**ELECTRICAL GENERAL NOTES**

- THE WORK MUST CONFORM WITH ALL REQUIREMENTS OF:
A. NFPA 70-2017 (NATIONAL ELECTRICAL CODE)
B. ANSI Z1.2-2017 (NATIONAL ELECTRICAL SAFETY CODE)
C. APPLICABLE LOCAL CODES AND FEDERAL AND STATE LAWS.
- MINIMUM RACEWAY SIZE MUST BE 3/4". INCREASE RACEWAY SIZE AS REQUIRED TO LIMIT RACEWAY FILL RATIO TO LESS THAN 40% FULL.
- CONTRACTOR MUST COORDINATE WORK WITH OTHER TRADES AND MUST BE RESPONSIBLE FOR SECURING SPACE REQUIREMENTS FOR ELECTRICAL EQUIPMENT, CLEARANCE FOR RECESSED LUMINAIRES, AND CORRECT ROUGH-IN LOCATIONS OF ELECTRICAL CONNECTIONS.
- CONTRACTOR MUST BE RESPONSIBLE FOR VERIFYING CATALOG NUMBERS ON THESE DRAWINGS TO MATCH WITH MATERIAL DESCRIPTIONS INDICATED.
- VERIFY EXACT HEIGHT OF EACH COUNTERTOP AND BACKSPLASH ON ARCHITECTURAL DETAILS AND/OR CASE WORK SHOP DRAWINGS AND ADJUST SPECIFIED MOUNTING HEIGHT OF WALL OUTLETS TO LOCATE BOTTOM OF OUTLET BOX 4" ABOVE TOP OF BACKSPLASH. IF NO BACKSPLASH IS USED, LOCATE BOTTOM OF OUTLET BOX 6" ABOVE COUNTERTOP.
- VERIFY DOOR SWINGS WITH ARCHITECTURAL DRAWINGS BEFORE ROUGHING IN WALL SWITCHES. SWITCHES IN THE SAME LOCATION MUST BE GANGED TOGETHER IN ONE COMMON BACKBOX AND MUST HAVE ONE COMMON FACE PLATE.
- ALL FEEDERS AND BRANCH CIRCUITS MUST INCLUDE A GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR, SIZE PER NATIONAL ELECTRICAL CODE, OR AS SHOWN, CONNECTED TO EACH DEVICE AND OUTLET BOX ON THE CIRCUIT AND TO THE PANELBOARD GROUND BUS. PROVIDE NEUTRAL CONDUCTORS AS INDICATED HEREIN. MULTIPLE BRANCH CIRCUITS IN ONE RACEWAY REQUIRE ONLY ONE EQUIPMENT GROUNDING CONDUCTOR.
- VERIFY LUMINAIRE AND CEILING MOUNTED OCCUPANCY SENSOR LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS AND DIMENSIONS PRIOR TO INSTALLATION. VERIFY EXACT LOCATIONS OF MOTORS AND EQUIPMENT BEFORE ROUGHING-IN.
- NEW WORK MUST BE MADE TO TIE INTO THE EXISTING IN A UNIFORM MANNER. SIMILAR ITEMS OF NEW WORK MUST BE CHECKED AGAINST EXISTING WORK FOR TYPE MOUNTING, MOUNTING HEIGHTS, ETC. ITEMS SHOWN IN NEW WORK AT VARIANCE FROM THE EXISTING MUST BE REFERRED TO THE ARCHITECT FOR DECISION BEFORE ROUGH-IN.
- "PROVIDE" IS AN INCLUSIVE TERM USED TO DESCRIBE ASPECTS OF THE WORK THAT MUST BE ACCOMPLISHED, AND IS HEREBY DEFINED TO REQUIRE TO STORE, FURNISH, INSTALL, MOUNT, CONNECT, CONTROL AND POWER EQUIPMENT INDICATED, AS WELL AS ALL APPURTENANCES REQUIRED TO MAKE ELECTRICAL SYSTEMS OPERATE AS INDICATED WITHIN THESE DRAWINGS AND SPECIFICATIONS AND TO FULFILL THE SCOPE OF WORK.
- "DEMOLISH" IS AN INCLUSIVE TERM USED TO DESCRIBE ASPECTS OF THE WORK THAT MUST BE ACCOMPLISHED, AND IS HEREBY DEFINED TO REQUIRE CONTRACTOR TO DISCONNECT EQUIPMENT FROM ALL CONNECTIONS, REMOVE FROM THE OWNER'S SITE, AND DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES. COST OF DISPOSAL IS ENTIRELY THE CONTRACTOR'S RESPONSIBILITY.
- ALL CONDUCTORS MUST BE COPPER UNLESS SPECIFICALLY NOTED AS ALUMINUM.
- CONTRACTOR MUST FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS BEFORE PROCUREMENT OF ANY MATERIALS AND DEVELOPMENT OF ANY SHOP DRAWINGS OR SUBMITTALS.
- PROVIDE LABELS ON ALL RECEPTACLES, WALL MOUNTED LIGHT SWITCHES/OCCUPANCY SENSORS AND JUNCTION BOXES INDICATING THE SOURCE PANEL & CIRCUIT(S). HANDWRITTEN LABELS ARE NOT PERMITTED EXCEPT FOR JUNCTION BOXES LOCATED ABOVE FINISHED CEILING WHICH MAY BE HANDWRITTEN WITH AN INDELIBLE MARKER.

WIRE SIZE FOR ALL 120V, 20A CIRCUITS, UIC:

FOR ALL ONE-WAY CIRCUITS OF LENGTH LESS THAN 75 FT, PROVIDE 2#12 & 1#12G, 3/4".

FOR ALL ONE-WAY CIRCUITS OF LENGTH LESS THAN 125 FT AND GREATER THAN OR EQUAL TO 75 FT, PROVIDE 2#10 & 1#10G, 3/4".

FOR ALL ONE-WAY CIRCUITS OF LENGTH LESS THAN 190 FT AND GREATER THAN OR EQUAL TO 125 FT, PROVIDE 2#8 & 1#8G, 3/4".

FOR ALL ONE-WAY CIRCUITS OF LENGTH LESS THAN 300 FT AND GREATER THAN OR EQUAL TO 190 FT, PROVIDE 2#6 & 1#6G, 3/4".

FOR ALL ONE-WAY CIRCUITS OF LENGTH LESS THAN 170 FT, PROVIDE 2#12 & 1#12G, 3/4".

FOR ALL ONE-WAY CIRCUITS OF LENGTH LESS THAN 280 FT AND GREATER THAN OR EQUAL TO 170 FT, PROVIDE 2#10 & 1#10G, 3/4".

FOR ALL ONE-WAY CIRCUITS OF LENGTH LESS THAN 440 FT AND GREATER THAN OR EQUAL TO 280 FT, PROVIDE 2#8 & 1#8G, 3/4".

FOR ALL ONE-WAY CIRCUITS OF LENGTH LESS THAN 700 FT AND GREATER THAN OR EQUAL TO 440 FT, PROVIDE 2#6 & 1#6G, 3/4".

ELECTRICAL ABBREVIATIONS

A or AMP	AMPERE(S)	IMC	INTERMEDIATE METAL CONDUIT
AC	AIR COMPRESSOR or AIR CURTAIN or ALTERNATING CURRENT	IRH	INFRARED HEATER
ACC	AIR COOLED CHILLER	J OR JB	JUNCTION BOX
AF	AMP FRAME	K	KILO
AFF	ABOVE FINISHED FLOOR	KAIC	THOUSAND AMPERE INTERRUPTING CAPACITY
AHG	ABOVE FINISHED GRADE	KCML	THOUSAND OF CIRCULAR MILS
AHU	AIR HANDLING UNIT	KEF	KITCHEN EXHAUST FAN
AIC	AMPERE INTERRUPTING CAPACITY	KH	KITCHEN HOOD
AL	ALUMINUM	KV	KILOVOLT
AM	AMMETER	KVAR	KILOVOLT AMPERES
ASYM	ASYMMETRICAL	KW	KILOWATT
AT	AMP TRIP	KWHR	KILOWATT-HOUR
ATS	AUTOMATIC TRANSFER SWITCH	L	LENGTH
AUTO	AUTOMATIC	LA	LIGHTNING ARRESTOR
AWG	AMERICAN WIRE GAUGE	LAN	LOCAL AREA NETWORK
B	BOILER	LAV	LAVATORY
BC	BRANCH CONTROLLER	LS	LONG TIME, SHORT TIME
BOW	BARE COPPER WIRE	LSI	LONG TIME, SHORT TIME, INSTANTANEOUS
BFF	BELLOW FINISHED FLOOR	LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND FAULT
BFG	BELLOW FINISHED GRADE		
BLDG	BUILDING	LTC	LIGHTING
C	CONDUIT	MAU	MAKE-UP AIR UNIT
CAT	CATEGORY	MAX	MAXIMUM
CB	CIRCUIT BREAKER	MCA	MINIMUM CIRCUIT AMPACITY
CCT	CORRELATED COLOR TEMPERATURE	MCB	MAIN CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION	MCC	MOTOR CONTROL CENTER
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED	MGB	MAIN GROUND BAR
CH	CHILLER	MH	MANHOLE
CHWCP	CHILLED WATER CIRCULATING PUMP	MIN	MINIMUM
CHWP	CHILLED WATER PUMP	MLO	MAIN LUGS ONLY
CHWSP	CHILLED WATER SUPPLY PUMP	MOD	MOTOR OPERATED DAMPER
CKT	CIRCUIT	MRS	MOTOR RATED SWITCH
CMH	COMMUNICATIONS MANHOLE	MT or MTD	MOUNT or MOUNTED
CP	CONDENSATE PUMP	N	NEUTRAL
CPT	CONTROL POWER TRANSFORMER	N/A	NOT APPLICABLE
CRAC	COMPUTER ROOM AC UNIT	NC	NORMALLY CLOSED
CRI	COLOR RENDERING INDEX	NEC	NATIONAL ELECTRICAL CODE
CT	CURRENT TRANSFORMER or COOLING TOWER	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
CU	COPPER	NESC	NATIONAL ELECTRICAL SAFETY CODE
CWP	CONDENSER WATER PUMP	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
D	DEPTH	NL	NIGHT LIGHT
DC	DIRECT CURRENT	NO	NORMALLY OPEN
DF	DESTRATIFICATION FAN	NTS	NOT TO SCALE
DH	DUCT HEATER or DEHUMIDIFIER	P	POLE(S) or PUMP
DHWCP	DOMESTIC HOT WATER CIRCULATING PUMP	PA	PUBLIC ADDRESS
DISC	DISCONNECT SWITCH	PDU	POWER DISTRIBUTION UNIT
DOAS	DEDICATED OUTSIDE AIR SYSTEM	PF	POWER FACTOR
DPDT	DOUBLE POLE DOUBLE THROW	PH	PHASE
DPST	DOUBLE POLE SINGLE THROW	PIU	PRIMARY INDUCTION UNIT (VAV TERMINAL UNIT)
DSCU	DUCTLESS SPLIT CONDENSING UNIT	PMT	PAD MOUNTED TRANSFORMER
DSHP	DUCTLESS SPLIT HEAT PUMP	PNL	PANEL OR PANELBOARD
DSS	DUCTLESS SPLIT SYSTEM (INDOOR UNIT)	PTAC	PACKAGED THRU-WALL AIR CONDITIONER
DUH	DUCT UNIT HEATER	PVC	POLYVINYL CHLORIDE
DWBP	DOMESTIC WATER BOOSTER PUMP	RECP	RECEPTACLE
DX	DIRECT EXPANSION COOLING COIL	RF	RETURN FAN
E or EMER	EMERGENCY	RH	RADIANT HEATERS (ELECTRIC)
EC	EMERGENCY CONDUIT	RMC	RIGID METAL CONDUIT
EF	EXHAUST FAN	RMS	ROUND METAL SQUARE
ELEC	ELECTRICAL	RTU	ROOF-TOP UNIT
EMEW	EMERGENCY EYEWASH	RVNR	REDUCED VOLTAGE NON-REVERSING
EMH	ELECTRICAL MANHOLE	SA	SURGE ARRESTOR
EMSH	EMERGENCY SHOWER	SCCR	SHORT CIRCUIT CURRENT RATING
EMT	ELECTRICAL METALLIC TUBING	SD	SMOKE DAMPER
EPA	EFFECTIVE PROJECTED AREA	SF	SUPPLY FAN
EQUIP	EQUIPMENT	S/N	SOLID NEUTRAL
ERU	ENERGY RECOVERY UNIT	SP	SPUMP
ERV	ENERGY RECOVERY VENTILATOR	SPD	SURGE PROTECTIVE DEVICE
ESEW	EMERGENCY SHOWER / EYEWASH	SPDT	SINGLE POLE DOUBLE THROW
EUH	ELECTRIC UNIT HEATER	SPEC	SPECIFICATIONS
EWC	ELECTRIC WATER COOLER	SPST	SINGLE POLE SINGLE THROW
EWH	ELECTRIC WATER HEATER	SWBD	SWITCHBOARD
Ex or EXIST	EXISTING	SWGR	SWITCHGEAR
EXP	EXPLOSION PROOF	TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
F	FUSE		
FACP	FIRE ALARM CONTROL PANEL	TOL	THERMAL OVERLOAD
FCU	FAN COIL UNIT	TP	TWISTED PAIR
FLEX	FLEXIBLE	TYP	TYPICAL
FWE	FURNISHED WITH EQUIPMENT	U	URINAL
G or GND	GROUND	UG	UNDERGROUND
GFCI	GOVERNMENT FURNISHED CONTRACTOR INSTALLED or GROUND FAULT CIRCUIT INTERRUPTER	UH	UNIT HEATER
GFGI	GOVERNMENT FURNISHED GOVERNMENT	UIO	UNLESS INDICATED OTHERWISE
GUH	GAS UNIT HEATER	UL	UNDERWRITERS LABORATORY
GWH	GAS WATER HEATER	UTP	UNSHIELDED TWISTED PAIR
H or HT	HEIGHT	V	VOLTS
HAC	HEATED AIR CURTAIN	VAR	VOLT AMPERES REACTIVE
HOA	HAND-OFF AUTOMATIC	VAV	VAV TERMINAL UNIT
HP	HORSE POWER or HEAT PUMP	VEF	VEHICLE EXHAUST FAN
HT	HEAT TRACKING	VM	VOLTmeter
HVU	HEATING/VENTILATING UNIT	VRF	VARIABLE REFRIGERANT FLOW SYSTEM
HWCP	HEATING WATER CIRCULATING PUMP	W	WATTS or WIRE
HWP	HEATING WATER PUMP	WC	WATER CLOSET
HWRP	HOT WATER RECIRCULATION PUMP	WEF	WELDING EXHAUST FAN
HWSP	HEATING WATER SUPPLY PUMP	WH	WATER HEATER
HWUH	HOT WATER UNIT HEATER	WHDM	WATTHOUR DEMAND METER
HZ	HERTZ	WP	WEATHERPROOF
IDS	INTRUSION DETECTION SYSTEM	WSHP	WATER SOURCE HEAT PUMP
		XFMR	TRANSFORMER
		Z	IMPEDANCE

NOTE:

1. NOT ALL SYMBOLS SHOWN WILL BE USED ON THIS PROJECT.

ELECTRICAL LEGEND

LUMINAIRES		WIRING DEVICES		WIRING DEVICES		GROUNDING AND LIGHTNING PROTECTION	
	LUMINAIRE AND OUTLET BOX, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.		LUMINAIRE AND OUTLET BOX WIRED FOR MULTILEVEL SWITCHING, LOWER CASE LETTER INDICATES SWITCHLEG DESTINATION.		LUMINAIRE AND OUTLET BOX, WITH PROVISIONS FOR EMERGENCY LIGHTING, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.		WALL MOUNTED LUMINAIRE AND OUTLET BOX, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.
	CEILING OR WALL MOUNTED EXIT SIGN AND OUTLET BOX. PROVIDE NUMBER OF ARROWS AND FACES INDICATED, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.		RECESSED OR PENDANT MOUNTED LUMINAIRE AND OUTLET BOX, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.		WALL MOUNTED LUMINAIRE AND OUTLET BOX, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.		CEILING OR WALL MOUNTED LUMINAIRE AND OUTLET BOX WITH PROVISIONS FOR EMERGENCY LIGHTING, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.
	EMERGENCY LIGHT UNIT, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.		REMOTE HEAD OR FLOOD LUMINAIRE, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.		WALL WASH DOWNLIGHT, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.		POLE MOUNTED LUMINAIRE, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.
	POST-TOP OR BOLLARD LUMINAIRE, LETTER INDICATES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.		EQUIPMENT		MOTOR, HORSEPOWER AS INDICATED		MOTORIZED DAMPER
	3-POLE COMBINATION MOTOR CONTROLLER STARTER/DISCONNECT (POLES/FRAME SIZE / FUSE SIZE / NEMA ENCLOSURE) NF = NON-FUSED MOUNTED 48" AFF, UNLESS OTHERWISE NOTED		60/40/3/3R DISCONNECT SWITCH, (FRAME SIZE / FUSE SIZE / POLES / NEMA ENCLOSURE) NF = NON-FUSED MOUNTED 48" AFF, UNLESS OTHERWISE NOTED		40/3/3R INDIVIDUALLY MOUNTED CIRCUIT BREAKER, (FRAME SIZE/POLES) NEMA ENCLOSURE		DRY TYPE TRANSFORMER
	SURFACE MOUNTED PANELBOARD, DASHED BOX INDICATES WORKING ACCESS REQUIRED BY CODE.		RECESSED MOUNTED PANELBOARD, DASHED BOX INDICATES WORKING ACCESS REQUIRED BY CODE.		DISTRIBUTION PANELBOARD, DASHED BOX INDICATES WORKING ACCESS REQUIRED BY CODE.		EQUIPMENT AS INDICATED
	CEILING OR WALL MOUNTED JUNCTION BOX		PULL OR JUNCTION BOX		CEILING MOUNTED BLUE LIGHT SYSTEM ROTATING BEACON		WHITE NOISE PLENUM SPEAKER; MOUNT ABOVE DROP CEILING
RECEPTACLE SUBSCRIPTS		WP = IN-USE WEATHER PROOF TR = TAMPER RESISTANT TV = TELEVISION MOUNT AT 60" ABOVE FINISHED FLOOR AFCI = ARC FAULT CIRCUIT INTERRUPTER		FLOOR BOX WITH DUPLEX RECEPTACLE NEMA 5-20R. PROVIDE FIRE RATED POKE-THROUGH DEVICES ON ALL FLOORS ABOVE GROUND LEVEL.		P2A-2 (#10) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)	
P2A-2 (#8) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)		SPECIAL RECEPTACLE, NEMA TYPE AS INDICATED, MOUNT 18" ABOVE FINISHED FLOOR, UNLESS INDICATED OTHERWISE		L4A-1 (#10) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)		L4A-1 (#8) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)	
CEILING BOX WITH DUPLEX RECEPTACLE, NEMA 5-20R		CEILING BOX WITH DUPLEX RECEPTACLE, NEMA 5-20R		WP → RECEPTACLE TYPE IF APPLICABLE		X1 → LUMINAIRE TYPE	
RECEPTACLE		FLOOR BOX SUITABLE FOR CONCRETE FLOOR POUR, TWO COMPARTMENTS - POWER AND TELECOMMUNICATIONS; FLUSH COVER/FLANGE WITH HINGED ACCESS TO RECEPTACLES AND JACKS RECESSED BELOW COVER IN FLOOR BOX. PROVIDE 8" FIRE RATED POKE-THROUGH ABOVE GROUND FLOOR.		L4A-1 (#10) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)		EL4A-1 (#8) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)	
S		WALL SWITCH, AC TYPE, SPST, MOUNT 48" ABOVE FINISHED FLOOR		RACEWAY EXPOSED TO VIEW		RACEWAY TURNED TOWARD VIEWER	
S ₁		WALL SWITCH, AC TYPE, DPDT, MOUNT 48" ABOVE FINISHED FLOOR		CONCEALED RACEWAY, LOCATED IN WALL OR ABOVE FINISHED CEILING		RACEWAY TURNED AWAY FROM VIEWER	
S ₂		3-WAY WALL SWITCH, MOUNT 48" ABOVE FINISHED FLOOR		UNDERGROUND RACEWAY, LOCATED BELOW GRADE OR CONCRETE SLAB		RACEWAY TERMINATION, STUB-OUT AND CAP	
S ₃		PLUG-IN BUSWAY, UNLESS INDICATED OTHERWISE		FLEXIBLE RACEWAY		PLUG-IN BUSWAY, UNLESS INDICATED OTHERWISE	
W		SURFACE METAL RACEWAY OR MULTIOUTLET ASSEMBLY AS INDICATED		RACEWAY TERMINATION, STUB-OUT AND CAP		LADDER TYPE CABLE TRAY (SIZE AS INDICATED ON PLAN)	
P2A-1,3,5		CIRCUIT HOMERUN TO PANELBOARD, P2A-1,3,5, ADJACENT TO ARROW, INDICATES HOMERUN CIRCUITS 1, 3, AND 5 IN PANEL P2A. MARKS ACROSS RACEWAY INDICATE THE NUMBER OF PHASE CONDUCTORS AND NEUTRALS IN RACEWAY. NEUTRAL CONDUCTORS ARE INDICATED BY LONGER HASHMARKS. NO MARKS ACROSS RACEWAY INDICATES 2#12 CONDUCTORS AND #12 GROUND CONDUCTOR. CONDUCTOR SIZE #12 UNLESS INDICATED OTHERWISE.		P2A-2 (#10) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)		VFD → INDIVIDUALLY MOUNTED MOTOR STARTER OR VARIABLE FREQUENCY DRIVE, NEMA SIZE AS INDICATED	
P2A-2 (#8) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)		800A/3P/400A → FUSED DISCONNECT, FRAME, POLE AND FUSE SIZE AS INDICATED.		L4A-1 (#10) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)		ENCLOSED CIRCUIT BREAKER 50/3P → INDIVIDUALLY MOUNTED CIRCUIT BREAKER, TRIP AND POLE SIZE AS INDICATED.	
L4A-1 (#8) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)		RACEWAY EXPOSED TO VIEW		RACEWAY TURNED TOWARD VIEWER		RACEWAY TURNED AWAY FROM VIEWER	
X1 → LUMINAIRE TYPE		CONCEALED RACEWAY, LOCATED IN WALL OR ABOVE FINISHED CEILING		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP	
EL4A-1 (#8) → PANEL, BRANCH CIRCUIT AND WIRE SIZE (IF OTHER THAN #12)		UNDERGROUND RACEWAY, LOCATED BELOW GRADE OR CONCRETE SLAB		FLEXIBLE RACEWAY		FLEXIBLE RACEWAY	
R		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP	
CR		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP	
ST		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP	
TR		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP	
M		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP	
EM		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP		RACEWAY TERMINATION, STUB-OUT AND CAP	
Schematic		SCHEMATIC		SCHEMATIC		SCHEMATIC	
Drawing Issue		DRAWING ISSUE		DRAWING ISSUE		DRAWING ISSUE	
Description		DESCRIPTION		DESCRIPTION		DESCRIPTION	
Mark		MARK		MARK		MARK	
Designed By:		WY		Drawn By:		WY	
Checked By:		JW		Submitted By:		JW	
Date:		02/28/2025		Project #:		1240263	
Sheet Title		ELECTRICAL LEGEND		ELECTRICAL LEGEND		ELECTRICAL LEGEND	
Sheet Number		E-002		E-002		E-002	
Original Sheet Size:		30" x 42"		30" x 42"		30" x 42"	

SHEET NOTES

- REFER TO SHEETS E-001 & E-002 FOR ELECTRICAL GENERAL NOTES, ABBREVIATIONS & LEGEND.
- RACEWAYS THAT SPAN EXPANSION JOINTS MUST BE PROVIDED WITH EXPANSION FITTINGS. FITTINGS SHALL BE CONCRETE TIGHT WITH GROUND CONTINUITY.
- RACEWAYS MUST NOT BE PLACED IN ELEVATED SLABS WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.
- EXTERIOR LUMINAIRES PROVIDED WITH INTEGRAL PHOTOCELL.

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EOR/AOR SEAL

COA SEAL

CLIENT INFORMATION
AMAZON.COM
SERVICES LLC

PROJECT NAME
AMZL DK01
AVI

151-153 TAYLOR
STREET
LITTLETON, MA
01460

DRAWING ISSUE

DATE

DESCRIPTION

DESIGNED BY: WY
DRAWN BY: WY
CHECKED BY: JW
SUBMITTED BY: JW
DATE: 02/28/2025
PROJECT #: 1240263

SHEET TITLE
LIGHTING PLAN

SHEET NUMBER
E-101

ORIGINAL SHEET SIZE:
30" X 42"

LUMINAIRE SCHEDULE											
Fixture	Description	Lamp	Detail Reference	Lumens	CRI	CCT	Voltage	Wattage	Mounting	Manufacturer	Notes
FE1	CANOPY LUMINAIRE W/BATTERY BACK-UP, IP66	LED		13760	80	40K	120 V	108 W	12' AFF, PENDANT BXD	LITHONIA, VCPG-LED-V4-P6-40K-80CRI-T5W-MVOLT-PM-DMG-E18WC-DD	1,2,3
GE1	EXTERIOR LED WALL PACK W/BATTERY BACK-UP, IP65	LED		2300	80	40K	120 V	16 W	9' AFF, WALL	LITHONIA LIGHTING, TWR1 LOW E7WC	1,3
GE2	EXTERIOR LED WALL PACK W/BATTERY BACK-UP, IP65	LED		8200	80	40K	120 V	55 W	13' AFF, WALL	LITHONIA LIGHTING, TWR2 LOW E7W	1,3
K1	8' EXTERIOR LED WALL MOUNTED FAÇADE LIGHTING, ALUMINUM DIECAST	LED		12873	80	40K	120 V	104 W	13' 6" AFF, WALL	THE LIGHT QUOTIENT, S175-H4-940	1
X1	EXIT SIGN, UL DAMP WITH BATTERY BACK UP, UNIVERSAL MOUNT.						120 V	1.03 W	7' 6" AFF, WALL	EVENLITE RAZOR SERIES; ISOLITE, PATHWAY, SURE-LITES TPX, TPX71R	1,3

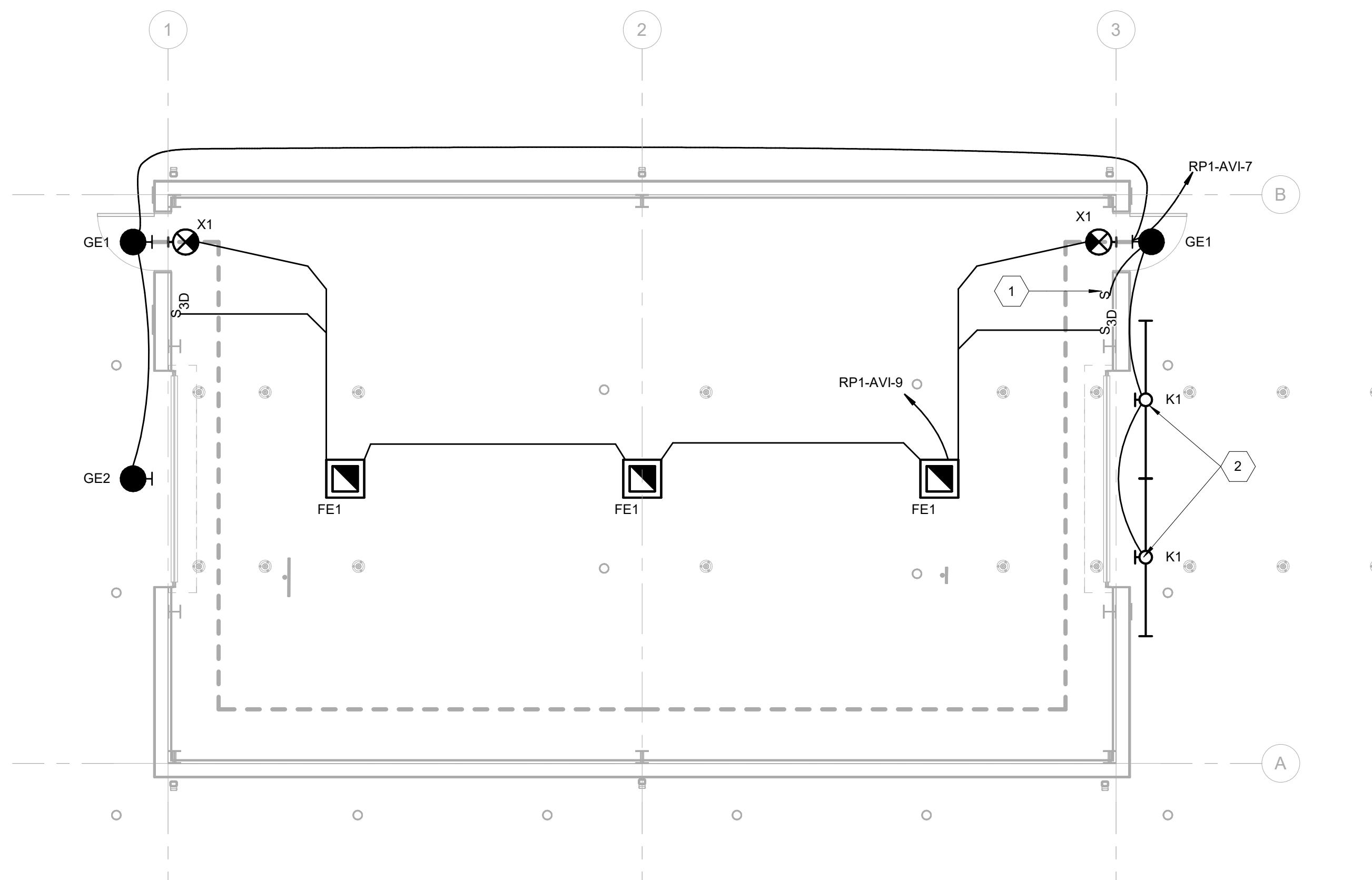
NOTES:

- DESIGN BASIS SHOWN FOR REFERENCE ONLY. FIXTURES OF EQUAL QUALITY AND PERFORMANCE ARE ACCEPTABLE. ALL FIXTURES MUST BE EQUAL IN MATERIAL, QUALITY, WARRANTY, PHOTOMETRIC, SIZE AND FINISH.
- VERIFY CEILING TYPES WITH ARCHITECTURAL DRAWINGS PRIOR TO ORDERING.
- WIRE EXIT SIGNS AND EMERGENCY BATTERY PACKS IN EMERGENCY LUMINAIRES AHEAD OF ALL LOCAL SWITCHING.

LUMINAIRE CONTROL SCHEDULE															
SPACE TYPE	ROOM NUMBER	MANUAL ON	MANUAL OFF	LOW-VOLTAGE DIMMING SYSTEM	LINE VOLTAGE DIMMING SWITCH	OCCUPANCY SENSOR ON	OCCUPANCY SENSOR OFF	VACANCY SENSOR OFF	AUTO BI-LEVEL CONTROL	ASTRONOMICAL TIME CLOCK	PHOTOCELL CONTROL	INTEGRAL MOTION CONTROL	DAYLIGHT DIMMING CONTROL	RECEPTACLE CONTROL	CONTROLS NARRATIVE
EXTERIOR/ BUILDING MOUNTED LIGHTING		X			X										PHOTOCELL CONTROL INTERNAL TO LIGHT FIXTURE
AVI TUNNEL															PROVIDE MANUAL ON SWITCHES AT EACH ROOM ENTRY.

KEYNOTES

- PHOTOCELL OVERRIDE SWITCH FOR EXTERIOR LIGHTS.
- PROVIDE AND INSTALL MOUNTED PHOTOCELL FOR K1 LIGHT FIXTURES THAT DO NOT HAVE INTERNAL PHOTOCELLS FOR LIGHTING CONTROL.



A3 AVI TUNNEL - ENLARGED LIGHTING PLAN

SCALE: 3/16" = 1'-0"

SHEET NOTES

- REFER TO SHEETS E-001 & E-002 FOR ELECTRICAL GENERAL NOTES, ABBREVIATIONS & LEGEND.
- RACEWAYS THAT SPAN EXPANSION JOINTS MUST BE PROVIDED WITH EXPANSION FITTINGS. FITTINGS MUST BE CONCRETE TIGHT WITH GROUND CONTINUITY.
- RACEWAYS MUST NOT BE PLACED IN ELEVATED SLABS WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.

EOR/AOR SEAL

COA SEAL

CLIENT INFORMATION
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SERVICES LLCPROJECT NAME
AMZL DK01
AVI151-153 TAYLOR
STREET
LITTLETON, MA
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DRAWING ISSUE

DATE

DESCRIPTION

DESIGNED BY: WY
DRAWN BY: WY
CHECKED BY: JW
SUBMITTED BY: JW
DATE: 02/28/2025
PROJECT #: 1240263

ENLARGED
POWER PLAN &
ONE-LINE
DIAGRAMSHEET NUMBER
E-111ORIGINAL SHEET SIZE:
30" X 42"

E

D

C

B

A

PANELBOARD SCHEDULE: DP1-AVI										
LOCATION: AVI TUNNEL 101			MAINS RATING: 150A MCB			MINIMUM BREAKER SCCR:				
SUPPLY FROM: T-RP1-AVI			VOLTAGE: 480Y/277							
MOUNTING: SURFACE			PHASES: 3							
ENCLOSURE: NEMA 1			WIRES: 4							
CONNECTED LOAD KVA										
CKT	CIRCUIT DESCRIPTION	TRIP	POLE	A	B	C	POLE	TRIP	CIRCUIT DESCRIPTION	CKT
1	T-RP1-AVI	70 A	3	4.31	0.00		3	80 A	FUTURE HEATING LOAD	2
--	3	--	--		4.19	0.00	--	--		4
--	5	--	--			5.25	0.00	--		6
7							--	--		8
9							--	--		10
11							--	--		12
13							--	--		14
15							--	--		16
17							--	--		18
19							--	--		20
21							--	--		22
23							--	--		24
25							--	--		26
27							--	--		28
29							--	--		30
31							--	--		32
33							--	--		34
35							--	--		36
37							--	--		38
39							--	--		40
41							--	--		42
TOTAL LOAD:			4.31	4.19	5.25					

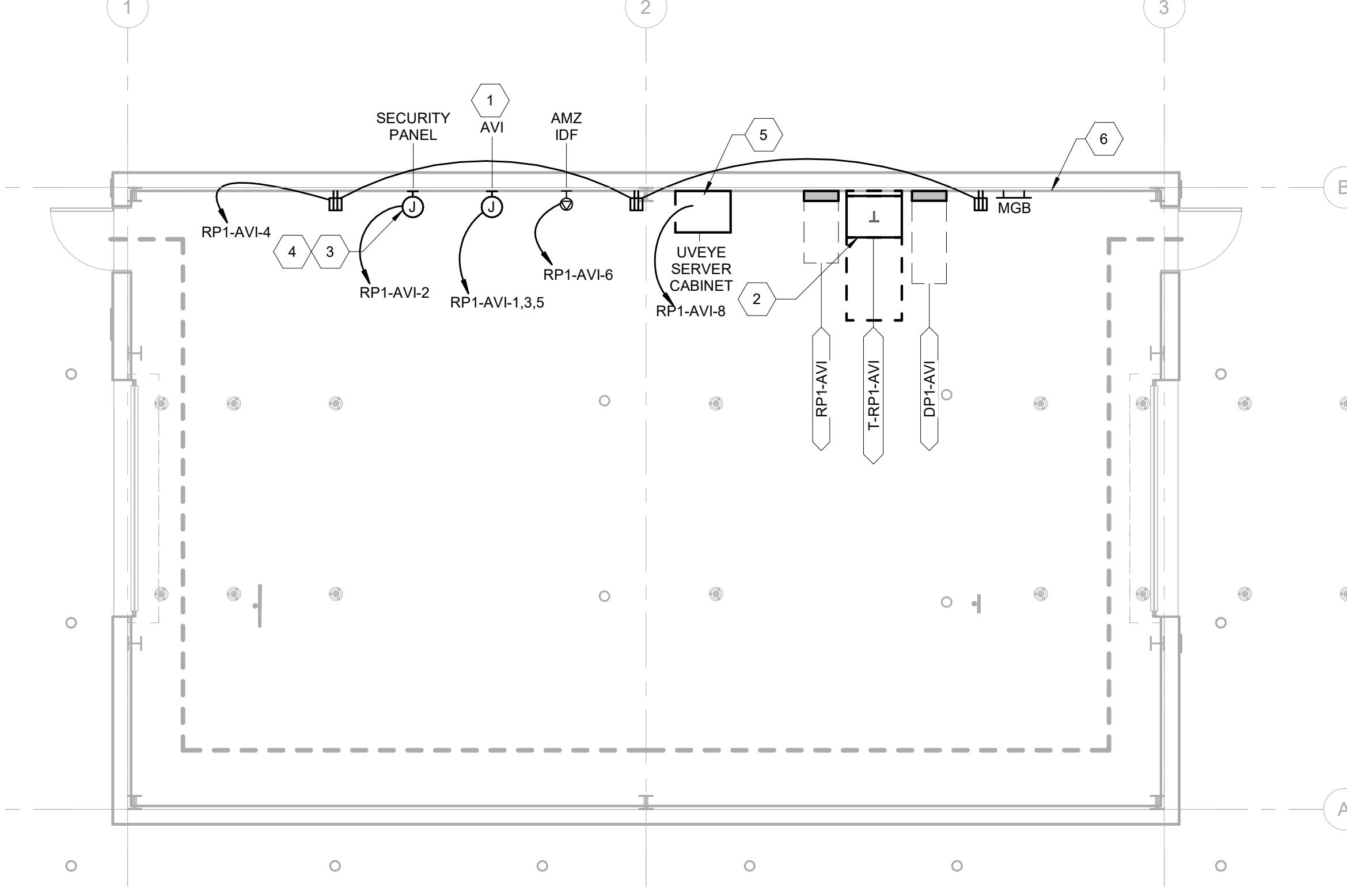
NOTES:

Load Classification	Connected Load	Estimated Demand	Panel Totals
Power	10.7 kVA	10.7 kVA	Total Conn. Load: 13.76 kVA
Lighting	0.0 kVA	0.0 kVA	Total Est. Demand Load: 13.8 kVA
Other	0.2 kVA	0.2 kVA	Total Conn. Current: 17 A
LTG	0.4 kVA	0.4 kVA	Total Est. Demand Current: 17 A
Recp - Specific Appliance or Load	1.9 kVA	1.9 kVA	Total Est. Design Current: 19.0 A
Recp - General Purpose	0.5 kVA	0.5 kVA	Total Est. Design Current: 19.0 A

PANELBOARD SCHEDULE: RP1-AVI											
LOCATION: AVI TUNNEL 101			MAINS RATING: 150A MCB			MINIMUM BREAKER SCCR:					
SUPPLY FROM: T-RP1-AVI			VOLTAGE: 208Y/120								
MOUNTING: SURFACE			PHASES: 3								
ENCLOSURE: NEMA 1			WIRES: 4								
CONNECTED LOAD KVA											
CKT	CIRCUIT DESCRIPTION	TRIP	POLE	A	B	C	POLE	TRIP	CIRCUIT DESCRIPTION	CKT	
1	AVI	40 A	3	3.33	0.50		1	20 A	SECURITY PANEL	2	
--	3	--	--		3.33	0.54	1	20 A	RECP - HOUSEKEEPING	4	
--	5	--	--			3.33	1.92	1	20 A	AMAZON IDF	6
7	EXT LTG	20 A	1	0.29	0.18		1	20 A	UVEYE SERVER CABINET	8	
9	INT LTG	20 A	1		0.32	0.00	1	20 A	SPARE	10	
11	SPARE	20 A	1			0.00	0.00	1	20 A	SPARE	12
13							--	--		14	
15							--	--		16	
17							--	--		18	
19							--	--		20	
21							--	--		22	
23							--	--		24	
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29							--	--		32	
31							--	--		34	
33							--	--		36	
35							--	--		38	
37							--	--		40	
39							--	--		42	
41							--	--			
TOTAL LOAD:			4.31	4.19	5.25						

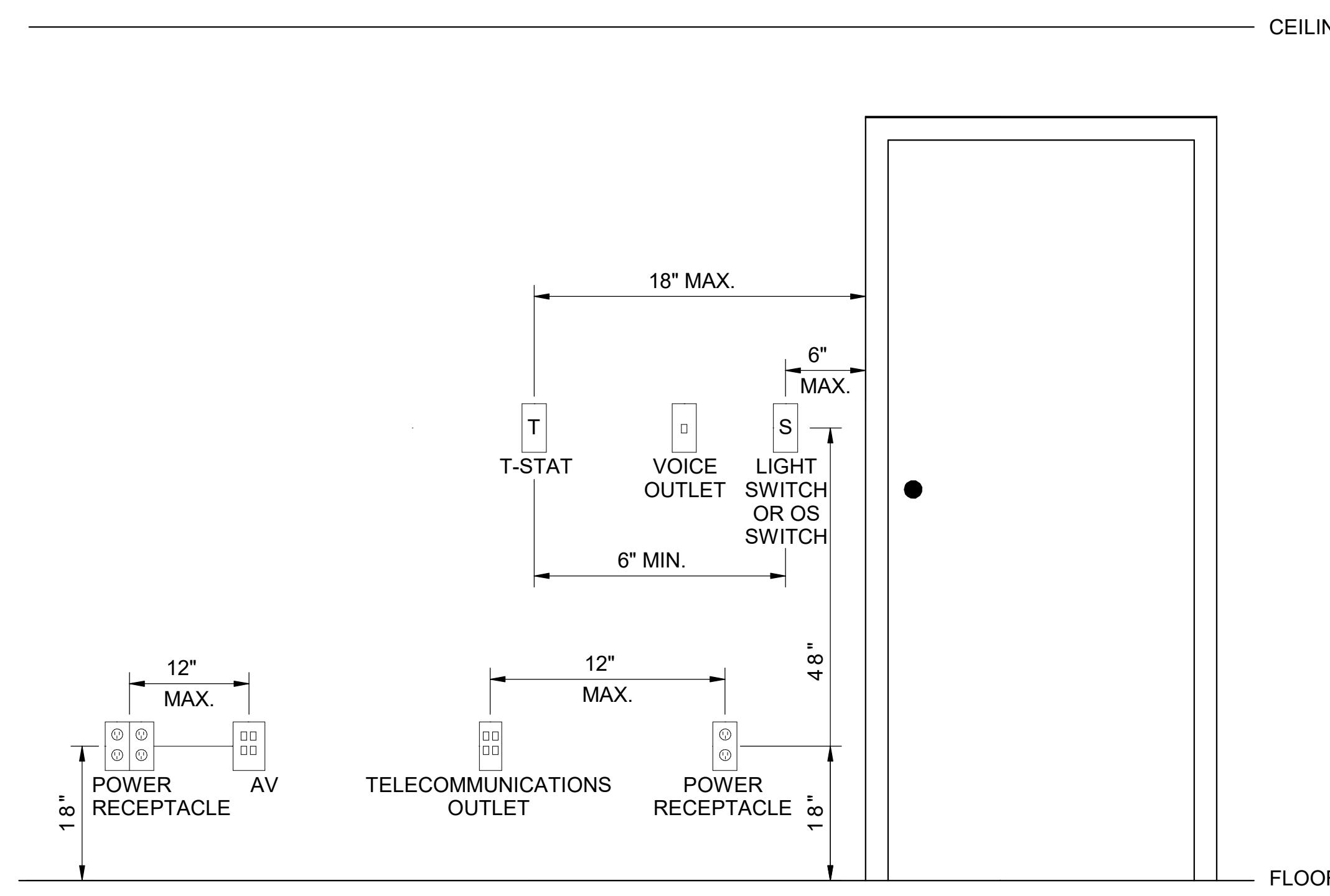
NOTES:

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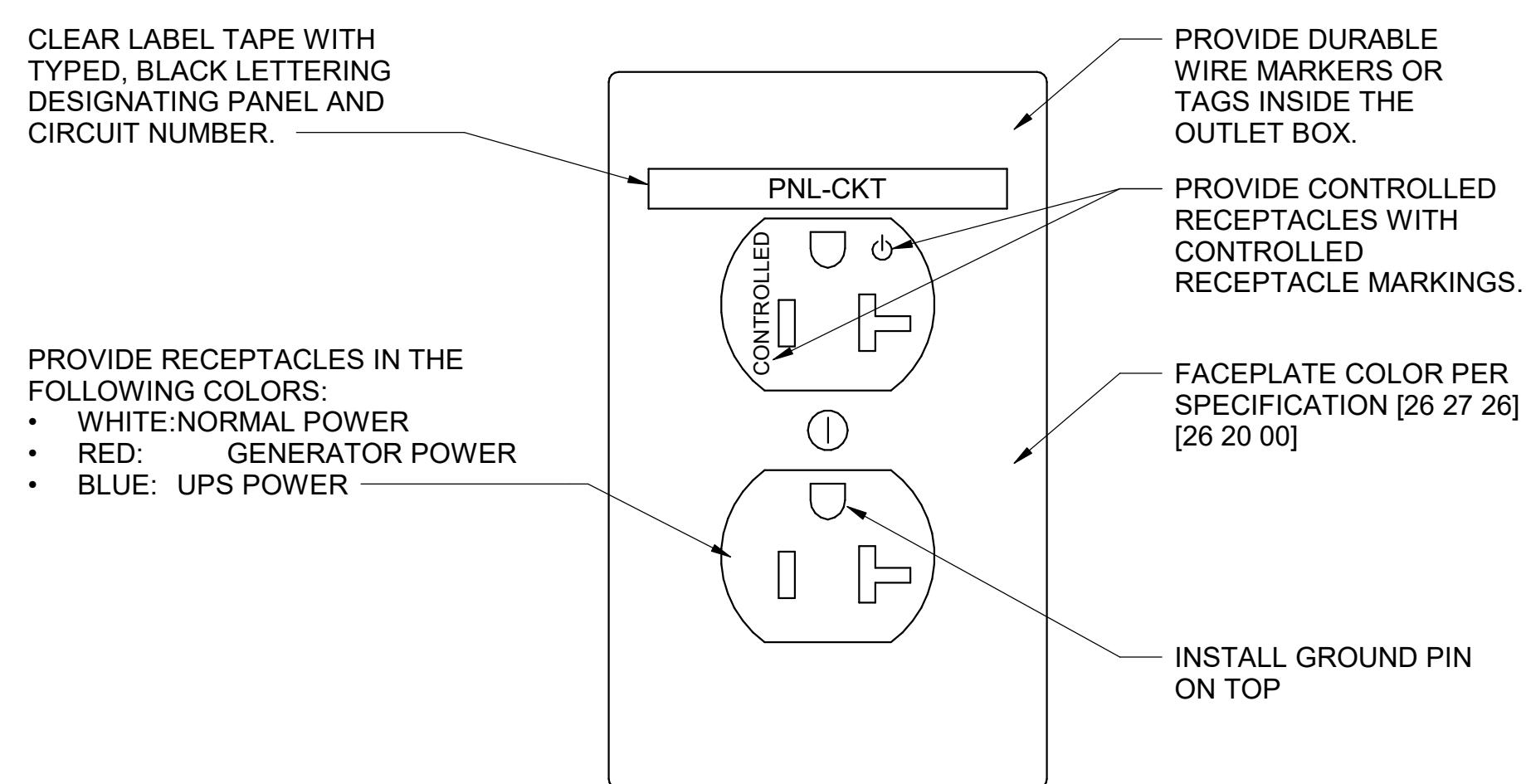


SHEET NOTES

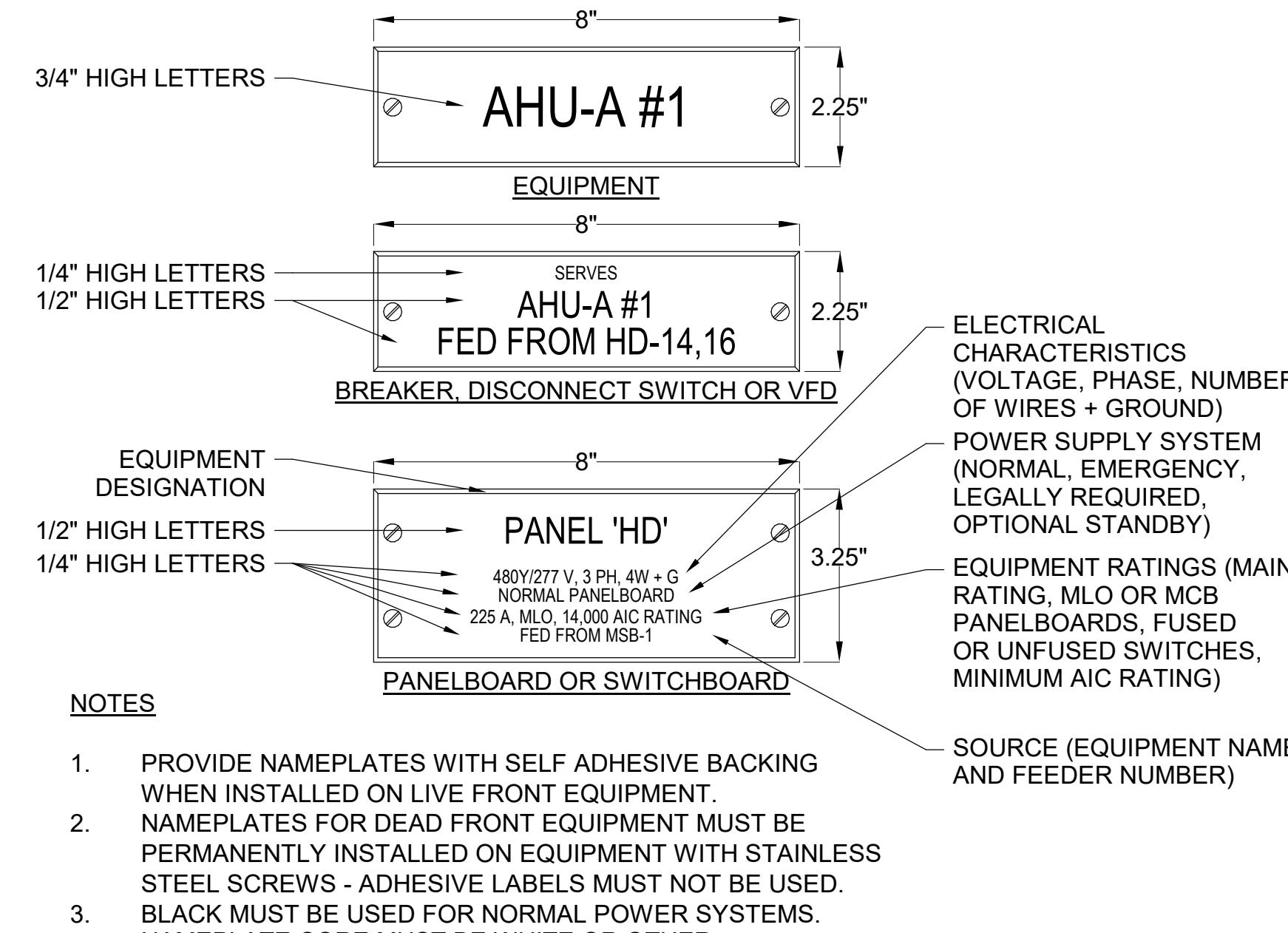
1. REFER TO SHEETS E-001 & E-002 FOR ELECTRICAL GENERAL NOTES, ABBREVIATIONS & LEGEND.



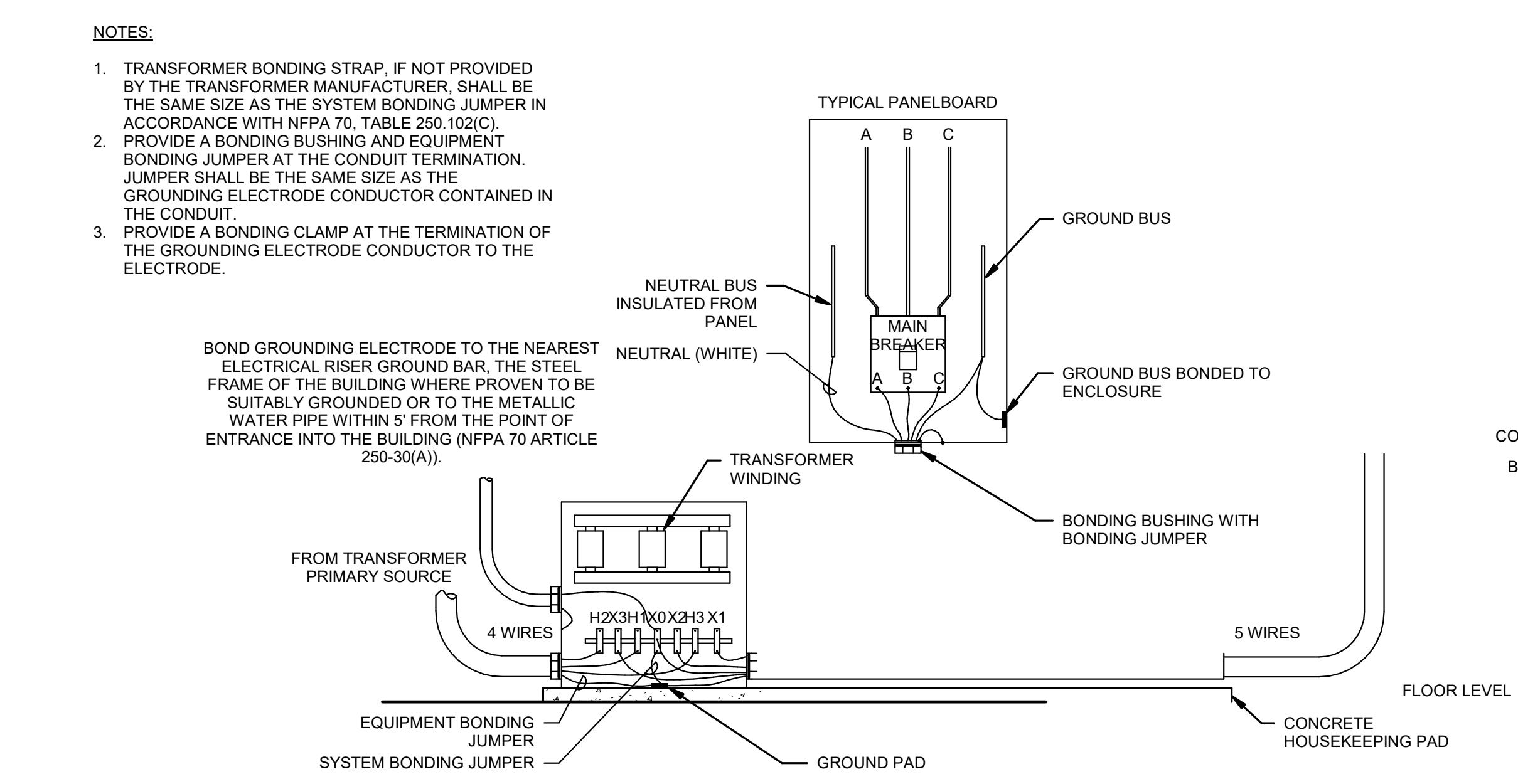
C1 — **MOUNTING HEIGHT DETAIL**
NOT TO SCALE



C3 RECEPTACLE FACEPLATE DETAIL
NOT TO SCALE

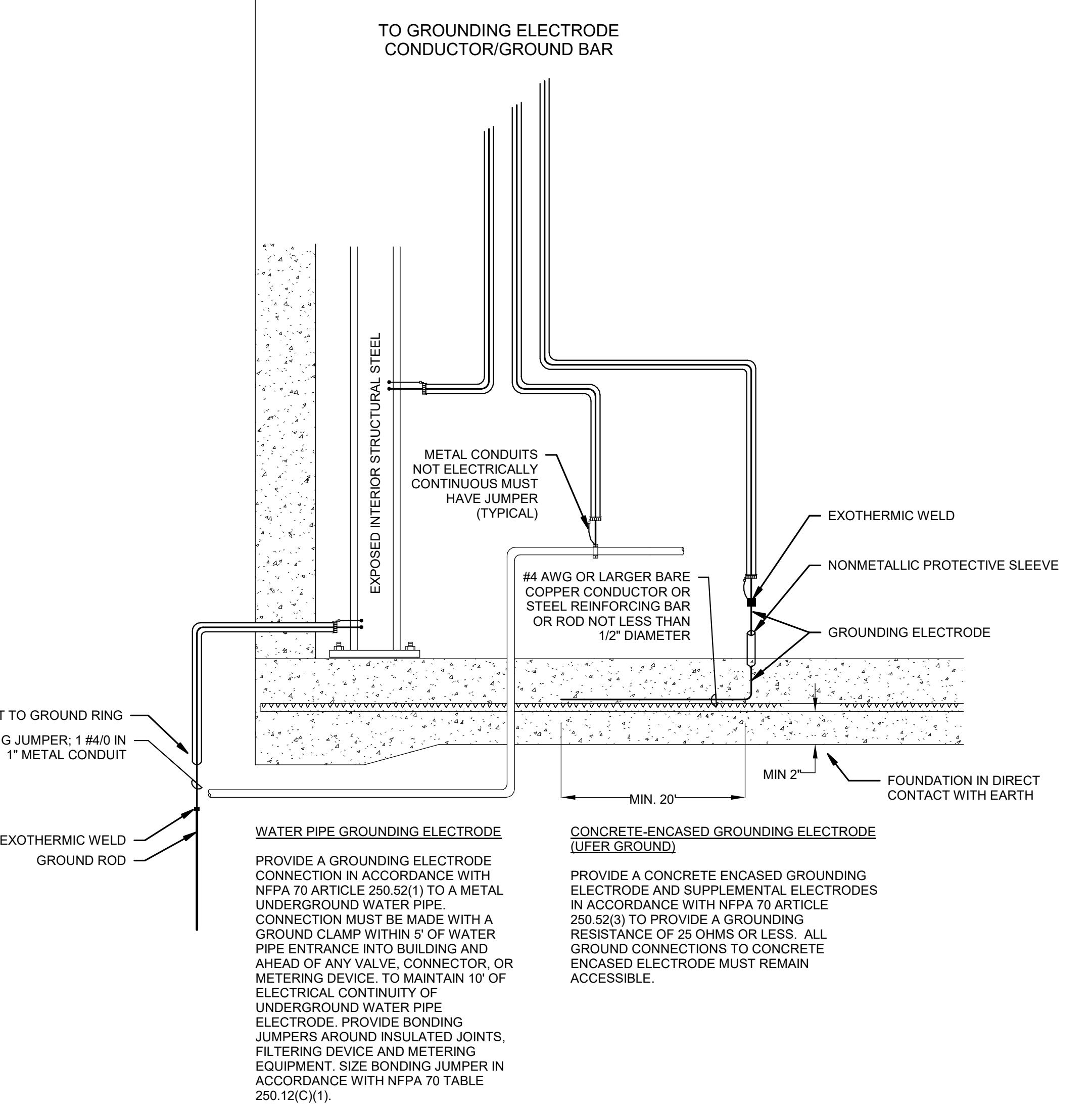


A1 **EQUIPMENT LABEL**
NOT TO SCALE



A3 GROUNDING RISER DIAGRAM

NOT TO SCALE



DIVISION 26 - ELECTRICAL**GENERAL**

- ALL ELECTRICAL WORK MUST BE IN ACCORDANCE WITH 2020 NATIONAL ELECTRICAL CODE.
- CONTRACTOR MUST PAY AND OBTAIN ALL PERMITS REQUIRED BY THE LOCAL BUILDING CODE.
- CONTRACTOR MUST COORDINATE ELECTRICAL SERVICE WITH THE LOCAL ELECTRICAL UTILITY COMPANY, COMPLY WITH LOCAL ELECTRICAL UTILITY COMPANY STANDARDS FOR PROVISION OF: PRIMARY DUCTS AND CONDUCTORS, TRANSFORMERS, PADS, REVENUE METERING; SECONDARY CONDUIT, CONDUCTORS, AND GROUNDING. ALL FEES ASSOCIATED WITH PROVISION OF ELECTRICAL SERVICE MUST BE PAID BY THE CONTRACTOR.
- DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, WHAT IS CALLED FOR BY ONE MUST BE PROVIDED AS IF CALLED FOR IN BOTH. IN THE EVENT THERE IS A DISCREPANCY BETWEEN THE DRAWINGS AND SPECIFICATIONS, PROVIDE THE MORE STRICT OR HIGHER QUALITY.
- CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS PRIOR PURCHASING EQUIPMENT.
- ELECTRICAL MATERIALS AND EQUIPMENT MUST MEET THE REQUIREMENTS OF UL, WHERE UL STANDARDS ARE ESTABLISHED FOR THOSE ITEMS.
- ALL ELECTRICAL WORK MUST BE INSTALLED IN ACCORDANCE WITH NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA) NATIONAL ELECTRICAL INSTALLATION STANDARDS (NEIS). WORK WHICH DOES NOT COMPLY WITH NEIS WILL BE GROUNDS FOR REJECTION OF WORK. THE OWNER AND ENGINEER RESERVE THE RIGHT TO INSPECT ALL WORK AND HAVE CONTRACTOR TEST AND DEMONSTRATE FUNCTIONALLY ALL OF ELECTRICAL WORK.
- DISCONNECT, REMOVE FROM THE SITE, AND DEPOSE OF ALL ITEMS INDICATED TO BE DEMOLISHED IN ACCORDANCE WITH LOCAL STATE AND FEDERAL LAWS AND CODES. CONTRACTOR MUST NOT REUSE DEMOLISHED ITEMS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS. REMOVE ALL USED MATERIAL AND SCRAP RELATIVE TO THE ELECTRICAL INSTALLATION AND LEAVE THE PREMISES IN CLEAN AND ORDERLY CONDITION, WHERE ITEMS ARE NOT INDICATED TO BE DEMOLISHED, THE ASSOCIATED CIRCUITRY AND CONDUIT MUST BE REWORKED TO MAINTAIN CIRCUIT CONTINUITY TO ITEMS TO REMAIN.
- CONTRACTOR MUST WARRANTY ALL ELECTRICAL WORK FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE TO INCLUDE ALL PARTS AND LABOR.

FIRE STOPPING

- FIRE STOP ALL ELECTRICAL PENETRATIONS OF RATED FLOORS AND WALLS. PROVIDE FIRESTOPPING MATERIALS, SUPPLIED FROM A SINGLE DOMESTIC MANUFACTURER, CONSISTING OF COMMERCIALLY MANUFACTURED, ASBESTOS-FREE, NONTOXIC PRODUCTS FM APP GUIDE APPROVED, OR UL LISTED, FOR USE WITH APPLICABLE CONSTRUCTION AND PENETRATING ITEMS.
- PROVIDE MATERIALS WITH A FLAME SPREAD OF 25 OR LESS, AND A SMOKE DEVELOPED RATING OF 50 OR LESS, WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723. MATERIAL MUST BE AN APPROVED FIRESTOPPING MATERIAL AS LISTED IN UL FIRE RESISTANCE OR BY A NATIONALLY RECOGNIZED TESTING LABORATORY.
- MATERIAL MUST BE NONTOXIC AND CARCINOGEN FREE TO HUMANS AT ALL STAGES OF APPLICATION OR DURING FIRE CONDITIONS AND MUST NOT CONTAIN HAZARDOUS CHEMICALS OR REQUIRE HARMFUL CHEMICALS TO CLEAN MATERIAL OR EQUIPMENT.
- FIESTOP SYSTEMS MUST BE UL FIRE RESISTANCE LISTED OR FM APP GUIDE APPROVED WITH "F" RATING AT LEAST EQUAL TO FIRE-RATING OF FIRE WALL OR FLOOR IN WHICH PENETRATED OPENINGS ARE TO BE PROTECTED. WHERE REQUIRED, FIESTOP SYSTEMS MUST ALSO HAVE "T" RATING AT LEAST EQUAL TO THE FIRE-RATED FLOOR IN WHICH THE OPENINGS ARE TO BE PROTECTED.
- FIRESTOPPING MATERIALS FOR THROUGH-PENETRATIONS MUST PROVIDE "F", "T" AND "L" FIRE RESISTANCE RATINGS IN ACCORDANCE WITH ASTM E814 OR UL 1479.

SUBMITTALS FOR APPROVAL

- PRODUCT DATA:
 - SUBMIT PRODUCT DATA FOR THE FOLLOWING ITEMS:
 - CONDUIT
 - CONDUCTORS
 - WIRING DEVICES
 - PANELBOARDS
 - DRY TYPE TRANSFORMERS
 - INTERIOR LIGHTING
 - EXTERIOR LIGHTING

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