

PROJECT NO. 23116
HOSSACK ARCHITECTS

ADDENDUM NO. 4

Issued by email Wednesday September 25, 2024

The following additions, deletions, modifications and clarifications issued herein are hereby an integral part of the Tender and Contract Documents. Minor Typographic or spelling mistakes in the Contract Documents which do not significantly affect the meaning of the sentence or phrase in which they occur may not necessarily be corrected by Addenda.

GENERAL

1. Ensure that all parties submitting bids are aware of this **Addendum No.4** and its contents.
2. **Contents:** Addendum No. 4 - in its entirety consists of the following:
 - .1 One (1) typed page of instructions, dated: September 25, 2024 by Hossack Architects.
 - .2 Electrical Addendum No. 1 dated Sept. 20/24 (13 pages incl. three (3) typed pages of instructions, three specification sections and three (3) full size electrical drawings.

ELECTRICAL

- .1 Electrical Addendum No. 1 dated Sept. 20/24 (13 pages incl. three (3) typed pages of instructions, three specification sections and three (3) full size electrical drawings.

End of Addendum No. 4



1266 South Service Road, Suite C1-1
Stoney Creek ON L8E 5R9 | CANADA
t: +1.905.525.6069 | exp.com

Electrical Addendum No. 01

EXP Project No.: ALL-23003797-A0

Project: Mississauga New Fire Station 124

Date: September 20, 2024

Prepared By: EXP Services Inc.

Requirements:

The addendum forms part of the Contract Documents and amends the original Specifications and Drawings, as noted below.

Ensure that all parties submitting bids are aware of all items included in this Addendum.

This Addendum consists of **12** pages.

Questions and answers from this area were provided in previous addenda.

Questions and answers from this area were provided in previous addenda.

Amendments to Specifications

1. Section 26 22 00 "Distribution Transformers" added
2. Section 26 27 13 "Metering" added.
3. Section 27 51 13 "Paging & Public Address System" revised.



Amendments to Drawings

4. **Drawing E-101 'Electrical Site Plan'**

- .1 **Revise** "Drivable Area – Future EV Charger Feeder Trench Detail".
- .2 **Revise** "Communication and Future Conduit – Below Ground Trench Detail"
- .3 **Add** new drawing note#10.
- .4 **Add** "Generator DuctBank Section Detail"

5. **Drawing E-601 'Single Line Diagram'**

- .1 Drawing is issued with this Addendum. Modifications include but are not limited to the following:
 - .1 **Modify** Generator size to 500kW/625Kva, 600Y/347V.
 - .2 **Modify** Generator panel breaker size from 2X 800A-3P to 2X 600A-3P.
 - .3 **Modify** breaker feeding ATS from 800A-3P to 600A-3P.
 - .4 **Revise** feeder schedule.
 - .5 **Revise** drawing notes as shown.



Part 1 - General

1.1 SUBMITTALS

- .1 Submit shop drawings for products specified in this Section.

Part 2 - Products

2.1 DISTRIBUTION TRANSFORMERS

- .1 Hammond Power Solutions, dry type transformers as per drawing schedule, CSA approved and/or ULC listed and labelled, constructed and factory tested in accordance with latest requirements of following:
 - .1 CSA Standard C9;
 - .2 CAN/CSA C22.2 No. 47;
 - .3 CAN/CSA-C802.2
 - .4 UL 1561;
 - .5 NEMA TP1;
 - .6 Local governing authority codes and standards.
- .2 Dry type transformers to be complete with:
 - .1 minimum NEMA 3R enclosure with a rigid end frame, removable plates, a terminal compartment; ventilation louvres designed to prevent penetration of water spray from activated sprinklers onto live parts, and gasketed doors and component openings;
 - .2 Class "H", 220°C class, silicone type coil insulation, such that winding temperature rise to not exceed 150C°(270F°) and enclosure temperature rise not exceed 65C°(117F°) under full load in a 40°C (104°F) ambient temperature;
 - .3 top mounted factory painted drip shield;
 - .4 bottom mounted drip tray for wall/ceiling mounted transformers.
- .3 Features for each transformer include:
 - .1 copper windings;
 - .2 core construction consisting of stacked laminations of high permeability silicone steel;
 - .3 vacuum impregnated polyester or epoxy resin;
 - .4 lugs or pressure type terminals to suit primary and secondary conductors;
 - .5 four (4) 2-1/2% full capacity taps; two (2) above normal and two (2) below normal; taps located on primary winding;
 - .6 an integral vibration dampening system with anti-vibration pads used between core and enclosure;
 - .7 seismic restraint requirements to suit local governing authority requirements and codes;
 - .8 unless otherwise noted, sound level and basic impulse level to meet CSA C9 requirements; unless otherwise noted, transformers 300 kVA and larger to have noise level 3 dB below CSA C9 requirements;
 - .9 efficiency meeting or exceeding CSA C802.2;
 - .10 factory painted with an ANSI grey enamel finish;
 - .11 aluminum nameplate indicating impedance rating, weight, connection diagram, style and serial number, riveted to front of enclosure.
- .4 Additional features include:

- .1 K factor 13 rating as per ANSI/IEEE C57-110.
- .5 Acceptable manufacturers are:
 - .1 Hammond Power Solutions;
 - .2 Delta Group;
 - .3 Schneider Electric;
 - .4 REX Power Magnetics;
 - .5 Bemag Transformer;
 - .6 Siemens;
 - .7 STI Power.

Part 3 - Execution

3.1 INSTALLATION OF DISTRIBUTION TRANSFORMERS

- .1 Locate transformers into position. Ensure adequate clearance is provided as per code requirements and as required for access for operation and maintenance. Comply with Manufacturer instructions and recommendations.
- .2 Secure transformers 75 KVA and larger to a concrete housekeeping pad on Vibro-Acoustics Ltd. type "RSR" vibration isolation pads.
- .3 Secure transformers smaller than 75 KVA in place on an angle wall mounting bracket support assembly located approximately 300 mm (12") below ceiling. Provide support assembly and adequately secure to wall and/or ceiling construction.
- .4 Provide seismic restraints as required by local governing codes.
- .5 Ensure that transformers are equipped with lugs or connections suitable for primary and secondary connections. Isolate primary and secondary connections from transformer enclosures by means of 300 mm - 450 mm (12" to 18") of liquid-tight flexible conduit.
- .6 Ground and bond equipment to ground electrode grids as per local governing electrical code and inspection authority requirements. Refer also requirements of Section titled - Grounding and Bonding.
- .7 Provide alarm/communications circuits as required. Include for provision of conduits, boxes and control/signal wiring for interconnection to BAS. Coordinate with Mechanical Divisions BAS Contractor on location of BAS panel to be used for monitoring points and extend wiring in conduit from electrical equipment to location. Terminate in junction box leaving 3 m (10') of slack length of wiring (exact length to be coordinated between Mechanical and Electrical trades), for extending and termination to BAS panel by Mechanical Division BAS Contractor. Properly identify wiring and junction box.
- .8 Provide engraved Lamacoid nameplates and warning signs with nomenclature reviewed with Consultant.
- .9 When installation is complete, test and check secondary voltages. Make all required adjustments and submit to Consultant a test report indicating secondary voltage readings and any adjustments made to achieve proper voltages. Furthermore, when building is in normal use, re-check voltages and make any required adjustments.
- .10 Refer to testing, coordination and verification requirements in Section titled Electrical Work Analysis and Testing and include applicable requirements.

END OF SECTION

Part 1 - General

1.1 SUBMITTALS

- .1 Submit shop drawings for products specified in this Section.

Part 2 - Products

2.1 UTILITY METERING

- .1 Type NEMA 3R weatherproof enclosure, 4 jaw meter base with maximum 200A, 600V ratings, Peerless meter seal rings and manufactured to CSA C22.2.
- .2 Confirm exact model number with local governing electrical utility.
- .3 Acceptable manufacturers are Microelectric and Eaton Cutler Hammer.
- .4 Provide conduit and fish cord in accordance to requirements of local electrical utility.

2.2 UTILITY METERING CABINETS & BASES

- .1 Surface wall mounting, NEMA 2 or 12, with sprinkler proof provisions, enamelled steel meter cabinets complete with gasketting, and padlocking provisions, in accordance with local governing electrical utility requirements. Cabinet to be approved by local governing electrical utility.
- .2 Exterior weatherproof, enamel painted steel meter base and socket as approved by local electrical Utility for mounting of utility meter. Base to be wall mounting with suitable mounting hardware.
- .3 Provide conduit and fish cord in accordance to requirements of local governing electrical utility.

2.3 SUB-METERING

- .1 Provision of microprocessor based CSA approved Power Measurement PML ION 7300 digital sub-metering system to measure and display voltage, current, frequency and time, and calculate and display kW, kWh, kW demand, ampere demand, kVA, kVA demand, kVAR and kVARh.
- .2 An LCD/LED display screen to be provided on unit.
- .3 System to include required inputs/outputs, contacts, RS232/Ethernet interface for communications to remote printer, LAN or building automation system (BAS), current transformers, potential transformers and control wiring as required.
- .4 Metering to be suitable for operation on 120/208 VAC and 600 VAC. Refer to single line diagram.
- .5 Meters to be installed in locations as shown on drawings. Mount in locations, connect, and test for proper operation. Comply with Manufacturer installation instructions.

Part 3 - Execution

3.1 INSTALLATION OF METERING PROVISIONS

- .1 Install meter enclosure with base and accessories in accordance with Manufacturer instructions and as per local electrical utility's requirements. Connect complete.
- .2 Coordinate and arrange for local governing electrical utility's incoming service work.
- .3 Obtain required inspections, approvals and certificates.

3.2 **INSTALLATION OF UTILITY'S METERING CABINETS & BASES**

- .1 Provide approved metering cabinets and conduit and install in accordance with local governing electrical utility requirements. Install cabinet in locations and install into locations and connect complete. Ensure adequate clearance is provided as per code requirements and as required for access for operation and maintenance. Provide required supporting hardware. Extend empty conduit from cabinets to metering compartments of switchboard or to main disconnect or to meter base as required.
- .2 Mount meter base with socket in location as approved by local governing electrical utility and coordinated with Consultant.
- .3 Coordinate installation with local governing electrical utility who to install meter equipment, and connect from meters to metering compartments of switchboard or to meter base. Confirm exact location of metering cabinet with local governing electrical utility.

3.3 **TRAINING**

- .1 Manufacturer trained technician to perform onsite training of each user (including the provision of user guides) prior to project completion to ensure that users are properly trained in the operation and maintenances of system.
- .2 Refer to Instructions to Owner specified in Section titled Electrical Work General Instructions.

END OF SECTION

Part 1 - General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical
- .2 Section 27 00 00 - General Systimax Standards & Guidelines

1.2 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings shall include project specific riser diagrams including:
 - .1 Paging Control Equipment
 - .2 Amplifiers
 - .3 Zone Wiring Topology
 - .4 Speakers and Horns
 - .5 Rack, Rails
 - .6 Microphones
 - .7 UPS

1.3 ACCEPTABLE MANUFACTURERS

- .1 The system specified herein is based on equipment listed under section 2.1.
- .2 Alternate manufacturers equipment shall be considered as approved, provided all functions and operations are provided as specified.
- .3 Proposed systems may differ from that specified herein and indicated on the Drawings provided that complete documentation of the system is submitted to the Consultant during Shop Drawing review. This Division shall assume all changes in costs that may flow from the design changes proposed.
- .4 Acceptable manufacturers are:
 - .1 TOA Electronics, Inc;

1.4 SYSTEM OPERATION

- .1 The system shall be zoned paging system with input interface suitably designed and selected to accept Owners input signal.
- .2 Paging Zones: as per drawings

1.5 QUALITY ASSURANCE

- .1 System supply, installation and support shall be carried out by one of the following pre-qualified authorized re-sellers.:
 - .1 Underwriter Security Controls Incorporated
27-172 Bullock Drive
Markham ON L3P 7M9
Contact: Paul
Email: paulg@purnrg.ca
Phone: (416) 410-7733

Part 2 - Products

2.1 Equipment

- .1 The equipment shall consist of the following:
 - .1 Program Audio Loudspeakers
 - .2 Multi Zone Amplification
 - .3 Cables, Plates and Terminations
 - .4 Connections to Mach Fire Station alerting system
 - .5 A/V Equipment Rack and Fit Up
 - .6 Racks shall house rack mounted sound equipment as specified.
 - .7 All unused rack spaces shall be covered by Middle Atlantic metal rack panels, finished with a baked-on, scratch-resistant BL finish to match equipment rack.
 - .8 No individual blank plate shall be greater than two rack units (2RU) in height.
 - .9 Rack layouts showing all devices, labelling, and blank panels are to be submitted during shop drawings phase for approval by the City of Mississauga.
- .2 Equipment Model List

Item	Description	Model	Qty
A1	240W digital mixer/amplifier (8 channel input, Misc./Line/two optional module slot), incl. 1Mic./Emergency, DSP, EQ	A-824D 3CUE00	1
A2	10W, ceiling mount 8" speaker, round, 25V/70V, (ULC S541, UL 1480 & 204 3) HY-BC580U Back box.	PC-580RU AM	32
A3	Back box for PC-580RU & PC-580RVU speakers	HY-BC580U AM F00	32
A4	Mounting support channels for ceiling speakers (min 10 pairs/1 carton)	Q-HY-TB2	4
A5	25W Decora-Style Volume control, input 25V/70V/100V	AT-025 AM QV	16
A6	Volume Control Attenuator	AT-100 AM QV	1
A7	30W Paging horn, 25/70V, incl. bracket, UL/ULC	SC-630TU	6
A8	Desk-top paging Misc., push-to-talk button, w/lock.	PM-660U	1
B1	18-4C STR BC LSPVC FOIL SHD LSPVC JKT NAT CMP 75C 1000' BOX	B6302FE-U1000	1
C1	Misc Install Supplies	Misc Install	1
D1	Onsite Installation of PA Solution as per Design Layout Diagrams.	Services	1

Part 3 - Execution

3.1 INSTALLATION

- .1 Install all major components, speakers and miscellaneous devices where indicated on Drawings.
- .2 Mount amplifiers on wall on backboard.

3.2 WIRING

- .1 Type of wiring is to be as recommended by System Supplier and shall be installed by Electrical Contractor, but connected by the Equipment Supplier.
- .2 All speaker cable must be 2 conductor 16 AWG plenum rated.
- .3 All wiring is to run in concealed EMT conduit. Conduits shall be sized to cable being supplied.
- .4 Lacing bars & cable tie saddles, and cable management straps as required to secure cable bundles.
- .5 Cover knock-outs with Protective Grommets or Gland Grommets to block dust & control airflow in the rack.
- .6 All line level cables must be balanced and shielded. (Belden 9451 or equivalent.) If line level cable is to be run through a plenum it must be plenum rated.

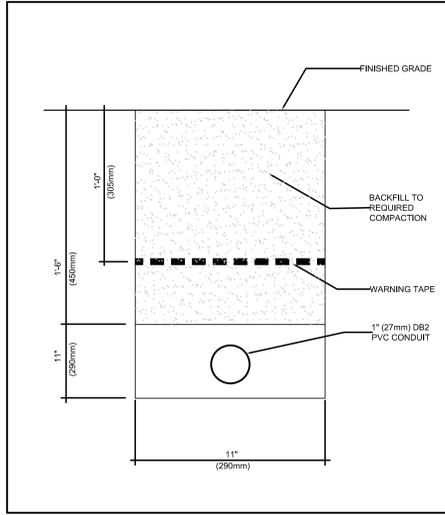
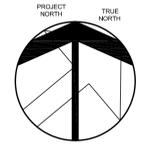
3.3 TESTING

- .1 All lines shall be tested for continuity, grounds and shorts. An impedance test shall be done on each and every speaker and a report shall be submitted to the Engineer.
- .2 The Supplier shall test the system to ensure proper operation and make changes/corrections to the system if any defects occur.
- .3 The Contractor shall include in his Tender price, all costs required for the Supplier's Technician's visit and testing.
- .4 Demonstration & Training
- .5 Demonstrate operation system to customer by walking the space.
- .6 Demonstrate functionality of the system to the customer or customer's representative.
- .7 Train customer employee to maintain system as required.

3.4 OPERATING INSTRUCTIONS & MANUALS

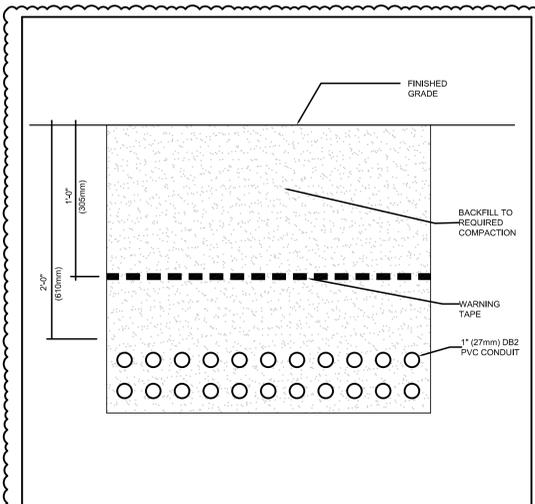
- .1 Engage the System Supplier to provide adequate instructions in the total operation of the System to all persons assigned by the Owner. These instructions shall be to the Owner's satisfaction.
- .2 Provide two (2) copies of complete operating manuals of each system installed.

END OF SECTION



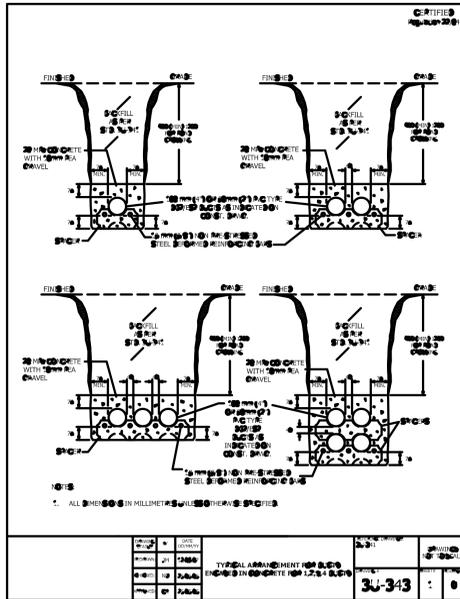
NON DRIVABLE AREA - FEEDER TRENCH DETAIL

SCALE: NTS



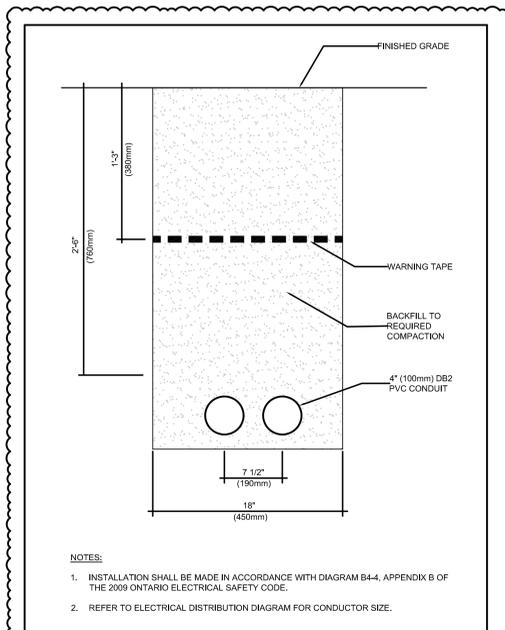
DRIVABLE AREA - FUTURE EV CHARGER FEEDER TRENCH DETAIL

SCALE: NTS



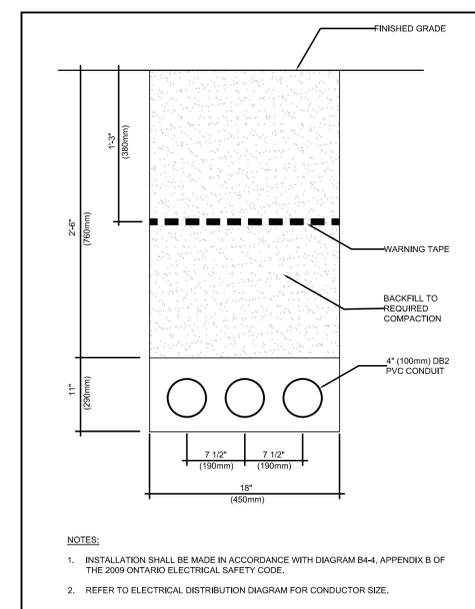
PRIMARY DUCTBANK SECTION

SCALE: NTS



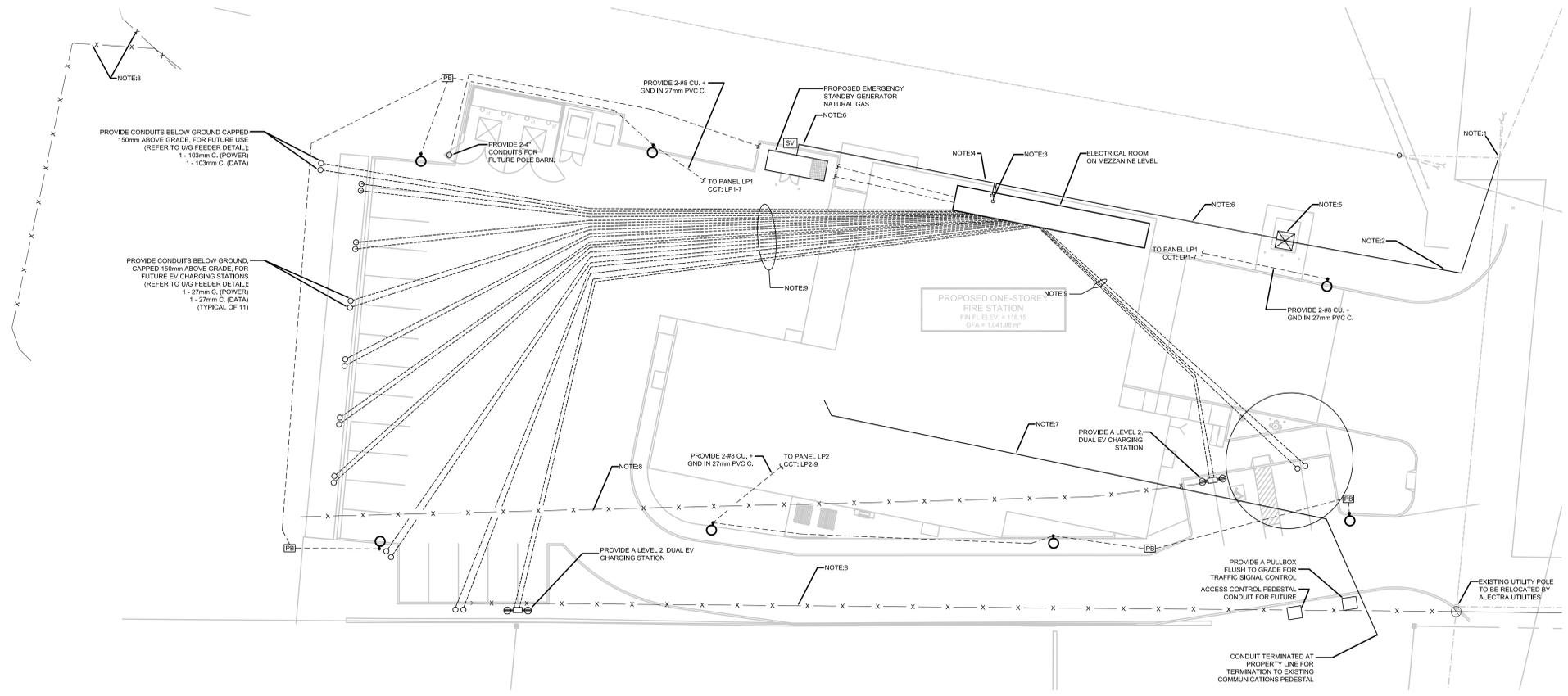
COMMUNICATION AND FUTURE CONDUIT - BELOW GROUND TRENCH DETAIL

SCALE: NTS



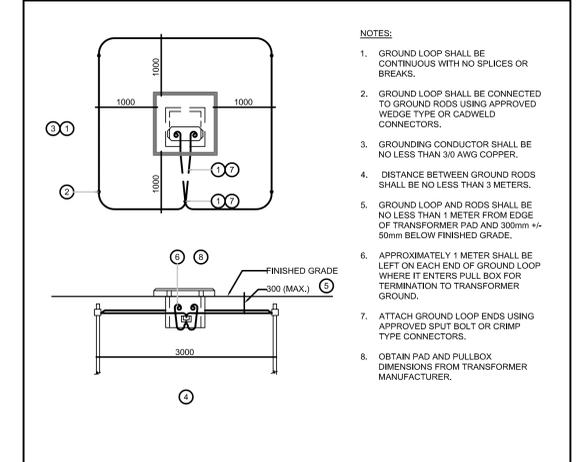
SECONDARY DUCTBANK SECTION

SCALE: NTS



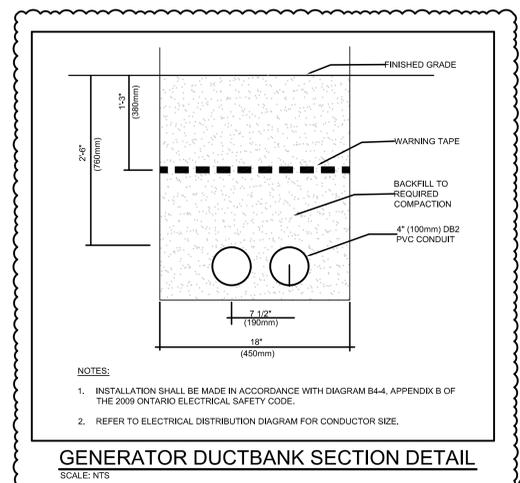
ELECTRICAL POWER AND SYSTEMS SITE PLAN LAYOUT

SCALE: 1:200



UNIT PAD MOUNT TRANSFORMER GROUNDING DETAIL

SCALE: NTS



GENERATOR DUCTBANK SECTION DETAIL

SCALE: NTS

- NOTES:**
- SERVICE FEED THROUGH EXISTING HYDRO POLE #P12289.
 - NEW 4X103MM(4) CONDUITS FOR ALECTRA UTILITIES PRIMARY FEEDERS @900mm DEPTH. REFER TO THE PRIMARY TRENCH DETAIL (34-343) ABOVE. PROVIDE UNDERGROUND DUCTBANK TO PROPERTY LINE, AT LOCATION CONFIRMED BY ALECTRA UTILITIES. WORK BEYOND PROPERTY LINE TO POLE IS BY ALECTRA UTILITIES. PRIMARY CONDUCTORS TO BE SUPPLIED AND INSTALLED BY ALECTRA UTILITIES AND TERMINATED AT TRANSFORMER.
 - SERVICE CONDUCTORS TO BE CONCRETE-ENCASED WITHIN BUILDING ON GROUND FLOOR, UP TO BOTTOM-FEED SWITCHGEAR ENTRANCE LOCATED IN THE ELECTRICAL ROOM, UP IN THE MEZZANINE ABOVE. COORDINATE LOCATION WITH LAYOUT OF MAIN SWITCHGEAR ABOVE.
 - GENERATOR CONDUCTORS TO BE CONCRETE-ENCASED, SIMILAR TO SERVICE CONDUCTORS.
 - NEW PROPOSED ALECTRA-HORIZON UTILITIES PAD MOUNT TRANSFORMER, THIS CONTRACTOR TO SUPPLY AND INSTALL CONCRETE VAULT, GROUNDING GRID AND BOLLARDS TO ALECTRA UTILITIES STANDARDS.
 - PROVIDE NEW SECONDARY SERVICE FEEDERS. REFER TO THE SECONDARY DUCT BANK DETAIL IN THIS DRAWING.
 - PROVIDE ONE (1) 103MM(4) CONDUIT FOR COMMUNICATIONS AT MINIMUM 600MM BELOW GRADE OUTSIDE OF BUILDING. WITHIN BUILDING ENVELOPE, CONDUIT TO BE INSTALLED BELOW CONCRETE SLAB MINIMUM THICK.
 - DISCONNECT AND REMOVE THE EXISTING ABANDONED BELL SERVICES AND BOXES, OVERHEAD ELECTRICAL UTILITY SERVICES AND POLES.
 - UNDERGROUND CONDUIT ROUTING FOR EV CHARGERS (INCLUDING FUTURE) FROM ELECTRICAL MEZZANINE IS APPROXIMATE. DETERMINE BEST ROUTING ON-SITE.
 - PROVIDE NEW GENERATOR FEEDERS. REFER TO GENERATOR DUCTBANK SECTION DETAIL IN THIS DRAWING.

NO.	DESCRIPTION	DATE
7	ISSUED FOR ADDENDUM #3	09/20/24
6	ISSUED FOR TENDER	08/15/24
5	RE-ISSUED FOR PERMIT COMMENTS	06/05/24
4	ISSUED FOR PERMIT	03/21/24
3	50% REVIEW SET	02/10/24
2	50% REVIEW SET	01/26/24
1	PROGRESS SET	12/20/23

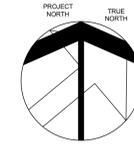
DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

PRC004616 - Construction Services for New Fire Station 124

LEGAL DESCRIPTION:
PART OF LOT 11, CONCESSION 1, SOUTH OF DUNDAS STREET, CITY OF MISSISSAUGA, REGIONAL MUNICIPALITY OF PEELE

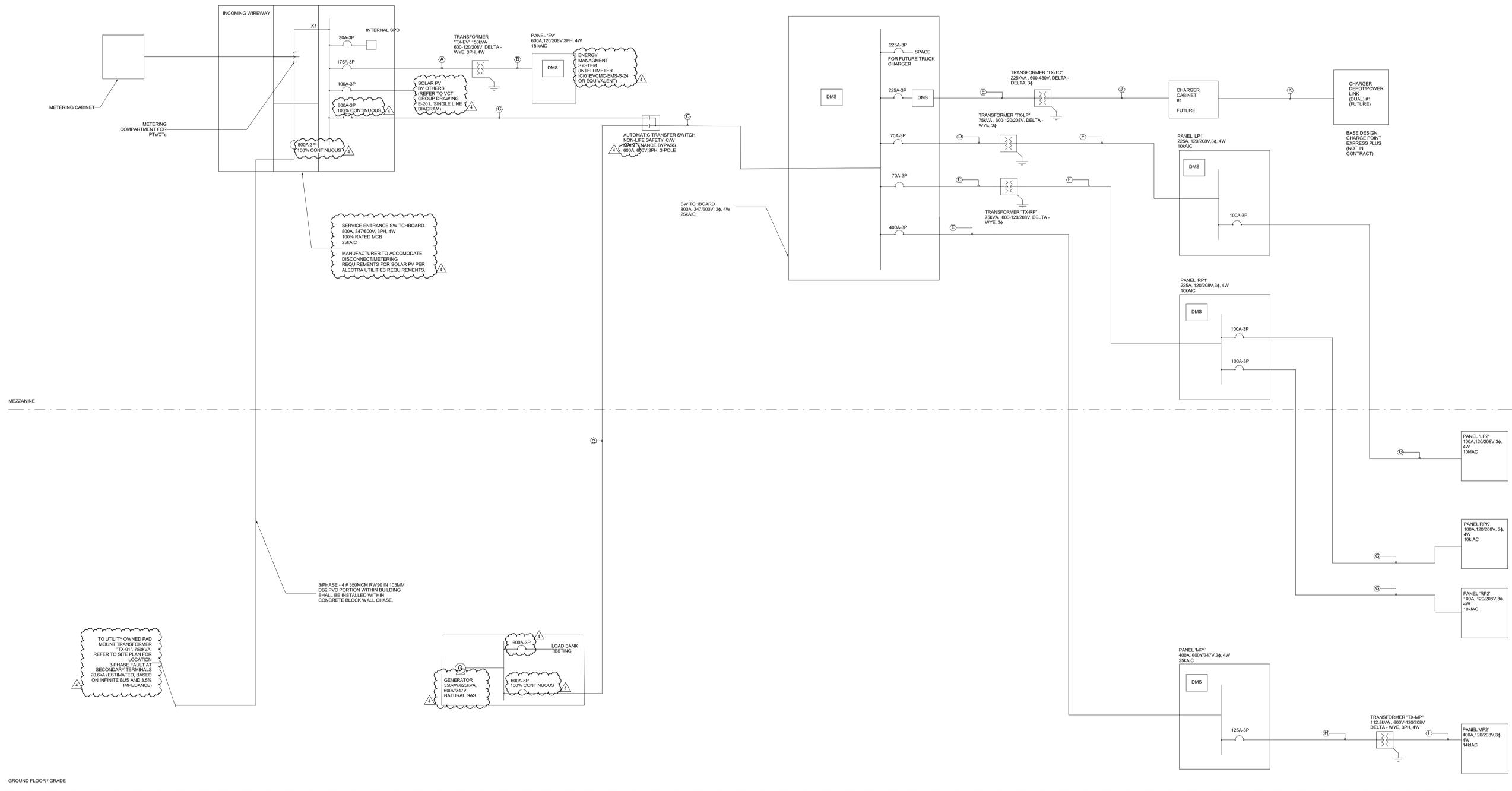
ELECTRICAL SITE PLAN

SCALE	PROJECT
AS NOTED	ALL-23003797
DATE	21 March, 2024
DRAWN	DRAWING
CHECKED	E-101
PRINT DATE	21 March, 2024



FEEDER SCHEDULE						
NO.	RUNS	MIN AMPACITY	CONDUCTOR	CONDUIT	BOND	REMARKS
A	1	175 A	3 # 2/0 AWG	53mm	#6	
B	2	505 A	4 # 250 MCM	78mm	#1	
C	2	600 A	4 # 350 MCM	78mm	#1/0	
D	1	70 A	3 # 4 AWG	35mm	#8	
E	1	225 A	3 # 250 MCM	63mm	#4	
F	1	202 A	4 # 4/0 AWG	63mm	#4	
G	1	100 A	4 # 1 AWG	53mm	#8	
H	1	125 A	3#1 AWG	53mm	#6	
I	1	361 A	4 #3/0 AWG	63mm	#3	
J	2	282 A	3 #300 MCM	78mm	#4	
K	2	350 A	3 #3/0AWG	TECK	#3	27MM CONDUIT PROVIDED FOR 48VDC, ETHERNET

NOTE:
 1. CONDUCTOR SHALL BE COPPER, R90 INDOORS UNLESS OTHERWISE INDICATED.
 2. CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.



NO.	DESCRIPTION	DATE
4	ADDENDUMS	09/20/2024
3	ISSUED FOR TENDER	07/17/24
2	RE-ISSUED FOR PERMIT COMMENTS	06/05/24
1	ISSUED FOR PERMIT	03/21/24

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

PRC004616 - CONSTRUCTION SERVICES FOR NEW FIRE STATION 124

LEGAL DESCRIPTION:
 PART OF LOT 11, CONCESSION 1, SOUTH OF DUNDAS STREET, CITY OF MISSISSAUGA, REGIONAL MUNICIPALITY OF PEEL



SINGLE LINE DIAGRAM



SCALE	PROJECT
DATE	ALL-23003797-A0
DRAWN	DRAWING
CHECKED	E-601
PRINT DATE	9/20/2024 3:07:26 PM
REVIT FILE	T:\2023\2311602\Rev1.RVT

NOTES:
1. SWITCH DG1 IS GENERATOR ISOLATION POINTS PER UTILITY WORKER PROTECTION CODE. SWITCH DG1 TO BE GANG OPERATED, ALECTRA ACCESSIBLE, ENCLOSED, LOCKABLE, VISIBLE BREAK TYPE. MOUNTED AS PER AGREEMENT WITH ALECTRA.

2. INTERACTIVE POINT OF CONNECTION BUS BAR CALCULATION PER OESC 64-112, 4C
-SOURCE CURRENT RATING: 100A (SOLAR) + 800A (HYDRO) = 900A
-BUS BAR RATING = 800A X 1.2 = 960A
THE POINT OF CONNECTION MUST BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION, WHERE THE PANELBOARD IS RATED LESS THAN THE SUM OF THE AMPERE RATINGS OF ALL OVERCURRENT DEVICES IN SOURCE CIRCUITS SUPPLYING THE PANELBOARD.

4. ALL LABELS MUST BE OF A PERMANENT TYPE, EITHER LASER-ENGRAVED OR ENGRAVED, IN ACCORDANCE WITH RULE 64-200 - MARKING, APPENDIX B TO THIS RULE, AND THE LATEST ESA BULLETIN 64-5-3

5. PV SYSTEM TO BE PROVIDED WITH A RAPID SHUTDOWN WHEN THE PV SOURCE OR OUTPUT CIRCUIT INSULATED CONDUCTORS IS MORE THAN 1 METER FROM THE SOLAR PV ARRAY. MAXIMUM DISTANCE WITH SPLIT SOLAR PV ARRAYS IS 2 METERS AS PER RULES 64-200, 64-218

6. THE SPECIFIED INVERTER MUST BE DE-RATED AT THE FACTORY BY THE MANUFACTURER. AN APPROPRIATE LETTER FROM THE INVERTER MANUFACTURER, SOLIS, MUST BE PROVIDED. THE INVERTER MUST INCLUDE A SECONDARY NAMEPLATE INDICATING THE DE-RATED MAXIMUM CONTINUOUS OUTPUT CURRENT AND DE-RATED MAXIMUM CONTINUOUS OUTPUT POWER RATINGS. IF AN ADDITIONAL NAMEPLATE IS NOT PROVIDED ON THE INVERTER, THE ORIGINAL NAMEPLATE DATA WILL APPLY, WHICH MAY RESULT IN UNDERSIZED CONDUCTORS AND/OR APPARATUS. THIS IS IN ACCORDANCE WITH RULE 64-100(A) AND APPENDIX B TO THIS RULE.

7. EXISTING EQUIPMENT SHOWN ON THIS SLD IS BASED ON EXISTING DRAWING NO. E601 DRAWING NAME: SINGLE LINE DIAGRAM, PROJECT # ALL-23003797-AD, PROJECT NAME: FIRE STATION 124-MISSISSAUGA FIRE & EMERGENCY SERVICES DEVELOPED BY HOSSACK & ASSOCIATES ARCHITECTS (REVISION #1 - ISSUED FOR PERMIT ON 2024-03-21 ANS STAMPED BY J.M POTALIVO P.ENG

8. REFER TO E-701 INTERNET / COMMUNICATIONS / DRAWING FOR DETAILS ON CONNECTION

NO.	BY	DATE	ISSUE OR REVISION
1	RB	JUN 26, 2024	ISSUED FOR TENDER
2			
3			
4			
5			
6			

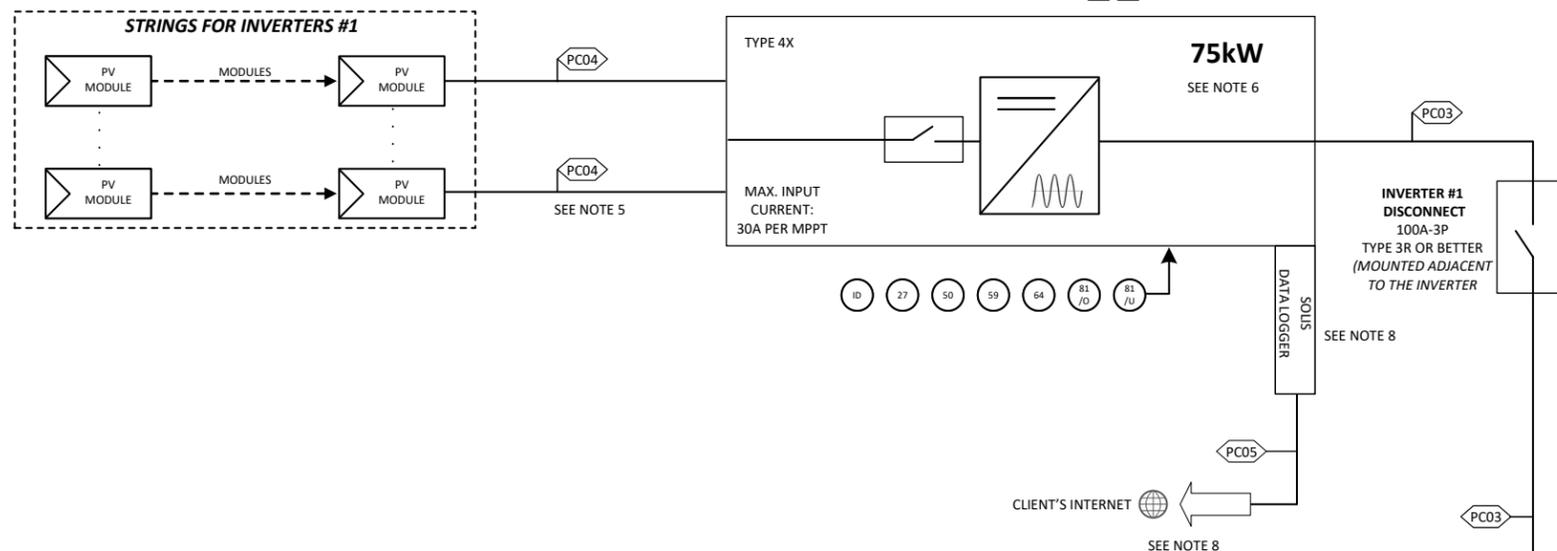
PROJECT NAME:
2524 CAWTHRA - FIRE STATION 124 - MISSISSAUGA FIRE & EMERGENCY SERVICES 75KW NET METER PV SYSTEM
LDC PROJECT ID#: TBD

ADDRESS:
2524 CAWTHRA RD, MISSISSAUGA, ON L5A 2X3

DRAWING TITLE:
SINGLE LINE DIAGRAM

DRAWING TITLE:	SHEET:	REV:
E-201	1 OF 1	1

SEE INVERTER STRING SCHEDULE FOR STRING DETAILS



INVERTER STRING SCHEDULE

INVERTER MPPT NUMBER:	INVERTER 1																	
	MPPT #1		MPPT #2		MPPT #3		MPPT #4		MPPT #5		MPPT #6		MPPT #7		MPPT #8		MPPT #9	
STRING NUMBER:	String 1	String 2	String 3	String 4	String 5	String 6	String 7	String 8	String 9	String 10	String 11	String 12	String 13	String 14	String 15	String 16	String 17	String 18
STRING LENGTH:	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
STRING VOLTAGE MAX (V):	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22	1452.22
STRING CURRENT MAX (A):	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44	13.44
TOTAL MODULES (PER INVERTER):	176																	
TOTAL MODULES:	176																	

SYSTEM CHARACTERISTICS

SYSTEM CAPACITY:
TOTAL SYSTEM AC RATED OUTPUT: 75kW, 72.25A, 600V, 3Ø, 3W

PV MODULE SPECIFICATIONS:
MODULE P/N: LRS-7ZHTH 600M
MANUFACTURER: LONGI
Pmax: 600W
Voc: 52.81VDC
Voc @ Tmin (OESC RULE 65-202): 66.01 VDC (125% FACTOR)
Isc: 14.46A
Vmpp: 44.66VDC
Impp: 13.44A

PV ARRAY SPECIFICATIONS:
TOTAL NUMBER OF MODULES IN SYSTEM: 176
TOTAL RATED ARRAY CAPACITY: 105.6 KW DC

INVERTER 1 SPECIFICATIONS:
MANUFACTURER: SOLIS
MODEL NUMBER: 125K-EHV-5G-US
NAMEPLATE CAPACITY: 125kW AC (PERMANENTLY DERATED TO 75 kW)
MAX. VOLTAGE INPUT: 1500VDC
INVERTER OUTPUT: 600V, 3Ø, 3W, 132.2A MAX (PERMANENTLY DERATED TO MAX 72.25A) PF>0.99

INVERTER LEGEND
LINE VOLTAGE AND FREQUENCY SYNCHRONIZATION HANDLED BY INVERTER CSA 22.2 NO 107.1, AND UL1741 IEEE 1547, RATINGS

IEEE DEVICE #:
 10 = ISLANDING DEVICE 64 = GROUND FAULT INTERRUPT
 27 = UNDERVOLTAGE 81/0 = OVER FREQUENCY TRIP
 50 = OVER-CURRENT 81/JU = UNDER FREQUENCY TRIP
 99 = OVER-VOLTAGE

POWER CABLE SCHEDULE

PC01	EXISTING, BY OTHERS
PC02	4C, #1/0 AWG + GND, AL, ACWU (120A at 75DEG C as per OESC Table #4)
PC03	3C, #1/0 AWG + GND, AL, ACWU (120A at 75DEG C as per OESC Table #4)
PC04	#10AWG, RPVU, 1500V RATED, CU (35A at 75DEG C as per OESC Table #2)
PC05	OUTDOOR RATED CAT-5E/6 SHIELDED TWISTED PAIR
PC06	2C #12AWG, CU, T90 + GND IN 21mm CONDUIT (25A at 75DEG C as per OESC Table #2)

WARNING LABEL SCHEDULE SEE NOTE 4

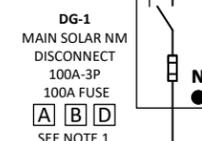
[A]	"WARNING: TWO SOURCES OF POWER"
[B]	SINGLE-LINE PERMANENT "AS BUILT" SLD, AS PER OESC 84-030(2)
[C]	"WARNING: DISCONNECT DG-1 AND DG-2 BEFORE SERVICING"
[D]	MAX. AC OPERATING VALUES LISTED AS PER OESC 64-072 (1) AND "PV SYSTEM RAPID SHUTDOWN INITIATOR" OR "WARNING - PV POWER SOURCE" AS PER 64-200 (3)
[E]	RATED AND MAX. OPERATING VALUES LISTED AND PV SOURCE CIRCUIT VOLTAGE AS PER 64-200 (1)
[F]	"DANGER 1500V DC" AS PER 64-202 (5c)

MAXIMUM DISTANCE RUN TO BE LESS THAN 175 METERS - VOLTAGE DROP FOR 3C WILL BE 2.74% CALCULATED BASED ON THE 75A AT THE END OF THE CABLE RUN

TO BE PLACED ON A ROOF HATCH OR NEAR ROOF ENTRANCE

ENGINEERING SEAL:

PROVISION FOR SCADA CIA REPORT TO DETERMINE



INTERIOR AT MEZZANINE ELECTRICAL ROOM

