ABBREVIATIONS & ACRONYMS

NOTE: SOME TERMS BELOW MAY NOT BE USED ON THE DRAWINGS

	– #, SYMBOLS –
1P	SINGLE–POLE, TYP/SIM FOR 2P & 3P
3R	NEMA 3R
#	NUMBER
#	WIRE SIZE (AWG OR kcmil WIRE SIZE FOLLOWS)
Δ	DELTA
Ø	PHASE(S) OR DIAMETER
	– A –
A	AMPERE(S)
ABV	ABOVE
ADA	AMERICANS WITH DISABILITIES ACT (ACCESSIBLE UNIT)
ASL	ABOVE SEA LEVEL
AF	AMP FRAME SIZE (CB)
AF	AMP FUSE RATING (DISC SW)
AF, AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AL	ALUMINUM
AM	AMP MAIN
AMP	AMPERE
APT	APARTMENT
AS	AMP SWITCH (DISC SW)
AT	AMP TRIP (CB)
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
AXB	AMP CROSS–BUSS
	– B –
BKR	BREAKER (CIRCUIT)
BFE	BASE FLOOD ELEVATION
BLW	BELOW
BMT	BASEMENT
BOT	BOTTOM
	– C –
C	CONDUIT RACEWAY
CAB	CABINET
CB	CIRCUIT BREAKER
CF	CEILING FAN
CKT	CIRCUIT
CLG	CEILING
CLO	CLOSET
COMM	COMMUNICATION(S)
CONN	CONNECTED
CONX	CONNECTION
CORR	CORRIDOR
CR	CRITICAL
CT	CURRENT TRANSFORMER, COUNTERTOP
CTR	CENTER
CTRL	CONTROL
CU	COPPER, CONDENSING UNIT
	– D –
(D)	DEMOLISH EXISTING
DEG	DEGREE
DEM	DEMAND
DFE	DESIGN FLOOD ELEVATION
DIA	DIAMETER
DISC	DISCONNECT
DISP	GARBAGE DISPOSER (SINK)
DIV	SPECIFICATION DIVISION (TRADE)
DN	DOWN
DU	DWELLING UNIT
D/W	DISHWASHER
DWG	DRAWING
	– E –
(E)	EXISTING TO REMAIN
E	EMERGENCY
EA	EACH
EC	EMPTY CONDUIT
ECB	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
EFF	EFFICIENCY
EGC	EQUIPMENT GROUNDING CONDUCTOR
ELEC	ELECTRICAL
ELU	EMERGENCY LIGHTING UNIT
EOR	ENGINEER OF RECORD
EQ, EQP	EQUIPMENT
EPVC	ELECTRICAL POLYVINYL CHLORIDE (GRAY)
ERMS	ENERGY REDUCTION MAINTENANCE SWITCH
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
	– F –
(F)	FUTURE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FACT	FACTOR
FIRM	FLOOD INSURANCE RATE MAP
FLR	FLOOR
FR	FIRE–RATED
FRM	FRAME
FT	FOOT / FEET
FTL	FEED–THRU (SUB–FEED) LUGS
FU	FUSED
	– G –
G, GND	GROUND
GB	GROUND BAR
GEC	GROUND ELECTRODE CONDUCTOR
GF, GFI	GROUND FAULT CIRCUIT INTERRUPTER
GRSC	GALVANIZED RIGID STEEL CONDUIT
GSF	GROSS SQUARE FEET
	– H –
HACR	HEATING, AIR CONDITIONING AND REFRIGERATION RATED DEVICE
HOA	HAND–OFF–AUTO SWITCH
HP	HORSEPOWER (PRECEDED BY NUMBER) OR HEAT PUMP (WHEN USED AS MARK FOR EQUIPMENT)
HTG	HEATING
Hz	HERTZ
HSKP	HOUSEKEEPING
	– I –
ICCB	INSULATED CASE CIRCUIT BREAKER
ID	IDENTIFICATION
IWH	INSTANTANEOUS WATER HEATER
	– J –
JB	JUNCTION BOX
	– K –
kAIC	THOUSAND AMPS INTERRUPTING CURRENT (SHORT–CIRCUIT)
kcmil	THOUSAND CIRCULAR MILS
kVA	KILOVOLT–AMPERE(S)
kW	KILOWATT(S)
	– L –
L	LOAD
LC	LIGHTING CONTACTOR, LOAD CENTER
LGTH	LENGTH
LS	LIFE SAFETY
LTS, LTG	LIGHTS, LIGHTING
LVPCB	LOW–VOLTAGE POWER CIRCUIT BREAKER
	– M –
MAX	MAXIMUM
MBJ	MAIN BONDING JUMPER
MC	METER CENTER, MC CABLE
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MCCB	MOLDED CASE CIRCUIT BREAKER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MFGR	MANUFACTURER('S)
MFS	MAXIMUM FUSE SIZE
MFUSW	MAIN FUSED SWITCH
MIN	MINIMUM
MISC	MISCELLANEOUS
MOCP	MAXIMUM OVER–CURRENT PROTECTION
MTG	MOUNTING
MTR	METER, MOTOR
M/W	MICROWAVE
	– N –
N	NEUTRAL, NORMAL
NC	NORMALLY–CLOSED
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NF	NON–FUSED
NM	NM WIRE (ROMEX)
NO	NORMALLY–OPEN, NUMBER
NOM	NOMINAL
	– O –
OCPD	OVER–CURRENT PROTECTIVE DEVICE
	– P –
P	POLE(S), PUMP
pf	POWER FACTOR
PNL	PANEL
PRI	PRIMARY
	– Q –
QTY	QUANTITY
QUAD	QUAD–PLEX OUTLET
	– R –
(R)	RELOCATE EXISTING
RCPT	RECEPTACLE OUTLET
REF	REFERENCE, REFRIGERATOR
REQ	REQUIRED
RLA	RATED LOAD AMPS
RM	ROOM
RTU	ROOF–TOP UNIT
	– S –
SCCR	SHORT CIRCUIT CURRENT RATING
SCWR	SHORT CIRCUIT WITHSTAND RATING
SECT	SECTION
sf	SQUARE FOOT (FEET)
SGL	SINGLE
SIM	SIMILAR
SM APP	SMALL APPLIANCE – NEC 210.52(B)
SN	SOLID NEUTRAL
S/O	SPACE ONLY
SPD	SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATION
STD	STANDARD
SW	SWITCH
SWD	SWITCH–DUTY RATED DEVICE
SWBD	SWITCHBOARD
SYM	SYMMETRICAL
	– T –
T	TRANSFORMER
TB	TERMINAL BOX
TBD	TO BE DETERMINED
TC	TIME–CLOCK
TELECOM	TELECOMMUNICATIONS
TGB	TELECOM GROUND BRIDGE (INTERSYSTEM BONDING TERMINATION – NEC 250.94)
TV	CABLE TELEVISION (ALSO CATV)
TYP	TYPICAL
	– U –
UC	UNDER COUNTER
UFER	UFER GROUND
UH	UNIT HEATER
UL	UNDERWRITERS' LABORATORIES
UON	UNLESS OTHERWISE NOTED
UTIL	UTILITY
UTV	UNABLE TO VERIFY
	– V –
V	VOLT(S) OR VOLTAGE
VA	VOLT–AMPERE(S)
VCC	VIRGINIA CONSTRUCTION CODE
VUSBC	VIRGINIA UNIFORM STATEWIDE BUILDING CODE
	– W –
W	WIRE(S), NUMBER PRECEDES (EX: 3W)
W/	WITH
W/D	LAUNDRY CENTER
WH	WALL HEATER
WT	WORKTOP
	– X –
XFER	TRANSFER
XFMR	TRANSFORMER
	– Y –
Y	WYE

LINETYPE LEGEND

- PART PLAN OR MATCH LINE
- 1/2–HOUR FIRE RATED PARTITION
- 1–HOUR FIRE RATED PARTITION
- 2–HOUR FIRE RATED PARTITION
- NEW WORK
- UGE UGE — UNDERGROUND ELECTRIC FEED
- OHE OHE — OVERHEAD ELECTRIC FEED
- EQUIPMENT SYSTEMS, ABOVE/BELOW (AS NOTED)
- PE PE — PATH OF EGRESS
- EXISTING SYSTEMS TO REMAIN
- FUTURE EQUIPMENT/SYSTEMS
- (F) (F) — FUTURE CONDUIT/CABLE
- ELECTRICAL EQUIPMENT WORKING CLEARANCE PER NEC 110.26

1–LINE DIAGRAM SYMBOLS

NOTE: ALL EQUIPMENT/DEVICES ARE 3–POLE/3–PHASE, UON

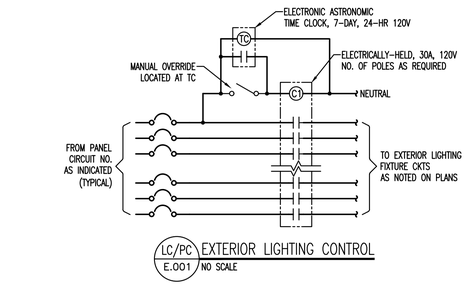
- [4.400] FEEDER SCHEDULE TAG CALLOUT
- 3#500 #4/0G 3.5C — FEEDER DESCRIPTION: QTY PARALLEL SETS WITH EACH SET QUANTITY AND WIRE SIZE (kcmil OR AWG) FOR PHASE AND NEUTRAL (WHERE DIFFERENT THAN PHASE WILL BE NOTED "N"), GROUND (NOTED "G") AND MINIMUM CONDUIT TRADE SIZE IN INCHES (NOTED "C"), TYPICAL
- CIRCUIT BREAKER: AF = AMP FRAME, AT = AMP TRIP ELECTRONIC TRIP FUNCTIONS AS INDICATED: LONG (L), SHORT (S), INSTANTANEOUS (I), GROUND FAULT (G) – WHERE APPLICABLE
- DISCONNECT SWITCH: AS = AMP SWITCH, AF = AMP FUSE
- FUSE: CL X = UL CLASS AS NOTED, WHERE APPLICABLE
- MAIN OR FEED–THRU LUGS
- G N — GROUND AND NEUTRAL BAR (MBJ AND GEC AS INDICATED)
- TGB — TELECOMMUNICATIONS GROUND BAR, SEE DETAIL
- 2 — SURGE PROTECTIVE DEVICE (SPD), UL 1449 TYPE AS INDICATED
- M — UTILITY CURRENT TRANSFORMERS AND METER
- MOTOR LOAD: RATINGS AS INDICATED
- TRANSFORMER: RATINGS AS INDICATED GEC AS NOTED, TO BUILDING STEEL OR SERVICE GEC

ELECTRICAL POWER PLAN SYMBOLS

- SINGLE / DUPLEX / QUADPLEX RCPT OUTLET, AS INDICATED
- GF — DUPLEX GROUND–FAULT CIRCUIT INTERRUPTER RCPT OUTLET
- GF — DUPLEX GROUND–FAULT CIRCUIT INTERRUPTER RCPT OUTLET (WEATHER–PROOF W/IN–USE COVER)
- DUPLEX OUTLET RCPT, TOP YOKE SWITCHED
- SPECIAL PURPOSE RCPT OUTLET 1ϕ / 3ϕ, COORDINATE NEMA DEVICE
- EQUIPMENT HARD–WIRED CONX 1ϕ / 3ϕ, COORDINATE REQUIREMENTS
- CEILING MOUNTED OUTLET
- FLOOR OUTLET, INSTALL WITHIN 6" OF WALL, UON

OUTLET MODIFIERS:
- AF – ARC–FAULT CIRCUIT INTERRUPTER (CB FEED)
- CH – COUNTER–HEIGHT (9" ABV COUNTERTOP TO DEVICE CENTER–LINE)
- GF – GROUND–FAULT CIRCUIT INTERRUPTER (OUTLET, FEED–THRU OR CB)
- PN – PENINSULA–MOUNTED DEVICE (6" BLW COUNTERTOP OF SM APP CKT)
- U – COMBINATION USB RECEPTACLE OUTLET

- J J — CEILING / WALL / FLOOR J–BOX FOR POWER (UON)
- PANELBOARD, 250V, TYP – SEE SCHEDULES
- 2P/30AS/3R FU20/CL R/S2 — DISCONNECT SWITCH NOTATION (SEE SECTION 262728): #P = POLES, #AS = SWITCH AMPS, SN = SOLID NEUTRAL; NON–FUSED (UON), FU# = FUSE AMPS, CLX = UL FUSE CLASS; ENCLOSURE: NEMA 1 (UON), 3R = NEMA 3R (SIMILAR FOR 4X AND 12); STARTER: S# = NEMA STARTER SIZE, WHERE USED
- FUSED DISCONNECT SWITCH, FUSING AS NOTED
- NON–FUSED DISCONNECT SWITCH
- *A/22 A/22 — CIRCUIT ID (INDICATED "*" OR HOMERUN ARROW SYMBOL), PANEL/CIRCUIT AS INDICATED DWELLING UNITS: CIRCUIT NUMBER IS FOR DWELLING UNIT PANEL SHOWN ON PLAN
- XXX/YY — PANEL/CIRCUIT CALL–OUT; XXX=PANEL NAME, YY=CIRCUIT ID OR POLE
- SD — SMOKE ALARM – INTERCONNECTED, LINE VOLTAGE W/BATTERY BACKUP
- 2 — COMBINATION TELECOM/DATA OUTLET – PROVIDE 4–11/16 BOX WITH EMPTY 1" CONDUIT (UON) WITH PULL STRING AND STUB OUT IN ACCESSIBLE CEILING SPACE (CABLING/OUTLETS BY OTHERS), PROVIDE 2–GANG PLASTER RING, NUMBER INDICATES QUANTITY OF OUTLETS
- TV — CATV OUTLET – PROVIDE 4–11/16 BOX WITH EMPTY 1" CONDUIT (UON) WITH PULL STRING AND STUB OUT IN ACCESSIBLE CEILING SPACE (CABLING/OUTLETS BY OTHERS), PROVIDE 2–GANG PLASTER RING



LC/PC EXTERIOR LIGHTING CONTROL
E.001 NO SCALE

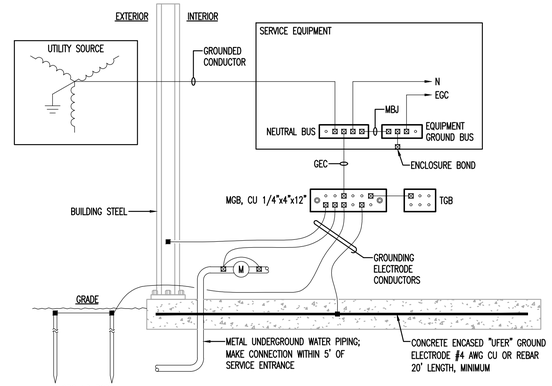
ELECTRICAL LIGHTING PLAN SYMBOLS

- LIGHT FIXTURE, CEILING–MOUNT TYPE AS NOTED – SEE SCHEDULE (TYPICAL ALL)
- LIGHT FIXTURE (STRIP), TYPE AS NOTED SEE SCHEDULE
- LIGHT FIXTURE (WALL–MOUNT OR WALL–WASHER)
- X1 X2 — EXIT SIGN WALL/CEILING MOUNT, AS INDICATED; SHADING INDICATES ILLUMINATED SIDES; DIRECTIONAL ARROWS INDICATE EGRESS PATH
- Y1 Y2 — CEILING–/WALL–MOUNT EMERGENCY LIGHTING UNIT (ELU)
- Z1 Z2 — COMBO ELU/EXIT SIGN, WITH BATTERY BACKUP
- YR — ELU REMOTE HEAD (PROVIDE ELU WITH HIGH CAPACITY BATTERY)
- WALL–MOUNT LIGHT FIXTURE, TYPE AS NOTED SEE SCHEDULE
- CEILING LIGHT FIXTURE, TYPE AS NOTED SEE SCHEDULE
- CEILING FAN WITH LIGHT KIT, TYPE AS NOTED SEE SCHEDULE FAN SPEED CONTROL BY SWITCH WITH MARK "F"

- S S3 S4 Sf — SINGLE–POLE, 3–WAY OR 4–WAY TOGGLE SWITCH, OR OTHER MODIFIER

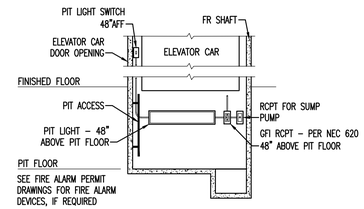
SWITCH MODIFIERS:
- C – COMBINATION OCCUPANCY SENSOR/DIMMER, COORDINATE AND ZONE LAMP TYPES, DRIVERS AND BALLASTS FOR COMPATIBILITY, AND DIMMER RATED WATTS
- D – DIMMER – COORDINATE AND ZONE LAMP TYPES, DRIVERS AND BALLASTS FOR COMPATIBILITY, AND DIMMER RATED WATTS
- F – EXHAUST FAN CONTROL OR CEILING FAN SPEED CONTROL SWITCH
- J – DOOR JAMB SWITCH
- L – LOCATOR SWITCH, LED–TYPE, ILLUMINATED WHEN "OFF"
- N – INDICATOR SWITCH, LED–TYPE, ILLUMINATED WHEN "ON"
- OS – OCCUPANCY SENSOR, WALL–BOX TYPE
- TR – TIMER SWITCH, 30–MIN
- o – LOWER CASE LETTER INDICATES SWITCHED CIRCUIT ID – FOR MULTIPLE INDICATED AT SWITCH, PROVIDE SEPARATE SWITCH FOR EACH

- OS OS — PASSIVE INFRARED/ULTRASONIC OCCUPANCY SENSOR, WALL/ CLG MT
- LC 6P/30A — LIGHTING CONTACTOR, P = POLES, A = AMPS



GSD GROUNDING SYSTEM DIAGRAM
E.001 NO SCALE

GROUNDING DIAGRAM NOTES:
1. PHASE CONDUCTORS ARE NOT SHOWN.
2. PROVIDE CONDUIT SLEEVES TO PROTECT CONDUCTORS FROM PHYSICAL DAMAGE, SEAL ALL OPENINGS.
3. LOCATE EXTERIOR ELECTRODES OUTSIDE OF BUILDING DRIP LINE MINIMUM OF 5'.
4. ■ PROVIDE EXOTHERMIC WELDS FOR ALL CONNECTIONS TO BUILDING STEEL AND ALL UNDERGROUND CONNECTIONS.
5. ⊠ PROVIDE MECHANICAL LUG CONNECTIONS FOR BUSBARS AND METAL PIPING.



EP ELEVATOR PIT DEVICES DETAIL
E.001 NO SCALE

ELECTRICAL DRAWING LIST

ELECTRICAL GENERAL NOTES

A. ALL WORK SHOWN IS NEW WORK, UON.
B. SOME SYMBOLS ON THE SYMBOL LIST MAY NOT BE USED ON THE DRAWINGS.
C. THE DRAWINGS ARE DIAGRAMMATIC & DO NOT SHOW ALL REQUIRED FITTINGS, OFFSETS OR CONDUIT ROUTING. PROVIDE ALL LABOR & MATERIALS REQUIRED FOR COMPLETE WORK.
D. WIRING METHODS, WIRE, CABLE & CONDUIT: SEE SPEC SECTIONS 260519 & 260533.
E. FIRE RATED ASSEMBLIES: SEE SPECIFICATION SECTION 260541
   1. FLOOR–TO–FLOOR: 1–HOUR RATED
   2. STAIRWELLS, ELEVATOR SHAFTS AND MECHANICAL SHAFTS: 2–HOUR RATED, UON
   3. ALL OTHER WALL TYPES AS NOTED ON PLANS
F. EGRESS STAIRS: TERMINATE CIRCUITS SERVING EGRESS STAIRS (LIGHTING, RECEPTACLES, HVAC, ETC.) IN EGRESS STAIRS & DO NOT FEED THRU TO FEED OTHER AREAS.
G. ELEVATOR EQUIPMENT ROOMS AND ELEVATOR HOISTWAYS: DO NOT ROUTE ANY SYSTEMS THROUGH THESE AREAS UNLESS THEY SERVE AND TERMINATE IN THE SPACE.
H. COORDINATION WITH OTHER TRADES: EXECUTE THE WORK IN FULL COOPERATION WITH OTHER CONSTRUCTION TRADES. PRIOR TO STARTING WORK, EXAMINE A COMPLETE SET OF CONSTRUCTION DOCUMENTS FOR ALL TRADES TO VERIFY COORDINATION, CHECK FOR INTERFERENCES, AND DETERMINE POINTS OF CONNECTIONS FOR EQUIPMENT. DUE TO STRUCTURAL CONDITIONS, MECHANICAL DUCT OR PIPING INTERFERENCE, OR OTHER REASONS, THE CONTRACTOR MAY DESIRE TO INSTALL THE WORK IN AN ALTERNATE MANNER FROM THAT SHOWN. PRESENT SUCH CHANGES TO THE OWNER'S REPRESENTATIVE FOR APPROVAL BEFORE PROCEEDING. RECORD ALL CHANGES ON THE AS–BUILT DRAWINGS.
I. COORDINATE ALL RECEPTACLE LOCATIONS WITH INSPECTOR PRIOR TO ROUGH–IN.
J. EXISTING BUILDINGS:
   1. THE ALTERATION OF AN EXISTING BUILDING IS COMPLEX WORK IN NATURE WHICH WILL REQUIRE ACCURATE PLANNING, CAREFUL PREPARATION AND EXECUTION, ATTENTION TO DETAIL, AND CLOSE SUPERVISION BY THE CONTRACTOR.
   2. PRIOR TO SUBMITTING PROPOSAL FOR THIS WORK, BECOME FAMILIAR WITH THE DRAWINGS AND EXAMINE THE PREMISES AND BE AWARE OF ALL EXISTING CONDITIONS OF PERFORMING THE CONTRACT. THE CONTRACTOR WILL NOT BE ENTITLED TO ANY EXTRA COMPENSATION FOR FAILURE TO ALLOW FOR EXISTING CONDITIONS.
   3. SUBMITTING A BID OR PROPOSAL WILL BE CONSIDERED EVIDENCE OF THE FACT THAT THE CONTRACTOR HAS INVESTIGATED AND IS FULLY AWARE OF EXISTING CONDITIONS AND IS ABLE TO COMPLETE ALL WORK REQUIRED BY THE CONTRACT.
   4. WHERE SURFACE–MOUNTED CONDUITS ARE REQUIRED ON EXISTING SURFACES, COORDINATE INSTALLATION WITH AND GET PRIOR APPROVAL OF ARCHITECT AND OWNER. SURFACE–MOUNTED CONDUITS AND ROUTE RACEWAYS ALONG BUILDING LINES, WITH PARALLEL AND PERPENDICULAR TO STRUCTURAL ELEMENTS.
K. SUBMIT ALL EQUIPMENT SUBSTITUTIONS TO OWNER/EOR FOR REVIEW/APPROVAL.
L. PROVIDE ALL PANELBOARDS AND LOAD CENTER WITH COVER TRIM AS FOLLOWS:
   L.A. UNFINISHED SPACES, BACK OF HOUSE, EQUIPMENT ROOMS, ETC.: ANSI STANDARD GRAY ENAMEL.
   L.B. 12.2. ALL FINISHED SPACES, PUBLIC SPACES, DWELLING UNITS, OR TENANT SPACES: WHITE OR AS DIRECTED BY OWNER/ARCHITECT.

PROJECT INFORMATION

BUILDING CODE:	VIRGINIA CONSTRUCTION CODE VIRGINIA UNIFORM STATEWIDE BUILDING CODE–2021 IBC–2021 W/VIRGINIA AMENDMENTS		
ELECTRICAL CODE:	NATIONAL ELECTRICAL CODE ANSI/NFPA 70–2020		
CONSTRUCTION TYPE:	IIIB	OCCUPANCY LOAD:	67
USE GROUP:	A3, R2	CHANGE OF USE:	YES
PROJECT AREA:	20,581 SF	TOTAL BUILDING AREA:	20,581 SF
NEW LOADS	YES	LEVEL OF RENOVATION:	100%
ALTERATION LEVEL:	100%	IN FLOOD PLAIN	NO
BFE PER FIRM:	N/A	DFE:	N/A
ELEVATION OF SERVICE ENTRANCE DISCONNECT SWITCH:		N/A	
FLOOR ELEVATION AT SERVICE ENTRANCE DISCONNECT SWITCH:		N/A	

Annex A: Electrical Plan Checklist

Department of Planning & Development Review, Bureau of Permits and Inspections
900 East Broad Street, Room 108
Richmond, Virginia 23219
Office: (804) 646-4169
https://www.rva.gov/planning-development-review/permits-and-inspections

Project Address: 2101 Venable St. Richmond, VA 23223

Make sure to check "✓" each box for all applicable items below that relate(s) to the above project. This checklist is required for all projects that require a plan review. Submit either on the plans or as a separate PDF document.

Section A: General Requirements for Projects

01 ✓ 02 ✓ 03 ✓ 04 ✓ 05 ✓ 06 ✓ 07 ✓ 08 ✓ 09 ___ 10 ___
11 ___ 12 ___ 13 ___ 14 ✓ 15 ___

Section B: Code Requirements

01 ✓ 02 ✓ 03 ✓ 04 ✓ 05 ___ 06 ___ 07 ___ 08 ✓ 09 ✓ 10 ✓
11 ✓ 12 ✓ 13 ✓ 14 ✓ 15 ✓ 16 ✓ 17 ✓ 18 ✓ 19 ✓ 20 ✓
21 ✓ 22 ✓

Section C-1: Photovoltaic Requirements

01 ___ 02 ___ 03 ___ 04 ___ 05 ___ 06 ___ 07 ___ 08 ___ 09 ___

Section C-2: Seismic Requirements

01 ___ 02 ___ 03 ___

Section C-3: Virginia Energy Conservation Code (VECC) Requirements

01 ✓ 02 ✓ 03 ✓ 04 ✓ 05 ✓ 06 ✓ 07 ___

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS

#	DATE	DESCRIPTION
–	06-JUN-2025	ISSUE FOR PERMIT

ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	NONE
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL ABBREVIATIONS, LEGENDS, DETAILS, AND GENERAL NOTES

SHEET:
E.001

VENABLE ST CHURCH

MC - METER CENTER

DESIGN BASIS: SQUARE-D EZM — SEE SPEC SECTION 262415
MAIN BUS AMPS, AL: 1600 — CROSS BUS AMPS, AL: 1200
SYSTEM: 208Y/120Vac,3ϕ/4W — MIN SCCR: TBD

DWELLING UNIT (DU) DATA AND EQUIPMENT SCHEDULE							CONNECTED LOAD SUMMARY, kVA															
							220.84(C)(1)&(2)		220.84(C)(5)				220.84(C)(3) - APPLIANCES (FIXED/SPECIFIC CIRCUIT), NAMEPLATE RATINGS									
DU #	OCPD			ADA	LC	UNIT	3	SM APP	DU1/HPs	DU2/HPs	DU1/AHs	DU2/AHs	D/W	M/W	RANGE	REFRIG	EWH	LAUNDRY	DRYER	DISP	EF	
UNIT	POLES	FRAME	TRIP	A/B	TYPE	sf	VA/sf	3	2.3	2.8	3.3	3.3	0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
101	2	125	125	N/A	DU2	759	2.3	3		2.8		3.3	0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
102	2	125	125	N/A	DU1	584	1.8	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
103	2	125	125	N/A	DU2	877	2.6	3		2.8		3.3	0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
104	2	125	125	N/A	DU1	477	1.4	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
105	2	125	125	N/A	DU1	436	1.3	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
106	2	125	125	N/A	DU1	655	2.0	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
107	2	125	125	N/A	DU1	590	1.8	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
108	2	125	125	N/A	DU1	460	1.4	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
109	2	125	125	N/A	DU1	469	1.4	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
110	2	125	125	N/A	DU1	592	1.8	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
111	2	125	125	N/A	DU1	444	1.3	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
201	2	125	125	N/A	DU2	722	2.2	3		2.8		3.3	0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
MAIN	3	1600	1600	MCB																		
H1	3	400	400	H1																		
H3	3	400	400	H3																		
202	2	125	125	N/A	DU1	475	1.4	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
203	2	125	125	N/A	DU1	431	1.3	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
204	2	125	125	N/A	DU1	548	1.6	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
205	2	125	125	N/A	DU1	621	1.9	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
301	2	125	125	N/A	DU2	863	2.6	3		2.8		3.3	0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
302	2	125	125	N/A	DU2	797	2.4	3		2.8		3.3	0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	
303	2	125	125	N/A	DU1	682	2.0	3	2.3		3.3		0.85	1.5	8.00	0.6	3.38	1.5	5.0	0.8	0.047	

CALCULATION PER NEC 220.84 & ANNEX D - MULTI-FAMILY DWELLING UNIT DEMAND CALCULATION (THIS MC ONLY)

DUs Gsf: 11,482 — **CONNECTED kVA: 611**
19 DUs - NEC 220.84 DEMAND: 38% = DU DEM kVA: 232
NON-DWELLING UNIT LOADS: **P/BD H1** 7,984 Gsf DEM kVA: 60
P/BD H3 1,115 Gsf DEM kVA: 73
SEE ALSO 1-LINE DIAGRAM — METER CENTER FEEDER LOAD AMPS: 1,013 — **TOTAL DEM kVA: 365**

H3

MAIN: 400 A LUGS ONLY — PHASE & GROUND: AL BUS
DESCRIPTION: BRANCH CIRCUITS — SYSTEM: 208Y/120Vac,3ϕ/4W — NEUTRAL: AL, 100%
LOCATION: UTILITY CLOSET 3RD FL — MIN SCWR: 85,000 AIC SYM, UON SEE NOTE 1 — DESIGN BASIS: SQUARE-D NQOD
FED FROM: MC — ENCLOSURE: SURFACE NEMA 1 - STANDARD — SEE SPEC SECTION 262416

CKT #	P	FRM	TRIP	OCPD TYPE	DESCRIPTION	TYPE	WIRE SIZE	DEM FACT	kVA	A	B	C	kVA	DEM FACT	WIRE SIZE	DESCRIPTION	TYPE	OCPD TYPE	TRIP	FRM	P	CKT #
1	2	150	30	MCCB	HP-CORR	H	#10	100%	2.5	2.5			0.0			SPARE		MCCB	20	150	1	2
3									2.5		2.5		0.0			SPARE		MCCB	20	150	1	4
5	2	150	30	MCCB	HP-ENTRY	H	#10	100%	2.5			2.5	0.0			SPARE		MCCB	20	150	1	6
7									2.5	2.5			0.0			SPARE		MCCB	20	150	1	8
9	2	150	30	MCCB	HP-LOBBY	H	#10	100%	2.0		2.0		0.0			SPARE		MCCB	20	150	1	10
11									2.0			2.0	0.0			SPARE		MCCB	20	150	1	12
13	2	150	50	MCCB	HP-MAIN 1	H	#6	100%	3.1	3.1			0.0			SPARE		MCCB	20	150	1	14
15									3.1		3.1		0.0			SPARE		MCCB	20	150	1	16
17	2	150	50	MCCB	HP-MAIN 2	H	#6	100%	3.1			3.1	0.0			SPARE		MCCB	20	150	1	18
19									3.1	3.1			0.0			SPARE		MCCB	20	150	1	20
21	1	150	20	MCCB	RCPTS HSKP ROOF	G	#12	100%	0.4		0.5		0.1	125%	#12	ELEV CAB LTS	SW	MCCB	20	150	1	22
23	1	150	20	MCCB	RCPTS HSKP 3RD FL		#12	100%	1.3			16.0	14.8									24
25	1	150	20	MCCB	LTS 3RD FL	SW	#12	125%	0.4	15.2			14.8	100%	#300 AL	ELEV		MCCB	175	250	3	26
27	1	150	20	MCCB	SPARE				0.0		14.8		14.8									28
29	1	150	20	MCCB	SPARE				0.0			0.0	0.0				ST					30

NOTES & REQUIREMENTS: (SOME MAY NOT APPLY)
1. COORDINATE AVAILABLE FAULT CURRENT WITH UTILITY PROVIDER
2. MULTIWIRE BRANCH CKTS: USE HANDLE TIES PER NEC 210.4
3. ALL WIRE SIZES INDICATED ARE COPPER, UON

TYPE: G=GFCI RCPT OR BKR, GB=GFCI CB ONLY, GR=GFCI RCPT ONLY H=HACR, L=CB LOCK, ST=SHUNT, SW=SWITCH DUTY
0.0 HP - LARGEST MOTOR
0.0 HP - SUM OF MOTORS

	A	B	C	TOTAL	
kVA	26	23	24	72.7 kVA	CALCULATED UNBALANCE 9%
AMP	219	190	196	TOTAL CONNECTED	PANEL DEMAND FACTOR 100%
kVA	*0*	*0*	*0*	*0.6 kVA*	*GENERAL CONTINUOUS CONNECTED LOAD*
kVA	1	0	0	0.7 kVA	GENERAL CONTINUOUS 125% - NEC 215.2(A)(1)
kVA	*0*	*0*	*0*	*0.0 kVA*	*COMPUTER CONNECTED LOAD (CONTINUOUS)*
kVA	0	0	0	0.0 kVA	COMPUTER CONTINUOUS 125% - NEC 215.2(A)(1)
kVA	15	15	15	44.3 kVA	NON-CONTINUOUS 100% - NEC 215.2(A)(1)
kVA	11	8	8	26.2 kVA	FIXED SPACE HEATING 100% - NEC 220.51
kVA	*0*	*0*	*0*	*0.0 kVA*	*KITCHEN EQUIP CONNECTED LOAD*
kVA	0	0	0	0.0 kVA	KITCHEN EQUIP DEM 100% - NEC 220.56 (0 ITEMS)
kVA	*0*	*0*	*1*	*1.6 kVA*	*RECEPTACLE CONNECTED LOAD*
kVA	0	0	1	1.6 kVA	RECEPTACLE DEMAND - NEC 220.44
kVA	26	23	24	72.8 kVA	SUM OF ALL DEMAND LOADS ABOVE
AMP	220	190	196	TOTAL DEMAND	

NEC 220.82; ANNEX D: LOAD CALCULATION FOR ONE-FAMILY DWELLING: AC WITH GAS HEAT OR HEAT PUMP (1PH, 120/208V)

CALCULATION FOR TYPICAL UNITS, LOAD CENTER TYPE: DU1 — 682 sf (MAX)

A) HEATING & AIR CONDITIONING LOAD - NEC 220.82(C)	MARK	TONS	DEM	RATED kW	RATED V	CONNECTED kW	CONNECTED V	DEM VA
HP CONVENTIONAL	HP-DU1	1.5	100%		208		208	2,267
AHU WITH SUPPL HEAT	AH-DU1		65%	5	208	5	208	3,250
A) AC/HEAT PUMP AND SUPPL HEAT LOAD SUBTOTAL:								5,517

B) GENERAL LOADS SUMMARY NEC 220.82(B)	NEC ART	DEM	LOAD	QTY	VA
LIGHTING/RECEPTACLE	220.12	100%	682 sf AT 3 VA/sf =	1	2,046
SMALL APPLIANCE CIRCUITS	210.11	100%	2 AT 1,500 VA EA =	1	3,000
RANGE/OVEN - MIN 8kVA	220.55	100%	11.7kVA AT 240V, 8.8kVA AT 208V	1	8,000
LAUNDRY CIRCUIT (WASHER)	210.11	100%	1.5kVA MIN	1	1,500
CLOTHES DRYER - MIN 5kVA	220.54	100%	5.6kVA AT 240V, 4.4kVA AT 208	1	5,000
MICROWAVE		100%	1.5kVA NOM	1	1,500
REFRIGERATOR	220.53	100%	18 CU FT, 5A, 120V NOM, 100% DEM	1	600
DISHWASHER	220.53	100%	800W, 7.1A, 120V NOM, 100% DEM	1	852
GARBAGE DISPOSAL	220.53	100%	1/3HP, 6.7A, 120V NOM, 100% DEM	1	804
WATER HEATER	422.11	100%	TANK-TYPE ELEC WATER HEATER	1	3,380
B) GENERAL LOAD SUBTOTAL:					26,682

C) GENERAL DEMAND LOAD CALCULATION NEC 220.82(B)	GENERAL LOADS (B ABOVE)		DEMAND	VA
	FIRST	10,000 VA	AT 100%	10,000
	REMAINDER	16,682 VA	AT 40%	6,673
C) GENERAL LOAD, TOTAL DEMAND VA:				16,673

TOTAL DEMAND LOAD VA = AC & HEATING + GENERAL DEMAND LOAD (A + C): 22,190

DEMAND AMPS AT 120/208 = 22,190 VA / 208 V = 107 AMPS
SELECTED SERVICE SIZE: 125 AMPS

H1

MAIN: 400 A LUGS ONLY — PHASE & GROUND: AL BUS
DESCRIPTION: BRANCH CIRCUITS — SYSTEM: 208Y/120Vac,3ϕ/4W — NEUTRAL: AL, 100%
LOCATION: UTILITY CLOSET 1ST FL — MIN SCWR: 85,000 AIC SYM, UON SEE NOTE 1 — DESIGN BASIS: SQUARE-D NQOD
FED FROM: MC — ENCLOSURE: SURFACE NEMA 1 - STANDARD — SEE SPEC SECTION 262416

CKT #	P	FRM	TRIP	OCPD TYPE	DESCRIPTION	TYPE	WIRE SIZE	DEM FACT	kVA	A	B	C	kVA	DEM FACT	WIRE SIZE	DESCRIPTION	TYPE	OCPD TYPE	TRIP	FRM	P	CKT #
1	2	150	45	MCCB	AHU-LOBBY	H	#6	100%	3.7	5.5			1.7									2
3									3.7		5.5		1.7	100%	#12	BP-1		MCCB	20	150	3	4
5	2	150	60	MCCB	AHU-MAIN 1	H	#4	100%	5.0			6.7	1.7									6
7									5.0	5.2			0.2	100%	#12	ELEV PIT/SHAFT RCPTS	G	MCCB	20	150	1	8
9	2	150	60	MCCB	AHU-MAIN 2	H	#4	100%	5.0		5.1		0.1	125%	#12	ELEV PIT/SHAFT LTS	SW	MCCB	20	150	1	10
11									5.0			6.6	1.7	100%	#12	ELEV SUMP	G	MCCB	20	150	1	12
13	2	150	15	MCCB	HP-AMEN	H	#12	100%	1.0	2.0			1.1	125%	#12	LTS 1ST FL	SW	MCCB	20	150	1	14
15									1.0		1.5		0.5	125%	#12	LTS STAIRS	SW	MCCB	20	150	1	16
17	1	150	20	MCCB	WH-1	L	#12	100%	1.8			2.1	0.3	125%	#12	LTS EXT VIA LC	SW	MCCB	20	150	1	18
19	1	150	20	MCCB	WH-1	L	#12	100%	1.8	2.5			0.7	125%	#12	LTS 2ND FL	SW	MCCB	20	150	1	20
21	2	150	30	MCCB	EWH-2	H	#10	100%	2.3		3.2		1.0	125%	#12	LTS 2ND FL	SW	MCCB	20	150	1	22
23									2.3			2.3	0.0			SPARE		MCCB	20	150	1	24
25	2	150	30	MCCB	EWH-2	H	#10	100%	2.3	2.3			0.0			SPARE		MCCB	20	150	1	26
27									2.3		2.3		0.0			SPARE		MCCB	20	150	1	28
29	1	150	20	MCCB	RCPTS HSKP 1ST FL		#12	100%	1.3			1.3	0.0			SPARE		MCCB	20	150	1	30
31	1	150	20	MCCB	RCPTS HSKP 1ST FL		#12	100%	0.7	0.7			0.0			SPARE		MCCB	20	150	1	32
33	1	150	20	MCCB	RCPTS HSKP EXT	G	#12	100%	1.1		1.1		0.0			SPARE		MCCB	20	150	1	34
35	1	150	20	MCCB	RCPTS HSKP 2ND FL		#12	100%	1.1			1.1	0.0			SPARE		MCCB	20	150	1	36
37	1	150	20	MCCB	RCPTS HSKP 2ND FL		#12	100%	1.1	1.1			0.0			SPARE		MCCB	20	150	1	38
39	1	150	20	MCCB	RCPTS HSKP JAN CLT	G	#12	100%	0.4		0.4		0.0			SPARE		MCCB	20	150	1	40
41	1	150	20	MCCB	RCPTS HSKP 2ND FL		#12	100%	0.9			0.9	0.0			SPARE		MCCB	20	150	1	42

NOTES & REQUIREMENTS: (SOME MAY NOT APPLY)
1. COORDINATE AVAILABLE FAULT CURRENT WITH UTILITY PROVIDER
2. MULTIWIRE BRANCH CKTS: USE HANDLE TIES PER NEC 210.4
3. ALL WIRE SIZES INDICATED ARE COPPER, UON

TYPE: G=GFCI RCPT OR BKR, GB=GFCI CB ONLY, GR=GFCI RCPT ONLY H=HACR, L=CB LOCK, ST=SHUNT, SW=SWITCH DUTY
0.8 HP - LARGEST MOTOR
0.8 HP - SUM OF MOTORS

	A	B	C	TOTAL	
kVA	19	19	21	59.1 kVA	CALCULATED UNBALANCE 6%
AMP	160	158	174	TOTAL CONNECTED	PANEL DEMAND FACTOR 102%
kVA	*2*	*2*	*0*	*3.6 kVA*	*GENERAL CONTINUOUS CONNECTED LOAD*
kVA	2	2	0	4.5 kVA	GENERAL CONTINUOUS 125% - NEC 215.2(A)(1)
kVA	*0*	*0*	*0*	*0.0 kVA*	*COMPUTER CONNECTED LOAD (CONTINUOUS)*
kVA	0	0	0	0.0 kVA	COMPUTER CONTINUOUS 125% - NEC 215.2(A)(1)
kVA	4	6	6	15.8 kVA	NON-CONTINUOUS 100% - NEC 215.2(A)(1)
kVA	12	10	12	33.0 kVA	FIXED SPACE HEATING 100% - NEC 220.51
kVA	*0*	*0*	*0*	*0.0 kVA*	*KITCHEN EQUIP CONNECTED LOAD*
kVA	0	0	0	0.0 kVA	KITCHEN EQUIP DEM 100% - NEC 220.56 (0 ITEMS)
kVA	*2*	*1*	*3*	*6.7 kVA*	*RECEPTACLE CONNECTED LOAD*
kVA	2	1	3	6.7 kVA	RECEPTACLE DEMAND - NEC 220.44
kVA	20	19	21	60.0 kVA	SUM OF ALL DEMAND LOADS ABOVE
AMP	164	161	175	TOTAL DEMAND	

LOAD CENTER - DU1

MAIN: 125 A LUGS ONLY — PHASE & GROUND: AL BUS
DESCRIPTION: DWELLING UNIT TYPE DU1 (TYP) HP CONVENTIONAL — SYSTEM: 120/208 V 1ϕ/3W+G — NEUTRAL: AL, 100%
MIN SCCR: 10,000 AIC SYM, UON — DESIGN BASIS: SQUARE-D HOMELINE
FED FROM: METER CENTER — ENCLOSURE: RECESSED NEMA 1 — SEE SPEC SECTION 242416

CKT #	P	FRM	TRIP	OCPD TYPE	DESCRIPTION	WIRE SIZE ϕ	DEM FACT	kVA	L1	L2	kVA	DEM FACT	WIRE SIZE ϕ	DESCRIPTION	OCPD TYPE	TRIP	FRM	P	CKT #
1	2	100	25	MCCB	AH-DU1 H	#10	DEMAND PER NEC 220.82 SEE ANNEX D CALC FOR DU1	1.6	5.6		4.0	DEMAND PER NEC 220.82 SEE ANNEX D CALC FOR DU1	#4 AL	RCPT RANGE/OVEN	MCCB	50	100	2	2
3								1.6		5.6	4.0								4
5	2	100	15	MCCB	HP-DU1 H	#14		1.1	2.8		1.7		#10	WATER HEATER (NOTE 3)	MCCB	30	100	2	6
7								1.1		2.8	1.7								8
9	2	100	30	MCCB	RCPT DRYER	#10		2.5	4.0		1.5		#12	RCPT M/W AF	MCCB	20	100	1	10
11								2.5		4.0	1.5		#12	KIT/SM APP RCPTS GF	MCCB	20	100	1	12
13	1	100	20	MCCB	RCPT WASHER GF	#12		1.5	3.0		1.5		#12	KIT/SM APP RCPTS GF	MCCB	20	100	1	14
15	1	100	15	MCCB	RCPT REFRIG AF	#14		0.6		1.5	0.9		#14	D/W (NOTE 3) GF	MCCB	15	100	1	16
17	1	100	20	MCCB	RCPT BATH GF	#12		0.2	1.0		0.8		#14	RCPT DISPOSER GF	MCCB	15	100	1	18
19	1	100	15	MCCB	RCPT/LTS BR #1 AF	#14		0.8		1.7	0.9		#14	RCPT/SD LIVE RM AF	MCCB	15	100	1	20
21	1	100	15	MCCB	BR #2 (NOTE 2) AF	#14		0.8	1.3		0.5		#14	LTS KIT/BATH/LR AF	MCCB	15	100	1	22
23	1	100	15	MCCB	BR #3 (NOTE 2) AF	#14		0.8		0.9	0.2		#14	RCPT (EXT) NOTE 2 GF	MCCB	15	100	1	24

	L1	L2	
AMP	147	137	CONN
kVA	17.7	16.5	34.2
AMP	107	107	DEMAND
kVA	11.1	11.1	22.2

LEGEND
AF - AFCI CB REQ FOR ALL 15A & 20A CKTS
GF - COMBO GFCI & AFCI CB REQ FOR ALL 15A & 20A CKTS
OTHER TYPES: 'H - HACR; SW - SWITCH RATED

NOTES:
1. ALL WIRE SIZES INDICATED ARE COPPER, UON
2. WHERE NOT USED OR PROVIDED, PROVIDE SPACE ONLY
3. PROVIDE NF DISCONNECT *OR* CKT BKR LOCKING DEVICE

NEC 220.82; ANNEX D: LOAD CALCULATION FOR ONE-FAMILY DWELLING: AC WITH GAS HEAT OR HEAT PUMP (1PH, 120/208V)

CALCULATION FOR TYPICAL UNITS, LOAD CENTER TYPE: DU2 — 877 sf (MAX)

A) HEATING & AIR CONDITIONING LOAD - NEC 220.82(C)	MARK	TONS	DEM	RATED kW	RATED V	CONNECTED kW	CONNECTED V	DEM VA
HP CONVENTIONAL	HP-DU2	2	100%		208		208	2,808
AHU WITH SUPPL HEAT	AH-DU2		65%	5	208	5	208	3,250
A) AC/HEAT PUMP AND SUPPL HEAT LOAD SUBTOTAL:								6,058

B) GENERAL LOADS SUMMARY NEC 220.82(B)	NEC ART	DEM	LOAD	QTY	VA
LIGHTING/RECEPTACLE	220.12	100%	877 sf AT 3 VA/sf =	1	2,631
SMALL APPLIANCE CIRCUITS	210.11	100%	2 AT 1,500 VA EA =	1	3,000
RANGE/OVEN - MIN 8kVA	220.55	100%	11.7kVA AT 240V, 8.8kVA AT 208V	1	8,000
LAUNDRY CIRCUIT (WASHER)	210.11	100%	1.5kVA MIN	1	1,500
CLOTHES DRYER - MIN 5kVA	220.54	100%	5.6kVA AT 240V, 4.4kVA AT 208	1	5,000
MICROWAVE		100%	1.5kVA NOM	1	1,500
REFRIGERATOR	220.53	100%	18 CU FT, 5A, 120V NOM, 100% DEM	1	600
DISHWASHER	220.53	100%	800W, 7.1A, 120V NOM, 100% DEM	1	852
GARBAGE DISPOSAL	220.53	100%	1/3HP, 6.7A, 120V NOM, 100% DEM	1	804
WATER HEATER	422.11	100%	TANK-TYPE ELEC WATER HEATER	1	3,380
B) GENERAL LOAD SUBTOTAL:					27,267

C) GENERAL DEMAND LOAD CALCULATION NEC 220.82(B)	GENERAL LOADS (B ABOVE)		DEMAND	VA
	FIRST	10,000 VA	AT 100%	10,000
	REMAINDER	17,267 VA	AT 40%	6,907
C) GENERAL LOAD, TOTAL DEMAND VA:				16,907

TOTAL DEMAND LOAD VA = AC & HEATING + GENERAL DEMAND LOAD (A + C): 22,965

DEMAND AMPS AT 120/208 = 22,965 VA / 208 V = 110 AMPS
SELECTED SERVICE SIZE: 125 AMPS

LOAD CENTER - DU2

MAIN: 125 A LUGS ONLY — PHASE & GROUND: AL BUS
DESCRIPTION: DWELLING UNIT TYPE DU2 (TYP) HP CONVENTIONAL — SYSTEM: 120/208 V 1ϕ/3W+G — NEUTRAL: AL, 100%
MIN SCCR: 10,000 AIC SYM, UON — DESIGN BASIS: SQUARE-D HOMELINE
FED FROM: METER CENTER — ENCLOSURE: RECESSED NEMA 1 — SEE SPEC SECTION 242416

CKT #	P	FRM	TRIP	OCPD TYPE	DESCRIPTION	WIRE SIZE ϕ	DEM FACT	kVA	L1	L2	kVA	DEM FACT	WIRE SIZE ϕ	DESCRIPTION	OCPD TYPE	TRIP	FRM	P	CKT #
1	2	100	25	MCCB	AH-DU2 H	#10	DEMAND PER NEC 220.82 SEE ANNEX D CALC FOR DU2	1.6	5.6		4.0	DEMAND PER NEC 220.82 SEE ANNEX D CALC FOR DU2	#4 AL	RCPT RANGE/OVEN	MCCB	50	100	2	2
3								1.6		5.6	4.0								4
5	2	100	20	MCCB	HP-DU2 H	#12		1.4	3.1		1.7		#10	WATER HEATER (NOTE 3)	MCCB	30	100	2	6
7								1.4		3.1	1.7								8
9	2	100	30	MCCB	RCPT DRYER	#10		2.5	4.0		1.5		#12	RCPT M/W AF	MCCB	20	100	1	10
11								2.5		4.0	1.5		#12	KIT/SM APP RCPTS GF	MCCB	20	100	1	12
13	1	100	20	MCCB	RCPT WASHER GF	#12		1.5	3.0		1.5		#12	KIT/SM APP RCPTS GF	MCCB	20	100	1	14
15	1	100	15	MCCB	RCPT REFRIG AF	#14		0.6		1.5	0.9		#14	D/W (NOTE 3) GF	MCCB	15	100	1	16
17	1	100	20	MCCB	RCPT BATH GF	#12		0.2	1.0		0.8		#14	RCPT DISPOSER GF	MCCB	15	100	1	18
19	1	100	15	MCCB	RCPT/LTS BR #1 AF	#14		0.8		1.7	0.9		#14	RCPT/SD LIVE RM AF	MCCB	15	100	1	20
21	1	100	15	MCCB	BR #2 (NOTE 2) AF	#14		0.8	1.3		0.5		#14	LTS KIT/BATH/LR AF	MCCB	15	100	1	22
23	1	100	15	MCCB	BR #3 (NOTE 2) AF	#14		0.8		0.9	0.2		#14	RCPT (EXT) NOTE 2 GF	MCCB	15	100	1	24

	L1	L2	
AMP	150	140	CONN
kVA	18.0	16.8	34.7
AMP	110	110	DEMAND
kVA	11.5	11.5	23.0

LEGEND
AF - AFCI CB REQ FOR ALL 15A & 20A CKTS
GF - COMBO GFCI & AFCI CB REQ FOR ALL 15A & 20A CKTS
OTHER TYPES: 'H - HACR; SW - SWITCH RATED

NOTES:
1. ALL WIRE SIZES INDICATED ARE COPPER, UON
2. WHERE NOT USED OR PROVIDED, PROVIDE SPACE ONLY
3. PROVIDE NF DISCONNECT *OR* CKT BKR LOCKING DEVICE

COMMERCIAL/HOUSE BRANCH CIRCUIT VOLTAGE DROP (3.0%)

CONDUCTOR SIZE (AWG)	CONDUCTOR MAT-ERIAL	OCPD (A)	MAX LOAD (A)	CIRCUIT VOLTAGE (V) 120 — MAXIMUM ALLOWED LENGTH	208
#14	CU	15	12	53 FT	92 FT
#12	CU	15	12	82 FT	142 FT
#10	CU	15	12	135 FT	235 FT
#8	CU	15	12	205 FT	356 FT
#12	CU	20	16	61 FT	107 FT
#10	CU	20	16	102 FT	176 FT
#8	CU	20	16	154 FT	267 FT
#10	CU	30	24	68 FT	117 FT
#8	CU	30	24	103 FT	178 FT

NOTES:
1. VERIFY THE LENGTH OF BRANCH CIRCUIT AND PROVIDE BRANCH CIRCUIT CONDUCTORS SIZED PER TABLE ABOVE.
2. BASED ON SINGLE-PHASE CIRCUITS, 0.90pf, AL OR UNCOATED CU WIRE IN STEEL RACEWAY (PER NEC CHAP 9, TAB 9).
3. ASSUMES MAXIMUM LOAD 80% OF OCPD RATING, CONCENTRATED AT END OF CIRCUIT, UON.

DWELLING UNIT 1-PHASE FEEDER VOLTAGE DROP

CONDUCTOR SIZE (AWG)	CONDUCTOR MAT-ERIAL	OCPD (A)	MAX LOAD (A)	VOLTAGE (V) 208 — MAX LENGTH
#2	CU	125	100	152 FT
#1	CU	125	100	185 FT
#1/0	CU	125	100	236 FT
#2/0	CU	125	100	275 FT
#1/0	AL	125	100	153 FT
#2/0	AL	125	100	186 FT

NOTES:
1. VERIFY THE LENGTH OF FEEDER CIRCUIT AND PROVIDE FEEDER CONDUCTORS SIZED PER TABLE ABOVE.
2. BASED ON SINGLE-PHASE CIRCUITS, 0.90pf, AL OR UNCOATED CU WIRE IN STEEL RACEWAY (PER NEC CHAP 9, TAB 9).
3. ASSUMES MAXIMUM LOAD 80% OF OCPD RATING, CONCENTRATED AT END OF CIRCUIT, UON.

DWELLING UNIT BRANCH CIRCUIT VOLTAGE DROP (2.0%)

CONDUCTOR SIZE (AWG)	CONDUCTOR MAT-ERIAL	OCPD (A)	MAX LOAD (A)	CIRCUIT VOLTAGE (V) 120 — MAXIMUM ALLOWED LENGTH	208
#14	CU	15	12	35 FT	61 FT
#12	CU	15	12	55 FT	95 FT
#10	CU	15	12	90 FT	157 FT
#12	CU	20	16	41 FT	71 FT
#10	CU	20	16	68 FT	117 FT
#8	CU	20	16	103 FT	178 FT
#10	CU	30	24	45 FT	78 FT
#8	CU	30	24	68 FT	119 FT

NOTES:
1. VERIFY THE LENGTH OF BRANCH CIRCUIT AND PROVIDE BRANCH CIRCUIT CONDUCTORS SIZED PER TABLE ABOVE.
2. BASED ON SINGLE-PHASE CIRCUITS, 0.90pf, AL OR UNCOATED CU WIRE IN STEEL RACEWAY (PER NEC CHAP 9, TAB 9).
3. ASSUMES MAXIMUM LOAD 80% OF OCPD RATING, CONCENTRATED AT END OF CIRCUIT, UON.

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS

#	DATE	DESCRIPTION
--	06-JUN-2025	ISSUE FOR PERMIT

ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	NONE
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL CALCULATIONS AND SCHEDULES

SHEET: E.002

VENABLE ST CHURCH

LIGHTING FIXTURE SCHEDULE

REFER TO SECTIONS 260910, 260920, 265100, & 265200

MARK	QTY NOTE 1	DESCRIPTION	MANUFACTURER	MODEL NUMBER	VOLTS	LAMP DATA				DRIVER		DIMMING	FIXTURE INPUT WATTS	EFFICACY LUMENS/ WATT	MOUNTING (UON)		REMARKS
						QTY	TYPE	WATTS	DESIGN LUMENS	QTY	TYPE	TYPE			TYPE	HEIGHT	
F1	0	FLUSH MOUNT	KUZCO	FM503715BN	UNIV	1	LED	32	2550	1	ELECT	NONE	32	79.7	SURFACE	CLG	
F2	1	5" DIA SLIM SURFACE MOUNT	RAB	SUMO-R-5	UNIV	1	LED	10	792	1	ELECT	NONE	10	79.2	SURFACE	CLG	WET LOCATION
F3	1	VANITY	MILLENIUM	9703-BN	UNIV	3	LED	14	1500	1	ELECT	NONE	42	107.1	WALL	SEE ARCH	DAMP LOCATION
F4	0	52" CEILING FAN	WESTINGHOUSE	7304900	UNIV	2	LED	8	800	1	ELECT	VERIFY	16	100.0	SURFACE	SEE ARCH	
F5	0	FLUSH MOUNT SLIM SURFACE MOUN	RAB	SUMO-R-12	UNIV	1	LED	24	1880	1	ELECT	NONE	24	78.3	SURFACE	CLG	
F6	0	LINEAR PENDANT	AFX	STHP0136LAJD1SN	UNIV	1	LED	20	1200	1	ELECT	NONE	20	60.0	SURFACE	SEE ARCH	
F7	0	24" STRIP LIGHT	SATCO NUVO	65-700	UNIV	1	LED	20	2735	1	ELECT	NONE	20	136.8	SURFACE	SEE ARCH	DAMP LOCATION
F8	0	SCONCE	PROGRESS	P5602260-028-30	UNIV	1	LED	9	670	1	ELECT	NONE	9	74.4	SURFACE	SEE ARCH	
F9	0	5" DIA SLIM SURFACE MOUNT	RAB	SUMO-R-5	UNIV	1	LED	10	792	1	ELECT	NONE	10	79.2	SURFACE	UC	
F20	19	SCONCE	OXYGEN	3-509-24	UNIV	2	LED	7	761	1	ELECT	NONE	14	108.7	SURFACE	SEE ARCH	
F21	46	DECORATIVE FLUSH MOUNT	AFX	BAYF14LAJUDSN	UNIV	1	LED	26	1800	1	ELECT	NONE	26	69.2	SURFACE	CLG	
F22	41	DECORATIVE PENDANT	AFX	GLOP24L30D1SN	UNIV	1	LED	30	1400	1	ELECT	NONE	30	46.7	SURFACE	CLG	
F23	24	DECORATIVE SCONCE	OXYGEN	3-535-24	UNIV	1	LED	10.1	709	1	ELECT	VERIFY	10.1	70.2	SURFACE	SEE ARCH	
F24	18	24" STRIP	SATCO NUVO	65-700	UNIV	1	LED	20	2735	1	ELECT	NONE	20	136.8	SURFACE	SEE ARCH	DAMP LOCATION
F25	0	DECORATIVE SCONCE	AFX	GLOS0214L30D1SN	UNIV	1	LED	15	600	1	ELECT	NONE	15	40.0	SURFACE	SEE ARCH	
F60	19	SURFACE MOUNT	FC	FCW3700-UNV-3K-CRI85-10L-WHE	UNIV	1	LED	10	1000	1	ELECT	NONE	10	100.0	SURFACE	CLG	WET LOCATION
F61	1	SCONCE	RAB	CDLED-4-W-40W-50D-930-X	UNIV	2	LED	17.5	3390	1	ELECT	NONE	35	193.7	SURFACE	SEE ARCH	WET LOCATION
F62	4	IN GROUND	LITON	IG16-T30	UNIV	1	LED	10	900	1	ELECT	NONE	10	90.0	RECESSED	GROUND	WET LOCATION
F63	0	POLE MOUNDED AREA	GARDCO BY SIGN	P20-X-XXX-830-XXX-RAM-UNV-XX-XXX-XXX-XX	UNIV	1	LED	143	14569	1	ELECT	NONE	143	101.9	POLE	SEE ARCH	WET LOCATION
F64	0	OUTDOOR PENDANT	AFX	BVYP06LAJUDBK	UNIV	1	LED	9	630	1	ELECT	NONE	9	70.0	SURFACE	SEE ARCH	WET LOCATION
F65	0	SURFACE MOUNT	AFX		UNIV	1	LED	9	630	1	ELECT	NONE	9	70.0	SURFACE	CLG	WET LOCATION
F66	0	SCONCE	BORWNLEE	7178-18-BL-H08-30K	UNIV	1	LED	8	698	1	ELECT	NONE	8	87.3	SURFACE	SEE ARCH	WET LOCATION
EF	EXEMPT	DWELLING - EXHAUST FAN W/LIGHT	SEE MECH		120	1	LED	7	600	1	ELECT	NONE	7	NOTE 2	RECESSED	CEILING	NOTE 2 - DU TOILET LIGHT/EF COMBO
EP	0	WET LOCATION, VAPOR TIGHT	UTHONIA	DMW2 L24 3000LM ACL WD MVOLT 35K 80CRI	UNIV	1	LED	27	3000	1	ELECT	NONE	27	111.1	WALL	48" AFF	ELEVATOR PIT
X	EXEMPT	EXIT SIGN, BATTERY BACKUP	UTHONIA	LQM S W 3 R ELN	UNIV	-	LED	-	N/A	-	-	NONE	1.4	N/A	UNIVERSAL	90" AFF	1/2 SIDED, W/ BATTERY PACK
Y	EXEMPT	ELU, INTERIOR, NORMALLY OFF	UTHONIA	ELM6L	UNIV	2	LED	-	N/A	-	-	NONE	3.3	N/A	SURFACE	90" AFF	EGRESS LIGHTING
YR	EXEMPT	ELU, REMOTE HEAD	UTHONIA	ELA QWP	UNIV	1	LED	-	N/A	-	-	NONE	1.5	N/A	SURFACE	90" AFF	EGRESS LIGHTING, WET LISTED
Z	EXEMPT	ELU + EXIT SIGN TANDEM	UTHONIA	LHQM LP06VS R	UNIV	2	LED	-	N/A	-	-	NONE	6	N/A	SURFACE	90" AFF	MAX 5W PER FACE

COMcheck Software Version COMcheckWeb

Exterior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: Q007 Venable St
Project Type: New Construction
Exterior Lighting Zone: 2 (Neighborhood business district (LZ2))

Construction Site:
2101 Venable St.
Richmond, Virginia 23223

Owner/Agent:
Virginia

Designer/Contractor:
Malcolm Lyle
Oneil Engineering Services
1480 Oakbridge Court
Powhatan, Virginia 23139
804373501
malcolml@oneil-engineering.com

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts /	D Tradable Wattage	E Allowed Watts (B X C)
Entry canopy (Entry canopy)	1055 ft2	0.25	Yes	264
Service areas (Plaza area)	281 ft2	0.1	Yes	28
			Total Tradable Watts (a) =	292
			Total Allowed Watts =	292
			Total Allowed Supplemental Watts (b) =	400

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 400 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Entry canopy (Entry canopy, 1055 ft2): Tradable Wattage				
LED: F60: SURFACE MOUNT: Other:	1	19	10	190
LED: F61: SCONCE: Other:	2	1	35	35
Service areas (Plaza area, 281 ft2): Tradable Wattage				
LED: F62: IN GROUND: Other:	1	4	10	40
			Total Tradable Proposed Watts =	265

Exterior Lighting PASSES: Design 62% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Project Title: Q007 Venable St — Report date: 06/05/25
Data filename: — Page 3 of 8

COMcheck Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: Q007 Venable St
Project Type: New Construction

Construction Site:
2101 Venable St.
Richmond, Virginia 23223

Owner/Agent:
Virginia

Designer/Contractor:
Malcolm Lyle
Oneil Engineering Services
1480 Oakbridge Court
Powhatan, Virginia 23139
804373501
malcolml@oneil-engineering.com

Additional Efficiency Package(s)

Credits: 10.0 Required 0.0 Proposed

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Corridors (Common Space Types:Corridor/Transition <8 ft wide)	3063	0.41	1256
2-Stairwells (Common Space Types:Stairwell)	835	0.49	409
3-Utility closets (Common Space Types:Electrical/Mechanical)	437	0.43	188
4-Restrooms (Common Space Types:Restrooms)	105	0.63	66
5-Amenities (Common Space Types:Audience Seating Area - Other)	3487	0.33	1151
		Total Allowed Watts =	3070

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
1-Corridors (Common Space Types:Corridor/Transition <8 ft wide)				
LED: F20: SCONCE: Other:	2	16	14	224
LED: F21: DECORATIVE FLUSH MOUNT: Other:	1	31	26	806
LED: F22: DECORATIVE PENDANT: Other:	1	19	30	570
LED: F23: DECORATIVE SCONCE: Other:	1	9	10	91
2-Stairwells (Common Space Types:Stairwell)				
LED: F20: SCONCE: Other:	2	2	14	28
LED: F21: DECORATIVE FLUSH MOUNT: Other:	1	7	26	182
LED: F22: DECORATIVE PENDANT: Other:	1	3	30	90
LED: F23: DECORATIVE SCONCE: Other:	1	17	10	172
3-Utility closets (Common Space Types:Electrical/Mechanical)				
LED: EP: WET LOCATION, VAPOR TIGHT: Other:	1	1	27	27
LED: F24: 24" STRIP: Other:	1	1	18	18
4-Restrooms (Common Space Types:Restrooms)				
LED: F21: DECORATIVE FLUSH MOUNT: Other:	1	2	26	52

Project Title: Q007 Venable St — Report date: 06/05/25
Data filename: — Page 1 of 8

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
5-Amenities (Common Space Types:Audience Seating Area - Other)				
LED: F2: 5" DIA SLIM SURFACE MOUNT: Other:	1	1	10	10
LED: F3: VANITY: Other:	3	1	42	42
LED: F21: DECORATIVE FLUSH MOUNT: Other:	1	6	26	156
LED: F22: DECORATIVE PENDANT: Other:	1	16	30	480
			Total Proposed Watts =	2948

Interior Lighting PASSES: Design 4% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Malcolm Lyle, PE - Chief Electrical Engineer — Name - Title
Signature
05-JUN-2025 — Date

Project Title: Q007 Venable St — Report date: 06/05/25
Data filename: — Page 2 of 8

Malcolm Lyle, PE - Chief Electrical Engineer — Name - Title
Signature
05-JUN-2025 — Date

Project Title: Q007 Venable St — Report date: 06/05/25
Data filename: — Page 4 of 8

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS

#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	NONE
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL LIGHTING FIXTURE SCHEDULE AND COMCHECK

SHEET:

E.003

VENABLE ST CHURCH

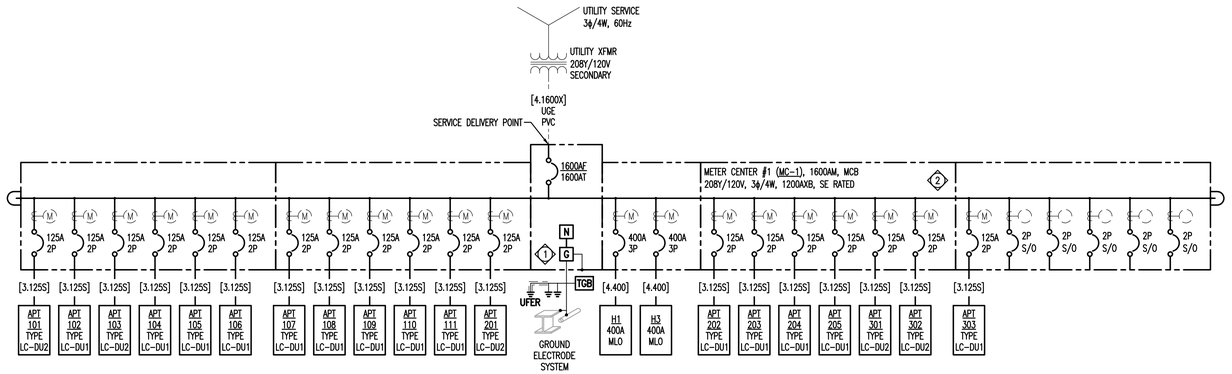
1-LINE DIAGRAM KEYNOTES

1. GROUNDING & BONDING: (SEE SPEC SECTION 260526) PROVIDE THE FOLLOWING:
   - GROUND ELECTRODE CONDUCTOR (GEC) SYSTEM:
     a. 1#6 AWG CU GEC CONX TO (2) DRIVEN GROUND RODS
     b. 1#3/0 AWG CU CONX TO METAL WATER PIPE AND BUILDING STEEL (WHERE PRESENT)
     c. TAP BOX (EXTERIOR): BUSBAR BOND NEUTRAL TO ENCLOSURE
     d. MBJ: 1#400 KCMIL CU CONX N-G MBJ (MIN) OR FACTORY BUSBAR
   - UFER: CONCRETE ENCASED ELECTRODE 1#4 AWG CU - SEE NEC 250.52(A)(3)
   - TGB: 1#6 AWG CU CONX FROM GEC TO TGB PER NEC 250.94

2. SEE SPECIFICATION SECTION 337173. COORDINATE AND PROVIDE CT CABINETS, CT SWBD SECTIONS, METER BASES AND/OR METER CENTERS PER POWER UTILITY REQUIREMENTS. METERS PROVIDED BY POWER UTILITY.

PLAN GENERAL NOTES

A. ALL SINGLE-PHASE DWELLING UNIT LOAD CENTERS ARE MLO, 10kAIC RATED, U.O.N.



1LD / E.004 ELECTRICAL 1-LINE DIAGRAM
NO SCALE

FEEDER SCHEDULE

TYPICAL: [X.YYYZ] X=PH WIRES, YYY=AMPS, Z=SUFFIX

FEEDER MARK	AMPS (NOM)	FEEDER DESCRIPTION (SEE NOTE 1)						REMARKS
		SETS	MAT'L	QTY: PH	QTY: NEUT	QTY: EGC	MIN RWY	
[4.1600X]	1600	5	AL	3 : #600	1 : #600	-	4"	SEE 1-LINE DIAGRAM. SEE NOTE 3.
[4.400]	400	1	CU	3 : #500	1 : #500	1 : #3	4"	
	400	2	AL	3 : #250	1 : #250	1 : #1	2-1/2"	
[3.125S]	125	1	CU	2 : #1/0	1 : #1/0	1 : #6	1-1/4"	DUs, SEE ALSO DU FEEDER VD TABLE. AMPACITY PER NEC TBL 310.15(B)(16). SER CABLE (INSULATED WALLS).
	125	1	AL	2 : #2/0	1 : #2/0	1 : #4	1-1/2"	
[3.125S]	125	1	CU	2 : #1	1 : #1	1 : #6	1-1/4"	DUs, SEE ALSO DU FEEDER VD TABLE. AMPACITY PER NEC TBL 310.15(B)(16). SER CABLE (UNINSULATED WALLS), WIRE & CONDUIT, OR MC CABLE.
	125	1	AL	2 : #1/0	1 : #1/0	1 : #4	1-1/2"	

NOTES:
1. PROVIDE CONDUCTORS PER SPEC SECTION 260519 AND RACEWAYS (RWY) PER SPEC SECTION 260533.
2. WHERE MULTIPLE FEEDER OPTIONS ARE SHOWN, SELECT BASED ON ECONOMY OR CONSTRUCTIBILITY.
3. ESTIMATED SERVICE ARRANGMENT, FINAL CONFIGURATION PER POWER UTILITY. SEE SECTION 337173.

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS

#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	NONE
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL 1-LINE DIAGRAM AND SCHEDULES

SHEET:
E.004

VENABLE ST CHURCH

ELECTRICAL WORK

SECTION 26 00 00 – ELECTRICAL GENERAL PROVISIONS:
1. CONFORM TO THE APPLICABLE PROVISIONS OF THESE REFERENCED CODES AND STANDARDS:
1.1. LOCAL AUTHORITY HAVING JURISDICTION (AHJ) REQUIREMENTS
1.2. VUSBC – VIRGINIA UNIFORM STATEWIDE BUILDING CODE 2021, INCLUDING:
1.2.1. VCC/2021 – VIRGINIA CONSTRUCTION CODE
1.2.2. VBC/2021 – VIRGINIA BUILDING CODE
1.2.3. VEBC/2021 – VIRGINIA EXISTING BUILDING CODE
1.2.4. VRC/2021 – VIRGINIA RESIDENTIAL CODE
1.2.5. VEC/2021 – VIRGINIA ENERGY CODE
1.2.6. VAC/2017 – VIRGINIA ACCESSIBILITY CODE (ANSI A117.1)
1.2.7. SFPC/2021 – VIRGINIA STATEWIDE FIRE PREVENTION CODE
1.2.8. VEEC/2019 – VIRGINIA ELEVATOR AND ESCALATOR CODE (ASME A17.1)
1.2.9. NFPA 70/2020 – NATIONAL ELECTRICAL CODE
1.2.10. NFPA 72/2019 – NATIONAL FIRE ALARM AND SIGNALING CODE
1.2.11. 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN (ASAD).
1.3. ADAAG – AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES
1.4. ANSI – AMERICAN NATIONAL STANDARDS INSTITUTE
1.5. ASTM – AMERICAN SOCIETY FOR TESTING AND MATERIALS
1.6. IEEE – INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
1.7. IESNA – ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA
1.8. NECA – NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
1.9. NEMA – NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
1.10. NETA – INTERNATIONAL ELECTRICAL TESTING ASSOCIATION
1.11. NFPA – NATIONAL FIRE PROTECTION ASSOCIATION
1.12. OSHA – OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
1.13. UL – UNDERWRITERS LABORATORIES, INC.
2. CONFORM TO THE BUILDING CODE AND LOCAL AUTHORITIES HAVING JURISDICTION (AHJ). OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND FEES REQUIRED.
3. COORDINATE SCHEDULE FOR ALL WORK WITH AND FOR APPROVAL BY THE OWNER.
4. COORDINATE WORK FROM OTHER TRADES AND BUILDING STRUCTURE PRIOR TO INSTALLATION. MAKE MINOR ADJUSTMENTS AS REQUIRED FACILITATING THE WORK.
5. PROVIDE ALL EQUIPMENT, MATERIALS AND SYSTEMS LISTED AND CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. (UL), AS SUITABLE FOR USE INTENDED.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE "MEANS AND METHODS" OF THE WORK. CONFORM TO NECA 1 – "STANDARD OF INSTALLATION" AND INSTALL ALL WORK IN A NEAT AND WORKMANLIKE MANNER.
7. INSTALL AND APPLY ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE SUBMITTALS WHERE INDICATED.
8. INSTALL AND PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE, DIRT, AND DEBRIS AND CLEAN AND REPAIR AS REQUIRED.
9. MAINTAIN CONTINUITY OF EXISTING CIRCUITS AND EQUIPMENT TO REMAIN. LEAVE EXISTING CIRCUITS ENERGIZED, EXCEPT WHERE AUTHORIZED BY OWNER. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS THAT REMAIN ACTIVE AND PROVIDE ACCESS PANELS AS APPROPRIATE.
10. DO NOT SCALE ELECTRICAL DRAWINGS. UNLESS SPECIFICALLY DIMENSIONED ON THESE PLANS, REFER TO CIVIL OR ARCHITECTURAL PLANS FOR ALL CONSTRUCTION DIMENSIONS AND SUBMIT RFI FOR CLARIFICATION AS REQUIRED. COORDINATE DIMENSIONS IN THE FIELD.

SECTION 26 00 10 – SUBMITTALS:
1. SUBMITTAL REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE PLANS AND SPECIFICATIONS. OPERATION OF THE SYSTEMS REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.
2. REVIEW OF A SPECIFIC ITEM DOES NOT INCLUDE OR IMPLY APPROVAL OF AN ASSEMBLY (OF WHICH THE ITEM IS A COMPONENT).
3. EXPLICITLY DISCLOSE AND NOTE ALL DEVIATIONS FROM THE PROJECT EOR DRAWINGS AND SPECIFICATIONS IN SUBMITTALS BY COVER LETTER OR SUBMITTAL WILL BE CONSIDERED NON-COMPLIANT AND REJECTED, REGARDLESS OF STATUS INDICATED BELOW. DEVIATIONS DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE CONTRACT DOCUMENTS UNLESS SEPARATELY NEGOTIATED WITH THE OWNER.
4. THE CONTRACTOR, BY SUBMITTING A PROPOSED SUBSTITUTION, ACCEPTS ALL RESPONSIBILITY FOR COORDINATING ALL CHANGES AND ABSORBING ALL COSTS DUE TO PROPOSED SUBSTITUTED EQUIPMENT TO INCLUDE, BUT NOT LIMITED TO: COORDINATION WITH AND CHANGES AFFECTING OTHER TRADES, ADDITIONAL CIRCUITS, IMPACT OF ADDITIONAL LOADS, FEEDER/FUSE/CIRCUIT BREAKER CHANGES, AND SINGLE-POINT CONNECTION KITS.

SECTION 26 00 50 – PROJECT CLOSEOUT:
1. DELIVER COPIES OF ALL PERMITS AND CERTIFICATES TO OWNER'S REPRESENTATIVE TO INDICATE ACCEPTANCE BY THE AHJ.
2. DELIVER TO OWNER: USER INSTRUCTIONS, OPERATING AND MAINTENANCE MANUALS (EDITED FOR SITE-SPECIFIC APPLICATION), PREVENTIVE MAINTENANCE PROCEDURES, SPARE PARTS LIST, SPECIALIZED MAINTENANCE TOOLS OR SOFTWARE REQUIRED, AND WARRANTY INFORMATION.
3. VERIFY ALL PERMANENT NAMEPLATES, EQUIPMENT TAGS ARE INSTALLED.
4. VERIFY ALL OPERATING INSTRUCTIONS, DESCRIPTIVE DATA PLACARDS, AND LOCATION CHARTS ARE MOUNTED (WHERE REQUIRED).
5. CLOSE ALL ELECTRICAL BOXES, CABINETS, AND EQUIPMENT WITH PROPER HARDWARE.
6. CLEAN ELECTRICAL INSTALLATIONS OF DIRT, DUST AND DEBRIS. REMOVE STORED MATERIALS FROM ELECTRICAL AREAS. DO NOT USE COMPRESSED AIR FOR CLEANING.

SECTION 26 05 00 – EQUIPMENT AND MOTOR WIRING:
1. COORDINATE WITH MECHANICAL CONTRACTOR AND SUPPLIERS/INSTALLERS OF ANY OTHER EQUIPMENT PRIOR TO INSTALLATION/ORDERING OF WIRE, CONDUIT, CIRCUIT BREAKERS, FUSES, DISCONNECT SWITCHES, MOTOR STARTERS, ETC.
2. COORDINATE NAMEPLATE REQUIREMENTS FOR ALL EQUIPMENT. PROVIDE PER NAMEPLATE "MOCP," "MOP," OR "MFS" RATING, AS APPLICABLE. PROVIDE CONDUCTOR AMPACITY PER NAMEPLATE MCA, AS REQUIRED.
3. COORDINATE EQUIPMENT PROVIDED WITH INTEGRAL DISCONNECTING MEANS AND PROVIDE SERVICE DISCONNECTING MEANS FOR ALL EQUIPMENT OVER 300VA OR 1/8HP WHERE NOT PROVIDED INTEGRAL. PROVIDE SEPARATE SWITCH DEVICE OR CIRCUIT BREAKER HANDLE LOCKING MECHANISM.
4. COORDINATE HORSEPOWER RATING OF SWITCHES SERVING MOTOR LOADS.COORDINATE CIRCUIT BREAKER OR SWITCH/FUSE RATINGS AND CIRCUIT REQUIREMENTS WITH ACTUAL EQUIPMENT INSTALLED.
5. PROVIDE EQUIPMENT WITH TERMINAL TEMPERATURE RATINGS TO CONFORM TO NEC, ARTICLE 110.14(C):
5.1. EQUIPMENT RATED 100 AMPERES OR LESS: 60 °C.
5.2. EQUIPMENT RATED OVER 100 AMPERES: 75 °C.
6. COORDINATE EQUIPMENT TERMINATIONS WITH SPECIFIED QUANTITY, TYPE AND SIZE OF CONDUCTORS INDICATED OR SCHEDULED ON THE DRAWINGS. PROVIDE TERMINATION LUGS, AS REQUIRED.
7. ELEVATORS: COORDINATE WITH MANUFACTURER REQUIREMENTS FOR WIRING TERMINATIONS AND OVERCURRENT DEVICE. PROVIDE COPPER CONDUCTORS ONLY WHERE REQUIRED BY THE MANUFACTURER. PROVIDE SHUNT-TRIP OPERATOR WHERE REQUIRED FOR INTERFACE TO THE FIRE ALARM/SPRINKLER SYSTEM CONTROL.

SECTION 26 05 19 – WIRE AND CABLE:
1. CONFORM TO NEMA WC7; UL 83, 486C, 486E, & 1581.
2. PROVIDE WIRING: UL 83, 600-VOLT, TYPE THHN/THHW INSULATION, UON:
2.1. #10 AWG AND SMALLER: SOFT-DRAWN ANNEALED COPPER, SOLID.
2.2. #8 AWG AND LARGER: SOFT-DRAWN ANNEALED COPPER, STRANDED
2.3. 100 AMPERES AND LARGER: AL COMPACT-STRANDED CONDUCTORS OF EQUAL AMPACITY MAY BE SUBSTITUTED FOR COPPER. CONTRACTOR RESPONSIBLE FOR COORDINATING WIRE AND CONDUIT SIZE. VERIFY THAT ALL TERMINATION LUGS ARE RATED FOR SIZE AND TYPE WIRE PROVIDED.
2.4. TYPE NM/SER CABLE:
2.4.1. NM CABLE: CONCEALED IN WALLS WITHIN DWELLING UNITS AND COMMERCIAL AREAS FOR BRANCH CIRCUITS.
2.4.2. SER CABLE: FEEDERS FROM METER CENTER TO DWELLING UNIT LOAD CENTERS. CONCEAL SER CABLING IN NEW SOFFITS, WALL OR ABOVE CEILINGS. PROVIDE IN CONDUIT WHERE INSTALLED IN PLENUMS AND WHERE CABLING CANNOT BE CONCEALED BY ARCHITECTURAL ELEMENTS.
2.4.3. INSTALL NM/SER CABLE ONLY IN CONSTRUCTION TYPE 3A, 3B, 5A AND 5B AREAS. DO NOT INSTALL NM WIRING ABOVE ACCESSIBLE OR LAY-IN CEILINGS. CONFORM TO NEC ARTICLE 334.10.
2.4.4. WHERE ROUTED THROUGH AREAS OF TYPE 1A, 1B, 2A OR 2B CONSTRUCTION, PROVIDE IN CONDUIT.
2.5. TYPE UF-B CABLE: NEC 340. UNDER-GROUND, DIRECT-BURY USE ONLY.
2.6. MINI-SPLIT HEAT PUMP INTERCONNECTION WIRING: PROTECT CONDUCTORS FROM DAMAGE USING CONDUIT OR USE SOUTHWIRE EZ-IN (OR EQUIVALENT) CABLE, UL LISTED FOR INDOORS, OUTDOORS, SUNLIGHT RESISTANT AND DIRECT BURIAL.
2.7. ARMORED CABLE ASSEMBLIES: TYPE MC CABLE (UL 1569).
2.8. USE STRANDED WIRING FOR ALL CONTROL CIRCUITS.
3. TERMINATIONS, PROVIDE AS FOLLOWS:
3.1. BRANCH CIRCUITS: SOLDER-LESS, COMPRESSION, TWIST SPRING CONNECTORS (WIRE NUTS), WAGO CONNECTORS, OR OTHER LISTED MEANS.
3.2. BOLTED BUS CONNECTIONS: 2-HOLE COMPRESSION LUGS.
3.3. WIRING SPLICES NOT PERMITTED.
4. ROUTE POWER WIRING AND LOW-VOLTAGE CONTROL WIRING IN SEPARATE RACEWAYS. DO NOT ROUTE CIRCUITS FROM DIFFERENT SYSTEMS IN THE SAME RACEWAY.
5. PROVIDE SEPARATE, DEDICATED NEUTRAL CONDUCTOR FOR ALL BRANCH CIRCUITS SERVING APPLIANCES, COMPUTERS OR MECHANICAL EQUIPMENT.
6. NEATLY TRAIN AND LACE WIRING IN ENCLOSURES AND MAKE GOOD. TEST ALL WIRING FOR CONTINUITY AND TO BE FREE OF FAULTS AND SHORT CIRCUITS.
7. USE SUITABLE ANTI-OXIDIZING COMPOUND FOR ALL ALUMINUM WIRING TERMINATIONS.
8. PROVIDE WIRING CONCEALED IN WALLS TO ALL BUILDING-MOUNTED EXTERIOR LIGHTING, RECEPTACLES AND OTHER DEVICES, UON. DO NOT USE SURFACE MOUNTED EXTERIOR CONDUITS UNLESS APPROVED BY THE OWNER/ARCHITECT IN ADVANCE.
9. POWER WIRING COLOR CODE:
9.1. 120/240V OR 120/208V (1Ø): LINE 1 (AØ)-BLACK, LINE 2 (BØ)-RED, NEUTRAL-WHITE; GROUND-GREEN.
9.2. 208Y/120V (3Ø): AØ-BLACK; BØ-RED; CØ-BLUE; NEUTRAL-WHITE; GROUND-GREEN.
10. COORDINATE WIRE SIZING AND TYPE FOR MEDICAL/LABORATORY/KITCHEN EQUIPMENT, FIRE PUMP, VEHICLE CHARGERS, AND ELEVATOR WITH OWNER AND EQUIPMENT VENDOR/MANUFACTURER.
11. WHERE CONDUCTORS, RATED LESS THAN 110 AMPS, ARE EXPOSED TO HIGH AMBIENT TEMPERATURES (i.e. -ROOFS), DERATE CONDUCTORS AS REQUIRED BY NEC 310.15.(B)(2)(b).

SECTION 26 05 26 – GROUNDING AND BONDING:
1. CONFORM TO UL 467.
2. EGC: PROVIDE SEPARATE BARE COPPER OR INSULATED GREEN GROUND CONDUCTOR IN ALL FEEDERS AND BRANCH CIRCUITS. DO NOT USE EGC FOR EQUIPMENT/APPLIANCE NEUTRAL CONNECTIONS.
3. BONDING: PROVIDE BONDING OF ALL NON-CURRENT-CARRYING METALLIC PARTS OF ELECTRICAL EQUIPMENT, METALLIC RACEWAYS AND ENCLOSURES PER NEC ARTICLE 250. BOND ALL METAL BUILDING COMPONENTS, INCLUDING PIPING, DUCTWORK AND METAL BUILDING COMPONENTS.
4. GROUNDING AND BONDING: PROVIDE SERVICE GROUNDING AND BONDING PER NEC ARTICLE 250. PROVIDE GEC AND MBJ AS INDICATED ON 1-LINE DIAGRAM. PROVIDE GROUND ELECTRODE BONDING OF METAL WATER SERVICE PIPING AND BUILDING STEEL. PROVIDE GROUND RODS MINIMUM 5/8" X 10' LENGTH, CU CLAD.
5. UFER: WHERE REQUIRED, PROVIDE 20 FT MIN LENGTH 1#4 BARE CU WIRE (OR USE STRUCTURAL 1" DIA REBAR IN FOOTING) EMBEDDED CONCRETE FOOTINGS. ENCASE ELECTRODE MINIMUM 2 INCHES COVER IN CONCRETE.
6. TGB: PROVIDE INTERSYSTEM BONDING TERMINATION PER NEC 250.94.

SECTION 26 05 29 – ELECTRICAL SUPPORTS:
1. COORDINATE INSTALLATION TO PROVIDE MAXIMUM ACCESSIBILITY TO ALL SYSTEMS.
2. SUPPORT CONDUIT BY PIPE STRAPS, WALL BRACKETS, HANGERS OR CEILING TRAPEZE. SUPPORT RACEWAYS MAXIMUM 24" FROM EACH BOX AND AT MAXIMUM 10' ALONG LENGTH.
3. SUPPORT BOXES DIRECTLY FROM BUILDING STRUCTURE, USING METAL FRAMING SYSTEMS, OR BY BAR HANGERS.
4. FASTEN SYSTEMS BY WOOD SCREWS TO WOOD; BY TOGGLE BOLTS TO HOLLOW MASONRY UNITS; CONCRETE INSERTS OR EXPANSION BOLTS TO SOLID MASONRY, CONCRETE, OR BRICK; AND BY MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING TENSION CLAMPS ON STEEL WORK. DO NOT WELD CONDUIT OR PIPE STRAPS TO STEEL STRUCTURES. PROVIDE VIBRATION- AND SHOCK-RESISTANT FASTENERS IN CONCRETE CEILINGS. DO NOT EXCEED 1/4 OF THE PROOF TEST LOAD FOR FASTENERS.
5. DO NOT CUT REINFORCING STEEL IN CONCRETE CONSTRUCTION. FILL UNUSED HOLES.
6. USE SHEET METAL SCREWS IN PARTITIONS OF LIGHT STEEL CONSTRUCTION.
7. DO NOT SHARE SUPPORTING MEANS FOR ELECTRICAL SYSTEMS WITH OTHER SYSTEMS (INCLUDING, BUT NOT LIMITED TO, MECHANICAL DUCT OR PIPING SYSTEMS).

SECTION 26 05 33 – RACEWAYS:
1. CONFORM TO ANSI C80.1 & C80.3; UL 1, 5, 6, 360, 514B, 630, 651, 797, & 870; NEMA FB1, TC2, TC3, & ICS6
2. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS, PULL AND JUNCTION BOXES, NOR ACTUAL CONDUIT ROUTING. WHERE ROUTES ARE SHOWN, A SINGLE LINE MAY REPRESENT MULTIPLE RACEWAYS.
3. EXCEPT WHERE NOTED, USE TRADE SIZE CONDUIT RACEWAY. SIZE SCHEDULE:
3.1. LIGHTING AND BRANCH CIRCUIT CONDUITS: 1/2", MINIMUM, OR MC CABLE.
3.2. CONTROLS CONDUITS: 3/4", MINIMUM.
4. INSTALL 1250-LB MULE TAPE (OR EQUAL) IN EMPTY RACEWAYS, TIED-OFF BOTH ENDS.
5. INSTALLATION SCHEDULE:
5.1. OUTDOOR, IN- OR UNDER-SLAB-ON-GRADE, IN ROCK FILL, OR IN WET OR DAMP LOCATIONS: SCHEDULE 40 PVC CONDUIT, UL 651.
5.2. DRY LOCATIONS:
5.2.1. WHERE SUBJECT TO PHYSICAL DAMAGE: RIGID METAL CONDUIT (RMC), ANSI C80.1.
5.2.2. ALL OTHER LOCATIONS: ELECTRICAL METALLIC TUBING (EMT), ANSI C80.3.
5.3. MOTORIZED EQUIPMENT AND TRANSFORMERS:
5.3.1. DRY LOCATIONS: FLEXIBLE METAL CONDUIT (FMC), UL 1; OR USE MC CABLE.
5.3.2. WET OR DAMP LOCATIONS: LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC), UL 360.
5.3.3. PROVIDE CONNECTIONS 24" MINIMUM AND 48" MAXIMUM LENGTH.
5.4. LIGHT FIXTURES IN LAY-IN GRID CEILINGS: FLEXIBLE METAL CONDUIT (FMC), UL 1, 72" MAXIMUM LENGTH; OR USE MC CABLE.
5.5. NM/SER CABLE: INSTALL IN CONDUIT WHERE REQUIRED. SEE SECTION 26 05 19.
6. WIREWAYS: NEMA 1, SCREW COVER, UON. PROVIDE FITTINGS AS REQUIRED.
7. CONCEAL CONDUIT RACEWAYS IN WALLS, FLOORS AND CEILINGS IN FINISHED SPACES. USE SURFACE MOUNTED RACEWAY IN FINISHED SPACES PERMITTED ONLY WITH PRIOR PERMISSION OF OWNER.
8. PROVIDE ALL FITTINGS, CONNECTORS AND COUPLINGS REQUIRED FOR COMPLETE SYSTEM. PROVIDE CADMIUM OR ZINC COATED STEEL FITTINGS IN ACCORDANCE WITH UL 5148. FASTEN WITH TWO LOCKNUTS WHERE REQUIRED BY NEC, WHERE INSULATING BUSHINGS ARE USED, OR WHERE BUSHING CANNOT BE BROUGHT INTO FIRM CONTACT WITH BOX; OTHERWISE, PROVIDE MINIMUM SINGLE LOCKNUT AND BUSHING. PROVIDE INSULATING BUSHING WHERE REQUIRED BY NEC.
9. PROVIDE NO MORE THAN THE EQUIVALENT OF FOUR 90° BENDS IN CONDUIT BETWEEN JUNCTION BOXES. SUPPORT CONDUITS PER NEC REQUIREMENTS. ROUTE CONDUITS AS HIGH AS POSSIBLE AND PARALLEL/PERPENDICULAR TO BUILDING STRUCTURE, PLUMB AND LEVEL. USE CONDUIT BODIES OR PROPER CONDUIT BENDING TOOLS FOR REQUIRED TURNS PER NEC. AVOID OBSTRUCTIONS AND UNNECESSARY BENDS. DO NOT INSTALL DEFORMED OR CRUSHED CONDUITS.
10. PROVIDE UL LISTED EXPANSION FITTINGS WITH GROUNDING BUSHINGS AT BUILDING EXPANSION JOINTS. PROVIDE BONDING CONTINUITY OF RACEWAYS.
11. CUT ALL CONDUIT SQUARE AND DE-BURR/REAM ENDS. PROVIDE SHARP, CLEAN-CUT THREADS WHERE APPLICABLE.
12. MAINTAIN 6" SEPARATION FROM PARALLEL RUNS OF FLUES AND STEAM OR HOT WATER PIPES. DO NOT ROUTE CONDUITS INSIDE DUCTWORK.
13. DO NOT CROSS AND MAINTAIN MINIMUM 6" SEPARATION BETWEEN POWER AND DATA CONDUITS.
14. PROVIDE RACEWAYS AND WIRING WITHIN EGRESS STAIRS LIMITED TO SERVING SYSTEMS WITHIN THE STAIR ENCLOSURE. DO NOT ROUTE RACEWAYS OR WIRING FOR SYSTEMS FOREIGN TO THE EGRESS STAIR THRU OR WITHIN THE EGRESS STAIR ENCLOSURE.

SECTION 26 05 34 – BOXES AND CABINETS:
1. CONFORM TO NEMA 250; UL 50, 514A, & 514B.
2. INSTALL BOXES IN ACCORDANCE WITH ADAAG GUIDELINES.
3. PROVIDE JUNCTION BOXES AT EQUIPMENT TERMINATIONS AND WHERE REQUIRED FOR WIRE PULLING (SIZE PER NEC ARTICLE 314).
3.1. MINIMUM SIZE: 1-1/2" DEEP X 2" WIDE X 4" HIGH.
3.2. PROVIDE PLASTIC, FIBERGLASS OR GALVANIZED SHEET-STEEL BOXES.
4. BOXES OVER 100 CU-IN: USE UL 50, GALVANIZED ENCLOSURES.
5. PROVIDE NEMA 1 BOXES INDOORS; PROVIDE NEMA 3R BOXES OUTDOORS.
6. PROVIDE CAST METAL STYLE OUTLET BOXES IN UNFINISHED AREAS.
7. PROVIDE WEATHERPROOF BOX WITH SINGLE GASKET FOR USE IN WET OR DAMP LOCATIONS.
8. WIREWAYS AND AUXILIARY WIRING GUTTERS: SCREW-COVER. MAINTAIN ACCESSIBILITY.
9. EFFECTIVELY CLOSE ALL UNUSED OPENINGS IN CABINETS, BOXES, EQUIPMENT HOUSINGS, GUTTERS, ETC.
10. COORDINATE BOX LOCATIONS WITH ARCHITECT AND OWNER. PROVIDE PULL & JUNCTION BOXES LOCATED ABOVE CEILINGS UON.
11. FIELD COORDINATE DOOR SWINGS AND LOCATE SWITCH BOXES 4-6" FROM LATCH SIDE OF DOORS.
12. FIELD COORDINATE LOCATION OF ALL EQUIPMENT FOR ELECTRICAL BOX LOCATIONS. COORDINATE LOCATIONS OF BOXES IN OR ABOVE MILLWORK WITH ARCHITECT/MILLWORK CONTRACTOR.
13. VERIFY ALL FIXTURE AND OUTLET BOX LOCATIONS WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
14. PROVIDE CEILING FAN RATED BOX FOR CEILING FAN LOCATIONS, AS INDICATED.
15. INSTALL WIRING DEVICES PER DEVICE LOCATION DETAIL.
16. PROVIDE MINIMUM 6" LATERAL OR VERTICAL SEPARATION FOR BACK-TO-BACK OUTLET BOXES.

SECTION 26 05 41 – FIRESTOPPING:
1. CONFORM TO THE REQUIREMENTS OF THERMAL AND MOISTURE PROTECTION, AS APPLICABLE.
2. CONFORM TO ASTM E814, UL 1479 AND UL FIRE RESISTANCE DIRECTORY XHEZ.
3. PROVIDE FIRESTOPPING PRODUCTS BY HILTI, STI OR 3M. DESIGN BASIS: HILTI.
4. PROVIDE FIRESTOP SYSTEM WITH AN "F" RATING (UL 1479 OR ASTM E814) HAVING EQUAL OR GREATER TIME RATING THAN THE CONSTRUCTION ASSEMBLY BEING PENETRATED.
5. SEALING AND FIRESTOPPING: SEAL ALL OPENINGS IN FIRE PARTITIONS OR SPACE CONDITIONING PARTITIONS.
6. PROVIDE GROMMET TRIM AT ALL CEILING TILE PENETRATIONS.
7. MINIMUM RATINGS:
7.1. HEAVY-DUTY SEALANT: WATER-BASED FIRESTOPPING MATERIAL, 3-HOUR MINIMUM RATING, FOR USE WITH METAL SLEEVES, PIPE AND CONDUIT PENETRATIONS.
7.2. TROWELABLE MORTAR SEALANT: WATER-BASED, 3-HOUR MINIMUM RATING, FIRESTOPPING MATERIAL DESIGNED FOR LARGE OPENINGS.
7.3. ELASTOMERIC SEALANT: WATER-BASED, 3-HOUR MINIMUM RATING, FIRESTOPPING MATERIAL DESIGNED FOR USE WHERE MOVEMENT OR VIBRATION OF PENETRANT IS EXPECTED.
7.4. INTUMESCENT SEALANT: WATER-BASED, 2-HOUR MINIMUM RATING, FIRESTOPPING MATERIAL DESIGNED TO EXPAND WHEN EXPOSED TO HEAT.
8. APPLICATIONS:
8.1. FOR PENETRATIONS BY NON-COMBUSTIBLE ITEMS INCLUDING STEEL PIPE, COPPER PIPE, RIGID STEEL CONDUIT AN ELECTRICAL METALLIC TUBING, USE ELASTOMERIC SEALANT OR HEAVY-DUTY SEALANT.
8.2. FOR FIRE RATED CONSTRUCTION JOINTS OR OTHER GAPS, USE ELASTOMERIC SEALANT.
8.3. FOR PENETRATIONS BY PLASTIC PIPE, USE INTUMESCENT SEALANT.
8.4. FOR PENETRATIONS BY COMBUSTIBLE ITEMS (PENETRANTS CONSUMED BY HEAT AND FLAME) INCLUDING INSULATED METAL PIPE, PVC JACKETED, FLEXIBLE CABLE OR CABLE BUNDLES, USE INTUMESCENT SEALANT.
8.5. FOR LARGE SIZE/COMPLEX PENETRATIONS MADE TO ACCOMMODATE CABLE TRAYS, MULTIPLE STEEL AND COPPER PIPES, ELECTRICAL BUSWAYS AND RACEWAYS, USE TROWELABLE MORTAR SEALANT.
9. ELECTRICAL BOXES IN FIRE-RATED WALLS: USE SEPARATE WALL CAVITY SPACE FOR BOXES FROM ADJOINING TENANT SPACES. DO NOT INSTALL BOXES BACK-TO-BACK. PROVIDE MINIMUM OF 6" LATERAL OR VERTICAL SEPARATION. FOR BOXES SEPARATED 24" OR LESS, USE FIRE-RATED BOXES AND USE HILTI (CLIV) CP-617 FIRESTOP PUTTY PAD OR HILTI FIRESTOP BOX INSERT.
10. RECESSED LIGHT FIXTURES IN FIRE RATED CEILING ASSEMBLIES: COORDINATE AND PROVIDE FIXTURES WITH UL FIRE RATING OR UL "FIRE HAT" BOX TO MATCH THE ASSEMBLY "F" RATING.

SECTION 26 05 53 – ELECTRICAL IDENTIFICATION:
1. CONFORM TO ANSI Z535 FOR PRODUCT SAFETY SIGNS AND LABELS.
2. IDENTIFICATION COLOR STANDARDS FOR ALL NAMEPLATES AND LABELS BY SYSTEM (TEXT/BACKGROUND):
2.1. GENERAL UTILITY POWER – BLACK/WHITE.
2.2. LOW-VOLTAGE CONTROL WIRING – WHITE/BLACK.
3. EQUIPMENT NAMEPLATES:
3.1. DURABLE, WATERPROOF, PRINTED ADHESIVE PLASTIC LABELS, BY BRADY OR EQUAL.
3.2. INSCRIBE WITH EQUIPMENT DESIGNATION, POINT-OF-SUPPLY (SOURCE) AND ELECTRICAL CHARACTERISTICS (SYSTEM VOLTAGE/PHASE).
3.3. TEXT HEIGHT: EQUIPMENT DESIGNATION 1" (MIN), OTHER DESCRIPTIVE INFORMATION 1/4" (MIN).
3.4. INDIVIDUALLY LABEL ALL INDICATORS, OPERATORS, RELAYS, OR OTHER DEVICES.
4. IDENTIFY CIRCUIT NUMBERS IN JUNCTION BOXES IN FINISHED AREAS WITH CIRCUIT ID MARKER ON BOX/DEVICE COVER BACK AND IN UNFINISHED AREAS WITH CIRCUIT ID MARKER ON BOX/DEVICE COVER FRONT. MINIMUM TEXT 3/8" HIGH BLOCK LETTERING OR PRINTED ADHESIVE LABEL.
5. SERVICE ENTRANCE EQUIPMENT: PROVIDE LABEL INDICATING AVAILABLE FAULT CURRENT PER NEC ARTICLE 110.24. SEE 1-LINE DIAGRAM.
6. PANELBOARD CIRCUIT DIRECTORIES: PROVIDE FOR EACH LOAD CENTER, PANELBOARD OR SWITCHBOARD BASED ON AS-BUILT CONDITIONS.
7. ENGRAVED PLASTIC OR METAL NAMEPLATES: AFFIX WITH EPOXY CEMENT OR ADHESIVE ONLY. DO NOT DRILL ENCLOSURES OR USE SCREW OR RIVET FASTENERS.
8. PROVIDE ARC-FLASH HAZARD LABELS TO INDICATE "DO NOT SERVICE WHILE ENERGIZED" FOR ALL ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NEC 110.16.
9. PROVIDE LABELING ON ALL DISCONNECT SWITCHES IN ACCORDANCE WITH NEC 110.22(A).

SECTION 26 08 00 – ELECTRICAL SYSTEMS TESTING AND COMMISSIONING:
1. CONFORM TO UL 1244 & 1436; NECA 90; NEMA AB4; NETA ATS.
2. TIGHTEN AND VERIFY BOLTED BUS, MECHANICAL LUGS, AND WIRING TERMINATIONS TO MANUFACTURER SPECIFIED TORQUE.
3. VERIFY PHASE, NEUTRAL, AND GROUND POLARITY FOR ALL WIRING DEVICES.
4. TEST OPERATION OF ALL GROUND-FAULT CIRCUIT INTERRUPTER DEVICES.
5. TEST OPERATION OF ALL ARC-FAULT CIRCUIT INTERRUPTER DEVICES.

SECTION 26 09 10 – DIMMING, OCCUPANCY/VACANCY AND LIGHTING CONTROLS:
1. DIMMING LIGHTING CONTROLS:
1.1. LINE VOLTAGE: 120-277V. COORDINATE WITH FIXTURE/BALLAST/DRIVER. COORDINATE DIMMER MAXIMUM WATTS RATING WITH CIRCUIT/ZONE.
1.2. LOW VOLTAGE: COORDINATE TYPE AND WIRING WITH FIXTURE REQUIREMENTS.
1.3. VERIFY COMPATIBILITY OF ALL DEVICES ON THE DIMMING CIRCUIT/ZONE.
1.4. SUBMIT WIRING DIAGRAMS AND LOAD TABULATIONS FOR ALL DIMMING CIRCUIT/ZONES BASED ON ACTUAL FIXTURES AND CONTROLS PROVIDED.
1.5. COLOR AS SELECTED BY ARCHITECT/OWNER.
1.6. ALL DIMMING CONTROLS MUST BE SUBMITTED FOR APPROVAL BY THE ARCHITECT/OWNER.
2. VACANCY/OCCUPANCY SENSORS: 120-277V OR 24VDC, DUAL TECHNOLOGY PIR/ULTRASONIC. TEST MODE AND FIELD ADJUSTABLE TIME DELAY UP TO 30 MINUTES. COLOR AS SELECTED BY ARCHITECT/OWNER. ARRA COMPLIANT.
2.1. WALL MOUNTED SWITCH: 1000W (120V)/1,200W (277V). SELECTABLE MANUAL "ON" (VACANCY) OR AUTOMATIC "ON" (OCCUPANCY) SENSOR. 1,000 SF/180 DEGREE PIR COVERAGE AND 400SF/150 DEGREE ULTRASONIC COVERAGE. PROVIDE SINGLE-GANG WIRING DEVICE MODELS AS REQUIRED FOR SINGLE CIRCUIT, DUAL CIRCUIT, BI-LEVEL, 3-WAY, OR 4-WAY, AS REQUIRED BY APPLICATION. DESIGN BASIS: WATTSTOPPER DSW-301.
2.2. WALL MOUNTED SWITCH: 24VDC RATED. SELECTABLE MANUAL "ON" (VACANCY) OR AUTOMATIC "ON" (OCCUPANCY) SENSOR VIA ROOM CONTROLLER. 1,000 SF/180 DEGREE PIR COVERAGE AND 400SF/150 DEGREE ULTRASONIC COVERAGE. PROVIDE SINGLE-GANG WIRING DEVICE MODELS AS REQUIRED FOR SINGLE CIRCUIT, DUAL CIRCUIT, BI-LEVEL, 3-WAY, 4-WAY, AS REQUIRED BY APPLICATION. CONTROL DEVICES FOR 24VDC APPLICATION REQUIRE A ROOM CONTROLLER AND WATTSTOPPER LMRJ CABLES. DESIGN BASIS: WATTSTOPPER LMDW-101 WITH LMRC-101 ROOM CONTROLLER.
2.3. CEILING-MOUNT: 24VDC RATED, PIR AND ULTRASONIC SENSOR. 1,000 SF COVERAGE OCCUPANCY. PROVIDE ROOM CONTROLLER AS REQUIRED. DESIGN BASIS: WATTSTOPPER LMDC-100 WITH LMRC-101 ROOM CONTROLLER.
2.4. WALL/CORNER MOUNT: 24VDC RATED, PIR AND ULTRASONIC SENSOR. 1,600 SF COVERAGE OCCUPANCY. PROVIDE ROOM CONTROLLER AS REQUIRED. MOUNT 9'-0"AFF UON. DESIGN BASIS: WATTSTOPPER LMDX-100 WITH LMRC-101 ROOM CONTROLLER.

SECTION 26 09 20 – TIME SWITCH, PHOTOCELL AND CONTACTOR LIGHTING CONTROLS:
1. CONFORM TO UL 508, 773A, 916, & 60947-4-1A.
2. TIME SWITCH: INTERMATIC, TORK OR GE. DESIGN BASIS: INTERMATIC ET8000 SERIES. PROVIDE 7-DAY ASTRONOMIC ELECTRONIC-TYPE, TIME-SWITCH WITH BATTERY BACKUP AND NON-VOLATILE EEPROM MEMORY CAPABLE OF 28 ON AND 28 OFF EVENTS (MIN). PROVIDE TIME SWITCH WITH SELECTABLE ASTRONOMIC DUSK/DAWN SETTINGS FOR EACH DAY AND CIRCUIT TO ALLOW LOAD SWITCHING AT SUNSET/SUNRISE WITHOUT A PHOTO CONTROL DEVICE.
3. PHOTOCELL: DESIGN BASIS: TORK 2020 SERIES. UNIVERSAL 120/277V, CADMIUM-SULFIDE, ON/OFF TIME-DELAY. POWER CONSUMPTION LESS THAN 1 WATT.
4. CONTACTOR: SQD, CH, GE OR SIEMENS. MECHANICALLY HELD, POLES, CONTACT AMPS, AND COIL AS INDICATED.
5. VOLTAGE RATING: PROVIDE PER DETAILS/NOTES ON THE DRAWINGS.
6. CONTACTS: AMPERE RATING AND NUMBER OF POLES AND AMP RATING – PROVIDE PER DETAILS/NOTES ON THE DRAWINGS.
7. ENCLOSURE: LOCKABLE. PROVIDE NEMA 1 STEEL INDOORS; NEMA 3R STEEL OUTDOORS.

SECTION 26 24 15 – METER CENTERS:
1. CONFORM TO ANSI C12.1 & C12.7; NEMA 250; UL 414.
2. METER CENTERS: SQD, CH, ABB, OR SIEMENS. DESIGN BASIS: SQD EZM.
3. PROVIDE MAIN TERMINAL CABINET, MAIN DEVICES AND CROSS-BUSS AS INDICATED ON THE DRAWINGS.
4. PROVIDE SERIES RATINGS WITH UPSTREAM OVER-CURRENT DEVICES FOR SHORT-CIRCUIT RATING INDICATED.
5. COORDINATE METER SOCKET TYPE WITH POWER UTILITY REQUIREMENTS. PROVIDE SUBMITTALS FOR APPROVAL BY POWER UTILITY.
6. PROVIDE CIRCUIT BREAKER PER SECTION 26 24 50.
7. LABEL MAIN, FEEDER DEVICES, AND SECTIONS WITH EQUIPMENT NAMEPLATES PER SECTION 26 05 53.

SECTION 26 24 16 – PANELBOARDS:
1. CONFORM TO NEMA PB1, UL 67.
2. PROVIDE CIRCUIT BREAKER PER SECTION 26 24 50.
3. SEE SCHEDULES ON THE DRAWINGS FOR DEVICES, RATINGS AND CONFIGURATION.
4. PANELBOARDS: SQD, CH, ABB, OR SIEMENS. DESIGN BASIS:
4.1. SQD HOMELINE FOR 120/240V AND 120/208V NOMINAL SINGLE-PHASE LOAD CENTERS, 200A MAIN AND LESS. SIEMENS NOT ALLOWED.
4.2. SQD NQOD FOR 240/208V PANELBOARDS 400A MAIN AND LESS.
5. PROVIDE TIN- OR COPPER-PLATED ALUMINUM BUS, GROUND BUS, AND NEUTRAL (WHERE INDICATED). REFER TO PANEL SCHEDULES FOR RATINGS, MAIN AND BRANCH DEVICES.
6. PROVIDE RECESSED-MOUNT CABINET IN FINISHED SPACES, SURFACE-MOUNT CABINET IN UNFINISHED SPACES.
7. COORDINATE TOP OR BOTTOM FEED WITH INSTALLATION CONDITIONS.
8. PROVIDE HANDLE LOCKING DEVICES AS REQUIRED FOR EMERGENCY LIGHTING AND FIRE ALARM LOADS.
9. PROVIDE HANDLE-TIES FOR ALL MULTI-WIRE BRANCH CIRCUITS WITH SHARED NEUTRAL CONDUCTORS PER NEC 210.4.
10. PROVIDE PANELBOARDS WITH TYPEWRITTEN CIRCUIT DIRECTORIES.
11. INSTALL PANELBOARDS WITH HIGHEST OPERATOR/HANDLE AT HIGHEST POSITION IS 79" (OR LESS).
12. PROVIDE ALL PANELBOARDS AND LOAD CENTER WITH COVER TRIM AS FOLLOWS:
12.1. UNFINISHED SPACES, BACK OF HOUSE, EQUIPMENT ROOMS, ETC.: ANSI STANDARD GRAY ENAMEL.
12.2. All FINISHED SPACES, PUBLIC SPACES, DWELLING UNITS, OR TENANT SPACES: WHITE OR AS DIRECTED BY OWNER/ARCHITECT.
13. INSTALL TOP OF LOAD CENTER ENCLOSURES IN ADA UNITS (ACCESSIBLE, TYPE A & TYPE B: PER IBC 1107 & ICC A117.1 CHAPTER 10) AT 48" AFF. REFER TO ARCHITECTURAL DRAWINGS FOR CLARIFICATION. SUBMIT RFI FOR CLARIFICATION IF UNITS ARE NOT IDENTIFIED.
14. PROVIDED DWELLING UNIT LOAD CENTERS WITH WHITE FINISH DOOR AND TRIM UNLESS INDICATED OTHERWISE BY OWNER/ARCHITECT.

SECTION 26 24 50 – CIRCUIT BREAKERS:
1. CONFORM TO NEMA AB 1 & SG3; UL 50 & 489.
2. CIRCUIT BREAKERS: SQD, CH, ABB, OR SIEMENS. USE ONLY CIRCUIT BREAKERS LISTED FOR USE BY MANUFACTURER OF DISTRIBUTION EQUIPMENT WHERE INSTALLED.
2.1. SIEMENS ARC FAULT CIRCUIT BREAKERS NOT ALLOWED.
2.2. 120V, 208V OR 240V CIRCUITS: GENERAL DUTY, 240-VOLT RATED.
3. COORDINATE CIRCUIT BREAKER POLES, NEUTRAL REQUIREMENTS, VOLTAGE, AND AMPACITY WITH NAMEPLATE DATA OF EQUIPMENT SERVICED.
4. COORDINATE SHORT CIRCUIT CURRENT RATINGS. SEE NEC 110.22(B) AND 240.86(A).
4.1. SERIES RATINGS: PROVIDE MANUFACTURER TEST DATA FOR ALL EXISTING AND PROPOSED DEVICES UTILIZING SERIES RATINGS, COMPLETED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE JURISDICTION OF PROJECT LOCATION.
4.1.1. PROVIDE SUBMITTAL DATA FOR LISTED SERIES RATED DEVICES INDICATING HOW DEVICES MEET OR EXCEED AVAILABLE FAULT CURRENT.
4.1.2. PROVIDE SERIES RATINGS CALCULATIONS, WHERE REQUIRED.
4.1.3. DO NOT USE SERIES RATING COMBINATIONS FOR MOTOR APPLICATIONS.
5. MOLDED CASE CIRCUIT BREAKERS: TOGGLE-TYPE HANDLE WITH OVER-CURRENT TRIP PROTECTION AND QUICK-MAKE, QUICK-BREAK, NON-WELDING SILVER-ALLOY CONTACTS. PROVIDE UNITS THAT INDICATE TRIP BY HANDLE POSITION OR INDICATOR VIEWING WINDOW.
6. ADJUSTABLE DEVICE SETTINGS: SET PER COORDINATION STUDY, WHERE PROVIDED.
6.1. WHERE STUDY IS NOT REQUIRED OR PROVIDED:
6.1.1. SET LONG TIME (LT) TRIP TO VALUE INDICATED ON 1-LINE DIAGRAM AND SCHEDULES.
6.1.2. SET ALL OTHER TRIP SETTINGS (ST, INST) AND DELAYS (LTD, STD) TO MINIMUM SETTING. SET I^2T TO "ON" OR "IN."
6.1.3. GROUND FAULT (WHERE PROVIDED): SET TO MINIMUM TRIP AND DELAY, SET I^2T TO "ON" OR "IN."
7. PROVIDE ARC-FAULT CIRCUIT BREAKER TO SERVE ALL DWELLING UNIT CIRCUITS (WITHOUT GFI DEVICES) FOR ALL LIVING AND BEDROOM AREAS GENERAL POWER & LIGHTING PER NEC ARTICLE 210.12. PROVIDE COMBINATION GF/AF DEVICES WHERE INDICATED ON THE PLANS.
8. PROVIDE MOTOR CIRCUIT PROTECTOR FOR MOTOR LOADS THAT HAVE MOTOR CONTROLLERS.
9. CIRCUIT BREAKER LOCKS: PROVIDE FOR ALL REMOTE HVAC EQUIPMENT AND REMOTE WATER HEATERS (WHERE LOCAL DISCONNECT SWITCHES ARE NOT PROVIDED AT THE UNIT), REMOTE TRANSFORMERS (PER NEC 450.14), FIRE ALARM CIRCUITS, OR WHERE INDICATED.
10. CIRCUIT BREAKER RATINGS: "HACR" FOR HVAC EQUIPMENT; "SWD" FOR LIGHTING.
11. FOR ALL DEVICES 1200 AMPS OR LARGER PROVIDE ARC ENERGY REDUCTION (ERMS) PER NEC 240.87, OR PROVIDE DOCUMENTATION THAT DEMONSTRATE AN INSTANTANEOUS OVERRIDE TO REDUCE CLEARING TIME IS SET TO OPERATE AT A VALUE BELOW THE AVAILABLE ARCING CURRENT PER NEC 240.87(B)(6).

SECTION 26 27 26 – WIRING DEVICES:
1. CONFORM TO NEMA WD1, WD3, WD5, & WD6; UL 20, 231, & 943.
2. PROVIDE RESIDENTIAL GRADE WIRING DEVICES IN DWELLING UNITS. PROVIDE COMMERCIAL SPECIFICATION GRADE FOR ALL OTHER WIRING DEVICES, UNLESS NOTED OTHERWISE. PROVIDE PER THE FOLLOWING:
2.1. DEVICE COLOR: NOMINAL WHITE OR AS SPECIFIED BY OWNER OR ARCHITECT FOR NORMAL/UTILITY POWER.
2.2. CONVENIENCE RECEPTACLES: DUPLEX AS FOLLOWS:
2.2.1. 20 AMPERE: 120V, NEMA 5-20, SIDE-WIRED ONLY.
2.2.2. 15 AMPERE: 120V, NEMA 5-15, SIDE-WIRED ONLY.
2.2.3. DWELLING UNIT: TAMPER-RESISTANT, PER NEC ARTICLE 406.11.
2.2.4. COMBINATION USB/RECEPTACLE: NEMA 5-20 DUPLEX AC OUTLET WITH TWO UNIVERSAL SERIAL BUS PORTS, 2.4 AMPERES EACH.
2.2.5. GFI RECEPTACLE PER UL 943 FOR LOCATIONS WITHIN 6' OF WATER SOURCE, EXTERIOR LOCATIONS, AND OTHER LOCATIONS WHERE INDICATED, PER NEC ARTICLE 210.8.
2.3. CONVENIENCE RECEPTACLES: SINGLE-YOKE AS FOLLOWS:
2.3.1. PROVIDE FOR DEDICATED CIRCUITS FOR APPLIANCES AND EQUIPMENT.
2.3.2. PROVIDE RECESSED DEVICE/BOX FOR REFRIGERATOR CIRCUITS.
2.3.3. OTHER RECEPTACLES: COORDINATE WITH EQUIPMENT SERVED, UON.
2.4. AC SWITCHES: 20 AMPERE, 120-277 VOLT, NOMINAL SINGLE-POLE, 3-WAY, OR 4-WAY, AS INDICATED OR REQUIRED.
3. COVER PLATES: PROVIDE GALVANIZED STEEL PLATES IN UNFINISHED AREAS; NYLON PLATES MATCHING DEVICE OR WALL COLOR IN FINISHED SPACES.
4. PROVIDE SINGLE, DUAL, THREE-GANG, FOUR-GANG AND SIX-GANG OUTLET BOXES AS REQUIRED FOR APPLICATIONS INDICATED ON THE DRAWINGS.
5. PROVIDE GFI RECEPTACLE WITH "IN-USE" COVER FOR EXTERIOR, WET OR DAMP LOCATIONS.
6. PROVIDE PLASTER RING SPACER WHERE REQUIRED TO ACCOMMODATE WALL FINISHES.

SECTION 26 27 28 – DISCONNECT SWITCHES AND FUSES:
1. CONFORM TO NEMA KS 1 & FU 1; UL 98, 198B, 198C, 198E, 248, & 977.
2. DISCONNECT SWITCHES: SQD, CH, ABB, OR SIEMENS. DESIGN BASIS: SQD NON-FUSED (UON):
2.1. 120V, 208V OR 240V CIRCUITS: GENERAL-DUTY, 250-VOLT.
3. FUSED SWITCHES: WHERE EQUIPMENT SERVED HAS "MFS" INDICATED ON NAMEPLATE OR INDICATED AS FUSED ON PLAN, PROVIDE FUSED DEVICE PER SCHEDULE:
3.1. PROVIDE FUSES BY BUSSMANN, MERSEN OR LITTELFUSE.
3.1.1. 120V, 208V OR 240V CIRCUITS: 250-VOLT RATED FUSES.
3.2. FUSES OVER 600A, SERVICE ENTRANCE AND FEEDERS: UL CLASS L.
3.3. FUSES SIZED THRU 600 AMPERES:
3.3.1. SELECT PER EQUIPMENT MANUFACTURER'S INSTRUCTIONS, UON.
3.3.2. SERVICE ENTRANCE AND FEEDERS: UL CLASS J.
3.3.3. GENERAL BRANCH CIRCUITS: UL CLASS CC OR J.
3.3.4. MOTORS, TRANSFORMERS, CONTROL PANELS, AND EQUIPMENT:
3.3.4.1. PROVIDE DUAL-ELEMENT TIME DELAY, UL CLASS RK-1, RK-5, OR J.
3.3.4.2. DEMONSTRATE CURRENT LIMITING CHARACTERISTICS AT EQUIPMENT TO 5kA OR LESS PER UL 508A.
3.3.4.3. CONFORM TO SECTION 26 29 00.
3.4. WHERE SERIES RATINGS ARE UTILIZED TO MEET EQUIPMENT SHORT CIRCUIT RATING, WITHSTAND RATING OR BRACING, PROVIDE SUBMITTAL DATA FOR LISTED SERIES RATED DEVICES.
3.5. COORDINATE DISCONNECT-SWITCH POLES, NEUTRAL REQUIREMENTS, FUSE, VOLTAGE, AND AMPACITY WITH NAMEPLATE DATA OF EQUIPMENT SERVICED.
3.6. COORDINATE REQUIREMENTS FOR FUSE HOLDERS AND BLOCKS, AS REQUIRED.
3.7. INSTALL FUSES SO LABELS MAY BE EASILY READ; PROVIDE THREE SPARE FUSES OF EACH TYPE AND SIZE INSTALLED. LOCATE SWITCHES ACCESSIBLE AND WITHIN SIGHT OF EQUIPMENT SERVICED. PROVIDE LABEL FOR EACH SWITCH WITH REQUIRED REPLACEMENT FUSE CLASS/TYPE/RATING.
4. INSTALL DISCONNECT SWITCHES WITH HIGHEST OPERATOR/HANDLE AT HIGHEST POSITION IS 79" OR LESS.
5. PROVIDE DISCONNECT SWITCH FOR ALL CONDENSING UNITS.
6. COORDINATE REQUIREMENTS OF SECTION 26 05 53.

SECTION 26 28 16 – CIRCUIT BREAKER ENCLOSURES:
1. CONFORM TO UL 50 & 98; NEMA AB1.
2. PROVIDE CIRCUIT BREAKER PER SECTION SECTION 26 24 50.
3. CIRCUIT BREAKER ENCLOSURES: SQD, CH, ABB, OR SIEMENS (MATCH MANUFACTURER OF INSTALLED CIRCUIT BREAKER).
4. LOCATE ENCLOSED CIRCUIT BREAKERS ACCESSIBLE AND WITHIN SIGHT OF EQUIPMENT SERVICED.
5. INSTALL ENCLOSED CIRCUIT BREAKERS WITH HIGHEST OPERATOR/HANDLE AT HIGHEST POSITION IS 79" OR LESS.

SECTION 26 29 00 – MOTOR CONTROL AND CONTROL PANELS:
1. CONFORM TO NEMA ICS1, ICS2, ICS3, & ICS6; UL 508A & 845.
2. ENCLOSED MOTOR STARTERS: SQD, CH, ABB, OR SIEMENS.
2.1. COORDINATE REQUIREMENTS WITH MECHANICAL EQUIPMENT.
2.2. PROVIDE NEMA RATED UNIT BASED ON HORSEPOWER OF LOAD SERVED.
2.3. COORDINATE STARTER OVERLOADS WITH MOTOR PROTECTED AND PROVIDE CLASS 10, 20 OR 30 AS REQUIRED.
3. FOR THREE-PHASE EQUIPMENT, PROVIDE FULL VOLTAGE NON-REVERSING TYPE, COMPLETE WITH "HOA" CONTROL SWITCH, INDICATING RUN LAMP, THERMAL OVERLOADS AND CONTROL CONNECTIONS AS REQUIRED FOR THE SPECIFIED OPERATION. COORDINATE OVERLOAD CLASS WITH MOTOR LOAD.
4. FOR SINGLE-PHASE EQUIPMENT, PROVIDE MAGNETIC (OR MANUAL MOTOR STARTER/MOTOR CONTROL SWITCH WHERE INDICATED) AS REQUIRED, WITH LOCKOUT SWITCH, THERMAL OVERLOADS, INDICATING LAMP AND CONTROL CONNECTIONS AS REQUIRED FOR THE SPECIFIED OPERATION.
5. FOR COMBINATION UNITS, PROVIDE MOTOR CIRCUIT PROTECTOR PER SECTION 26 24 50.
6. COORDINATE SHORT CIRCUIT CURRENT FOR EQUIPMENT CONTROL PANELS WITH REQUIREMENTS OF UL 508A AND PROVIDE CURRENT LIMITING OCPD. DEMONSTRATE PEAK AND RMS LET-THRU CURRENT AT DEVICE IS BELOW RATED WITHSTAND RATING. CONFORM TO SECTION 26 27 28.
7. INSTALL MOTOR STARTERS OR COMBINATION STARTERS AT 79" TO TOP OF ENCLOSURE.

SECTION 26 43 13 – SURGE PROTECTIVE DEVICES:
1. CONFORM UL 1293 & 1449-4TH EDITION; NEC ARTICLE 285.
2. PROVIDE SURGE PROTECTIVE DEVICES BY SQD, CH, ABB, OR SIEMENS. DESIGN BASIS: SQD EMA SERIES.
3. PROVIDE SPD WITH EXTERNALLY-MOUNTED CONSTRUCTION USING A REPLACEABLE SYSTEM MODULE OR PHASE MODULES, PERMANENTLY-CONNECTED, INTEGRAL ROTARY-TYPE DISCONNECT TYPE. PROVDIE SPD MODULES CONSTRUCTED USING 50kA TPMOVS (THERMALLY PROTECTED METAL OXIDE VARISTORS).
4. UL1449 SPD TYPE: AS INDICATED. SURGE CURRENT RATINGS AS FOLLOWS:
4.1. TYPE 1 (SERVICE ENTRANCE): 240kA PER PHASE
4.2. TYPE 2 (DISTRIBUTION): 120kA PER PHASE
5. SERVICE VOLTAGE: 3-PHASE, 4-WIRE PLUS GROUND, 60 Hz.
5.1. 208Y/120V SYSTEMS: 208Y/120V, MAXIMUM CONTINUOUS OPERATING VOLTAGE (MCOV): 150V RMS.
6. PROTECTION MODES: L-N, L-G, L-L & N-G.
6.1. DISCRETE PROTECTION MODES: SPD DIRECTLY CONNECTED TPMOVS BETWEEN ALL OF THE ELECTRICAL SYSTEMS 10 CONDUCTOR PAIRS FOR 'TRUE' OR 'DISCRETE' 10-MODE PROTECTION FOR L-N, L-G, L-L, AND N-G CONDUCTORS.
7. UL 1449 VOLTAGE PROTECTION RATINGS (VPRS): 700V (L-N, L-G, & N-G), 1200V (L-L).
8. SHORT CIRCUIT CURRENT RATING (SCCR): 200kA.
9. I-NOMINAL RATING: 20kA.
10. RESPONSE TIME: LESS THAN 1 NANOSECOND.
11. UNIT FUNCTIONAL LIFE: 5,000 IMPULSE EVENTS, MINIMUM.
12. PROVIDE WITH LED INDICATOR, SURGE COUNTER, DRY CONTACTS AND AUDIBLE ALARM WITH TEST/SILENCE SWITCH.
13. PROVIDE UL1283 EMI/RFI FILTERING FOR NOISE ATTENUATION. PROVIDE ACTIVE TRACKING UP TO -50db FROM 10kHz TO 100MHz.
14. ENVIRONMENT: -25°C TO +60°C, 0-95% RH (NON-CONDENSING).
15. ENCLOSURE: NEMA 4X, SURFACE MOUNT.
16. WARRANTY: 10 YEARS.
17. APPLICATION: APPLIED ON LOAD SIDE OF SERVICE EQUIPMENT OR PANEL MAIN OVERCURRENT DISCONNECTING MEANS. PRE-PLAN SPD INSTALLATION TO ENSURE APPROPRIATE WALL SPACE AVAILABILITY IS MAINTAINED TO ASSURE SPD LEAD LENGTH IS KEPT AS SHORT AS POSSIBLE, REDUCING BENDS.
18. TWIST SPD CABLES TO MINIMIZE THE IMPACT OF INDUCTIVE COUPLING. IN ADDITION, REARRANGE BREAKERS TO FACILITATE DIRECT SPD CONNECTION FROM PANELBOARD ENTRY MINIMIZING PHASE, NEUTRAL, AND GROUND CONDUCTOR SEPARATION.

SECTION 26 51 00 – LIGHTING SYSTEMS:
1. CONFORM TO UL 1598 & 8750.
2. PROVIDE FIXTURES AS SCHEDULED, FURNISHED WITH FACTORY INSTALLED ACCESSORIES.
3. FURNISH FIXTURES WITH WET/DAMP LISTING AS REQUIRED BY APPLICATION.
4. INSTALL LAMPS AS SPECIFIED WITH EACH FIXTURE.
5. IF ALTERNATE FIXTURES ARE SUBSTITUTED FOR THOSE SPECIFIED, PROVIDE UNITS WITH FIXTURE WATTS NO GREATER THAN THOSE SCHEDULED.
6. COORDINATE FIXTURE MOUNTING WITH ARCHITECTURAL REFLECTED CEILING PLAN AND PROVIDE TRIM AS REQUIRED FOR CEILING TYPES WHERE INSTALLED.
7. DWELLING UNITS: FOR DWELLING UNIT FIXTURE PACKAGE PROVIDE MINIMUM OF 75% OF LAMPS AS HIGH EFFICACY PER IECC C405.1 EXCEPTION:
7.1. MINIMUM 60 LUMENS/WATT FOR LAMPS OVER 40 WATTS
7.2. MINIMUM 50 LUMENS/WATT FOR LAMPS 15 TO 40 WATTS
7.3. MINIMUM 40 LUMENS/WATT FOR LAMPS 15 OR LESS
8. INSTALL LIGHTING FIXTURES IN CLOSETS TO CONFORM TO REQUIREMENTS OF NEC 410.2 AND NEC 410.16.
9. SUPPORT FIXTURES FROM STRUCTURE ONLY.
10. PROVIDE HIGH-POWER-FACTOR (0.95 MIN), ENERGY-SAVING, ELECTRONIC TYPE LED DRIVERS.
11. PROVIDE EXTERIOR LIGHTING CONTROL PHOTOCELLS/TIMERS FOR "DUSK-TO-DAWN" OPERATION, UON. LOCATE PHOTOCELLS WITH SENSOR FACING GENERALLY NORTH TO NORTHEAST, WHERE POSSIBLE.
12. COORDINATE FIXTURE DIMMING REQUIREMENTS WITH DIMMERS AND DIMMING ZONES SHOWN. COORDINATE DIMMING FIXTURES, BALLASTS AND DRIVERS WITH REQUIRED LOW-VOLTAGE DIMMERS, LINE-VOLTAGE DIMMERS, CONTROL SYSTEMS AND/OR CONTROL ZONES. SUBMIT WIRING DIAGRAMS AND LOAD TABULATIONS FOR ALL DIMMING CIRCUIT/ZONES BASED ON ACTUAL FIXTURES AND CONTROLS PROVIDED. ALL DIMMING CONTROLS MUST BE SUBMITTED FOR APPROVAL BY THE ARCHITECT/OWNER. SEE SECTION 26 09 10.
13. PROVIDE FIXTURES LOCATED IN UNHEATED SPACES WITH LOW TEMPERATURE DRIVERS/BALLAST AND LAMPS.
14. FIRE RATED CEILING ASSEMBLIES: COORDINATE AND PROVIDE FIXTURES WITH UL FIRE RATING OR UL "FIRE HAT" BOX TO MATCH THE ASSEMBLY "F" RATING.
15. ELEVATORS: EACH CAB LUMINAIRES REQUIRED TO HAVE A MINIMUM ON 35 LUMENS PER WATT. SIGNALS AND DISPLAYS ARE EXCLUDED.

SECTION 26 52 00 – EMERGENCY LIGHTING (NON-RESIDENTIAL):
1. CONFORM TO UL 924; NFPA 70 & 101.
2. PROVIDE FOR MEANS OF EGRESS ILLUMINATION IN OCCUPIED ROOM/SPACES TO BE 'ON' AT ALL TIMES THE ROOM/SPACE IS OCCUPIED.
2.1. ROOMS/SPACES LESS THAN 300 SF: CONNECT EGRESS LUMINAIRE(S), WITHOUT ALTERNATE POWER SOURCE, TO NORMAL UTILITY LIGHTING CIRCUIT FOR THE ROOM/SPACE. CONNECT NORMAL CIRCUIT TO OCCUPANCY SENSOR PROGRAMMED TO IMMEDIATELY TURN 'ON' THE EGRESS LUMINAIRE(S) WHEN THE ROOM/SPACE IS OCCUPIED. PROVIDE VACANCY SENSOR(S) CONNECTED TO THE SAME LIGHTING CIRCUIT UON FOR ALL NON-EGRESS LUMINAIRE(S) IN THE ROOM/SPACE. PROGRAM OCCUPANCY AND VACANCY SENSOR(S) TO TURN 'OFF' WITHIN 20 MINUTES OF THE ROOM/SPACE BECOMING UNOCCUPIED.
2.2. ROOMS/SPACES 300 SF OR MORE: CONNECT EGRESS LUMINAIRE(S), WITH ALTERNATE POWER SOURCE, TO NORMAL LIGHTING CIRCUIT FOR THE ROOM/SPACE. CONNECT NORMAL CIRCUIT TO OCCUPANCY SENSOR PROGRAMMED TO IMMEDIATELY TURN 'ON' THE EGRESS LUMINAIRE(S) WHEN THE ROOM/SPACE IS OCCUPIED. PROVIDE VACANCY SENSOR(S) CONNECTED TO A DIFFERENT SWITCH LEG ON THE SAME LIGHTING CIRCUIT UON FOR ALL NON-EGRESS LUMINAIRE(S) IN THE ROOM/SPACE. PROGRAM OCCUPANCY AND VACANCY SENSORS TO TURN 'OFF' WITHIN 20 MINUTES OF THE ROOM/SPACE BECOMING UNOCCUPIED.
2.3. MEANS OF EGRESS ILLUMINATION: MIN 1 FC FOR THE PATH OF EGRESS WHEN ON UTILITY POWER.
3. PROVIDE AHJ APPROVED, CONTINUOUSLY ILLUMINATED EXIT SIGNS IN THE PATH OF EGRESS, LOCATED LESS THAN 100 FEET FROM ANY OCCUPANT IN AN OCCUPIED SPACE, AND READILY VISIBLE FOR THE DIRECTION OF EGRESS. PROVIDE MIN 90 MINUTE BATTERY BACKUP WHEN NO UPS, LIGHTING INVERTER, OR GENERATOR POWER IS USED FOR LIFE SAFETY ILLUMINATION DURING LOSS OF UTILITY POWER.
4. ROOMS/SPACES REQUIRING TWO OR MORE EXITS: PROVIDE AN ALTERNATE EMERGENCY POWER SOURCE TO AUTOMATICALLY ILLUMINATE EGRESS LUMINAIRE(S). PROVIDE EGRESS ILLUMINATION FOR ALL AISLES, CORRIDORS, EXIT PASSAGEWAYS, VESTIBULES, EXIT DISCHARGE AREAS (SEE VCC 1028), INTERIOR AND EXTERIOR EXIT ACCESS STAIRS AND RAMPS, EXTERIOR LANDINGS WHEN REQUIRED, AND FOR EXIT DOORS LEADING DIRECTLY TO EXIT DISCHARGE.
5. PROVIDE ALTERNATE EMERGENCY POWER SOURCE CAPABLE OF MAINTAINING SUFFICIENT POWER FOR 90 MINUTES MIN WITH INITIAL EGRESS ILLUMINATION OF 1 FC AVERAGE (0.1 FC MIN) ALONG THE PATH OF EGRESS. FOR BATTERY BACKUP SOURCES, EGRESS ILLUMINATION MAY DETERIORATE TO 0.6 FC AVERAGE (0.06 FC MIN) AFTER 90 MINUTES. LIGHT LEVELS MEASURED AT FLOOR LEVEL. INSTALL EGRESS LUMINAIRES IN LOCATIONS THAT DO NOT EXCEED 40:1 MAX-TO-MIN UNIFORMITY RATIO FOR ILLUMINATION LEVELS ALONG PATH OF EGRESS.
6. WHERE INDICATED, PROVIDE UL 924 [1008] LIGHTING RELAY FOR CONTROL OF DESIGNATED EMERGENCY EGRESS LUMINAIRES ON THE EMERGENCY POWER SYSTEM. (UL924 MONITORS ROOM/SPACE NORMAL LIGHTING CIRCUIT FOR FAILURE & BYPASSES TO 100% DIMMED LUMINAIRE(S) AND/OR OVERRIDES SENSOR SWITCHING OF ALTERNATE EMERGENCY POWER EGRESS CIRCUIT)
7. DELEGATED DESIGN AND PERFORMANCE: THE BASIS OF DESIGN EGRESS LIGHTING SYSTEM INDICATED ON THE DRAWINGS IS DIAGRAMMATIC AND FOR PERMITTING REFERENCE ONLY. PRIOR TO SUBMITTING & PURCHASING LUMINAIRES AND LIGHTING CONTROLS, VERIFY COMPATIBILITY OF THE LUMINAIRES WITH THE LIGHTING CONTROLS AND PERFORM THE EGRESS LIGHTING CALCULATIONS TO CONFIRM THAT THE BASIS OF DESIGN LUMINAIRES AND LIGHTING CONTROLS OR ANY PROPOSED ALTERNATE IS COMPLETELY FUNCTIONAL AND PROVIDES THE REQUIRED ILLUMINATION LEVELS. PROVIDE ANY ADDITIONAL MATERIALS AS REQUIRED TO MEET ALL AHJ REQUIREMENTS FOR REQUIRED ILLUMINATION LEVELS AND LIGHTING CONTROL FUNCTIONS.
8. SUBMITTALS: PRIOR TO PURCHASE OF EGRESS LIGHTING EQUIPMENT, SUBMIT EQUIPMENT CUT SHEETS AND PHOTOMETRIC PERFORMANCE CALCULATIONS TO DEMONSTRATE COMPLIANCE WITH THE REQUIREMENTS OF AHJ/BUILDING CODE FOR APPROVAL.
9. CITY OF RICHMOND REQUIREMENTS: REFER TO AHJ FOR REQUIRED PERFORMANCE CRITERIA. AHJ REQUIRES EGRESS CERTIFICATION VIA PERFORMANCE MEASUREMENT PRIOR TO FINAL INSPECTION OR OCCUPANCY. VERIFICATION OF THE EGRESS LIGHTING SYSTEM PERFORMANCE IS RESPONSIBILITY OF THE CONTRACTOR.
9.1. ENGINEER CERTIFICATION OF EGRESS LIGHTING PERFORMANCE: ENGINEER CALCULATIONS ARE NOT INCLUDED IN THIS CONTRACT. AT CONTRACTOR'S REQUEST, ENGINEER WILL PROVIDE AN ENGINEERING SERVICES PROPOSAL TO REVIEW AND CERTIFY EGRESS LIGHTING BY LIGHTING DESIGNER OR VENDOR.

SECTION 27 00 00 – TELECOMMUNICATIONS AND SECURITY CABLING:
1. EXCEPT WHERE NOTED ON PLANS, STRUCTURED CABLING AND PATHWAYS FOR TELEPHONE, DATA, CATV AND SECURITY SYSTEMS PROVIDED BY OTHERS UNDER SEPARATE CONTRACT.
2. LOW-VOLTAGE CABLE AND SYSTEMS WILL BE INSTALLED UNDER SEPARATE PERMIT.
3. ALL TELECOM OUTLET DEVICES SHOWN ARE "REFERENCE ONLY." COORDINATE ACTUAL LOCATIONS WITH ARCHITECT AND OWNER.
4. TELECOMM GROUND BRIDGE (TGB): PROVIDE ARLINGTON GBB5P-1 BRONZE WITH PVC ADAPTER, OR EQUAL.

SECTION 28 30 00 – FIRE ALARM SYSTEM:
1. CONFORM TO NFPA 72; UL 38, 268, 521, 864, & 1971.
2. FIRE ALARM SYSTEM (NOT INCLUSIVE OF MULTIPLE-STATION LINE-VOLTAGE ALARMS) AND DEVICES ARE SHOWN FOR REFERENCE ONLY AND ARE PROVIDED BY OTHERS UNDER SEPARATE CONTRACT.
3. COORDINATE WORK WITH THE FIRE ALARM CONTRACTOR.

SECTION 28 30 50 – MULTIPLE-STATION SMOKE ALARMS:
1. CONFORM TO NFPA 72, UL 217.
2. PROVIDE SMOKE ALARMS WITHIN EACH DWELLING UNIT AS LINE-VOLTAGE 120V, 3-WIRE, INTERCONNECTED PHOTOELECTRIC TYPE WITH LOCAL ALARM AND BATTERY BACKUP.
3. COORDINATE INTERCONNECTION TO BUILDING FIRE ALARM SYSTEM, WHERE PROVIDED.
4. LOCATIONS: COMPLY WITH NFPA 72 29.8.3.4.
4.1. PROVIDE ON EACH OCCUPIED LEVEL OF A DWELLING
4.2. FOR DWELLING UNITS WITH A FIRE RATED CEILING ASSEMBLY, PROVIDE A RELAY CONNECTED TO THE 120V AND INTERCONNECTION WIRING BETWEEN SMOKE ALARMS WITHIN THE DWELLING UNIT TO SHUT DOWN THE DWELLING UNIT'S AHU(S).
4.3. DO NOT LOCATE SMOKE ALARMS:
4.3.1. IN UNFINISHED ATTICS OR GARAGES
4.3.2. WITHIN 10' HORIZONTAL PATH OF A FIXED COOKING APPLIANCE
4.3.3. WITHIN 3' HORIZONTAL PATH OF A BATHROOM WITH SHOWER OR TUB
4.3.4. WITHIN 3' HORIZONTAL PATH OF A HVAC SUPPLY REGISTER
4.3.5. WITHIN 3' HORIZONTAL PATH OF A CEILING (PADDLE) FAN

SECTION 33 71 73 – ELECTRIC UTILITY SERVICE:
1. COORDINATE THE INSTALLATION OF PERMANENT ELECTRICAL POWER WITH THE LOCAL POWER UTILITY.
2. PROVIDE ELECTRIC SERVICE AS INDICATED ON THE ONE-LINE DIAGRAM. BOND THE SECONDARY NEUTRAL TO GROUND.
3. COORDINATE REQUIREMENTS WITH POWER UTILITY FOR UTILITY STRUCTURES, EQUIPMENT, CONDUITS, METERING AND SERVICE.
4. PROVIDE SERVICE ENTRANCE CONDUIT/CABLE TRENCHING AND RACEWAYS, CT CABINET AND METERING CONDUIT(S).
5. PROVIDE METER CENTER DISTRIBUTION EQUIPMENT, WHERE INDICATED.
6. INSTALL POWER UTILITY PROVIDED METER BASE(S) AND ENCLOSURE(S).
7. TRANSFORMER, TRANSFORMER PAD, SERVICE ENTRANCE CABLE(S), METER(S) AND FINAL TERMINATION OF CONDUCTORS AT THE SERVICE ENTRANCE POINT ARE BY POWER UTILITY.
8. SERVICES WITH MORE THAN ONE MAIN DISCONNECT:
8.1. METER STACKS WITH SINGLE MAIN SERVICE DISCONNECT AND WITH PRIVATE METERING: PROVIDE BARRIER SEPARATION BETWEEN MAIN DISCONNECT AND METERING SECTIONS.

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS

#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

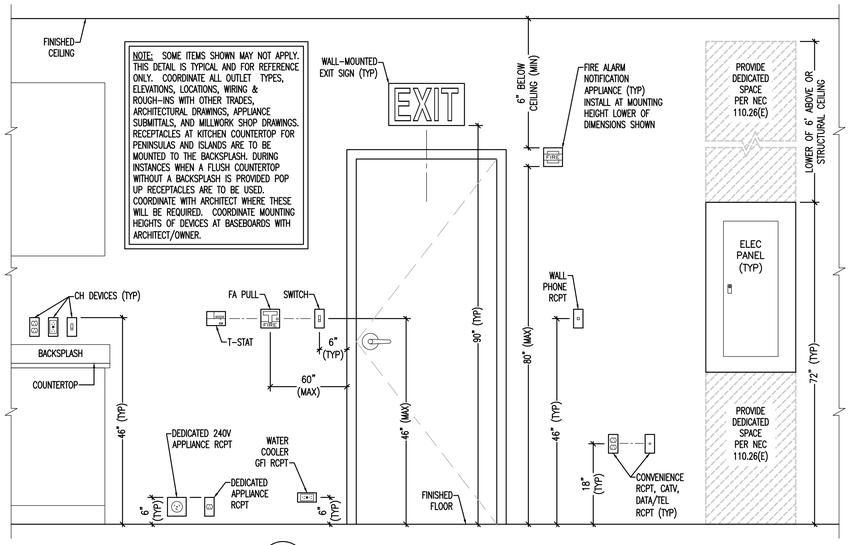
ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	NONE
DRAWN BY:	JH
APPROVED BY:	JT

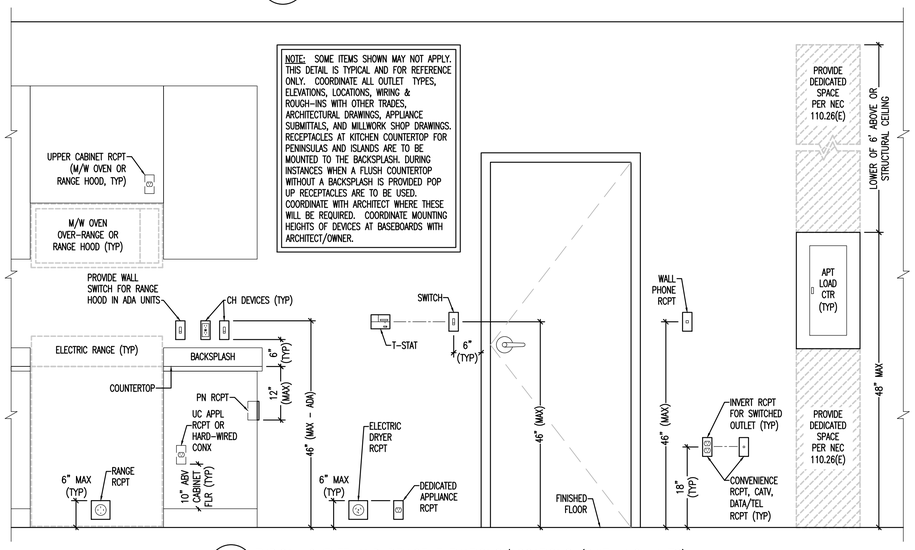
ELECTRICAL SPECIFICATIONS

VENABLE ST CHURCH

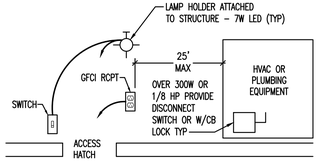
SHEET:
E.005



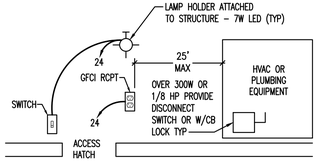
OD/E E.006 TYPICAL OUTLET AND DEVICE ELEVATIONS/LOCATIONS
NO SCALE



DU/E E.006 TYPICAL OUTLET AND DEVICE ELEVATIONS/LOCATIONS (DWELLING UNITS)
NO SCALE



C/M E.006 GENERAL EQUIPMENT ABOVE CEILING (NOT SERVICED FROM BELOW) TYPICAL DETAIL
NO SCALE

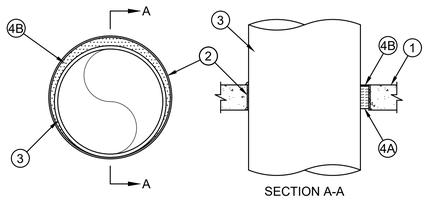


DU/M E.006 DWELLING UNIT EQUIPMENT ABOVE CEILING (NOT SERVICED FROM BELOW) TYPICAL DETAIL
NO SCALE

System No. C-AJ-1226

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

F Rating — 3 Hr
T Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/Sq Ft
L Rating At 400 F — 4 CFM/Sq Ft



1. Floor or Wall Assembly — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 32 in.
2. Metallic Sleeve — (Optional) Nom 32 in. diam (or smaller) Schedule 40 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. above floor or beyond both surfaces of wall.

2A. Sheet Metal Sleeve — (Optional) Max 6 in. diam, min 26 ga galv steel provided with a 26 ga galv steel square flange spot welded to the sleeve at approx mid-height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. larger than the sleeve diam. The sleeve is to be cast in place and may extend a max of 4 in. below the bottom of the deck and a max of 1 in. above the top surface of the concrete floor.

2B. Sheet Metal Sleeve — (Optional) — Max 12 in. diam, min 24 ga galv steel provided with a 24 ga galv steel square flange spot welded to the sleeve at approx mid-height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. larger than the sleeve diam. The sleeve is to be cast in place and may extend a max of 4 in. below the bottom of the deck and a max of 1 in. above the top surface of the concrete floor.

3. Through-Penetrant — One metallic pipe, tube or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. Penetrant may be installed with continuous point contact. Penetrant to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic penetrants may be used:
   A. Steel Pipe — Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. diam (or smaller) cast or ductile iron pipe.
   C. Copper Pipe — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
   D. Copper Tubing — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
   E. Conduit — Nom 6 in. diam (or smaller) steel conduit.
   F. Conduit — Nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT).
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or sleeve or from both surfaces of wall or sleeve as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — Sealant — Min 1/4 in. thickness of fill material applied within the annulus, flush with top surface of floor or sleeve or with both surfaces of wall or sleeve. At the point or continuous contact locations between penetrant and concrete or sleeve, a min 1/4 in. diam bead of fill material shall be applied at the concrete or sleeve/ pipe penetrant interface on the top surface of floor and on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant

*Bearing the UL Classification Mark

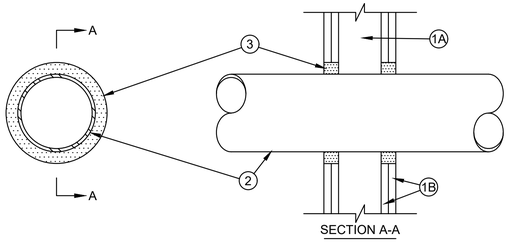
Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. June 27, 2007

System No. W-L-1054

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

F Ratings - 1 and 2 Hr (See Items 1 and 3)
T Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/Sq Ft
L Rating At 400 F - 4 CFM/Sq Ft



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. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. 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. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* -- 5/8 in. thick, 4 ft 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. for steel stud walls. Max diam of opening is 14-1/2 in. for wood stud walls. The F Rating of the firestop system is equal to the fire rating of the wall assembly.
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. Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. 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 diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe -- Nom 30 in. diam (or smaller) cast or ductile iron pipe.
   C. Conduit -- Nom 4 in diam (or smaller) steel electrical metallic tubing or 6 in. diam steel conduit.
   D. Copper Tubing -- Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe -- Nom 6 in. diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* -- Sealant -- Min 5/8 in. 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. 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 Sealant

*Bearing the UL Classification Mark

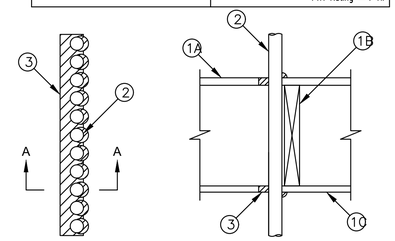
Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. December 4, 2002

System No. F-C-3094

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

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 Hr	F Rating — 1 Hr
T Rating — 1 Hr	FT Rating — 1 Hr
	FH Rating — 1 Hr
	FTH Rating — 1 Hr



1. Floor-Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist Floor-Ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory, as summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max area of floor opening is 40 in2 (258 cm2) with max dimension of 20 in. (508 mm).
   B. Joists — Nom 10 in. (254 mm) deep (or deeper) lumber and steel joist, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   C. Gypsum Board* — Nom 4 ft (122 cm) wide by 5/8 in. (16 mm) thick. Gypsum board direct-attached to joists or screw-attached to furring channels as specified in the individual Floor-Ceiling Design. Max area of opening in ceiling is 40 in2 (258 cm2) with max dimension of 20 in. (508 mm).
2. Cables — One or more cables to be installed either concentrically or eccentricity within the firestop system. The annular space between each cable and the periphery of the opening shall be 0 in. (point contact) to max 1 in. (25 mm). The annular space between individual cables shall be min 1/4 in. (6 mm) to max 1/2 in. (13 mm). Cables to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of cables may be used:
   A. Max 3/C (with ground) No. 2/0 AWG aluminum conductor service entrance cable with PVC insulation and jacket materials.
3. Fill, Void or Cavity Material* — Sealant — Min 3/4 in.(19 mm) thickness of fill material applied within the annulus, flush with top surface of floor. At the bottom of assembly, a min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with the surface of the ceiling. Additional fill material to be installed such that a min 1/2 in. (13 mm) diam bead is applied at the cable/floor and cable/ceiling interface at all point contact locations.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

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

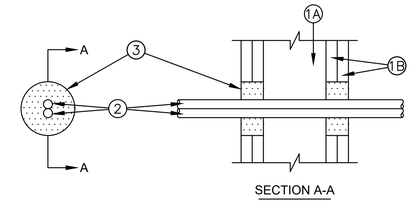
Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 20, 2015

System No. W-L-3071

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

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)
T Rating — 1/4 and 3/4 Hr (See Item 1)	FT Ratings — 1/4 and 3/4 Hr (See Item 1)
L Rating At Ambient – Less Than 1 CFM/sq ft	FH Rating — 1 and 2 Hr (See Item 1)
L Rating At 400 F – 4 CFM/sq ft	FTH Rating — 1/4 and 3/4 Hr (See Item 1)
	L Rating At Ambient – Less Than 1 CFM/sq ft
	L Rating At 400 F – 4 CFM/sq ft



1. Wall Assembly — The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 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. (405 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tappered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 3 in. (76 mm).
   The hourly F, FH Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T, FT, FTH Rating of the firestop system is 1/4 and 3/4 hr for 1 and 2 hr rated wall assemblies, respectively.
2. Cables — Max two 3/C with ground No. 2/0 AWG aluminum or copper Type SER cable with polyvinyl chloride (PVC) insulation. Cable to be rigidly supported on both sides of wall assembly. The annular space between the cables and the periphery of opening shall be min 1/2 in. to max 1-1/2 in. (13 to 38 mm).
3. Fill, Void or Cavity Material* — Sealant — Installed to completely fill the annular space between the cables and gypsum wallboard on both sides of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-MAX Intumescent Sealant
* 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

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 23, 2015

COMMONWEALTH OF VIRGINIA
MALCOLM H. EYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS		
#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

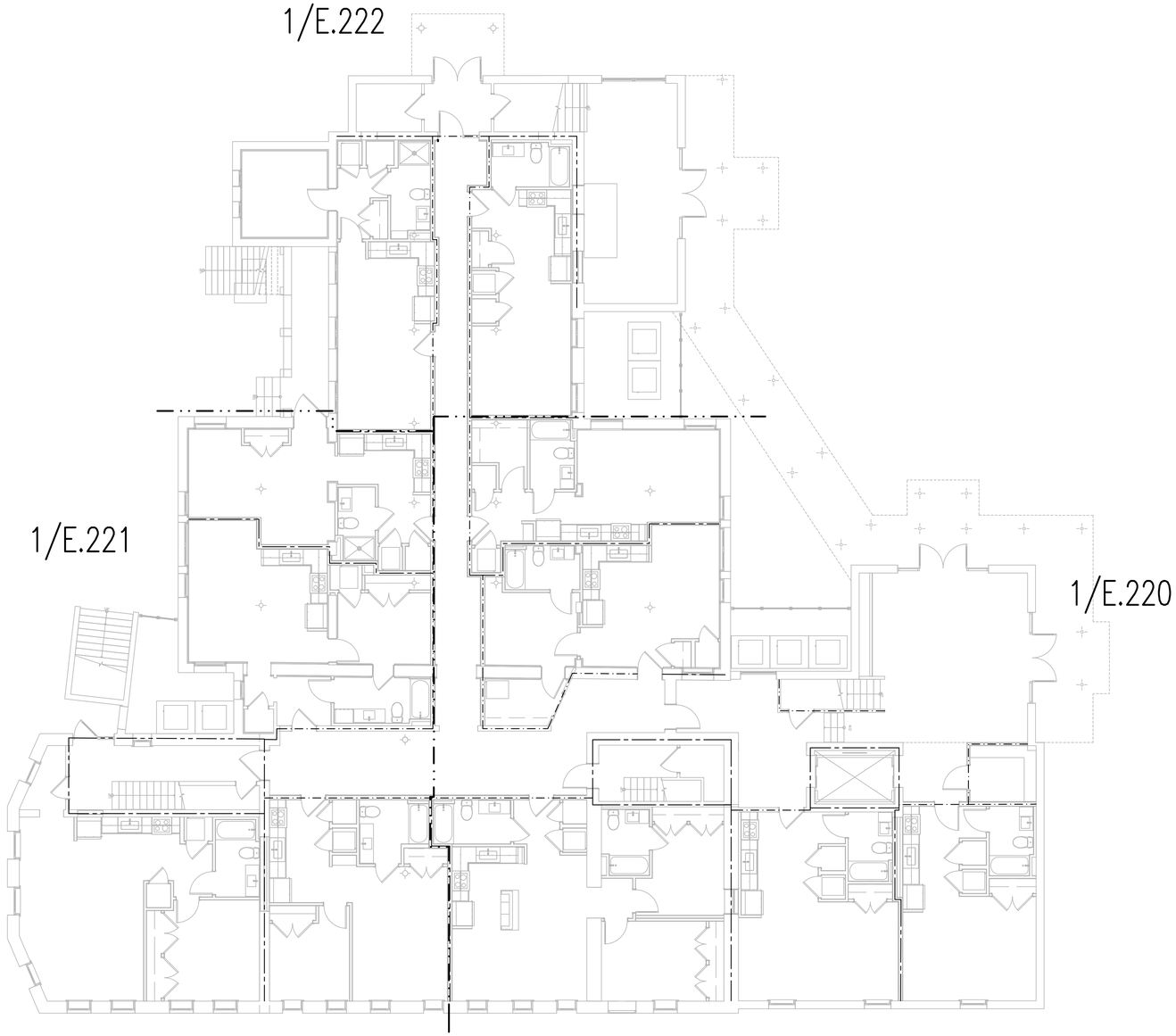
ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolmi@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	NONE
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL DETAILS

SHEET:
E.006

VENABLE ST CHURCH



1 E.201 ELECTRICAL FIRST FLOOR OVERALL AND EGRESS PLAN
SCALE: 1/8" = 1'-0"

TRUE NORTH

8' 0' 8' 16'
GRAPHIC SCALE 1/8" = 1'-0"

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS		
#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

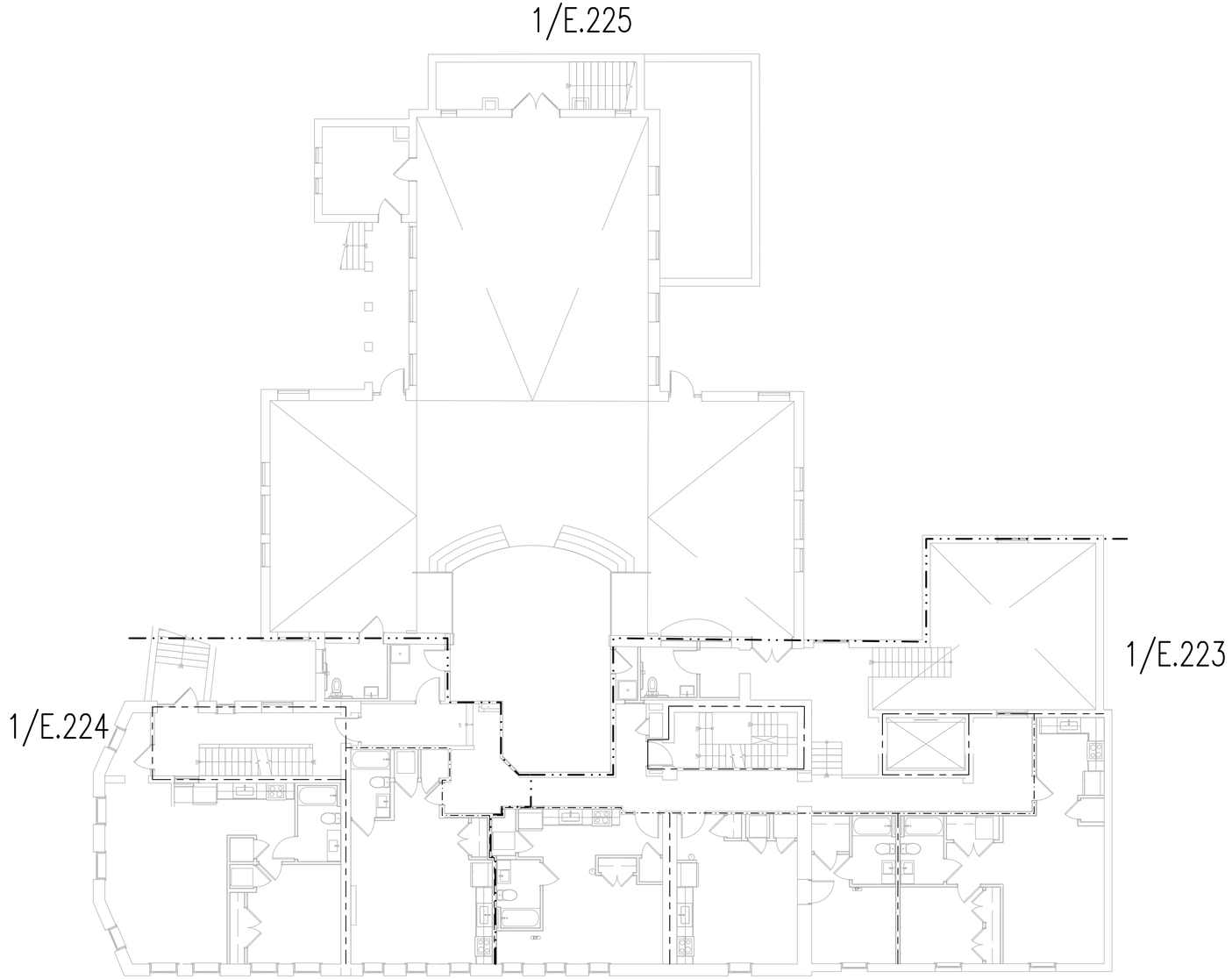
ONEIL
ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/8" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL FIRST FLOOR OVERALL AND EGRESS PLAN

SHEET:
E.201

VENABLE ST CHURCH



1 E1.1 ELECTRICAL SECOND FLOOR OVERALL AND EGRESS PLAN
SCALE: 1/8" = 1'-0"

TRUE NORTH

8' 0' 8' 16'
GRAPHIC SCALE
1/8" = 1'-0"

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS		
#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

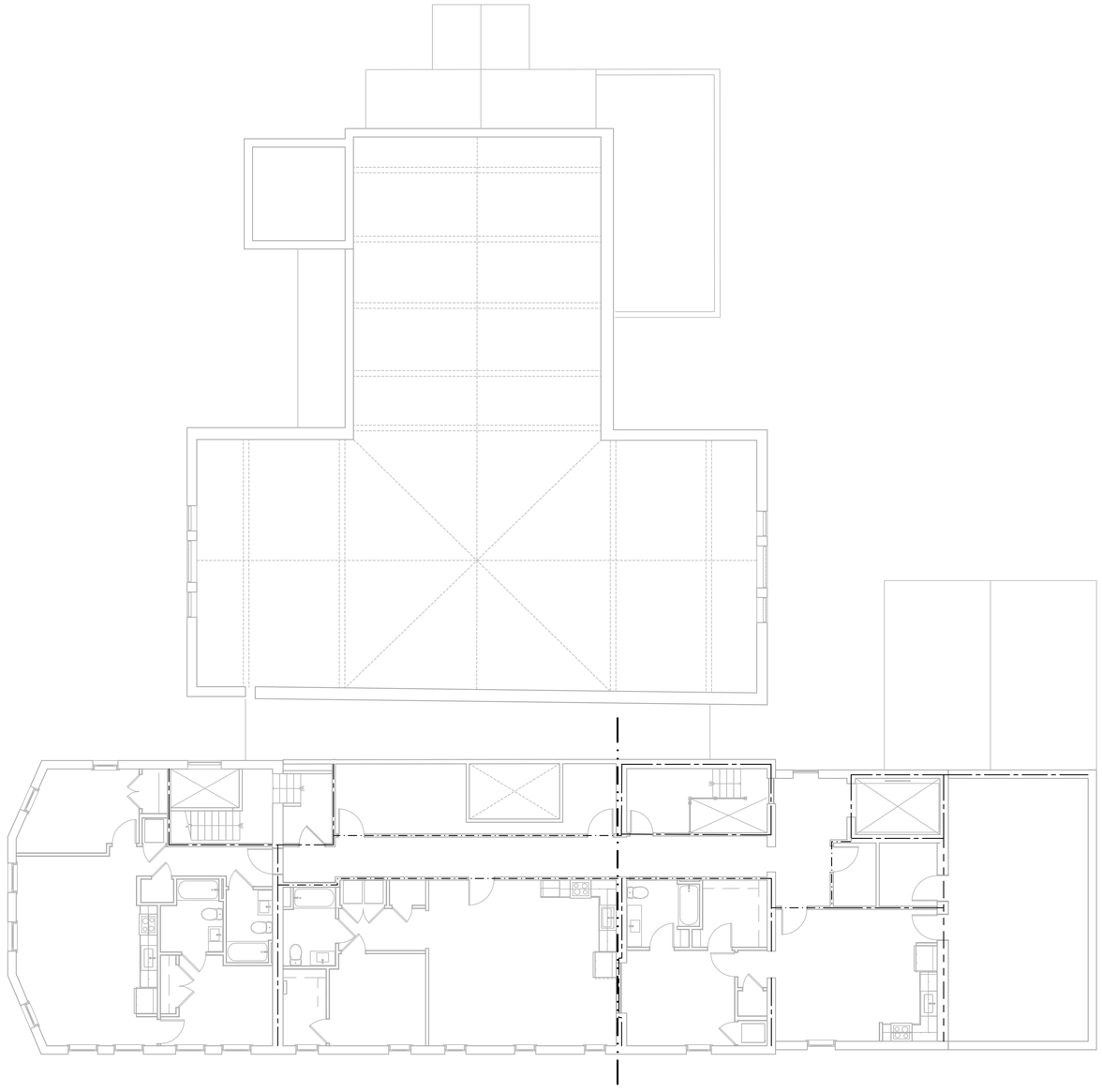
ONEIL
ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/8" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL SECOND FLOOR OVERALL AND EGRESS PLAN

SHEET:
E.202

VENABLE ST CHURCH



1 E1.2 ELECTRICAL THIRD FLOOR OVERALL AND EGRESS PLAN
SCALE: 1/8" = 1'-0"

TRUE NORTH

8' 0' 8' 16'
GRAPHIC SCALE 1/8" = 1'-0"

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS

#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

ONEIL
ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/8" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL THIRD FLOOR OVERALL AND EGRESS PLAN

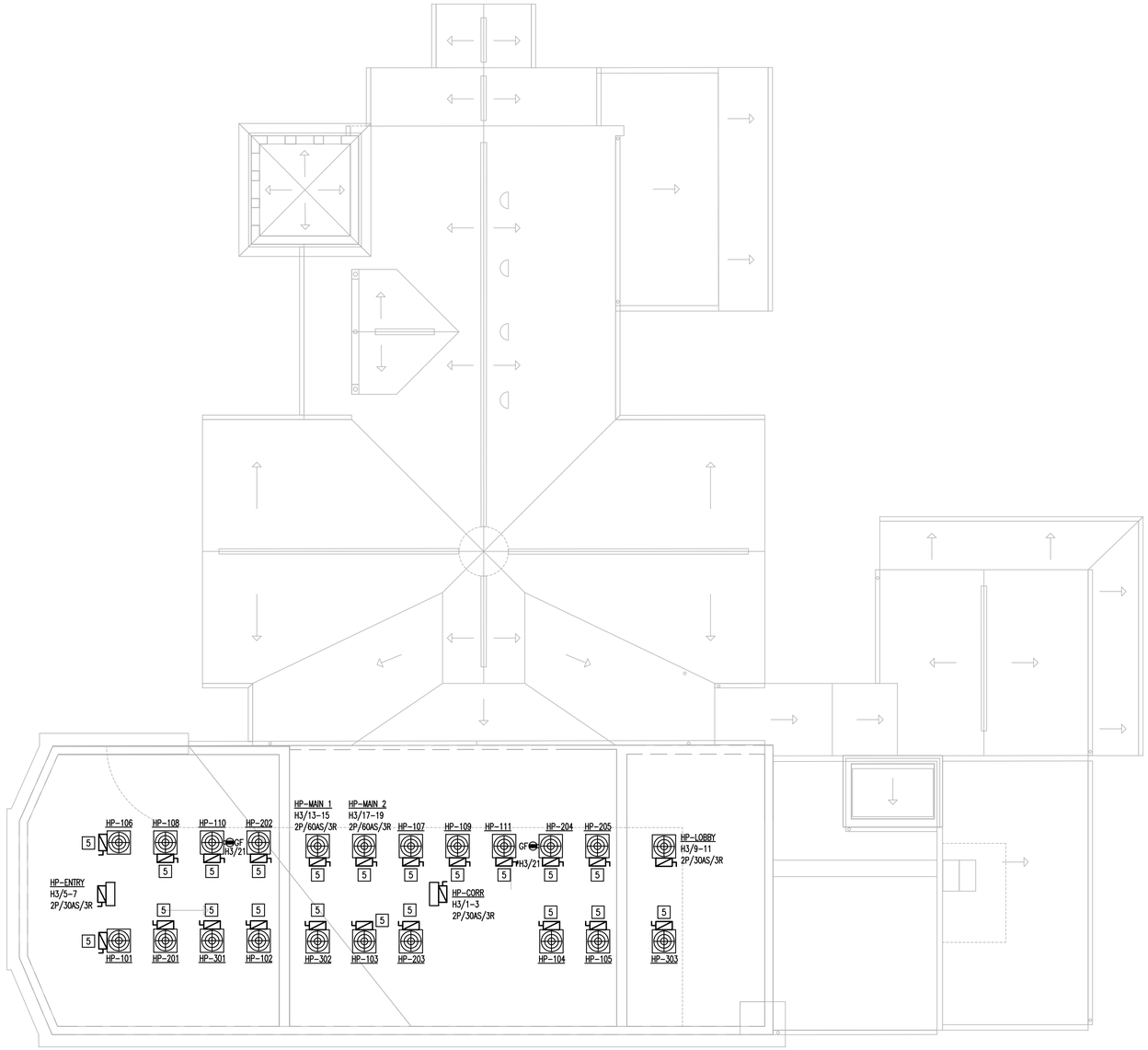
SHEET:
E.203

VENABLE ST CHURCH

DWELLING UNIT KEYNOTES [X] TYP

NOTE: SOME KEYNOTES BELOW MAY NOT BE USED ON THIS PLAN. COORDINATE ALL DEVICES BASED ON APPLIANCE SUBMITTALS.

[5] HP: 2P/30A DISC SW, NEMA 3R, NF, CKT#5-7 FROM ASSOCIATED DWELLING UNIT PANEL



1 E.204 ELECTRICAL ROOF PLAN
SCALE: 1/8" = 1'-0"

TRUE NORTH

8' 0' 8' 16'
GRAPHIC SCALE 1/8" = 1'-0"

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS		
#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

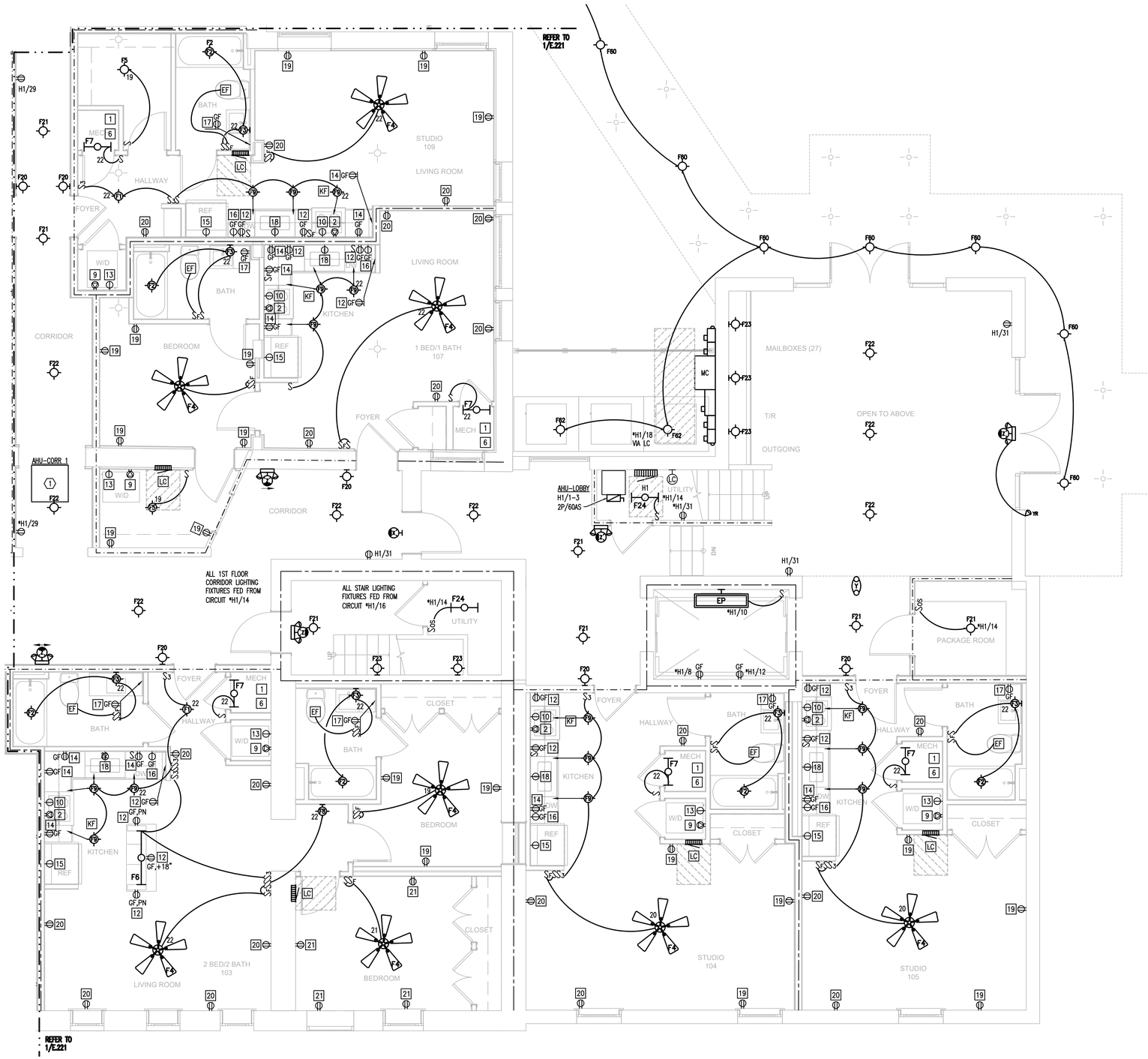
ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/8" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL ROOF PLAN

SHEET:
E.204

VENABLE ST CHURCH



1 E2.0 ELECTRICAL PARTIAL FIRST FLOOR PLAN – AREA A
SCALE: 1/4" = 1'-0"

DWELLING UNIT KEYNOTES [X] TYP

NOTE: SOME KEYNOTES BELOW MAY NOT BE USED ON THIS PLAN. COORDINATE ALL DEVICES BASED ON APPLIANCE SUBMITTALS.

1. AHU: W/CB LOCK, CKT#1-3 – FOR UNITS ABOVE CEILING/IN ATTIC, COORDINATE LOCATION OF OUTLET & LAMP HOLDER LIGHT FIXTURE (SEE DETAIL DU/M)
2. RANGE/OVEN: 250V NEMA 14-50R RCPT, CKT#2-4
5. HEAT PUMP: (SEE ROOF PLAN), CKT#5-7
6. WATER HEATER: W/CB LOCK, CKT#6-8
9. CLOTHES DRYER: 250V NEMA 14-30R RCPT, CKT#9-11
10. MICROWAVE OVEN: NEMA 5-20R (SGL) RCPT, CKT#10 IN-CABINET ABOVE RANGE
12. KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#12 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
13. CLOTHES WASHER: NEMA 5-20R RCPT (SGL), CKT#13 (PROVIDE AFCI CB IN AREAS WHERE REQUIRED BY NEC 210.12)
14. KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#14 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
15. REFRIGERATOR: NEMA 5-15R RCPT (SGL), CKT#15, PROVIDE RECESSED BOX AND COVER.
16. DISHWASHER: NEMA 5-15R RCPT (SGL), UC, GFCI, CKT#16 (AFCI CB)
17. BATHROOM: NEMA 5-20R (DUPL) RCPT, CH, GFCI, CKT#17
18. GARBAGE DISPOSAL: NEMA 5-15R (SGL) RCPT, UC, CKT#18 CONTROL VIA 1P SWITCH AT SINK, CH
19. BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS & APT SMOKE DETECTORS, CKT#19 (AFCI CB)
20. LIVING ROOM RCPTS: NEMA 5-15R (DUPL) RCPT, CKT#20 (AFCI CB)
21. BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS, CKT#21 (AFCI CB)
22. LIVING ROOM/KIT/CORRIDOR/BATH ROOM LIGHTS: CKT#22 (AFCI CB)
24. EXTERIOR RCPT: NEMA 5-15R (DUPL) RCPT, WP, GFCI, CKT#24

EF TOILET EXHAUST FAN: CTRL BY SWITCH "S", CKT#22

KF KITCHEN EXHAUST FAN: CONSTANT VOLUME FAN, CKT#22 (CB LOCK)

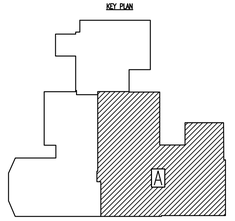
MULTIPLE-STATION SMOKE ALARM, INTERCONNECTED, CKT#19

LC DWELLING UNIT LOAD CENTER (REFER TO METER CENTER SCHEDULES FOR LOAD CENTER TYPE), MOUNT 66" AFF, (TYP) 48" (MAX ADA ACCESSIBLE, TYPE A & B), TYP

SHEET KEYNOTES

1. AHU FED FROM OUTDOOR UNIT.

KEY PLAN



TRUE NORTH

GRAPHIC SCALE 4' 0' 4' 8' 1/4" = 1'-0"

COMMONWEALTH OF VIRGINIA
MALCOLM H. EYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS		
#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

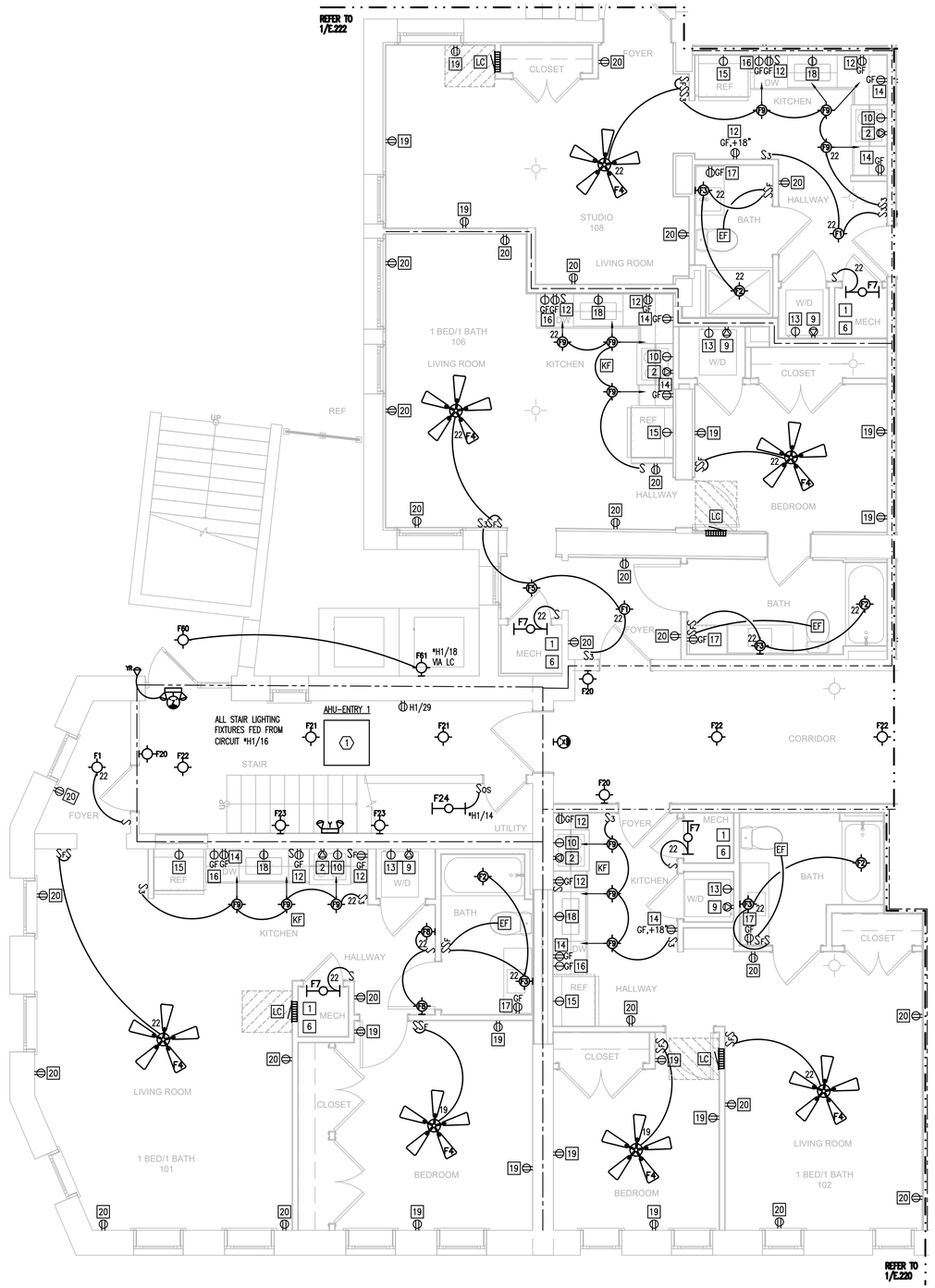
PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/4" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL PARTIAL FIRST FLOOR PLAN - AREA A

SHEET:

E.220

VENABLE ST CHURCH



1 E2.1 ELECTRICAL PARTIAL FIRST FLOOR PLAN – AREA B
SCALE: 1/4" = 1'-0"

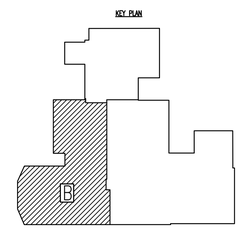
DWELLING UNIT KEYNOTES [X] TYP

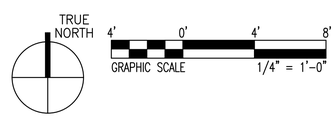
NOTE: SOME KEYNOTES BELOW MAY NOT BE USED ON THIS PLAN. COORDINATE ALL DEVICES BASED ON APPLIANCE SUBMITTALS.

- [1] AHU: W/CB LOCK, CKT#1-3 – FOR UNITS ABOVE CEILING/IN ATTIC, COORDINATE LOCATION OF OUTLET & LAMP HOLDER LIGHT FIXTURE (SEE DETAIL DU/M)
- [2] RANGE/OVEN: 250V NEMA 14-50R RCPT, CKT#2-4
- [5] HEAT PUMP: (SEE ROOF PLAN), CKT#5-7
- [6] WATER HEATER: W/CB LOCK, CKT#6-8
- [9] CLOTHES DRYER: 250V NEMA 14-30R RCPT, CKT#9-11
- [10] MICROWAVE OVEN: NEMA 5-20R (SGL) RCPT, CKT#10 IN-CABINET ABOVE RANGE
- [12] KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#12 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
- [13] CLOTHES WASHER: NEMA 5-20R RCPT (SGL), CKT#13 (PROVIDE AFCI CB IN AREAS WHERE REQUIRED BY NEC 210.12)
- [14] KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#14 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
- [15] REFRIGERATOR: NEMA 5-15R RCPT (SGL), CKT#15, PROVIDE RECESSED BOX AND COVER.
- [16] DISHWASHER: NEMA 5-15R RCPT (SGL), UC, GFCI, CKT#16 (AFCI CB)
- [17] BATHROOM: NEMA 5-20R (DUPL) RCPT, CH, GFCI, CKT#17
- [18] GARBAGE DISPOSAL: NEMA 5-15R (SGL) RCPT, UC, CKT#18 CONTROL VIA 1P SWITCH AT SINK, CH
- [19] BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS & APT SMOKE DETECTORS, CKT#19 (AFCI CB)
- [20] LIVING ROOM RCPTS: NEMA 5-15R (DUPL) RCPT, CKT#20 (AFCI CB)
- [21] BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS, CKT#21 (AFCI CB)
- [22] LIVING ROOM/KIT/CORRIDOR/BATH ROOM LIGHTS: CKT#22 (AFCI CB)
- [24] EXTERIOR RCPT: NEMA 5-15R (DUPL) RCPT, WP, GFCI, CKT#24
- [EF] TOILET EXHAUST FAN: CTRL BY SWITCH "S", CKT#22
- [KF] KITCHEN EXHAUST FAN: CONSTANT VOLUME FAN, CKT#22 (CB LOCK)
- MULTIPLE-STATION SMOKE ALARM, INTERCONNECTED, CKT#19
- [LC] DWELLING UNIT LOAD CENTER (REFER TO METER CENTER SCHEDULES FOR LOAD CENTER TYPE), MOUNT 66" AFF, (TYP) 48" (MAX ADA ACCESSIBLE, TYPE A & B), TYP

SHEET KEYNOTES

(1) AHU FED FROM OUTDOOR UNIT.





COMMONWEALTH OF VIRGINIA
MALCOLM H. EYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS		
#	DATE	DESCRIPTION
–	06-JUN-2025	ISSUE FOR PERMIT

ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/4" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL PARTIAL FIRST FLOOR PLAN - AREA B

SHEET:
E.221

VENABLE ST CHURCH

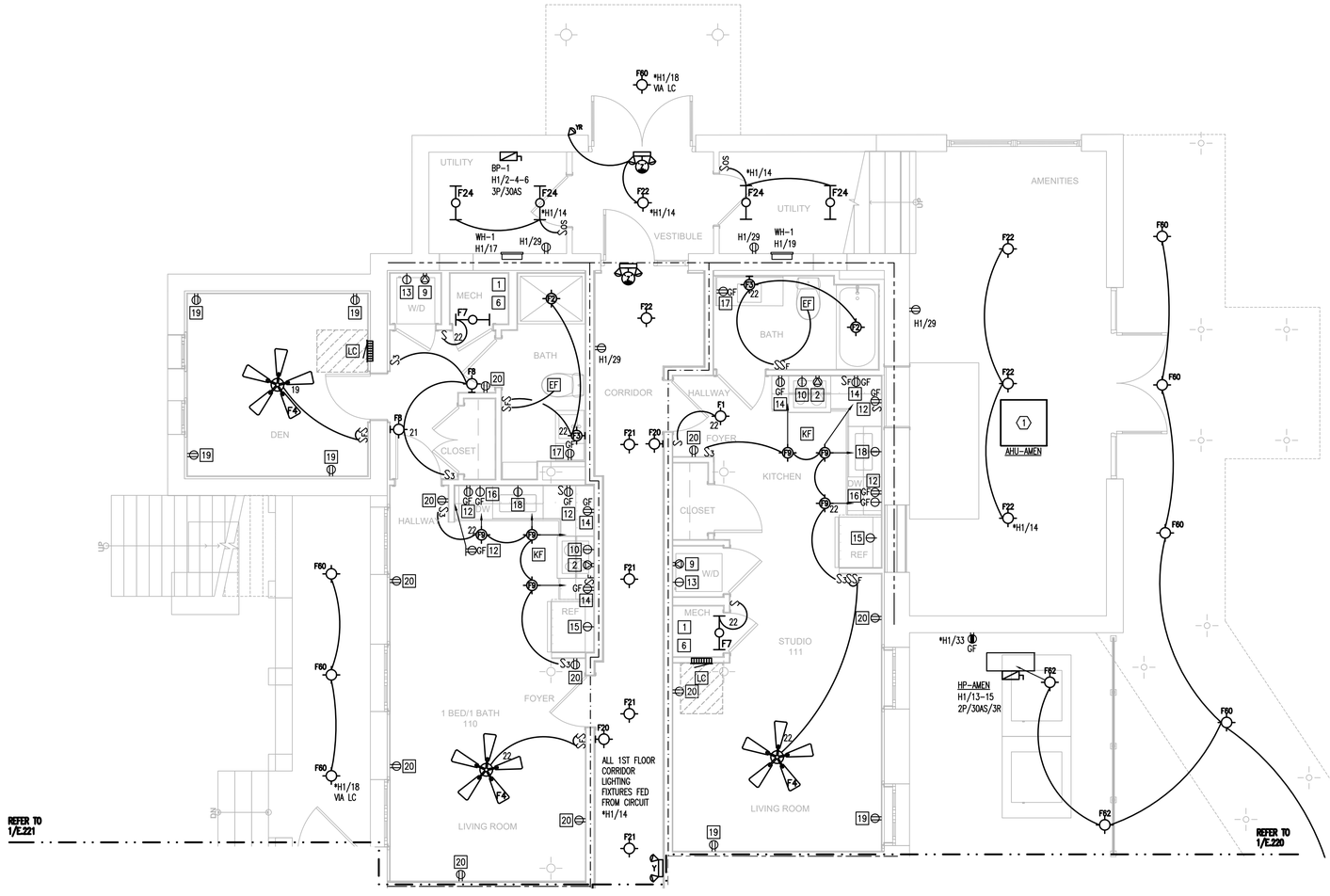
DWELLING UNIT KEYNOTES [X] TYP

NOTE: SOME KEYNOTES BELOW MAY NOT BE USED ON THIS PLAN.
COORDINATE ALL DEVICES BASED ON APPLIANCE SUBMITTALS.

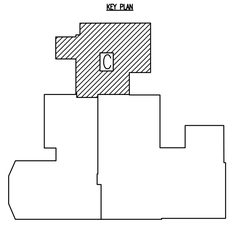
[1] AHU: W/CB LOCK, CKT#1-3 – FOR UNITS ABOVE CEILING/IN ATTIC, COORDINATE LOCATION OF OUTLET & LAMP HOLDER LIGHT FIXTURE (SEE DETAIL DU/M)
[2] RANGE/OVEN: 250V NEMA 14-50R RCPT, CKT#2-4
[5] HEAT PUMP: (SEE ROOF PLAN), CKT#5-7
[6] WATER HEATER: W/CB LOCK, CKT#6-8
[9] CLOTHES DRYER: 250V NEMA 14-30R RCPT, CKT#9-11
[10] MICROWAVE OVEN: NEMA 5-20R (SGL) RCPT, CKT#10 IN-CABINET ABOVE RANGE
[12] KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#12 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
[13] CLOTHES WASHER: NEMA 5-20R RCPT (SGL), CKT#13 (PROVIDE AFCI CB IN AREAS WHERE REQUIRED BY NEC 210.12)
[14] KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#14 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
[15] REFRIGERATOR: NEMA 5-15R RCPT (SGL), CKT#15, PROVIDE RECESSED BOX AND COVER.
[16] DISHWASHER: NEMA 5-15R RCPT (SGL), UC, GFCI, CKT#16 (AFCI CB)
[17] BATHROOM: NEMA 5-20R (DUPL) RCPT, CH, GFCI, CKT#17
[18] GARBAGE DISPOSAL: NEMA 5-15R (SGL) RCPT, UC, CKT#18 CONTROL VIA 1P SWITCH AT SINK, CH
[19] BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS & APT SMOKE DETECTORS, CKT#19 (AFCI CB)
[20] LIVING ROOM RCPTS: NEMA 5-15R (DUPL) RCPT, CKT#20 (AFCI CB)
[21] BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS, CKT#21 (AFCI CB)
[22] LIVING ROOM/KIT/CORRIDOR/BATH ROOM LIGHTS: CKT#22 (AFCI CB)
[24] EXTERIOR RCPT: NEMA 5-15R (DUPL) RCPT, WP, GFCI, CKT#24
[EF] TOILET EXHAUST FAN: CTRL BY SWITCH "S", CKT#22
[KF] KITCHEN EXHAUST FAN: CONSTANT VOLUME FAN, CKT#22 (CB LOCK)
MULTIPLE-STATION SMOKE ALARM, INTERCONNECTED, CKT#19
[LC] DWELLING UNIT LOAD CENTER (REFER TO METER CENTER SCHEDULES FOR LOAD CENTER TYPE), MOUNT 66" AFF, (TYP) 48" (MAX ADA ACCESSIBLE, TYPE A & B), TYP

SHEET KEYNOTES

(1) AHU FED FROM OUTDOOR UNIT.



1 E2.2 ELECTRICAL PARTIAL FIRST FLOOR PLAN – AREA C
SCALE: 1/4" = 1'-0"



TRUE NORTH

4' 0' 4' 8'
GRAPHIC SCALE 1/4" = 1'-0"

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS

#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

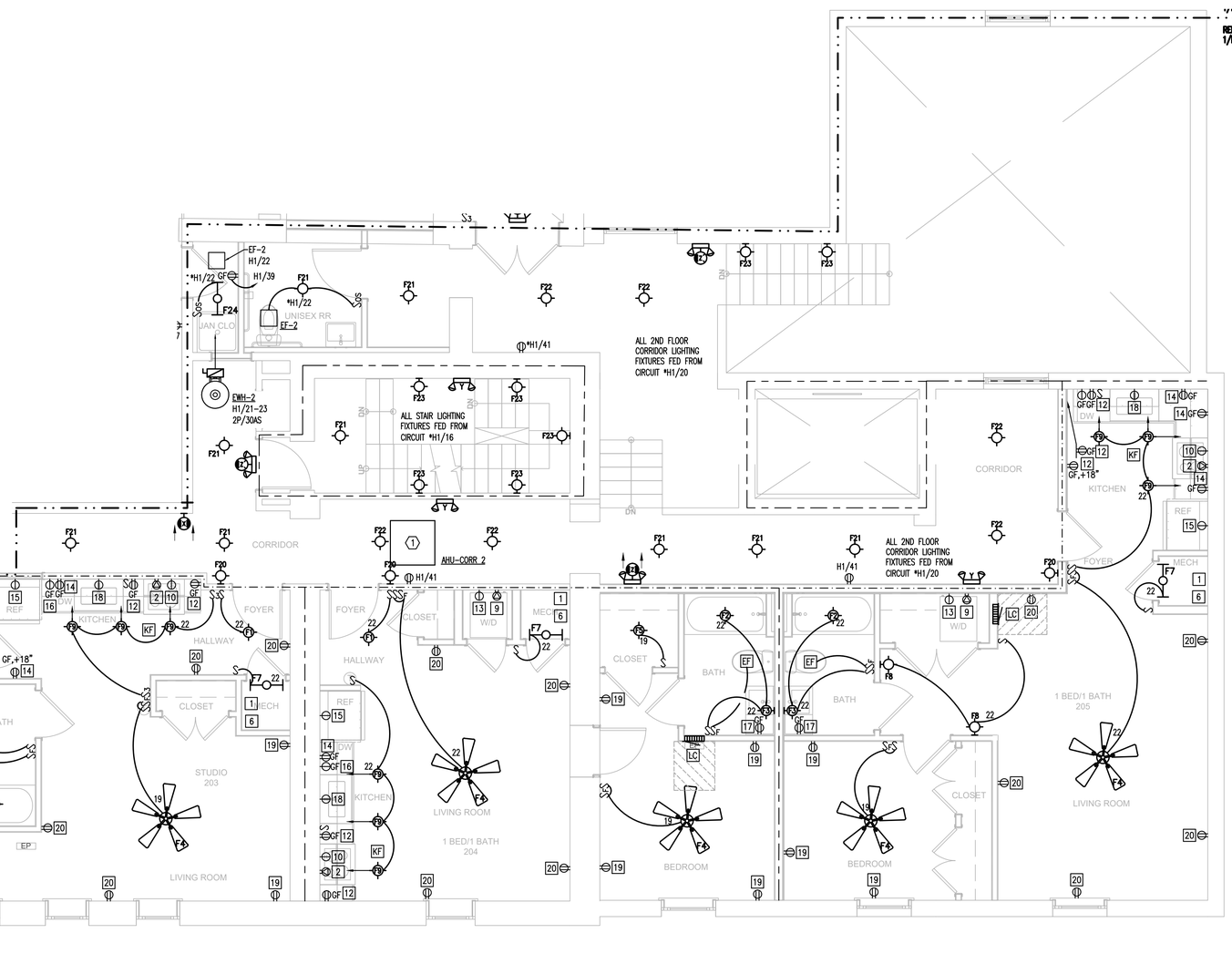
ONEIL
ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/4" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL PARTIAL FIRST FLOOR PLAN - AREA C

SHEET:
E.222

VENABLE ST CHURCH



1 E3.1 ELECTRICAL PARTIAL SECOND FLOOR PLAN – AREA A
SCALE: 1/4" = 1'-0"

DWELLING UNIT KEYNOTES [X] TYP

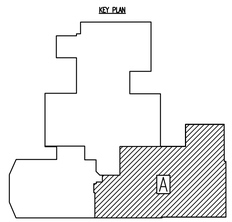
NOTE: SOME KEYNOTES BELOW MAY NOT BE USED ON THIS PLAN. COORDINATE ALL DEVICES BASED ON APPLIANCE SUBMITTALS.

- [1] AHU: W/CB LOCK, CKT#1-3 – FOR UNITS ABOVE CEILING/IN ATTIC, COORDINATE LOCATION OF OUTLET & LAMP HOLDER LIGHT FIXTURE (SEE DETAIL DU/M)
- [2] RANGE/OVEN: 250V NEMA 14-50R RCPT, CKT#2-4
- [5] HEAT PUMP: (SEE ROOF PLAN), CKT#5-7
- [6] WATER HEATER: W/CB LOCK, CKT#6-8
- [9] CLOTHES DRYER: 250V NEMA 14-30R RCPT, CKT#9-11
- [10] MICROWAVE OVEN: NEMA 5-20R (SGL) RCPT, CKT#10 IN-CABINET ABOVE RANGE
- [12] KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#12 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
- [13] CLOTHES WASHER: NEMA 5-20R RCPT (SGL), CKT#13 (PROVIDE AFCI CB IN AREAS WHERE REQUIRED BY NEC 210.12)
- [14] KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#14 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
- [15] REFRIGERATOR: NEMA 5-15R RCPT (SGL), CKT#15, PROVIDE RECESSED BOX AND COVER.
- [16] DISHWASHER: NEMA 5-15R RCPT (SGL), UC, GFCI, CKT#16 (AFCI CB)
- [17] BATHROOM: NEMA 5-20R (DUPL) RCPT, CH, GFCI, CKT#17
- [18] GARBAGE DISPOSAL: NEMA 5-15R (SGL) RCPT, UC, CKT#18 CONTROL VIA 1P SWITCH AT SINK, CH
- [19] BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS & APT SMOKE DETECTORS, CKT#19 (AFCI CB)
- [20] LIVING ROOM RCPTS: NEMA 5-15R (DUPL) RCPT, CKT#20 (AFCI CB)
- [21] BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS, CKT#21 (AFCI CB)
- [22] LIVING ROOM/KIT/CORRIDOR/BATH ROOM LIGHTS: CKT#22 (AFCI CB)
- [24] EXTERIOR RCPT: NEMA 5-15R (DUPL) RCPT, WP, GFCI, CKT#24
- [EF] TOILET EXHAUST FAN: CTRL BY SWITCH "S", CKT#22
- [KF] KITCHEN EXHAUST FAN: CONSTANT VOLUME FAN, CKT#22 (CB LOCK)
- MULTIPLE-STATION SMOKE ALARM, INTERCONNECTED, CKT#19
- [LC] DWELLING UNIT LOAD CENTER (REFER TO METER CENTER SCHEDULES FOR LOAD CENTER TYPE), MOUNT 66" AFF, (TYP) 48" (MAX ADA ACCESSIBLE, TYPE A & B), TYP

SHEET KEYNOTES

- (1) AHU FED FROM OUTDOOR UNIT.

KEY PLAN



TRUE NORTH

GRAPHIC SCALE 4' 0' 4' 8' 1/4" = 1'-0"

COMMONWEALTH OF VIRGINIA
MALCOLM H. EYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS		
#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolm@oneil-engineering.com

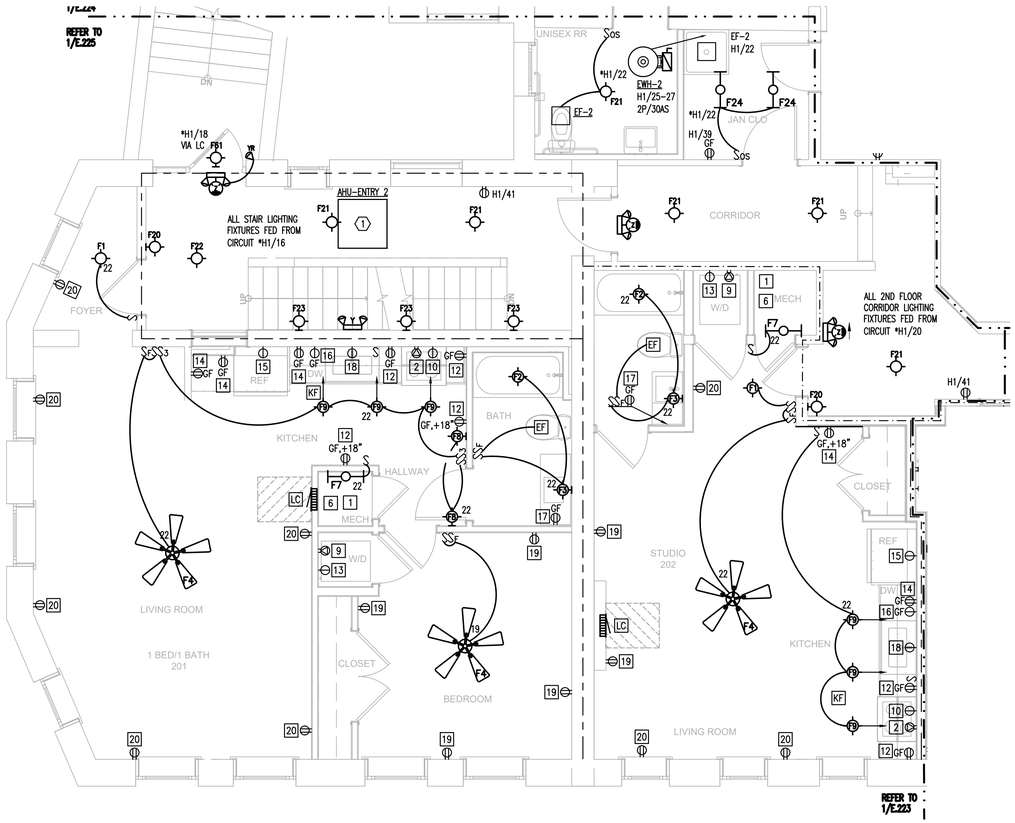
PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/4" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL PARTIAL SECOND FLOOR PLAN - AREA A

SHEET:

E.223

VENABLE ST CHURCH



1 E3.0 ELECTRICAL PARTIAL SECOND FLOOR PLAN – AREA B
SCALE: 1/4" = 1'-0"

DWELLING UNIT KEYNOTES [X] TYP

NOTE: SOME KEYNOTES BELOW MAY NOT BE USED ON THIS PLAN.
COORDINATE ALL DEVICES BASED ON APPLIANCE SUBMITTALS.

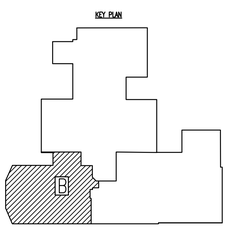
- [1] AHU: W/CB LOCK, CKT#1-3 – FOR UNITS ABOVE CEILING/IN ATTIC, COORDINATE LOCATION OF OUTLET & LAMP HOLDER LIGHT FIXTURE (SEE DETAIL DU/M)
- [2] RANGE/OVEN: 250V NEMA 14-50R RCPT, CKT#2-4
- [5] HEAT PUMP: (SEE ROOF PLAN), CKT#5-7
- [6] WATER HEATER: W/CB LOCK, CKT#6-8
- [9] CLOTHES DRYER: 250V NEMA 14-30R RCPT, CKT#9-11
- [10] MICROWAVE OVEN: NEMA 5-20R (SGL) RCPT, CKT#10 IN-CABINET ABOVE RANGE
- [12] KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#12 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
- [13] CLOTHES WASHER: NEMA 5-20R RCPT (SGL), CKT#13 (PROVIDE AFCI CB IN AREAS WHERE REQUIRED BY NEC 210.12)
- [14] KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#14 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
- [15] REFRIGERATOR: NEMA 5-15R RCPT (SGL), CKT#15, PROVIDE RECESSED BOX AND COVER.
- [16] DISHWASHER: NEMA 5-15R RCPT (SGL), UC, GFCI, CKT#16 (AFCI CB)
- [17] BATHROOM: NEMA 5-20R (DUPL) RCPT, CH, GFCI, CKT#17
- [18] GARBAGE DISPOSAL: NEMA 5-15R (SGL) RCPT, UC, CKT#18 CONTROL VIA 1P SWITCH AT SINK, CH
- [19] BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS & APT SMOKE DETECTORS, CKT#19 (AFCI CB)
- [20] LIVING ROOM RCPTS: NEMA 5-15R (DUPL) RCPT, CKT#20 (AFCI CB)
- [21] BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS, CKT#21 (AFCI CB)
- [22] LIVING ROOM/KIT/CORRIDOR/BATH ROOM LIGHTS: CKT#22 (AFCI CB)
- [24] EXTERIOR RCPT: NEMA 5-15R (DUPL) RCPT, WP, GFCI, CKT#24
- [EF] TOILET EXHAUST FAN: CTRL BY SWITCH "S", CKT#22
- [KF] KITCHEN EXHAUST FAN: CONSTANT VOLUME FAN, CKT#22 (CB LOCK)

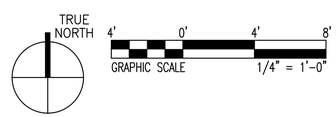
MULTIPLE-STATION SMOKE ALARM, INTERCONNECTED, CKT#19

- [LC] DWELLING UNIT LOAD CENTER (REFER TO METER CENTER SCHEDULES FOR LOAD CENTER TYPE), MOUNT 66" AFF, (TYP) 48" (MAX ADA ACCESSIBLE, TYPE A & B), TYP

SHEET KEYNOTES

(1) AHU FED FROM OUTDOOR UNIT.





COMMONWEALTH OF VIRGINIA
MALCOLM H. EYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS		
#	DATE	DESCRIPTION
–	06-JUN-2025	ISSUE FOR PERMIT

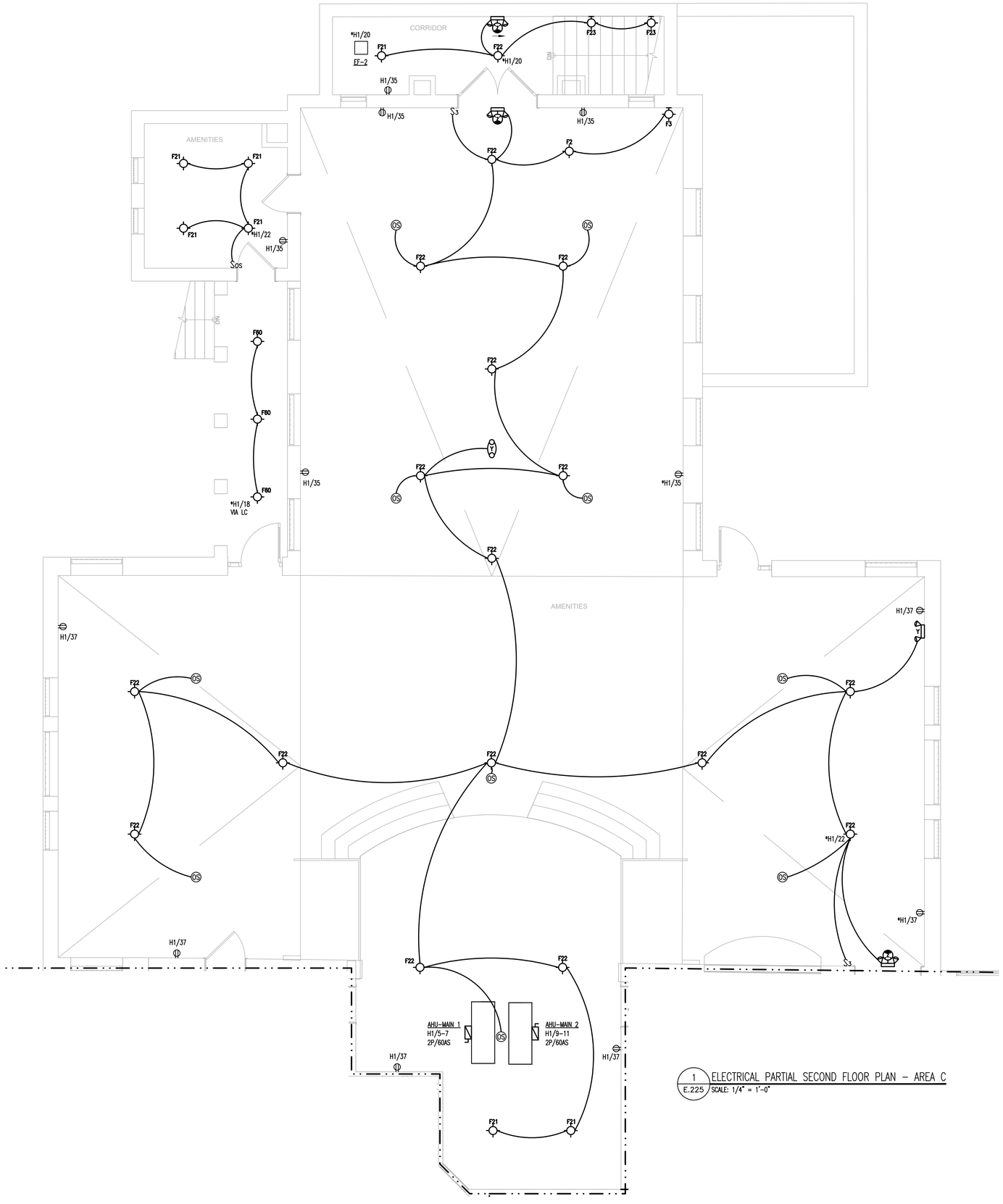
ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/4" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

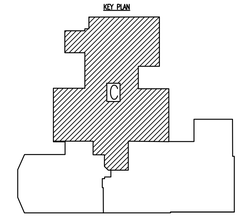
ELECTRICAL PARTIAL SECOND FLOOR PLAN - AREA B

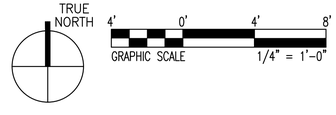
SHEET:
E.224

VENABLE ST CHURCH



1 E.225 ELECTRICAL PARTIAL SECOND FLOOR PLAN – AREA C
SCALE: 1/4" = 1'-0"





COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS

#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

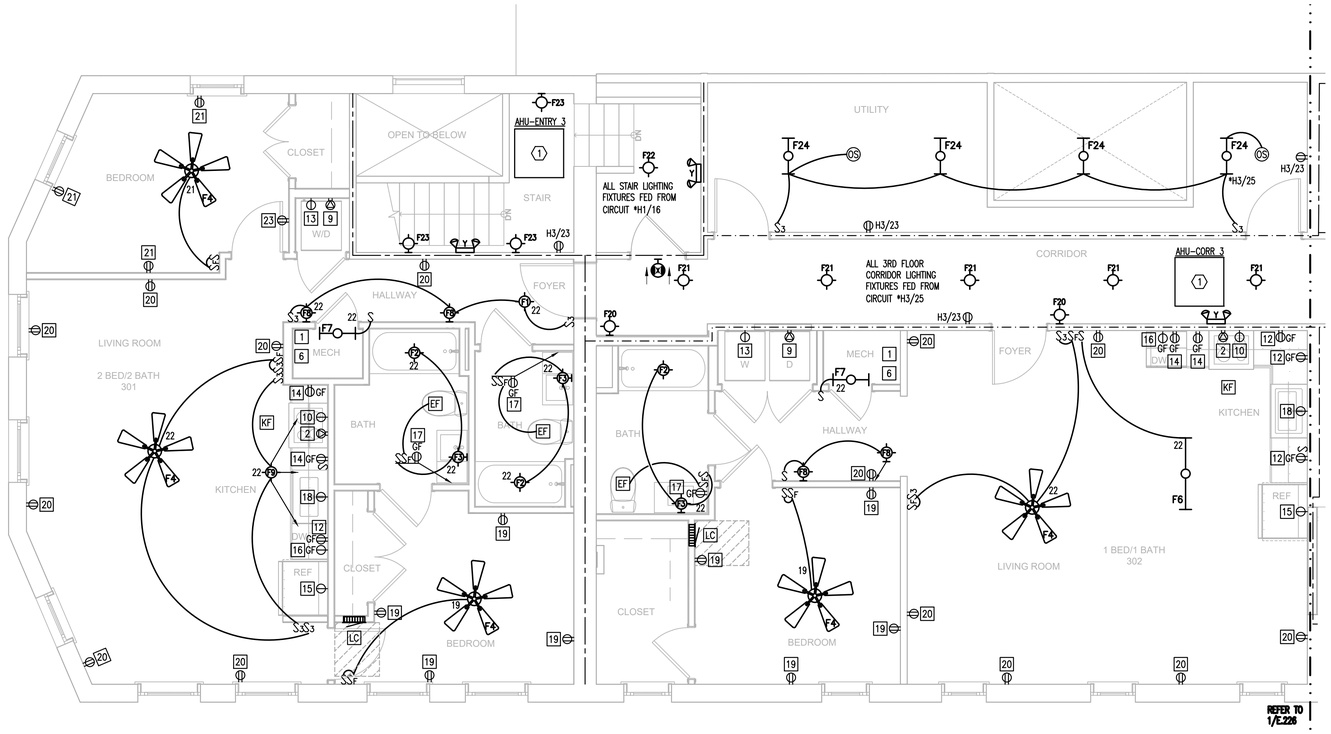
ONEIL
ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/4" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

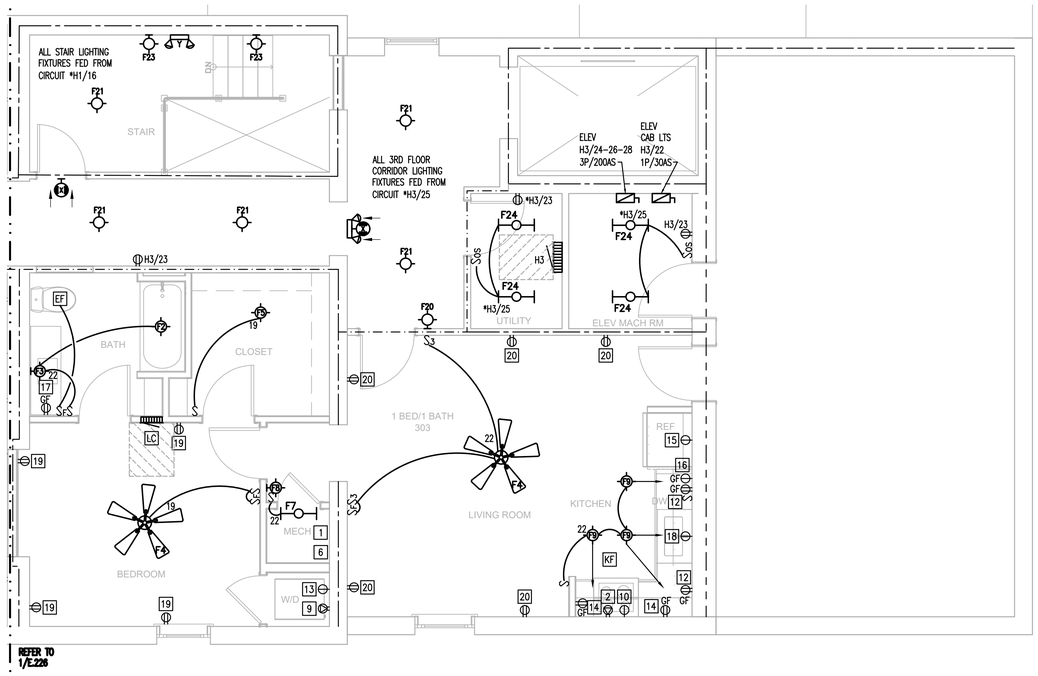
ELECTRICAL PARTIAL SECOND FLOOR PLAN - AREA C

SHEET:
E.225

VENABLE ST CHURCH



1 E.226 ELECTRICAL PARTIAL THIRD FLOOR PLAN – AREA A
SCALE: 1/4" = 1'-0"



2 E.226 ELECTRICAL PARTIAL THIRD FLOOR PLAN – AREA B
SCALE: 1/4" = 1'-0"

DWELLING UNIT KEYNOTES [X] TYP

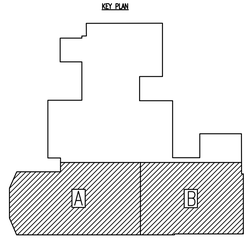
NOTE: SOME KEYNOTES BELOW MAY NOT BE USED ON THIS PLAN.
COORDINATE ALL DEVICES BASED ON APPLIANCE SUBMITTALS.

[1] AHU: W/CB LOCK, CKT#1-3 – FOR UNITS ABOVE CEILING/IN ATTIC, COORDINATE LOCATION OF OUTLET & LAMP HOLDER LIGHT FIXTURE (SEE DETAIL DU/M)
[2] RANGE/OVEN: 250V NEMA 14-50R RCPT, CKT#2-4
[5] HEAT PUMP: (SEE ROOF PLAN), CKT#5-7
[6] WATER HEATER: W/CB LOCK, CKT#6-8
[9] CLOTHES DRYER: 250V NEMA 14-30R RCPT, CKT#9-11
[10] MICROWAVE OVEN: NEMA 5-20R (SGL) RCPT, CKT#10 IN-CABINET ABOVE RANGE
[12] KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#12 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
[13] CLOTHES WASHER: NEMA 5-20R RCPT (SGL), CKT#13 (PROVIDE AFCI CB IN AREAS WHERE REQUIRED BY NEC 210.12)
[14] KITCHEN/DINING SMALL APPLIANCE CKT: NEMA 5-20R (DUPL) RCPT, GFCI, CKT#14 – 1ST DEVICE IN CKT GFCI FEED-THRU, ALL CH UON
[15] REFRIGERATOR: NEMA 5-15R RCPT (SGL), CKT#15, PROVIDE RECESSED BOX AND COVER.
[16] DISHWASHER: NEMA 5-15R RCPT (SGL), UC, GFCI, CKT#16 (AFCI CB)
[17] BATHROOM: NEMA 5-20R (DUPL) RCPT, CH, GFCI, CKT#17
[18] GARBAGE DISPOSAL: NEMA 5-15R (SGL) RCPT, UC, CKT#18 CONTROL VIA 1P SWITCH AT SINK, CH
[19] BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS & APT SMOKE DETECTORS, CKT#19 (AFCI CB)
[20] LIVING ROOM RCPTS: NEMA 5-15R (DUPL) RCPT, CKT#20 (AFCI CB)
[21] BEDROOM CKT: LIGHTS & NEMA 5-15R (DUPL) RCPTS, CKT#21 (AFCI CB)
[22] LIVING ROOM/KIT/CORRIDOR/BATH ROOM LIGHTS: CKT#22 (AFCI CB)
[24] EXTERIOR RCPT: NEMA 5-15R (DUPL) RCPT, WP, GFCI, CKT#24
[EF] TOILET EXHAUST FAN: CTRL BY SWITCH "S", CKT#22
[KF] KITCHEN EXHAUST FAN: CONSTANT VOLUME FAN, CKT#22 (CB LOCK)
MULTIPLE-STATION SMOKE ALARM, INTERCONNECTED, CKT#19
[LC] DWELLING UNIT LOAD CENTER (REFER TO METER CENTER SCHEDULES FOR LOAD CENTER TYPE), MOUNT 66" AFF, (TYP) 48" (MAX ADA ACCESSIBLE, TYPE A & B), TYP

SHEET KEYNOTES

(1) AHU FED FROM OUTDOOR UNIT.

KEY PLAN



TRUE NORTH

GRAPHIC SCALE 4' 0' 4' 8' 1/4" = 1'-0"

COMMONWEALTH OF VIRGINIA
MALCOLM H. LYLE III
Lic. No. 29156
06-JUN-2025
Q007
PROFESSIONAL ENGINEER

VENABLE STREET CHURCH
2101 Vanable St.
Richmond, VA 23223

REVISIONS		
#	DATE	DESCRIPTION
-	06-JUN-2025	ISSUE FOR PERMIT

ONEIL ENGINEERING SERVICES
1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501 FAX: 804-980-7110
EMAIL: malcolml@oneil-engineering.com

PROJECT #:	Q007
DATE:	06-JUN-2025
SCALE:	1/4" = 1'-0"
DRAWN BY:	JH
APPROVED BY:	JT

ELECTRICAL PARTIAL THIRD FLOOR PLAN - AREA A & B

SHEET:
E.226

VENABLE ST CHURCH