LEGEND OF SYMBOLS

SYMBOL	DESCRIPTION
	EXISTING LIGHTING FIXTURE TO BE REMAIN.
	LIGHTING FIXTURE WIRED ON EMERGENCY CIRCUIT.
$	LIGHT SWITCH
	CEILING MOUNTED EXIT SIGN (GREEN PICTOGRAM TYPE). LUMACELL, LA SERIES, CAT. #LA-3-W-U OR APPROVED EQUAL.
	WALL MOUNTED EXIT SIGN (GREEN PICTOGRAM TYPE). LUMACELL, LA SERIES, CAT. #LA-3-W-U OR APPROVED EQUAL.
	FIRE ALARM HEAT DETECTOR
	FIRE ALARM PULL STATION
	FIRE ALARM SMOKE DETECTOR
S	FIRE ALARM SPEAKER
	15A, 120V SINGLE RECEPTACLE
	15A, 120V DUPLEX RECEPTACLE (5-15R)
	15A, 120V QUAD RECEPTACLE (DOUBLE 15A DUPLEX RECEPTACLES)
	20A, 120V SINGLE RECEPTACLE
	20A, 120V DUPLEX RECEPTACLE (5-20R)
	20A, 120V QUAD RECEPTACLE (DOUBLE 20A DUPLEX RECEPTACLES)
	SURFACE-MOUNTED FLOOR BOX C/W DUPLEX RECEPTACLE
	POWER POLE C/W DATA AND 20A QUAD RECEPTACLES (LEGRAND, AMDTP-4 SERIES, CAT. #25DTP-4 OR APPROVED EQUAL).
	1P/2P DIRECT CONNECTION
	3P DIRECT CONNECTION
	DATA OUTLET
	TELEPHONE OUTLET
	SURFACE-MOUNTED FLOOR BOX C/W COMMUNICATION OUTLET
WAP	WIRELESS ACCESS POINT
	ELECTRICAL PANEL
JB PB	JUNCTION BOX / PULL BOX

EX	EXISTING TO REMAIN	OC	OVER COUNTER
R	EXISTING TO BE REMOVED	UC	UNDER COUNTER
ER	EXISTING TO BE RELOCATED	WP	WEATHER PROOF
RE	EXISTING IN RELOCATED POSITION	AFF	ABOVE FINISHED FLOOR
GFI	GROUND FAULT CIRCUIT INTERRUPTER (AS PER ESA)	CLG	CEILING MOUNTED

ELECTRICAL DRAWING LIST

SHEET NUMBER	SHEET NAME
E101	ELECTRICAL LEGEND, DRAWING LIST, KEY PLANS & CAMPUS MAP
E102	ELECTRICAL & COMMUNICATION SPECIFICATIONS
E202	LEVEL 2 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT
E203	LEVEL 3 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT
E204	LEVEL 4 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT
E207	LEVEL 7 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT
E212	LEVEL 2 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT
E213	LEVEL 3 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT
E214	LEVEL 4 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT
E217	LEVEL 7 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT
E302	LEVEL 2 FLOOR PLAN - NEW ELECTRICAL LAYOUT
E303	LEVEL 3 FLOOR PLAN - NEW ELECTRICAL LAYOUT
E304	LEVEL 4 FLOOR PLAN - NEW ELECTRICAL LAYOUT
E307	LEVEL 7 FLOOR PLAN - NEW ELECTRICAL LAYOUT
E312	LEVEL 2 FLOOR PLAN - NEW LIGHTING LAYOUT
E313	LEVEL 3 FLOOR PLAN - NEW LIGHTING LAYOUT
E314	LEVEL 4 FLOOR PLAN - NEW LIGHTING LAYOUT
E317	LEVEL 7 FLOOR PLAN - NEW LIGHTING LAYOUT
E401	ELECTRICAL ELEVATIONS
E501	DEMOLITION & NEW SINGLE LINE DIAGRAMS
E502	PANEL SCHEDULES
E503	COMMUNICATION DETAILS
E504	ELECTRICAL RACEWAY ROUTING & SECURITY LAYOUT

ELECTRICAL GENERAL NOTES

1. CONTRACTOR SHALL VISIT THE SITE TO VERIFY THE SCOPE OF WORK & EXISTING CONDITIONS. CONTRACTOR SHALL ALSO EXAMINE ALL EXISTING CONDITIONS WHICH AFFECT THE WORK, PRIOR TO SUBMITTING TENDER PRICE. NO EXTRAS WILL BE ALLOWED FOR FAILURE TO DO SO.
2. VERIFY FIELD MEASUREMENTS AND CIRCUITING ARRANGEMENTS ARE AS SHOWN ON DRAWINGS.
3. VERIFY THAT ABANDONED WIRING AND EQUIPMENT SERVE ONLY ABANDONED FACILITIES.
4. DEMOLITION DRAWINGS ARE BASED ON CASUAL FIELD OBSERVATION. REPORT DISCREPANCIES TO UNIVERSITY OF TORONTO BEFORE DISTURBING EXISTING INSTALLATION.
5. SCHEDULE & COORDINATE ALL WORK WITH U OF T STAFF AND OTHER TRADES ON SITE.
6. ANY INTERRUPTIONS TO POWER SUPPLY TO EXISTING LIGHTING OR DEVICES SHALL BE COORDINATED ON SITE. REFER TO ARCHITECTURAL & MECHANICAL DRAWINGS FOR FULL SCOPE OF WORK.
7. DISCONNECT ELECTRICAL SYSTEMS IN WALLS, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.
8. THE CONTRACTOR TO ENSURE CONTINUITY OF SYSTEMS THROUGH RENOVATION SPACE
9. MODIFY/EXTEND/REPLACE EXISTING CONDUITS/WIRING/BACKBOXES AS REQUIRED FOR THE RELOCATED AND EXISTING TO REMAIN EQUIPMENT/DEVICES FOR FULLY OPERATIONAL SYSTEM.
10. PROVIDE BLANK STAINLESS STEEL COVER PLATES WHERE OUTLETS ARE REMOVED FROM EXISTING WALLS TO REMAIN.
11. REROUTE AS REQUIRED TO MAINTAIN CONTINUITY FOR ALL SYSTEMS TO REMAIN WHICH ARE AFFECTED BY THE DEMOLITION OR ALTERATION.
12. REMOVE ABANDONED WIRING TO SOURCE OF SUPPLY.
13. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.
14. EXISTING ELECTRICAL SERVICE: MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR SERVICE. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. FOLLOW UNIVERSITY OF TORONTO PROCEDURES FOR SCHEDULING SHUTDOWNS. MINIMIZE OUTAGE DURATION.
15. REMOVE EXPOSED ABANDONED CONDUIT, INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING SPACE. CUT CONDUIT FLUSH WITH WALLS AND FLOORS, AND PATCH SURFACES AS REQUIRED.
16. DISCONNECT AND REMOVE ABANDONED PANELBOARDS AND DISTRIBUTION EQUIPMENT, WHERE INDICATED.
17. DISCONNECT AND REMOVE ELECTRICAL DEVICES AND EQUIPMENT SERVING UTILIZATION EQUIPMENT THAT HAS BEEN REMOVED.
18. DISCONNECT AND REMOVE ABANDONED LUMINAIRES. REMOVE BRACKETS, STEMS, HANGERS, AND OTHER ACCESSORIES. RECYCLE ALL ELEMENTS WHERE POSSIBLE. DISPOSE OFHAZARDOUS MATERIALS AT APPROPRIATE FACILITIES.
19. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK.
20. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANEL AS APPROPRIATE.
21. EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH EXISTING ELECTRICAL INSTALLATIONS, OR AS SPECIFIED.
22. CLEAN AND REPAIR EXISTING MATERIALS AND EQUIPMENT WHICH REMAIN OR ARE TO BE REUSED.
23. DISCONNECT & REMOVE EXISTING LIGHTING FIXTURES AND ASSOCIATED WIRING & CONDUIT BACK TO JUNCTION BOX/SOURCE AS INDICATED.
24. DISCONNECT & REMOVE EXISTING DATA & TELEPHONE OUTLETS AND ASSOCIATED CABLING BACK TO RESPECTIVE DATA RACK AND TELEPHONE BACKBOARD AS INDICATED.
25. DISCONNECT & REMOVE EXISTING POWER OUTLETS & DEVICES ALONG WITH ASSOCIATED OUTLETS, CONDUITS & WIRING BACK TO THE RESPECTIVE SOURCE OF ORIGIN AS REQUIRED.
26. DISCONNECT & REMOVE ALL ABANDONED CONDUITS, CABLES & LOOSE BX WIRING AS REQUIRED, WHETHER SHOWN ON THIS DRAWING OR NOT. RE-SUPPORT/ARRANGE EXISTING WIRING IN CEILING SPACE TO SATISFY ESA INSPECTION AS REQUIRED.
27. RELOCATE EXISTING WAP TO NEW LOCATION, AS SHOWN ON DRAWINGS. TEST DATA CABLING AS PER DATA CABLING SPECIFICATION INDICATED IN PROJECT SPECIFICATIONS.
28. PROVIDE FIRESTOPPING AT ALL ELECTRICAL PENETRATIONS THROUGH FIRE SEPARATIONS AS REQUIRED TO MAINTAIN THE INTEGRITY OF THE FIRE SEPARATION. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE SEPARATION LOCATIONS AND FIRE RESISTANCE RATING REQUIREMENTS.
29. ALL NEW ELECTRICAL INSTALLATIONS ARE TO BE SURFACE MOUNTED WITH WIREMOLD, UNLESS NOTED OTHERWISE.
30. CONTRACTOR SHALL PERFORM VOLTAGE DROP CALCULATIONS FOR ALL BRANCH CIRCUITS (LIGHTING AS WELL AS POWER) AND SHALL MAINTAIN VOLTAGE DROP WITHIN PERMISSIBLE LIMITS AS PER O.E.S.C. REQUIREMENTS AND PROVIDE PROPER WIRE SIZES, ACCORDINGLY, PRIOR TO COMMENCING OF ROUGH-IN INSTALLATION. THE VOLTAGE DROP CALCULATIONS SHALL BE BASED ON MAXIMUM CIRCUIT AMPACITY.
31. ALL RECEPTACLES SHALL BE IDENTIFIED USING PROFESSIONAL GRADE, HIGH GLOSS LABELS INDICATING CIRCUIT NUMBER & PANEL SOURCE.
32. PROVIDE UPDATED AND NEW 'TYPED' PANEL DIRECTORY CARD FOR EXISTING & NEW PANELS IN THE AREA OF WORK AS REQUIRED.
33. EXISTING FIRE ALARM PANEL (NOTIFIER, MODEL #3030) IS LOCATED IN CACF ROOM #1131 AT 33 URSULA FRANKLIN ST.

DIVISION OF RESPONSIBILITY - DEMOLITION

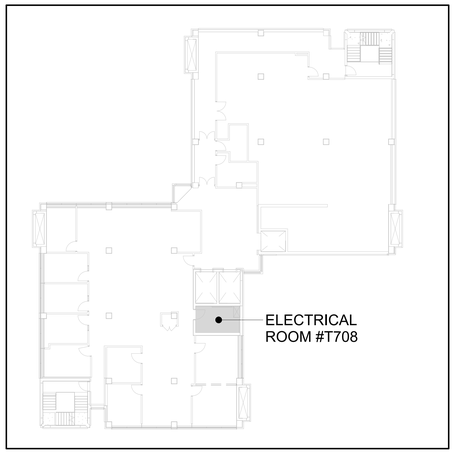
CATEGORY	DESCRIPTION	MECHANICAL	ELECTRICAL
WIRING, BACK-BOXES & CONDUITS	LINE VOLTAGE POWER WIRING AND ASSOCIATED BACK-BOXES & CONDUITS		•
	LINE & LOW VOLTAGE CONTROL WIRING AND ASSOCIATED BACK-BOXES & CONDUITS	•	
EQUIPMENT & DEVICES	DISCONNECT SWITCHES, VFD'S, STARTERS & LINE VOLTAGE CONTROL DEVICES		•
	LOW VOLTAGE CONTROL DEVICES	•	
	HEAT TRACING, SNOWMELT SYSTEMS, ELECTRIC COILS & PACKAGED ELECTRIC SPACE HEATING EQUIPMENT	•	
COMMUNICATIONS	BAS DATA CABLING, PATCH CABLING & ASSOCIATED CONDUITS FROM MECHANICAL EQUIPMENT CONTROLLER TO FACILITIES & SERVICES (F&S) NETWORK SWITCH	•	

DIVISION OF RESPONSIBILITY - NEW WORK

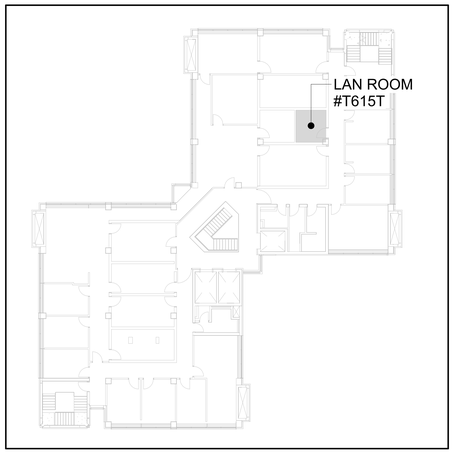
CATEGORY	DESCRIPTION	MECHANICAL	ELECTRICAL
WIRING, BACK-BOXES & CONDUITS	LINE VOLTAGE POWER WIRING AND ASSOCIATED BACK-BOXES & CONDUITS		PROVIDE
	LINE & LOW VOLTAGE CONTROL WIRING AND ASSOCIATED BACK-BOXES & CONDUITS	PROVIDE	
	BACK-BOXES FOR STEP-DOWN TRANSFORMERS & RELAYS SERVING MECHANICAL EQUIPMENT		PROVIDE
EQUIPMENT & DEVICES	VFD'S, STARTERS, SPEED CONTROLLERS, & LINE VOLTAGE CONTROL DEVICES SERVING MECHANICAL EQUIPMENT	SUPPLY	INSTALL
	LOW VOLTAGE CONTROL DEVICES	PROVIDE	
	LOW VOLTAGE STEP-DOWN TRANSFORMERS & RELAYS SERVING MECHANICAL EQUIPMENT	SUPPLY	INSTALL
	HEAT TRACING, ELECTRIC COILS & PACKAGED ELECTRIC SPACE HEATING EQUIPMENT	PROVIDE	
	ELECTRIC SNOWMELT SYSTEMS		PROVIDE
COMMUNICATIONS	BAS DATA CABLING, PATCH CABLING & ASSOCIATED CONDUITS FROM MECHANICAL EQUIPMENT CONTROLLER TO FACILITIES & SERVICES (F&S) NETWORK SWITCH	PROVIDE	

NOTES:

1. LOW VOLTAGE IS DEFINED AS BELOW 30 VOLTS.
2. ALL ELECTRICAL WORK INCLUDING CONTROLS WORK SHALL BE PERFORMED BY THE CONTRACTOR ON BEHALF OF THE OWNER THAT FALLS UNDER THE PROVISIONS OF ANY COLLECTIVE AGREEMENTS BY WHICH THE OWNER IS BOUND, OR WHICH THE OWNER IS CONTRACTUALLY REQUIRED TO APPLY TO THE PROJECT, SHALL IN EACH CASE BE PERFORMED BY EMPLOYEES COVERED BY THE APPLICABLE COLLECTIVE AGREEMENT. REFER TO SPECIFICATIONS SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS, AND CCDC2 SUPPLEMENTARY CONDITIONS.



6 E101 7TH FLOOR - KEY PLAN
SCALE: 1 : 200



5 E101 6TH FLOOR - KEY PLAN
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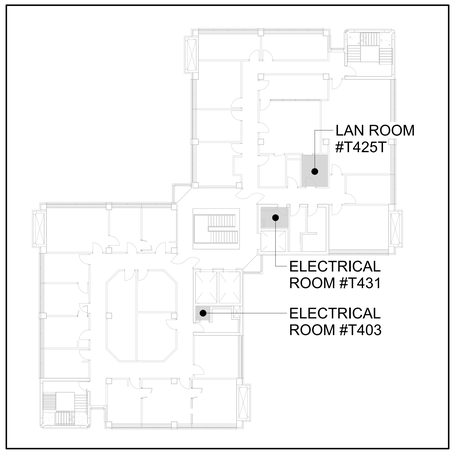

4 E101 4TH FLOOR - KEY PLAN
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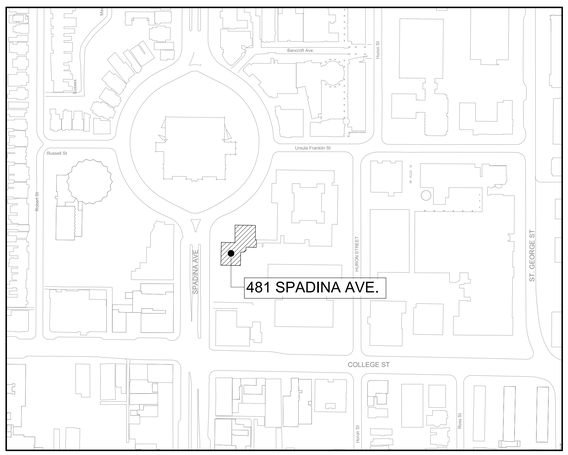

A. E101 CAMPUS MAP
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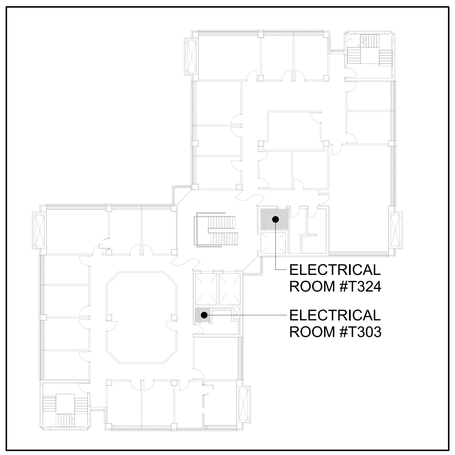
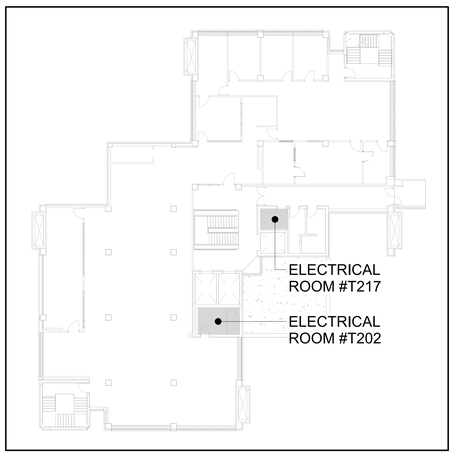
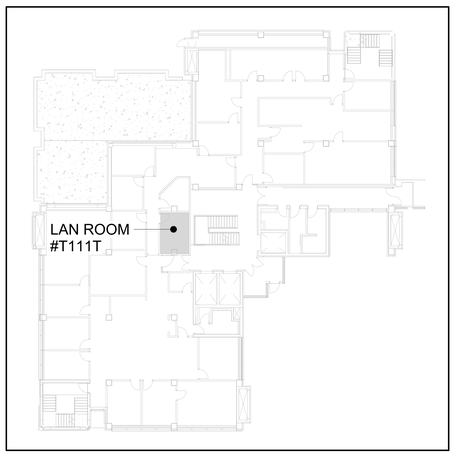


3 E101 3RD FLOOR - KEY PLAN
SCALE: 1 : 200



2 E101 2ND FLOOR - KEY PLAN
SCALE: 1 : 200



1 E101 1ST FLOOR - KEY PLAN
SCALE: 1 : 200

University of Toronto
UNIVERSITY PLANNING, DESIGN & CONSTRUCTION
Design & Engineering
255 McCaul Street, 4th Floor, Toronto, Ontario M5T 1W7

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REV.	DESCRIPTION	DATE
	ISSUED FOR TENDER	2026-01-21
	ISSUED FOR F&S REVIEW	2026-01-16
	ISSUED FOR PERMIT	2026-01-14
	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
ELECTRICAL LEGEND, DRAWING LIST, KEY PLANS & CAMPUS MAP

DRAWN BY: JW/GDP
SCALE: N/A
REVIEWED BY: JW
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER
E101
REV. NUMBER

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COMMUNICATIONS SPECIFICATION

A) GENERAL SCOPE OF WORK

1. THIS DOCUMENT INCLUDES SPECIFICATIONS FOR CABLING COMPONENTS, CONDUIT & RACEWAY INFRASTRUCTURE, CABLE TERMINATIONS, TESTING AND "AS-BUILT" DOCUMENTATION WITHIN THE DESIGNATED AREAS.

2. THE CONTRACTOR IS TO PROVIDE CABLING INFRASTRUCTURE AND TERMINATION HARDWARE INSTALLED, TERMINATED AND TESTED. EMT CONDUITS & CABLE TRAYS ARE TO BE PROVIDED AS REQUIRED.

3. ALL WORK MUST CONFORM TO THE FOLLOWING; INDUSTRY ACCEPTED PRACTICES, MANUFACTURERS COMPONENT INSTALLATION GUIDELINES AND THE LATEST VERSIONS OF THE APPLICABLE CODES INCLUDING ANY TECHNICAL SERVICES BULLETINS AND ADDENDA. THESE INCLUDE, BUT NOT LIMITED TO, THE ONTARIO BUILDING CODE, THE CANADIAN ELECTRICAL CODE PART I, ONTARIO HYDRO ELECTRIC SAFETY CODE, AND THE FOLLOWING COMMUNICATIONS STANDARDS:

STANDARD	TITLE
ANSI/TIA-568-D.0	GENERIC TELECOMMUNICATIONS CABLING FOR CUSTOMER PREMISES
ANSI/TIA-568-D.1	COMMERCIAL BUILDING TELECOMMUNICATIONS CABLING STANDARD
ANSI/TIA-568-C.2	BALANCED TWISTED-PAIR TELECOMMUNICATION CABLING AND COMPONENTS STANDARD
ANSI/TIA-568-D.3	OPTICAL FIBER CABLING COMPONENTS STANDARD"
ANSI/TIA-606-C	ADMINISTRATION STANDARD FOR THE TELECOMMUNICATIONS INFRASTRUCTURE
CSA-C22.2 NO. 182.4-M9	PLUGS, RECEPTACLES AND CONNECTORS FOR COMMUNICATION SYSTEMS
CSA-C22.2 NO.214-94	COMMUNICATIONS CABLES

4. ALL CABLING INSTALLATIONS MUST BE PERFORMED BY LICENSED UNIONIZED (IBEW) ELECTRICIANS. THE ELECTRICIANS MUST FOLLOW THE LATEST SAFETY REQUIREMENTS FROM THE MINISTRY OF LABOUR.

5. THE CONTRACTOR SHALL UPDATE CONSTRUCTION DRAWINGS IDENTIFYING CABLE ROUTING AND NEW INFRASTRUCTURE INSTALLED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO RECORD THE DISTANCES OF THE FIBRE/COPPER RUNS ON DRAWINGS.

6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL PART NUMBERS IDENTIFIED IN THE SCOPE AND DRAWINGS ARE ACCURATE WITH THE MANUFACTURERS. ALSO, THE CONTRACTOR'S RESPONSIBILITY IS TO ENSURE ALL LOCATIONS & DISTANCES IDENTIFIED IN THIS DOCUMENT ARE ACCURATE. ANY DEVIATIONS MUST BE BROUGHT FORWARD FOR THE ENGINEER'S REVIEW & APPROVAL, PRIOR TO ORDERING THE MATERIALS OR COMMENCING THE WORK ON SITE.

7. INSTALLED SYSTEM SHALL BE END-TO-END CERTIFIED WITH **MINIMUM 25 YEAR WARRANTY** FROM THE MANUFACTURER. THE CONTRACTOR SHALL PROVIDE CONFIRMATION FROM MANUFACTURER THAT THE INSTALLER IS LICENSED TO PROVIDE A CERTIFIED END-TO-END SYSTEM.

8. SUBMIT SHOP DRAWINGS FOR ALL NEW MATERIALS, DEVICES AND EQUIPMENT FOR THE REVIEW OF U OF T, PRIOR TO ORDERING. SHOP DRAWINGS SHALL INCLUDE BUT NOT LIMITED TO: RACKS, CABLING, JACKS, PATCH PANELS, WIRE MANAGEMENT, CABLE TRAYS, ETC.

9. BASE BID MANUFACTURER IS **PANDUIT**. APPROVED ALTERNATIVES ARE BELDEN, COMMSCOPE & HUBBELL.

B) INTERFERENCE DRAWINGS:

1. THE CONTRACTOR MUST SUBMIT INTERFERENCE DRAWINGS PRIOR TO COMMENCING WITH THE INSTALLATION OF CONDUITS/CABLE TRAYS. THESE DRAWINGS MUST INDICATE THE CONDUIT/CABLE TRAYS ROUTING AND PULL BOX LOCATIONS WITH REFERENCE MEASUREMENTS FROM TWO WALLS OR PERMANENT FIXTURES.

2. INCLUDE CONSTRUCTION NOTES DESCRIBING ELEVATION CHANGES, WALL PENETRATIONS AND INFORMATION WITH REGARDS TO EXISTING FIXTURES THAT MAY BE AFFECTED BY THE INSTALLATION OF THE CONDUIT.

C) SHOP DRAWINGS:

1. BEFORE FABRICATION OF ANY MATERIALS OR EQUIPMENT, SUBMIT ONE (1) PDF COPY OF DETAILED MANUFACTURER'S SHOP DRAWINGS OF MATERIAL, EQUIPMENT AND DEVICES FOR REVIEW. DO NOT ORDER MATERIALS UNTIL REVIEW PROCESS IS COMPLETE. IF CORRECTIONS ARE REQUIRED, COPIES WILL BE RETURNED WITH CORRECTIONS NOTED. CORRECTED COPIES SHALL BE RESUBMITTED FOR REVIEW AND DISTRIBUTION. SUBMISSIONS SHALL BE MADE IN AMPLE TIME TO AVOID DELAYS IN THE WORK. THE REVIEW OF THE SHOP DRAWINGS SHALL BE, AND IS MUTUALLY UNDERSTOOD TO BE, IN REFERENCE TO GENERAL DESIGN ONLY. IF ERRORS IN THE DETAILED DIMENSIONS OR INTERFERENCE WITH THE WORKS ARE NOTICED, THE ATTENTION OF THE CONTRACTOR WILL BE CALLED TO SUCH ERRORS OR INTERFERENCE, BUT REVIEW OF THE DRAWINGS SHALL NOT IN ANY WAY RELIEVE THIS CONTRACTOR OF RESPONSIBILITY FOR ERRORS OR INTERFERENCE, OR FROM THE NECESSITY OF FURNISHING SUCH WORKS AND MATERIALS AS MAY BE REQUIRED FOR THE COMPLETION OF THE WORK AT ANY TIME UNTIL FORMAL ACCEPTANCE.

2. THE CONTRACTOR SHALL SUBMIT STAMPED DETAILED DRAWINGS BY A QUALIFIED PROFESSIONAL ENGINEER (WHERE REQUIRED) INDICATING THE SUPPORTING SYSTEM THAT CARRYING ELECTRICAL DEVICES OR EQUIPMENT. THE DRAWINGS SHALL INCLUDE SPECIFICATIONS OF SUPPORTS, THREADED RODS, SCREWS, ANCHORS AND OTHER MATERIALS REQUIRED FOR SAFE INSTALLATION.

D) CABLING PATHWAYS

1. GENERAL REQUIREMENTS:

a) ALL CONDUIT ENDS SHALL BE FITTED WITH PLASTIC BUSHINGS

b) MAXIMUM DISTANCE OF CONDUIT RUN BETWEEN TWO PULL BOXES TO BE 30M. THE PULL BOXES SHALL HAVE SCREW TYPE COVER NOT HINGED. ALL PULL BOXES MUST BE ACCESSIBLE WITH A MINIMUM 24" X 24" HINGED ACCESS HATCH PROVIDED WHERE REQUIRED. PULL BOXES FOR VERTICAL CONDUITS MUST BE INSTALLED TO PROVIDE A STRAIGHT PASS THROUGH FOR VERTICAL CABLES. THE SIZE OF PULL BOXES SHALL BE AT MINIMUM EIGHT (8) TIMES THE SIZE OF THE INNER DIAMETER OF THE LARGEST CONDUIT CONNECTED TO IT.

c) THERE ARE TO BE NO MORE THAN TWO 90° BENDS OR THE EQUIVALENT BETWEEN PULL BOXES.

d) CONDUITS SHALL HAVE A BEND RADIUS AS RECOMMENDED BY THE FIBER CABLING MANUFACTURER.

2. PROVIDE FIRE STOPPING AND SEALANT AT ALL LOCATIONS WHERE CONDUITS PENETRATE WALLS AND FLOORS TO MAINTAIN FIRE RATING OF EXISTING WALLS.

3. PROVIDE FIRE BARRIER PILLOW (3M) AT ALL LOCATIONS WHERE CABLE TRAYS PENETRATE WALLS AND FLOORS.

4. PULL STRINGS MUST BE PROVIDED IN ALL NEW AND REWORKED CONDUITS.

E) CAT 6A DATA CABLING & COMPONENTS (FOR WIRELESS CONNECTIONS - WAP)

1. THE APPROVED HORIZONTAL DATA CABLING SHALL BE SOLID COPPER, BLUE FOR THE DATA NETWORK, UNSHIELDED TWISTED PAIR (UTP), 4-PAIR, 23 AWG, CMP RATED (FT6), CATEGORY 6A CABLE AS APPLICABLE. THE CABLE SHALL BE, BELDON IBDN 2400, HUBBELL, OR COMMSCOPE SYSTIMAX GIGASPEED XL & PANDUIT.

2. ALL CABLES SHOULD BE INSTALLED IN A WAY TO COMPLY WITH THE ANSI/TIA/EIA-568-C.2 WIRING STANDARD.

3. PROVIDE TWO (2) CAT 6A DATA CABLES IN CONDUIT, FROM EACH ACCESS POINT LOCATION TO THE WAP PATCH PANEL IN THE DATA RACK IN TELECOMMUNICATIONS ROOM AS INDICATED, ENSURING THAT THE TOTAL WIRE LENGTH OF 90M IS NOT EXCEEDED.

4. FACEPLATES SHALL BE SINGLE GANG, CREAM COLORED WITH MODULAR JACKS. PROVIDE BLANKS FOR ALL UNUSED JACKS. CONFIRM COLOR WITH ARCHITECT IN EACH SPACE PRIOR TO PURCHASING.

5. PROVIDE:

a) ORANGE, 6" LENGTH, CATEGORY 6A RATED, 28 AWG PATCH CORD CABLE AT THE RELAY RACK LOCATION (ONE FOR EACH DATA DROP), TO BE INSTALLED BY UofT ITS.

b) WHITE, 1'-0" LENGTH FOR CEILING MOUNTED, CATEGORY 6A RATED, 28 AWG PATCH CORD CABLE BETWEEN THE WAP & THE DATA OUTLET (ONE FOR EACH DATA DROP), TO BE INSTALLED BY ELECTRICAL CONTRACTOR
.
c) WHITE, 6" LENGTH FOR WALL MOUNTED, CATEGORY 6A RATED, 28 AWG PATCH CORD CABLE BETWEEN THE WAP & THE DATA OUTLET (ONE FOR EACH DATA DROP), TO BE INSTALLED BY ELECTRICAL CONTRACTOR.

CAT 6A CABLING SHALL BE TERMINATED IN MODULAR ORANGE DATA JACKS AT THE PATCH PANEL END AND MODULAR WHITE DATA JACKS AT THE ACCESS POINT END. MODULES TO BE WIRED AS PER T568A.

6. U OF T TO SUPPLY THE WIRELESS ACCESS POINTS TO BE MOUNTED AT LOCATIONS ON DRAWINGS, ADJACENT TO CORRESPONDING DATA OUTLETS. WALL MOUNTED ACCESS POINTS TO BE INSTALLED APPROXIMATELY 10'-0" A.F.F. CEILING MOUNTED ACCESS POINTS TO BE POSITIONED BELOW THE CEILING. CONTRACTOR SHALL INSTALL THE ACCESS POINT & CONNECT THE CAT. 6A, WHITE DATA UTP CABLE FROM ACCESS POINT TO WIRELESS DATA OUTLET.

7. PROVIDE, AS REQUIRED, 1U 48 PORT PATCH 19" PANELS, CATEGORY 6A COMPLIANT, MODULAR JACKS IN EXISTING NETWORK RACK. MODULAR JACKS TO BE COLOR BLUE IN THE RELAY RACK. ONE HORIZONTAL CABLE MANAGER PER COPPER PATCH PANEL IS TO BE PROVIDED. MANAGERS ARE TO BE 1U FOR 24 PORT PANEL AND 2U FOR 48 PORT PANEL.

8. WIRELESS ACCESS POINTS SHALL BE PROVIDED BY U OF T INFORMATION TECHNOLOGY GROUP (ITS) AND BE PICKED UP BY THE ELECTRICAL CONTRACTOR. TWO WEEKS NOTICE IS REQUIRED BEFORE PICK UP. PICK-UP LOCATION IS:

UNIVERSITY OF TORONTO I+TS
4 BANCROFT AVE., ROOM #103

IN ADDITION, ITS GROUP MUST BE NOTIFIED BEFORE REMOVAL OF ANY EXISTING WAP'S. COORDINATE WITH PROJECT MANAGER ACCORDINGLY.

F) CAT 6 DATA CABLING & COMPONENTS FOR SECURITY CONNECTIONS

1. PROVIDE ONE CAT. 6 DATA CABLE IN CONDUIT, FROM EACH SECURITY DEVICE LOCATION TO THE F&S PATCH PANEL IN THE DATA RACK IN TELECOMMUNICATIONS ROOM AS INDICATED, ENSURING THAT THE TOTAL WIRE LENGTH OF 90M IS NOT EXCEEDED.

2. CAT. 6 CABLING SHALL BE TERMINATED IN THE FOLLOWING MODULAR COLORED JACKS:

a. RED DATA JACKS FOR HONEYWELL SYSTEM & SECURITY CAMERAS AT THE PATCH PANEL END AND AT THE SECURITY DEVICE END.
b. YELLOW DATA JACKS FOR SALTO SYSTEM AT THE PATCH PANEL END AND AT THE SECURITY DEVICE END.

3. PROVIDE:

a. RED (FOR HONEYWELL & SECURITY CAMERAS), 7'-0" LENGTH, CATEGORY 6 RATED, 28 AWG PATCH CORD CABLE AT THE RELAY RACK LOCATION, TO BE INSTALLED BY UofT ITS OR LOCKSHOP.
b. YELLOW (FOR SALTO), 7'-0" LENGTH, CATEGORY 6 RATED, 28 AWG PATCH CORD CABLE AT THE RELAY RACK LOCATION, TO BE INSTALLED BY UofT ITS OR LOCKSHOP.
c. CAT 6A CABLING FOR CONNECTION TO F&S SWITCH.

G) CONNECTION TO F&S SWITCHES:

CONTRACTOR MUST REFER TO THE LATEST BUILDING AUTOMATION & ENERGY SYSTEMS DESIGN STANDARD ON THE FACILITIES & SERVICES WEBSITE FOR ALL COMPLIANCE TESTING & WIRING REQUIREMENTS. IN ORDER FOR THE SYSTEM TO BE FINALIZED BY THE F&S IT TEAM, THE FOLLOWING DOCUMENTS MUST BE PROVIDED:

1. COMPLETE & SUBMIT THE NETWORK IP REQUEST FORM FOR APPROVAL UPON COMPLETION OF CABLE TERMINATION.
2. SUBMIT CABLE TESTING & VERIFICATION REPORT
3. COMPLETE & SUBMIT THE WIRING INSTALLATION QUALIFICATION FORM

H) SPIRAL WRAP

1. CABLES RUNNING FROM SYSTEM FURNITURE FEED POINTS TO THE SYSTEM FURNITURE SHALL BE NEATLY WRAPPED WITH PANDUIT T50R-C SERIES SPIRAL WRAP AND OR PW SERIES PAN WRAP OR EQUIVALENT. CABLING CONTRACTOR TO SIZE THE SPIRAL WRAP ACCORDINGLY.

I) TESTING:

1. THE CABLING CONTRACTOR IS TO USE THE FLUKE DTX SERIES OR EQUIVALENT WITH THE LATEST VERSION OF FIRMWARE TO TEST THE UTP CABLING SYSTEM. A LIGHT SOURCE AND POWER METER WILL BE USED TO FOR ALL FIBRE OPTIC CABLES. THE CABLING CONTRACTOR MUST ENSURE THAT ALL CABLING IS TESTED IN ACCORDANCE TO THE PROPOSED SPECIFICATIONS OF THE CATEGORY INSTALLED.

2. UPON COMPLETION OF TESTING BY THE CABLING CONTRACTOR, A UNIVERSITY REPRESENTATIVE MAY CHOOSE TO WITNESS THE CABLES BEING TESTED.

3. ALL DEFICIENCIES MUST BE CORRECTED BEFORE THE PROJECT MANAGER WILL PROVIDE A CERTIFICATE TO RELEASE THE HOLDBACK ON THE PROJECT.

4. CATEGORY 6/6A FIELD TEST PARAMETERS SHALL BE. TESTING OF ALL 4 PAIRS AND 25 PAIR IS TO INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

a. WIRE MAP
b. INSERTION LOSS
c. EQUAL LEVEL FAR END CROSS TALK (ELFEXT)
d. POWER SUM EQUAL LEVEL FAR END CROSS TALK (PSELFEXT)
e. DELAY SKEW
f. ATTENUATION (PSACR)
g. NEAR END CROSS TALK (NEXT)
h. PROPAGATION DELAY
i. CABLE LENGTH
j. POWER SUM NEAR END CROSS TALK (PSNEXT)
k. RETURN LOSS

5. A TESTER WITH THE MOST RECENT VERSION OF ITS SOFTWARE AND FIRMWARE MUST PERFORM ALL TESTS IN ACCORDANCE TO ANSI/EIA/TIA TSB-67. THE NOMINAL VELOCITY OF PROPAGATION (NVP) MUST BE SET SPECIFIC TO EACH CABLE MANUFACTURER BEFORE TESTING. PORTABLE TESTERS TO BE CALIBRATED ON A MINIMUM ANNUAL BASIS. FLUKE DTX OR EQUIVALENT SHALL BE USED.

6. TEST PATCH CORDS FOR THE TESTER MUST BE DESIGNED AND APPROVED FOR TESTING BY THE MANUFACTURER. FIELD ASSEMBLED PATCH CORDS ARE NOT ACCEPTABLE.

7. ALL CABLE FAULTS MUST BE CORRECTED. SPLICING OF ANY CABLES WILL NOT BE PERMITTED, FOR ANY REASON,UNLESS PRIOR AUTHORIZATION IF RECEIVED IN WRITING BY THE UNIVERSITY OF TORONTO.

8. ALL CABLE FAULTS MUST BE CORRECTED. SPLICING OF ANY CABLES WILL NOT BE PERMITTED, FOR ANY REASON, UNLESS PRIOR AUTHORIZATION IF RECEIVED IN WRITING BY THE UNIVERSITY OF TORONTO.

J) LABELLING:

1. CABLE LABELS SHALL BE OF SELF-LAMINATING VINYL CONSTRUCTION WITH A WHITE PRINTING AREA AND A CLEAR TAIL THAT SELF LAMINATES THE PRINTED AREA WHEN WRAPPED AROUND A CABLE. THE CLEAR AREA SHOULD BE OF SUFFICIENT LENGTH TO WRAP AROUND THE CABLE AT LEAST ONE AND ONE-HALF TIMES AND BE INSTALLED WITHIN 2" OF THE TERMINATION POINT OF THE CABLE, PATCH CORD OR PIGTAIL.

2. ALL ADHESIVE CABLE LABELS SHALL MEET THE LEGIBILITY, DEFACEMENT, AND ADHESION REQUIREMENTS SPECIFIED IN UL 969 (REF. D-16). IN ADDITION THE LABELS SHALL MEET THE GENERAL EXPOSURE REQUIREMENTS IN UL 969 FOR INDOOR USE.

3. ALL CABLE LABELS SHALL BE COMPLIANT WITH THE TIA/EIA-606(A) SECTION 6.2.2 CABLE LABELING, SECTION 6.2.4 TERMINATION HARDWARE LABELING, AND SECTION 6.2.6 TERMINATION POSITION LABELING.

4. ALL PATCH PANEL AND 110 BLOCK LABELS ARE TO BE MECHANICALLY PRINTED AND ARE TO FOLLOW THE GUIDELINES IN CSA-T528-93 FOR COLOUR CODING OF TERMINATION FIELDS.

5. LABEL ALL CABLING IN ACCORDANCE WITH CSA-528 SPECIFICATIONS. ONE LABEL SHOULD BE ATTACHED TO THE FRONT OF THE PATCH PANEL, AND ONE AT EACH END OF THE CABLE.

6. PROVIDE PROPER LABEL ON EACH NEW CABLE INSIDE THE PULL BOXES.

7. THE RISER CABLES SHALL BE LABELED IN THE FORMAT TYPE BUILDING-TYPE-ROOM#-ROOM#-CABLE#. THE PER ROOM CABLE NUMBERS SHALL BE SEQUENTIAL BEGINNING AT 1.

EXAMPLE:
164F-1103-309-1 REPRESENTS THE FIRST FIBER CABLE FROM ROOM #1103 TO ROOM #309.

K) EXECUTION:

1. THE CONTRACTOR SHALL INSTALL PULLING STRING/ROPE IN ALL NEW CONDUITS. ROPES SHALL REMAIN IN CONDUITS UPON COMPLETION OF CABLE INSTALLATION.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP OF ALL FACILITIES AND BUILDINGS RELATED TO THE PROJECT, DURING AND AT COMPLETION.

3. THE WORK SITE AND ADJACENT AREAS SHALL BE LEFT IN THE SAME CONDITION OR CLEANER THAN WHEN STARTING A SHIFT. THIS MUST BE DONE ON A DAILY BASIS.

4. THE CONTRACTOR SHALL PROTECT BUILDING EQUIPMENT, EXTERIOR AND INTERIOR, IN THE IMMEDIATE AND ADJACENT WORK AREAS.

5. THE CONTRACTOR SHALL PROTECT EXISTING BUILDING FINISHES AND SERVICES NOT AFFECTED BY THE MODIFICATIONS.

6. ALL CABLES WILL BE INSTALLED WITH 10-FOOT (~3 METER) SERVICE COILS AT ALL TERMINATION POINTS AND TRANSITION CLOSETS. SERVICE LOOPS MAY BE STORED ON BACKBOARDS, IN UNOCCUPIED SECTIONS OF CABLE TRAY OR IN CONDUIT PULL BOXES. DO NOT STORE SERVICE LOOPS IN THE FIBRE CABLE IN THE CONNECTOR TRAY.

7. ALL CABLE AND COMPONENTS MUST BE INSTALLED AS PER THE MANUFACTURER'S SPECIFICATIONS. CONNECTORS SHOULD BE LC TYPE, CERAMIC FERRULE: PHYSICAL CONTACT FINISH WITH NO ALUMINUM CONSTRUCTION.

8. FOR NEW INSTALLATIONS, ONLY FUSION SPLICE TERMINATIONS ARE ACCEPTED. THIS IS TO BE DONE IN CONJUNCTION WITH MANUFACTURED PIGTAIL ASSEMBLIES WITH LC CONNECTORS. NO FIELD TERMINATION OF CONNECTORS WILL BE PERMITTED. NO MECHANICAL SPLICE METHODS WILL BE PERMITTED.

9. LUBRICATION: IF CABLE PULLING LUBRICANT IS USED FOR FIBRE OPTIC CABLE INSTALLATIONS, THE CONTRACTOR MUST PROVIDE IN WRITING THE MANUFACTURER AND PRODUCT SPECIFIC SPECIFICATION SHEET.

L) CLOSEOUT DOCUMENTS

1. AS BUILT DRAWINGS:

a. THE CONTRACTOR SHALL MARK ALL THE CHANGES AND DEVIATIONS FROM CONSTRUCTION DRAWINGS IN RED PEN ON ONE (1) SET OF CLEAN PRINTS AND SUBMIT TO DESIGN ENGINEER (IN PDF FORMAT) UPON COMPLETION OF WORK.

b. THE CABLING CONTRACTOR IS REQUIRED TO PROVIDE AS-BUILT DRAWINGS OF THE CABLES INSTALLATION IN PDF AS WELL AS IN CAD FORMATS. THIS SHALL INCLUDE THE PATHWAY OF THE CABLES FROM THE TELECOMMUNICATIONS ROOMS TO THE WORKSTATION. THE AS-BUILT DRAWINGS SHALL ALSO INCLUDE AS ALL RED PEN MARKUPS AND ANY CHANGES THAT OCCUR DURING CONSTRUCTION. THE CABLING CONTRACTOR SHALL PROVIDE THE AS-BUILT DRAWINGS TO THE UNIVERSITY OF TORONTO WITHIN 7 BUSINESS DAYS OF THE COMPLETION OF THE PROJECT. THE DRAWINGS MUST CONTAIN BUT NOT LIMITED TO THE FOLLOWING DETAIL:

i. CONDUIT & PULL BOX LOCATIONS, ROUTING AND SIZES
ii. EXACT DISTANCES OF FIBER RUNS.
iii. PHOTO OF EACH PULL BOX SHOWING THE CABLE LABELS.

2. CABLE TEST RESULTS

THE CABLING CONTRACTOR SHALL PROVIDE ALL TEST RESULTS IN SOFT COPY TO THE UNIVERSITY OF TORONTO. IF SENT ELECTRONICALLY, ENSURE THE TEST RESULTS ARE SENT IN THE PROPER TESTER FORMAT. TEST RESULTS SHALL INCLUDE ALL VOICE AND DATA HORIZONTAL CABLES AND ALL BACKBONE CABLES. THE REPORT SHOULD INDICATE FOR EACH CABLE, WHEN IT WAS TESTED SUCCESSFULLY AND THE SIGNATURE OF THE TECHNICIAN THAT PERFORMED THE TEST. THE ENTIRE REPORT MUST BE SIGNED BY AN AUTHORIZED PERSON FOR THE CABLING CONTRACTOR AT THE END OF THE PROJECT.

3. EXCEPT OTHERWISE INDICATED ON THIS SPECIFICATION, WARRANT ALL LABOUR AND MATERIALS INSTALLED UNDER THIS DIVISION FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL PERFORMANCE AND SUBMIT THE FOLLOWING TO U OF T UPON COMPLETION OF THE PROJECT.

a. CABLE TEST REPORTS
b. O & M MANUALS
c. PRODUCTS WARRANTY CERTIFICATES (25 YEAR FROM MANUFACTURER)
d. AS-BUILT DRAWINGS (CAD & PDF FORMAT)
e. LABELING CHART FOR CABLES AND EQUIPMENT

TABLE 'AA' - CONDUITS SIZES FOR DATA CABLES

FOR CATEGORY 6A CABLES:

CONDUIT SIZE:	16 (½")	21 (3/4")	27 (1")	35 (1¼")	41 (1½")	53 (2")	63 (2½")	78 (3")	103 (4")
CABLE CAPACITY:	-	2	3	5	8	16	32	48	72

TABLE 'BB' - DATA JACK / PATCH CABLE COLORS

SYSTEM	DATA JACKS		PATCH CABLES	
	PATCH PANEL	END DEVICE	PATCH PANEL	END DEVICE
NORMAL DATA	BLUE	BLUE	BLUE	BLUE
WIRELESS	ORANGE	WHITE	ORANGE	WHITE
SECURITY (HONEYWELL, VIDEO CAMERAS)	RED	RED	RED	RED
SECURITY (SALTO, KEY BOXES, BIOMETRIC HAND SCANNER)	YELLOW	YELLOW	YELLOW	YELLOW
BAS & LIGHTING CONTROL	GREEN	GREEN	GREEN	GREEN

ELECTRICAL SPECIFICATION

A) GENERAL REQUIREMENTS

1. THE UNIVERSITY OF TORONTO GENERAL CONDITIONS OF THE CONTRACT, AND INSTRUCTIONS TO TENDERS FORM AN INTEGRAL PART OF THIS SPECIFICATION.

2. ALL ELECTRICAL CONSTRUCTION WORK MUST BE PERFORMED BY MEMBERS OF THE INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, LOCAL 353.

3. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE SITE AND EXAMINING ALL CONDITIONS AFFECTING THE ELECTRICAL INSTALLATION. NO CONSIDERATION WILL BE GIVEN TO CLAIMS FOR EXTRA COSTS ARISING FROM FAILURE TO VISIT SITE.

4. THE UNIVERSITY OF TORONTO HAS THE RIGHT TO RELOCATE OUTLETS UP TO TEN FEET, PRIOR TO INSTALLATION, WITHOUT EXTRA CHARGE.

5. THE WORD "PROVIDE" SHALL MEAN SUPPLY, INSTALL, CONNECT AND TEST.

6. PROVIDE ALL EQUIPMENT AND MATERIALS, LABOUR, TOOLS, SCAFFOLDING, TEMPORARY POWER AND ANY OTHER ITEMS NECESSARY FOR THE COMPLETE ELECTRICAL INSTALLATION.

7. THIS CONTRACTOR SHALL REMOVE ALL HIS DEBRIS (CARTONS, WIRING REELS, CONNECTORS, WIRING, ETC.) FROM ELECTRICAL ROOMS IN WHICH HE IS WORKING.

8. THIS CONTRACTOR SHALL CO-ORDINATE HIS WORK WITH ALL OTHER TRADES TO AVOID INTERFERENCE WITH OTHER SERVICES. ASSUME FULL RESPONSIBILITY FOR LAYOUT FOR ALL WORK AND FOR ANY DAMAGE CAUSED TO U OF T PROPERTY, OR THE WORK OF OTHER DIVISIONS BY IMPROPER LOCATION OR CARRYING OUT OF THIS WORK. ANY REPAIRS SHALL BE CARRIED OUT AT OWN EXPENSE OF ANY DAMAGE CAUSED BY THIS CONTRACTOR OR BY HIS SUBCONTRACTORS.

9. COORDINATE WITH GENERAL CONTRACTOR FOR DRILLING, CUTTING, PATCHING AND PAINTING REQUIRED FOR ALL ELECTRICAL WORK AND SHALL BE PROVIDED BY GENERAL CONTRACTOR. X-RAY THE FLOORS PRIOR TO ANY CORE DRILLING. USE COVERMETER TO LOCATE BOTTOM REINFORCING LOCALLY, AND IF NECESSARY, ADJUST LOCATION OF BOLTS TO AVOID DRILLING THROUGH BOTTOM REINFORCING. PAINT ALL EXPOSED CONDUITS AND SURFACE MOUNTED WIREWAY IN FINISHED AREAS TO MATCH ADJACENT SURFACES.

10. ALL ELECTRICAL POWER SUPPLY INTERRUPTIONS SHALL BE ARRANGED WITH THE U OF T CONSTRUCTION SUPERVISOR AT LEAST 15 WORKING DAYS IN ADVANCE AND SHALL BE CARRIED OUT ONLY OUTSIDE NORMAL WORKING HOURS.

11. HAZARDOUS MATERIALS REMOVAL AND DRILLING OF HOLES IN WALLS AND CEILING THAT CONTAIN ASBESTOS HAZARDOUS MATERIALS, IF FOUND, THEY SHALL BE REMOVED BY HAZARDOUS MATERIAL ABATEMENT CONTRACTOR ACCORDING TO THE TYPE OF PROCEDURES STIPULATED BY THE REGULATIONS AND IN GENERAL SPECIFICATIONS.

12. REMOVAL OF EXISTING BREAKERS FROM THE EXISTING ELECTRICAL PANELS AND INSTALLATION OF NEW BREAKERS IN THE EXISTING ELECTRICAL PANELS SHALL BE CARRIED OUT ONLY OUTSIDE NORMAL WORKING HOURS WITH PROPER POWER SHUT DOWN PROCEDURES AND SHALL BE COORDINATED WITH U OF T UTILITIES DIVISION.

13. ALL ELECTRICAL EQUIPMENT DEEMED FOR DEMOLITION OR DECOMMISSIONING SHALL BE REMOVED BACK TO THE SOURCE OF SUPPLY. THIS INCLUDES ALL CONDUIT, WIRE, JUNCTION/PULL BOXES, ETC. IT IS UNACCEPTABLE TO 'ABANDON' AND MAKE SAFE, REGARDLESS OF SITE CONDITIONS.

14. KNOCKOUT(S) SHALL BE FILLED WHEN REMOVING CIRCUITS FROM ANY PANELBOARD OR SPLITTER.

15. CONTRACTORS WORKING ON LIVE EQUIPMENT OF 30 VOLTS OR MORE WITHOUT A POWER SHUTDOWN TO THE EQUIPMENT WILL BE LIABLE FOR INJURIES AND/OR DAMAGES FOR ANY POWER DISRUPTION THAT MAY BE CAUSED, EVEN IF PERMISSION IS GRANTED TO WORK ON LIVE EQUIPMENT.

16. FIRE ALARM ISOLATION SHALL BE ARRANGED WITH THE U OF T CONSTRUCTION SUPERVISOR AT LEAST 48 HOURS IN ADVANCE.

17. ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE ONTARIO ELECTRICAL SAFETY CODE, ONTARIO BUILDING CODE AND APPLICABLE C.S.A. AND U.L.C STANDARDS. ONTARIO ELECTRICAL SAFETY AUTHORITY INSPECTION SHALL BE APPLIED AND PAID FOR BY THIS CONTRACTOR.

18. PROVIDE ONTARIO ELECTRICAL SAFETY AUTHORITY INSPECTION CERTIFICATE PRIOR TO FINAL ACCEPTANCE OF THE WORK.

19. ALL MATERIALS AND EQUIPMENT SHALL BE CSA OR ONTARIO ELECTRICAL SAFETY SPECIAL INSPECTION APPROVED AND BEAR EVIDENCE OF SAME.

20. THE DRAWINGS FOR ELECTRICAL WORK ARE DIAGRAMMATIC IN NATURE, INTENDED TO CONVEY THE SCOPE OF WORK. THE DRAWINGS DO NOT SHOW INTERIOR DESIGN, ARCHITECTURAL, MECHANICAL, STRUCTURAL OR BASE BUILDING DETAILS. BE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF SAME BEFORE PROCEEDING WITH WORK.

21. SUBMIT ONE (1) SETS OF SHOP DRAWINGS ELECTRONICALLY FOR NEW ELECTRICAL MATERIAL, DEVICES AND EQUIPMENT FOR THE REVIEW OF U OF T, PRIOR TO ORDERING.

B) INTERFERENCE DRAWINGS

1. CONTRACTOR MUST SUBMIT INTERFERENCE DRAWINGS PRIOR TO COMMENCING WITH THE INSTALLATION OF CONDUITS/CABLE TRAYS. THESE DRAWINGS MUST INDICATE THE CONDUITS/CABLE TRAYS ROUTING AND PULL BOX LOCATIONS WITH REFERENCE MEASUREMENTS FROM TWO WALLS OR PERMANENT FIXTURES.

2. INCLUDE CONSTRUCTION NOTES DESCRIBING ELEVATION CHANGES, WALL PENETRATIONS AND INFORMATION WITH REGARDS TO EXISTING FIXTURES THAT MAY BE AFFECTED BY THE INSTALLATION OF THE CONDUITS.

C) SHOP DRAWINGS:

1. BEFORE FABRICATION OF ANY MATERIALS OR EQUIPMENT, SUBMIT ONE (1) PDF COPY OF DETAILED MANUFACTURER'S SHOP DRAWINGS OF MATERIAL, EQUIPMENT AND DEVICES FOR REVIEW. DO NOT ORDER MATERIALS UNTIL REVIEW PROCESS IS COMPLETE. IF CORRECTIONS ARE REQUIRED, COPIES WILL BE RETURNED WITH CORRECTIONS NOTED. CORRECTED COPIES SHALL BE RESUBMITTED FOR REVIEW AND DISTRIBUTION. SUBMISSIONS SHALL BE MADE IN AMPLE TIME TO AVOID DELAYS IN THE WORK. THE REVIEW OF THE SHOP DRAWINGS SHALL BE, AND IS MUTUALLY UNDERSTOOD TO BE, IN REFERENCE TO GENERAL DESIGN ONLY. IF ERRORS IN THE DETAILED DIMENSIONS OR INTERFERENCE WITH THE WORKS ARE NOTICED, THE ATTENTION OF THE CONTRACTOR WILL BE CALLED TO SUCH ERRORS OR INTERFERENCE, BUT REVIEW OF THE DRAWINGS SHALL NOT IN ANY WAY RELIEVE THIS CONTRACTOR OF RESPONSIBILITY FOR ERRORS OR INTERFERENCE, OR FROM THE NECESSITY OF FURNISHING SUCH WORKS AND MATERIALS AS MAY BE REQUIRED FOR THE COMPLETION OF THE WORK AT ANY TIME UNTIL FORMAL ACCEPTANCE.

2. SUBMIT SAMPLE FOR ALL LIGHTING FIXTURES ALONG WITH LIGHTING SHOP DRAWINGS FOR THE ARCHITECT AND CLIENT'S APPROVAL, PRIOR TO PLACING MATERIAL ORDERING.

3. THE CONTRACTOR SHALL SUBMIT STAMPED DETAILED DRAWINGS INDICATING THE SUPPORTING SYSTEM THAT CARRYING ELECTRICAL DEVICES OR EQUIPMENT. THE DRAWINGS SHALL INCLUDE SPECIFICATIONS OF SUPPORTS, THREADED RODS, SCREWS, ANCHORS AND OTHER MATERIALS REQUIRED FOR SAFE INSTALLATION.

D) GROUNDING AND BONDING:

1. PROVIDE ALL GROUNDING TO CONFORM WITH THE REQUIREMENTS OF ONTARIO ELECTRICAL SAFETY CODE AND ALL OTHER AUTHORITIES HAVING JURISDICTION, REGARDLESS OF WHETHER OR NOT IT IS SHOWN ON THE DRAWINGS. A SEPARATE INSULATED GREEN GROUND WIRE SHALL BE INSTALLED IN EACH POWER CONDUIT OR RACEWAY, SIZED PER ONTARIO ELECTRICAL SAFETY CODE BUT NO LESS THAN #14 AWG.

E) WIRING AND FEEDERS

1. ALL ELECTRICAL POWER WIRING SHALL BE COPPER, MINIMUM SIZE NO. 12 AWG, TYPE RW90XLPE, 600V INSULATION. ALL ELECTRICAL WIRING SHALL BE STRANDED. POWER WIRING SHALL BE INSTALLED IN METALLIC CONDUIT, OR METALLIC RACEWAY, UNLESS NOTED OTHERWISE. ALL OUTDOOR WIRING SHALL HAVE COPPER CONDUCTORS WITH RWU-90, X-LINK, -40°F, 600V INSULATION. FOR ALL APPLICATIONS WHERE FLEXIBILITY IS REQUIRED, USE SEAL TIGHT FLEXIBLE METALLIC CONDUIT, UNLESS NOTED OTHERWISE. TERMINATION LUGS FOR FEEDER CABLES SHALL BE COMPRESSION TYPE. FINAL WIRING CONNECTIONS TO ALL ROTATING AND VIBRATING EQUIPMENT SHALL BE MADE USING LIQUISEAL FLEXIBLE METAL CONDUIT OR EQUAL.

2. PERFORM VOLTAGE DROP CALCULATIONS TO ENSURE COMPLIANCE WITH OESC REQUIREMENTS AND SIZE WIRING AND FEEDERS ACCORDINGLY. HOME RUNS TO LIGHTING AND RECEPTACLE PANELS WHICH EXCEED 25M (75'-0") SHALL BE MINIMUM NO. 10 AWG.

3. CABLES SHALL BE NEATLY INSTALLED, COORDINATED, AND ALIGNED WITH ADJACENT SURFACES. CABLES SHALL BE INDEPENDENTLY AND APPROPRIATELY SUPPORTED AND SHALL NOT REST ON CEILING TILES OR SUPPORTS.

4. ALL LV CABLES SHALL BE INSULATION RESISTANCE TESTED FOR 1 MINUTE AT 1000VDC, FOLLOWING INSTALLATION, BEFORE FINAL TERMINATIONS. EACH PHASE SHALL BE TESTED SEPARATELY. SUBMIT TESTING REPORT TO THE ENGINEER FOR REVIEW AND RECORD.

5. TERMINATION LUGS FOR FEEDER CABLES SHALL BE OF THE COMPRESSION TYPE. MECHANICAL LUGS ARE NOT ACCEPTABLE FOR FEEDERS.

6. NO SPLICES SHALL BE PERMITTED ON ANY LOW VOLTAGE FEEDERS.

7. FOR AREAS WITH DRYWALL PARTITIONS, TYPE AC90 ARMOURED CABLE SHALL ONLY BE USED FOR:

a) FIXTURE DOWN DROPS ABOVE ACCESSIBLE DROP CEILINGS WITH A MAXIMUM DOWN DROP NOT GREATER THAN 6M (20 FEET) FROM THE CEILING JUNCTION BOX TO FIXTURE. FINISHED CABLE LENGTH SHALL BE THE SHORTEST DISTANCE PERMISSIBLE BETWEEN JUNCTION BOX AND FIXTURE.

b) SINGLE AND MULTI-BRANCH CIRCUIT INSTALLATIONS WITHIN WALL SPACE, PROVIDED THE LENGTH OF ARMOURED CABLE DOES NOT EXCEED 3M; OR FOR OPEN OFFICE AREAS USING SYSTEM FURNITURE AND PARTITIONS WHERE UNDERFLOORWIRING IS IMPRACTICAL.

8. ANY FEEDER(S) BEING REUSED OR RE-PURPOSED SHALL BE PROVEN WITH AN INSULATION RESISTANCE TEST WITH NETA MTS AS THE THRESHOLD FOR PASSING. ELECTRICAL CONTRACTOR TO PERFORM.

9. PERFORM INSULATION/MEGGER TEST FOR ALL NEW FEEDERS AND BRANCH WIRING AFTER HEY ARE BEING PULLED IN CONDUITS/RACEWAYS. SUBMIT DETAILED TESTING REPORT TO THE ENGINEER FOR REVIEW AND INCLUDE ALL ASSOCIATED COST IN TENDER, AS REQUIRED.

10. WIRING FOR FIRE ALARM INITIATING DEVICES SHALL BE COPPER, MINIMUM SIZE NO.14 AWG, OR SPECIAL CABLES REQUIRED AS PER FIRE ALARM SYSTEM MANUFACTURER RECOMMENDATIONS, INSTALLED IN EMT. WIRING FOR SIGNAL CIRCUITS SHALL BE #12 AWG MINIMUM INSTALLED IN EMT.

F) CONDUITS AND RACEWAYS:

1. MINIMUM CONDUIT SIZE 3/4" DIAMETER, EXCEPT BY SPECIAL PERMISSION AND/OR AS NOTED OTHERWISE.

2. CONDUITS FOR INDOOR INSTALLATIONS SHALL BE EMT WITH STEEL COMPRESSION TYPE FITTINGS UNLESS OF OTHERWISE INDICATED TO USE WIREMOLD SYSTEM.

3. ALL CONDUCTORS FOR PANELBOARDS, SWITCHGEAR, TRANSFORMER AND OTHER ELECTRICAL EQUIPMENT SHALL BE RAIN TIGHT AND SUITABLE FOR WET LOCATION.

4. CONDUITS FOR OUTDOOR INSTALLATIONS SHALL BE RIGID GALVANIZED STEEL WITH THREADED CONNECTORS.

5. THE UNDERGROUND CONDUITS SHALL BE PVC TYPE 2 COMPLETE WITH APPROVED FITTINGS.

6. MOTOR FEEDER DROPS SHALL BE IN A THREADED GALVANIZED RIGID CONDUIT. A MAXIMUM OF 1M (39") MAY BE OF ARMOURED FLEXIBLE LIQUID-TIGHT CONDUIT FOR FINAL CONNECTION TO MOTOR TERMINATION ENCLOSURE.

7. PROVIDE WIREMOLD SYSTEM FOR WALL MOUNTED POWER OUTLET AS INDICATED ON THE DRAWINGS FROM OUTLET TO RESPECTIVE PANEL.

8. WIREMOLD FOR POWER WIRING SHALL BE METALLIC, WHITE COLOR, COMPLETE WITH COVERS & ALL REQUIRED ACCESSORIES.

9. WIREMOLD ACCESSORIES MUST BE PROVIDED FROM THE SAME MANUFACTURER, INCLUDING BUT NOT LIMITED TO ELBOWS, TEES, TRANSITION DEVICES, OUTLETS & DEVICES BOXES. BASE BID MANUFACTURER IS LEGRAND. ALTERNATIVE MANUFACTURER IS HUBBELL OR APPROVED EQUAL.

10. EXPANSION FITTINGS SHALL BE INSTALLED IN CONDUITS CROSSING EXPANSION JOINTS.

11. FISH WIRES SHALL BE INSTALLED IN ALL EMPTY CONDUITS.

12. CONDUITS FOR COMPUTER SYSTEMS SHALL COMPLY WITH THE UNIVERSITY'S COMMUNICATIONS INFRASTRUCTURE SPECIFICATIONS, STANDARDS AND PRACTICES STANDARDS.

13. HORIZONTAL RUNS OF CONDUITS SHALL BE INSTALLED ABOVE SUSPENDED CEILINGS AND FASTENED TO THE BUILDING STRUCTURE. PROVIDE CONDUIT SUPPORTS AS REQUIRED BY THE LATEST EDITION OF THE ONTARIO ELECTRICAL SAFETY CODE. THE DOWN DROPS ON EXISTING WALLS SHALL BE INSTALLED WITH SURFACE MOUNTED WIREWAY SIZED TO SUIT THE APPLICATION, UNLESS NOTED OTHERWISE. THE CONDUITS SHALL BE CONCEALED IN NEW WALLS, UNLESS NOTED OTHERWISE.

14. ALL CONDUITS SHALL RUN PARALLEL TO BUILDING LINES.

15. AVOID RUNNING CONDUITS THROUGH OR DOWN "FEATURE WALLS". REFER TO ARCHITECTURAL DRAWINGS FOR "FEATURE WALLS" LOCATION.

16. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FIRE STOPPING AND SMOKE SEALS WITHIN ELECTRICAL ASSEMBLIES, WHERE THEY PENETRATE FIRE-RATED SEPARATIONS. COORDINATE WITH THE GENERAL TRADES ON SITE.

17. EXACT CONDUIT ROUTING TO BE DETERMINED ON SITE. COORDINATE WITH GENERAL TRADE.

G) DISCONNECTING MEANS:

1. FUSED DISCONNECT SWITCHES ARE NOT ACCEPTABLE TO BE USED ACROSS THE CAMPUS.

2. NON-FUSED DISCONNECT SWITCHES SHALL HAVE A MINIMUM NEMA-1 RATING, UNLESS OTHERWISE INDICATED IN ITEMS #3 & 4 BELOW:

3. NON-FUSED DISCONNECT SWITCHES INSTALLED WITHIN MECHANICAL SPACES SHALL BE NEMA-3R RATING.

4. NON-FUSED DISCONNECT SWITCHES FOR OUTDOOR APPLICATION SHALL HAVE A MINIMUM NEMA-3R RATING.

H) BOXES AND WIRING DEVICES

1. PROVIDE ALL WIRING DEVICES, COMPLETE WITH OUTLET BOXES AND STAINLESS STEEL COVER PLATES AS CALLED FOR ON THE DRAWINGS. WIRING DEVICES SHALL BE COMMERCIAL GRADE 'HUBBELL' OR APPROVED EQUAL.

2. ALL RECEPTACLES TO BE LABELLED WITH MACHINE GENERATED ADHESIVE LABELS TO INDICATE THE CORRESPONDING CIRCUIT NUMBERS.

3. RECEPTACLES SHALL BE WHITE COMMERCIAL GRADE, DECORA STYLE, MOUNTED AT 400mm FROM FLOOR TO THE BOTTOM OF THE RECEPTACLE, UNLESS NOTED OTHERWISE.

4. RECEPTACLES ON EMERGENCY POWER SHALL BE COLOURED RED. ISOLATED GROUND RECEPTACLES SHALL BE COLOURED ORANGE.

5. LINE VOLTAGE LIGHTING SWITCHES SHALL BE WHITE DECORA STYLE MOUNTED AT 1100MM (43") FROM FLOOR TO THE CENTRE OF THE SWITCH.

6. OUTLET, JUNCTION AND PULL BOXES SHALL BE SIZED TO SUIT PARTICULAR DEVICE AND APPLICATION. IN NEW WALLS, OUTLET BOXES SHALL BE FLUSH-MOUNTED. USE 4 GANG BACK BOXES WITH BARRIER AT LOCATIONS WHERE POWER/DATA/TELEPHONE OUTLETS ARE RECESSED TOGETHER IN WALLS. ON EXISTING WALLS, OUTLET BOXES SHALL BE SURFACE MOUNTED BOXES, UNLESS NOTED OTHERWISE. OUTLET BOXES IN NEW WALLS AND PARTITIONS SHALL NOT BE MOUNTED BACK-TO-BACK.

7. PROVIDE A MINIMUM HORIZONTAL SEPARATION OF 6" BETWEEN OPPOSING BOXES. FLOOR MOUNTED OUTLET BOXES SHALL BE NEPCO SERIES 900, UNLESS NOTED OTHERWISE.

8. ELECTRICAL BOXES OCCURRING IN ACOUSTIC WALLS SHALL BE INSTALLED WITH PREFORMED NEOPRENE BOX SEALS.

9. REFER TO LIGHTING CONTROL DETAILS FOR SPECIFICATION OF LIGHTING CONTROLS DEVICES.

I) PANELBOARDS

1. PROVIDE PANELBOARDS AS CALLED FOR ON THE DRAWINGS. PANELBOARDS SHALL BE INDUSTRIAL QUALITY, COMPLETE WITH COPPER BUS & COPPER GROUND BAR, MAIN BREAKER, DESIGNED FOR USE WITH BOLT-ON, THERMALLY COMPENSATED, TRIP-FREE CIRCUIT BREAKERS; 2 POLE AND 3 POLE CIRCUIT BREAKERS SHALL HAVE COMMON TRIP HANDLES. TIE HANDLES ARE NOT ACCEPTABLE. PANELBOARDS SHALL BE RATED AT MINIMUM 10KA IC FOR 208V & 14KA IC FOR 600V.

2. PANELBOARD ENCLOSURE SHALL BE DEAD FRONT CONSTRUCTION WITH HINGED DOOR HAVING LATCH AND TWO KEY, AND FACTORY-FINISHED GREY ASA NO. 61, UNLESS OTHERWISE INDICATED.

3. PANELBOARDS ARE TO BE MOUNTED SO THAT THE TOP OF THE PANELS ARE LOCATED 2M (78 IN) ABOVE FINISHED FLOOR.

4. PANELBOARD DIRECTORIES SHALL BE TYPEWRITTEN USING THE TEMPLATES PROVIDED BY THE UNIVERSITY.

5. FILLER PLATES SHALL BE PROVIDED ON ALL BLANK BREAKER SPACES.

6. EMERGENCY PANELS SHALL HAVE GREEN COLOR FRONT COVER. SUBMIT COLOR SAMPLES & COLOR CODE FOR APPROVAL BEFORE ORDERING.

7. PANELBOARDS SHALL BE COMPLETED WITH 200% RATED NEUTRAL.

8. SURFACE-MOUNTED PANELBOARDS SHALL BE COMPLETE WITH DRIP SHIELD AND WEATHER PROOF CONNECTORS, AND FIRE RETARDANT PLYWOOD BACKBOARD.

9. BALANCE THE CONNECTED LOADS ACROSS THE PHASES ON THE PANEL, WITHIN 5%.

10. PROVIDE TWO 25MM (1") EMPTY CONDUITS FROM EACH FLUSH MOUNTED PANELBOARD TO THE CEILING SPACES ABOVE FOR FUTURE INSTALLATION OF WIRING. THE CONDUITS SHALL TERMINATE IN JUNCTION BOXES WITH FISH WIRES.

11. PANELBOARDS SHALL BE SINGLE-TUB MANUFACTURED BY SCHNEIDER ELECTRIC, SIEMENS OR EATON.

12. WHEREVER NEW BREAKERS/DISCONNECT SWITCHES ARE REQUIRED TO BE ADDED IN EXISTING SWITCHBOARDS/DISTRIBUTION PANELS/PANELS AS INDICATED ON THE DRAWINGS, ELECTRICAL CONTRACTOR SHALL MODIFY, RETROFIT AND RE-CONFIGURE EXISTING RESPECTIVE SWITCHBOARD/ DISTRIBUTION PANEL/PANEL IN ORDER TO ALLOW FOR THE INSTALLATION OF THE NEW REQUIRED/INDICATED BREAKERS/DISCONNECT SWITCHES WITHIN THE EXISTING ELECTRICAL PANEL. CONTRACTOR SHALL VERIFY ON SITE FOR THE SCOPE AND EXTENT OF WORK AND SHALL CO-ORDINATE WITH PANEL MANUFACTURER FOR MORE DETAILS AND THEN PROCEED ACCORDINGLY. CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS (INCLUDING BUT NOT LIMITED TO: CUSTOM MADE PARTS, BUS ASSEMBLY, BRACKETS HARDWARE ETC.). LABOR ETC. FOR FULLY OPERATIONAL SYSTEM. THE NEW BREAKERS/DISCONNECT SWITCHES TO BE ADDED SHALL BE FROM THE SAME MANUFACTURER AS EXISTING. KA RATING OF THE NEW BREAKERS/DISCONNECT SWITCHES SHALL MATCH EXISTING OR NEXT HIGHER AVAILABLE VALUE. INCLUDE ALL ASSOCIATED COST IN TENDER PRICE AS REQUIRED.

J) PANELBOARD SCHEDULES/DIRECTORIES

1. A PRINTED VERSION OF SCHEDULES SHALL BE INSTALLED INSIDE THE PANEL ON THE BACKSIDE OF THE DOOR.

2. CHANGES TO THE PANEL SCHEDULES (ESPECIALLY ON EXISTING PANELS) SHALL BE INDICATED ON A NEWLY PRINTED SCHEDULE FROM TEMPLATE WITH REVISION DATE FOR EACH CHANGE. HANDWRITTEN OR MARKED UP COPY OF EXISTING SCHEDULE IS NOT PERMITTED.

3. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ENTERING BOTH EXISTING AND NEW CIRCUIT TAGS/LOADS INTO THE TEMPLATE, WITH EXISTING IN RED AND NEW IN BLACK. LOADING INFORMATION ON EXISTING LOADS IS NOT REQUIRED.

4. ELECTRONIC FILE FOR SCHEDULES SHALL BE PROVIDED TO THE UNIVERSITY AS PART OF THE CLOSE-OUT DOCUMENTS.

K) SHORT CIRCUIT AND ARC FLASH STUDIES

1. ELECTRICAL CONTRACTOR SHALL SUBMIT SHORT CIRCUIT COORDINATION STUDY AND ARC FLASH CALCULATION REPORTS ALONG WITH POWER DISTRIBUTION SHOP DRAWINGS TO ENSURE CORRECT SELECTION OF 'kA' RATING OF NEW BREAKERS AND ALSO TO VERIFY NEW BREAKERS ARE COORDINATED WITH UPSTREAM BREAKERS. ARC FLASH LABELS SHALL BE PROVIDED TO ALL NEW EQUIPMENT AS PER ARC FLASH REPORT. INCLUDE ALL ASSOCIATED COSTS IN TENDER PRICE AS REQUIRED.

2. ALL ARC FLASH AND SHORT CIRCUIT STUDIES SHALL BE PERFORMED USING ETAP SOFTWARE (VERSION 24 OR HIGHER) AND UPDATED ELECTRICAL MODELS SHALL BE MADE AVAILABLE TO THE UNIVERSITY AT PROJECT CLOSEOUT. THE RETURNED ETAP FILE VERSION MUST MATCH THE ORIGINAL ETAP FILE PROVIDED.

3. ALL NEW ELECTRICAL DISTRIBUTION EQUIPMENT (INCLUDING BRANCH CIRCUIT PANELBOARDS) SHALL BE PROVIDED WITH ARC FLASH LABELS, BASED ON SHORT CIRCUIT, COORDINATION, AND ARC FLASH STUDY REPORT.

4. THE ARC FLASH LABELS SHALL DETAIL ARC AND SHOCK HAZARDS AS PER CSA-Z462. FINAL LABEL CONFIGURATION SHALL BE APPROVED BY THE UNIVERSITY BEFORE INSTALLATION.

L) FIRE ALARM SYSTEM INSTALLATION AND VERIFICATION

1. AFFECTED FIRE ALARM DEVICES SHALL BE DISCONNECTED AND REMOVED BY UNIVERSITY OF TORONTO'S FIRE ALARM TESTING & MAINTENANCE GROUP. THE ELECTRICAL CONTRACTOR SHALL RE-INSTALL RELOCATED FIRE ALARM DEVICES IN NEW LOCATIONS & PROVIDE NEW CONDUITS, JUNCTION BOXES & WIRING TO EXTEND EXISTING FIRE ALARM SYSTEM AS REQUIRED.

2. ALL EXISTING FIRE ALARM SYSTEM MODIFICATIONS AND NEW INSTALLATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ONTARIO BUILDING CODE, ONTARIO FIRE CODE AND CAN/ULC-S524. FIRE ALARM SYSTEM SHALL BE VERIFIED IN ACCORDANCE WITH CAN/ULC-S537. THE CONTRACTOR SHALL INCLUDE THE COST OF HIRING A THIRD PARTY FIRE ALARM SYSTEM SPECIALIST (CHUBB, JOHNSON CONTROLS OR SIEMENS) TO PERFORM VERIFICATION WORK AS REQUIRED. THE CONTRACTOR (THROUGH THE PROJECT MANAGER) SHALL COORDINATE & SCHEDULE THE THIRD PARTY VERIFICATION WITH THE UNIVERSITY OF TORONTO FIRE PREVENTION OFFICE (ON THE APPROPRIATE FORM) AT LEAST TWO WEEKS IN ADVANCE OF ITS COMMENCEMENT. FIRE ALARM SYSTEM VERIFICATION SHALL BE CARRIED OUT ONLY OUTSIDE NORMAL WORKING HOURS.

3. WHERE FIRE PROTECTION, LIFE SAFETY SYSTEMS, OR OTHER SYSTEMS WITH FIRE PROTECTION OR LIFE SAFETY FUNCTIONS (E.G. ELEVATORS, PRESSURIZATION FANS & EMERGENCY GENERATORS) ARE INTEGRATED AS PART OF THE PROJECT SCOPE, THE INTEGRATED SYSTEM AS A WHOLE MUST BE TESTED AND THE OPERATION OF THE VARIOUS COMPONENTS CONFIRMED, IN ACCORDANCE WITH THE CAN/ULC-S1001 STANDARD FOR INTEGRATED SYSTEMS TESTING OF FIRE PROTECTION AND LIFE SAFETY SYSTEMS.

M) IDENTIFICATION OF ELECTRICAL EQUIPMENT

1. ALL ELECTRICAL EQUIPMENT SHALL HAVE PERMANENT IDENTIFICATION LAMICOID NAME PLATES IDENTIFYING SOURCE OF POWER SUPPLY AND CONNECTED LOAD. LIGHTING FIXTURES CONNECTED ON EMERGENCY POWER SHALL BE LABELED WITH RED DOT MARKING.

2. LAMACOID SHALL HAVE WHITE TEXT WITH HEIGHT AS INDICATED BELOW:

SIZE A: 25MM
SIZE B: 13MM
SIZE C: 6MM

3. WHEN IDENTIFYING PIECES OF ELECTRICAL EQUIPMENT, EXCEPT FOR BREAKERS/SWITCHES, THE PRIMARY LAMACOID OF SIZE A SHALL INDICATE THE EQUIPMENT IDENTIFIER TAG.

4. THE SECONDARY LAMACOID OF SIZE C SHALL BE INSTALLED IMMEDIATELY BELOW THE PRIMARY AND INDICATE THE SOURCE OF SUPPLY IDENTIFIER TAG AND ROOM NUMBER.

5. LAMACOID BACKGROUND COLOUR SHALL BE BLACK EXCEPT IN THE FOLLOWING CASES:

a. GREEN FOR EMERGENCY (BOTH LIFE, AND NON-LIFE SAFETY),
b. BLUE FOR UPS.

6. LAMACOIDS OF SIZE B SHALL BE INSTALLED NEXT TO EACH NEW, REPLACED OR MODIFIED (SPARE) CIRCUIT BREAKER, DETAILING THE PANELBOARD OR EQUIPMENT IT IS FEEDING, INCLUDING ROOM NUMBER WHERE THE FEEDER TERMINATES.

N) COLOUR CODES FOR ELECTRICAL EQUIPMENT

1. ALL ELECTRICAL EQUIPMENT SHALL BE ANSI 61 GREY UNLESS OTHERWISE SPECIFIED.

2. EMERGENCY PANELBOARDS SHALL BE PANTONE 335 C (GREEN) AND UPS PANELBOARDS SHALL BE PANTONE 285 C (BLUE).

3. ALL JUNCTION BOX COVER PLATES ON VARIOUS SYSTEMS SHALL BE COLOUR-CODED ACCORDING TO BELOW:

120/208V NORMAL LIGHTING AND POWER = WHITE
120/208V EMERGENCY POWER = WHITE / RED
120/208V UPS = WHITE / BLUE
240/416V NORMAL LIGHTING AND POWER = PINK
240/416V EMERGENCY POWER = PINK / RED
240/416V UPS = PINK / BLUE
347/600V NORMAL LIGHTING AND POWER = YELLOW
347/600V EMERGENCY POWER = YELLOW / RED
347/600V UPS = YELLOW / BLUE
FIRE ALARM = RED
TELEPHONE = ORANGE
CABLE TV = PURPLE
DATA = BROWN
CONTROL HVAC = GREEN
CONTROL L.V. LIGHTING = GREEN / BLACK
SECURITY = GREY
SURVEILLANCE, CCTV = GREY / BLACK
PUBLIC ADDRESS = 'PA'
AUDIO VISUAL = 'AV'
PAGING = 'PG'
INTERCOM = 'ICOM'

4. NOTE THAT, LIGHT COLOURS SHALL BE CHOSEN FOR GREEN, BLUE, BROWN, AND GREY.

O) AS BUILT AND CLOSEOUT DOCUMENTS:

1. THE CONTRACTOR SHALL MARK ALL CHANGES AND DEVIATIONS FROM CONSTRUCTION DRAWINGS IN RED PEN ON ONE (1) SET OF CLEAN PRINTS AND SUBMIT TO DESIGN ENGINEER (IN PDF FORMAT) UPON COMPLETION OF WORK.

2. THE CONTRACTOR SHALL PROVIDE ONE HARD COPY OF COMPLETE ELECTRICAL AS-BUILT DRAWINGS ON ANSI SIZE E PAPER, PLUS AN ELECTRONIC COPY OF AS-BUILT DRAWINGS IN CAD FORMAT (.DWG FILES) AS PART OF THE CLOSEOUT DOCUMENTS PACKAGE. AS-BUILT DRAWINGS SHALL INCORPORATE ALL RED PEN MARKUPS AND ANY CHANGES THAT OCCUR DURING CONSTRUCTION.

3. THE PACKAGE SHALL ALSO CONTAIN A PDF COPY OF EACH CAD DRAWING ALONG WITH ELECTRONIC VERSION OF PANELBOARD SCHEDULES (IN EXCEL FORMAT) ON THE UNIVERSITY'S TEMPLATES OF SCHEDULES.

4. WARRANT ALL LABOUR AND MATERIALS INSTALLED UNDER THIS DIVISION FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL PERFORMANCE AND SUBMIT WARRANTY CERTIFICATE TO U OF T.

5. SUBMIT THE FOLLOWING DOCUMENTS FOR THE ENGINEER'S REVIEW UPON COMPLETION OF PROJECT:

a. ESA FINAL INSPECTION CERTIFICATE
b. FIRE ALARM VERIFICATION & TESTING REPORT
c. EMERGENCY LIGHTING TEST REPORT
d. O & M MANUALS
e. PRODUCTS WARRANTY CERTIFICATES
f. AS-BUILT DRAWINGS (CAD & PDF FORMAT)
g. UPDATED PANELBOARD SCHEDULES
h. SHORT CIRCUIT COORDINATION & ARC FLASH STUDY REPORT (PDF FORMAT)
i. ETAP MODEL

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REV.	DESCRIPTION	DATE
	ISSUED FOR TENDER	2026-01-21
	ISSUED FOR F&S REVIEW	2026-01-16
	ISSUED FOR PERMIT	2026-01-14
	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

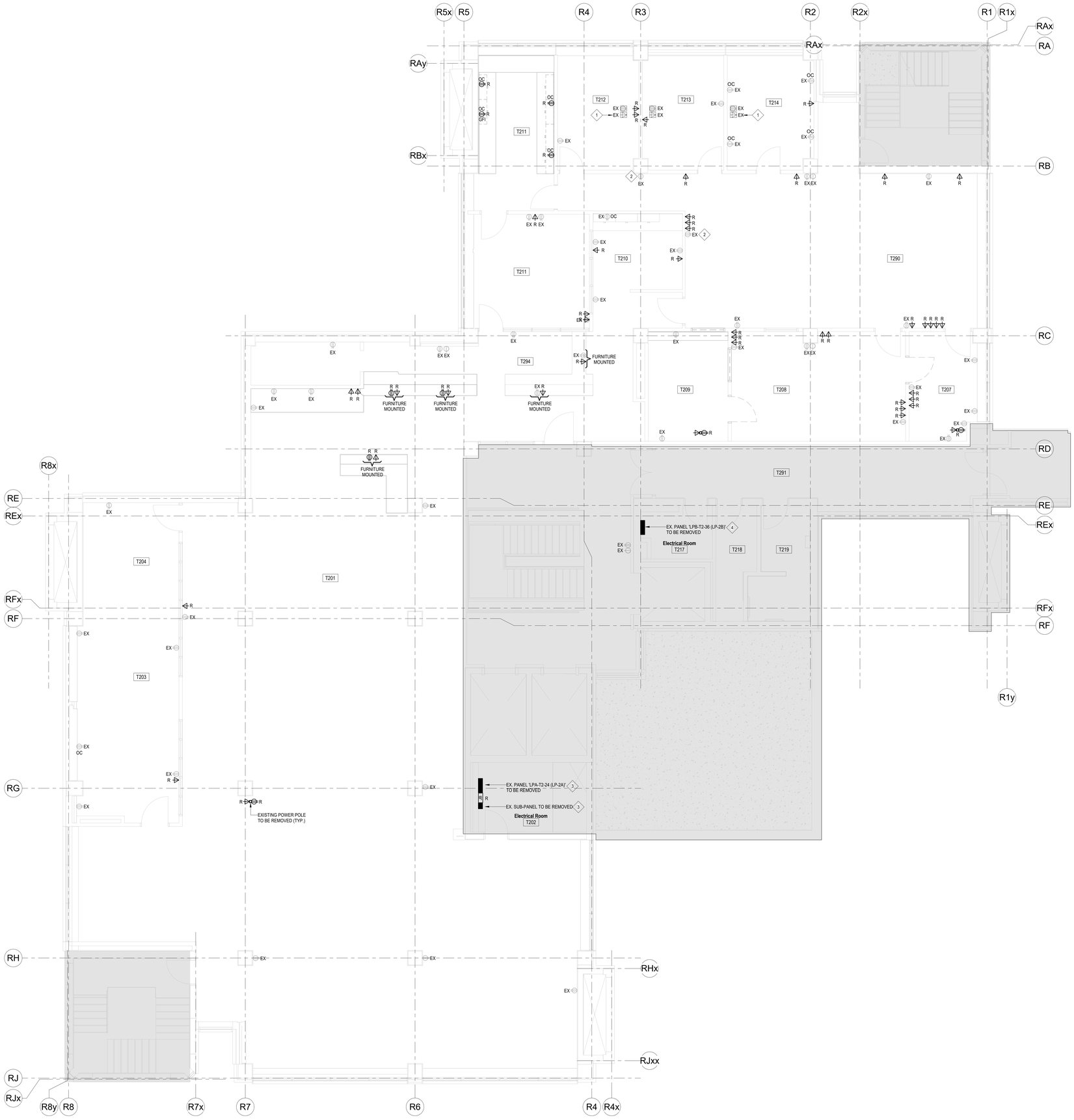
KEY PLAN (NTS) | SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
ELECTRICAL & COMMUNICATION SPECIFICATIONS

DRAWN BY: JW/GDP	SCALE: N/A
REVIEWED BY: SG	DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078	NORTH POINT
DRAWING NUMBER: **E102**	REV. NUMBER



1 E202 LEVEL 2 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT
SCALE: 1 : 50

DEMOLITION KEYED NOTES

1. DISCONNECT & REMOVE EXISTING DATA CABLE BACK TO SOURCE. PROVIDE BLANK STAINLESS STEEL COVERPLATE AND MAKE GOOD.
2. PROVIDE NEW BLANK STAINLESS STEEL COVERPLATE FOR THE INDICATED RECEPTACLE.
3. DISCONNECT & REMOVE EXISTING PANEL C/W MAIN FEEDER & CONDUIT. TRANSFER EXISTING BRANCH CIRCUITS FROM EXISTING PANEL TO NEW PANEL. REFER TO SINGLE LINE DIAGRAM & PANEL SCHEDULES FOR DETAILS. MODIFY AND/OR EXTEND EXISTING CONDUIT & WIRING AS REQUIRED.
4. DISCONNECT & REMOVE EXISTING PANEL C/W MAIN FEEDER. TRANSFER EXISTING BRANCH CIRCUITS FROM EXISTING PANEL TO NEW PANEL. UTILIZED EXISTING CONDUIT TO FEED THE NEW PANEL. REFER TO SINGLE LINE DIAGRAM & PANEL SCHEDULES FOR DETAILS. MODIFY AND/OR EXTEND EXISTING CONDUIT & WIRING AS REQUIRED.

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KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 2 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09

UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER: **E202**
REV. NUMBER

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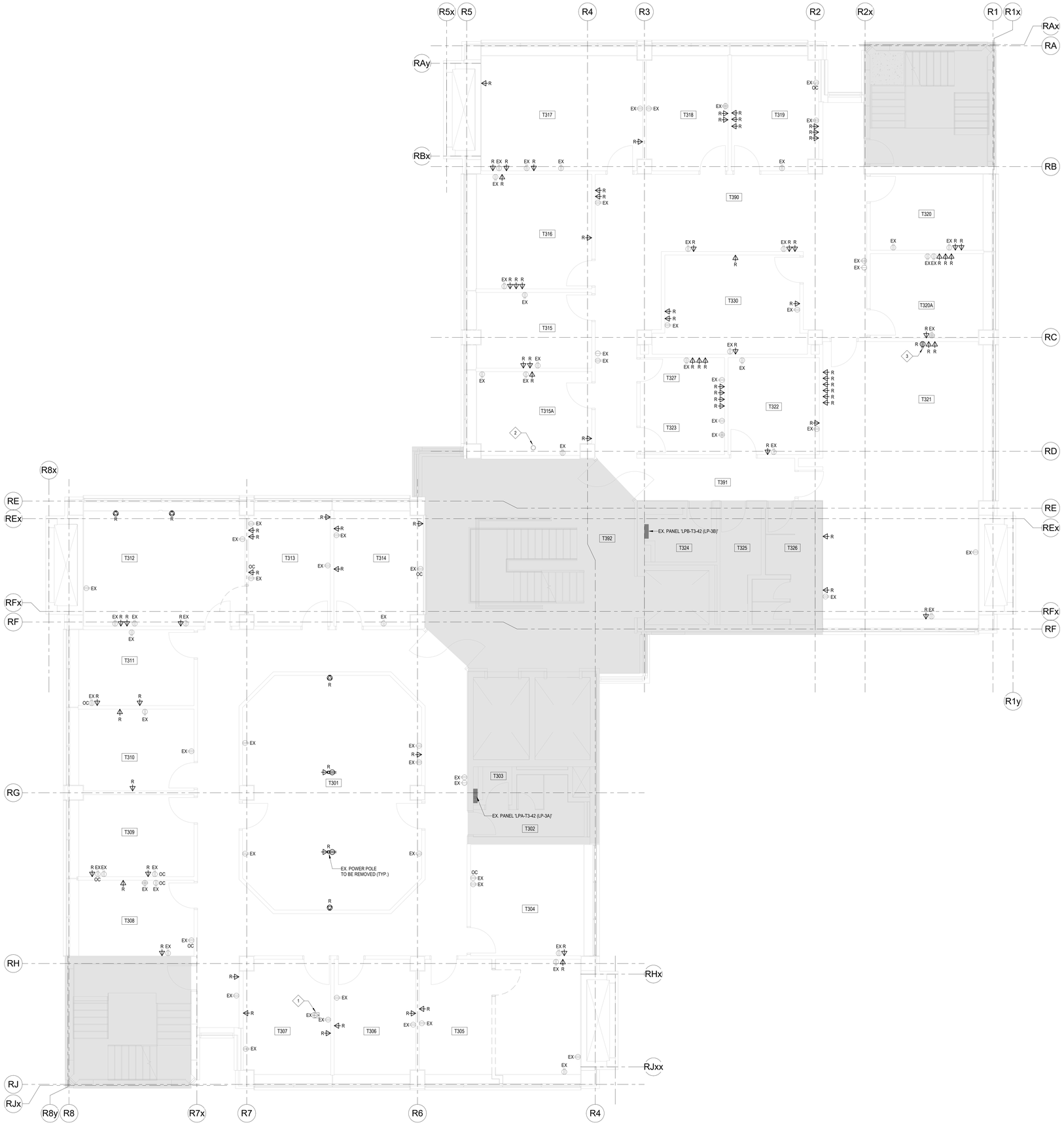

1 E203 LEVEL 3 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT
SCALE: 1 : 50

DEMOLITION KEYED NOTES

1. DISCONNECT & REMOVE EXISTING DATA CABLE BACK TO SOURCE. PROVIDE BLANK STAINLESS STEEL COVERPLATE AND MAKE GOOD.
2. REMOVE EXISTING COMMUNICATION CABLE BACK TO SOURCE. CUT THE CONDUIT FLUSH WITH THE FLOOR AND MAKE GOOD.
3. DISCONNECT & REMOVE EXISTING RECEPTACLE. EXTEND EXISTING BRANCH WIRING TO HIGHER LEVEL FOR NEW MONITOR. REFER TO DRAWING #E303 FOR NEW RECEPTACLE LOCATION.

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	ISSUED FOR PERMIT	2026-01-14
	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 3 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER: **E203**
REV. NUMBER:

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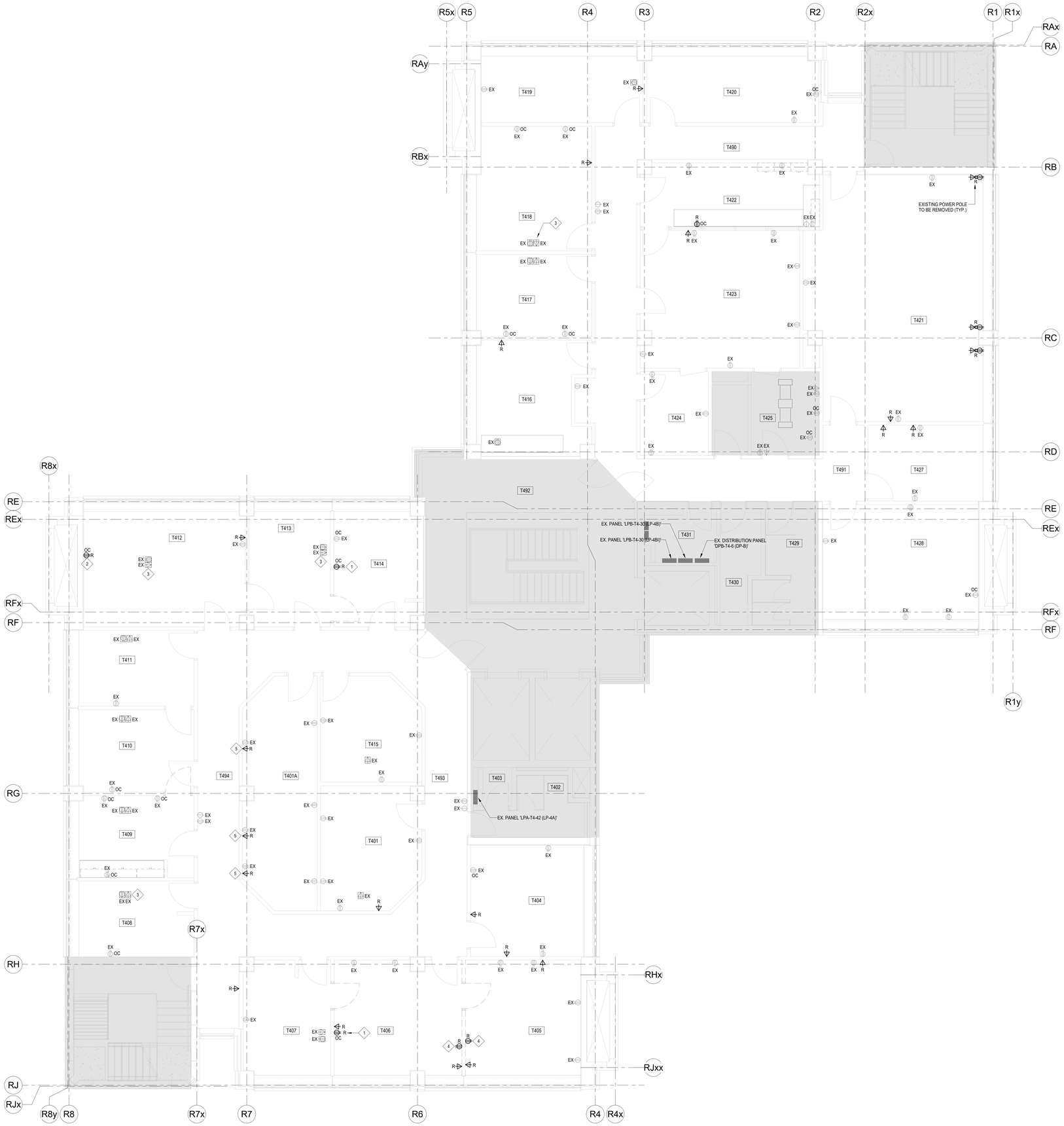

1 E204 LEVEL 4 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT
SCALE: 1 : 50

DEMOLITION KEYED NOTES

1. DISCONNECT & REMOVE EXISTING RECEPTACLE. EXTEND EXISTING BRANCH WIRING TO LOWER LEVEL. REFER TO DRAWING #E304 FOR NEW RECEPTACLE LOCATION.
2. DISCONNECT & REMOVE EXISTING RECEPTACLE. EXTEND EXISTING BRANCH WIRING TO HIGHER LEVEL FOR NEW MONITOR. REFER TO DRAWING #E304 FOR NEW RECEPTACLE LOCATION.
3. DISCONNECT & REMOVE EXISTING DATA CABLE BACK TO SOURCE. PROVIDE EMPTY COVERPLATE AND MAKE IT GOOD.
4. DISCONNECT & REMOVE EXISTING RECEPTACLE. EXTEND EXISTING BRANCH WIRING TO NEW RECEPTACLE AS INDICATED ON DRAWING #E304.
5. EXISTING DATA OUTLEST ON WIREMOLD. DISCONNECT & REMOVE EXISTING DATA CABLE BACK TO SOURCE. PROVIDE EMPTY COVERPLATE AND MAKE GOOD.

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	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 4 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER: **E204**
REV. NUMBER

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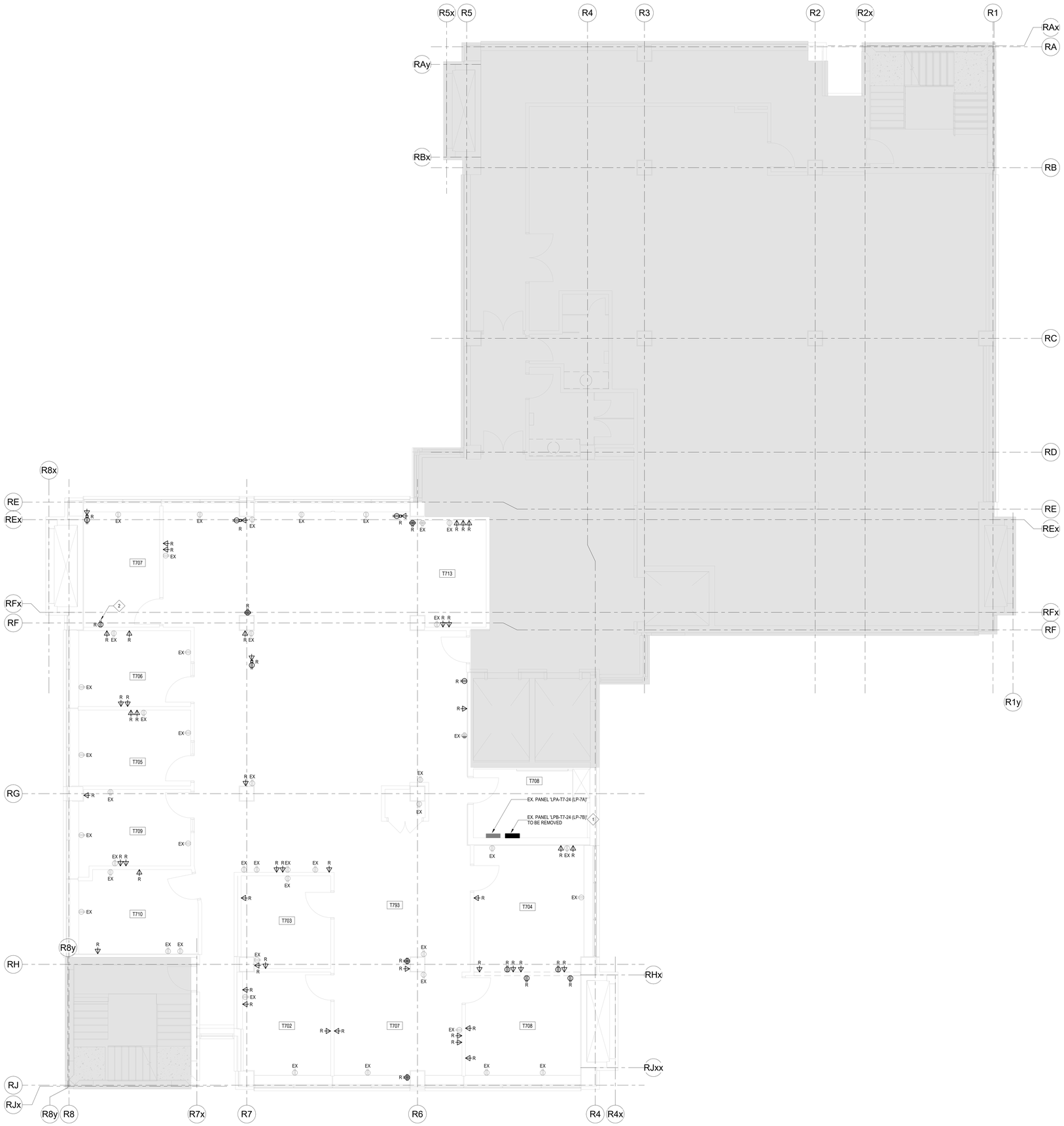

1 E207 LEVEL 7 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT
SCALE: 1 : 50

DEMOLITION KEYED NOTES

1 DISCONNECT & REMOVE EXISTING PANEL C/W MAIN FEEDER. TRANSFER EXISTING BRANCH CIRCUITS FROM EXISTING PANEL TO NEW PANEL. UTILIZED EXISTING CONDUIT TO FEED THE NEW PANEL. REFER TO SINGLE LINE DIAGRAM & PANEL SCHEDULES FOR DETAILS. MODIFY AND/OR EXTEND EXISTING CONDUIT & WIRING AS REQUIRED.

2 DISCONNECT & REMOVE EXISTING RECEPTACLE. EXTEND EXISTING BRANCH WIRING TO HIGHER LEVEL FOR NEW MONITOR. REFER TO DRAWING #E307 FOR NEW RECEPTACLE LOCATION.

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	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 7 FLOOR PLAN - ELECTRICAL DEMOLITION LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER
E207

REV. NUMBER

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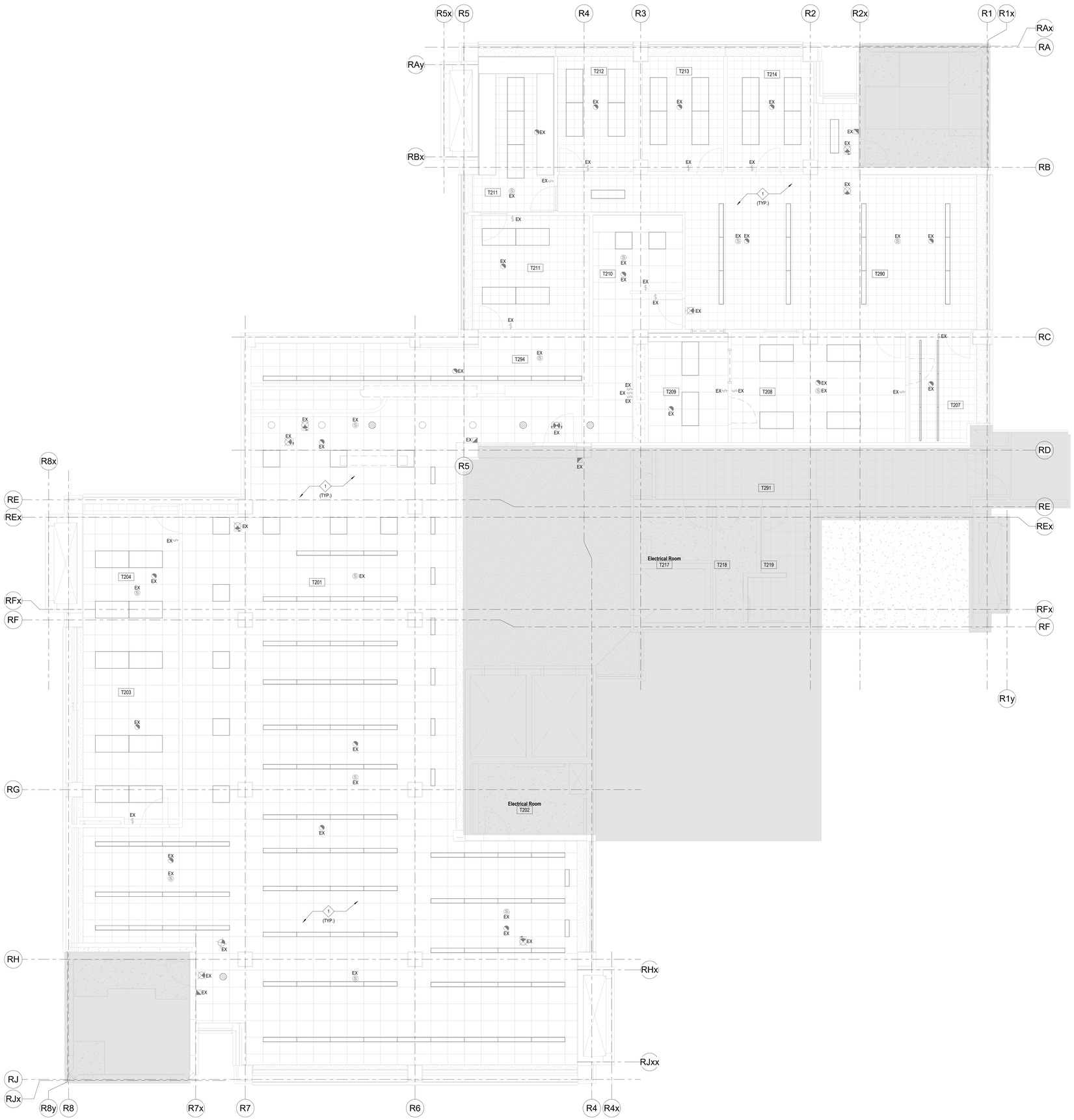

1 E212 LEVEL 2 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT
SCALE: 1 : 50

DEMOLITION KEYED NOTES

1 CONTRACTOR TO VERIFY EXISTING EMERGENCY CIRCUIT(S) ON SITE AND CONNECT THE EXISTING LIGHTING FIXTURES INDICATED ON DRAWING E312 TO EXISTING EMERGENCY LIGHTING CIRCUIT(S) WITH SPARE CAPACITY.

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	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 2 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER
E212
REV. NUMBER

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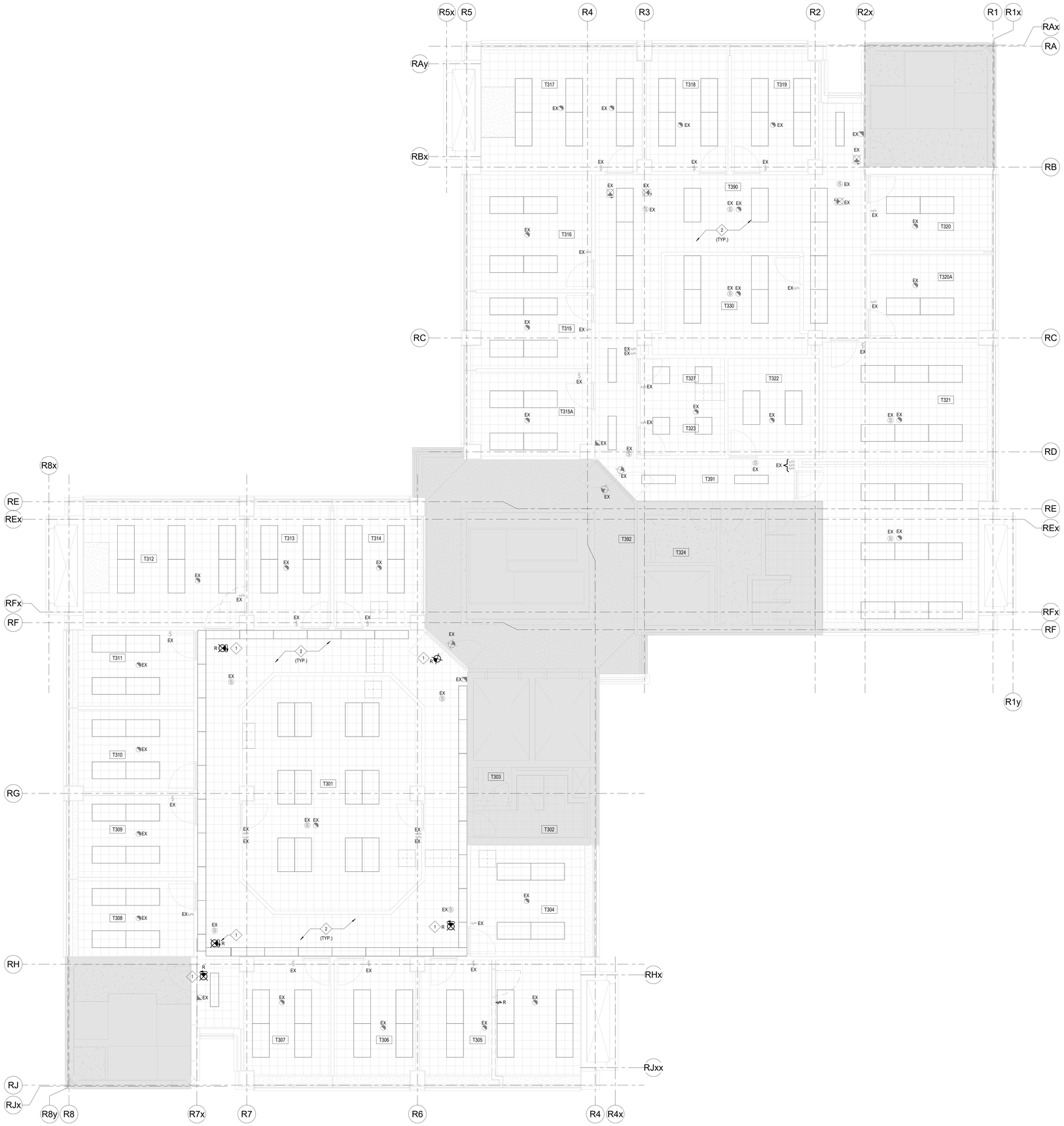

1 E213 LEVEL 3 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT
SCALE: 1 : 50

DEMOLITION KEYED NOTES

1 DISCONNECT & REMOVE EXISTING RED EXIT SIGN. MODIFY AND/OR EXTEND EXISITNG BRANCH WIRING FOR NEW RUNNING MAN EXIT SIGNS AS REQUIRED. REFER TO DRAWING #E313 FOR NEW RUNNING MAN EXIT SIGN LOCATION.

2 CONTRACTOR TO VERIFY EXISTING EMERGENCY CIRCUIT(S) ON SITE AND CONNECT THE EXISTING LIGHTING FIXTURES INDICATED ON DRAWING E313 TO EXISTING EMERGENCY LIGHTING CIRCUIT(S) WITH SPARE CAPACITY.

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	ISSUED FOR PERMIT	2026-01-14
	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 3 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER: **E213**
REV. NUMBER

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1 E214 LEVEL 4 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT
SCALE: 1 : 50

DEMOLITION KEYED NOTES

1. DISCONNECT & REMOVE EXISTING LIGHT SWITCH. MODIFY EXISTING LIGHTING CIRCUIT TO ENSURE ALL EXISTING LIGHTS IN OFFICE #T413 TO BE CONTROLLED BY THE EXISTING LIGHTING SWITCH. REFER TO DRAWING #E314 FOR MORE DETAILS.
2. DISCONNECT & REMOVE EXISTING LIGHT SWITCH. MODIFY EXISTING LIGHTING CIRCUIT TO ENSURE ALL EXISTING LIGHTS IN OFFICE #T405 TO BE CONTROLLED BY THE EXISTING LIGHT SWITCH. REFER TO DRAWING #E314 FOR MORE DETAILS.
3. DISCONNECT & REMOVE EXISTING RED EXIT SIGN. MODIFY AND/OR EXTEND EXISITNG BRANCH WIRING FOR NEW RUNNING MAN EXIT SIGNS AS REQUIRED. REFER TO DRAWING #E314 FOR NEW RUNNING MAN EXIT SIGN LOCATION.
4. CONTRACTOR TO VERIFY EXISTING EMERGENCY CIRCUIT(S) ON SITE AND CONNECT THE EXISTING LIGHTING FIXTURES INDICATED ON DRAWING E314 TO EXISTING EMERGENCY LIGHTING CIRCUIT(S) WITH SPARE CAPACITY.

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REV.	DESCRIPTION	DATE
	ISSUED FOR TENDER	2026-01-21
	ISSUED FOR F&S REVIEW	2026-01-16
	ISSUED FOR PERMIT	2026-01-14
	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 4 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER
E214
REV. NUMBER

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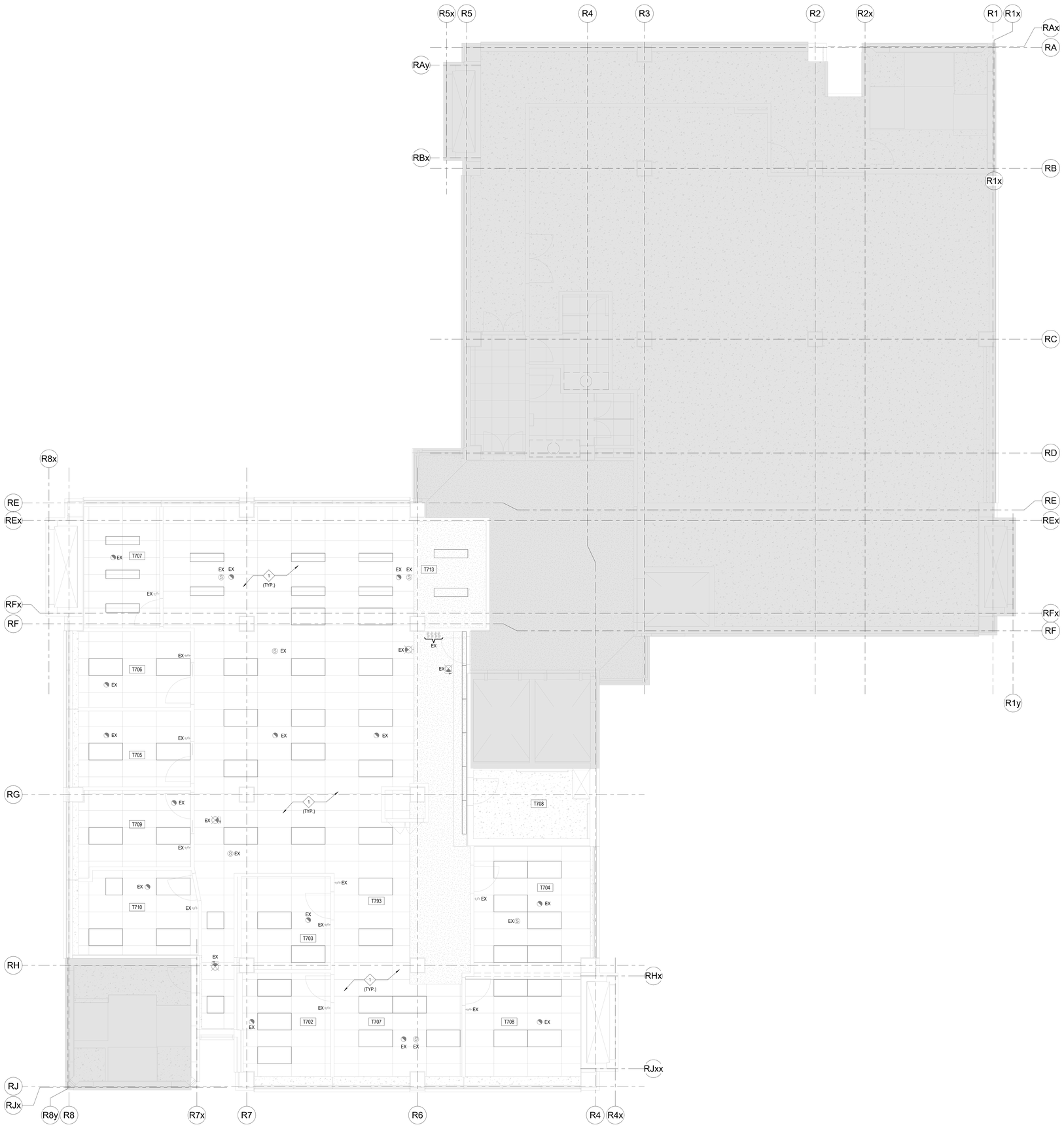

1 E217 LEVEL 7 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT
SCALE: 1 : 50

DEMOLITION KEYED NOTES

1 CONTRACTOR TO VERIFY EXISTING EMERGENCY CIRCUIT(S) ON SITE AND CONNECT THE EXISTING LIGHTING FIXTURES INDICATED ON DRAWING E317 TO EXISTING EMERGENCY LIGHTING CIRCUIT(S) WITH SPARE CAPACITY.

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	ISSUED FOR PERMIT	2026-01-14
	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 7 FLOOR PLAN - LIGHTING DEMOLITION LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER
E217
REV. NUMBER

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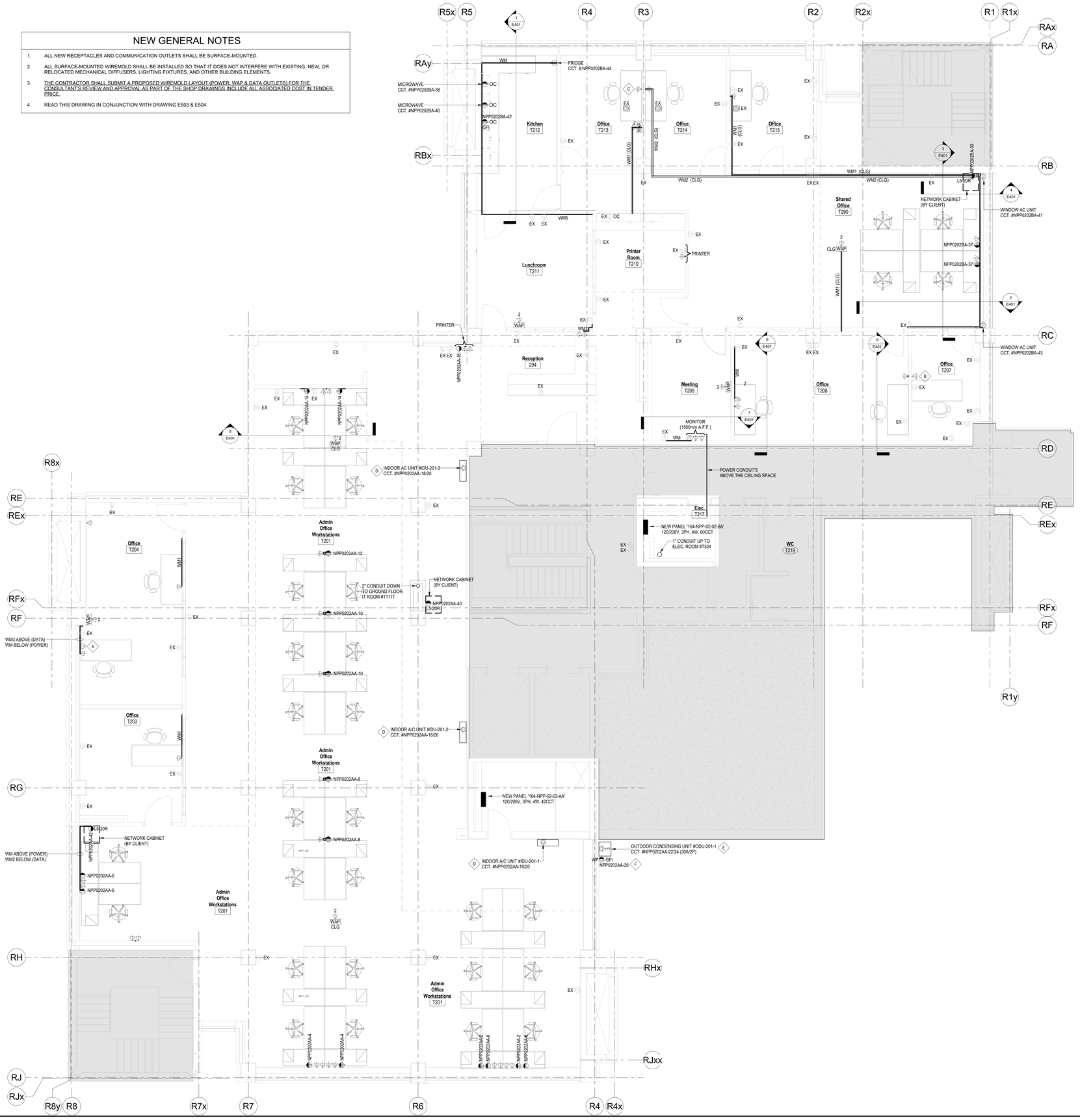
NEW GENERAL NOTES

1. ALL NEW RECEPTACLES AND COMMUNICATION OUTLETS SHALL BE SURFACE-MOUNTED.
2. ALL SURFACE-MOUNTED WIREMOLD SHALL BE INSTALLED SO THAT IT DOES NOT INTERFERE WITH EXISTING, NEW, OR RELOCATED MECHANICAL DIFFUSERS, LIGHTING FIXTURES, AND OTHER BUILDING ELEMENTS.
3. THE CONTRACTOR SHALL SUBMIT A PROPOSED WIREMOLD LAYOUT (POWER, WAP & DATA OUTLETS) FOR THE CONSULTANT'S REVIEW AND APPROVAL AS PART OF THE SHOP DRAWINGS INCLUDE ALL ASSOCIATED COST IN TENDER PRICE.
4. READ THIS DRAWING IN CONJUNCTION WITH DRAWING E503 & E504.



1 / E302 LEVEL 2 FLOOR PLAN - NEW ELECTRICAL LAYOUT
SCALE: 1 : 50

NEW KEYED NOTES

A UTILIZE EXISTING RECEPTACLE TO FEED THE NEW SURFACE-MOUNTED RECEPTACLE. CONTRACTOR TO SAFELY DISCONNECT EXISTING RECEPTACLE DEVICE. PROVIDE NEW SURFACE-MOUNTED DEVICE BOX WITH BLANK COVER PLATE OVER THE EXISTING BACKBOX & EXTEND EXISTING WIRING TO THE NEW RECEPTACLE C/W NEW WIREMOLD & DEVICE BOXES. PROVIDE PROPER LABELING FOR NEW RECEPTACLE AS REQUIRED. REFER TO FLOOR PLAN.

B OUTLET TO BE INSTALLED RECESSED IN NEW WALL CAVITY & DATA CABLE TO BE FED THROUGH THE WALL FROM ADJACENT ROOM.

C DATA CABLE FOR THIS OUTLET TO BE FED THROUGH THE WALL FROM ADJACENT ROOM.

D PROVIDE POWER CONNECTIONS TO INDOOR AC UNIT WITH NEW LOCAL DISCONNECT SWITCH, WIRING AND SURFACE-MOUNTED WIRMOLD. COORDINATE LOCATION WITH MECHANICAL CONTRACTOR ON SITE PRIOR TO ROUGH-INS.

E PROVIDE POWER CONNECTIONS TO INDOOR AC UNIT WITH NEW LOCAL DISCONNECT SWITCH, WIRING AND SURFACE-MOUNTED WIRMOLD. COORDINATE LOCATION WITH MECHANICAL CONTRACTOR ON SITE PRIOR TO ROUGH-INS.

F PROVIDE CLEAR, WEATHERPROOF RATED ELECTRICAL BOX AND COVER.

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	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 2 FLOOR PLAN - NEW ELECTRICAL LAYOUT

DRAWN BY: JW/GDP
SCALE: As indicated
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER: **E302**
REV. NUMBER

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2026-01-21 2:19:15 PM

NEW GENERAL NOTES

1. ALL NEW RECEPTACLES AND COMMUNICATION OUTLETS SHALL BE SURFACE-MOUNTED.
2. ALL SURFACE-MOUNTED WIREMOLD SHALL BE INSTALLED SO THAT IT DOES NOT INTERFERE WITH EXISTING, NEW, OR RELOCATED MECHANICAL DIFFUSERS, LIGHTING FIXTURES, AND OTHER BUILDING ELEMENTS.
3. THE CONTRACTOR SHALL SUBMIT A PROPOSED WIREMOLD LAYOUT (POWER, WAP & DATA OUTLETS) FOR THE CONSULTANT'S REVIEW AND APPROVAL AS PART OF THE SHOP DRAWINGS INCLUDE ALL ASSOCIATED COST IN TENDER PRICE.
4. READ THIS DRAWING IN CONJUNCTION WITH DRAWING E503 & E504.

1 E303 LEVEL 3 FLOOR PLAN - NEW ELECTRICAL LAYOUT
SCALE: 1 : 50

NEW KEYED NOTES

A CONNECT INDICATED RECEPTACLE TO EXISTING BRANCH WIRING AS REQUIRED.

B UTILIZE EXISTING RECEPTACLE TO FEED THE NEW SURFACE-MOUNTED RECEPTACLE. CONTRACTOR TO SAFELY DISCONNECT EXISTING RECEPTACLE DEVICE. PROVIDE NEW SURFACE-MOUNTED DEVICE BOX WITH BLANK COVER PLATE OVER THE EXISTING BACKBOX & EXTEND EXISTING WIRING TO THE NEW RECEPTACLE C/W NEW WIREMOLD & DEVICE BOXES. PROVIDE PROPER LABELING FOR NEW RECEPTACLE AS REQUIRED. REFER TO FLOOR PLAN.

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	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 3 FLOOR PLAN - NEW ELECTRICAL LAYOUT

DRAWN BY: JW
SCALE: As indicated
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER
E303

REV. NUMBER

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2026-01-21 2:19:17 PM

NEW GENERAL NOTES

1. ALL NEW RECEPTACLES AND COMMUNICATION OUTLETS SHALL BE SURFACE-MOUNTED.
2. ALL SURFACE-MOUNTED WIREMOLD SHALL BE INSTALLED SO THAT IT DOES NOT INTERFERE WITH EXISTING, NEW, OR RELOCATED MECHANICAL DIFFUSERS, LIGHTING FIXTURES, AND OTHER BUILDING ELEMENTS.
3. THE CONTRACTOR SHALL SUBMIT A PROPOSED WIREMOLD LAYOUT (POWER, WAP & DATA OUTLETS) FOR THE CONSULTANT'S REVIEW AND APPROVAL AS PART OF THE SHOP DRAWINGS INCLUDE ALL ASSOCIATED COST IN TENDER PRICE.
4. READ THIS DRAWING IN CONJUNCTION WITH DRAWING E503 & E504.

1 / E304 LEVEL 4 FLOOR PLAN - NEW ELECTRICAL LAYOUT
SCALE: 1 : 50

NEW KEYED NOTES

A CONNECT INDICATED RECEPTACLE TO EXISTING BRANCH WIRING AS REQUIRED.

B UTILIZE EXISTING RECEPTACLE TO FEED THE NEW SURFACE-MOUNTED RECEPTACLE. CONTRACTOR TO SAFELY DISCONNECT EXISTING RECEPTACLE DEVICE. PROVIDE NEW SURFACE-MOUNTED DEVICE BOX WITH BLANK COVER PLATE OVER THE EXISTING BACKBOX & EXTEND EXISTING WIRING TO THE NEW RECEPTACLE C/W NEW WIREMOLD & DEVICE BOXES. PROVIDE PROPER LABELING FOR NEW RECEPTACLE AS REQUIRED. REFER TO FLOOR PLAN.

C UTILIZE EXISTING RECEPTACLE TO FEED THE NEW SURFACE-MOUNTED RECEPTACLE. CONTRACTOR TO EXTEND EXISTING WIRING TO THE NEW RECEPTACLE C/W NEW WIREMOLD & DEVICE BOXES. PROVIDE PROPER LABELING FOR NEW RECEPTACLE AS REQUIRED. EXISTING RECEPTACLE IS TO REMAIN. REFER TO FLOOR PLAN.

D ELECTRICAL CONTRACTOR TO VERIFY EXISTING LOADS ON LIGHTING BRANCH CIRCUITS (CCT. #2, 4, 6, 8, 10, 12, 14, & 16). WHERE FEASIBLE, COMBINE TWO (2) LIGHTING CIRCUITS INTO ONE (1) CIRCUIT TO FREE SPARE CIRCUITS AND BREAKERS. UTILIZE ONE (1) OF THE FREED SPARE CIRCUITS TO FEED THE NEW WINDOW A/C UNIT IN LAB #405.

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	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 4 FLOOR PLAN - NEW ELECTRICAL LAYOUT

DRAWN BY: JW/GDP
SCALE: As indicated
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER: **E304**
REV. NUMBER

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2026-01-21 2:19:18 PM

NEW GENERAL NOTES

1. ALL NEW RECEPTACLES AND COMMUNICATION OUTLETS SHALL BE SURFACE-MOUNTED.
2. ALL SURFACE-MOUNTED WIREMOLD SHALL BE INSTALLED SO THAT IT DOES NOT INTERFERE WITH EXISTING, NEW, OR RELOCATED MECHANICAL DIFFUSERS, LIGHTING FIXTURES, AND OTHER BUILDING ELEMENTS.
3. THE CONTRACTOR SHALL SUBMIT A PROPOSED WIREMOLD LAYOUT (POWER, WAP & DATA OUTLETS) FOR THE CONSULTANT'S REVIEW AND APPROVAL AS PART OF THE SHOP DRAWINGS INCLUDE ALL ASSOCIATED COST IN TENDER PRICE.
4. READ THIS DRAWING IN CONJUNCTION WITH DRAWING E503 & E504.

1 E307 LEVEL 7 FLOOR PLAN - NEW ELECTRICAL LAYOUT
SCALE: 1 : 50

NEW KEYED NOTES

A CONNECT INDICATED RECEPTACLE TO EXISTING BRANCH WIRING AS REQUIRED.

B UTILIZE EXISTING RECEPTACLE TO FEED THE NEW SURFACE-MOUNTED RECEPTACLE. CONTRACTOR TO SAFELY DISCONNECT EXISTING RECEPTACLE DEVICE. PROVIDE NEW SURFACE-MOUNTED DEVICE BOX WITH BLANK COVER PLATE OVER THE EXISTING BACKBOX & EXTEND EXISTING WIRING TO THE NEW RECEPTACLE C/W NEW WIREMOLD & DEVICE BOXES. PROVIDE PROPER LABELING FOR NEW RECEPTACLE AS REQUIRED. REFER TO FLOOR PLAN.

C PROVIDE ONE (1) 2" EMPTY CONDUIT WITH PULL STRING FROM THE PROPOSED IT CABINET TO CEILING SPACE AND ONE (1) EMPTY CONDUIT WITH PULL STRING FROM THE PROPOSED IT CABINET TO IT ROOM #T615T . COORDINATE EXACT LOCATION WITH COMMUNICATION CONTRACTOR PRIOR TO INSTALLATION. REFER TO DRAWING E503 FOR DETAILS.

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	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 7 FLOOR PLAN - NEW ELECTRICAL LAYOUT

DRAWN BY: JW
SCALE: As indicated
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER
E307

REV. NUMBER

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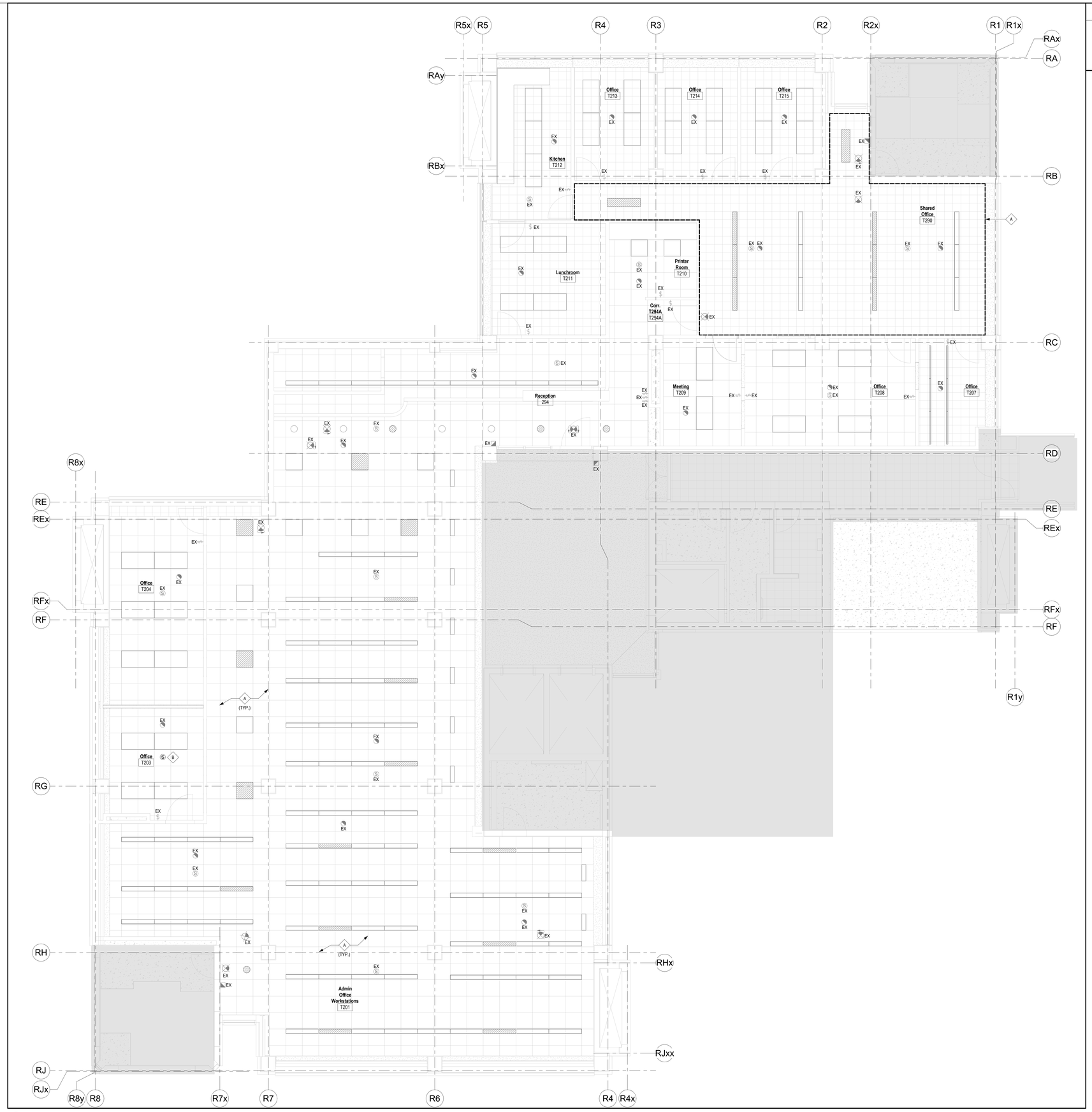

1 E312 LEVEL 2 FLOOR PLAN - NEW LIGHTING LAYOUT
SCALE: 1 : 50

NEW KEYED NOTES

A EMERGENCY LIGHTING LAYOUT SHOWN IN THE WORK AREA IS NEW. THE ELECTRICAL CONTRACTOR SHALL CONNECT EXISTING LUMINAIRES TO THE NEAREST EMERGENCY LIGHTING CIRCUIT(S) WITH SPARE CAPACITY. PROVIDE NEW CIRCUIT(S) AND BREAKER(S) WITHIN THE EXISTING EMERGENCY LIGHTING PANEL AS REQUIRED.

B PROVIDE NEW FIRE ALARM SPEAKER TO MATCH EXISTING AND CONNECT TO NEAREST EXISTING FIRE ALARM CIRCUIT WITH SPARE CAPACITY TO SUIT.

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KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 2 FLOOR PLAN - NEW LIGHTING LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER
E312
REV. NUMBER

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1 E313 LEVEL 3 FLOOR PLAN - NEW LIGHTING LAYOUT
SCALE: 1 : 50

NEW KEYED NOTES

A EMERGENCY LIGHTING LAYOUT SHOWN IN THE WORK AREA IS NEW. THE ELECTRICAL CONTRACTOR SHALL CONNECT EXISTING LUMINAIRES TO THE NEAREST EMERGENCY LIGHTING CIRCUIT(S) WITH SPARE CAPACITY. PROVIDE NEW CIRCUIT(S) AND BREAKER(S) WITHIN THE EXISTING EMERGENCY LIGHTING PANEL AS REQUIRED.

B CONNECT NEW EMERGENCY EXIT SIGN AS SPECIFIED TO EXISTING EMERGENCY LIGHTING CIRCUIT WITH SPARE CAPACITY TO SUIT. MODIFY AND/OR EXTEND EXISTING BRANCH CIRCUIT AS REQUIRED.

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481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 3 FLOOR PLAN - NEW LIGHTING LAYOUT

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REVIEWED BY: SG
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NORTH POINT

DRAWING NUMBER: **E313**
REV. NUMBER

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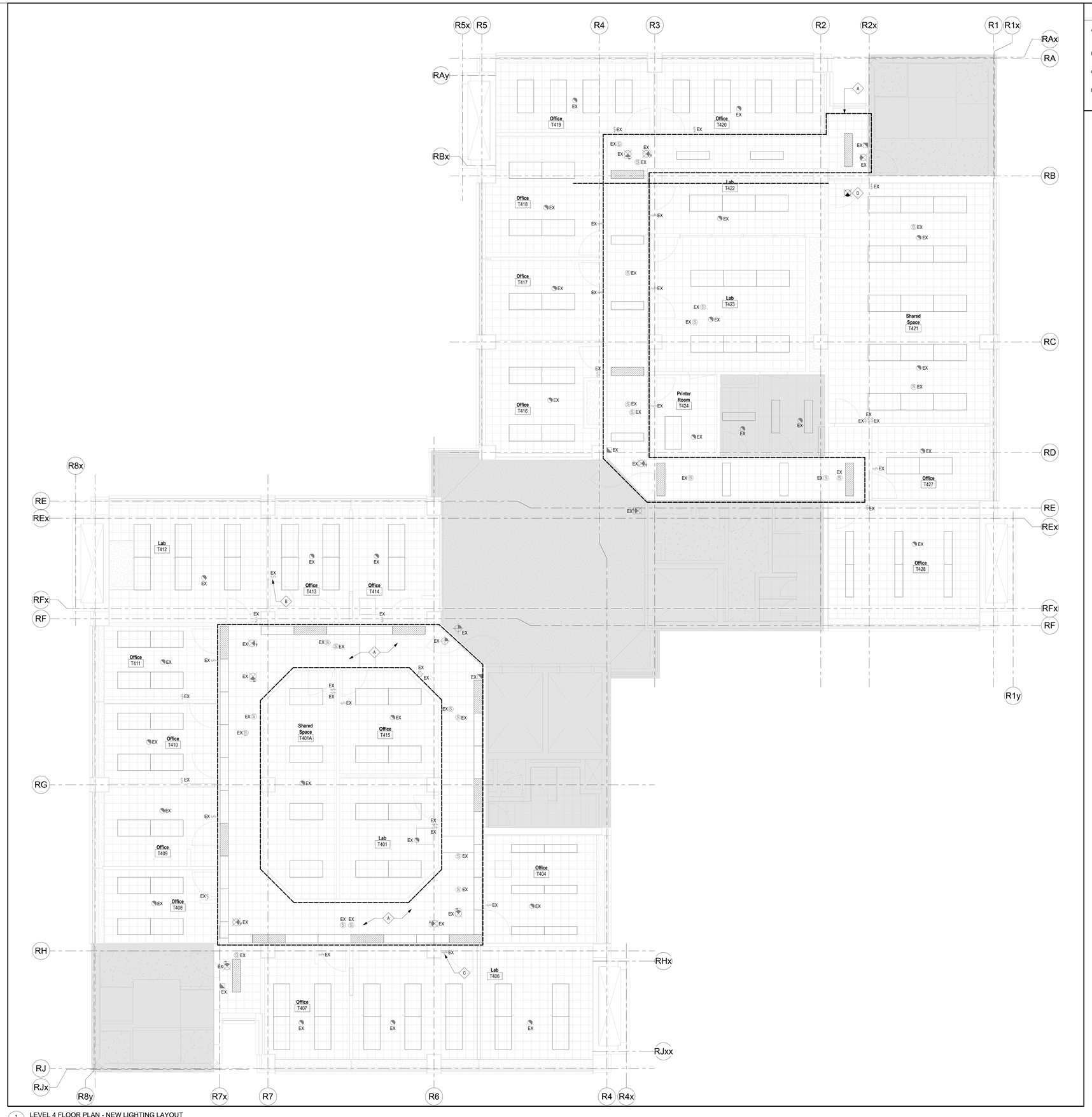

1 / E314 LEVEL 4 FLOOR PLAN - NEW LIGHTING LAYOUT

SCALE: 1 : 50

NEW KEYED NOTES

A EMERGENCY LIGHTING LAYOUT SHOWN IN THE WORK AREA IS NEW. THE ELECTRICAL CONTRACTOR SHALL CONNECT EXISTING LUMINAIRES TO THE NEAREST EMERGENCY LIGHTING CIRCUIT(S) WITH SPARE CAPACITY. PROVIDE NEW CIRCUIT(S) AND BREAKER(S) WITHIN THE EXISTING EMERGENCY LIGHTING PANEL AS REQUIRED.

B MODIFY EXISTING LIGHTING CIRCUIT TO ENSURE ALL EXISTING LIGHTS IN OFFICE #T413 TO BE CONTROLED BY THE EXISTING LIGHTING SWITCH AS INDICATED.

C MODIFY EXISTING LIGHTING CIRCUIT TO ENSURE ALL EXISTING LIGHTS IN OFFICE #T405 TO BE CONTROLED BY THE EXISTING LIGHTING SWITCH AS INDICATED.

D CONNECT NEW EMERGENCY EXIT SIGN AS SPECIFIED TO EXISTING EMERGENCY LIGHTING CIRCUIT WITH SPARE CAPACITY TO SUIT. MODIFY AND/OR EXTEND EXISTING BRANCH CIRCUIT AS REQUIRED.

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KEY PLAN (NTS)

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PROJECT TITLE:
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Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 4 FLOOR PLAN - NEW LIGHTING LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09

UNIVERSITY PROJECT NUMBER: P164-25-078

NORTH POINT

DRAWING NUMBER: **E314**

REV. NUMBER

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2026-01-21 2:28:55 PM

1 E317 LEVEL 7 FLOOR PLAN - NEW LIGHTING LAYOUT
SCALE: 1 : 50

NEW KEYED NOTES

A EMERGENCY LIGHTING LAYOUT SHOWN IN THE WORK AREA IS NEW. THE ELECTRICAL CONTRACTOR SHALL CONNECT EXISTING LUMINAIRES TO THE NEAREST EMERGENCY LIGHTING CIRCUIT(S) WITH SPARE CAPACITY. PROVIDE NEW CIRCUIT(S) AND BREAKER(S) WITHIN THE EXISTING EMERGENCY LIGHTING PANEL AS REQUIRED.

B MODIFY EXISTING LIGHTING CIRCUIT TO ENSURE ALL EXISTING LIGHTS IN OFFICE #T701 TO BE CONTROLED BY THE EXISTING LIGHTING SWITCHES AS INDICATED.

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KEY PLAN (NTS)

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PROJECT TITLE:
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Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
LEVEL 7 FLOOR PLAN - NEW LIGHTING LAYOUT

DRAWN BY: JW
SCALE: 1 : 50
REVIEWED BY: SG
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NORTH POINT

DRAWING NUMBER: **E317**

REV. NUMBER

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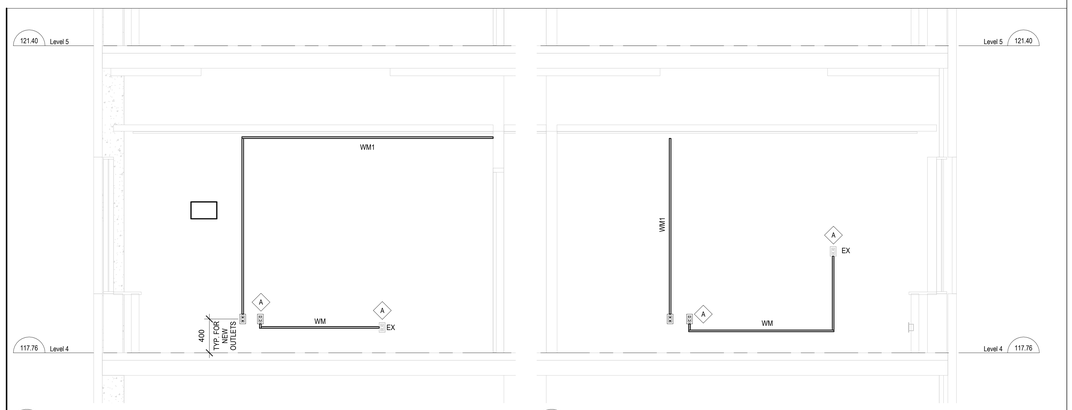
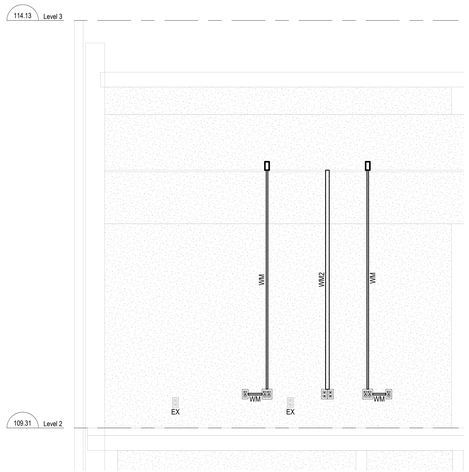
NEW KEYED NOTES

A UTILIZE EXISTING RECEPTACLE TO FEED THE NEW SURFACE-MOUNTED RECEPTACLE. CONTRACTOR TO SAFELY DISCONNECT EXISTING RECEPTACLE DEVICE. PROVIDE NEW SURFACE-MOUNTED DEVICE BOX WITH BLANK COVER PLATE OVER THE EXISTING BACKBOX & EXTEND EXISTING WIRING TO THE NEW RECEPTACLE C/W NEW WIREMOLD & DEVICE BOXES. PROVIDE PROPER LABELING FOR NEW RECEPTACLE AS REQUIRED. REFER TO FLOOR PLAN.

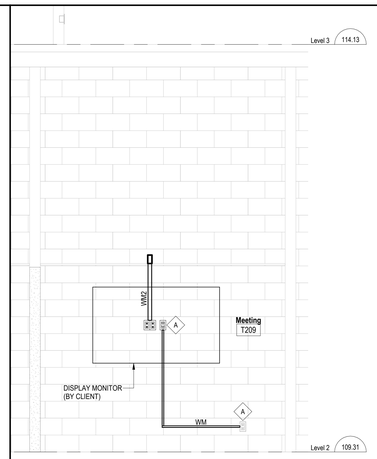


b E401 **ELEVATION - ROOM #T428 WEST WALL WIREMOLD LAYOUT**
1 : 25

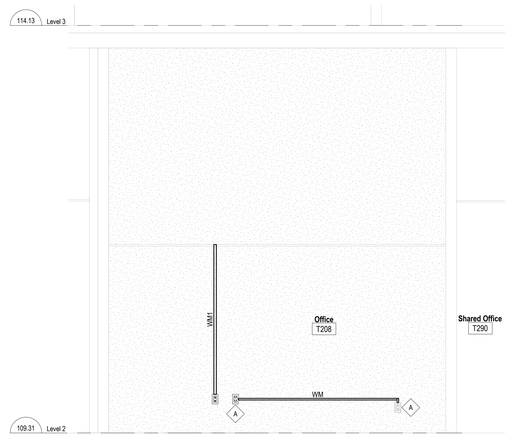
a E401 **ELEVATION - ROOM #T428 EAST WALL WIREMOLD LAYOUT**
1 : 25



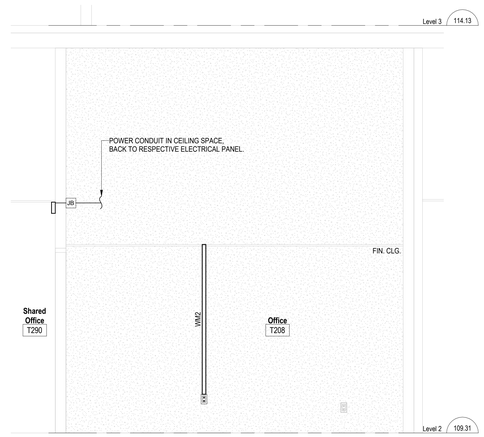
8 E401 **ELEVATION - OPEN OFFICE #T201 NORTH WALL WIREMOLD LAYOUT**
1 : 25



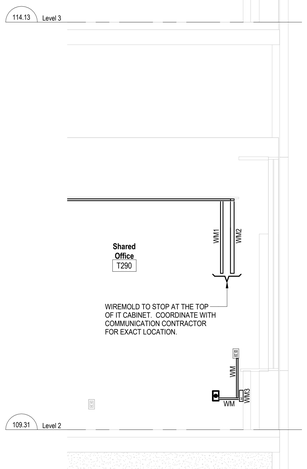
7 E401 ELEVATION - OFFICE #T209 SOUTH WALL WIREMOLD LAYOUT
SCALE: 1 : 25



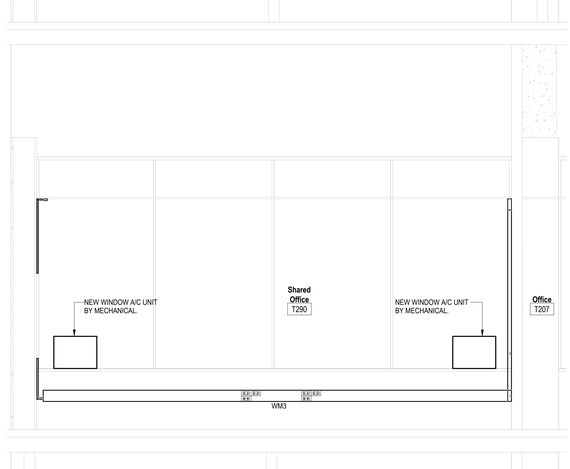
6 E401 ELEVATION - OFFICE #T208 WEST WALL WIREMOLD LAYOUT
SCALE: 1 : 25



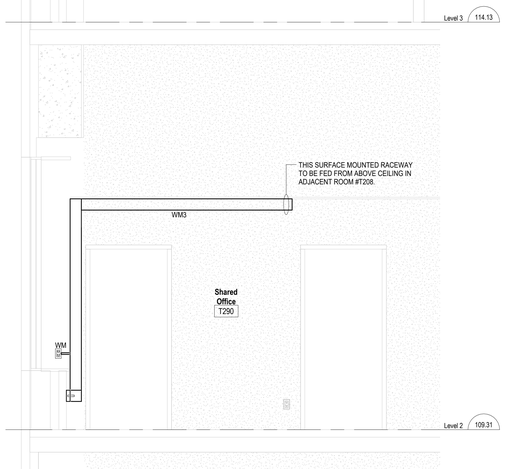
5 E401 ELEVATION - OFFICE #T208 EAST WALL WIREMOLD LAYOUT
SCALE: 1 : 25



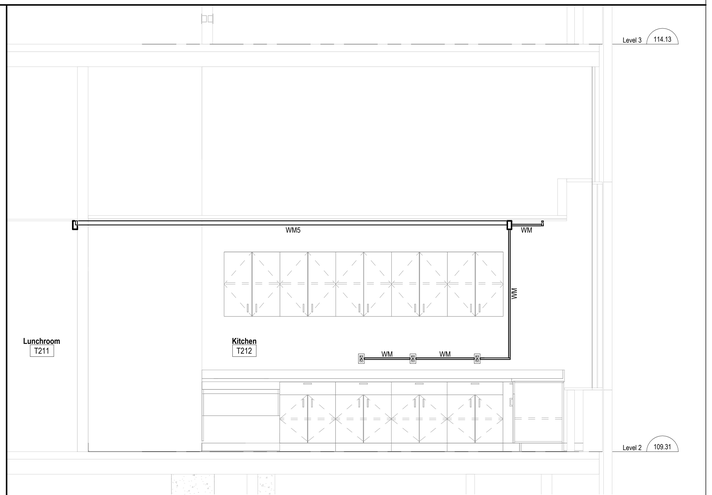
4 E401 ELEVATION - OFFICE #T290 NORTH WALL WIREMOLD LAYOUT
SCALE: 1 : 25



3 E401 ELEVATION - OFFICE #T290 EAST WALL WIREMOLD LAYOUT
SCALE: 1 : 25



2 E401 ELEVATION - OFFICE #T290 SOUTH WALL WIREMOLD LAYOUT
SCALE: 1 : 25



1 E401 ELEVATION - KITCHEN #T212 WEST WALL WIREMOLD LAYOUT
SCALE: 1 : 25

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REV.	DESCRIPTION	DATE
	ISSUED FOR TENDER	2026-01-21
	ISSUED FOR T&S REVIEW	2026-01-16
	ISSUED FOR PERMIT	2026-01-14
	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
ELECTRICAL ELEVATIONS

DRAWN BY: GDP
SCALE: 1 : 25
REVIEWED BY: JW
DATE CREATED: 2025-09

UNIVERSITY PROJECT NUMBER: P164-25-078

NORTH POINT

DRAWING NUMBER
E401

REV. NUMBER

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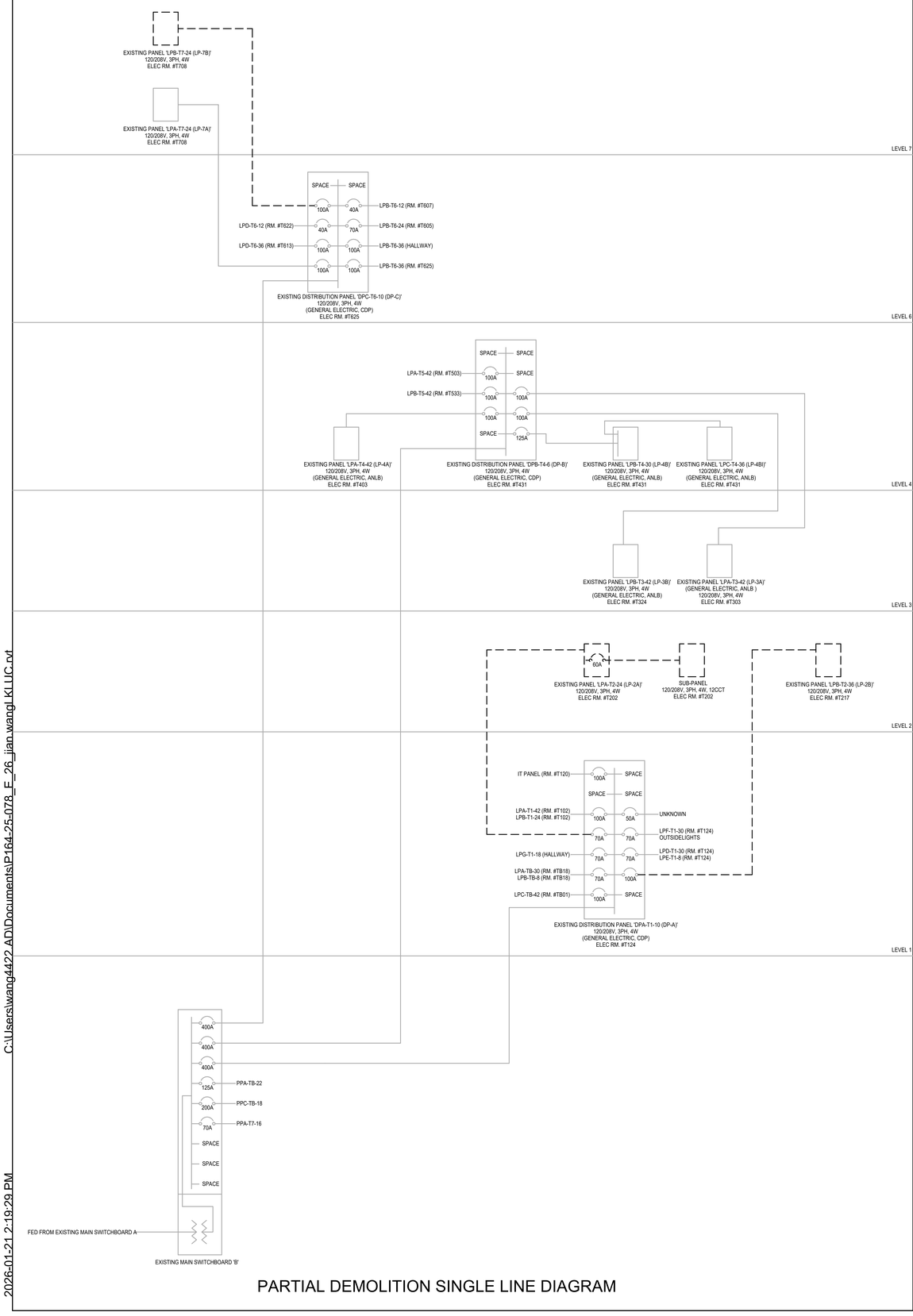
NEW KEYED NOTES

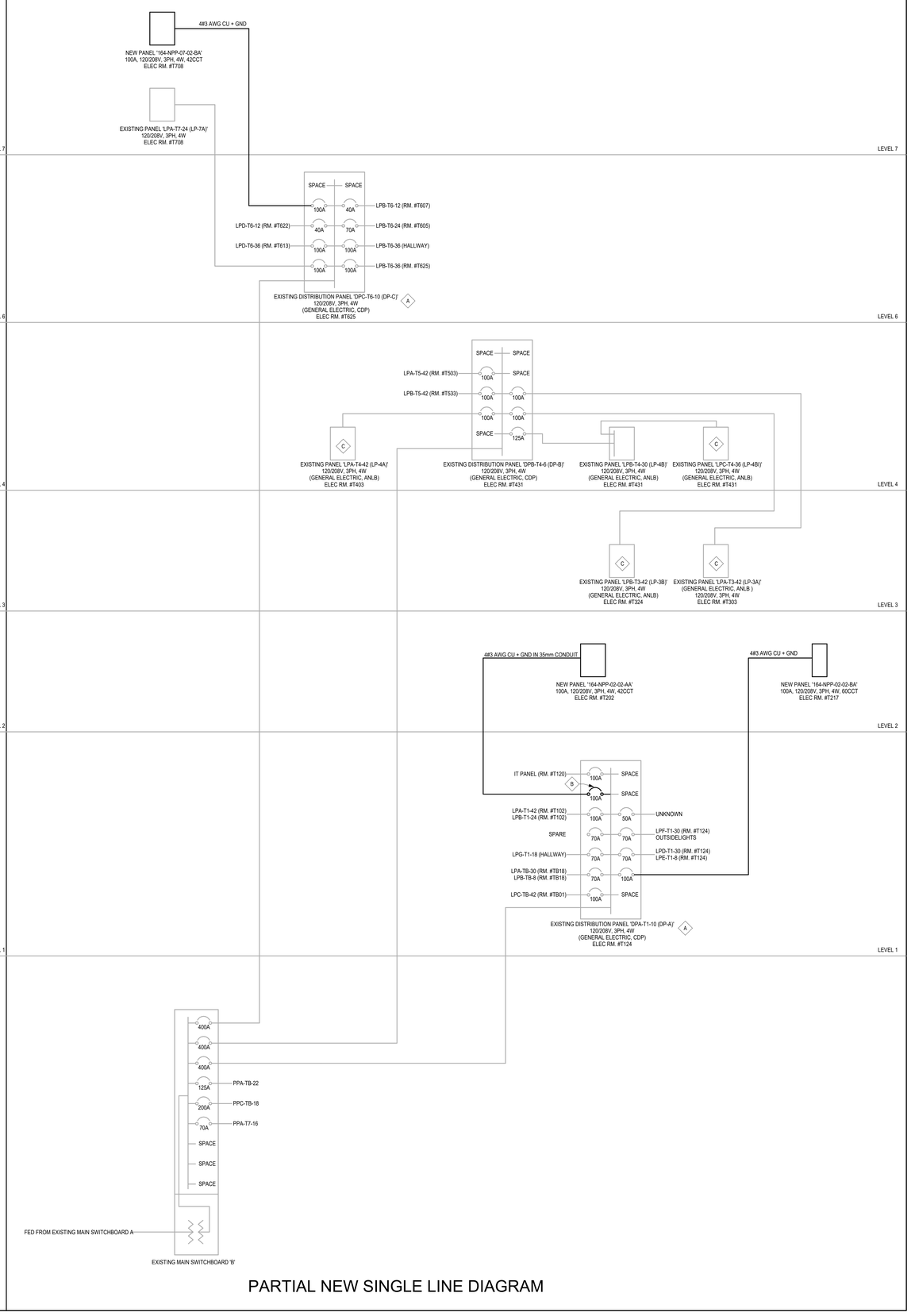
A PROVIDE NEW PANELS AS INDICATED IN PANELS SCHEDULE. PROVIDE ARC FLASH STUDY IN ETAP VERSION 24 & AFFIX ARC FLASH LABELS ON PANELS AFTER INSTALLATION IS COMPLETE.

B PROVIDE NEW 100A/3P BREAKER IN EXISTING PANEL TO FEED THE NEW PANEL AS INDICATED.

C PROVIDE NEW CIRCUIT BREAKERS IN EXISING PANEL. REFER TO PANEL SCHEDULE FOR DETAILS.



PARTIAL DEMOLITION SINGLE LINE DIAGRAM



PARTIAL NEW SINGLE LINE DIAGRAM

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REV.	DESCRIPTION	DATE
	ISSUED FOR TENDER	2026-01-21
	ISSUED FOR F&S REVIEW	2026-01-16
	ISSUED FOR PERMIT	2026-01-14
	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
DEMOLITION & NEW SINGLE LINE DIAGRAMS

DRAWN BY: JW/GDP
SCALE: 1 : 50
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER
E501
REV. NUMBER

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BLDG #: 164 PANEL TAG: 164-NPP-02-02-AA DATE MODIFIED:

CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND	DESCRIPTION (Item, Room Number[s]):	BKR (A)	CT		CT	BKR (A)	DESCRIPTION (Item, Room Number[s]):	CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND
		0	PLUGS JIFFY POLE RM T201	15A	1	A	2	20A	T201 - WORKSTATIONS (X4)	1200	0.80	960
		0	PLUGS JIFFY POLE	15A	3	B	4	20A	T201 - WORKSTATIONS (X4)	1200	0.80	960
		0	LIGHTS AUDIO VIDEO RM	15A	5	C	6	20A	T201 - WORKSTATIONS (X4)	1200	0.80	960
		0	EXISTING LOADS	15A	7	A	8	20A	T201 - WORKSTATIONS (X4)	1200	0.80	960
		0	PLUGS RM T201	15A	9	B	10	20A	T201 - WORKSTATIONS (X4)	1200	0.80	960
		0	PLUG LIBRARY	15A	11	C	12	20A	T201 - WORKSTATIONS (X2)	600	0.80	480
		0	PLUS & LIGHTS	15A	13	A	14	20A	T201 - WORKSTATIONS (X4)	1200	0.80	960
		0	PLUGS JIFFY POLE RM T201	15A	15	B	16	20A	T294 - PRINTER	500	0.50	250
		0	PLUGS OPEN OFFICE JIFFY POLE	15A	17	C	18	15A / 2P	T201 - INDOOR AC UNITS (IDU-201-1, IDU-201-2 & IDU-201-3)	100	0.50	50
		0	PLUGS JIFFY POLE RM T201	15A	19	A	20			100	0.50	50
		0	PLUG	15A	21	B	22	30A / 2P	T201 - OUTDOOR CONDENSING UNIT (ODU-201-1)	3000	0.50	1500
		0	EXISTING LOADS	15A	23	C	24			3000	0.50	1500
		0	EXISTING LOADS	15A	25	A	26	20A	OUTDOOR RECEPTACLE	200	0.50	100
		0	EXISTING LOADS	15A	27	B	28		SPACE			0
		0	EXISTING LOADS	20A	29	C	30		SPACE			0
		0	EXISTING LOADS	20A	31	A	32		SPACE			0
		0	EXISTING LOADS	20A	33	B	34	15A	SPARE			0
		0	PLIG LIBRARY	20A	35	C	36	20A	SPARE			0
		0	HK PLUG	20A	37	A	38	2A	SPARE			0
		0	EXISTING LOADS	20A	39	B	40	20A	T201 - IT RECEPTACLE	1000	0.50	500
		0	EXISTING LOADS	20A	41	C	42	20A	T201 - IT RECEPTACLE	1000	0.50	500

BLDG: 164 FLOOR: 2 ROOM: T202 NEW TAG: 164-NPP-02-02-AA

RATINGS:	100A	120/208V	3 PHASE	4 WIRE	S.C.:	10kA/C

FED FROM:	PANEL TAG:	BLDG #:	ROOM #:	BREAKER SIZE	FEEDER SIZE:
	DPA-T1-10 (DP-A)	164	T124	100A	4#3 AWG CU + GND

BLDG #: 164 PANEL TAG: 164-NPP-02-02-BA DATE MODIFIED:

CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND	DESCRIPTION (Item, Room Number[s]):	BKR (A)	CT		CT	BKR (A)	DESCRIPTION (Item, Room Number[s]):	CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND
		0	LIGHTS RM T216 & XEROX RM	15A	1	A	2	15A	LIGHTS IN STAIRWELL			0
		0	PLUGS IN OFFICE	15A	3	B	4	15A	LIGHTS IN LOBBY			0
		0	LIGHTS OFFICE	15A	5	C	6	15A	PLUG RM T211			0
		0	LIGHTS RM T215	15A	7	A	8	15A	PLUG LIBRARY, OPEN AREA LIGHTS RM T212			0
		0	LIGHTS RM T214	15A	9	B	10	15A	LIGHTS RM T213			0
		0	LIGHTS CORRIDOR	15A	11	C	12	15A	LIGHTS RM T211			0
		0	UNIT HEATER IN HALLWAY	15A	13	A	14	15A	LIGHTS RM T217, T218 & T219			0
		0	PLUGS RM T215, T214 & T213	15A	15	B	16	15A	PLUGS RM T215			0
		0	EXISTING LOADS	15A	17	C	18	15A	PLUGS RM T215 T 214			0
		0	HK PLUGS RM T316, OFFICE SPACE, OPEN AREA	15A	19	A	20	15A	PLUGS RM T213			0
		0	HK PLUGS RM T216, OFFICE SPACE, OPEN AREA	15A	21	B	22	15A	PLUGS RM T212			0
		0	PLUG XEROX MACH. & RM T216, T217, T218	15A	23	C	24	15A	PLUGS RM T211			0
		0	DOOR ALARM	15A	25	A	26	15A	SHOW CASE LIGHTS			0
		0	ELECTRICAL ROOM PLUG	15A	27	B	28	15A	PLUG 20AP XEROX MACHINE			0
		0	HANDICAP DOOR	15A	29	C	30	15A	PLUG RM T316			0
		0	PLUG RM T316	15A	31	A	32	20A	EXISTING LOADS			0
		0	EXISTING LOADS	15A	33	B	34	15A	EXISTING LOADS			0
		0	EXISTING LOADS	15A	35	C	36	20A	EXISTING LOADS			0
1200	0.80	960	T290 - WORKSTATIONS (X4)	20A	37	A	38	20A	T212 - MICROWAVE	1000	0.80	800
1000	0.50	500	T290 - IT RECEPTACLE	20A	39	B	40	20A	T212 - MICROWAVE	1000	0.80	800
870	0.50	435	T290 - INDOOR AC UNIT	15A	41	C	42	20A	T212 - COFFEE MACHINE	1000	0.80	800
870	0.50	435	T290 - INDOOR AC UNIT	15A	43	A	44	15A	T212 - FRIDGE	500	0.80	400
		0	SPARE	15A	45	B	46	15A	SPARE			0
		0	SPARE	15A	47	C	48	15A	SPARE			0
		0	SPARE	15A	49	A	50	15A	SPARE			0
		0	SPACE		51	B	52		SPACE			0
		0	SPACE		53	C	54		SPACE			0
		0	SPACE		55	A	56		SPACE			0
		0	SPACE		57	B	58		SPACE			0
		0	SPACE		59	C	60		SPACE			0

BLDG: 164 FLOOR: 2 ROOM: T217 NEW TAG: 164-NPP-02-02-BA

RATINGS:	~A	120/208V	3 PHASE	4 WIRE	S.C.:	10kA/C

FED FROM:	PANEL TAG:	BLDG #:	ROOM #:	BREAKER SIZE	FEEDER SIZE:
	DPA-T1-10 (DP-A)	164	T124	100A	4#3 AWG CU + GND

BLDG #: 164 PANEL TAG: LPA-T3-42 (LP-3A) DATE MODIFIED:

CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND	DESCRIPTION (Item, Room Number[s]):	BKR (A)	CT		CT	BKR (A)	DESCRIPTION (Item, Room Number[s]):	CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND
		0	LIGHTS RM T305	15A	1	A	2	15A	LIGHTS RM T308			0
		0	LIGHTS RM T306	15A	3	B	4	15A	LIGHTS RM T311 & PLUGS			0
		0	LIGHTS RM T307	15A	5	C	6	15A	LIGHTS RM T311			0
		0	LIGHTS RM T303, T304	15A	7	A	8	15A	LIGHTS RM T311 & PLUGS			0
		0	LIGHTS RM T301	15A	9	B	10	15A	LIGHTS RM T312			0
		0	LIGHTS RM T301	15A	11	C	12	15A	LIGHTS RM T311			0
		0	HALLWAY LIGHTS	15A	13	A	14	15A	PLUGS RM T304			0
		0	HALLWAY LIGHTS	15A	15	B	16	15A	LIGHTS RM T314			0
		0	B.B. HEATER RM T308	15A	17	C	18	15A	LIGHTS RM T314 & RAZOR PLUG RM T302			0
		0	HK PLUG	15A	19	A	20	15A	PLUGS RM T311			0
		0	HK PLUG	20A	21	B	22	15A	PLUGS RM T312			0
		0	PLUGS RM T311	15A	23	C	24	15A	EXISTING LOADS			0
		0	PLUGS RM T306, T307	15A	25	A	26	15A	FLOOR PLUGS T305			0
		0	PLUGS RM T301	15A	27	B	28	15A	HWALLWAY PRINTER			0
		0	PLUGS RM T301	15A	29	C	30	15A	PLUGS RM T308			0
		0	PLUGS RM T304	15A	31	A	32	15A	PLUGS RM T308			0
		0	PLUGS RM T304	15A	33	B	34	15A	PLUGS RM T301			0
		0	PLUGS RM T303	15A	35	C	36	15A	PLUGS RM T312			0
1200	0.80	960	T301 - WORKSTATIONS (X4)	20A	37	A	38	15A	PLUGS RM T312			0
900	0.80	720	T301 - WORKSTATIONS (X2) & TV	20A	39	B	40	15A	PLUGS RM T312			0
1000	0.50	500	T301 - IT RECEPTACLE	20A	41	C	42		SPACE			0

BLDG: 164 FLOOR: 3 ROOM: T303 NEW TAG:

RATINGS:	100A	120/208V	3 PHASE	4 WIRE	S.C.:	

FED FROM:	PANEL TAG:	BLDG #:	ROOM #:	BREAKER SIZE	FEEDER SIZE:
	DPB-T4-6 (DP-B)	164	T431	100A	

BLDG #: 164 PANEL TAG: LPB-T3-42 (LP-3B) DATE MODIFIED:

CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND	DESCRIPTION (Item, Room Number[s]):	BKR (A)	CT		CT	BKR (A)	DESCRIPTION (Item, Room Number[s]):	CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND
		0	LIGHTS RM T321, T324, T325, T326	15A	1	A	2	15A	LIGHTS RM T315A & LOBBY			0
		0	LIGHTS RM T321	15A	3	B	4	15A	LIGHTS RM T315			0
		0	LIGHTS RM T321	15A	5	C	6	15A	LIGHTS RM T316			0
		0	LIGHTS RM T320 & T320A	15A	7	A	8	15A	PLUGS & LIGHTS RM T315 PLUGS RM T316			0
		0	PLUGS & LIGHTS T320, LIGHTS RM T328 & HALLWAY	15A	9	B	10	15A	LIGHTS RM T318			0
		0	HALLWAY LIGHTS	15A	11	C	12	15A	PLUGS & LIGHTS RM T319			0
		0	LIGHTS RM T323 & T322	15A	13	A	14	15A	PLUGS RM T329, T320A & T316			0
		0	PLUGS RM T315 & T315A HALLWAY LIGHTS	15A	15	B	16	15A	PLUGS RM T320 HK PLUG			0
		0	PLUGS RM T321	15A	17	C	18	15A	HK PLUG			0
		0	PLUGS RM T318-28-23 FLOOR PLUGS HALLWAY	15A	19	A	20	15A	FLOOR PLUG RM T315			0
		0	PLUGS RM T325 & T324	15A	21	B	22	30A / 2P	EXISTING LOADS			0
		0	SPARE	15A	23	C	24					0
		0	PLUGS RM T321 & T322	15A	25	A	26	15A	PLUGS RM T327			0
		0	PLUGS RM T320A & T321	15A	27	B	28	15A	PLUGS RM T327			0
		0	EXISTING LOADS	15A	29	C	30	15A	PLUGS RM T327			0
		0	EXISTING LOADS	15A	31	A	32	15A	PLUGS RM T327			0
		0	EXISTING LOADS	15A	33	B	34	20A	XEROX			0
		0	EXISTING LOADS	15A	35	C	36	15A	HEATER RM T317			0
600	0.80	480	T322- WORKSTATION T321 - RECEPTACLES (X2)	15A	37	A	38	15A	T321 - WINDOW AC UNIT	870	0.50	435
1200	0.80	960	T328 - WORKSTATIONS (X4)	20A	39	B	40	20A	T328 - IT CABINET	1000	0.50	500
1000	0.80	800	T321 - IT CABINET	20A	41	C	42		SPACE			0

BLDG: 164 FLOOR: 3 ROOM: T324 NEW TAG:

RATINGS:	100A	120/208V	3 PHASE	4 WIRE	S.C.:	

FED FROM:	PANEL TAG:	BLDG #:	ROOM #:	BREAKER SIZE	FEEDER SIZE:
	DPB-T4-6 (DP-B)	164	T431	100A	

BLDG #: 164 PANEL TAG: LPA-4T-42 (LP-4A) DATE MODIFIED:

CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND	DESCRIPTION (Item, Room Number[s]):	BKR (A)	CT		CT	BKR (A)	DESCRIPTION (Item, Room Number[s]):	CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND
		0	LIGHTS RM T406	15A	1	A	2	15A	T405 - WINDOW AC UNIT	870	0.50	435
		0	LIGHTS RM T406	15A	3	B	4	15A	LIGHTS RM T408 & T409			0
		0	LIGHTS RM T407	15A	5	C	6	15A	LIGHTS RM T410			0
		0	LIGHTS RM T404 & T403	15A	7	A	8	15A	LIGHTS RM T411			0
		0	EXISTING LOADS	15A	9	B	10	15A	LIGHTS RM T412			0
		0	LIGHTS RM T401	15A	11	C	12	15A	LIGHTS RM T413			0
		0	HALLWAY LIGHTS	15A	13	A	14	15A	LIGHTS RM T414			0
		0	HALLWAY LIGHTS	15A	15	B	16	15A	LIGHTS RM T415			0
		0	PRINTER HALL	15A 15A	17	C	18	15A	PLUG RM T408 & T409			0
		0	HK PLUG & LIGHT T401A	15A	19	A	20	15A	PLUG RM T410			0
		0	HK PLUG & RAZOR PLUG T403	15A	21	B	22	15A	PLUG RM T409			0
		0	PLUG RM T404 & T406	15A	23	C	24	15A	PLUG RM T412 & T414			0
		0	PLUG RM T406	15A	25	A	26	15A	PLUG RM T414			0
		0	PLUG RM T406	15A	27	B	28	20A	T401A - IT CABINET	1000	0.50	500
		0	PLUG RM T406 & T407	15A	29	C	30	15A	EXISTING LOADS			0
		0	PLUG RM T415	15A	31	A	32	15A	FLOOR PLUG RM T411, T412 & T413			0
		0	PLUG RM T401 & T401A	15A	33	B	34	15A	PLUG RM T404 FLOOR PLUG RM T407			0
		0	PLUG RM T415	15A	35	C	36	15A	PLUG RM T409 FLOOR PLUG RM T409 & T410			0
		0	PLUG RM T415	15A	37	A	38	15A / 2P	EXISTING LOADS			0
1500	0.80	1200	T412 - WORKSTATIONS (X5)	20A	39	B	40					0
870	0.80	696	T405 - WINDOW AC UNIT	15A	41	C	42	15A	EXISTING LOADS			0

BLDG: 164 FLOOR: 4 ROOM: T403 NEW TAG: LPA-4T-42 (LP-4A)

RATINGS:	100A	120/208V	3 PHASE	4 WIRE	S.C.:	

FED FROM:	PANEL TAG:	BLDG #:	ROOM #:	BREAKER SIZE	FEEDER SIZE:
	DPB-T4-6 (DP-B)	164	T431	100A	

BLDG #: 164 PANEL TAG: LPC-4T-36 (LP-4BI) DATE MODIFIED:

CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND	DESCRIPTION (Item, Room Number[s]):	BKR (A)	CT		CT	BKR (A)	DESCRIPTION (Item, Room Number[s]):	CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND
		0	EXISTING LIGHTS	15A	1	A	2	15A	MAG-LOCK			0
		0	LIGHTS RM T427	15A	3	B	4	15A	LIGHTS HALLWAY			0
		0	LIGHTS RM T421	15A	5	C	6	15A	LIGHTS RM T416			0
		0	LIGHTS RM T421	15A	7	A	8	15A	LIGHTS RM T417 & T418			0
		0	LIGHTS RM T421	15A	9	B	10	15A	LIGHTS RM T418			0
		0	LIGHTS RM T425 & T426	15A	11	C	12	20A	LIGHTS RM T419			0
		0	FLOOR PLUG RM T428, T419 &T421	15A	13	A	14	20A / 2P	LIGHTS RM T420			0
		0	LIGHTS RM T423	15A	15	B	16					0
		0	EXISTING LOADS	15A	17	C	18		SPACE			0
		0	EXISTING LOADS	15A	19	A	20		SPACE			0
900	0.80	720	T421 - WORKSTATIONS (X3)	15A	21	B	22		SPACE			0
900	0.80	720	T421 - WORKSTATIONS (X3)	15A	23	C	24		SPACE			0
600	0.80	480	T421 - WORKSTATIONS (X2)	15A	25	A	26		SPACE			0
870	0.50	435	T421 - WINDOW AC UNIT	15A	27	B	28		SPACE			0
		0	SPACE		29	C	30		SPACE			0
		0	SPACE		31	A	32		SPACE			0
		0	SPACE		33	B	34		SPACE			0
		0	SPACE		35	C	36		SPACE			0

BLDG: 164 FLOOR: 4 ROOM: T431 NEW TAG: LPC-4T-36 (LP-4BI)

RATINGS:	225A	120/208V	3 PHASE	4 WIRE	S.C.:	

FED FROM:	PANEL TAG:	BLDG #:	ROOM #:	BREAKER SIZE	FEEDER SIZE:
	DPB-T4-6 (DP-B)	164	T431	100A	

BLDG #: 164 PANEL TAG: 164-NPP-07-02-BA DATE MODIFIED:

CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND	DESCRIPTION (Item, Room Number[s]):	BKR (A)	CT		CT	BKR (A)	DESCRIPTION (Item, Room Number[s]):	CONNECTED LOAD (W)	DEMAND FACTOR	TOTAL DEMAND
		0	EXISTING LOADS	15A	1	A	2	15A	WALL PLUGS RM T701 & T702			0
		0	EXISTING LOADS	15A	3	B	4	15A	WALL PLUGS RM T703 & WATER COOLER			0
		0	EXISTING LOADS	15A	5	C	6	15A	PLUGS NW WALL & RM T705, T706, T707			0
		0	EXISTING LOADS	15A	7	A	8	15A	LITE OPEN AREA & T707			0
		0	EXISTING LOADS	15A	9	B	10	15A	COMMUNICATION EQUIPMENT			0
		0	COPIER	15A	11	C	12	15A	FURNITURE CENTRE			0
		0	COPIER	15A	13	A	14	15A	FURNITURE CENTRE			0
		0	NORTH EAST PLUGS	15A	15	B	16	15A	FURNITURE CENTRE			0
		0	NORTH EAST PLUGS	15A	17	C	18	15A	FURNITURE CENTRE			0
		0	NORTH EAST PLUGS	15A	19	A	20	15A	FURNITURE NORTH WEST			0
		0	NORTH EAST PLUGS	15A	21	B	22	15A	FURNITURE NORTH WEST			0
		0	EXISTING LOADS	15A	23	C	24	15A	FURNITURE NORTH WEST			0
1200	0.80	960	T794 - WORKSTATIONS (X4)	20A	25	A	26	20A	IT CABINET RECEPTACLE	1000	0.50	500
600	0.80	480	T794 - WORKSTATIONS (X2)	15A	27	B	28	20A	IT CABINET RECEPTACLE	1000	0.50	500
870	0.80	696	T701 - WINDOW AC UNIT	15A	29	C	30	20A	SPARE			0
		0	SPARE	15A	31	A	32	20A	SPARE			0
		0	SPACE		33	B	34		SPACE			0
		0	SPACE		35	C	36		SPACE			0
		0	SPACE		37	A	38		SPACE			0
		0	SPACE		39	B	40		SPACE			0
		0	SPACE		41	C	42		SPACE			0

BLDG: 164 FLOOR: 7 ROOM: T708 NEW TAG: 164-NPP-07-02-BA

RATINGS:	100A	120/208V	3 PHASE	4 WIRE	S.C.:	10kA/C

FED FROM:	PANEL TAG:	BLDG #:	ROOM #:	BREAKER SIZE	FEEDER SIZE:
	DPC-T6-10 (DP-C)	164	T625	100A	4#3 AWG CU + GND

University of Toronto
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Design & Engineering
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REV.	DESCRIPTION	DATE
	ISSUED FOR TENDER	2026-01-21
	ISSUED FOR F&S REVIEW	2026-01-16
	ISSUED FOR PERMIT	2026-01-14
	ISSUED FOR DD	2025-11-07

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
PANEL SCHEDULES

DRAWN BY: JW/GDP
SCALE:
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: NORTH POINT
P164-25-078

DRAWING NUMBER
E502

REV. NUMBER

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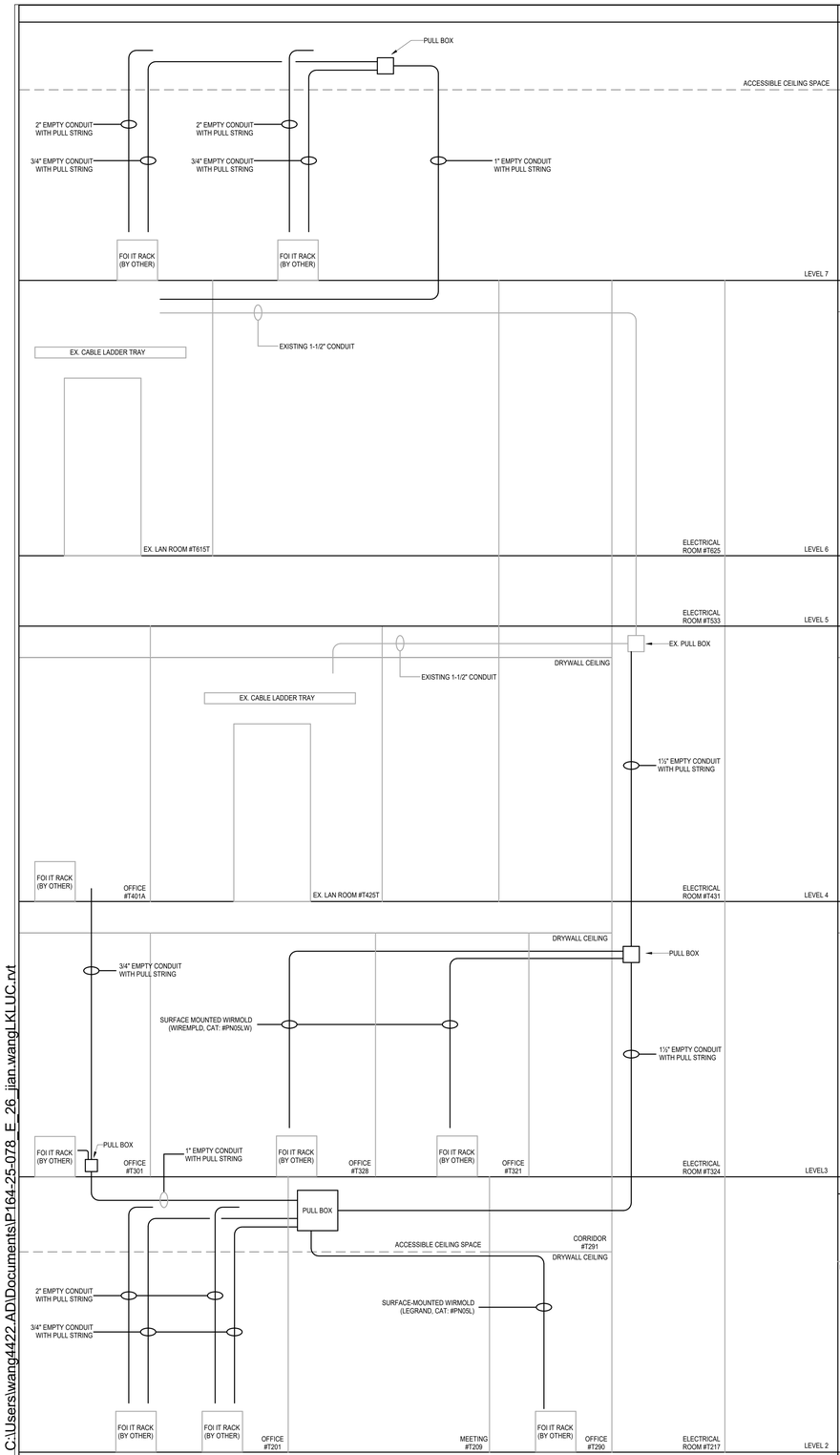
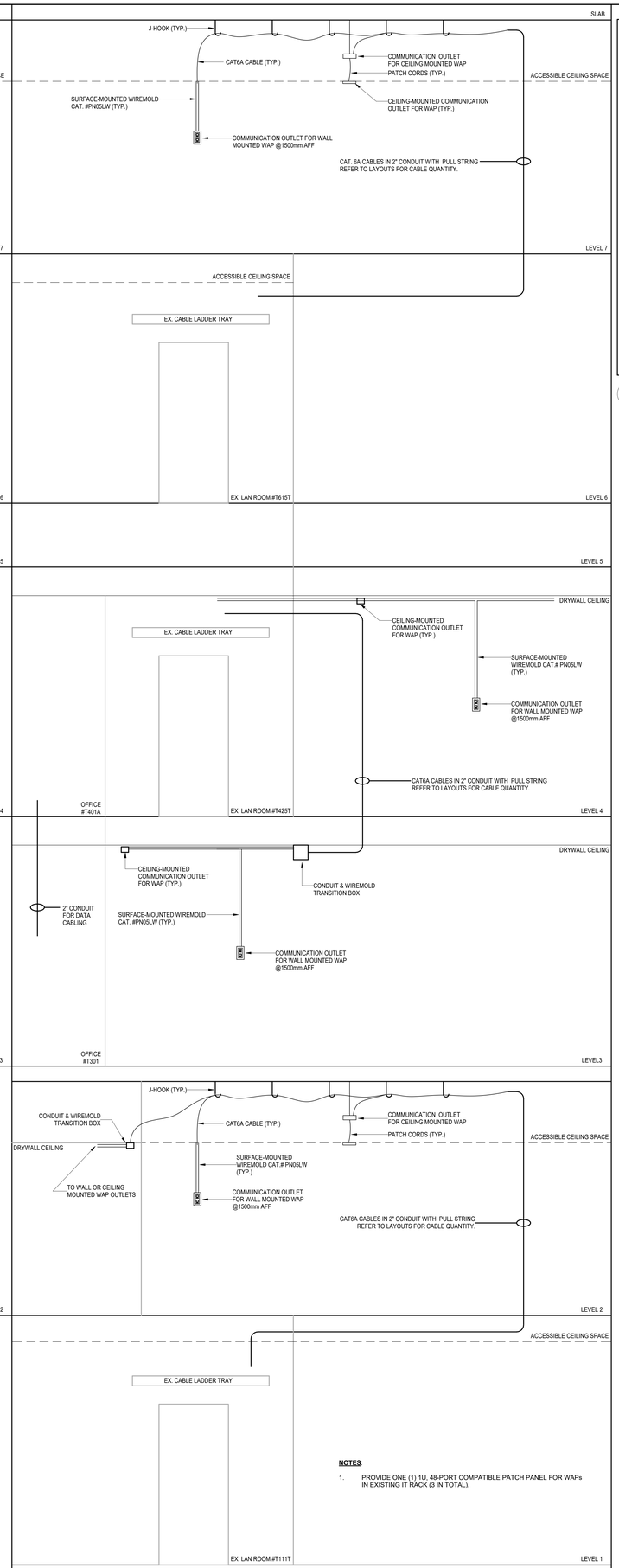
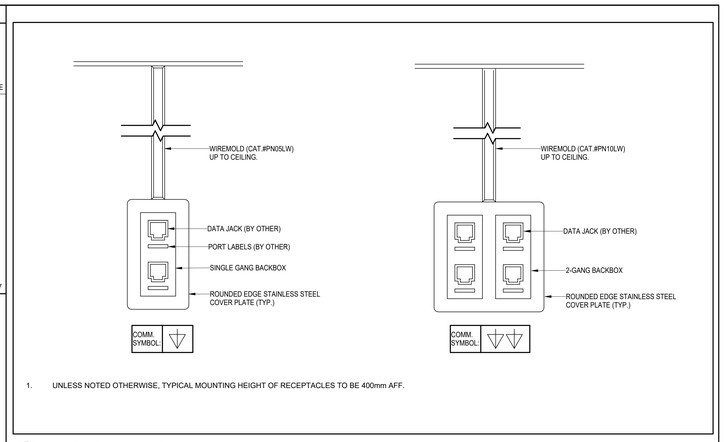


COMMUNICATION RISER DIAGRAM



WIRELESS ACCESS POINT (WAP) RISER DIAGRAM



1. UNLESS NOTED OTHERWISE, TYPICAL MOUNTING HEIGHT OF RECEPTACLES TO BE 400mm AFF.

1 / E503 TYPICAL SURFACE-MOUNTED DATA DETAIL
SCALE: NTS

WIREMOLD TYPE SCHEDULE

SYMBOL	TYPE	MATERIAL	COLOR	MAX # OF CAT6A CABLES	NOTES
WM	LEGRAND 700 SERIES WIREMOLD	METALLIC	WHITE (STANDARD)	--	COMPLETE WITH ALL REQUIRED ACCESSORIES
WM5	LEGRAND 2400 SERIES WIREMOLD	METALLIC	WHITE	--	COMPLETE WITH ALL REQUIRED ACCESSORIES
WM1	LEGRAND WIREMOLD PN05L SERIES	NONMETALLIC	WHITE	2	COMPLETE WITH ALL REQUIRED ACCESSORIES
WM2	LEGRAND WIREMOLD PN10L SERIES	NONMETALLIC	WHITE	4	COMPLETE WITH ALL REQUIRED ACCESSORIES
WM3	LEGRAND 5400 SERIES WIREMOLD	NONMETALLIC	WHITE	16 (1-CHANEL) 16+16 (2-CHANEL)	COMPLETE WITH ALL REQUIRED ACCESSORIES

NOTES:

1. PROVIDE ONE (1) 1U, 48-PORT COMPATIBLE PATCH PANEL FOR WAPs IN EXISTING IT RACK (3 IN TOTAL).

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REV.	DESCRIPTION	DATE
	ISSUED FOR TENDER	2026-01-21
	ISSUED FOR FAS REVIEW	2026-01-16
	ISSUED FOR PERMIT	2026-01-14
	ISSUED FOR DD	2025-11-07
	ISSUED FOR 100% SCHEMATIC DESIGN	2025-09-25

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
COMMUNICATION DETAILS

DRAWN BY: JW/GDP
SCALE: As indicated
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: P164-25-078
NORTH POINT

DRAWING NUMBER: **E503**
REV. NUMBER

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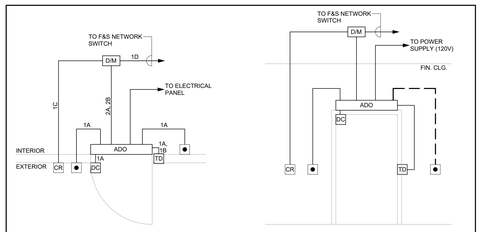


PLAN VIEW

ELEVATION

ENTERPRISE BUILDINGS INTEGRATOR
FAULT TOLERANT SERIES EXTERIOR DOOR WIRING SCHEMATIC FOR
SINGLE DOOR W/CARD READER & DOOR ACTIVATION DEVICE

WIRE & CABLE LEGEND			
CABLE	DESCRIPTION	BELDEN #	DESCRIPTION
A	2PR, 22AWG, STRANDED, SHEILDED, TWISTED PR.	8723	DOOR CONTACT / REX / LOCK STATUS
B	1 PR, 18AWG, STRANDED, TWISTED PR.	9740	ELECTRIC LOCK / AUDIBLE ALARM
C	3PR, 22AWG, STRANDED, SHEILDED, TWISTED PR.	8777	CARD READER
D	CAT. 6		

FIELD DEVICE LEGEND			
SYM.	DESCRIPTION	BELDEN #	DESCRIPTION
CR	CARD READER	ADO	DOOR OPERATOR
DC	DOOR CONTACT	●	DOOR ACTIVATION DEVICE
TD	ELECTRIC TRANSFER DEVICE	D/M	DOOR MODULE

NOTES: (EXTERIOR DOOR)

1. FOR EXACT HEIGHTS, REFER TO AODA SPECIFICATIONS.
2. LOW VOLTAGE WIRING SHALL BE COPPER CONDUCTORS.
3. RUN WIRES IN TO HEADER OF AUTOMATIC DOOR OPERATOR OPPOSITE HINGE SIDE ABOVE DOOR JAMB TO ALLOW FOR ORGANIZED LOW VOLTAGE WIRING DUE TO LOCATION OF RELAY.
4. COORDINATE EXACT WIRING REQUIREMENTS WITH DOOR OPERATOR MANUFACTURER.
5. MINIMUM CONDUIT SIZE TO BE 3/4".

SEQUENCE OF OPERATION (EXTERIOR DOOR WI CARD READER):

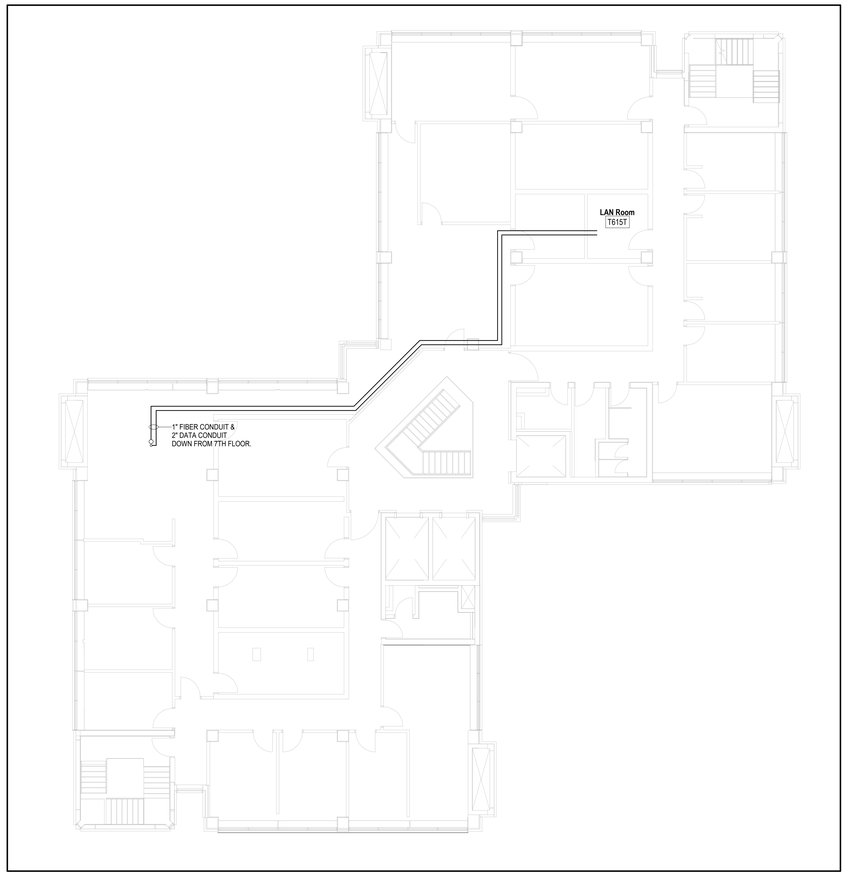
FOR LOCKED DOORS:

- EXTERIOR DOOR ACTIVATION DEVICE IS DISABLED. INTERIOR DOOR ACTIVATION DEVICE UNLOCKS & OPENS DOOR. CARD READER UNLOCKS DOOR & ENABLES DOOR OPERATOR.
- WHEN DOOR IS UNLOCKED, ANY DOOR ACTIVATION DEVICE OPENS DOOR.
- AFTER SET TIME, ELECTRIC LATCH RETRACTION CLOSES THE DOOR. ONCE CLOSED, DOOR LOCKS.

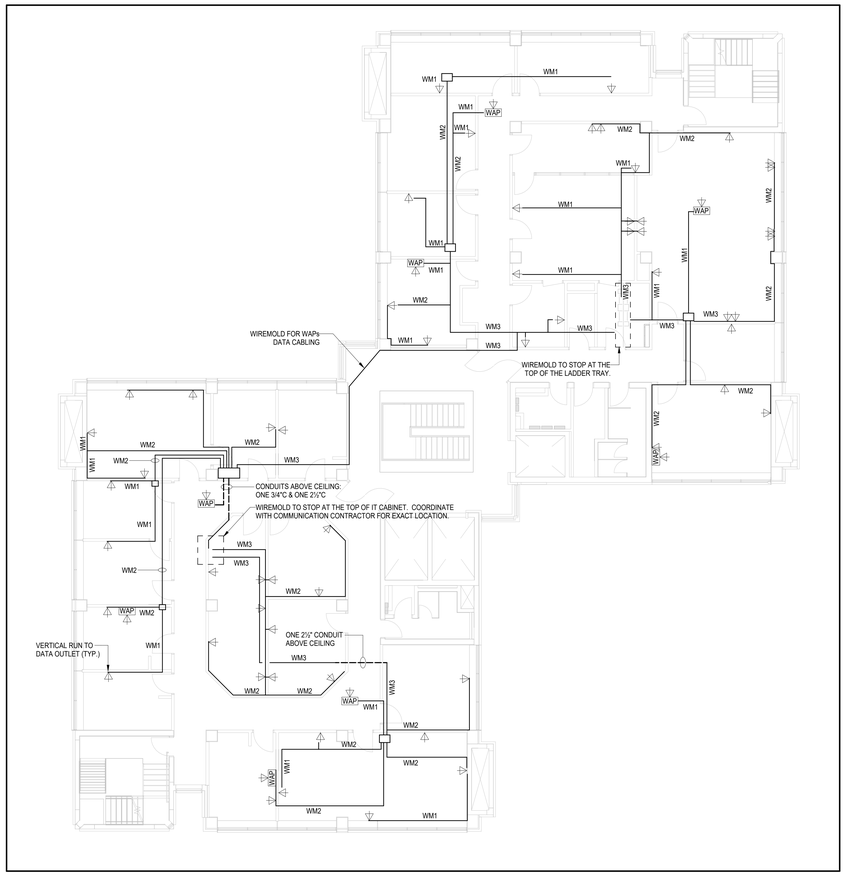
FOR UNLOCKED DOORS:

- ANY DOOR ACTIVATION DEVICE OPENS DOOR.
- AFTER SET TIME, ELECTRIC LATCH RETRACTION CLOSES THE DOOR.

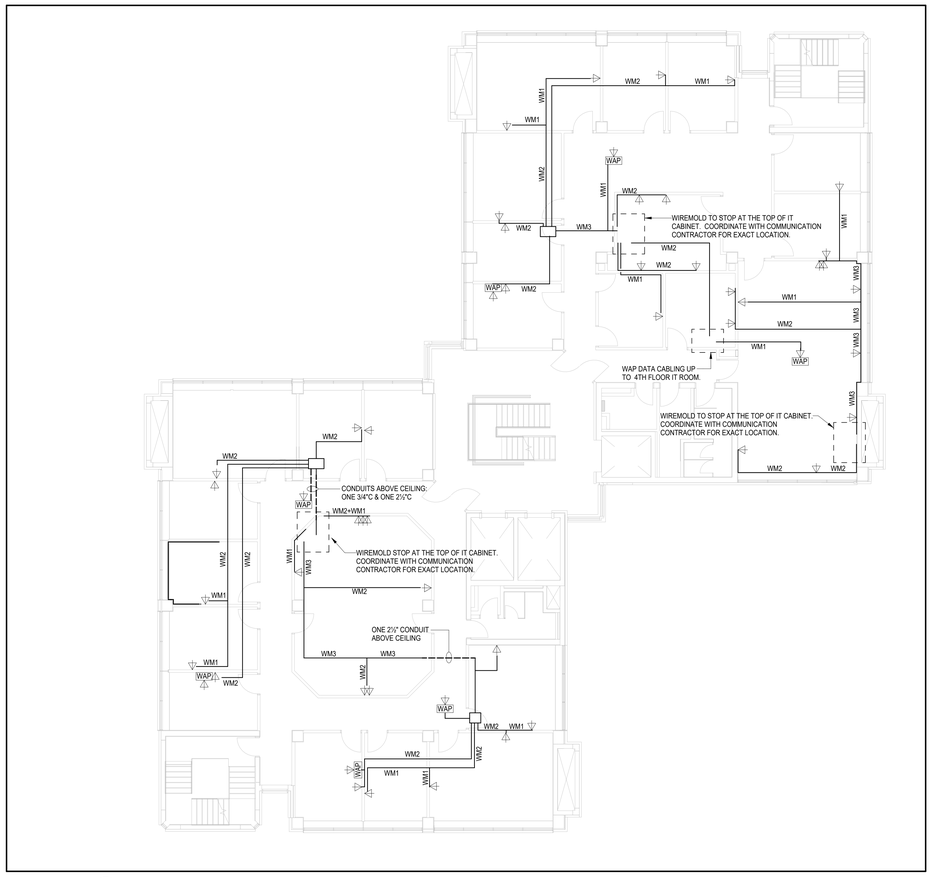
6 E504 HONEYWELL EXTERIOR DOOR SECURITY WIRING SCHEMATIC
SCALE: NTS



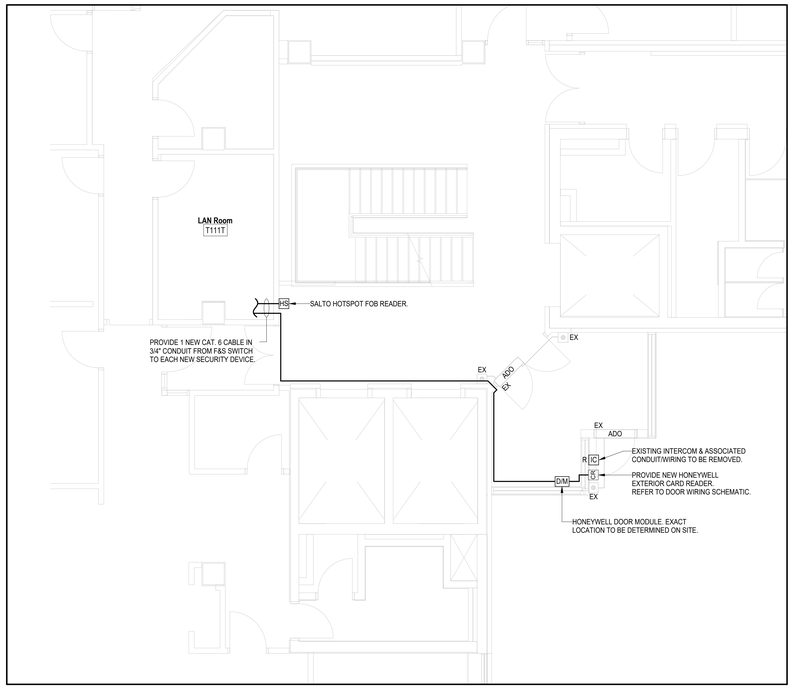
5 E504 6TH FLOOR - MAIN ELECTRICAL CONDUIT & WIREMOLD LAYOUT
SCALE: 1 : 100



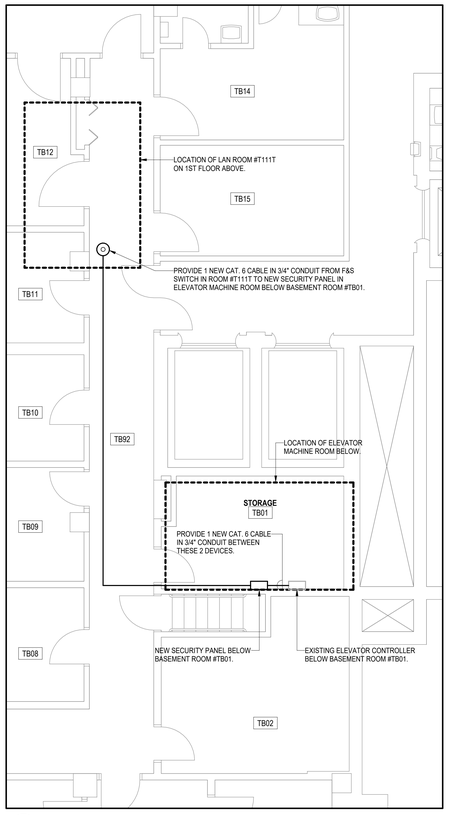
4 E504 4TH FLOOR - MAIN ELECTRICAL CONDUIT & WIREMOLD LAYOUT
SCALE: 1 : 100



3 E504 3RD FLOOR - MAIN ELECTRICAL CONDUIT & WIREMOLD LAYOUT
SCALE: 1 : 100



2 E504 1ST FLOOR PART PLAN - NEW DOOR SECURITY LAYOUT
SCALE: 1 : 50



1 E504 BASEMENT PART PLAN - NEW ELEVATOR SECURITY LAYOUT
SCALE: 1 : 50

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	ISSUED FOR F&S REVIEW	2026-01-16
	ISSUED FOR PERMIT	2026-01-14

KEY PLAN (NTS)

SEAL

PROJECT TITLE:
UNIVERSITY OF TORONTO
Tower FOI Relocation

481 Spadina Ave

DRAWING SHEET TITLE
ELECTRICAL RACEWAY ROUTING & SECURITY LAYOUT

DRAWN BY: JW/GDP
SCALE: As indicated
REVIEWED BY: SG
DATE CREATED: 2025-09
UNIVERSITY PROJECT NUMBER: NORTH POINT
P164-25-078

DRAWING NUMBER
E504

REV. NUMBER

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