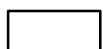

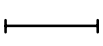





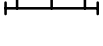

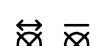
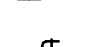

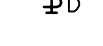













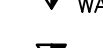

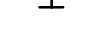

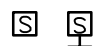








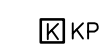



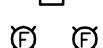



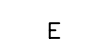
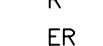
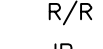




MOLSON FAN ZONE +
ALUMNI LOUNGE +
DIAGEO BARS

AIR CANADA CENTRE

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	FLUORESCENT LUMINAIRE.
	FLUORESCENT LUMINAIRE ON EMERGENCY CIRCUIT.
	FLUORESCENT STRIP LIGHT LUMINAIRE.
	WALL MOUNTED FLUORESCENT LUMINAIRE.
	RECESSED DOWNLIGHT LUMINAIRE.
	STEP LIGHT
	LED TAPE LIGHT
	SUSPENDED (PENDANT) LUMINAIRE.
	TRACK LIGHTING. QUANTITY OF HEADS AS SHOWN. LENGTH OF TRACK TO SCALE OR AS NOTED.
	EXAMPLE OF LUMINAIRE DESIGNATOR. LETTER INSIDE DENOTES LUMINAIRE TYPE. REFER TO LUMINAIRE SCHEDULE.
	EXIT LIGHT – WALL OR CEILING MOUNTED AS SHOWN. ARROW(S) DENOTE(S) ILLUMINATED FACE(S) AND DIRECTION. BAR(S) INDICATE ILLUMINATED FACE(S) ONLY.
	LIGHT SWITCH – SINGLE POLE, 120 VOLT OR 347 VOLT AS REQUIRED.
	DIMMER SWITCH. (DLV–DENOTES LOW VOLTAGE).
	FIRE ALARM PULLSTATION.
	LIFE SAFETY SYSTEM SPEAKER – CEILING OR WALL MOUNTED.
	LIFE SAFETY SYSTEM SPEAKER/STROBE COMBINATION – CEILING OR WALL MOUNTED.
	SMOKE DETECTOR – CEILING OR WALL MOUNTED.
	SURFACE MOUNTED PANELBOARD.
	WALL MOUNTED DUPLEX RECEPTACLE (15A,1P, 120V UNLESS OTHERWISE NOTED).
	OUTLETS MOUNTED ON MILLWORK. REFER TO ELECTRICAL DETAILS FOR SPECIFICATIONS.
	WALL MOUNTED DUPLEX RECEPTACLE (20A,1P, 120V T-SLOT UNLESS OTHERWISE NOTED)
	CEILING MOUNTED DUPLEX RECEPTACLE (15A,1P, 120V UNLESS OTHERWISE NOTED).
	DIRECT CONNECTION OUTLET. (HARDWIRE DIRECT CONNECTION TO EQUIPMENT TERMINALS).
	DOUBLE–GANG WALL MOUNTED AUDIO VISUAL OUTLET BOX.
	WIRELESS ACCESS POINT
	SINGLE–GANG WALL MOUNTED COMBINATION VOICE/DATA OUTLET BOX.
	WALL MOUNTED CATV OUTLET BOX C/W 19mm (3/4") EMPTY CONDUIT TO NEAREST COMMUNICATIONS ROOM.
	BARRIER FREE DOOR OPERATOR PUSH BUTTON SUPPLIED BY OTHERS. PROVIDE SINGLE GANG BOX COMPLETE WITH 19mm CONDUIT AND 2C/18AWG UP TO DOOR MOTOR.
	FLUSH MOUNTED AUDIO/VISUAL SYSTEMS LOUD SPEAKER. BACKBOX BY ELECTRICAL CONTRACTOR. SPEAKER ASSEMBLY AND GRILL BY OTHERS.
	CARD READER.
	DOOR CONTACT.
	ELECTRO–MAGNETIC DOOR LOCK
	ELECTRIC STRIKE.
	DOOR RELEASE PUSHBUTTON.
	HELP/HOLD–UP/DURESS BUTTON.
	KEY BY–PASS/KEY OVERRIDE.
	KEY PAD.
	CCTV CAMERA. 3/4" E.C. BACK TO SECURITY PLYWOOD BACKBOARD.
	DISTRIBUTION TRANSFORMER. REFER TO DISTRIBUTION RISER BLOCK DIAGRAM FOR KVA RATING, OR AS NOTED. REFER TO SPECIFICATIONS FOR K–RATING.
	DISCONNECT SWITCH.
	STROBE – CEILING OR WALL MOUNTED.
	LOCAL ALARM HORN
	HELP/HOLD–UP/DURESS BUTTON.
	ADDITIONAL NOMENCLATURE
	GENERAL
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED AND/OR RELOCATED
	EXISTING IN RELOCATED POSITION
	REMOVE AND REINSTALL
	JUNCTION BOX
	FIXTURE ON EMERGENCY CIRCUIT
	DIMMER SWITCHES
	eldoLED – DimWheel Colour

GENERAL NOTES

1.	<u>GENERAL</u>
1.1	THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH DESIGN CONSULTANT'S/ARCHITECTS DRAWINGS FOR DIMENSIONS, FINISHES AND MOUNTING HEIGHTS OF DEVICES, ETC.
2.	<u>LIGHTING</u>
2.1	ALL LUMINAIRES INCLUDING ALL DOWNLIGHTS AND PENDANTS, EXCLUDING EMERGENCY LUMINAIRES, WITHIN THE TENANT PREMISES TO BE ON A SEPARATE LIGHTING ZONE AND TO BE CONTROLLED BY BASE BUILDING LIGHTING CONTROL SYSTEM UNLESS OTHERWISE NOTED. REARRANGE CIRCUITING OF BASE–BUILDING LUMINAIRES AT DEMISING PARTITIONS TO ENSURE LIGHTING ZONES ARE INDEPENDENT OF ADJACENT TENANCIES AND/OR COMMON AREAS. PROVIDE ALL NECESSARY RELAYS, CONTACTORS, RELAY PANELS AND ANY INTERFACE REQUIRED FOR SUCH CONTROL. INCLUDE COST IN THIS CONTRACT. ELECTRICAL CONTRACTOR TO CONTACT BASE BUILDING OPERATIONS TO COORDINATE LIGHTING CONTRLOL ZONES AND TIE–INS PRIOR TO CONSTRUCTION START.
2.2	EXTEND WIRING TO NEW EMERGENCY LUMINAIRES FROM EXISTING CIRCUITS AVAILABLE IN CEILING SPACE. DO NOT OVERLOAD CIRCUIT. PROVIDE NEW CIRCUITS AS NECESSARY, IF REQUIRED. WHERE EXISTING EMERGENCY LIGHTING CIRCUITS ARE 347V AND EMERGENCY LIGHTING IS 120V, PROVIDE ALL REQUIRED AUTO TRANSFORMERS. PLANS DENOTE FINAL LOCATION OF EMERGENCY LUMINAIRES. RECIRCUIT EXISTING NORMAL AND EMERGENCY LIGHTING CIRCUITS TO OBTAIN LAYOUT AS SHOWN.
2.3	CONNECT EXIT LIGHTS TO NEAREST EXIT LIGHT CIRCUIT ON THIS FLOOR. ALL NEW EXIT SIGNS TO MATCH EXISTING. DO NOT OVERLOAD CIRCUIT. PROVIDE NEW CIRCUITS AS NECESSARY, IF REQUIRED. EXIT SIGN SHALL BE CERTIFIED AS PER CSA 22.2 NO.141–10, AND MEET ISO 3864–1 AND 7010.
3.	<u>POWER</u>
3.1	CIRCUIT NUMBERS SHOWN ARE FOR GROUPING PURPOSES ONLY. RE–ARRANGE EXISTING CIRCUITS AND PROVIDE NEW BREAKERS AS REQUIRED IN EXISTING PANELS.
4.	<u>LIFE SAFETY SYSTEM</u>
4.1	PROVIDE COST FOR ADDITION, RELOCATION, VERIFICATION AND TESTING OF THE LIFE SAFETY SYSTEM COMPONENTS. ALL TIE–IN TO BASE BUILDING LIFE SAFETY SYSTEM TO BE DONE BY LANDLORD'S CONTRACTOR. INCLUDE COST IN THIS CONTRACT. ALL NEW LIFE SAFETY DEVICES TO MATCH BASE BUILDING STANDARDS.
5.	<u>VOICE/DATA</u>
5.1	PROVIDE EMPTY CONDUIT C/W PULL STRING, JUNCTION BOXES AND ALL NECESSARY ACCESSORIES TO FACILITATE THE PROPER INSTALLATION OF VOICE/ DATA CABLING. THE SUPPLY AND INSTALLATION OF VOICE/DATA CABLES TO BE BY THE COMMUNICATIONS CONTRACTOR.

LUMINAIRE SCHEDULE

TYPE	LAMP	DESCRIPTION
LT1	G9 HALOGEN 42W	ROUND TABLE MOUNTED LUMINAIRE C/W 120V DIMMING DRIVER. CONFIRM COLOR TEMPERATURE & FINISHES WITH CLIENT & DESIGNER. MOROSINI CAT# 37013 CONTACT ADRIEN TURRIN – 416 674 0327
LT2	LED 6W/FT 3000K	LED LINEAR UNDER COUNTER LIGHT C/W 120V, 0–10V DIMMING DRIVER. PROVIDE ALL REQUIRED DRIVERS AND MOUNTING ACCESSORIES. CONFIRM EXACT LENGTHS WITH ARCHITECTURAL DRAWINGS. I2SYSTEMS CAT# S1205–A–X–6–CBB–LL–205–10V CONTACT ADRIEN TURRIN – 416 674 0327
LT3	LED 2X40W 3000K	LED LINEAR SUSPENDED INDIRECT LUMINAIRE C/W 120V ELECTRONIC DRIVER. PROVIDE ALL REQUIRED MOUNTING ACCESSORIES AND DRIVERS. CONFIRM EXACT LENGTHS AND SUSPENSION HEIGHTS WITH ARCHITECTURAL DRAWINGS. ARTEMIDE CAT# USC–M–119–4–2–8–H–00–LA–ES – KAO KIT D LED SUSPENSION CONTACT ARTEMIDE – 416 628 6718
LT4	LED 2X40W 3000K	LED LINEAR SUSPENDED INDIRECT LUMINAIRE C/W 120V ELECTRONIC DRIVER. PROVIDE ALL REQUIRED MOUNTING ACCESSORIES AND DRIVERS. CONFIRM EXACT LENGTHS AND SUSPENSION HEIGHTS WITH ARCHITECTURAL DRAWINGS. ARTEMIDE CAT# USC–M–119–3–2–8–H–00–LA–ES – KAO KIT C LED SUSPENSION CONTACT ARTEMIDE – 416 628 6718
LT5	G9 HALOGEN 42W	ROUND WALL MOUNTED LUMINAIRE C/W 120V DIMMING DRIVER. CONFIRM COLOR TEMPERATURE & FINISHES WITH CLIENT & DESIGNER. MOROSINI CAT# ROUND/PP CONTACT ADRIEN TURRIN – 416 674 0327
LT6	LED 16W 3000K	4" RECESSED ROUND LED LUMINAIRE C/W 120, 0–10V DIMMING DRIVER. CONFIRM LENS, TRIM & FINISHES WITH CLIENT AND DESIGNER. JUNO CAT#C91LEDG4–3K–U–XX
LT7	LED 1W 3000K	20mm DIAMETER RECESSED LUMINAIRE. PROVIDE 150W/12V DRIVER PER 105 FIXTURES AND ALL REQUIRED STEP DOWN TRANSFORMERS. DRIVER TO BE MOUNTED IN APPROPRIATE/APPROVED ENCLOSURE. CONFIRM COLOR TEMPERATURE WITH DESIGNER. DESIGN21 CAT# STEP&DECK LIGHT
LT8	LED G25 8W 3000K	ROUND SUSPENDED LUMINAIRE, CHROME FINISH C/W 120V DIMMING DRIVER. CONFIRM SUSPENSION HEIGHT WITH ARCHITECTURAL DRAWINGS. PROVIDE ALL REQUIRED MOUNTING ACCESSORIES. ZUO CAT# 50089 – GILESE CEILING LAMP CONTACT JOHN MONK – 416 879 4065
LT9	LED E12 16X4W 3000K	SUSPENDED LUMINAIRE, CHROME FINISH C/W 120V DIMMING DRIVER. CONFIRM SUSPENSION HEIGHT WITH ARCHITECTURAL DRAWINGS. PROVIDE ALL REQUIRED MOUNTING ACCESSORIES. ZUO CAT# 98268 – STEEL CONTACT JOHN MONK – 416 879 4065
LT10	LED 10.5W/M 2700K	LINEAR FLEXIBLE LED COLOR CHANGING TAPE LIGHT C/W DIMMING DRIVER. PROVIDE ALL REQUIRED MOUNTING ACCESSORIES, DRIVERS AND STEP DOWN TRANSFORMER (120–24V). CONFIRM EXACT LENGTHS WITH ARCHITECTURAL DRAWINGS. VARIOLED CAT# FLEX RGB–HD10–XX–IP67 CONTACT MIKE HAMILTON – 416 538 8989
LT11	T5 2X28W 3000K	SURFACE MOUNTED 1'X4' LUMINAIRE C/W 2X15 LAMPS & 120V DRIVER. CONFIRM COLOR TEMPERATURE AND FINISHES WITH DESIGNER. EUREKA CAT# 3132–48–2XF.T5.28–120V–MG (OR APPROVED EQUAL)
LT12	LED 6.7W 3000K	4.75"X2.75"X3.5" SQUARE STEP LIGHT C/W 120 DRIVER. PROVIDE ALL REQUIRED DRIVERS AND MOUNTING ACCESSORIES. CONFIRM FINISHES AND COLOR TEMPERATURE WITH DESIGNER. ZANEEN CAT# D8–6220–3000K (OR APPROVED EQUAL)
LT13		3–3/4" APERTURE ROUND ADJUSTABLE RECESSED MR16 LED RETROFIT DOWNLIGHT LUMINAIRE COMPLETE WITH ALUMINUM HOUSING, BLACK BAFFLE, WHITE TRIM FLANGE, BLUE GLASS LENS, 3500K MR16 LED RETROFIT LAMP, AND A MAGNETIC 120V TRANSFORMER. LIGHTOLIER CAT# LYTECASTER 105 105BK (REFLECTOR), 102MR (TRIM) (OR APPROVED EQUAL)

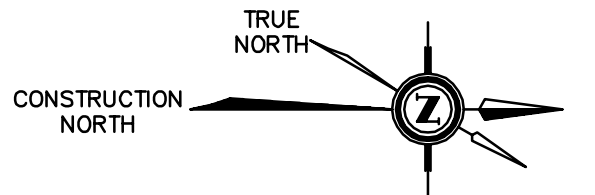
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Project
MOLSON FAN ZONE
Upper Concourse
Air Canada Centre, 40 Bay Street, Toronto, ON

Sheet Title
GENERAL NOTES & ELECTRICAL LEGEND

Scale	NTS
Project	16–1124
Drawn	PE
Checked	KP
Dwg. File	
Sheet No.	

E-001

ELECTRICAL SPECIFICATIONS

GENERAL ELECTRICAL REQUIREMENTS

1. CODES & STANDARDS

1.1. COMPLETE THE INSTALLATION OF THE WORK IN ACCORDANCE WITH THE LATEST EDITIONS OF THE ONTARIO BUILDING CODE, ONTARIO ELECTRICAL SAFETY CODE, C.S.A. STANDARDS, U.L.C.A. AND OTHER BUILDING CODES, AS REQUIRED. COMPLY WITH ELECTRICAL AND BUILDING CODE BULLETINS IN FORCE AT TIME OF BID SUBMISSION. WHILE NOT IDENTIFIED AND SPECIFIED BY NUMBER IN THIS DIVISION, THEY ARE TO BE CONSIDERED AS FORMING PART OF RELATED STANDARDS. ALSO, ALL ELECTRICAL WORK SHALL COMPLY WITH LANDLORD'S REQUIREMENTS AND BASE BUILDING STANDARDS. CONTRACTOR SHALL OBTAIN ALL LANDLORD'S REQUIREMENTS AND BASE BUILDING STANDARDS FROM THE LANDLORD DURING THE TENDER PERIOD.

2. EXISTING CONDITIONS

2.1. VISIT THE SITE AND EXAMINE THE EXISTING CONDITIONS AFFECTING THE WORK OF THIS DIVISION. NO CLAIM FOR EXTRA PAYMENT SHALL BE MADE FOR EXTRA WORK MADE NECESSARY BY CIRCUMSTANCES ENCOUNTERED DUE TO CONDITIONS WHICH WERE VISIBLE UPON OR REASONABLY INFERRABLE FROM AN EXAMINATION OF THE SITE PRIOR TO SUBMISSION OF THE BID. THIS INCLUDES THE EXISTING SERVICES ABOVE CEILING.

2.2. BE AWARE THAT THERE MAY BE ASBESTOS FIBRES PRESENT IN VARIOUS FINISHES OR ON VARIOUS SURFACES, IN CERTAIN AREAS OF THE BUILDING. ARRANGE WORK SO AS NOT TO DISRUPT THESE MATERIALS, OR TAKE FULL AND NECESSARY MEANS TO PROTECT ALL PERSONNEL FROM CONTACT WITH THEM, IN A WAY TO BE APPROVED BY THE LANDLORD. INCLUDE ALL COSTS ASSOCIATED WITH ANY REMEDIAL WORK, IN THE BID.

3. DEFINITIONS

3.1. WHEREVER THE WORDS "PROVIDE" OR "SUPPLY AND INSTALL", ARE USED, IT SHALL BE UNDERSTOOD TO MEAN "PROVIDE AND INSTALL, INCLUSIVE OF ALL LABOUR, MATERIALS, INSTALLATION, TESTING, AND CONNECTIONS" FOR THE ITEM TO WHICH IT REFERENCES.

3.2. WHEREVER THE WORDS "EQUAL", "APPROVED", OR "APPROVED EQUAL" ARE USED, IT SHALL BE UNDERSTOOD TO MEAN "EQUAL", "APPROVED", OR "APPROVED EQUAL" IN THE OPINION OF THE CONSULTANT ONLY.

4. MATERIALS AND EQUIPMENT

4.1. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, C.S.A. CERTIFIED AND MANUFACTURED TO THE STANDARDS SPECIFIED.

4.2. WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT C.S.A. CERTIFIED, OBTAIN SPECIAL APPROVAL FROM THE ELECTRICAL SAFETY AUTHORITY.

5. PERMITS AND FEES

5.1. THE ELECTRICAL CONTRACTOR SHALL ACT AS THE OWNER'S AGENT IN ACCORDANCE WITH SECTION 2 OF THE O.E.S.C. AND SHALL IMMEDIATELY UPON AWARD OF CONTRACT, SUBMIT TO THE LOCAL ELECTRICAL INSPECTION DEPARTMENT, THE NECESSARY NUMBER OF DOCUMENTS FOR EXAMINATION, SPECIAL INSPECTION AND APPROVAL PRIOR TO THE COMMENCEMENT OF THE WORK, AND PAY ALL COSTS AND ASSOCIATED FEES. IF REQUIRED, PREPARE ANY ADDITIONAL DRAWINGS/DOCUMENTS REQUIRED BY THE AUTHORITY.

5.2. THE CONSULTANT WILL PROVIDE UPON REQUEST, AT THE CONTRACTOR'S COST, THE REQUIRED QUANTITY OF DRAWINGS.

5.3. PROVIDE CERTIFICATE(S) OF ACCEPTANCE FROM THE AUTHORITIES INSPECTION DEPARTMENT, UPON COMPLETION OF WORK.

6. INSURANCE

6.1. PROVIDE AND MAINTAIN INSURANCE TO PROTECT THE LANDLORD, TENANT AND TRADES FROM ALL POSSIBLE CLAIMS. SUBMIT WITH BID FOR AN AMOUNT ACCEPTABLE TO LANDLORD AND TENANT.

7. CONTRACT DOCUMENTS

7.1. THE DRAWINGS FOR THE ELECTRICAL WORK ARE DIAGRAMMATIC PERFORMANCE DRAWINGS ONLY, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF ELECTRICAL EQUIPMENT. THE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL, INTERIOR DESIGN, MECHANICAL, STRUCTURAL OR BASE BUILDING DETAILS. BE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF SAME BEFORE PROCEEDING WITH THE WORK.

7.2. DO NOT SCALE OR MEASURE DRAWINGS, BUT OBTAIN INFORMATION REGARDING ACCURATE DIMENSIONS FROM THE DIMENSIONS SHOWN ON THE DESIGN CONSULTANT'S/ARCHITECT'S DRAWINGS, OR BY SITE REQUIREMENTS.

7.3. ANY DISCREPANCIES BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND EXISTING CONDITIONS, MUST BE REFERRED TO THE DESIGN CONSULTANT/ARCHITECT BEFORE ANY WORK AFFECTED IS BEGUN.

7.4. COOPERATE AND COORDINATE WITH OTHER CONTRACTORS IN LAYING OUT OF WORK SO AS NOT TO CONFLICT WITH THE WORK OF OTHER CONTRACTORS. CARRY OUT WORK PROMPTLY AS PER CONSTRUCTION SCHEDULE AND COORDINATE WITH WORK OF OTHER CONTRACTOR

7.5. MAKE, AT NO ADDITIONAL COST, ANY CHANGES OR ADDITIONS TO MATERIALS AND EQUIPMENT NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS (OFFSETS AROUND BEAMS, COLUMN, ETC.)

8. INTENT

8.1. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS THAT THE CONTRACTOR PROVIDE COMPLETE AND OPERATIONAL SYSTEMS AS REQUIRED, WHERE DIFFERENCES OCCUR, THE MAXIMUM CONDITION SHALL GOVERN.

8.2. ANY MISCELLANEOUS ITEMS, HARDWARE, DEVICES, WIRING, ETC., NOT SPECIFICALLY DESCRIBED, BUT REQUIRED FOR THE OPERATION OF THE SYSTEM, MUST BE PROVIDED AND INCLUDED AS PART OF THE BID.

9. SHOP DRAWINGS

9.1. SUBMIT SINGLE (1) SET OF SHOP DRAWINGS IN EITHER PDF OR HARD COPY FORMAT FOR ALL SPECIFIED EQUIPMENT FOR REVIEW AND RECORDS BEFORE COMMENCEMENT OF WORK.

9.2. CHANGES MADE TO THE SHOP DRAWINGS BY THE CONSULTANT WILL NOT AFFECT THE CONTRACT PRICE.

10. INSERTS, HANGERS AND SLEEVES

10.1. PROVIDE HANGERS, INSERTS, SLEEVES AND SUPPORTS AS REQUIRED.

10.2. INSERTS ARE TO BE OF A LEAD SHIELD TYPE.

10.3. HANGERS MUST NOT BE WELDED TO STRUCTURAL STEEL MEMBERS AND BURNING OF HOLES IN STRUCTURAL STEEL IS PROHIBITED.

10.4. SLEEVES ARE TO BE OF A TYPE SUITABLE FOR THE APPLICATION AND BE SEALED AND MADE WATERTIGHT. SLEEVES THROUGH CONCRETE SHALL BE SCHEDULE 40 STEEL PIPE, SIZED FOR FREE PASSAGE OF CONDUIT AND INSTALLED FLUSH WITH UNDERSIDE OF CONCRETE SLAB AND EXTEND 100MM (4") ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.

10.5. DO NOT USE ANY BASE BUILDING SUPPORTS OR EQUIPMENT, INCLUDING CEILING SUPPORT SYSTEM.

11. CUTTING AND PATCHING

11.1. ALL CUTTING AND PATCHING REQUIRED TO THE EXISTING BUILDING STRUCTURE FOR THE WORK SHALL BE INCLUDED UNDER THIS CONTRACT AND BE ACCEPTABLE TO THE LANDLORD. OBTAIN WRITTEN APPROVAL FROM LANDLORD BEFORE ANY CUTTING IS CARRIED OUT.

11.2. WHERE CONDUITS PASS THROUGH FIRE RATED WALLS OR FLOORS, PROVIDE FIRE STOPPING MATERIAL LISTED WITH, AND BEAR LABEL OF CSA AND ULC, AND MAINTAIN SAME FIRE RATING OF BUILDING COMPONENT PENETRATION.

12. LOCATION OF OUTLETS

12.1. REFER TO DESIGN CONSULTANT'S/ARCHITECT'S DRAWINGS FOR EXACT LOCATIONS OF ALL LIGHTING FIXTURES AND WIRING DEVICES.

12.2. CHANGE LOCATION OF OUTLETS AT NO COST OR CREDIT, PROVIDING DISTANCE DOES NOT EXCEED 3M (10'-0") AND INFORMATION IS GIVEN PRIOR TO INSTALLATION.

12.3. ALL OUTLETS TO BE MARKED ON JOB SITE FOR APPROVAL BY DESIGN CONSULTANT/ARCHITECT PRIOR TO INSTALLATION.

13. PLYWOOD

13.1. ALL SURFACE MOUNTED ELECTRICAL DISTRIBUTION EQUIPMENT SHALL BE MOUNTED ON PLYWOOD BACKBOARDS. PROVIDE ALL PLYWOOD BACKBOARDS REQUIRED FOR THE WORK OF THIS DIVISION. PLYWOOD BACKBOARDS SHALL BE 19MM (3/4") THICK, OF HIGHEST QUALITY FIRE RETARDANT FIR, PRIME AND PAINT BACKBOARDS WITH FIRE RETARDANT PAINT EQUAL TO CGSB SPEC. #1-GP-151M, OF A COLOUR AS SELECTED BY THE DESIGN CONSULTANT/ARCHITECT.

14. ACCESS DOORS

14.1. WHEREVER ANY BASE BUILDING EQUIPMENT REQUIRES ACCESSIBILITY, MAINTENANCE OR ADJUSTMENT, PROVIDE ACCESS DOORS APPROVED BY DESIGN CONSULTANT/ARCHITECT AND LANDLORD. ARRANGE FOR ITS INSTALLATION BY THE DIVISION IN WHOSE WORK IT OCCURS.

15. CORE DRILLING

15.1. BEFORE CORE DRILLING FLOOR SLAB OR STRUCTURAL WALLS, X-RAY SLAB OR WALLS AND HAVE THE LOCATIONS ACCEPTED BY THE LANDLORD IN WRITING.

15.2. ANY EXISTING BUILDING SERVICE DAMAGED BY CORE DRILLING MUST BE REPAIRED IMMEDIATELY AT NO COST TO LANDLORD OR TENANT.

15.3. FLOOR DRILLING TO BE CARRIED OUT AFTER NORMAL WORKING HOURS AND AT A TIME ACCEPTABLE TO LANDLORD AND ALLOWANCES FOR THIS WORK SHALL BE INCLUDED IN BID PRICE SUBMITTED.

16. NOISE AND VIBRATION

16.1. ELECTRICAL EQUIPMENT IS TO OPERATE WITHOUT OBJECTIONABLE NOISE OR VIBRATION. IF, IN THE OPINION OF THE CONSULTANT, THE EQUIPMENT OPERATES WITH EXCESSIVE NOISE OR VIBRATION, THEN THE EQUIPMENT MUST BE REPLACED OR NOISE OR VIBRATION ELIMINATED.

16.2. CONNECTIONS TO NOISE-PRODUCING AND VIBRATING EQUIPMENT MUST BE MADE WITH LIQUID-TIGHT FLEXIBLE CONDUIT AND ASSOCIATED CONNECTORS. THIS INCLUDES TRANSFORMERS, DIMMING EQUIPMENT RACKS, AND MOTORS. USE A MINIMUM OF 1M (3FT) OF FLEXIBLE CABLE WITH SLACK AT EACH DEVICE.

16.3. VIBRATION ISOLATORS ARE TO BE PROVIDED WHERE INDICATED OR REQUIRED. TRANSFORMERS TO BE ISOLATED FROM THE STRUCTURE, WITH SPRING AND RUBBER ISOLATORS WHEN WALL MOUNTED OR SUSPENDED AND 12MM (1/2") HIGH DENSITY NEOPRENE SANDWICH PADS (TYPE MWP) WHEN FLOOR MOUNTED.

17. TENANT'S EQUIPMENT

17.1. WHERE SPECIFIED, INSTALL ALL EQUIPMENT PROVIDED BY THE TENANT. RECEIVE, STORE AND INSTALL EQUIPMENT AND ACCEPT FULL RESPONSIBILITY FOR ITS CORRECT OPERATION. PROVIDE CONDUIT, WIRE, BOXES, SWITCHES, OUTLETS, DEVICES, FLEX CONNECTIONS, ETC., AS REQUIRED.

18. WORK IN NEW AND RENOVATED AREAS

18.1. WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES REMOVAL OF ALL DISCONNECTED WIRING BACK TO THE ASSOCIATED PANEL BOARD OR DISTRIBUTION EQUIPMENT.

18.2. DISCONNECT AND REMOVE EXISTING LUMINAIRES, DEVICES, OUTLETS, ETC., WHICH ARE NOT TO BE REUSED. SUCH ITEMS SHALL BE CARTONED AND TURNED OVER TO THE LANDLORD AT A PLACE DESIGNATED BY THE LANDLORD. CUT BACK AND CAP UNUSED RACEWAY AND OUTLETS AND REMOVE UNUSED WIRING BACK TO PANELBOARD IN AN APPROVED MANNER. REMOVE ALL REDUNDANT COMMUNICATIONS CABLES BACK TO HUB ROOMS AND/OR TELEPHONE RISER ROOMS.

18.3. ENSURE THAT ALL EXISTING EQUIPMENT WHICH ARE TO BE REUSED AND/OR RELOCATED IS THOROUGHLY INSPECTED AND REFURBISHED TO ENSURE CORRECT OPERATION WHEN PUT BACK INTO SERVICE AND MEETS THE LOCAL ELECTRICAL SAFETY AUTHORITY'S APPROVAL. OUTLET BOXES AND WIRING AND/OR CONDUITS WHICH ARE CORRODED OR DAMAGED ARE TO BE REPLACED.

18.4. ALL EXISTING ELECTRICAL EQUIPMENT WHICH ARE NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF SITE.

18.5. WHERE EXISTING OUTLET BOXES ARE REMOVED FROM EXISTING UNDER FLOOR DUCTS, PLUG AND CAP EXISTING HOLES FLUSH WITH FLOOR USING APPROVED FITTINGS. REMOVE ALL REDUNDANT WIRE AND CABLE BACK TO SERVICE.

18.6. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT.

18.7. CARRY OUT THE WORK WITH A MINIMUM OF NOISE, DUST AND DISTURBANCE.

18.8. PROVIDE TOOLS AND CLEAN UP EQUIPMENT. OBTAIN THE LANDLORD'S PERMISSION FOR THE USE OF ELECTRICAL, ELEVATOR, PLUMBING OR DRAINAGE OUTLETS.

18.9. PROVIDE DAILY CLEAN UP AND PROPER DISPOSAL OF DEBRIS GENERATED BY DAILY OPERATIONS. ON COMPLETION OF THE WORK, ALL TOOLS, SURPLUS MATERIALS AND WASTE MATERIALS SHALL BE REMOVED AND THE PREMISES LEFT IN A CLEAN AND PERFECT CONDITION.

18.10. REMOVE AND REROUTE EXISTING CONDUITS WHICH ARE TO REMAIN IN "FINISHED" AREAS WHICH ARE TO BE EXPOSED.

18.11. CONDUITS WHICH ARE TO BE CUT BACK ARE TO TERMINATE IN A JUNCTION BOX.

18.12. CLEAN LUMINAIRE REFLECTORS AND LENSES, LAMPS, AND OTHER SURFACES THAT HAVE BEEN EXPOSED TO CONSTRUCTION DUST AND DIRT. CLEAN THE INSIDES AND OUTSIDES OF PANELBOARDS, SPLITTERS AND OTHER ELECTRICAL EQUIPMENT, AND COMPLETELY REMOVE ALL DEBRIS AND TOOLS FROM THE PROJECT.

19. INTERRUPTION OF SERVICES

19.1. INTERRUPTION OF ELECTRICAL SERVICE TO ANY PART OF THE BUILDING SHALL OCCUR ONLY BY PRE-ARRANGEMENT WITH AND AT TIMES SUITABLE TO THE LANDLORD.

19.2. INTERRUPTIONS SHALL ONLY OCCUR DURING PREMIUM TIME PERIODS; ALL ALLOWANCES FOR THIS SHALL BE INCLUDED IN THE PRICE SUBMITTED.

20. IDENTIFICATION

20.1. PROVIDE LAMACOID NAMEPLATES ON ALL PANELS, DISCONNECT SWITCHES, SPLITTERS, ETC., TO MATCH BASE BUILDING. LAMACOIDS SHALL IDENTIFY EQUIPMENT DESIGNATION, VOLTAGE, PHASE, NUMBER OF WIRES AND LOCATION OF FEED. NAMEPLATES SHALL BE MECHANICALLY ATTACHED TO EQUIPMENT BY MEANS OF RIVETS OR SELF TAPPING SCREWS. LAMACOIDS SHALL BE ATTACHED PRIOR TO EQUIPMENT BEING ENERGIZED.

20.2. PROVIDE TYPEWRITTEN DIRECTORIES FOR NEW AND EXISTING PANELS. CONFIRM EXISTING IDENTIFICATION AND CORRECT WHERE NECESSARY.

20.3. CLEARLY MARK ALL EXPOSED CONDUIT, PULLBOXES, JUNCTION BOXES, ETC., TO INDICATE THE NATURE OF THE SERVICE TO MATCH BASE BUILDING STANDARDS.

21. VALUATION OF CHANGES

21.1. PROVIDE COMPLETE BREAKDOWN OF MATERIAL, LABOUR, OVERHEAD, PROFIT, ETC., WHEN SUBMITTING QUOTATIONS FOR CHANGE NOTICES ON THIS PROJECT.

21.2. THE HOURLY LABOUR RATE SHALL BE INCLUSIVE OF ALL CHARGES FOR SUPERVISION, VARIABLE LABOUR FACTORS, HAND TOOLS, PAYROLL BURDENS, HEIGHT FACTORS, WARRANTIES, STORAGE, RENTALS, ADDITIONAL BONDING, PARKING, CLEAN-UP, AS-BUILT DRAWINGS, HOISTING, FREIGHT AND DELIVERY, BUT EXCLUSIVE OF OVERHEAD AND PROFIT.

21.3. THE LABOUR HOURS SHALL BE BASED ON THE LATEST ISSUE OF THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA) LABOUR UNITS, COLUMN ONE NORMAL FOR THE DURATION OF THIS CONTRACT.

21.4. THE MATERIAL PRICES SHALL BE BASED ON THE CURRENT NATIONAL PRICES SYSTEM (NPS) CATALOGUE LESS APPLICABLE TRADE DISCOUNTS.

22. ENGINEERS FINAL INSPECTION

22.1. FINAL INSPECTION IS IMPERATIVE. PRIOR TO CLOSING OF CEILINGS, THIS CONTRACTOR SHALL CONTACT MULVEY & BANANI INC., (416) 751-2520 AND THE LANDLORD'S REPRESENTATIVE TO PERFORM A FINAL INSPECTION WHEN CEILING TILES HAVE BEEN INSTALLED IT WILL BE NECESSARY FOR THE CONTRACTOR TO REMOVE PORTIONS FOR INSPECTION.

23. COMPLETION OF CONTRACT

23.1. ALL EQUIPMENT MUST BE CLEANED AND TESTED BEFORE FINAL ACCEPTANCE BY CONSULTANT.

23.2. FROM THE DATE OF ISSUANCE OF A "CERTIFICATE OF SUBSTANTIAL PERFORMANCE", PROVIDE A WRITTEN GUARANTEE FOR ONE YEAR COVERING ALL EQUIPMENT, MATERIALS AND WORKMANSHIP, OTHER THAN LAMPS. INSERT IN OPERATIONS AND MAINTENANCE MANUAL.

23.3. DEFECTS AND DEFICIENCIES WHICH ORIGINATE OR BECOME EVIDENT DURING THE WARRANTY PERIOD MUST BE REPAIRED OR REPLACED, AT NO COST.

23.4. REPLACE, AT NO COST, ALL INCANDESCENT LAMPS BURNED-OUT DURING A THIRTY (30) DAY PERIOD AND ALL BURNED-OUT FLOUORESCENT AND HID LAMPS FOR A PERIOD OF NINETY (90) DAYS AFTER DATE OF ISSUANCE OF CERTIFICATE OF "SUBSTANTIAL PERFORMANCE" FOR THE CONTRACT FOR THE WORK.

23.5. IF, DURING THE WARRANTY PERIOD, TRANSFORMERS, BALLASTS OR OTHER NOISE AND VIBRATION PRODUCING EQUIPMENT ARE CONSIDERED BY THE CONSULTANT TO EXCEED ACCEPTABLE STANDARDS, THEN THESE MUST BE REPLACED WITHOUT DELAY OR ADDITIONAL COST TO THE TENANT. ALL WORK RELATING TO THE REPLACEMENT OF DEFECTIVE ITEMS, MUST BE CARRIED OUT AFTER NORMAL WORKING HOURS AND AT A TIME WHICH IS ACCEPTABLE TO THE TENANT.

24. AS-BUILT DRAWINGS

24.1. AT THE COMPLETION OF WORK AND BEFORE FINAL ACCEPTANCE, PROVIDE AS-BUILT DRAWINGS OF THE INSTALLATION IN AUTOCAD 2010 OR NEWER, AN ELECTRONIC COPY (AUTOCAD FORMAT) OF ALL DRAWINGS WILL BE PROVIDED TO THE ELECTRICAL CONTRACTOR BY THE CONSULTANT AT NO COST. THE DRAWINGS WILL REFLECT THE TENDER AND/OR CONSTRUCTION SET OF DRAWINGS. SHOULD THE CONTRACTOR REQUIRE ADDITIONAL ELECTRONIC COPIES DURING CONSTRUCTION, THEY CAN BE PURCHASED FROM THE CONSULTANT AT THE FOLLOWING COSTS:

- \$50.00 PER DRAWING FOR THE FIRST 10 DRAWINGS
- \$30.00 PER DRAWING FOR ADDITIONAL DRAWINGS 11 THROUGH 20
- \$750.00 FOR 20 DRAWINGS OR MORE

24.1. INCORPORATE ALL CHANGES AND DEVIATIONS FROM TENDER DRAWINGS, UTILIZING NORMAL RECOGNIZED DRAFTING PROCEDURES THAT MATCH THE ORIGINAL DRAFTING METHODOLOGY.

24.2. ALL MAIN BRANCH CONDUIT RUNS, JUNCTION BOX LOCATIONS, CONDUIT RUNS FOR ALL FLOOR OUTLETS, ETC., MUST BE REFLECTED ON THE DRAWINGS.

24.3. REMOVE THE ELECTRICAL ENGINEER'S STAMP FROM ALL AS-BUILT DRAWINGS.

24.4. CLEARLY INDICATE THE WORDS "AS-BUILT" IN THE TITLE BLOCK COLUMN OF THE DRAWINGS AS WELL AS THE ELECTRICAL CONTRACTOR'S NAME AND ADDRESS.

24.5. SUBMIT A SINGLE (1) SET OF CAD AND PDF DRAWINGS TO CONSULTANT FOR REVIEW, WHEN FOUND ACCEPTABLE BY THE CONSULTANT, SUBMIT THREE (3) SETS OF PRINTS TOGETHER WITH THE CAD-DISK FOR PRESENTATION TO THE LANDLORD AND TENANT.

25. OPERATION AND MAINTENANCE MANUALS

25.1. PROVIDE 2 (TWO) SETS OF OPERATION AND MAINTENANCE MANUALS SUBMITTED IN HARD COVER 3-RING BINDERS. INCLUDE THE FOLLOWING INFORMATION IN THE OPERATIONS AND MAINTENANCE MANUALS:

- NAMES AND ADDRESS OF LOCAL SUPPLIERS FOR THE ITEMS INCLUDED.
- TECHNICAL DATA, PRODUCT DATA, SUPPLEMENTED BY BULLETINS, COMPONENT ILLUSTRATIONS, EXPLODED VIEWS, TECHNICAL DESCRIPTIONS OF ITEMS, AND PARTS LISTS. ADVERTISING OR SALES LITERATURE IS NOT ACCEPTABLE.
- THE CONSULTANT'S REVIEWED SHOP DRAWINGS.
- CERTIFICATE(S) OF ACCEPTANCE FROM THE AUTHORITIES INSPECTION DEPARTMENT.
- VERIFICATION REPORTS AND CERTIFICATE(S) FOR ANY NEW FIRE ALARM COMPONENTS TIE-INS AND ANY BASE BUILDING TIE-INS FOR MISCELLANEOUS SYSTEMS (I.E. SECURITY, LIGHTING CONTROL, DIGITAL METERING).
- LOAD BALANCE REPORT
- WRITTEN GUARANTEE
- LIST OF EACH FIXTURE TYPE IDENTIFYING TYPE OF LAMP, WATTAGE AND MANUFACTURER'S CONTACT INFO.
- COORDINATION STUDY
- ALL 3RD PARTY COMMISSIONING REPORTS FOR FIRE ALARM, EMERGENCY LIGHTING, EXIT LIGHTING AND OTHER LIFE SAFETY SYSTEMS.
- CONTRACTOR'S INSTALLATION LETTER FOR FIRE ALARM, EMERGENCY LIGHTING, AND EXIT LIGHTING SYSTEMS.

25.1. REVIEW INFORMATION PROVIDED IN THE MAINTENANCE INSTRUCTIONS AND MANUALS WITH THE TENANT'S OPERATING PERSONNEL AND LANDLORD'S OPERATING PERSONNEL WHERE BASE BUILDING SYSTEMS ARE REVISED, TO ENSURE A COMPLETE UNDERSTANDING OF THE ELECTRICAL EQUIPMENT AND SYSTEMS AND THEIR OPERATION.

26. DEMOLITION

26.1. VISIT THE SITE, EXAMINE THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE EXTENT OF THE NECESSARY REMOVAL, RELOCATION, RECONNECTING, AND REROUTING OF ELECTRICAL EQUIPMENT AND WIRING AS NECESSARY FOR THE COMPLETION OF THE PROJECT.

26.2. REVIEW AND CONFIRM WITH THE ARCHITECT/DESIGNER'S DRAWINGS FOR THE COMPLETE EXTENT OF DEMOLITION AND ALTERATION.

26.3. MAKE SAFE AND DISCONNECT ALL POWER AND SYSTEMS, AS AND WHEN, AND TO THE EXTENT REQUIRED TO FACILITATE WITH THE DEMOLITION.

26.4. ENSURE THAT ALL ELECTRICAL, LIFE SAFETY SERVICES, AND SERVICES FOR EXISTING EQUIPMENT, IN AREAS OUTSIDE THE AREAS OF THIS WORK, THAT ARE REQUIRED TO REMAIN IN SERVICE, SHALL DO SO.

26.5. RELOCATE ANY ELECTRICAL FEEDERS OR EQUIPMENT THAT ARE REQUIRED TO REMAIN IN SERVICE, THAT ARE SECURED TO EXISTING WALLS, FLOORS OR CEILINGS TO BE DEMOLISHED OR THAT ARE BURIED AND REQUIRED TO BE EXCAVATED FOR NEW WORK.

26.6. REMOVE AND REPLACE ANY ELECTRICAL EQUIPMENT ON WALLS OR CEILINGS THAT WILL BE DEMOLISHED AND REBUILT.

26.7. WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES ALL CONDUIT AND WIRING BACK TO THE ASSOCIATED PANELBOARDS OR CONTROL PANEL. WHERE FLOORBOXES ARE BEING REMOVED, ENSURE UNDER-FLOOR CONDUIT IS REMOVED BACK TO SOURCE AND FILL ALL CORD HOLES, IN FLOORS AND IN WALLS, WITH APPROPRIATE CONCRETE.

26.8. DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES, DEVICES, OUTLETS, E.T.C. WHICH ARE NOT TO BE REUSED. SUCH ITEMS SHALL BE CARTONED AND TURNED OVER TO THE OWNER AT A PLACE DESIGNATED BY THE OWNER. CUT BACK AND CAP UNUSED RACEWAY AND OUTLETS AND REMOVED UNUSED WIRING BACK TO PANELBOARD IN APPROVED MANNER.

26.9. INCLUDE IN DEMOLITION WORK FOR REMOVAL OF ALL COMMUNICATION DEVICES, OUTLETS, CABLES, CONDUITS E.T.C., WHICH ARE NOT TO BE REUSED. ALL REDUNDANT CABLEING AND CONDUIT SHALL BE REMOVED IN ITS ENTIRETY FROM TENANT SPACE BACK TO BASE BUILDING RISER ROOMS. REMOVE ALL UNNECESSARY CABLES AND EQUIPMENT IN HUB ROOMS AND/OR TELEPHONE ROOMS WITH EXTREME CARE TO AVOID ANY ACCIDENTAL SHUTDOWN TO EXISTING SERVICES SERVING OTHER PARTS OF THE BUILDING.

26.10. PROVIDE BLANK COVERPLATE WHERE OUTLETS ARE REMOVED FROM EXISTING WALLS TO REMAIN.

26.11. ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF SITE.

26.12. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT.

26.13. CARRY OUT THE WORK WITH MINIMUM OF NOISE, DUST AND DISTURBANCE.

27. FIRE ALARM

27.1. INITIATING AND SIGNALLING DEVICES

27.1.1. ALL PULL-STATIONS, EVAC SPEAKERS AND SMOKE DETECTORS TO MATCH EXISTING BASE BUILDING DEVICES.

27.1.2. ALL SMOKE DAMPERS SHALL BE CONNECTED TO THE NEAREST AVAILABLE 120V LIFE SAFETY EMERGENCY CIRCUIT. TIE DEVICE INTO FIRE ALARM SYSTEM. PROVIDE ALL REQUIRED END SWITCHES AND ACCESSORIES FOR APPROPRIATE MONITORING AND CONTROL. COORDINATE ALL WORK WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.

27.1.3. FIRE ALARM PULL STATIONS SHALL BE MOUNTED AT 1200MM (47") TO CENTRE OF DEVICE ABOVE FINISHED FLOOR AND MAXIMUM 600MM (23") FROM DOOR LATCH. WHERE FIRE ALARM PULL STATIONS ARE BEING REMOVED AND RELOCATED, ENSURE THAT THEY ARE REINSTALLED AS PER THE ABOVE NOTED DIMENSIONS.

27.1.4. ELECTRICAL CONTRACTOR SHALL PROVIDE TIE-IN TO BASE BUILDING MAGLOCK RISER ON EACH FLOOR TO ENSURE THAT ALL MAGLOCKS DROP IN THE EVENT OF A FIRE ALARM. MAGLOCKS SHALL ALSO RESET WITH MAGLOCK KEYSWITCH OVERRIDE. COORDINATE INSTALLATION WITH BASE BUILDING FIRE ALARM CONTRACTOR AND PROVIDE ALL NECESSARY COMPONENTS FOR A COMPLETE INSTALLATION.

27.1.5. UPON COMPLETION OF FIRE ALARM AUDIBILITY TESTING, THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE ELECTRICAL CONSULTANT A DRAWING OUTLINING AUDIBILITY RESULTS THROUGHOUT THE RENOVATED AREAS. INCLUDE FOR A RE-VISIT TO SITE TO ALLOW FOR ADJUSTMENTS TO SPEAKER TAP SETTINGS AS DIRECTED BY THE CONSULTANT. INCORPORATE ANY RE-VERIFICATION COSTS WITHIN THE TENDER. ELECTRICAL CONTRACTOR SHALL INCLUDE ALL SPEAKER TAP SETTINGS ON AS-BUILT DRAWINGS.

27.2. VISUAL OUTPUT DEVICES

27.2.1. SYSTEM CONNECTIONS FOR INITIATING AND SIGNALING LINE CIRCUITS SHALL BE CLASS "A" AND NOTIFICATION APPLIANCE CIRCUITS SHALL ALSO BE CLASS "A".

27.2.2. CIRCUIT SUPERVISION: CIRCUIT FAULTS SHALL BE INDICATED BY A TROUBLE SIGNAL AT THE FACP. PROVIDE A DISTINCTIVE INDICATING AUDIBLE TONE AND ALPHANUMERIC ANNUNCIATION.

27.2.3. VISUAL DEVICE TO BE COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM. CONTRACTOR TO PROVIDE ALL ASSOCIATED DRIVERS, POWER SUPPLIES, CONDUIT, WIRE AND ACCESSORIES FOR A COMPLETE AND OPERATIONAL SYSTEM.

27.2.4. STROBE SHALL BE LISTED TO ULC-5526 AND SUITABLE FOR OPERATION WITH EXISTING FIRE ALARM SYSTEM. THE V/O SHALL CONSIST OF A XENON FLASH TUBE AND ASSOCIATED LENS/REFLECTOR SYSTEM. THE V/O ENCLOSURE SHALL MOUNT DIRECTLY TO STANDARD SINGLE GANG, DOUBLE GANG OR 4 SQUARE ELECTRICAL BOX, WITHOUT THE USE OF SPECIAL ADAPTERS OR TRIM RINGS. V/O APPLIANCES SHALL BE PROVIDED WITH DIFFERENT MINIMUM ADJUSTABLE FLASH INTENSITIES OF 150CD, 300CD, 750CD AND 1100CD. PROVIDE A LABEL INSIDE THE STROBE LENS TO INDICATE THE LISTED CANDELA RATING OF THE SPECIFIC VISIBLE/ONLY APPLIANCE. WHEN MULTIPLE STROBES AND THEIR REFLECTIONS CAN BE SEEN FROM ONE LOCATION PROVIDE STROBE FLASH SYNCHRONIZATION. QUANTITY, SPACING AND CANDELA DESIGN REQUIREMENTS OF VISUAL SIGNALS TO COMPLY TO CAN/ULC 5524 STANDARD FOR THE INSTALLATION OF FIRE ALARM SYSTEMS SECTION 5.4.

27.3. SYSTEM COMMISSIONING

27.3.1. INCLUDE IN THE BID THE COST FOR AN INDEPENDENT 3RD PARTY FIRE ALARM VERIFICATION IN ACCORDANCE WITH CAN/ULC-5537. SUBMIT SEPARATE REPORTS TO THE CONSULTANT AND COMMISSIONING AGENT FOR REVIEW. ONCE APPROVED PROVIDE VERIFICATION CERTIFICATE TO LANDLORD AND INCLUDE A COPY IN THE OPERATIONS AND MAINTENANCE MANUAL.

27.3.2. THE ELECTRICAL CONTRACTOR IS TO MEASURE THE DECIBEL LEVEL (DBA) AND INTELLIGIBILITY LEVEL (CIS) OF THE FIRE ALARM SYSTEM AUDIBLE DEVICES ON THE FLOOR PRIOR TO FINAL INSPECTION BY THE AUTHORITIES HAVING JURISDICTION (AAH). PLOT ALL READINGS ON A CAD DISK OR ON A SET OF REPRODUCIBLE SEPA DRAWINGS FOR REVIEW BY THE CONSULTANT. SUBMIT RESULTS TO THE AAH IF REQUIRED.

27.3.3. PROVIDE INDEPENDENT 3RD PARTY VERIFICATION AND COMMISSIONING OF ALL LIFE SAFETY SYSTEMS INCLUDING EXIT LIGHTING, EMERGENCY LIGHTING AND OTHER LIFE SAFETY SYSTEMS. SUBMIT SEPARATE REPORTS TO THE CONSULTANT AND COMMISSIONING AGENT FOR REVIEW. INCLUDE COPY OF THE REPORT IN THE OPERATIONS AND MAINTENANCE MANUAL.

28. DISTRIBUTION SURGE PROTECTIVE DEVICE (SPD)

28.1. SPD SHALL BE UL 1449 LISTED AND LABELED WITH THE FOLLOWING RATINGS: TYPE 2 DESIGNATION; 10KA 1-NOMINAL MINIMUM; 100KA SCOR MINIMUM; VPRS NOT TO EXCEED 700V IN L-N, L-G, N-G PROTECTION MODES FOR 120/208 SYSTEMS; VPRS NOT TO EXCEED 1500V IN L-N, L-G, N-G PROTECTION MODES FOR 347/600 SYSTEMS.

28.2. ALL OVERCURRENT PROTECTION AND OVER TEMPERATURE PROTECTION SHALL BE INCLUDED WITHIN THE DEVICE AND THE SPD SHALL AT A MINIMUM UTILIZE LARGE BLOCK 30MM MOV'S.

28.3. MINIMUM SURGE CURRENT RATINGS PER PHASE SHALL BE 200KA FOR DISTRIBUTION PANELS AND 100KA FOR SUB-DISTRIBUTION PANELS AND 50KA FOR POINT OF USE APPLICATIONS.

28.4. EVERY SUPPRESSION COMPONENT OF EVERY MODE, INCLUDING N-G, SHALL BE MONITORED AND THE SPD SHALL INCLUDE VISUAL INDICATION OF SPD OPERATION.

28.5. SPD SHALL BE INSTALLED AS CLOSE TO PANEL AS POSSIBLE WITH SHORT, EQUAL LENGTH LEADS.

28.6. APPROVED VENDORS: ADVANCED PROTECTION TECHNOLOGIES (APT) / TOTAL PROTECTION SERVICES / INTERNATIONAL INNOVATIVE SYSTEMS / ETI ELECTRONICS / PSP PRODUCTS INC.

29. COORDINATION OF PROTECTIVE DEVICES

29.1. FOR ALL NEW ELECTRICAL SERVICES GREATER THAN AND EQUAL TO: 200A, 600V 3PH OR 400A, 120/208V 3PH, RETAIN THE SERVICES OF A SPECIALTY COORDINATION CONSULTANT, FOR THE PURPOSE OF PROVIDING COORDINATION AND TESTING SERVICES.

29.2. ENSURE CIRCUIT PROTECTIVE DEVICES SUCH AS OVERCURRENT TRIPS, RELAYS, CIRCUIT BREAKERS AND FUSES ARE INSTALLED TO VALUES AND SETTINGS SO AS TO PROVIDE PROTECTION BY MEANS OF OPENING THE CLOSEST DEVICE TO THE FAULT.

29.3. SUBMIT A SHORT CIRCUIT, PROTECTION COORDINATION AND ARC FLASH STUDY AS FOLLOWS:

29.3.1. OBTAIN AND ORGANIZE ALL ELECTRICAL PROTECTION DATA FOR ALL THE EQUIPMENT. THIS WILL CONSIST OF OBTAINING THE RELAY TYPES AND SETTINGS, TRANSFORMER IMPEDANCES, CABLE SIZES, FUSE SIZES AND TYPES, MOTOR DATA ETC., REQUIRED TO CARRY OUT THE SHORT CIRCUIT, PROTECTION, COORDINATION AND ARC FLASH STUDY.

29.3.2. PERFORM A SHORT CIRCUIT ANALYSIS TO DETERMINE SHORT CIRCUIT CURRENT LEVELS AT ALL CRITICAL POINTS IN THE DISTRIBUTION SYSTEM, HAVING OBTAINED THE AVAILABLE SHORT CIRCUIT CURRENT AVAILABLE FROM THE LOCAL ELECTRICAL SUPPLY AUTHORITY.

29.3.3. GENERATE APPROPRIATE SETTINGS FOR ALL RELAYS AND PROTECTIVE DEVICES FROM THE LEVEL OF THE LOCAL ELECTRICAL SUPPLY AUTHORITY FEEDER PROTECTIVE DEVICES TO THE LARGEST DOWNSTREAM DEVICE ON ALL THE FEEDER SECONDARY DISTRIBUTION LEVELS.

29.

ELECTRICAL SPECIFICATIONS

MATERIALS AND INSTALLATION

1. CONDUITS AND CONDUIT FITTINGS
- 1.1. PROVIDE ALL CONDUIT UP TO AND INCLUDING 100MM (4") SIZE, AS EMT THIN WALL WITH STEEL SET SCREW TYPE FITTINGS AND WEATHERPROOF CONNECTORS WITH "O" RINGS IN SPRINKLERED BUILDINGS. BUSHINGS AND CONNECTORS TO BE C/W INSULATED THROAT.
- 1.2. PROVIDE FLEXIBLE LIQUID-TIGHT CONDUIT FOR CONNECTION TO MOTORS, TRANSFORMERS AND WHEN CROSSING BUILDING EXPANSION JOINTS.
- 1.3. INSTALL CONDUITS TO CONSERVE HEADROOM, PARALLEL AND PERPENDICULAR TO BUILDING LINES. DO NOT CADDIE CLIP CONDUITS TO CEILING HANGERS.
- 1.4. ALL EMPTY CONDUITS SHALL BE COMPLETE WITH NYLON FISH WIRE.
- 1.5. PROVIDE PLENUM-RATED LIQUID-TIGHT FLEXIBLE METAL CONDUITS UNDER RAISED FLOOR AREAS IN COMPUTER ROOMS AND LAN ROOMS. CONDUITS TO RUN PARALLEL TO THE RAISED FLOOR GRID AND LAY FLAT AGAINST THE FLOOR SLAB.
- 1.6. RUN TWO (2) 25MM (1") SPARE CONDUITS UP TO CEILING SPACE FOR EACH RECESSED PANELBOARD. TERMINATE THESE CONDUITS IN A 150MMX150MMX100MM (6"x6"x4") COVERED JUNCTION BOX IN CEILING SPACE.
- 1.7. ALL COMMUNICATIONS CONDUIT SHALL BE REAMED AND INSTALLED COMPLETE WITH INSULATED BUSHINGS AT EACH END, THE CONTRACTOR SHALL INFORM THE CONSULTANT OF ANY COMMUNICATIONS CONDUIT LENGTHS IN EXCESS OF 70M (230 FT.) PRIOR TO INSTALLATION.
- 1.8. USE RIGID STEEL CONDUIT UP TO 2.4M (8'-0") ABOVE FINISHED FLOOR WHERE EXPOSED INDOORS AND IN ALL OUTDOOR LOCATIONS.
- 1.9. THE MINIMUM CONDUIT SIZE (INCLUDING ALL UNDIMENSIONED CONDUITS IN THESE DRAWINGS) SHALL BE 19 MM (3/4").
2. SPLITTERS, JUNCTION BOXES AND PULL BOXES
- 2.1. SPLITTERS SHALL HAVE SHEET STEEL ENCLOSURE, WITH WELDED CORNERS AND FORMED HINGED COVER SUITABLE FOR LOCKING IN CLOSED POSITION. CONNECTION BARS ARE TO MATCH REQUIRED SIZE AND NUMBER OF INCOMING AND OUTGOING CONDUCTORS AS INDICATED.
- 2.2. JUNCTION BOXES AND PULLBOXES SHALL BE SUITABLE FOR SURFACE MOUNTING AND BE OF WELDED STEEL CONSTRUCTION WITH SCREW-ON FLAT COVERS.
- 2.3. FOR FLUSH-MOUNTED PULL AND JUNCTION BOXES, PROVIDE COVERS WITH 25MM (1") MINIMUM EXTENSION ALL AROUND.
- 2.4. INSTALL JUNCTION AND PULL BOXES IN INCONSPICUOUS BUT ACCESSIBLE LOCATIONS.
- 2.5. A MINIMUM OF ONE PULL BOX SHALL BE INSTALLED FOR EVERY 100 FT. (30M) OF CONDUIT. (NOTE: EACH 90 DEG. BEND SHALL EQUATE TO A 30 FT. (9M) LENGTH OF CONDUIT).
- 2.6. NO MORE THAN TWO (2) - 90 DEG. BENDS SHALL BE INSTALLED BETWEEN ANY TWO ADJACENT PULL BOXES.
3. OUTLET BOXES
- 3.1. OUTLET BOXES SHALL BE ELECTRO-GALVANIZED STEEL, SIZED AS REQUIRED BY CODE.
- 3.2. PROVIDE EACH LIGHT SWITCH, RECEPTACLE, COMMUNICATION AND OTHER OUTLET WITH AN OUTLET BOX. INSTALL PLUMB AND TRUE. PROVIDE 76MM (3") DEEP 1004 BOXES FOR DIMMING SWITCHES.
- 3.3. ADAPT ALL OUTLET BOXES TO THEIR RESPECTIVE LOCATIONS AND SUPPORT INDEPENDENTLY OF THE CONDUIT. DO NOT CADDIE CLIP TO CEILING HANGERS.
- 3.4. PROVIDE BLANK COVERPLATES FOR BOXES WITHOUT WIRING DEVICES.
- 3.5. DO NOT INSTALL OUTLET BOXES BACK TO BACK IN PARTITIONS. STAGGER TO PREVENT SOUND TRANSFER.
- 3.6. TWO OR MORE OUTLET BOXES THAT OCCUR AT THE SAME LOCATION SHALL BE GANGED TOGETHER IN THE SAME COVERPLATE UNLESS OTHERWISE NOTED.
- 3.7. PROVIDE "fs" OR "fd" FERALOY BOXES FOR ALL SURFACE MOUNTED DEVICES, INCLUDING FIRE ALARM, SECURITY AND AUXILIARY SYSTEMS.
4. GROUNDING
- 4.1. GROUND ALL EQUIPMENT IN ACCORDANCE WITH LATEST EDITION OF THE ELECTRICAL SAFETY CODE. PROVIDE SEPARATE GREEN INSULATED GROUND CONDUCTOR IN EVERY CONDUIT TO ALL DEVICES, LUMINAIRES AND FEEDERS (PANELBOARDS, SPLITTERS, DISCONNECT SWITCHES, ETC.).
5. WIRE AND CABLE
- 5.1. ALL WIRE AND CABLE SHALL BE COPPER, MINIMUM 12 GAUGE, NO. 12 AND NO. 10 SOLID, NO. 8 AND LARGER STRANDED, WITH RW90 INSULATION, 600VOLT RATING.
- 5.2. BX#12 MAY BE USED IN CEILING SPACE FROM CEILING DISTRIBUTION BOX DOWN TO RECEPTACLES IN PARTITIONS. BX RUNS IN CEILING SPACE NOT TO EXCEED 3048MM(10'-0") IN LENGTH. DO NOT RUN BX CABLES INTO PANELBOARDS.
- 5.3. WALL MOUNTED DEVICES SHALL BE FED VERTICALLY. HORIZONTAL RUNS THROUGH PARTITIONS SHALL NOT BE PERMITTED, EXCEPT IN LOW HEIGHT PARTITIONS OR WHERE NOTED ON DRAWINGS.
- 5.4. SIZE ALL WIRE FOR MAXIMUM 2% VOLTAGE DROP.
- 5.5. ALL HOME RUNS TO BE IN CONDUIT.
6. LOCAL SWITCHES
- 6.1. PROVIDE SPECIFICATION GRADE LOCAL 20A. 120 VOLT AND 347 VOLT SWITCHES, A.C. TYPE WITH MATCHING COVERPLATE:

120 VOLT

P&S #2621 SERIES

HUBBELL #HBL2121 SERIES

LEVITON #5621-2 SERIES

347 VOLT

P&S #2601-347 SERIES

LEVITON #5621-C-347 SERIES
- 6.2. OCCUPANCY SENSOR LIGHT SWITCH SHALL BE HUBBELL OCCUPANCY SENSORS LHMTS-1-WH OR EQUAL BY WATTSTOPPER OR NIGHT SUITABLE FOR 120V OR 347V AS REQUIRED. SENSOR SHALL BE MANUAL "ON" WITH AUTO-OFF FUNCTION AND C/W FIELD ADJUSTABLE VIEWING ANGLE AND ADAPTIVE TECHNOLOGY. PROVIDE INDIVIDUAL TIME AND SENSOR ADJUSTMENT TO CLIENT'S REQUIREMENTS.
- 6.3. CEILING MOUNTED ADAPTIVE TECHNOLOGY OCCUPANCY SENSORS SHALL BE HUBBELL DUAL TECHNOLOGY H-MOSS OCCUPANCY SENSORS ATD SUITABLE FOR 120V OR 347V AS REQUIRED. SENSOR SHALL BE C/W POWER PACK AND ALL NECESSARY WIRING ACCESSORIES AND SUITABLE FOR 500, 1000 OR 2000 SQ. FT. AS REQUIRED. PROVIDE INDIVIDUAL TIME AND SENSOR ADJUSTMENT TO CLIENT'S REQUIREMENTS.
- 6.4. REFER TO LEGEND FOR OTHER TYPES.
7. RECEPTACLES
- 7.1. PROVIDE SPECIFICATION GRADE 15A. 120 VOLT, "U" GROUND DUPLEX RECEPTACLES, WITH MATCHING COVERPLATES. RECEPTACLES SHALL BE OF THE "DESIGNER" RECTILINEAR STYLE.
- 7.2. REFER TO LEGEND FOR OTHER TYPES.
- 7.3. RECEPTACLES ON SEPARATE CIRCUITS ARE TO HAVE CIRCUIT NUMBER IDENTIFIED ON THE WALL PLATE AND FURTHER IDENTIFIED WITH THE EXACT LOCATION LISTED IN THE PANEL DIRECTORY.
8. DIMMERS
- 8.1. PROVIDE DIMMERS WITH LINEAR SLIDE CONTROL, SIZED TO SUIT LOADS CONTROLLED FOR FLUORESCENT, INCANDESCENT, LOW VOLTAGE MAGNETIC AND LOW VOLTAGE ELECTRONIC LIGHTING AS INDICATED.
- 8.2. ALL DIMMERS SHALL INCORPORATE AN AIR GAP WHICH SHALL BE ACCESSIBLE WITHOUT REMOVING THE FACEPLATE; MEET THE U.L. 20 U.L. 1472 LIMITED SHORT CIRCUIT TEST REQUIREMENTS FOR SNAP SWITCHES; AND MEET ANSI/IEEC STANDARD C62.41-1980, TESTED TO WITHSTAND VOLTAGE SURGES OF UP TO 6000V, AND CURRENT SURGES OF UP TO 200A WITHOUT DAMAGE. MANUFACTURER SHALL PROVIDE FILE CARD UPON REQUEST SHOWING THEIR COMPLIANCE WITH THE ABOVE STANDARDS.
- 8.3. DIMMERS SHOWN SIDE BY SIDE SHALL BE GANGED UNDER ONE SEAMLESS, MULTI-GANG FACEPLATE.
- 8.4. DIMMERS SHALL BE OF LUTRON NOVA T SERIES OR OF APPROVED EQUAL.
- 8.5. WHEN FLUORESCENT AND/OR COMPACT FLUORESCENT LAMPS ARE TO BE DIMMED, PROVIDE EITHER LUTRON ECO-10 OR LUTRON HI-LUME DIMMING BALLASTS AS SPECIFIED IN LUMINAIRE SCHEDULE. OPERATE LAMPS AT FULL BRIGHTNESS FOR A MINIMUM 100 HOURS PRIOR TO DIMMING.
9. MECHANICAL TRADES WIRING
- 9.1. UNLESS OTHERWISE NOTED, ALL STARTERS AND CONTROL WIRING TO BE PROVIDED BY DIVISION 15. DIVISION 16 TO RECEIVE. INSTALL STARTERS AND PROVIDE ALL LINE-SIDE AND LOAD-SIDE POWER WIRING AND REQUIRED ISOLATING DISCONNECT SWITCHES.
- 9.2. CONFIRM ELECTRICAL REQUIREMENTS AND EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT WITH DIVISION 15 PRIOR TO INSTALLATION.
10. LUMINAIRES
- 10.1. PROVIDE ALL LUMINAIRES AS SHOWN ON THE DRAWINGS AND AS SPECIFIED IN THE LUMINAIRE SCHEDULE.
- 10.2. ALL LUMINAIRES SHALL BE COMPLETE WITH NEW LAMPS, BALLASTS, ACCESSORIES AND MOUNTING APPURTENANCES.
- 10.3. ALL LUMINAIRES TO BE CSA APPROVED.
- 10.4. AIM AND ADJUST ALL LUMINAIRES IN PRESENCE OF CONSULTANT.
- 10.5. ALL NEW DOWNLIGHT AND SURFACE MOUNTED LUMINAIRES INSTALLED IN OR ON THE BASE BUILDING CEILINGS SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE WITH TENSO CHAINS UNLESS OTHERWISE NOTED.
- 10.6. UNLESS WRITTEN CONFIRMATION CAN BE PROVIDED THAT THE EXISTING BASE BUILDING CEILING HAS BEEN DESIGNED AND CONSTRUCTED TO SUPPORT THE ADDITIONAL WEIGHT OF THE BASE BUILDING LUMINAIRES, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ADDITIONAL SUPPORTS ON ALL NEW BASE BUILDING LUMINAIRES BEING ADDED AND ON ALL RELOCATED EXISTING LUMINAIRES. ALL FLUORESCENT FIXTURES SHALL BE SUPPORTED WITH 2 TENSO CHAINS FROM STRUCTURE ABOVE. ALL DOWNLIGHTS SHALL BE SUPPORTED WITH A MINIMUM OF ONE TENSO CHAIN. INCLUDE COST IN TENDER PRICE.
- 10.7. EACH NEW FLUORESCENT LUMINAIRE INSTALLED ON BRANCH CIRCUITS WITH VOLTAGES EXCEEDING 150 VOLTS-TO-GROUND, SHALL BE:

- (A) PROVIDED WITH A DISCONNECTING MEANS INTEGRAL WITH THE LUMINAIRE THAT SIMULTANEOUSLY OPENS ALL CIRCUIT CONDUCTORS BETWEEN THE BRANCH CIRCUIT CONDUCTORS AND THE CONDUCTORS SUPPLYING THE BALLAST(S); AND
- (B) MARKED IN A CONSPICUOUS, LEGIBLE, AND PERMANENT MANNER ADJACENT TO THE DISCONNECTING MEANS, IDENTIFYING THE SPECIFIC PURPOSE.
- 10.8. COOPERATE WITH ALL OTHER TRADES FOR THE PROPER INSTALLATION OF ALL LUMINAIRES.
- 10.9. ACCEPTABLE MANUFACTURERS FOR ALL TYPES OF LAMPS OF ALL SPECIFIED LUMINAIRES SHALL BE OSRAM SYLVANIA, PHILIPS OR GE. UNLESS OTHERWISE NOTED, BALLASTS AND LAMPS MUST BE BY THE SAME MANUFACTURER.
- 10.10. WITH JUST EMERGENCY LIGHTING IN OPERATION, AND AT NIGHT, THE ELECTRICAL CONTRACTOR IS TO MEASURE THE "AVERAGE" ILLUMINATION ON THE FLOOR (BY ESTABLISHING THE MAXIMUM AND THE MINIMUM LEVEL) IN THE PRINCIPAL ROUTES PROVIDING ACCESS TO EXITS, PLOT ALL LIGHTING RESULTS ON A CAD DISK OR ON A SET OF REPRODUCIBLE SEPIA DRAWINGS FOR REVIEW BY THE CONSULTANT. SUBMISSION TO THE BUILDING INSPECTION AUTHORITIES TO BE BY THE ELECTRICAL CONTRACTOR.
11. MEGGERING AND BALANCING
- 11.1. MEGGER ALL POWER CIRCUIT FEEDERS, IF GROUND RESISTANCE ON ANY CIRCUIT IS LESS THAN THAT REQUIRED BY CSA OR OTHER GOVERNING REGULATIONS, SUCH CIRCUITS ARE TO BE CONSIDERED DEFECTIVE AND MUST BE REPLACED.
- 11.2. MEASURE PHASE CURRENT TO PANELBOARDS WITH NORMAL LOADS OPERATING AT TIME OF ACCEPTANCE. ADJUST BRANCH CIRCUIT CONNECTIONS AS REQUIRED TO OBTAIN BEST BALANCE OF CURRENT BETWEEN PHASES AND SUBMIT A REPORT FOR INSERTION INTO MANUALS.
12. SERVICE EQUIPMENT
- 12.1. ALL NEW PANELBOARDS, DISCONNECT SWITCHES, METERS, TRANSFORMERS, ETC., TO BE COPPER WINDINGS/BUS-BARS, SAME MANUFACTURE, RATING AND TYPE AS BASE BUILDING EQUIPMENT UNLESS OTHERWISE NOTED. MOLDED CASE CIRCUIT BREAKERS TO BE BOLT-ON AND SAME MANUFACTURER, RATING AND TYPE AS BASE BUILDING BREAKERS. ALL ATS'S AND SURFACE MOUNTED PANELBOARDS TO BE SPRINKLERPROOF. IF UNABLE TO MATCH BASE BUILDING EQUIPMENT, ONE OF THE FOLLOWING MANUFACTURER'S EQUIPMENT MUST BE PROVIDED:

SCHNEIDER

CUTLER-HAMMER

SIEMENS
- 12.2. ALL NEW PANELBOARDS SHALL BE COMPLETE WITH 200% RATED NEUTRAL BUS.
- 12.3. ALL MAIN BREAKERS SHALL BE SEPARATELY MOUNTED ON TOP OR BOTTOM OF PANEL TO SUIT CABLE ENTRY.
- 12.4. DRY TYPE TRANSFORMERS SHALL BE OF THE SAME MANUFACTURER AS THE BASE BUILDING BUT WITH A DESIGN K FACTOR OF 13 AND WITH ELECTROSTATICALLY SHIELDED, COPPER WINDINGS. PROVIDE DOUBLE LUGS ON TRANSFORMER NEUTRALS FOR CONNECTION OF CABLES. TRANSFORMERS SHALL NOT BE "T-TAP" TYPE. IF UNABLE TO MATCH BASE BUILDING TRANSFORMER, ONE OF THE FOLLOWING MANUFACTURER'S TRANSFORMERS MUST BE PROVIDED:

SCHNEIDER

DELTA

ACME

HAMMOND

MAGNETEK/POLYGON
- 12.5. CEILING MOUNT TRANSFORMERS UP TO 45 KVA WITH SUSPENSION RODS AND SPRING ISOLATORS, TRANSFORMERS 60 KVA AND LARGER TO BE FLOOR MOUNTED ON KORFUND ISOLATION PADS UNLESS OTHERWISE NOTED.
- 12.6. ALL FLOOR MOUNTED DISTRIBUTION EQUIPMENT, INCLUDING TRANSFORMERS, PANELBOARDS AND/OR UPS MODULES SHALL BE INSTALLED ON A 100MM (4") HIGH CONCRETE BASE TO EXTEND 50MM (2") ON ALL SIDES WITH CHAMFERED CORNERS. ALL CONCRETE WORK TO BE INCLUDED IN THIS DIVISION.
- 12.7. PROVIDE A CONCRETE BASE 100MM (4") HIGH AT ALL SLEEVE LOCATIONS AND CONDUITS PENETRATING THE FLOOR SLAB. CONCRETE BASE TO EXTEND 100MM (4") BEYOND THE EDGE OF THE SLEEVE OR CONDUIT. ALL CONCRETE WORK TO BE INCLUDED IN THIS DIVISION.
13. CABLE TROUGHS
- 13.1. CABLE TROUGHS, AS DEFINED IN CSA C22.2, NO.126, ACCESSORIES AND FITTINGS SHALL BE MANUFACTURED TO EMAC F5.1.
- 13.2. UNLESS OTHERWISE NOTED, POWER SYSTEMS AND VOICE/DATA/HUB ROOM CABLE TRAYS SHALL BE VENTILATED STEEL, CLASS C1, WITHOUT COVER, SIZED AS INDICATED AND WITH A NATURAL FINISH.
- 13.3. SUPPORTS SHALL BE ROD AND CHANNEL OF A SIZE TO SUIT TOTAL LOAD. PROVIDE "2" BRACKETS TO BE INSTALLED AT EXTERIOR OF CABLE TRAYS TO PREVENT DAMAGE TO CABLES.
- 13.4. SUPPLY ALL BENDS, ELBOWS, END PLATES, DROP OUTS, TEES, WYES AND EXPANSION JOINTS FOR THE COMPLETE SYSTEM AS REQUIRED. PROVIDE PLASTIC CAPS ON ALL INTERNAL BOLTS WITHIN CABLE TRAY WHICH ARE USED TO JOIN BARRIER STRIPS AND FITTINGS.
- 13.5. REMOVE SHARP EDGES TO PREVENT CABLE DAMAGE OR INJURY TO PERSONNEL.
- 13.6. PROVIDE GROUNDING FOR ALL CABLE TROUGHS AS PER THE O.E.S.C.
14. DRY WALL CEILINGS
- 14.1. IN ALL DRYWALL CEILING AREAS, DIVISION 16 IS TO REMOVE AND RELOCATE ALL EXISTING JUNCTION BOXES TO ACCESSIBLE CEILING SPACE
- 14.2. PROVIDE ACCESS PANELS FOR ALL NEW AND EXISTING DEVICES AS REQUIRED.
15. BREAKERS
- 15.1. PROVIDE BREAKER LOCKS FOR ALL NEW AND EXISTING BREAKERS SERVING EXIT LIGHTS, EMERGENCY LIGHTING AND EMERGENCY BATTERY PACKS.
- 15.2. PROVIDE 15A.1P G.F.I BREAKER FOR ALL DUPLEX RECEPTACLES AND 15A.2P G.F.I BREAKER FOR ALL SPLIT RECEPTACLES INSTALLED WITHIN 1.5 METERS (59") OF SINK, SHOWER, ETC.
- 15.3. TANDEM BREAKERS SHALL NOT BE UTILIZED.

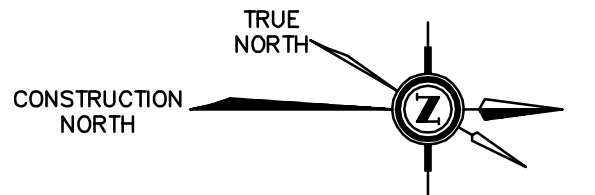
Revision/Issue	
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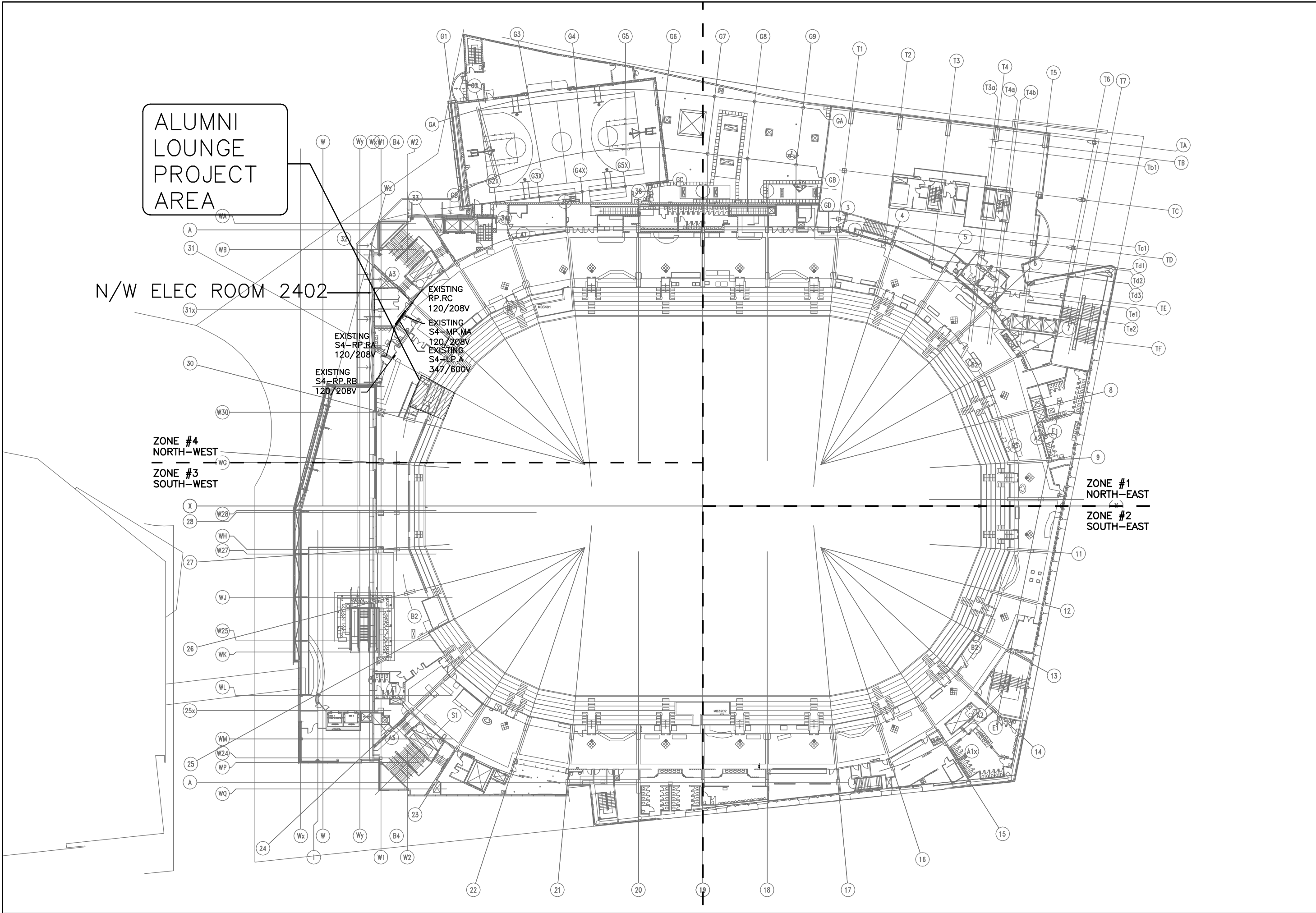
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Project
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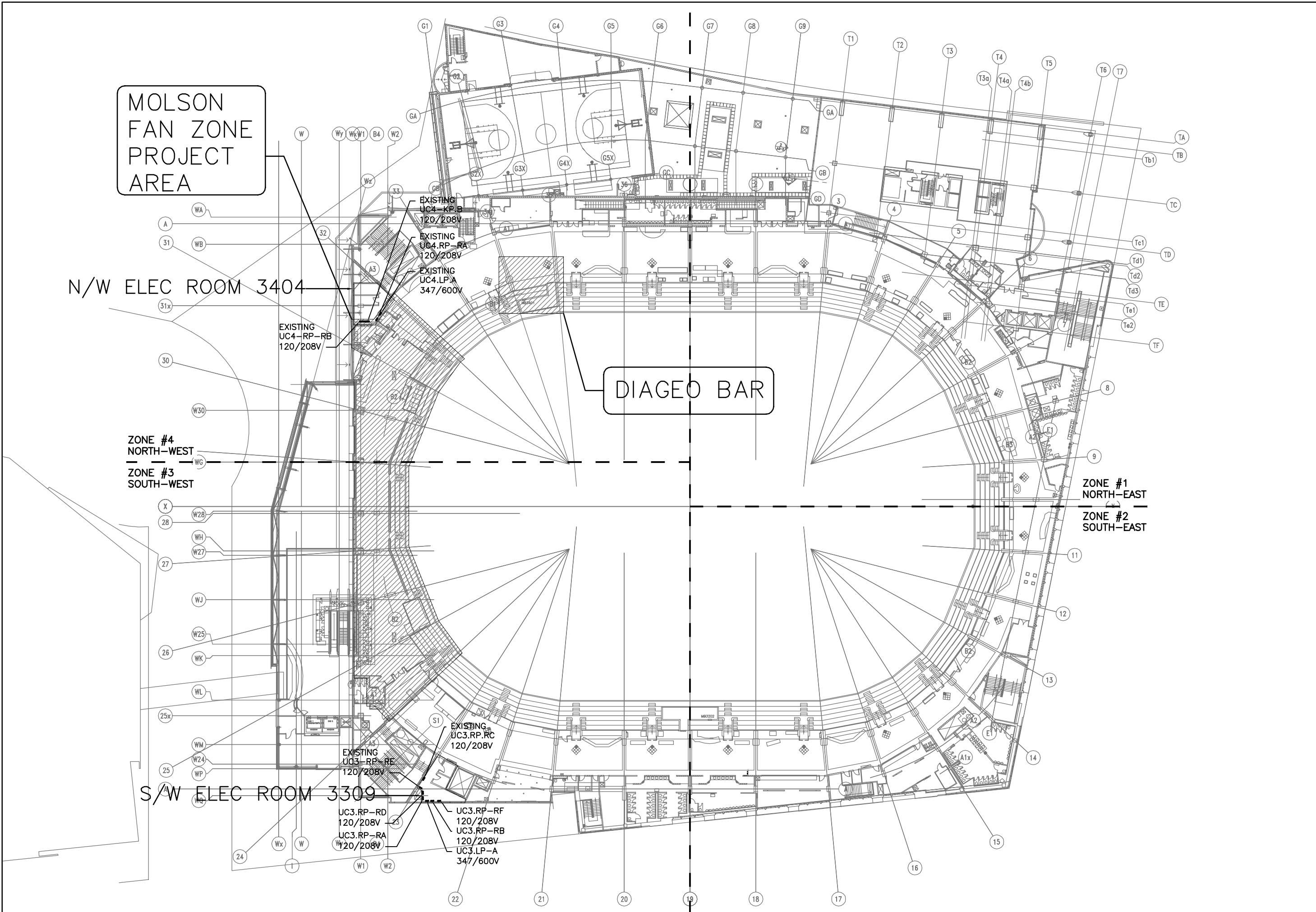
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**ELECTRICAL
SPECIFICATIONS**

Scale	NTS
Project	16-1124
Drawn	PE
Checked	KP
Dwg. File	
Sheet No.	

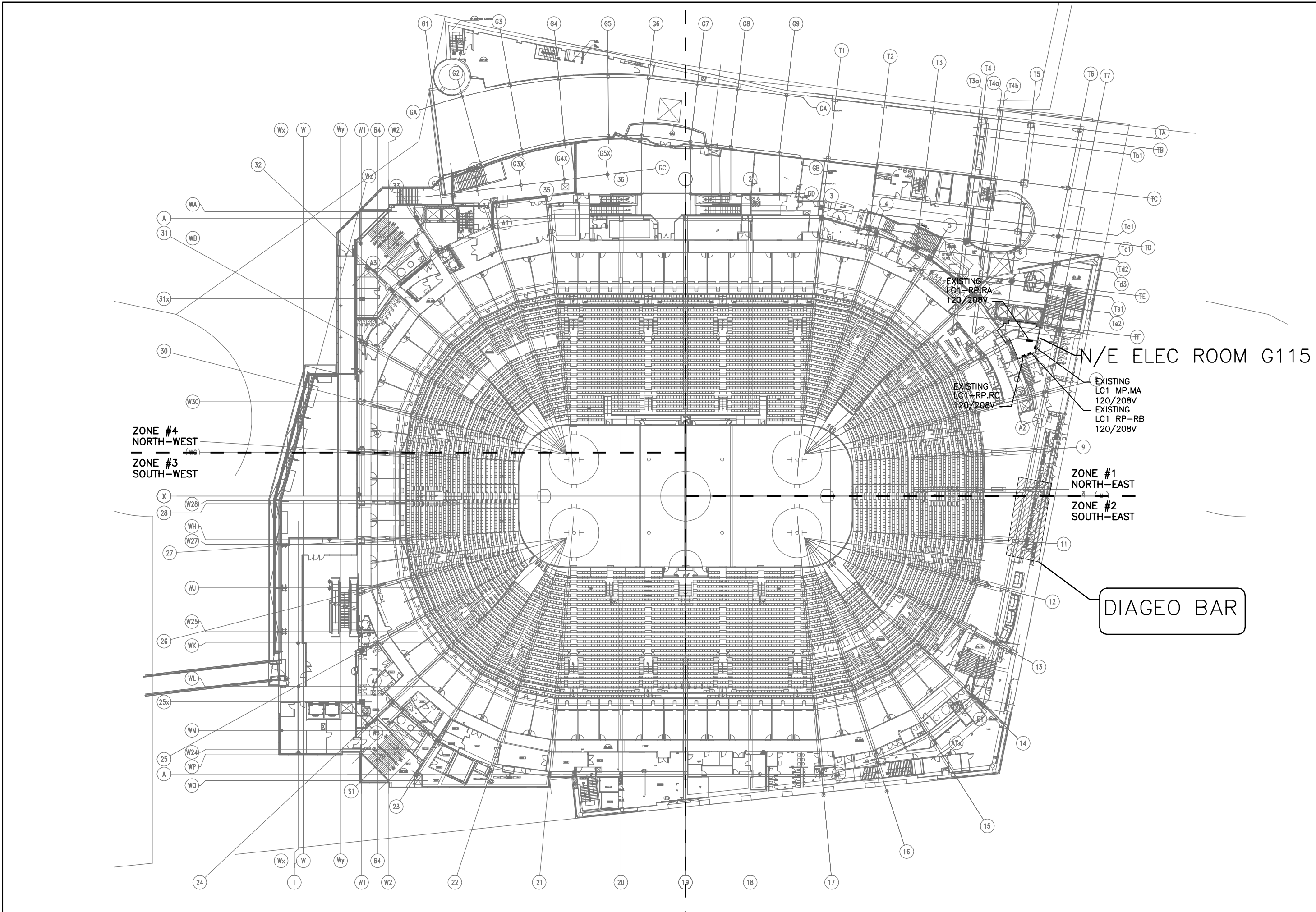
E-003



2 2ND FLOOR KEY PLAN
SCALE: 1:500



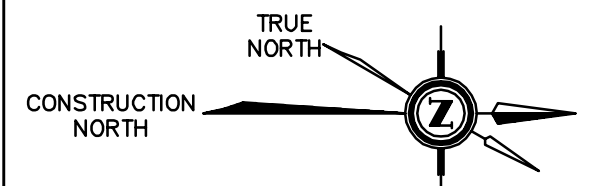
3 3RD FLOOR KEY PLAN
SCALE: 1:500



1 1ST FLOOR KEY PLAN
SCALE: 1:500

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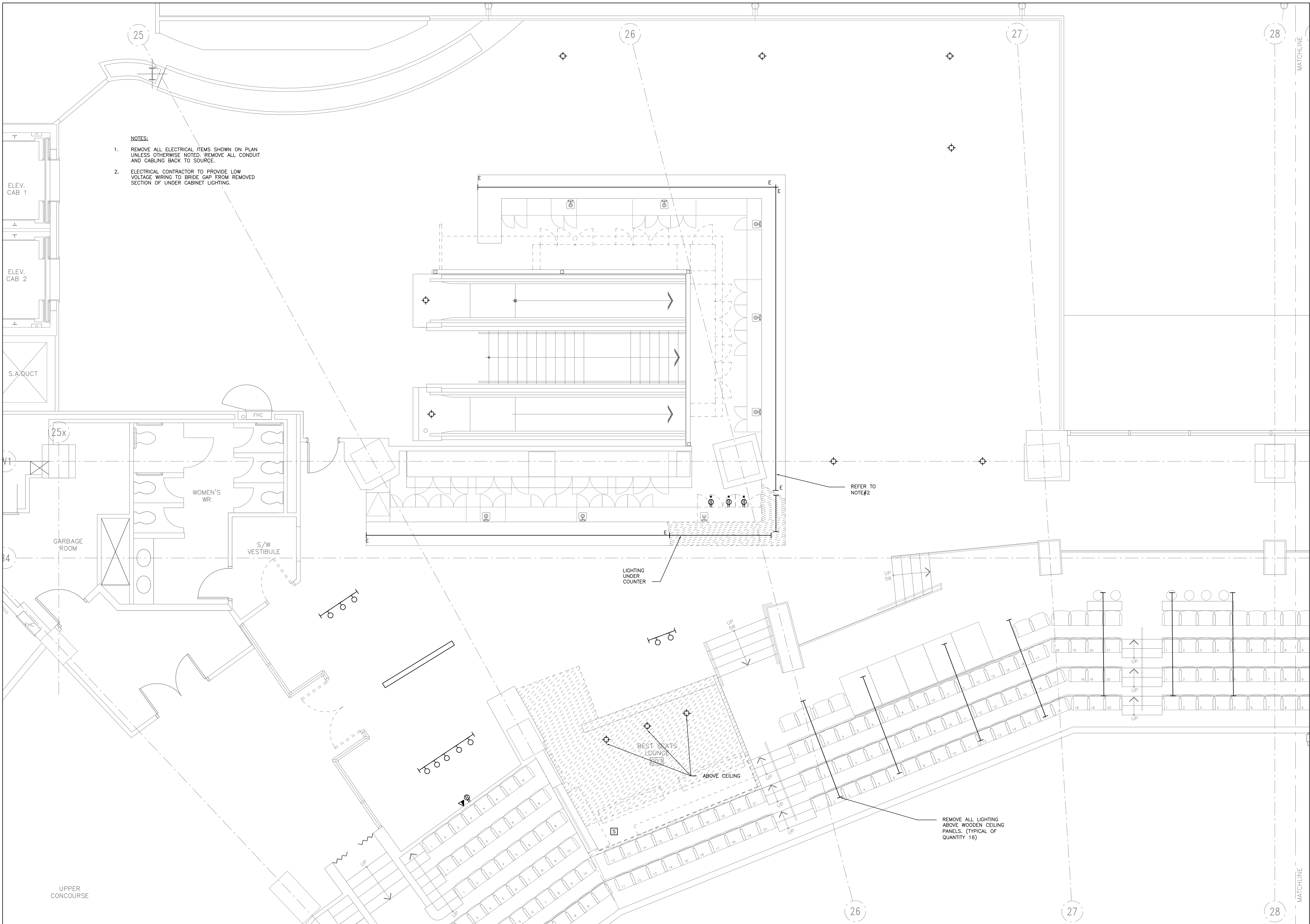
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Sheet Title
**1ST, 2ND AND 3RD
FLOOR KEY PLANS**

Scale	AS SHOWN
Project	16-1124
Drawn	PE
Checked	KP
Dwg. File	
Sheet No.	

E-004

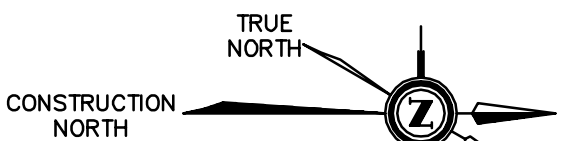


NOTES:

1. REMOVE ALL ELECTRICAL ITEMS SHOWN ON PLAN UNLESS OTHERWISE NOTED. REMOVE ALL CONDUIT AND CABLING BACK TO SOURCE.
2. ELECTRICAL CONTRACTOR TO PROVIDE LOW VOLTAGE WIRING TO BRIDGE GAP FROM REMOVED SECTION OF UNDER CABINET LIGHTING.

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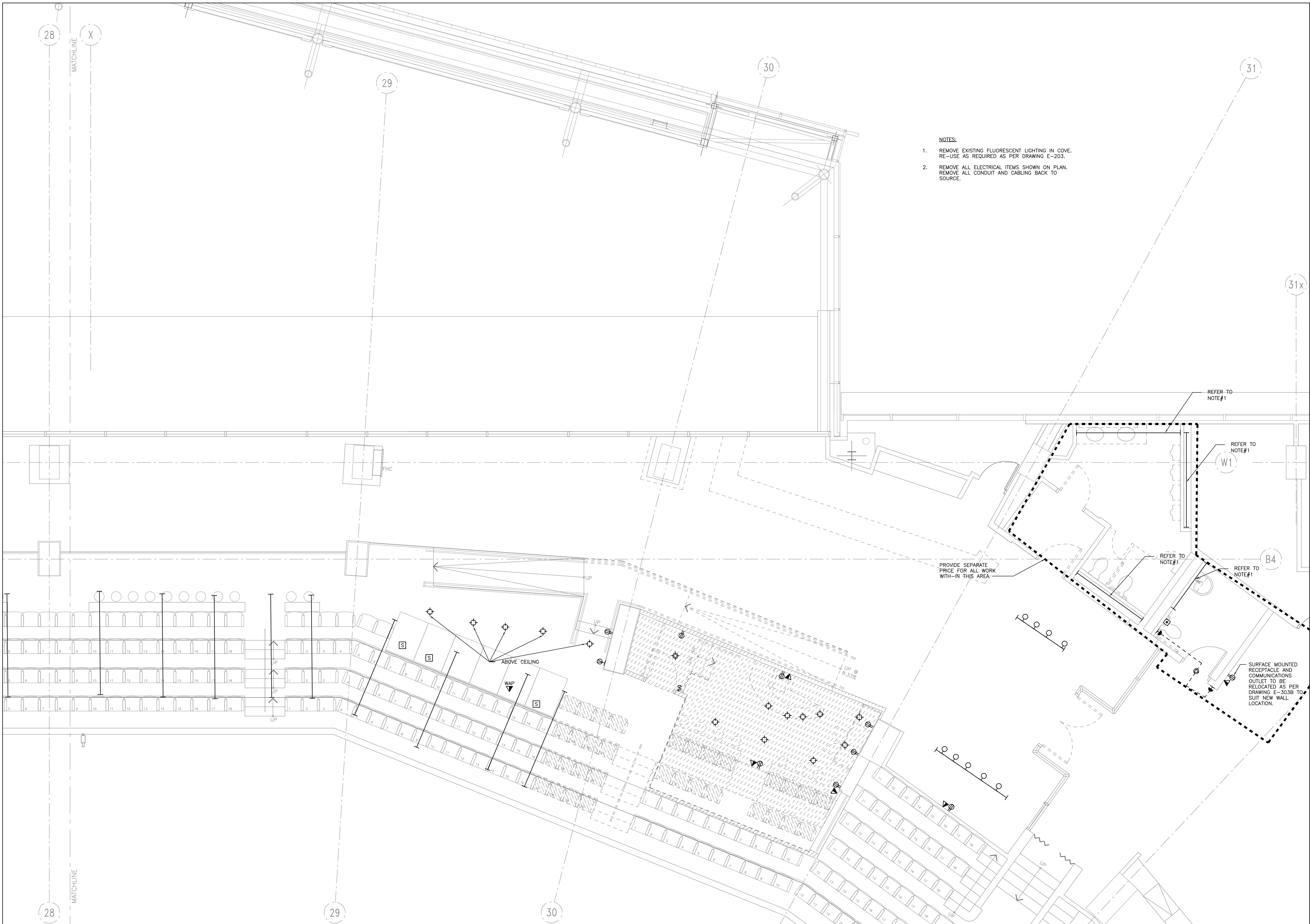
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Project
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Sheet Title
3RD FLOOR – DEMOLITION PLAN SOUTH

Scale	NTS
Project	16-1124
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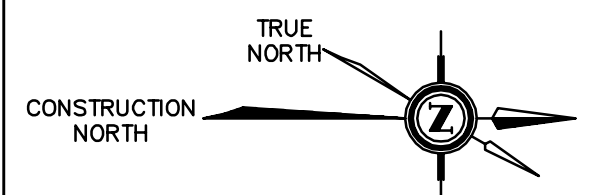
E-103A



- NOTES:
1. REMOVE EXISTING FLUORESCENT LIGHTING IN COVE. RE-USE AS REQUIRED AS PER DRAWING E-203.
 2. REMOVE ALL ELECTRICAL ITEMS SHOWN ON PLAN. REMOVE ALL CONDUIT AND CABLING BACK TO SOURCE.

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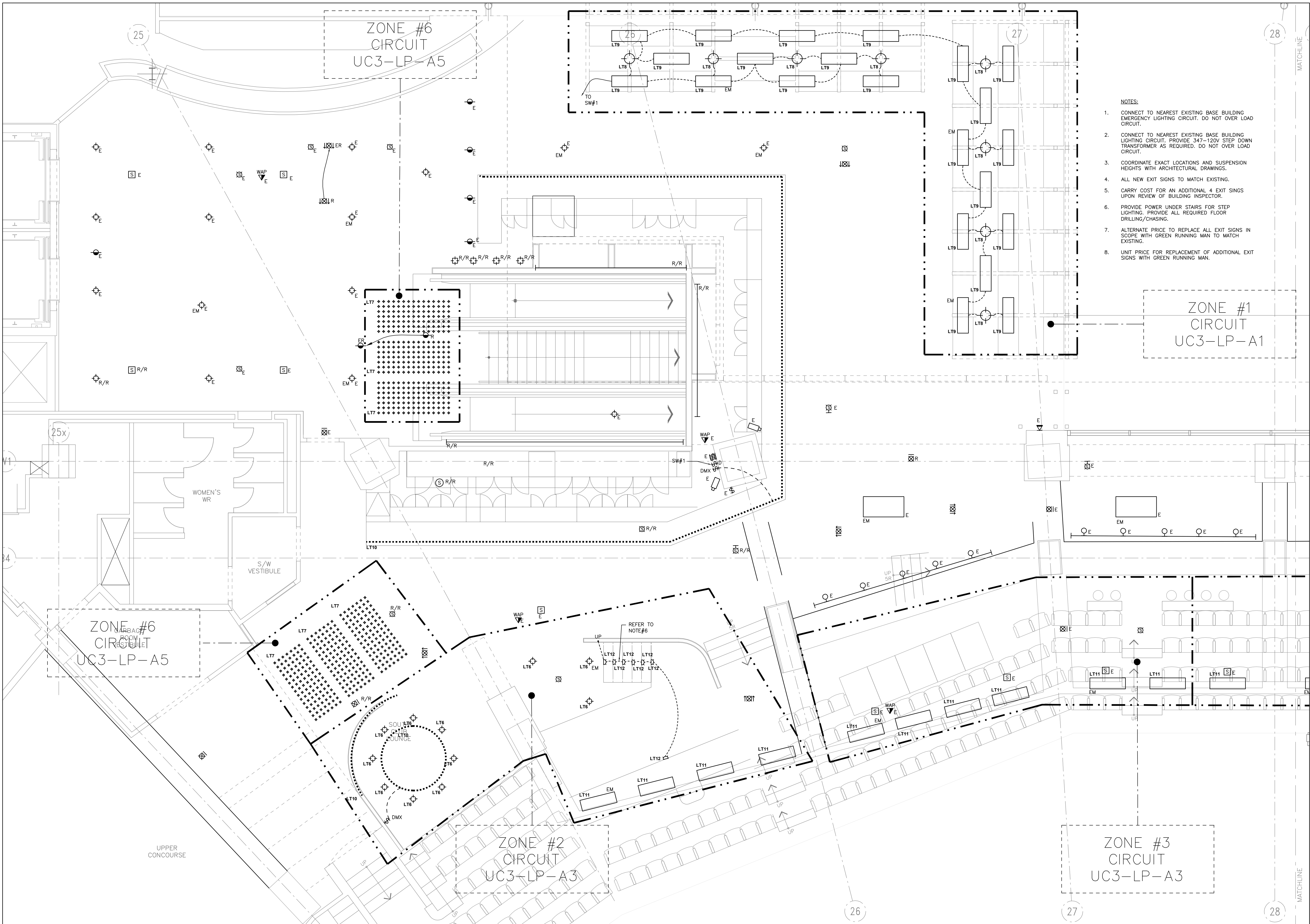
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Project
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Sheet Title
3RD FLOOR – DEMOLITION PLAN NORTH

Scale	NTS
Project	16-1124
Drawn	PE
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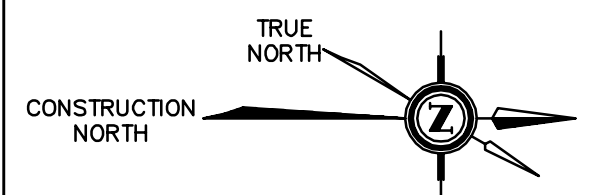
E-103B



- NOTES:
1. CONNECT TO NEAREST EXISTING BASE BUILDING EMERGENCY LIGHTING CIRCUIT. DO NOT OVER LOAD CIRCUIT.
 2. CONNECT TO NEAREST EXISTING BASE BUILDING LIGHTING CIRCUIT. PROVIDE 347-120V STEP DOWN TRANSFORMER AS REQUIRED. DO NOT OVER LOAD CIRCUIT.
 3. COORDINATE EXACT LOCATIONS AND SUSPENSION HEIGHTS WITH ARCHITECTURAL DRAWINGS.
 4. ALL NEW EXIT SIGNS TO MATCH EXISTING.
 5. CARRY COST FOR AN ADDITIONAL 4 EXIT SIGNS UPON REVIEW OF BUILDING INSPECTOR.
 6. PROVIDE POWER UNDER STAIRS FOR STEP LIGHTING. PROVIDE ALL REQUIRED FLOOR DRILLING/CHASING.
 7. ALTERNATE PRICE TO REPLACE ALL EXIT SIGNS IN SCOPE WITH GREEN RUNNING MAN TO MATCH EXISTING.
 8. UNIT PRICE FOR REPLACEMENT OF ADDITIONAL EXIT SIGNS WITH GREEN RUNNING MAN.

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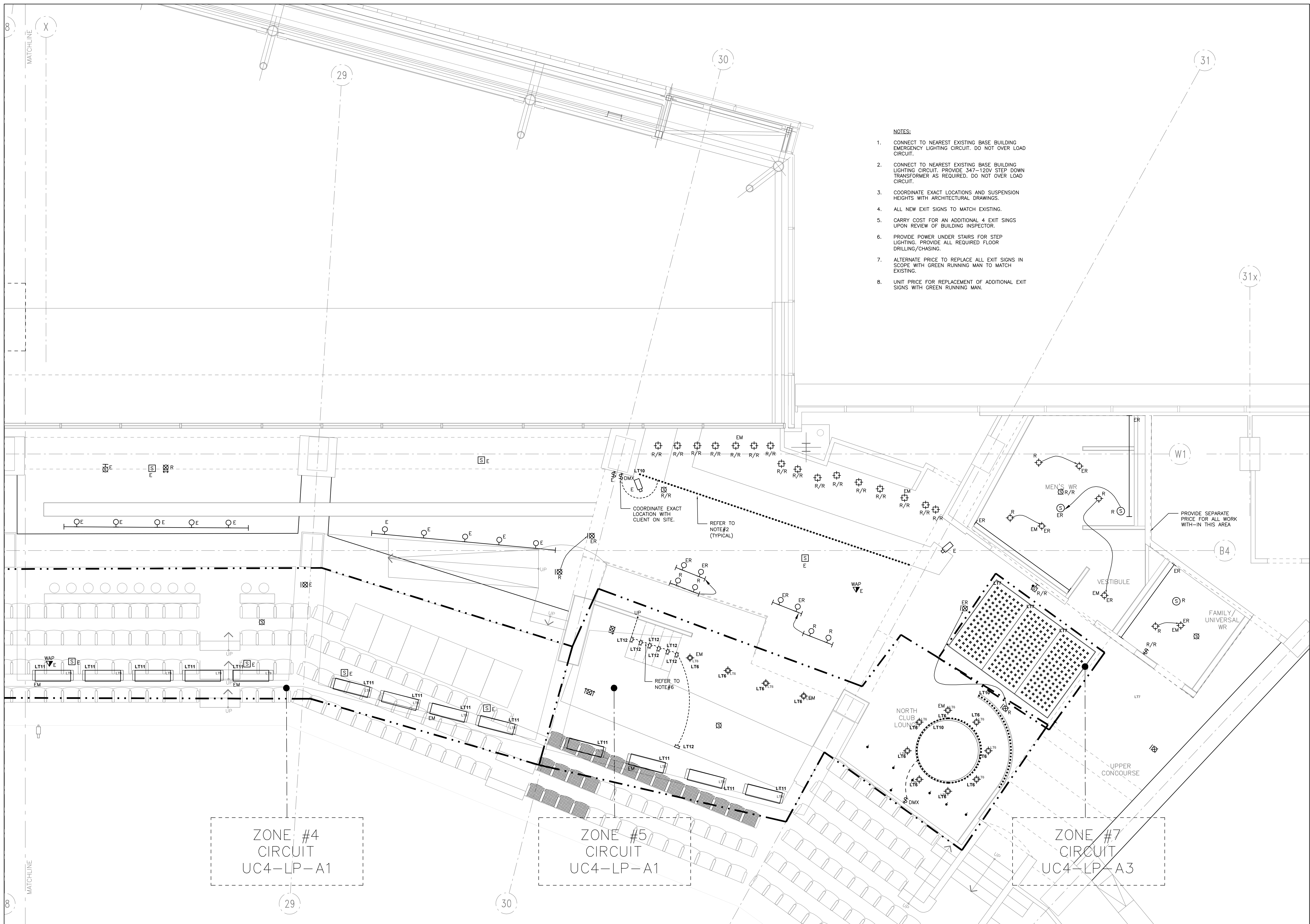
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Sheet Title
3RD FLOOR - LIGHTING PLAN SOUTH

Scale	1:50
Project	16-1124
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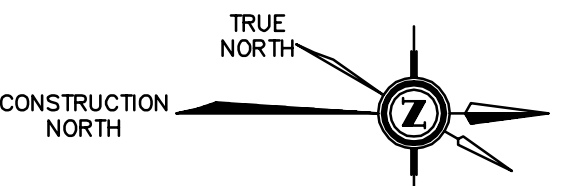


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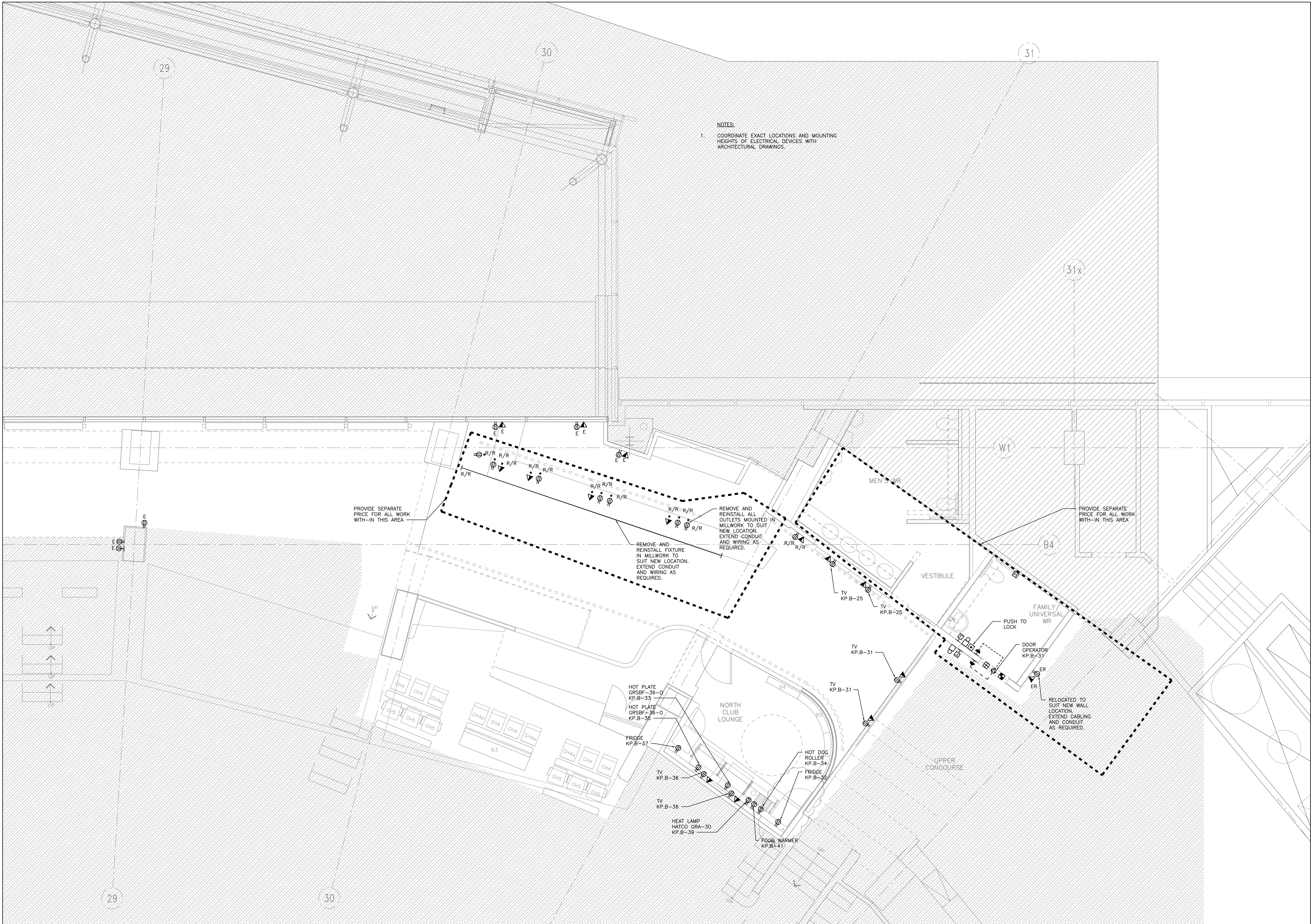
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Project **MOLSON FAN ZONE**
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Sheet Title
3RD FLOOR – LIGHTING PLAN NORTH

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E-203B



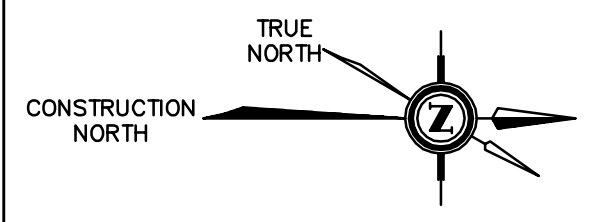
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Sheet Title
**3RD FLOOR – POWER &
SYSTEMS PLAN NORTH**

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Project	16-1124
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E-303B



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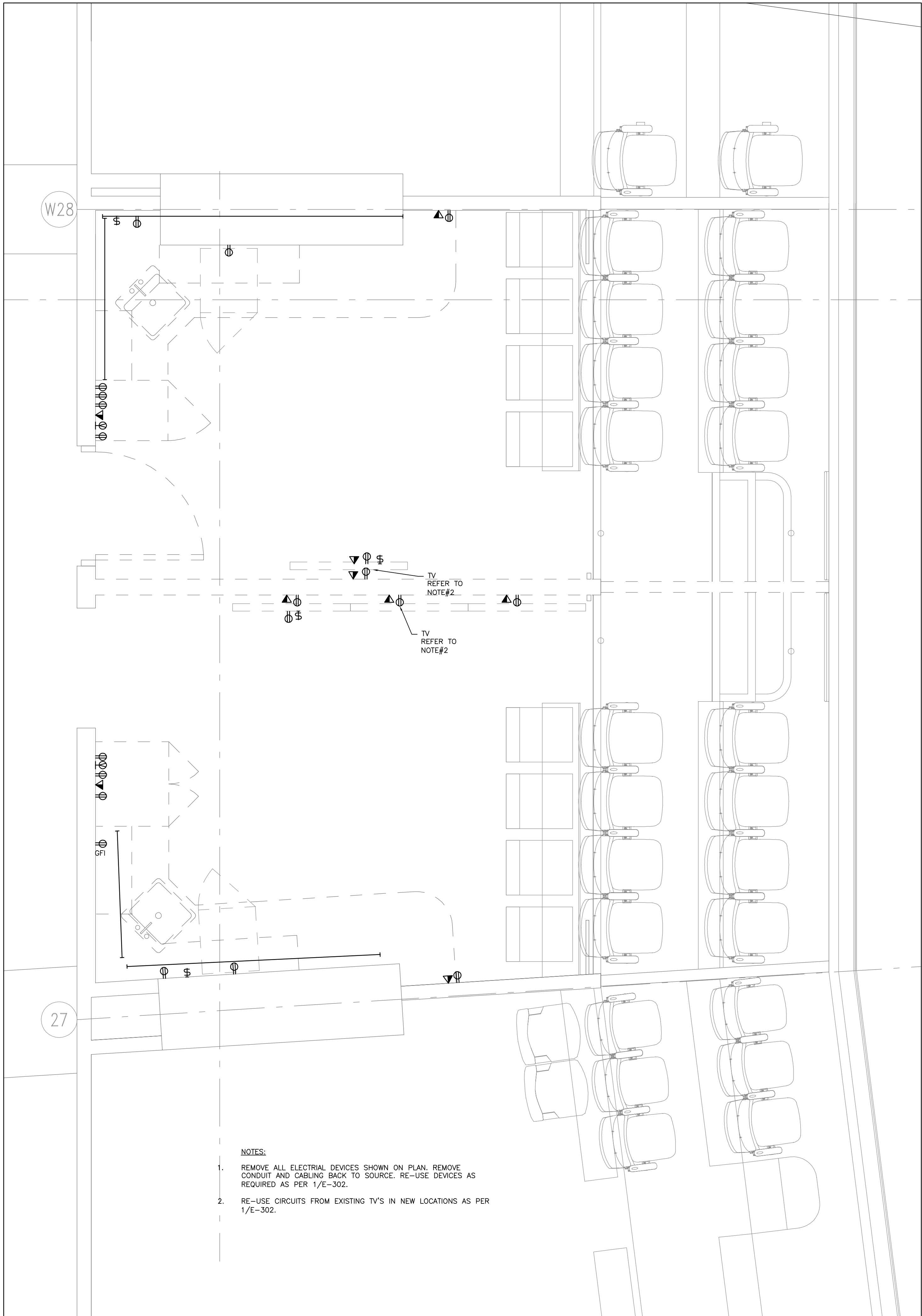
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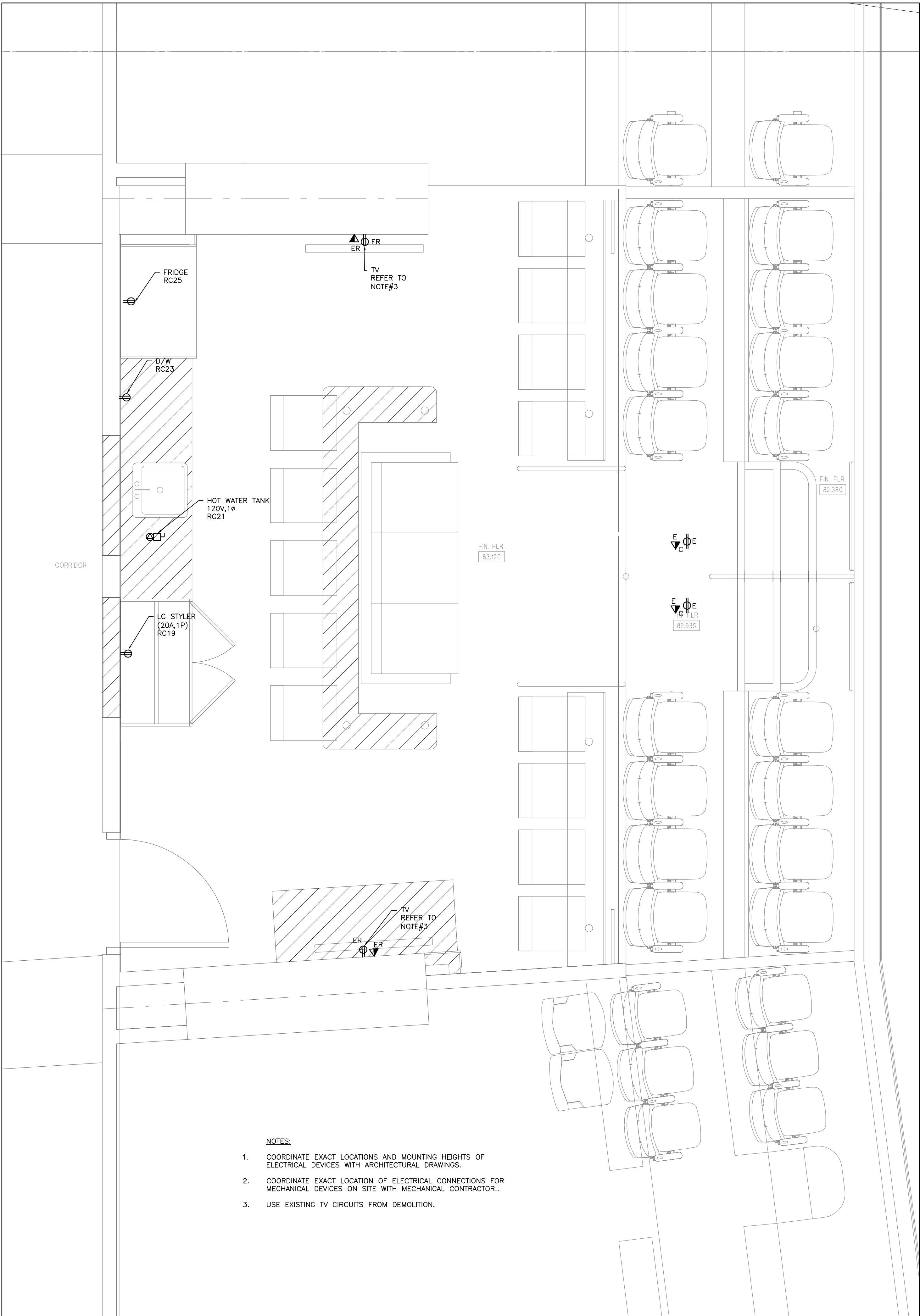
Sheet Title

2ND FLOOR ALUMNI
LIGHTING PLAN

E-202



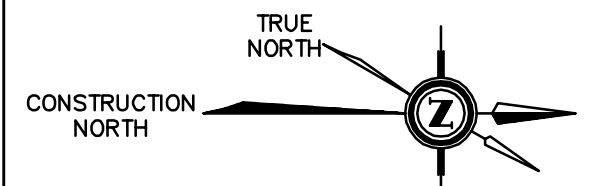
2 ALUMNI LOUNGE DEMOLITION PLAN
E-302 SCALE: 1:20



1 ALUMNI LOUNGE ELECTRICAL PLAN
E-302 SCALE: 1:20

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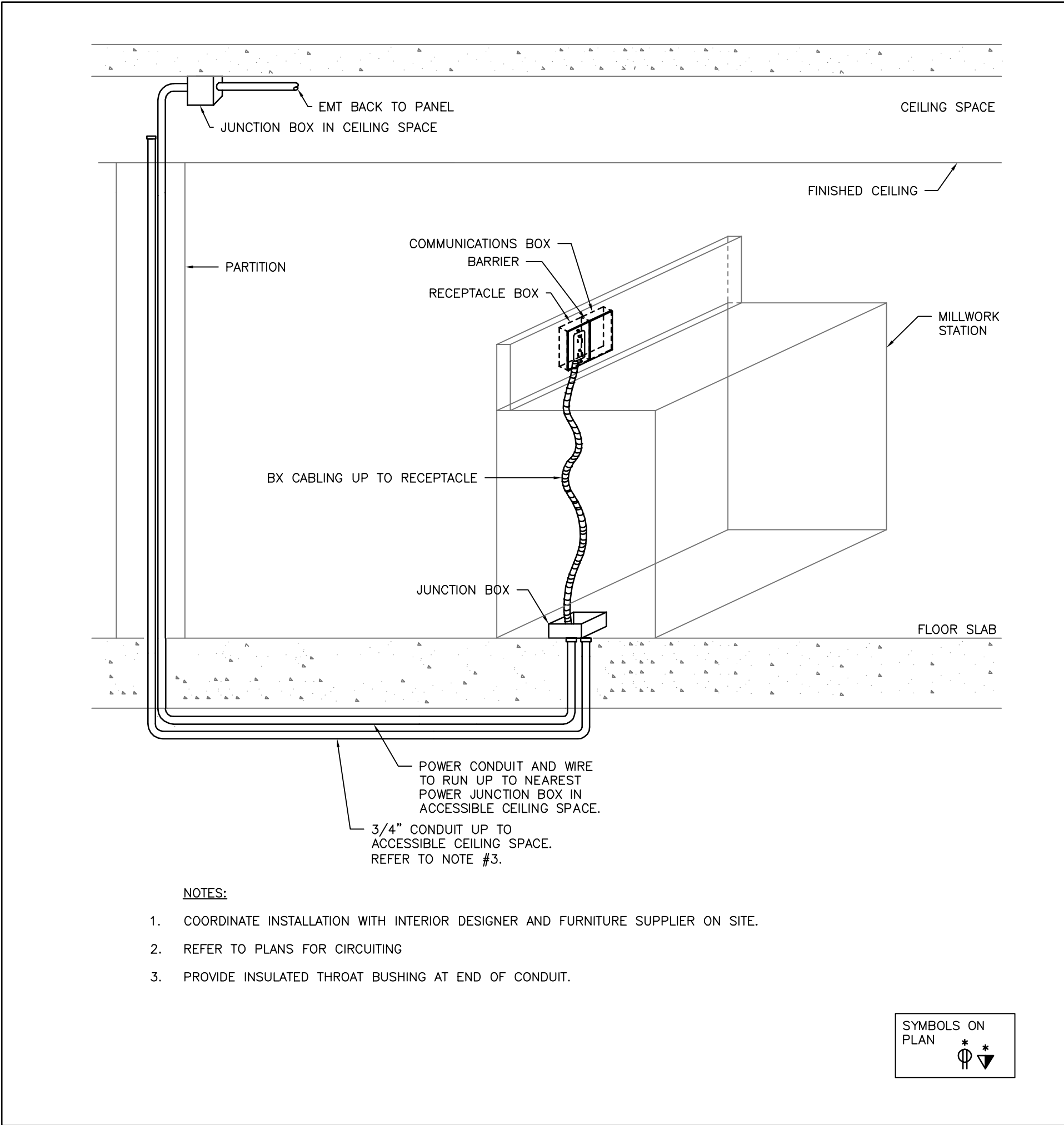
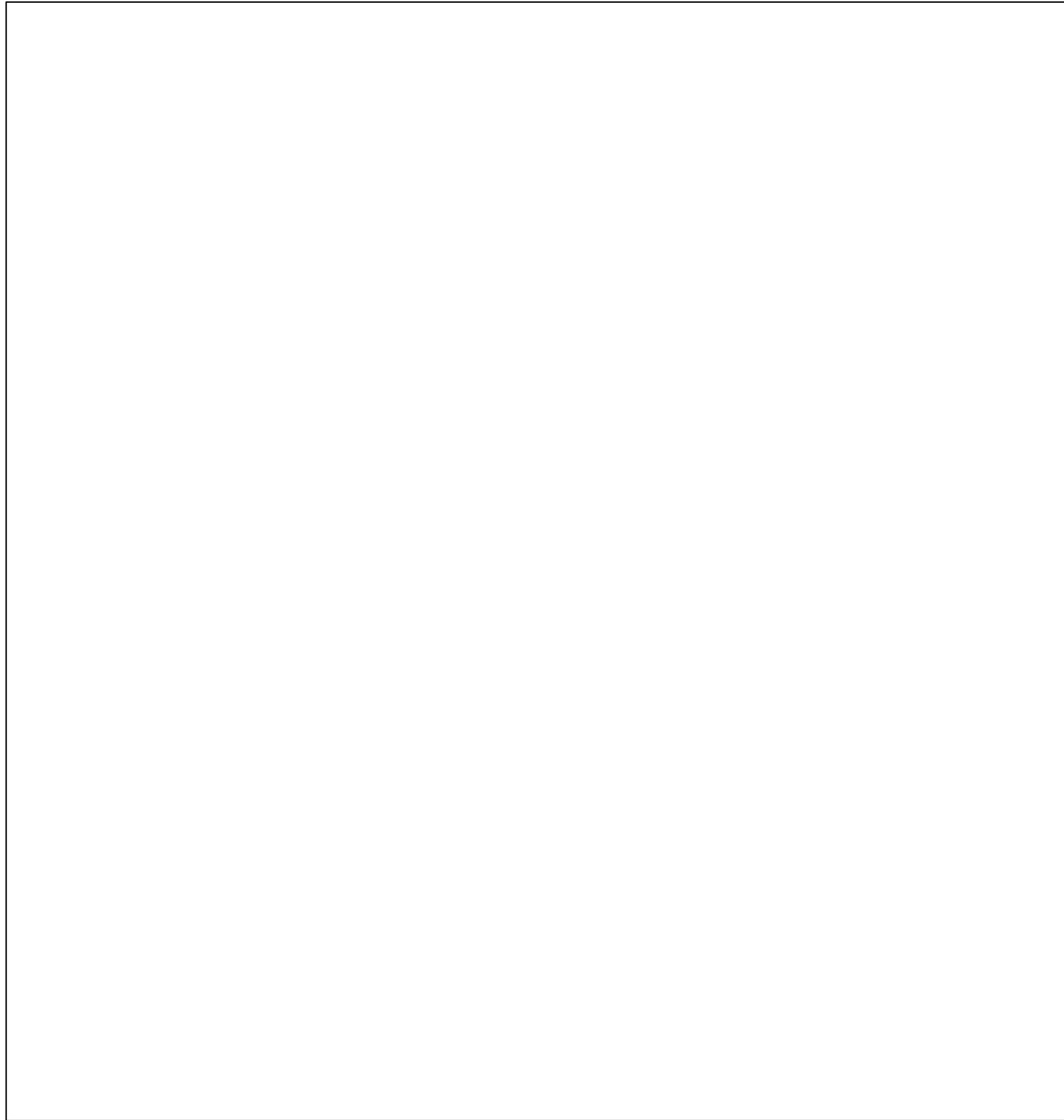
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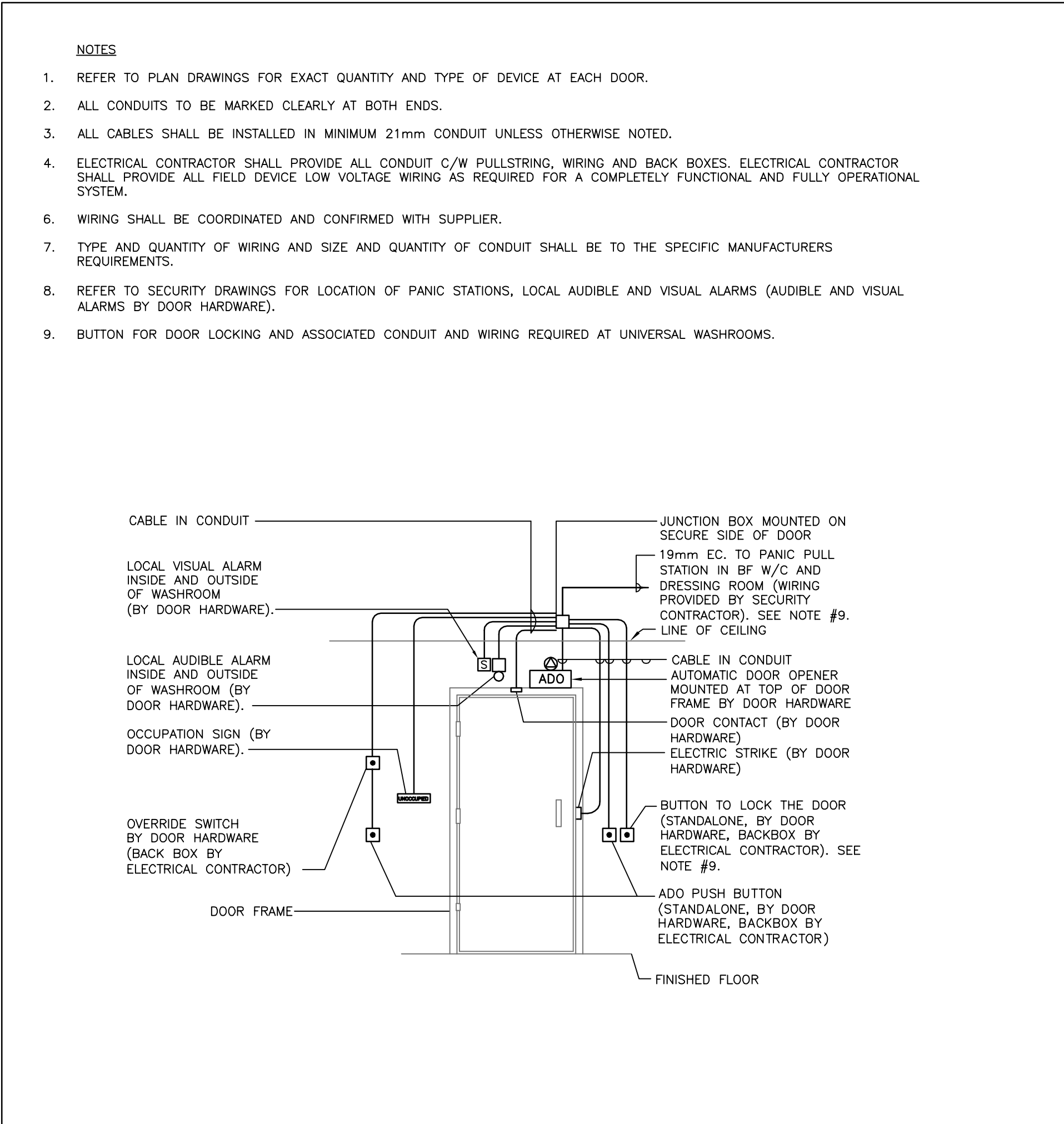
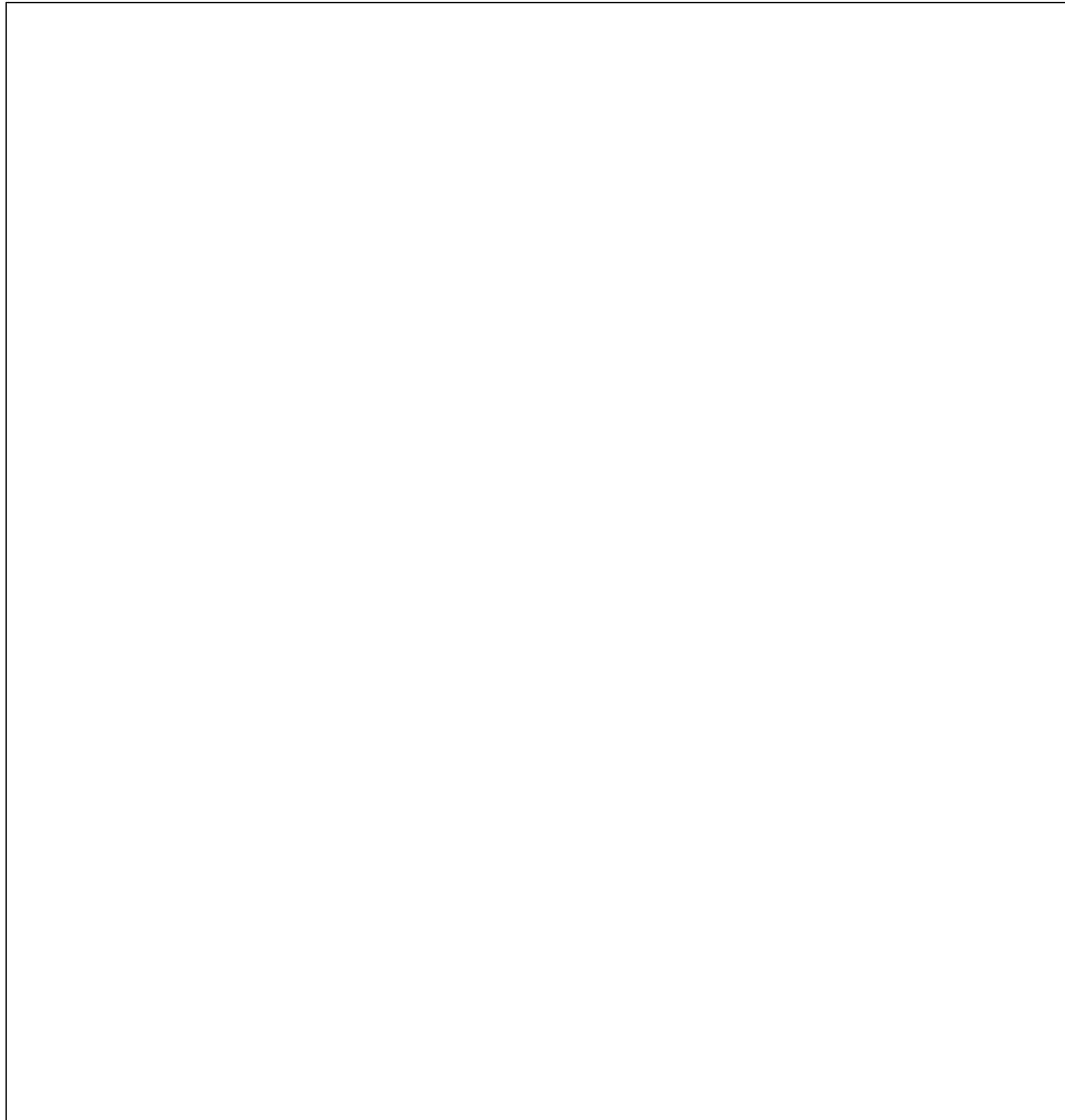
Sheet Title
**2ND FLOOR ALUMNI
LOUNGE ELECTRICAL
PLANS**

Scale	AS SHOWN
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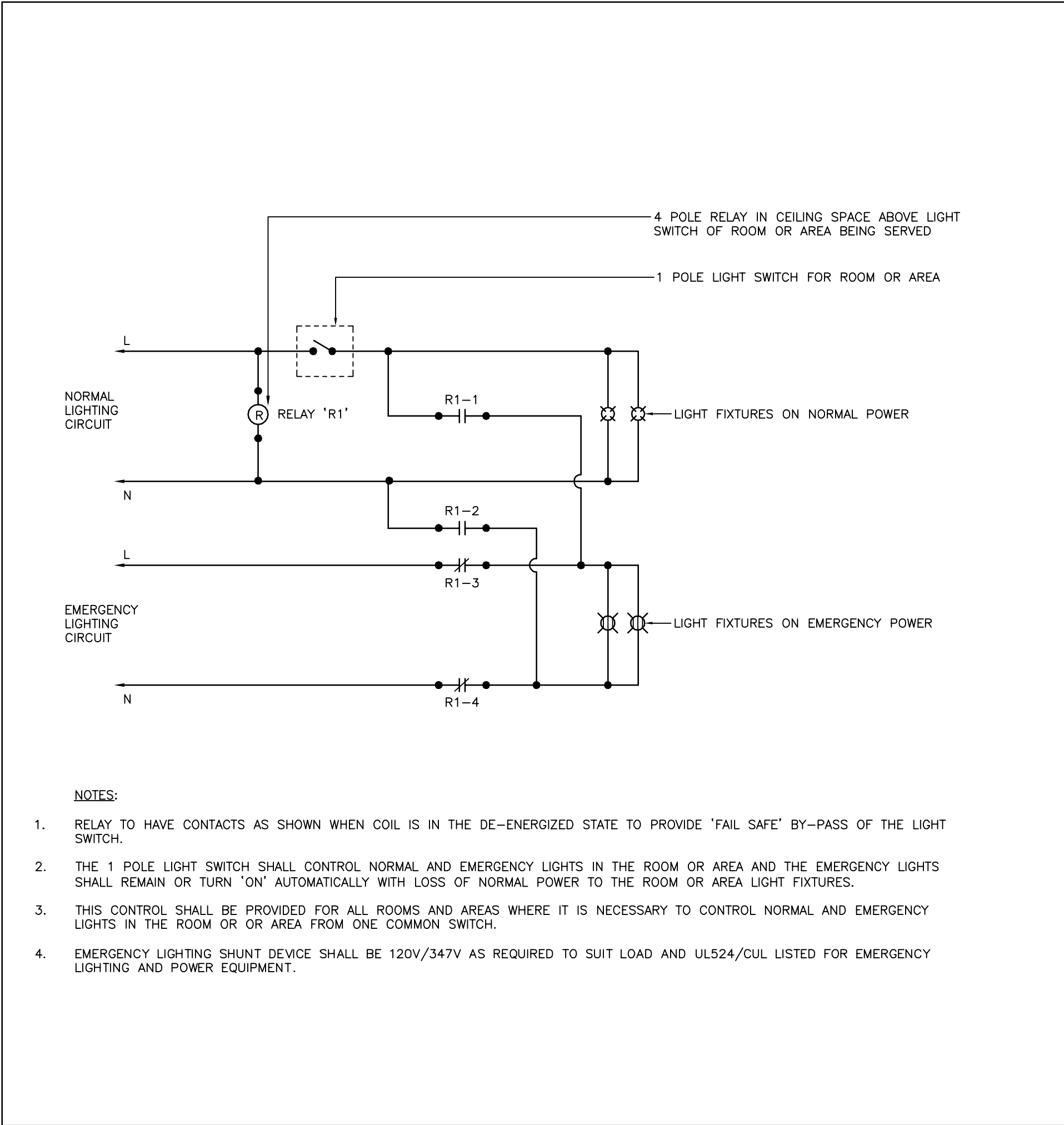
E-302



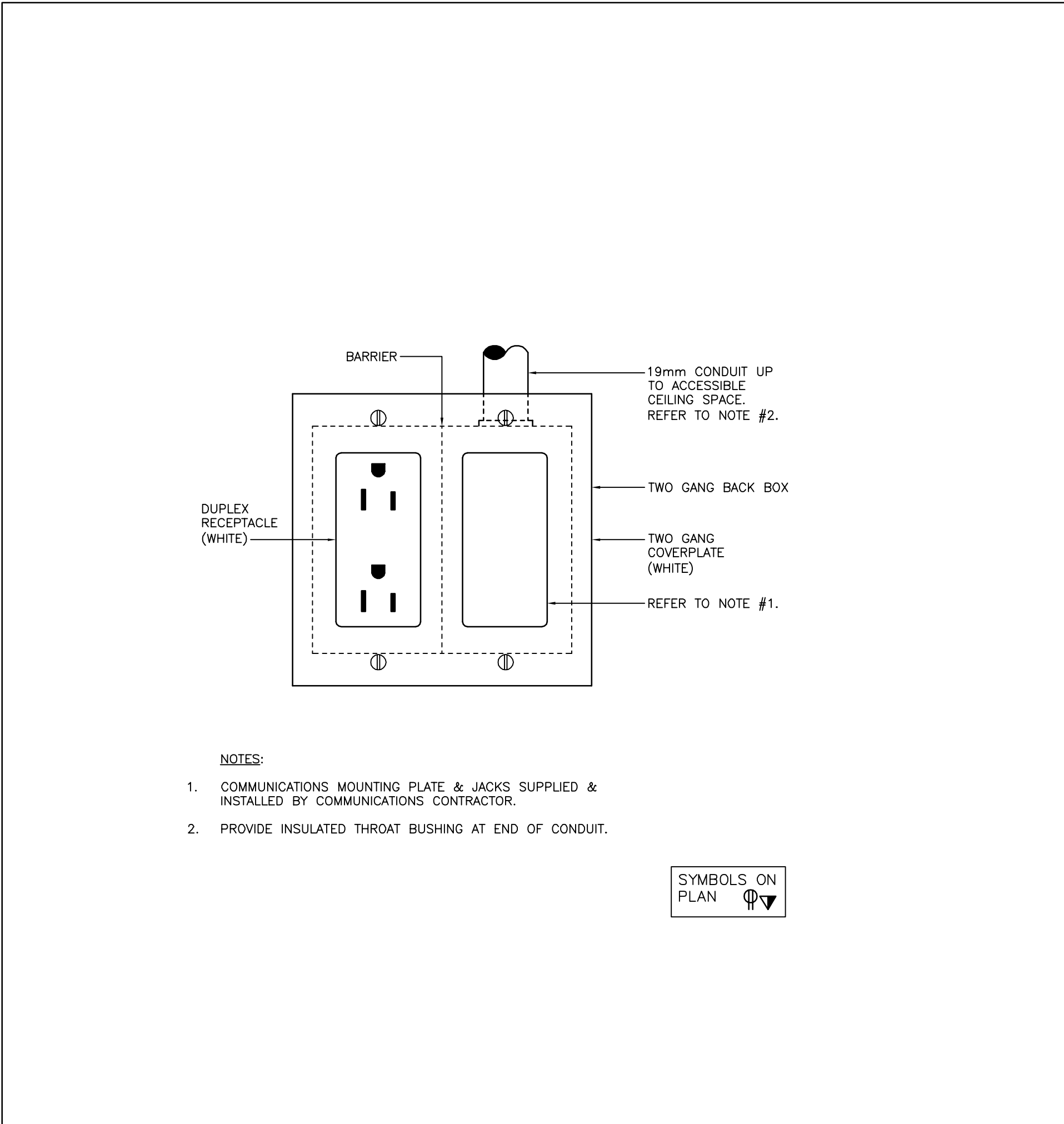
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E-601
MILLWORK POWER CONDUIT DETAIL
SCALE: N.T.S.



3
E-601
BARRIER FREE WASHROOM DETAIL
SCALE: N.T.S.



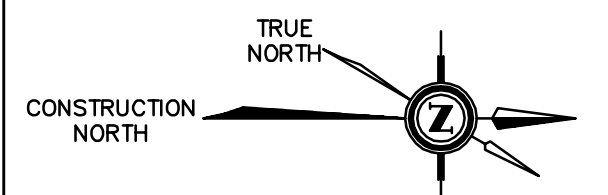
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E-601
TYPICAL AUTOMATIC EMERGENCY LIGHTING CONTROL DIAGRAM
SCALE: N.T.S.



1
E-601
COMBO POWER/COMMUNICATIONS WALL OUTLET DETAIL
SCALE: N.T.S.

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Sheet Title
**ELECTRICAL
DETAILS**

Scale	NTS
Project	16-1124
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E-601