

SCOPE OF WORK

TO INSTALL A SOLAR PHOTOVOLTAIC (PV) SYSTEM AT THE BRUCE RESIDENCE, LOCATED AT 55 WELCOME DRIVE, FUQUAY VARINA, NORTH CAROLINA. THE POWER GENERATED BY THE PV SYSTEM WILL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE NEW ELECTRICAL SERVICE EQUIPMENT. THE PV SYSTEM DOES INCLUDE STORAGE BATTERIES.

SYSTEM RATING

7.360 kW DC STC
6.080 kW AC

EQUIPMENT SUMMARY

- (16) REC SOLAR REC460AA PURE-RX (460W) PV MODULES
- (16) ENPHASE IQ8X-80-M-US [240V] PV INVERTERS
- (1) TESLA POWERWALL 3 1707000-XX-Y [240V] PV INVERTERS
- (1) TESLA ENERGY GATEWAY-2

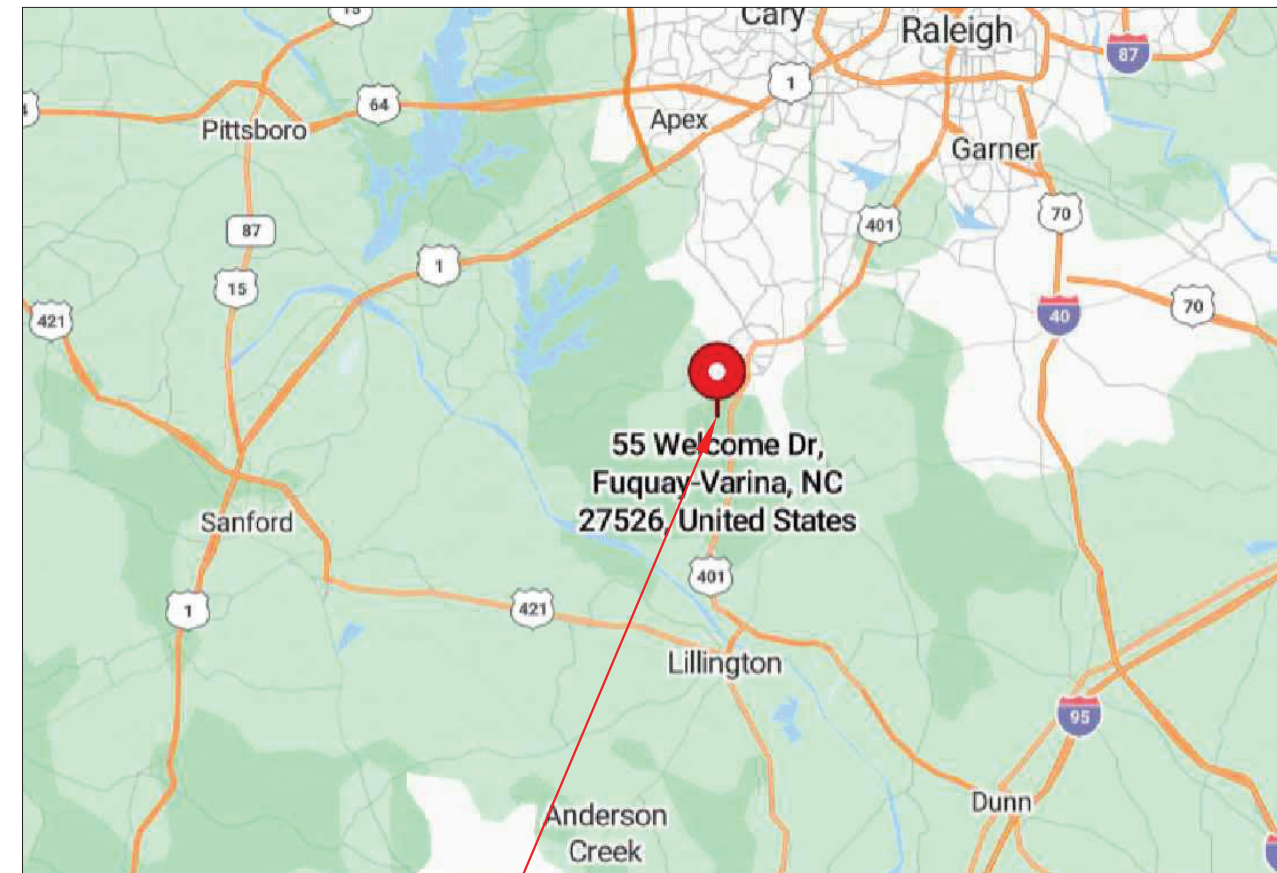
SHEET INDEX

- PV-0 COVER
- PV-1 SITE MAP AND PV LAYOUT
- PV1A RACKING PLAN
- PV-2 STRING MAP & MONITORING LAYOUT
- PV-3 ELECTRICAL DIAGRAM
- PV-4 EQ WALL
- PV-5 MOUNTING DETAIL
- PV-6 SYSTEM LABELING DETAIL
- PV-7 SITE DIRECTORY PLACARD
- PV-8 SAFETY PLAN

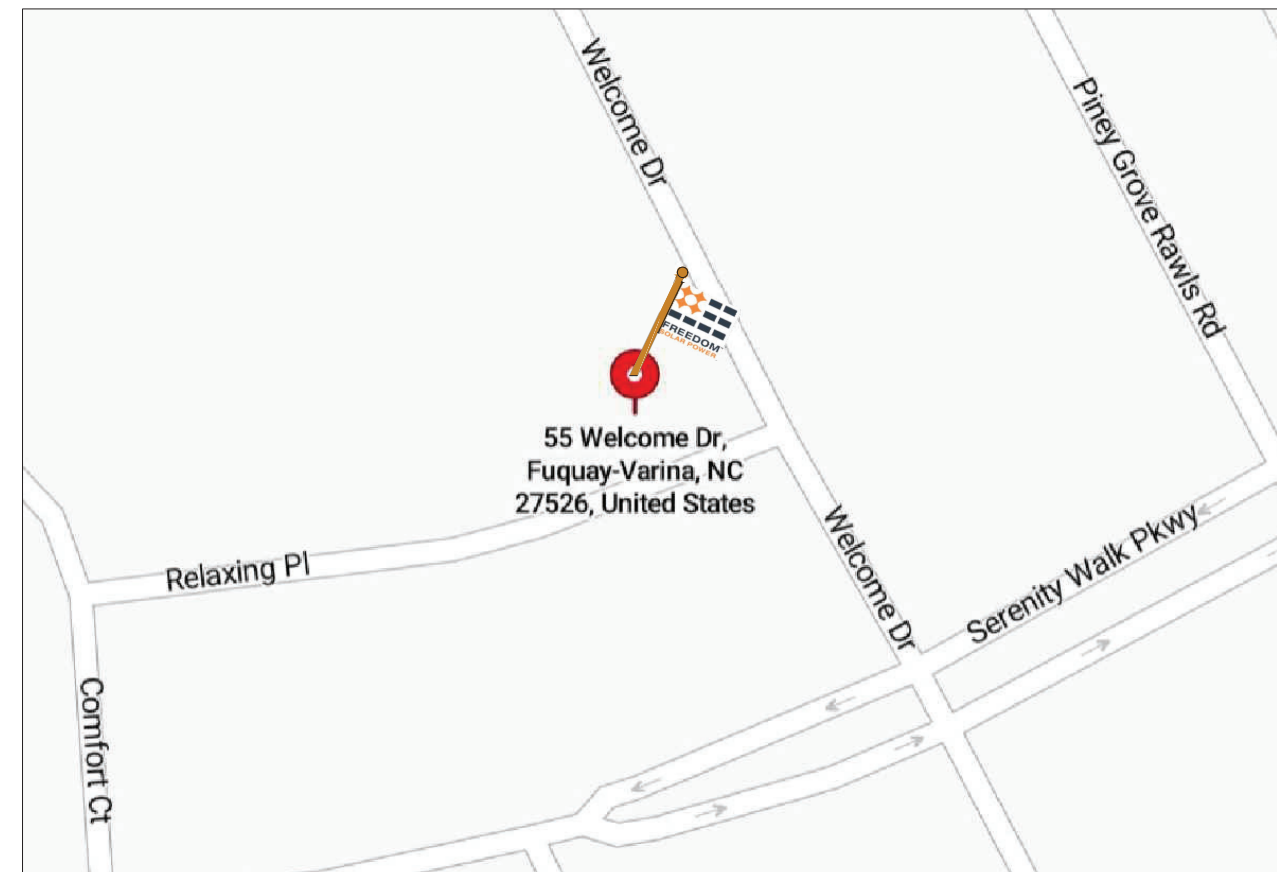
GOVERNING CODES

2017 NATIONAL ELECTRICAL CODE
2018 NORTH CAROLINA RESIDENTIAL CODE
2018 NORTH CAROLINA STATE BUILDING CODE
UNDERWRITERS LABORATORIES (UL) STANDARDS
OSHA 29 CFR 1910.269

08-23-2024 REVISION B:
- CHANGED VERBIAGE OF BATTERY
NOTE ON PV-3 FOR DUKE



PROJECT LOCATION



VICINITY MAP

CONTRACTOR



FREEDOM[™]
SOLAR POWER

FREEDOM SOLAR LLC
4801 FREDRICH LN, STE 100
AUSTIN, TX 78744
512-759-8313
TECL # 28621

REVISIONS		
DESCRIPTION	DATE	REV
DESIGN PACKET	08/08/2024	-
REVISION	08/10/2024	A
REVISION	08/23/2024	B

PE STAMP

PROJECT NAME

SHARON BRUCE
55 WELCOME DRIVE
FUQUAY VARINA, NORTH
CAROLINA, 27526
(770) 820-9142
PROJECT ID: 115522

SHEET NAME

COVER

SHEET SIZE

ANSI B
11" x 17"

SHEET NUMBER

PV-0

LEAD ID: 115522

CONSTRUCTION SUMMARY

- (16) (REC SOLAR REC460AA PURE-RX (460W)) SOLAR MODULES, 7.360 kW DC STC
MODULE DIMENSIONS = 47.4"x68.1"x1.2"
- (16) ENPHASE IQ8X-80-M-US [240V] PV INVERTERS
COMBINED INVERTER OUTPUT = 6.080 kW AC.
- (01) TESLA ENERGY GATEWAY-2
- (01) TESLA POWERWALL 3 1707000-XX-Y [240V] PV INVERTERS
- (01) ENPHASE IQ GATEWAY
- (01) GENERATION PANEL

RACKING: PEGASUS RAIL
 ATTACHMENT: PEGASUS INSTAFLASH

SITE DETAILS

ROOF TYPE: ASPHALT SHINGLE
 ARRAY #1 - TILT = 27°, AZIMUTH = 242°

**UTILITY SHUTDOWN REQUIRED TO
 INSTALL TEG BETWEEN MDP AND METER.**

NOTE : PE STAMPS REQUIRED IF:
 -WEIGHT OF ARRAY IS >3PSF
 -MORE THAN 1-LAYER OF SHINGLE
 -ROOF TYPE IS OTHER THAN COMP SHINGLES
 -WIND SPEED IS GREATER THAN 140 MPH
 IF DESIGN PACK IS NOT STAMPED, MUST INCLUDE
 EXCEPTION STATEMENT IN RED:

**-PANEL WEIGHT EQUALS 2.5 LBS PER SQ FT,
 LESS THAN 3 LBS PER SQ FT**

**NO CUTTING AND COVERING PLUMBING VENTS AT ALL,
 PVC PIPES CAN BE RELOCATED WITH ROOF JACK**

FALL PROTECTION REQUIRED

CONSTRUCTION NOTES

- 1.) ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 2.) ALL OUTDOOR EQUIPMENT SHALL BE RAINTIGHT WITH MINIMUM NEMA 3R RATING.
- 3.) ALL LOCATIONS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION.

MAIN DISTRIBUTION PANEL
 (INSIDE GARAGE WALL)

DUKE ENERGY REVENUE METER
 # 342 482 100
 GROUNDING ELECTRODE
 TESLA ENERGY GATEWAY
 GENERATION PANEL
 ENPHASE IQ GATEWAY
 PV AC DISCONNECT
 -VISIBLE
 -LOCKABLE
 -LABELED
 -KNIFE BLADE DISCONNECT
 (OUTSIDE GARAGE WALL)

(1)TESLA POWERWALL 3
 1707000-XX-Y [240V] PV INVERTERS
 (ON CONCRETE PAD OUTSIDE
 GARAGE WALL)

PV ARRAY #1
 (16) MODULES



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SHEET NAME

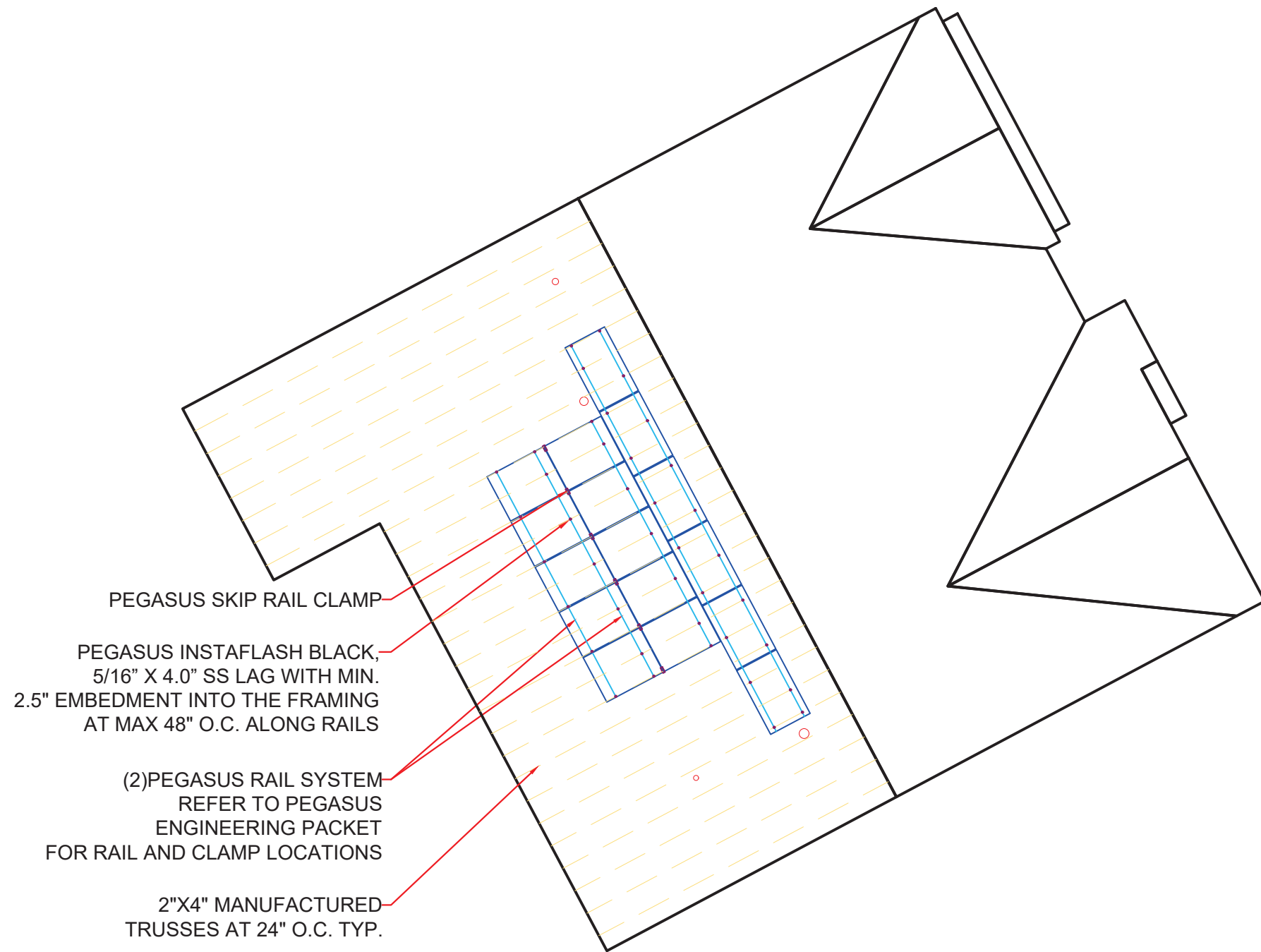
SITE MAP &
 PV LAYOUT

SHEET SIZE

ANSI B
 11" x 17"

SHEET NUMBER

PV-1



- PEGASUS SKIP RAIL CLAMP
- PEGASUS INSTAFLASH BLACK,
5/16" X 4.0" SS LAG WITH MIN.
2.5" EMBEDMENT INTO THE FRAMING
AT MAX 48" O.C. ALONG RAILS
- (2) PEGASUS RAIL SYSTEM
REFER TO PEGASUS
ENGINEERING PACKET
FOR RAIL AND CLAMP LOCATIONS
- 2"X4" MANUFACTURED
TRUSSES AT 24" O.C. TYP.

CONSTRUCTION NOTES

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SHEET NAME

RACKING PLAN

SHEET SIZE

ANSI B
11" x 17"

SHEET NUMBER

PV-1A

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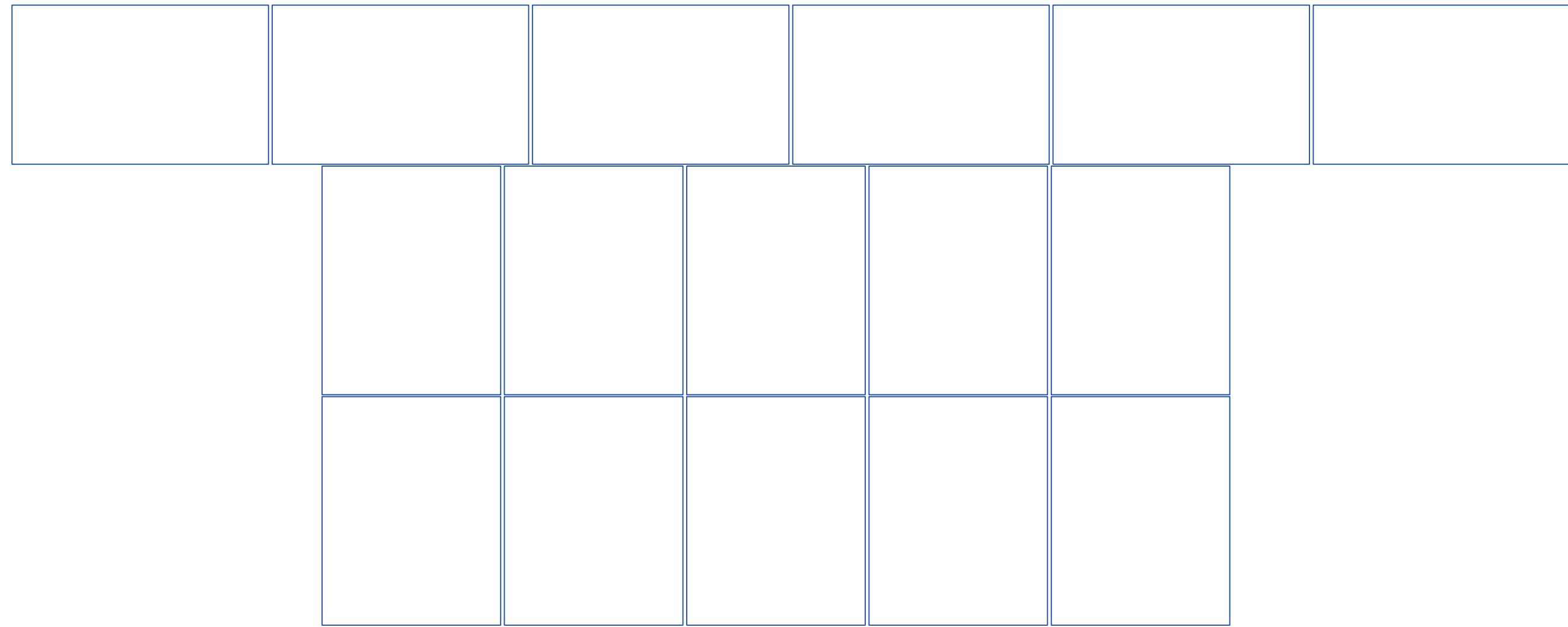
STRING MAP &
MONITORING
LAYOUT

SHEET SIZE

ANSI B
11" x 17"

SHEET NUMBER

PV-2



ENPHASE ENVOY S/N _____

SOLAR ARRAY - 7.360 KW DC STC, 6.080 KW AC, 1-PHASE
 (16) REC SOLAR REC460AA PURE-RX (460W) PV MODULES

(16) ENPHASE IQ8X-80-M-US [240V] PV INVERTERS

(4) AWG #10 THWN-2
 (1) AWG #10 THWN-2 GND
 IN 3/4" CONDUIT OR
 ROMEX 10/2 IN ATTIC

NEW JUNCTION BOXES:
 TRANSITION FROM Q CABLE
 TO AWG #12 THWN-2
 NEMA 3R, UL LISTED

NEW GENERATION PANEL
 240VAC, 200A
 NEMA 3R, UL LISTED
 (3) 2P-20A BREAKERS
 (1) 2P-60A BREAKER

NEW PV AC DISCONNECT
 240VAC, 100A
 NON FUSIBLE
 NEMA 3R, UL LISTED
 VISIBLE, LOCKABLE, LABELED
 -KNIFE BLADE DISCONNECT

DUKE ENERGY REVENUE METER
 # 342 482 100
 ESID#:10443720002989363
 1-PHASE, 3 WIRE,240V

(3) AWG #4/0 AL THWN-2
 IN 2" CONDUIT

NEW MAIN SERVICE DISCONNECT
 240V, 200A

NEW TESLA ENERGY GATEWAY
 1P3W, 240 VAC
 200A, SERVICE RATED
 AUTOMATIC DISCONNECT DEVICE
 INTERNAL PANEL BOARD (BU)

2P-20A BREAKER FOR
 SURGE PROTECTOR
 POINT OF INTERCONNECTION
 (1)2P-100A CIRCUIT BREAKER
 INSTALLED AT TEG-2
 (705.12 NEC COMPLIANT)

EXISTING GROUNDING
 ELECTRODE SYSTEM

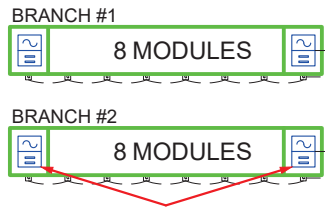
(3) AWG #4/0 AL THWN-2
 (1) AWG #4 AL THWN-2 GND
 IN 2" CONDUIT

MAIN BREAKER
 240V, 200A

MAIN DISTRIBUTION PANEL
 EATON BR, 1P3W,
 240V, 200A BUS

NEW (1) TESLA POWERWALL 3 AC
 POWERWALL 1707000-XX-Y [240V]
 5.0 KW AND 11.5 KW (MAX. CONT.
 CHARGE AND DISCHARGE POWER)
 13.5 KWH AC, NEMA 3R
 INTEGRATED DC DISCONNECT SWITCH

(3) AWG #6 THWN-2
 (1) AWG #8 THWN-2 GND
 IN 3/4" CONDUIT



(16) ENPHASE IQ8X-80-M-US [240V]
 INVERTERS 240V AC, 1.58 A MAX
 380 VA, 1-PHASE
 CEC WEIGHTED EFFICIENCY 96.5 %
 NEMA 4R, UL LISTED, INTERNAL GFDI

(1) AWG #6 BARE
 COPPER THWN-2 GND

THE BATTERY IS BEING USED FOR
 STORAGE ONLY.

UTILITY SHUTDOWN REQUIRED TO
 INSTALL TEG BETWEEN MDP AND METER.

ELECTRICAL NOTES

- 1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- 2.) ALL CONDUCTORS SHALL BE COPPER. ALUMINUM CONDUCTORS MAY BE USED IF CORRECTLY UPSIZED FOR AMPACITY RATING PER NEC 310.12 OR 310.16. ALL CONDUCTORS SHALL BE RATED FOR 600V AND 90°C WET ENVIRONMENT UNLESS OTHERWISE NOTED.
- 3.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- 4.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- 5.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY. SPECIFIED CONDUIT AND WIRE SIZES ARE MINIMUM REQUIREMENTS AND LARGER SIZES SHALL BE PERMITTED.
- 6.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- 7.) MAXIMUM MOUNTING HEIGHT FROM GRADE TO CENTER OF METER SOCKET SHALL BE 72" FOR RESIDENTIAL SINGLE PHASE METER SOCKETS 0-320 AMPS. MINIMUM MOUNTING HEIGHT IS 30" FROM FOR AUSTIN ENERGY, AND 48" FOR ALL OTHER JURISDICTIONS
- 8.) MINIMUM HORIZONTAL CLEARANCE FROM GAS REGULATOR TO ANY ELECTRICAL ENCLOSURE IS 36", EXCEPT AUSTIN ENERGY WHICH REQUIRES 48" CLEARANCE FROM GAS TO METER SOCKET
- 9.) PV DISCONNECT SHALL BE VISIBLE, LOCKABLE AND LABELED AND THE DOOR CANNOT BE OPENED WHEN HANDLE IS IN ON POSITION
- 10.) BY DEFAULT THE MONITORING DEVICE IS SHOWN CONNECTED TO A 20-AMP BREAKER IN THE SOLAR LOAD CENTER. ALTERNATIVELY, THE MONITORING DEVICE MAY BE CONNECTED TO A 20-AMP BREAKER AT THE MAIN DISTRIBUTION PANEL.
- 11.) ALL EQUIPMENT TERMINATIONS SHALL BE RATED FOR 75 DEGREES OR GREATER
- 12.) ALL CT WIRES SHALL BE CONSIDERED CLASS 1 PER NEC ARTICLE 725, AND BE MARKED AS RATED FOR 600V. PER 725.48(A) CLASS 1 CIRCUITS SHALL BE PERMITTED TO OCCUPY THE SAME RACEWAY AS OTHER CIRCUITS PROVIDED ALL CONDUCTORS ARE INSULATED FOR THE MAXIMUM VOLTAGE OF ANY CONDUCTOR IN THE RACEWAY.
- 13.) AWG #10 COPPER CONDUCTORS ARE SPECIFIED AS THE DEFAULT WIRE REQUIRED FROM THE PV ARRAY TO THE SOLAR LOAD CENTER, HOWEVER, AWG #12 COPPER CONDUCTORS MAY BE UTILIZED IF BOTH OF THE FOLLOWING CONDITIONS ARE MET: THE LENGTH OF THE CONDUCTOR IS LESS THAN 75 FT AND THERE ARE LESS THAN 8 CURRENT-CARRYING CONDUCTORS WITHIN THE RACEWAY.

CALCULATIONS FOR CURRENT CARRYING CONDUCTORS	CALCULATIONS FOR OVERCURRENT DEVICES
<p>INVERTER OUTPUT WIRE AMPACITY CALCULATION [NEC 690.8(A)(3)]: 1.58A PER INVERTER ENPHASE IQ8X-80-M-US [240V] MAXIMUM INVERTER BRANCH CURRENT = (10)(1.58A) = 15.80A CONTINUOUS USE: #10 WIRE 75°C DERATED AMPACITY = (0.80)(35.0A) = 28.00A 28.00A > 15.80A CONDITIONS OF USE: #10 WIRE 90°C DERATED AMPACITY = (0.91)(0.80)(40.0A) = 29.12A 29.12A > 15.80A</p> <p>GENERATION PANEL OUTPUT WIRE AMPACITY CALCULATION [NEC 690.8(A)(3)]: 1.58A PER INVERTER ENPHASE IQ8X-80-M-US [240V] [NEC 690.8(A)(3)]: 48.00A PER INVERTER TESLA POWERWALL 3 1707000-XX-Y [240V] COMBINED CURRENT = (16)(1.58A) + 48.00A = 73.28A CONTINUOUS USE: #3 WIRE 75°C DERATED AMPACITY = (0.80)(100A) = 80.00A 80.00A > 73.28A CONDITIONS OF USE: #3 WIRE 90°C DERATED AMPACITY = (0.91)(115A) = 104.65A 104.65A > 73.28A</p>	<p>INVERTER BRANCH AC CURRENT CALCULATION [NEC 690.8(A)(3)]: 1.58A PER INVERTER ENPHASE IQ8X-80-M-US [240V] MAXIMUM BRANCH INVERTER CURRENT = (10)(1.58A) = 15.80A MINIMUM OCPD = (15.80A)(1.25) = 19.75A USE 2P-20A BREAKERS IN GENERATION PANEL FOR INVERTER BRANCH OCPD</p> <p>SYSTEM AC CURRENT CALCULATION [NEC 690.8(A)(3)]: 1.58A PER INVERTER ENPHASE IQ8X-80-M-US [240V] [NEC 690.8(A)(3)]: 48.00A PER INVERTER TESLA POWERWALL 3 1707000-XX-Y [240V] COMBINED CURRENT = (16)(1.58A) + 48.00A = 73.28A MINIMUM OCPD = (73.28A)(1.25) = 91.60A USE (1) 2P-100A BREAKER IN TEG-2 FOR SYSTEM OCPD</p> <p>CALCULATION FOR OVERCURRENT POWERWALL DEVICES</p> <p>TESLA POWERWALL 3 1707000-XX-Y [240V] OUTPUT CURRENT CALCULATION OUTPUT CURRENT = 48.00A MINIMUM OCPD = (48.00A)(1.25) = 60.00A USE (1) 2P-60A BREAKER IN GENERATION PANEL FOR POWERWALL OCPD</p>

CONTRACTOR

FREEDOM[™] SOLAR POWER
 FREEDOM SOLAR LLC
 4801 FREIDRICH LN, STE 100
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 TECL # 28621

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 PROJECT ID: 115522

SHEET NAME

**ELECTRICAL
 DIAGRAM**

SHEET SIZE

**ANSI B
 11" x 17"**

SHEET NUMBER

PV-3

CONTRACTOR



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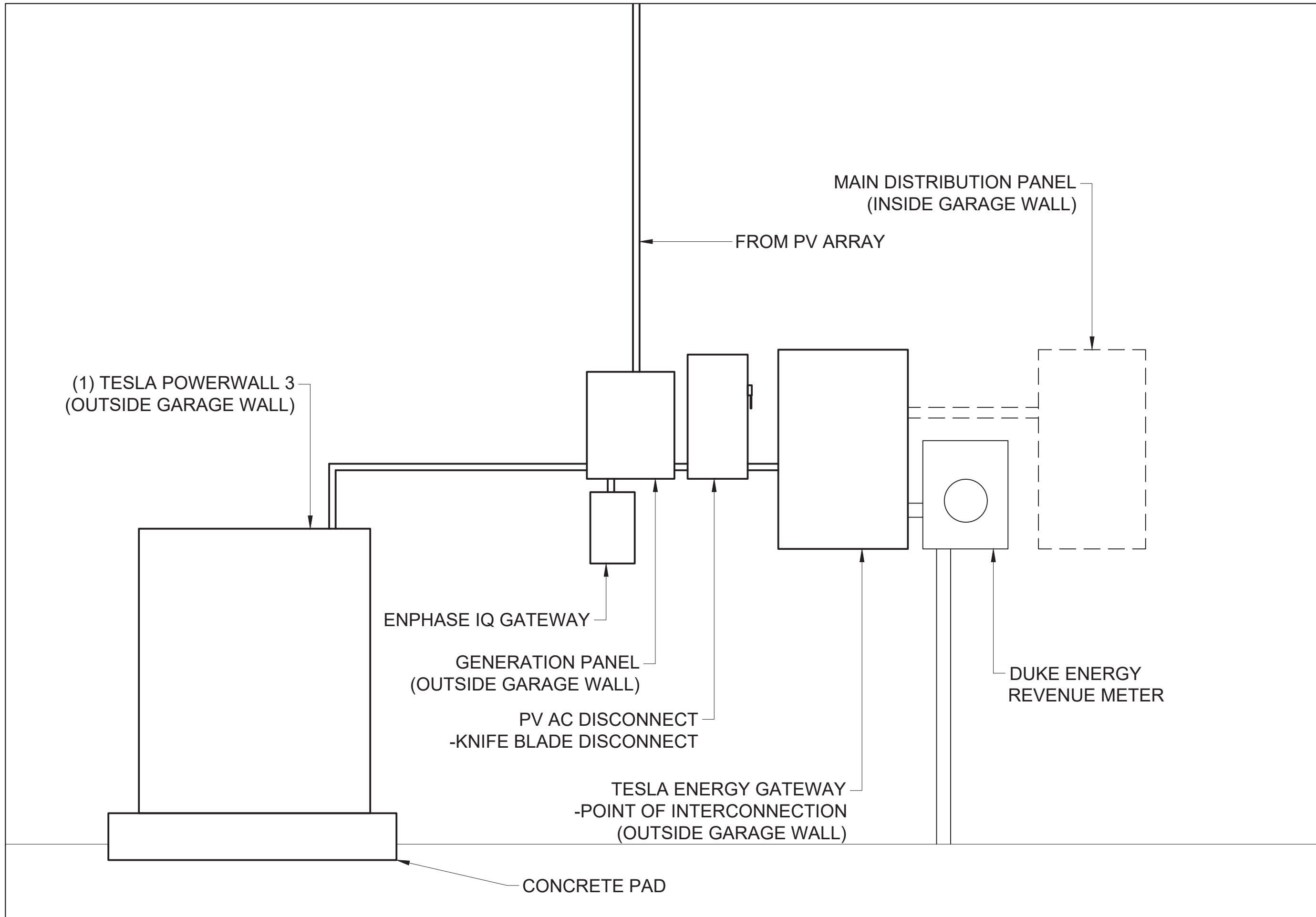
EQ.WALL

SHEET SIZE

ANSI B
11" x 17"

SHEET NUMBER

PV-4



CONTRACTOR



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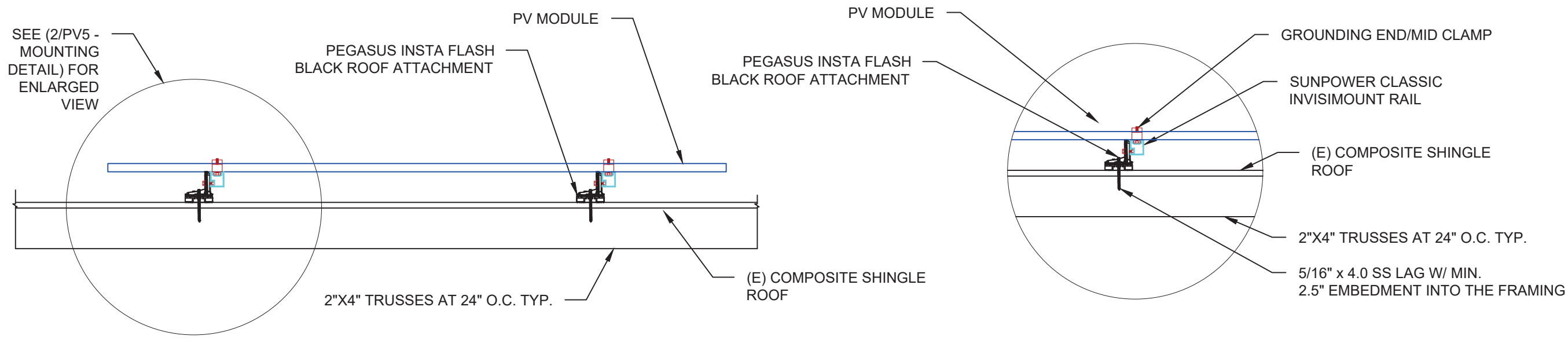
MOUNTING DETAIL

SHEET SIZE

**ANSI B
11" x 17"**

SHEET NUMBER

PV-5



MOUNTING METHOD
NTS 1

MOUNTING DETAIL
NTS 2

NOTE: NOT ALL LABELS MAY BE APPLICABLE

SIGNAGE REQUIREMENTS

- > RED BACKGROUND
- > WHITE LETTERING
- > MIN. 3/8" LETTER HEIGHT
- > ALL CAPITAL LETTERS
- > ARIAL OR SIMILAR FONT
- > REFLECTIVE, WEATHER RESISTANT MATERIAL, UL 969

PV SYSTEM DISCONNECT

REQ'D BY: NEC 690.13(B)

A

APPLY TO:
PV DISCONNECT

WARNING
ELECTRIC SHOCK HAZARD.
DO NOT TOUCH TERMINALS.
TERMINALS ON THE LINE AND
LOAD SIDES MAY BE
ENERGIZED IN THE OPEN
POSITION.

REQ'D BY: NEC 690.13(B)

B

APPLY TO:
PV DISCONNECT

**WARNING: PHOTOVOLTAIC
POWER SOURCE**

REQ'D BY: NEC 690.31(G)(3)

C

APPLY TO:
RACEWAYS, CABLE TRAYS,
OTHER WIRING METHODS, AND
ENCLOSURES THAN CONTAIN
PV SYSTEM DC CONDUCTORS

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

REQ'D BY: NEC 705.12(B)(2)(3)(b)

D

APPLY TO:
DISTRIBUTION EQUIPMENT
ADJACENT TO BACK-FED BREAKER

2" ADDRESS NUMBERS

REQ' BY: AHJ

E

APPLY TO:
REVENUE METER SOCKET
(IF APPLICABLE)

REVENUE METER

REQ'D BY: AHJ

F

APPLY TO:
REVENUE METER SOCKET
(IF APPLICABLE)

MONITORING

REQ'D BY: FREEDOM SOLAR

G

APPLY TO:
MONITORING DEVICE ENCLOSURE

**RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM**

REQ'D BY: NEC 690.56(C)(2)

H

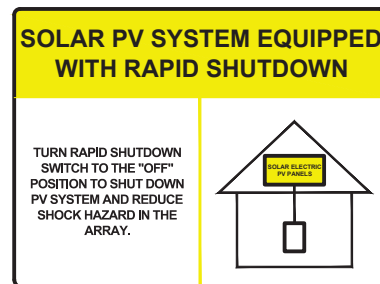
APPLY TO:
PV DISCONNECT

**PHOTOVOLTAIC SYSTEM
AC DISCONNECT**
OPERATING CURRENT: 73.28A
OPERATING VOLTAGE: 240 VAC

REQ'D BY: 690.56(1)(a)

I

APPLY TO:
PV DISCONNECT



REQ'D BY: NEC 690.56(C)(1)(a)

J

APPLY TO:
MAIN DISTRIBUTION PANEL

CAUTION
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE
FOLLOWING SOURCES WITH DISCONNECTS AS SHOWN:

- UTILITY SUPPLY & CUSTOMER SERVICE PANEL
- PV AC DISCONNECT
- RAPID SHUTDOWN SWITCH

FRONT

REQ'D BY: 705.10

K

APPLY TO:
MAIN DISTRIBUTION PANEL
(*ONLY REQUIRED IF PV SYSTEM
DISCONNECT IS NOT GROUPED
WITH MAIN SERVICE DISCONNECT)
**SEE SHEET PV-6 FOR SITE
SPECIFIC LABELS**

CONTRACTOR

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SHEET NAME

SYSTEM LABELING
DETAIL

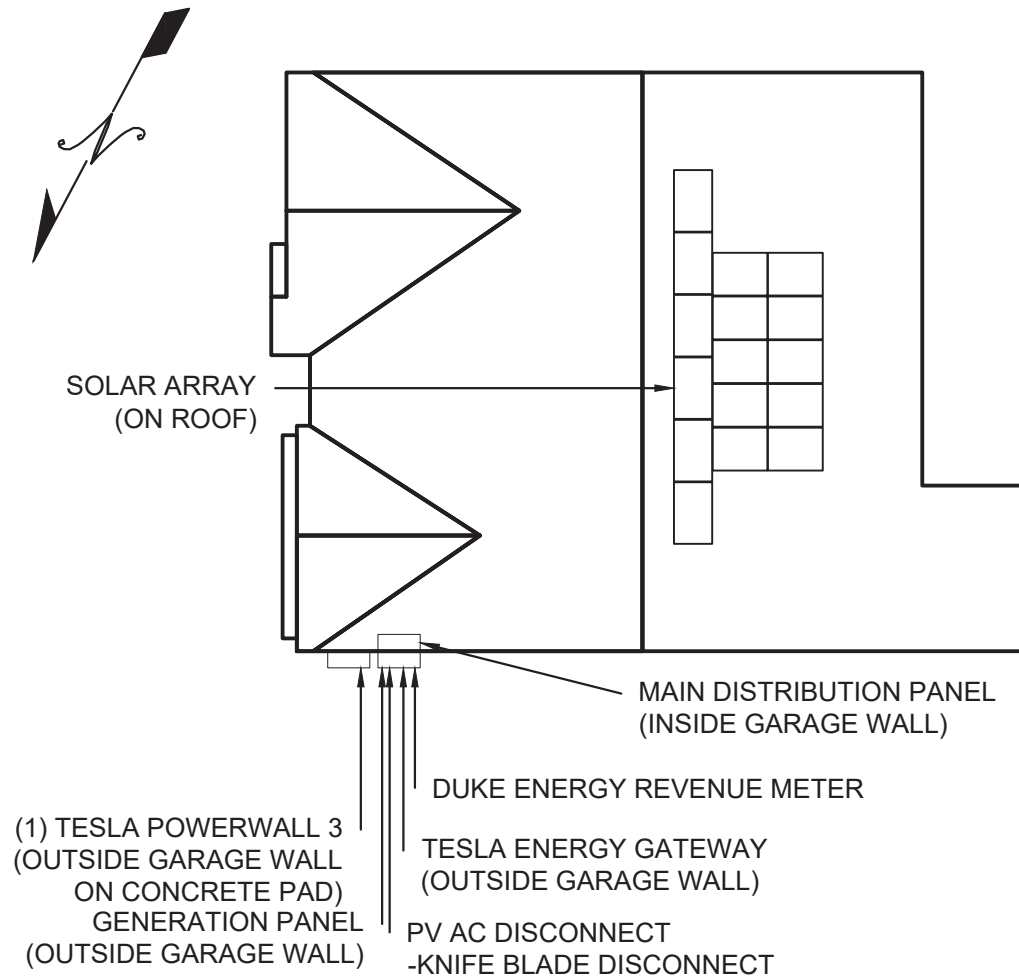
SHEET SIZE

ANSI B
11" x 17"

SHEET NUMBER

PV-6

CAUTION:
MULTIPLE SOURCES OF POWER
LOCATION OF EACH POWER SOURCE
DISCONNECTING MEANS SHOWN BELOW



QUESTIONS, CALL:
 800-504-2337
www.freedomsolarpower.com



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SHEET NAME

SITE
 DIRECTORY
 PLACARD

SHEET SIZE

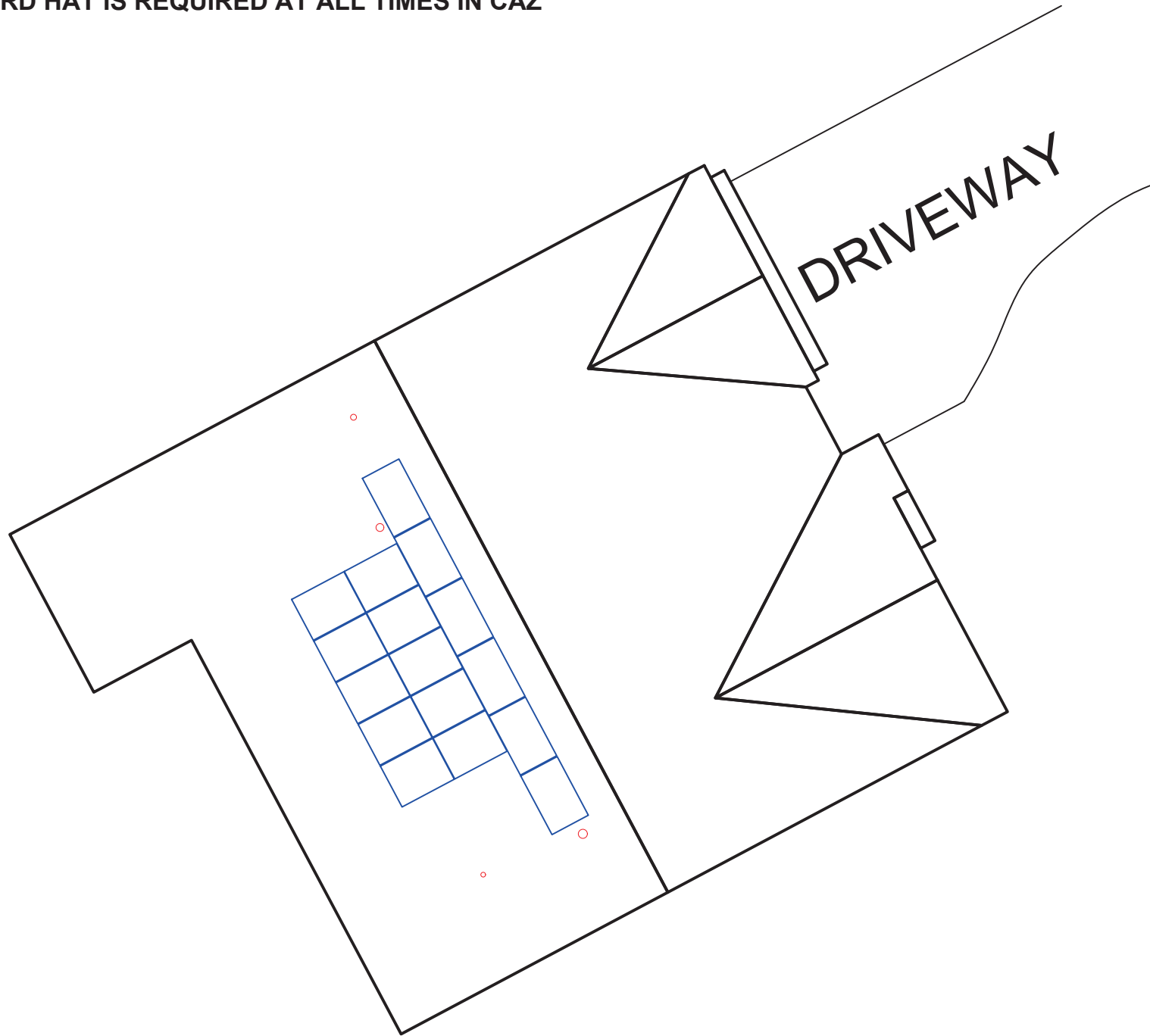
ANSI B
 11" x 17"

SHEET NUMBER

PV-7

USE THE SAFETY SYMBOL KEY TO DRAW IN THE CONTROLLED ACCESS ZONE (CAZ), LADDER PLACEMENT, METER LOCATION, FALL PROTECTION ANCHOR POINT, AND ANY OTHER HAZARD.

HARD HAT IS REQUIRED AT ALL TIMES IN CAZ



SAFETY SYMBOL KEY

- CAZ
- L** LADDER
- M** METER
- ==== POWER LINES
- R** RESTRAINT ANCHOR
- A** ARREST ANCHOR

CONDUCT SAFETY MEETING WITH ALL CREW MEMBERS ON SITE AT THE BEGINNING OF EACH JOB. USE SIGN IN SHEET BELOW.

1. _____
2. _____
3. _____
4. _____
5. _____

COMPETENT PERSON: _____ JOB START DATE: _____

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PROJECT NAME

SHARON BRUCE
 55 WELCOME DRIVE
 FUQUAY VARINA, NORTH
 CAROLINA, 27526
 (770) 820-9142
 PROJECT ID: 115522

SHEET NAME

SAFETY PLAN

SHEET SIZE

**ANSI B
 11" x 17"**

SHEET NUMBER

PV-8

SOLAR'S MOST TRUSTED



REC ALPHA[®] PURE-RX SERIES

PRODUCT SPECIFICATIONS

470_{WP}

226 $\frac{W}{M^2}$



COMPACT PANEL SIZE

9 A MODULE CURRENT
COMPATIBLE WITH MLPE



ELIGIBLE



LEAD-FREE
ROHS COMPLIANT

EXPERIENCE



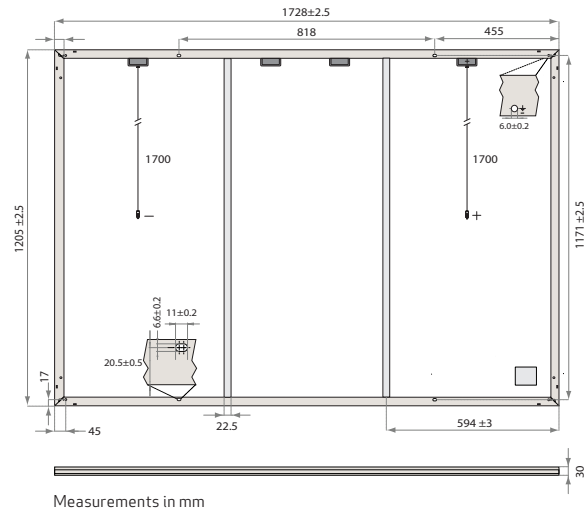
PERFORMANCE

REC ALPHA PURE-RX SERIES

PRODUCT SPECIFICATIONS

GENERAL DATA

Cell type:	88 half-cut REC bifacial, heterojunction cells with lead-free, gapless technology
Glass:	3.2 mm solar glass with anti-reflective surface treatment in accordance with EN 12150
Backsheet:	Highly resistant polymer
Frame:	Anodized aluminum (black)
Junction box:	4-part, 4 bypass diodes, lead-free IP68 rated, in accordance with IEC 62790
Connectors:	Stäubli MC4 PV-KBT4/KST4 (4 mm ²) in accordance with IEC 62852, IP68 only when connected
Cable:	4 mm ² solar cable, 1.7 + 1.7 m in accordance with EN 50618
Dimensions:	1728 x 1205 x 30 mm (2.08 m ²)
Weight:	23.4 kg
Origin:	Made in Singapore



ELECTRICAL DATA

Product Code*: RECxxxAA Pure-RX

	450	460	470
Power Output - P _{MAX} (Wp)	450	460	470
Watt Class Sorting - (W)	0/+10	0/+10	0/+10
Nominal Power Voltage - V _{MPP} (V)	54.3	54.9	55.4
Nominal Power Current - I _{MPP} (A)	8.29	8.38	8.49
Open Circuit Voltage - V _{OC} (V)	65.1	65.3	65.6
Short Circuit Current - I _{SC} (A)	8.81	8.88	8.95
Power Density (W/m ²)	216	221	226
Panel Efficiency (%)	21.6	22.1	22.6
Power Output - P _{MAX} (Wp)	343	350	358
Nominal Power Voltage - V _{MPP} (V)	51.2	51.7	52.2
Nominal Power Current - I _{MPP} (A)	6.70	6.77	6.86
Open Circuit Voltage - V _{OC} (V)	61.3	61.6	61.8
Short Circuit Current - I _{SC} (A)	7.11	7.17	7.23

Values at standard test conditions (STC: air mass AM 1.5, irradiance 1000 W/m², temperature 25°C), based on a production spread with a tolerance of P_{MAX}, V_{OC} & I_{SC} ±3% within one watt class. Nominal module operating temperature (NMOT: air mass AM 1.5, irradiance 800 W/m², temperature 20°C, windspeed 1 m/s). * Where xxx indicates the nominal power class (P_{MAX}) at STC above.

MAXIMUM RATINGS

Operational temperature:	-40 ... +85°C
Maximum system voltage:	1000 V
Maximum test load (front):	+ 7000 Pa (713 kg/m ²)*
Maximum test load (rear):	- 4000 Pa (407 kg/m ²)*
Max series fuse rating:	25 A
Max reverse current:	25 A

* See installation manual for mounting instructions.
Design load = Test load / 1.5 (safety factor)

WARRANTY

	Standard	REC ProTrust	
Installed by an REC Certified Solar Professional	No	Yes	Yes
System Size	All	≤25 kW	25-500 kW
Product Warranty (yrs)	20	25	25
Power Warranty (yrs)	25	25	25
Labor Warranty (yrs)	0	25	10
Power in Year 1	98%	98%	98%
Annual Degradation	0.25%	0.25%	0.25%
Power in Year 25	92%	92%	92%

The REC ProTrust Warranty is only available on panels purchased through an REC Certified Solar Professional installer. Warranty conditions apply. See www.recgroup.com for more details.

Available from:

CERTIFICATIONS

IEC 61215:2021, IEC 61730:2016, UL 61730	
IEC 62804	PID
IEC 61701	Salt Mist
IEC 62716	Ammonia Resistance
ISO 11925-2	Ignitability (EN 13501-1 Class E)
IEC 62782	Dynamic Mechanical Load
IEC 61215-2:2016	Hailstone (35mm)
IEC 62321	Lead-free acc. to RoHS EU 863/2015
IEC 61730-2:2016	Fire Class C (as per UL 790)
ISO 14001, ISO 9001, IEC 45001, IEC 62941	



Living Building Challenge Compliant

Declare.

TEMPERATURE RATINGS*

Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P _{MAX} :	-0.24 %/°C
Temperature coefficient of V _{OC} :	-0.24 %/°C
Temperature coefficient of I _{SC} :	0.04 %/°C

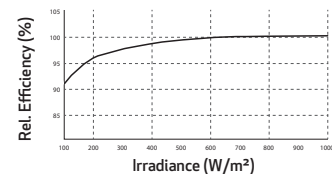
*The temperature coefficients stated are linear values

DELIVERY INFORMATION

Panels per pallet:	33
Panels per 40 ft GP/high cube container:	594 (18 pallets)
Panels per 13.6 m truck:	660 (20 pallets)

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:



Founded in 1996, REC Group is an international pioneering solar energy company dedicated to empowering consumers with clean, affordable solar power. As Solar's Most Trusted, REC is committed to high quality, innovation, and a low carbon footprint in the solar materials and solar panels it manufactures. Headquartered in Norway with operational headquarters in Singapore, REC also has regional hubs in North America, Europe, and Asia-Pacific.

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