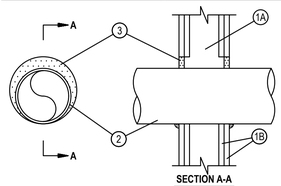
System No. W-L-1054

WL 1054

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings —1 and 2 Hr (See Items 1 and 3)	F Ratings — 1 and 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating (Without Movement) at Ambient — Less Than 1 CFM/sq ft	FH Ratings —1 and 2 Hr (See Items 1 and 3)
L Rating (Without Movement) at 400°F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
M Rating (Movement) — See Table 1	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 5.1 Ls/m2
	L Rating at 204°C — Less Than 5.1 Ls/m2



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. For M Rating, steel studs to be min 3-5/8 in. (92 mm) wide. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls. The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly. The M Rating is applicable only to 1 hr rated walls.
2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) . diam steel conduit.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E.Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX Intumescent Sealant

Movement Direction	Penetrant Item	Nominal Penetrant Diameter	Annular Space	Movement	Sealant Depth	F-Rating	L Rating with Movement
Y	2A, 2C*	2 in.	Max 2-1/4 in.	5%	5/8 in.	1 hr	N/A
Z	2A, 2C*	2 in.	2-1/4 in.	0.25 in.	5/8 in.	1 hr	N/A

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

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Gypsum Framed Walls
1 or 2 Hour Penetration Firestop
Metallic Pipe, Conduit, or Tubing

1 Scale: None

GENERAL NOTES AND REQUIREMENTS.

1. Workmanship shall conform to NECA installation standards including NECA 1.
2. Installation shall comply with National Electrical Code (NEC/ NFPA 70), state building code, and all requirements of the local inspector (furnish inspection certificate). All work shall be by licensed electrical contractor.
3. The contractor shall refer to the architectural plans for floor plan dimensions and not scale these drawings. The location of all wall mounted devices, including mounting heights, shall be field verified with the architect prior to rough-in. Coordinate locations of all light fixtures with the reflected ceiling plans. Light fixtures installed in mechanical areas shall avoid mechanical piping, equipment, ductwork, etc.
4. Contractor shall comply with all requirements of the 2018 NC Building Code and Accessibility Code which are applicable to this project regardless of whether all details are indicated on plans. All receptacles, switches, and other electrical devices required to be ADA accessible shall be mounted per ANSI 117.1 sections 308 AND 309.
5. All electrical equipment shall be installed so that all code required and manufacturer recommended working/ servicing clearances are maintained. Installation shall fully comply with NEC 110.26 and NEC 408.18 for clearance requirements.
6. All wall outlet boxes, receptacles, switches, cover plates, etc. shall be commercial grade, standard or heavy duty except where specified. Verify color/ material for all devices and cover plates prior to order. Provide label for each device identifying the circuit serving the device. Verify if label should be on inside our outside face of cover plate with building management/ tenant. All 15 and 20 amp, 125V and 250V non-locking receptacles shall be listed as tamper resistant, in all location outlined per NEC 406.12.
7. The electrical contractor shall coordinate any and all work with other trades involved in the project, prior to installation of electrical equipment, so as to avoid conflicts during construction and to allow for optimum maintenance and working space.
8. All branch circuits shall be in 3/4" minimum zinc-coated EMT, IMC, or RMC as permitted or required by the NEC. LFMC (or FMC as permitted) shall be used for final connections to equipment subject to vibration. A deduct price for MC cable may be offered for approval, where permitted by owner and NEC and conduits completely concealed from view. Schedule 40 PVC conduit may be used for underground feeders/ branch circuits or underground low voltage system conduits located below slab on grade or buried outside of the building, or in concrete block walls. PVC schedule 80 conduit may be used on the building exterior (expansion fittings may be used above grade) where permitted by code. Contractor shall include cost of painting all exposed conduits subject to public view. Conduit sizes noted on these plans are based on EMT conduit. Where other permitted raceway types are used, contractor shall adjust conduit sizes as necessary based on type of raceway used and allowable fill. Provide pull wire in all empty conduit. Junction box covers shall be permanently labeled and conduit shall be labeled every 10'. All labels shall be machine generated onto adhesive labels or tags, or engraved on plastic laminated placards or brass tags.
9. All wire and conduit sizes are based on 75° C THHN/THWN copper conductors unless otherwise noted. All conductors, terminations larger than 30A & devices shall be rated for minimum 75°C. All conductor and conduit sizes are calculated based on installation of no more than 3 current carrying conductors per conduit, neutral(s) included. Unless otherwise noted, contractor shall not install more than 3 current carrying conductors per conduit with the following exception: up to 9 current carrying conductors may be used in a single raceway where permitted by the NEC when minimum #12 AWG (THHN 90°c) is used and when all included circuits are protected upstream by 20 amp overcurrent devices and no other derating conditions exist.
10. All conductors shall be copper type THHN, or XHHW, solid for #10 AWG or #12 AWG, and stranded for all larger sizes. Minimum conductor size shall be #12.
11. Conduits and cables shall be concealed wherever possible by either routing above ceiling, in interstitial spaces or running exposed in unfinished spaces where possible. Conduits may be run exposed in mechanical areas or other areas not subject to public view where approved by the owner. Wherever conduits or cables are approved to be exposed, conduits and cables shall be run parallel or perpendicular to structural elements and shall be run and bundled in groups, and the installation shall be neat and orderly. Even when exposed, conduits and cables shall be routed to minimize view from personnel. Seal all penetrations air tight around all conduits passing through walls or floors. Escutcheon plates shall be used when passing through walls that are visible to the public. Use appropriate penetration projection when conduit passes into or through rated assemblies.
12. Where branch circuit total length is greater than sixty five (65') feet from the panel, see voltage drop schedule for wire size adjustment.
13. All mounting heights indicated are given to the bottom of the device, unless noted otherwise.
14. Where used in these documents, the word "provide" shall mean to furnish and install the item or equipment as well as make the final connection required.
15. All light fixtures shall be supported independently of the suspended ceiling system.
16. The electrical contractor shall provide all necessary disconnects, switches, receptacles, etc. under the electrical bid and shall include all necessary circuits to and make final connections to the equipment furnish by all suppliers. Coordinate closely with other trades.
17. All breakers, disconnect switches, and fuses sizes, indicated for mechanical equipment, shall be verified with equipment supplier and mechanical contractor, before the purchase or installation of that equipment.
18. All disconnect switches are to be fusible type. Fuses shall be the appropriate type for the load served by Bussmann or equal. Unless unsuitable, fuses rated 1200A or higher shall be Class L, fast-acting, and shall have a clearing time of 0.07 seconds at the available fault current per NEC 240.67. Submit fuse trip curves along with available fault current at the service entrance for engineer verification prior to beginning work or ordering equipment. The contractor shall compare all installed equipment nameplate information with the electrical plans/ schedules and notify the engineer immediately of any discrepancies. The contractor shall coordinate all fuse sizes with actual installed equipment nameplate information prior to purchasing or installing fuses. Where the nameplate information does not indicate an overcurrent protection size or maximum ampacity rating, fuses shall be installed per the electrical plans assuming other equipment parameters are in agreement with nameplate data.
19. Provide grounding conductor for all circuits per NEC. Building ground shall meet all requirements of NEC 250.
20. Ground telephone equipment per NEC. If telephone service is not located within 20' of electrical service, then provide separate grounding electrode as required per NEC 800.
21. All multiwire branch circuits shall have multipole breakers as required by NEC 210.7.
22. All new circuits 100 amps and larger shall be megger tested prior to energizing. All other circuits shall be tested for continuity prior to energizing.
    Testing Requirements:
    - Dielectric absorption tests shall be performed with a 2,500 volt DC megger.
    - Megger tests shall be performed at a DC voltage of 1,000 volts for 600 volt rated equipment, and at a DC voltage of 500 volts for 120-300 volt rated equipment.
    - The megger test shall be performed between each pair of conductors and from each conductor to ground. Each test shall be performed for 15 seconds or until the insulation resistance value stabilizes. The insulation resistance between conductors, and from each conductor to ground, shall be 25 megaohms (120-300V) or 100 megaohms (600V) minimum in one minute or less. In addition, the lowest insulation resistance value shall not differ from the highest value by more than 20 percent. If all megger readings for a given circuit or feeder are above 1000-megaohms, the 20% balance requirement may be waived
    - Continuity checks shall be performed with a low voltage DC meter, light or bell.
    - The resistance to ground shall be measured using either the three point method or the fall-of potential method.
    - Test instruments shall be calibrated to national standards to insure accuracy of tests. These calibration reports shall be made available to the Owner when requested. Depending upon frequency of use, the instruments shall be calibrated at least every 12-months.
23. The electrical contractor shall patch any wall, ceiling, or floor opening (or penetration) resulting from demolition or new work in existing areas. Any rated constructions or assemblies affected shall be patched, protected and refinished as necessary to maintain the original appearance as well as the rating.
24. The contractor is responsible for properly disposing of all waste materials, demo materials and other trash. This includes but is not limited to proper disposal of mercury containing lamps, batteries, recyclable materials.
25. Contractor shall provide the engineer with shop drawings/submittal data for lights, switches, switchgear/panels, floor boxes, fire alarm devices, and any other products deemed necessary for review. These shall be provided in editable PDF format via email through project manager, general contractor, architect, or other proper channel. Expected review duration, and industry standard, is ten business days from date of receipt by engineer. Similarly, RFI response duration, and industry standard, is five business days from date of receipt by engineer. All submissions should include and acknowledge this review duration unless otherwise specifically discussed and agreed upon in advance.
26. It is the sole responsibility of the contractor to coordinate w/ all other trades regarding voltages, loads, circuit breakers, etc. prior to beginning any work.
27. All switchgear/ panels shall be commercial grade from a reputable national manufacturer such as Square D, Eaton, Siemens and ABB. Panels shall be rated as indicated on panel schedules/ electrical riser diagram. If discrepancies are found, contact engineer immediately.
28. Engineer has reserved the right to choose the software package(s) deemed most efficient to deliver these plans for permitting, bid, and construction. Engineer considers any other digital files created during this process as instruments of service, and as such remain the property of the engineer. The contractor should not assume that digital files in any format will be made available during bidding or after award other than PDFs. If digital files are requested, engineer reserves the right to selectively provide them when available and/or may request additional considerations for the time incurred to prepare them.
29. Contractor shall verify all areas that are used as a return plenum with mechanical contractor and provide plenum rated cable for all cables not run in metal conduit. PVC is not allowed in plenum space. This "cable" includes all telecommunications, fire alarm, or control wiring above ceiling.
30. Contractor shall comply with all applicable seismic requirements of the area.
31. All underground raceway entering the building, (i.e. through a foundation wall or through the floor) shall be sealed in accordance with NEC 225.27 and 300.5(F). Raceway seals and sealants shall be approved and listed for the specific application and materials.
32. Contractor shall provide support bushings/conduit stops for vertical branch circuits and feeders where required per NEC 300.19(A).
33. If existing building is equipped with a Bi-Directional Antenna system (BDA), contractor shall test the areas of construction before and after construction activities per NC Fire Code section 510.6.1 and possibly supplement the existing system to meet the requirements of NC Fire Code section 510.
34. Electrical boxes, conduit, and wiring shall not be recessed into or penetrate structural members. Boxes/conduits shall be surface mounted to structural member and/or recessed in stud wall where possible. Coordinate with architect.
35. All equipment associated with or connected to the electrical, fire alarm or data systems or otherwise included in the drawings/ scope of work shall be listed and labeled by a third party that is acceptable to the AHJ.
36. All non-locking type 125 volt, 15 and 20 amp receptacles that are controlled by an automatic control device or that incorporate control features that remove power from the outlet for the purpose of energy management or building automation shall be labeled per NEC 406.3(E).
37. These plans are based on the 2020 NEC.

Electrical Abbreviations

A	above- indicates a device is to be mounted with the bottom of box 2" above back splash unless noted otherwise.
AFF	above finished floor
AG	combination of 'A' and 'GFCI' (above counter and ground fault circuit interrupter)
ARCH	architect
C	ceiling- indicates a device is to be mounted in flush ceiling tile.
EC	electrical contractor
EX	existing
EXT	exterior
FA	fire alarm
FURN	furniture
G	GFCI- indicates a device with integral ground fault circuit interrupter (GFCI) protection and/or protected by upstream GFCI outlet.
GFI/ GFIC	same as 'G'
H	horizontal orientation of device
HG	hospital grade
IG	device shall have isolated ground and will require isolated ground circuitry back to an isolated ground bar in panelboard.
JB	junction box
MC	MC cable (when referring to NEC, wiring methods, or wiring type)
MC	mechanical contractor (when not referring to NEC wiring methods or type
MECH	mechanical contractor
NTS	not to scale
OC	on center
PC	plumbing contractor
PLUMB	plumbing contractor
S	surface- indicates device is to be surface mounted.
TP	tamper proof device per NEC 406.12
W/	with
WP	indicates a device rated for exterior use and is weatherproof or weather resistant with an approved weatherproof in-use cover.

Voltage Drop Schedule

120 V branch circuits up to 8 amps (1.0 kVA)

Distance of run, in feet			Wire size
1'	-	120'	#12
121'	-	190'	#10
191'	-	300'	#8
301'	-	470'	#6

120 V branch circuits from 8 to 14 amps (1.7 kVA)

Distance of run, in feet			Wire size
1'	-	65'	#12
66'	-	110'	#10
111'	-	170'	#8
171'	-	270'	#6

277 V branch circuits up to 14 amps (3.9 kVA)

Distance of run, in feet			Wire size
1'	-	160'	#12
161'	-	250'	#10
251'	-	390'	#8
391'	-	620'	#6

Contractor shall upsize branch circuit conductors based on load and length as indicated in schedule above. Wire sizes indicated in general notes and schedules are minimum wire sizes and shall be adjusted for length.

Electrical Legend

Symbols shown below are indicative of new devices. See Linetype Legend for distinction of existing and demolition devices.

Floor Plans

Home run to panel/ branch circuit connection- short cross line(s) represent phase conductor(s) (hot), long cross line(s) represent grounded conductor(s) (neutral), equipment grounding conductor (ground) required but not shown. Minimum size per NEC requirements based on circuit breaker / schedule / voltage drop table.

All duplex and quad receptacles shall be NEMA 5-20R unless otherwise noted.

Duplex receptacle
Power receptacle
Quad receptacle
Isolated ground duplex receptacle
} 16" AFF or as otherwise noted

USB — 16" AFF or as otherwise noted. Duplex receptacle with (2) USB ports. Nema 5-20R Duplex Cooper TR7756 or equal.

Telecommunications wall outlet - 16" AFF or as noted (run 3/4" EMT to accessible point above ceiling.) Provide pull wire. Outlet/devices, bushings, and cables provided by tenant/ cabling contractor.

TV — Television wall outlet - 16" AFF. Run RG6 in 3/4" EMT to telephone backboard or as indicated on plans.

WB — AV Wall box furnished by AV contractor - confirm height prior to rough-in. Install quaduplex and data in AV wall box. Verify device plates with tenant. Provide 1 1/4" conduit from AV wall box to AV box on wall below or floor box.

AV — AV wall outlet - 16" AFF or as noted (run 1 1/4" EMT to AV wall box above) Provide pull wire, bushings, and faceplate as necessary. Cables provided by tenant/ cabling contractor.

Junction box w/ whip for power for furniture system. Verify exact location and requirements with system supplier prior to rough-in and connect as required.

Junction box adequately sized to accept 2" conduit for telecommunications for furniture system. Verify exact location and requirements with system supplier prior to rough-in. Stub 2" conduit to accessible point above ceiling with pull wire.

CR — Card reader- verify mounting height with tenant prior to beginning work. Stub 3/4" EMT to above ceiling with pull wire. Outlet/device and all low voltage wiring by tenant/security contractor. Coordinate with tenant/security contractor.

Junction box

Telephone backboard - 4'x8'x3/4" fire-treated plywood. Pull #6 ground wire and terminate with 1/4" x 2" x 12" ground bar with holes every 1". Mount to backboard with stand-off insulators.

Electrical panel

Step-down transformer

Electrical disconnect

M — Motor rated switch

Meter Base

All lighting control switches shall be mounted at 44" AFF unless otherwise noted. (All motion sensors shall be set to 30 minute delay)

Single pole switch - nLight: nPODMA-WH

Dimmer switch (slide type) appropriate for load served. 3-way switching capable. All dimmers shall match in appearance regardless of dimming technology.
nLight: nPODMA-DX-WH
Forward Phase: Leviton #IPI10-1LZ
Reverse Phase: Leviton #IPE04-1LZ
0-10V: Leviton #IP710-D0Z

3-way wall switch

4-way wall switch

Low voltage motion-sensing Dual Technology switch. Sensorswitch #nWSXA-PDT-LV-WH

DD — Low voltage motion-sensing 0-10v Dual Technology dimmer switch. Sensorswitch #nWSXA-PDT-LV-DX-WH

Low voltage motion-sensing switch operating in Manual On / Automatic Off mode. Sensorswitch #nWSXA-LV-WH

S3 — Low voltage wall/ceiling mounted motion sensor. nLight #nWV-16-KIT. Mount on wall at 10' AFF where ceilings are not present or are over 10' AFF. Mount to ceiling where ceilings are 10' AFF or lower.

PP — 120/277V to 24V power pack. nLight #nPP16-EFP

PPD — 120/277V to 24V power pack. nLight #nPP16-D-EFP

S2 — Low voltage 360° ceiling mounted motion Dual Technology sensor. nLight #nCM-PDT-10-RJB

S4 — Low voltage 360° ceiling mounted motion sensor PIR sensor. nLight #nCM-PDT-9-RJB

DH — Low voltage 360° ceiling mounted 0-10V dimming daylighting sensor. nLight #NCM-ADCX-RJB

F1 — Flush on-grade floor box - Legrand #RFB4E-OG w/ flush round cover #6CT2** (verify color with architect/ tenant prior to order). Provide 2 duplex outlets with 3/4" conduit for power to accessible location above tenant ceiling. Provide pull wire and bushing. Contractor shall verify all floor outlet locations and specifications with tenant/arch prior to rough-in.

F2 — Flush on-grade floor box - Legrand #RFB6E-OG w/ flush round cover #6CT2** (verify color with architect/ tenant prior to order). Provide 2 duplex receptacles, data and AV device plates. Provide 3/4" conduit for power, 3/4" conduit to above accessible ceiling of tenant space for data and 1 1/4" conduit to AV wall box behind screen. Provide pull wire and bushing. Contractor shall verify all floor outlet locations w/ tenant prior to rough-in/order.

Overhead fixture unless otherwise noted. See fixture schedule

Downlight / pendant style fixture. See fixture schedule.

Slash or shading indicates fixture connected ahead of switch/controls and to operate as night lights (fixture will be on 24/7 unless otherwise noted)

Exit sign, faces and arrows as indicated. See fixture schedule.

Emergency wallpack fixture. See fixture schedule.

Combo emergency / exit fixture. See fixture schedule.

Wall sconce/ mount fixture. See fixture schedule.

Flood light/ track head style fixture. See fixture schedule.

Pole mounted fixture. See fixture schedule.

Detail Sheets

P (200/3) — Electrical panelboard; Main breaker or minimum ampacity

M — Meter in meter base

CT — CT cabinet

200/3 — Frame size/ number of poles
150A — Fusible disconnect, frame and fuse size as indicated or noted. Fuse size

T1 — Transformer designation
75 KVA — Transformer size
Transformer, size and designation as indicated. Primary voltage as noted in panel schedule/ for primary feed. Secondary voltage as noted in panel schedule/ for load supplied.

Service ground

Linetypes

New device unless otherwise noted

Existing device to remain

Existing device to be demolished

New underslab or underground connection. Existing and demo underground noted with existing or demo linetype. New connections not specifically shown to be underground are not necessarily required to be run overhead unless noted as such.

Low voltage wiring

Examples of existing and demolition symbols using above linetypes.

Existing floor box to remain

Existing duplex receptacle to remain

Existing panel to remain

XR — Existing light fixture to remain

Existing switch to remain

Existing light fixture to remain

Existing sign to remain

Existing duplex receptacle to be demolished

Existing panel to be demolished or relocated

XD — Existing light fixture to be demolished or relocated

Existing switch to be demolished or relocated

See fire alarm legend for fire alarm symbols & specifications

See wall rating legend for wall types and symbols

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REVISIONS

SEALS

NORTH CAROLINA PROFESSIONAL SEAL 57323 ENGINEER JACOB TAYLOR
5/29/26

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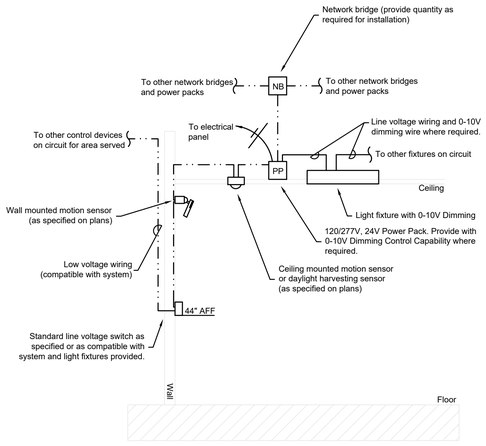
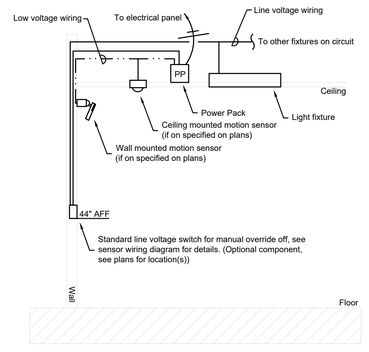


Notes:

1. A maximum of two motion sensors shall be connected to each power pack.
2. Ceiling-mounted motion sensors shall be installed at least 6 feet away from any diffuser.
3. Motion sensors and motion sensor switches shall be set to a 30-minute time delay. The contractor shall adjust the sensor's sensitivity as required to suit room conditions and size.
4. The contractor shall provide the appropriate quantity of power packs as per the design requirements. In rooms utilizing both 277-volt and 120-volt lighting, a minimum of two power packs shall be provided (one for each voltage).
5. Dual-technology sensors shall be programmed so that both technologies are required to turn the lights on initially, but only one technology is necessary to keep the lights on.

1 Typical Motion Sensor with Low Voltage Switch Connection Detail

Scale: None



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2 Typical Motion Sensor with Line Voltage Switch Connection Detail

Scale: None

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REVISIONS

SEALS

NORTH CAROLINA PROFESSIONAL SEAL 57323 ENGINEER JACOB TAYLOR
5/29/26

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ARQ AVIATION
FLIGHT SCHOOL + FBO

Wilmington International Airport (ILM)

Wilmington, NC 28405

OWNER
ARQ Realty

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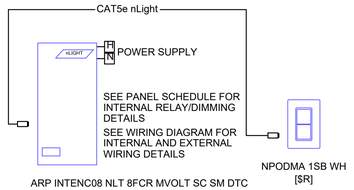
PHASE	PERMIT SET
DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

DRAWING TITLE
STANDARD
ELECTRICAL DETAILS

DRAWING NUMBER
E-001

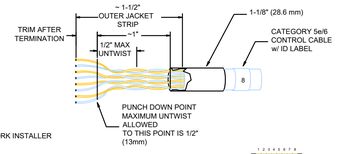
These drawings will be at the scale indicated when plotted at 24" x 36"



1 nLight - Typical Relay Panel Connections
Scale: None

TIA / EIA-568-B CABLING STANDARD TERMINATION

Function	PAIR #	PIN OUT (T568B)	Wire Color
(T1) (R1)	1	5 4	WHITE w/ BLUE BLUE
Tx + (T2) Tx - (R2)	2	1 2	WHITE w/ ORANGE ORANGE
Rx + (T3) Rx - (R3)	3	3 6	WHITE w/ GREEN GREEN
(T4) (R4)	4	7 8	WHITE w/ BROWN BROWN

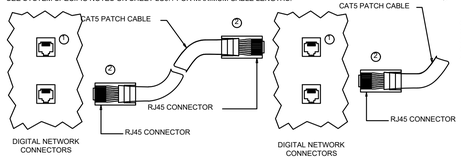


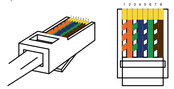
TERMINATION & TESTING OF CAT5 CABLES MUST BE DONE BY A QUALIFIED NETWORK INSTALLER

Cable termination requirements:

1. Strip off outer jacket - approximately 1-1/2" (37.6 mm)
2. Terminate approximately 1/2" (12.2 mm) from end of conductors on type 110 punch down block or connector per schedule (t568b) - maximum untwist of conductors to terminations is 1/2" (12.2 mm) - trim excess leads.

SEE SYSTEM SPECIFIC NOTES ON SHEET LC0.1 FOR MAXIMUM CABLE LENGTHS.





① RJ45 FEMALE CONNECTOR

② RJ45 MALE CONNECTORS. ALL CABLES SUPPLIED BY CONTRACTOR.

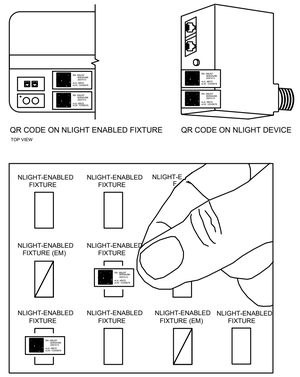
Notes:

Daisy-chain CAT5 patch cable with RJ45 connectors from digital device to digital device.

Refer to manufacturers instructions for long distance runs between digital devices.

Crimp and test each cable with a LAN circuit tester prior to installation.

2 CAT5E/6 Cable Termination
Scale: None



NOTES:

EVERY NLIGHT ENABLED DEVICE (INCLUDING NLIGHT ENABLED FIXTURES) IS FURNISHED WITH (1) PERMANENTLY ADHERED ID TAG AND (1) MATCHING, PARTIALLY ADHERED ID TAG TO BE PLACED ON THE RISER DIAGRAM OR QRCODE TEMPLATE SHEET PROVIDED AS PART OF AN NLIGHT SUBMITTAL DURING INSTALLATION AND PRIOR TO FACTORY STARTUP. CONTRACTOR SHALL PLACE EACH ID TAG BELOW EACH CORRESPONDING DEVICE SHOWN ON RISER DIAGRAM TO FACILITATE FACTORY STARTUP. FAILURE TO COMPLY MAY RESULT IN STARTUP DELAYS AND ADDITIONAL COSTS AT THE CONTRACTOR'S EXPENSE. DO NOT PLACE DEVICE ID STICKERS ON FLOOR PLAN UNLESS REQUIRED TO EXECUTE NFLOORPLAN SERVICES, REFERENCE NFLOORPLAN SERVICE NOTES ON THIS SHEET FOR SPECIFIC REQUIREMENTS.

THE SMALL QR CODE LABELS INCLUDED WITH ALL NLIGHT DEVICES AND NLIGHT ENABLED FIXTURES MUST BE PLACED ON A PRINTED PLAN SHEET BY THE INSTALLER PRIOR TO ONSITE SYSTEM STARTUP.

THE QR CODE INDICATES THE UNIQUE ID OF EACH NLIGHT DEVICE. THIS ID IS USED DURING SYSTEM STARTUP TO PROGRAM DEVICES WITH THE CORRECT GROUPINGS AND SETTINGS. WITHOUT THIS, SYSTEM STARTUP WILL REQUIRE ADDITIONAL DAYS ON THE JOB TO LOCATE DEVICE IDS.

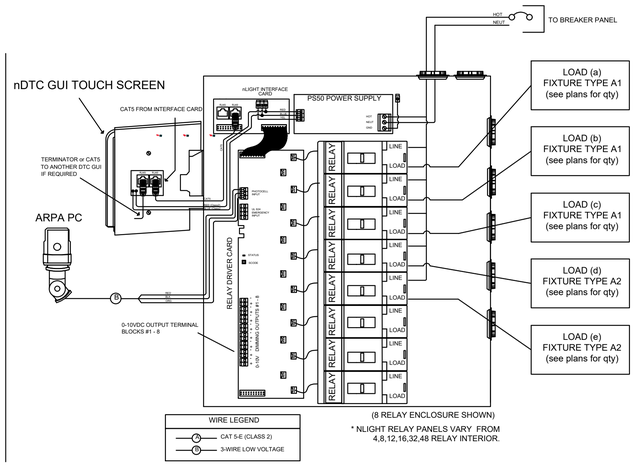
QR CODE INSTRUCTIONS:

1. * PRINT A PLAN SHEET TO A MINIMUM D SIZE (24"X 36") OF THE INSTALLATION AREA RISER SHEET, QR CODE TEMPLATE, LIGHTING PLAN, ETC. SO LONG AS ALL DEVICES CAN BE LOCATED BY THE FIELD SUPPORT ENGINEER.
2. PLACE THE SMALL QR CODE LABEL (0.875" LONG) FROM EACH LUMINAIRE AND DEVICE ON THE FLOORPLAN. THE LARGE QR CODE LABEL (1.25" LONG) CAN BE USED ON THE OUTSIDE OF ANY HOUSING OR JUNCTION BOX THAT OBSCURES THE ID NUMBER SHOWN ON THE DEVICE ITSELF.
3. SAVE THE PLAN AT THE JOB SITE, AND HAND OVER TO ACUITY FIELD SUPPORT ENGINEER OR OTHER PERSONNEL RESPONSIBLE FOR ONSITE SYSTEM STARTUP. IT IS ALSO ACCEPTABLE TO PROVIDE THE BARCODE PLAN AS SCANNED PDF FILES, EMAILED TO CONTROLSFIELDSCHEDULING@ACUITYBRANDS.COM, WITH PROJECT NAME AND PROJECT ADDRESS IN SUBJECT LINE AND A COPY OF THE ONSITE STARTUP REQUEST FORM.
4. DRAW ON PLAN ANY LOCATION CHANGES FOR A FIXTURE OR DEVICES, IF DIFFERENT THAN SHOWN ON PLAN.

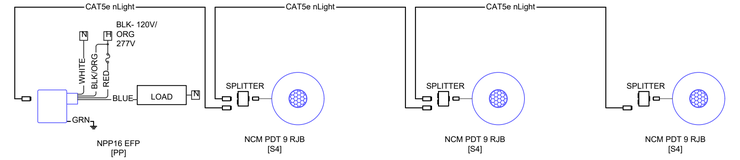
3 nLIGHT QR Code Instructions
Scale: None

GENERAL NOTES:

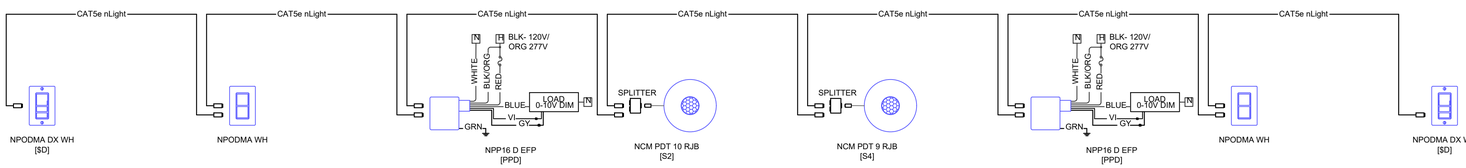
1. TOTAL CAT5 BUS LENGTH SHOULD NOT EXCEED 1,500 FEET.
2. DO NOT EXCEED 128 DIGITAL DEVICES PER NLIGHT CONTROL ZONE. FOR EVERY 8 RELAYS THE NLIGHT PANEL UTILIZES 9 DEVICE ADDRESSES.
3. PROVIDE 3-#18AWG WIRES BETWEEN PHOTOCELL AND CONTROL PANEL
4. THE ARP PANEL SHOULD BE FED WITH NORMAL POWER. THIS WILL ENSURE ALL RELAYS FAIL TO ON IN THE EVENT OF NORMAL POWER LOSS.
5. AN ARPA PC SHOULD BE USED FOR SWITCHING LOADS ONLY, NOT FOR DIMMING LOADS. FOR DIMMING LOADS, SEE SPEC SHEET FOR LIST OF COMPATIBLE PHOTOCELLS.
6. CAT5 CABLE RUNS TO BE IN A DAISY CHAIN CONFIGURATION FROM THE ARP PANEL TO OTHER CONTROL DEVICES.



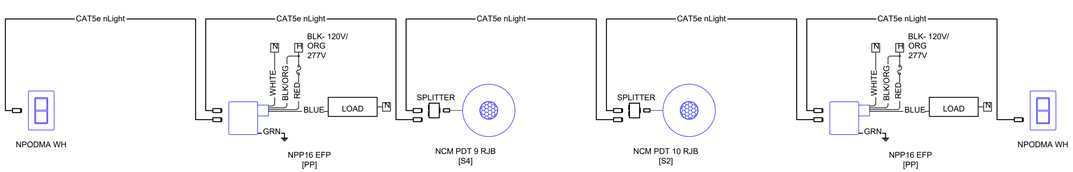
4 nLIGHT ARP DTC AND ARPA PC
Scale: None



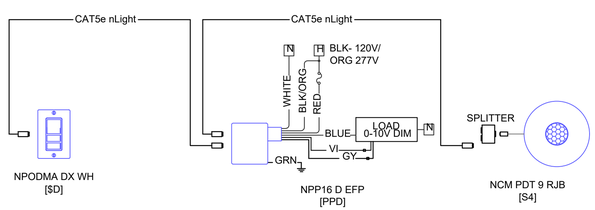
5 nLight - Multiple Occupancy Sensors Using One Power Pack
Scale: None



6 nLight - Multiple Zone, Multiple Sensor, and Multiple Dimming Switch Control
Scale: None



7 nLight - Non-Dimming Multiple Zone, Multiple Sensor, and Multiple ON/OFF Switch Control
Scale: None



8 nLight - Single Occupancy Sensor Using One Power Pack
Scale: None

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ELECTRICAL DETAILS

DRAWING NUMBER
E-002

These drawings will be at the scale indicated when plotted at 24" x 36"

Lighting Control System Description

1. The Lighting Control System shall consist of any of the following components: relay panels, Dataline wiring, front end equipment, switches, sensors, and remote override devices. All equipment to be UL certified to meet UL 916.

2. The relay panels shall be suitable for mounting in electrical closets and mounted in accordance with national and local electrical codes. The relays will control individual circuits or branch circuits as indicated in the Relay Panel Schedules. All power wiring will be identified at the relay by its controlling circuit breaker and branch letter.

3. Low voltage switches, occupancy sensors, and/or photocells shall be mounted in the spaces as indicated on the Reflected Ceiling Plans. Low voltage wiring from the switches and sensors to the relay panel shall be plenum rated as required by the National Electrical Code and local standards. All wiring shall be compatible with and per LCP manufacturer's specification.

4. Control electronics in the low voltage section shall be capable of driving 1 to 24 relays as specified on plans, control any individual or group of relays, provide individual relay overrides, provide a master override for each panel, store all programming in non-volatile memory, after power is restored return system to the correct state for time of day, provide programmable dual blink warn timers for each relay or zone of relays, and be able to control Normally Open Latching (NOL) or Normally Closed Latching (NCL) relays.

5. Each relay panel shall use UL Listed 30 Amp @ 277VAC Ballast and HID and 20 Amp Tungsten at 120 Vac. 347V Ballast and HID at 20 amps Latching Relay wit 18,000A SCCR at 277Vac. Relays shall be individually replaceable.

6. Relay Panels will be capable of following standard features: Scheduled ON/OFF, Astronomical Time of Day, Flick Warning, True after hours Time Delay, Telephone overrides, Pulse ON/OFF, common area scenario. Panels will log every relay change by time and initiator for troubleshooting and operational reports.

7. System shall be capable of warning of an impending off sweep by flashing lights Off/On once or twice (programmable) by relay or by zone prior to the lights being turned off. The warning interval times between the flash and the final lights off signal shall be definable for each zone. Additionally an audible signal shall be able to be programmed that gives a mild note on the first flash and a more insistent signal on the second one. Occupant shall be able to override any scheduled Off sweep using local wall switches within the occupied space. Occupant override time shall be locally and remotely programmable and not exceed 2 hours.

8. All components shall be supplied as necessary to ensure the overall operation of the system. Components may include networking devices, dataline power supply, dataline interface portal, and system software.

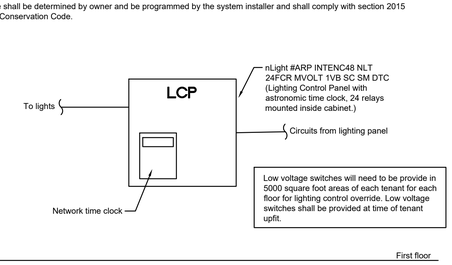
9. Where specified on plans, provide photocell package compatible with LCP. Photocells to be mounted in location indicated on the plans. Photocells used for exterior lights shall provide multiple trip points from 1 roof mounted unit. All trip points shall be able to be changed remotely via Internet or dial up modem. Photocells requiring manual trip point adjustment are not acceptable. Photocell used for interior lighting control shall have multiple settings such as start-point, mid-point, off-point, fade-up, fade-down, etc. All settings shall be remotely accessible and adjustable. Systems providing local adjustment only (at the photocell) are not acceptable. Photocells to be certified to comply with the current energy code covering this project at time of submittal of plans for building permit.

10. Manufacturer shall provide a factory authorized technician to confirm proper installation and operation of all system components.

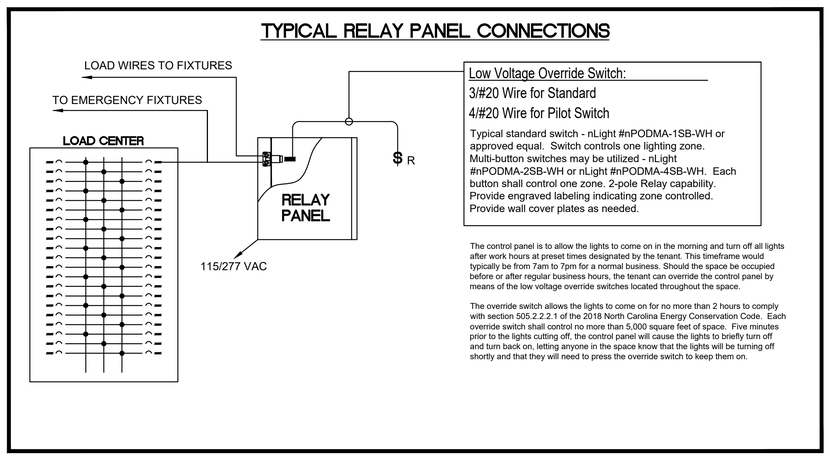
11. Manufacturer shall provide factory authorized application engineer to train owner personnel in the operation and programming of the lighting control system.

12. Manufacturer shall provide system documentation including: a) System 1-line showing all panels, number and type of switches and sensors, dataline, programmable system switches, front end material, b) Drawings for each panel showing hardware configuration and numbering, c) Panel wiring schedules, and d) Typical wiring diagrams for each component. Provide a point-to-point wiring diagram for the entire lighting control system. Diagram must indicate exact mounting location of each system device. Diagram shall indicate the loads controlled by each relay and the identification number for that relay, placement of switches and location of photocell. Original to be given to owner, copies placed inside the door of each LCP.

13. Lighting schedule shall be determined by owner and be programmed by the system installer and shall comply with section 2015 International Energy Conservation Code.



1 Lighting Control System Data Riser Detail
Scale: None



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ELECTRICAL DETAILS

DRAWING NUMBER
E-003

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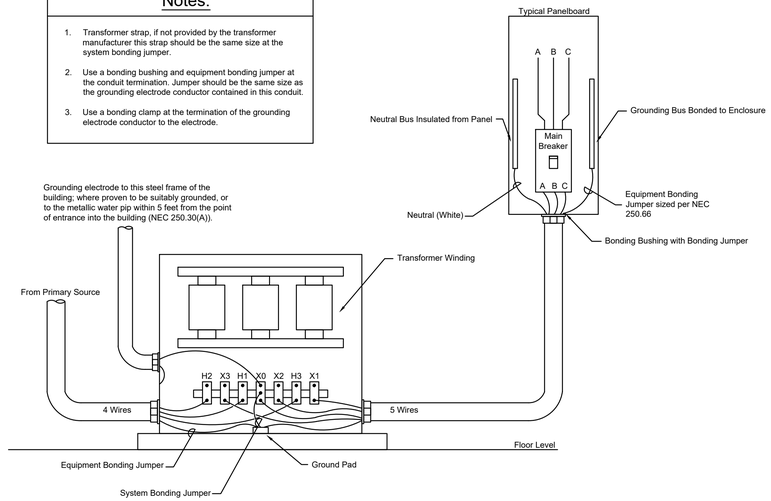
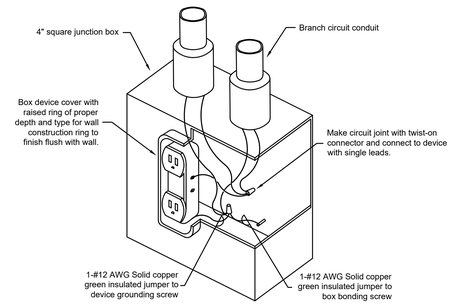
Notes:

1. Transformer strap, if not provided by the transformer manufacturer this strap should be the same size at the system bonding jumper.
2. Use a bonding bushing and equipment bonding jumper at the conduit termination. Jumper should be the same size as the grounding electrode conductor contained in this conduit.
3. Use a bonding clamp at the termination of the grounding electrode conductor to the electrode.



1 Grounding Detail For Dry Type Transformer
Scale: None

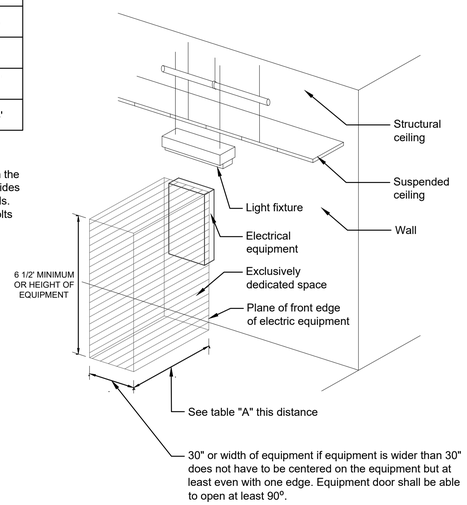


2 Receptacle Grounding Detail
Scale: None

TABLE "A" WORKING CLEARANCES			
VOLTAGE TO GROUND	CONDITION: 1	2	3
(Normal)	(MINIMUM CLEAR DISTANCE)		
0-150	3'	3'	3'
151-600	3'	3 1/2'	4'

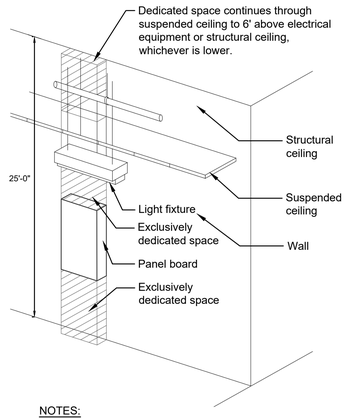
Where the "conditions" are as follows:

1. Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by suitable wood or other insulating materials. Insulated wire or insulated busbars operating at not over 300 volts shall not be considered live parts.
2. Exposed live parts on one side and grounded parts on the other side.
3. Exposed life parts on both sides of the work space (Not guarded as provided in condition 1) with the operator between.



NOTES:
1. This figure illustrates the working space in front of electrical equipment required by NEC section 110-26.
2. This includes but is not limited to panel boards, safety switches, motor starters, junction boxes and other electrical equipment.

3 NEC Article 110.26 Working Clearance For Electrical Equipment
Scale: None



NOTES:
1. This figure illustrates the additional exclusively dedicated space required over and under panel boards for cables, raceways, etc. to and from panel boards required by NEC section 110-26.
2. No piping ductwork or equipment foreign to the electrical equipment or architectural appurtenances shall be permitted to be installed in, enter or pass through the dedicated spaces shown. For exceptions see NEC section 110-26(E).

4 NEC Article 110.26 (E) Dedicated Equipment Space For Electrical Equipment
Scale: None

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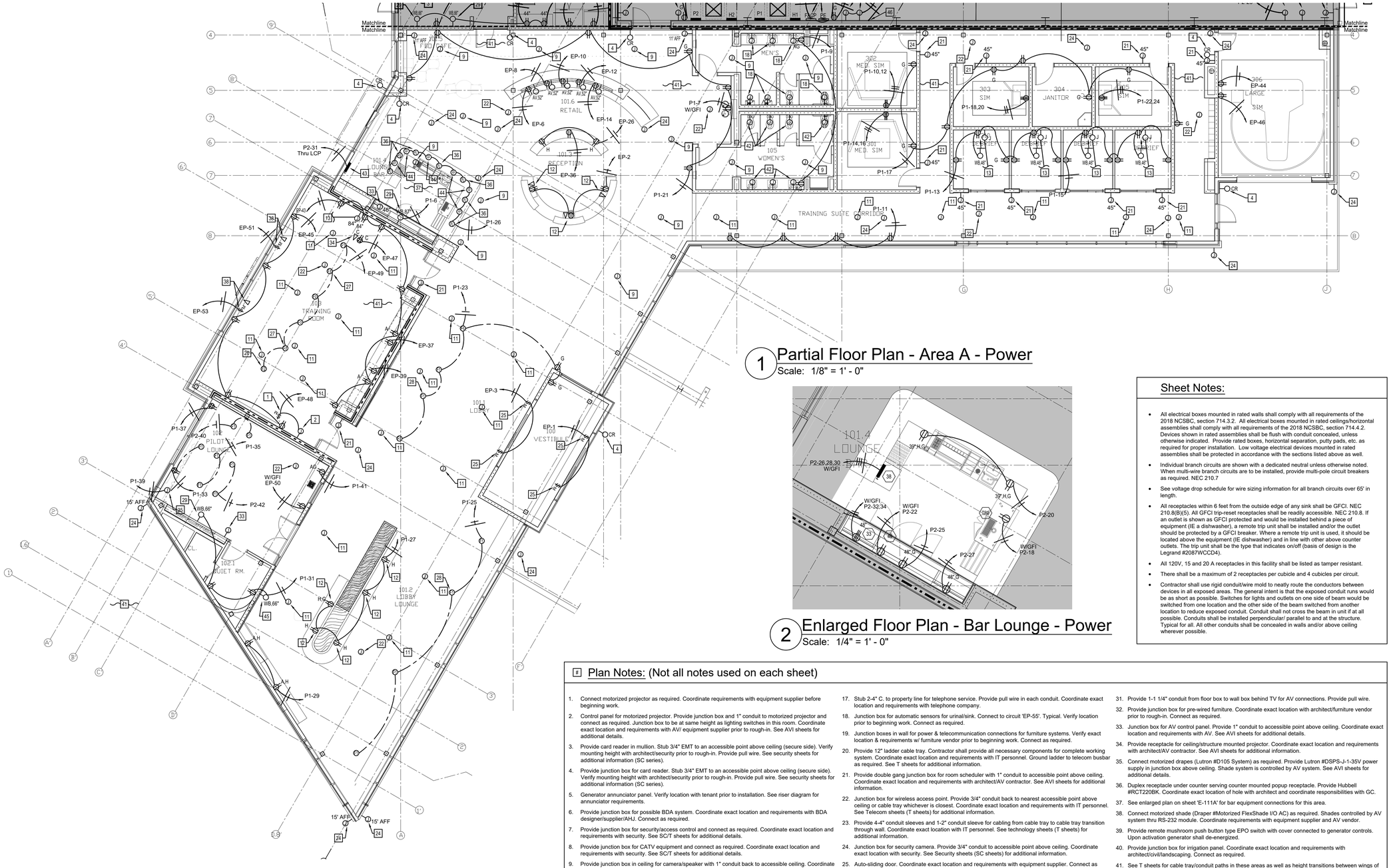

1 Partial Floor Plan - Area A - Power

Scale: 1/8" = 1' - 0"

2 Enlarged Floor Plan - Bar Lounge - Power

Scale: 1/4" = 1' - 0"

Sheet Notes:

- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
- Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
- See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
- All receptacles within 6 feet from the outside edge of any sink shall be GFCI. NEC 210.8(B)(5). All GFCI trip-reset receptacles shall be readily accessible. NEC 210.8. If an outlet is shown as GFCI protected and would be installed behind a piece of equipment (IE a dishwasher), a remote trip unit shall be installed and/or the outlet should be protected by a GFCI breaker. Where a remote trip unit is used, it should be located above the equipment (IE dishwasher) and in line with other above counter outlets. The trip unit shall be the type that indicates on/off (basis of design is the Legrand #2087WCCD4).
- All 120V, 15 and 20 A receptacles in this facility shall be listed as tamper resistant.
- There shall be a maximum of 2 receptacles per cubicle and 4 cubicles per circuit.
- Contractor shall use rigid conduit/wire mold to neatly route the conductors between devices in all exposed areas. The general intent is that the exposed conduit runs would be as short as possible. Switches for lights and outlets on one side of beam would be switched from one location and the other side of the beam switched from another location to reduce exposed conduit. Conduit shall not cross the beam in unit if at all possible. Conduits shall be installed perpendicular/ parallel to and at the structure. Typical for all. All other conduits shall be concealed in walls and/or above ceiling wherever possible.

Plan Notes: (Not all notes used on each sheet)

1. Connect motorized projector as required. Coordinate requirements with equipment supplier before beginning work.
2. Control panel for motorized projector. Provide junction box and 1" conduit to motorized projector and connect as required. Junction box to be at same height as lighting switches in this room. Coordinate exact location and requirements with AV/ equipment supplier prior to rough-in. See AVI sheets for additional details.
3. Provide card reader in mullion. Stub 3/4" EMT to an accessible point above ceiling (secure side). Verify mounting height with architect/security prior to rough-in. Provide pull wire. See security sheets for additional information (SC series).
4. Provide junction box for card reader. Stub 3/4" EMT to an accessible point above ceiling (secure side). Verify mounting height with architect/security prior to rough-in. Provide pull wire. See security sheets for additional information (SC series).
5. Generator annunciator panel. Verify location with tenant prior to installation. See riser diagram for annunciator requirements.
6. Provide junction box for possible BDA system. Coordinate exact location and requirements with BDA designer/supplier/AHJ. Connect as required.
7. Provide junction box for security/access control and connect as required. Coordinate exact location and requirements with security. See SC/T sheets for additional details.
8. Provide junction box for CATV equipment and connect as required. Coordinate exact location and requirements with security. See SC/T sheets for additional details.
9. Provide junction box in ceiling for camera/speaker with 1" conduit back to accessible ceiling. Coordinate exact location and requirements with AV. See AVI sheets for additional details.
10. Junction box for automatic sensors for urinal/sink. Connect to circuit 'EP-35'. Typical. Verify location prior to beginning work. Connect as required.
11. Provide junction box mounted at structure for camera/speaker. Coordinate exact location and requirements with AV. See AVI sheets for additional details.
12. Mount device in millwork. Coordinate exact location and requirements with architect/millwork contractor prior to rough-in.
13. Provide 1-1" conduit to accessible point above ceiling. Provide pull wire.
14. Connect fire alarm control panel and power extender to a 120/1 circuit w/ locked breaker.
15. Power for overhead door. Connect as required. Coordinate exact location with equipment supplier and owner prior to beginning work.
16. Provide 3/4" conduit for overhead door controls. Connect as required. Coordinate exact location with equipment supplier and owner prior to beginning work.
17. Stub 2-4" C, to property line for telephone service. Provide pull wire in each conduit. Coordinate exact location and requirements with telephone company.
18. Junction box for automatic sensors for urinal/sink. Connect to circuit 'EP-55'. Typical. Verify location prior to beginning work. Connect as required.
19. Junction boxes in wall for power & telecommunication connections for furniture systems. Verify exact location & requirements w/ furniture vendor prior to beginning work. Connect as required.
20. Provide 12" ladder cable tray. Contractor shall provide all necessary components for complete working system. Coordinate exact location and requirements with IT personnel. Ground ladder to telecom busbar as required. See T sheets for additional information.
21. Provide double gang junction box for room scheduler with 1" conduit to accessible point above ceiling. Coordinate exact location and requirements with architect/AV contractor. See AVI sheets for additional information.
22. Junction box for wireless access point. Provide 3/4" conduit back to nearest accessible point above ceiling or cable tray whichever is closest. Coordinate exact location and requirements with IT personnel. See Telecom sheets (T sheets) for additional information.
23. Provide 4-4" conduit sleeves and 1-2" conduit sleeve for cabling from cable tray to cable tray transition through wall. Coordinate exact location with IT personnel. See technology sheets (T sheets) for additional information.
24. Junction box for security camera. Provide 3/4" conduit to accessible point above ceiling. Coordinate exact location with security. See Security sheets (SC sheets) for additional information.
25. Auto-sliding door. Coordinate exact location and requirements with equipment supplier. Connect as required.
26. Flush floor box for power, data, and AV. Floor box shall be located in the floor at a distance not less than 6' from any fixed wall to comply with NEC 210.65. Verify exact location w/ architect prior to rough-in. Typical for all 'F2' floor boxes. See legend for specification.
27. Flush floor box for power. Floor box shall be located in the floor at a distance not less than 6' from any fixed wall to comply with NEC 210.65. Verify exact location w/ architect prior to rough-in. Typical for all 'F1' floor boxes. See legend for specification.
28. Flush floor box for power. Verify exact location with architect/furniture vendor prior to rough-in. See legend for specification. Typical for all 'F1' floor boxes.
29. Provide AV wall box (Chief #PAC526) with power and low voltage pathway (1-1 1/4" conduit to accessible point above ceiling or cable tray) for wall mounted screen. Coordinate exact location and mounting height with architect/AV contractor prior to rough-in. See AVI sheets for additional information.
30. Provide AV wall box (Chief #PAC526) with power and low voltage pathway (1-1 1/4" conduit to floor box) for wall mounted screen. Coordinate exact location and mounting height with architect/AV contractor prior to rough-in. See AV sheets for additional information.
31. Provide 1-1 1/4" conduit from floor box to wall box behind TV for AV connections. Provide pull wire.
32. Provide junction box for pre-wired furniture. Coordinate exact location with architect/furniture vendor prior to rough-in. Connect as required.
33. Junction box for AV control panel. Provide 1" conduit to accessible point above ceiling. Coordinate exact location and requirements with AV. See AVI sheets for additional details.
34. Provide receptacle for ceiling/structure mounted projector. Coordinate exact location and requirements with architect/AV contractor. See AVI sheets for additional information.
35. Connect motorized drapes (Lutron #D105 System) as required. Provide Lutron #DSPS-J-1-35V power supply in junction box above ceiling. Shade system is controlled by AV system. See AVI sheets for additional details.
36. Duplex receptacle under counter serving counter mounted popup receptacle. Provide Hubbell #RCT220BK. Coordinate exact location of hole with architect and coordinate responsibilities with GC.
37. See enlarged plan on sheet 'E-111A' for bar equipment connections for this area.
38. Connect motorized shade (Draper #Motorized FlexShade I/O AC) as required. Shades controlled by AV system thru RS-232 module. Coordinate requirements with equipment supplier and AV vendor.
39. Provide remote mushroom push button type EPO switch with cover connected to generator controls. Upon activation generator shall de-energized.
40. Provide junction box for irrigation panel. Coordinate exact location and requirements with architect/civil/landscaping. Connect as required.
41. See T sheets for cable tray/conduit paths in these areas as well as height transitions between wings of the buildings for additional details. Provide necessary conduits and pull wire as indicated.
42. Junction box for automatic sensors for urinal/sink. Connect to circuit 'EP-57'. Typical. Verify location prior to beginning work. Connect as required.
43. Provide lockable 30/1 disconnect fused at 20 amps above ceiling/up high on wall for sign circuit per NEC 600.5. Connect as required.
44. Provide Freepower 2 device chargers mounted in millwork. Coordinate exact location and requirements with architect. Connect as required.
45. Connect BAS panel as required. Coordinate exact location and requirements with mechanical/OT contractor.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

- New Wall being Constructed
- New 1/2 Height Wall being Constructed
- Wall to Deck
- One Hour Fire Barrier
- Two Hour Fire Barrier

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DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

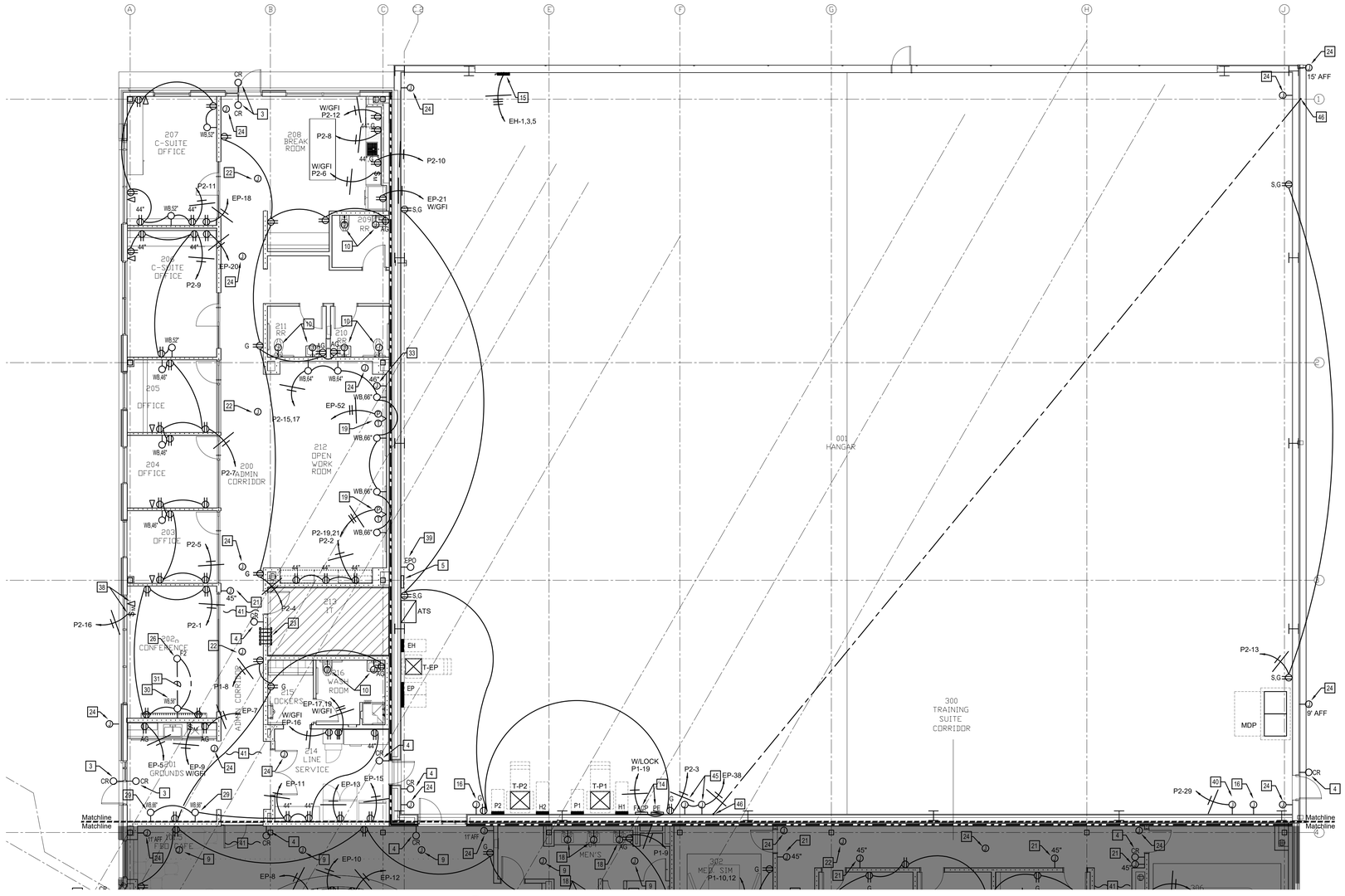
DRAWING TITLE

PARTIAL FLOOR PLAN - AREA A - POWER

DRAWING NUMBER

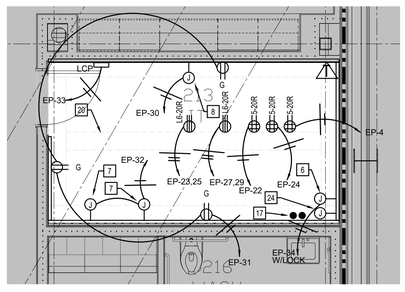
E-111A

These drawings will be at the scale indicated when plotted at 24" x 36"



1 Partial Floor Plan - Area B - Power

Scale: 1/8" = 1' - 0"



2 Enlarged Floor Plan - IT Room - Power

Scale: 1/4" = 1' - 0"

Sheet Notes:

- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
- Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
- See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
- All receptacles within 6 feet from the outside edge of any sink shall be GFCI. NEC 210.8(B)(5). All GFCI trip-reset receptacles shall be readily accessible. NEC 210.8. If an outlet is shown as GFCI protected and would be installed behind a piece of equipment (IE a dishwasher), a remote trip unit shall be installed and/or the outlet should be protected by a GFCI breaker. Where a remote trip unit is used, it should be located above the equipment (IE dishwasher) and in line with other above counter outlets. The trip unit shall be the type that indicates on/off (basis of design is the Legrand #2087WCCD4).
- All 120V, 15 and 20 A receptacles in this facility shall be listed as tamper resistant.
- There shall be a maximum of 2 receptacles per cubicle and 4 cubicles per circuit.
- Contractor shall use rigid conduit/wire mold to neatly route the conductors between devices in all exposed areas. The general intent is that the exposed conduit runs would be as short as possible. Switches for lights and outlets on one side of beam would be switched from one location and the other side of the beam switched from another location to reduce exposed conduit. Conduit shall not cross the beam in unit if at all possible. Conduits shall be installed perpendicular/ parallel to and at the structure. Typical for all. All other conduits shall be concealed in walls and/or above ceiling wherever possible.

Plan Notes: (Not all notes used on each sheet)

1. Connect motorized projector as required. Coordinate requirements with equipment supplier before beginning work.
2. Control panel for motorized projector. Provide junction box and 1" conduit to motorized projector and connect as required. Junction box to be at same height as lighting switches in this room. Coordinate exact location and requirements with AV equipment supplier prior to rough-in. See AVI sheets for additional details.
3. Provide card reader in mullion. Stub 3/4" EMT to an accessible point above ceiling (secure side). Verify mounting height with architect/security prior to rough-in. Provide pull wire. See security sheets for additional information (SC series).
4. Provide junction box for card reader. Stub 3/4" EMT to an accessible point above ceiling (secure side). Verify mounting height with architect/security prior to rough-in. Provide pull wire. See security sheets for additional information (SC series).
5. Generator annunciator panel. Verify location with tenant prior to installation. See riser diagram for annunciator requirements.
6. Provide junction box for possible BDA system. Coordinate exact location and requirements with BDA designer/supplier/AHJ. Connect as required.
7. Provide junction box for security/access control and connect as required. Coordinate exact location and requirements with security. See SC/T sheets for additional details.
8. Provide junction box for CATV equipment and connect as required. Coordinate exact location and requirements with security. See SC/T sheets for additional details.
9. Provide junction box in ceiling for camera/speaker with 1" conduit back to accessible ceiling. Coordinate exact location and requirements with AV. See AVI sheets for additional details.
10. Connect hand dryer as required. Coordinate exact location and requirements with architect.
11. Provide junction box mounted at structure for camera/speaker. Coordinate exact location and requirements with AV. See AVI sheets for additional details.
12. Mount device in millwork. Coordinate exact location and requirements with architect/millwork contractor prior to rough-in.
13. Provide 1-1" conduit to accessible point above ceiling. Provide pull wire.
14. Connect fire alarm control panel and power extender to a 120/1 circuit w/ locked breaker.
15. Power for overhead door. Connect as required. Coordinate exact location with equipment supplier and owner prior to beginning work.
16. Provide 3/4" conduit for overhead door controls. Connect as required. Coordinate exact location with equipment supplier and owner prior to beginning work.
17. Stub 2-4" C. to property line for telephone service. Provide pull wire in each conduit. Coordinate exact location and requirements with telephone company.
18. Junction box for automatic sensors for urinal/sink. Connect to circuit 'X-XX'. Typical. Verify location prior to beginning work. Connect as required.
19. Junction boxes in wall for power & telecommunication connections for furniture systems. Verify exact location & requirements w/ furniture vendor prior to beginning work. Connect as required.
20. Provide 12" ladder cable tray. Contractor shall provide all necessary components for complete working system. Coordinate exact location and requirements with IT personnel. Ground ladder to telecom busbar as required. See T sheets for additional information.
21. Provide double gang junction box for room scheduler with 1" conduit to accessible point above ceiling. Coordinate exact location and requirements with architect/AV contractor. See AVI sheets for additional information.
22. Junction box for wireless access point. Provide 3/4" conduit back to nearest accessible point above ceiling or cable tray whichever is closest. Coordinate exact location and requirements with IT personnel. See Telecom sheets (T sheets) for additional information.
23. Provide 4-4" conduit sleeves and 1-2" conduit sleeve for cabling from cable tray to cable tray transition through wall. Coordinate exact location with IT personnel. See technology sheets (T sheets) for additional information.
24. Junction box for security camera. Provide 3/4" conduit to accessible point above ceiling. Coordinate exact location with security. See Security sheets (SC sheets) for additional information.
25. Auto-sliding door. Coordinate exact location and requirements with equipment supplier. Connect as required.
26. Flush floor box for power, data, and AV. Floor box shall be located in the floor at a distance not less than 6' from any fixed wall to comply with NEC 210.65. Verify exact location w/ architect prior to rough-in. Typical for all 'F2' floor boxes. See legend for specification.
27. Flush floor box for power. Floor box shall be located in the floor at a distance not less than 6' from any fixed wall to comply with NEC 210.65. Verify exact location w/ architect prior to rough-in. Typical for all 'F1' floor boxes. See legend for specification.
28. Flush floor box for power. Verify exact location with architect/furniture vendor prior to rough-in. See legend for specification. Typical for all 'F1' floor boxes.
29. Provide AV wall box (Chief #PAC526) with power and low voltage pathway (1-1 1/4" conduit to accessible point above ceiling or cable tray) for wall mounted screen. Coordinate exact location and mounting height with architect/AV contractor prior to rough-in. See AVI sheets for additional information.
30. Provide AV wall box (Chief #PAC526) with power and low voltage pathway (1-1 1/4" conduit to floor box) for wall mounted screen. Coordinate exact location and mounting height with architect/AV contractor prior to rough-in. See AV sheets for additional information.
31. Provide 1-1 1/4" conduit from floor box to wall box behind TV for AV connections. Provide pull wire.
32. Provide junction box for pre-wired furniture. Coordinate exact location with architect/furniture vendor prior to rough-in. Connect as required.
33. Junction box for AV control panel. Provide 1" conduit to accessible point above ceiling. Coordinate exact location and requirements with AV. See AVI sheets for additional details.
34. Provide receptacle for ceiling/structure mounted projector. Coordinate exact location and requirements with architect/AV contractor. See AVI sheets for additional information.
35. Connect motorized drapes (Lutron #D105 System) as required. Provide Lutron #DSPS-J-1-35V power supply in junction box above ceiling. Shade system is controlled by AV system. See AVI sheets for additional details.
36. Duplex receptacle under counter serving counter mounted popup receptacle. Provide Hubbell #RCT220BK. Coordinate exact location of hole with architect and coordinate responsibilities with GC.
37. See enlarged plan on sheet 'E-111A' for bar equipment connections for this area.
38. Connect motorized shade (Draper #Motorized FlexShade I/O AC) as required. Shades controlled by AV system thru RS-232 module. Coordinate requirements with equipment supplier and AV vendor.
39. Provide remote mushroom push button type EPO switch with cover connected to generator controls. Upon activation generator shall de-energized.
40. Provide junction box for irrigation panel. Coordinate exact location and requirements with architect/civil/landscaping. Connect as required.
41. See T sheets for cable tray/conduit paths in these areas as well as height transitions between wings of the buildings for additional details. Provide necessary conduits and pull wire as indicated.
42. Junction box for automatic sensors for urinal/sink. Connect to circuit 'EP-57'. Typical. Verify location prior to beginning work. Connect as required.
43. Provide lockable 30/1 disconnect fused at 20 amps above ceiling/up high on wall for sign circuit per NEC 600.5. Connect as required.
44. Provide Freepower 2 device chargers mounted in millwork. Coordinate exact location and requirements with architect. Connect as required.
45. Connect BAS panel as required. Coordinate exact location and requirements with mechanical/OT contractor.
46. Provide 3/4" conduit from gas meter to BAS control panel with pull string. Coordinate exact location with mechanical/OT contractor.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

- New Wall being Constructed
- New 1/2 Height Wall being Constructed
- Wall to Deck
- One Hour Fire Barrier
- Two Hour Fire Barrier

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PHASE	PERMIT SET
DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

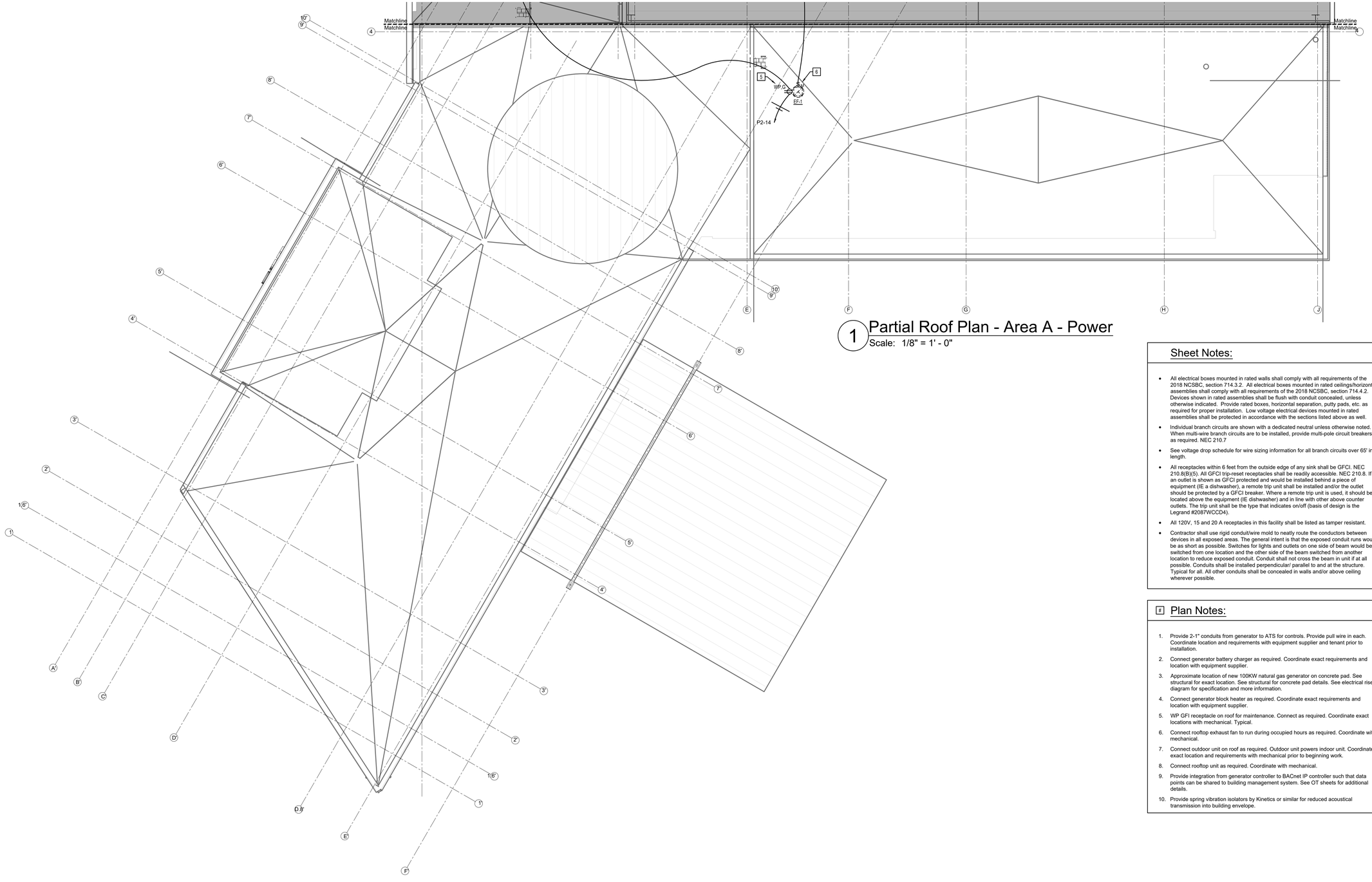
DRAWING TITLE

PARTIAL FLOOR PLAN - AREA B - POWER

DRAWING NUMBER

E-111B

These drawings will be at the scale indicated when plotted at 24" x 36"



1 Partial Roof Plan - Area A - Power

Scale: 1/8" = 1' - 0"

Sheet Notes:

- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
- Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
- See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
- All receptacles within 6 feet from the outside edge of any sink shall be GFCI. NEC 210.8(B)(5). All GFCI trip-reset receptacles shall be readily accessible. NEC 210.8. If an outlet is shown as GFCI protected and would be installed behind a piece of equipment (IE a dishwasher), a remote trip unit shall be installed and/or the outlet should be protected by a GFCI breaker. Where a remote trip unit is used, it should be located above the equipment (IE dishwasher) and in line with other above counter outlets. The trip unit shall be the type that indicates on/off (basis of design is the Legrand #2087WCCD4).
- All 120V, 15 and 20 A receptacles in this facility shall be listed as tamper resistant.
- Contractor shall use rigid conduit/wire mold to neatly route the conductors between devices in all exposed areas. The general intent is that the exposed conduit runs would be as short as possible. Switches for lights and outlets on one side of beam would be switched from one location and the other side of the beam switched from another location to reduce exposed conduit. Conduit shall not cross the beam in unit if at all possible. Conduits shall be installed perpendicular/ parallel to and at the structure. Typical for all. All other conduits shall be concealed in walls and/or above ceiling wherever possible.

Plan Notes:

1. Provide 2-1" conduits from generator to ATS for controls. Provide pull wire in each. Coordinate location and requirements with equipment supplier and tenant prior to installation.
2. Connect generator battery charger as required. Coordinate exact requirements and location with equipment supplier.
3. Approximate location of new 100KW natural gas generator on concrete pad. See structural for exact location. See structural for concrete pad details. See electrical riser diagram for specification and more information.
4. Connect generator block heater as required. Coordinate exact requirements and location with equipment supplier.
5. WP GFI receptacle on roof for maintenance. Connect as required. Coordinate exact locations with mechanical. Typical.
6. Connect rooftop exhaust fan to run during occupied hours as required. Coordinate with mechanical.
7. Connect outdoor unit on roof as required. Outdoor unit powers indoor unit. Coordinate exact location and requirements with mechanical prior to beginning work.
8. Connect rooftop unit as required. Coordinate with mechanical.
9. Provide integration from generator controller to BACnet IP controller such that data points can be shared to building management system. See OT sheets for additional details.
10. Provide spring vibration isolators by Kinetics or similar for reduced acoustical transmission into building envelope.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

- New Wall being Constructed
- New 1/2 Height Wall being Constructed
- Wall to Deck
- One Hour Fire Barrier
- Two Hour Fire Barrier

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SCO ID #	N/A

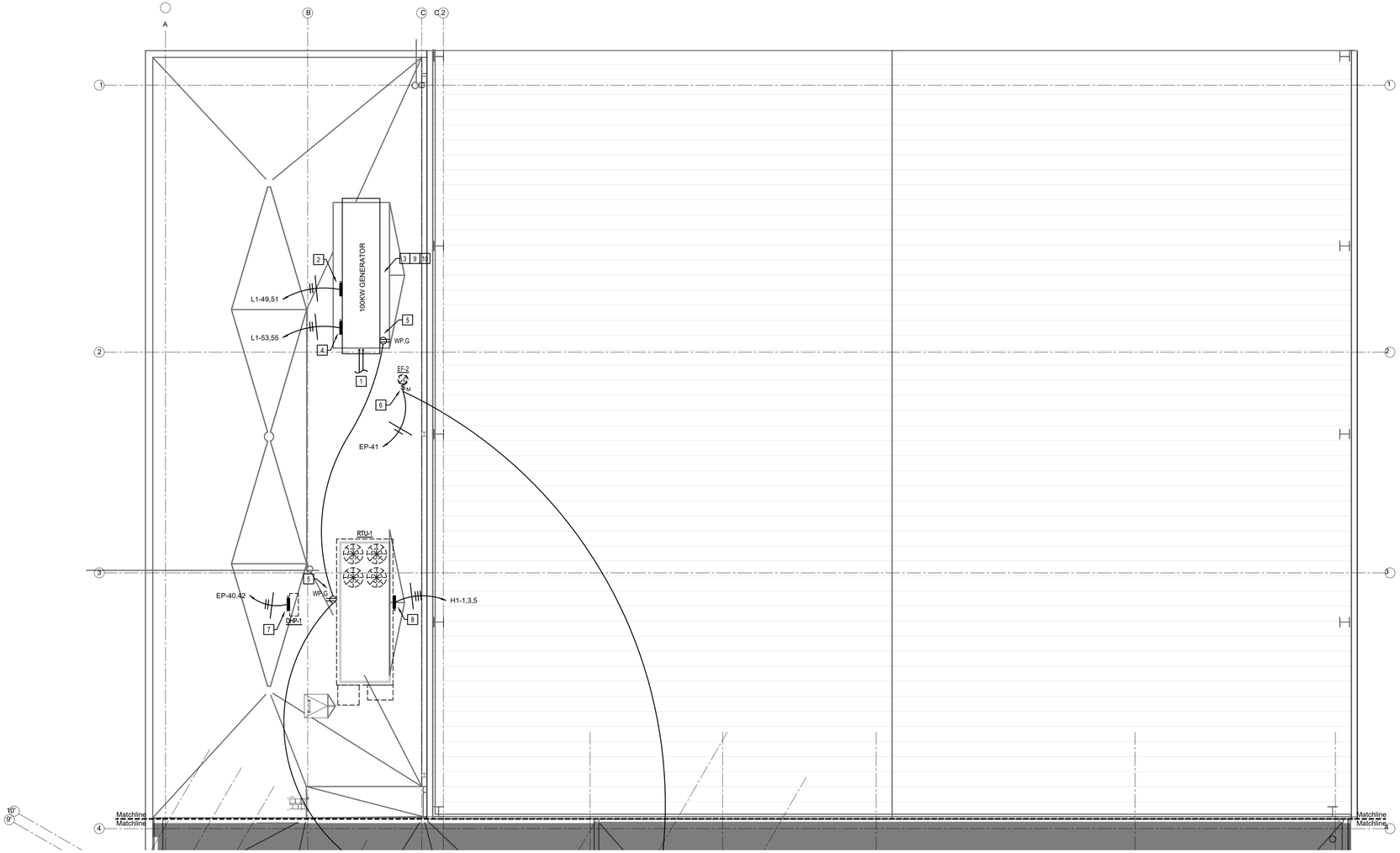
DRAWING TITLE

PARTIAL ROOF PLAN - AREA A - POWER

DRAWING NUMBER

E-121A

These drawings will be at the scale indicated when plotted at 24" x 36"



1 Partial Roof Plan - Area B - Power
Scale: 1/8" = 1' - 0"

Sheet Notes:

- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
- Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
- See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
- All receptacles within 6 feet from the outside edge of any sink shall be GFCI. NEC 210.8(B)(5). All GFCI trip-reset receptacles shall be readily accessible. NEC 210.8. If an outlet is shown as GFCI protected and would be installed behind a piece of equipment (IE a dishwasher), a remote trip unit shall be installed and/or the outlet should be protected by a GFCI breaker. Where a remote trip unit is used, it should be located above the equipment (IE dishwasher) and in line with other above counter outlets. The trip unit shall be the type that indicates on/off (basis of design is the Legrand #2087WCCD4).
- All 120V, 15 and 20 A receptacles in this facility shall be listed as tamper resistant.
- Contractor shall use rigid conduit/wire mold to neatly route the conductors between devices in all exposed areas. The general intent is that the exposed conduit runs would be as short as possible. Switches for lights and outlets on one side of beam would be switched from one location and the other side of the beam switched from another location to reduce exposed conduit. Conduit shall not cross the beam in unit if at all possible. Conduits shall be installed perpendicular/ parallel to and at the structure. Typical for all. All other conduits shall be concealed in walls and/or above ceiling wherever possible.

Plan Notes:

1. Provide 2-1" conduits from generator to ATS for controls. Provide pull wire in each. Coordinate location and requirements with equipment supplier and tenant prior to installation.
2. Connect generator battery charger as required. Coordinate exact requirements and location with equipment supplier.
3. Approximate location of new 100KW natural gas generator on concrete pad. See structural for exact location. See structural for concrete pad details. See electrical riser diagram for specification and more information.
4. Connect generator block heater as required. Coordinate exact requirements and location with equipment supplier.
5. WP GFI receptacle on roof for maintenance. Connect as required. Coordinate exact locations with mechanical. Typical.
6. Connect rooftop exhaust fan to run during occupied hours as required. Coordinate with mechanical.
7. Connect outdoor unit on roof as required. Outdoor unit powers indoor unit. Coordinate exact location and requirements with mechanical prior to beginning work.
8. Connect rooftop unit as required. Coordinate with mechanical.
9. Provide integration from generator controller to BACnet IP controller such that data points can be shared to building management system. See OT sheets for additional details.
10. Provide spring vibration isolators by Kinetics or similar for reduced acoustical transmission into building envelope.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

- New Wall being Constructed
- New 1/2 Height Wall being Constructed
- Wall to Deck
- One Hour Fire Barrier
- Two Hour Fire Barrier

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SCO ID #	N/A

DRAWING TITLE
PARTIAL ROOF PLAN - AREA B - POWER

DRAWING NUMBER
E-121B

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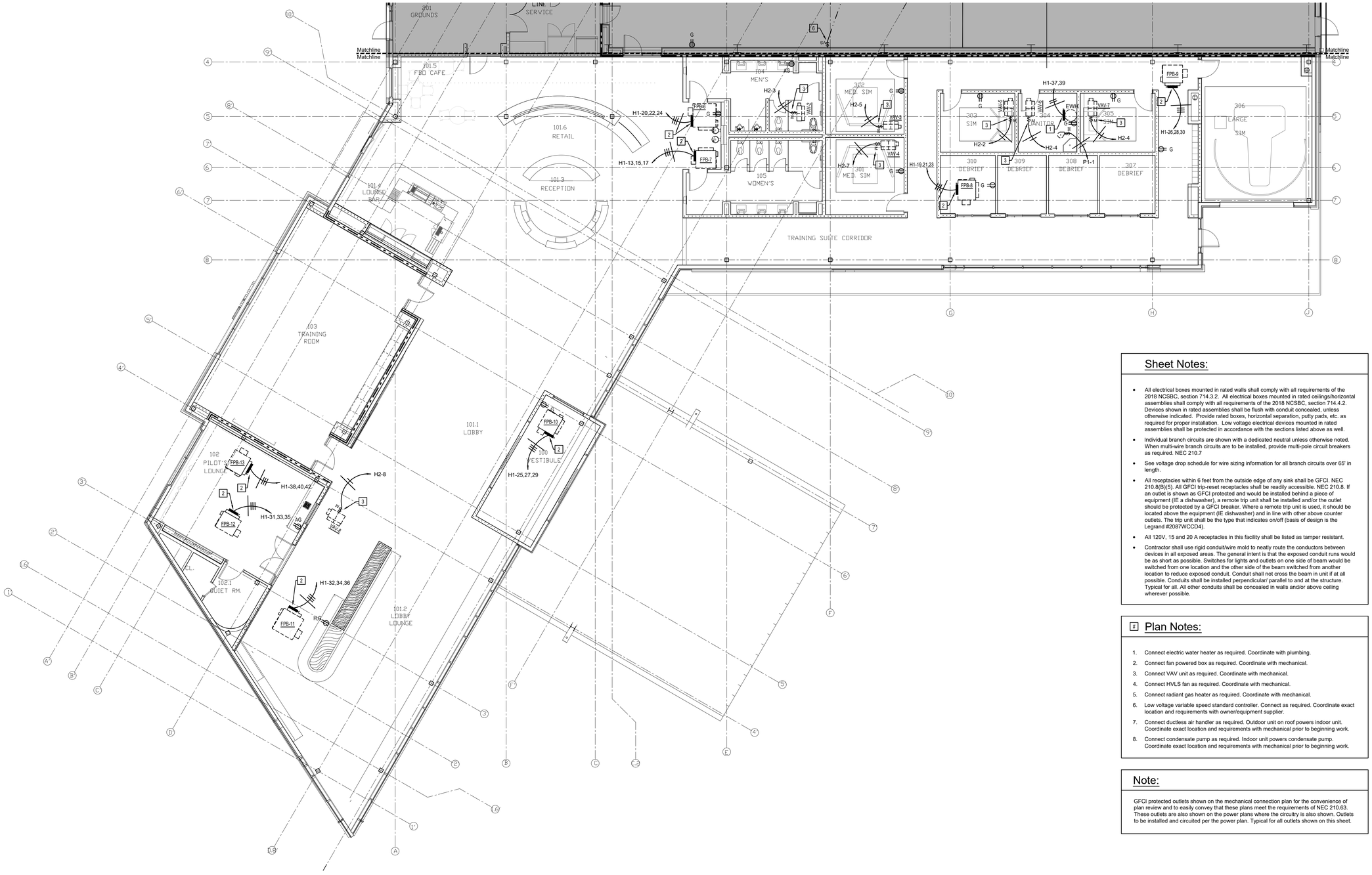

1 Partial Floor Plan - Area A - Mechanical Connections

Scale: 1/8" = 1' - 0"

Sheet Notes:

- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
- Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
- See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
- All receptacles within 6 feet from the outside edge of any sink shall be GFCI. NEC 210.8(B)(5). All GFCI trip-reset receptacles shall be readily accessible. NEC 210.8. If an outlet is shown as GFCI protected and would be installed behind a piece of equipment (IE a dishwasher), a remote trip unit shall be installed and/or the outlet should be protected by a GFCI breaker. Where a remote trip unit is used, it should be located above the equipment (IE dishwasher) and in line with other above counter outlets. The trip unit shall be the type that indicates on/off (basis of design is the Legrand #2087WCCD4).
- All 120V, 15 and 20 A receptacles in this facility shall be listed as tamper resistant.
- Contractor shall use rigid conduit/wire mold to neatly route the conductors between devices in all exposed areas. The general intent is that the exposed conduit runs would be as short as possible. Switches for lights and outlets on one side of beam would be switched from one location and the other side of the beam switched from another location to reduce exposed conduit. Conduit shall not cross the beam in unit if at all possible. Conduits shall be installed perpendicular/ parallel to and at the structure. Typical for all. All other conduits shall be concealed in walls and/or above ceiling wherever possible.

[#] Plan Notes:

1. Connect electric water heater as required. Coordinate with plumbing.
2. Connect fan powered box as required. Coordinate with mechanical.
3. Connect VAV unit as required. Coordinate with mechanical.
4. Connect HVLS fan as required. Coordinate with mechanical.
5. Connect radiant gas heater as required. Coordinate with mechanical.
6. Low voltage variable speed standard controller. Connect as required. Coordinate exact location and requirements with owner/equipment supplier.
7. Connect ductless air handler as required. Outdoor unit on roof powers indoor unit. Coordinate exact location and requirements with mechanical prior to beginning work.
8. Connect condensate pump as required. Indoor unit powers condensate pump. Coordinate exact location and requirements with mechanical prior to beginning work.

Note:

GFCI protected outlets shown on the mechanical connection plan for the convenience of plan review and to easily convey that these plans meet the requirements of NEC 210.63. These outlets are also shown on the power plans where the circuitry is also shown. Outlets to be installed and circuited per the power plan. Typical for all outlets shown on this sheet.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

- New Wall being Constructed
- New 1/2 Height Wall being Constructed
- Wall to Deck
- One Hour Fire Barrier
- Two Hour Fire Barrier

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DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

DRAWING TITLE
PARTIAL FLOOR PLAN - AREA A - MECHANICAL CONNECTIONS

DRAWING NUMBER
E-131A

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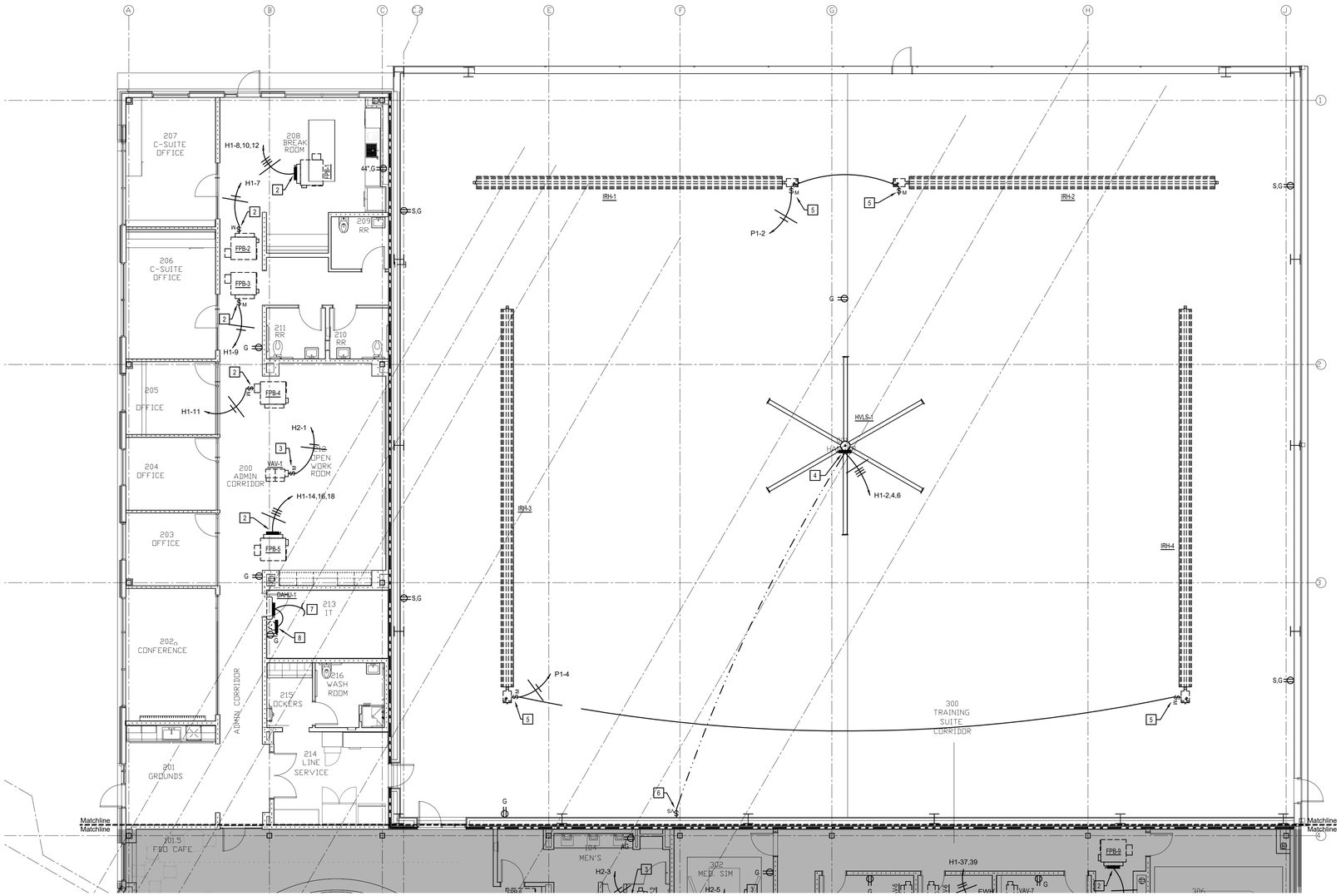

1 Partial Floor Plan - Area B - Mechanical Connections

Scale: 1/8" = 1' - 0"

Sheet Notes:

- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
- Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
- See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
- All receptacles within 6 feet from the outside edge of any sink shall be GFCI. NEC 210.8(B)(5). All GFCI trip-reset receptacles shall be readily accessible. NEC 210.8. If an outlet is shown as GFCI protected and would be installed behind a piece of equipment (IE a dishwasher), a remote trip unit shall be installed and/or the outlet should be protected by a GFCI breaker. Where a remote trip unit is used, it should be located above the equipment (IE dishwasher) and in line with other above counter outlets. The trip unit shall be the type that indicates on/off (basis of design is the Legrand #2087WCCD4).
- All 120V, 15 and 20 A receptacles in this facility shall be listed as tamper resistant.
- Contractor shall use rigid conduit/wire mold to neatly route the conductors between devices in all exposed areas. The general intent is that the exposed conduit runs would be as short as possible. Switches for lights and outlets on one side of beam would be switched from one location and the other side of the beam switched from another location to reduce exposed conduit. Conduit shall not cross the beam in unit if at all possible. Conduits shall be installed perpendicular/ parallel to and at the structure. Typical for all. All other conduits shall be concealed in walls and/or above ceiling wherever possible.

Plan Notes:

1. Connect electric water heater as required. Coordinate with plumbing.
2. Connect fan powered box as required. Coordinate with mechanical.
3. Connect VAV unit as required. Coordinate with mechanical.
4. Connect HVLS fan as required. Coordinate with mechanical.
5. Connect radiant gas heater as required. Coordinate with mechanical.
6. Low voltage variable speed standard controller. Connect as required. Coordinate exact location and requirements with owner/equipment supplier.
7. Connect ductless air handler as required. Outdoor unit on roof powers indoor unit. Coordinate exact location and requirements with mechanical prior to beginning work.
8. Connect condensate pump as required. Indoor unit powers condensate pump. Coordinate exact location and requirements with mechanical prior to beginning work.

Note:

GFCI protected outlets shown on the mechanical connection plan for the convenience of plan review and to easily convey that these plans meet the requirements of NEC 210.63. These outlets are also shown on the power plans where the circuitry is also shown. Outlets to be installed and circuited per the power plan. Typical for all outlets shown on this sheet.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

- New Wall being Constructed
- New 1/2 Height Wall being Constructed
- Wall to Deck
- One Hour Fire Barrier
- Two Hour Fire Barrier

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5/29/26

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PHASE	PERMIT SET
DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

DRAWING TITLE

PARTIAL FLOOR PLAN - AREA B - MECHANICAL CONNECTIONS

DRAWING NUMBER

E-131B

These drawings will be at the scale indicated when plotted at 24" x 36"



1 Site Plan - Electrical
Scale: 1/40" = 1' - 0"

Sheet Notes:

- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
- Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
- See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.

Plan Notes:

1. 4-#3, 1-#8 ground, in 2" conduit for EV Charger (ChargePoint Express 250). Coordinate exact location and requirements with civil/equipment supplier. Connect as required.
2. Provide 2" conduit from this location to location beside MDP and cap for future EV Charger. Provide pull wire.
3. Connect entry main security gate as required. Coordinate exact location and requirements with security gate supplier.
4. Connect monument sign as required. Coordinate exact location and requirements with civil.
5. Connect security gate/bar as required. Coordinate exact location and requirements with security gate supplier.
6. Mount receptacles to pedestals and connect as required. Coordinate exact locations with architect.
7. Connect accessed controlled security gate as required. Coordinate exact location and requirements with security gate supplier.
8. 2-#4, 1-#12 ground, 1" conduit.
9. 3-#6 , 1-#12 ground, 1" conduit.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

- New Wall being Constructed
- New 1/2 Height Wall being Constructed
- Wall to Deck
- One Hour Fire Barrier
- Two Hour Fire Barrier

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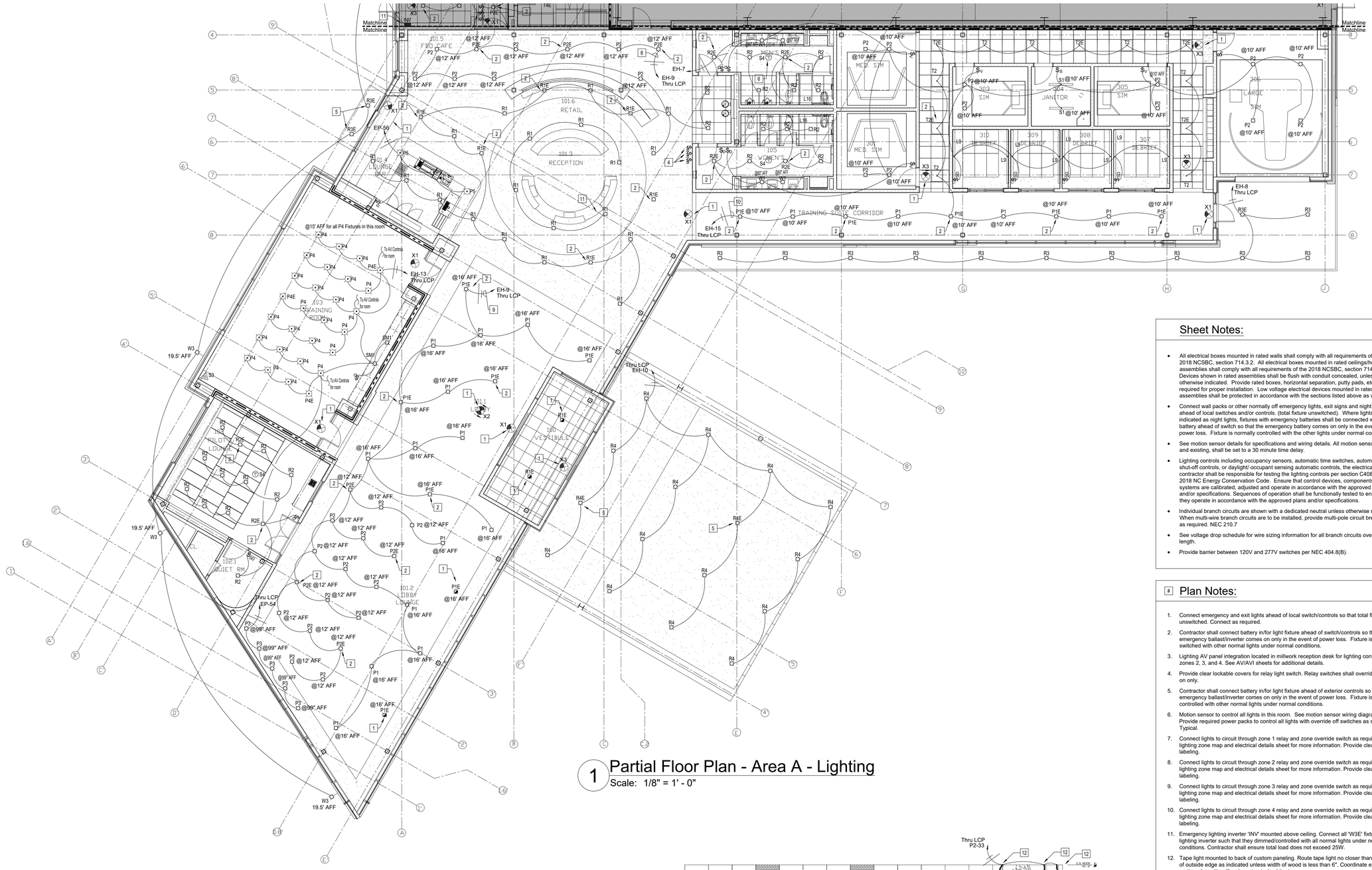
PHASE	PERMIT SET
DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

DRAWING TITLE
SITE PLAN - ELECTRICAL

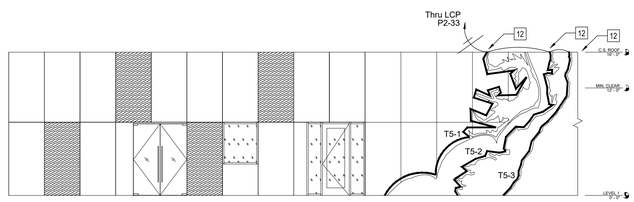
DRAWING NUMBER
E-140

These drawings will be at the scale indicated when plotted at 24" x 36"



1 Partial Floor Plan - Area A - Lighting

Scale: 1/8" = 1' - 0"



2 Elevation Plan - NC Logo - Lighting

Scale: None

Sheet Notes:

- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
- Connect wall packs or other normally off emergency lights, exit signs and night lights ahead of local switches and/or controls. (total fixture unswitched). Where lights are not indicated as night lights, fixtures with emergency batteries shall be connected with the battery ahead of switch so that the emergency battery comes on only in the event of power loss. Fixture is normally controlled with the other lights under normal conditions.
- See motion sensor details for specifications and wiring details. All motion sensors, new and existing, shall be set to a 30 minute time delay.
- Lighting controls including occupancy sensors, automatic time switches, automatic shut-off controls, or daylight/ occupant sensing automatic controls, the electrical contractor shall be responsible for testing the lighting controls per section C408.3 of the 2018 NC Energy Conservation Code. Ensure that control devices, components, and systems are calibrated, adjusted and operate in accordance with the approved plans and/or specifications. Sequences of operation shall be functionally tested to ensure they operate in accordance with the approved plans and/or specifications.
- Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
- See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
- Provide barrier between 120V and 277V switches per NEC 404.8(B).

Plan Notes:

1. Connect emergency and exit lights ahead of local switch/controls so that total fixture is unswitched. Connect as required.
2. Contractor shall connect battery in/for light fixture ahead of switch/controls so that emergency ballast/inverter comes on only in the event of power loss. Fixture is switched with other normal lights under normal conditions.
3. Lighting AV panel integration located in millwork reception desk for lighting control of zones 2, 3, and 4. See AV/AVI sheets for additional details.
4. Provide clear lockable covers for relay light switch. Relay switches shall override lights on only.
5. Contractor shall connect battery in/for light fixture ahead of exterior controls so that emergency ballast/inverter comes on only in the event of power loss. Fixture is controlled with other normal lights under normal conditions.
6. Motion sensor to control all lights in this room. See motion sensor wiring diagrams. Provide required power packs to control all lights with override off switches as shown. Typical.
7. Connect lights to circuit through zone 1 relay and zone override switch as required. See lighting zone map and electrical details sheet for more information. Provide clear labeling.
8. Connect lights to circuit through zone 2 relay and zone override switch as required. See lighting zone map and electrical details sheet for more information. Provide clear labeling.
9. Connect lights to circuit through zone 3 relay and zone override switch as required. See lighting zone map and electrical details sheet for more information. Provide clear labeling.
10. Connect lights to circuit through zone 4 relay and zone override switch as required. See lighting zone map and electrical details sheet for more information. Provide clear labeling.
11. Emergency lighting inverter 'INV' mounted above ceiling. Connect all 'W3E' fixtures to lighting inverter such that they dimmed/controlled with all normal lights under normal conditions. Contractor shall ensure total load does not exceed 25W.
12. Tape light mounted to back of custom paneling. Route tape light no closer than within 3" of outside edge as indicated unless width of wood is less than 6". Coordinate exact routing plan with millwork contractor/architect.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

- New Wall being Constructed
- New 1/2 Height Wall being Constructed
- Wall to Deck
- One Hour Fire Barrier
- Two Hour Fire Barrier

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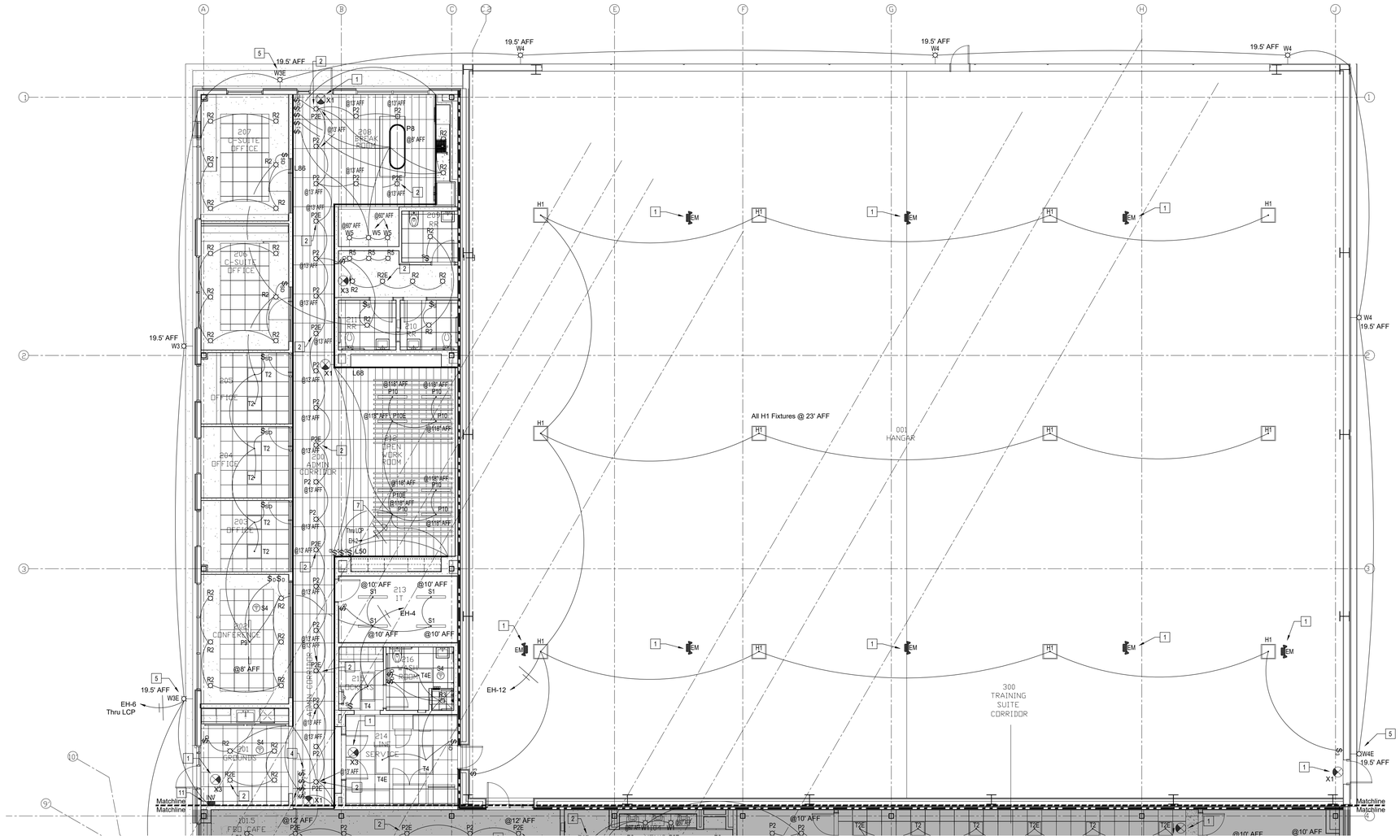
PHASE	PERMIT SET
DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

DRAWING TITLE
PARTIAL FLOOR PLAN - AREA A - LIGHTING

DRAWING NUMBER
E-231A

These drawings will be at the scale indicated when plotted at 24" x 36"



1 Partial Floor Plan - Area B - Lighting

Scale: 1/8" = 1' - 0"

Sheet Notes:

- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
- Connect wall packs or other normally off emergency lights, exit signs and night lights ahead of local switches and/or controls. (total fixture unswitched). Where lights are not indicated as night lights, fixtures with emergency batteries shall be connected with the battery ahead of switch so that the emergency battery comes on only in the event of power loss. Fixture is normally controlled with the other lights under normal conditions.
- See motion sensor details for specifications and wiring details. All motion sensors, new and existing, shall be set to a 30 minute time delay.
- Lighting controls including occupancy sensors, automatic time switches, automatic shut-off controls, or daylight/ occupant sensing automatic controls, the electrical contractor shall be responsible for testing the lighting controls per section C408.3 of the 2018 NC Energy Conservation Code. Ensure that control devices, components, and systems are calibrated, adjusted and operate in accordance with the approved plans and/or specifications. Sequences of operation shall be functionally tested to ensure they operate in accordance with the approved plans and/or specifications.
- Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
- See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
- Provide barrier between 120V and 277V switches per NEC 404.8(B).

Plan Notes:

1. Connect emergency and exit lights ahead of local switch/controls so that total fixture is unswitched. Connect as required.
2. Contractor shall connect battery in/for light fixture ahead of switch/controls so that emergency ballast/inverter comes on only in the event of power loss. Fixture is switched with other normal lights under normal conditions.
3. Lighting AV panel integration located in millwork reception desk for lighting control of zones 2, 3, and 4. See AV/AVI sheets for additional details.
4. Provide clear lockable covers for relay light switch. Relay switches shall override lights on only.
5. Contractor shall connect battery in/for light fixture ahead of exterior controls so that emergency ballast/inverter comes on only in the event of power loss. Fixture is controlled with other normal lights under normal conditions.
6. Motion sensor to control all lights in this room. See motion sensor wiring diagrams. Provide required power packs to control all lights with override off switches as shown. Typical.
7. Connect lights to circuit through zone 1 relay and zone override switch as required. See lighting zone map and electrical details sheet for more information. Provide clear labeling.
8. Connect lights to circuit through zone 2 relay and zone override switch as required. See lighting zone map and electrical details sheet for more information. Provide clear labeling.
9. Connect lights to circuit through zone 3 relay and zone override switch as required. See lighting zone map and electrical details sheet for more information. Provide clear labeling.
10. Connect lights to circuit through zone 4 relay and zone override switch as required. See lighting zone map and electrical details sheet for more information. Provide clear labeling.
11. Emergency lighting inverter 'INV' mounted above ceiling. Connect all 'W3E' fixtures to lighting inverter such that they dimmed/controlled with all normal lights under normal conditions. Contractor shall ensure total load does not exceed 25W.
12. Tape light mounted to back of custom paneling. Route tape light no closer than within 3" of outside edge as indicated unless width of wood is less than 6". Coordinate exact routing plan with millwork contractor/architect.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

- New Wall being Constructed
- New 1/2 Height Wall being Constructed
- Wall to Deck
- One Hour Fire Barrier
- Two Hour Fire Barrier

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DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

DRAWING TITLE

PARTIAL FLOOR PLAN - AREA B - LIGHTING

DRAWING NUMBER

E-231B

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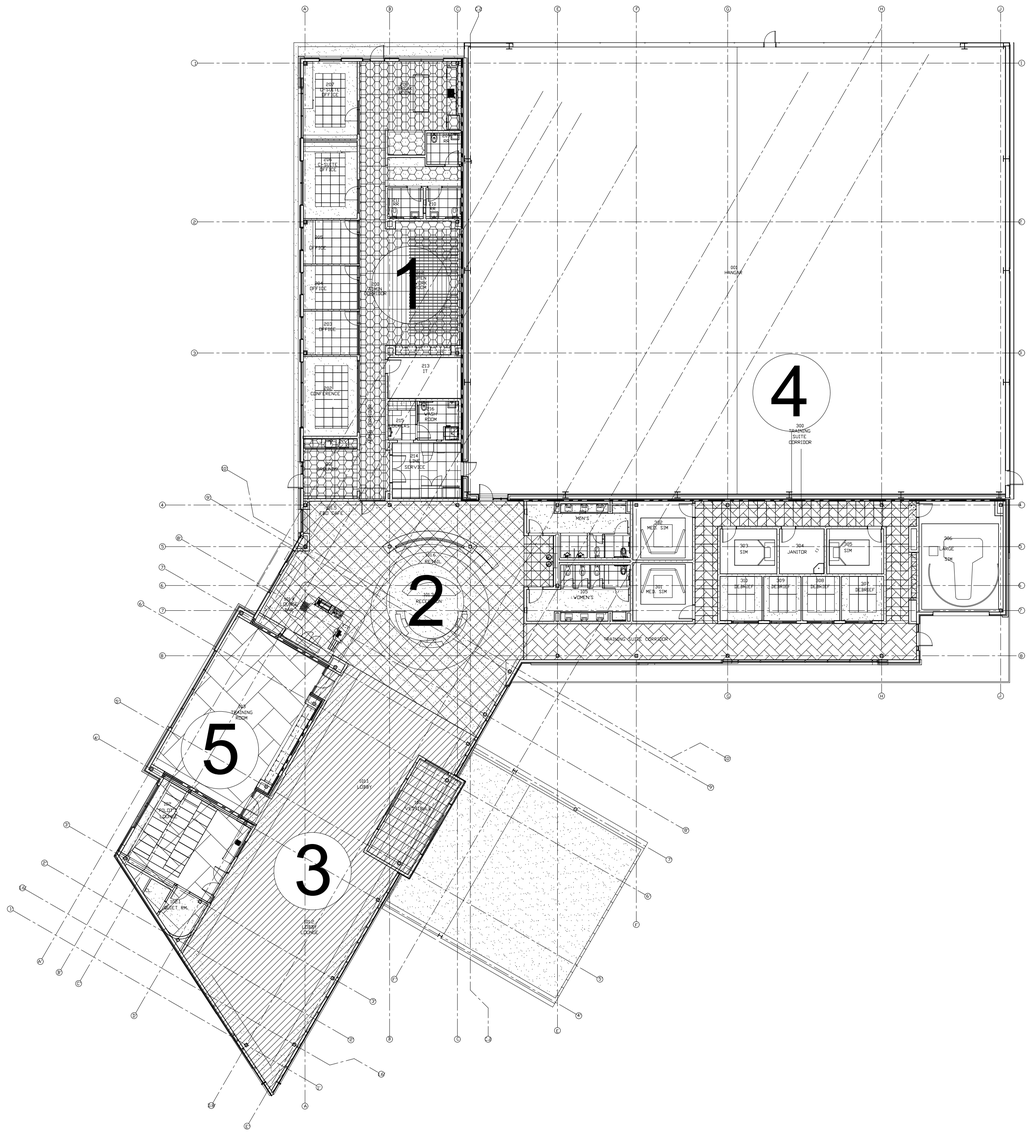

1 Floor Plan - Lighting Control Zones
Scale: 1/16" = 1' - 0"

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

New Wall being Constructed	
New 1/2 Height Wall being Constructed	
Wall to Deck	
One Hour Fire Barrier	
Two Hour Fire Barrier	

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PHASE	PERMIT SET
DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

DRAWING TITLE
FLOOR PLAN - LIGHTING CONTROL ZONES

DRAWING NUMBER
E-241

These drawings will be at the scale indicated when plotted at 24" x 36"

TYPICAL NOTES FOR ALL TRANSFORMERS AND SEPARATELY DERIVED SYSTEMS:

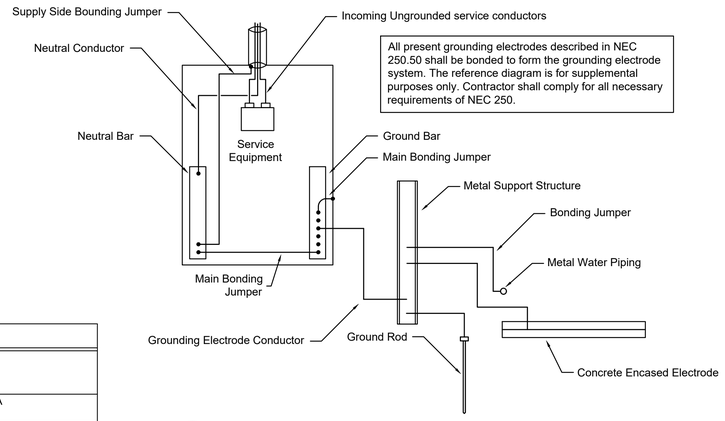
1. Provide grounding electrode conductor connected to grounding electrode system. Bond the neutral at the transformer. NEC 250.30
2. Where the disconnecting means for the primary feed to a transformer is not within site of the transformer, it shall be lockable and the location of the disconnecting means shall be permanently indicated on the transformer. NEC 450.14 and NEC 110.25

Electrical Riser Notes

1. Grounds for all services shall be bonded together per NEC 250.58 and shall meet all requirements of NEC 250.104.
2. The design is based on an estimated fault current of 65,000 Amps. The contractor shall coordinate with the utility/ power company to confirm the available fault current at the transformer and service entrance conductor length. This information shall be submitted to engineer as part of the gear submittal, prior to beginning work.
3. The service equipment enclosure(s) and new panelboards shall be legibly marked in the field to indicate the available fault current prior to final inspection. NEC 110.24 and 408.6 The electrical contractor shall contact the power company and obtain the actual available fault current at the transformer. The contractor shall contact the engineer with this value, the conductor type, the verified length of conductors from the transformer to the service enclosure, as well as any and all feeders serving the new panel. With this information, the engineer can calculate the available fault current. The resulting calculated value shall be placarded on the exterior of the service enclosure/ new panel and shall read as follows:

   AVAILABLE FAULT CURRENT: _____
   CALCULATED DATE: _____

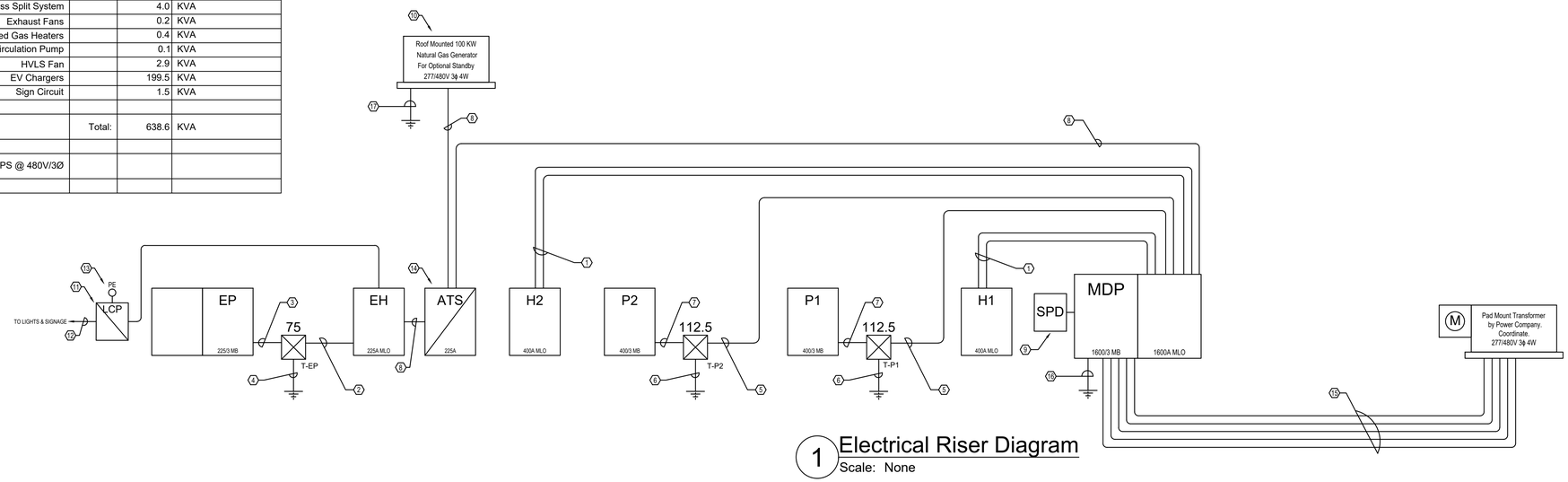
4. Provide plaques per NEC 230.2(E) and graphic key plans for each service and service disconnecting means for each building service. All disconnecting means for each service shall be grouped. Label each disconnecting means for each service as disconnect # 1 of 1 for service number # _ of 2. Provide labeling and graphic key plan at main electrical panel (or panels) showing the location and identification of their disconnecting means.
5. Provide signage at the service entrance equipment indicating the location and type of optional standby power source. NEC 702.8
6. Where circuit breakers or fuses are applied in compliance with the series combination ratings marked on the equipment by the manufacturer, the equipment enclosure(s) shall be legibly marked in the field to indicate the equipment has been applied with a series combination rating. The placard shall be readily visible and state the following "CAUTION -- SERIES COMBINATION SYSTEM RATED _____AMPERES. IDENTIFIED REPLACEMENT COMPONENTS REQUIRED." NEC 110.22
7. Contractor shall meet all requirements of NEC 250.50 for service grounding. Connect to structural steel, rebar, metal water piping and any other available at the structured served. See service ground detail for more information.
8. It is the sole responsibility of the contractor to confirm exact responsibilities with the utility company prior to installation. This includes but is not limited to: who furnishes equipment, underground service cable/conduit, pit pad, metering scheme, lighting pole bases, etc.



2 Grounding Electrode System Detail
Scale: None

Demand Loads

	Load Type		Load	
	Lights (Calculated Per NEC 220.12(A) 1.3W/SF for 26,835.3 SF)		34.9	KVA
	Receptacles and Miscellaneous		140.0	KVA
	Roof Top Unit (w/ elec heat)		83.1	KVA
	Fan Powered Boxes		158.7	KVA
	VAV's		8.0	KVA
	Electric Water Heaters		4.5	KVA
	Ductless Split System		4.0	KVA
	Exhaust Fans		0.2	KVA
	Infrared Gas Heaters		0.4	KVA
	Recirculation Pump		0.1	KVA
	HVLS Fan		2.9	KVA
	EV Chargers		199.5	KVA
	Sign Circuit		1.5	KVA
		Total:	638.6	KVA
	768.1 AMPS @ 480V/3Ø			



1 Electrical Riser Diagram
Scale: None

Generator Note:

Contractor must submit plans for generator, tank, and shop drawings to the fire marshal for their approval prior to rough-in or installation of the generator. Fire marshal must approve location and specifications for generator prior to beginning work.

Generator Test and Startup Notes

Hire a certified testing agency to conduct tests, inspections, and generate reports for the generator.

Engage a factory-authorized service representative to inspect, test, and calibrate components, assemblies, and installations, including connections.

Conduct manufacturer-recommended tests, including but not limited to:

1. Single-step full-load pickup test.
2. Battery tests:
   - 2.1. Equalize the charging of battery cells per the manufacturer's instructions. Record the voltage of each cell.
   - 2.2. Measure the charging voltage and the voltages between available battery terminals for both full-charge and float-charge conditions. Check electrolyte levels and specific gravity in both states.
   - 2.3. Test the contact integrity of all connectors, and perform both integrity and capacity load tests on the battery.
   - 2.4. Confirm that each battery element accepts a charge after discharge.
   - 2.5. Ensure all measurements meet the manufacturer's specifications.
3. Battery-charger tests: Verify the charge rates for both equalizing and float-charging conditions as specified.
4. System integrity tests: Methodically verify the proper installation, connection, and functionality of each component of the engine-generator system both before and during operation. Check for air, exhaust, and fluid leaks.
5. Exhaust-system back-pressure test: Connect to the exhaust line near the engine manifold and ensure that back pressure at full-rated load stays within the manufacturer's specified limits.
6. Exhaust emissions test: Adhere to applicable government and environmental testing criteria.
7. Voltage and Frequency transient stability tests: Measure voltage and frequency transients for 50% and 100% step-load changes, and confirm performance matches specifications.
8. Harmonic-content tests: Measure the harmonic content of the output voltage under 25% and 100% of rated linear load, ensuring it stays within specified limits.
9. Noise level tests: Measure the A-weighted noise level from the generator installation, including the engine exhaust and cooling-air intake and discharge. Compare the levels with the required values.
10. Coordinate generator tests with tests for transfer switches and run them concurrently.
11. Leak test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
12. Operational test: Once the electrical circuitry is energized, start the unit to verify proper motor rotation and operation.
13. Test and adjust controls and safeties. Replace any damaged or malfunctioning controls and equipment.
14. Remove and replace malfunctioning units and retest according to the specified procedures above.
15. Retest: Address any deficiencies identified during tests and observations, and retest until all specified requirements are satisfied.
16. Water Intrusion Test: Provide water intrusion testing of rooftop-mounted generator enclosure by applying simulated wind-driven rain (ASTM E1105 methodology) to all surfaces, seams, doors, louvers, and penetrations for a minimum of 60 minutes; no water shall enter electrical or mechanical components, and any deficiencies shall be repaired and retested until compliant, with results documented and coordinated to maintain roof warranty.

Riser Key Notes:

1. 2 runs of 4-#3/0, #6 ground, in 2" conduit. Each run.
2. 3-#1, #6 ground, in 1 1/2" conduit.
3. 4-#4/0, #2 ground, in 2 1/2" conduit.
4. #2 ground
5. 3-#2/0, #6 ground, in 2" conduit.
6. #1/0 ground
7. 2 runs of 4-#3/0, #3 ground, in 2" conduit. Each run.
8. 4-#4/0, #4 ground, in 2 1/2" conduit.
9. Provide a 277/480-3Ø surge protection device (SPD) with 240kA rating per phase. Contractor shall install unit with shortest possible length from the 60A breaker in the MDP (not to exceed 5') to the SPD. Contractor shall avoid sharp bends in #6 conductor (minimum) from MDP to SPD. SPD shall be UL 1449 3rd edition listed, have 10 mode protection, and shall not utilize thermally protected metal oxide varistors (TPMOVs).
10. Minimum 100 KW (or as required to serve indicated loads), 480/3V, 60Hz, 0.8 power factor, 1800 RPM, optional standby NG generator set w/ brushless synchronous generator (permanent magnet excited w/ volts/hertz voltage regulator & space heater)

    Features shall include:
    - 'Non-walk in' type weather-proof enclosure (sound attenuated as required to meet local ordinances) w/ hinged lockable doors and oil/water drain group.
    - Generator shall meet requirements of U.L. 2200 and be listed as such.
    - Dual-rate battery charger w/ alarm contacts.
    - Radiator w/ engine driven fan.
    - Critical degree exhaust silencer mounted in outside enclosure for corrosion protection provided with flexible fitting and stainless steel components.
    - Electronic isochronous speed control governor
    - Control panel w/ AC metering, engine metering, auto start-stop logic w/ indicators alarm module
    - Provide PMG excitation and digital voltage regulation of +/- 0.25%
    - 225 Amp generator mounted output circuit breaker
    - Structural steel base w/ vibration mounts
    - Lead acid starting batteries w/ battery charger, tray and cables
    - Jacket heater tank-type with isolation valves and adjustable thermostat.
    - Provide separate line item cost for a remote annunciator (8 point minimum) and associated control wiring for a fully functional system. Verify location of annunciator panel with tenant prior to installation.
    - Provide standard 24 month parts & labor warranty for standby usage.
    - EMCP 4 Generator Set Controls (Modbus Serial Communication)
    - Spring vibration isolators by Kinetics or similar
11. Lighting relay panel. See lighting control system data riser diagram for specifications.
12. Circuits as specified on plans.
13. Photocell on roof facing north. Adjust sensitivity as required for proper operation.
14. 480V, 3-phase, 225 Amp, 3 pole, NEMA 3R and SE rated open transition automatic transfer switch. Switch shall be listed at or above 65,000 AIC.
15. 5 runs of 4-#400 kcmil, in 4" conduit. Each run.
16. #3/0 ground (GEC). Bond all service grounds together per NEC 250.58 and 250.104.
17. #2 ground (GEC). Bond all service grounds together per NEC 250.58 and 250.104.

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ARQ AVIATION
FLIGHT SCHOOL + FBO

Wilmington International Airport (ILM)

Wilmington, NC 28405

OWNER
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PHASE	PERMIT SET
DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

DRAWING TITLE
ELECTRICAL DETAILS

DRAWING NUMBER
E-300

These drawings will be at the scale indicated when plotted at 24" x 36"

Panel Schedule Notes (All Panels, All Sheets):

1. All panel directories shall be completed in accordance with NEC 408.4.
2. Values for demand loads include all code factors such as 125% for continuous loads, 125% largest motor, etc.
3. Breaker sizes shown in panel schedules for new equipment are for reference only, see equipment connection schedule for additional information. Where breaker / fuse size between schedules conflict, the equipment connection schedule shall take precedence. Contractor shall ultimately confirm breaker size with equipment provider
4. Circuit breakers used as overcurrent protection for HVAC equipment shall be "HACR" type.
5. Contractor shall provide identification for new feeders and any new branch circuits per NEC 200.6, 210.5, and 215.12 .
6. Contractor shall label breakers feeding emergency and exit lighting per NEC 700.12(I) .
7. Spare circuits found or created during demolition shall be labeled at the junction box or demolished back to the panel, panel directory shall be updated, and breaker set to the off position.
8. Provide arc flash hazard warning labels as required on all panels affected by this work to comply with NEC 110.16 .
9. Where circuit breakers or fuses are noted to be series rated, the equipment shall be listed per NEC 110.22 as applicable. Tested series combination systems, the placard shall state the following "Caution - Series Combination System Rated ___ Amperes. Identified Replacement Components Required." See NEC 110.22(b) , for engineered series combination systems placarding language.
10. Bolded text indicates a new or changed breaker, label, load on an existing panel. Bolded breakers are new or relocated breakers to location shown.
11. Contractor shall provide handle ties as required for cubicle circuits per NEC 210.4 .
12. Contractor shall provide multipole breakers in place of all single pole breakers shown, when multiwire branch circuits are installed per NEC 210.4(B) .
13. New circuits in locations determined to be spare or space based on panel directories and other available information from site visit or existing plans. Contractor shall confirm that placement shown does not interfere with existing circuits necessary to remain. Confirm available circuits based on new and demo plans and contact engineer with conflicts.
14. Breakers indicated as (L) shall have a breaker lock provided. 20/1(L) means a 20 amp single pole breaker with lock. Breaker lock shall be accessible from outside of panel and shall not require the removal of panel cover in order to reset the breaker.
15. Breakers indicated as (G) shall have GFCI protection provided. 20/1(G) means a 20 amp single pole breaker with GFCI protection. Label GFCI protected circuit in panel schedule per NEC 408.4.
16. Circuit breakers used for switching lights shall be listed for switching and marked per NEC 240.83(D) .
17. Circuit breaker rated 1200 amps or higher shall be provided with an arc flash reduction maintenance switch and indicator per NEC 240.87(B)(3) mounted integral to breaker, switchboard, or panel enclosure.
18. Shunt trip type breakers shall be 120V shunt trip actuated unless noted otherwise.
19. Circuit supplying power to fire alarm or similar system shall comply with all requirements of the 2013 edition of NFPA 72, Sections 10.6.5.2 through 10.6.5.5.

Panel: MDP (Sect. 2)

Enclosure: NEMA 1 — **Mounting:** Surface — **Voltage:** 277/480 — **Poles:** 42 — **Phase:** 3 — **Wires:** 4 — **Panel Bus Rating:** 1600 Amp Bus — **Main Rating:** 1600A Main Lugs Only — **Fed From:** MDP Section 1 — **Manufacture:** Square D QED2

Load Type	kVA	Breaker Size		ø		Breaker Size	kVA	Load Type
TVSS	0.0	60/3	1	A	2	100/3	22.1	EV Charger
	0.0		3	B	4		22.2	
	0.0		5	C	6		22.2	
Panel P1 Thru XFMR	13.5	175/3	7	A	8	100/3	22.1	EV Charger
	12.2		9	B	10		22.2	
	11.4		11	C	12		22.2	
Panel P2 Thru XFMR	16.2	175/3	13	A	14	100/3	22.1	EV Charger
	14.2		15	B	16		22.2	
	13.0		17	C	18		22.2	
Panel EH Thru ATS	30.3	225/3	19	A	20	100/3	0.0	Future EV Charger
	26.9		21	B	22		0.0	
	26.8		23	C	24		0.0	
Panel H1	74.8	400/3	25	A	26	100/3	0.0	Future EV Charger
	73.9		27	B	28		0.0	
	68.3		29	C	30		0.0	
Panel H2	11.0	400/3	31	A	32	100/3	0.0	Future EV Charger
	6.0		33	B	34		0.0	
	4.0		35	C	36		0.0	
Space		-	37	A	38	100/3	0.0	Future EV Charger
Space		-	39	B	40		0.0	
Space		-	41	C	42		0.0	

Demand Load Summary:

Lighting:	12.0 kVA	@ 125%	15.0 kVA	Phase A:	212.2 kVA	765.9	Amps
Largest Motor:	83.1 kVA	@ 125%	103.9 kVA	Phase B:	199.7 kVA	721.0	Amps
Gen Receptacles:	47.2 kVA	@100%	47.2 kVA	Phase C:	197.4 kVA	712.6	Amps
Kitchen Equipment:	kVA	Diversified	kVA	Total Panel Load:	609.3 kVA	732.8	Amps
All Other:	443.2 kVA	@ 100%	443.2 kVA	Total Panel Load w/ Minimum Lighting Load:	630.3 kVA	758.1	Amps

- [X] UL SE rated
- [X] Separate Neutral Bar
- [X] Ground bar
- [ ] Feed thru lugs
- [ ] Existing Panel

1. All breakers shall be 65,000 AIC.

Panel: H1

Enclosure: NEMA 1 — **Mounting:** Surface — **Voltage:** 277/480 — **Poles:** 42 — **Phase:** 3 — **Wires:** 4 — **Panel Bus Rating:** 400 Amp Bus — **Main Rating:** 400A Main Lugs Only — **Fed From:** MDP — **Manufacture:** Square D NF

Load Type	kVA	Breaker Size		ø		Breaker Size	kVA	Load Type
RTU-1	27.7	110/3	1	A	2	20/3	1.0	HVSL-1
	27.7		3	B	4		1.0	
	27.7		5	C	6		0.9	
FPB-2	4.5	25/1	7	A	8		2.1	
FPB-3	3.5	20/1	9	B	10	20/3	2.2	FPB-1
FPB-4	5.0	25/1	11	C	12		2.2	
FPB-7	3.9	20/3	13	A	14	20/3	2.3	FPB-5
	3.9		15	B	16		2.3	
	3.9		17	C	18		2.4	
FPB-8	3.5	20/3	19	A	20	30/3	4.8	FPB-6
	3.5		21	B	22		4.8	
	3.5		23	C	24		4.9	
FPB-10	2.3	20/3	25	A	26	20/3	3.5	FPB-9
	2.3		27	B	28		3.5	
	2.4		29	C	30		3.5	
FPB-12	1.8	20/3	31	A	32	30/3	7.0	FPB-11
	1.8		33	B	34		7.0	
	1.9		35	C	36		6.9	
Space		-	37	A	38	20/3	3.5	FPB-13
Space		-	39	B	40		3.5	
Space		-	41	C	42		3.5	

Demand Load Summary:

Lighting:	kVA	@ 125%	kVA	Phase A:	kVA	270.1	Amps
Largest Motor:	83.1 kVA	@ 125%	103.9 kVA	Phase B:	73.9 kVA	266.9	Amps
Gen Receptacles:	kVA	@100%	kVA	Phase C:	75.6 kVA	273.0	Amps
Kitchen Equipment:	kVA	Diversified	kVA	Total Panel Load:	224.4 kVA	269.9	Amps
All Other:	120.5 kVA	@ 100%	120.5 kVA				

- [ ] UL SE rated
- [X] Separate Neutral Bar
- [X] Ground bar
- [ ] Feed thru lugs
- [ ] Existing Panel

1. All breakers shall be 22,000 AIC and series rated to 65,000 AIC with breaker feeding this panel.

Panel: H2

Enclosure: NEMA 1 — **Mounting:** Surface — **Voltage:** 277/480 — **Poles:** 42 — **Phase:** 3 — **Wires:** 4 — **Panel Bus Rating:** 400 Amp Bus — **Main Rating:** 400A Main Lugs Only — **Fed From:** MDP — **Manufacture:** Square D NF

Load Type	kVA	Breaker Size		ø		Breaker Size	kVA	Load Type
VAV-1	3.0	20/1	1	A	2	20/1	2.0	VAV-5
VAV-2	3.0	20/1	3	B	4	20/1	3.0	VAV-6
VAV-3	2.0	20/1	5	C	6	20/1	2.0	VAV-7
VAV-4	2.0	20/1	7	A	8	20/1	4.0	VAV-8
Space		-	9	B	10	-		Space
Space		-	11	C	12	-		Space
Space		-	13	A	14	-		Space
Space		-	15	B	16	-		Space
Space		-	17	C	18	-		Space
Space		-	19	A	20	-		Space
Space		-	21	B	22	-		Space
Space		-	23	C	24	-		Space
Space		-	25	A	26	-		Space
Space		-	27	B	28	-		Space
Space		-	29	C	30	-		Space
Space		-	31	A	32	-		Space
Space		-	33	B	34	-		Space
Space		-	35	C	36	-		Space
Space		-	37	A	38	-		Space
Space		-	39	B	40	-		Space
Space		-	41	C	42	-		Space

Demand Load Summary:

Lighting:	kVA	@ 125%	kVA	Phase A:	11.0 kVA	39.7	Amps
Largest Motor:	kVA	@ 125%	kVA	Phase B:	6.0 kVA	21.7	Amps
Gen Receptacles:	kVA	@100%	kVA	Phase C:	4.0 kVA	14.4	Amps
Kitchen Equipment:	kVA	Diversified	kVA	Total Panel Load:	21.0 kVA	25.3	Amps
All Other:	21.0 kVA	@ 100%	21.0 kVA				

- [ ] UL SE rated
- [X] Separate Neutral Bar
- [X] Ground bar
- [ ] Feed thru lugs
- [ ] Existing Panel

1. All breakers shall be 22,000 AIC and series rated to 65,000 AIC with breaker feeding this panel.

LCP Schedule

#	Load Description	Relay Amperage	# of Poles
1	Zone 1 Lights	20A	1
2	Zone 2 Lights	20A	1
3	Zone 3 Lights	20A	1
4	Zone 4 Lights	20A	1
5	Zone 5 Lights	20A	1
6	Exterior Main Canopy Lights	20A	1
7	Exterior Side Canopy Lights	20A	1
8	Exterior Building Lights	20A	1
9	Zone 3 120 Lights	20A	1
10	Sculpture Lights	20A	1
11	Monument Sign	20A	1
12	Monument Sign	20A	1
13	NC Coast Line Light	20A	1
14	Exterior Sign Circuit	20A	1
15	Spare	-	-
16	Spare	-	-
17	Spare	-	-
18	Spare	-	-
19	Spare	-	-
20	Spare	-	-
21	Spare	-	-
22	Spare	-	-
23	Spare	-	-
24	Spare	-	-

Panel: P1

Enclosure: NEMA 1 — **Mounting:** Surface — **Voltage:** 120/208 — **Poles:** 42 — **Phase:** 3 — **Wires:** 4 — **Panel Bus Rating:** 400 Amp Bus — **Main Rating:** 400/3 Main Breaker — **Fed From:** MDP — **Manufacture:** Square D NQ

Load Type	kVA	Breaker Size		ø		Breaker Size	kVA	Load Type
Recirulation Pump	0.1	15/1	1	A	2	20/1	1.0	IRH-1 & 2
Security Gate	0.5	20/1	3	B	4	20/1	1.0	IRH-3 & 4
Spare		20/1	5	C	6	20/1	0.5	101.4 Lounge Bar TV
EWC	0.7	20/1(G)	7	A	8	20/1	1.2	201, 216, Admin. Corridor Recs
Restroom Recs	0.4	20/1	9	B	10	20/2	1.0	302 Med Simulator
Training Suite Corridor Recs	0.8	20/1	11	C	12		1.0	
310-309 Debrief Recs	1.2	20/1	13	A	14	20/2	1.0	302 Med Simulator
308-307 Debrief Recs	1.2	20/1	15	B	16		1.0	
Training Suite Corridor Recs	1.6	20/1	17	C	18	20/2	1.0	303 Simulator
FACP & PE	1.0	20/1 (L)	19	A	20		1.0	
101.5 FBO Cafe Recs	1.0	20/1	21	B	22	20/2	1.0	305 Simulator
Lobby 101.1 FB Recs	1.2	20/1	23	C	24		1.0	
Lobby Lounge 101.2 FB Recs	1.0	20/1	25	A	26	20/1	1.5	101.4 Lounge Bar Recs
Lobby Lounge 101.2 Island Recs	1.0	20/1	27	B	28	20/1	0.4	Courtyard Recs
Lobby Lounge 101.2 Furniture	1.0	20/1	29	C	30	20/1	0.2	Sculpture Lighting
102 Pilots Lounge, 102.1 Quiet Rm Recs	0.8	20/1	31	A	32	20/1	1.0	Monument Sign
102 Pilots Lounge Recs	1.0	20/1	33	B	34	20/1	1.0	Monument Sign
102 Pilots Lounge Chair	1.0	20/1	35	C	36	20/1	0.5	Security Gate
102 Pilots Lounge Recs	1.0	20/1	37	A	38	20/2	1.0	Entry Security Gate
102 Pilots Lounge Motorized Shades	0.7	20/1	39	B	40		1.0	
103 Pilots Lounge Counter Rec	1.0	20/1	41	C	42	20/1	0.5	Security Gate

Demand Load Summary:

Lighting:	0.2 kVA	@ 125%	0.3 kVA	Phase A:	13.5 kVA	112.5	Amps
Largest Motor:	kVA	@ 125%	kVA	Phase B:	12.2 kVA	101.3	Amps
Gen Receptacles:	18.8 kVA	@100%	18.8 kVA	Phase C:	11.4 kVA	94.8	Amps
Kitchen Equipment:	kVA	Diversified	kVA	Total Panel Load:	37.0 kVA	102.8	Amps
All Other:	18.0 kVA	@ 100%	18.0 kVA				

- [ ] UL SE rated
- [X] Separate Neutral Bar
- [X] Ground bar
- [ ] Feed thru lugs
- [ ] Existing Panel

1. All breakers shall be 10,000 AIC.

Panel: P2

Enclosure: NEMA 1 — **Mounting:** Surface — **Voltage:** 120/208 — **Poles:** 42 — **Phase:** 3 — **Wires:** 4 — **Panel Bus Rating:** 400 Amp Bus — **Main Rating:** 400/3 Main Breaker — **Fed From:** MDP Thru XFMR — **Manufacture:** Square D NQ

Load Type	kVA	Breaker Size		ø		Breaker Size	kVA	Load Type
202 Conference Recs	1.4	20/1	1	A	2	20/1	0.6	212 Open Work Room Counter Recs
Warehouse Rec	0.8	20/1	3	B	4	20/1	1.6	Admin Cooridor & RR Recs
203 & 204 Office Recs	1.2	20/1	5	C	6	20/1(G)	1.0	Break Room 208 Diswasher
204 & 205 Office Recs	1.2	20/1	7	A	8	20/1	1.0	Break Room 208 Counter Rec
206 C-Suite Office Recs	1.0	20/1	9	B	10	20/1	1.0	Break Room 208 Counter Rec
207 C-Suite Office Recs	1.4	20/1	11	C	12	20/1(G)	1.0	Break Room 208 Microwave Rec
Warehouse Recs	0.4	20/1	13	A	14	20/1	1.0	WP GFI on Roof
212 OWR Cubicles	0.8	20/2	15	B	16	20/1	0.7	Conf. 202 Motorized Shades
	0.8		17	C	18	20/1(G)	0.2	101.4 Lounge Bar
212 OWR Cubicles	0.8	20/2	19	A	20	20/1(G)	0.4	101.4 Lounge Bar Recs.
	0.8		21	B	22	20/1(G)	0.3	101.4 Lounge Bar UC Ref.
101.4 Lounge Bar Microwave	1.0	20/1	23	C	24	20/1		Spare
101.4 Lounge Bar Rec.	1.0	20/1	25	A	26		2.6	
101.4 Lounge Bar Rec.	1.0	20/1	27	B	28	30/3 (G)	2.6	101.4 Lounge Bar Dishwasher
Irrigation Panel	0.5	20/1	29	C	30		2.7	
Exterior Sign	1.5	20/1	31	A	32	20/2 (G)	2.0	Speed Oven
NC Coastline Tape Light	0.5	20/1	33	B	34		2.0	
Spare		20/1	35	C	36	30/2	2.2	EWH
Spare		20/1	37	A	38		2.3	
Spare		20/1	39	B	40	20/1	1.0	Pilots Lounge Chairs
Spare		20/1	41	C	42	20/1	1.0	Pilots Lounge Chairs

Demand Load Summary:

Lighting:	0.5 kVA	@ 125%	0.6 kVA	Phase A:	16.2 kVA	135.0	Amps
Largest Motor:	kVA	@ 125%	kVA	Phase B:	14.2 kVA	118.0	Amps
Gen Receptacles:	12.0 kVA	@100%	12.0 kVA	Phase C:	13.0 kVA	108.3	Amps
Kitchen Equipment:	kVA	Diversified	kVA	Total Panel Load:	43.4 kVA	120.4	Amps
All Other:	30.8 kVA	@ 100%	30.8 kVA				

- [ ] UL SE rated
- [X] Separate Neutral Bar
- [X] Ground bar
- [ ] Feed thru lugs
- [ ] Existing Panel

1. All breakers shall be 10,000 AIC.

Panel: EH

Enclosure: NEMA 1 — **Mounting:** Surface — **Voltage:** 277/480 — **Poles:** 42 — **Phase:** 3 — **Wires:** 4 — **Panel Bus Rating:** 225 Amp Bus — **Main Rating:** 225A Main Lugs Only — **Fed From:** ATS — **Manufacture:** Square D NF

Load Type	kVA	Breaker Size		ø		Breaker Size	kVA	Load Type
Over Head Door	4.4	20/3	1	A	2	20/1	2.7	Zone 1 Interior Lights
	4.4		3	B	4	20/1	0.8	Office Area Interior Lights
	4.4		5	C	6	20/1	0.3	Exterior Lights
Zone 2 RR & SIMS Lights	1.1	20/1	7	A	8	20/1	0.2	Exterior Canopy Lights
Zone 2 Interior Lights	1.4	20/1	9	B	10	20/1	0.4	Main Entry Canopy Lights
Zone 3 Interior Lights	0.9	20/1	11	C	12	20/1	1.8	Warehouse Lights
Zone 3 Classroom Lights	0.9	20/1	13	A	14	-		Space
Zone 4 Lights	0.6	20/1	15	B	16	-		Space
Space		-	17	C	18	-		Space
Space		-	19	A	20	-		Space
Space		-	21	B	22	-		Space
Space		-	23	C	24	-		Space
Space		-	25	A	26	-		Space
Space		-	27	B	28	-		Space
Space		-	29	C	30	-		Space
Space		-	31	A	32	-		Space
Space		-	33	B	34	-		Space
Space		-	35	C	36	-		Space
Space		-	37	A	38		19.7	
Space		-	39	B	40	125/3	17.8	T-EP
Space		-	41	C	42		19.2	

Demand Load Summary:

Lighting:	11.3 kVA	@ 125%	14.1 kVA	Phase A:	30.3 kVA	109.5	Amps
Largest Motor:	kVA	@ 125%	kVA	Phase B:	26.9 kVA	97.0	Amps
Gen Receptacles:	16.4 kVA	@100%	16.4 kVA	Phase C:	26.8 kVA	96.7	Amps
Kitchen Equipment:	kVA	Diversified	kVA	Total Panel Load:	84.0 kVA	101.0	Amps
All Other:	53.4 kVA	@ 100%	53.4 kVA	Total Panel Load w/ Minimum Lighting Load:	105.0 kVA	126.3	Amps

- [ ] UL SE rated
- [X] Separate Neutral Bar
- [X] Ground bar
- [ ] Feed thru lugs
- [ ] Existing Panel

1. All breakers shall be 22,000 AIC and series rated to 65,000 AIC with breaker feeding this panel.

Panel: EP

Enclosure: NEMA 1 — **Mounting:** Surface — **Voltage:** 120/208 — **Poles:** 42 — **Phase:** 3 — **Wires:** 4 — **Panel Bus Rating:** 225 Amp Bus — **Main Rating:** 225/3 Main Breaker — **Fed From:** Panel EH Thru XFMR — **Manufacture:** Square D NQ

Load Type	kVA	Breaker Size		ø		Breaker Size	kVA	Load Type
Main Lobby Doors	1.0	20/1	1	A	2	20/1	0.6	Reception 101.3 Desk Recs
Main Lobby Doors	1.0	20/1	3	B	4	20/1	1.0	213 IT Ded Rec
201 Ground Counter Rec	1.0	20/1	5	C	6	20/1	1.9	Retail 101.6 Rec
201 Ground Counter Rec	1.0	20/1	7	A	8	20/1	1.9	Retail 101.6 Rec
201 Ground Dishwasher Rec	1.0	20/1(G)	9	B	10	20/1	1.9	Retail 101.6 Rec
214 Counter Recs & 201 Wall Screens	1.0	20/1	11	C	12	20/1	1.9	Retail 101.6 Rec
214 Line Service Refrigerator	1.0	20/1	13	A	14	20/1	1.9	Retail 101.6 Rec
214 Line Service Freezer	1.0	20/1	15	B	16	20/1 (G)	1.0	Washer
Dryer	2.5	30/2 (G)	17	C	18	20/1	0.7	207 C-Suite Office UCF
	2.5		19	A	20	20/1	0.7	206 C-Suite Office UCF
208 Break Room Refrigerator	1.0	20/1(G)	21	B	22	20/1	1.0	213 IT Ded Rec
213 IT L6-20	1.0	20/2	23	C	24	20/1	1.0	213 IT Ded Rec
	1.0		25	A	26	20/1	0.4	Reception 101.3 Counter Recs
213 IT L6-20	1.0	20/2	27	B	28	20/1	0.5	213 IT Control Panel
	1.0		29	C	30	20/1	0.5	213 IT Control Panel
213 IT Recs	0.6	20/1	31	A	32	20/1	0.5	213 IT Control Panel
213 IT LCP	0.5	20/1	33	B	34	20/1	0.5	213 IT Control Panel
Automatic Bathroom Sensors	0.7	20/1	35	C	36	20/1	1.0	IPAD Charging Station
103 Training Room UCF	0.7	20/1	37	A	38	20/1	0.5	BAS Control Panels
103 Training Room UCF	0.7	20/1	39	B	40	25/2	2.0	Ductless Split System
EF 1& 2	0.2	15/1	41	C	42		2.0	

Demand Load Summary:

Lighting:	0.2 kVA	@ 125%	0.3 kVA	Phase A:	19.7 kVA	164.2	Amps
Largest Motor:	kVA	@ 125%	kVA	Phase B:	18.5 kVA	154.1	Amps
Gen Receptacles:	16.4 kVA	@100%	16.4 kVA	Phase C:	18.6 kVA	155.2	Amps
Kitchen Equipment:	kVA	Diversified	kVA	Total Panel Load:	56.8 kVA	157.7	Amps
All Other:	40.1 kVA	@ 100%	40.1 kVA				

- [ ] UL SE rated
- [X] Separate Neutral Bar
- [X] Ground bar
- [X] Feed thru lugs
- [ ] Existing Panel

1. All breakers shall be 10,000 AIC.
2. Receptacle diversification taken per NEC 220.44.

Panel: EP Sect. 2

Enclosure: NEMA 1 — **Mounting:** Surface — **Voltage:** 120/208 — **Poles:** 42 — **Phase:** 3 — **Wires:** 4 — **Panel Bus Rating:** 225 Amp Bus — **Main Rating:** 225A Main Lugs Only — **Fed From:** Pnl EP — **Manufacture:** Square D NQ

Load Type	kVA	Breaker Size		ø		Breaker Size	kVA	Load Type
103 Training Room Recs	1.4	20/1	43	A	44	20/1	1.0	306 Large Sim
103 Training Room Recs	1.0	20/1	45	B	46	20/1	1.0	306 Large Sim
103 Training Room Projector	0.7	20/1	47	C	48	20/1	0.7	103 Training Room Screen
103 Training Room FB	1.2	20/1	49	A	50	20/1(G)	1.0	102 Pilots Lounge UCR
103 Training Room Motorized Shade	0.7	20/1	51	B	52	20/1	1.0	212 Open Work Room CCTV's
103 Training Room Motorized Shade	0.7	20/1	53	C	54	20/1	0.1	120V Lights Lounge
Automatic Bathroom Sensors	0.7	20/1	55	A	56	20/1	0.1	120V Lights Bar
Automatic Bathroom Sensors	0.7	20/1	57	B	58	-		Space
Space		-	59	C	60	-		Space
Space		-	61	A	62	-		Space
Space		-	63	B	64	-		Space
Space		-	65	C	66	-		Space
Space		-	67	A	68	-		Space
Space		-	69	B	70	-		Space
Space		-	71	C	72	-		Space
Space		-	73	A	74	-		Space
Space		-	75	B	76	-		Space
Space		-	77	C	78	-		Space
Space		-	79	A	80	-		Space
Space		-	81	B	82	-		Space
Space		-	83	C	84	-		Space

Demand Load Summary:

See Panel 'EP' for Demand load for this Panel

- [ ] UL SE rated
- [X] Separate Neutral Bar
- [X] Ground bar
- [ ] Feed thru lugs
- [ ] Existing Panel

1. All breakers shall match existing AIC.
2. Receptacle diversification taken per NEC 220.44.

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REVISIONS

SEALS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 57323 JACOB A. KYLER 5/29/26

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ARQ AVIATION FLIGHT SCHOOL + FBO

Wilmington International Airport (ILM)

Wilmington, NC 28405

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PHASE	PERMIT SET
DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

DRAWING TITLE
ELECTRICAL DETAILS

DRAWING NUMBER
E-301

These drawings will be at the scale indicated when plotted at 24" x 36"

Mechanical/Plumbing Equipment Connection Schedule

Tag	Callout	Furnished By	KVA	HP	Voltage	FLA	MCA	Disconnect Size	Provided By	Nema Configuration	Fuse/Breaker Size	Feeder Size	Ground Size	Conduit Size
RTU-1	Rooftop Unit	Mechanical	83.1	-	480/3	-	100.0	200/3	Electrical	3R	110/3	4 - #2	#6	1 1/4"
DHP-1	Ductless Split System	Mechanical	4.0	-	208/1	-	19.0	30/2	Electrical	3R	25/2	3 - #10	#10	3/4"
DAHU-1	Ductless Air Handler	Mechanical	#		208/1	-	1.0	30/2	Electrical	1	25/2	3 - #10	#10	3/4"
-	Condensate Pump	Mechanical	#		208/1	-	1.0	30/2	Electrical	1	25/2	3 - #10	#10	3/4"
HVLS-1	High-Volume Low Speed Fan	Mechanical	2.9	-	480/3	3.5	-	30/3	Electrical	1	20/3	4 - #12	#12	3/4"
IRH-1	Infrared Gas Heater	Mechanical	0.1	-	120/1	0.8	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
IRH-2	Infrared Gas Heater	Mechanical	0.1	-	120/1	0.8	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
IRH-3	Infrared Gas Heater	Mechanical	0.1	-	120/1	0.8	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
IRH-4	Infrared Gas Heater	Mechanical	0.1	-	120/1	0.8	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
FPB-1	Fan Powered Box	Mechanical	6.5	-	480/3	7.8	-	30/3	Electrical	1	20/3	4 - #12	#12	3/4"
FPB-2	Fan Powered Box	Mechanical	4.5	-	277/1	16.2	-	M	Electrical	1	25/1	2 - #10	#10	3/4"
FPB-3	Fan Powered Box	Mechanical	3.5	-	277/1	12.6	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
FPB-4	Fan Powered Box	Mechanical	5.0	-	277/1	18.1	-	M	Electrical	1	25/1	2 - #10	#10	3/4"
FPB-5	Fan Powered Box	Mechanical	7.0	-	480/3	8.4	-	30/3	Electrical	1	20/3	4 - #12	#12	3/4"
FPB-6	Fan Powered Box	Mechanical	14.5	-	480/3	17.4	-	30/3	Electrical	1	25/3	4 - #10	#10	3/4"
FPB-7	Fan Powered Box	Mechanical	11.7	-	480/3	14.1	-	30/3	Electrical	1	20/3	4 - #12	#12	3/4"
FPB-8	Fan Powered Box	Mechanical	10.5	-	480/3	12.6	-	30/3	Electrical	1	20/3	4 - #12	#12	3/4"
FPB-9	Fan Powered Box	Mechanical	10.5	-	480/3	12.6	-	30/3	Electrical	1	20/3	4 - #12	#12	3/4"
FPB-10	Fan Powered Box	Mechanical	7.0	-	480/3	8.4	-	30/3	Electrical	1	20/3	4 - #12	#12	3/4"
FPB-11	Fan Powered Box	Mechanical	20.9	-	480/3	25.1	-	60/3	Electrical	1	35/3	4 - #8	#10	3/4"
FPB-12	Fan Powered Box	Mechanical	5.5	-	480/3	6.6	-	30/3	Electrical	1	20/3	4 - #12	#12	3/4"
FPB-13	Fan Powered Box	Mechanical	10.5	-	480/3	12.6	-	30/3	Electrical	1	20/3	4 - #12	#12	3/4"
VAV-1	VAV Box	Mechanical	3.0	-	277/1	10.8	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
VAV-2	VAV Box	Mechanical	3.0	-	277/1	10.8	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
VAV-3	VAV Box	Mechanical	2.0	-	277/1	7.2	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
VAV-4	VAV Box	Mechanical	2.0	-	277/1	7.2	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
VAV-5	VAV Box	Mechanical	2.0	-	277/1	7.2	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
VAV-6	VAV Box	Mechanical	3.0	-	277/1	10.8	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
VAV-7	VAV Box	Mechanical	2.0	-	277/1	7.2	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
VAV-8	VAV Box	Mechanical	4.0	-	277/1	14.4	-	M	Electrical	1	20/1	2 - #12	#12	3/4"
EWH	Electric Water Heater	Plumbing	4.5	-	208/1	21.5	-	30/2	Electrical	1	30/2	3 - #10	#10	3/4"
-	Recirculation Pump	Plumbing	0.1	-	120/1	0.5	-	M	Electrical	1	15/1	2 - #12	#12	3/4"
EF-1	Exhaust Fan	Mechanical	0.1	-	120/1	0.8	-	M	Electrical	3R	15/1	2 - #12	#12	3/4"
EF-2	Exhaust Fan	Mechanical	0.1	-	120/1	0.8	-	M	Electrical	3R	15/1	2 - #12	#12	3/4"

- All wire sizing in the schedule above is based on minimum 75° C terminations. 75° C terminations are required for every component in the branch circuit including equipment terminals, as any new or existing panel, and any other in-line electrical device. Contractor shall verify in field and with other trades that these minimums can be maintained. If not, the use of the 60° C column will be required, which will likely increase the wire size. Contact engineer if there are questions about application.
- Breaker sizes for all equipment sized at MOCP where applicable.
- All disconnects for equipment shall be of fusible type and shall be fused as indicated.

Indoor unit is powered through outdoor unit. Condensate pump is powered through indoor unit.

Bar Equipment Connection Schedule

Tag	Callout	Furnished By	KVA	HP	Voltage	FLA	MCA	Disconnect Size	Provided By	Nema Configuration	Fuse/Breaker Size	Feeder Size	Ground Size	Conduit Size	Note
TDR48	True Refrigerator	Others	0.2	-	120/1	1.8	-	5-20R	Electrical	1	20/1	2 - #12	#12	3/4"	-
49	Self-Contained Back Bar Refrigeration	Others	0.3	-	120/1	2.7	-	5-20R	Electrical	1	20/1	2 - #12	#12	3/4"	-
38	Undercounter Glasswasher	Others	7.9	-	208/3	22.0	-	30/3	Electrical	3R	30/3	4 - #10	#10	3/4"	-
33	High-Speed Oven	Others	4.0	-	208/1	19.0	-	6-20R	Electrical	1	20/2	3 - #10	#10	3/4"	-

Electrical contractor shall verify all requirements, mounting height, voltage, load, connection type, etc. with equipment supplier.

Electrical System and Equipment: Energy Code Compliance

Compliance Method: Prescriptive

Total Exterior Wattage Calculation per table C405.5.1(2)
Specified vs Allowed: 878 vs 2,444

Base Site Allowance Zone 3 750 W

Building Entrances and Exits:

Main Entries 30 W/LF for 13 LF of door width
Other Doors 20 W/LF for 15 LF of door width
Entry Canopies 0.40 W/SF for - 2511 SF

See Light Fixtures Schedule for fixture lamp type, quantity, driver, total fixture wattage and additional information.

Engineer Statement:

To the best of my belief, understanding, and knowledge; the design of electrical system of this building complies with NC State Building Code and the 2018 NC Energy Conservation Code.

Name: W. Jacob Taylor, PE

Electrical System and Equipment: Energy Code Compliance

Compliance Method: Prescriptive

Total Interior Wattage Specified vs Allowed: **10,679.0 vs 22,040.0**

See Exterior Lighting Summary for exterior lighting energy code calculations (if required)
See Light Fixtures Schedule for interior fixture lamp type, quantity, driver, total fixture wattage and additional information.

Engineer Statement:

To the best of my belief, understanding, and knowledge; the design of electrical system of this building complies with the NC State Building Code and the 2018 NC Energy Conservation Code.

Name: W. Jacob Taylor, PE

Energy Code Section C406 Compliance:

This project is complying with section C406 for the energy code under the provisions of C406.3 (Reduced lighting power density). The remaining provisions are therefore not required and have not been included in this design.

Light Fixture Schedule

Mark	Manufacturer	Fixture Description	Voltage	Driver Type	Lamp Type/Quantity	Total Wattage
FL1	B-K Lighting #RI-FL-LID-LHP-AL-SQ-TKM-CA-E131-WFL-010-09-00-WL00-___-TE	Exterior Flood	120/1	1-LED Driver	1-LED	14
H1	TGS #CHB-E-L-40-WD-U-D-*-PM-M	High Bay	277/1	1-LED Driver	1-LED	150
L9	3G Lighting #3G-1RLI-D750-S80-30K-UNV-DIM-XTR-FL-S(9')	1.5" Linear Recessed	277/1	1-LED Driver	1-LED	54
L16	3G Lighting #3G-1RLI-D750-S80-30K-UNV-DIM-GCX-FL-S(16')	1.5" Linear Recessed	277/1	1-LED Driver	1-LED	107
L50	Finelite #HP-WS-4W-4D-50'-V-830-SW-277-SC-FC-1%-WB-C1-TXL-L-TXL-R-SW	2" Perimeter LED	277/1	1-LED Driver	1-LED	465
L68	Finelite #HP-WS-4W-4D-68'-V-830-SW-277-SC-FC-1%-WB-C1-TXL-L-TXL-R-SW	2" Perimeter LED	277/1	1-LED Driver	1-LED	632
L86	Finelite #HP-WS-4W-4D-86'-V-830-SW-277-SC-FC-1%-WB-C1-TXL-L-TXL-R-SW	2" Perimeter LED	277/1	1-LED Driver	1-LED	800
P1	HE Williams #6CR-TL-16-L30/930-WHT-DIM-UNV-LW-CS-AD-CM96-S9658/W	6.5" X 10" Cylinder	277/1	1-LED Driver	1-LED	28
P1E	Same as 'P1' with battery	6.5" X 10" Cylinder	277/1	1-LED Driver	1-LED	28
P2	HE Williams #6CR-TL-16-L15/930-ALUM-DIM-UNV-LW-AL-AD-CM96/ALUM-S9658/B	6.5" X 10" Cylinder	277/1	1-LED Driver	1-LED	14
P2E	Same as 'P2' with battery	6.5" X 10" Cylinder	277/1	1-LED Driver	1-LED	14
P3	Kuzco Lighting #493216-WH/GD	Lobby Lounge Pendant	120/1	1-LED Driver	1-8W Screw-In LED (3000K)	8
P4	Echo #28QTY E4712-A-*-CG (Square Grid)-930CK-2500LM-WFL-LV01-STD-WPC-WH	Acoustical Multi Fin Pendant	277/1	1-LED Driver	1-LED	25
P4E	Same as 'P4' with battery	Acoustical Multi Fin Pendant	277/1	1-LED Driver	1-LED	25
P5	Kuzco Lighting #PD22907-GY	Bar Decorative Pendant	120/1	1-LED Driver	1-LED	34
P8	Bina #RING-OVL-48"Straight Run X 12" Radius-PD-CC-A-*-DN-D1-30K-90-750lmF-1C-D10-**-	Oval Pendant	277/1	1-LED Driver	1-LED	31
P9	TECHOLED #BX-1-D-6-HI-30-U-*-P -DM1%-NL-M	Linear Pendant	277/1	1-LED Driver	1-LED	60
P10	3G Lighting #3G-1PLI-D-DC800-S80-30K-UNV-DIM-DWSO-BK-60"-BCN-BC-S(4')	1.5" Linear Pendant Direct	277/1	1-LED Driver	1-LED	28
P10E	Same as 'P10' with battery	1.5" Linear Pendant Direct	277/1	1-LED Driver	1-LED	28
R1	HE Williams #6DR-TL-L20/930-DIM1-UNV-OW-OF-CS-N-CA1	6" Recessed Can	277/1	1-LED Driver	1-LED	19
R1E	Same as 'R1' with battery	6" Recessed Can	277/1	1-LED Driver	1-LED	19
R2	HE Williams #6DR-TL-L15/930-DIM1-UNV-OW-OF-CS-N-CA1	6" Recessed Can	277/1	1-LED Driver	1-LED	14
R2E	Same as 'R2' with battery	6" Recessed Can	277/1	1-LED Driver	1-LED	14
R3	HE Williams #6DR-TL-L15/830-DIM1-UNV-LW-OF-CS-AD-WET/CC-N-CA1	6" Recessed Can (Wet)	277/1	1-LED Driver	1-LED	14
R3E	Same as 'R3' with battery	6" Recessed Can (Wet)	277/1	1-LED Driver	1-LED	14
R4	HE Williams #8DR-L20/830-DIM-277-OW-CS-WET/CC-N-CA1	8" Exterior Recessed Can	277/1	1-LED Driver	1-LED	24
R4E	Same as 'R4' with battery	8" Exterior Recessed Can	277/1	1-LED Driver	1-LED	24
R5	HE Williams #4DR-TL-L10/830-DIM1-UNV-OWW-OF-CS-N-CA1	4" Wall Washer Recessed Can	277/1	1-LED Driver	1-LED	9
S1	HE Williams #96-4-L40/830-SFRA-DIM-UNV	Field select strip	277/1	1-LED Driver	1-LED	30
SM1	HE Williams #4CR-13-L9/830-WHT-DIM-UNV-OW-CS-SM	4" Surface Mount Cylinder	277/1	1-LED Driver	1-LED	11
T2	HE Williams #DIG-S22-L32/830-AD-DIM-UNV	2x2 LED Troffer	277/1	1-LED Driver	1-LED	26
T2E	Same as 'T2' with battery	2x2 LED Troffer	277/1	1-LED Driver	1-LED	26
T4	HE Williams #DIG-S24-L50/830-AD-DIM-UNV	2x4 LED Troffer	277/1	1-LED Driver	1-LED	38
T4E	Same as 'T4' with battery	2x4 LED Troffer	277/1	1-LED Driver	1-LED	38
T5-1	Kelvix #FX-30K-650-50-*-47'	Tape Light	120/1	1-LED Driver	1-5W/LF	230
T5-2	Kelvix #FX-30K-650-50-*-27'	Tape Light	120/1	1-LED Driver	1-5W/LF	130
T5-3	Kelvix #FX-30K-650-50-*-18'	Tape Light	120/1	1-LED Driver	1-5W/LF	90
W1	Scott Arch Lighting #S3A75-L12-30K-PT-FEC	Bathroom Wall Sconce	277/1	1-LED Driver	1-LED	13
W3	GARDCO GEOFORM #GCM-A05-830-T2M-UNV-FAWS	Exterior Wall sconce @ 19.5' AFF	277/1	1-LED Driver	1-LED	41
W3E	Same as 'W3' with battery	Exterior Wall sconce @ 19.5' AFF	277/1	1-LED Driver	1-LED	41
W4	MIMIK20 #M20-M-26-T2-*-80-3K-UNV-0-10V	Exterior Wall Sconce @ 19.5' AFF	277/1	1-LED Driver	1-LED	26
W4E	Same as 'W4' with battery	Exterior Wall Sconce @ 19.5' AFF	277/1	1-LED Driver	1-LED	26
W5	Scott Architectural Lighting #SC-WC100-L-09-30K-BN-FRST	Decorative Wall Sconce	120/1	1-LED Driver	1-LED	9
EM	Mule #SQ-LED-W-SD	Emergency Wallpack (w/ Battery)	120/277/1			
INV	Mule #CEPS-25W-RT	Emergency Micro Lighting Inverter	120/277/1			
X1	Mule #ELX-1-B-GM-U-BA-SD	Emergency Exit Light (w/ Battery)	120/277/1			
X2	Mule #ELX-2-B-GM-U-BA-SD	Emergency Exit Light (w/ Battery)	120/277/1			
X3	Mule #ELX-1-B-GM-R-BA-SD	Emergency Exit Light (w/ Battery)	120/277/1			

General Notes:

1. All fixtures and components shall comply with NC Building Code, 2018 North Carolina Energy Conservation Code and shall be UL listed. All led drivers shall comply with NEMA 410.
2. All new, relocated, or reswitched fixtures that utilize ballasts shall be provided with a luminaire disconnect where required per NEC section 410.130(G). Use Ideal PowerPlug or equal inside fixture.
3. All fixtures noted as emergency shall have emergency illumination functionality as described below. Batteries must be rated for the environment in which they are installed, in all cases.
   • Interior linear LED and fluorescent fixtures shall have 1,100 lumen (minimum) output, 90 minute battery. LED and fluorescent downlights shall have a 500 lumen (minimum) output, 90 minute battery. Otherwise fixture shall be provided with a full output inverter.
   • Exterior emergency fixtures shall have an integral exterior rated (0° F) or remotely mounted 1,100 lumen (minimum) output, 90 minute battery.
   • Test switches for emergency batteries/inverter shall be integral to the fixture/device served, unless otherwise noted.
   • Emergency fixtures shall operate at least one lamp where multiple emergency fixtures are to be installed in that area, and shall operate at least two lamps where the loss of a single lamp would leave the space in total darkness during emergency operation.
   • Emergency lighting design is based on fixtures lumen outputs as described above. Contractor shall verify all existing emergency batteries to ensure lumen outputs are as indicated and shall replace any batteries rated less outlined above.
   • Emergency lighting units with dedicated emergency heads are spaced based on their unique output. If contractor selects an alternate fixture, they are responsible for ensuring an average of 1 foot candle is provided along the paths of egress for at least 90 minutes.
4. Lamp color temperature for new lamps shall match existing to remain lamps, and all lamp colors for different fixture types and sources shall be consistent throughout the space or area unless specifically noted otherwise. Contractor shall ensure that all interior and exterior lamps are the same color temperature.
5. Light fixtures indicated as dimmable shall be provide with all necessary components (driver, switch etc.) necessary to achieve 5% minimum dimming unless another specific minimum dimming level is noted.

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REVISIONS

SEALS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 57323 W. JACOB TAYLOR
5/29/26

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DATE	05.29.2026
TD PROJECT #	25-009
SCO ID #	N/A

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ELECTRICAL DETAILS

DRAWING NUMBER
E-302

These drawings will be at the scale indicated when plotted at 24" x 36"