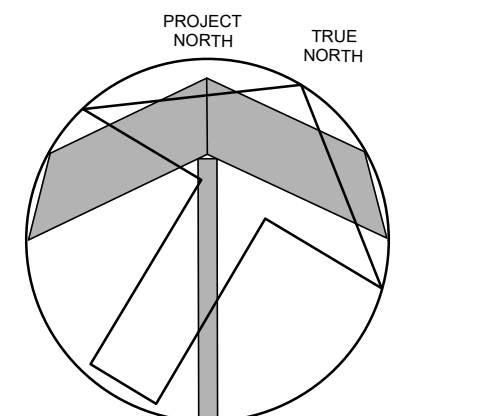


ELECTRICAL SPECIFICATIONS

<p>1. GENERAL REQUIREMENTS:</p> <p>1.1 COMPLY WITH ALL DIVISION 1 GENERAL CONDITIONS. THE ELECTRICAL CONTRACTOR SHALL FOLLOW REQUIREMENTS AS IDENTIFIED BY ARCHITECT AND OTHER CONSULTANTS. COORDINATE WITH ALL TRADES TO ENSURE PROPER INSTALLATION METHODS APPLICABLE TO ALL CONSULTANT SPECIFICATIONS OF THE PROJECT.</p> <p>1.2 OBTAIN ALL APPROVALS FROM PUBLIC AUTHORITIES HAVING JURISDICTION BEFORE COMMENCING WORK AND PAY ALL INSPECTION FEES AND ALL PERMITS. COMPLY WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE APPLICABLE C.S.A. STANDARDS, BUILDING DEPARTMENT ORDINANCES THAT ARE APPLICABLE TO AREA HAVING JURISDICTION, APPLICABLE U.L.C. STANDARDS, AND THE OWNERS REQUIREMENTS. SUBMIT CERTIFICATE OF INSPECTION AND APPROVAL FROM ALL AUTHORITIES HAVING JURISDICTION.</p> <p>1.3 DO NOT REDUCE THE STANDARDS ESTABLISHED BY THE DRAWINGS AND SPECIFICATIONS BY APPLYING ANY OF THE CODES REFERRED TO HEREIN.</p> <p>1.4 PROVIDE PROOF OF PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE COVERAGE AND AMOUNT. SUBMIT WITH TENDER. COORDINATE WITH CONSTRUCTION RFP.</p> <p>1.5 THE ELECTRICAL BID, THE ELECTRICAL QUOTATIONS FOR ADDITIONAL WORK, AND ALL SUBMISSIONS RELATED TO THE ELECTRICAL SCOPE SHALL BE BY THE ELECTRICAL CONTRACTOR OR SUBCONTRACTOR ENGAGED ON THE PROJECT. ALL BIDDERS ON THE ELECTRICAL DRAWINGS SPECIFICATION, THE SUBMISSIONS SHALL BE ON THE ELECTRICAL OR SUBCONTRACTOR COMPANY LETTERHEAD, SUPERSEDED BY THE ELECTRICAL CONTRACTOR LETTERHEAD DOCUMENT WHERE GENERAL CONTRACTOR IS ENGAGED. ALL DOCUMENTS SHALL BE SIGNED AND SEALED WHEN REQUIRED.</p> <p>1.6 ALL ITEMS STIPULATED AND DESIGNATED AS INSTRUCTIONS TO THE ELECTRICAL CONTRACTOR SCOPE OF WORK SHALL BE APPLICABLE TO ANY SUBCONTRACTORS ENGAGED TO THE PROJECT WHICH SCOPE IS BASED ON THE HAMMERSCHLAG AND JOFFE ISSUED DRAWINGS.</p>	<p>4.2.3 OPERATION AND MAINTENANCE MANUALS SHALL FORM A COMPLETE DOCUMENTATION FOR THE SUBJECTED ELECTRICAL INSTALLATION AND WILL NOT BE LIMITED TO LINE VOLTAGE POWER EQUIPMENT.</p> <p>4.2.4 ANY SECURITY, TELEPHONE, OR OTHER MISCELLANEOUS SYSTEMS REPAIR OR REPAIRS, WITHOUT EXPENSE TO THE OWNER, FOR ANY DEFECTS DUE TO WORKMANSHIP OR MATERIALS WHICH, IN THE OWNER'S OPINION, ARE NOT DUE TO MISUSE OR NEGLECT. LED LIGHTING SHALL HAVE THREE (3) YEARS INSTALLATION AND MANUFACTURERS WARRANTY, COORDINATED WITH GENERAL CONDITIONS.</p> <p>4.3 PROJECT SUBSTANTIAL COMPLETION AND PROJECT CLOSURE:</p> <p>4.3.1 AFTER THE WORK IS COMPLETED, GIVE A WRITTEN GUARANTEE FOR ONE (1) YEAR COVERING WORKMANSHIP AND MATERIALS. REPAIR OR REPAIRS, WITHOUT EXPENSE TO THE OWNER, FOR ANY DEFECTS DUE TO WORKMANSHIP OR MATERIALS WHICH, IN THE OWNER'S OPINION, ARE NOT DUE TO MISUSE OR NEGLECT. LED LIGHTING SHALL HAVE THREE (3) YEARS INSTALLATION AND MANUFACTURERS WARRANTY, COORDINATED WITH GENERAL CONDITIONS.</p> <p>4.3.2 PROVIDE OWN LIST OF OUTSTANDING AND DEFICIENT WORK PRIOR TO SUBSTANTIAL COMPLETION.</p> <p>4.3.3 ADJUST AND RECORD LEVELS OF EMERGENCY LIGHTING THROUGHOUT THE FACILITY. AIMING ADJUSTMENT SHALL BE COMPLETED AND ADJUSTED AS NECESSARY AND AS REQUIRED BY AHJ AND CONSULTANT. PROVIDE RECORD OF EMERGENCY LIGHTING TESTING AND EMERGENCY LIGHT LEVEL MEASUREMENTS PRIOR TO REQUEST FOR SUBSTANTIAL COMPLETION.</p> <p>4.3.4 PRIOR TO COMPLETING FIRE ALARM SYSTEM PROGRAMMING OBTAIN APPROVAL FOR SEQUENCE OF OPERATION BY LOCAL AHJ. ALLOW TO COMPLETE FIRE ALARM SYSTEM PROGRAMMING ADJUSTMENTS AS REQUESTED BY AHJ AT A LATER DATE.</p> <p>4.3.5 CLEAN AND TEST ALL EQUIPMENT BEFORE FINAL ACCEPTANCE IS GIVEN FOR THE WORK.</p> <p>4.3.6 ARRANGE FOR FINAL ELECTRICAL INSPECTION BY ELECTRICAL CONSULTANT FOR ONE WEEK PRIOR TO COMPLETION OF WORK.</p>	<p>8.3 CONNECTORS TO ELECTRICAL PANELS, FIRE ALARM PANEL SWITCHBOARDS, ETC. HEAD-MAIN EQUIPMENT SHALL BE COMPLETE WITH RAIN WATER CONNECTORS TO ENSURE EQUIPMENT INTEGRITY IN CASE OF WATER SPILLAGE.</p> <p>8.4 CONDUITS SHALL BE INSTALLED OVERHEAD AND SHALL NOT BE SUSPENDED FROM THE FLOOR DECK. INSTALL ALL CONDUITS AT 10% JOIST LEVEL FROM TOP PART OF THE JOIST OR FROM THE BEAM. PROVIDE ALL REQUIRED CONDUIT SUPPORT HARDWARE.</p> <p>8.5 LARGEST CONDUITS APPROVED TO BE USED FOR CONNECTION OF BRANCH CIRCUITS IS 1-1/4". ANY DEVIATION WILL TRIGGER REWORK OF INSTALLED CONDUITS.</p> <p>8.6 EMPTY CONDUITS SHALL BE COMPLETE WITH NYLON PULL WIRE.</p> <p>9. WIRING</p> <p>9.1 ALL WIRING SHALL BE MINIMUM #12 GAUGE COPPER, EXCEPT AS OTHERWISE NOTED. ALL WIRING SHALL BE 600 VOLT TYPE RW90 FOR PANEL FEEDERS INSTALLED IN METALLIC CONDUIT, UNLESS OTHERWISE NOTED. CIRCUIT BRANCH WIRING SHALL BE 7-90 CU JACKETED CONDUCTOR. AC-90 CABLES MAY BE USED WHERE PERMITTED BY CODE IN CEILING SPACE FOR FINAL CONNECTION TO LIGHT FIXTURE AND FROM CEILING DISTRIBUTION BOXES DOWN HOLLOW PARTITIONS TO RECEPTACLES ONLY.</p> <p>9.2 MINIMUM SIZE WIRING FOR DC WIRING SHALL BE #10 GAUGE. MAXIMUM VOLTAGE DROP SHALL NOT EXCEED 2% AT ALL FINAL OUTLET LOCATIONS.</p> <p>9.3 BRANCH CIRCUIT WIRING VOLTAGE DROP SHALL BE 2% FOR ALL FEEDER CONDUITS AND TOTAL 4% TO FINAL OUTLET. MINIMUM WIRE SIZE DEPICED ON ELECTRICAL DRAWINGS CONTRACTOR TO INCREASE TO ACCOMMODATE FOR ANY VOLTAGE DROP DUE TO LENGTHS OF WIRE.</p> <p>9.4 ALL WIRING SHALL BE SIZED COMPLIANT WITH 75°C RATED EQUIPMENT, SUBJECT TO DERATING AS PER TABLES 5A, 5B, 5C AND 5D.</p> <p>9.5 UNDERGROUND WIRING FEEDERS AND BRANCH WIRES SHALL BE RWU RATED FOR DIRECT BURIAL AND INSTALLED IN SPECIFIED UNDERGROUND CONDUITS AS NOTED ON THE ELECTRICAL DRAWINGS.</p> <p>9.6 CHANGE OF LOCATION OF WIRING DEVICES WITHIN 5m OF THE NOTED LOCATION ON THE DRAWINGS SHALL BE AT NO COST TO THE CLIENT PROVIDED THAT THE LOCATION IS CLARIFIED PRIOR TO INSTALLATION.</p> <p>9.7 CALL FOR ROUGH-IN INSPECTION BY AUTHORITIES HAVING JURISDICTION FROM THE FLOOR DECK TO THE PANELS AND FEES AND PROVIDE RECORDS OF INSPECTION COMPLETE.</p> <p>9.8 UNDERGROUND WIRING FEEDERS AND BRANCH WIRES SHALL BE RWU RATED FOR DIRECT BURIAL, INSTALLED IN SPECIFIED UNDERGROUND CONDUITS AS NOTED ON THE ELECTRICAL DRAWINGS.</p>	<p>14. DISTRIBUTION FEEDERS:</p> <p>14.1 FEEDERS SHALL BE SIZED AS DETAILED. SUBSTITUTION OF ELECTRICAL CABLE MATERIAL OR ROUTING WILL NOT BE PERMITTED UNLESS ENGINEERS WRITTEN APPROVAL IS OBTAINED. FEEDERS SHALL HAVE A MAXIMUM VOLTAGE DROP OF 2% AT FULL LOAD AT THE PANELS SUPPLIED. ALL FEEDERS SHALL BE BALANCED UNDER FULL LOAD CONDITIONS TO WITHIN 5% BETWEEN PHASES. ALL PHASES AND NEUTRALS SHALL BE IDENTIFIED AND MAINTAINED IN THEIR CORRECT ORDER WHEN READING LEFT TO RIGHT THROUGHOUT THE BUILDING.</p> <p>14.2 FEEDERS TO PANELS, TRANSFORMER, INCOMING SERVICE AND LOAD CENTRES SHALL BE BALANCED UNDER FULL LOAD CONDITIONS TO WITHIN 5% BETWEEN PHASES. ALL PHASES AND NEUTRALS SHALL BE IDENTIFIED AND MAINTAINED IN THEIR CORRECT ORDER WHEN READING LEFT TO RIGHT THROUGHOUT THE BUILDING.</p> <p>14.3 ALL PHASES AND NEUTRALS SHALL BE IDENTIFIED AND MAINTAINED IN THEIR CORRECT ORDER WHEN READING LEFT TO RIGHT THROUGHOUT THE BUILDING.</p> <p>14.4 MEGGER ALL FEEDERS TO MEET CODE AND LATEST NEMA MANUAL. ALL FEEDERS SHALL BE MEGGER TESTED WITH 1000VDC APPROVED MEGGER TESTER, HAND CRANKED INSTRUMENTS ARE NOT PERMITTED. SUBMIT TEST RESULTS FOR CONSULTANT REVIEW PRIOR TO POWER ON.</p> <p>14.5 REPLACE AT NO COST ALL FEEDERS THAT DO NOT MEET MINIMUM INSULATION RESISTANCE.</p> <p>14.6 ALL DISTRIBUTION FEEDERS SHALL BE 90°C RATED.</p> <p>15. ELECTRICAL EQUIPMENT ENCLOSURE RATING:</p> <p>15.1 EQUIPMENT SHALL BE NEMA 2 RATED WHEN INDOOR AND NEMA 4 WHEN OUTDOOR. OUTDOOR DEVICES SHALL BE SUITABLY RATED FOR THEIR ENVIRONMENT.</p>	<p>16. ELECTRICAL PANEL BOARDS:</p> <p>16.1 EACH PANEL BOARD SHALL BE COMPLETE WITH A KEY LOCKABLE HINGED DOOR AND A CIRCUIT DIRECTORY GIVING THE NUMBER AND DESCRIPTION OF EACH CIRCUIT CONTROLLED. THE DIRECTORIES SHALL BE CLEARLY TYPED, LEGIBLE AND OF AMPLE SIZE AND SHALL BE MOUNTED IN A METAL FRAME WITH A CLEAR PLASTIC COVER ON THE INSIDE OF THE DOOR.</p> <p>16.2 THE CIRCUIT BREAKERS SHALL BE CONNECTED TO THE PANEL BY BOLTED CONNECTIONS. ALL BUS BARS, LUGS, AND BREAKER TERMINALS SHALL BE COPPER SILVER-PLATED AT THE CONNECTION POINTS. THE INTERRUPTING CAPACITY OF EACH BOARD SHALL BE DETERMINED BY THE CO-ORDINATION STUDY AS PER DRAWINGS. MINIMUM 10KA FOR 280V PANELS AND 18KA FOR 347/600V PANELS. WHEN REMOTELY LOCATED FROM THE MAIN ELECTRICAL SERVICE. ELECTRICAL PANELS INSIDE MAIN ELECTRICAL ROOM SHALL BE RATED NOT LESS THAN 35KAIC FOR 247/600V PANELS AND MINIMUM 10KA FOR 280V PANELS. REFER TO COORDINATION STUDY FOR DETAILS OF REQUIRED RATING. NOT WITHSTANDING THE ABOVE ALL SUPPLIED ELECTRICAL EQUIPMENT 400AMP OR LESSER SHALL BE APPLICABLE FOR SERIES RATING LISTED WITH CLASS J FUSE AND UPSTREAM BREAKER.</p> <p>16.3 NOTWITHSTANDING THE ABOVE, PANEL BOARDS CONNECTED TO THE SECONDARY SIDE OF TRANSFORMERS, 600-120/208 VOLT AND 600-120/240 VOLT, SIZED 150KVA AND HIGHER SHALL BE RATED MINIMUM 22KAIC.</p> <p>16.4 ALL TWO OR THREE POLE BREAKERS SHALL OPERATE WITH A COMMON TRIP AND WITH A SINGLE HANDLE. TWO POLE CIRCUIT BREAKERS CONSISTING OF TWO SINGLE POLE BREAKERS WITH A TIE HANDLE, TWIN BREAKERS.</p> <p>16.5 SELECTED PANELBOARD AND BREAKER TYPE COMBINATION SHALL ALLOW FOR INSTALLATION OF THREE POLE BREAKERS WITH AMPERAGE RATING NO LESS THAN 50% OF THE PANEL AMPERAGE RATING WITHOUT USE OF SPECIAL PURPOSE BREAKER KIT AND NOT REQUIRING MORE THAN THREE SINGLE POLE BREAKER SPACES.</p> <p>16.6 ALL PANEL BOARDS SHALL BE SPRINKLER PROOF AS REQUIRED TO MEET LOCAL AND HYDRO CODES.</p> <p>16.7 ALL ELECTRICAL EQUIPMENT SHALL BE 75°C RATED OR HIGHER.</p> <p>16.8 ALL PANELBOARDS SHALL BE FULLY BUSSED AND COMPLETE WITH BREAKER MOUNTING HARDWARE FOR ALL BREAKER SPACES.</p> <p>16.9 NO HALF-SIZE BREAKERS PERMITTED, IF NO SPACE IS AVAILABLE IN EXISTING PANELS, ADD NEW PANEL TO SUPPLY NEW LOADS.</p>	<p>18. SWITCHES: LIGHTING:</p> <p>18.1 SWITCHES SHALL BE, UNLESS OTHERWISE NOTED, SPECIFICATION GRADE FOR 120V AND HEAVY-DUTY GRADE FOR 347V, TYPE F & MODEL TO MATCH EXISTING.</p> <p>18.2 LIGHT SWITCHES OF QUALITY AS MANUFACTURED BY BRYANT, P AND S, LEVITON AND HUBBELL, SHALL BE CONSIDERED AS ACCEPTABLE AS SPECIFIED ALTERNATES.</p> <p>18.3 DIMMERS SHALL BE LUTRON SPECIFICATION GRADE OR APPROVED ALTERNATE. OCCUPANCY SENSORS SHALL BE WATTSTOPPER DUAL TECHNOLOGY OR APPROVED EQUIVALENT.</p> <p>18.4 DISCONNECT SWITCHES:</p> <p>18.4.1 DISCONNECT SWITCHES FOR MECHANICAL AND ALL OTHER EQUIPMENT SHALL BE HEAVY DUTY SINGLE OR DOUBLE THROW SAFETY SWITCHES AS NOTED ON THE DRAWINGS. LOAD BREAK, WITH A RATING EQUIVALENT TO THE UPSTREAM FUSE, IN CASE OF CIRCUIT BREAKER PROTECTION, AND NOT WITHSTANDING LINE DIAGRAMS FUSIBLE DISCONNECT SWITCHES SHALL BE PROVIDED IF NO CURRENT LIMITING DEVICE IS PROVIDED UPSTREAM IN THE ELECTRICAL SYSTEM.</p>	<p>23. TRANSFORMERS:</p> <p>23.1 DRY TYPE INDOOR DISTRIBUTION TRANSFORMERS SHALL BE THREE-COIL ONLY, NO SCOTT-T, OF COPPER WINDINGS, INDOOR AIR-COOL TYPE RATED THREE PHASE 60 CYCLE, OF KVA, VOLT AND AMP RATINGS AS SHOWN ON THE DRAWINGS. 1.2KV CLASS AND CAPABLE OF WITHSTANDING A 10KV BASIC IMPULSE LEVEL (BIL). THEY SHALL HAVE STANDARD PRIMARY TAPS. THE TRANSFORMER SHALL BE DESIGNED WITH A CLASS B OR H INSULATION SYSTEM.</p> <p>23.2 THE SOUND LEVEL IN DECIBELS SHALL BE IN ACCORDANCE WITH NEMA TRI CURRENT STANDARDS. THE TRANSFORMER SHALL BE LOCATED WITH TERMINAL BOARDS, TAP CHANGING LINKS, SUITABLE SOLDERLESS CONNECTORS AND SHALL HAVE A VENTILATED CODE GAUGE STEEL ENCLOSURE COMPLETE WITH HINGED REMOVABLE EXPANDED METAL SIDE PANELS AND MOUNTING BRACKETS FOR FLOOR OR WALL MOUNTING AS SHOWN. MOUNT ALL TRANSFORMERS 75KVA AND SMALLER AT HIGH LEVEL IN LOCATION SHOWN UNLESS OTHERWISE NOTED.</p> <p>23.3 TRANSFORMERS 112.5KVA OR LARGER SHALL BE PLACED ON A MINIMUM 4" HIGH CONCRETE HOUSEKEEPING PAD AND UPSIZED AS REQUIRED FOR SEISMIC CONSTRUCTION.</p> <p>23.4 THE COMPLETED ASSEMBLY SHALL BE PAINTED WITH A PRIMER COAT AND A FINISH COAT OF AS8091 GRAY. THE TRANSFORMER SHALL CONFORM TO C.S.A. 8002.2, NEMA TRI AND CEMA 12 CURRENT STANDARDS EXCEPT WHERE NOTED AND SHALL BE APPROVED TO C.S.A. CODE PART 2 SPECIFICATION 022.2 AND 04.47 WHERE APPLICABLE.</p> <p>23.5 TRANSFORMERS SHALL BE SPRINKLERPROOF AS REQUIRED TO MEET LOCAL AND HYDRO CODES.</p> <p>23.6 COMPLETE TRANSFORMER CONNECTION BY USE OF FLEXIBLE CONDUITS TO ALLOW FOR VIBRATION ISOLATION.</p> <p>24. METERING</p> <p>24.1 METERING CABINETS SHALL BE OF SIZE SHOWN ON DRAWING OR AS REQUIRED WITH REMOVABLE STEEL METER MOUNTING PLATE. TWO DOORS AND SEALING SHALL BE LIMITED TO UTILITY APPROVAL. PROVIDE A CAT 6 WIRE TELEPHONE LINE FROM EACH METER CABINET TO THE MAIN TELEPHONE ENTRY POINT AS REQUIRED BY THE LOCAL DISTRIBUTION COMPANY METERING DEPARTMENT.</p> <p>24.2 METER SOCKET BASE SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. FOR ELECTRICAL SERVICES 400 AMP AND HIGHER. COMBINATION OF METER CABINET AND SEPARATE METER BASE ARE REQUIRED.</p> <p>24.3 THE CABINET SHALL BE MOUNTED ON THE WALL AS SHOWN ON THE DRAWINGS AND TO THE SATISFACTION OF THE LOCAL UTILITY. METER SOCKETS SHALL BE TO APPROVAL OF UTILITY.</p> <p>24.4 THE CONTRACTOR SHALL CONFIRM METERING REQUIREMENTS WITH LOCAL HYDRO METERING DEPARTMENT PRIOR TO WORK COMMENCEMENT AND METERING EQUIPMENT SUPPLY.</p> <p>24.5 PROVIDE ALL REQUIRED NEUTRAL WIRES TO METER AS PER LOCAL HYDRO'S REQUIREMENT.</p> <p>24.6 COORDINATE AND PAY FOR ANY HYDRO SERVICE COSTS AS REQUIRED. INCLUDE FOR COORDINATION AND MEETING WITH UTILITY DISTRIBUTION COMPANY.</p> <p>24.7 METERING EQUIPMENT SHALL BE PRE-APPROVED BY LOCAL HYDRO METERING DEPARTMENT. OBTAIN APPROVAL BY AHJ.</p> <p>25. MISCELLANEOUS ELECTRICAL WORK:</p> <p>25.1 PROVIDE ALL CONCRETE WORK REQUIRED FOR ELECTRICAL WORK IN ACCORDANCE WITH ELECTRICAL AND ARCHITECTURAL DIVISION OF SPECIFICATION. THIS INCLUDES HOUSEKEEPING PAD BELOW ALL FLOOR STANDING EQUIPMENT.</p> <p>25.2 PROVIDE ALL NECESSARY DUCT BANKS AS REQUIRED BY HYDRO IN ACCORDANCE WITH THEIR SPECIFICATIONS. SUBMIT ALL NECESSARY DRAWINGS TO HYDRO FOR THEIR APPROVAL.</p> <p>25.3 CONFIRM ALL LOCATIONS AND OUTLETS PRIOR TO INSTALLATION. ALLOW TO RELOCATE ANY OUTLET WITH 5 METERS OF SPECIFIED LOCATION PRIOR TO INSTALLATION.</p> <p>25.4 COORDINATE LOCATION OF TENANT ELECTRICAL SERVICE WITH TENANT INTERIOR DETAILS PRIOR TO SERVICE INSTALLATION. REQUEST FROM GENERAL CONTRACTOR TENANT INTERIOR DRAWINGS FOR COORDINATION PURPOSES.</p> <p>25.5 PROVIDE ALL REQUIRED LUGS, CONNECTORS, REDUCERS, CRIMP, AND ADAPTERS WITH THEIR SPECIFICATIONS. SUBMIT ALL ENSURE CONDUCTORS COMPATIBLE WITH TERMINATOR REQUIREMENTS OF THE EQUIPMENT.</p>	<p>28. EXISTING FIRE ALARM SYSTEM:</p> <p>28.1 OBTAIN AND PAY FOR SERVICES FROM LANDLORD APPROVED FIRE ALARM CONTRACTOR WHEN MODIFYING EXISTING FIRE ALARM SYSTEM.</p> <p>28.2 UNLESS OTHERWISE NOTED, ALL NEW DEVICES SHALL BE MATCH EXISTING DEVICES UTILIZED AT THE PROPERTY.</p> <p>28.3 OBTAIN SERVICES FROM THE FIRE ALARM MANUFACTURER TO OBTAIN VERIFICATION OF THE EXISTING CAPACITY OF THE EXISTING FIRE ALARM SYSTEM AND ENSURE ADDITIONAL DEVICES WILL NOT OVERLOAD FIRE ALARM SYSTEM NOTIFICATION UNITS.</p> <p>28.4 INCLUDE FOR FIRE ALARM VERIFICATION AT THE END OF THE PROJECT. VERIFICATION SHALL BE COMPLETED PER LATEST ULC 537 AND ULC 5-1001.</p> <p>28.5 INSTALLING FIRE ALARM CONTRACTOR SHALL PROVIDE ULC 524 INSTALLATION LETTER, SIGNED AND CERTIFIED BY CFAA APPROVED INSTALLING CONTRACTOR.</p> <p>29. DEMOLITION:</p> <p>29.1 REMOVE AND DISPOSE OFF ALL EXPOSED CONDUITS, BRANCH WIRING, OUTLETS, LUMINAIRES, EMERGENCY LIGHTING ETC., FROM CEILINGS AND WALLS BEING DEMOLISHED. REMOVE WIRING TO PANEL BOARDS.</p> <p>29.2 REMOVE ANY AND ALL PCB BALLASTS FROM LUMINAIRES. PLACE IN STORAGE DRUMS AND REMOVE AND DISPOSE OF OFF-SITE. ALL WORK TO BE DONE IN ACCORDANCE WITH MINISTRY OF ENVIRONMENT RULES AND REGULATIONS.</p> <p>29.3 REMOVE ALL REDUNDANT TELECOMMUNICATION WIRING BACK TO THE ENTRY POINTS.</p> <p>29.4 EXISTING FIRE ALARM SYSTEM TO REMAIN OPERATIONAL AT ALL TIMES. FOR ALTERATIONS AND ANY TIME WHEN FIRE ALARM IS INOPERATIVE, ARRANGE FOR 24-HOUR SECURITY WATCH TO APPROVAL OF LOCAL FIRE MARSHAL.</p> <p>29.5 ALL EXISTING EQUIPMENT BEING REMOVED SHALL BE FIRST OFFERED TO THE OWNER. ANY EQUIPMENT NOT REQUIRED BY THE OWNER SHALL BE DISPOSED OF OFF-SITE BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST.</p> <p>29.6 ANY CONCRETE FOUNDATIONS OR OTHER SUPPORTS FOR ELECTRICAL EQUIPMENT SHALL BE REMOVED TO BELOW 600mm FROM FINISHED FLOOR.</p> <p>29.7 ALL WORK TO BE DONE IN ACCORDANCE WITH HYDRO REGULATION, MINISTRY OF LABOUR, OBC AND AHJ.</p> <p>30. HAZARDOUS LOCATIONS:</p> <p>30.1 ALL WIRING IN AREAS/ZONES CLASSIFIED AS HAZARDOUS SHALL BE COMPLETED WITH RIGID STEEL PIPING AND IN ACCORDANCE TO SECTION 18 OF O.E.S.G. TRICK WIRING WILL NOT BE ACCEPTED.</p> <p>31. APPROVED MANUFACTURERS:</p> <p>31.1 SWITCHBOARD AND ELECTRICAL PANELS: EATON, SQUARE D, GE AND SIEMENS.</p> <p>31.2 METER CENTRES: EATON AND SQUARE D</p> <p>31.3 LV TRANSFORMER: REX, MARCUS, HAMMOND, SIEMENS, BEMAG, DELTA AND GE.</p> <p>32. SPECIFICATION GUIDELINES:</p> <p>34.1 ELECTRICAL SPECIFICATION IS APPLICABLE TO ALL ITEMS SHOWN ON THE ELECTRICAL DRAWINGS.</p> <p>34.2 SPECIFICATION REFERENCING EQUIPMENT BEYOND THE SHOWN ON THE DRAWINGS SHALL BE DISCARDED.</p>
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NO	REVISIONS	DATE
3	ISSUED FOR TENDER	04/12/2024
2	ISSUED FOR PERMIT	04/02/2024
1	ISSUED FOR CLIENT REVIEW	03/26/2024
	ISSUED	DATE

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.

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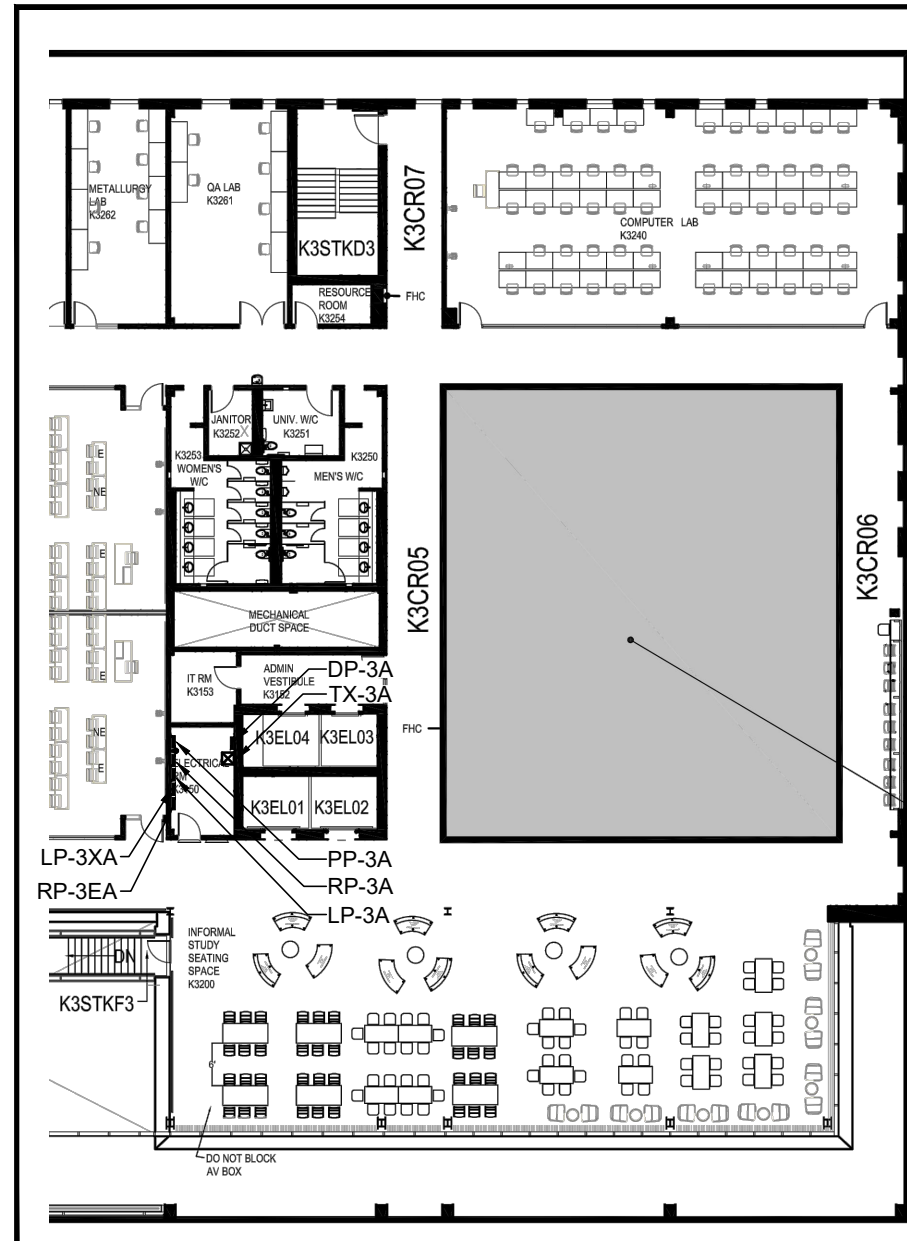
Seneca

ELECTRICAL SPECIFICATIONS



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SCALE	PROJECT
N.T.S.	24-018-007
DATE	MARCH 2024
DRAWN BY	IM/JZ
CHECKED BY	JZ
PRINT DATE	E1.0



1 KEY PLAN
E1.1 SCALE: N.T.S.

APPROVED CONTRACTORS/VENDORS

Scanning Company to be engaged:
Isaac Lett <isaac@xradar.ca>
Xradar Estimating and Sales
Xradar Canada Inc.
Toronto: 416-476-3325
Ottawa: 613-325-5260
W: xradar.ca Sales and Estimating: estimat@xradar.ca
34-3045 Southcreek Rd. Mississauga, ON L4X 2E9

ALL NETWORK WIRING TO BE COMPLETED BY
TELECOM BY DESIGN, JAMES PATRAN,
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416-244-2525

ALL SECURITY CAMERA WIRING TO BE COMPLETED BY
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ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
POWER LEGEND	
	ELECTRICAL DIRECT CONNECTION (LB=POWER CONNECTION TO LIGHT BOX, S=SIGNAGE, M=MIRROR LIGHTS)
	SYSTEMS FURNITURE CONNECTION POINT (F=FLOOR, C=CEILING, W=WALL)
	MOTOR CONNECTION
	DISCONNECT SWITCH - FUSED
	DISCONNECT SWITCH - UNFUSED
	CIRCUIT BREAKER
	TRANSFORMER
	ELECTRICAL PANEL BOARD - SURFACE OR FLUSH MOUNTED
	DUPLEX RECEPTACLE - WALL MOUNTED, 15A/120V OR AS NOTED H - DENOTE MOUNTED AT HIGH LEVEL, L - DENOTE MOUNTED AT LOW LEVEL D - DENOTE DEDICATED CIRCUIT
	DUPLEX RECEPTACLE - WALL MOUNTED ON EMERGENCY CIRCUIT
	DUPLEX RECEPTACLE - 15/20A, 120V, T-SLOT NEMA 5-20R
	DUPLEX RECEPTACLE - 15A/120V ISOLATED GROUND TYPE
	SINGLE RECEPTACLE - WALL MOUNTED, 15A/120V OR AS NOTED
	QUAD RECEPTACLE - WALL MOUNTED, 15A/120V OR AS NOTED
	COUNTERTOP DUPLEX RECEPTACLE - WALL MOUNTED, 15A/120V OR AS NOTED
	DUPLEX RECEPTACLE - FLOOR MOUNTED, 15A/120V OR AS NOTED
	DUPLEX RECEPTACLE - CEILING MOUNTED, 15A/120V OR AS NOTED
	JUNCTION BOX
	COMBINATION DATA OUTLET AND DUPLEX RECEPTACLE, 15A/120V OR AS NOTED - FLOOR MOUNTED, FIRE RATED, UNLESS OTHERWISE NOTED, RUN (1) 3/4\"/>
	COMBINATION DATA/VOICE OUTLET AND DUPLEX RECEPTACLE, 15A/120V OR AS NOTED - FLOOR MOUNTED, FIRE RATED, UNLESS OTHERWISE NOTED, RUN (1) 3/4\"/>
	COMBINATION DATA/VOICE OUTLET AND TWO DUPLEX RECEPTACLES, 15A/120V OR AS NOTED - FLOOR MOUNTED, FIRE RATED, UNLESS OTHERWISE NOTED, RUN (1) 3/4\"/>
	MOTOR CONNECTION WITH DISCONNECT SWITCH
	DIRECT CONNECTION WITH DISCONNECT SWITCH
	METERING JAR
	METERING CABINET
COMMUNICATIONS LEGEND	
	DATA OUTLET - WALL OR FLOOR MOUNTED, 'C' DENOTES CEILING MOUNTED PROVIDE BACK BOX C/W 3/4\"/>
	VOICE OUTLET - WALL OR FLOOR MOUNTED, 'C' DENOTES CEILING MOUNTED PROVIDE BACK BOX C/W 3/4\"/>
	COMBINATION VOICE/DATA OUTLET - WALL OR FLOOR MOUNTED, 'C' DENOTES CEILING MOUNTED PROVIDE BACK BOX C/W 3/4\"/>
	SECURITY CAMERA - PROVIDE 1x1\"/>
	KEY PAD
	CARD READER
	DOOR CONTACT
	ELECTRIC STRIKE
	REQUEST-TO-EXIT SENSOR
	PUSH BUTTON
	2 - GANG MUDRING C/W MIN. 1.5\"/>
	2 - GANG MUDRING FOR AV TV OR FPD (FLAT PANEL DISPLAY)
	1 - GANG BACKBOX C/W 3/4\"/>
	2 - GANG MOTORING FOR AV CAMERA
	1 - GANG AV BACK BOX FOR AV MICROPHONE
	1 - GANG AV BACK BOX FOR AV SPEAKER
	1 - GANG AV MUDRING FOR AV OCCUPANCY SENSOR

ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
LIGHTING LEGEND	
	LIGHTING CONTACTOR
	TOGGLE SWITCH
	DIMMER SWITCH - COORDINATE TYPE WITH LIGHT FIXTURE.
	MASTER SWITCH
	WALL MOUNTED OCCUPANCY SENSOR SWITCH. 1 - DENOTES PRESSURE INFRARED, 2 - DENOTES DUAL TECH
	TIME SWITCH
	OCCUPANCY SENSOR - CEILING OR WALL MOUNTED. 1 - DENOTES PASSIVE INFRARED, 2 - DENOTES DUAL TECH
	LUMINAIRE FIXTURE TYPE IDENTIFIER (REFER TO LUMINAIRE SCHEDULE)
	LUMINAIRE FIXTURE - NEW OR EXISTING IN RELOCATED POSITION
	LUMINAIRE ON EMERGENCY POWER
	LUMINAIRES - CEILING OR WALL MOUNTED
	TRACK LIGHTING - NUMBER OF HEADS AS SHOWN
	EMERGENCY LIGHTING REMOTE HEAD(S) - WALL MOUNTED
	EMERGENCY LIGHTING REMOTE HEAD(S) - CEILING MOUNTED
	EMERGENCY LIGHTING BATTERY UNIT WITH HEADS - WALL MOUNTED
	EMERGENCY LIGHTING BATTERY UNIT - WALL MOUNTED
	EXIT SIGN WITH DIRECTIONAL ARROWS AND FACE AS SHOWN - CEILING OR WALL MOUNTED
	JUNCTION BOX FOR LIGHTING
FIRE ALARM LEGEND	
	FIRE ALARM PULL STATION
	FIRE ALARM SMOKE DETECTOR
	FIRE ALARM HEAT DETECTOR
	FIRE ALARM PANEL
	FIRE ALARM SPEAKER (TYPE TO MATCH EXISTING)
	FIRE ALARM STROBE LIGHT (TYPE TO MATCH EXISTING)
	FIRE ALARM BELL (NEW TYPE TO MATCH EXISTING)
	FIRE ALARM HORN (NEW TYPE TO MATCH EXISTING)
	FIRE ALARM HORN / STROBE (NEW TYPE TO MATCH EXISTING)
	FIRE ALARM SPEAKER (NEW TYPE TO MATCH EXISTING)
	FIRE ALARM SPEAKER / STROBE (NEW TYPE TO MATCH EXISTING)

ADDITIONAL NOMENCLATURE & ABBREVIATIONS	
EX	EXISTING TO REMAIN
R	EXISTING TO BE REMOVED
R/R	REMOVE/RE-INSTALL
ER	EXISTING TO BE RELOCATED
RE	EXISTING IN RELOCATED POSITION
AFF	ABOVE FINISHED FLOOR
WP	WEATHERPROOFED
TL	TWIST LOCK
GFI	GROUND FAULT INTERRUPTER
RT	ROOF TOP, RAIN TIGHT
LV	LOW VOLTAGE
NIC	NOT IN CONTRACT
C/W	COMPLETE WITH
UON	UNLESS OTHERWISE NOTED
NL	NIGHT LIGHT
AFCI	ARC FAULT CIRCUIT INTERRUPTER
HD	HAND DRYER
TP	TAMPER PROOF
AD	AUTODOOR
AV	AUDIO VIDEO (REFER TO AV DRAWINGS FOR EQUIPMENT AND/OR OUTLET DETAILS)
FPD	FLAT PANEL DISPLAY (REFER TO AV DRAWINGS FOR EQUIPMENT DETAILS)

DRAWING LIST	
SHEET No.	SHEET TITLE
E1.0	ELECTRICAL SPECIFICATIONS
E1.1	ELECTRICAL LEGEND AND GENERAL NOTES
E2.0	SINGLE LINE DIAGRAM AND PANEL SCHEDULES
E3.0	FLOOR PLAN - DEMOLITIONS
E4.0	FLOOR PLAN - POWER LAYOUT
E5.0	FLOOR PLAN - LIGHTING LAYOUT
E6.0	ELECTRICAL DETAILS

GENERAL NOTES:

- ALL PENETRATIONS THRU SLAB, CORE DRILLING AND CUTTING IN BUILDING CONCRETE STRUCTURE MUST BE REVIEWED AND APPROVED BY BASE BUILDING STRUCTURAL ENGINEER.
- X-RAY SCAN REQUIRED FOR ANY DRILLING AND/OR CUTTING OF CONCRETE STRUCTURE. SUBMIT X-RAY RESULTS TO THE OWNER AND BASE BUILDING STRUCTURAL ENGINEER FOR THEIR REVIEW AND APPROVAL PRIOR TO COMMENCEMENT OF WORK. X-RAY SCANNING MUST BE DONE AFTER HOURS WITH NO OCCUPANTS IN THE AREA OF SCANNING.
- ANY PENETRATIONS THRU FIRE RATED WALLS, PARTITIONS, FLOORS ETC... SHALL BE FIRE STOPPED USING APPROVED METHODS TO MAINTAIN FIRE RESISTANCE TESTING.
- ELECTRICAL CONTRACTOR SHALL COORDINATE WITH INTERIOR DESIGNER AND FOR FINAL LOCATION OF ALL OUTLETS PRIOR TO INSTALLATION.
- ALL FIRE ALARM WORK SHALL BE PERFORMED BY BASE BUILDING APPROVED FIRE ALARM CONTRACTOR. INCLUDE FOR ALL COSTS.
- REFER TO DESIGNER'S PLANS AND ELEVATIONS FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR ALL POWER AND DATA OUTLETS IN MILLWORK AND PERIMETER WALLS. CONFIRM OUTLETS AND COVER PLATE COLOUR WITH DESIGNER'S PLANS.
- RESERVED.
- BE ADVISED THAT REMOVAL OF ALL REDUNDANT EQUIPMENT AND ASSOCIATED COMPONENTS SHALL BE INCLUDED IN CONTRACT. CONFIRM IN ADVANCE OF REMOVAL WITH THE CONSULTANT AND COMPONENT THAT CONTRACTOR HAS CONCERN OR QUESTIONS AS TO ITS STATUS AND/OR CONDITION.
- UPDATE PANEL DIRECTORY AND SINGLE LINE DIAGRAM ONCE CONSTRUCTION IS COMPLETED.
- CONTRACTOR SHALL READ THE ELECTRICAL DRAWINGS THOROUGHLY AND IN CONJUNCTION WITH ALL OTHER DRAWINGS, ESPECIALLY ARCHITECTURAL, INTERIOR DESIGN, MECHANICAL, SECURITY AND AV DRAWINGS. SUBMIT ALL CHANGES AND/OR EXTRA WITH MARKED UP DRAWING FOR REVIEW PRIOR TO STARTING OF WORK. IF NO CHANGES ARE SUBMITTED, CONTRACTOR IS TO ACKNOWLEDGE THAT THE TENDER LAYOUT IS PROPER AND WILL BUILD THE SYSTEM ACCORDINGLY. NO EXTRAS WILL BE ENTERTAINED AFTER THE WORK IS STARTED. IF CONTRACTOR MUST MODIFY THE DESIGN NECESSARY BY THE INSPECTOR DURING THE FINAL INSPECTIONS, THIS SHALL BE DONE AT NO EXTRA COST TO SENECA.

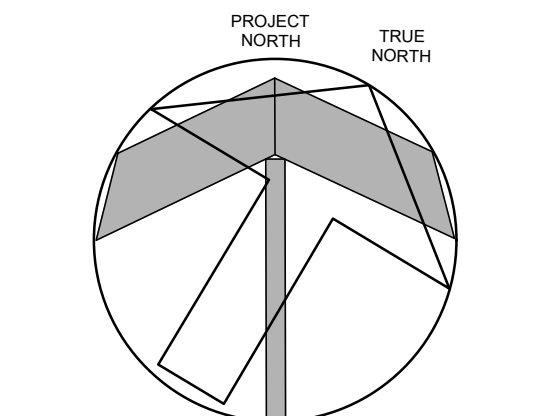
CLOSE OUT DOCUMENTATION

THE FOLLOWING INFORMATION SHALL BE PROVIDED TO THE ENGINEER PRIOR TO FINAL SITE INSPECTION AND ISSUANCE OF ENGINEERING'S FINAL SIGN OFF LETTER TO OBTAIN OCCUPANCY.

- FIRE ALARM VERIFICATION REPORT.
- LETTER OF ACCEPTANCE FROM THE ELECTRICAL SAFETY AUTHORITY.
- EMERGENCY LIGHTING LETTER CONFIRMING ALL EMERGENCY LIGHTING HAS BEEN INSTALLED AS PER THE ELECTRICAL DRAWINGS AND OPERATES TO MEET LOCAL BUILDING CODE REQUIREMENTS.
- LOAD BALANCING REPORT.

THE FOLLOWING INFORMATION SHALL BE PROVIDED TO THE OWNER UPON PROJECT COMPLETION.

- WARRANTY LETTER FROM ELECTRICAL CONTRACTOR.
- AS-BUILT DRAWINGS AND MANUALS.



NO	REVISIONS	DATE
3	ISSUED FOR TENDER	04/12/2024
2	ISSUED FOR PERMIT	04/02/2024
1	ISSUED FOR CLIENT REVIEW	03/26/2024
NO	ISSUED	DATE

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SENECA ENGINEERING LAB AT NH K3170
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1750 FINCH AVE E., TORONTO

Seneca

ELECTRICAL LEGEND AND GENERAL NOTES

ARTIFACT
DESIGN + DEVELOPMENT

31 PLYMBRIDGE CRESCENT, TORONTO, ON M2P 1P4
TEL: 416-614-7095
EMAIL: DIANA@ARTIFACTDEVELOPMENT.CA

SCALE	PROJECT
N.T.S.	24-018-007
DATE	MARCH 2024
DRAWN BY	IM/JZ
CHECKED BY	JZ
PRINT DATE	E1.1

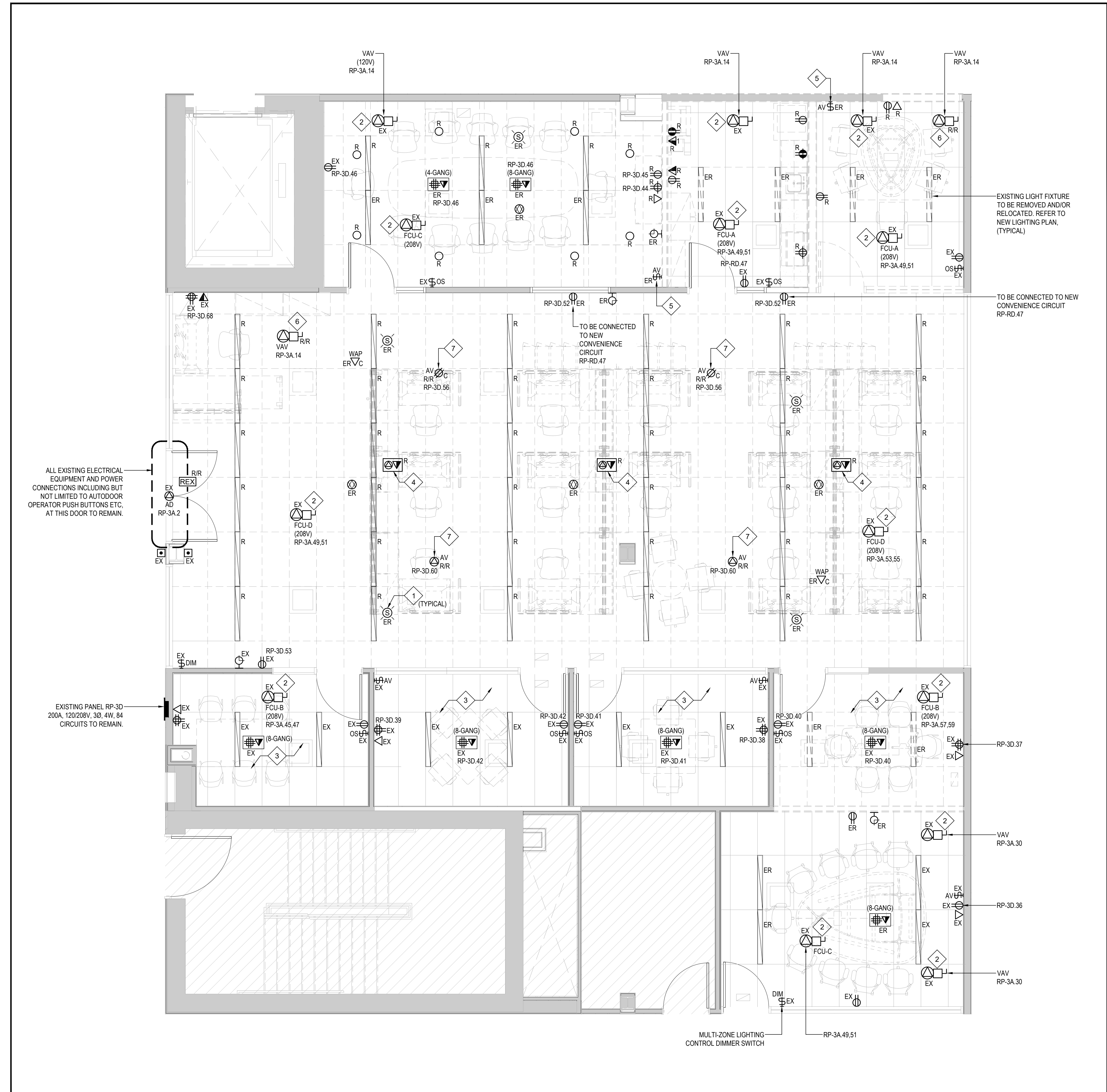
DEMOLITION KEY NOTES:

- 1 ANY EXISTING FIRE ALARM SPEAKERS TO REMAIN TO BE RELOCATED AS SHOWN ON NEW RCP PLAN. PROVIDE TEMPORARY SUPPORT DURING DEMOLITION AS REQUIRED.
- 2 EXISTING POWER CONNECTION TO HVAC INCLUDING ALL ASSOCIATED CONTROLS STARTERS ETC., SHALL REMAIN.
- 3 ALL EXISTING ELECTRICAL PROVISIONS AND EQUIPMENT IN EXISTING OFFICE TO REMAIN.
- 4 EXISTING ELECTRICAL SURFACE MOUNTED FLOOR BOX FOR POWER AND DATA TO THE PARTITIONS TO BE REMOVED. MAINTAIN PORTION OF THE CONDUIT AND CIRCULATING FOR NEW FLOOR BOX. REFER TO NEW POWER LAYOUT FOR DETAILS.
- 5 EXISTING AV BUTTONS PANEL TO BE RELOCATED. TO BE RE-PROGRAMMED BY THE AV CONTRACTOR. CONFIRM NEW LOCATION WITH AV PLANS.
- 6 ALLOW TO DISCONNECT POWER CONNECTION TO EXISTING MECHANICAL VAV UNIT THAT IS BEING REPLACED WITH NEW. RE-CONNECT NEW UNIT TO EXISTING CIRCUIT CONFIRM POWER REQUIREMENTS AND CIRCUIT WITH NEW EQUIPMENT BEFORE MAKING THE FINAL CONNECTION.
- 7 RE & RE POWER CONNECTION FOR EXISTING AV EQUIPMENT MOUNTED IN CEILING.

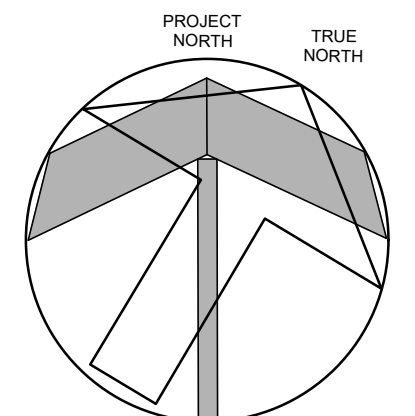
CIRCUIT NUMBERS SHOWN FOR GROUPING PURPOSE ONLY. CONFIRM EXACT CIRCUITS ON SITE.

DEMOLITION GENERAL NOTES:

1. THE INTENT OF THIS CONTRACT IS TO REMOVE PORTIONS OF THE EXISTING INSTALLATION AS CONTEMPLATED WITH THIS PROJECT, TO RE-WORK AND RE-ROUTE EXISTING SERVICES AND TO PROVIDE NEW LUMINAIRES, DEVICES AND SERVICES AS REQUIRED.
2. CONTRACTOR SHALL CONFIRM AND REVIEW ALL CONSULTANTS AND ARCHITECT DOCUMENTS FOR THE EXTENT OF WORK. COORDINATE WITH CONSTRUCTION MANAGER REGARDING THE PHASING OF WORK AND EXITING ROUTE DURING CONSTRUCTION.
3. UNLESS OTHERWISE NOTED, DISCONNECT REMOVE AND DISPOSE OF ELECTRICAL LUMINAIRES, DEVICES, HANGERS, SUPPORTS, WIRING WITHIN DEMOLITION AREA, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - a. LUMINAIRES, BRANCH WIRING AND CONDUIT, SWITCHERS, DIMMERS, ETC.
 - b. MECHANICAL EQUIPMENT DISCONNECT SWITCHES, WIREMOLD, WIRING, CONDUIT, ETC. REMOVE WIRING TO PANEL BOARDS.
 - c. SIGNAL WIRING, CONDUIT, COMMUNICATION DEVICES, TV OUTLETS, CABLE TRAY, ETC. REMOVE ALL REDUNDANT TELECOMMUNICATION WIRING BACK TO THE ENTRY POINTS
 - d. WHERE LUMINAIRES, DEVICES AND SERVICES CONNECTED TO SOURCES OUTSIDE DEMOLITION AREA, PULL ALL FEEDERS AND ASSOCIATED FITTINGS BACK TO SOURCE, OR LAST LUMINAIRE AND/OR DEVICE TO REMAIN, AND REMOVE.
 - e. REMOVE ANY AND ALL PCB BALLASTS FROM LUMINAIRES. PLACE IN STORAGE DRUMS AND REMOVE AND DISPOSE OF OFF-SITE. ALL WORK TO BE DONE IN ACCORDANCE WITH MINISTRY OF ENVIRONMENT RULES AND REGULATIONS.
4. ALLOW TO SURVEY ALL CONDUITS AND FEEDERS IN WALLS AND ABOVE CEILINGS BEING REMOVED. IDENTIFY ALL ITEMS THAT ARE REQUIRED TO REMAIN, AS THEY SERVICE EXISTING AND REMAINING CIRCUIT LOADS AND OUTLETS. ALLOW TO RELOCATE, REROUTE AND PROVIDE SUPPORTS AS REQUIRED FOR DEMOLITION.
5. DO NOT REUSE EXISTING EMERGENCY EXIT SIGNS, DC HEADS OR BATTERY UNITS REMOVED AS PART OF THIS SCOPE OF WORK.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL, STRUCTURAL AND MECHANICAL DEMOLITION DRAWINGS.
7. EXISTING ELECTRICAL INSTALLATION THAT IS REQUIRED TO STAY SHALL BE RE-SUPPORTED FROM JOIST. INCLUDE TO REWORK CONDUITS PASSING THROUGH THE SPACE FOR ELECTRICAL, TELEPHONE, I.T. RE-SUPPORT ALL COMMUNICATION, POWER CONDUITS PASSING THROUGH ETC. SYSTEMS THAT ARE NOT SPECIFIC FOR THIS SPACE.
8. ALL MATERIALS AND/OR EQUIPMENT DESIGNATED FOR SALVAGE SHALL BE TURNED OVER TO THE OWNER. ALL OTHER MATERIALS AND/OR EQUIPMENT FOR REMOVAL BECOMES THE PROPERTY OF THE ELECTRICAL CONTRACTOR AND SHALL PROMPTLY BE REMOVED FROM THE SITE.
9. CONTACT THE OWNER PRIOR TO ANY DEMOLITION WORK. THE OWNER WILL DESIGNATE WHICH EQUIPMENT AND/OR MATERIAL TO BE SALVAGED. DEMOLITION WORK IS TO PROCEED ONLY AFTER OWNER'S APPROVAL IS OBTAINED.
10. FOR EXACT LOCATION AND QUANTITY OF EXISTING MECHANICAL EQUIPMENT WHICH SHALL BE REMOVED, COORDINATE WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR.
11. ENSURE DEVICES THAT ARE LOCATED BEYOND THE AREA OF THE NOTED DEMOLITION SCOPE ARE NOT AFFECTED WITH THE REMOVAL OF THE POWER CONNECTIONS IN THE AREA OF DEMOLITION. REWIRE AS NEED POWER TO DEVICES BEYOND THE NOTED AREA OF DEMOLITION TO ENSURE POWER SUPPLY IS MAINTAINED THROUGHOUT THE FACILITY.
12. ALL ELECTRICAL WIRING IS TO BE REMOVED BACK TO SOURCE, INCLUDING SERVICES AND SERVICE CONDUITS. INTERIOR WIRING INSIDE THE TENANT SPACE SHOULD BE MADE SAFE, DISCONNECTED AND REMOVED.
13. ALL EXISTING EQUIPMENT BEING REMOVED SHALL BE FIRST OFFERED TO THE OWNER. ANY EQUIPMENT NOT REQUIRED BY THE OWNER SHALL BE DISPOSED OF OFF-SITE BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST.
14. COORDINATE WITH OWNER REPRESENTATIVE TO RELOCATE EQUIPMENT REQUIRED TO REMAIN FOR STORE OPERATION PRIOR TO DEMOLITION, RELOCATE AND EXTEND POWER/ COMMUNICATION/ CONTROL WIRING TO SUIT OWNER REQUIREMENTS
15. ANY CONCRETE FOUNDATIONS OR OTHER SUPPORTS FOR ELECTRICAL EQUIPMENT SHALL BE REMOVED TO BELOW 600mm FROM FINISHED FLOOR.
16. EXISTING FIRE ALARM SPEAKERS TO REMAIN, AND TO BE RE-USED/RE-LOCATED.
17. ALL WORK TO BE DONE IN ACCORDANCE WITH HYDRO REGULATION, MINISTRY OF LABOUR, AND AHJ.



1 FLOOR PLAN - DEMOLITION
E3.0 SCALE: 1/4" = 1'-0"



NO	REVISIONS	DATE
3	ISSUED FOR TENDER	04/12/2024
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FLOOR PLAN ELECTRICAL LAYOUT - DEMOLITION



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SCALE	PROJECT
1/4" = 1'-0"	24-018-007
DATE	DRAWING
MARCH 2024	E3.0
DRAWN BY	CHECKED BY
IM/JZ	JZ
PRINT DATE	

ELECTRICAL EQUIPMENT SCHEDULE

EQ.#	EQUIPMENT	QTY	DESCRIPTION	ELECTRICAL DATA					OUTLET TYPE	NOTES
				HP	VOLT	AMP	KW			
MAKER AREA										
1	DRILL PRESS	1	KING CANADA 83705 NOVA VIKING DVR 16" DRILL PRESS	1	120	15.0	1.8	5-15R	C/W EMERGENCY STOP	SPD IS REQUIRED
2	REWORK STATION	1	WELLER WR3000 REWORK STATIONS		120	3.3	0.4	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY
3	AIR SCRUBBER FOR SOLDERING IRON	1	FA-430 WITH DUCT & ROUND NOZZLE (USD TO CAD)		120	0.9	0.11	5-15R	C/W LOCAL SWITCH ON THE UNIT	
4	3D PRINTER	1	ULTIMAKER S7		120	4.2	0.5	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
5	SHOP VAC	1	RIDGID NXT 45L (12 GAL.) 5.0 PEAK HP	5	120	9.0	1.08	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
6	DIGITAL MULTI-METER	2	34461A DIGITAL MULTI-METER		120	0.2	0.025	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
7	DIGITAL STORAGE OSCILLOSCOPE	1	MSOX2004A MIXED SIGNAL OSCILLOSCOPE: 70 MHZ, 4 ANALOG PLUS 8 DIGITAL CHANNELS		120	0.8	0.1	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
8	DC VARIABLE POWER SUPPLY	1	KEYSIGHT E36234A BENCH POWER SUPPLY		120	6.7	0.8	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
9	WAVEFORM GENERATOR	1	KEYSIGHT 33521B WAVEFORM GENERATOR, 30 MHZ, 1-CHANNEL WITH ARB		120	1.3	0.15	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
HARDWARE TOOLS										
		1	PIERS, WIRE CUTTERS, SCREW DRIVERS, HAND SAWS, POWER TOOLS							
STARTUP SUPPLIES (10%)										
			DRILL BIT, FILAMENT							
CAPSTONE ROOM (EACH)										
10	DIGITAL MULTI-METER	2	34461A DIGITAL MULTI-METER		120	0.2	0.025	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
11	DIGITAL STORAGE OSCILLOSCOPE	1	MSOX2004A MIXED SIGNAL OSCILLOSCOPE: 70 MHZ, 4 ANALOG PLUS 8 DIGITAL CHANNELS		120	0.8	0.1	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
12	DC VARIABLE POWER SUPPLY	1	KEYSIGHT E36234A BENCH POWER SUPPLY		120	6.7	0.8	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
13	WAVEFORM GENERATOR	1	KEYSIGHT 33521B WAVEFORM GENERATOR, 30 MHZ, 1-CHANNEL WITH ARB		120	1.3	0.15	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
14	SOLDERING IRON	1	WELLER WE1010NA SOLDERING STATION		120	0.6	0.07	5-15R	C/W LOCAL SWITCH ON THE UNIT	
15	3D PRINTER	1	ULTIMAKER 3 EXTENDED 3D		120	4.2	0.5	5-15R	C/W LOCAL SWITCH ON THE UNIT	PC CONNECTIVITY & LAN
16	AIR SCRUBBER FOR SOLDERING IRON	1	FA-430 WITH DUCT & ROUND NOZZLE (USD TO CAD)		120	0.9	0.11	5-15R	C/W LOCAL SWITCH ON THE UNIT	
	MONITOR (MOUNTED ON TABLE)	1			120	2.1	0.25	5-15R	ASSUMED POWER	
	WI-FI ROUTER OR SWITCH	1			120	0.4	0.05	5-15R	ASSUMED POWER	
	TV (MOUNTED ON WALL)	1			120	2.0	0.24	5-15R	ASSUMED POWER	
	POWER - MONITORING	1			120	2.0	0.24	5-15R	ASSUMED POWER	

ALL PENETRATIONS THRU SLAB, CORE DRILLING AND CUTTING IN BUILDING CONCRETE STRUCTURE MUST BE REVIEWED AND APPROVED BY OWNER AND BASE BUILDING STRUCTURAL ENGINEER.

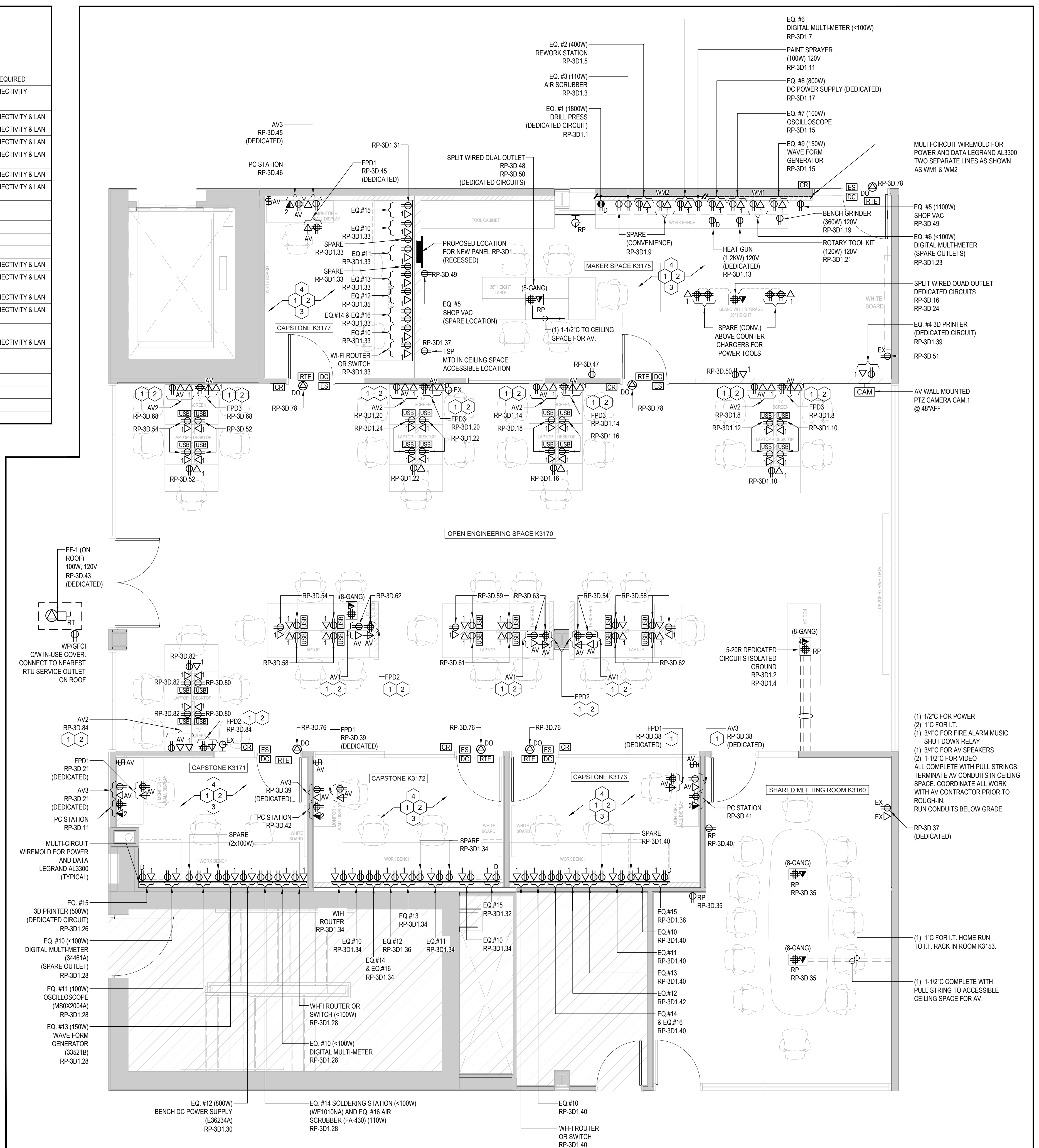
X-RAY SCAN REQUIRED FOR ANY DRILLING AND/OR CUTTING OF CONCRETE STRUCTURE. SUBMIT X-RAY RESULTS TO OWNER AND BASE BUILDING STRUCTURAL ENGINEER FOR THEIR REVIEW AND APPROVAL PRIOR TO COMMENCEMENT OF WORK. X-RAY SCANNING TO BE COMPLETED AFTER HOURS WITH NO OCCUPANTS IN THE AREA

CIRCUIT NUMBERS SHOWN FOR GROUPING PURPOSE ONLY. CONFIRM EXACT CIRCUITS ON SITE.

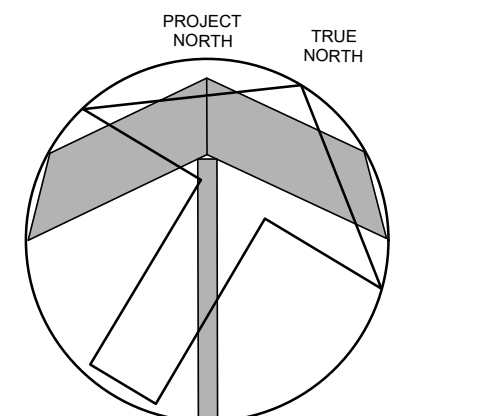
ELECTRICAL CONTRACTOR TO REFER TO AV DRAWINGS TO CONFIRM ALL AV BACK BOXES / MUDRING SIZES, AV BOXES MOUNTING HEIGHTS AND POWER OUTLETS TYPES FOR AV EQUIPMENT PRIOR TO ROUGH IN.

NUMBER OF DATA DROPS SHOWN FOR REFERENCE ONLY. THIS ELECTRICAL CONTRACTOR TO PROVIDE BACK BOX AND CONDUIT C/W PULL STRING. THE SUPPLY AND INSTALL DATA CABLING AND BY SENECA IT CONTRACTOR.

- KEY NOTES:**
- REFER TO LATEST AV DRAWINGS FOR EXACT SIZE OF BACKBOX / MUDRING AND CONDUITS REQUIREMENTS IN BETWEEN THE AV DEVICES.
 - REFER TO ARCHITECTURAL/DESIGNER AND AV DRAWINGS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL POWER, DATA AND AV OUTLETS.
 - ALLOW TO ADJUST WIREMOLD OUTLETS 6 FEET TO CLIENT FINAL LAYOUT. WIRING LAYOUT ON ENGINEERING DRAWINGS IS SHOWN FOR CIRCUITING SCHEDULE. FINAL LOCATION TO BE ADJUSTED BASED ON EQUIPMENT LAYOUT ON SITE.
 - PROVIDE LAMACOID LABEL FOR EACH OUTLET INDICATING EQUIPMENT NAME AND CIRCUIT NUMBER



1 FLOOR PLAN - POWER AND SYSTEMS
E4.0 SCALE: 1/4" = 1'-0"



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FLOOR PLAN - POWER LAYOUT



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TEL: 416-614-7095
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SCALE	PROJECT
1/4" = 1'-0"	24-018-007
DATE	DRAWING
MARCH 2024	IM/JZ
DRAWN BY	CHECKED BY
JZ	JZ
PRINT DATE	

E4.0

LUMINAIRE SCHEDULE		(BY THIS ELECTRICAL CONTRACTOR)	
L7B		CONTINUOUS LENGTH AS SHOWN ON PLAN. NARROW LINEAR LED LUMINAIRE RECESSED IN T-BAR. RIGID EXTRUDED ALUMINUM BODY. OPTICAL SYSTEM METALIZED MID FLUX LED TECHNOLOGY TO AN INTERNAL HIGH PERFORMANCE REFLECTOR. 0-10V DIM. CUL LISTED, ROHS. 23.89W/4FT, 2869LUMENS/4FT, 3500K, 120V. SUSPENSION LENGTH FOR AIRCRAFT CABLE MIN. 8 FEET. TYPE TO MATCH EXISTING IN LABS. (CONFIRM ON SITE)	METALUMEN CAT# RM4D SERIES L3 RM4D-1L35K-R-M-L3-1-PA-1
L8A		4 FOOT LONG NARROW LINEAR LED LUMINAIRE RECESSED IN T-BAR. RIGID EXTRUDED ALUMINUM BODY. OPTICAL SYSTEM METALIZED MID FLUX LED TECHNOLOGY TO AN INTERNAL HIGH PERFORMANCE REFLECTOR. 0-10V DIM. CUL LISTED, ROHS. 23.89W/4FT, 2869LUMENS/4FT, 3500K, 120V. TYPE TO MATCH EXISTING IN LABS. (CONFIRM ON SITE)	METALUMEN CAT# RM4D SERIES L3 RM4D-1L35K-R-M-L3-1-T-1

NOTES:
1. RESERVED.
2.

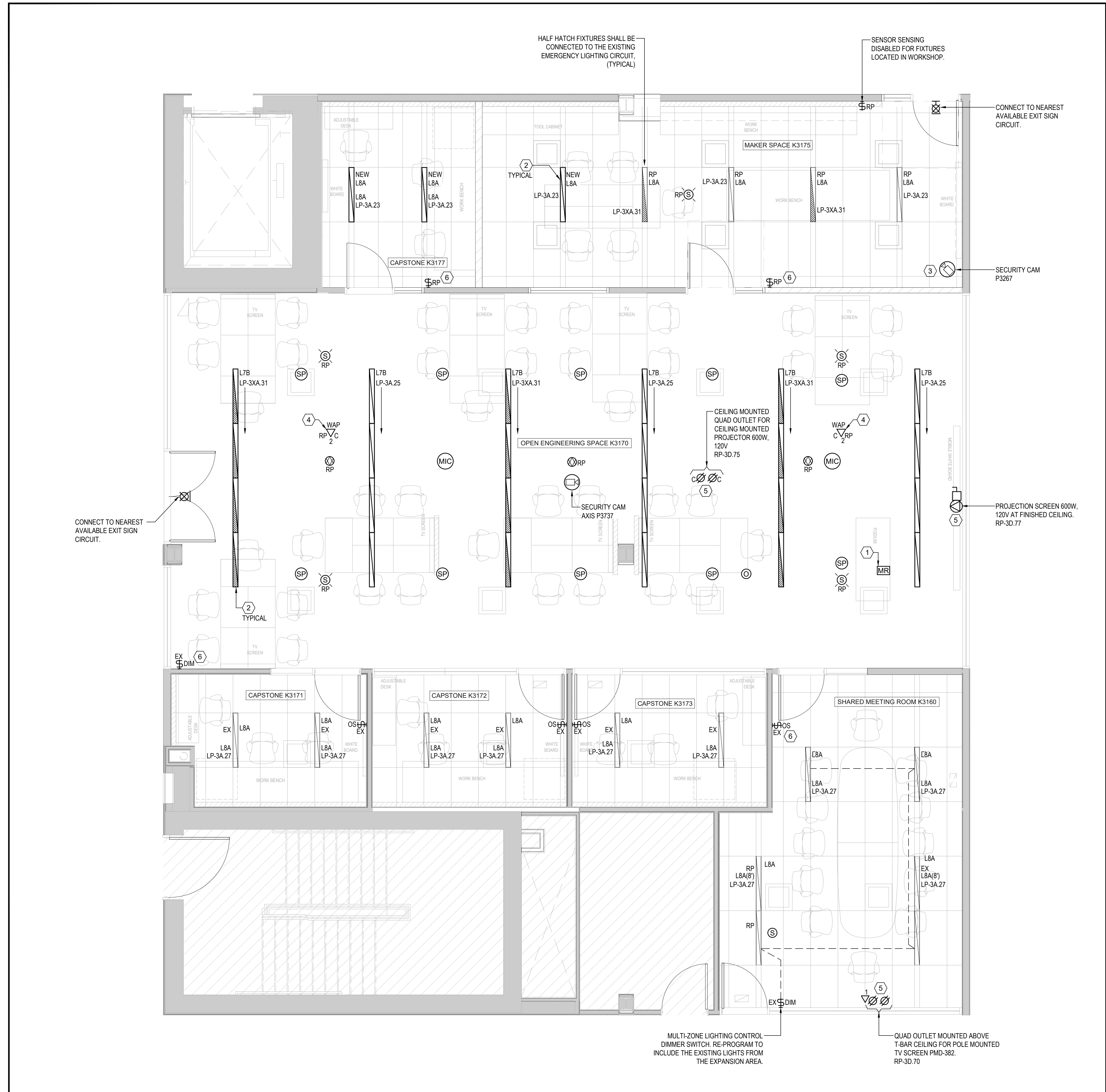
EMERGENCY EXIT SIGNS SCHEDULE					(BY THIS ELECTRICAL CONTRACTOR)	
EMERGENCY EXIT SIGNS X1		CEILING RECESSED OR WALL MOUNTED, EDGE-LIT, GREEN PICTOGRAM "RUNNING MAN" EXIT SIGN, EXTRUDED ALUMINUM CONSTRUCTION SINGLE OR DOUBLE FACE WITH DIRECTIONAL INDICATORS AS SHOWN. FULLY RECESSED, SUITABLE FOR CONNECTION TO 120VAC POWER SUPPLY, SELF POWERED.	3W LED	LUMACELL CAT# LDE SERIES OR APPROVED EQUAL		
EMERGENCY EXIT SIGNS X2		CEILING RECESSED OR WALL MOUNTED, GREEN PICTOGRAM "RUNNING MAN" EXIT SIGN, EXTRUDED ALUMINUM CONSTRUCTION SINGLE OR DOUBLE FACE WITH DIRECTIONAL INDICATORS AS SHOWN. SUITABLE FOR CONNECTION TO 120VAC POWER SUPPLY, SELF POWERED.	3W LED	LUMACELL CAT# LA SERIES OR APPROVED EQUAL		

NOTES:
1. MINIMUM ILLUMINATION ALONG MEANS OF EGRESS PATH SHALL BE 10 LUX AT THE WALKING SURFACE.
2. EXIT SIGNS SHALL BE ILLUMINATED AT ALL TIME AND EQUIPPED WITH MIN. 30 MINUTES BATTERY BACKUP POWER.
3. EXIT SIGNS SHALL BE CENTRED OVER EXIT DOORS.

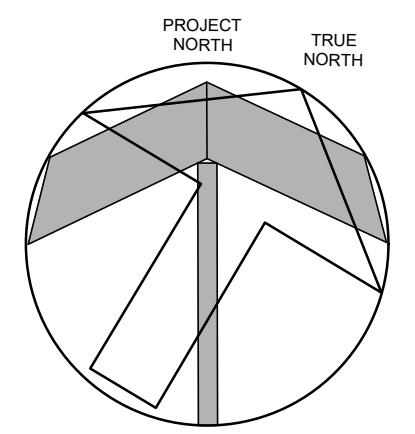
- KEY NOTES:**
- PROVIDE FIRE ALARM MUSIC SHUT DOWN RELAY AND INTERFACE TO THE TENANT AUDIO SYSTEM TO TURN OFF MUSIC SYSTEM UPON FIRE ALARM SYSTEM ACTIVATION.
 - LIGHT FIXTURE SUSPENDED FROM CEILING. CONFIRM EXACT MOUNTING HEIGHT WITH DESIGNER AND/OR ARCHITECT'S PLANS AND ELEVATIONS.
 - SECURITY CAMERAS SUPPLIED AND INSTALLED BY SENECA SECURITY VENDOR. THIS ELECTRICAL CONTRACTOR SHALL PROVIDE 1" CONDUIT COMPLETE WITH PULL STRING FROM EACH CAMERA HOME RUN TO THE SECURITY SYSTEM IN I.T. ROOM K3153. CONFIRM CABLE TYPE WITH SECURITY CONTRACTOR PRIOR TO INSTALLING. RUN IN CONDUIT TO NEAREST CABLE TRAY FOR HOME RUN TO I.T. CABINET IN I.T. ROOM K3153. ALLOW FOR 10 FEET SLACK FOR FUTURE CONNECTION TO IT RACK BY SECURITY CONTRACTOR. RJ DATA JACKS SUPPLY AND INSTALL BY THIS ELECTRICAL CONTRACTOR.
 - WAP DEVICE INCLUDING DATA WIRING SUPPLIED AND INSTALLED BY SENECA I.T. CONTRACTOR. PROVIDE BACKBOX AND 3/4" CONDUIT C/W PULL STRING TO IT RACK.
 - CONFIRM EXACT LOCATION WITH AV CONTRACTOR PRIOR TO ROUGH-IN.
 - REPROGRAM THE LIGHT SWITCHES TO MATCH NEW AREA LIGHTING AND SENECA LIGHTING CONTROL SEQUENCE OF OPERATION. PROVIDE FINAL LIGHTING CONTROL SEQUENCE OF OPERATION AND LIGHTING CONTROL COMMISSIONING RECORD TO CONFIRM LIGHTING OPERATING TO THE INTENDED SEQUENCE OF OPERATION. INCLUDE FOR NEW DATA WIRING FROM SWITCH TO THE LIGHT FIXTURES AS REQUIRED. INCLUDE TO HIRE ENCELIUM TO REPROGRAM ALL THE LIGHT FIXTURES.

CIRCUIT NUMBERS SHOWN FOR GROUPING PURPOSE ONLY. CONFIRM EXACT CIRCUITS ON SITE.

NUMBER OF DATA DROPS SHOWN FOR REFERENCE ONLY. THIS ELECTRICAL CONTRACTOR TO PROVIDE BACK BOX AND CONDUIT C/W PULL STRING. THE SUPPLY AND INSTALL DATA CABLING AND BY SENECA I.T CONTRACTOR.



1 FLOOR PLAN - LIGHTING
E5.0 SCALE: 1/4" = 1'-0"



NO	REVISIONS	DATE
3	ISSUED FOR TENDER	04/12/2024
2	ISSUED FOR PERMIT	04/02/2024
1	ISSUED FOR CLIENT REVIEW	03/26/2024
NO	ISSUED	DATE

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.

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Seneca

FLOOR PLAN - LIGHTING LAYOUT

ARTIFACT
DESIGN + DEVELOPMENT
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SCALE	PROJECT
1/4" = 1'-0"	24-018-007
DATE	MARCH 2024
DRAWN BY	IM/JZ
CHECKED BY	JZ
PRINT DATE	E5.0

