

# ELECTRICAL SYMBOL LIST

NOTE: This is a standard symbol list and not all items listed may be used.

## Abbreviations

AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ARF	ABOVE RAISED FLOOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AWG	AMERICAN WIRE GAUGE
A	AMPERES, AMPERE
AV	AUDIO VISUAL
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AVAILABLE INTERRUPTING CAPACITY
BAS	BUILDING AUTOMATION SYSTEM
CA	CABLE
CAT	CATEGORY
CLG	CEILING
CB	CIRCUIT BREAKER
C	CONDUIT, CLOSE, CONTROL
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED
COORD	COORDINATE
CU	COPPER
dB	DECIBEL
(D)	DEMOLISH
DTL	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DN	DOWN
DWG	DRAWING
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NON-METALLIC TUBING
ESD	ELECTROSTATIC DISCHARGE
EL	ELEVATION
E	EMERGENCY
EF	EXHAUST FAN
(E)	EXISTING
FMS	FACILITY MANAGEMENT SYSTEMS
FF	FINISH FLOOR
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FMC	FLEXIBLE METAL CONDUIT
FT	FOOT, FEET
FBO	FURNISHED BY OTHERS
G, GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GE	GROUNDING EQUALIZER
HH	HANDHOLE
HT	HEIGHT
HC	HORIZONTAL CROSS CONNECT
ID	IDENTIFICATION
IN	INCH, INCHES
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KW	KILOWATT
LED	LIGHT EMITTING DIODE
LNC	LIQUID TIGHT FLEXIBLE NONMETALLIC CONDUIT
LPMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LV	LOW VOLTAGE
MOCP	MAXIMUM OVERCURRENT PROTECTION
MHz	MEGAHERTZ
MIN	MINIMUM
MCA	MINIMUM CIRCUIT AMPS
MISC	MISCELLANEOUS
M	MOTOR
MCC	MOTOR CONTROL CENTER
MT, MTD	MOUNT, MOUNTED
MDU	MULTI-DWELLING UNIT
NEC	NATIONAL ELECTRIC CODE
NESC	NATIONAL ELECTRIC SAFETY CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
N/A	NOT APPLICABLE
N.I.C.	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OSP	OUTSIDE PLANT
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
PNL	PANEL
PH	PHASE
PVC	POLY-VINYL-CHLORIDE
PWR	POWER
QTY	QUANTITY
(R)	RELOCATE
RFI	REQUEST FOR INFORMATION
REQD	REQUIRED
RMC	RIGID METAL CONDUIT
RM	ROOM
SHT	SHEET
SPKR	SPEAKER
STD	STANDARD
SPD	SURGE PROTECTION DEVICE
SWBD	SWITCHBOARD
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TGB	TELECOMMUNICATIONS GROUNDING BUS BAR
TDB	TELEPHONE TERMINAL BOARD
TBD	TO BE DETERMINED
XFRM	TRANSFORMER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TP	TRANSITION POINT
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
UON	UNLESS OTHERWISE NOTED
VRFY	VERIFY
V	VOLTS, VOLTAGE
WP	WEATHERPROOF
W	WIRE, WHITE
W/	WITH
W/O	WITHOUT
WAO	WORK AREA OUTLET

## Connections / Equipment

	HEAVY DUTY FUSED DISCONNECT SWITCH
	NON-FUSED DISCONNECT SWITCH
	GENERAL
	DETAIL NUMBER AND SHEET LOCATION
	EQUIPMENT IDENTIFICATION
	KEYED NOTE
	SECTION NUMBER AND SHEET LOCATION
	NEW WORK

## Lighting

	EXIT SIGN CEILING MOUNTED, ARROW(S) INDICATES DIRECTION IF SHOWN
	EXIT SIGN WALL MOUNTED, ARROW(S) INDICATES DIRECTION IF SHOWN
	RECESSED 1' X 4' LUMINAIRE
	RECESSED 2' X 4' LUMINAIRE
	RECESSED LUMINAIRE
	SURFACE OR PENDANT MOUNTED STRIPLIGHT
	WALL MOUNTED 6" WIDE LUMINAIRE
	WALL MOUNTED LUMINAIRE
	FLOODLIGHT

## Miscellaneous

	AUTOMATIC TRANSFER SWITCH
	BARE COPPER GROUND CONDUCTOR BELOW GRADE
	BRANCH CIRCUIT WIRING, ARROW INDICATES HOME RUN TO PANEL WITH CIRCUITS AS NOTED, WIRE SIZE IS #12 AWG MINIMUM, UNLESS NOTED OTHERWISE, SHORT TICK MARKS INDICATE PHASE CONDUCTORS, LONG TICK MARKS INDICATE NEUTRAL CONDUCTORS, A SINGLE CURVED TICK MARK INDICATES INSULATED GREEN GROUND CONDUCTOR, SECOND CURVED TICK MARK INDICATES "ISOLATED GROUND" (GREEN INSULATION WITH YELLOW STRIPE) CONDUCTOR.
	BRANCH PANEL
	CIRCUIT BREAKER
	GROUND BAR
	GROUND ROD
	GROUNDING POINT
	METER WITH CONNECTION
	STANDBY/EMERGENCY GENERATOR

## Raceways

	CONDUIT CONCEALED IN WALL OR CEILING SPACE
	CONDUIT ROUTED BELOW FLOOR / GRADE

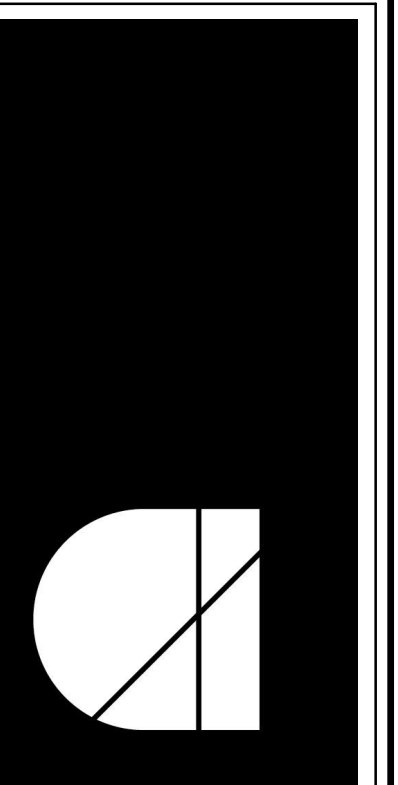
## Switches and Receptacles

	DUPLEX RECEPTACLE (MULTIPLE LETTERS INDICATE MULTIPLE OPTIONS) A = ABOVE COUNTER B = CLOCK HANGER C = FLUSH CEILING MOUNTED E = EMERGENCY F = ARC FAULT PROTECTED BY BREAKER IN PANEL G = GROUND FAULT CIRCUIT INTERRUPTER H = HOSPITAL GRADE K = CHILD RESISTANT COVER L = ISOLATED GROUND P = PENDANT MOUNTED WITH CORD GRIPS, VERIFY PENDANT LENGTH R1 = HALF SWITCHED BY OCCUPANCY SENSOR RELAY R2 = FULLY SWITCHED BY OCCUPANCY SENSOR RELAY S = SPLIT WIRED T = TAMPER RESISTANT SHUTTERED RECEPTACLE TV = TELEVISION RECEPTACLE U = USB PORT(S) W = WEATHERPROOF CONTINUOUS USE COVER, GFCI PROTECTED, WITH WEATHER-RESISTANT RECEPTACLE
	DOUBLE DUPLEX RECEPTACLE. SEE LETTER CODE LIST AT DUPLEX RECEPTACLE FOR OPTIONS
	SPECIAL PURPOSE RECEPTACLE. LETTER CODE DENOTES RECEPTACLE CONFIGURATION LX-XXR = NEMA CONFIGURATION TWIST-LOCK RECEPTACLE X-XXR = NEMA CONFIGURATION STRAIGHT BLADE RECEPTACLE P = PENDANT MOUNT WITH CORD GRIPS, VERIFY PENDANT LENGTH X = COORDINATE RECEPTACLE CONFIGURATION WITH EQUIPMENT BEING SUPPLIED CEILING MOUNTED OCCUPANCY SENSOR P = PASSIVE INFRARED D = DUAL TECHNOLOGY U = ULTRASONIC, 360 DEG RANGE H = ULTRASONIC, HALLWAY PATTERN V (LOWERCASE) = VACANCY CONTROL DESIGNATION

	SINGLE POLE SWITCH
	2 = DOUBLE POLE SWITCH
	3 = THREE-WAY SWITCH
	4 = FOUR-WAY SWITCH
	a THRU 2 (LOWERCASE) = LUMINAIRE CONTROL DESIGNATION
	D = DIMMER
	F = FAN SPEED CONTROL
	K = KEY OPERATED SWITCH
	L = LIGHTED HANDLE
	M = MANUAL MOTOR STARTER WITH THERMAL OVERLOAD
	P = SWITCH WITH PILOT LIGHT
	T = INTERVAL TIMER
	W = WEATHERPROOF SWITCH
	V = LOW VOLTAGE SWITCH
	RACEWAY ONLY DATA/TELEPHONE OUTLET. PROVIDE DOUBLE GANG BACK BOX AND SINGLE GANG ADAPTER PLATE WITH 1" C. AND PULLSTRINGS TO ACCESSIBLE CEILING SPACE (MULTIPLE LETTERS INDICATE MULTIPLE OPTIONS) A = ABOVE COUNTER C = CEILING MOUNTED ABOVE ACCESSIBLE CEILING F = FLUSH CEILING MOUNTED R = SURFACE MOUNTED ON RACEWAY

# GENERAL ELECTRICAL NOTES

- DO NOT COMMENCE INSTALLATION OF ELECTRICAL SYSTEMS AND EQUIPMENT WITHOUT RELATED SHOP DRAWING APPROVALS.
- COORDINATE THE EXACT LOCATION OF EXISTING UTILITIES AND EQUIPMENT PRIOR TO COMMENCEMENT OF WORK. COMPENSATE THE OWNER FOR DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE UTILITIES. REPLACE DAMAGED ITEMS WITH NEW MATERIAL TO MATCH EXISTING.
- OFFER REMOVED LUMINAIRES, WIRING DEVICES, PANELBOARDS AND EQUIPMENT TO THE OWNER. IF OWNER CHOOSES TO RETAIN THESE ITEMS, RETURN SUCH ITEMS TO OWNER CAREFULLY REMOVE AND DISPOSE OF ITEMS REJECTED BY OWNER FROM PROJECT SITE AND IN A LEGAL MANNER.
- PROVIDE SUITABLE ANCHORAGE AND SUPPORT FOR ELECTRICAL EQUIPMENT IN RATED WALLS, SLABS AND CEILINGS. MOUNT DEVICES AND RACEWAYS IN ACCORDANCE WITH ESTABLISHED CODES AND SPECIFICATIONS.
- REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- DRAWINGS AND SPECIFICATIONS COMPLY EACH OTHER. REQUIREMENT BY EITHER INFERS REQUIREMENT BY BOTH.
- CONNECT EQUIPMENT AND DEVICES FURNISHED UNDER OTHER DIVISIONS OF THIS CONTRACT, BY OWNER OR BY OTHER CONTRACTS.
- UNLESS OTHERWISE NOTED, PROVIDE CONCEALED AND FLUSH MOUNTED INSTALLATION OF DEVICES AND EQUIPMENT IN AREAS.
- PROVIDE SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN 120 VOLT, MULTI-WIRE CIRCUITS.
- FOR 120 VOLT, 20 AMP CIRCUITS, WHERE CIRCUIT DISTANCE FROM PANELBOARD TO FARTHEST DEVICE/FIXTURE EXCEEDS 75 FEET, PROVIDE #10 SIZE CONDUCTOR.
- RUN ELECTRICAL CONDUIT CONCEALED AND PARALLEL TO BUILDING LINES. VERIFY WITH ARCHITECT.
- BRACE ELECTRICAL EQUIPMENT TO RESIST A HORIZONTAL FORCE THAT ACT IN ANY DIRECTION. COMPLY WITH TITLE 24 REQUIREMENTS.
- INSTALL COMPLETE SYSTEM OF CONDUCTORS IN RACEWAY SYSTEM THROUGHOUT BUILDING FOR FEEDERS, BRANCH CIRCUITS, ETC.
- DESIGN OF TEMPORARY POWER FOR CONSTRUCTION SHALL BE THE CONTRACTOR'S RESPONSIBILITY. REMOVE TEMPORARY POWER PRIOR TO COMPLETION OF PROJECT.
- PROVIDE UNSWITCHED HOT CONDUCTOR TO EMERGENCY BALLAST/DRIVER OF SWITCHED LUMINAIRES TO PREVENT SWITCHOVER TO BATTERY OPERATION WHEN LUMINAIRES ARE SWITCHED TO THE OFF POSITION.
- INSTALLATION OF UTILITY TRANSFORMER, UTILITY SERVICE CONDUITS, VAULTS, GROUNDING, ETC., SHALL BE VERIFIED AND COORDINATED WITH UTILITY COMPANY PRIOR TO INSTALLATION. ALL WORK SHALL CONFORM WITH ALL UTILITY COMPANY RULES, REGULATIONS, AND STANDARDS. THE PROPOSED UTILITY COMPANY TRANSFORMER LOCATION, SERVICE FEEDER ROUTING, VAULT LOCATION AND SIZE ARE SUBJECT TO UTILITY COMPANY ENGINEERING, REVIEW AND APPROVAL. AT THE TIME OF THE ISSUANCE OF THESE DOCUMENTS, THIS ENGINEERING HAS NOT BEEN COMPLETED. CONTRACTOR SHALL COORDINATE AND VERIFY ALL THE NECESSARY UTILITY REQUIREMENTS FOR THIS PROJECT WITH UTILITY COMPANY PRIOR TO COMMENCING WORK.
- ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT TRENCHING WITH OTHER DISCIPLINES AND THE UTILITY COMPANY TO AVOID CONFLICT.
- MINIMUM SIZE FOR EXTERIOR BELOW GRADE CONDUIT SHALL BE 1".
- OCCUPANCY SENSOR NOTES:
  - WALL SENSORS
    - SENSOR MUST HAVE CLEAR "VIEW" OF OCCUPANTS. WHERE SENSOR WILL BE BLOCKED, SUBSTITUTE WITH SMALL-ROOM CEILING SENSOR.
  - SEE MANUFACTURER'S SPECIFICATION REGARDING PLACING SENSORS AWAY FROM STRONG AIR-FLOW. INDICATE PRECISE LOCATION OF EACH CEILING SENSOR WHERE DRAWINGS INDICATE AIR SUPPLIES.
  - IN INDIVIDUAL ROOMS WITH CEILING SENSORS AND DUAL-LEVEL LIGHTING, ASSUME TWO TOGGLE SWITCH OVERRIDES PER ROOM.
  - PRIOR TO INSTALLATION, RECEIVE FACTORY-TRAINING AND LAYOUT-ASSISTANCE. IF LOCAL AGENT CHANGES LIGHTING DRAWINGS, CONTACT FACTORY REPRESENTATIVE.
- PROVIDE ALL BACKBOXES, FLOOR BOXES, FLOOR TRENCH DUCT, GROUNDING SYSTEM, PULL BOXES, CONDUITS, CABLING, AND CABLE TRAYS PER TELECOM/AV/SECURITY DRAWINGS AND SPECIFICATIONS. REFER TO TELECOM/AV/SECURITY DRAWINGS FOR QUANTITY AND LOCATIONS. PROVIDE ALL APPURTENANCES FOR A COMPLETE INSTALLATION.
- ALL LOW VOLTAGE DEVICES SHOWN ON PLANS ARE BACKBOXES AND RACEWAYS ONLY. PROVIDE CABLING AND DEVICES PER THE TELECOMMUNICATION CONSULTANT OR OWNER REQUIREMENTS.
- ALL AIC RATINGS SHOWN ARE MINIMUM REQUIREMENTS. COORDINATE AND UPGRADE RATINGS FOR ALL DISTRIBUTION EQUIPMENT AS PER SHORT CIRCUIT ANALYSIS RECOMMENDATIONS.



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1212 S. IRVING ST.  
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Project: 19296-01

Issued 10/21/2020

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Revisions

## SYMBOL LIST AND GENERAL NOTES - ELECTRICAL

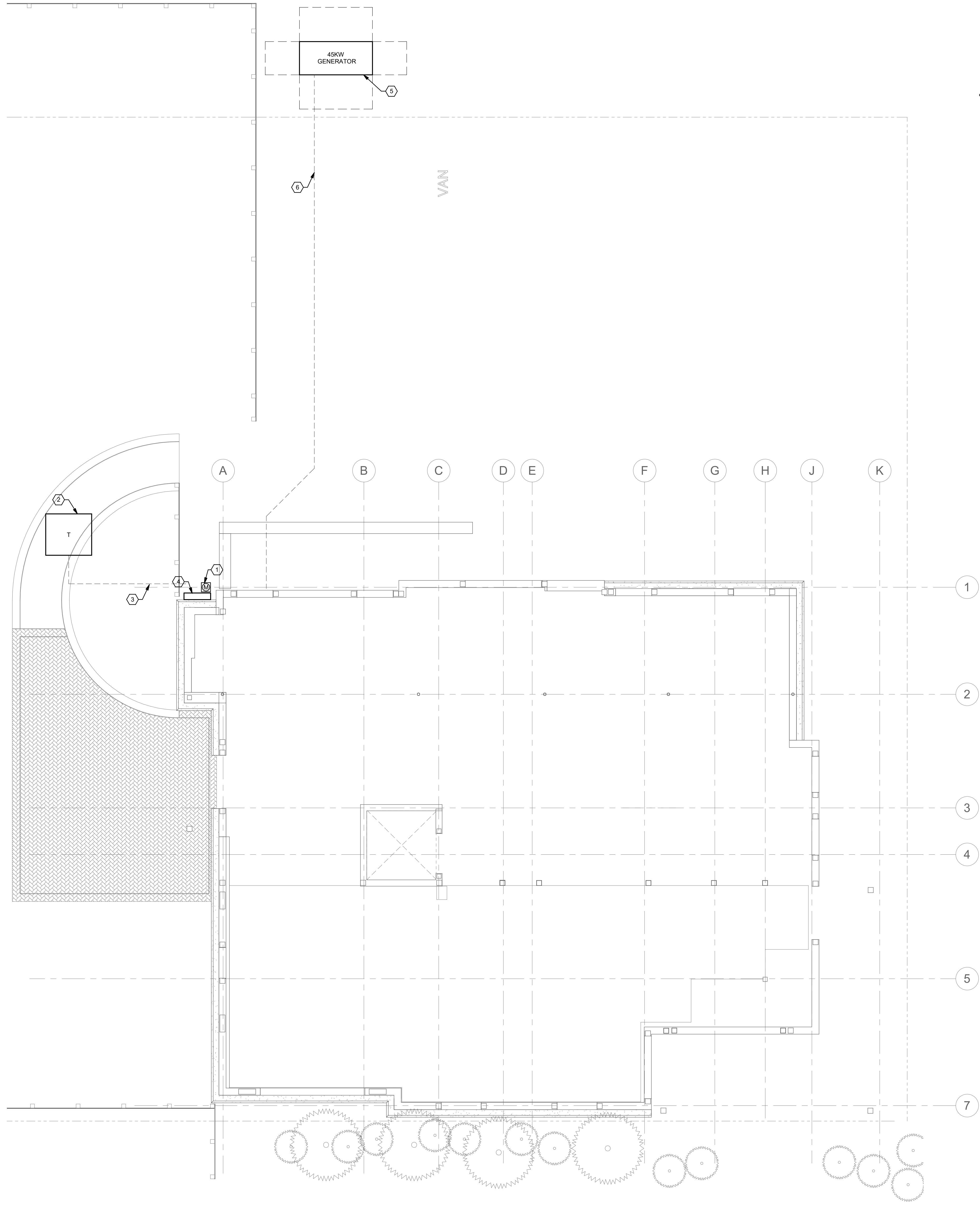
## SHEET INDEX

E001	SYMBOL LIST AND GENERAL NOTES - ELECTRICAL
E100	SITE PLAN - ELECTRICAL
E101	RCPS - BASEMENT & GROUND LEVEL - LIGHTING
E102	RCPS - 2ND LEVEL - LIGHTING
E201	FLOOR PLANS - BASEMENT & GROUND LEVEL - POWER
E202	FLOOR PLANS - 2ND & ATTIC LEVEL - POWER
E203	ROOF PLAN - PV
E501	SINGLE LINE DIAGRAMS - ELECTRICAL
E601	SCHEDULES - ELECTRICAL

Scale  
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E001

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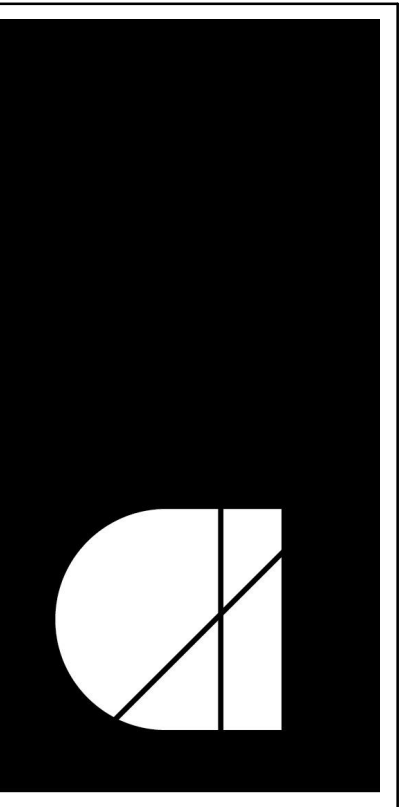
1 LEVEL 1 SITE ELECTRICAL PLAN

0' 2' 4' 8'  
1/4" = 1'-0"

**SHEET KEYNOTES**

1. ELECTRIC UTILITY METER - CONFIRM LOCATION PER CIVIL DRAWINGS.
2. ELECTRIC UTILITY TRANSFORMER TO BE LOCATED PER CIVIL DRAWINGS.
3. ELECTRIC UTILITY SERVICE CONDUCTOR ROUTING TO BE DETERMINED BY CIVIL DRAWINGS.
4. 400A CT CABINET - CONFIRM DIMENSIONS AND LOCATION PER CIVIL DRAWINGS.
5. 45 KW GENERATOR - COORDINATE FINAL LOCATION WITH OWNER / ARCHITECT.
6. GENERATOR SERVICE CONDUCTOR ROUTING TO BE DETERMINED BY CONTRACTOR.

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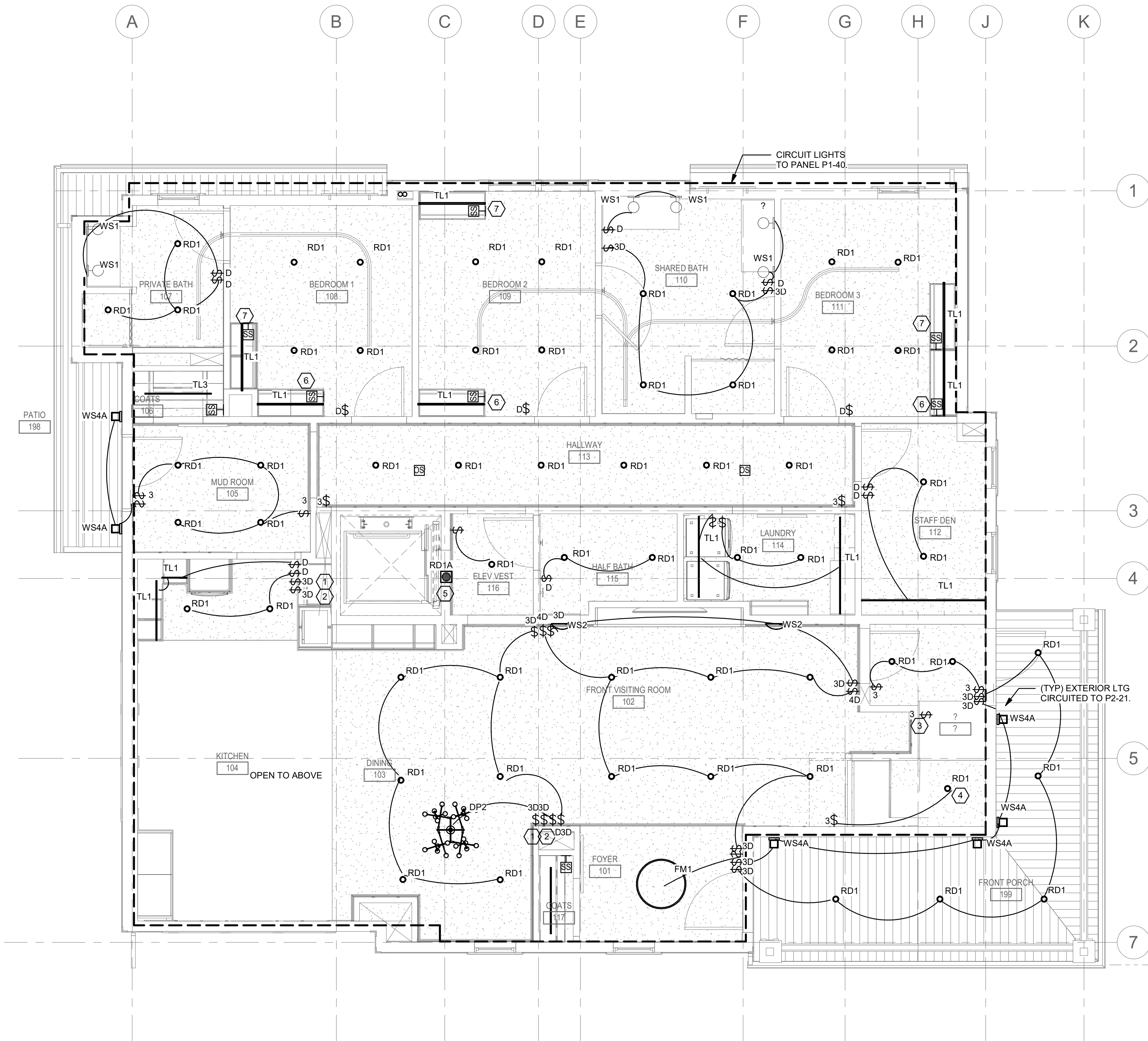
Revisions	

**SITE PLAN - ELECTRICAL**

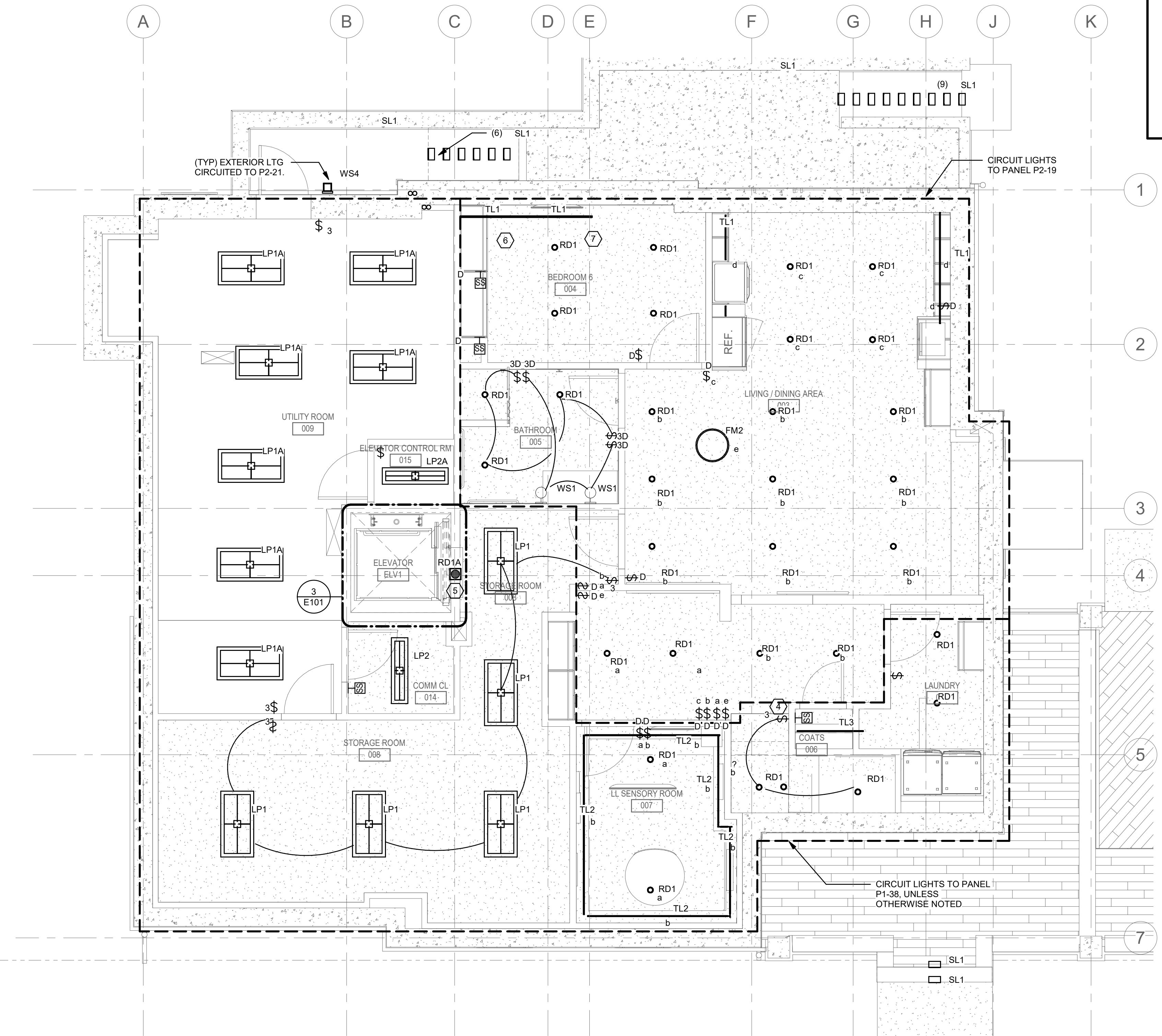
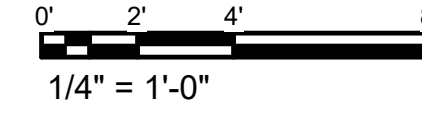
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**E100**

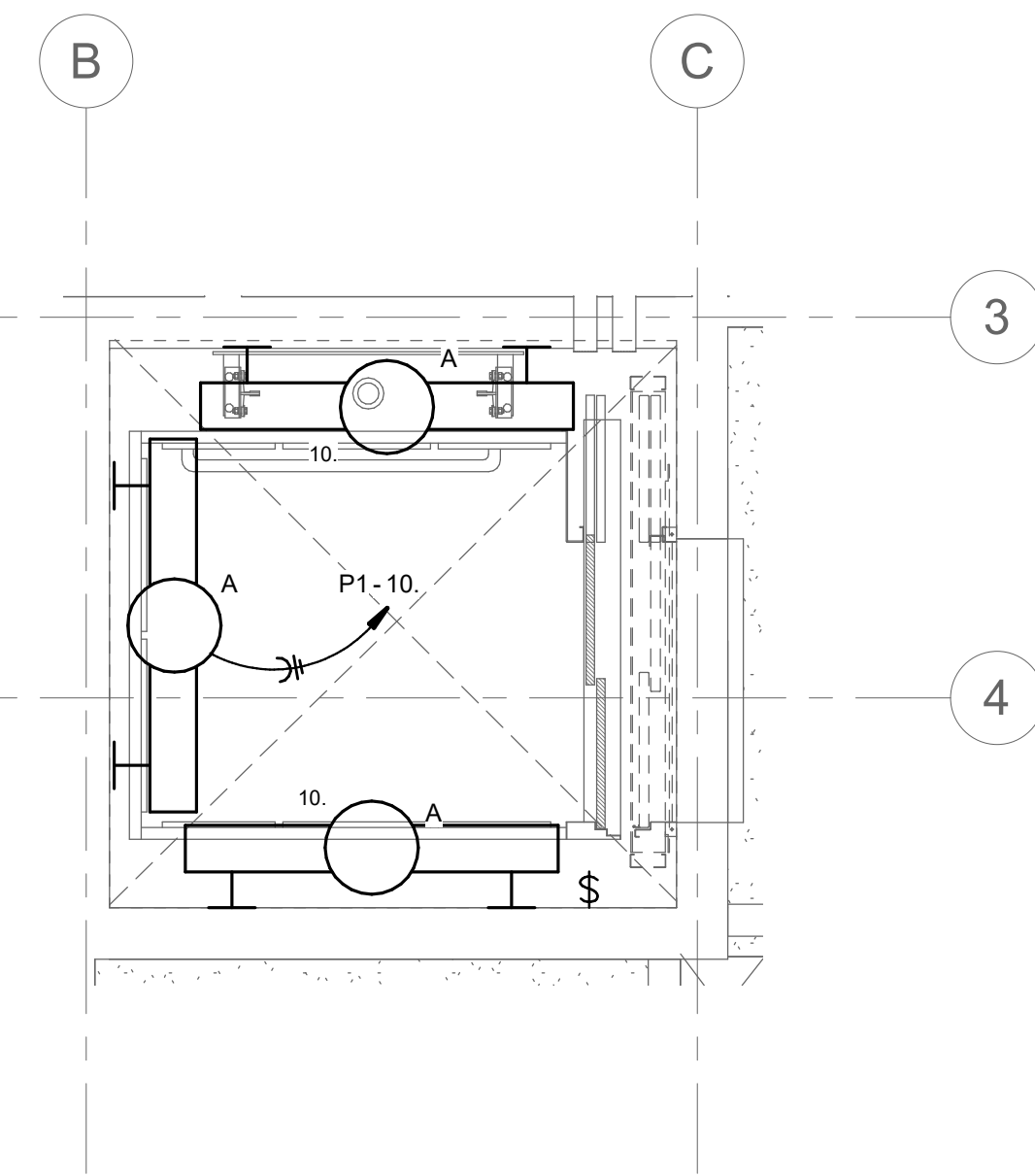
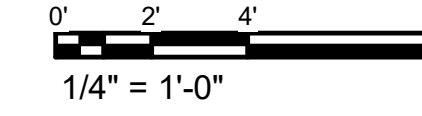
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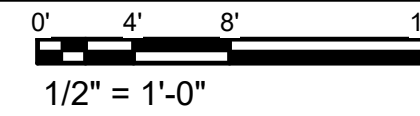
**2 GROUND LEVEL LIGHTING PLAN - OVERALL**



**1 BASEMENT LEVEL LIGHTING PLAN - OVERALL**



**3 ELEV. PIT LIGHTING**



**SHEET KEYNOTES**

1. THREE WAY SWITCH TO CONTROL DP1 LIGHTING FIXTURES ABOVE KITCHEN ISLAND.
2. THREE WAY SWITCH TO CONTROL RD2 LIGHTING FIXTURES ABOVE KITCHEN.
3. THREE WAY SWITCH TO CONTROL LIGHTS FOR STAIRWELL TO LEVEL 2.
4. THREE WAY SWITCH TO CONTROL LIGHTS AT STAIR BETWEEN LEVEL 1 AND BASEMENT.
5. DOWNLIGHT AT ELEVATOR THRESHOLD TO BE SWITCHED OFF EXCEPT WHEN ON EMERGENCY POWER.
6. TL1 TAPELIGHT IN CLOSET TO BE MOUNTED WITHIN MILLWORK AND CONTROLLED WITH DIMMING OCCUPANCY SENSOR TO BE MOUNTED INSIDE MILLWORK. SEE ARCHITECT DETAILS FOR FIXTURE AND SWITCH LOCATIONS.
7. TL1 TAPELIGHT IN MILLWORK WORKSTATION TO BE MOUNTED WITHIN MILLWORK AND CONTROLLED WITH DIMMING VACANCY SENSOR TO BE MOUNTED INSIDE MILLWORK. SEE ARCHITECT DETAILS FOR FIXTURE AND SWITCH LOCATIONS.

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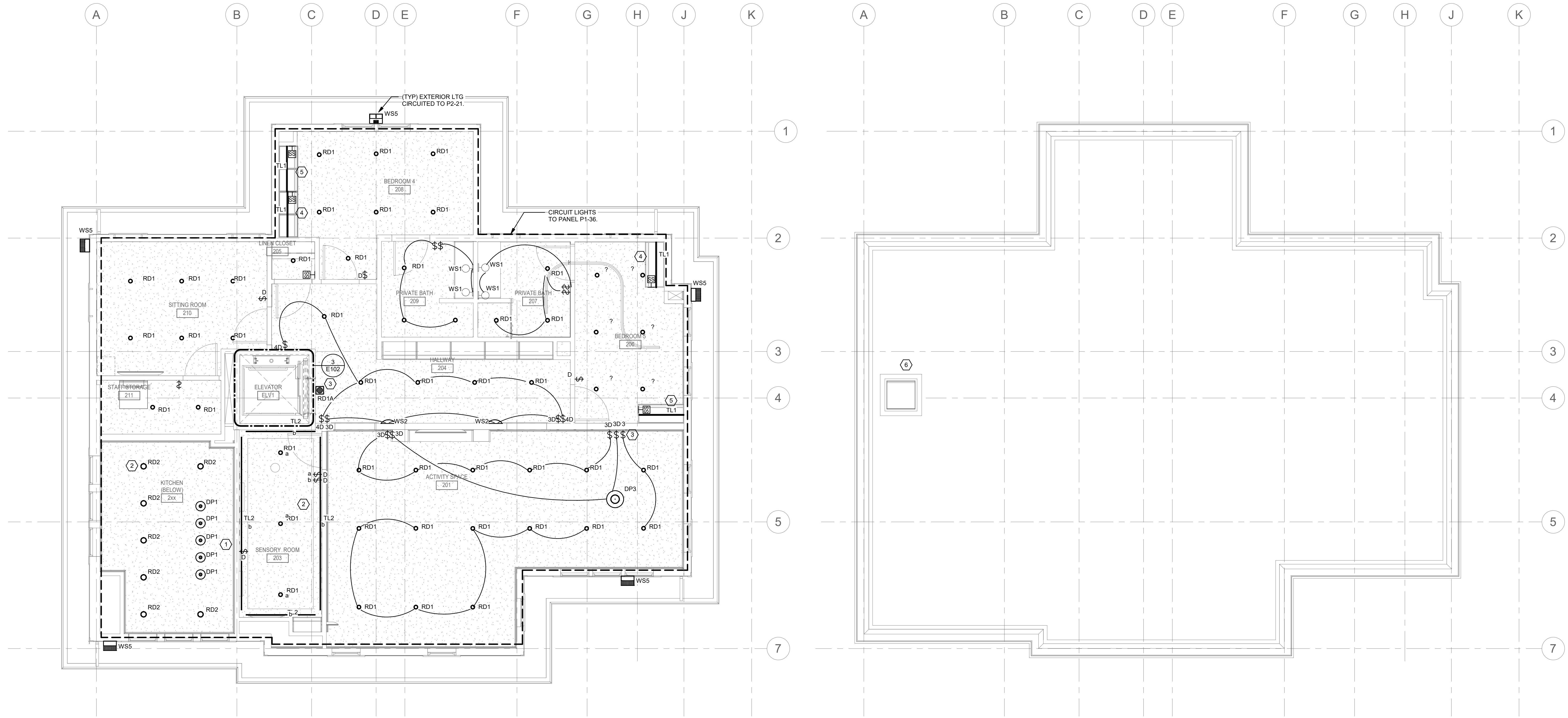
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**RCPS - BASEMENT & GROUND LEVEL - LIGHTING**

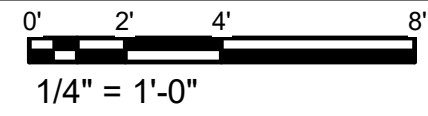
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**E101**

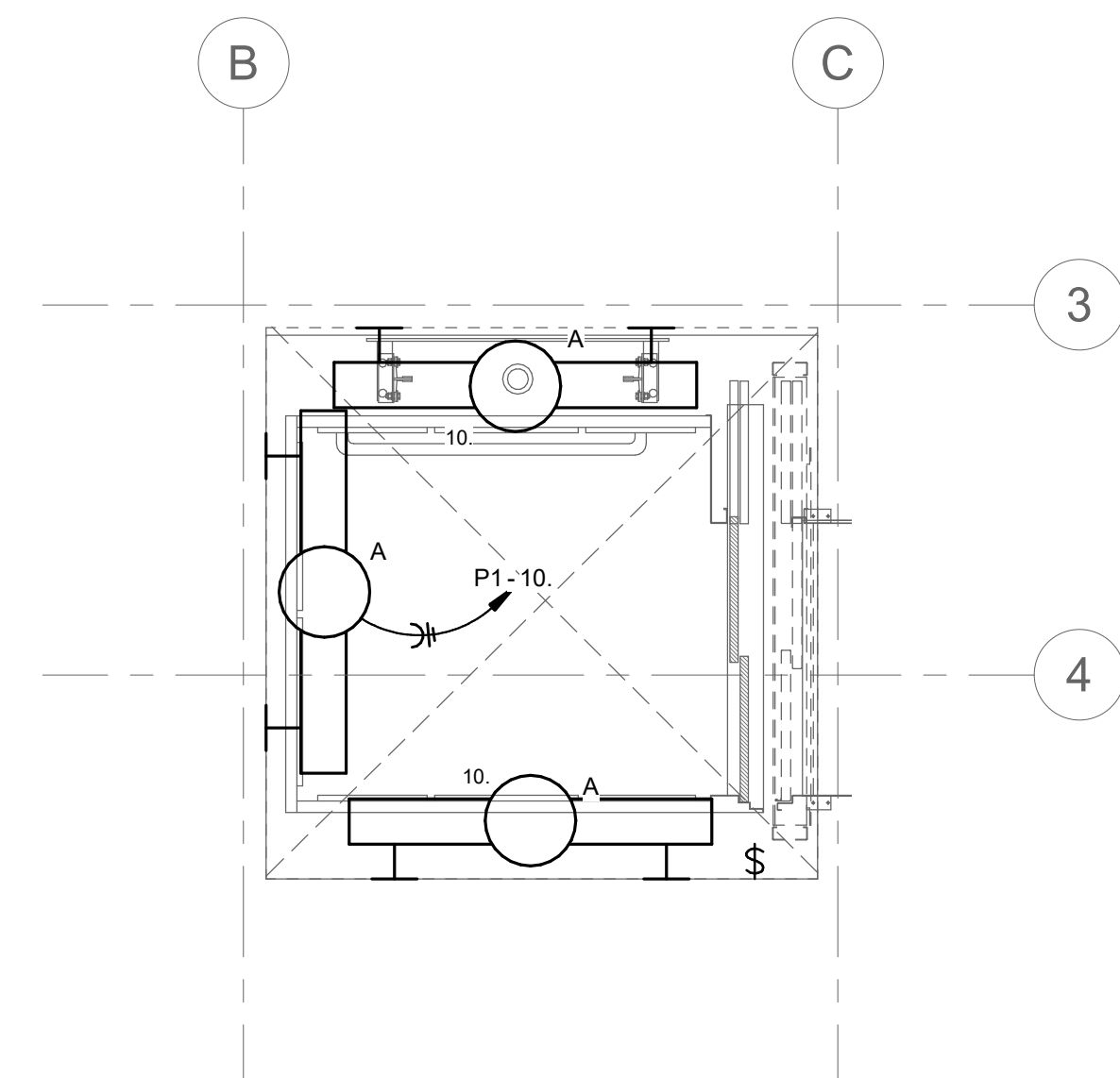
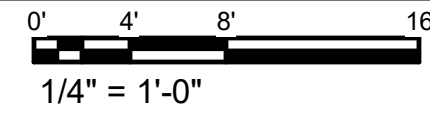
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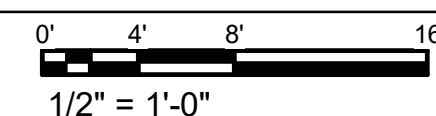
**1 SECOND LEVEL LIGHTING PLAN - OVERALL**



**2 ATTIC LIGHTING PLAN - OVERALL**

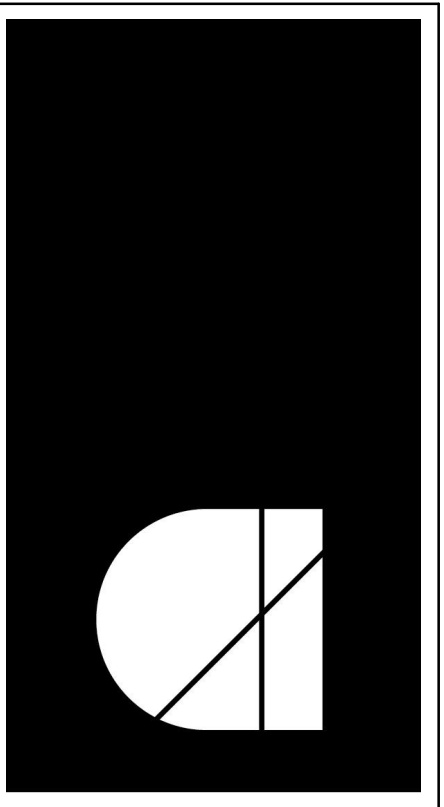


**3 TOP OF ELEVATOR LIGHTING**



**SHEET KEYNOTES**

1. FIXTURES DP1 TO BE CONTROLLED BY THREE-WAY SWITCHES ON LEVEL 1. SEE SHEET 2/E101 FOR SWITCH LOCATIONS.
2. FIXTURES RD2 TO BE CONTROLLED BY THREE-WAY SWITCHES ON LEVEL 1. SEE SHEET 2/E101 FOR SWITCH LOCATIONS.
3. DOWNLIGHT AT ELEVATOR THRESHOLD TO BE SWITCHED OFF EXCEPT WHEN ON EMERGENCY POWER.
4. TL1 TAPELIGHT IN CLOSET TO BE MOUNTED WITHIN MILLWORK AND CONTROLLED WITH DIMMING OCCUPANCY SENSOR TO BE MOUNTED INSIDE MILLWORK. SEE ARCHITECT DETAILS FOR FIXTURE AND SWITCH LOCATIONS.
5. TL1 TAPELIGHT IN MILLWORK WORKSTATION TO BE MOUNTED WITHIN MILLWORK AND CONTROLLED WITH DIMMING VACANCY SENSOR TO BE MOUNTED INSIDE MILLWORK. SEE ARCHITECT DETAILS FOR FIXTURE AND SWITCH LOCATIONS.
6. PROVIDE KEYLESS PORCELAIN SOCKET WITH LOCAL TOGGLE SWITCH AT TOP OF ATTIC ACCESS. LAMP WITH 9W MAXIMUM LED A19 LAMP (800 LUMEN OUTPUT).



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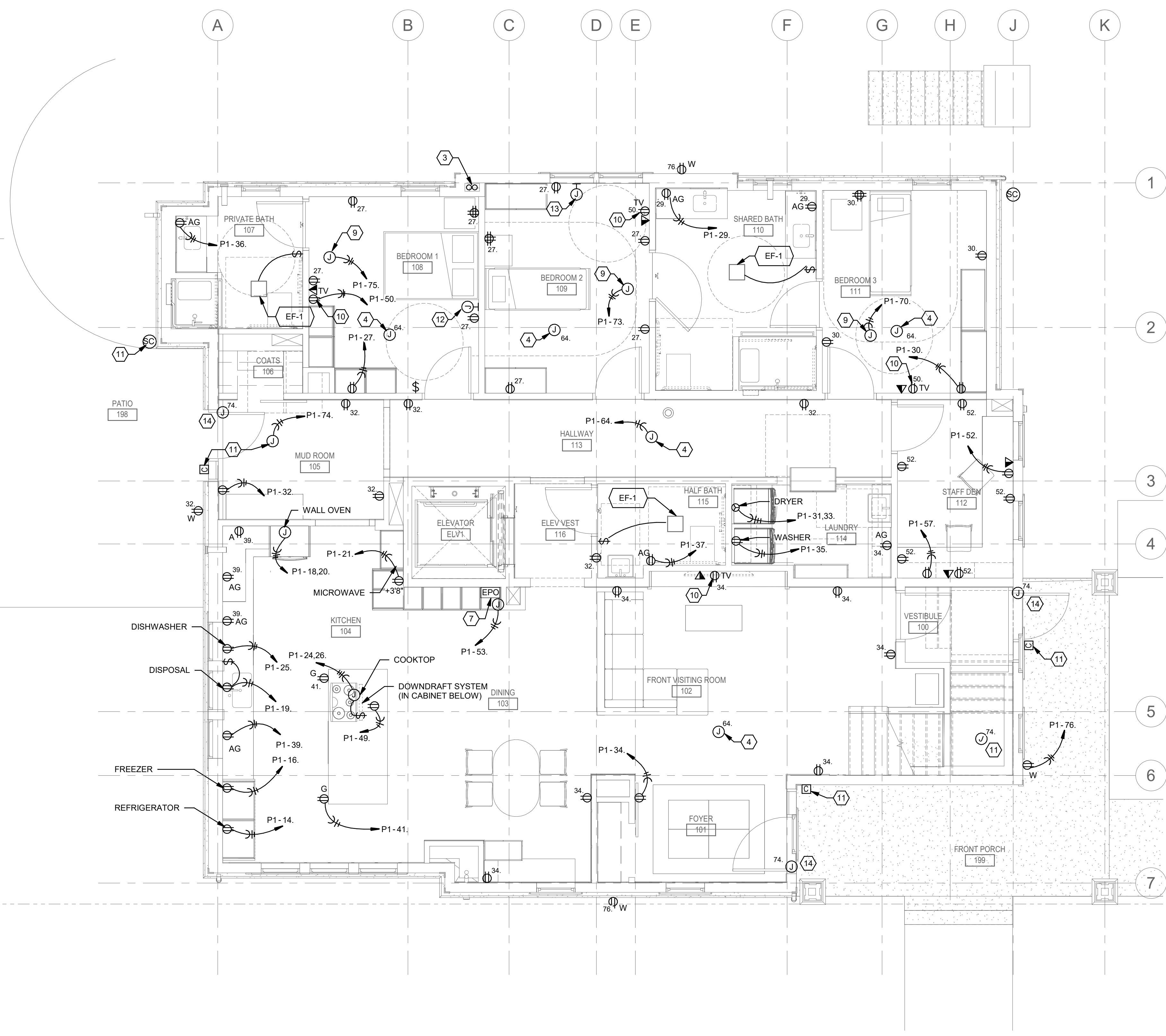
Revisions	
1	Permit Revisions 05.20.2021

**FLOOR PLANS - BASEMENT & GROUND LEVEL - POWER**

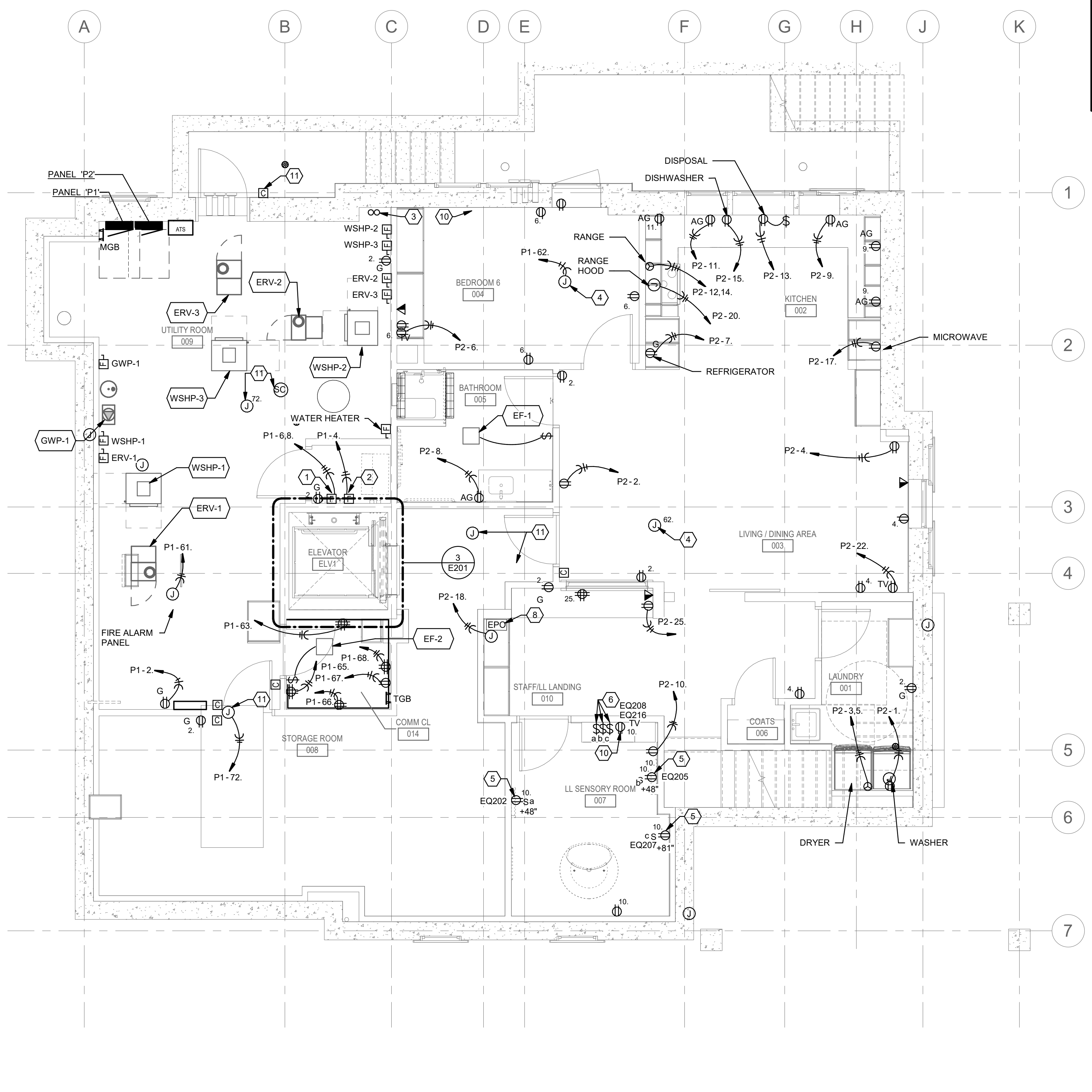
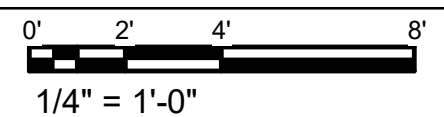
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**E201**

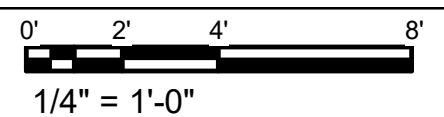
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**2 GROUND LEVEL POWER PLAN - OVERALL**

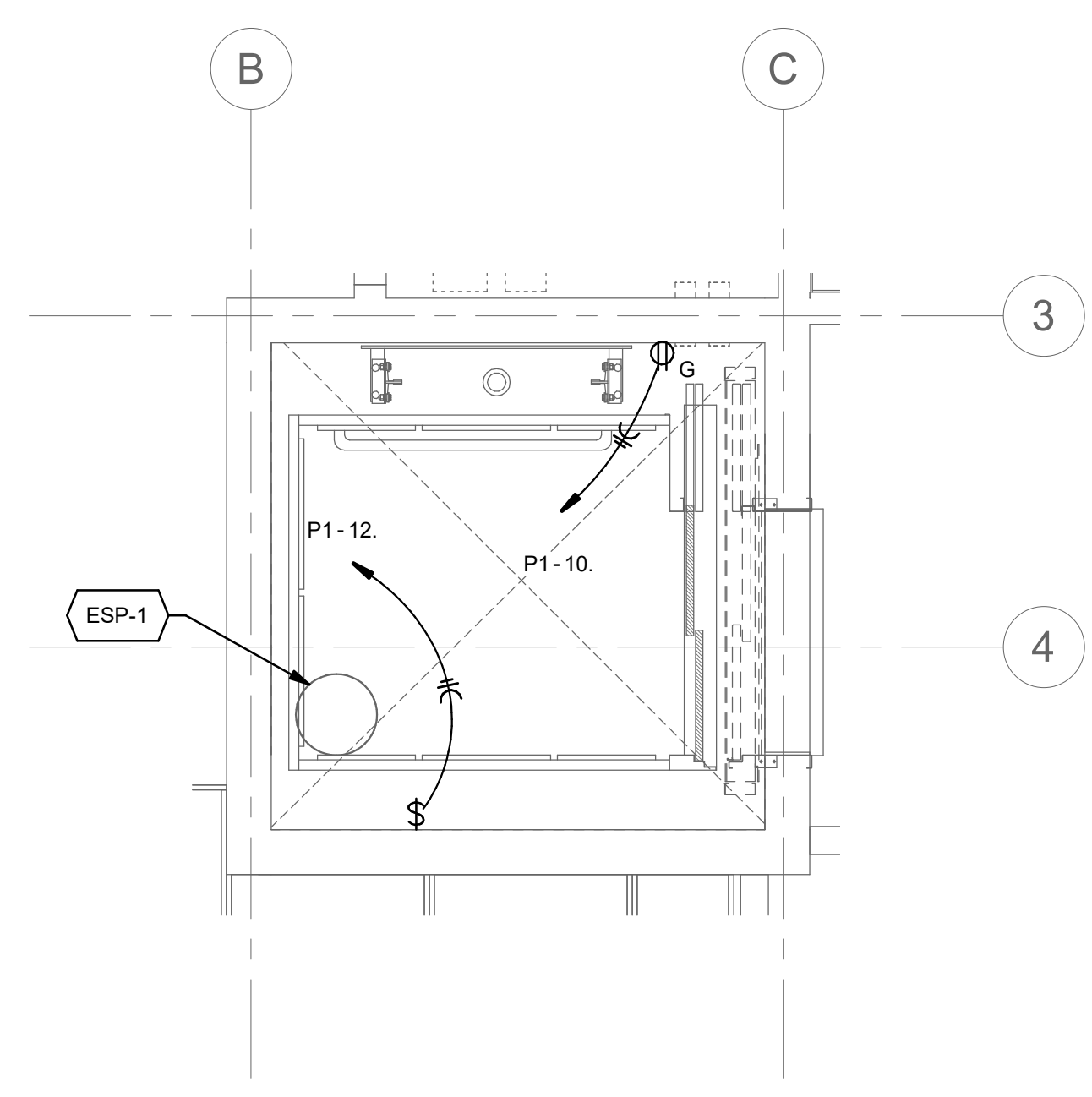


**1 BASEMENT LEVEL POWER PLAN - OVERALL**

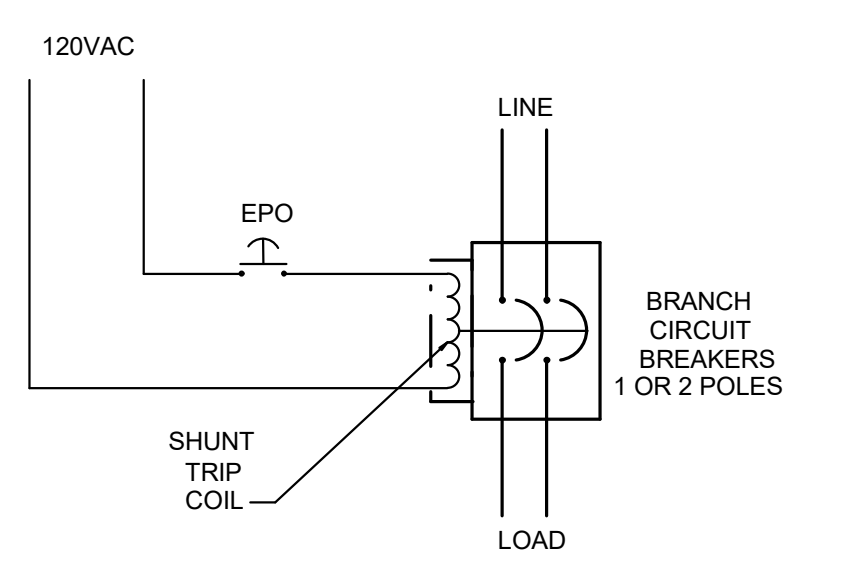
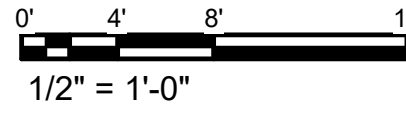


**SHEET KEYNOTES**

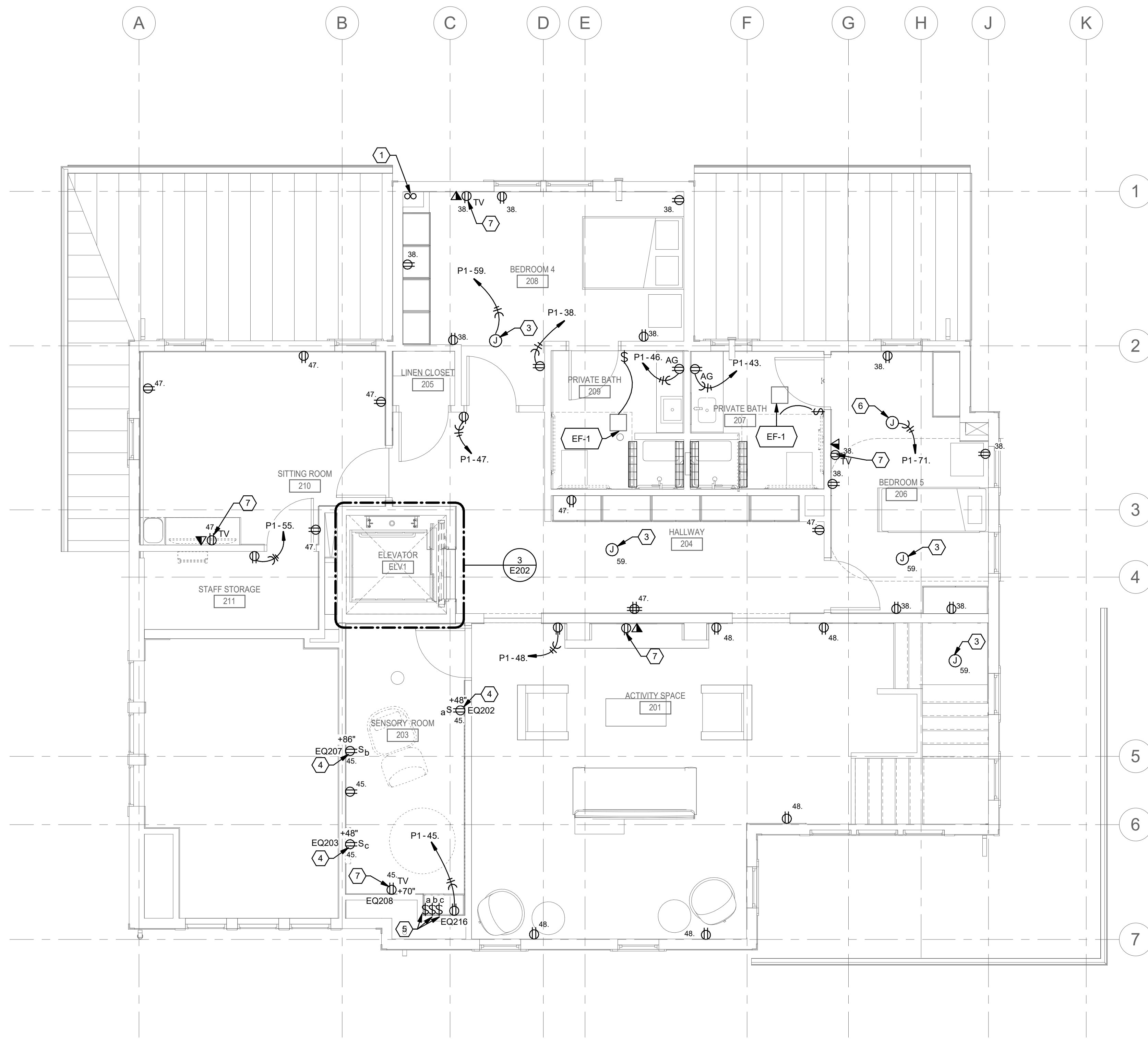
- ELEVATOR DISCONNECT. BUSSMANN PS 6 T24 R1 K R N6 B F1.
- ELEVATOR CAB LIGHTING DISCONNECT.
- 3" C. FROM UNFINISHED BASEMENT 009 TO ROOF FOR PV SYSTEM POWER AND DATA/COMMUNICATION. PV SYSTEM IS TO BE FURNISHED AND INSTALLED BY GC.
- POWER FOR SMOKE DETECTORS.
- PROVIDE CLOCK TYPE RECESSED RECEPTACLES FOR EQUIPMENT.
- SWITCHES CONTROLLING EQUIPMENT ARE TO BE INSTALLED IN LOCKED MILLWORK CABINET.
- EMERGENCY POWER OFF PUSH BUTTON LOCATED IN LOCKED MILLWORK CABINET. PUSH BUTTON OPERATES SHUNT TRIP CIRCUIT BREAKERS IN PANEL 'P1' CIRCUITS 18,20,24,26,21. SEE DETAIL 4 ON THIS SHEET.
- EMERGENCY POWER OFF PUSH BUTTON LOCATED IN LOCKED MILLWORK CABINET. PUSH BUTTON OPERATES SHUNT TRIP CIRCUIT BREAKERS IN PANEL 'P2' CIRCUITS 12,14,17. SEE DETAIL 4 ON THIS SHEET.
- JUNCTION BOX FOR CEILING LIFT. COORDINATE FINAL LOCATION WITH ARCHITECT AND EQUIPMENT MANUFACTURER.
- TV LOCATION. REFER TO SHEET AV100 TV ELEVATIONS, FOR MORE INFORMATION.
- SECURITY LOCATION. REFER TO SHEET SEC001 FOR MORE INFORMATION.
- JUNCTION BOX WITH COVERPLATE. FOR FUTURE AT-HOME MEDICAL EQUIPMENT. CONTRACTOR TO PROVIDE EMPTY 3/4" C WITH PULL STRING BACK TO PANEL 'P1'.
- JUNCTION BOX WITH COVERPLATE. FOR FUTURE BASEBOARD HEATER. CONTRACTOR TO PROVIDE EMPTY 3/4" C WITH PULL STRING BACK TO PANEL 'P1'.
- JUNCTION BOX FOR POWERED DOOR HARDWARE.



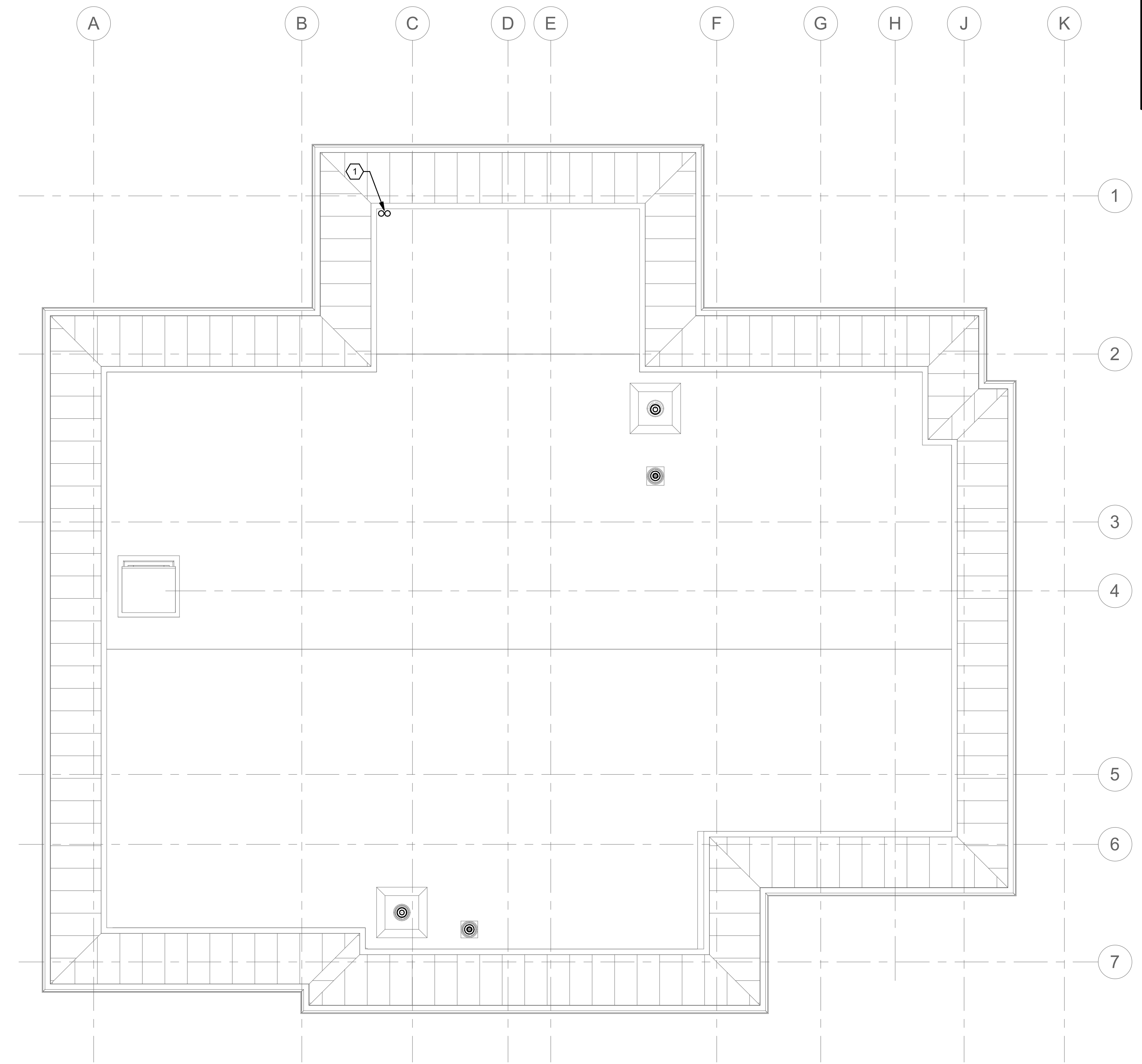
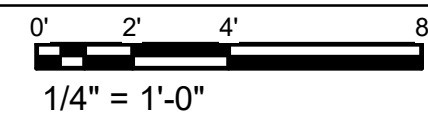
**3 ELEVATOR PIT DETAIL**



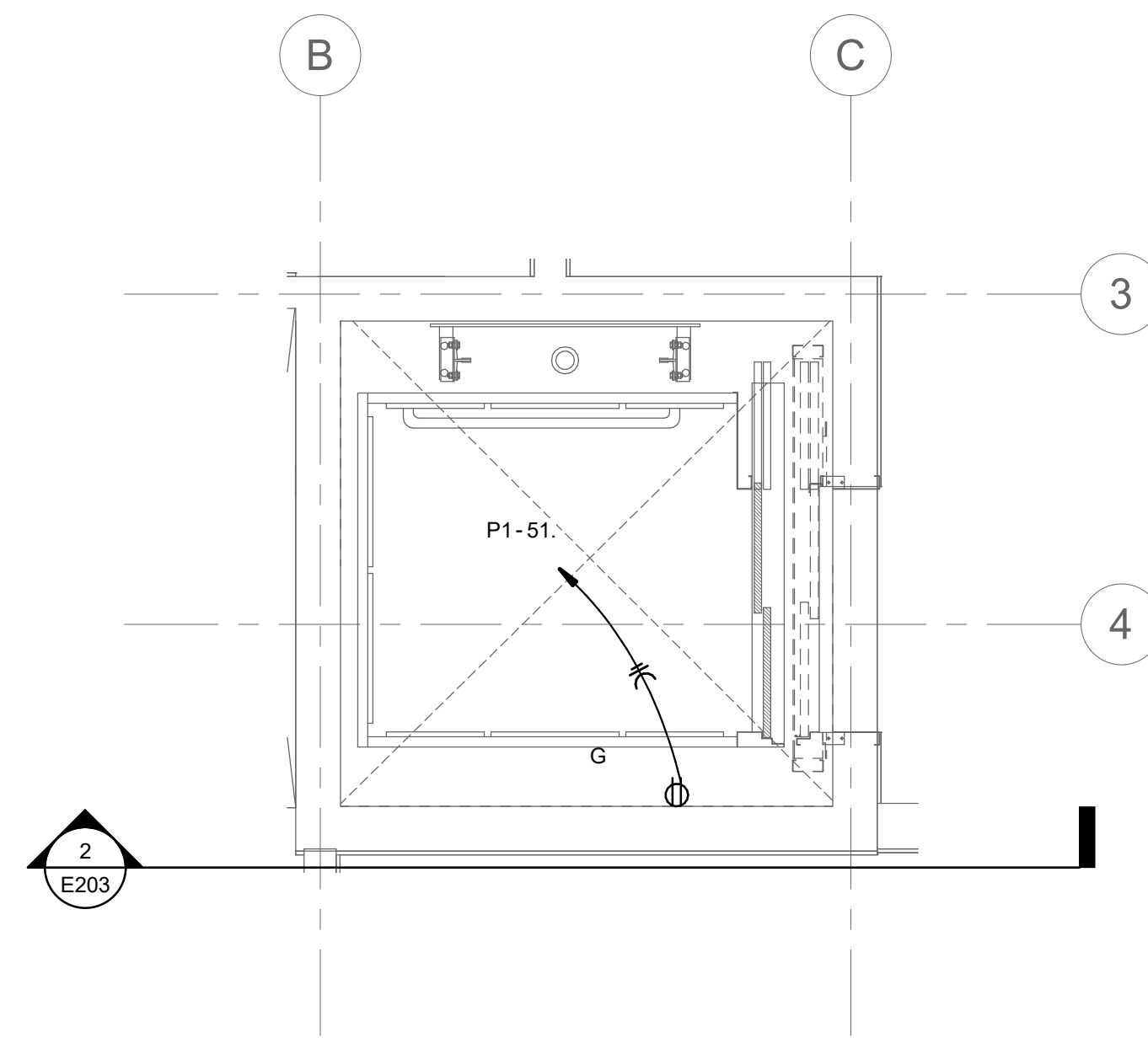
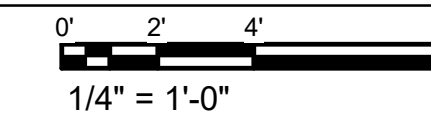
**4 EPO WIRING DIAGRAM**  
 NO SCALE



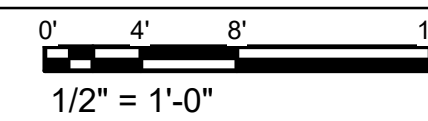
**1 SECOND LEVEL POWER PLAN - OVERALL**



**2 ATTIC POWER PLAN - OVERALL**

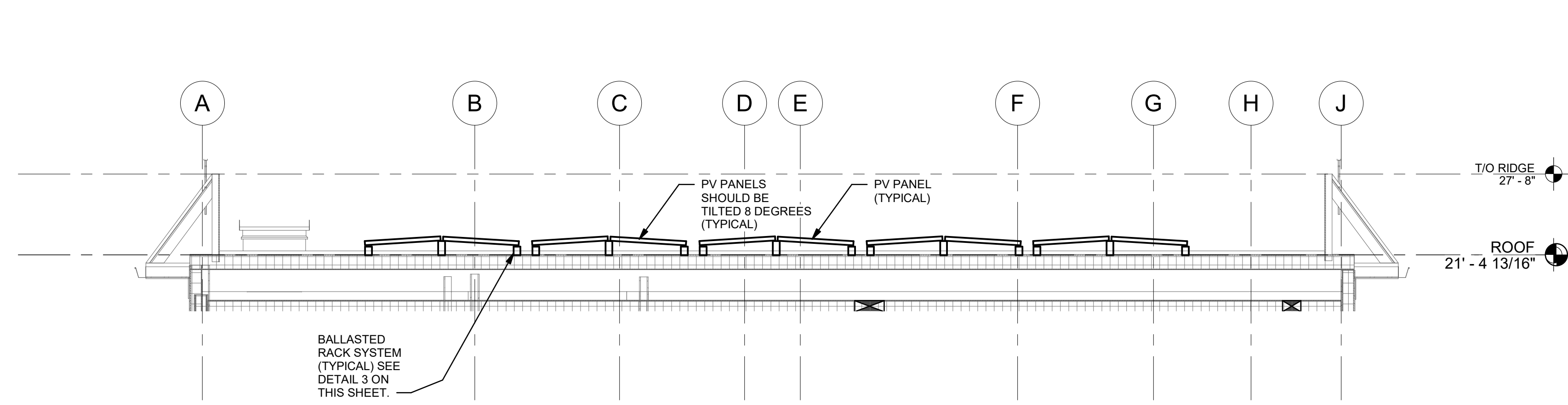


**3 ELEVATOR TOP OF SHAFT DETAIL**



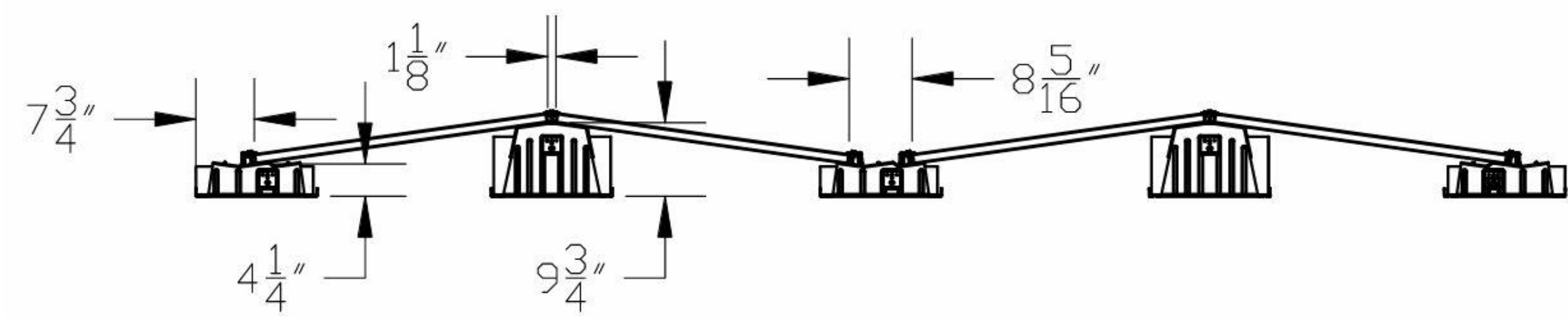
**SHEET KEYNOTES**

1. 3" C. FROM UNFINISHED BASEMENT 009 TO ROOF FOR PV SYSTEM POWER AND DATA/COMMUNICATION. PV SYSTEM IS TO BE FURNISHED AND INSTALLED BY GC.
2. PROVIDE LOCKABLE DISCONNECT FOR PV SYSTEM.
3. POWER FOR SMOKE DETECTORS.
4. PROVIDE CLOCK TYPE RECESSED RECEPTACLES FOR EQUIPMENT.
5. SWITCHES CONTROLLING EQUIPMENT ARE TO BE INSTALLED IN LOCKED MILLWORK CABINET.
6. JUNCTION BOX FOR CEILING LIFT, COORDINATE FINAL LOCATION WITH ARCHITECT AND EQUIPMENT MANUFACTURER.
7. TV LOCATION, REFER TO SHEET AV100 TV ELEVATIONS, FOR MORE INFORMATION.

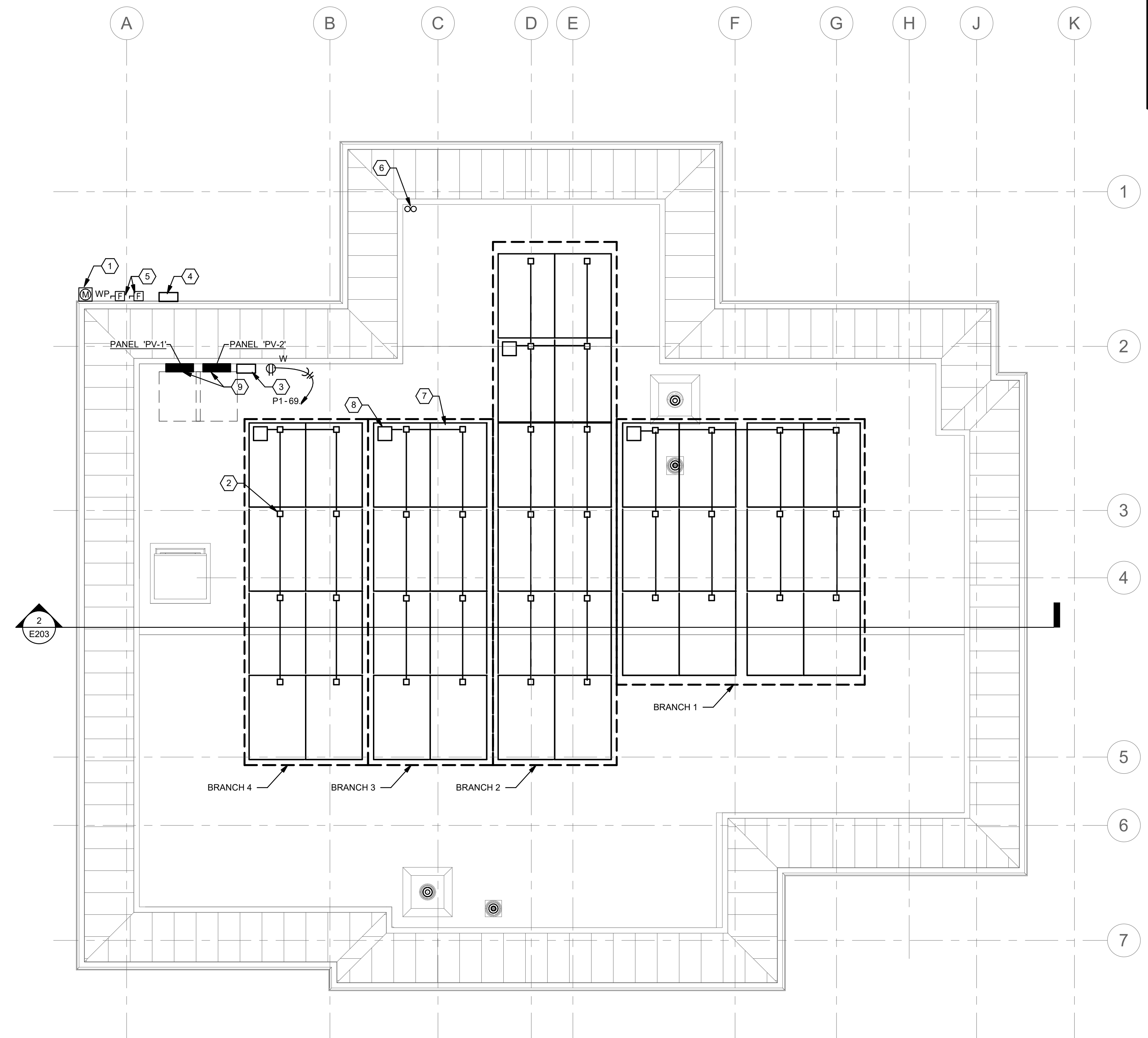


**2 ROOF SECTION**

0" 4" 8" 16"  
1/4" = 1'-0"



**3 UNIRAC RMDT BALLASTED SYSTEM**



**1 ROOF PV PLAN - OVERALL**

0" 4" 8" 16"  
1/4" = 1'-0"

**GENERAL NOTES**

A. CONDUITS AND WIRING IS DIAGRAMMATIC. FINAL ROUTING TO BE DETERMINED BY INSTALLER.

**SHEET KEYNOTES**

1. NET UTILITY METER.
2. ENPHASE IQ7A-72-2-US MICRO-INVERTER (TYPICAL).
3. ENPHASE ENVOY IN NEMA 3R ENCLOSURE.
4. PV PANEL IN NEMA 3R ENCLOSURE.
5. PROVIDE LOCKABLE DISCONNECT NEAR ELECTRICAL SERVICE AT GROUND LEVEL, FOR PV SYSTEM.
6. 3" C. FROM UNFINISHED BASEMENT 009 TO ROOF FOR PV SYSTEM POWER AND DATA COMMUNICATION. PV SYSTEM IS TO BE FURNISHED AND INSTALLED BY GC.
7. SUNPOWER X-SERIES RESIDENTIAL SOLAR PANEL X22-370 (TYPICAL).
8. PV JUNCTION BOX MOUNTED ON RAIL (TYPICAL).
9. PV PANELS AS PER ONE-LINE DIAGRAM ON SHEET E501.

### LABEL PRINT NOTES

- A** SOLAR ELECTRIC SYSTEM DISCONNECT LOCATED IN MAIN SERVICE PANEL
- B** PV SOLAR BREAKER  
DO NOT RELOCATE THIS OVERCURRENT DEVICE
- C** WARNING  
DUAL POWER SUPPLY UTILITY GRID AND SOLAR PHOTOVOLTAIC SYSTEM
- D** NOMINAL OPERATION AC VOLTAGE 240V  
NOMINAL OPERATING AC FREQUENCY 60HZ  
MAXIMUM AC POWER 20.9KW  
MAXIMUM AC CURRENT BOX 1 23.2A  
MAXIMUM OCP DEVICE RATING FOR AC MODULE PROTECTION PER BOX 30A
- E** WARNING - PHOTOVOLTAIC POWER SOURCE
- F** PHOTOVOLTAIC SYSTEM DISCONNECT 1  
OPERATING AMPS 23.2A  
OPERATING VOLTAGE 240V
- G** CAUTION - SOLAR CIRCUIT  
TYP. LABEL @ EVERY 10 FEET.
- H** RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM
- I** WARNING  
ELECTRIC SHOCK HAZARD DO NOT TOUCH TERMINALS ON BOTH LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION
- J** PHOTOVOLTAIC SYSTEM DISCONNECT 2  
OPERATING AMPS 34.8A  
OPERATING VOLTAGE 240V

MODULE SPECIFICATIONS	
40X SUNPOWER X22-370	
STC RATING	370W
Vmp	59.1V
Imp	6.26A
Voc	69.5V

INVERTER SPECIFICATIONS	
40X ENPHASE IQ7A-72-2-US (240V)	
MAX AC POWER RATING	370W
MAX INPUT VOLTAGE	58V
MIN AC POWER RATING	0W
MIN INPUT VOLTAGE	18V
DC/AC RATIO	1.26

WIRE RUN	# OF MODS	VOLTAGE DROP					WIRE SIZE	RACEWAY
		V (VOLTS)	I (AMPS)	L (FT)	VD**	VD %		
BRANCH #1 TO J-BOX	12	240	12	55	12	12	12	FREE AIR
BRANCH #2 TO J-BOX	12	240	12	65	12	12	12	FREE AIR
BRANCH #3 TO J-BOX	8	240	14.5	37	2.88	1.2	12	FREE AIR
BRANCH #4 TO J-BOX	8	240	14.5	42	3.26	1.36	12	FREE AIR
J-BOX #1 TO PV-PANEL	20	240	29	23	1.4	0.58	8	1" RMC
J-BOX #2 TO PV-PANEL	20	240	29	15	0.91	0.38	8	1" RMC
J-BOX #3 TO PV-PANEL	20	240	29	22	1.34	0.56	8	1" RMC
PV=PNL TO PANEL "P1"	240	43.5	50	1.92	0.8	0.8	8	1 1/4" RMC

### CLIMATE DATA

WASHINGTON DC REAGAN AP, USA, 38.87N, 77.03W  
 ASHRAE EXTREME LOW: -12.3 DEG C  
 ASHRAE 2% HIGH: 39 DEG C  
 ASHRAE EXTREME HIGH: 40.9 DEG C  
 WIND SPEED: 115 MPH (ASCE7-10)  
 RISK CATEGORY: II  
 WIND EXPOSURE CATEGORY: B  
 GROUND SNOW LOAD: 25 PSF

### DC WORST CASE: (1 MODULES IN SERIES)

$I = 6.48(\text{isc}) \times 1.25 (\text{NEC } 690.8(A)(1)) \times 1.25 (\text{NEC } 690.8(B)) = 10.11\text{A}$   
 $V = 69.5\text{V (Voc)} \times 1 \text{ MODULE} \times 1.2 (\text{NEC TABLE } 690.7) = 83.4\text{V}$   
 EXTREME MIN. TEMP (WASHINGTON DC) = -8 DEG F  
 AMBIENT CORRECTION FACTOR PER NEC TABLE 690.7 = 1.2

### AMPACITY CALCULATION LOCATION "A"

MONTHLY DRY BULB TEMP HIGH FOR WASHINGTON DC PER ASHRAE 105.62 DEG F  
 TEMPERATURE ADDER PER NEC 310.15(B)(2)(A) 30 DEG F  
 AMBIENT TEMPERATURE TOTAL 135.62 DEG F  
 ADJUSTMENT FACTOR FOR AMBIENT TEMPERATURE PER TABLE 310.16 0.67  
 AMPACITY OF #12 CONDUCTORS PER TABLE 310.16 25A  
 CALCULATED CONDUCTOR AMPACITY 16.75A

### AMPACITY CALCULATION LOCATION "B"

MONTHLY DRY BULB TEMP HIGH FOR WASHINGTON DC PER ASHRAE 105.62 DEG F  
 TEMPERATURE ADDER PER NEC 310.15(B)(2)(A) 30 DEG F  
 AMBIENT TEMPERATURE TOTAL 135.62 DEG F  
 ADJUSTMENT FACTOR FOR AMBIENT TEMPERATURE PER TABLE 310.16 0.67  
 AMPACITY OF #12 CONDUCTORS PER TABLE 310.16 25A  
 CALCULATED CONDUCTOR AMPACITY 16.75A  
 TOTAL BRANCH AMPACITY = INVERTER AMP X 6 (NO. MOD) X 1.25 11.32A

### AMPACITY CALCULATION LOCATION "C"

MONTHLY DRY BULB TEMP HIGH FOR WASHINGTON DC PER ASHRAE 105.62 DEG F  
 TEMPERATURE ADDER PER NEC 310.15(B)(2)(A) 30 DEG F  
 AMBIENT TEMPERATURE TOTAL 135.62 DEG F  
 ADJUSTMENT FACTOR FOR AMBIENT TEMPERATURE PER TABLE 310.16 0.67  
 AMPACITY OF #12 CONDUCTORS PER TABLE 310.16 25A  
 CALCULATED CONDUCTOR AMPACITY 16.75A  
 TOTAL BRANCH AMPACITY = INVERTER AMP X 6 (NO. MOD) X 1.25 14.15A

### AMPACITY CALCULATION LOCATION "D"

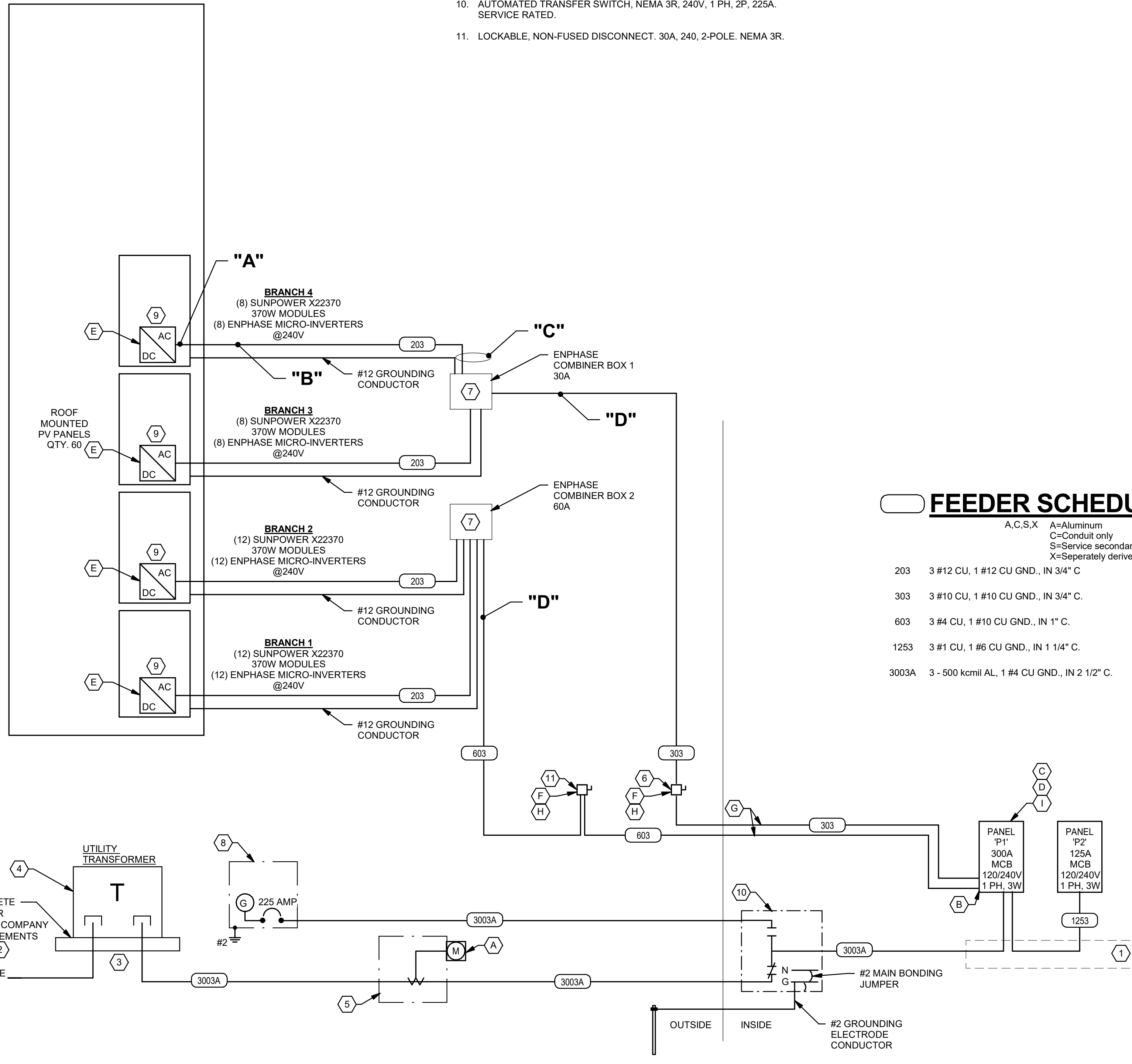
MONTHLY DRY BULB TEMP HIGH FOR WASHINGTON DC PER ASHRAE 105.62 DEG F  
 TEMPERATURE ADDER PER NEC 310.15(B)(2)(A) 30 DEG F  
 AMBIENT TEMPERATURE TOTAL 135.62 DEG F  
 ADJUSTMENT FACTOR FOR AMBIENT TEMPERATURE PER TABLE 310.16 0.67  
 AMPACITY OF #10 CONDUCTORS PER TABLE 310.16 25A  
 CALCULATED CONDUCTOR AMPACITY 23.45A  
 TOTAL BRANCH AMPACITY = INVERTER AMP X 6 (NO. MOD) X 1.25 19.79A

### SHEET KEYNOTES

- TROUGH CONNECTION.
- PROVIDE 3-1/2 INCH HIGH CONCRETE HOUSEKEEPING PAD UNDER TRANSFORMER/SWITCHBOARD.
- CONNECT GROUNDING ELECTRODE CONDUCTORS FROM TRANSFORMER GROUNDING LUG TO AVAILABLE GROUNDING ELECTRODES PER NEC 250.30 AND 250.104.
- PAD MOUNTED OR POLE MOUNTED TRANSFORMER. CONTRACTOR TO COORDINATE WITH UTILITY PRIOR TO BIDDING.
- 400A CT CABINET AS PER DOMINION VIRGINIA POWER REQUIREMENTS.
- LOCKABLE, NON-FUSED DISCONNECT. 60A, 240, 2-POLE, NEMA 3R.
- 60A ENPHASE IQ COMBINER BOX WITH IQ ENVOY. NEMA 3R, 12/240V, 1 PH.
- NATURAL GAS NON-SEPARATELY DERIVED GENERATOR, 240V, 1 PH, 45KW/60KVA ALTERNATOR WITH 225A BREAKER.
- ENPHASE IQ7A-72-2-US MICRO-INVERTER (TYPICAL FOR EACH MODULE).
- AUTOMATED TRANSFER SWITCH, NEMA 3R, 240V, 1 PH, 2P, 225A, SERVICE RATED.
- LOCKABLE, NON-FUSED DISCONNECT. 30A, 240, 2-POLE, NEMA 3R.

### GENERAL SHEET NOTES

- REFER TO CIVIL DRAWINGS TO COORDINATE EXACT LOCATION OF SERVICE ENTRANCE CONDUCTORS AND UTILITY TRANSFORMER.
- CONTRACTOR TO PROVIDE METER AND CT CABINET PER DOMINION VIRGINIA POWER REQUIREMENTS.
- CONTRACTOR TO PROVIDE PV EQUIPMENT LABELS AS PER NEC 690.
- PV PANELS INSTALLED ON A ROOF MOUNT SYSTEM WITH INTEGRATED GROUNDING XR100 RAIL FROM IRONRIDGE OR EQUIVALENT.

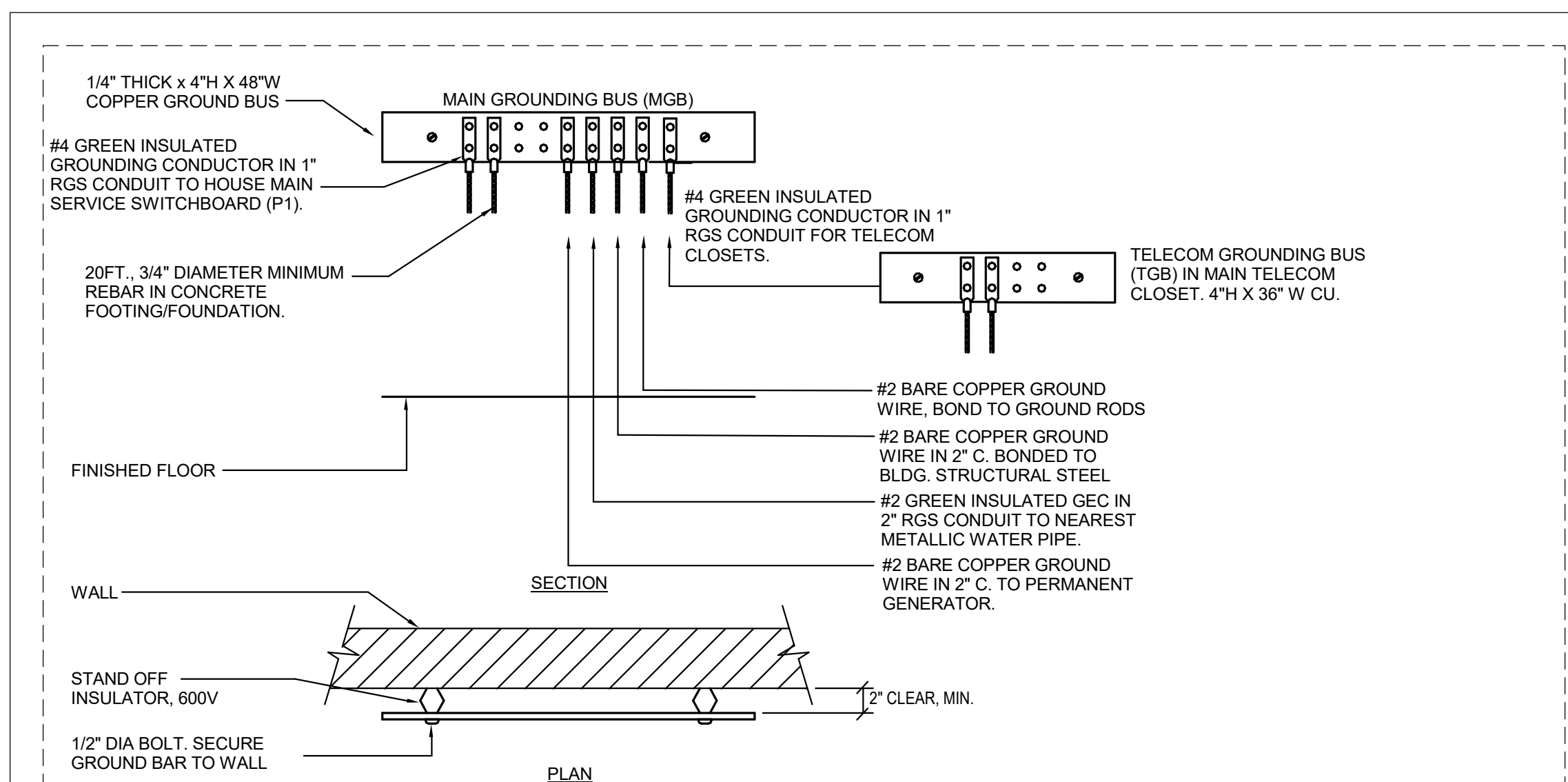


### FEEDER SCHEDULE

	A.C.S.X	A=Aluminum	C=Conduit only	S=Service secondary	X=Separately derived system
203	3 #12 CU, 1 #12 CU GND., IN 3/4" C				
303	3 #10 CU, 1 #10 CU GND., IN 3/4" C.				
603	3 #4 CU, 1 #10 CU GND., IN 1" C.				
1253	3 #1 CU, 1 #6 CU GND., IN 1 1/4" C.				
3003A	3 - 500 kcmil AL, 1 #4 CU GND., IN 2 1/2" C.				

### 1 ONE-LINE POWER DISTRIBUTION DIAGRAM

NO SCALE



### 1 GROUNDING DETAIL

NO SCALE



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Construction Documents for:  
**ARLINGTON COUNTY DHS GROUP HOME**  
 1212 S. IRVING ST.  
 ARLINGTON, VA 22204  
 Project: 19296-01

Issued 10/21/2020  
 100% BID  
 Revisions

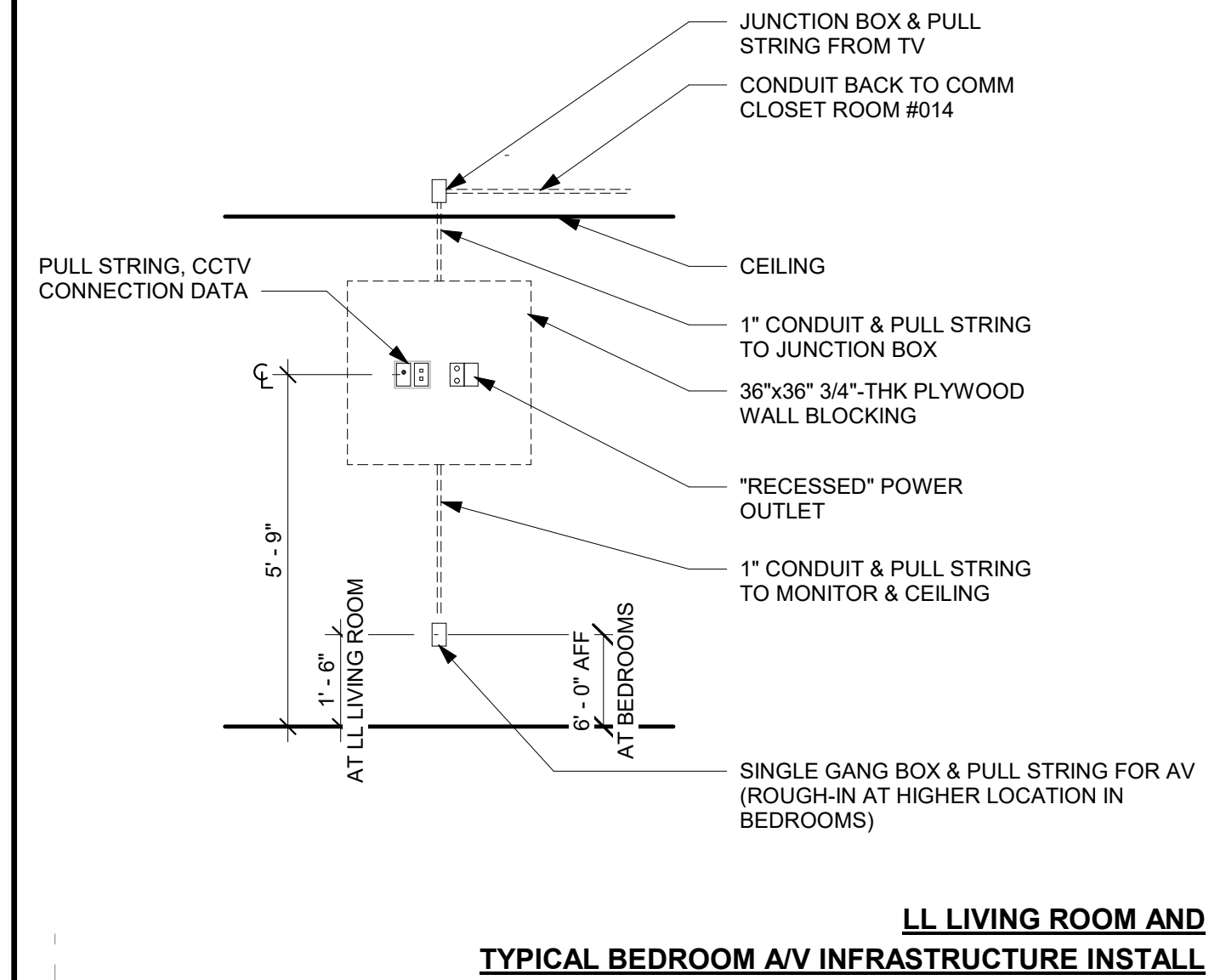
**SINGLE LINE DIAGRAMS - ELECTRICAL**  
 Scale NO SCALE  
 Drawn ALF  
 Checked CS

**E501**

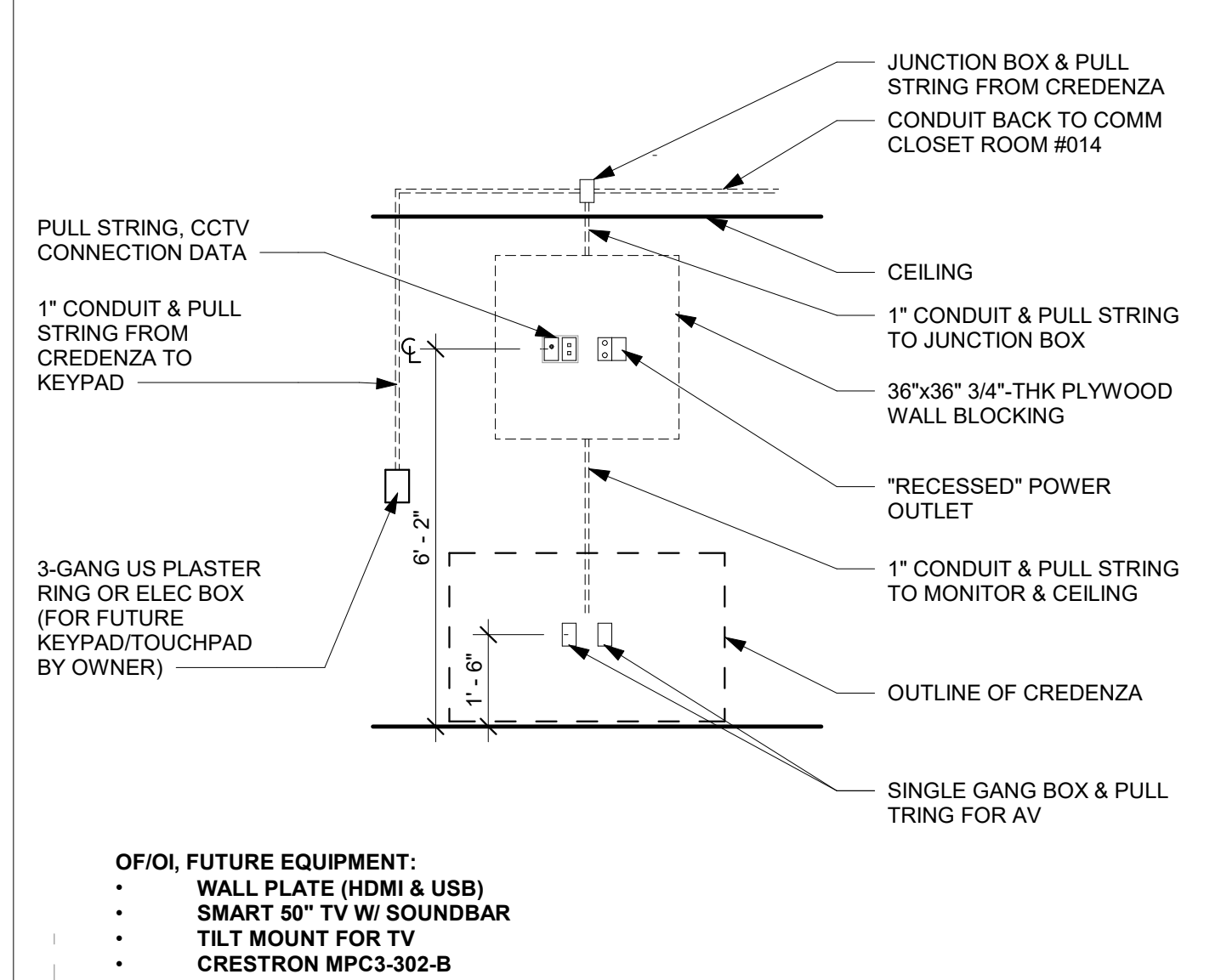
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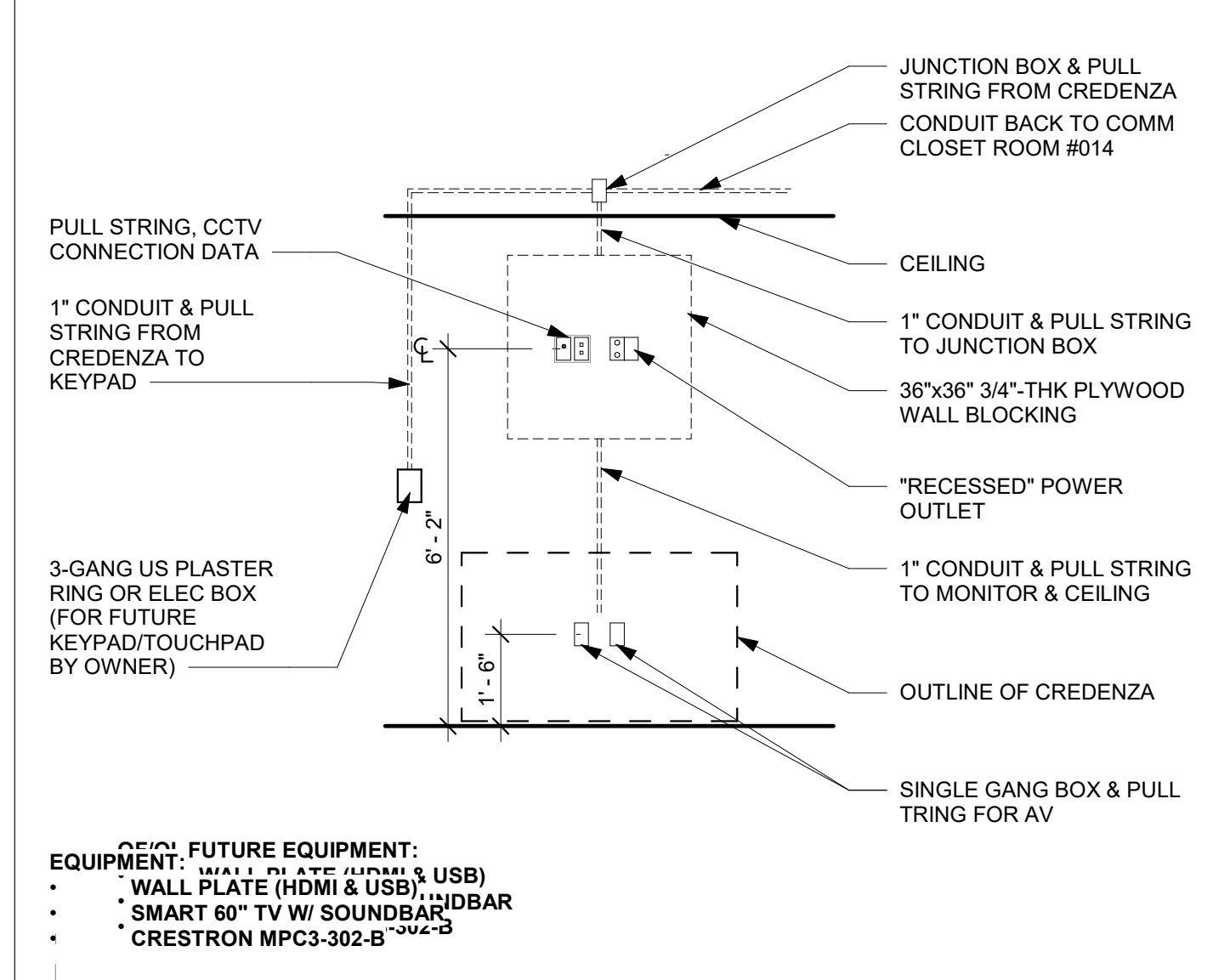




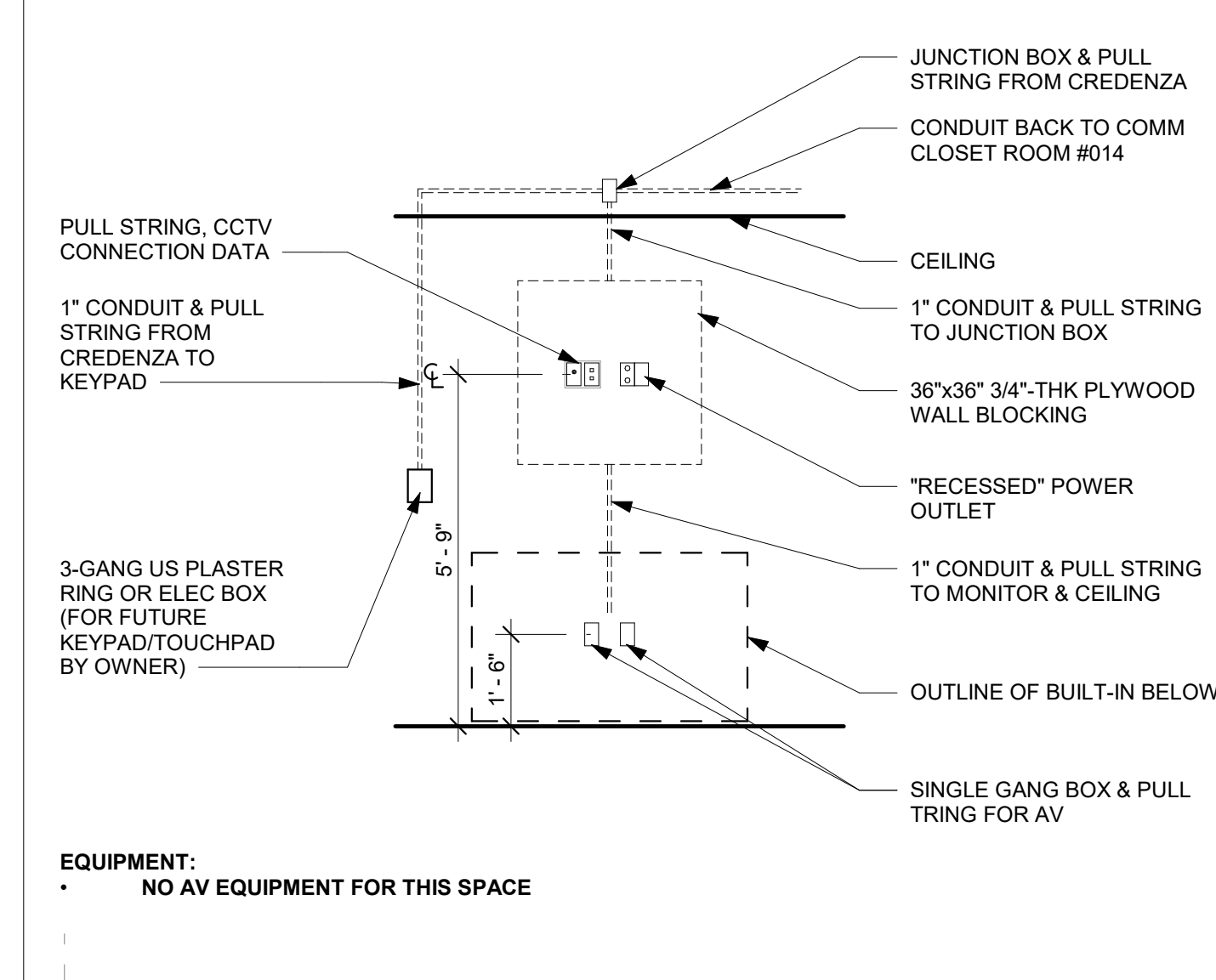
**1 TV BLKG. @ TYPICAL TF/TI LOCATIONS**  
3/8" = 1'-0"



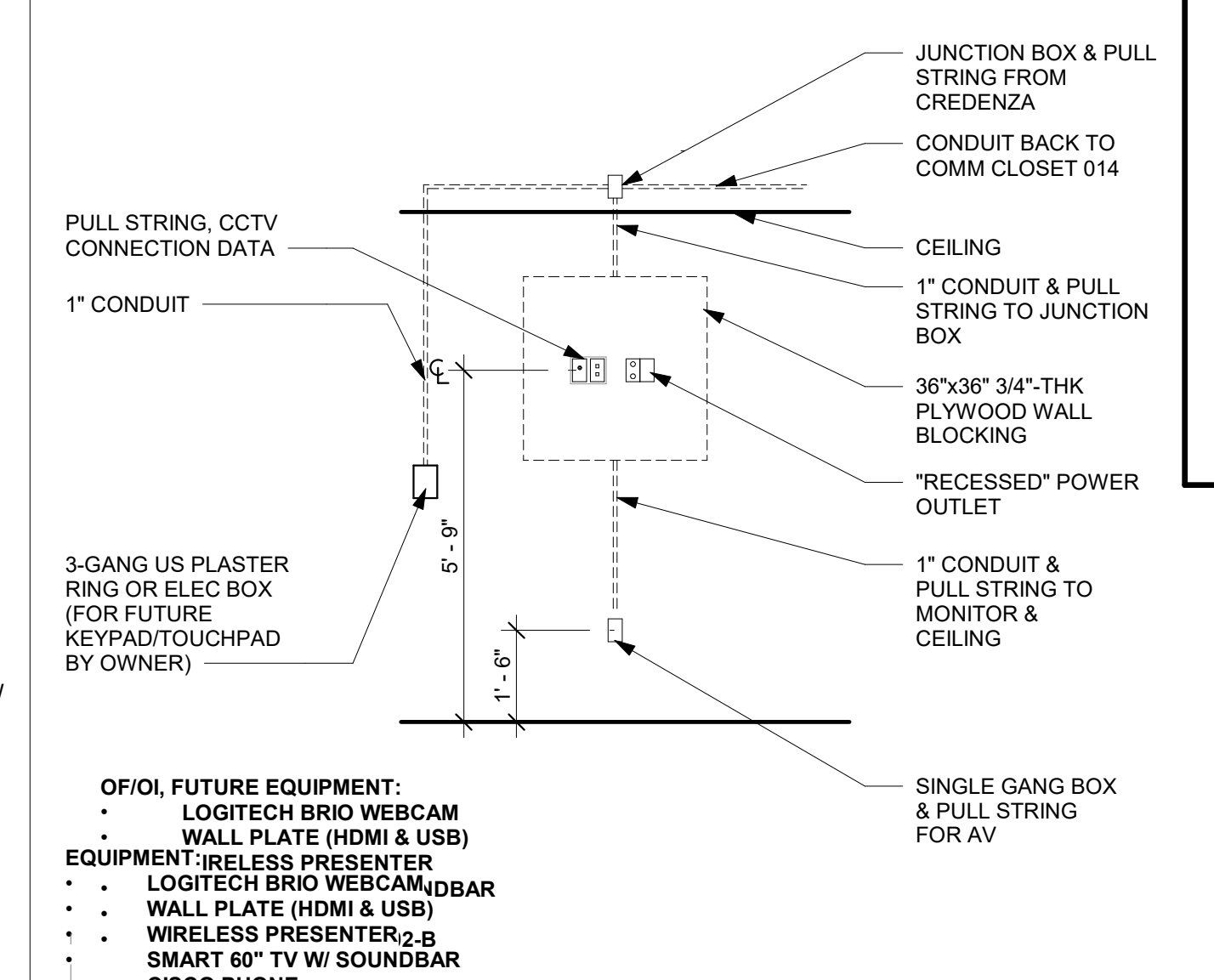
**2 TV BLKG. @ SENSORY ROOMS**  
3/8" = 1'-0"



**3 TV BLKG. @ FRONT VISITING 102**  
3/8" = 1'-0"



**4 TV BLKG. @ ACTIVITY SPACE 201**  
3/8" = 1'-0"



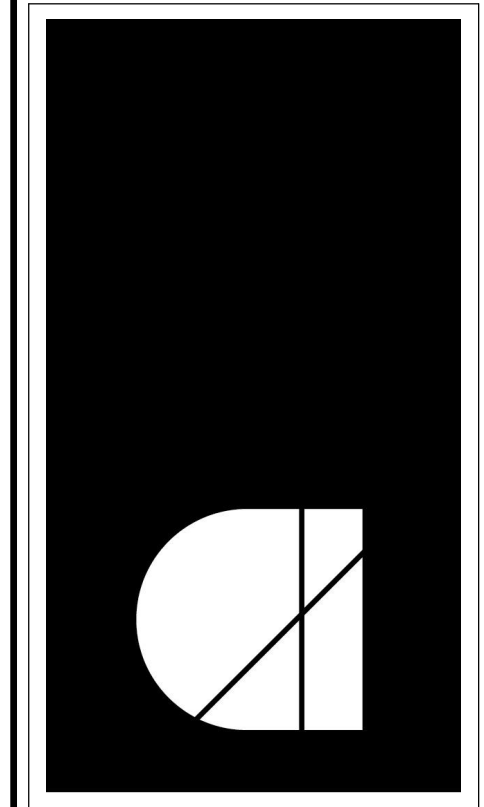
**5 TV BLKG @ SITTING RM/CONF**  
3/8" = 1'-0"

- EQUIPMENT:**
- WALL PLATE (HDMI & USB)
  - SMART 50" TV W/ SOUNDBAR
  - TILT MOUNT FOR TV
  - CRESTRON MPC3-302-B

- OF/OI, FUTURE EQUIPMENT:**
- WALL PLATE (HDMI & USB)
  - SMART 50" TV W/ SOUNDBAR
  - TILT MOUNT FOR TV
  - CRESTRON MPC3-302-B

- EQUIPMENT:**
- NO AV EQUIPMENT FOR THIS SPACE

- OF/OI, FUTURE EQUIPMENT:**
- LOGITECH BRIO WEBCAM
  - WALL PLATE (HDMI & USB)
- EQUIPMENT:**
- WIRELESS PRESENTER
  - LOGITECH BRIO WEBCAM
  - WALL PLATE (HDMI & USB)
  - WIRELESS PRESENTER2-B
  - SMART 60" TV W/ SOUNDBAR
  - CISCO PHONE
  - CRESTRON MPC3-302-B



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Project: 19296-01

**Issued** 12/21/20  
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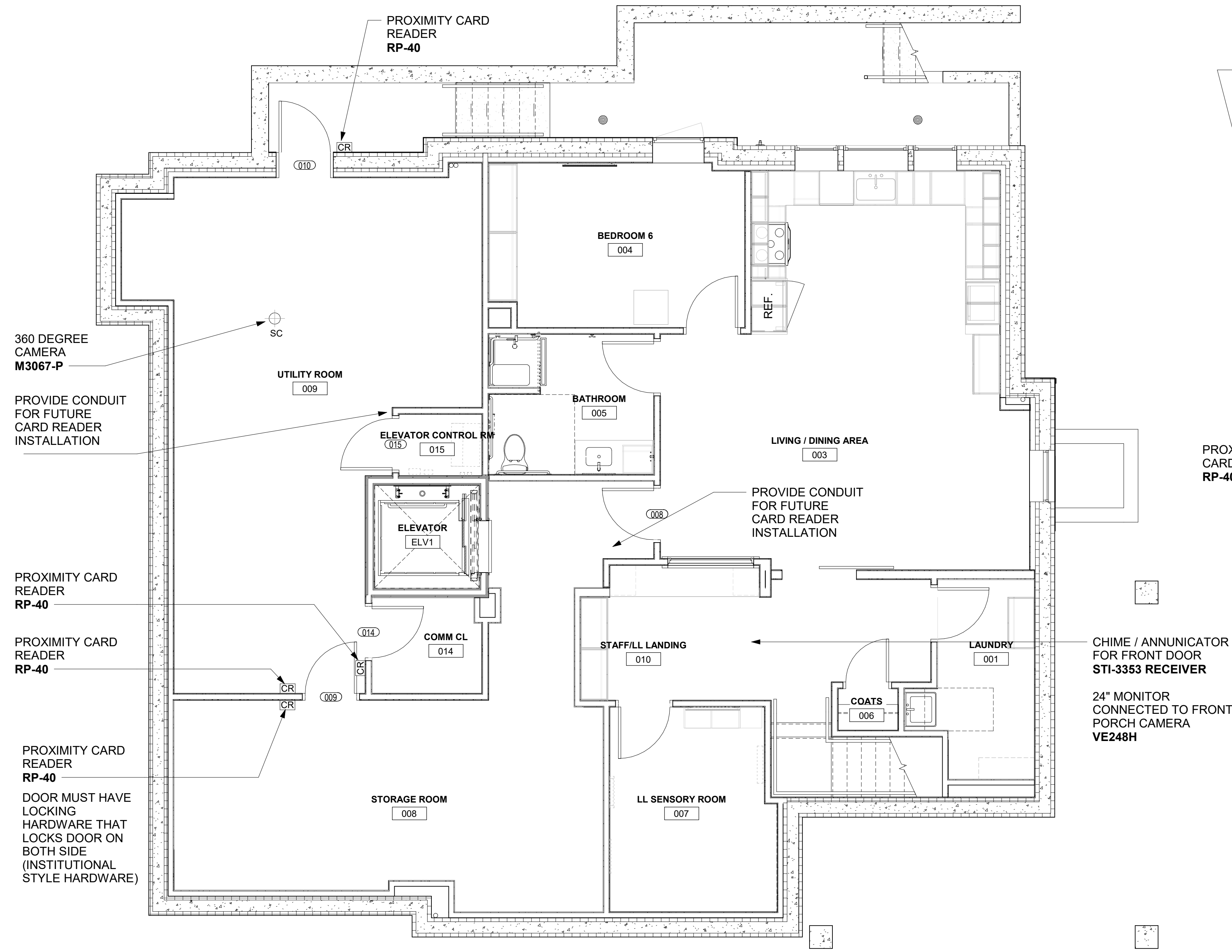
**TECHNOLOGY /**  
**AUDIO-VISUAL**

Scale **3/8" = 1'-0"**  
Drawn Author  
Checked Checker

**AV100**

**SECURITY EQUIPMENT - BASEMENT:**

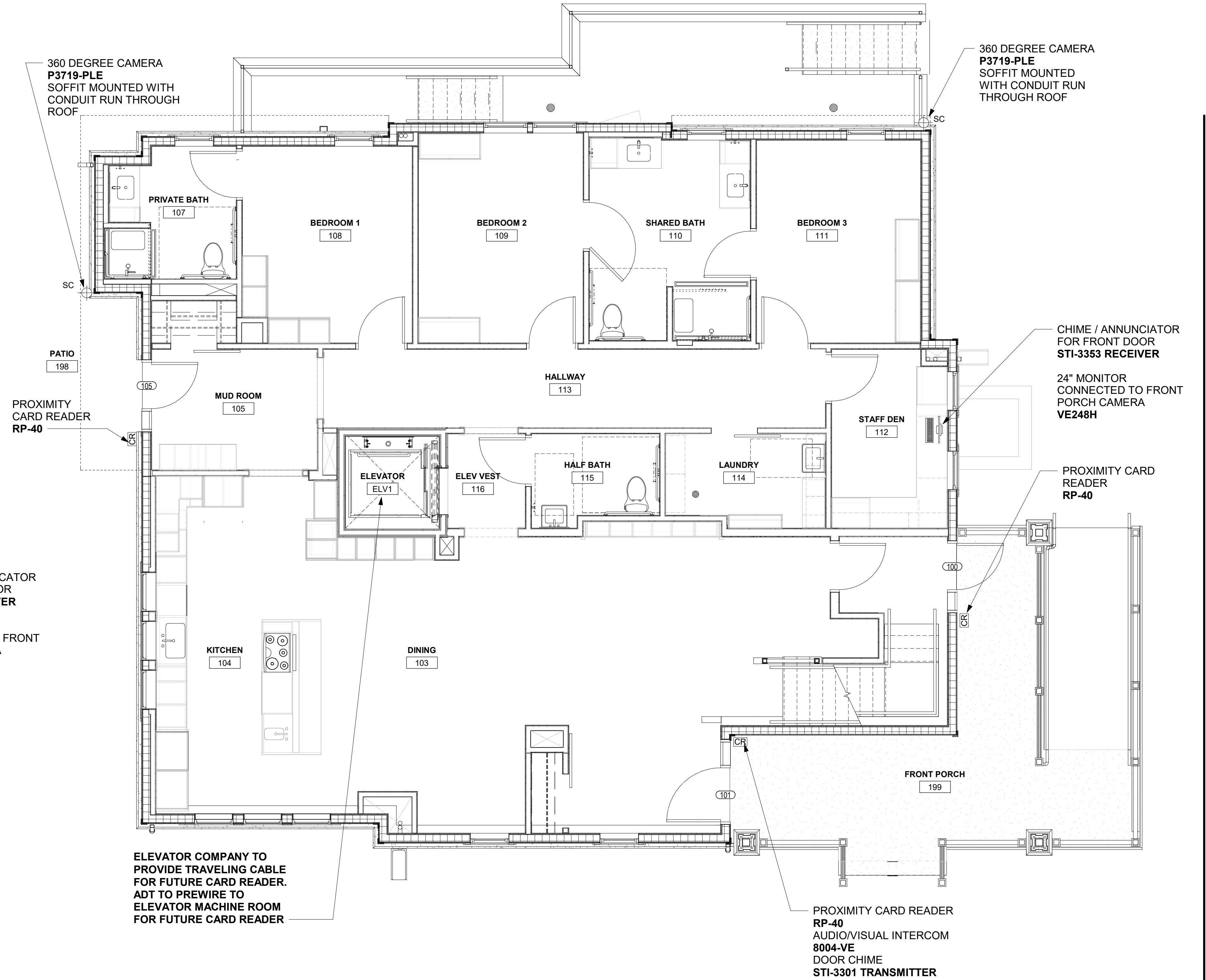
- 4 - Proximity Card Readers - exterior stairwell door, telecom room and storage room (2)
- Electronic locking hardware to be provided by door contractor**
- 1 - Interior 360 Degree Camera - unfinished basement
- 1 - Chime - front door
- 1 - 24" Monitor - display front porch camera



**1 BASEMENT LEVEL SECURITY PLAN**  
1/4" = 1'-0"

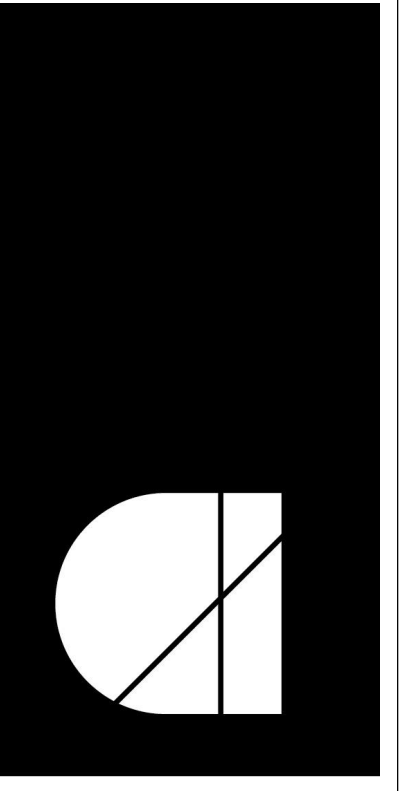
**SECURITY EQUIPMENT - GROUND LEVEL:**

- 3 - Proximity Card Readers - main entry door, vestibule door and mud room door
- Electronic locking hardware to be provided by door contractor**
- 3 - Exterior 360 Degree Cameras - viewing parking areas (2) and one (1) viewing entrances
- 1 - Audio/visual Intercom - main entry door
- 1 - Chime - front door
- 1 - 24" Monitor - display front porch camera



**2 GROUND LEVEL SECURITY PLAN**  
1/4" = 1'-0"

**NOTE:**  
OWNER TO PROVIDE ALL SECURITY EQUIPMENT, UNO  
THE GENERAL CONTRACTOR (GC) TO PROVIDE DOOR  
HARDWARE AND ALL ROUGH-IN SUCH AS ELECTRIFIED DOOR  
FRAMES, ELECTRICAL WIRING (IN CONDUITS) FOR THE  
CAMERAS ETC.



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Revisions	
1	REVISIONS FOR PERMIT 5/20/21

**SECURITY PLAN**

Scale 1/4" = 1'-0"  
Drawn Author  
Checked Checker

**SEC001**