

PROJECT INFORMATION

OWNER DESMOND BUTLER RESIDENCE
3321 N St NW Washington, DC 20007

SCOPE OF WORK RESIDENTIAL GRID INTERACTIVE SOLAR INSTALLATION
HANWHA Q.PEAK DUO BLK-G8+
(58) x 360W = 20.880 KWdc @ STC
(58) IQ7-60-2-US MICROINVERTERS

BUILDING SINGLE FAMILY RESIDENTIAL

CODES 2017 DCMR 12A, DC BUILDING CODE AMENDMENTS
2017 DCMR 12B, DC RESIDENTIAL CODE AMENDMENTS
2017 DCMR 12C, DC ELECTRICAL CODE
2017 DCMR 12H, DC FIRE CODE

MODULE SPECS HANWHA Q.PEAK DUO BLK-G8+
(L) 68.5 X (W) 40.6" X (H) 1.26"
WEIGHT = 43.9 LBS
COMBINED WEIGHT OF
MODULES AND RACKING: 3.15PSF ≤4.5PSF

CONTRACTOR REVOLUTION SOLAR
10746 JUDY LANE
COLUMBIA, MD 21044
CONTACT: MATT YOUNG
PHONE: 443-865-5039

SITE AND ARRAY DETAILS FLAT ROOF , 2 x 8 RAFTERS @,SHINGLE ROOF, 2 x 8 RAFTERS @
24" O.C. , DF #2
TILT: 2°,12°
AZIMUTH: 1°,180°,181°,271°
AREA OF ROOF(PLAN VIEW)= 4260 SF
AREA OF NEW ARRAY = 1044 SF

CLIMATE DATA SOURCE: WASHINGTON
DC REAGAN AP, VA, USA, 38.87N,
77.03W
ASHRAE EXTREME LOW: -12.3°C
ASHRAE 2% HIGH: 36°C
ASHRAE EXTREME HIGH: 40.9°C
WIND SPEED: 115 MPH (ASCE7-10)
RISK CATEGORY: II
WIND EXPOSURE CATEGORY: B
GROUND SNOW LOAD: 25 PSF



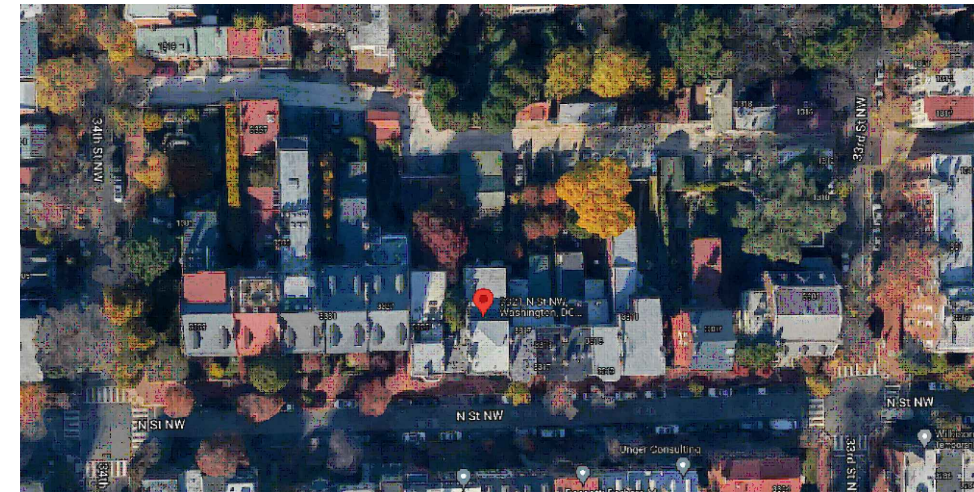
NUMBER OF ARRAYS PROPOSED: 5				
ARRAY #1 DETAILS	# OF MODULES: 8	TILT:2°	AZIMUTH: 180°	ARRAY HEIGHT: 1'-4"
ARRAY #2 DETAILS	# OF MODULES: 39	TILT:2°	AZIMUTH: 180°	ARRAY HEIGHT: 1'-4"
ARRAY #3 DETAILS	# OF MODULES: 3	TILT:12°	AZIMUTH: 1°	ARRAY HEIGHT: 0'-7"
ARRAY #4 DETAILS	# OF MODULES: 3	TILT: 12°	AZIMUTH: 271°	ARRAY HEIGHT: 0'-7"
ARRAY #5 DETAILS	# OF MODULES: 5	TILT: 12°	AZIMUTH: 181°	ARRAY HEIGHT: 0'-7"

NOTE: MAX HEIGHT OF SYSTEM IS 1'-4" ABOVE FLAT ROOF
NOTE: MAX HEIGHT OF SYSTEM IS 0'-7" ABOVE SHINGLE ROOF

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 - PV-2 FLAT ROOF LAYOUT
 - PV-2.1 TILT ROOF LAYOUT
 - PV-3 ELECTRICAL PLAN
 - PV-4 SINGLE LINE DIAGRAM
 - PV-5 LABELS
 - PV-6 ELEVATION

- SUPPORTING DOCUMENTS**
- DATA SHEETS
 - STRUCTURAL CALCULATIONS

SATELLITE VIEW (SCALE: NTS)



OFFICIAL USE

PE STAMP

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Contractor # 410518000062



DESMOND BUTLER RESIDENCE
Residential Grid Interactive Solar Installation
3321 N St NW Washington, DC 20007
Ph:
Square / Lot / Zoning: 4260, 5435, R3 PEPCO#: 1229 0137

COVER SHEET

System AC Size @ STC:13.920 kW System DC Size @ STC:20.880kW
(58) HANWHA Q.PEAK DUO BLK-G8+ 360 SOLAR MODULES OR EQUAL
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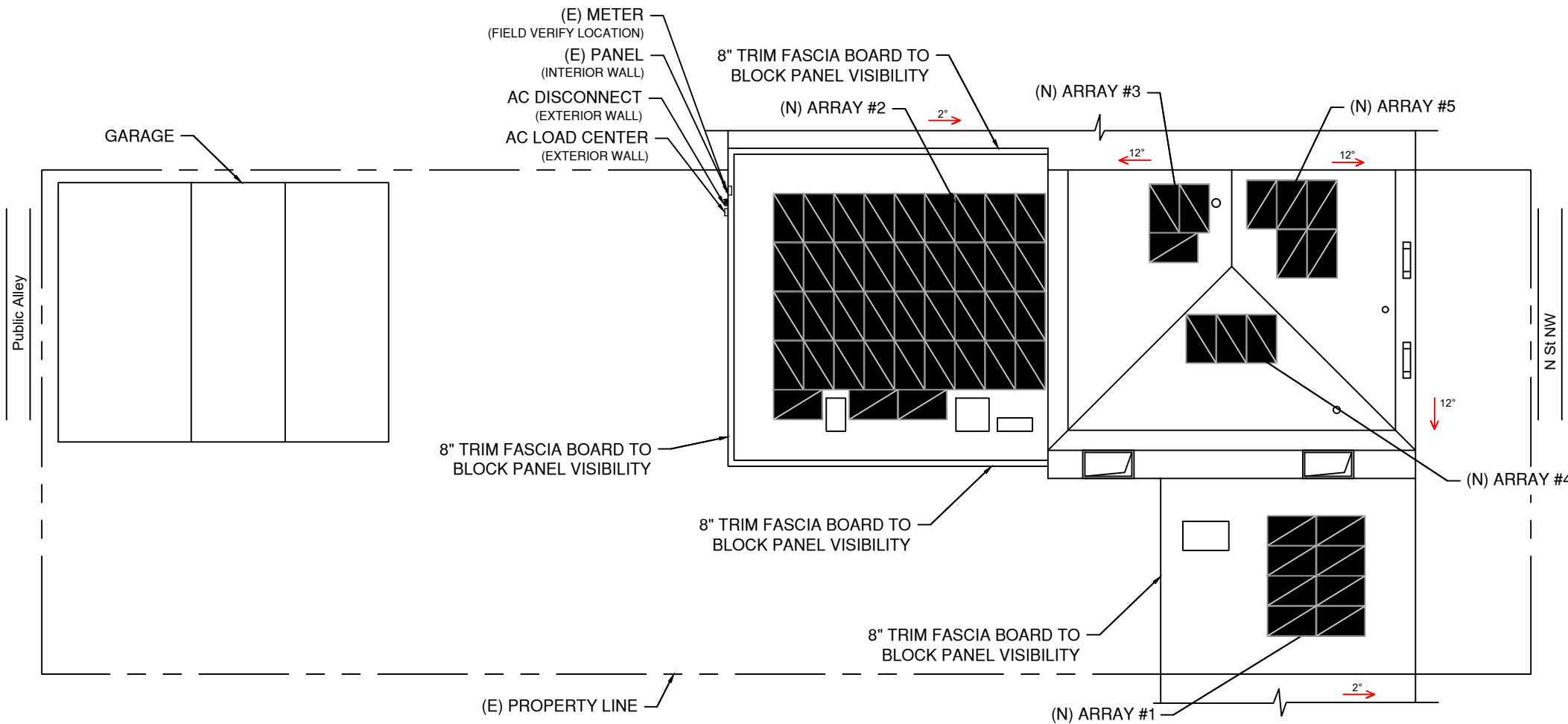
Drawn by:
TC

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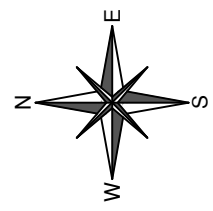
Date:
06.14.2022

NOTE: *CHECK WITH CITY/COUNTY OR LAND SURVEYOR FOR ACCURATE PROPERTY LOCATE.

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SITE PLAN
SCALE: 1/16" = 1'-0"

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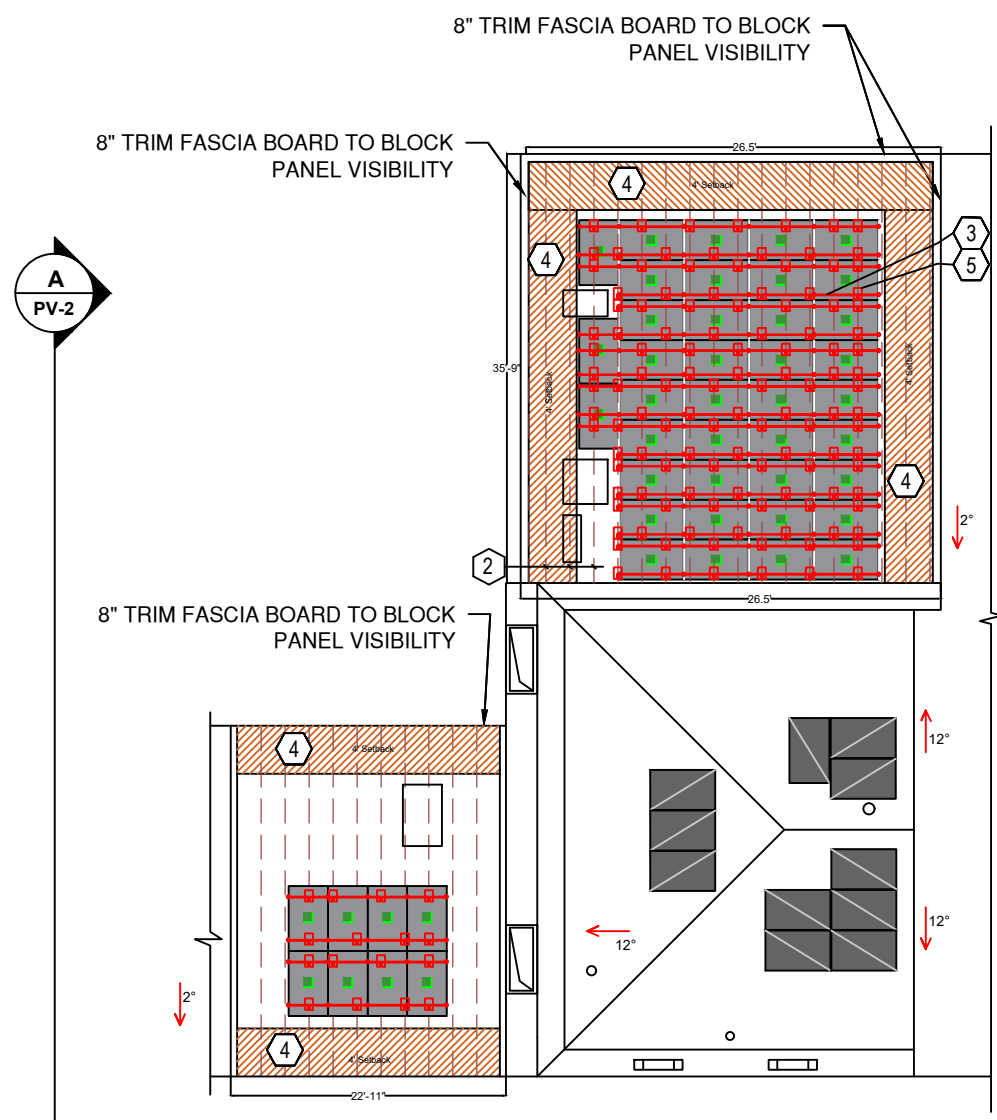


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SITE PLAN

System AC Size @ STC:13.920 kW System DC Size @ STC:20.880kW (58) HANWHA Q.PEAK DUO BLK-G8+ 360 SOLAR MODULES OR EQUAL (58) IQ7-60-2-US MICRO INVERTERS	Page: PV-1
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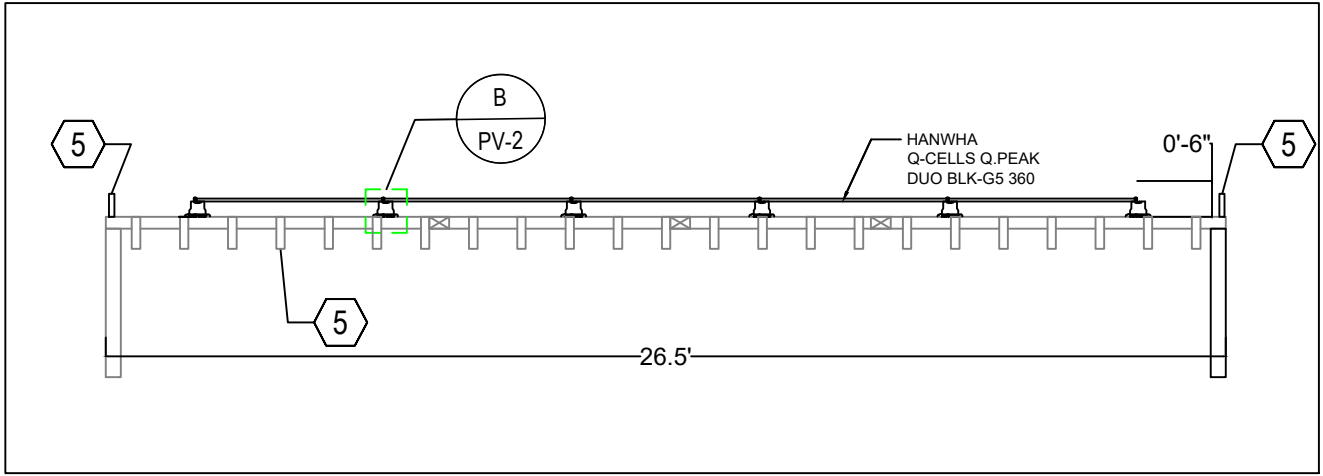


NOTES:

- ① SOLAR STACK ATTACHMENT TYP.
- ② 2 x 8 RAFTERS@ 24" O.C. TYP.
- ③ SOLAR STACK RAIL
- ④ 4' SET BACK, TYP.
- ⑤ NEW 8" TRIM FASCIA BOARD TO BLOCK PANEL VISIBILITY

GENERAL NOTES:

- 1. RAFTER LOCATIONS ARE APPROXIMATE. ACTUAL LOCATIONS MAY DIFFER AND CONTRACTOR MAY NEED TO ADJUST MOUNT LOCATIONS. IN NO CASE SHALL THE MOUNT SPACING EXCEED MAX. MOUNT SPACING.

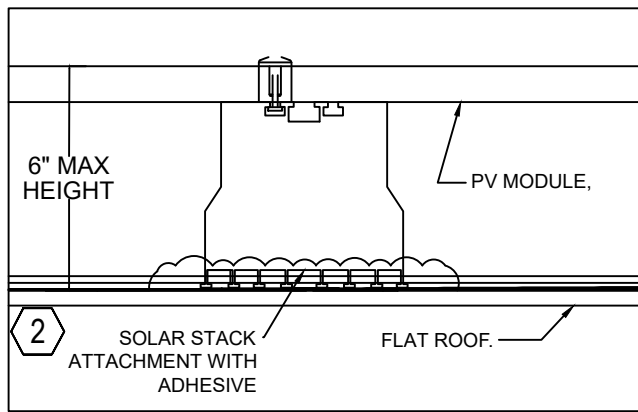


A SECTION DETAIL
Scale: 3/16" = 1'-0"

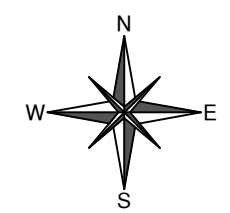
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EXAMPLE OF FASCIA BOARD BLOCKING VISIBILITY



B MOUNTING DETAIL
Scale: NTS



FRAMING PLAN

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

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FLAT ROOF LAYOUT
 System AC Size @ STC: 13.920 kW System DC Size @ STC: 20.880 kW
 (58) HANWHA Q-PEAK DUO BLK-G8+ 360 SOLAR MODULES OR EQUAL
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NOTES:

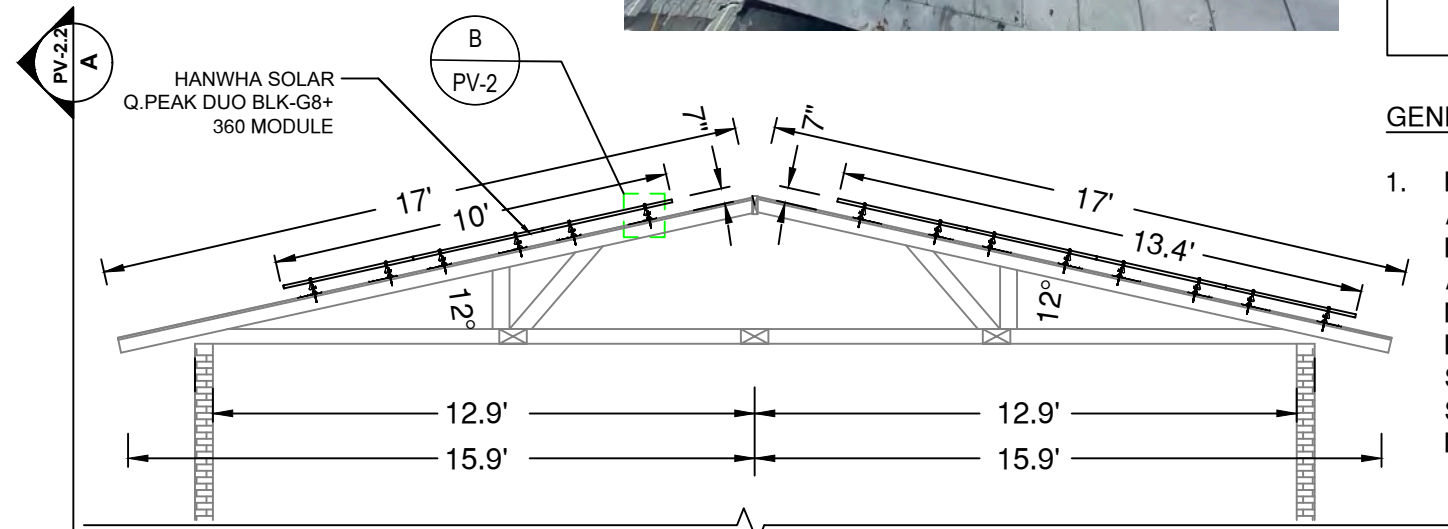
- 1 IRONRIDGE FLASH FOOT2, TYP.
- 2 2 x 8 RAFTERS@ 24" O.C.TYP.
- 3 IRONRIDGE XR10 RAIL
- 4 RIDGE
- 5 EAVE
- 6 3'-0 SET BACK, TYP.



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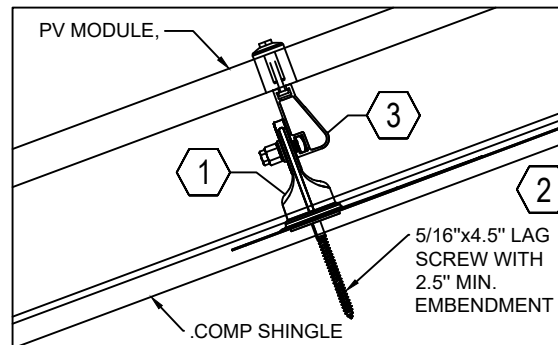
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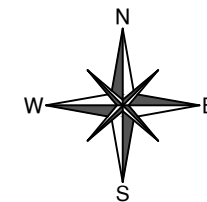


NOTE: MAX HEIGHT OF SYSTEM IS 0'-7" ABOVE SHINGLE ROOF

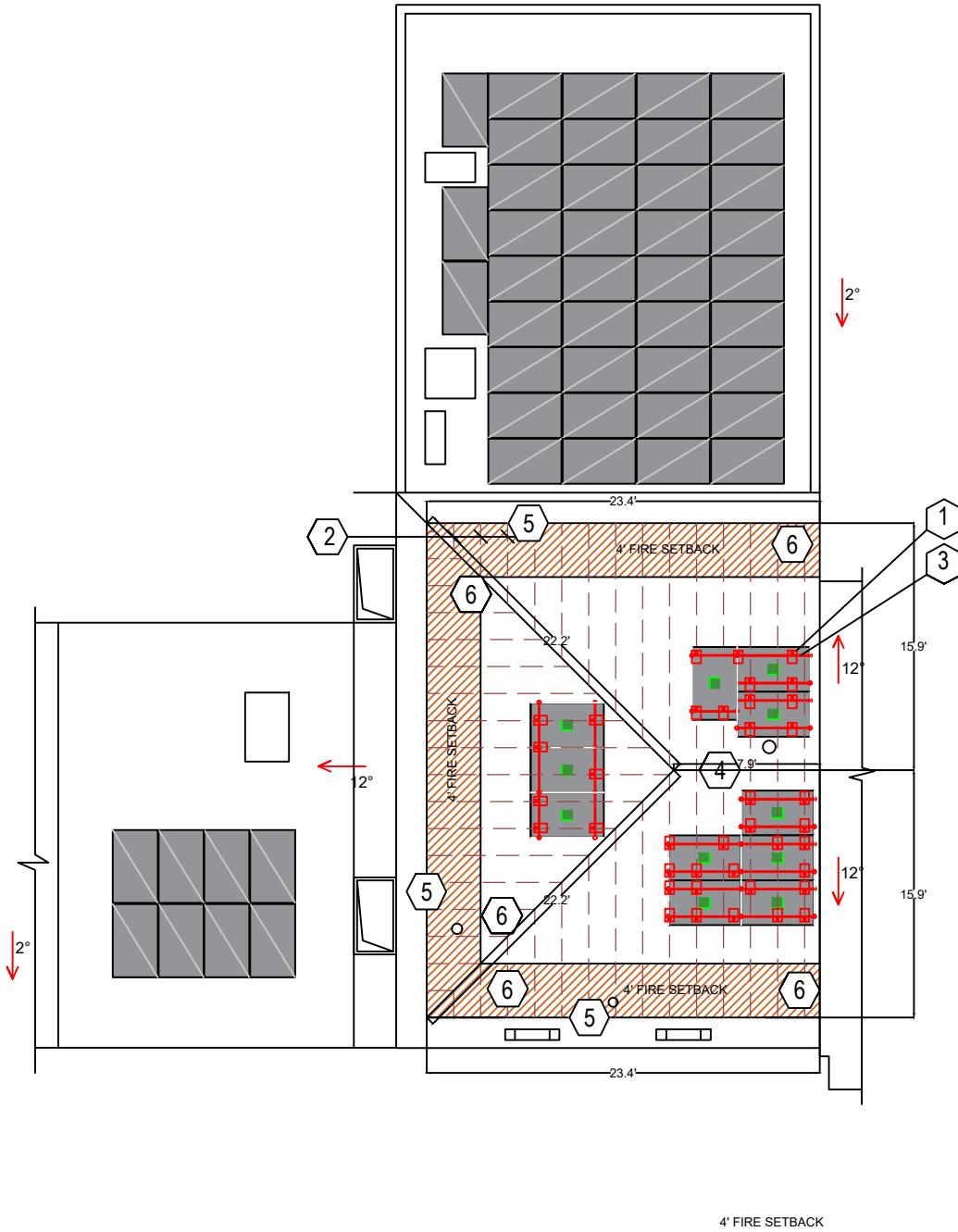
A SECTION DETAIL
Scale: 3/16" = 1'-0"



B MOUNTING DETAIL
Scale: NTS



FRAMING PLAN
SCALE: 1/8" = 1'-0"



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TILT ROOF LAYOUT

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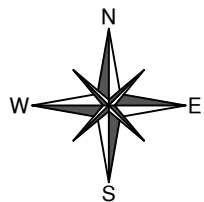
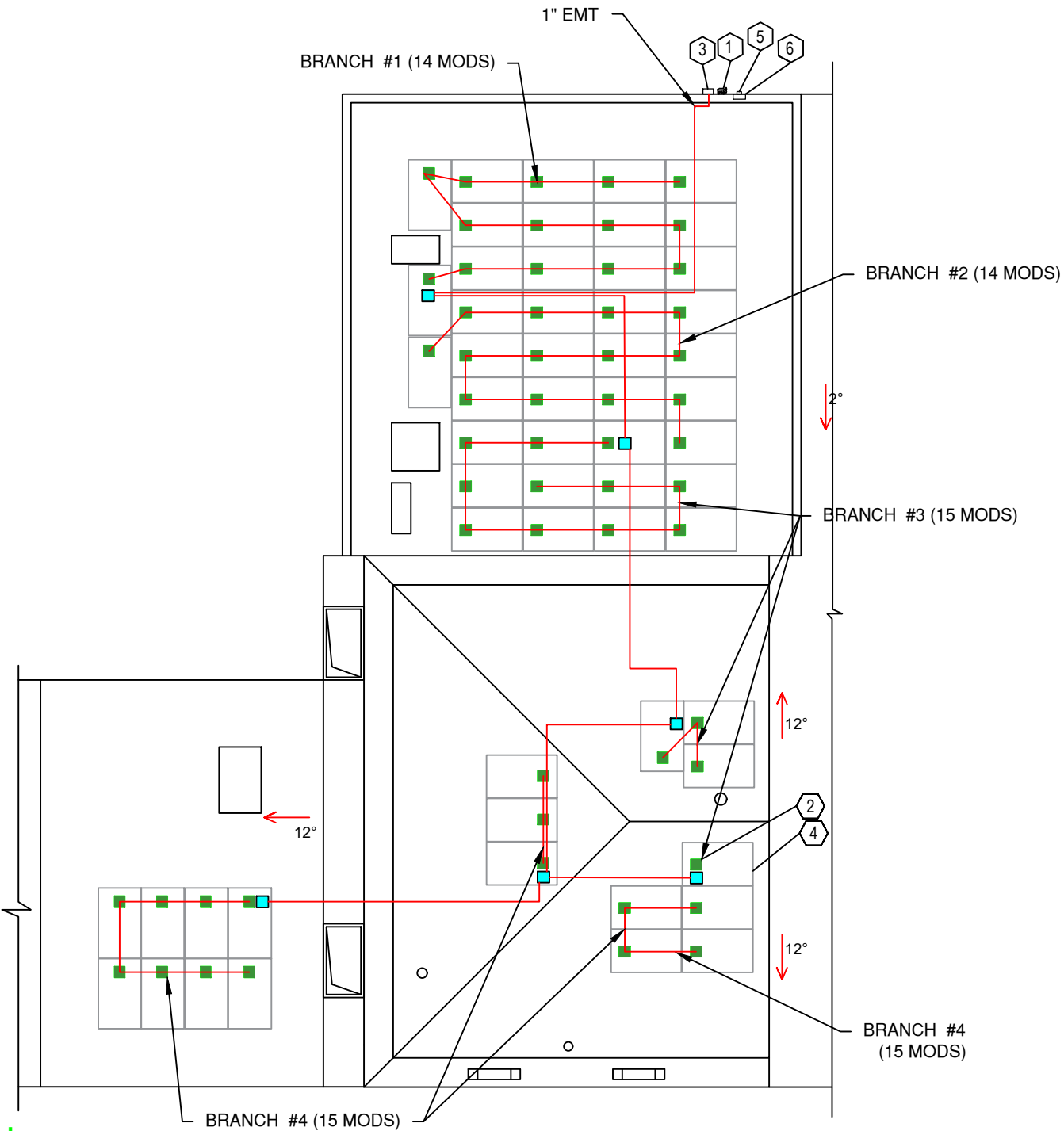
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PV-2.2

GENERAL NOTES:
 1. CONDUIT AND WIRING IS DIAGRAMMATIC. FINAL ROUTING TO BE DETERMINED BY INSTALLER



ELECTRICAL PLAN
 SCALE: 3/32" = 1'-0"

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KEYED NOTES:

- ① (N) AC DISCONNECT (EXTERIOR WALL)
- ② (N) IQ7-60-2-US MICRO INVERTER (ARE LOCATED UNDERSIDE OF EACH MODULE AND ARE INSTALLED TO CONTINUOUS SUPPORT RAIL)
- ③ (N) ENPHASE IQ COMBINER+ W/ ENVOY
- ④ (N) PV MODULE
- ⑤ (E) METER (FIELD VERIFY LOCATION)
- ⑥ (E) SERVICE PANEL (INTERIOR WALL)

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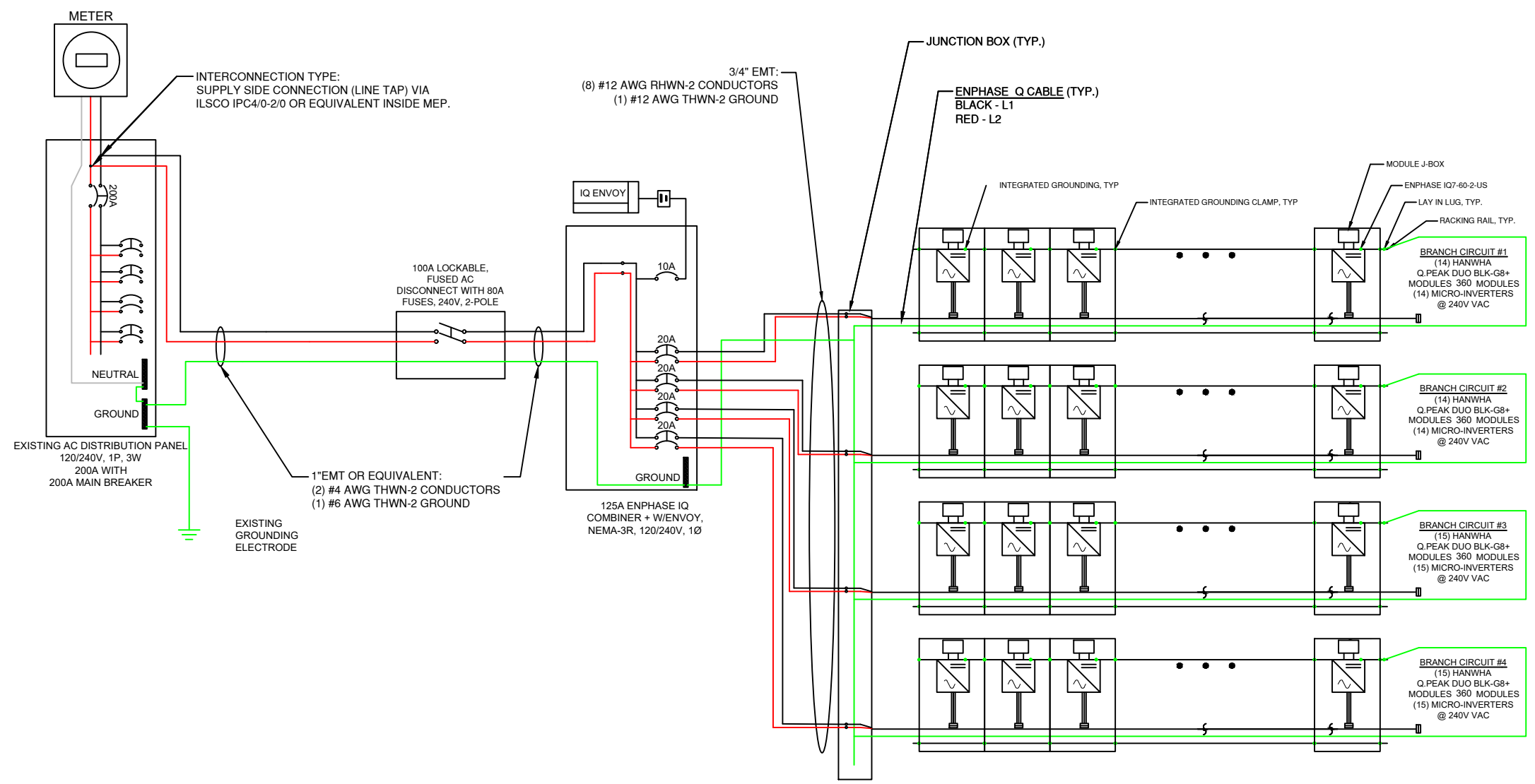
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VOLTAGE DROP CALCULATIONS								
WIRE RUN	# OF MODS	V (VOLTS)	I (AMPS)	L (FT)	VD**	VD (%)	WIRE SIZE	RACEWAY
BRANCH #1 TO J-BOX	14	240V	14A	50	1.11V	0.46%	12 AWG	FREE AIR
BRANCH #2 TO J-BOX	14	240V	14A	52	1.16V	0.48%	12 AWG	FREE AIR
BRANCH #3 TO J-BOX	15	240V	15A	55	1.31V	0.55%	12 AWG	FREE AIR
BRANCH #4 TO J-BOX	15	240V	15A	55	1.31V	0.55%	12 AWG	FREE AIR
J-BOX TO IQ COMBINER	15	240V	15A	60	1.43V	0.60%	12 AWG	3/4" EMT
IQ COMBINER TO POI	58	240V	58A	10	0.14V	0.060%	4 AWG	1" EMT
MAX VOLTAGE DROP: 2.7%								

MODULE SPECS	
MODULE MAKE	HANWHA
MODULE MODEL	Q.PEAKDUO BLK-G8+ 360
MAX. POWER Pmax	360 W
OPEN CIRCUIT VOLTAGE Voc	41.19 V
MAX. POWER POINT Vmp	34.85 A
SHORT CIRCUIT CURRENT Isc	10.84A
MAX. POWER POINT Imp	10.33A
Voc TEMP. COEFF.	-0.28%/°C
Pmax TEMP. COEFF.	-0.36%/°C

INVERTER SPECS	
ENPHASE MODEL	IQ7-60-2-US
MAX. POWER Pmax	240 W
MAX. INPUT VOLTAGE	48 V
Q.PEAKDUO BLK-G8+ (OR EQUAL) Voc @ -12.3°C	41.19 V
44.5V < 48V	YES
OUTPUT CURRENT	1 A
OUTPUT VOLTAGE	240 V, 1φ
DC/AC RATIO	1.31



- GENERAL NOTES:
- CONTRACTOR RESPONSIBLE FOR COMPLYING WITH ALL LOCAL OR NATIONAL CODE REQUIREMENTS AND EQUIPMENT INSTALLATION INSTRUCTIONS.
 - SEE PV-5 FOR LABELING REQUIREMENTS

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SINGLE LINE DIAGRAM
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**SOLAR ELECTRIC SYSTEM
DISCONNECT LOCATED IN MAIN
SERVICE PANEL**

LOCATION: USE ONLY WHEN THE MAIN SERVICE
DISCONNECT IS ON THE METER (METER MAIN)
LABEL ON THE OUTSIDE OF THE METER
ENCLOSURE (WHEN THE METER MAIN ACTS AS
THE RAPID SHUTDOWN): NEC 705.10 & 690.56(B)

**PV SYSTEM POINT OF
INTERCONNECTION**

LOCATION: MAIN
SERVICE PANEL

⚠ WARNING ⚠
DUAL POWER SUPPLY
SOURCES: UTILITY GRID AND
SOLAR PHOTOVOLTAIC SYSTEM

LOCATION: MAIN SERVICE PANEL

NOMINAL OPERATING AC VOLTAGE:	240V
NOMINAL OPERATING AC FREQUENCY:	60HZ
MAXIMUM AC POWER:	13.920KW
MAXIMUM AC CURRENT:	58A
MAXIMUM OVERCURRENT PROTECTIVE DEVICE FOR AC MODULE PROTECTION:	80A

LOCATION AT POINT OF INTERCONNECTION CODE SECTION: NEC 690.52

**WARNING - PHOTOVOLTAIC
POWER SOURCE**

IF APPLICABLE PER IFC 605.11.1.2

PHOTOVOLTAIC SYSTEM DISCONNECT
OPERATING AMPS

58A

OPERATING VOLTAGE

240V

LOCATION: PV SYSTEM DISCONNECT

CAUTION SOLAR CIRCUIT

LABEL EVERY 10'

**RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM**

LOCATION: PV SYSTEM DISCONNECT

⚠ WARNING ⚠
ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH LINE AND
LOAD SIDE MAY BE ENERGIZED IN
THE OPEN POSITION

LOCATION: PV SYSTEM DISCONNECT

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LABELS

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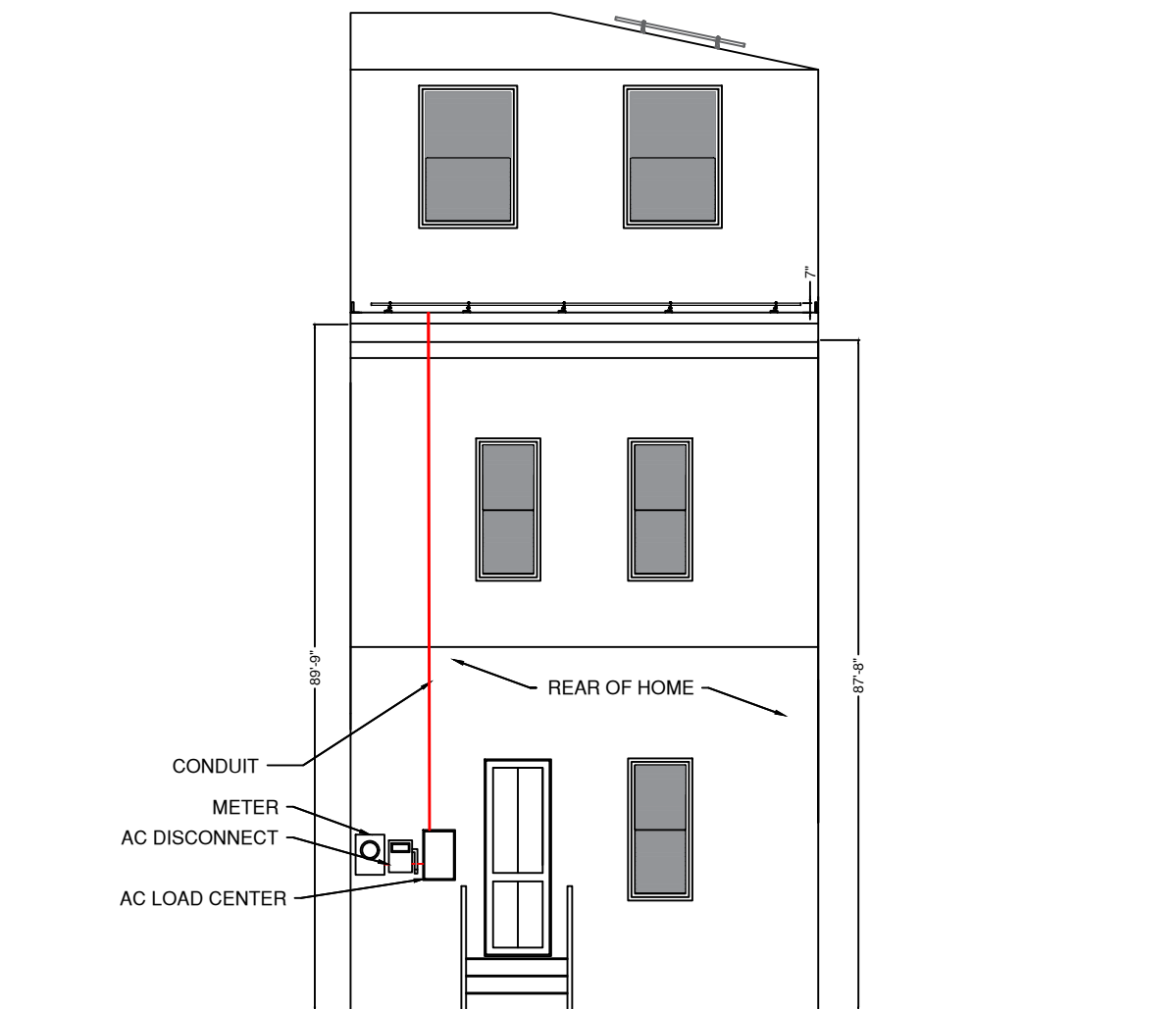
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A REAR ELEVATION DETAIL
 PV-2.2 Scale: 1/8" = 1'-0"

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ELEVATION		Page:
System AC Size @ STC:13.92kW	System DC Size @ STC:20.880kW	PV-6
(58) HANWHA Q.PEAK DUO BLK-G8+ 360 SOLAR MODULES OR EQUAL	(58) IQ7-60-2-US MICRO INVERTERS	
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