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June 23, 2022

Parker Schram  
 365 Solar  
 3524 Bost Street  
 Charlotte, NC 28208

SCOTT E  
 WYSSLING, PE

Digitally signed by SCOTT E WYSSLING, PE  
 DN: C=US, S=Utah, L=Alpine, O=Wyssling Consulting, OU=Owner,  
 CN="SCOTT E WYSSLING, PE",  
 E=swyssling@wysslingconsulting.com  
 Reason: I am the author of this document  
 Location: your signing location here  
 Date: 2022-06-23 14:20:54  
 Foxit PhantomPDF Version: 9.7.5

Re: Engineering Services  
 Hall Residence  
 147 Kensington Drive, Spring Lake, NC  
 7.600 kW System

To Whom It May Concern:

We have received information regarding solar panel installation on the roof of the above referenced structure. Our evaluation of the structure is to verify the existing capacity of the roof system and its ability to support the additional loads imposed by the proposed solar system.

**A. Site Assessment Information**

1. Site visit documentation identifying attic information including size and spacing of framing for the existing roof structure.
2. Design drawings of the proposed system including a site plan, roof plan and connection details for the solar panels. This information will be utilized for approval and construction of the proposed system.

**B. Description of Structure:**

**Roof Framing:** Prefabricated wood trusses at 24" on center. All truss members are constructed of 2x4 dimensional lumber.  
**Roof Material:** Composite Asphalt Shingles  
**Roof Slope:** 30 degrees  
**Attic Access:** Accessible  
**Foundation:** Permanent

**C. Loading Criteria Used**

- **Dead Load**
  - Existing Roofing and framing = 7 psf
  - New Solar Panels and Racking = 3 psf
  - TOTAL = 10 PSF
- **Live Load** = 20 psf (reducible) – 0 psf at locations of solar panels
- **Ground Snow Load** = 10 psf
- **Wind Load** based on ASCE 7-10
  - Ultimate Wind Speed = 120 mph (based on Risk Category II)
  - Exposure Category C

*Analysis performed of the existing roof structure utilizing the above loading criteria is in accordance with the North Carolina Residential Code (2018), including provisions allowing existing structures to not require strengthening if the new loads do not exceed existing design loads by 105% for gravity elements and 110% for seismic elements. This analysis indicates that the existing framing will support the additional panel loading without damage, if installed correctly.*

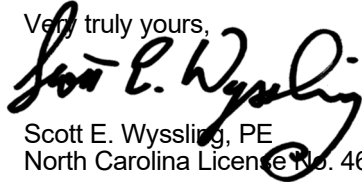
**D. Solar Panel Anchorage**

1. The solar panels shall be mounted in accordance with the most recent Ironridge installation manual. If during solar panel installation, the roof framing members appear unstable or deflect non-uniformly, our office should be notified before proceeding with the installation.
2. The maximum allowable withdrawal force for a  $\frac{5}{16}$ " lag screw is 235 lbs per inch of penetration as identified in the National Design Standards (NDS) of timber construction specifications. Based on a minimum penetration depth of  $2\frac{1}{2}$ ", the allowable capacity per connection is greater than the design withdrawal force (demand). Considering the variable factors for the existing roof framing and installation tolerances, the connection using one  $\frac{5}{16}$ " diameter lag screw with a minimum of  $2\frac{1}{2}$ " embedment will be adequate and will include a sufficient factor of safety.
3. Considering the wind speed, roof slopes, size and spacing of framing members, and condition of the roof, the panel supports shall be placed no greater than 48" on centers.
4. Panel supports connections shall be staggered to distribute load to adjacent framing members.

Based on the above evaluation, this office certifies that with the racking and mounting specified, the existing roof system will adequately support the additional loading imposed by the solar system. This evaluation is in conformance with the North Carolina Residential Code (2018) current industry standards, and is based on information supplied to us at the time of this report.

Should you have any questions regarding the above or if you require further information do not hesitate to contact me.

Very truly yours,



Scott E. Wyssling, PE  
North Carolina License No. 46546



Wyssling Consulting, PLLC  
76 N Meadowbrook Drive  
Alpine UT 84004 COA # P-2308

# PROJECT DESCRIPTION:

15 x MISSION SOLAR: MSE345SX5T 345W MONO MODULES  
 ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES  
 DC SYSTEM SIZE: 5.175kW DC  
 AC SYSTEM SIZE: 7.600kW AC

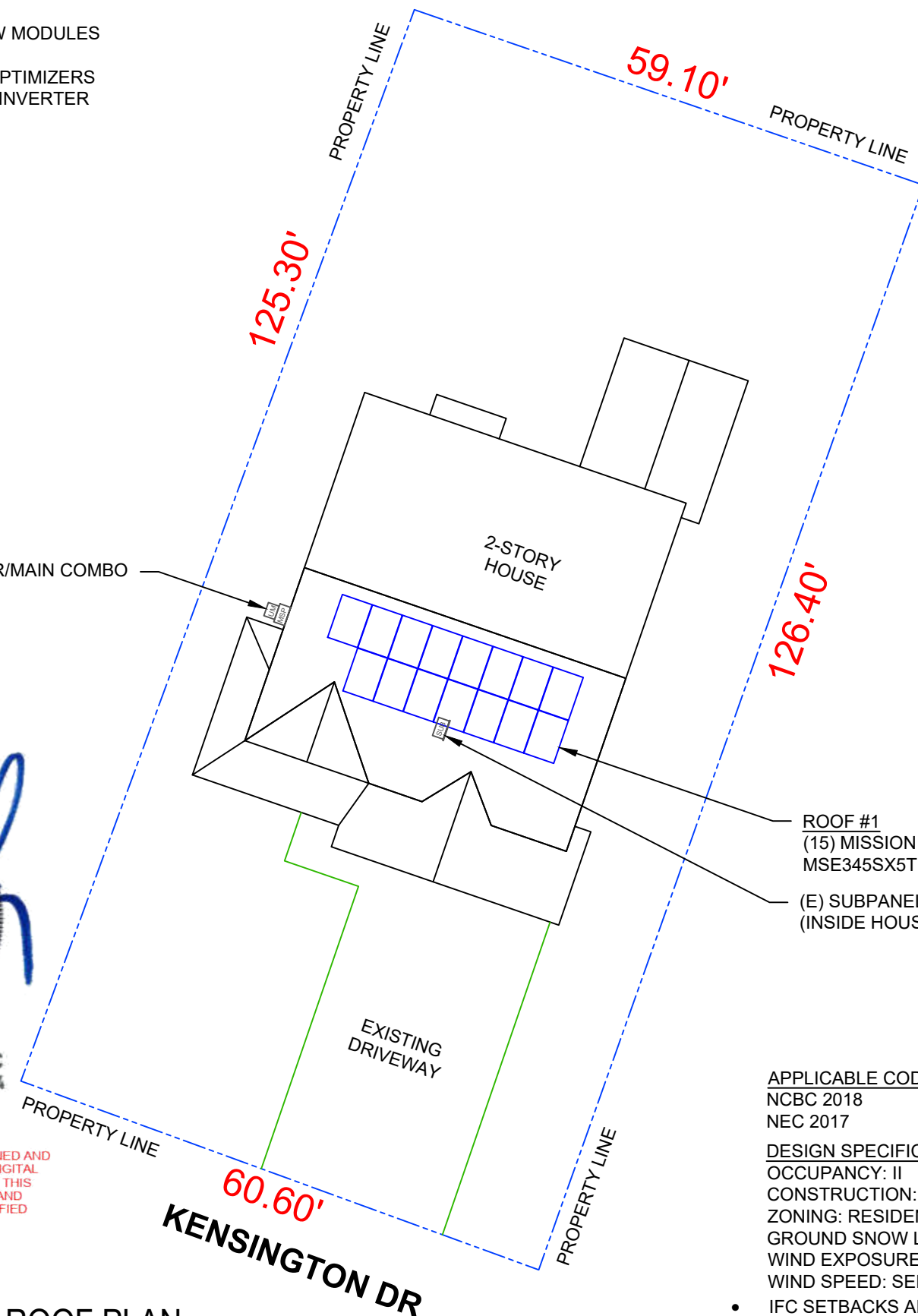
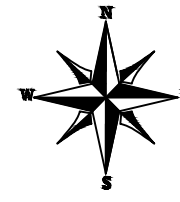
## EQUIPMENT SUMMARY

15 MISSION SOLAR: MSE345SX5T 345W MODULES  
 15 GENERAC SNAPRS801  
 02 GENERAC PV LINK S2502 POWER OPTIMIZERS  
 01 GENERAC PWRCELL: X7602 7600W INVERTER

ROOF ARRAY AREA #1:- 297.45 SQ FT.

## AUTHORITIES HAVING JURISDICTION

BUILDING: HARNETT COUNTY  
 ZONING: HARNETT COUNTY  
 UTILITY: SOUTH RIVER EMC



(E) UTILITY METER/MAIN COMBO

2-STORY HOUSE

ROOF #1  
 (15) MISSION SOLAR:  
 MSE345SX5T 345W MODULES

(E) SUBPANEL  
 (INSIDE HOUSE)

EXISTING DRIVEWAY

KENSINGTON DR



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 North Carolina CDA # P-2308  
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APPLICABLE CODES & STANDARDS  
 NCBC 2018  
 NEC 2017

DESIGN SPECIFICATIONS  
 OCCUPANCY: II  
 CONSTRUCTION: SINGLE-FAMILY  
 ZONING: RESIDENTIAL  
 GROUND SNOW LOAD: SEE STRUCTURAL LETTER  
 WIND EXPOSURE: SEE STRUCTURAL LETTER  
 WIND SPEED: SEE STRUCTURAL LETTER

- IFC SETBACKS ARE REQUIRED TO BE DISCUSSED WITH THE AHJ PRIOR TO CONSTRUCTION

# 1 PLOT PLAN WITH ROOF PLAN

PV-1

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

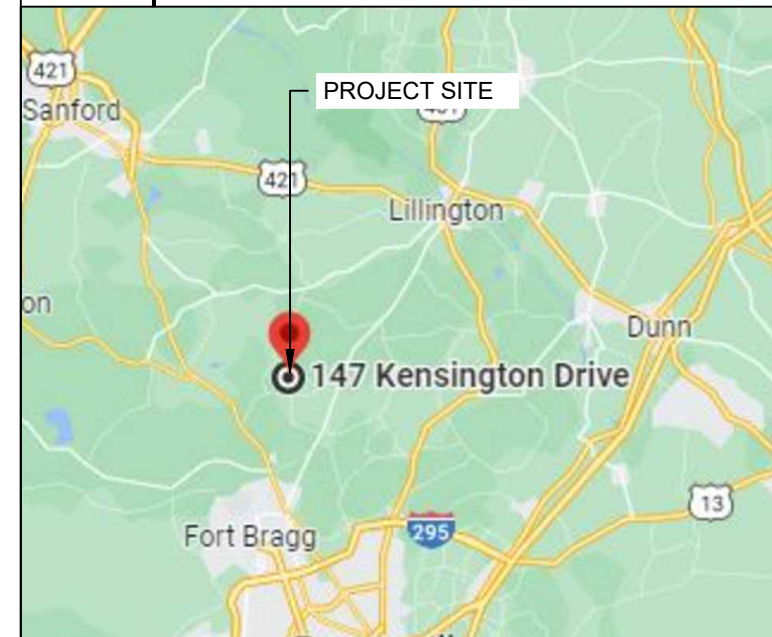


2

# HOUSE PHOTO

PV-1

SCALE: NTS



3

# VICINITY MAP

PV-1

SCALE: NTS

## SHEET INDEX

PV-1	PLOT PLAN & VICINITY MAP
PV-2	ROOF PLAN & MODULES
PV-2A	STRING LAYOUT
PV-3	ATTACHMENT DETAIL
PV-4	ELECTRICAL LINE DIAGRAM
PV-5	WIRING CALCULATIONS
PV-6	LABELS
PV-7	PLACARD
PV-8	POWER OPTIMIZER CHART
PV-9+	EQUIPMENT SPECIFICATIONS



## REVISIONS

DESCRIPTION	DATE	REV
INITIAL	06/17/2022	

SIGNATURE WITH SEAL

DATE: 06/17/2022

PROJECT NAME & ADDRESS

CANDICE HALL RESIDENCE  
 147 KENSINGTON DR  
 SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
 AC SIZE: 7.600 KW

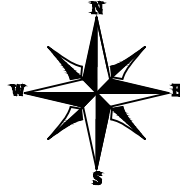
SHEET NAME  
**PLOT PLAN & VICINITY MAP**

SHEET SIZE  
**ANSI B  
 11" X 17"**

SHEET NUMBER  
**PV-1**

**MODULE TYPE, DIMENSIONS & WEIGHT**

NUMBER OF MODULES = 15 MODULES  
 MODULE TYPE = MISSION SOLAR: MSE345SX5T 345W MODULES  
 MODULE WEIGHT = 44.8 LBS / 20.3KG.  
 MODULE DIMENSIONS = 68.8"x 41.5" = 19.83 SF



ROOF DESCRIPTION				
ROOF TYPE		COMPOSITE SHINGLE		
ROOF LAYER		1 LAYER		
ROOF	ROOF TILT	AZIMUTH	TRUSS SIZE	TRUSS SPACING
#1	30°	199°	2X4	24"

ARRAY AREA & ROOF AREA CALC'S				
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	15	297.45	662.73	45



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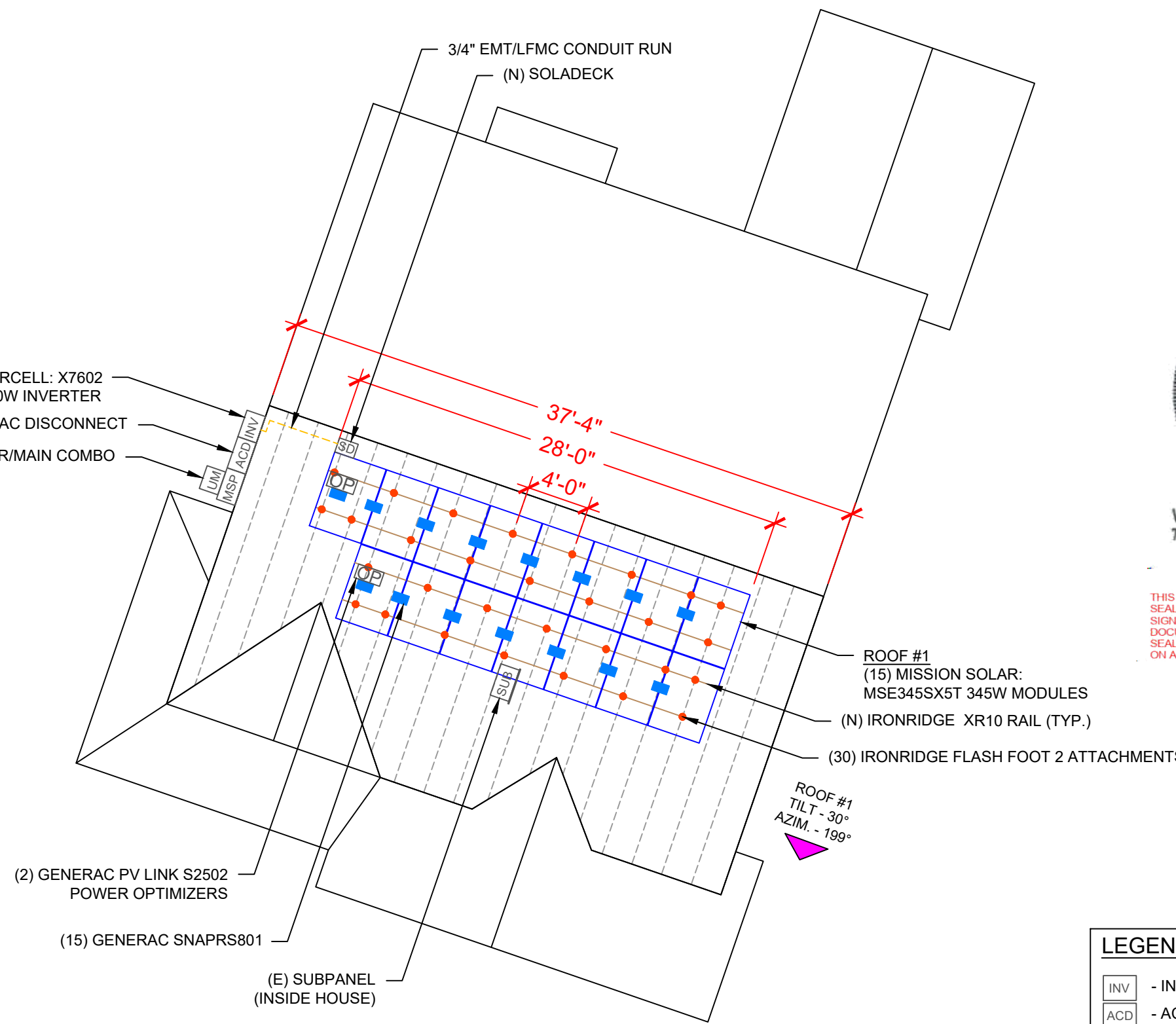
CANDICE HALL  
 RESIDENCE  
 147 KENSINGTON DR  
 SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
 AC SIZE: 7.600 KW

SHEET NAME  
**ROOF PLAN & MODULES**

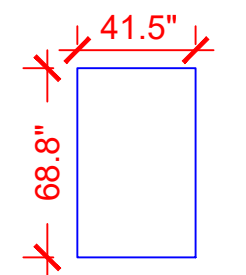
SHEET SIZE  
**ANSI B  
 11" X 17"**

SHEET NUMBER  
**PV-2**





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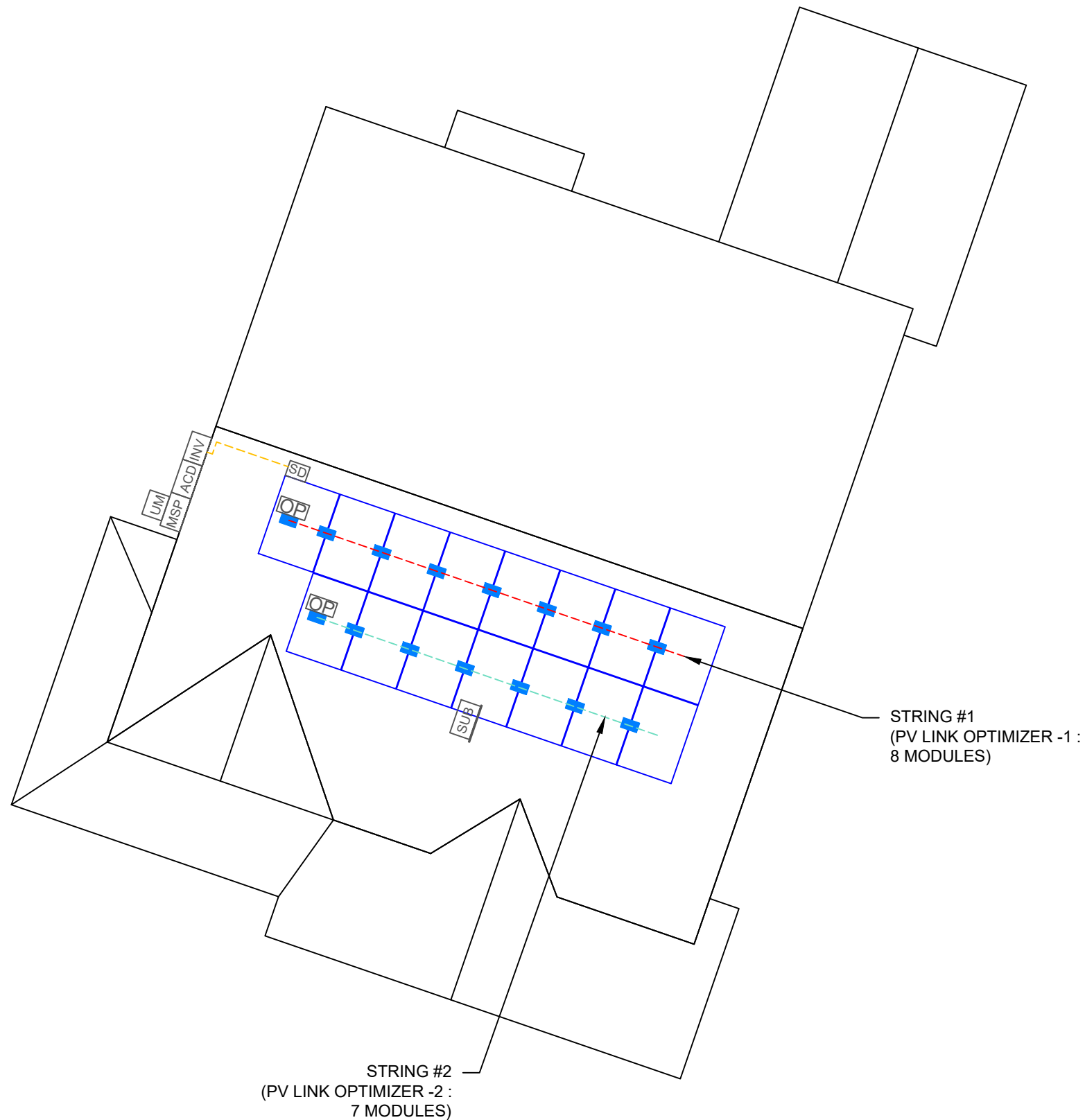
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MISSION SOLAR:  
 MSE345SX5T  
 345W MODULES

LEGEND	
[INV]	- INVERTER
[ACD]	- AC DISCONNECT
[MSP]	- MAIN SERVICE PANEL
---	- CONDUIT
---	- TRUSS
[SD]	- SOLADECK
[OP]	- PV LINK -S2502
[Blue Box]	- SNAPRS801
[Orange Box]	- VENT, ATTIC FAN (ROOF OBSTRUCTION)
[Orange Circle]	- ROOF ATTACHMENT

STRING LEGENDS	
	STRING #1
	STRING #2



BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	15	MISSION SOLAR: MSE345SX5T 345W MODULES
SNAPRS	15	GENERAC SNAPRS801
OPTIMIZER	2	GENERAC PV LINK S2502 POWER OPTIMIZERS
INVERTER	1	GENERAC PWRCELL: X7602 7600W INVERTER
AC DISCONNECT	1	60A NON-FUSED AC DISCONNECT, 240V NEMA 3R, UL LISTED
SOLADECK	1	SOLADECK 600V,NEMA 3R, UL LISTED
ATTACHMENT	30	IRONRIDGE FLASH FOOT 2 ATTACHMENT
SQUARE-BOLT	30	SQUARE-BOLT BONDING ATTACHMENT HARDWARE
RAILS	8	IRONRIDGE XR10 RAIL-168" (14 FEET) BLACK
BONDED SPLICE	4	SPLICE KIT
MODULE CLAMPS	26	UNIVERSAL MODULE CLAMPS
END CLAMPS	8	END CLAMPS / STOPPER SLEEVE
GROUNDING LUG	2	IRONRIDGE GROUNDING LUG



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PROJECT NAME & ADDRESS

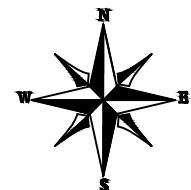
CANDICE HALL  
RESIDENCE  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

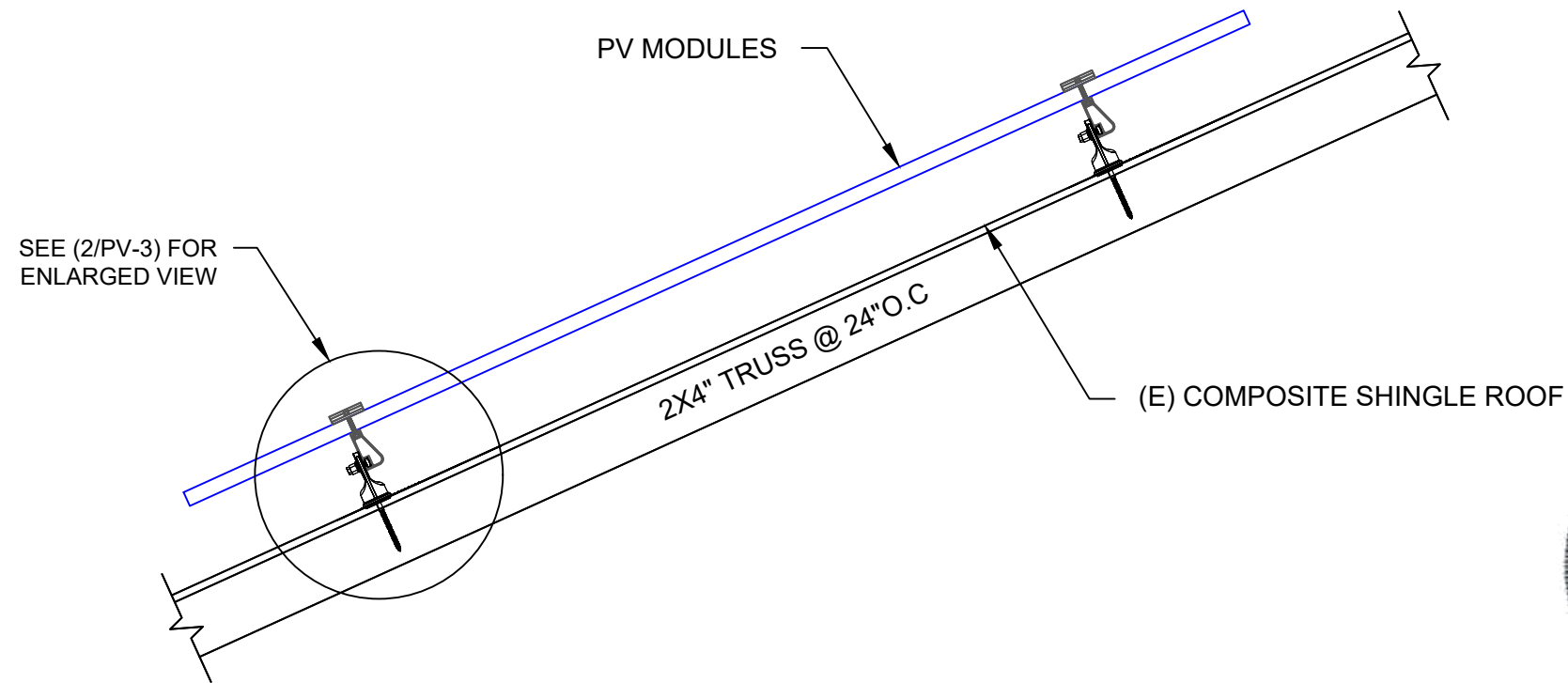
DC SIZE: 5.175 KW  
AC SIZE: 7.600 KW

SHEET NAME  
STRING  
LAYOUT

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-2A





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DATE: 06/17/2022

PROJECT NAME & ADDRESS

CANDICE HALL  
RESIDENCE  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
AC SIZE: 7.600 KW

SHEET NAME  
ATTACHMENT  
DETAIL

SHEET SIZE

ANSI B  
11" X 17"

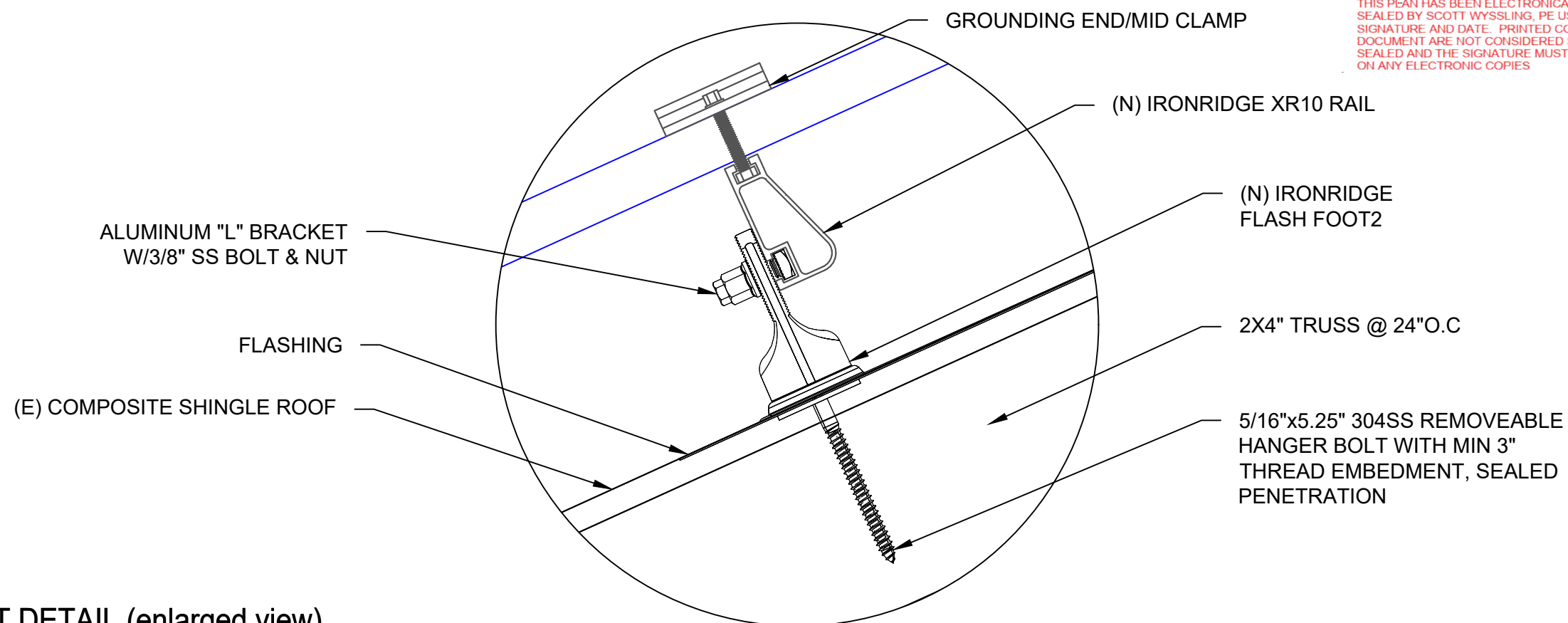
SHEET NUMBER

PV-3

1 ATTACHMENT DETAIL

PV-3

SCALE: NTS



2 ATTACHMENT DETAIL (enlarged view)

PV-3

SCALE: NTS

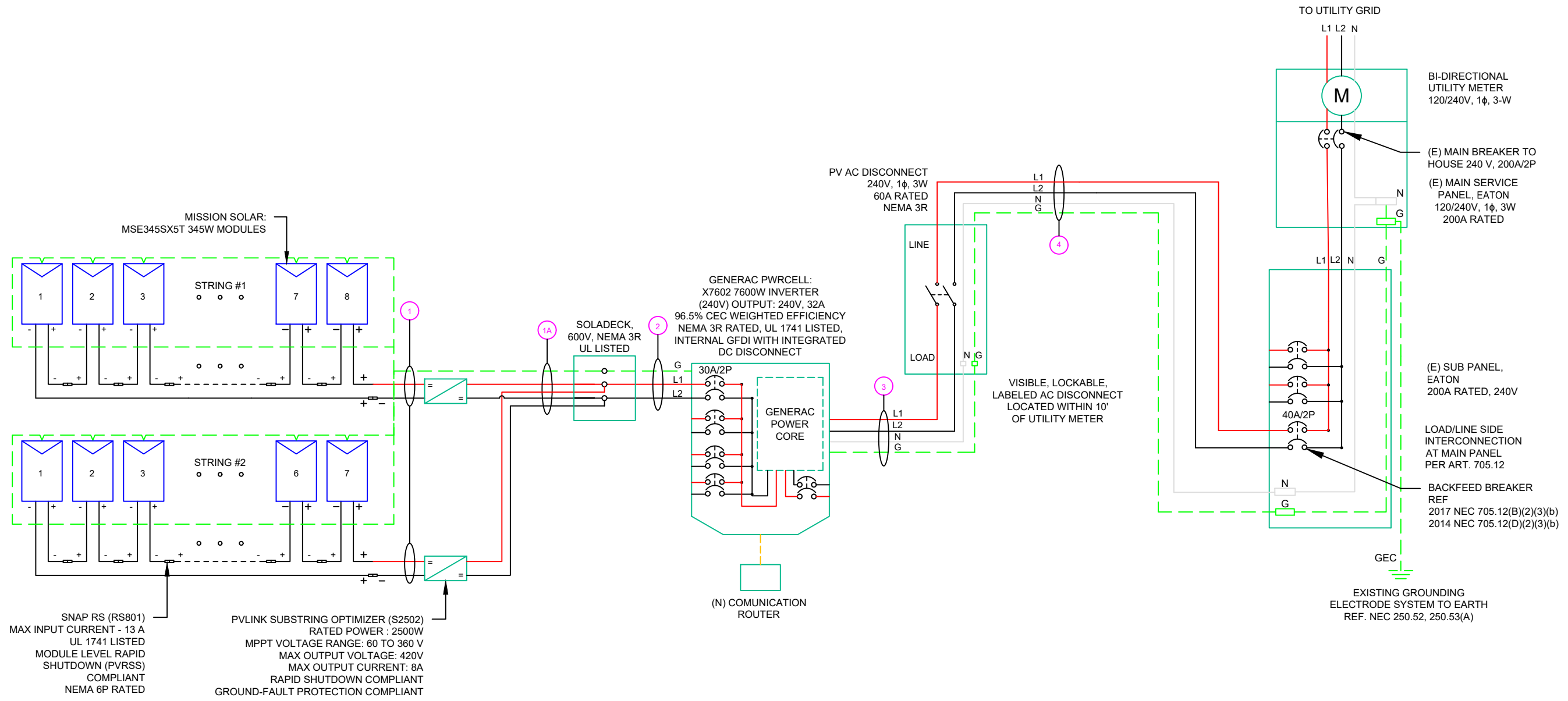
DC SYSTEM SIZE: 5.175 kW DC  
AC SYSTEM SIZE: 7.600 kW AC

(15) MISSION SOLAR: MSE345SX5T 345W MODULES  
WITH (15) GENERAC SNAPRS801

(1) STRING OF 8 MODULES AND  
(1) STRING OF 7 MODULES CONNECTED IN SERIES

**RACKING NOTE:-**

- BOND EVERY RAIL WITH #6 BARE COPPER



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PROJECT NAME & ADDRESS

**CANDICE HALL RESIDENCE**  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
AC SIZE: 7.600 KW

SHEET NAME  
**ELECTRICAL LINE DIAGRAM**

SHEET SIZE  
**ANSI B 11" X 17"**

SHEET NUMBER  
**PV-4**

SERVICE INFO

UTILITY PROVIDER: **SOUTH RIVER EMC**

MAIN SERVICE VOLTAGE: 240V

MAIN PANEL BRAND: EATON

MAIN SERVICE PANEL: 200A

MAIN STRING BREAKER RATING: 200A

MAIN SERVICE LOCATION: NORTH-WEST

SERVICE FEED SOURCE: UNDERGROUND

QTY	CONDUCTOR INFORMATION	CONDUIT TYPE	CONDUIT SIZE
1	(4) CU#10AWG - PV WIRE/USE-2	N/A	N/A
1	(1) CU#6AWG - BARE COPPER IN FREE AIR	N/A	N/A
1A	(1) CU#10AWG - PV WIRE/USE-2	N/A	N/A
1	(1) CU#6AWG - BARE COPPER IN FREE AIR	N/A	N/A
2	(2) CU#10AWG - THWN-2 (L1,L2)	EMT OR LFMC	3/4"
1	(1) CU#10AWG - THWN-2 GND		
2	(2) CU#8AWG - THWN-2 (L1,L2)	EMT OR LFMC	3/4"
1	(1) CU#8AWG - THWN-2 NEUTRAL		
1	(1) CU#10AWG - THWN-2 GND	EMT OR LFMC	3/4"
2	(2) CU#8AWG - THWN-2 (L1,L2)		
1	(1) CU#8AWG - THWN-2 NEUTRAL	EMT OR LFMC	3/4"
1	(1) CU#10AWG - THWN-2 GND		

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	MISSION SOLAR: MSE345SX5T 345W MODULES
VMP	33.37V
IMP	10.34A
VOC	41.00V
ISC	10.92A
TEMP. COEFF. VOC	-0.262%/°C
MODULE DIMENSION	68.8"L x 41.5"W x 1.60"D (In Inch)

POWER OPTIMIZER (GENERAC PV LINK S2502 POWER OPTIMIZERS)	
RATED POWER	2500W
MAXIMUM INPUT VOLTAGE	420Voc
MPPT VOLTAGE RANGE	60-360Vmp
NOMINAL OUTPUT	380Vdc
MAXIMUM OUTPUT	420Adc
MAXIMUM OUTPUT CURRENT	8A
MAXIMUM SHORT CIRCUIT CURRENT	18A

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-10°
AMBIENT TEMP (HIGH TEMP 2%)	36°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.262%/°C

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	GENERAC PWRCELL: X7602 7600W INVERTER
NOMINAL AC POWER	7.600 KW
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	32A

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
0.80	4-6
0.70	7-9
0.50	10-20

AC FEEDER CALCULATIONS																						
CIRCUIT ORIGIN	CIRCUIT DESTINATION	VOLTAGE (V)	FULL LOAD AMPS "FLA" (A)	FLA*1.25 (A)	OCPD SIZE (A)	NEUTRAL SIZE	GROUND SIZE	CONDUCTOR SIZE	75°C AMPACITY (A)	AMPACITY CHECK #1	AMBIENT TEMP. (°C)	TOTAL CC CONDUCTORS IN RACEWAY	90°C AMPACITY (A)	DERATION FACTOR FOR AMBIENT TEMPERATURE NEC 310.15(B)(2)(a)	DERATION FACTOR FOR CONDUCTORS PER RACEWAY NEC 310.15(B)(3)(a)	90°C AMPACITY DERATED (A)	AMPACITY CHECK #2	FEEDER LENGTH (FEET)	CONDUCTOR RESISTANCE (OHM/KFT)	VOLTAGE DROP AT FLA (%)	CONDUIT SIZE	CONDUIT FILL (%)
INVERTER 1	AC DISCONNECT	240	32	40	40	CU #8 AWG	CU #10 AWG	CU #8 AWG	50	PASS	36	2	55	0.91	1	50.05	PASS	5	0.778	0.104	3/4" EMT	24.5591
AC DISCONNECT	POI	240	32	40	40	CU #8 AWG	CU #10 AWG	CU #8 AWG	50	PASS	36	2	55	0.91	1	50.05	PASS	5	0.778	0.104	3/4" EMT	24.5591
																			CUMULATIVE VOLTAGE DROP	0.21		

DC FEEDER CALCULATIONS																					
CIRCUIT ORIGIN	CIRCUIT DESTINATION	VOLTAGE (V)	FULL LOAD AMPS "FLA" (A)	FLA*1.25 (A)	OCPD SIZE (A)	GROUND SIZE	CONDUCTOR SIZE	75°C AMPACITY (A)	AMPACITY CHECK #1	AMBIENT TEMP. (°C)	TOTAL CC CONDUCTORS IN RACEWAY	90°C AMPACITY (A)	DERATION FACTOR FOR AMBIENT TEMPERATURE NEC 310.15(B)(2)(a)	DERATION FACTOR FOR CONDUCTORS PER RACEWAY NEC 310.15(B)(3)(a)	90°C AMPACITY DERATED (A)	AMPACITY CHECK #2	FEEDER LENGTH (FEET)	CONDUCTOR RESISTANCE (OHM/KFT)	VOLTAGE DROP AT FLA (%)	CONDUIT SIZE	CONDUIT FILL (%)
STRING 1	SOLADECK	380	8.00	10.00	20	BARE COPPER #6 AWG	CU #10 AWG	35	PASS	36	2	40	0.91	1	36.4	PASS	5	1.24	0.026	N/A	#N/A
STRING 2	SOLADECK	380	8.00	10.00	20	BARE COPPER #6 AWG	CU #10 AWG	35	PASS	36	2	40	0.91	1	36.4	PASS	5	1.24	0.026	N/A	#N/A
JUNCTION BOX	INVERTER	380	16.00	20.00	30	CU #10 AWG	CU #10 AWG	35	PASS	36	2	40	0.91	1	36.4	PASS	35	1.24	0.365	3/4" EMT	11.87617
																			String 1 Voltage Drop	0.392	
																			String 2 Voltage Drop	0.392	

**ELECTRICAL NOTES**

- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- WHERE SIZES OF SOLADECK, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- 8.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- TEMPERATURE RATINGS OF ALL CONDUCTORS, TERMINATIONS, BREAKERS, OR OTHER DEVICES ASSOCIATED WITH THE SOLAR PV SYSTEM SHALL BE RATED FOR AT LEAST 75 DEGREE C.



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RESIDENCE  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
AC SIZE: 7.600 KW

SHEET NAME  
WIRING  
CALCULATIONS

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-5



**CAUTION:  
AUTHORIZED SOLAR  
PERSONNEL ONLY!**

LABEL- 1:  
LABEL LOCATION:  
AC DISCONNECT

**WARNING: PHOTOVOLTAIC  
POWER SOURCE**

EVERY 10' ON CONDUIT & ENCLOSURES

LABEL- 2:  
LABEL LOCATION:  
EMT/CONDUIT RACEWAY  
SOLADECK / JUNCTION BOX  
CODE REF: NEC 690.31 (D)(2)

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

LABEL- 3:  
LABEL LOCATION:  
AC DISCONNECT  
INVERTER  
MAIN SERVICE PANEL  
SUBPANEL  
MAIN SERVICE DISCONNECT  
CODE REF: NEC 690.13(B)

**WARNING DUAL POWER SOURCE  
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM**

LABEL- 4:  
LABEL LOCATION:  
PRODUCTION METER  
UTILITY METER  
MAIN SERVICE PANEL  
SUBPANEL  
CODE REF: NEC 705.12(C) & NEC 690.59

**WARNING**  
**TURN OFF PHOTOVOLTAIC AC  
DISCONNECT PRIOR TO  
WORKING INSIDE PANEL**

LABEL- 5:  
LABEL LOCATION:  
MAIN SERVICE PANEL  
SUBPANEL  
MAIN SERVICE DISCONNECT  
CODE REF: NEC 110.27(C) & OSHA 1910.145 (f) (7)

**CAUTION**  
**PHOTOVOLTAIC SYSTEM CIRCUIT IS  
BACKFEED**

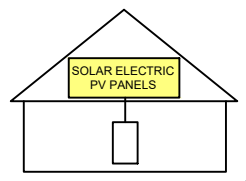
LABEL- 6:  
LABEL LOCATION:  
MAIN SERVICE PANEL (ONLY IF SOLAR IS BACK-FED)  
SUBPANEL (ONLY IF SOLAR IS BACK-FED)  
CODE REF: NEC 705.12(D) & NEC 690.59

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

LABEL- 7:  
LABEL LOCATION:  
MAIN SERVICE PANEL (ONLY IF SOLAR IS BACK-FED)  
SUBPANEL (ONLY IF SOLAR IS BACK-FED)  
CODE REF: NEC 705.12(B)(3)(2)

**SOLAR PV SYSTEM EQUIPPED  
WITH RAPID SHUTDOWN**

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



LABEL- 8:  
LABEL LOCATION:  
AC DISCONNECT  
CODE REF: IFC 605.11.3.1(1) & NEC 690.56(C)

**RAPID SHUTDOWN SWITCH  
FOR SOLAR PV SYSTEM**

LABEL- 9:  
LABEL LOCATION:  
AC DISCONNECT  
CODE REF: NEC 690.56(C)(2)

**PHOTOVOLTAIC  
AC DISCONNECT**

LABEL- 10:  
LABEL LOCATION:  
AC DISCONNECT  
CODE REF: NEC 690.13(B)

**PHOTOVOLTAIC  
DC DISCONNECT**

LABEL- 11:  
LABEL LOCATION:  
INVERTER  
CODE REF: NEC 690.13(B)

**PHOTOVOLTAIC  
AC DISCONNECT**  
NOMINAL OPERATING AC VOLATGE **240 V**  
RATED AC OUTPUT CURRENT **32.00 A**

LABEL- 12:  
LABEL LOCATION:  
MAIN SERVICE PANEL  
SUBPANEL  
AC DISCONNECT  
CODE REF: NEC 690.54

**INVERTER  
AC DISCONNECT**  
NOMINAL OPERATING AC VOLATGE **240 V**  
RATED AC OUTPUT CURRENT **32.00 A**

LABEL- 13:  
LABEL LOCATION:  
INVERTER  
CODE REF: NEC 690.54

**MAXIMUM VOLTAGE **380 V****  
**MAXIMUM CIRCUIT CURRENT **30 A****  
**MAXIMUM RATED OUTPUT  
CURRENT OF THE CHARGE  
CONTROLLER OR DC-TO-DC  
CONVERTER (IF INSTALLED)**

LABEL- 14:  
LABEL LOCATION:  
INVERTER  
CODE REF: NEC 690.53

**MAIN PHOTOVOLTAIC  
SYSTEM DISCONNECT**

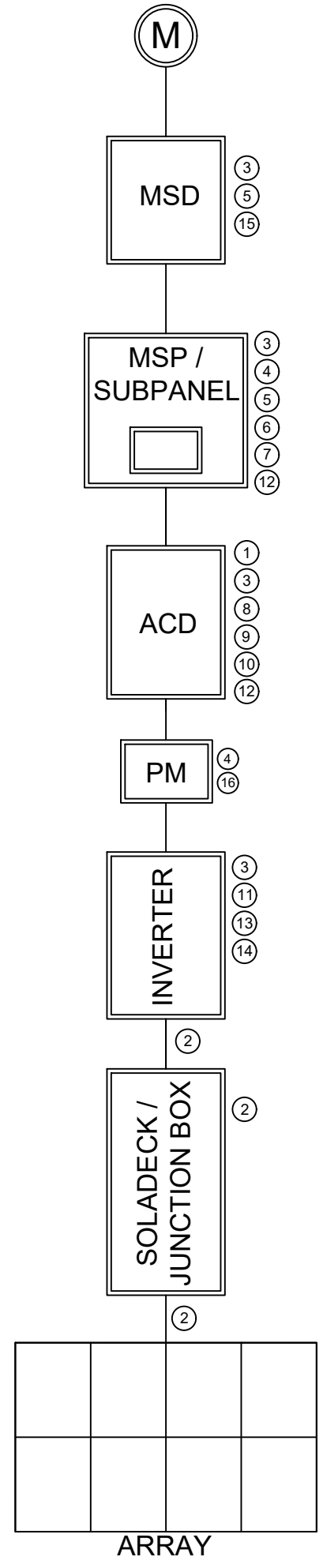
LABEL- 15:  
LABEL LOCATION:  
MAIN SERVICE DISCONNECT (ONLY IF MAIN SERVICE DISCONNECT IS PRESENT)  
CODE REF: NEC 690.13(B)

**PRODUCTION METER**

LABEL- 16:  
LABEL LOCATION:  
PRODUCTION METER (ONLY IF PRODUCTION METER IS USED)

**NOTE:**

\*\* ELECTRICAL DIAGRAM SHOWN IS FOR LABELING PURPOSES ONLY. NOT AN ACTUAL REPRESENTATION OF EQUIPMENT AND CONNECTIONS TO BE INSTALLED. LABEL LOCATIONS PRESENTED MAY VARY DEPENDING ON TYPE OF INTERCONNECTION METHOD AND LOCATION PRESENTED ELECTRICAL DIAGRAM PAGE. \*\*



REVISIONS

DESCRIPTION	DATE	REV
INITIAL	06/17/2022	

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DATE: 06/17/2022

PROJECT NAME & ADDRESS

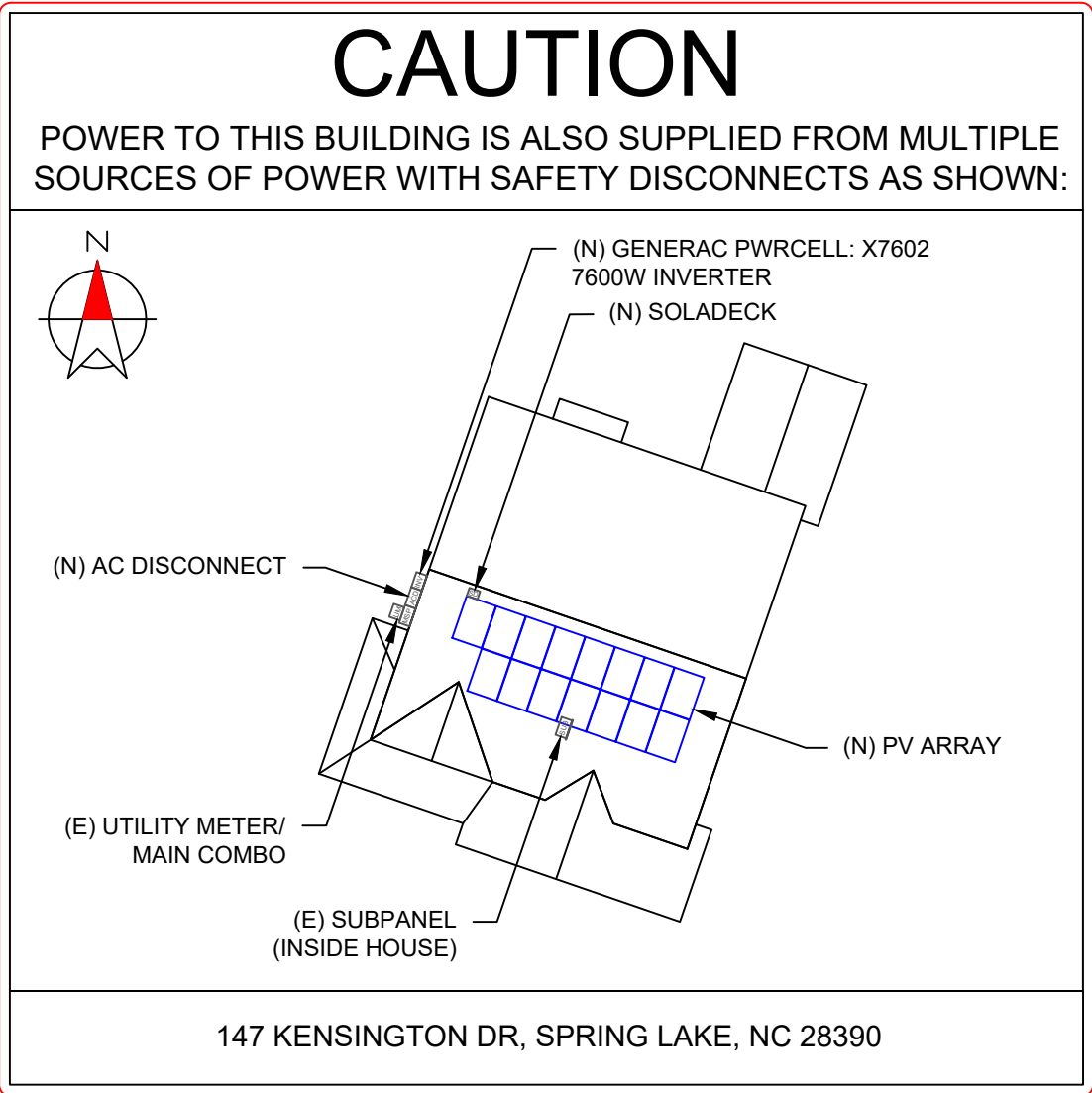
**CANDICE HALL  
RESIDENCE**  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
AC SIZE: 7.600 KW

SHEET NAME  
**LABELS**

SHEET SIZE  
**ANSI B  
11" X 17"**

SHEET NUMBER  
**PV-6**



**DIRECTORY**  
 PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM.

(ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS OUTLINED WITHIN:  
 NEC 690.56(B)&(C), [NEC 705.10])

- LABELING NOTES:**
1. LABELS CALLED OUT ACCORDING TO ALL COMMON CONFIGURATIONS. ELECTRICIAN TO DETERMINE EXACT REQUIREMENTS IN THE FIELD PER CURRENT NEC AND LOCAL CODES AND MAKE APPROPRIATE ADJUSTMENTS.
  2. LABELING REQUIREMENTS BASED ON THE 2017 NATIONAL ELECTRIC CODE, OSHA STANDARD 19010.145, ANSI Z535.
  3. MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
  4. LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED [NEC 110.21]
  5. LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8", WHITE ON RED BACKGROUND; REFLECTIVE, AND PERMANENTLY AFFIXED [IFC 605.11.1.1]

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 RESIDENCE**  
 147 KENSINGTON DR  
 SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
 AC SIZE: 7.600 KW

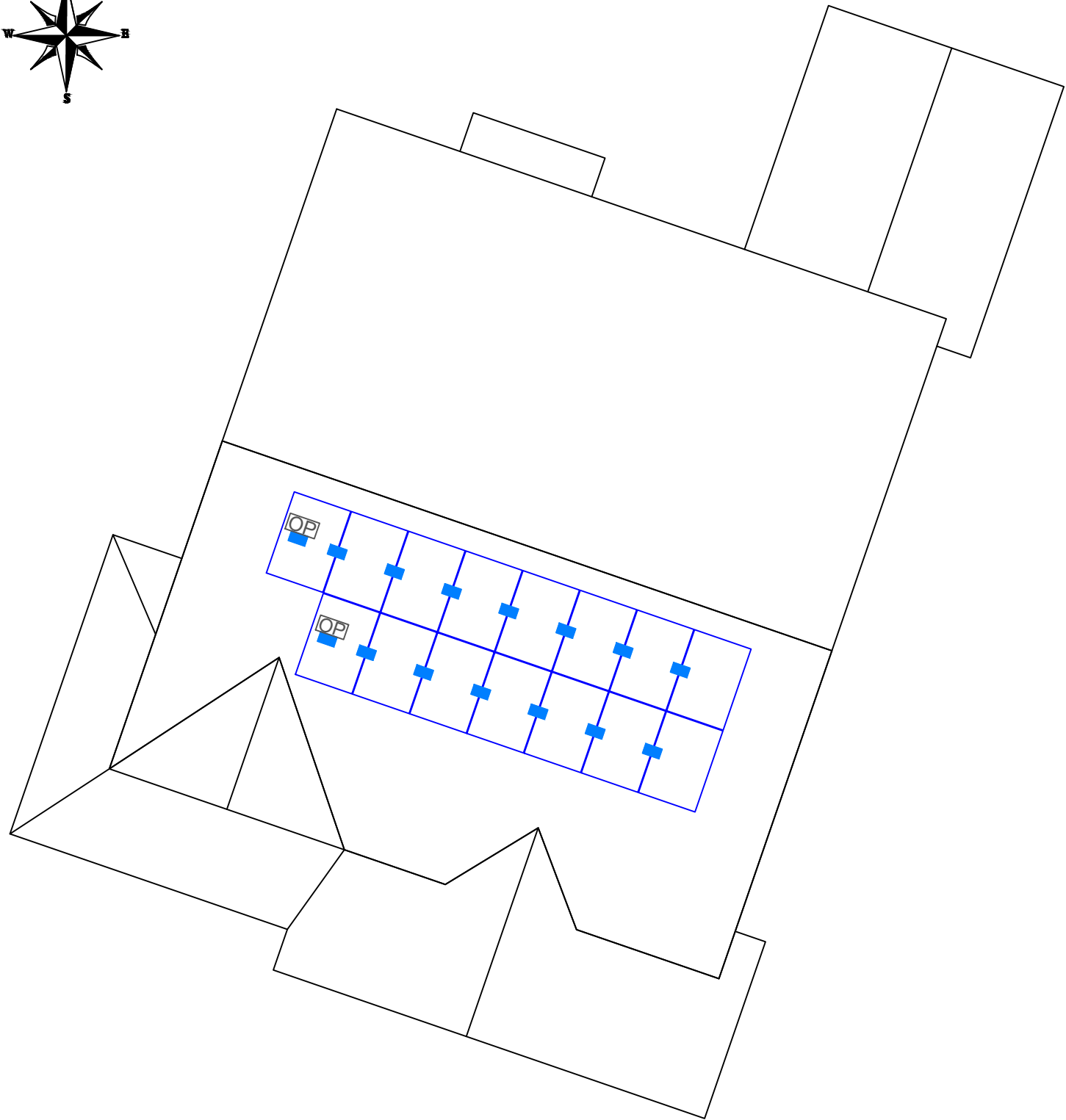
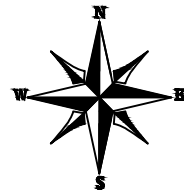
SHEET NAME  
**PLACARD**

SHEET SIZE  
**ANSI B  
 11" X 17"**

SHEET NUMBER  
**PV-7**

1-10    11-20    21-30    31-40    41-50    51-60

# POWER OPTIMIZER CHART



1  
2  
3  
4  
5  
6  
7  
8  
9  
10



REVISIONS

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PROJECT NAME & ADDRESS

CANDICE HALL  
RESIDENCE  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
AC SIZE: 7.600 KW

SHEET NAME  
POWER  
OPTIMIZER CHART

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-8

# MSE PERC 60

MISSION SOLAR ENERGY

## 345W

Class leading power output -0 to +3%

Positive Power Tolerance

## True American Quality True American Brand

Mission Solar Energy is headquartered in San Antonio, Texas, where we manufacture our modules. We produce American, high quality solar modules ensuring the highest in-class power output and best in-class reliability. Our product line is tailored for residential, commercial and utility applications. Every Mission Solar Energy solar module is certified and surpasses industry standard regulations, proving excellent performance over the long term.

Demand the best. Demand Mission Solar Energy.



### Certified Reliability

- Tested to UL 61730 & IEC Standards
- PID resistant
- Resistance to salt mist corrosion



### Advanced Technology

- 6 Busbar
- Passivated Emitter Rear Contact
- Ideal for all applications



### Extreme Weather Resilience

- Up to 5,600 Pa front load & 5,631 Pa back load
- Tested load to UL 61730
- 40 mm frame



### BAA Compliant for Government Projects

- Buy American Act
- American Recovery & Reinvestment Act

### FRAME-TO-FRAME WARRANTY

Degradation guaranteed not to exceed 2% in year one and 0.58% annually from years two to 30 with 84.08% guaranteed in year 25. For more information visit [www.missionsolar.com/warranty](http://www.missionsolar.com/warranty)

### CERTIFICATIONS

CEC



UL 61730 / IEC 61215 / IEC 61730 / IEC 61701

If you have questions or concerns about certification of our products in your area, please contact Mission Solar Energy.



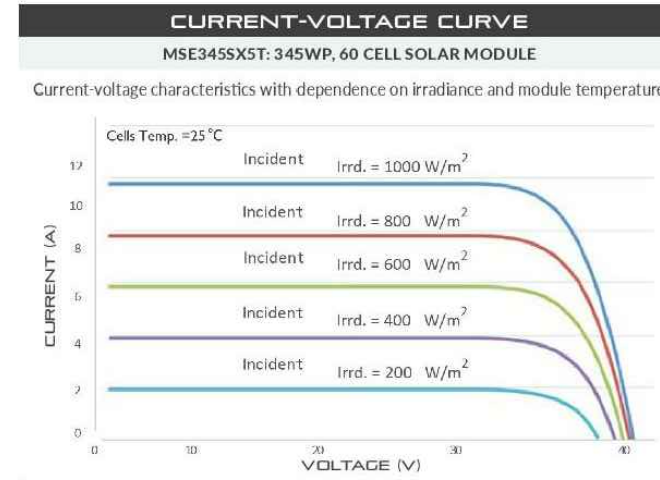
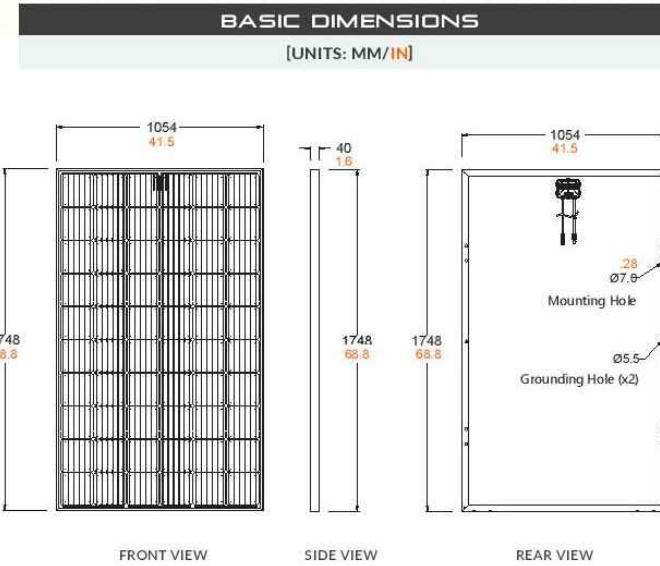
CEC



## Mission Solar Energy

8303 S. New Braunfels Ave., San Antonio, Texas 78235  
[www.missionsolar.com](http://www.missionsolar.com) | [info@missionsolar.com](mailto:info@missionsolar.com)

## Class Leading 340-350W



**CERTIFICATIONS AND TESTS**

Standard	Test Results
IEC	61215, 61730, 61701
UL	61730

# MSE PERC 60

**ELECTRICAL SPECIFICATION**

PRODUCT TYPE	MSExxxSX5T (xxx = P <sub>max</sub> )			
	P <sub>max</sub>	W <sub>p</sub>	V <sub>mp</sub>	
Power Output	340	345	350	
Module Efficiency	% 18.5	18.7	19.0	
Tolerance	% 0/+3	0/+3	0/+3	
Short Circuit Current	I <sub>sc</sub> V	10.86	10.92	10.97
Open Circuit Voltage	V <sub>oc</sub> A	40.82	41.00	41.18
Rated Current	I <sub>mp</sub> V	10.24	10.34	10.44
Rated Voltage	V <sub>mp</sub> V	33.20	33.37	33.52
Fuse Rating	A	20	20	20
System Voltage	V	1,000	1,000	1,000

**TEMPERATURE COEFFICIENTS**

Normal Operating Cell Temperature (NOCT)	44.43°C (±3.7%)
Temperature Coefficient of P <sub>max</sub>	-0.361%/°C
Temperature Coefficient of V <sub>oc</sub>	-0.262%/°C
Temperature Coefficient of I <sub>sc</sub>	0.039%/°C

**OPERATING CONDITIONS**

Maximum System Voltage	1,000Vdc
Operating Temperature Range	-40°C (-40°F) to +85°C (185°F)
Maximum Series Fuse Rating	20A
Fire Safety Classification	Type 1
Front & Back Load (UL Standard)	Up to 5,600 Pa front and 5,631 Pa back load, Tested to UL 61730
Hail Safety Impact Velocity	25mm at 23 m/s

**MECHANICAL DATA**

Solar Cells	P-type mono-crystalline silicon
Cell Orientation	60 cells (6x10)
Module Dimension	1748mm x 1054mm x 40mm
Weight	20.3 kg (44.8 lbs.)
Front Glass	3.2mm, tempered, low-iron, anti-reflective
Frame	Anodized
Encapsulant	Ethylene vinyl acetate (EVA)
Junction Box	Protection class IP67 with 3 bypass-diodes
Cable	1.0m, Wire 4mm <sup>2</sup> (12AWG)
Connector	Staubli PV-KBT4/6II-UR and PV-KST4/6II-UR, MC4, Renhe 05-8

**SHIPPING INFORMATION**

Container Feet	Ship To	Pallet	Panels	345 W Bin
53'	Most States	34	884	304.98 kW
Double Stack	CA	28	728	251.16 kW

**PALLET [26 PANELS]**

Weight	Height	Width	Length
1263 lbs. (573 kg)	47.5 in (120.65 cm)	46 in (116.84 cm)	70.25 in (178.43 cm)



### REVISIONS

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DATE: 06/17/2022

### PROJECT NAME & ADDRESS

CANDICE HALL  
RESIDENCE  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
AC SIZE: 7.600 KW

SHEET NAME  
EQUIPMENT  
SPECIFICATION

### SHEET SIZE

ANSI B  
11" X 17"

### SHEET NUMBER

PV-9

**GENERAC**

# SnapRS™

Inline Disconnect Switch  
Model #: RS801 (Ordering SKU: APKE00011)



Generac SnapRS are a simple way to satisfy rapid shutdown compliance for solar + storage systems. Generac SnapRS are 2017/2020 NEC 690.12 compliant, don't require any extra hardware to mount, and need no pairing or fussy digital communications.

## FEATURES & BENEFITS

- Fast, easy, and simple to install
- One SnapRS device per PV module
- Achieves PVRSS Compliance
- Low cost, high efficiency solution

## SYSTEM DESIGN

Snap a Generac SnapRS disconnect device (RS) to the negative lead (-) of each module in the solar array for simple module-level rapid shutdown compliance. SnapRS devices isolate array voltage when a rapid shutdown is initiated at a PWRcell™ Inverter. When rapid shutdown is initiated, SnapRS units isolate each PV module in the array, reducing array voltage to <80V in seconds.

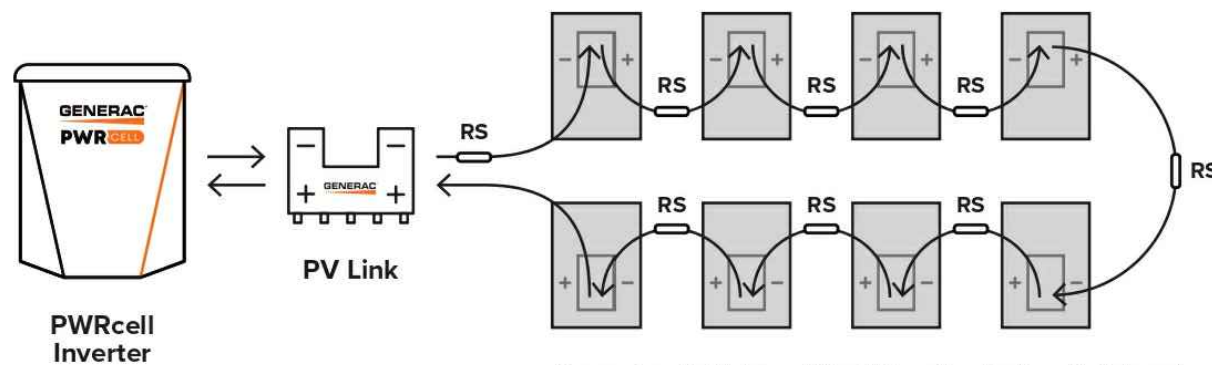


Diagram is applicable for most 60 cell PV modules. Modules with higher cell count may require a different arrangement. Contact Generac for more details.

## Specifications

SnapRS™ (APKE00011)	
PV MODULE MAX VOC:	75 V
EFFICIENCY:	99.8%*
MAX INPUT CURRENT:	13 A
MAX STC ISC OF STRING:	10.4 A
MAX TOTAL QTY IN SUBSTRING:	10
SHUTDOWN TIME:	< 10 Seconds
ENCLOSURE RATING:	NEMA 6P
OPERATING TEMPERATURE - FAHRENHEIT (CELSIUS):	-40 to 158 °F (-40 to 70 °C)
CERTIFICATIONS:	UL1741
PROTECTIONS:	PVRSE
WEIGHT - LB (KG):	0.17 (0.08)
DIMENSIONS, L x W x H - IN (MM):	7" x 1" x 1" (177.8 x 25.4 x 25.4)
WARRANTY:	25 Years

\*When used with a 50V panel

Connect one SnapRS device to the negative lead of each PV module in the PV Link controlled array for complete PV Rapid shutdown performance



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PROJECT NAME & ADDRESS

CANDICE HALL  
RESIDENCE  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
AC SIZE: 7.600 KW

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-10

**GENERAC**

# PV Link™

2500W MPPT Substring Optimizer  
Model #: S2502 (Ordering SKU: APKE00010)



PV Link is the simple solar optimizer for quick installation and long-lasting performance. Connect PV modules to each PV Link to overcome shading and challenging roof lines.

## FEATURES & BENEFITS

- Fast, simple installation
- Lower failure risk than module-level optimizers
- 2017/2020 NEC rapid shutdown compliant with SnapRS™
- Quick connections with MC4 connectors
- Exports up to 2500W
- Compatible with PWRcell™ Inverters
- Cost-effective solution for high-performance PV
- Ground-fault protection

## SINGLE-STRING PV ARRAY WITH SnapRS DEVICES

Where PV module-level rapid shutdown is required (NEC 690.12), a SnapRS device (RS) is installed to negative (-) lead of each PV module.

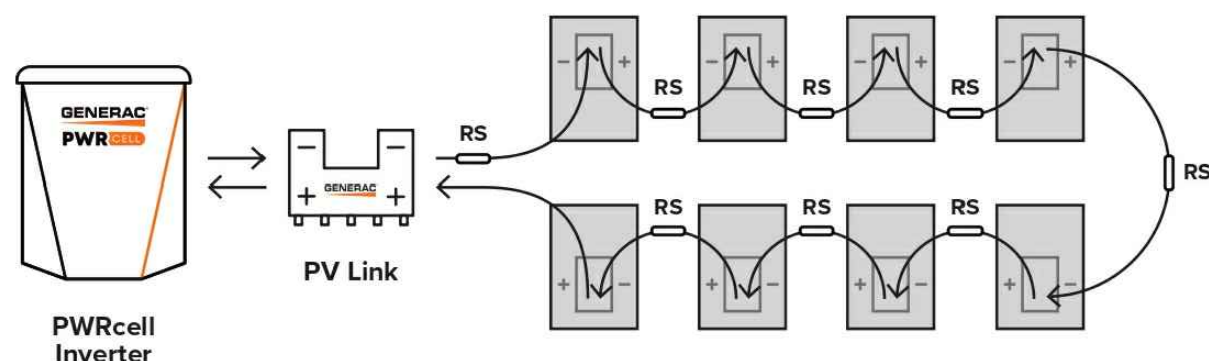


Diagram is applicable for most 60 cell PV modules. Modules with higher cell count may require a different arrangement. Contact Generac for more details.

## Specifications

PV Link™ (APKE00010)	
RATED POWER*:	2500W
PEAK EFFICIENCY:	99%
MPPT VOLTAGE RANGE:	60-360 VMP
MAX INPUT VOLTAGE:	420 VOC; max when cold
MAX OUTPUT:	420 VOC
NOMINAL OUTPUT (REbus™):	380 VDC
MAX OUTPUT CURRENT (CONTINUOUS):	8 A
MAX OUTPUT CURRENT (FAULT):	10 A
MAX INPUT CURRENT (CONTINUOUS):	13 A @ 50°C, 10 A @ 70°C
MAX INPUT SHORT CIRCUIT CURRENT (ISC):	18 A
STANDBY POWER:	< 1 W
PROTECTIONS:	Ground-fault, Arc-fault (Arc-fault Type 1AFCI, Integrated), PVRSE
MAX OPERATING TEMP: FAHRENHEIT (CELSIUS)	158 °F (70 °C)
SYSTEM MONITORING:	PWRview™ Web Portal and Mobile App
ENCLOSURE:	Type 4X
WEIGHT - LB (KG):	7.3 lb (3.3 kg)
DIMENSIONS, L x W x H - IN (MM):	15.4" x 2" x 9.6" (391.2 x 50.8 x 243.8)
COMPLIANCE:	UL 1741, CSA 22.2
WARRANTY:	25 Years

\*PV Link can tolerate higher than rated power at its input if Max Input Voltage and Short Circuit Current specifications are not exceeded



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PROJECT NAME & ADDRESS

CANDICE HALL  
RESIDENCE  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

DC SIZE: 5.175 KW  
AC SIZE: 7.600 KW

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-11

# GENERAC<sup>®</sup> PWRCELL

7.6kW 1Ø PWRcell Inverter with CTs  
Model #: X7602 (Ordering SKU: APKE00014)  
11.4 kW 3Ø PWRcell Inverter with CTs  
Model #: X11402 (Ordering SKU: APKE00013)



Solar + storage is simple with the Generac PWRcell™ Inverter. This bi-directional, REbus™-powered inverter offers a simple, efficient design for integrating smart batteries with solar. Ideal for self-supply, backup power, zero-export and energy cost management, the PWRcell Inverter is the industry's most feature-rich line of inverters, available in single-phase and three-phase models.

## FEATURES & BENEFITS

- Single inverter for grid-tied solar with smart battery integration
- Simplified system design: No autotransformer or battery inverter needed
- User-selectable modes for backup power, self-supply, time-of-use, zero-import and export limiting
- Free system monitoring included via PWRview™ Web Portal and Mobile App

AC OUTPUT/GRID-TIE	MODEL X7602	MODEL X11402
CONT. GRID-TIED AC POWER @ 50°C (122°F):	7600 W	11400 W
AC OUTPUT VOLTAGE:	120/240, 1Ø VAC	120/208, 3Ø VAC
AC FREQUENCY:	60 Hz	
MAXIMUM CONTINUOUS OUTPUT CURRENT:	32 A, RMS	
GROUND-FAULT ISOLATION DETECTION:	Included	
CHARGE BATTERY FROM AC:	Yes	
THD (CURRENT):	< 2%	
TYPICAL NIGHTTIME POWER CONSUMPTION:	< 7 W	

DC INPUT	MODEL X7602	MODEL X11402
DC INPUT VOLTAGE RANGE:	360-420 VDC	
NOMINAL DC BUS VOLTAGE:	380 VDC	
DC DISTRIBUTION INPUT BREAKERS:	4 x 2P30 A	
MAX INPUT CURRENT PER DC INPUT:	30 A	
REVERSE-POLARITY PROTECTION:	Yes	
TRANSFORMERLESS, UNGROUNDED:	Yes	
TYPICAL NIGHTTIME POWER CONSUMPTION:	< 7 W	
DC BUS EXPORT FUSES (+/-):	40 A	
2-POLE DISCONNECTION:	Yes	

AC OUTPUT/ISLANDED	MODEL X7602	MODEL X11402
MAX. CONT. ISLANDED AC POWER WITHOUT AN EXTERNAL TRANSFER SWITCH <sup>1</sup> :	7600 W	
MAX. CONT. ISLANDED AC POWER W/ EXTERNAL TRANSFER SWITCH AND SINGLE 6 MODULE BATTERY CABINET <sup>2</sup> :	9000 W	
MAX. CONT. ISLANDED AC POWER W/ EXTERNAL TRANSFER SWITCH AND 2 BATTERY CABINETS (8 MODULES MINIMUM) <sup>2</sup> :	11000 W	9600 W-11000 W*
PEAK MOTOR STARTING CURRENT (2 SEC):	50 A, RMS	
AC BACKUP OUTPUT VOLTAGE:	120/240, 1Ø VAC	120/208, 1Ø VAC
AC FREQUENCY:	60 Hz	
THD (VOLTAGE):	< 2%	
ALLOWABLE SPLIT PHASE IMBALANCE:	Up to 30%	

<sup>1</sup>When islanded, continuous power output is restricted to 7.6kW unless backup power is routed through an external transfer switch.  
<sup>2</sup>Peak performance, values provided for 40°C (104°F).  
<sup>\*</sup>In island mode X11402 protected loads only supply 2 phases 208 VAC L-N, 208 L-L which results in lower power than in grid tied 3 phase mode. The low value of the range is for full L-L loading while high value of the range is full L-N loading

## Specifications

### FEATURES AND MODES

ISLANDING <sup>4</sup> :	Yes
GRID SELL:	Yes
SELF CONSUMPTION:	Yes
PRIORITIZED CHARGING FROM RENEWABLES:	Yes
GRID SUPPORT - ZERO EXPORT:	Yes
ESS PCS OPERATION MODES (IMPORT ONLY, EXPORT ONLY):	Yes

### ADDITIONAL FEATURES

SUPPORTED COMMUNICATION INTERFACES:	REbus™, CANbus, Ethernet
SYSTEM MONITORING:	PWRview™ Web Portal and Mobile App
BACKUP LOADS DISCONNECT <sup>5</sup> :	Yes, 50 A Circuit Breaker
INVERTER BYPASS SWITCH:	Automatic
WARRANTY:	10 Years

### STANDARDS COMPLIANCE

SAFETY:	UL 1741 SA, CSA 22.2, UL 1998
GRID CONNECTION STANDARDS:	IEEE 1547, Rule 21, Rule 14H, CSIP, UL 1741 PCS CRD (Import Only, Export Only)
EMISSIONS:	FCC Part 15 Class B

### DIMENSIONS AND INSTALLATION SPECIFICATIONS

ENCLOSURE KNOCKOUTS - QTY, SIZE - IN (MM):	6 x Combo 3/4" x 1" (19 x 25.4) 7 x Combo 1/2" x 3/4" (12.7 x 19)
DIMENSIONS L x W x H - IN (MM):	24.5" x 19.25" x 8" (622.3 x 488.9 x 203.2)
WEIGHT - LB (KG):	62.7 (28.4)
COOLING:	Forced convection
AUDIBLE NOISE:	< 40 dBA
OPERATING TEMPERATURE - FAHRENHEIT (CELSIUS):	-4 to 122 °F (-20 to 50 °C) <sup>5</sup>
ENCLOSURE TYPE:	Type 3R

### INSTALLATION GUIDELINES

BATTERY TYPES SUPPORTED:	PWRcell™ Battery
MODULE STRING SIZE PER PV LINK OPTIMIZER:	Varies, refer to PV Link Installation Manual
MAXIMUM RECOMMENDED DC POWER FROM PV <sup>6</sup> :	10 kW (1Ø), 15 kW (3Ø)

<sup>4</sup>3Ø inverters offer islanding for 1Ø loads.  
<sup>5</sup>Includes ambient temperature rising from inverter operation. Reduced power at extreme temperatures. Specifications listed in this document are achieved with firmware version 13310 or greater. Confirm inverter has latest firmware to ensure full performance.  
<sup>6</sup>Values provided for PV-only or small storage systems. Additional PV power is permissible if sufficient battery storage capacity is installed.

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RESIDENCE  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

DC SIZE: 5.175 KW

AC SIZE: 7.600 KW

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-12



# Flush Mount System

Datasheet

Datasheet



## Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs in solar. Our components have been tested to the limit and proven in extreme environments, including Florida's high-velocity hurricane zones.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 25-year warranty.



### Strength Tested

All components evaluated for superior structural performance.



### PE Certified

Pre-stamped engineering letters available in most states.



### Class A Fire Rating

Certified to maintain the fire resistance rating of the existing roof.



### Design Assistant

Online software makes it simple to create, share, and price projects.



### UL 2703 Listed System

Entire system and components meet newest effective UL 2703 standard.



### 25-Year Warranty

Products guaranteed to be free of impairing defects.

## XR Rails

### XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6' spanning capability
- Moderate load capability
- Clear and black finish

### XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear and black finish

### XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish

### Bonded Splices



All rails use internal splices for seamless connections.

- Self-drilling screws
- Varying versions for rails
- Forms secure bonding

## Clamps & Grounding

### UFOs



Universal Fastening Objects bond modules to rails.

- Fully assembled & lubed
- Single, universal size
- Clear and black finish

### Stopper Sleeves



Snap onto the UFO to turn into a bonded end clamp.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

### CAMO



Bond modules to rails while staying completely hidden.

- Universal end-cam clamp
- Tool-less installation
- Fully assembled

### Bonding Hardware



Bond and attach XR Rails to roof attachments.

- T & Square Bolt options
- Nut uses 7/16" socket
- Assembled and lubricated

## Attachments

### FlashFoot2



Flash and mount XR Rails with superior waterproofing.

- Twist-on Cap eases install
- Wind-driven rain tested
- Mill and black finish

### Conduit Mount



Flash and mount conduit, strut, or junction boxes.

- Twist-on Cap eases install
- Wind-driven rain tested
- Secures 3/4" or 1" conduit

### Knockout Tile



Replace tiles and ensure superior waterproofing.

- Flat, S, & W tile profiles
- Form-fit compression seal
- Single-lag universal base

### All Tile Hook



Mount on tile roofs with a simple, adjustable hook.

- Works on flat, S, & W tiles
- Single-socket installation
- Optional deck flashing

## Resources



### Design Assistant

Go from rough layout to fully engineered system. For free.

Go to [IronRidge.com/design](https://www.ironridge.com/design)



### Endorsed by FL Building Commission

Flush Mount is the first mounting system to receive Florida Product approval for 2017 Florida Building Code compliance.

Learn More at [bit.ly/floridacert](https://bit.ly/floridacert)



### REVISIONS

DESCRIPTION	DATE	REV
INITIAL	06/17/2022	

### SIGNATURE WITH SEAL

DATE: 06/17/2022

### PROJECT NAME & ADDRESS

CANDICE HALL  
RESIDENCE  
147 KENSINGTON DR  
SPRING LAKE, NC 28390

DC SIZE: 5.175 KW

AC SIZE: 7.600 KW

### SHEET NAME

EQUIPMENT  
SPECIFICATION

### SHEET SIZE

ANSI B  
11" X 17"

### SHEET NUMBER

PV-13





## UFO Family of Components

Tech Brief

### Simplified Grounding for Every Application

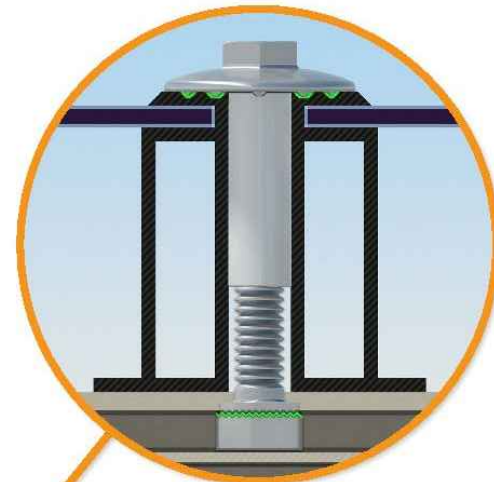
The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



#### Stopper Sleeve

The Stopper Sleeve snaps onto the UFO, converting it into a bonded end clamp.



#### Universal Fastening Object (UFO)

The UFO securely bonds solar modules to XR Rails. It comes assembled and lubricated, and can fit a wide range of module heights.



#### Bonded Splice

Each Bonded Splice uses self-drilling screws to form a secure connection. No bonding strap needed.



#### Grounding Lug

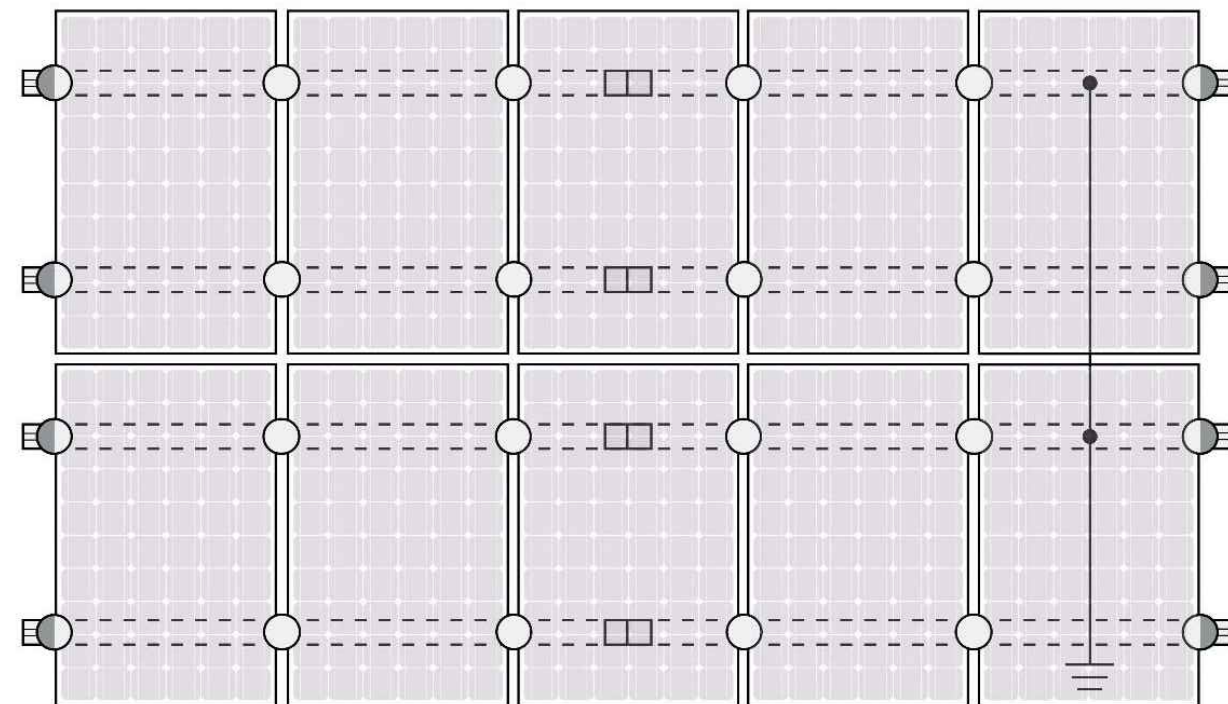
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.



#### Bonded Attachments

The bonding bolt attaches and bonds the L-foot to the rail. It is installed with the same socket as the rest of the system.

### System Diagram



○ UFO    ◐ Stopper Sleeve    ● Grounding Lug    □ Bonded Splice    ≡ Ground Wire

⚠ Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

### UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to [IronRidge.com/UFO](http://IronRidge.com/UFO)

### Cross-System Compatibility

Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✓	✓	XR1000 Only
UFO/Stopper	✓	✓	✓
Bonded Splice	✓	✓	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Enphase - M250-72, M250-60, M215-60, C250-72 Darfon - MIG240, MIG300, G320, G640 SolarEdge - P300, P320, P400, P405, P600, P700, P730		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		

Tech Brief



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# SolaDeck

FLASHED PV ROOF-MOUNT COMBINER/ENCLOSURE

## Basic Features

- Stamped Seamless Construction
- 18 Gauge Galvanized Steel
- Powder Coated Surfaces
- Flashes into the roof deck
- 3 Roof deck knockouts .5", .75", 1"
- 5 Centering dimples for entry/exit fittings or conduit
- 2 Position Ground lug installed
- Mounting Hardware Included



SolaDeck Model SD 0783



## SolaDeck UL50 Type 3R Enclosures

Available Models:

- Model SD 0783 - (3" fixed Din Rail)
- Model SD 0786 - (6" slotted Din Rail)



## SolaDeck UL 1741 Combiner/Enclosures

Models SD 0783-41 and SD 0786-41 are labeled and ETL listed UL STD 1741 according to the UL STD 1741 for photovoltaic combiner enclosures.

Max Rated - 600VDC, 120AMPS

**Model SD 0783-41** 3" Fixed Din Rail fastened using Norlock System

### \*\*Typical System Configuration

- 4- Din Rail Mounted Fuse Holders 600VDC 30 AMP
- 1- Power Distribution Block 600VDC 175AMP
- 1- Bus Bar with UL lug

**Model SD 0786-41** 6" Slotted Din Rail fastened using steel studs

### \*\*Typical System Configuration

- 4- Din Rail Mounted Fuse Holders 600VDC 30 AMP
- 4- Din Rail Mounted Terminal Blocks
- Bus Bars with UL lug

\*\*Fuse holders and terminal blocks added in the field must be UL listed or recognized and meet 600 VDC 30 AMP 110C for fuse holders, 600V 50 AMP 90C for rail mounted terminal blocks and 600 V 175 AMP 90C for Power Distribution Blocks. Use Copper Wire Conductors.



Cover is trimmed to allow conduit or fittings, base is center dimpled for fitting locations.



Model SD 0783-41, wired with Din Rail mounted fuse holders, bus bar and power distribution block.



Model SD 0786-41, wired with Din Rail mounted fuse holders, terminal blocks and bus bars.

RSTC Enterprises, Inc • 2219 Heimstead Road • Eau Claire, WI 54703  
For product information call 1(866) 367-7782



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