PART 1 - ADDENDUM

1.1 TITLE

.1 This Addendum shall be known as:

Addendum 1
EN-189-21 Thermal Lab Mechanical Upgrades

.2 The Date of the Addendum is Tuesday, February 18, 2025

1.2 PRECEDENCE

.1 This amendment to the bid documents is effective immediately.

.2 This Addendum shall form an integral part of the original bid documents and is to be read in conjunction therewith.

.3 The Addendum shall take precedence over previously issued bid documents with which it may prove to be at variance.

1.3 GENERAL

.1 The General Conditions shall govern all phases of the Work covered by this Addendum.

.2 Acknowledge receipt of this addendum in the Tender and Acceptance form.

1.4 PURPOSE

.1 The purpose of the Addendum is to inform bidders of the changes, deletions and additions to be added to the bid documents.

1.5 CHANGES IN GENERAL

.1 The construction phase of this work must be delayed until August 15, 2025, there are scheduled commitments that entail use of the lab space and operation of the cold rooms during this time.

1.6 CHANGES TO SPECIFICATION

.1 No changes to Specification.

1.7 CHANGES TO DRAWINGS

.1 No changes to drawing.

CHANGE IN CLOSING/OPENING DATES

Closing date has been extended to Thursday, February 27, 2025 at 3:00pm NST. The Opening will start at 3:30pm NST on Thursday, February 27 2025.
Webex Access Code has changed to the following: 2772 259 4913

PART 1 - ADDENDUM

1.1 TITLE

.1 This Addendum shall be known as:

Addendum 1
EN-189-21 Thermal Lab Mechanical Upgrades

.2 The Date of the Addendum is Wednesday, February 12, 2025

1.2 PRECEDENCE

.1 This amendment to the bid documents is effective immediately.

.2 This Addendum shall form an integral part of the original bid documents and is to be read in conjunction therewith.

.3 The Addendum shall take precedence over previously issued bid documents with which it may prove to be at variance.

1.3 GENERAL

.1 The General Conditions shall govern all phases of the Work covered by this Addendum.

.2 Acknowledge receipt of this addendum in the Tender and Acceptance form.

1.4 PURPOSE

.1 The purpose of the Addendum is to inform bidders of the changes, deletions and additions to be added to the bid documents.

1.5 CHANGES IN GENERAL

.1 No changes in General. The tender deadline for receipt of tenders has changed. The new deadline is 3 p.m. NST on Thursday, February 20, 2025. The new Webex access code is: 2771 396 7201.

1.6 CHANGES TO SPECIFICATION

.1 No changes to Specification.

1.7 CHANGES TO DRAWINGS

.1 No changes to drawing.

END OF ADDENDUM

PART 1 - ADDENDUM

1.1 TITLE

.1 This Addendum shall be known as:

Addendum 1
TFM-002-25 EN-189-21 Thermal Lab Mechanical Upgrades

.2 The Date of the Addendum is Tuesday, February 04, 2025

1.2 PRECEDENCE

.1 This amendment to the bid documents is effective immediately.

.2 This Addendum shall form an integral part of the original bid documents and is to be read in conjunction therewith.

.3 The Addendum shall take precedence over previously issued bid documents with which it may prove to be at variance.

1.3 GENERAL

.1 The General Conditions shall govern all phases of the Work covered by this Addendum.

.2 Acknowledge receipt of this addendum in the Tender and Acceptance form.

1.4 PURPOSE

.1 The purpose of the Addendum is to inform bidders of the changes, deletions and additions to be added to the bid documents.

1.5 CHANGES TO DRAWINGS

.1 Drawings issued in this tender were Issued for Review drawings by mistake, I have provided the Issued for Tender drawings.

1.6 CHANGES TO SPECIFICATION

.1 None.

1.7 QUESTIONS AND RESPONSES

.1 Existing electrical panel was not identified on the drawing.
RESPONSE: The drawings provided were not the latest IFT.

END OF ADDENDUM

Memorial University of Newfoundland

S.J. CAREW BUILDING
FACULTY OF ENGINEERING & APPLIED SCIENCE)
THERMAL LAB UPGRADES

DECEMBER 13, 2024

ISSUED FOR TENDER

LIST OF DRAWINGS

EN-189-21 - ISSUED FOR TENDER

DEPARTMENT OF
FACILITIES MANAGEMENT

This University was raised by the people of Newfoundland as a memorial to the fallen in the great wars, 1914-1918, 1939-1945, that in freedom of learning, their cause and sacrifice might not be forgotten.

- Dedication plaque, Arts & Administration Building, St. John's Campus

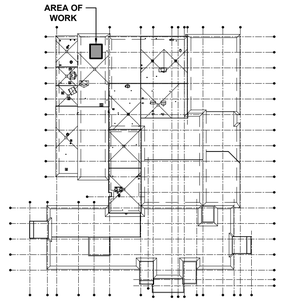
MEMORIAL
UNIVERSITY

GENERAL NOTES:

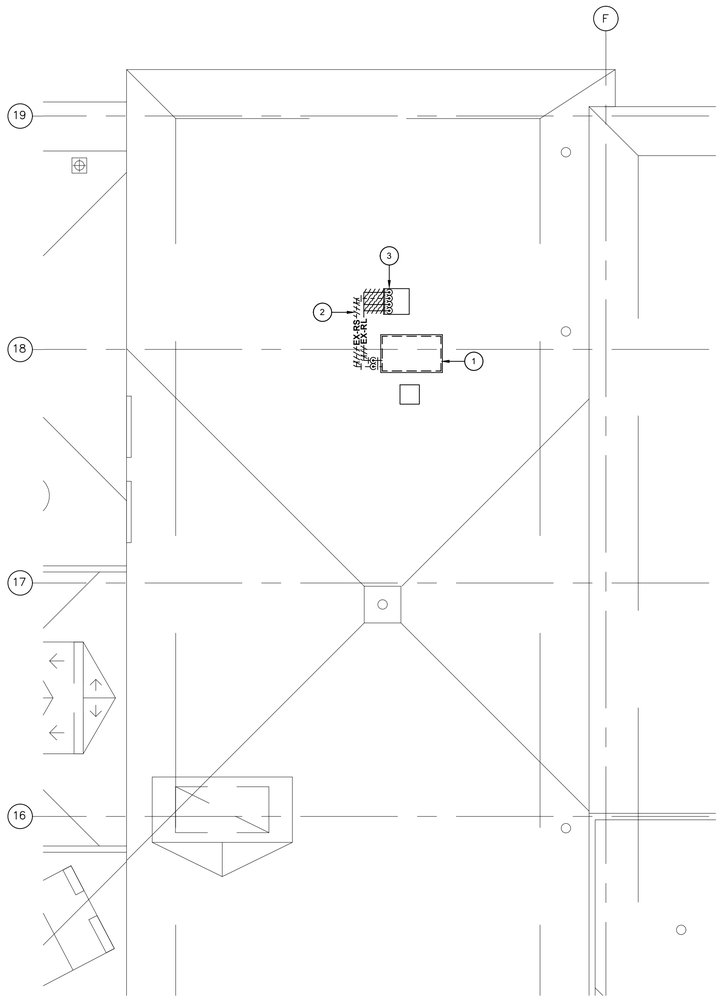
1. CONTRACTOR TO CONFIRM EXACT PIPING LAYOUTS AND EQUIPMENT LOCATIONS ON SITE BEFORE COMMENCING ANY DEMOLITION. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING ALL EXISTING SYSTEMS WHICH MAY BE AFFECTED BY THE WORK, AND REMOVE/MODIFY IN AN APPROVED MANNER TO ALLOW FOR A COMPLETE WORKING SYSTEM.
2. GENERAL CONTRACTOR SHALL COORDINATE SERVICES DISRUPTIONS AND SYSTEM SHUT DOWNS WITH OWNER.
3. CONTRACTOR TO REMOVE, RECOVER AND DISPOSE OF ALL REFRIGERANT IN ACCORDANCE WITH AUTHORITY HAVING JURISDICTION. PROVIDE DISPOSAL REPORT OUTLINING ALL PROCEDURES.
4. ALL EQUIPMENT BEING REMOVED SHALL BE TURNED OVER TO OWNER DURING DEMOLITION. IF OWNER DOES NOT WANT ANY EXISTING EQUIPMENT, CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING ALL MATERIALS FROM SITE AND DISPOSE AS PER LOCAL CODES.
5. ALL PIPING AND INSULATION SHALL HAVE A SMOKE FLAME SPREAD RATING OF 50, 25.
6. CONTRACTOR TO BE RESPONSIBLE FOR ANY CUTTING AND PATCHING OF ANY EXISTING EQUIPMENT, WALLS, CEILINGS, AND PIPING DISTURBED AS PART OF THIS SCOPE. ANY REPAIRS SHALL BE MADE TO BE MATCH EXISTING BUILDING CONDITIONS.

DRAWING NOTES:

1. EXISTING ROOF MOUNTED CONDENSING UNIT TO BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH WITH AUTHORITY HAVING JURISDICTION. REFRIGERANT TO BE RECOVERED BY A LICENSED REFRIGERATION INSTALLER.
2. REFRIGERATION LIQUID AND SUCTION PIPING C/W INSULATION TO BE REMOVED.
3. REFRIGERATION LIQUID AND SUCTION PIPING DOWN THROUGH ROOF TO BELOW TO BE REMOVED.



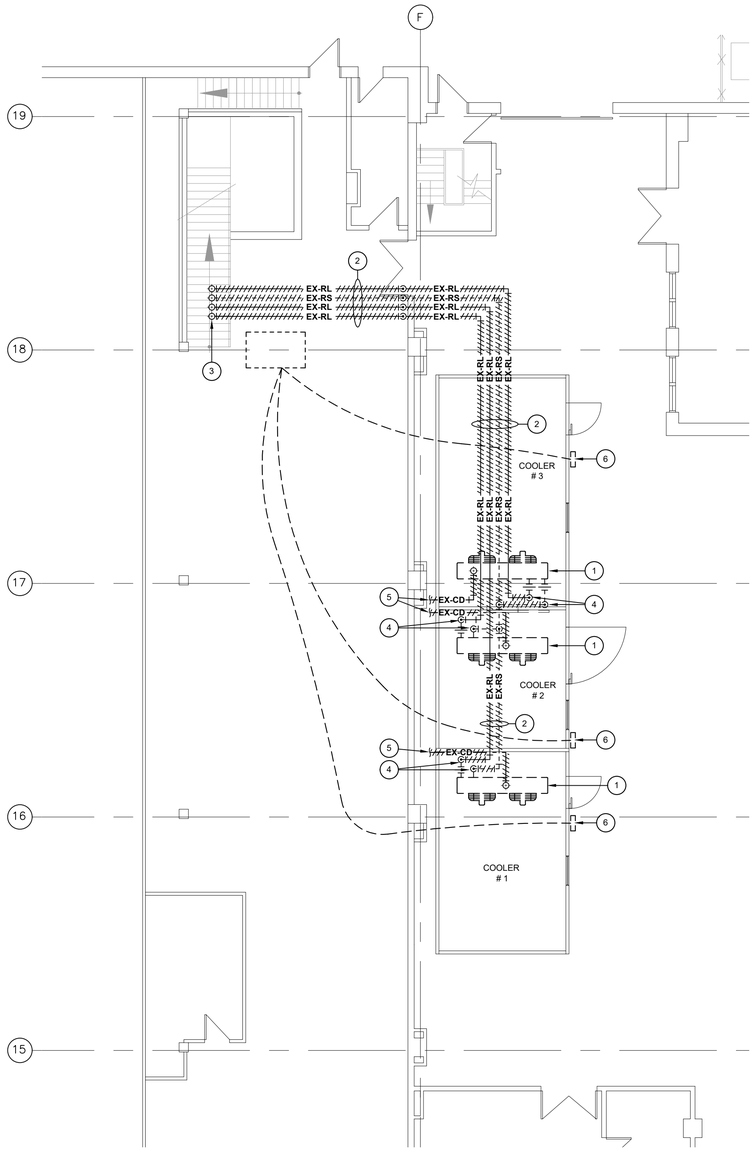
S.J. CAREW BUILDING - KEY PLAN (ROOF)



PARTIAL ROOF PLAN - MECHANICAL DEMOLITION LAYOUT

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



PARTIAL LEVEL 1 FLOOR PLAN - MECHANICAL DEMOLITION LAYOUT

SCALE : 1:100

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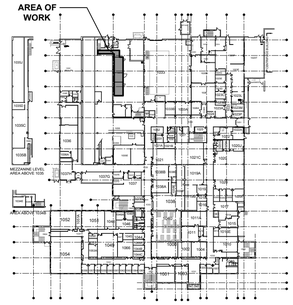

S.J. CAREW BUILDING - KEY PLAN (LEVEL 1)

GENERAL NOTES:

1. CONTRACTOR TO CONFIRM EXACT PIPING LAYOUTS AND EQUIPMENT LOCATIONS ON SITE BEFORE COMMENCING ANY DEMOLITION. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING ALL EXISTING SYSTEMS WHICH MAY BE AFFECTED BY THE WORK, AND REMOVE/MODIFY IN AN APPROVED MANNER TO ALLOW FOR A COMPLETE WORKING SYSTEM.
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3. CONTRACTOR TO REMOVE, RECOVER AND DISPOSE OF ALL REFRIGERANT IN ACCORDANCE WITH AUTHORITY HAVING JURISDICTION. PROVIDE DISPOSAL REPORT OUTLINING ALL PROCEDURES.
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5. ALL PIPING AND INSULATION SHALL HAVE A SMOKE FLAME SPREAD RATING OF 50, 25.
6. CONTRACTOR TO BE RESPONSIBLE FOR ANY CUTTING AND PATCHING OF ANY EXISTING EQUIPMENT, WALLS, CEILINGS, AND PIPING DISTURBED AS PART OF THIS SCOPE. ANY REPAIRS SHALL BE MADE TO BE MATCH EXISTING BUILDING CONDITIONS.

DRAWING NOTES:

1. EXISTING EVAPORATOR UNIT LOCATED INSIDE OF COOLER TO BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH WITH AUTHORITY HAVING JURISDICTION.
2. REFRIGERATION LIQUID AND SUCTION PIPING C/W INSULATION & PIPE HANGERS RUNNING AT HIGH LEVEL JUST BELOW ROOF TO BE REMOVED.
3. REFRIGERATION LIQUID AND SUCTION PIPING UP THROUGH ROOF TO CONDENSING UNIT TO BE REMOVED.
4. REFRIGERATION LIQUID AND SUCTION PIPING DOWN THROUGH CEILING OF COOLER TO EVAPORATOR UNIT TO BE REMOVED.
5. EXISTING CONDENSATE DRAIN PIPING FROM EVAPORATOR TO DRAIN TO BE REMOVED.
6. EXISTING REFRIGERATION SYSTEM CONTROL PANEL AND ASSOCIATED CONDUIT BACK TO CONDENSER AND EVAPORATORS TO BE REMOVED.

A - DETAIL
B - LOCATION/DRAWING No.
C - DRAWING No.

No.	REVISION	DATE (Y/M/D/)
0	ISSUED FOR TENDER	2024.12.13

GENERAL NOTES

1. DRAWINGS TO BE READ AS A SET.
2. DO NOT SCALE FROM DRAWINGS.
3. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO SUBMISSION OF TENDERS.
4. ALL DEFICIENCIES FOUND IN THIS DRAWING IS TO BE BROUGHT TO THE ATTENTION OF THE FACILITIES ENGINEERING AND DEVELOPMENT OFFICE OF THE DEPARTMENT OF FACILITIES MANAGEMENT, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, PRIOR TO THE SUBMISSION OF THE TENDERS.

REGISTERED PROFESSIONAL ENGINEER
PEGNL Newfoundland & Labrador
DAVE ENNIS
SIGNATURE
2024-12-13
DATE
PROVINCE OF NEWFOUNDLAND

PROVINCE OF NEWFOUNDLAND
pegnl
PERMIT HOLDER
This Permit Allows
CORE ENGINEERING INC.
MIRC: 03823
To practice Professional Engineering in Newfoundland and Labrador.
Permit No. as issued by PEGNL D0209
which is valid for the year 2023.

MECHANICAL & ELECTRICAL CONSULTANT:
CORE ENGINEERING INC.
57 Pippy Place
St. John's, NL, Canada A1B 4H8
Tel (709) 722-8613
Fax (709) 722-0910

MEMORIAL UNIVERSITY

Department of Facilities Management

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- Dedication plaque, Arts & Administration Building, St. John's Campus

PROJECT NAME:

S.J. CAREW BUILDING (FACULTY OF ENGINEERING & APPLIED SCIENCE) THERMAL LAB MECHANICAL UPGRADES
Project #: EN-189-21

DRAWING TITLE:

MECHANICAL DEMOLITION

DESIGNED:	DRAWN:
DE	JS
REVIEWED:	APPROVED:
DE	DE
SCALE:	DATE:
AS NOTED	2024/08/09
PROJECT No.	DRAWING No.
EN-189-21	M-1.0

GENERAL NOTES:

1. CONTRACTOR TO CONFIRM EXACT PIPING LAYOUTS AND EQUIPMENT LOCATIONS ON SITE BEFORE COMMENCING ANY DEMOLITION. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING ALL EXISTING SYSTEMS WHICH MAY BE AFFECTED BY THE WORK, AND REMOVE/MODIFY IN AN APPROVED MANNER TO ALLOW FOR A COMPLETE WORKING SYSTEM.
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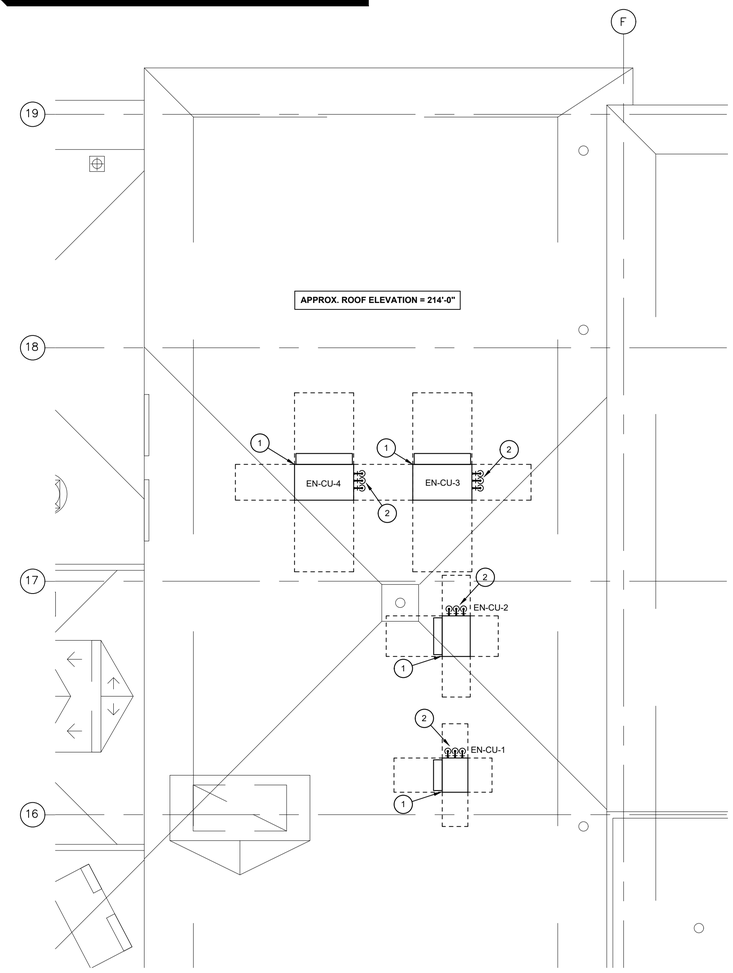
7. ALL REFRIGERANT LINE SIZING AND TRAPPING SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER TO ENSURE ALL VELOCITIES AND OIL RETURN IS OPTIMAL FOR THEIR SYSTEM INCLUDING THAT OF THE HOT GAS BYPASS. LINE SIZES SHOWN ON DRAWINGS ARE CONNECTION SIZE ONLY.

DRAWING NOTES:

1. NEW CONDENSING UNIT MOUNTED ON ROOF. SEE DETAIL 3/3.0
2. REFERIGERATION PIPING DOWN THROUGH ROOF CURB TO LEVEL 1 BELOW. SEE LEVEL 1 FLOOR PLAN FOR CONTINUATION. SEE DETAIL 2/3.0



PARTIAL ROOF PLAN - NEW MECHANICAL LAYOUT

SCALE : 1:100

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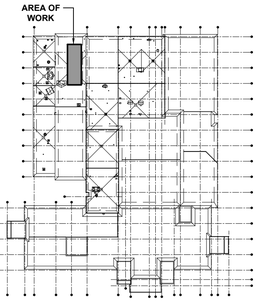
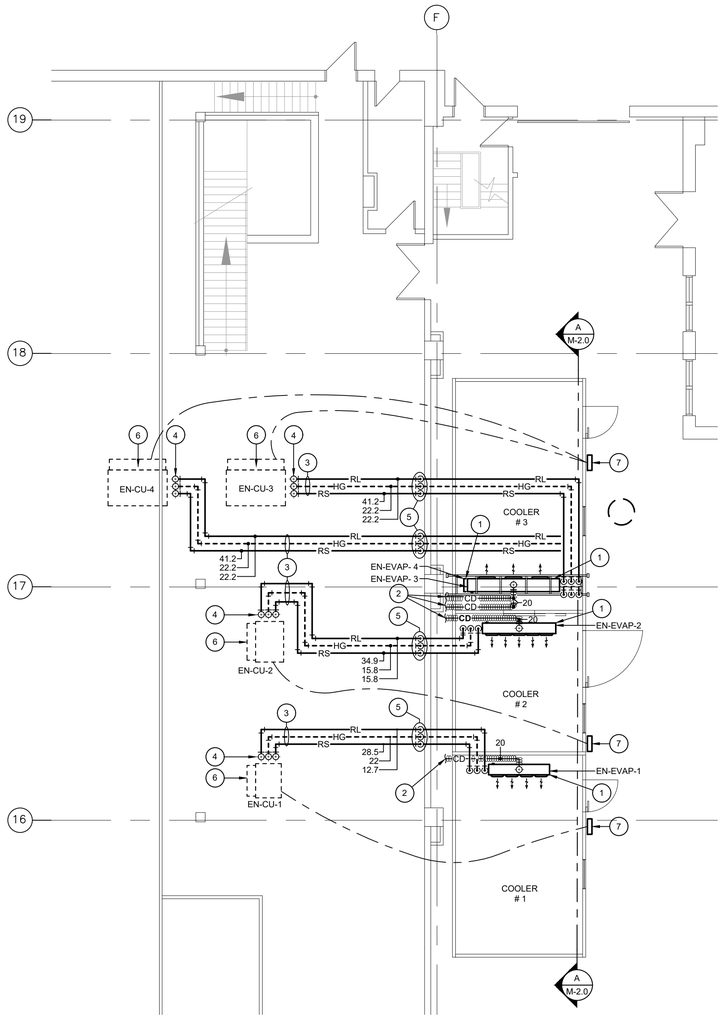


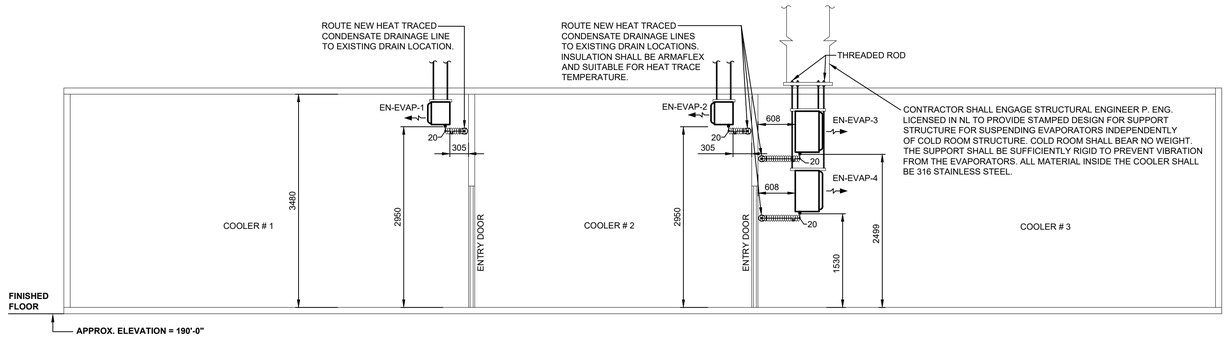
S.J. CAREW BUILDING - KEY PLAN (ROOF)



PARTIAL LEVEL 1 FLOOR PLAN - NEW MECHANICAL LAYOUT

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

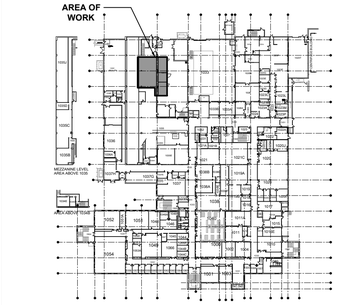


COOLER SECTIONS - MECHANICAL LAYOUT

SCALE: 1:50

0m 1m 2m 3m 4m 5m

A M-2.0



S.J. CAREW BUILDING - KEY PLAN (LEVEL 1)

GENERAL NOTES:

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DRAWING NOTES:

1. NEW EVAPORATOR TO BE INSTALLED INSIDE OF EXISTING COOLER. EVAPORATOR TO BE INSTALLED AS HIGH AS POSSIBLE. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. ROUTE CONDENSATE DRAIN FROM NEW EVAPORATOR TO EXISTING DRAIN LOCATIONS. PROVIDE HEAT TRACE ON CONDENSATE PIPING.
3. REFRIGERATION PIPING RUNNING UP HIGH IN SPACE SUSPENDED FROM BUILDING STRUCTURE. SEE DETAIL 1/3.0
4. REFRIGERATION PIPING RUNNING UP THROUGH ROOF CURB TO CONDENSING UNITS LOCATED ON ROOF. SEE DETAIL 2/3.0
5. REFRIGERANT PIPING TO DROP DOWN FROM HIGH ROOF AREA AND ROUTE TO EVAPORATOR UNITS AS INDICATED.
6. OUTLINE OF CONDENSING UNIT ON ROOF ABOVE.
7. REFRIGERATION SYSTEM CONTROL PANEL. REFER TO DETAIL 5/3.0 PANEL SHALL BE MOUNTED ON UNI STRUT FRAME.

A - DETAIL
B - LOCATION/DRAWING No.
C - DRAWING No.

A / B C

No.	REVISION	DATE (Y/M/D/)
0	ISSUED FOR TENDER	2024.12.13

GENERAL NOTES

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4. ALL DEFICIENCIES FOUND IN THIS DRAWING IS TO BE BROUGHT TO THE ATTENTION OF THE FACILITIES ENGINEERING AND DEVELOPMENT OFFICE OF THE DEPARTMENT OF FACILITIES MANAGEMENT, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, PRIOR TO THE SUBMISSION OF THE TENDERS.

REGISTERED PROFESSIONAL ENGINEER — PEGL Newfoundland & Labrador — DAVE ENNIS — SIGNATURE — 2024-12-13 — DATE — PROVINCE OF NEWFOUNDLAND

PROVINCE OF NEWFOUNDLAND
pegnl
PERMIT HOLDER
This Permit Allows
CORE ENGINEERING INC.
MIRC: 03823
To practice Professional Engineering in Newfoundland and Labrador. Permit No. as issued by PEGNL D0209 which is valid for the year 2023.

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- Dedication plaque, Arts & Administration Building, St. John's Campus

PROJECT NAME:

S.J. CAREW BUILDING (FACULTY OF ENGINEERING & APPLIED SCIENCE) THERMAL LAB MECHANICAL UPGRADES
Project #: EN-189-21

DRAWING TITLE:

NEW MECHANICAL LAYOUT

DESIGNED:	DRAWN:
DE	JS
REVIEWED:	APPROVED:
DE	DE
SCALE:	DATE:
AS NOTED	2024/08/09
PROJECT No.	DRAWING No.
EN-189-21	M-2.0

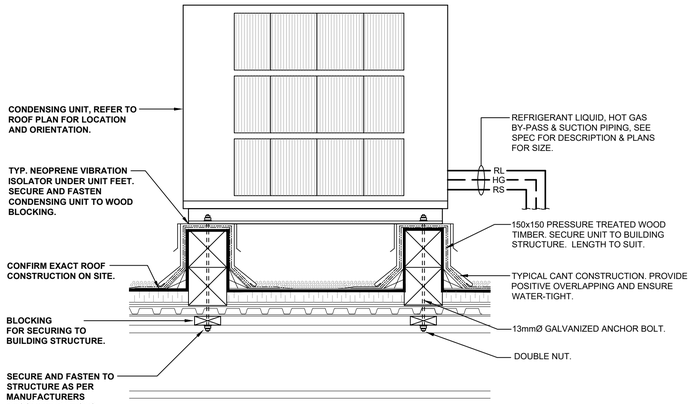
MECHANICAL LEGEND

- PIPING TO BE REMOVED
- EX-RS — EXISTING REFRIGERATION SUCTION PIPING
- EX-RL — EXISTING REFRIGERATION LIQUID PIPING
- EX-CD — EXISTING CONDENSATE DRAIN PIPING
- HG — NEW HOT GAS BYPASS PIPING
- RL — NEW REFRIGERATION LIQUID PIPING
- RS — NEW REFRIGERATION SUCTION PIPING
- CD — NEW CONDENSATE DRAIN PIPING
- NEW PIPE HEAT TRACING
- PIPE DROP
- PIPE RISE
- EXISTING EQUIPMENT TO BE REMOVED

CONTROLS

- MAGNETICALLY SHIELDED WIRING, INDICATING NUMBER OF WIRES.
- DISCONNECT PROVIDED WITH EQUIPMENT BY MECHANICAL EQUIPMENT SUPPLIER.
- DI — DIGITAL INPUT SIGNAL TO DDC PANEL.

NOTES:
1. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ROOF WORK AND ALL CUTTING AND PATCHING.

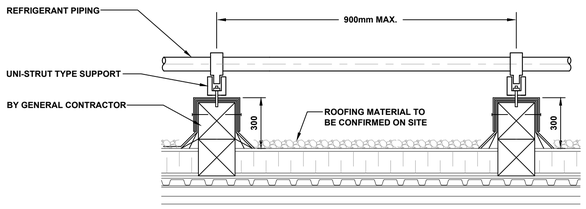


NOTES:
1. THIS CONTRACTOR TO INSTALL AS PER MANUFACTURERS RECOMMENDATIONS.
2. REFER TO SHOP DRAWINGS FOR EXACT CONNECTION LOCATION, JUNCTION BOXES & PIPE SIZES.
3. REFER TO SHOP DRAWINGS FOR UNIT DIMENSIONS.
4. ALL REFRIGERANT PIPING TO BE INSULATED AND EXPOSED PIPING TO HAVE ALUMINUM JACKETING.

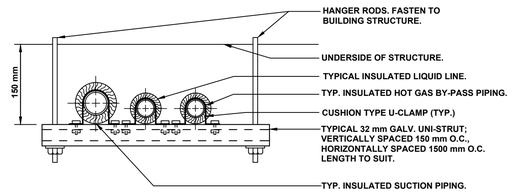
CONDENSING UNIT MOUNTING DETAIL

3 / 3.0

SCALE: N.T.S.



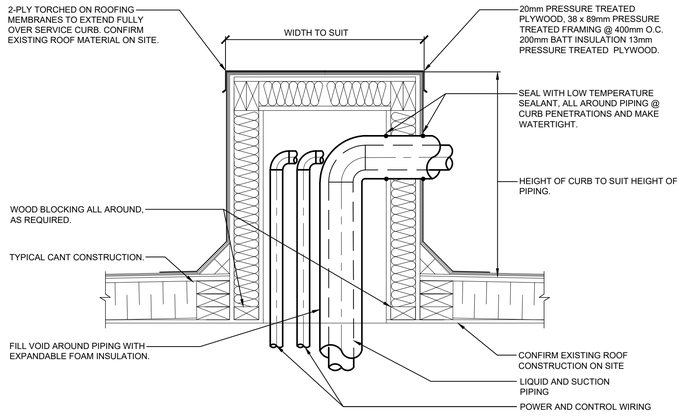
NOTE
1. CONTRACTOR TO SUPPLY & INSTALL COPPER PIPE CLAMPS ON SUCTION & LIQUID LINES TO FASTEN PIPES TO UNI-STRUT. INSTALL RUBBER ISOLATION AROUND PIPES AT THE HANGERS
2. CONFIRM NUMBER OF PIPES WITH FLOOR PLAN LAYOUT.

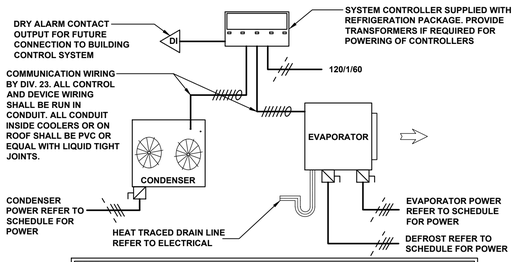


TYPICAL REFRIGERANT PIPING SUPPORT DETAIL

1 / 3.0

SCALE: N.T.S.





NOTE:
1. COOLER ROOM 3 WILL UTILIZE 2 EVAPORATORS AND TWO CONDENSERS WITH SINGLE CONTROLLER.
2. ALL ROOF PENETRATIONS TO BE MADE USING LIQUID TIGHT FLASHING EQUAL TO THALER MEF SERIES.

TYPICAL REFRIGERATION CONTROL DETAIL

5 / 3.0

SCALE: N.T.S.

PIPING ROOF SUPPORT DETAIL

4 / 3.0

SCALE: N.T.S.

PIPE CURB DETAIL

2 / 3.0

SCALE: N.T.S.

CONDENSING UNIT SCHEDULE

TAG	SERVING	MANUFACTURER	MODEL No.	RATING CAPACITY (kW)	SPACE TEMP (°C)	REFRIGERANT	UNIT WEIGHT (kg)	POWER			NOTES
								V/PH/CYC	MCA	MOCP	
EN-CU-1	COOLER #1	TRENTON REFRIGERATION PRODUCTS	TEZA055L8-HT5D	5.87	-20	R448A	199.5	575/3/60	8.9	15	C/W WEATHERPROOF FUSED DISC. SWITCH, WIND GUARD, LOW NOISE OPTION, E-COAT COILS.
EN-CU-2	COOLER #2	TRENTON REFRIGERATION PRODUCTS	TEZA075L8-HT5D	6.99	-25	R448A	224.5	575/3/60	12.3	20	C/W WEATHERPROOF FUSED DISC. SWITCH, WIND GUARD, LOW NOISE OPTION, E-COAT COILS.
EN-CU-3	COOLER #3	TRENTON REFRIGERATION PRODUCTS	TEZA170L8-HT5D	12.25	-30	R448A	433.1	575/3/60	31.4	50	C/W WEATHERPROOF FUSED DISC. SWITCH, WIND GUARD, LOW NOISE OPTION, E-COAT COILS.
EN-CU-4	COOLER #3	TRENTON REFRIGERATION PRODUCTS	TEZA170L8-HT5D	12.25	-30	R448A	433.1	575/3/60	31.4	50	C/W WEATHERPROOF FUSED DISC. SWITCH, WIND GUARD, LOW NOISE OPTION, E-COAT COILS.

NOTES:
1. COOLING CAPACITY BASED ON 35 °C EXT. AMBIENT TEMPERATURE.
2. UNITS TO HAVE HEAVY PRE-PAINTED STEEL ENCLOSURE

EVAPORATOR SCHEDULE

TAG	SERVING	MANUFACTURER	MODEL No.	NET COOLING CAPACITY (kW)	SPACE TEMP (°C)	REFRIGERANT	AIRFLOW (L/s)	UNIT WEIGHT (kg)	POWER			ELECTRIC DEFROST POWER			NOTES
									V/PH/CYC	MCA	MOCP	V/PH/CYC	MCA	MOCP	
EN-EVAP-1	COOLER #1	TRENTON REFRIGERATION PRODUCTS	TLP421LE-T3D	6.33	-20°C	R448A	1284	65.77	208/1/60	2.6	15	208/1/60	12.5	15	CEILING MOUNTED EVAPORATOR COIL WITH THERMAL EXPANSION VALVE, HEATED AND INSULATED DRAIN PAN, AUXILIARY SIDE PORT CONNECTION AND ELECTRIC DEFROST HEATERS.
EN-EVAP-2	COOLER #2	TRENTON REFRIGERATION PRODUCTS	TLP526LE-S2D	7.52	-25°C	R448A	1605	79.8	208/1/60	3.2	15	208/1/60	23.9	25	CEILING MOUNTED EVAPORATOR COIL WITH THERMAL EXPANSION VALVE, HEATED AND INSULATED DRAIN PAN, AUXILIARY SIDE PORT CONNECTION AND ELECTRIC DEFROST HEATERS.
EN-EVAP-3	COOLER #3	TRENTON REFRIGERATION PRODUCTS	TMP347LE-I3D	12.35	-30°C	R448A	4295	159.6	208/3/60	7.2	15	208/3/60	33	35	CEILING MOUNTED EVAPORATOR COIL WITH THERMAL EXPANSION VALVE, HEATED AND INSULATED DRAIN PAN, AUXILIARY SIDE PORT CONNECTION AND ELECTRIC DEFROST HEATERS.
EN-EVAP-4	COOLER #3	TRENTON REFRIGERATION PRODUCTS	TMP347LE-I3D	12.35	-30°C	R448A	4295	159.6	208/3/60	7.2	15	208/3/60	33	35	CEILING MOUNTED EVAPORATOR COIL WITH THERMAL EXPANSION VALVE, HEATED AND INSULATED DRAIN PAN, AUXILIARY SIDE PORT CONNECTION AND ELECTRIC DEFROST HEATERS.

NOTES:
1. REFER TO SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

A - DETAIL
B - LOCATION/DRAWING No.
C - DRAWING No.

No.	REVISION	DATE (Y/M/D/)
0	ISSUED FOR TENDER	2024.12.13

GENERAL NOTES

1. DRAWINGS TO BE READ AS A SET.
2. DO NOT SCALE FROM DRAWINGS.
3. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO SUBMISSION OF TENDERS.
4. ALL DEFICIENCIES FOUND IN THIS DRAWING IS TO BE BROUGHT TO THE ATTENTION OF THE FACILITIES ENGINEERING AND DEVELOPMENT OFFICE OF THE DEPARTMENT OF FACILITIES MANAGEMENT, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, PRIOR TO THE SUBMISSION OF THE TENDERS.

REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF NEWFOUNDLAND
PEGL Newfoundland and Labrador
DAVE ENNIS
SIGNATURE
2024-12-13
DATE

PROVINCE OF NEWFOUNDLAND
pegnl
PERMIT HOLDER
This Permit Allows
CORE ENGINEERING INC.
MIRC: 03823
To practice Professional Engineering in Newfoundland and Labrador.
Permit No. as issued by PEGNL D0209
which is valid for the year 2023.

MECHANICAL & ELECTRICAL CONSULTANT:
CORE ENGINEERING INC.
57 Pippy Place
St. John's, NL, Canada A1B 4H8
Tel (709) 722-8613
Fax (709) 722-0910

MEMORIAL UNIVERSITY
Department of Facilities Management

This University was raised by the people of Newfoundland as a memorial to the fallen in the great wars, 1914-1918, 1939-1945, that in freedom of learning, their cause and sacrifice might not be forgotten.

- Dedication plaque, Arts & Administration Building, St. John's Campus

PROJECT NAME:

S.J. CAREW BUILDING (FACULTY OF ENGINEERING & APPLIED SCIENCE) THERMAL LAB MECHANICAL UPGRADES
Project #: EN-189-21

DRAWING TITLE:

MECHANICAL SCHEDULES, DETAILS & LEGEND

DESIGNED:	DRAWN:
DE	JS
REVIEWED:	APPROVED:
DE	DE
SCALE:	DATE:
AS NOTED	2024/08/09
PROJECT No.	DRAWING No.
EN-189-21	M-3.0

ELECTRICAL SPECIFICATION

1.0 GENERAL:

1.1 COMPLETE ELECTRICAL INSTALLATION SHALL CONFORM TO THE CANADIAN ELECTRICAL CODE C22.1–24 AND LOCAL BYLAWS CURRENTLY IN FORCE IN THE PROVINCE AND MUNICIPALITY.

1.2 ALL WORK SHALL BE PERFORMED BY PERSONNEL HAVING QUALIFICATIONS AS REQUIRED BY AN AUTHORITY HAVING JURISDICTION WHO ARE COMPETENT IN THEIR TRADE.

1.3 BEFORE SUBMITTING A PROPOSAL FOR THE WORK COVERED BY THE SPECIFICATIONS, EACH BIDDER SHALL VISIT AND INSPECT THE SITE OF THE PROPOSED WORK IN ORDER THAT THEY MAY BE THOROUGHLY FAMILIAR WITH THE SITE AND LOCAL CONDITIONS, WITH THE CHARACTER AND DETAIL OF THE BUILDING CONSTRUCTION AND WITH ALL MATTERS WHICH CAN, IN ANY WAY, AFFECT THE WORK COVERED BY THE SPECIFICATIONS. MAKE ALLOWANCE FOR REMOVAL OF EXISTING POWER/LIGHTING AND SYSTEMS THAT INTERFERES WITH NEW WORK. NO CLAIM WILL BE ENTERTAINED FOR ANY LABOR, MATERIALS OR OTHER EXTRAS THAT MAY BE REQUIRED FOR THE PROPER EXECUTION AND COMPLETION OF THE CONTRACT WHICH COULD HAVE BEEN DETERMINED BY SITE EXAMINATION.

1.4 PAYMENT FOR PERMITS AND DEPOSITS FOR THE WORK SHALL BE INCLUDED IN THE TENDER PRICE.

1.5 USE ONLY NEW CSA APPROVED MATERIALS EXCEPT WHERE SPECIFICALLY NOTED.

1.6 THE CONTRACTOR SHALL GUARANTEE ALL NEW MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM DATE OF COMPLETION OF THE WORK AND FINAL ACCEPTANCE BY THE OWNER.

1.7 SHOP DRAWINGS SHOWING THE DESIGN AND CONSTRUCTION OF ALL APPARATUS SHALL BE PROVIDED. ELECTRONIC COPIES OF DRAWINGS SHALL BE SUBMITTED FOR EXAMINATION. ALL SHOP DRAWINGS TO INCLUDE ELECTRICAL SUBCONTRACTORS REVIEW STAMP, NAME OF PROJECT AND SIGNATURE INDICATING ITEM HAS BEEN REVIEWED BY ELECTRICAL SUBCONTRACTOR PRIOR TO SUBMISSION. IF CORRECTIONS ARE REQUIRED, COPIES WILL BE RETURNED WITH CORRECTIONS NOTED. INCLUDE SHOP DRAWINGS FOR THE FOLLOWING:

.1 PANEL BOARDS
.2 TRANSFORMERS
.3 DISCONNECTS
.4 CIRCUIT BREAKERS
.5 WIRING DEVICES

1.8 PROVIDE "AS–BUILT" DRAWINGS TO INDICATE ACTUAL CIRCUIT NUMBERS TO ALL ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND ALL EXISTING REMAINING EQUIPMENT.

1.9 THIS CONTRACTOR SHALL PROVIDE PROPER PROTECTION FOR ALL EQUIPMENT, FIXTURES, MATERIALS, ETC. DURING THE CONSTRUCTION PERIOD. UPON COMPLETION OF THE WORK ALL PROTECTIVE MATERIALS, DIRT, RUBBISH AND DEBRIS DUE TO THE WORK SHALL BE REMOVED FROM THE SITE.

1.10 CONTRACTOR SHALL SUPPLY AND INSTALL ALL MATERIALS EXCEPT AS OTHERWISE SPECIFIED.

1.11 IDENTIFY ELECTRICAL EQUIPMENT WITH LAMACOID NAMEPLATES 3mm THICK PLASTIC ENGRAVING SHEET, BLACK FACE, WHITE CORE, MECHANICALLY ATTACHED WITH SELF TAPPING SCREWS. WORDING ON NAMEPLATES AND LABELS TO BE APPROVED BY ENGINEER BEFORE MANUFACTURE.

1.12 CSA AND MANUFACTURERS LABELS MUST BE VISIBLE AND LEGIBLE AFTER EQUIPMENT IS INSTALLED.

2.0 COORDINATION

2.1 COORDINATE WORK WITH WORK OF OTHER DIVISIONS TO AVOID CONFLICT.

2.2 LOCATE DISTRIBUTION SYSTEMS, EQUIPMENT AND MATERIALS TO PROVIDE MINIMUM INTERFERENCE AND MAXIMUM USABLE SPACE.

2.3 WHERE INTERFERENCE OCCURS, OWNER MUST APPROVE RELOCATION OF EQUIPMENT AND MATERIALS REGARDLESS OF INSTALLATION ORDERS.

2.4 NOTWITHSTANDING THE REVIEW OF SHOP DRAWINGS, THIS DIVISION MAY BE REQUIRED TO RELOCATE ELECTRICAL EQUIPMENT WHICH INTERFERES WITH THE EQUIPMENT OF OTHER TRADES, DUE TO LACK OF COORDINATION BY THIS DIVISION. THE COST OF THIS RELOCATION SHALL BE THE RESPONSIBILITY OF THIS DIVISION. THE OWNER SHALL DECIDE THE EXTENT OF THE RELOCATION REQUIRED.

3.0 SAFETY

3.1 NO WORK SHALL BE CARRIED OUT ON ANY LIVE EQUIPMENT. DISCONNECT POWER COMPLETELY TO ALL EQUIPMENT BEFORE PROCEEDING WITH WORK ON THAT EQUIPMENT. UTILIZE LOCK–OUTS & TAG–OUTS ON ALL EQUIPMENT WHICH IS BEING WORKED ON.

4.0 WORK IN EXISTING AREAS:

4.1 THE CONTRACTOR SHALL DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES NOT BEING REUSED, AND TURN OVER TO OWNER'S REPRESENTATIVE ON SITE.

4.2 IN AREAS WHERE EXISTING DEVICES ARE BEING REMOVED, THE CONTRACTOR SHALL ENSURE THAT A SAFE AND WORKING SYSTEM IS MAINTAINED TO ALL REMAINING DEVICES.

4.3 THE ELECTRICAL CONTRACTOR SHALL CLEAN AND REFURBISH ALL EXISTING DEVICES THAT ARE TO REMAIN AND/OR BE RELOCATED. EXTEND CONDUIT AND WIRE TO SUIT.

4.4 IF ANY CIRCUITS ARE DAMAGED OR INTERRUPTED DURING CONSTRUCTION, CIRCUITS SHALL BE EXTENDED AND RECONNECTED AS REQUIRED TO MAINTAIN EXISTING DEVICES AND EQUIPMENT IN SERVICE.

4.5 RELOCATE ALL EXISTING JUNCTION BOXES, CONDUITS, DEVICES, ETC. AS REQUIRED TO ACCOMMODATE DEMOLITION OF EXISTING AND CONSTRUCTION OF NEW WALL & CEILING ASSEMBLIES.

GENERAL CONTROL NOTES:

1. ALL CONTROL WIRING 50 VOLTS & LESS TO BE SUPPLIED AND INSTALLED BY MECHANICAL.
2. MECHANICAL CONTRACTOR TO PROVIDE ALL CONTROL TRANSFORMERS AND RELAYS AS REQUIRED TO COMPLETE ALL CONTROLS.

5.0 DEMOLITION:

5.1 PERFORM ALL REQUIRED DEMOLITION. DO NOT LEAVE POWERED WIRING EXPOSED IN DEMOLISHED AREAS.

5.2 VISIT SITE TO DETERMINE FULL EXTENT OF DEMOLITION WORK.

5.3 REMOVE ALL ELECTRICAL EQUIPMENT DEEMED OBSOLETE BY RENOVATION.

5.4 OWNER TO HAVE FIRST RIGHT OF REFUSAL FOR ALL EQUIPMENT BEING REMOVED. ALL OTHER OBSOLETE ELECTRICAL EQUIPMENT TO BE REMOVED FROM SITE BY DIVISION 26.

5.5 REMOVE WIRING ASSOCIATED WITH OBSOLETE ELECTRICAL EQUIPMENT BACK TO SOURCE.

6.0 FIRE RATING PENETRATIONS:

6.1 MAINTAIN FIRE RATING AROUND CONDUITS PASSING THROUGH WALLS AND CEILINGS.

6.2 USE 3M BRAND, OR EQUAL, FIRE BARRIER PRODUCTS AT EACH PENETRATION.

6.3 STANDARD OF ACCEPTANCE FOR FIRE BARRIER PRODUCTS SHALL BE 3M #CP25 FIRE BARRIER CAULK, #303 PUTTY, #FS195 WRAP AND #CS195 SHEET.

7.0 WIRING METHODS:

7.1 FOR GENERAL PURPOSE WIRING: RW90 COPPER CONDUCTORS IN EMT CONDUIT FOR FEEDERS UNLESS OTHERWISE NOTED. ALL WIRING INSIDE COOLERS TO BE TECK90. TRANSITION TO TECK90 PRIOR TO PENETRATING COOLER WALLS.

7.2 UTILIZE CONCRETE OR MASONRY BOXES AS APPROPRIATE.

7.3 USE TYPE TW INSULATED GREEN GROUND/BOND CONDUCTOR IN ALL CONDUITS FOR CIRCUITS OPERATING AT OVER 30 VOLTS.

7.4 THE ELECTRICAL WIRING SYSTEM AND VARIOUS ELECTRICAL EQUIPMENT TO BE GROUNDED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE C22.1–24. PROVIDE GROUND WIRE IN ALL CONDUITS.

7.5 EXCEPT AS NOTED RUN ALL CONDUIT PARALLEL AND PERPENDICULAR TO BUILDING LINES. SUPPORT ALL CONDUIT USING APPROVED STRAPS AND HANGARS. TIE WIRE IS NOT ACCEPTABLE FOR SUPPORTING CONDUIT.

7.6 WIRE AND CABLES TO BE RUN CONCEALED AT ALL TIMES, UNLESS OTHERWISE STATED.

7.7 MINIMUM WIRE SIZE: #12 AWG. MINIMUM CONDUIT SIZE: 21mm.

7.8 PERFORM SPLICES ON #8 AWG AND SMALLER WIRES USING 3M–SCOTHLOC OR IDEAL–WIRENUT CONNECTORS.

7.9 LUGS, TERMINALS AND SCREWS USED FOR TERMINATION OF WIRING TO BE SUITABLE FOR EITHER COPPER OR ALUMINUM CONDUCTORS.

8.0 WIRING DEVICES:

8.1 120V RECEPTACLES: SPEC GRADE 15 AND 20 AMP DUPLEX U–GROUND TYPE. STANDARD OF ACCEPTANCE: HUBBELL BR SERIES.

8.2 COVER PLATE: WHITE NYLON OR AS INDICATED.

9.0 OUTLET BOXES

9.1 BOXES ARE TO BE FLUSH MOUNTED.

9.2 WHERE DEVICES ARE SHOWN GROUPED, MOUNT BOXES WITH MAXIMUM 50mm SPACING. PROVIDE ADDITIONAL BLOCKING AS REQUIRED.

9.3 DO NOT INSTALL OUTLETS BACK TO BACK IN WALL. ALLOW MINIMUM 150mm HORIZONTAL CLEARANCE BETWEEN BOXES.

10.0 DISCONNECT SWITCHES

101.1 HEAVY DUTY DISCONNECT SWITCHES ABLE TO BE PADLOCKED INTO ON OR OFF POSITION WITH 3 LOCKS, LEVER HANDLE.

10.2 ENCLOSURE: NEMA 1 FOR INTERIOR, NEMA 3R FOR EXTERIOR.

10.3 FUSIBLE OR NON–FUSIBLE AS INDICATED.

10.4 IDENTIFICATION AS PER 1.11.

10.5 MECHANICALLY INTERLOCKED DOOR.

11.0 PANEL BOARDS – BREAKER TYPE

11.1 PANEL BOARDS

.1 ALL PANEL BOARDS MUST BE AS PER CSA C22.2 NO.29, AND PRODUCT OF ONE MANUFACTURER.

.2 ALL NEW PANEL BOARDS IN THE WORK AREA TO BE PAINTED AS FOLLOWS. CONFIRM COLORS WITH OWNER PRIOR TO PAINTING. PROVIDE NEW LAMACOID LABELS FOR ALL PANEL BOARDS:

EQUIPMENT SYSTEM	COLOR	PANTONE
12500+ V NORMAL	BRIGHT YELLOW	12–0752 BUTTERCUP
4160V ESSENTIAL	DARK ORANGE	17–1461 ORANGEADE
480 TO 600V NORMAL	LIGHT BLUE	13–5410 ICED AQUA
480 TO 600V ESSENTIAL	DARK BLUE	17–4530 BARRIER REEF
120 TO 240V NORMAL	LIGHT GREEN	14–0425 BEACHNUT
120 TO 240V ESSENTIAL	DARK GREEN	18–0430 AVOCADO
FIRE ALARM	BRIGHT RED	–

.3 SEQUENCE THE PHASE BUSSING WITH THE ODD NUMBERED BREAKERS ON THE LEFT AND THE EVEN NUMBERED BREAKERS ON THE RIGHT, WITH EACH BREAKER BEING IDENTIFIED BY A PERMANENT NUMBER IDENTIFICATION AS TO THE CIRCUIT NUMBER AND PHASE.

.4 PROVIDE THE PANEL BOARDS WITH THE MAINS RATINGS, THE NUMBER OF CIRCUITS, AND THE NUMBER AND SIZE OF THE BRANCH CIRCUIT BREAKERS AS INDICATED.

.5 PROVIDE TWO (2) KEYS FOR EACH PANEL BOARD WITH A DOOR.

.6 PROVIDE A COPPER MAIN BUS OF THE VOLTAGE AND AMPERE RATINGS AS INDICATED.

.7 PROVIDE A FULL SIZE NEUTRAL FOR 600V BOARDS WHERE IT IS REQUIRED ON THE DRAWING.

.8 PROVIDE BOLT–ON BRANCH BREAKERS AS INDICATED.

.9 PROVIDE COPPER GROUND BUS.

.10 HOT–DIP GALVANIZE THE PANEL BOARD TUBS AFTER FABRICATION OR ACID ETCH, PRIME AND APPLY TWO (2) FINISH COATS OF AIR DRIED ASA 61 GREY ENAMEL TO THEM.

.11 ACID ETCH, PRIME AND APPLY TOW (2) FINISH COATS OF AIR DRIED ASA 61 GREY ENAMEL TO THE PANEL BOARD TRIMS AND DOORS EXCEPT AS OTHERWISE INDICATED.

.12 PROVIDE DOORS WITH CONCEALED HINGES, LOCKS AND HARDWARE FOR ALL PANEL BOARDS, EXCEPT FOR DISTRIBUTION PANEL BOARDS UNLESS OTHERWISE INDICATED. FOR RECESSED PANEL BOARDS, PROVIDE CHROME PLATED HARDWARE WHERE EXPOSED.

11.2 BREAKERS

.1 PROVIDE MOLDED CASE CIRCUIT BREAKER (BOLT–ON OR PLUG–ON CONNECTION AS INDICATED), QUICK–MAKE–QUICK–BREAK TYPE, FOR MANUAL AND AUTOMATIC OPERATION WITH TEMPERATURE COMPENSATION FOR 40 DEGREE CELSIUS AMBIENT AS INDICATED.

.2 PROVIDE MULTI–POLE BREAKERS WITH A COMMON–TRIP DEVICE AND SINGLE HANDLE.

.3 PROVIDE A SEPARATELY MOUNTED MAIN BREAKER, WHERE INDICATED, AT THE TOP OR THE BOTTOM OF THE PANEL BOARD TO SUIT THE CABLE ENTRY. WHEN MOUNTED VERTICALLY, THE HANDLE'DOWN' POSITION SHOULD BE THE 'OPEN' POSITION.

.4 PROVIDE PADLOCKING DEVICES ON CIRCUIT BREAKERS WHERE NOTED TO LOCK THE HANDLE OF A BREAKER IN THE 'ON' OR 'OFF' POSITION WITH THE TRIP UNITS TO REMAIN FREE TO FUNCTION AND PROTECT THE CIRCUIT FROM BOTH OVERLOAD AND SHORT CIRCUIT CONDITIONS.

.5 PROVIDE LOCK–ON DEVICES FOR BRANCH BREAKERS CONTROLLING FIRE ALARM, CLOCK OUTLET, EMERGENCY, DOOR SUPERVISORY, INTERCOM, STAIRWAY, EXIT, SHUNT TRIP AND NIGHT LIGHT CIRCUITS AND AS INDICATED.

.6 PROVIDE MOLDED CASE CIRCUIT BREAKERS TO OPERATE AUTOMATICALLY BY MEANS OF THERMAL AND MAGNETIC TRIPPING DEVICES TO PROVIDE AN INVERSE TIME VS. CURRENT TRIPPING CHARACTERISTICS.

.7 WHERE A 15A OR 20A CIRCUIT BREAKER IS USED AS THE ONLY SWITCHING DEVICE FOR LUMINARIES, THE CIRCUIT BREAKER SHALL BE SUITABLE FOR SWITCHING DUTY AND SHALL BE MARKED 'SWD'.

11.3 EQUIPMENT IDENTIFICATION

.1 PROVIDE A SIZE 8 NAMEPLATE FOR EACH PANEL BOARD ENGRAVED AS INDICATED.

.2 PROVIDE A SIZE 8 NAMEPLATE FOR EACH CIRCUIT IN DISTRIBUTION PANEL BOARDS ENGRAVED AS INDICATED. PROVIDE A COMPLETE TYPEWRITTEN CIRCUIT DIRECTORY WITH A CLEAR PLASTIC COVER SHOWING THE LOCATION AND LOAD OF EACH CIRCUIT FOR ALL OTHER PANEL BOARDS.

.3 FOR DISTRIBUTION PANEL BOARDS, PROVIDE LAMACOID NAMEPLATES NEXT TO EACH CIRCUIT BREAKER, ENGRAVED WITH THE NAME OF THE LOADS SUPPLIED BY THE CIRCUIT BREAKER.

11.4 INSTALLATION

.1 LOCATE PANEL BOARDS AS INDICATED AND MOUNT SECURELY, PLUMB, TRUE AND SQUARE, TO ADJOINING SURFACES.

.2 INSTALL SURFACE MOUNTED PANEL BOARDS ON PLYWOOD BACKBOARDS. WHERE PRACTICAL, GROUP PANEL BOARDS, AND OTHER ELECTRICAL EQUIPMENT IF PRESENT ON COMMON BACKBOARD

.3 MOUNT THE PANEL BOARDS 60" (1500MM) ABOVE THE FINISHED FLOOR LEVEL TO THE PANEL BOARD CENTERLINE UNLESS OTHERWISE INDICATED. WHERE TWO (2) OR MORE DIFFERENT SIZE PANEL BOARDS ARE INSTALLED ADJACENT TO EACH OTHER, ALIGN THE TOPS OF THE PANEL BOARDS TO SUIT THE TALLEST PANEL BOARD.

.4 CONNECT THE LOADS TO THE BRANCH BREAKERS AS INDICATED.

.5 CONNECT THE NEUTRAL CONDUCTORS TO THE COMMON NEUTRAL BUS.

.6 CONNECT THE ISOLATED GROUND CONDUCTORS TO THE ISOLATED GROUND BUS, IF PROVIDED.

.7 CONNECT THE MAIN FEEDER TO THE MAIN LUGS OR TO THE MAIN BREAKER AND TO THE NEUTRAL BUS AND THE ISOLATED GROUND BUS, IF PROVIDED

12.0 DRY TYPE TRANSFORMERS:

12.1 DRY TYPE TRANSFORMERS TO BE ALUMINUM WINDING, THREE–CORE DESIGN TO CSA C802.2–06, TYPE ANN.

12.2 RATING: KVA AS INDICATED; 3 PHASE; 600Vac DELTA PRIMARY; 120/208Vac WYE SECONDARY C/W STANDARD TAPS.

12.3 ENCLOSURE: SPRINKLER PROOF.

12.4 INSULATION: CLASS H, 150°C TEMPERATURE RISE.

12.5 COLOR TO BE AS PER 11.1.2, BASED ON PRIMARY VOLTAGE.

13.0 EXECUTION

13.1 INSTALL MATERIALS IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

13.2 PROVIDE INSPECTION CERTIFICATE UPON COMPLETION OF THIS WORK.

13.3 FIELD QUALITY CONTROL:

.1 CONDUCT THE FOLLOWING TESTS:
- .1 POWER DISTRIBUTION SYSTEM INCLUDING PHASING, VOLTAGE GROUNDING AND LOAD BALANCE.
- .2 CIRCUITS ORIGINATING FROM BRANCH DISTRIBUTION PANELS.
- .3 MOTORS AND ASSOCIATED CONTROLS EQUIPMENT. INCLUDE SEQUENCED OPERATION OF SYSTEMS WHERE APPLICABLE.

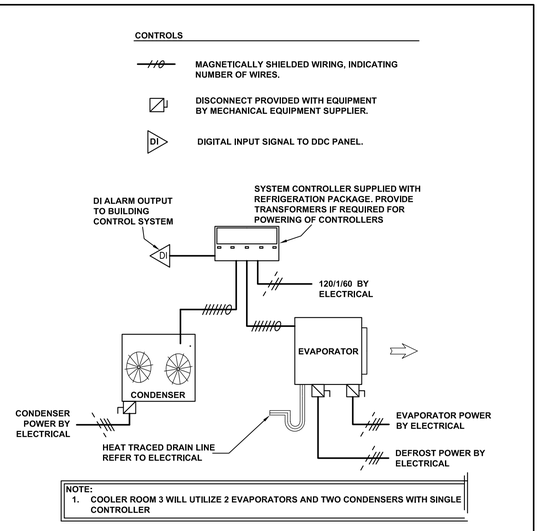
.2 FURNISH MANUFACTURERS CERTIFICATE OR LETTER CONFIRMING THAT THE INSTALLATION, AS IT PERTAINS TO EACH SYSTEM, HAS BEEN INSTALLED TO MANUFACTURERS INSTRUCTIONS.

.3 INSTALLATION RESISTANCE TESTING:
- .1 MEGGER CIRCUITS, FEEDERS AND EQUIPMENT UP TO 350V WITH 500V INSTRUMENT, UP TO 600V WITH 1000V INSTRUMENT.
- .2 CHECK RESISTANCE TO GROUND BEFORE TESTING.
- .3 CARRY OUT CHECK IN PRESENCE OF ENGINEER.
- .4 PROVIDE INSTRUMENTS, METERS, EQUIPMENT AND PERSONAL REQUIRED TO CONDUCT TESTS.
- .5 SUBMIT TEST RESULTS FOR ENGINEER'S REVIEW.

14.0 STANDARD OF ACCEPTANCE

14.1 THE ITEMS NAMED MEET IN ALL RESPECT PERFORMANCE, QUALITY AND WORKMANSHIP AND ARE ACCEPTABLE TO THE OWNER WITHOUT QUALIFICATIONS.

14.2 EQUIPMENT PROPOSED SHALL MEET THE SAME STANDARDS OF PERFORMANCE, QUALITY AND WORKMANSHIP.



TYPICAL REFRIGERATION CONTROL DETAIL

SCALE: N.T.S.

A / B — A - DETAIL; B - LOCATION/DRAWING No.; C - DRAWING No. — A / B C

No.	REVISION	DATE (Y/M/D/)
0	ISSUED FOR TENDER	2024.12.13

GENERAL NOTES

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4. ALL DEFICIENCIES FOUND IN THIS DRAWING IS TO BE BROUGHT TO THE ATTENTION OF THE FACILITIES ENGINEERING AND DEVELOPMENT OFFICE OF THE DEPARTMENT OF FACILITIES MANAGEMENT, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, PRIOR TO THE SUBMISSION OF THE TENDERS.

PERMITS REQUIRED FOR ELECTRICAL WORK AT MEMORIAL UNIVERSITY OF NEWFOUNDLAND SHALL BE OBTAINED FROM SERVICE NL EFFECTIVE FEBRUARY 1, 2020 AND MADE AVAILABLE TO MUN REPRESENTATIVES UPON REQUEST. SEE STIPULATED PRICE CONTRACT GENERAL CONDITIONS SECTION 2.18.0 LAWS, NOTICES, PERMITS AND FEES.

MECHANICAL & ELECTRICAL CONSULTANT:

CORE ENGINEERING INC.
57 Pippy Place
St. John's, NL, Canada A1B 4H8
Tel (709) 722-8613
Fax (709) 722-0910

CORE PROJECT #: 22-3392

REGISTERED PROFESSIONAL ENGINEERS NEWFOUNDLAND & LABRADOR — PEGNL Newfoundland and Labrador — GREGORY S. TUCKER — SIGNATURE 2024.12.13 DATE

PROVINCE OF NEWFOUNDLAND
pegnl PROFESSIONAL ENGINEERS AND GEOSCIENTISTS NEWFOUNDLAND & LABRADOR
PERMIT HOLDER
This Permit Allows
CORE ENGINEERING INC.
MIRC: 04896
To practice Professional Engineering in Newfoundland and Labrador. Permit No. as Issued by PEGNL D0209 which is valid for the year 2024.

MEMORIAL UNIVERSITY
Department of Facilities Management

This University was raised by the people of Newfoundland as a memorial to the fallen in the great wars, 1914-1918, 1939-1945, that in freedom of learning, their cause and sacrifice might not be forgotten.

- Dedication plaque, Arts & Administration Building, St. John's Campus

PROJECT NAME:

S.J. CAREW BUILDING (FACULTY OF ENGINEERING & APPLIED SCIENCE) THERMAL LAB MECHANICAL UPGRADES
Project #: EN-189-21

DRAWING TITLE:

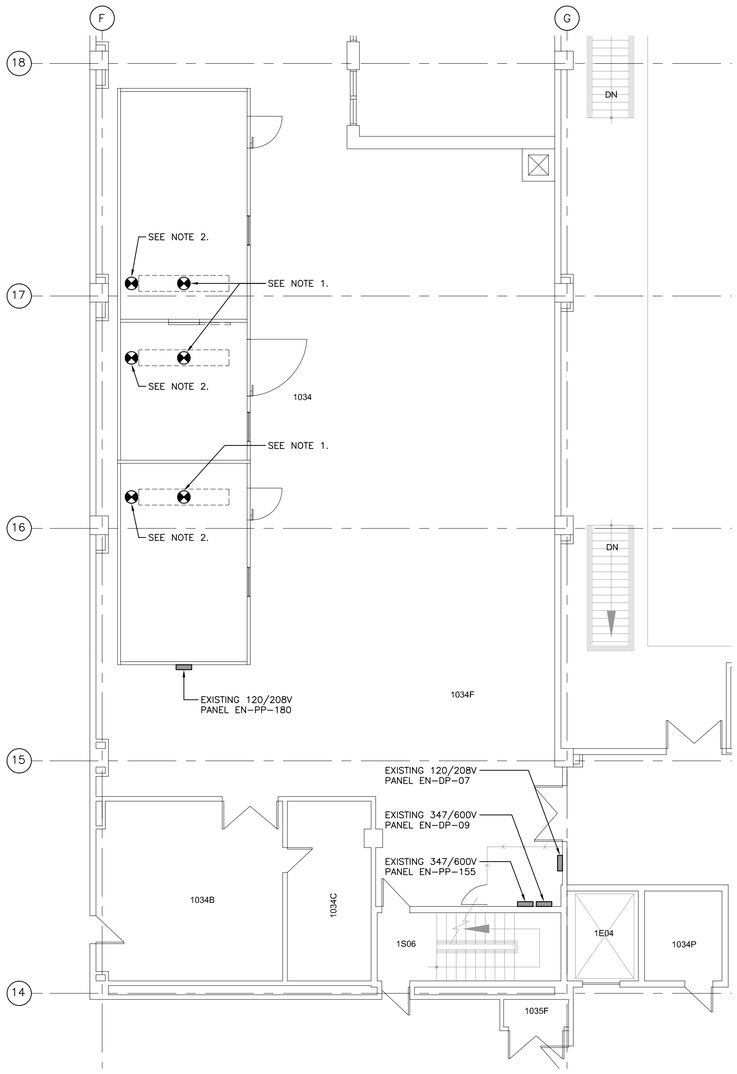
ELECTRICAL SPECIFICATIONS AND CONTROL DETAIL

DESIGNED:	DRAWN:
GT	RG
REVIEWED:	APPROVED:
GT	GT
SCALE:	DATE:
AS NOTED	2024/08/09
PROJECT No.	DRAWING No.
EN-189-21	E-0.1

ELECTRICAL LEGEND

- – ELECTRICAL CONNECTION TO EQUIPMENT.
- – DISCONNECT SWITCH SUPPLIED AND INSTALLED BY ELECTRICAL.
- – 20A, 120V GFCI DUPLEX CONVENIENCE RECEPTACLE.
- – ELECTRICAL PANEL BOARD.

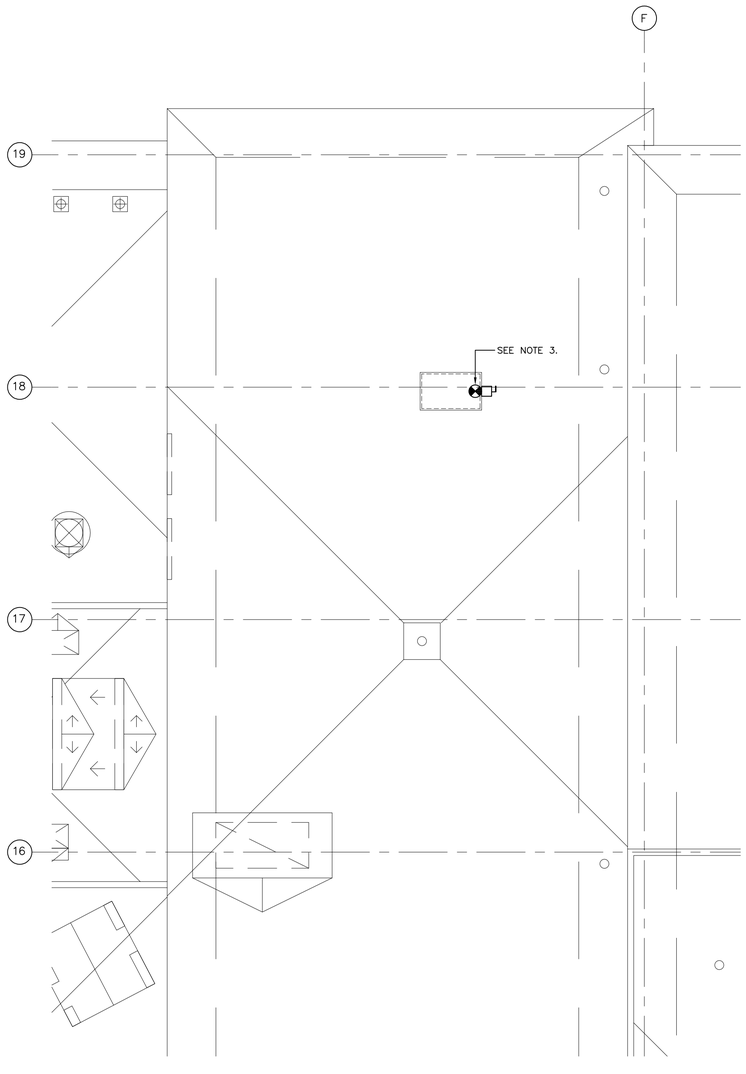
NOTES:
1. EXISTING EVAPORATOR TO BE REMOVED. REMOVE ASSOCIATED WIRE AND CONDUIT BACK TO SOURCE. TURN BREAKER TO "OFF" POSITION AND LABEL AS SPARE. PROVIDE UPDATED, TYPE WRITTEN PANEL SCHEDULE.
2. EXISTING DRAIN LINE HEAT TRACE CIRCUIT TO BE DISCONNECTED FROM EXISTING HEAT TRACE BEING REMOVED AND RECONNECTED TO NEW HEAT TRACING. EXTEND/REROUTE AS REQUIRED.
3. EXISTING ROOFTOP CONDENSING UNIT TO BE REMOVED. PORTION OF CONDUIT AND WIRE RUN TO REMAIN AND BE REUSED FOR FEED TO NEW TRANSFORMER IN ROOM EN–1034. REFER TO REVISED FLOOR PLAN FOR APPROXIMATE LOCATION. SUPPLY AND INSTALL NEW LAMACOID LABEL FOR 100A, 3P BREAKER IN PANEL EN–DP–05.



PART PLAN – LEVEL 1 ELECTRICAL DEMOLITION LAYOUT

SCALE : 1:100

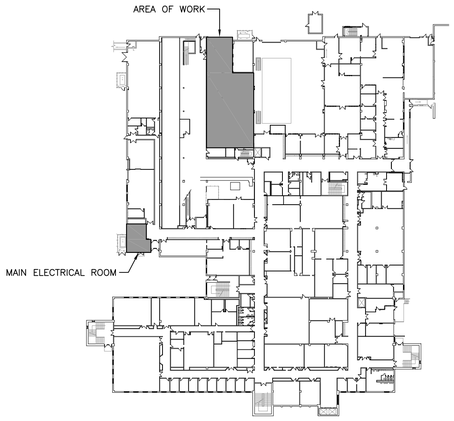
0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



PART PLAN – ROOF ELECTRICAL DEMOLITION LAYOUT

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



KEY PLAN – LEVEL 1

SCALE : 1:1000

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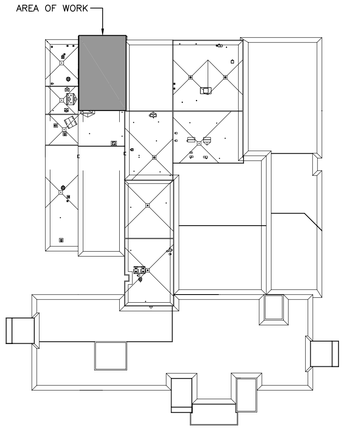

KEY PLAN – ROOF

SCALE : 1:1000

0m 10m 20m 30m 40m 50m 60m 70m 80m 90m 100m

A / B – A - DETAIL, B - LOCATION/DRAWING No., C - DRAWING No. (A / B C)

No.	REVISION	DATE (Y/M/D/)
0	ISSUED FOR TENDER	2024.12.13

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MECHANICAL & ELECTRICAL CONSULTANT:

CORE ENGINEERING INC.

57 Pippy Place
St. John's, NL, Canada A1B 4H8

Tel (709) 722-8613
Fax (709) 722-0910

CORE PROJECT #: 22-3392

REGISTERED PROFESSIONAL ENGINEER – PEGNL Newfoundland and Labrador – GREGORY S. TUCKER – SIGNATURE – 2024.12.13 DATE – NEWFOUNDLAND & LABRADOR

PROVINCE OF NEWFOUNDLAND

pegnl PROFESSIONAL ENGINEERS AND GEOSCIENTISTS NEWFOUNDLAND & LABRADOR

PERMIT HOLDER
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MIRC: 04896
To practice Professional Engineering in Newfoundland and Labrador. Permit No. as issued by PEGNL D0209 which is valid for the year 2024.

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Department of Facilities Management

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- Dedication plaque, Arts & Administration Building, St. John's Campus

PROJECT NAME:

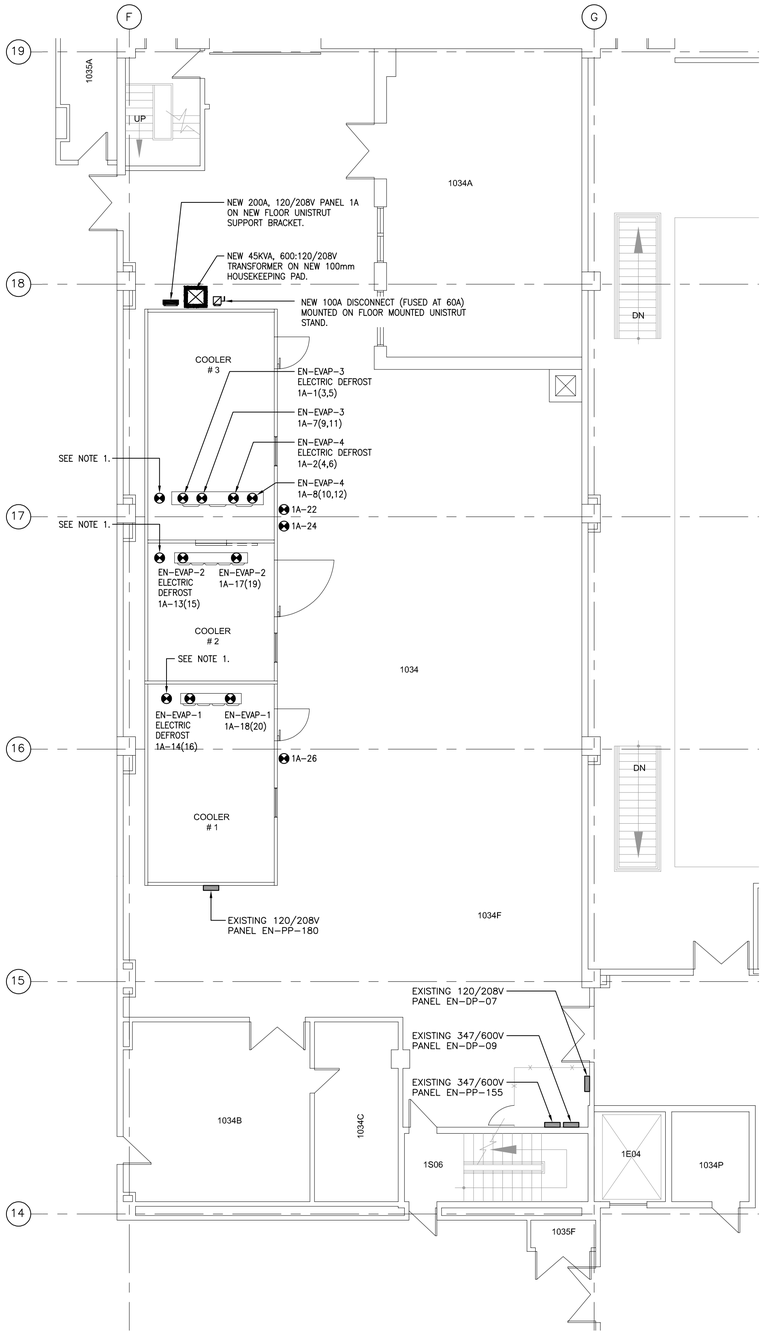
S.J. CAREW BUILDING (FACULTY OF ENGINEERING & APPLIED SCIENCE) THERMAL LAB MECHANICAL UPGRADES
Project #: EN-189-21

DRAWING TITLE:

ELECTRICAL LEGEND AND DEMOLITION FLOOR PLANS

DESIGNED:	DRAWN:
GT	RG
REVIEWED:	APPROVED:
GT	GT
SCALE:	DATE:
AS NOTED	2024/08/09
PROJECT No.	DRAWING No.
EN-189-21	E-0.2

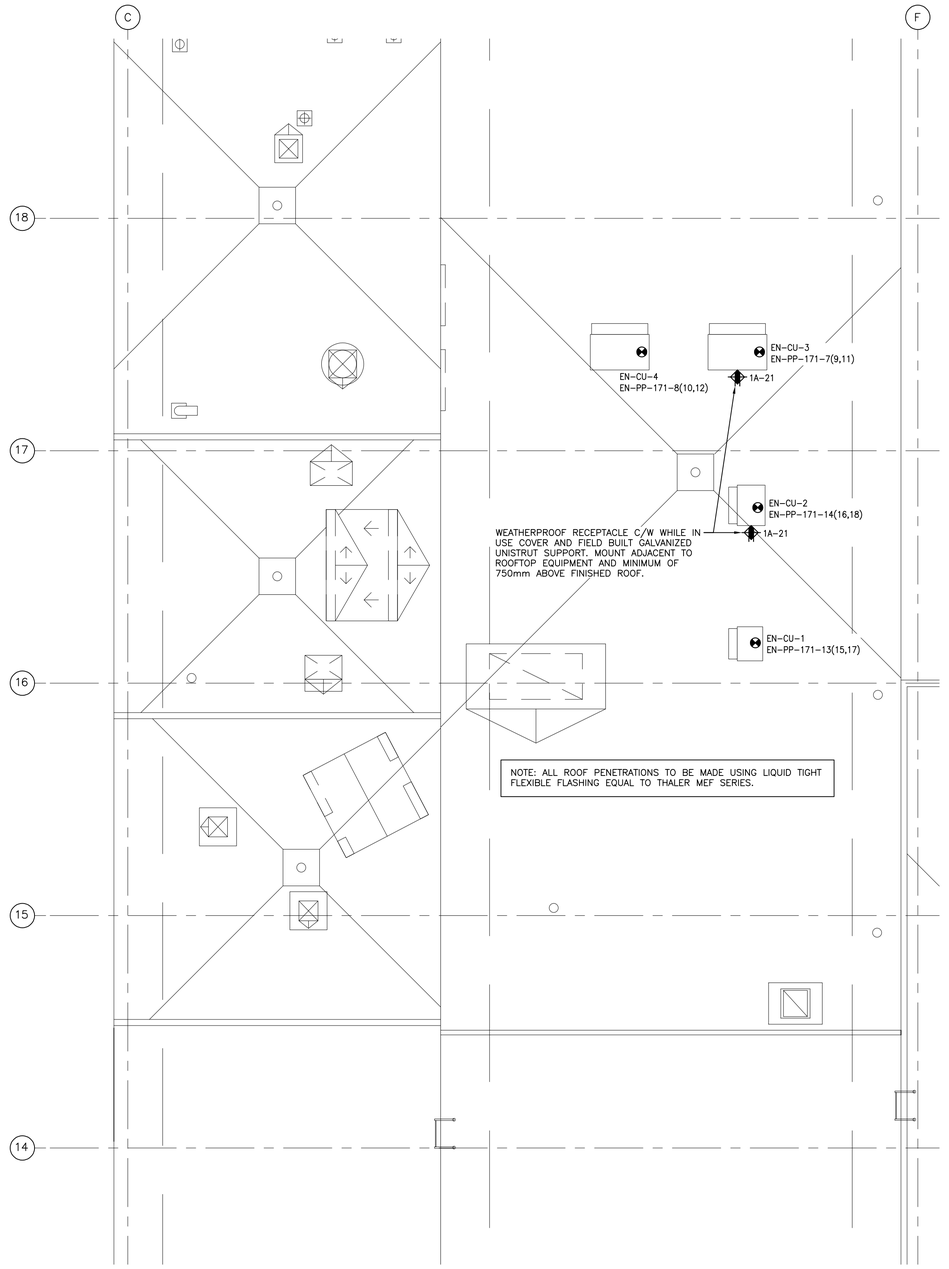
NOTES:
1. SUPPLY AND INSTALL 5m OF NEW HEAT TRACE FOR EVAPORATOR DRAIN LINES IN EACH COOLER (4 TOTAL – 1 IN COOLER #1, 1 IN COOLER #2 AND 2 IN COOLER #3). FIELD MEASURE AND CONFIRM LENGTH PRIOR TO ORDERING. HEAT TRACE CABLE TO BE EQUAL TO RAYCHEM 5XL1CT (IF EXISTING VOLTAGE IS 120V) OR 5XL2CT (IF EXISTING VOLTAGE IS 208V – CONFIRM ON SITE PRIOR TO ORDERING) WITH RAYCLIC PC POWER CONNECTION AND END SEAL KIT. SUPPLY AND INSTALL RAYCHEM AMCF5 THERMOSTAT IN EACH COOLER TO CONTROL THE HEATING CABLE. PROVIDE RAYCHEM GT66 TAPE TO AFFIX HEATING CABLE TO THE COPPER DRAIN LINES. HEAT TRACE CABLE SHALL NOT OPERATE ABOVE PIPING INSULATION RATING (93˚C). EXISTING DRAIN LINE HEAT TRACE CIRCUIT TO BE DISCONNECTED AND EXISTING HEAT TRACE AND CONTROLS TO BE REMOVED. RECONNECT EXISTING CIRCUIT TO NEW HEAT TRACE. EXTEND/REROUTE AS REQUIRED.
2. ALL WIRING INSIDE COOLER SHALL BE TECK90. TRANSITION FROM CONDUIT AND WIRE TO TECK90 PRIOR TO PENETRATING COOLER WALLS.



PART PLAN – LEVEL 1 ELECTRICAL LAYOUT

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



PART ELECTRICAL ROOF PLAN

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

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No.	REVISION	DATE (Y/M/D/)
0	ISSUED FOR TENDER	2024.12.13

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57 Pippy Place
St. John's, NL, Canada A1B 4H8

Tel (709) 722-8613
Fax (709) 722-0910

CORE PROJECT #: 22-3392

REGISTERED PROFESSIONAL ENGINEERS NEWFOUNDLAND & LABRADOR — PEGNL Newfoundland and Labrador — GREGORY S. TUCKER — SIGNATURE — 2024.12.13 DATE

PROVINCE OF NEWFOUNDLAND
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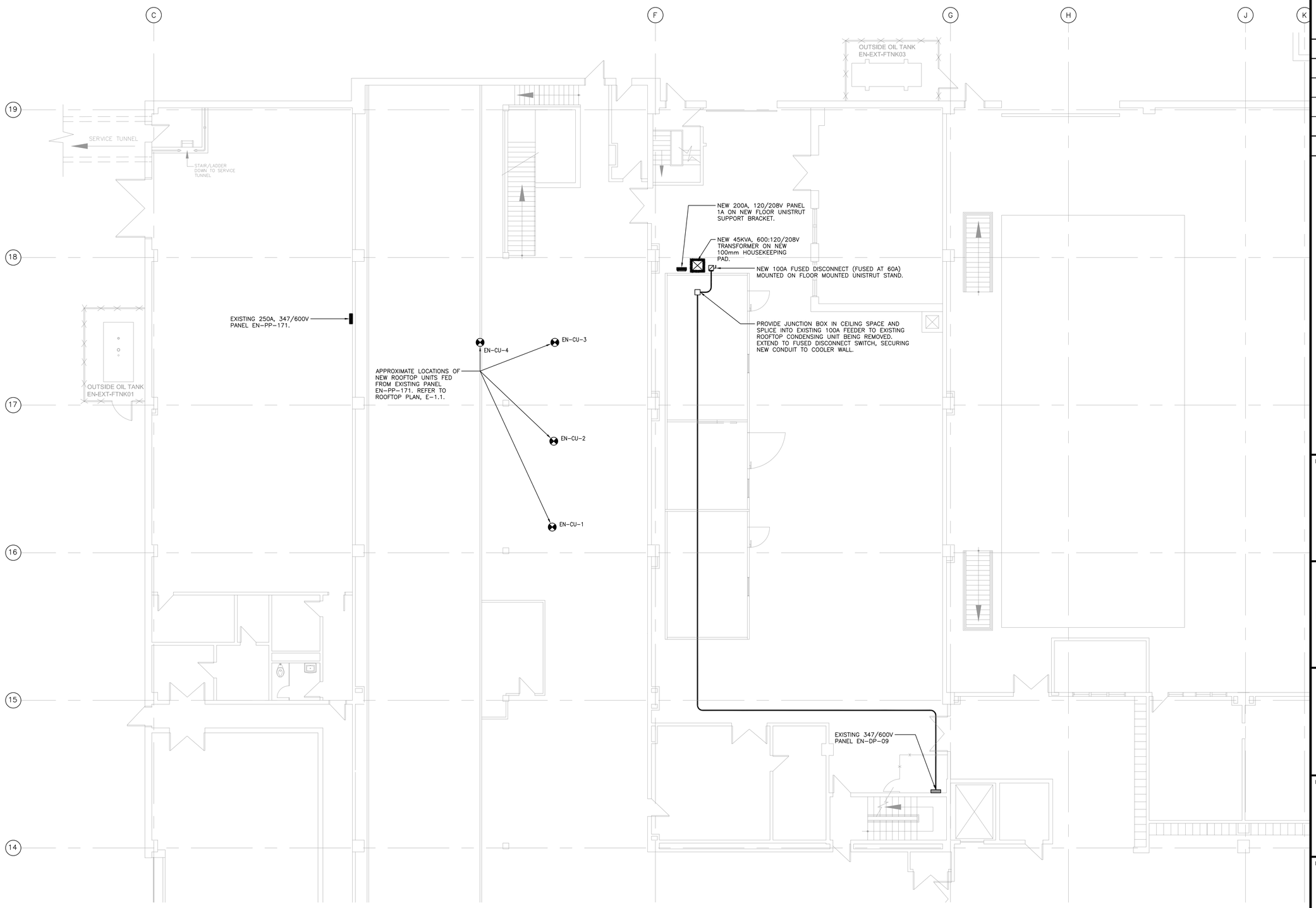
PROJECT NAME:

S.J. CAREW BUILDING (FACULTY OF ENGINEERING & APPLIED SCIENCE) THERMAL LAB MECHANICAL UPGRADES Project #: EN-189-21

DRAWING TITLE:

REVISED ELECTRICAL FLOOR PLANS

DESIGNED:	DRAWN:
GT	RG
REVIEWED:	APPROVED:
GT	GT
SCALE:	DATE:
AS NOTED	2024/08/09
PROJECT No.	DRAWING No.
EN-189-21	E-1.1



CONDUIT ROUTING PLAN

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

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REGISTERED PROFESSIONAL ENGINEER NEWFOUNDLAND & LABRADOR
PEGNL Professional Seal Impression
GREGORY S. TUCKER
SIGNATURE
2024.12.13
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S.J. CAREW BUILDING (FACULTY OF ENGINEERING & APPLIED SCIENCE) THERMAL LAB MECHANICAL UPGRADES
Project #: EN-189-21

DRAWING TITLE:

CONDUIT ROUTING PLAN

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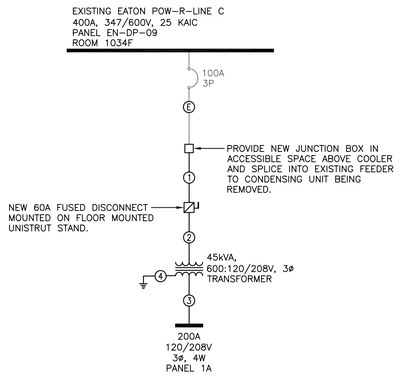

ELECTRICAL SINGLE LINE DIAGRAM

FEEDER SCHEDULE

① 3-#3 RW90 COPPER CONDUCTORS & 1-#8 TW BOND IN 35mm CONDUIT.
② 3-#6 RW90 COPPER CONDUCTORS & 1-#10 TW BOND IN 27mm CONDUIT.
③ 4-#2/0 RW90 COPPER CONDUCTORS & 1-#6 TW BOND IN 53mm CONDUIT.
④ 1-#6 BONDING JUMPER CONNECTED TO BONDING CONDUCTOR IN THE PRIMARY SUPPLY.

EXISTING

PANEL EN-PP-171 — PANEL SCHEDULE
TYPE CIRCUIT BREAKER TYPE
RATING 250A, 347/600V, 3ø, 4W, SURFACE
MANUFACTURER EATON POW-R-LINE 3a
MINIMUM INTERRUPTING CAPACITY 25KA

CIRCUIT DESCRIPTION	LOAD	WIRE SIZE	BRKR. SIZE	CIRCUIT NO.		BRKR. SIZE	WIRE SIZE	LOAD	CIRCUIT DESCRIPTION
COMP-02 DSW-050 EN-RM-1036C	14000		60	1	2	60			
	14000		A	3	4	A			SPARE
	14000		3P	5	6	3P			
	9861		50	7	8	50		9861	
CONDENSING UNIT EN-CU-3	9861	8	A	9	10	A	8	9861	CONDENSING UNIT EN-CU-4
	9861		3P	11	12	3P		9861	
	2526		15	13	14	20		3460	
CONDENSING UNIT EN-CU-1	2526	12	A	15	16	A	12	3460	CONDENSING UNIT EN-CU-2
	2526		3P	17	18	3P		3460	
				19	20				
				21	22				
				23	24				
SPACE				25	26				SPACE
				27	28				
				29	30				

CONNECTED LOAD: 119124 W

REMARKS:
1. EXISTING 60A, 3P BREAKERS IN POSITIONS 1(3,5) AND 2(4,6) TO REMAIN. ALL OTHER BREAKERS INDICATED ABOVE ARE NEW. TYPE AND RATINGS TO MATCH EXISTING.

NEW

PANEL 1A — PANEL SCHEDULE
TYPE CIRCUIT BREAKER TYPE
RATING 225A, 120/208V, 3ø, 4W, SURFACE
MANUFACTURER EATON POW-R-LINE 2
MINIMUM INTERRUPTING CAPACITY 10KA

CIRCUIT DESCRIPTION	LOAD	WIRE SIZE	BRKR. SIZE	CIRCUIT NO.		BRKR. SIZE	WIRE SIZE	LOAD	CIRCUIT DESCRIPTION
EVAPORATOR EN-EVAP-3 ELECTRIC DEFROST	3203		40	1	2	40		3600	
	3203	8	A	3	4	A	8	3600	EVAPORATOR EN-EVAP-4 ELECTRIC DEFROST
	3203		3P	5	6	3P		3600	
	792		15	7	8	15		1350	
EVAPORATOR EN-EVAP-3	792	12	A	9	10	A	12	1350	EVAPORATOR EN-EVAP-4
	792		3P	11	12	3P		1350	
EVAPORATOR EN-EVAP-2 ELECTRIC DEFROST	1986	10	30A	13	14	15A	12	1040	EVAPORATOR EN-EVAP-1 ELECTRIC DEFROST
	1986		2P	15	16	2P		1040	
EVAPORATOR EN-EVAP-2	312	12	15A	17	18	15A	12	250	EVAPORATOR EN-EVAP-1
	312		2P	19	20	2P		250	
ROOFTOP RECEPTACLE	300	10	20	21	22	15	12	200	CONTROL POWER
SPARE			20	23	24	15	12	200	CONTROL POWER
SPARE			20	25	26	15	12	200	CONTROL POWER
SPARE			20	27	28	15			SPARE
SPARE			15	29	30	15			SPARE
				31	32				
				33	34				
				35	36				
SPACE				37	38				SPACE
				39	40				
				41	42				

CONNECTED LOAD: 35211 W

REMARKS:
1. COORDINATE NEW PANEL NAME WITH OWNER. ALL PANEL AND CIRCUIT TAGGING TO MATCH.

A - DETAIL
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Project #: EN-189-21

DRAWING TITLE:

ELECTRICAL SINGLE LINE DIAGRAM AND PANEL SCHEDULES

DESIGNED:	DRAWN:
GT	RG
REVIEWED:	APPROVED:
GT	GT
SCALE:	DATE:
AS NOTED	2024/08/09
PROJECT No.	DRAWING No.
EN-189-21	E-2.1