2.3 Surge Protective Device (SPD)**
- .1 Provide SPD unit complete with the component level fusing, enhanced transient filter, fail safe design and a compact footprint in a Type 1 enclosure.
 - .2 Voltage and Surge Current rating: 120/208V, 3-Phase, 3-Wire + Gnd, and rated 160kA per phase.
 - .3 Application: suitable for ANSI/IEEE C62.41 Locations C, B and A.
 - .4 Acceptable manufacturer: Total Protection Solutions (Innosys Power, 877-775-7474) TK-ST160-3Y208-FL.
- 2.4 Low Voltage Wire (1000V and Below)**
- .1 Conductors: stranded Copper conductors, with minimum power conductor size: No. 12 AWG, minimum control conductor size: No. 14 AWG.
 - .2 Power conductors: size as indicated, with cross linked polyethylene (XLPE) insulation rated 1000 V - RW90 or RWU90, as indicated.
 - .3 Provide Sunlight Resistant ("SR" type) insulated conductors where exposed to weather.
 - .4 Control conductors: RW90, XLPE insulation rated 600V - RW90.
 - .5 Control panel wiring: copper with thermoplastic insulation type TEW rated at 600V.

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- 2.5 Conduits and Ducts**
- .1 Minimum above grade conduit size: 21mm (3/4").
 - .2 Rigid PVC conduit, manufactured to schedule 40 wall thickness. Solvent weld compound for all PVC joints. Complies with CSA C22.2 No. 211.2-06. All conduits be UV rated.
 - .3 Fittings: manufactured for use with conduit specified. Coating and UV rating: same as conduit. Fittings to incorporate nylon insulated throat or bushing.
 - .4 Factory "ells" where 90° bends. Use "large or utility" sweeping bends to reduce pulling cable tensions.
 - .5 Weatherproof expansion fittings for linear expansion at entry to panel and pedestals.
- 2.6 Miscellaneous Equipment**
- .1 Wire markers: computer printed, black letters on white background, self-laminating - vinyl markers, number of markers as required.
 - .2 Cable markers for cables or conductors greater than 13 mm diameter: strap-on type, rigid PVC, black letters on white background, with PVC covered aluminium straps.
 - .3 Terminal blocks: minimum 600 V rated, modular, sized to accommodate conductor size used.
 - .4 Where screw-type terminals are provided on equipment field wiring: terminate with pressure-type insulated copper fork tongue terminals.
 - .5 Splice connectors for wire sizes Nos. 12-10 AWG inclusive: compression spring type.
 - .6 Splice connectors for wire sizes No. 8 AWG and larger: split-bolt type, sized to suit number and size of conductors, c/w flame retardant foot-type insulator.
 - .7 Cable ties shall be nylon, one-piece, self-locking type.
- PART 3 - EXECUTION**
- 3.1 Power Supply to HOA and RF-1**
- .1 Install breaker and power cables to pre-wired switch in junction box as indicated on contract drawings.
 - .2 Install power cables from pre-wired switch in junction box to RF-1 and HOA as indicated on contract drawings.
- 3.2 Surge Protective Device**
- .1 Relocate existing breaker as indicated on contract drawings.
 - .2 Mount unit above existing switchboard as indicated on contract drawings. All leads shall be as short and straight as possible. Refer to manufacturer's instructions.
 - .3 Installation must comply with U.L. 1283 and U.L. 1449 Third Edition listed.
- 3.3 Fire Alarm Upgrade**
- .1 Installation
 - .1 A new duct smoke detector shall be installed in accordance with the latest edition of CAN/ULC-5524 and the approved manufacturers' manuals and wiring diagrams. The contractor shall furnish all labour, conduit, wiring, junction boxes and similar devices necessary to update the existing life safety fire alarm system. Provide all necessary power supply, interconnecting and remote signal wire in dedicated conduit throughout and installed in accordance with the manufacturer's wiring diagrams and the requirements of the Canadian Electrical Code and the Inspection Authority.
 - .2 All penetration of floor slabs and fire walls shall be fire stopped in accordance with all local fire codes.
 - .3 End-of-line resistors shall be furnished as required for mounting as directed by the manufacturer.

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- .2 Testing and Inspection
 - .1 The manufacturer's representative shall make an inspection of the new fire alarm equipment, including those components necessary to the direct operation of the system, such as manual stations, thermal and smoke actuated detectors and controls, whether or not manufactured by the manufacturer. The inspection shall comprise an examination and test of such equipment for the following:
 - .1 That the type of equipment installed is that designated by the specifications.
 - .2 That the wiring connections to all equipment components show that the installer undertook to have observed ULC requirements.
 - .3 That all products of combustion (smoke) detectors have been properly calibrated and adjustments set correctly.
 - .4 That the representative's equipment has been installed in accordance with the manufacturer's recommendations.
 - .5 That the supervisory wiring of all devices connected to a supervised circuit is operating and that the wiring, having been met to the satisfaction of the testing to be done in the presence of the local building inspector and the local Fire Marshall.
 - .6 Fire alarm devices shall be verified as per the latest issue of CAN-ULCS537 Verification of Fire Alarm Systems standard.
 - .3 Demonstration
 - .1 Each of the intended operations of the installed fire alarm devices shall be demonstrated to the Electrical Engineer and/or Building Owners Representative and the local authority having jurisdiction.
- 3.4 Conduits and Wiring**
- .1 Install all wire and cable according to the drawings, with a minimum power conductor size of No. 12 AWG and minimum control conductor size of No. 14 AWG.
 - .2 No splices shall be permitted in cable or wiring runs, and shall only be permitted in junction boxes.
 - .3 Identify each conductor by plastic slip-on markers at each termination with circuit or wire number.
 - .4 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension.
- 3.5 Testing and Commissioning**
- .1 Provide testing and commissioning of all electrical work.
 - .2 Notify the Township at least three working days before the testing and commissioning is scheduled to start. The Township may request repetition of any test for which due notification was not received.
 - .3 Provide insulation test using 500V megger on all new power cables.

END OF SPECIFICATIONS

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			<p>1.</p>	<p>ISSUED FOR TENDER</p>	<p>AUG/24</p>				<p>DRAWN: JES</p>	<p>DATE: FEB 2024</p>	
			<p>2.</p>	<p>-</p>	<p>***/**</p>				<p>CHECK: SRT</p>	<p>SCALE: AS SHOWN</p>	
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