

ELECTRICAL SPECIFICATION

GENERAL NOTES

1. PROVIDE LABOUR MATERIAL AND EQUIPMENT REQUIRED TO PROVIDE A COMPLETE INSTALLATION WITH QUALITY WORKMANSHIP ACCEPTABLE TO THE OWNER, ARCHITECT AND CONSULTANT.
2. OBTAIN ALL PERMITS AND PAY ALL TAXES, FEES AND OTHER COSTS INCURRED WITH THIS WORK. FILE ALL PLANS. OBTAIN NECESSARY APPROVALS, CERTIFICATES AND INSPECTIONS. SUBMIT ALL FINAL CERTIFICATES TO THE CONSULTANT.
3. COMPLY WITH RULES AND RECOMMENDATIONS OF THE BOARD OF UNDERWRITERS, ELECTRICAL SAFETY AUTHORITY, THE CANADIAN STANDARDS ASSOCIATION AND ALL REQUIREMENTS OF THE LOCAL UTILITY.
4. VISIT THE SITE BEFORE SUBMITTING TENDERS TO EVALUATE ANY SITE CONDITIONS THAT MIGHT ARISE. INCLUDE ALL SITE CONDITIONS IN TENDER, EXTRAS WILL NOT BE ACCEPTED UNLESS BELIEVED TO BE REASONABLE BY THE OWNER AND CONSULTANT.
5. CUTTING AND PATCHING SHALL BE BY THE CONTRACTOR REQUIRING TO INSTALL THE SERVICE.
6. THE DRAWINGS ARE DIAGRAMMATIC, THE SERVICES SHALL BE INSTALLED TO CONSERVE HEADROOM AND INTERFERE AS LITTLE AS POSSIBLE WITH THE FREE USE OF THE SPACES THROUGH WHICH THEY PASS.
7. SUBMIT COPIES OF SHOP DRAWINGS AS PDF FILES VIA EMAIL FOR ALL MAJOR EQUIPMENT. THESE WILL BE REVIEWED BY THE CONSULTANT. RESUBMIT AS OFTEN AS MAY BE FOUND NECESSARY.
8. PROVIDE ALL NECESSARY PROTECTION FOR FINISHED OR UNFINISHED WORK. ALL OPENINGS IN CONDUITS, DUCTS AND EQUIPMENT SHALL BE CAPPED TO ENSURE SERVICES ARE KEPT CLEAN WHEN NOT IN USE.
9. MAINTAIN INSURANCE TO FULLY PROTECT THE CONTRACTOR, OWNER AND CONSULTANT FROM ANY AND ALL CLAIMS SUCH AS UNDER THE WORKMEN'S COMPENSATION ACT, ETC. POST PROJECT NOTIFICATION AT THE SITE IN ACCORDANCE WITH THE MINISTRY OF LABOUR REQUIREMENTS.
10. PROVIDE STRUCTURAL SUPPORTS, PLATFORMS, SUPPORTING RODS, HANGERS, INSERTS AND BRACKETS FOR EQUIPMENT AND SERVICES. DO NOT SUPPORT SERVICES FROM STEEL DECK.
11. INSTRUCT THE OWNER'S STAFF IN THE CARE, MAINTENANCE AND OPERATION OF THE SYSTEMS.
12. WARRANTY ALL LABOUR, MATERIAL AND EQUIPMENT FOR A PERIOD OF ONE (1) YEAR AFTER FINAL ACCEPTANCE OF SYSTEM.
13. COORDINATE WITH OTHER CONTRACTORS INSTALLING EQUIPMENT OR MATERIAL AND ARRANGE EQUIPMENT IN PROPER RELATION WITH APPARATUS OF ALL OTHER TRADES.
14. PROVIDE LAMICOID TAGS FOR IDENTIFICATION OF NEW EQUIPMENT ADDED.
15. MOUNTING HEIGHTS SHALL BE AS FOLLOWS FROM FINISHED FLOOR TO CENTERLINE OF DEVICE/EQUIPMENT (UNLESS OTHERWISE NOTED):
- SWITCHES, DIMMERS AND SPEED CONTROLLERS: EXISTING
 - WALL RECEPTACLES:
 - GENERAL: EXISTING
16. ALL AREAS NOT AFFECTED BY RENOVATION OR DEMOLITION SHALL REMAIN AS PRESENTLY INSTALLED UNLESS OTHERWISE NOTED.
17. ALL EXISTING ELECTRICAL DEVICES, OUTLET BOXES, ETC., NOT SHOWN ON DRAWINGS OR MENTIONED IN THE FOLLOWING NOTES AND INSTALLED IN WALLS SLATED FOR DEMOLITION, SHALL BE DISCONNECTED AND REMOVED COMPLETELY IN ALL RESPECTS.
18. EXCAVATION AND BACKFILLING SHALL BE BY THE TRADE INSTALLING THE SERVICE.
19. SUBMIT ONE COPY OF OPERATING AND MAINTENANCE INSTRUCTIONS BY EMAIL COMPLETE WITH ITEMIZED SECTIONS CONTAINING PROJECT DATA, SHOP DRAWINGS, ETC. UPON ACCEPTANCE OF THE OPERATION AND MAINTENANCE MANUAL BY THE CONSULTANT A PDF FILE OF THE ENTIRE MANUAL ON A USB STICK. ONLY ONE USB STICK IS TO BE PROVIDED CONTAINING BOTH THE APPROVED MANUALS AND RECORD DRAWINGS.
20. CONTRACTOR SHALL PROVIDE 2 SETS OF REPRODUCIBLE ELECTRICAL DRAWINGS. MARK THEREON ALL CHANGES AS WORK PROGRESSES AND AS CHANGES OCCUR. THIS SHALL INCLUDE FIELD AND CONTRACT CHANGES TO ELECTRICAL SYSTEMS. IDENTIFY EACH DRAWING IN LOWER RIGHT HAND CORNER IN LETTERS AT LEAST 3mm (1/8") HIGH AS FOLLOWS: – "RECORD DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW ELECTRICAL SYSTEMS AS INSTALLED. (SIGNATURE OF CONTRACTOR)(DATE)". SUBMIT HARD COPY TO CONSULTANT FOR APPROVAL. WHEN RETURNED, MAKE CORRECTIONS (IF ANY) AS DIRECTED. ONCE APPROVED, SUBMIT COMPLETED REPRODUCIBLE PAPER RECORD DRAWINGS AS WELL AS A SCANNED PDF COPY FILE ON USB STICK WITH OPERATING AND MAINTENANCE MANUALS.
21. CONTRACTOR SHALL PROVIDE RED LINE RECORD DRAWINGS OF EACH AND EVERY ELECTRICAL DRAWING FOR DEI & ASSOCIATES INC. TO CAD THE RECORD DRAWINGS. THE CAD DRAWING FILES WILL BE PROVIDED TO THE OWNER AS PART OF THE MAINTENANCE MANUALS.
22. THE CONTRACTOR IS TO DETERMINE GENERAL INSPECTION FEES WITH THE ELECTRICAL SAFETY AUTHORITY AND INCLUDE AS PART OF TENDER.
23. A SUBMISSION HAS BEEN MADE (IF REQUIRED BY THIS SCOPE OF PROJECT) BY THE CONSULTANT TO THE ELECTRICAL SAFETY AUTHORITY FOR REVIEW OF THIS PROJECT. THE PAYMENT OF THE REQUIRED REVIEW COSTS WILL BE COORDINATED BY THE CONSULTANT. A COPY OF THE ELECTRICAL SAFETY AUTHORITY REVIEW REPORT WILL BE FORWARDED TO THE SUCCESSFUL CONTRACTOR FOR INFORMATION AND ACTION.

BASIC MATERIALS

1. JUNCTION, OUTLET AND PULL BOXES MUST BE APPROVED TO SUIT INSTALLATION METHODS AND ENVIRONMENT.
2. CONDUIT MUST BE CONCEALED UNLESS INSTALLED IN SERVICE OR STORAGE ROOMS.
3. CONDUIT MUST BE INSTALLED PARALLEL AND PERPENDICULAR TO BUILDING LINES IN A NEAT AND WORKMANLIKE MANNER.
4. ALL FEEDER AND BRANCH CIRCUIT WIRING MUST BE COPPER, T90 RATING/STYLE RUN IN EMT CONDUIT WITH INTERNAL INSULATED GREEN GROUND WIRE UNLESS NOTED OTHERWISE. MINIMUM WIRE SIZE SHALL BE #12 AND MINIMUM CONDUIT SIZE SHALL BE 3/4" (19mm).
5. AC90 CABLE MAY BE USED FOR BRANCH CIRCUIT WIRING IN STEEL STUD WALLS AND "DROPS" IN T-BAR CEILING AREAS TO LIGHT FIXTURES AND FIRE ALARM DEVICES. LENGTH OF DROP MUST BE LIMITED TO 8'-0" (2400mm).
6. WHERE DEVICES ARE TO BE INSTALLED ON EXISTING WALLS IN FINISHED AREA, WHICH CANNOT BE FISHED, INSTALL FEEDS IN A SURFACE METAL RACEWAY EQUAL TO WIREMOLD V700 SERIES.
7. COLOUR CODE CONDUITS, BOXES AND METALLIC SHEATHED CABLES.
8. CODE WITH PLASTIC TAPE OR PAINT AT POINTS WHERE CONDUIT OR CABLE ENTERS WALL, CEILING, OR FLOOR, AND AT 15m(45') INTERVALS.
9. COLOUR BANDS MUST BE 25mm(1") WIDE AND CODED AS FOLLOWS FOR NOTED SYSTEMS. (WRITER TO EDIT)

SYSTEM	COLOUR
UP TO 208v	YELLOW
209 TO 600v	WHITE
DATA SYSTEM	ORANGE

10. THIS CONTRACTOR MUST PAINT ALL SYSTEM JUNCTION BOXES AND COVERS IN CONFORMANCE WITH THE ABOVE SCHEDULE.

DRAW BREAKDOWN

1. THIS CONTRACTOR MUST SUBMIT A BREAKDOWN OF THE TENDER PRICE INTO CLASSIFICATIONS TO THE SATISFACTION OF THE CONSULTANT, WITH THE AGGREGATE OF THE BREAKDOWN TOTALING THE TOTAL CONTRACT AMOUNT. EACH ITEM MUST BE BROKEN OUT INTO MATERIAL AND LABOUR COSTS. PROGRESS CLAIMS WHEN SUBMITTED ARE TO BE ITEMIZED AGAINST EACH ITEM OF THE DRAW BREAKDOWN. THIS SHALL BE DONE IN TABLE FORM SHOWING CONTRACT AMOUNT, AMOUNT THIS DRAW, TOTAL TO DATE, % COMPLETE AND BALANCE.
2. BREAKDOWN SHALL BE AS FOLLOWS (WRITER TO EDIT):
- PERMITS AND FEES
 - MOBILIZATION (MAXIMUM 1%)
 - DEMOLITION
 - BRANCH CONDUITS
 - BRANCH WIRING
 - LIGHTING FIXTURES
 - VOICE/DATA SYSTEM
 - COMMISSIONING (MINIMUM 3%)
3. THE BREAKDOWN MUST BE APPROVED BY THE CONSULTANT PRIOR TO SUBMISSION OF THE FIRST DRAW.
4. BREAKDOWNS NOT COMPLYING TO THE ABOVE WILL NOT BE APPROVED.
5. BREAKDOWN MUST INDICATE TOTAL CONTRACT AMOUNT.
6. MOBILIZATION AMOUNT MAY ONLY BE DRAWN WHEN ALL REQUIRED SHOP DRAWINGS HAVE BEEN REVIEWED BY THE CONSULTANT.

SHOP DRAWINGS AND PRODUCT DATA

1. FURNISH COMPLETE CATALOG DATA FOR MANUFACTURED ITEMS OF EQUIPMENT TO BE USED IN THE WORK TO CONSULTANT FOR REVIEW WITHIN 30 DAYS AFTER AWARD OF CONTRACT.
2. IF MATERIAL OR EQUIPMENT IS NOT AS SPECIFIED OR SUBMITTAL IS NOT COMPLETE, IT WILL BE REJECTED BY CONSULTANT.
3. ADDITIONAL SHOP DRAWINGS REQUIRED BY THE CONTRACTOR FOR MAINTENANCE MANUALS, SITE COPIES ETC., SHALL BE PHOTOCOPIES OF THE "REVIEWED" SHOP DRAWINGS. ALL COSTS TO PROVIDE ADDITIONAL COPIES OF SHOP DRAWINGS SHALL BE BORNE BY THE CONTRACTOR.
4. PARTIAL SUBMITTALS WILL NOT BE ACCEPTED.
5. CATALOG DATA OR SHOP DRAWINGS FOR EQUIPMENT, WHICH ARE NOTED AS BEING REVIEWED BY CONSULTANT OR HIS ENGINEER SHALL NOT SUPERSEDE CONTRACT DOCUMENTS.
6. REVIEW COMMENTS OF CONSULTANT SHALL NOT RELIEVE THIS DIVISION FROM RESPONSIBILITY FOR DEVIATIONS FROM CONTRACT DOCUMENTS UNLESS CONSULTANT'S ATTENTION HAS BEEN CALLED TO SUCH DEVIATIONS IN WRITING AT TIME OF SUBMISSION, NOR SHALL THEY RELIEVE THIS DIVISION FROM RESPONSIBILITY FOR ERRORS IN ITEMS SUBMITTED.
7. CHECK WORK DESCRIBED BY CATALOG DATA WITH CONTRACT DOCUMENTS FOR DEVIATIONS AND ERRORS.
8. SHOP DRAWINGS AND PRODUCT DATA SHALL SHOW:
- MOUNTING ARRANGEMENTS.
 - OPERATING AND MAINTENANCE CLEARANCES. E.G. ACCESS DOOR SWING SPACES.
9. SHOP DRAWINGS AND PRODUCT DATA SHALL BE ACCOMPANIED BY:
- DETAILED DRAWINGS OF BASES, SUPPORTS, AND ANCHOR BOLTS.
 - MANUFACTURER TEST DATA WHERE REQUESTED.
 - MANUFACTURER TO CERTIFY AS TO CURRENT MODEL PRODUCTION.
 - CERTIFICATION OF COMPLIANCE TO APPLICABLE CODES.
10. STATE SIZES, CAPACITIES, BRAND NAMES, MOTOR HP, ACCESSORIES, MATERIALS, GAUGES, DIMENSIONS, AND OTHER PERTINENT INFORMATION. LIST ON CATALOG COVERS PAGE NUMBERS OF SUBMITTED ITEMS. UNDERLINE APPLICABLE DATA.
11. ONCE THESE SHOP DRAWINGS ARE RETURNED "REVIEWED" OR "REVIEWED AS NOTED" FABRICATION, PRODUCTION, AND INSTALLATION MAY COMMENCE. NOTE: IF A SHOP DRAWING IS RETURNED "REVIEWED AS NOTED" THIS CONTRACTOR MUST PROVIDE WRITTEN INDICATION THAT THE COMMENTS HAVE BEEN COMPLIED WITH.
12. A PARTIAL LIST OF SHOP DRAWINGS INCLUDES:
- LUMINAIRES
 - WIRING DEVICES
 - FLOOR BOXES

WIRING DEVICES

1. RECEPTACLES, PLUGS, AND OTHER SIMILAR WIRING DEVICES MUST CONFORM TO CSA C22.2 NO. 42 (LATEST EDITION).
2. DUPLEX RECEPTACLES, CSA TYPE 5–15 R, 125 V, 15 A, U GROUND, WITH THE FOLLOWING FEATURES:
- UREA MOLDED HOUSING WITH COLOUR AS SELECTED BY OWNER'S FACILITIES DEPARTMENT.
 - SUITABLE FOR NO. 10 AWG FOR BACK AND SIDE WIRING.
 - BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
 - EIGHT BACK WIRED ENTRANCES, FOUR SIDE WIRING SCREWS.
 - TRIPLE WIRE CONTACTS AND RIVETED GROUNDING CONTACTS.
3. ACCEPTABLE MATERIALS:
- DECORA STYLE DUPLEX RECEPTACLE: HUBBELL CAT. #HBL2152 COMPLETE WITH DECORA STYLE COVERPLATE TO SUIT SPECIFICATION BELOW.
4. ACCEPTABLE ALTERNATE MANUFACTURERS INCLUDE:
- PASS & SEYMOUR
LEVITON
5. PROVIDE OTHER OCCUPANCY SENSORS TO SUIT THE DETAIL(S) ON THE DRAWINGS.
6. ALL SENSORS SHALL BE SET TO 5 MINUTES "DELAY TO OFF" UNLESS OTHERWISE DIRECTED.
7. OCCUPANCY SENSORS:
- INSTALL POWER PACKS IN ACCESSIBLE MAINTENANCE AREAS.
 - PROVIDE ACCESS DOORS IF POWER PACKS ARE INSTALLED ABOVE DRYWALL CEILINGS.
 - IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND AIM SENSORY IN THE CORRECT LOCATION REQUIRED FOR COMPLETE AND PROPER COVERAGE WITHIN THE RANGE OF COVERAGE AS PER THE MANUFACTURER'S RECOMMENDATIONS. THE LOCATIONS AND QUANTITIES OF SENSORS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE ONLY THE ROOMS WHICH ARE TO BE PROVIDED WITH SENSORS. THE CONTRACTOR SHALL PROVIDE ADDITIONAL SENSORS IF REQUIRED TO PROPERLY AND COMPLETELY COVER THE RESPECTIVE ROOMS.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE A PRE-INSTALLATION MEETING WITH THE MANUFACTURER'S FACTORY AUTHORIZED REPRESENTATIVE, AT THE FACILITY, TO VERIFY PLACEMENT TO SENSORS AND INSTALLATION CRITERIA.
 - THE CONTRACTOR SHALL ALSO PROVIDE THE ON-SITE TRAINING NECESSARY TO FAMILIARIZE THE OWNER'S PERSONNEL WITH THE OPERATION, USE, ADJUSTMENT AND PROBLEM SOLVING DIAGNOSIS OF THE OCCUPANCY SENSING DEVICES SYSTEMS.
 - UPON COMPLETION OF THE INSTALLATION, THE SYSTEM SHALL BE COMPLETELY COMMISSIONED BY THE MANUFACTURER'S FACTORY AUTHORIZED TECHNICIAN WHO WILL VERIFY ALL ADJUSTMENTS AND SENSOR PLACEMENT TO ENSURE A TROUBLE-FREE OCCUPANCY-BASED LIGHTING CONTROL. SUBMIT COMMISSIONING REPORT WITH CLOSE-OUT DOCUMENTS.
8. INSTALL DEVICES IN GANG TYPE OUTLET BOX WHEN MORE THAN ONE DEVICE IS REQUIRED IN ONE LOCATION.
9. SHEET STEEL UTILITY BOX COVER FOR WIRING DEVICES INSTALLED IN SURFACE MOUNTED UTILITY BOXES.
10. STAINLESS STEEL, VERTICALLY BRUSHED, 1mm THICK COVER PLATES FOR WIRING DEVICES MOUNTED IN FLUSH-MOUNTED OUTLET BOXES.
11. PROTECT STAINLESS STEEL COVER PLATE FINISH WITH PAPER OR PLASTIC FILM UNTIL PAINTING AND OTHER WORK IS FINISHED.
12. INSTALL SUITABLE COMMON COVER PLATES WHERE WIRING DEVICES ARE GROUPED.

LIGHTING SYSTEMS

FIXTURES ARE TO BE PROVIDED AS NOTED IN THE LIGHT FIXTURE SCHEDULE C/W THE FOLLOWING FEATURES:

1. LED
- FIXTURE LED'S MUST BE TESTED IN CONFORMANCE WITH IESNA LM80 STANDARD.
 - LED'S MUST BE SELECTED USING A BINNING ALGORITHM TO ENSURE COLOUR AND LUMEN OUTPUT OF A GIVEN FIXTURE ARE CONSISTENT, AS WELL AS MEET OR SURPASS ANSI C78.377 SPECIFICATION FOR THE RATED LIFETIME OF THE FIXTURE. COLOUR ACCURACY BETWEEN PRODUCTS MUST BE WITHIN A 2-STEP MACADAM ELLIPSE.
 - LUMINAIRES MUST BE TESTED TO IESNA LM79 BY AN INDEPENDENT APPROVED LABORATORY.
 - LUMINAIRES MUST BE TESTED PRIOR TO SHIPPING.
 - LUMINAIRES MUST BE ULC CERTIFIED AND APPROVED FOR USE IN CANADA.
 - FIXTURES MUST MAINTAIN A MINIMUM OF 90% OF THEIR INITIAL LIGHT OUTPUT FOR 60,000 HOURS. SUBMIT TEST RESULTS UPON REQUEST.
 - LUMEN VALUES INDICATED FOR FIXTURES IN THE PROJECT DOCUMENTS ARE TO BE CONSIDERED AS "ABSOLUTE" OR "DELIVERED" VALUES.
 - OTHER THAN FOR SPECIALTY FIXTURES, AND UNLESS OTHERWISE INDICATED, THE MAXIMUM DRIVER CURRENT IS TO BE 750 MA.
2. FIXTURE INSTALLATION
- LOCATE AND INSTALL LUMINAIRES AS INDICATED.
 - FIXTURE SURFACE MOUNTED TO SUSPENDED CEILINGS MUST BE SECURED THROUGH CEILING ASSEMBLY TO CROSS MEMBER SUPPORTS. THESE SUPPORTS ARE TO BE STEEL CHANNELS OR ANGLES INDEPENDENTLY SECURED TO STRUCTURE USING #12 "JACK" CHAIN. EACH CHAIN MUST BE SECURED SO NO FIXTURE WEIGHT IS ADDED TO THE CEILING ASSEMBLY.
 - PLASTER FRAMES/FLANGE KITS MUST BE PROVIDED BY THIS DIVISION FOR FIXTURES RECESSED IN PLASTER AND/OR DRYWALL CEILINGS.
 - WHERE SPECIFIED, FIXTURES TO BE CHAIN HUNG SHALL BE HUNG USING "JACK" CHAIN WITH A CAPACITY TO SUIT THE FIXTURE WEIGHT. BRANCH CIRCUIT WIRING FEEDING THESE FIXTURES SHALL BE AC90 CABLE "TY-WRAPPED" AT 36" (900mm) INTERVALS ALONG LENGTH OF DROP. FINAL APPEARANCE MUST BE NEAT AND PROFESSIONAL.
 - DIRECT "HEADS" ON UNITS AND REMOTE MOUNTED FIXTURES TO ILLUMINATE PATH(S) OF EXIT.
 - CONNECT LUMINAIRES TO LIGHTING CIRCUITS AS INDICATED.
 - ALIGN LUMINAIRES MOUNTED IN CONTINUOUS ROWS TO FORM STRAIGHT UNINTERRUPTED LINES.
 - ALIGN LUMINAIRES MOUNTED INDIVIDUALLY PARALLEL OR PERPENDICULAR TO BUILDING GRID LINES.
 - ALL LIGHTING BRANCH CIRCUITS ARE TO BE PROVIDED WITH SEPARATE NEUTRALS.
3. GUARANTEE
- ALL LED FIXTURES AND DRIVERS ARE TO BE COMPLETE WITH A 5 YEAR GUARANTEE.
 - THE LABOUR REQUIRED TO REPLACE THESE DRIVERS MUST BE INCLUDED IN THE ABOVE GUARANTEE
4. TESTING/CERTIFICATION
- AT THE COMPLETION OF THE PROJECT AND IN THE PRESENCE OF THE CONSULTANT, TEST ALL EXIT AND EMERGENCY FIXTURES, ON COMPANY LETTERHEAD, THE CONTRACTOR IS TO PREPARE A CHART INDICATING:
 - PROJECT
 - DATE
 - EQUIPMENT TYPE
 - CERTIFICATION OF CORRECT CONNECTION
 - CERTIFICATION OF CORRECT OPERATION
 - DURATION OF TEST IN MINUTES (MINIMUM 30)
 - ACTUAL PERIOD OF TESTING (TIME OF DAY)
 - THIRD PARTY FUNCTIONAL TESTING
 - AT THE COMPLETION OF THE INSTALLATION, THE SYSTEM SHALL BE COMMISSIONED BY A MANUFACTURER'S FACTORY AUTHORIZED THIRD PARTY REPRESENTATIVE WHO SHALL PROVIDE FUNCTIONAL TESTING AND DOCUMENTATION CONFORMING TO THE REQUIREMENTS OF AS/NZS 94.4. FUNCTIONAL THIRD PARTY TESTING SHALL INCLUDE LINE VOLTAGE OCCUPANCY SENSORS AND DIGITAL ROOM CONTROL SYSTEMS. ALL COSTS SHALL BE INCLUDED IN THE CONTRACT.

LIGHTING CONTROLS

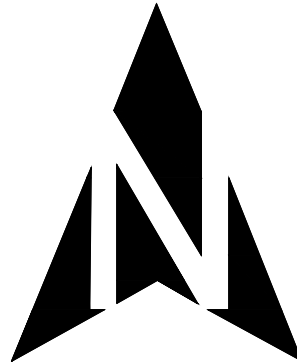
- LIGHTING CONTROLS AND FIXTURE DRIVERS ARE TO BE LUTRON ECOSYSTEM COMPATIBLE WITH QUANTUM ENERGI SAVR NODE; NO EQUALS.
- SYSTEM SHALL BE TOPOLOGY-FREE. PROVIDE RS485 COMMUNICATION WIRING BETWEEN LOW VOLTAGE DEVICES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE SYSTEM COMPLETE WITH LUTRON QUANTUM VUE LIGHTING MANAGEMENT SYSTEM SOFTWARE LICENSE TO CAPTURE SYSTEM DESIGN AND DEFINE AND ALTER CONFIGURATIONS AS REQUIRED.
- PROVIDE OWNER TRAINING ON LIGHTING CONTROL SYSTEM.
- PROVIDE LOW VOLTAGE CONTROL STATIONS AS SHOWN ON DRAWINGS, EQUAL TO LUTRON OSW SERIES WITH BUTTONS AND PROGRAMMING AS INDICATED.
- PROVIDE LOW VOLTAGE CONTROL INTERFACES AS REQUIRED INCLUDING SENSOR MODULE (LUTRON QSM SERIES).
- PROVIDE OCCUPANCY SENSORS (LUTRON LOS-CDT SERIES), POWER PACKS (LUTRON GRX SERIES), AND PARTITION SENSORS (LUTRON GRX-IRPS-WH) AS SHOWN ON DRAWINGS.
- PROVIDE COMPLETE SYSTEM COMMISSIONING BY MANUFACTURER IN BASE TENDER PRICE. PROVIDE MAINTENANCE MATERIALS IN ACCORDANCE WITH GENERAL REQUIREMENTS.
- INCLUDE IN BASE TENDER PRICE FOR ONE ADDITIONAL MANUFACTURER VISIT TO SITE TO CONDUCT MEETING WITH OWNER/ENGINEER TO MAKE REQUIRED ADJUSTMENTS TO LIGHTING CONTROL SYSTEM.

VOICE/DATA NETWORK INSTALLATIONS

- GENERAL
- THE OWNER HAS STANDARDIZED ON COMMSCOPE CAT6 CABLING PER REFERENCE SPECIFICATION SUPPLEMENT SECTION 27 10 00.
 - SCOPE OF WORK INCLUDES INDIVIDUAL CAT6 DROPS FROM NEW CLOCKS BACK TO EXISTING PATCH PANEL IN DATA ROOM K211.
 - REFER TO SPECIFICATION SECTION 27 10 00 FOR ADDITIONAL INFORMATION REGARDING PRODUCTS, INSTALLATION METHODS, TESTING, AND DOCUMENTATION.
 - THE PREQUALIFIED VOICE/DATA SUB CONTRACTORS ARE:
 - ACP COMMUNICATIONS TECHNOLOGIES
885 MAIN ST. E., MILTON, ONTARIO L9T 5A7
CONTACT: MR. DAVE LINTON
DLINTON@NETWORKACP.COM
905-876-4026
416-200-0854
 - VRIDIAN
3184 RIDGEWAY DR., UNITS 43&44, MISSISSAUGA, ONTARIO L6L 557
CONTACT: MR. JASON SPIERS
JSPIERS@VRIDIANAUTOMATION.COM
905-608-0505 X 105
905-580-1571
 - IDEA NETWORKS
1515 MATHESON BLVD. E., UNIT B10, MISSISSAUGA, ONTARIO L4W 2P5
CONTACT: MR. GEORGE CHAPMAN
GCHAPMAN@IDEANETWORKS.COM
905-790-3900
647-637-4332

FIRESTOPPING

- FIRESTOPPING MATERIAL AND INSTALLATION WITHIN ANNULAR SPACE BETWEEN CONDUITS, DUCTS, AND ADJACENT FIRE SEPARATION.
- PROVIDE MATERIALS AND SYSTEMS CAPABLE OF MAINTAINING EFFECTIVE BARRIER AGAINST FLAME, SMOKE, AND GASES.
- COMPLY WITH THE REQUIREMENTS OF CAN4-S115-M35, AND DO NOT EXCEED OPENING SIZE FOR WHICH THEY HAVE BEEN TESTED.
- SYSTEMS TO HAVE AN F OR FT RATING (AS APPLICABLE) NOT LESS THAN THE FIRE PROTECTION RATING REQUIRED FOR CLOSURES IN A FIRE SEPARATION. PROVIDE "FIREWRAP" BLANKET AROUND SERVICES PENETRATING FIREWALLS.
- EXTENT OF BLANKET MUST CORRESPOND TO ULC RECOMMENDATIONS. IN GENERAL WRAP INDIVIDUAL CONDUITS WITH APPROVED FIREWRAP MATERIALS ON EACH SIDE OF FIREWALL. REFER TO ARCHITECTURAL DRAWINGS FOR FT RATINGS. PROVIDE 1 AND/OR 2 LAYERS OF FIREWRAP WITH TRANSVERSE AND LONGITUDINAL SEAMS OVERLAPPED AND/OR BUTTED (SECOND LAYER OFFSET FROM FIRST LAYER). CUT EDGES ARE TO BE SEALED WITH ALUMINUM FOIL TAPE. PROVIDE 50 MM STAINLESS STEEL BANDING AT 200 MM INTERVALS. INSTALL FIREWRAP TO MANUFACTURER'S RECOMMENDATIONS FOR PROPER FT RATING. ACCEPTABLE MANUFACTURERS ARE 3M FIREMASTER DUCTWRAP OR APPROVED EQUAL.
- THE FIRESTOPPING MATERIALS ARE NOT TO SHRINK, SLUMP OR SAG AND BE FREE OF ASBESTOS, HALOGENS AND VOLATILE SOLVENTS.
- FIRESTOPPING MATERIALS ARE TO CONSIST OF A COMPONENT SEALANT APPLIED WITH A CONVENTIONAL CAULKING GUN AND TROWEL.
- FIRESTOP MATERIALS ARE TO BE CAPABLE OF RECEIVING FINISH MATERIALS IN THOSE AREAS, WHICH ARE EXPOSED AND SCHEDULED TO RECEIVE FINISHES.
- FIRESTOPPING SHALL BE INSPECTED AND APPROVED BY LOCAL AUTHORITY PRIOR TO CONCEALMENT OR ENCLOSURE.
- INSTALL MATERIAL AND COMPONENTS IN ACCORDANCE WITH ULC CERTIFICATION, MANUFACTURERS INSTRUCTIONS AND LOCAL AUTHORITY.
- SUBMIT PRODUCT LITERATURE AND INSTALLATION MATERIAL ON FIRESTOPPING IN SHOP DRAWING AND PRODUCT DATA MANUAL.
- ACCEPTABLE MANUFACTURERS:
 - FYRESELEEVE INDUSTRIES INC.
GENERAL ELECTRIC PENSIL FIRESTOP SYSTEMS
INTERNATIONAL PROTECTIVE COATINGS CORP.
RECTORSEAL CORPORATION (METACAULK)
PROSET SYSTEMS
3M
AD SYSTEMS
HILTI
ROYAL
- NOTE: FIRE STOP MATERIAL MUST CONFORM TO REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION. CONTRACTOR TO CONFIRM PRIOR TO APPLICATION AND ENSURE MATERIAL USED IS COMPATIBLE WITH THAT USED BY OTHER TRADES ON SITE.
- ENSURE FIRESTOP MANUFACTURER REPRESENTATIVE PERFORMS ON SITE INSPECTIONS AND CERTIFIES INSTALLATION. SUBMIT INSPECTION REPORTS/CERTIFICATION AT TIME OF SUBSTANTIAL COMPLETION.



The contractor shall verify all dimensions and report all errors and discrepancies to the Consultant before commencement of the work.

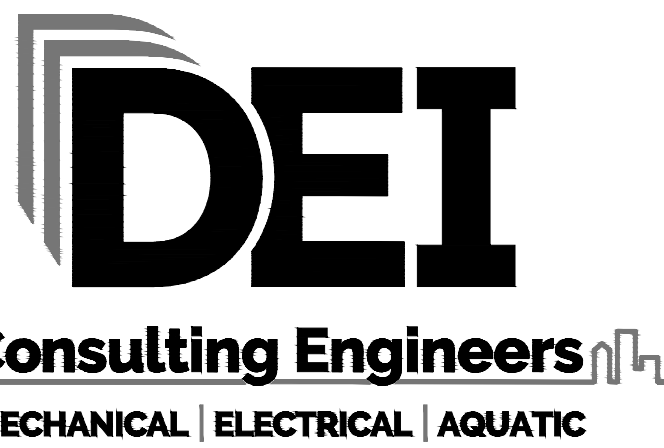
The drawings show general arrangement of services. Follow as closely as actual building construction will permit. Obtain approval for relocation of service from Consultant before commencement of the work.

The drawings do not indicate all offsets fitting and accessories which may be required. Provide the same to meet the required conditions.

Drawings and specifications, etc., prepared and issued by the consultant are the property of the consultant and must be returned at the completion of the project. These documents are not to be duplicated or copied without the consent of the Consultant.

Do not scale this drawing.

© 2021 DEI & Associates Inc.



55 Northland Road, Waterloo, ON N3V 1Y8
Phone: 519-725-3555 Fax: 519-725-2515
Website: deiasociates.ca
Project Number: 21131



No.	Description	Date
7		
6		
5		
4		
3		
2	ISSUED FOR TENDER	04/12/2021
1	ISSUED FOR REVIEW	03/26/2021



BARRIE CAMPUS
1 GEORGIAN DRIVE, BARRIE ON L4M 3X9

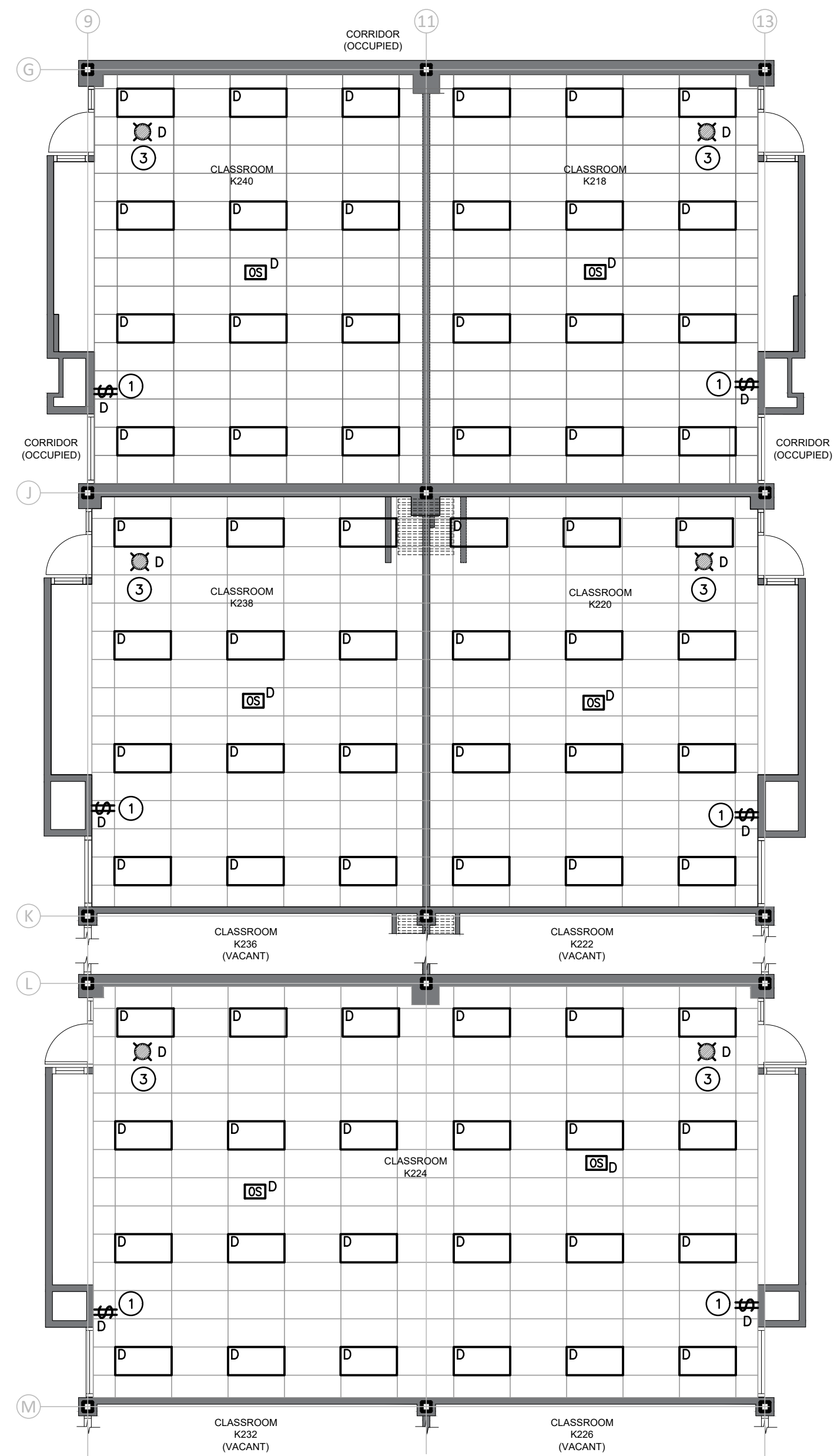
PROJECT:
BA K Building - 2nd Floor BYOD
Lab Renovations

DRAWING:
Electrical Specifications

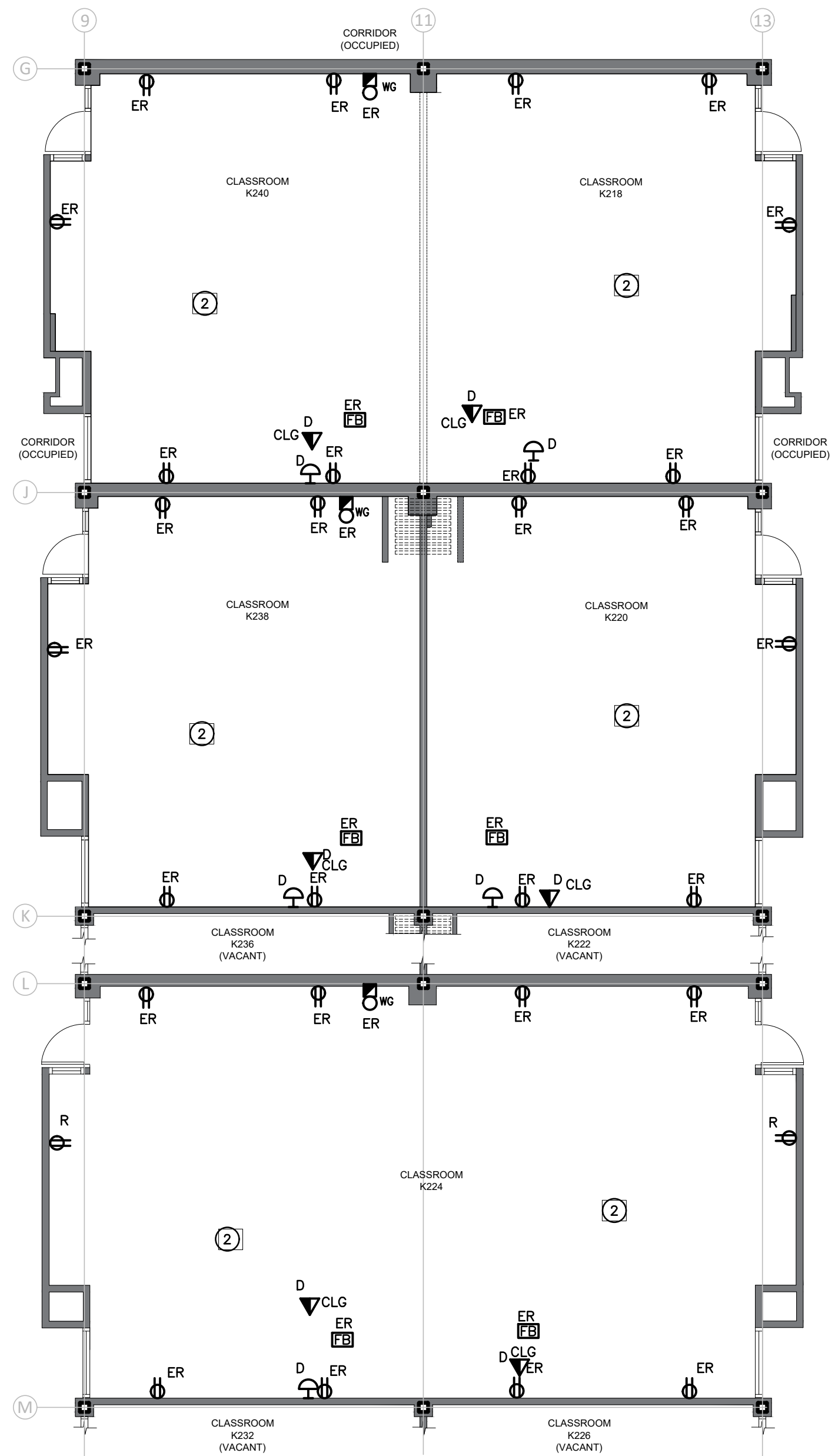
PID: 11303
Date: 2021 APRIL
Drawn by: SF
Checked by: KS
Scale: As Indicated

SHEET:

E0.01



DEMOLITION LIGHTING PLAN
SCALE 1/8" = 1'-0"



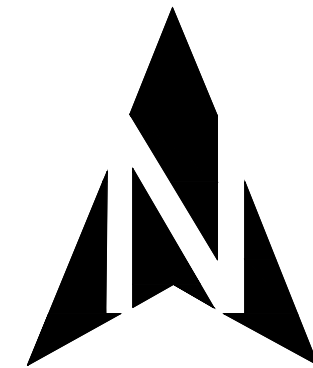
DEMOLITION POWER AND SYSTEMS PLAN
SCALE 1/8" = 1'-0"

GENERAL DEMOLITION NOTES

- 'ER' DENOTES EXISTING ITEM TO REMAIN.
- EXISTING ELECTRICAL EQUIPMENT NOT SHOWN SHALL REMAIN UNLESS NOTED OTHERWISE.
- 'R' INDICATES EXISTING ITEM TO BE RELOCATED. REFER TO RENOVATION DRAWINGS AND RELOCATE DEVICE AND WIRING TO SUIT. UNLESS OTHERWISE NOTED.
- 'D' INDICATES EXISTING ITEM TO BE DELETED. UNLESS OTHERWISE NOTED DISCONNECT AND REMOVE NOTED DEVICE AND WIRING BACK TO SOURCE.
- EXISTING 347V NORMAL POWER LIGHTING CIRCUIT TO BE DEMOLISHED.
- EXISTING AV AND WIFI ACCESS POINTS TO BE REMOVED BY OWNER'S FORCES. MAINTAIN DEVICES.
- TURN OVER DEMOLISHED CLOCKS TO OWNER.

SPECIFIC DEMOLITION NOTES

- 1 EXISTING LIGHTING CONTROLS TO BE REMOVED COMPLETELY. MAINTAIN EXISTING ROUGH-IN FOR RE-USE. REFER TO RENOVATION PLANS FOR ADDITIONAL INFORMATION.
- 2 NOTED DEVICES FOR PROJECTOR ARE IN CEILING SPACE AND ARE EXISTING TO REMAIN.
- 3 MAINTAIN EXISTING 347V EMERGENCY CIRCUIT FOR REUSE. REFER TO RENOVATION PLANS FOR ADDITIONAL INFORMATION.



The contractor shall verify all dimensions and report all errors and discrepancies to the Consultant before commencement of the work.
The drawings show general arrangement of services. Follow as closely as actual building construction will permit. Obtain approval for relocation of service from Consultant before commencement of the work.
The drawings do not indicate all offsets fitting and accessories which may be required. Provide the same to meet the required conditions.
Drawings and specifications, etc., prepared and issued by the consultant are the property of the consultant and must be returned at the completion of the project. These documents are not to be duplicated or copied without the consent of the Consultant.
Do not scale this drawing.
© 2021 DEI & Associates Inc.



Consulting Engineers
MECHANICAL | ELECTRICAL | AQUATIC

55 Northland Road, Waterloo, ON N3V 1V8
Phone: 519-725-3555 Fax: 519-725-2515
Website: deiassociates.ca
Project Number: 21131



No.	Description	Date
7		
6		
5		
4		
3		
2	ISSUED FOR TENDER	04/12/2021
1	ISSUED FOR REVIEW	03/26/2021



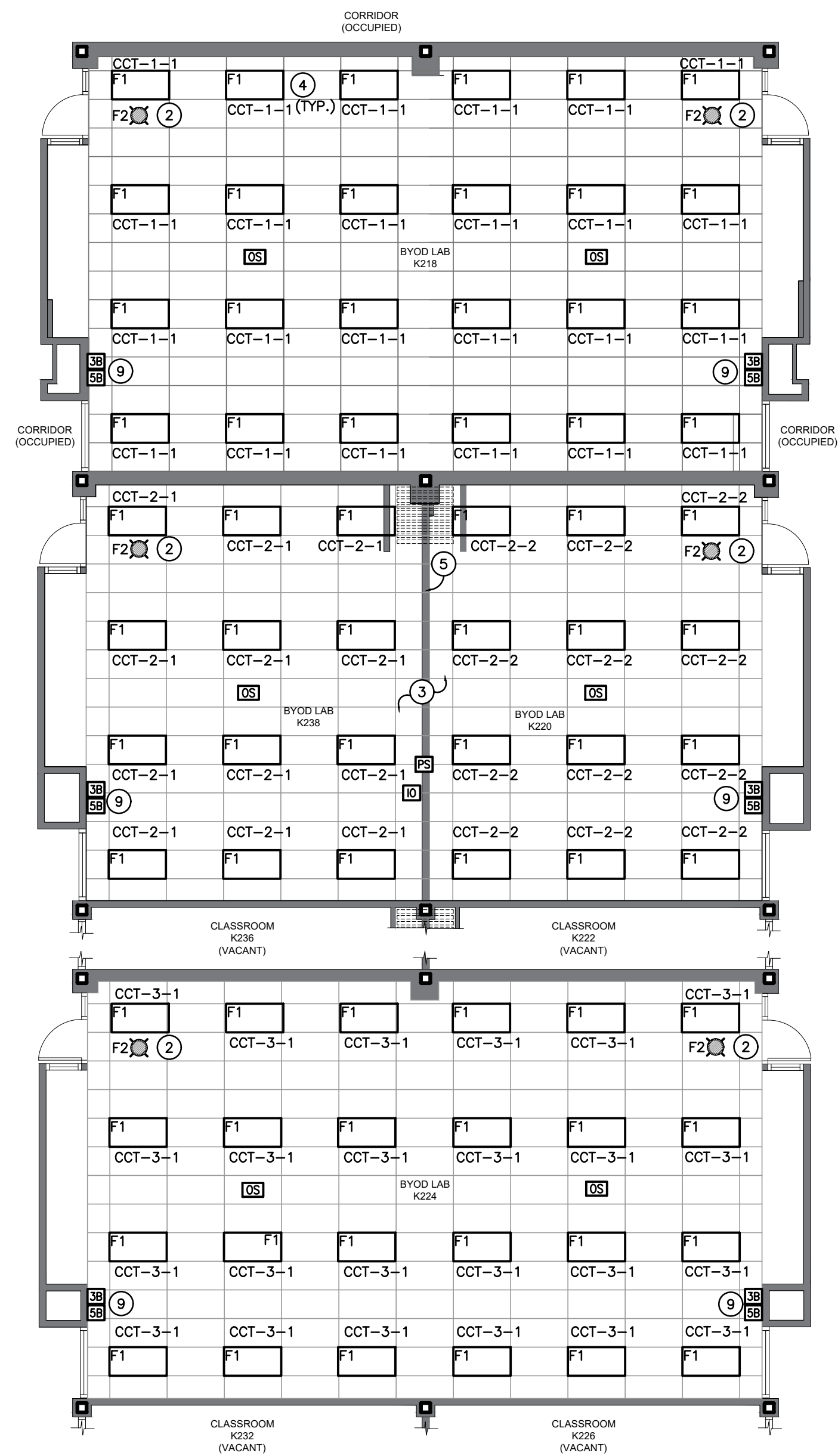
BARRIE CAMPUS
1 GEORGIAN DRIVE, BARRIE ON L4M 3X9

PROJECT:
**BA K Building - 2nd Floor BYOD
Lab Renovations**

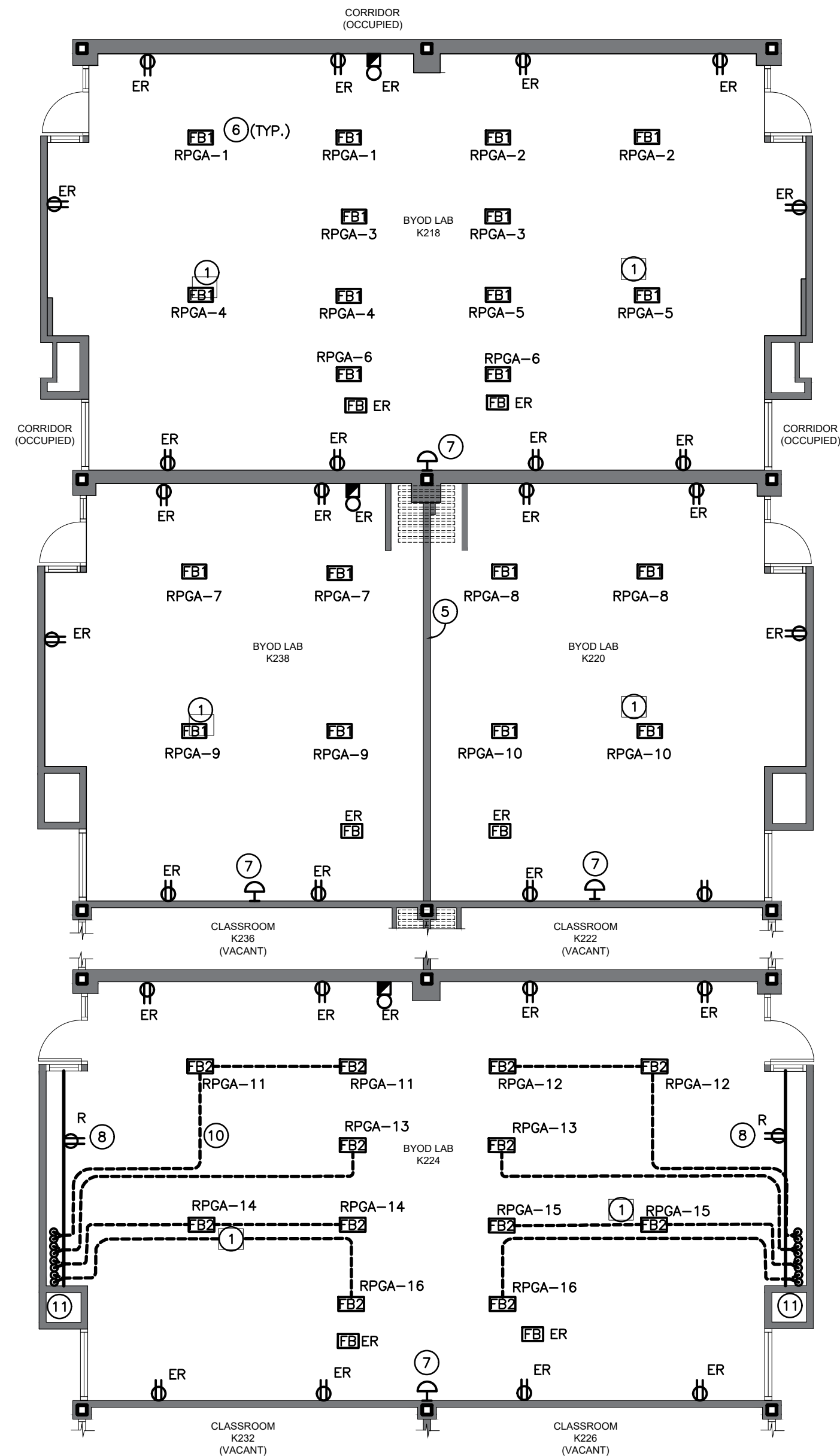
DRAWING:
**Electrical BYOD LAB
Demolition Plans**

PID:	11303	SHEET:	
Date:	2021 APRIL		
Drawn by:	SF		
Checked by:	KS		
Scale:	As Indicated		

E1.00



RENOVATION LIGHTING PLAN
SCALE 1/8" = 1'-0"



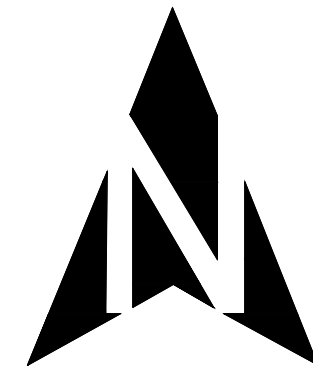
RENOVATION POWER AND SYSTEMS PLAN
SCALE 1/8" = 1'-0"

GENERAL RENOVATION NOTES

- 'ER' INDICATES EXISTING ITEM TO REMAIN.
- 'R' INDICATES EXISTING ITEM IN RELOCATED POSITION.
- ALL DEVICES SHOWN ARE NEW UNLESS OTHERWISE NOTED.
- EXISTING ELECTRICAL EQUIPMENT NOT SHOWN SHALL REMAIN UNLESS OTHERWISE NOTED.
- MAINTAIN SERVICE TO ALL EXISTING DEVICES TO REMAIN.
- REVISE PANEL DIRECTORIES TO SUIT CHANGES (TYPED).
- EXISTING AV AND WIFI ACCESS POINTS TO BE REINSTALLED BY OWNER'S FORCE.
- PROVIDE NEW WHITE THERMOPLASTIC COVER PLATES FOR NEW DEVICES AND ALL EXISTING RECEPTACLES IN AREA OF WORK.
- PROVIDE PASSIVE FIRE RATED COVERS FOR ALL LIGHT FIXTURES (EQUAL TO TENMAT FF130 SERIES AND OUTLET BOXES (EQUAL TO TENMAT FF109-FR50 OR FF190-FR50CL) IN CEILING SPACE TO SUIT DIMENSION OF EQUIPMENT. PROVIDE C/W 64MM COMMON NAILS TO SUIT ULC-APPROVALS.
- REFER TO GENERAL ALLOWANCES FOR X-RAYING OF FLOORS/SLABS BY A QUALIFIED TRADE.
- CUTTING AND PATCHING OF FLOORS IN ROOM K224 IS TO BE UNDER GENERAL ALLOWANCE.
- SEGMENT MANAGER, POWER SUPPLY, AND QS CONTROL LINK CABLE TO AREA OF WORK BY OWNER.
- OWNER IS TO UNDERTAKE WORK TO BRING AV INTEGRATION CONTROLS INTO AREAS OF WORK.
- TERMINATE FLOORBOX DATA ROUGH-INS IN ONE CENTRAL JUNCTION BOX PER BYOD LAB SPACE. LOCATE JUNCTION BOX IN GROUND FLOOR CEILING SPACE FOR ROOMS 218, 238, AND 220, AND IN CEILING SPACE OF ROOM 224. LABEL ACCORDINGLY.

SPECIFIC RENOVATION NOTES

- 1 NOTED DEVICES FOR PROJECTOR ARE IN CEILING SPACE AND ARE EXISTING TO REMAIN.
- 2 CONNECT NEW FIXTURE TO EXISTING LOCAL EMERGENCY LIGHTING INVERTER CIRCUIT.
- 3 REWORK EXISTING CONTROLS ROUGH-INS TO SUIT POTENTIAL SEPARATION OF ROOM AS SHOWN ON RENOVATION PLAN.
- 4 WITHIN EXISTING LOCAL PANEL IN ROOM K23-B, PROVIDE NEW 15A-1P BREAKER WITH A KAIC RATING TO MATCH EXISTING BREAKERS TO FEED NEW LIGHTING. FOR PRICING PURPOSES, ASSUME 22KAIC RATING. PANEL IS CUTLER HAMMER PRL1A SERIES 120/208V 3P 4W.
- 5 INDICATES EXISTING FOLDING PARTITION.
- 6 WITHIN EXISTING LOCAL PANEL RPGA IN ROOM KIOSE, PROVIDE NEW 15A-1P BREAKER WITH A KAIC RATING TO MATCH EXISTING BREAKERS TO FEED NEW FLOORBOX. FOR PRICING PURPOSES, ASSUME 22KAIC RATING. PANEL IS CUTLER HAMMER PRL1A SERIES 120/208V 3P 4W.
- 7 INDICATES SYSTEM CLOCK BY OTHERS. PROVIDE DATA ROUGH-IN TO CABLE TRAY IN ROOMS K220 AND K238.
- 8 EXTEND EXISTING WIRING TO SUIT FURR OUT AND PROVIDE NEW COVERPLATE.
- 9 UTILIZE EXISTING ROUGH-INS FOR NEW CONTROLS.
- 10 INDICATED SCHEMATIC CONDUIT TRENCHING ROUTE. COORDINATE EXACT ROUTING ON SITE AFTER COMPLETION OF SLAB X-RAY.
- 11 INDICATED CONDUITS RISE FROM IN-FLOOR TRENCH TO CEILING SPACE OF ROOM FOR FLOORBOX POWER AND DATA CONDUITS.



The contractor shall verify all dimensions and report all errors and discrepancies to the Consultant before commencement of the work.
The drawings show general arrangement of services. Follow as closely as actual building construction will permit. Obtain approval for relocation of service from Consultant before commencement of the work.
The drawings do not indicate all offsets fitting and accessories which may be required. Provide the same to meet the required conditions.
Drawings and specifications, etc., prepared and issued by the consultant are the property of the consultant and must be returned at the completion of the project. These documents are not to be duplicated or copied without the consent of the Consultant.
Do not scale this drawing.
© 2021 DEI & Associates Inc.



Consulting Engineers

MECHANICAL | ELECTRICAL | AQUATIC

55 Northland Road, Waterloo, ON N3V 1Y8
Phone: 519-725-3555 Fax: 519-725-2515
Website: deiassociates.ca
Project Number: 21131



7		
6		
5		
4		
3		
2	ISSUED FOR TENDER	04/12/2021
1	ISSUED FOR REVIEW	03/26/2021
No.	Description	Date



BARRIE CAMPUS
1 GEORGIAN DRIVE, BARRIE ON L4M 3X9

PROJECT:

**BA K Building - 2nd Floor BYOD
Lab Renovations**

DRAWING:

**Electrical BYOD LAB
Renovation Plans**

PID: 11303
Date: 2021 APRIL
Drawn by: SF
Checked by: KS
Scale: As Indicated

SHEET:

E2.00