

**CE PLAN NE PEUT ÊTRE UTILISÉ POUR
L'ÉMISSION QUE SI IL EST EN LEVÉ
ET QU'IL EST ÉTAMPÉ PAR L'INGÉNIEUR
ET LE DÉSIGNÉ. S'IL N'EST PAS ÉTAMPÉ,
IL NE PEUT ÊTRE UTILISÉ POUR LA
CONSTRUCTION. S'IL NE PEUT ÊTRE
UTILISÉ, IL NE PEUT ÊTRE ÉTAMPÉ
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PAR L'INGÉNIEUR ET LE DÉSIGNÉ.**

15-01-2015 SOUMISSION / TENDER
01-04-2016 ÉMIS POUR / ISSUED FOR

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INGÉNIEUR EN ÉLECTRICITÉ
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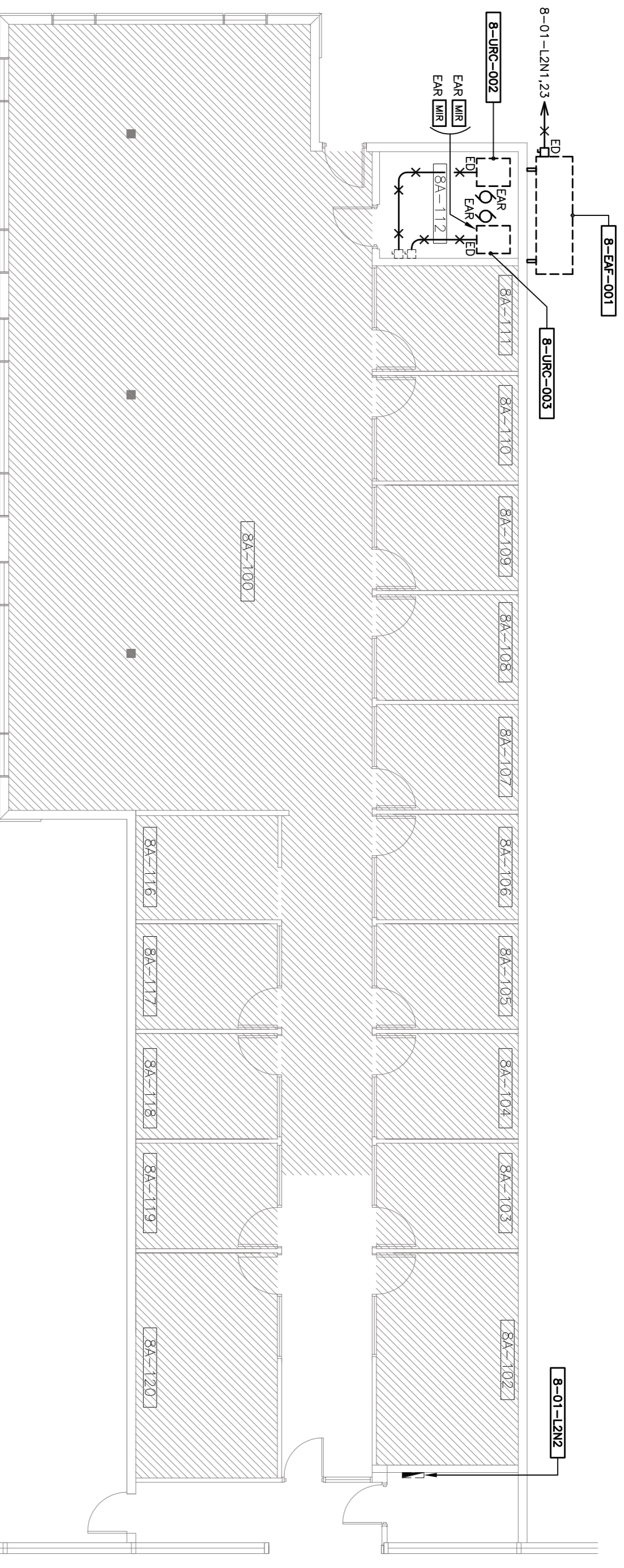


ROCHON
EXPERTS-CONSEILS INC.
Mécanique - Électricité

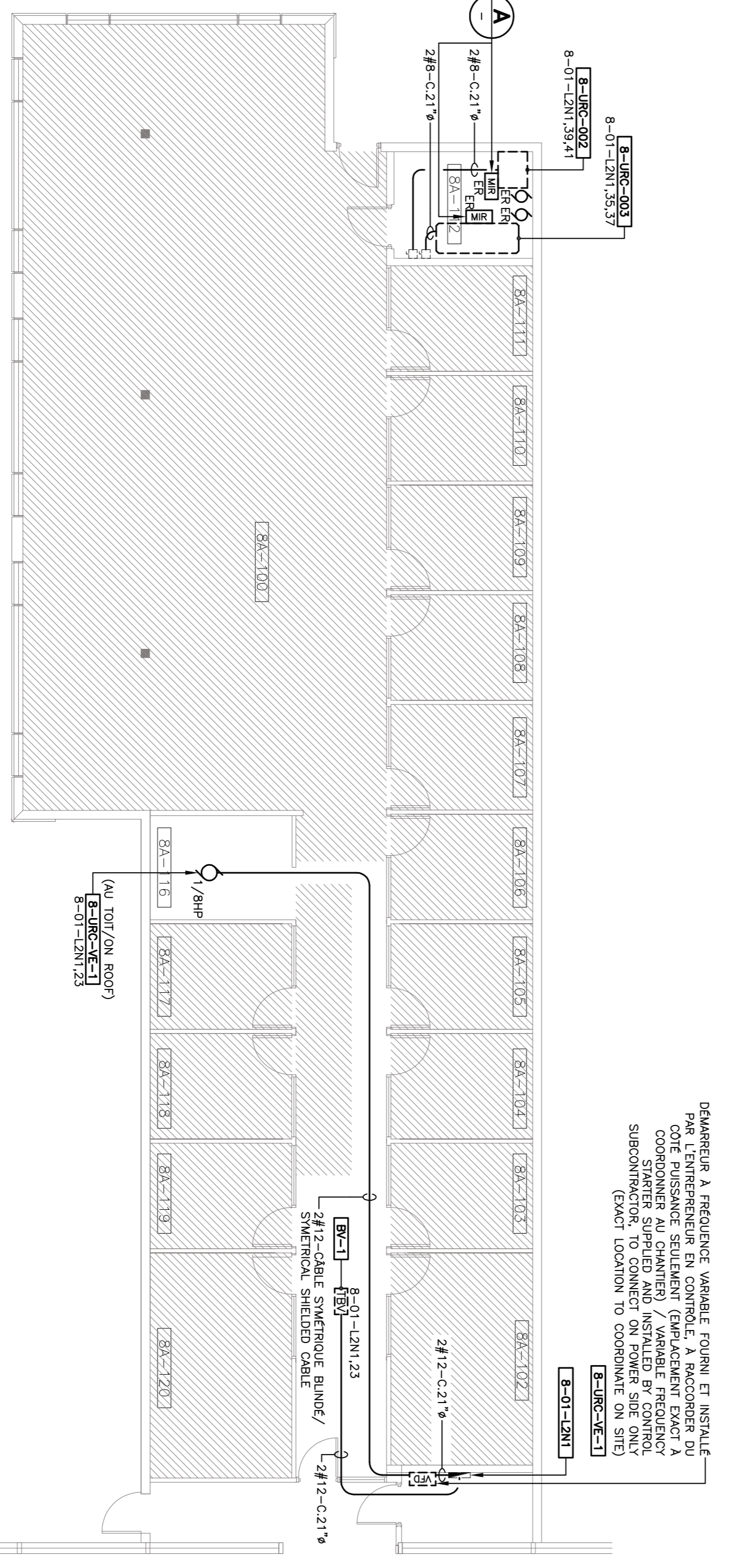
**AGENCE SPATIALE CANADIENNE
CANADIAN SPACE AGENCY**
PAVILLON 8 / PAVILLION 8
AMÉLIORATION DES CONDITIONS
AMBIANTALES / IMPROVEMENTS OF
AMBIENT CONDITIONS
6767 route de l'Aéroport, Saint-Hubert (Québec)

**ÉLECTRICITÉ / ELECTRICITY
DEVIS & SERVICES /
SPECIFICATIONS
& SERVICES**

Client / client: Agence spatiale canadienne
Projet / project: PAVILLON 8 / PAVILLION 8
Date: Mars 2014
No. de projet / project no.: 2013-20
Développé par / developed by: Carl Blanchard
Vérifié par / verified by: Frédéric Gagnon, ing.
E-212



**PAVILLON 8
EXISTANT / DÉMOLITION
EXISTING / DEMOLITION**



**PAVILLON 8
NOUVEAU / NEW LAYOUT**

DÉMARRER À FREQUENCE VARIABLE FOURNI ET INSTALLÉ PAR L'ENTREPRENEUR EN CONTRÔLE. À REMPLACER EXACT AINSI QUE LES DÉTACHEMENTS DE PUISSANCE. LES DÉTACHEMENTS DE PUISSANCE SONT FOURNIS EN DEUX COPIES. UN EXEMPLAIRE DE LA COPIE EST À FAIRE CROQUER SUR LE PLAN ET À FAIRE ÉTAMPÉ PAR L'INGÉNIEUR EN CONTRÔLE. LE DÉTACHEMENT DE PUISSANCE DOIT ÊTRE FOURNI EN DEUX COPIES. UN EXEMPLAIRE DE LA COPIE EST À FAIRE CROQUER SUR LE PLAN ET À FAIRE ÉTAMPÉ PAR L'INGÉNIEUR EN CONTRÔLE.

2#12-C-21" 9
2#8-C-21" 9
P-01-L2N1-139.4
P-01-L2N1-139.41
P-01-L2N1-135.37
E-URC-003
E-URC-002
E-URC-001

- 2. UNLESS OTHERWISE INDICATED, THE NON METALLIC SHEATHED CABLE (POWER, MINDO, FIRE ALARM, FAS109) SHALL BE USED IN WOOD-STUD THE WALL CONSTRUCTION AND IN BUILDINGS DESIGNED TO BE COMBUSTIBLE.
 - 3. METAL CONDUIT OR ARMORED CABLE IS TO BE USED WHERE WOOD OR METAL STUDDED PARTITIONS ARE CONSTRUCTED FOR CONNECTION TO LIGHTING FIXTURES, RECEPTACLES AND OTHER EQUIPMENT INSTALLED IN A BUILDING CLASSIFIED AS "COMBUSTIBLE".
 - 4. ALL CABLE INSTALLED IN A VENTILATION PLENUM SHALL BE ARMORED CABLE OR AN FT-4 CLASS CABLE.
 - 5. WIRE SIZES INDICATED ARE MINIMUMS. THE CONTRACTOR MUST ALWAYS INSTALL THE WIRES REQUIRED TO LIMIT VOLTAGE DROP TO 3% (DISTANCE VS INDICATED LOAD).
 - 6. ALL WIRING EQUAL OR GREATER THAN #8 AWG MUST BE STRANDED.
- 2.03 QUOTE BOXES**
- 1. ALL OUTLET AND JUNCTIONS BOXES SHALL BE SUPPORTED INDEPENDENTLY FROM THE CONDUITS CONNECTED TO THEM.
 - 2. THESE BOXES SHALL BE OF GALVANIZED STEEL AND EQUIPPED WITH A PLASTER RING, AS REQUIRED, PER THE INSULATION OR THE PROTECTION UNLESS OTHERWISE NOTED. THE ELECTRICAL CONTRACTOR SHALL BE UNDER THE OBLIGATION TO PROVIDE ALL REQUIRED COVERINGS.
 - 3. CAST ALUMINUM BOXES F5 OR F2 TYPE WITH FACTORY THREADED OPENINGS AND MOUNTING LUGS FOR SURFACE MOUNT OF SWITCHES AND SERVICE RECEPTACLES.
 - 4. PVC MOLDED BOXES WITH FACTORY MADE OPENINGS, MOUNTING LUGS FOR SURFACE MOUNT.
- 2.04 CONDUITS**
- 1. UNLESS OTHERWISE NOTED (EX: COMBUSTIBLE BUILDING) ALL WIRING IS TO BE INSTALLED IN CONDUITS.
 - 2. UNLESS OTHERWISE INDICATED THE CONDUITS MUST COMPLY WITH THE FOLLOWING:
 - UNDERGROUND INSTALLATIONS, PVC CONDUIT.
 - HAZARDOUS LOCATIONS (SECTION 18 OF THE ELECTRICAL CODE): THREADED RIGID GALVANIZED STEEL
 - LOCATIONS SUBJECT TO DAMAGE:
 - ALL OTHER LOCATIONS: EMT CONDUIT.
 - 3. CONDUITS USED FOR THE ELECTRICAL UTILITY'S UNDERGROUND SERVICES MUST BE PVC, OF INDICATED DIAMETER AND APPROVED FOR USE BY THE SAID UTILITY.
 - 4. THE USE OF ARMORED CABLE (AC-90) IS LIMITED TO A 10'-0" (3 METERS) LENGTH FOR THE FINAL CONNECTION TO LIGHTING FIXTURES. EXCESS LENGTH IS TO BE CONDUIT.
 - 5. USE LIQUID-TIGHT FLEXIBLE CONDUIT FOR CONNECTION TO MOTORS OR VIBRATING EQUIPMENT AS WELL AS IN DAMP, WET OR CORROSIVE LOCATIONS.
 - 6. ALL CONDUITS WILL BE SECURELY ATTACHED WITH APPROPRIATE COLLARS, STEEL FITTINGS OR ANCHORAGES AND WILL HAVE TO 90 DEGREE BENDS AND BE INSTALLED PARALLEL TO THE SIDE WINDS OF THE BUILDING.
 - 7. PROVIDE A POLYPROPYLENE PULL CORD IN EMPTY CONDUITS AND PROVIDE A CONNECTOR WITH A NYLON BUSHING AT EACH END OF CONDUIT BEING USED FOR COMMUNICATION AND DATA CABLES.
 - 8. ALL THE PIP CONDUITS SHALL BE PROVIDED WITH CONNECTORS AND SET SCREW COUPLINGS. THE COUPLINGS SHALL BE OF STEEL AND THE CONNECTORS SHALL BE OF STEEL WITH NYLON BUSHING.
 - 9. ALL THE CONDUITS SHALL BE PROVIDED WITH A GREEN INSULATED WIRE FOR BONDING, SIZE AS REQUIRED BY THE ELECTRICAL CODE.
- 2.05 SAFETY DISCONNECT SWITCH**
- 1. ALL SAFETY DISCONNECT SWITCHES ARE TO BE FOR HEAVY DUTY SERVICE AND SHALL ACCEPT IIRC, FORM 1, CLASS 1 FUSES WHEN INDICATED ON DRAWINGS.
 - 2. DISCONNECT SWITCHES FOR OUTSIDE USE SHALL BE OF TYPE EMAC OR DISCONNECT SWITCHES SHALL BE OF TYPE C-100. DISCONNECT SWITCHES SHALL BE PROVIDED BY THE CONTRACTOR. DISCONNECT SWITCHES SHALL BE PROVIDED BY THE CONTRACTOR TO PROTECT OPENING WHEN HANDLE IS IN THE "ON" POSITION. DISCONNECT SWITCHES SHALL BE SECURELY FIXED TO THE EQUIPMENT IT IS FEEDING. IF APPROVED BY EQUIP. MFGT MANUFACTURER, OR ELSE IT SHALL BE INSTALLED ON AN INDEPENDENT CHANNEL SUPPORT.
 - 3. ACCEPTABLE MANUFACTURERS: G.E. OR EQUIPMENT BY SIGNES OR SQUARE-D

- 4. PROVIDE A WRITTEN SIGNED REPORT, AND TESTING THAT ALL SYSTEMS, EQUIPMENT & ACCESSORIES ARE INSTALLED ACCORDING TO CANADIAN STANDARDS AND EQUIPMENT MANUFACTURERS.
 - NOTE: ALL ABOVE MENTIONED DOCUMENTS SHALL BE SIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE CONTRACTOR.
- 1.13 SMALL WORKS**
- 1. EACH SUB-CONTRACTOR SHALL EXECUTE ALL SMALL WORKS (NOT INDICATED ON DRAWINGS) NECESSARY FOR A PROPER AND COMPLETE INSTALLATION OF THE ELECTRICAL SYSTEMS. ALL SMALL WORKS SHALL BE COMPLETED AND INSPECTED WHILE UNDER TENDER AND BE FULLY OPERATIONAL.
 - 2. THE FINAL LOCATION OF LIGHTING FIXTURES, SMOKE DETECTORS AND OTHER ELECTRICAL EQUIPMENT SHALL BE COORDINATED ON SITE WITH NEW TELEPHONE EQUIPMENT, CABLE TRAYS AND VENTILATION DUCTS AND GRILLS.
- 1.14 COORDINATION**
- 1. THE FINAL LOCATION OF LIGHTING FIXTURES, SMOKE DETECTORS AND OTHER ELECTRICAL EQUIPMENT SHALL BE COORDINATED ON SITE WITH NEW TELEPHONE EQUIPMENT, CABLE TRAYS AND VENTILATION DUCTS AND GRILLS.
- 1.15 FINAL INSPECTION**
- 1. FINAL INSPECTION SUBJECT TO APPROVAL BY ENGINEER AND OWNER.
 - 2. REQUEST FINAL INSPECTION AFTER:
 - a. DEFICIENCIES NOTED IN JOB INSPECTIONS ARE COMPLETED
 - b. SYSTEMS HAVE BEEN TESTED AND ARE FULLY OPERATIONAL;
 - c. CERTIFICATES HAVE BEEN FURNISHED;
 - d. ALL INTERNAL INSPECTION DEFICIENCIES HAVE BEEN CORRECTED AND VERIFIED.
- 1.16 TRAINING**
- 1. THE CONTRACTOR MUST ALLOW A CERTAIN PERIOD FOR THE OWNER TRAINING FOR HIM TO BE ABLE TO UNDERSTAND AND OPERATE CERTAIN SYSTEMS. THE LENGTH OF THIS TRAINING IS AT THE OWNER'S DISCRETION, HOWEVER IT DOES NOT RELIEVE THE BIDDER FROM HIS RESPONSIBILITY TO PROPERLY TRAIN THE OWNER IN ORDER FOR HIM TO PROBABLY OPERATE ALL SYSTEMS.
- 2.0 TECHNICAL ELECTRICAL INSTRUCTIONS**
- 2.01 GENERAL REQUIREMENTS**
- 1. PROVIDE ALL LABOR, NEW MATERIALS AND ALL THE NECESSARY EQUIPMENT TO COMPLETE INS-TALKATION OF ALL ELECTRICAL WORK.
 - 2. PERFORM ALL WORK IN ACCORDANCE WITH ONTARIO ELECTRICAL SAFETY CODE AND NATIONAL BUILDING CODE OF CANADA.
 - 3. ALL ELECTRICAL WORK AND EQUIPMENT SHALL BE COVERED BY A WARRANTY OF A MINIMUM OF ONE (1) YEAR, MATERIAL AND LABOUR INCLUDED, STARTING FROM THE DATE OF FINAL ACCEPTANCE.
 - 4. THE ELECTRICAL CONTRACTORS SHALL VERIFY ON SITE THE SPACE NECESSARY TO EXECUTE ALL CONNECTIONS REQUIRED IN THIS CONTRACT.
 - 5. ALL EQUIPMENT SHOWN IN DOTTED LINES ARE EITHER EXISTING, PROVIDED BY OTHERS, UNDER-GROUND OR IN A STRUCTURAL SLAB, ALL ACCORDING TO THE INTENT ON THE DRAWINGS OR INDICATED NOTES.
 - 6. PROVIDE AND INSTALL ALL APPROPRIATE "J" SHARP GALVANIZED STEEL SUPPORT CHANNELS 1.5/8" x 1.5/8" TO SUPPORT ELECTRICAL EQUIPMENT. ALL CUTS MADE TO CHANNELS SHALL BE COATED WITH A GALVANIZED PROTECTIVE PAINT.
 - 7. THE ELECTRICAL CONTRACTORS SHALL PROVIDE AND INSTALL (UNLESS SHOWN ON DRAWINGS) APPROPRIATE TELEPHONE EQUIPMENT PANELS, THE "FIBERPROOF" STAMP SHALL BE VISIBLE FOR INSPECTION.
 - 8. WHEN SUPPLIED BY THE CONTRACTOR, THE TIMERS SHALL BE PROGRAMMED IN ACCORDANCE WITH THE CLIENTS NEEDS.
- 2.02 WIRING**
- 1. UNLESS OTHERWISE INDICATED, ALL CONDUCTORS SHALL BE MADE OF COPPER FOR AMPERAGES OF 100A OR LESS AND ALUMINUM ("N/A" BY ALUM ONLY) FOR AMPERAGES ABOVE 100A AND AS INDICATED SPECIFICALLY ON WHEN DRAWINGS INDICATE OTHERWISE. WIRE SIZES SHALL BE AS INDICATED SPECIFICALLY ON DRAWINGS. WIRE SIZES SHALL BE AS INDICATED SPECIFICALLY ON DRAWINGS. WIRE SIZES SHALL BE AS INDICATED SPECIFICALLY ON DRAWINGS. WIRE SIZES SHALL BE AS INDICATED SPECIFICALLY ON DRAWINGS.

ALLENTERER VIA 1504, 3P DU PANNEAU DPM4 / SUPERIEUR TROUVER 1504, 3P FROID PANNEAU DPM4 / IDENTIFICATION: "B-01-L2N1"

TOUS LES DSI, SONT DE 15A, 1P (SAUF INDICATIONS CONTRAIRES) / 15 AMP 1 POLE BREAKER EXCEPT OTHERWISE NOTED

DESCRIPTION	REFERENCE	WATTS	HP	CIRCUITS			TYPE	WATTS	REFERENCE	DESCRIPTION
				Disjoncteur / Breaker	Interrup- tion	Disjoncteur / Breaker				
8A-117/118	X	15	1	1	2	15		X	EXISTANTS	
8A-119	X	15	1	1	1	15		X	EXISTANTS	
8A-120/121	X	15	1	1	1	15		X	EXISTANTS	
8A-122	X	15	1	1	1	15		X	EXISTANTS	
8A-123	X	15	1	1	1	15		X	EXISTANTS	
8A-124	X	15	1	1	1	15		X	EXISTANTS	
8A-125	X	15	1	1	1	15		X	EXISTANTS	
8A-126	X	15	1	1	1	15		X	EXISTANTS	
8A-127	X	15	1	1	1	15		X	EXISTANTS	
8A-128	X	15	1	1	1	15		X	EXISTANTS	
8A-129	X	15	1	1	1	15		X	EXISTANTS	
8A-130	X	15	1	1	1	15		X	EXISTANTS	
8A-131	X	15	1	1	1	15		X	EXISTANTS	
8A-132	X	15	1	1	1	15		X	EXISTANTS	
8A-133	X	15	1	1	1	15		X	EXISTANTS	
8A-134	X	15	1	1	1	15		X	EXISTANTS	
8A-135	X	15	1	1	1	15		X	EXISTANTS	
8A-136	X	15	1	1	1	15		X	EXISTANTS	
8A-137	X	15	1	1	1	15		X	EXISTANTS	
8A-138	X	15	1	1	1	15		X	EXISTANTS	
8A-139	X	15	1	1	1	15		X	EXISTANTS	
8A-140	X	15	1	1	1	15		X	EXISTANTS	
8A-141	X	15	1	1	1	15		X	EXISTANTS	
8A-142	X	15	1	1	1	15		X	EXISTANTS	
8A-143	X	15	1	1	1	15		X	EXISTANTS	
8A-144	X	15	1	1	1	15		X	EXISTANTS	
8A-145	X	15	1	1	1	15		X	EXISTANTS	
8A-146	X	15	1	1	1	15		X	EXISTANTS	
8A-147	X	15	1	1	1	15		X	EXISTANTS	
8A-148	X	15	1	1	1	15		X	EXISTANTS	
8A-149	X	15	1	1	1	15		X	EXISTANTS	
8A-150	X	15	1	1	1	15		X	EXISTANTS	
8A-151	X	15	1	1	1	15		X	EXISTANTS	
8A-152	X	15	1	1	1	15		X	EXISTANTS	
8A-153	X	15	1	1	1	15		X	EXISTANTS	
8A-154	X	15	1	1	1	15		X	EXISTANTS	
8A-155	X	15	1	1	1	15		X	EXISTANTS	
8A-156	X	15	1	1	1	15		X	EXISTANTS	
8A-157	X	15	1	1	1	15		X	EXISTANTS	
8A-158	X	15	1	1	1	15		X	EXISTANTS	
8A-159	X	15	1	1	1	15		X	EXISTANTS	
8A-160	X	15	1	1	1	15		X	EXISTANTS	
8A-161	X	15	1	1	1	15		X	EXISTANTS	
8A-162	X	15	1	1	1	15		X	EXISTANTS	
8A-163	X	15	1	1	1	15		X	EXISTANTS	
8A-164	X	15	1	1	1	15		X	EXISTANTS	
8A-165	X	15	1	1	1	15		X	EXISTANTS	
8A-166	X	15	1	1	1	15		X	EXISTANTS	
8A-167	X	15	1	1	1	15		X	EXISTANTS	
8A-168	X	15	1	1	1	15		X	EXISTANTS	
8A-169	X	15	1	1	1	15		X	EXISTANTS	
8A-170	X	15	1	1	1	15		X	EXISTANTS	
8A-171	X	15	1	1	1	15		X	EXISTANTS	
8A-172	X	15	1	1	1	15		X	EXISTANTS	
8A-173	X	15	1	1	1	15		X	EXISTANTS	
8A-174	X	15	1	1	1	15		X	EXISTANTS	
8A-175	X	15	1	1	1	15		X	EXISTANTS	
8A-176	X	15	1	1	1	15		X	EXISTANTS	
8A-177	X	15	1	1	1	15		X	EXISTANTS	
8A-178	X	15	1	1	1	15		X	EXISTANTS	
8A-179	X	15	1	1	1	15		X	EXISTANTS	
8A-180	X	15	1	1	1	15		X	EXISTANTS	
8A-181	X	15	1	1	1	15		X	EXISTANTS	
8A-182	X	15	1	1	1	15		X	EXISTANTS	
8A-183	X	15	1	1	1	15		X	EXISTANTS	
8A-184	X	15	1	1	1	15		X	EXISTANTS	
8A-185	X	15	1	1	1	15		X	EXISTANTS	
8A-186	X	15	1	1	1	15		X	EXISTANTS	
8A-187	X	15	1	1	1	15		X	EXISTANTS	
8A-188	X	15	1	1	1	15		X	EXISTANTS	
8A-189	X	15	1	1	1	15		X	EXISTANTS	
8A-190	X	15	1	1	1	15		X	EXISTANTS	
8A-191	X	15	1	1	1	15		X	EXISTANTS	
8A-192	X	15	1	1	1	15		X	EXISTANTS	
8A-193	X	15	1	1	1	15		X	EXISTANTS	
8A-194	X	15	1	1	1	15		X	EXISTANTS	
8A-195	X	15	1	1	1	15		X	EXISTANTS	
8A-196	X	15	1	1	1	15		X	EXISTANTS	
8A-197	X	15	1	1	1	15		X	EXISTANTS	
8A-198	X	15	1	1	1	15		X	EXISTANTS	
8A-199	X	15	1	1	1	15		X	EXISTANTS	
8A-200	X	15	1	1	1	15		X	EXISTANTS	
8A-201	X	15	1	1	1	15		X	EXISTANTS	
8A-202	X	15	1	1	1	15		X	EXISTANTS	

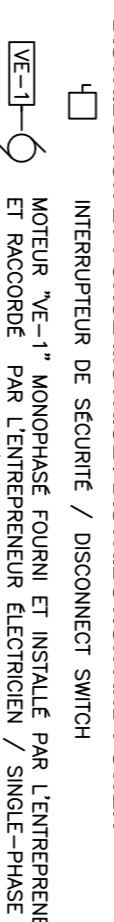
BARRES DE / BUS BARS 225 AMPS
DISJONCTEURS / CIRCUIT BREAKERS - AMPS
CAPACITÉ DE RIPTURE 10 kV / SURFACE
BARRÉ DE MAINTI. / EXISTANT / EXISTING
BARRÉ NEUTRE 200% / 200% NEUTRAL BAR

REFERENCE TYPE
P: PRISE / A: ANTI-ARC /
R: REÇEPE / F: DIFFÉRENTIEL CLASSE A
S: ESPACE / G: P. MONTAGE
W: CHAUFFE-EAU / STROBE
X: EXISTANT / V: VERROUILLE / SHUNT TRIP
M: MOTEUR / SHUNT TRIP
CHARGE TOTALE / TOTAL LOAD

(1) REMPLACER LE DISJONCTEUR EXISTANT PAR UN NOUVEAU DISJONCTEUR.
(2) REMPLACER LE DISJONCTEUR EXISTANT DEVENU LIBRE / USE SPARE EXISTING BREAKER.

LÉGENDE ÉLECTRIQUE / ELECTRICAL LEGEND

SERVICES
DISTRIBUTION ET FORCE MOTRICE / DISTRIBUTION AND POWER



SERVICES AUXILIAIRES / AUXILIARY SERVICES
ALARME INCENDIE / FIRE ALARM
MODULE D'INTERFACE A RELAYS / RELAY INTERFACE MODULE

CÂBLAGE / CABLING
CONDUIT OU CÂBLE À ENLEVER / CONDUIT TO BE REMOVED
CONDUIT OU CÂBLE INSTALLE EN SURFACE / SURFACE MOUNTED CONDUIT OR CABLE
CONDUIT OU CÂBLE ENVOI SOUS TERRE OU DANS LA DAILE / CONDUIT OR CABLE IN GROUND OR SLAB

ABRÉVIATIONS/ABBREVIATIONS
EXISTANT / EXISTING TO BE RELOCATED
EQUIPEMENT RELOCALISÉ / RELOCATED EQUIPMENT

BRANS SQUARE-D CLASSÉ 8501. TYPE C08 C/A BROSSE 120V. CONTACTS N.O./N.F. ET BOUTER AÉRIÉ. INSTALLER PRÈS DE L'UNITÉ DE VENTILATION DE FAÇON À ÊTRE FACILEMENT ACCESSIBLE. / SQUARE-D CLASSÉ 8501. TYPE C08 C/A BRUSH 120V. CONTACTS N.O./N.F. AND AIR SWITCH. INSTALL NEAR THE VENTILATION UNIT SO THAT IT BE EASILY ACCESSIBLE.

