

# SHEET INDEX

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## ABBREVIATIONS

|         |                               |
|---------|-------------------------------|
| A       | AMPERE                        |
| AC      | ALTERNATING CURRENT           |
| AFC     | ARC FAULT CIRCUIT INTERRUPTER |
| AZIM    | AZIMUTH                       |
| COMP    | COMPOSITION                   |
| DC      | DIRECT CURRENT                |
| (E)     | EXISTING                      |
| ESS     | ENERGY STORAGE SYSTEM         |
| EXT     | EXTERIOR                      |
| INT     | INTERIOR                      |
| MSP     | MAIN SERVICE PANEL            |
| (N)     | NEW                           |
| NTS     | NOT TO SCALE                  |
| OC      | ON CENTER                     |
| PRE-FAB | PRE-FABRICATED                |
| PSF     | POUNDS PER SQUARE FOOT        |
| PV      | PHOTOVOLTAIC                  |
| RSD     | RAPID SHUTDOWN DEVICE         |
| TL      | TRANSFORMERLESS               |
| TYP     | TYPICAL                       |
| V       | VOLTS                         |
| W       | WATTS                         |
| LAN     | LANDSCAPE                     |
| POR     | PORTRAIT                      |

# LEGEND

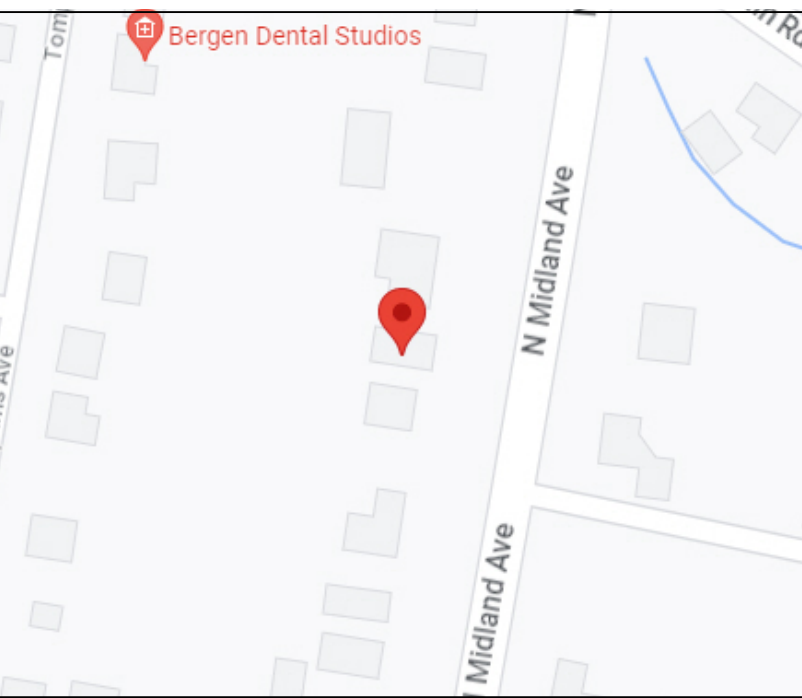
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|--|--|
|  | SERVICE ENTRANCE                                 |
|  | MAIN PANEL                                       |
|  | SUB-PANEL  |
|  | PV LOAD CENTER                                   |
|  | SUNRUN METER                                     |
|  | DEDICATED PV METER                               |
|  | INVERTER(S)                                      |
|  | AC DISCONNECT(S)                                 |
|  | DC DISCONNECT(S)                                 |
|  | IQ COMBINER BOX                                  |
|  | ENERGY STORAGE SYSTEM                            |
|  | MICROGRID INTERCONNECT DEVICE                    |
|  | BACKUP LOADS PANEL                               |
|  | ACREL METER                                      |
|  | CHIMNEY  |
|  | ATTIC VENT                                       |
|  | FLUSH ATTIC VENT                                 |
|  | PVC PIPE VENT                                    |
|  | METAL PIPE VENT                                  |
|  | T-VENT   |
|  | SATELLITE DISH                                   |
|  | FIRE SETBACKS                                    |
|  | HARDSCAPE  |
|  | PROPERTY LINE                                    |
|  | INTERIOR EQUIPMENT SHOWN AS DASHED COMMUNICATION |
|  | WIRES SOLAR MODULES                              |
|  | SNR MOUNT  |
|  | SNR MOUNT & SKIRT                                |

# SCOPE OF WORK

SYSTEM SIZE: 4860W DC, 5760W AC  
 MODULES: (12) HANWHA Q-CELLS: Q.PEAK DUO BLK ML-G10+ 405  
 INVERTERS: (1) DELTA ELECTRONICS: E6-TL-US  
 RACKING: RL UNIVERSAL, SPEEDSEAL TRACK ON COMP, SEE DETAIL SNR-DC-00436  
 ENERGY STORAGE SYSTEM: (1) LG CHEM: RESU 10H PRIME, 9.8KWh, 5KW

RAPID SHUTDOWN: (12) APSMART RSD-S-PLC ROOFTOP MODULE LEVEL RAPID SHUTDOWN DEVICE

# VICINITY MAP



# GENERAL NOTES

ALL WORK SHALL COMPLY WITH 2020 NEW YORK STATE RESIDENTIAL CODE WITH 2018 IRC/IBC/IEBC, MUNICIPAL CODE, AND ALL MANUFACTURERS' LISTINGS AND INSTALLATION INSTRUCTIONS.

PHOTOVOLTAIC SYSTEM WILL COMPLY WITH NEC 2017.

ELECTRICAL SYSTEM GROUNDING WILL COMPLY WITH NEC 2017.

PHOTOVOLTAIC SYSTEM IS UNGROUNDED. NO CONDUCTORS ARE SOLIDLY GROUNDED IN THE INVERTER. SYSTEM COMPLIES WITH 690.35.

MODULES CONFORM TO AND ARE LISTED UNDER UL 61730.

INVERTER CONFORMS TO AND IS LISTED UNDER UL 1741.

RACKING CONFORMS TO AND IS LISTED UNDER UL 2703.

SNAPRACK RACKING SYSTEMS, IN COMBINATION WITH TYPE I, OR TYPE II MODULES, ARE CLASS A FIRE RATED.

RAPID SHUTDOWN REQUIREMENTS MET WHEN INVERTERS AND ALL CONDUCTORS ARE WITHIN ARRAY BOUNDARIES PER NEC 690.12(1).

CONSTRUCTION FOREMAN TO PLACE CONDUIT RUN PER 690.31(G).

ARRAY DC CONDUCTORS ARE SIZED FOR DERATED CURRENT.

11.17 AMPS MODULE SHORT CIRCUIT CURRENT.

17.45 AMPS DERATED SHORT CIRCUIT CURRENT [690.8 (A) & 690.8 (B)].

ESS SHALL BE INSTALLED 3FT FROM DOORS AND WINDOWS IN ACCORDANCE WITH R327.4

ESS SUBJECT TO VEHICLE IMPACT WILL BE PROTECTED BY AN APPROVED BARRIER IN ACCORDANCE WITH THE 2020 NEW YORK STATE RESIDENTIAL CODE SECTION R327.9 AND THE 2020 FIRE CODE OF NEW YORK STATE SECTION 312.2.

ROOMS AND AREAS WHERE ENERGY STORAGE SYSTEMS ARE INSTALLED SHALL BE PROTECTED ON THE SYSTEM SIDE BY NO LESS THAN 5/8 INCH TYPE X GYPSUM BOARD OR EQUIVALENT, INSTALLED ON THE WALLS AND CEILING OF THE ROOM OR AREA IN ACCORDANCE WITH THE 2020 NEW YORK STATE RESIDENTIAL CODE SECTION R327.8.

ENERGY STORAGE SYSTEM CONFORMS TO AND IS LISTED UNDER UL 9540.

ENERGY STORAGE SYSTEM LIVE PARTS ARE NOT ACCESSIBLE DURING ROUTINE MAINTENANCE. SYSTEM VOLTAGE IN ACCORDANCE WITH NEC 706.30 AND EXCEPTION 1 NEC 706.30 (A).

ADDITIONAL DISCONNECTING MEANS SHALL BE INSTALLED WHERE ENERGY STORAGE DEVICE INPUT AND OUTPUT TERMINALS ARE MORE THAN 5 FT FROM CONNECTED EQUIPMENT, OR WHERE THE CIRCUITS FROM THESE TERMINALS PASS THROUGH A WALL OR PARTITION PER 706.7(E).

LISTED, COMBINATION TYPE AFCI SHALL BE INSTALLED WHERE BACKED UP CIRCUIT WIRING IS EXTENDED MORE THAN 6FT AND DOES NOT INCLUDE ANY ADDITIONAL OUTLETS OR DEVICES PER NEC 210.12(D).

THE CAPACITY OF THE STANDALONE SYSTEM SUPPLY SHALL BE EQUAL TO OR GREATER THAN THE LOAD POSED BY THE SINGLE LARGEST UTILIZATION EQUIPMENT CONNECTED TO THE SYSTEM PER NEC ARTICLE 710.15(A)

ALL PASS-THROUGH CONDUCTORS MUST COMPLY WITH NEC 312.8

| REV | NAME | DATE | COMMENTS |
|-----|------|------|----------|
|     |      |      |          |
|     |      |      |          |
|     |      |      |          |

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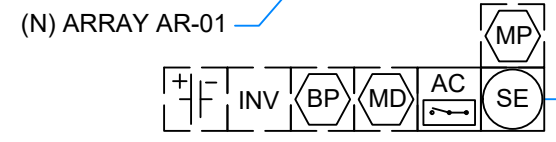
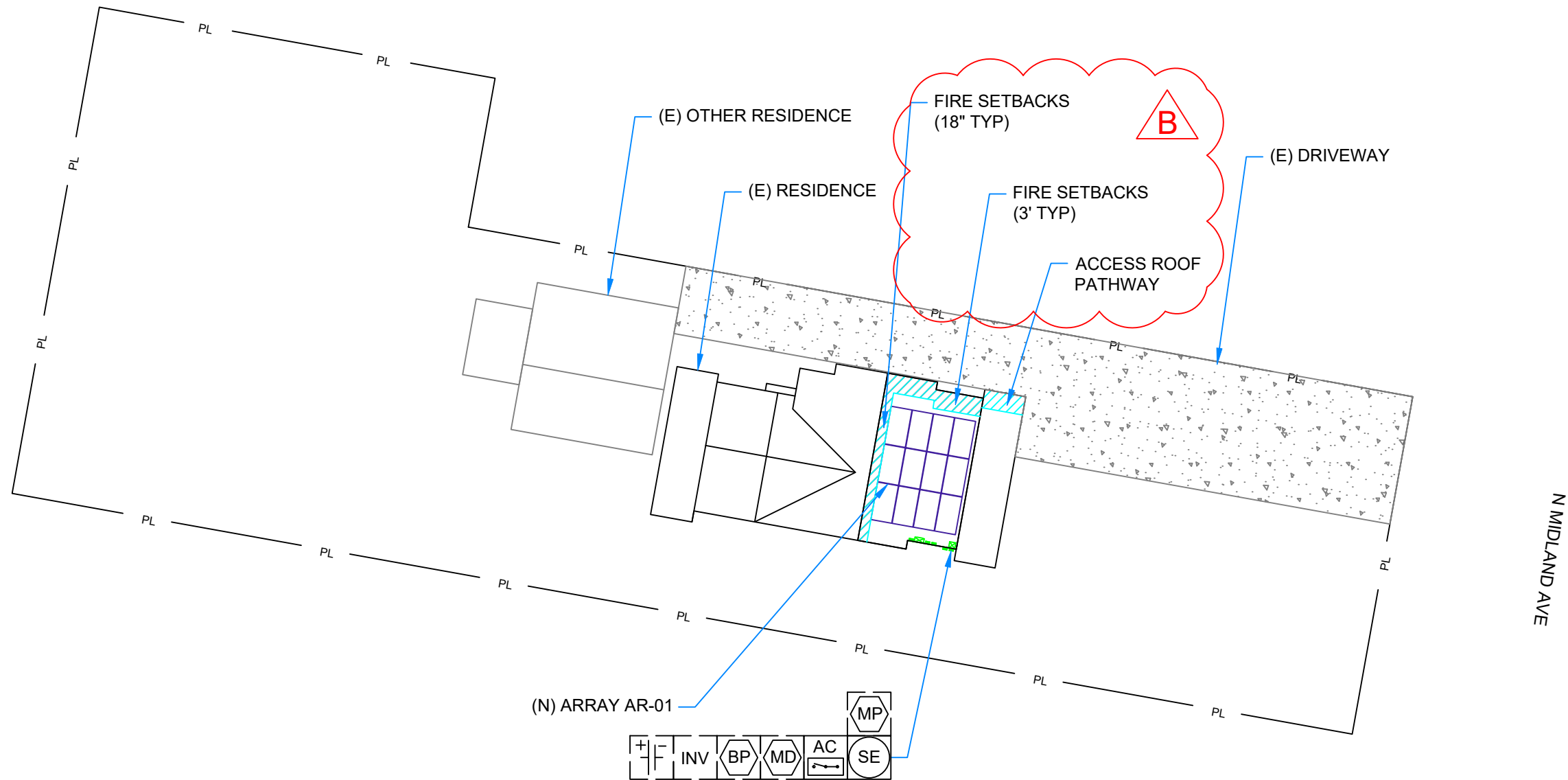
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 212R-412MCL1

**DESIGNER:** (415) 580-6920 ex3  
 BENCH GOLD DR BANGIT

**SHEET**  
**COVER SHEET**

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|       | ARRAY PITCH | TRUE AZIM | PV AREA (SQFT) |
|-------|-------------|-----------|----------------|
| AR-01 | 31°         | 100°      | 253.6          |

**NOTE:** ROOFTOP MODULE LEVEL RAPID SHUTDOWN DEVICE INSTALLED ON EACH MODULE PER NEC 690.12

## SUNRUN

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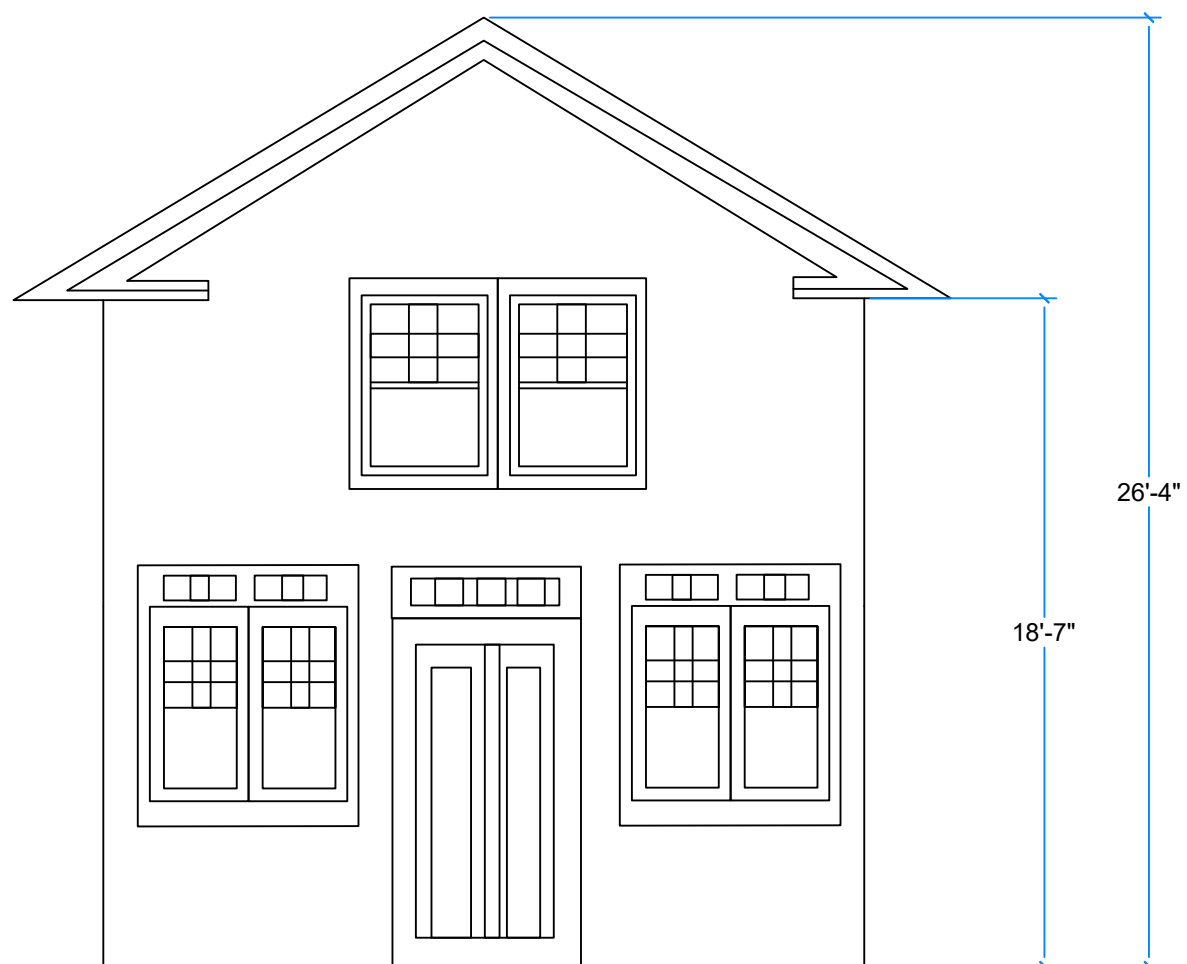
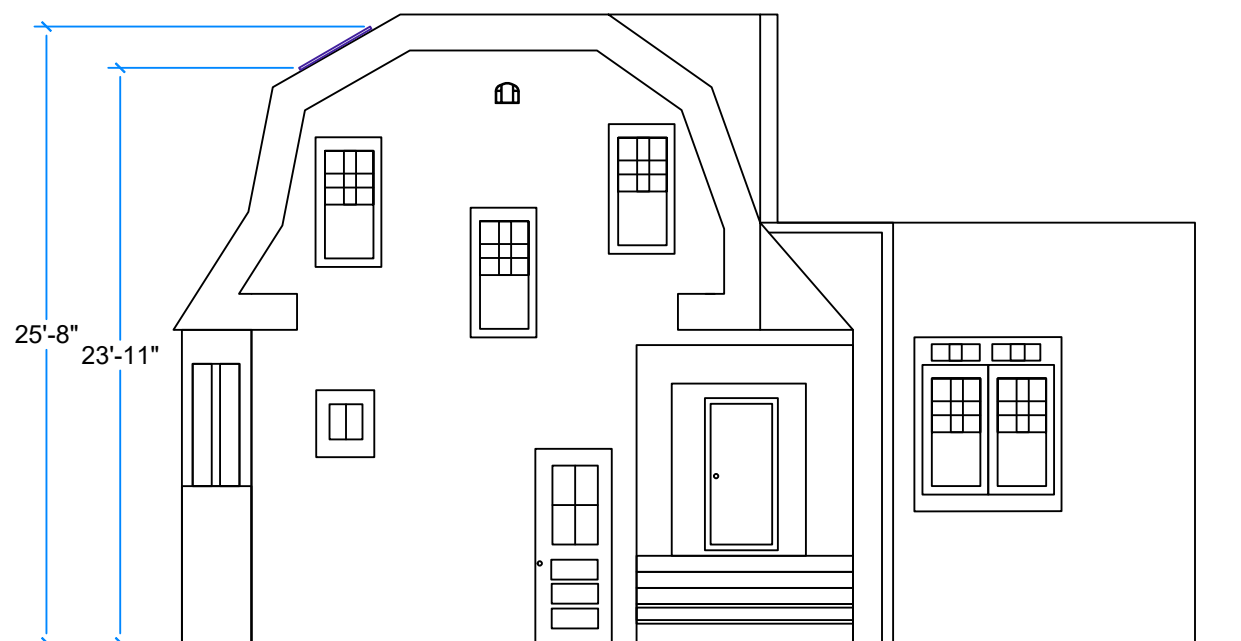
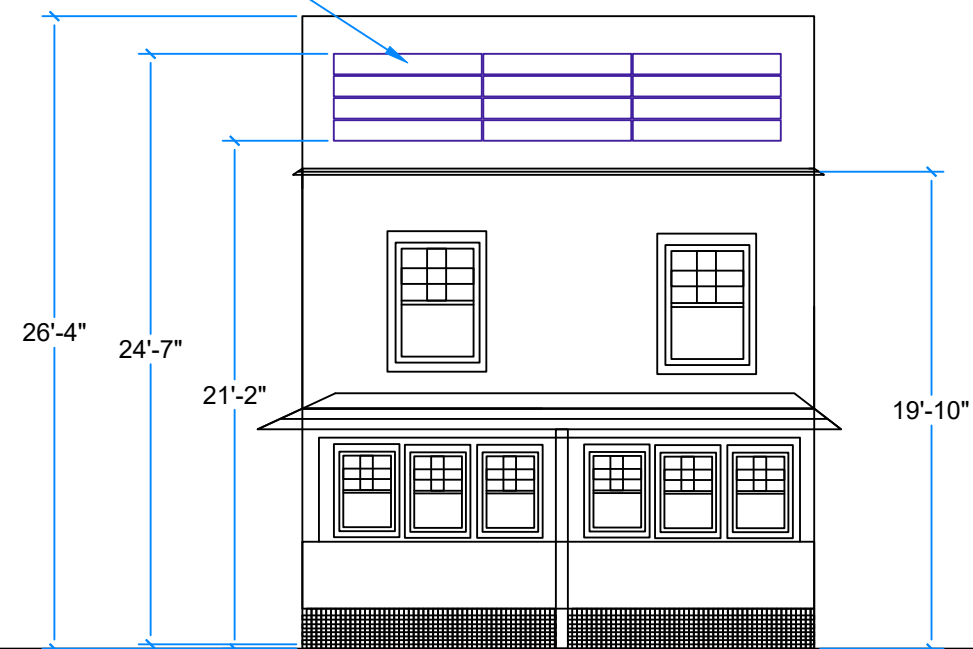
**SHEET**  
**SITE PLAN**

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(N) ARRAY AR-01



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ELEVATION VIEW

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GARAGE PLAN VIEW

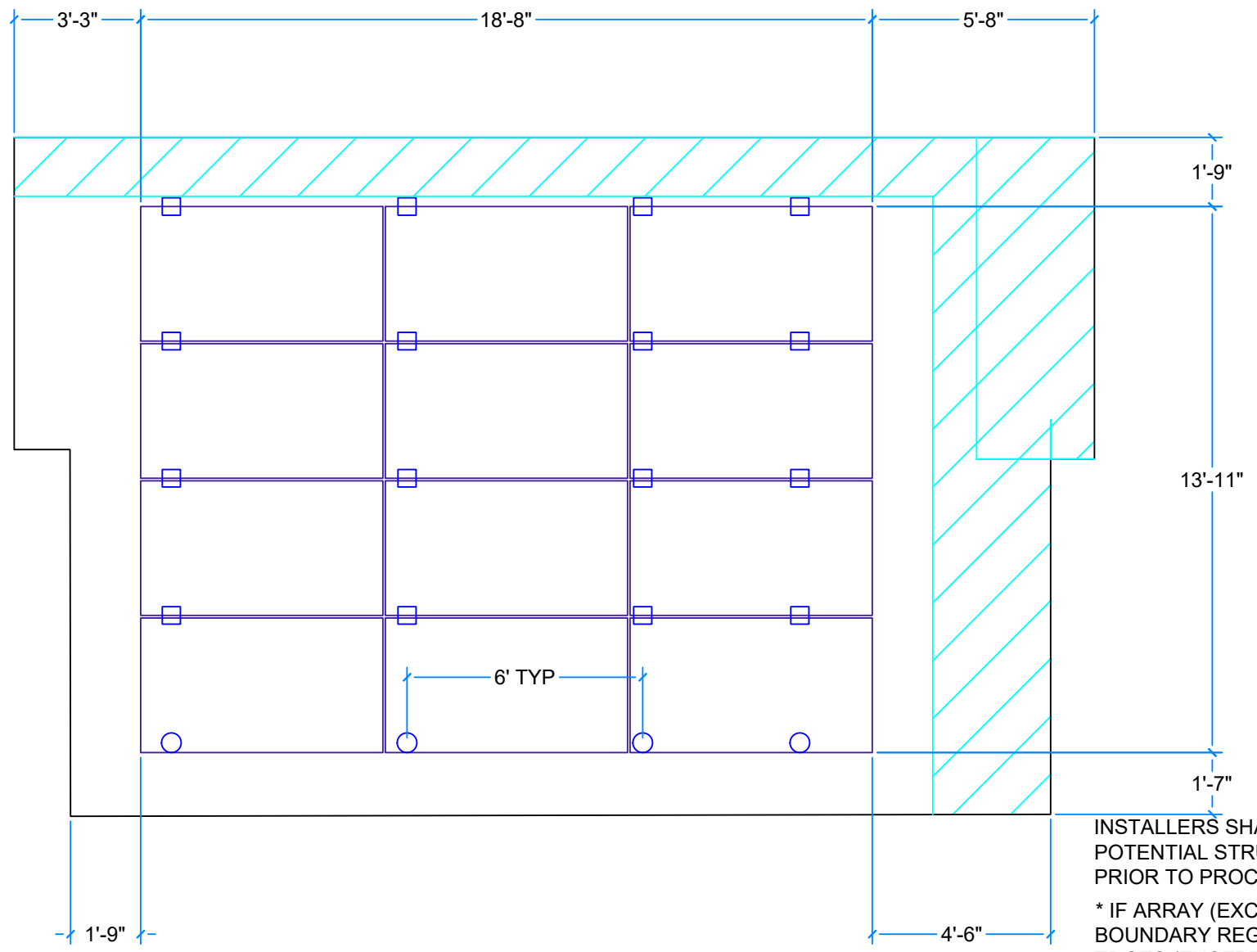
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| ROOF INFO |                    |         | FRAMING INFO |          |            | ATTACHMENT INFORMATION   |                          |                        |                         |                       |               |
|-----------|--------------------|---------|--------------|----------|------------|--|--------------------------|------------------------|-------------------------|-----------------------|---------------|
| Name      | Type               | Height  | Type         | Max Span | OC Spacing | Detail   | Max Landscape OC Spacing | Max Landscape Overhang | Max Portrait OC Spacing | Max Portrait Overhang | Configuration |
| AR-01     | COMP SHINGLE - RLU | 2-Story | 2X6 RAFTERS  | 12' - 8" | 24"        | RL UNIVERSAL, SPEEDSEAL TRACK ON COMP, SEE DETAIL SNR-DC-00436 | 6' - 0"                  | 2' - 4"                | 4' - 0"                 | 2' - 0"               | STACKED       |

**DESIGN CRITERIA**  
**MAX DISTRIBUTED LOAD:** 3 PSF  
**SNOW LOAD:** 30 PSF  
**WIND SPEED:**  
 114 MPH 3-SEC GUST.  
**S.S. LAG SCREW**  
 5/16"X5.5":2.5" MIN. EMBEDMENT

**SITE PLAN - SCALE = 1/4" = 1'-0"**



INSTALLERS SHALL NOTIFY ENGINEER OF ANY POTENTIAL STRUCTURAL ISSUES OBSERVED PRIOR TO PROCEEDING W/ INSTALLATION.

\* IF ARRAY (EXCLUDING SKIRT) IS WITHIN 12" BOUNDARY REGION OF ANY ROOF PLANE EDGES (EXCEPT VALLEYS), THEN ATTACHMENTS NEED TO BE ADDED AND OVERHANG REDUCED WITHIN THE 12" BOUNDARY REGION ONLY AS FOLLOWS:  
 \*\* ALLOWABLE ATTACHMENT SPACING INDICATED ON PLANS TO BE REDUCED BY 50%.  
 \*\* ALLOWABLE OVERHANG INDICATED ON PLANS TO BE 1/5TH OF ALLOWABLE ATTACHMENT SPACING INDICATED ON PLANS.

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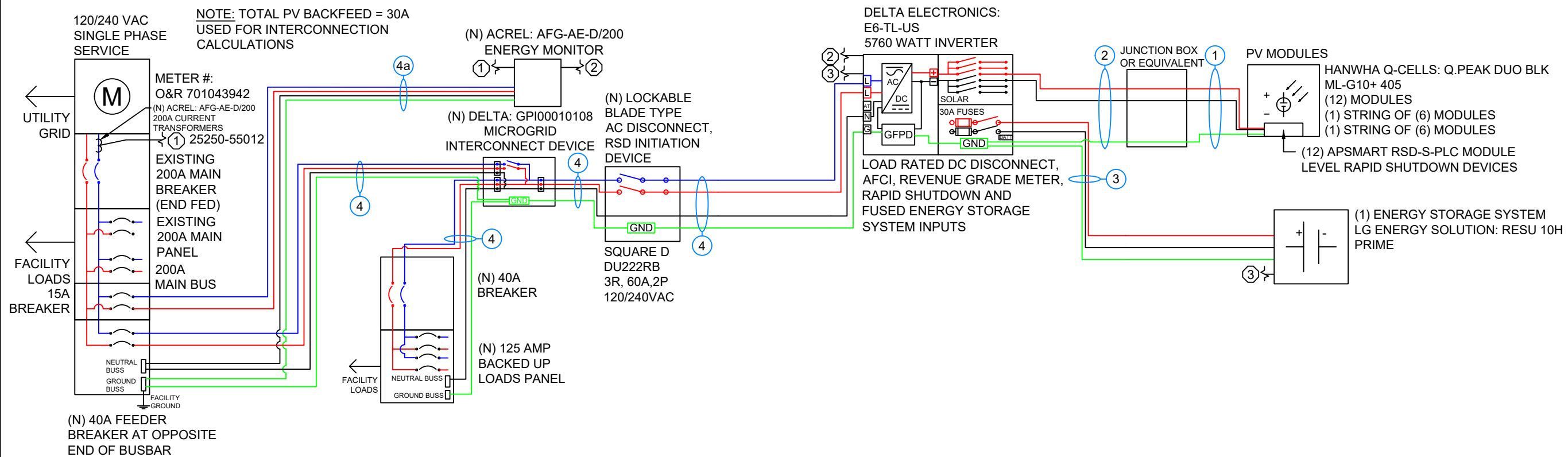
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**LAYOUT**

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**CONDUIT SCHEDULE**

| #  | CONDUIT            | CONDUCTOR              | NEUTRAL                | GROUND                 |
|----|--------------------|------------------------|------------------------|------------------------|
| 1  | NONE               | (4) 10 AWG PV WIRE     | NONE                   | (1) 6 AWG BARE COPPER  |
| 2  | 3/4" EMT OR EQUIV. | (4) 10 AWG THHN/THWN-2 | NONE                   | (1) 10 AWG THHN/THWN-2 |
| 3  | 3/4" EMT OR EQUIV. | (2) 8 AWG THHN/THWN-2  | NONE                   | (1) 10 AWG THHN/THWN-2 |
| 4  | 3/4" EMT OR EQUIV. | (2) 8 AWG THHN/THWN-2  | (1) 10 AWG THHN/THWN-2 | (1) 8 AWG THHN/THWN-2  |
| 4a | 3/4" EMT OR EQUIV. | (2) 14 AWG THHN/THWN-2 | (1) 14 AWG THHN/THWN-2 | (1) 14 AWG THHN/THWN-2 |

**MODULE CHARACTERISTICS**

HANWHA Q-CELLS: Q.PEAK DUO BLK  
ML-G10+ 405: 405 W  
OPEN CIRCUIT VOLTAGE: 45.34 V  
MAX POWER VOLTAGE: 37.39 V  
SHORT CIRCUIT CURRENT: 11.17 A

**SYSTEM CHARACTERISTICS - INVERTER 1**

SYSTEM SIZE: 4860 W  
SYSTEM OPEN CIRCUIT VOLTAGE: 302.89 V  
MAX ALLOWABLE DC VOLTAGE: 480 V  
SYSTEM SHORT CIRCUIT CURRENT: 27.93 A

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SHEET  
**ELECTRICAL**

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**WARNING**  
ELECTRICAL SHOCK HAZARD  
TERMINALS ON LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:  
INVERTER(S), AC/DC DISCONNECT(S), AC COMBINER PANEL (IF APPLICABLE).  
PER CODE(S): CEC 2019: 690.13(B), NEC 2017: 690.13(B)

**WARNING**  
POWER SOURCE OUTPUT CONNECTION  
DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:  
ADJACENT TO PV BREAKER (IF APPLICABLE).  
PER CODE(S): CEC 2019: 705.12(B)(2)(3)(b), NEC 2017: 705.12(B)(2)(3)(b)

**WARNING**  
PHOTOVOLTAIC SYSTEM COMBINER PANEL  
DO NOT ADD LOADS

LABEL LOCATION:  
PHOTOVOLTAIC AC COMBINER (IF APPLICABLE).  
PER CODE(S): CEC 2019: 705.12(B)(2)(3)(c), NEC 2017: 705.12(B)(2)(3)(c)

**WARNING**  
THREE POWER SUPPLY SOURCES: UTILITY GRID, BATTERY AND PV SOLAR ELECTRIC SYSTEM

LABEL LOCATION:  
UTILITY SERVICE METER AND MAIN SERVICE PANEL.  
PER CODE(S): CEC 2019: 706.11 & 705.12(B)(3), NEC 2017: 705.12(B)(3), 706.11(A), & 706.11(B)

INVERTER 1

**PHOTOVOLTAIC DC DISCONNECT**

|   |       |     |
|---|-------|-----|
| MAXIMUM SYSTEM VOLTAGE:   | 480   | VDC |
| MAXIMUM CIRCUIT CURRENT:  | 27.93 | ADC |
| MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER (IF INSTALLED): | N/A   | ADC |

LABEL LOCATION:  
INVERTER(S), DC DISCONNECT(S).  
PER CODE(S): CEC 2019: 690.53, NEC 2017: 690.53

NOTES AND SPECIFICATIONS:

- SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF THE NEC 2017 ARTICLE 110.21(B), UNLESS SPECIFIC INSTRUCTIONS ARE REQUIRED BY SECTION 690, OR IF REQUESTED BY THE LOCAL AHJ.
- SIGNS AND LABELS SHALL ADEQUATELY WARN OF HAZARDS USING EFFECTIVE WORDS, COLORS AND SYMBOLS.
- LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
- LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
- SIGNS AND LABELS SHALL COMPLY WITH ANSI Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.
- DO NOT COVER EXISTING MANUFACTURER LABELS.

**RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM**

LABEL LOCATION:  
INSTALLED WITHIN 3' OF RAPID SHUT DOWN SWITCH PER CODE(S): CEC 2019: 690.56(C)(3), NEC 2017: 690.56(C)(3), IFC 2012: 605.11.1, IFC 2018: 1204.5.3, CFC 2019: 1204.5.3

**WARNING: PHOTOVOLTAIC POWER SOURCE**

LABEL LOCATION:  
INTERIOR AND EXTERIOR DC CONDUIT EVERY 10 FT, AT EACH TURN, ABOVE AND BELOW PENETRATIONS, ON EVERY JB/PULL BOX CONTAINING DC CIRCUITS.  
PER CODE(S): CEC 2019: 690.31(G)(3), 690.31(G)(4), NEC 2017: 690.31(G)(3), 690.31(G)(4) IFC 2012: 605.11.1.4

**PHOTOVOLTAIC AC DISCONNECT**

MAXIMUM AC OPERATING CURRENT: 24 AMPS  
NOMINAL OPERATING AC VOLTAGE: 240 VAC

LABEL LOCATION:  
AC DISCONNECT(S), PHOTOVOLTAIC SYSTEM POINT OF INTERCONNECTION.  
PER CODE(S): CEC 2019: 690.54, NEC 2017: 690.54

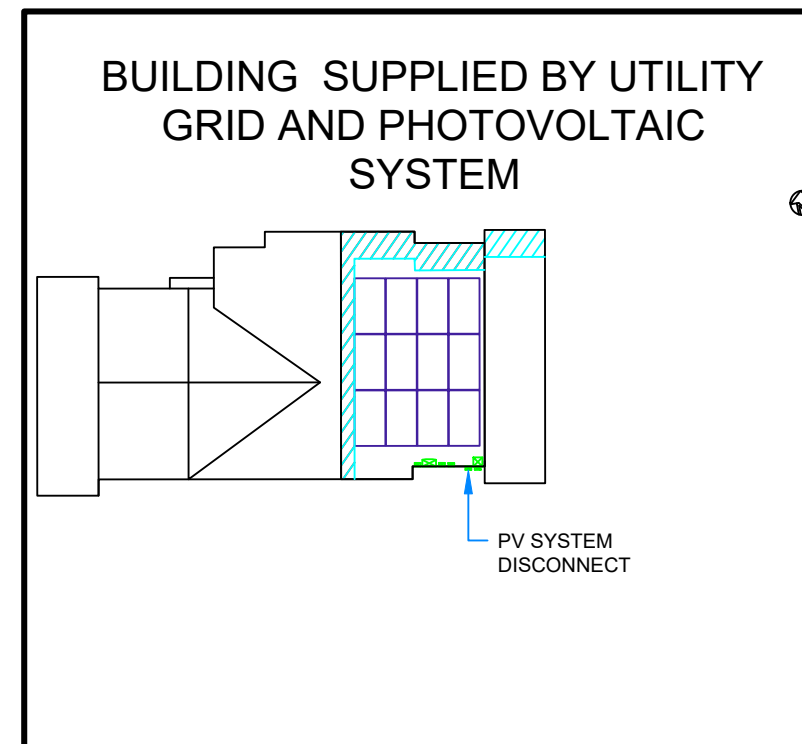
4"

**SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN**

3"

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY.

LABEL LOCATION:  
ON OR NO MORE THAT 1 M (3 FT) FROM THE SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED.  
PER CODE(S): CEC 2019: 690.56(C)(1)(a), NEC 2017: 690.56(C)(1)(a)



LABEL LOCATION:  
POINT OF INTERCONNECTION  
(PER CODE: NEC690.56(B), NEC705.10, 225.37, 230.2(E))

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SHEET  
**SIGNAGE**

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