

# PROJECT DESCRIPTION:

25 X 320 HANWHA QCELL Q.PEAK DUO-G5 320 MODULES  
 ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES

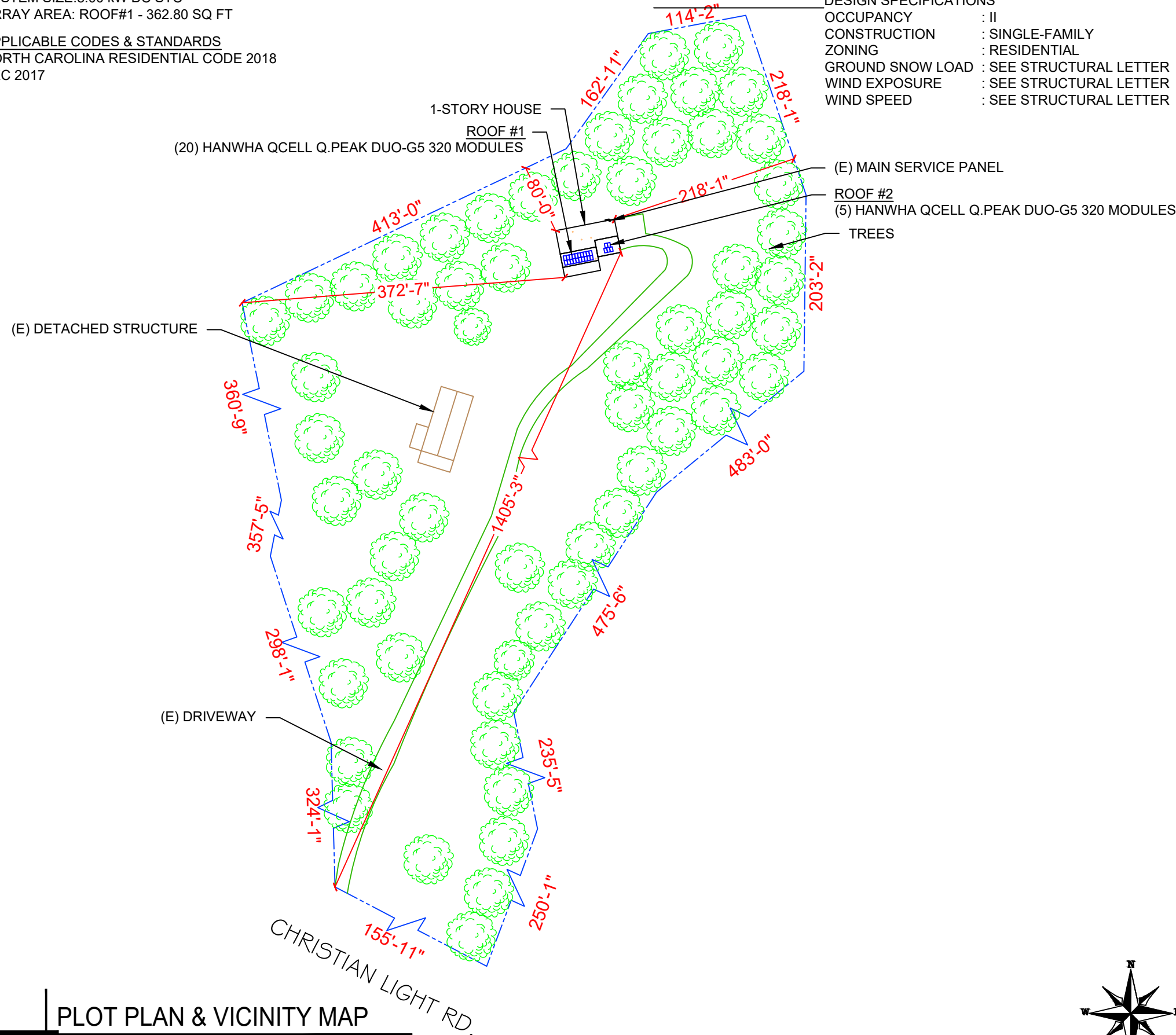
SYSTEM SIZE: 8.00 kW DC STC  
 ARRAY AREA: ROOF#1 - 362.80 SQ FT

APPLICABLE CODES & STANDARDS  
 NORTH CAROLINA RESIDENTIAL CODE 2018  
 NEC 2017

EQUIPMENT SUMMARY	
25	HANWHA QCELL Q.PEAK DUO-G5 320 MODULES
04	GENERAC PV LINK S2502 POWER OPTIMIZERS
01	GENERAC PWRCELL X7602 7600W INVERTER

AUTHORITIES HAVING JURISDICTION	
BUILDING	: WAKE COUNTY
ZONING	: WAKE COUNTY
UTILITY	: SOUTH RIVER EMC

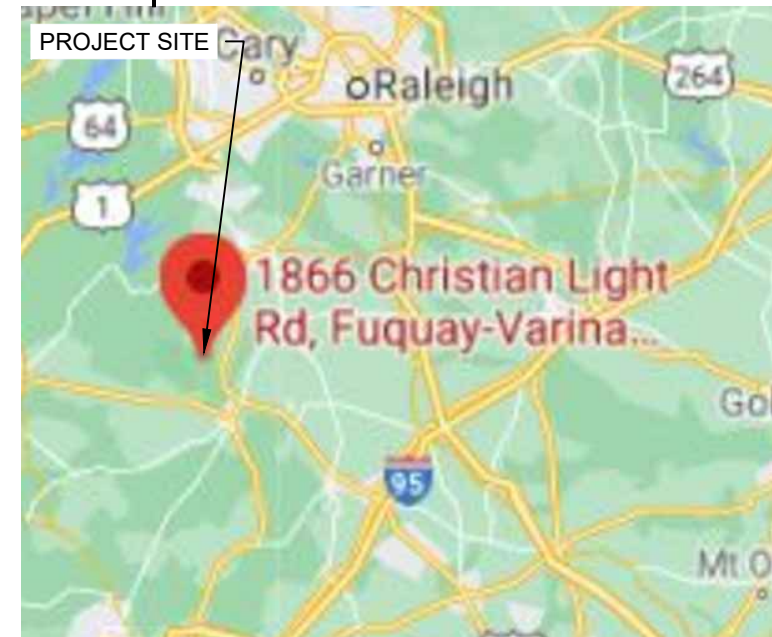
DESIGN SPECIFICATIONS	
OCCUPANCY	: II
CONSTRUCTION	: SINGLE-FAMILY
ZONING	: RESIDENTIAL
GROUND SNOW LOAD	: SEE STRUCTURAL LETTER
WIND EXPOSURE	: SEE STRUCTURAL LETTER
WIND SPEED	: SEE STRUCTURAL LETTER



1 PLOT PLAN & VICINITY MAP  
 PV-1 SCALE: 1/128" = 1'-0"

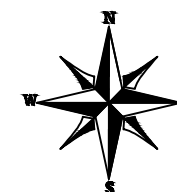


2 HOUSE PHOTO  
 PV-1 SCALE: NTS



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 to 12	EQUIPMENT SPECIFICATIONS



**POWERHOME**  
 POWER HOME SOLAR, LLC  
 "POWER YOUR FUTURE"  
 919 N. MAIN ST.  
 MOORESVILLE, NC 28115  
 Phone: 704-800-6591 (OFFICE)  
 Email: info@powerhome.com  
 Web: www.powerhome.com

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal  
 DATE: 3/29/2021

PROJECT NAME & ADDRESS  
**PETER ORMUND  
 RESIDENCE**  
 1866 CHRISTIAN LIGHT RD.,  
 FUQUAY-VARINA, NC 27526

SHEET NAME  
**PLOT PLAN &  
 VICINITY MAP**

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

SHEET NUMBER  
**PV-1**

**MODULE TYPE, DIMENSIONS & WEIGHT**

NUMBER OF MODULES = 25 MODULES  
 MODULE TYPE = HANWHA QCELL Q.PEAK DUO-G5 320 MODULES  
 MODULE WEIGHT = 41.20 LBS / 18.7 KG.  
 MODULE DIMENSIONS = 66.3"x 39.4" = 18.14 SF  
 UNIT WEIGHT OF ARRAY = 2.27 PSF

(E) BACK OF RESIDENCE

(E) MAIN SERVICE PANEL  
 (E) UTILITY METER  
 (N) FUSED AC DISCONNECT  
 (N) GENERAC PWRCELL X7602 7600W INVERTER

ROOF DESCRIPTION				
ROOF TYPE			CORRUGATED METAL	
ROOF	ROOF TILT	AZIMUTH	FRAMING SIZE	FRAMING SPACING
#1	14.04°	170°	SEE STRUCTURAL LETTER	
#2	18.43°	170°		

ARRAY AREA & ROOF AREA CALC'S				
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	20	362.80	658.58	55
#2	5	90.70	522.49	17

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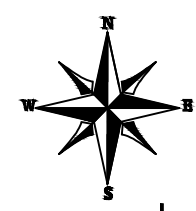
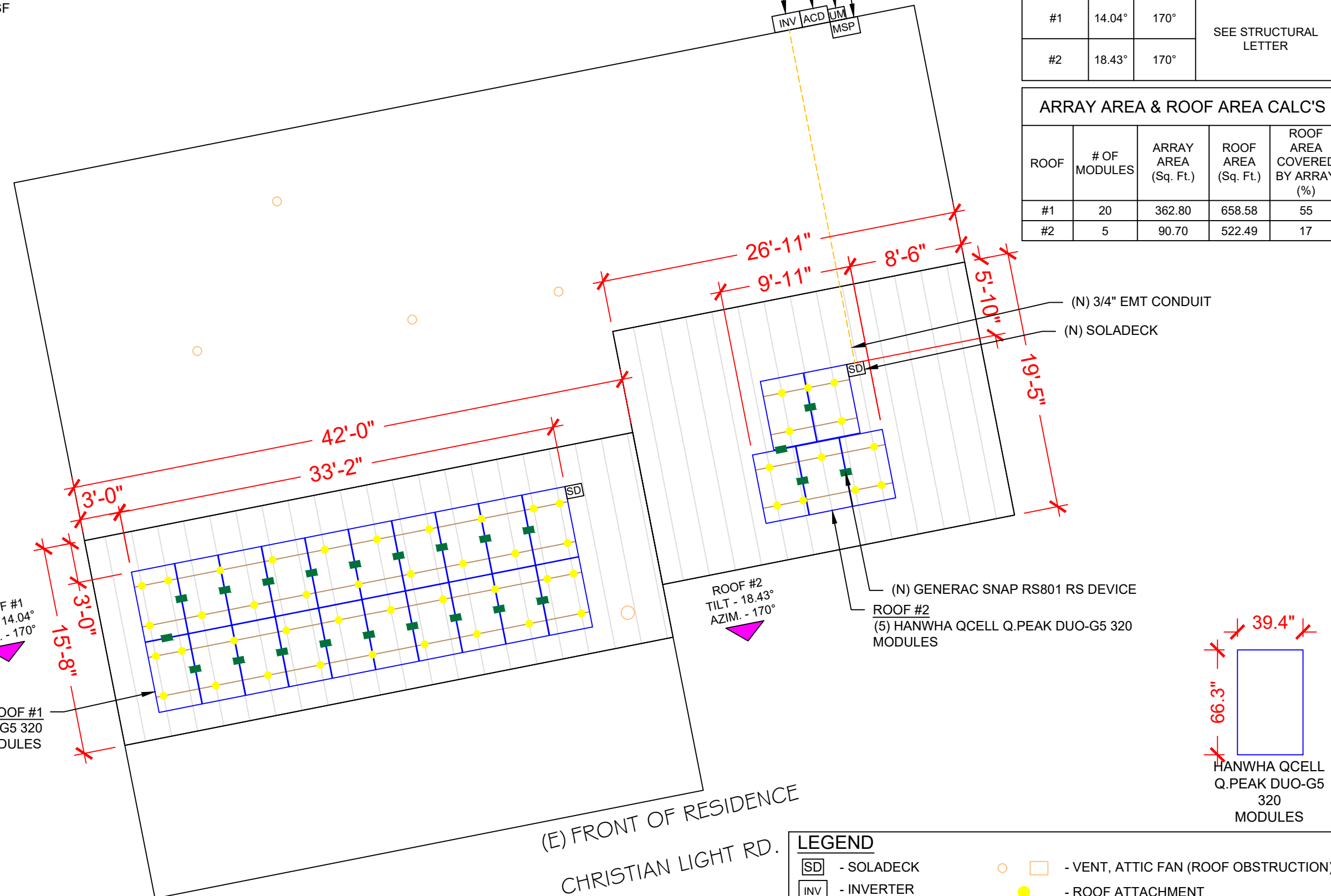
PROJECT NAME & ADDRESS

**PETER ORMUND  
 RESIDENCE**  
 1866 CHRISTIAN LIGHT RD.,  
 FUQUAY-VARINA, NC 27526

SHEET NAME  
**ROOF PLAN & MODULES**

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

SHEET NUMBER  
**PV-2**



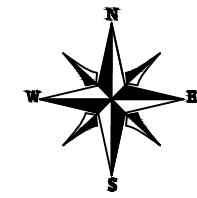
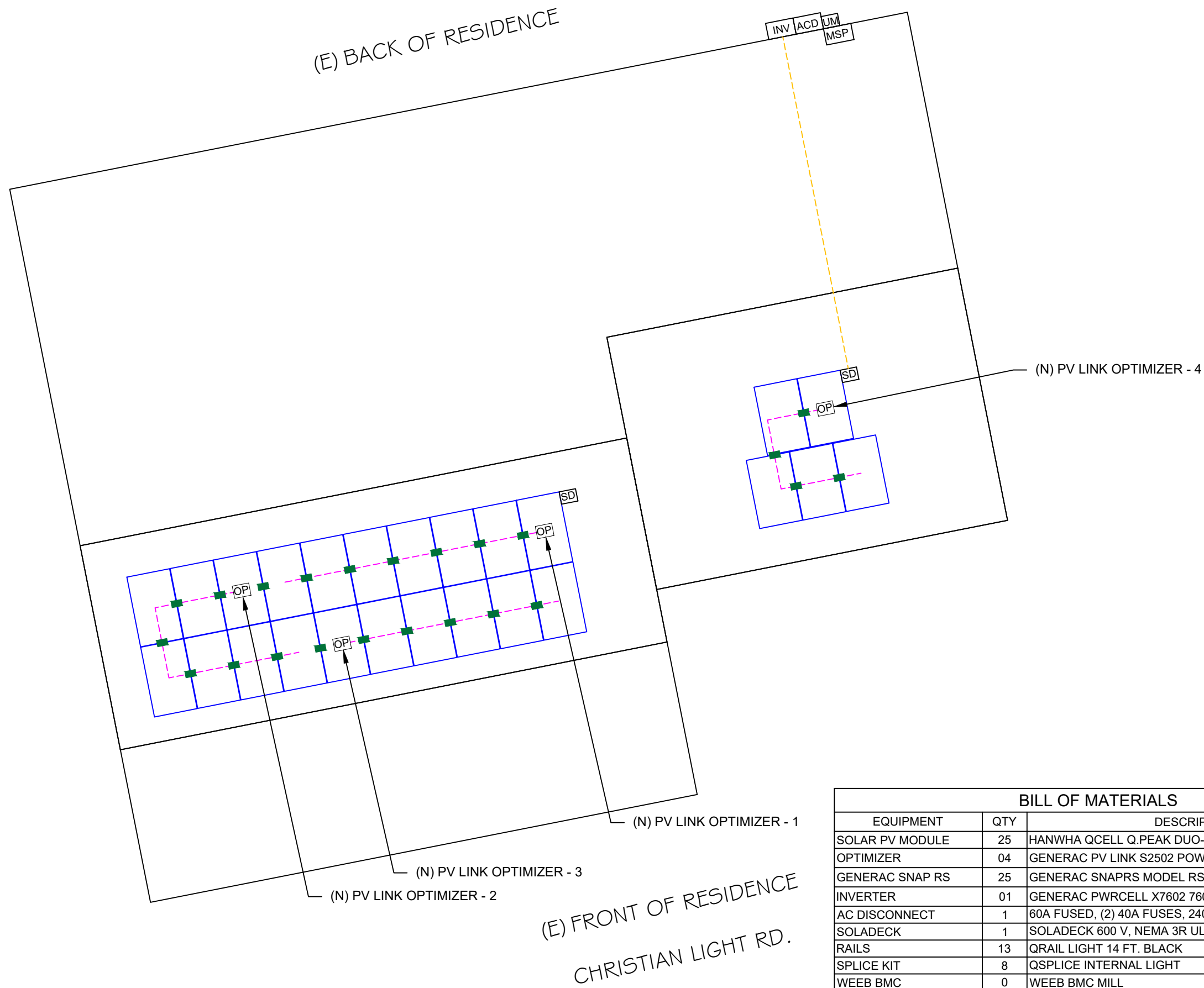
**1 ROOF PLAN & MODULES**

PV-2 SCALE: 1/8" = 1'-0"

ON- SITE CUSTOMER APPROVAL: \_\_\_\_\_

**LEGEND**

[SD]	- SOLADECK	○ □	- VENT, ATTIC FAN (ROOF OBSTRUCTION)
[INV]	- INVERTER	●	- ROOF ATTACHMENT
[ACD]	- AC DISCONNECT	—	- RAFTERS
[MSP]	- MAIN SERVICE PANEL	- - -	- CONDUIT
[OP]	- PV LINK OPTIMIZER		
■	- RAPID SHUTDOWN		



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REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal  
  
 DATE: 3/29/2021

PROJECT NAME & ADDRESS  
  
**PETER ORMUND  
 RESIDENCE**  
 1866 CHRISTIAN LIGHT RD.,  
 FUQUAY-VARINA, NC 27526

SHEET NAME  
**STRING  
 LAYOUT**

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

SHEET NUMBER  
**PV-2A**

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	25	HANWHA QCELL Q.PEAK DUO-G5 320 MODULES
OPTIMIZER	04	GENERAC PV LINK S2502 POWER OPTIMIZERS
GENERAC SNAP RS	25	GENERAC SNAPRS MODEL RS801
INVERTER	01	GENERAC PWRCELL X7602 7600W INVERTER
AC DISCONNECT	1	60A FUSED, (2) 40A FUSES, 240V, NEMA 3R, UL LISTED
SOLADECK	1	SOLADECK 600 V, NEMA 3R UL LISTED
RAILS	13	QRAIL LIGHT 14 FT. BLACK
SPLICE KIT	8	QSPLICE INTERNAL LIGHT
WEEB BMC	0	WEEB BMC MILL
MODULE CLAMPS	42	UNIVERSAL MID CLAMP
GROUNDING LUG	4	WEEB LUG W/ T-BOLT
END CLAMPS	16	UNIVERSAL END CLAMPS
ATTACHMENT	54	S-5! PROTEA BRACKET
T-BOLT	58	T-BOLT W/ NUT M8 X 20MM
L-FOOT	54	SINGLE - SLOT L-FOOT (QMC-LF A12)

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 3/29/2021

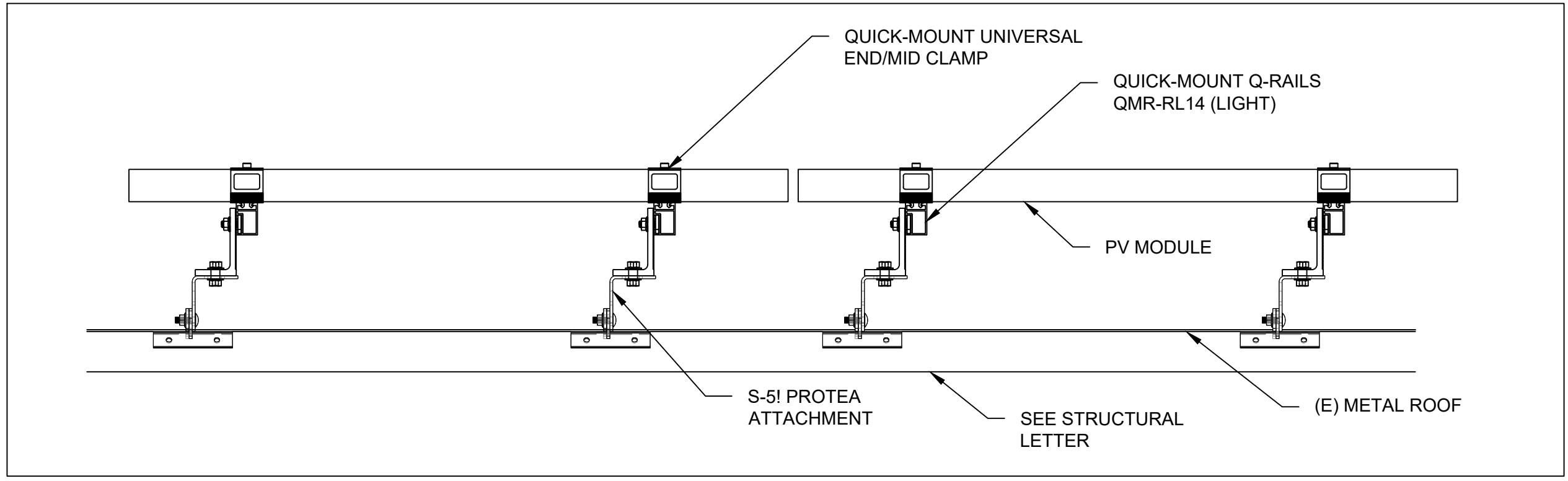
PROJECT NAME & ADDRESS

PETER ORMUND  
 RESIDENCE  
 1866 CHRISTIAN LIGHT RD.,  
 FUQUAY-VARINA, NC 27526

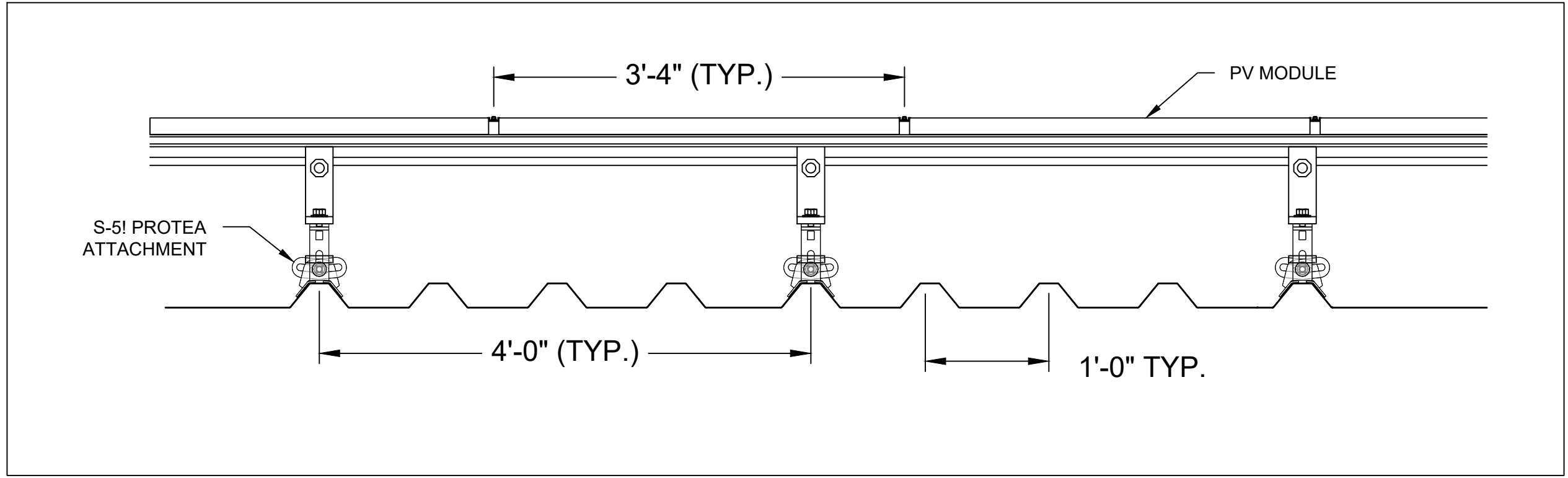
SHEET NAME  
 ATTACHMENT  
 DETAIL

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-3



**1** | STRUCTURAL ATTACHMENT (SIDE VIEW)  
 PV-3 | SCALE: NTS



**2** | ATTACHMENT DETAIL (enlarged view)  
 PV-3 | SCALE: NTS



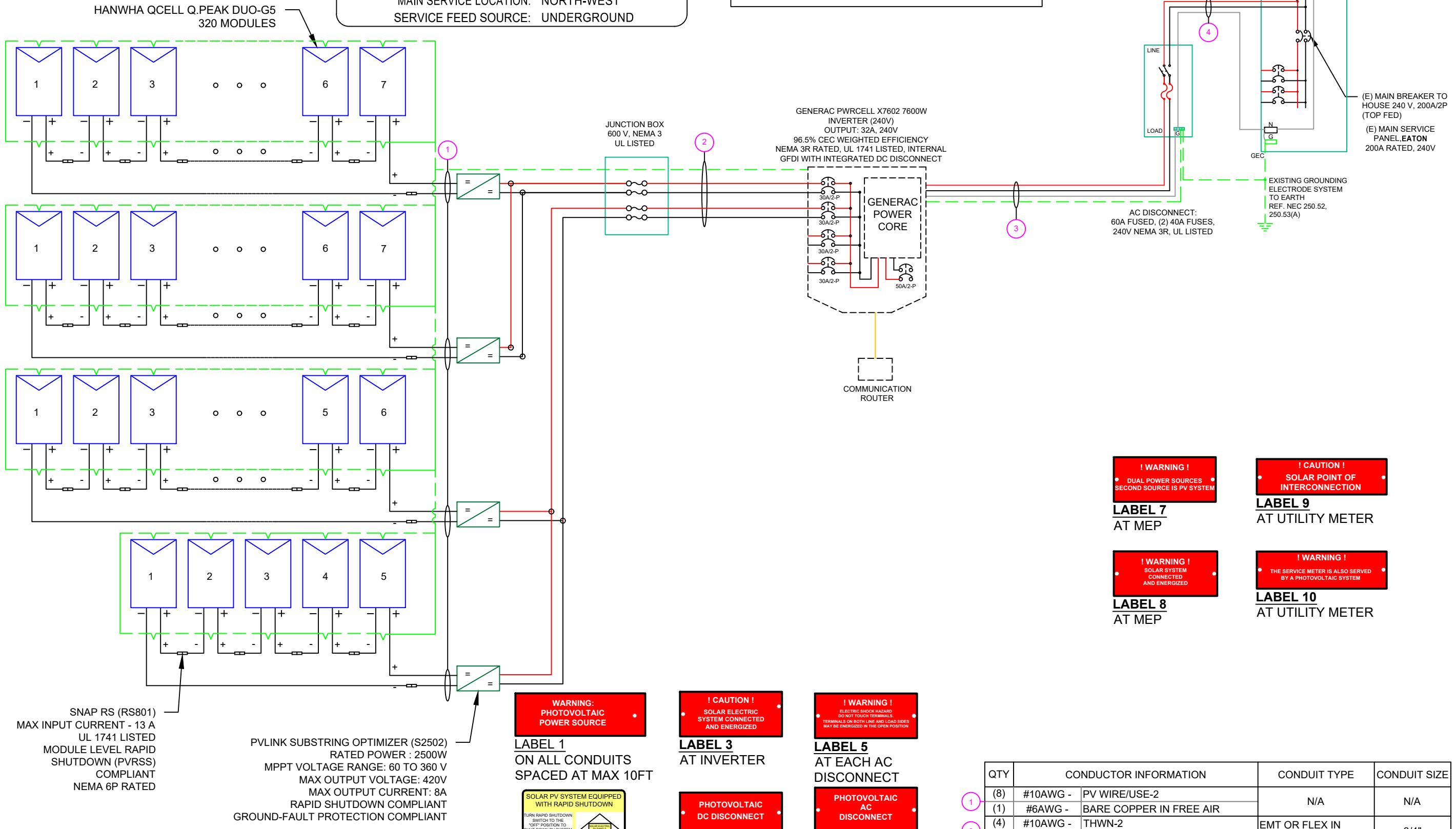
(25) HANWHA QCELL Q.PEAK DUO-G5 320 MODULES  
 (2) PV LINKS OF 7 MODULES &  
 (1) PV LINK OF 6 MODULES &  
 (1) PV LINK OF 5 MODULES CONNECTED IN SERIES

**SERVICE INFO**

UTILITY PROVIDER: SOUTH RIVER EMC  
 MAIN SERVICE VOLTAGE: 240V  
 MAIN PANEL BRAND: EATON  
 MAIN SERVICE PANEL: 200A  
 MAIN CIRCUIT BREAKER RATING: 200A  
 MAIN SERVICE LOCATION: NORTH-WEST  
 SERVICE FEED SOURCE: UNDERGROUND

**WIRE LEGEND**

- PV ARRAY +VE CONDUCTOR AND L1
- PV ARRAY -VE CONDUCTOR AND L2
- NEUTRAL CONDUCTOR
- EGC AND GEC
- SINGLE TWISTED PAIR, CAT 5 WIRE



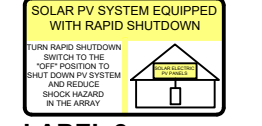
SNAP RS (RS801)  
 MAX INPUT CURRENT - 13 A  
 UL 1741 LISTED  
 MODULE LEVEL RAPID  
 SHUTDOWN (PVRSS)  
 COMPLIANT  
 NEMA 6P RATED

PV LINK SUBSTRING OPTIMIZER (S2502)  
 RATED POWER : 2500W  
 MPPT VOLTAGE RANGE: 60 TO 360 V  
 MAX OUTPUT VOLTAGE: 420V  
 MAX OUTPUT CURRENT: 8A  
 RAPID SHUTDOWN COMPLIANT  
 GROUND-FAULT PROTECTION COMPLIANT

**! WARNING !**  
 PHOTOVOLTAIC  
 POWER SOURCE  
**LABEL 1**  
 ON ALL CONDUITS  
 SPACED AT MAX 10FT

**! CAUTION !**  
 SOLAR ELECTRIC  
 SYSTEM CONNECTED  
 AND ENERGIZED  
**LABEL 3**  
 AT INVERTER

**! WARNING !**  
 ELECTRIC SHOCK HAZARD  
 DO NOT TOUCH TERMINALS.  
 TERMINALS ON BOTH LINE AND LOAD SIDES  
 MAY BE ENERGIZED IN THE OPEN POSITION  
**LABEL 5**  
 AT EACH AC  
 DISCONNECT



**LABEL 2**  
 AT INVERTER

**PHOTOVOLTAIC  
 DC DISCONNECT**  
**LABEL 4**  
 AT EACH DC  
 DISCONNECT

**PHOTOVOLTAIC  
 AC DISCONNECT**  
**LABEL 6**  
 AT EACH AC  
 DISCONNECT

**! WARNING !**  
 DUAL POWER SOURCES  
 SECOND SOURCE IS PV SYSTEM  
**LABEL 7**  
 AT MEP

**! CAUTION !**  
 SOLAR POINT OF  
 INTERCONNECTION  
**LABEL 9**  
 AT UTILITY METER

**! WARNING !**  
 SOLAR SYSTEM  
 CONNECTED  
 AND ENERGIZED  
**LABEL 8**  
 AT MEP

**! WARNING !**  
 THE SERVICE METER IS ALSO SERVED  
 BY A PHOTOVOLTAIC SYSTEM  
**LABEL 10**  
 AT UTILITY METER

QTY	CONDUCTOR INFORMATION	CONDUIT TYPE	CONDUIT SIZE
1	(8) #10AWG - PV WIRE/USE-2	N/A	N/A
2	(1) #6AWG - BARE COPPER IN FREE AIR		
3	(4) #10AWG - THWN-2	EMT OR FLEX IN ATTIC	3/4"
4	(1) #6AWG - THWN-2 GND		
5	(3) #6AWG - THWN-2	EMT OR FLEX	3/4"
6	(1) #6AWG - THWN-2 GND		
7	(3) #6AWG - THWN-2	EMT OR FLEX	3/4"

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**REVISIONS**

DESCRIPTION	DATE	REV
(E) MAIN BREAKER TO HOUSE 240 V, 200A/2P (TOP FED)		
(E) MAIN SERVICE PANEL EATON 200A RATED, 240V		

Signature with Seal  
 DATE: 3/29/2021

PROJECT NAME & ADDRESS  
**PETER ORMUND  
 RESIDENCE**  
 1866 CHRISTIAN LIGHT RD.,  
 FUQUAY-VARINA, NC 27526

SHEET NAME  
**ELECTRICAL LINE  
 DIAGRAM**

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

SHEET NUMBER  
**PV-4**

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	HANWHA QCELL Q.PEAK DUO-G5 320 MODULES
VMP	33.32V
IMP	9.60A
VOC	40.13V
ISC	10.09A
TEMP. COEFF. VOC	-0.28%/°C
PTC RATING	297W
MODULE DIMENSION	66.3"L x 39.4"W x 1.26"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	GENERAC PWRCELL X7602
AC POWER OUTPUT (LOADS/GRID)	7600VA
AC POWER OUTPUT (BACKUP)	8000VA
NOMINAL OUTPUT VOLTAGE	240 VAC
MAX OUTPUT CURRENT @240V (LOADS/GRID)	32A
MAX OUTPUT CURRENT @240V (BACKUP)	50A
NOMINAL DC INPUT VOLTAGE	380Vdc
MAX DC INPUT VOLTAGE	420Vdc
CEC WEIGHTED EFFICIENCY	96.5%
MAX DC POWER (PV)	10000W
MAX INPUT CURRENT (PV)	20Adc
CONT. PEAK POWER (BATTERY)	8000W

SERIES SUB STRING OPTIMIZER SPECIFICATIONS	
MANUFACTURER / MODEL #	PV LINK S2502
RATED POWER	2500W
MPPT VOLTAGE RANGE	60-360 Vmp
MAXIMUM INPUT VOLTAGE	420Voc
MAXIMUM OUTPUT	420 Adc
NOMINAL OUTPUT	380 Vdc
MAXIMUM OUTPUT CURRENT	8 A
MAXIMUM SHORT CIRCUIT CURRENT	18 A

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-19°
AMBIENT TEMP (HIGH TEMP 2%)	34°
CONDUIT HEIGHT	0.5"
ROOF TOP TEMP	56°

**DC CONDUCTOR AMPACITY CALCULATIONS:  
ARRAY TO JUNCTION BOX:**

EXPECTED WIRE TEMP (In Celsius)	56°
TEMP. CORRECTION PER NEC TABLE 310.15 (B)(2)(a)	0.71
NO. OF CURRENT CARRYING CONDUCTORS	8
CONDUIT FILL CORRECTION PER NEC TABLE 310.15(B)(3)(a)	0.7
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY PER NEC TABLE 310.15(B)(16)	40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	10A
1.25 X I <sub>max</sub>	
DERATED AMPACITY OF CIRCUIT CONDUCTOR	
TEMP. CORRECTION PER TABLE 310.15 (B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY 310.15 (B)(16)	19.88A
Result should be greater than (10A) otherwise less the entry for circuit conductor size and ampacity	

**FROM JUNCTION BOX TO INVERTER:**

EXPECTED WIRE TEMP (In Celsius)	56°
TEMP. CORRECTION PER NEC TABLE 310.15 (B)(2)(a)	0.71
NO. OF CURRENT CARRYING CONDUCTORS	4
CONDUIT FILL CORRECTION PER NEC TABLE 310.15(B)(3)(a)	0.8
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY PER NEC TABLE 310.15(B)(16)	40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	20A
1.25 X I <sub>max</sub> X # of PV LINKS	
DERATED AMPACITY OF CIRCUIT CONDUCTOR	
TEMP. CORRECTION PER TABLE 310.15 (B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY 310.15 (B)(16)	22.72A
Result should be greater than (20A) otherwise less the entry for circuit conductor size and ampacity	

**AC CONDUCTOR AMPACITY CALCULATIONS:  
FROM INVERTER TO MEP:**

No. OF INVERTER	1
EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER NEC TABLE 310.15(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC TABLE 310.15(B)(3)(a)	1
CIRCUIT CONDUCTOR SIZE	6 AWG
CIRCUIT CONDUCTOR AMPACITY PER NEC TABLE 310.15(B)(16)	75A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	40A
1.25 X MAX INVERTER OUTPUT CURRENT (LOADS/GRID)	
DERATED AMPACITY OF CIRCUIT CONDUCTOR	
TEMP. CORRECTION PER TABLE 310.15 (B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY 310.15 (B)(16)	72A
Result should be greater than (40A) otherwise less the entry for circuit conductor size and ampacity	



REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 3/29/2021

PROJECT NAME & ADDRESS

**PETER ORMUND  
RESIDENCE**  
1866 CHRISTIAN LIGHT RD.,  
FUQUAY-VARINA, NC 27526

SHEET NAME  
**WIRING  
CALCULATIONS**

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

SHEET NUMBER  
**PV-5**

**ELECTRICAL NOTES**

- 1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- 2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- 3.) 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.
- 4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- 5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- 6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- 7.) 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.
- 9.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- 10.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE





# Q.PEAK DUO-G5 315-330

## Q.ANTUM SOLAR MODULE

The new Q.PEAK DUO-G5 solar module from Q CELLS impresses thanks to innovative Q.ANTUM DUO Technology, which enables particularly high performance on a small surface. Q.ANTUM's world-record-holding cell concept has now been combined with state-of-the-art circuitry half cells and a six-busbar design, thus achieving outstanding performance under real conditions - both with low-intensity solar radiation as well as on hot, clear summer days.

- Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY**  
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.9%.
- INNOVATIVE ALL-WEATHER TECHNOLOGY**  
Optimal yields, whatever the weather with excellent low-light and temperature behavior.
- ENDURING HIGH PERFORMANCE**  
Long-term yield security with Anti LID and Anti PID Technology<sup>1</sup>, Hot-Spot Protect and Traceable Quality Tra.Q™.
- EXTREME WEATHER RATING**  
High-tech aluminum alloy frame, certified for high snow (5400Pa) and wind loads (4000Pa) regarding IEC.
- A RELIABLE INVESTMENT**  
Inclusive 12-year product warranty and 25-year linear performance guarantee<sup>2</sup>.
- STATE OF THE ART MODULE TECHNOLOGY**  
Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

THE IDEAL SOLUTION FOR:

- Rooftop arrays on residential buildings
- Rooftop arrays on commercial/industrial buildings

Engineered in Germany

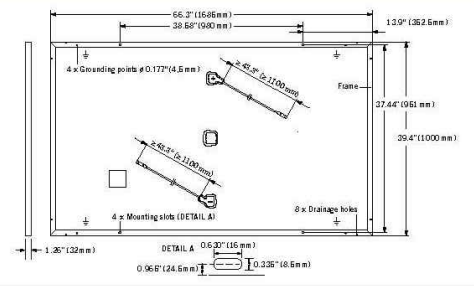


<sup>1</sup> APT test conditions according to IEC/TS 62804-1:2015, method B (-1500V, 168h)  
<sup>2</sup> See data sheet on rear for further information.



### MECHANICAL SPECIFICATION

<b>Format</b>	66.3 in x 39.4 in x 1.26 in (including frame) (1685 mm x 1000 mm x 32 mm)
<b>Weight</b>	41.2 lbs (18.7 kg)
<b>Front Cover</b>	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
<b>Back Cover</b>	Composite film
<b>Frame</b>	Black anodized aluminum
<b>Cell</b>	6 x 20 monocrystalline Q.ANTUM solar half-cells
<b>Junction box</b>	2.76-3.35 in x 1.97-2.76 in x 0.51-0.83 in (70-85 mm x 50-70 mm x 13-21 mm), decentralized, IP67
<b>Cable</b>	4 mm <sup>2</sup> Solar cable; (+) ≥ 43.3 in (1100 mm), (-) ≥ 43.3 in (1100 mm)
<b>Connector</b>	Multi-Contact MC4, IP68

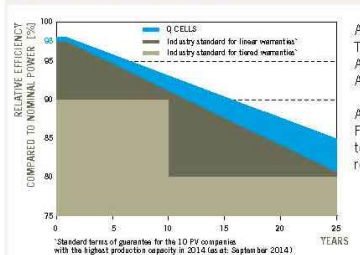


### ELECTRICAL CHARACTERISTICS

POWER CLASS		315	320	325	330	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5W / -0W)						
Minimum	<b>Power at MPP<sup>1</sup></b>	<b>P<sub>MPP</sub></b> [W]	315	320	325	330
	<b>Short Circuit Current<sup>1</sup></b>	<b>I<sub>SC</sub></b> [A]	10.04	10.09	10.14	10.20
	<b>Open Circuit Voltage<sup>1</sup></b>	<b>V<sub>OC</sub></b> [V]	39.87	40.13	40.40	40.66
	<b>Current at MPP<sup>1</sup></b>	<b>I<sub>MPP</sub></b> [A]	9.55	9.60	9.66	9.71
	<b>Voltage at MPP</b>	<b>V<sub>MPP</sub></b> [V]	32.98	33.32	33.65	33.98
	<b>Efficiency<sup>1</sup></b>	<b>η</b> [%]	≥ 18.7	≥ 19.0	≥ 19.3	≥ 19.6
	MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT <sup>2</sup>					
Minimum	<b>Power at MPP</b>	<b>P<sub>MPP</sub></b> [W]	235.3	239.0	242.8	246.5
	<b>Short Circuit Current</b>	<b>I<sub>SC</sub></b> [A]	8.09	8.13	8.17	8.22
	<b>Open Circuit Voltage</b>	<b>V<sub>OC</sub></b> [V]	37.52	37.77	38.02	38.27
	<b>Current at MPP</b>	<b>I<sub>MPP</sub></b> [A]	7.52	7.56	7.60	7.64
	<b>Voltage at MPP</b>	<b>V<sub>MPP</sub></b> [V]	31.30	31.62	31.94	32.25

<sup>1</sup> Measurement tolerances P<sub>MPP</sub> ± 3%; I<sub>SC</sub>, V<sub>OC</sub> ± 5% at STC: 1000 W/m<sup>2</sup>, 25 ± 2°C, AM 1.5 G according to IEC 60904-3 · <sup>2</sup> 800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5 G

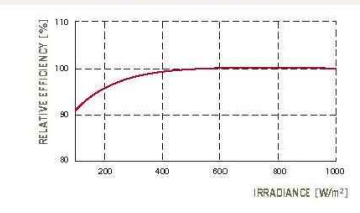
### Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.54% degradation per year. At least 93.1% of nominal power up to 10 years. At least 85% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organization of your respective country.

### PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000W/m<sup>2</sup>).

### TEMPERATURE COEFFICIENTS

<b>Temperature Coefficient of I<sub>SC</sub></b>	<b>α</b> [%/K]	+0.04	<b>Temperature Coefficient of V<sub>OC</sub></b>	<b>β</b> [%/K]	-0.28
<b>Temperature Coefficient of P<sub>MPP</sub></b>	<b>γ</b> [%/K]	-0.37	<b>Normal Module Operating Temperature</b>	<b>NMOT</b> [°F]	109 ± 5.4 (43 ± 3 °C)

### PROPERTIES FOR SYSTEM DESIGN

<b>Maximum System Voltage V<sub>sys</sub></b>	[V]	1000 (IEC) / 1000 (UL)	<b>Safety Class</b>	II
<b>Maximum Series Fuse Rating</b>	[A DC]	20	<b>Fire Rating</b>	C (IEC) / TYPE 1 (UL)
<b>Max. Design Load, push<sup>2</sup></b>	[lbs/ft <sup>2</sup> ]	75 (3600 Pa) / 55 (2667 Pa)	<b>Permitted module temperature on continuous duty</b>	-40°F up to +185°F (-40°C up to +85°C)
<b>Max. Test Load, Push / Pull<sup>2</sup></b>	[lbs/ft <sup>2</sup> ]	113 (5400 Pa) / 84 (4000 Pa)	<sup>2</sup> see installation manual	

### QUALIFICATIONS AND CERTIFICATES

UL 1703; VDE Quality Tested; CE-compliant; IEC 61215:2016; IEC 61730:2011, application class A



### PACKAGING INFORMATION

<b>Number of Modules per Pallet</b>	32
<b>Number of Pallets per 53' Trailer</b>	30
<b>Number of Pallets per 40' High Cube Container</b>	26
<b>Pallet Dimensions (L x W x H)</b>	69.3 in x 45.3 in x 46.9 in (1760 mm x 1150 mm x 1190 mm)
<b>Pallet Weight</b>	1415 lbs (642 kg)

NOTE: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.  
300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA | TEL +1 949 748 69 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

Specifications subject to technical changes © Hanwha Q CELLS Q.PEAK DUO-G5\_315-330\_2018-03\_Rev03\_MJA



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DESCRIPTION	DATE	REV

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DATE: 3/29/2021

### PROJECT NAME & ADDRESS

PETER ORMUND  
RESIDENCE  
1866 CHRISTIAN LIGHT RD.,  
FUQUAY-VARINA, NC 27526

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-6



**GENERAC**

# 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
MAX. 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	60 Hz
MAXIMUM CONTINUOUS OUTPUT CURRENT:	32 A, RMS	32 A, RMS
GROUND-FAULT ISOLATION DETECTION:	Included	Included
CHARGE BATTERY FROM AC:	Yes	Yes
THD (CURRENT):	< 2%	< 2%
TYPICAL NIGHTTIME POWER CONSUMPTION:	< 7 W	< 7 W

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

AC OUTPUT/ISLANDED	MODEL X7602	MODEL X11402
MAX. CONT. AC POWER @ 40°C (104°F) W/ SINGLE 6 MODULE BATTERY CABINET <sup>1</sup> :	9,000 W	9,000 W
MAX. CONT. AC POWER @ 40°C (104°F) WITH 2 BATTERY CABINETS (8 MODULES MINIMUM):	11,000 W	9,600-11,000 W <sup>2</sup>
MAX. CONT. AC POWER @ 50°C (122°F):	8,800 W	7,500-8,800 W <sup>2</sup>
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	60 Hz
THD (VOLTAGE):	< 2%	< 2%
AUTOMATIC SWITCHOVER TIME:	< 1 Seconds	< 1 Seconds

<sup>1</sup>Peak Performance

<sup>2</sup>In Island mode X11402 protected loads only supply 2 phases 120 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>3</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>3</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>4</sup>
PROTECTION RATING:	NEMA 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:	15 kW

<sup>3</sup>3Ø Inverters offer islanding for 1Ø loads.

<sup>4</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.

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DATE: 3/29/2021

PROJECT NAME & ADDRESS

PETER ORMUND  
RESIDENCE  
1866 CHRISTIAN LIGHT RD.,  
FUQUAY-VARINA, NC 27526

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-7



**GENERAC**

# SnapRS™

Inline Disconnect Switch  
Model: APKE00011  
Certification Model Reference: RS801



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.

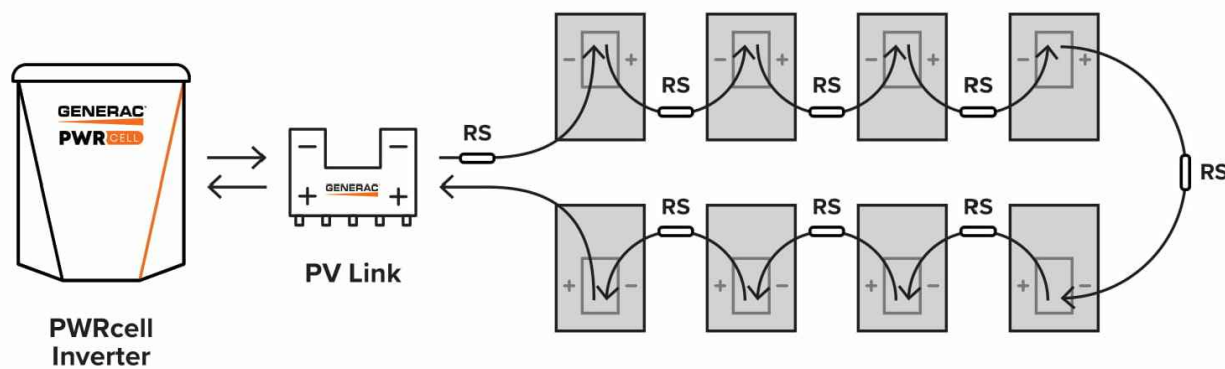


Diagram is applicable for most 60 cell PV modules. Modules with higher cell count may require a different arrangement. Contact Generac for more details.

## Specifications

SnapRS™ (APKE00011)	
PV MODULE MAX VOC:	75 V
EFFICIENCY:	99.8%*
MAX INPUT CURRENT:	13 A
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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PETER ORMUND  
RESIDENCE  
1866 CHRISTIAN LIGHT RD.,  
FUQUAY-VARINA, NC 27526

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

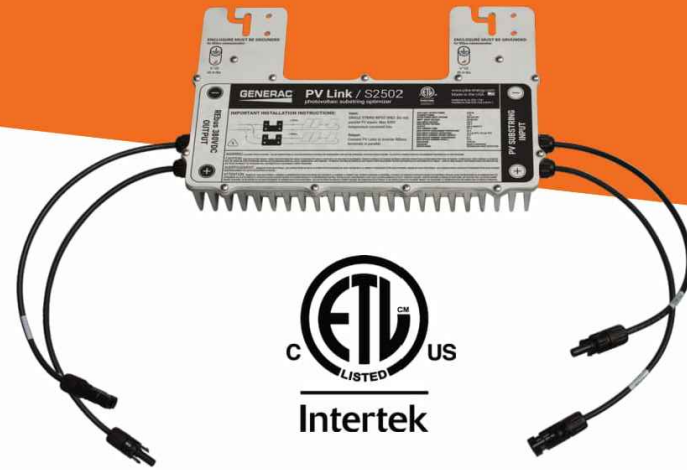
PV-8



**GENERAC**

# PV Link™

2500W MPPT Substring Optimizer  
 Model: APKE00010  
 Certification Model Reference: S2502



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.

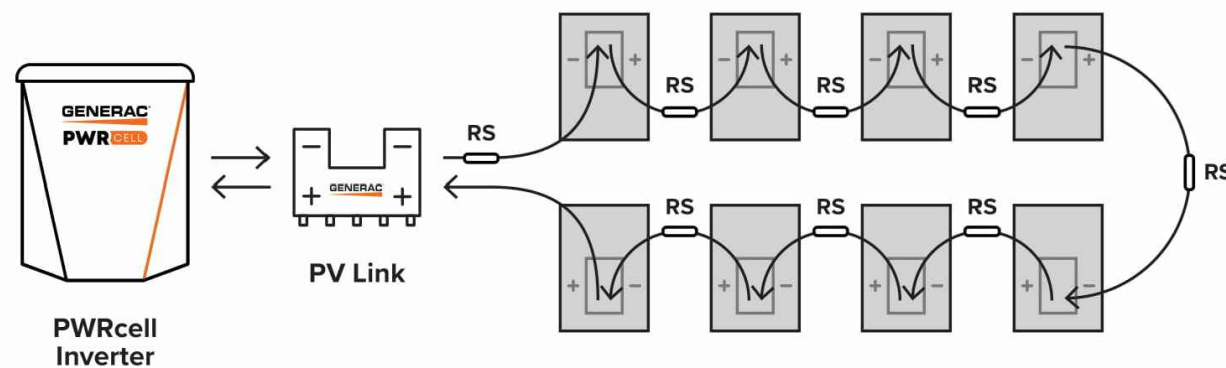


Diagram is applicable for most 60 cell PV modules. Modules with higher cell count may require a different arrangement. Contact Generac for more details.

## 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 1 AFCI, Integrated), PVRSE
MAX OPERATING TEMP: FAHRENHEIT (CELSIUS)	158 °F (70 °C)
SYSTEM MONITORING:	PWRview™ Web Portal and Mobile App
ENCLOSURE:	Type 3R
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

PETER ORMUND  
 RESIDENCE  
 1866 CHRISTIAN LIGHT RD.,  
 FUQUAY-VARINA, NC 27526

SHEET NAME  
**EQUIPMENT  
 SPECIFICATION**

SHEET SIZE

**ANSI B  
 11" X 17"**

SHEET NUMBER

**PV-9**





## QRail™ — Fully Integrated Mounting and Racking System

The QRail Series is a strong and versatile solar array mounting system that provides unrivaled benefits to solar designers and installers. Combined with Quick Mount PV's industry-leading waterproof mounts, QRail offers a complete racking solution for mounting solar modules on any roof.



Easily design array configurations with the QDesign software application. Generate complete engineering reports and calculate a precise bill of materials for all the mounting, racking and accessories needed for a complete solar array.

## Comprehensive, One-Source Solution

QRail, together with Quick Mount PV's waterproof mounting products, provides the benefit of a single-sourced, seamlessly integrated rooftop installation that works with all roof types — composition/asphalt shingles, flat or curved tile, metal shingle, shake, slate and low slope roofs. The QRail system also works with any roof attachment system for maximum flexibility.

## Superior Strength and Versatility

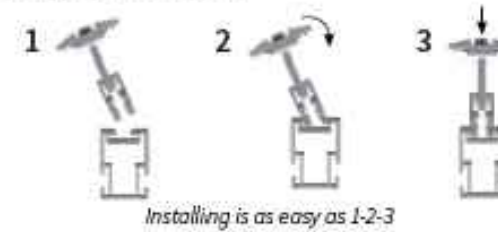
QRail is engineered for optimal structural performance. The system is certified to UL 2703, fully code compliant and backed by a 25-year warranty. QRail is available in Light, Standard and Heavy versions to match all geographic locations. QRail is compatible with virtually all modules and works on a wide range of pitched roof surfaces. Modules can be mounted in portrait or landscape orientation in standard or shared-rail configurations.



## Fast, Simple Installation: It Just Clicks

### QClick Technology™

The universal mid and end clamps use QClick technology to simply "click" into the rail channel and remain upright, ready to accept the module. The pre-assembled clamps fit virtually all module frames and require no extra hardware, eliminating pre-loading and reducing installation time.



**UNIVERSAL END CLAMP**  
2 clamps for modules from  
30-45mm or 38-50mm thick



**UNIVERSAL BONDED MID CLAMP**  
2 clamps for modules from  
30-45mm or 38-50mm thick

### QSplice™ Technology

QRail's innovative internal QSplice installs in seconds, requiring no tools or screws. Simply insert QSplice into the rail and slide the other rail on to create a fully structural, bonded splice. An external splice is also available.



## Fully Integrated Electrical Bonding

The QRail system provides an integrated electrical bonding path, ensuring that all exposed metal parts and the solar module frames are electrically connected. All electrical bonds are created when the components are installed and tightened down.



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1866 CHRISTIAN LIGHT RD.,  
FUQUAY-VARINA, NC 27526

SHEET NAME

EQUIPMENT  
SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-10



# QRail™ Configurations



Item Code	Part Number	Description	Finish
QMR-RL14 A 60	800	QRail Light, 14 ft., 60 Pack	Mill
QMR-RL17.3 A 60	801	QRail Light, 17.3 ft., 60 Pack	Mill
QMR-RL14 B 60	805	QRail Light, 14 ft., 60 Pack	Black
QMR-RL17.3 B 60	806	QRail Light, 17.3 ft., 60 Pack	Black
QMR-RS14 A 60	810	QRail Standard, 14 ft., 60 Pack	Mill
QMR-RS17.3 A 60	811	QRail Standard, 17.3 ft., 60 Pack	Mill
QMR-RS14 B 60	815	QRail Standard, 14 ft., 60 Pack	Black
QMR-RS17.3 B 60	816	QRail Standard, 17.3 ft., 60 Pack	Black
QMR-RH14 A 60	820	QRail Heavy, 14 ft., 60 Pack	Mill
QMR-RH17.3 A 60	821	QRail Heavy, 17.3 ft., 60 Pack	Mill
QMR-RH14 B 60	825	QRail Heavy, 14 ft., 60 Pack	Black
QMR-RH17.3 B 60	826	QRail Heavy, 17.3 ft., 60 Pack	Black

# QSplice™ Internal Structural Splice



Item Code	Part Number	Description	Finish
QMR-ISL A 15	830	QSplice Internal, Light, 15 Pack	Mill
QMR-ISS A 15	831	QSplice Internal, Standard, 15 Pack	Mill
QMR-ISH A 15	832	QSplice Internal, Heavy, 15 Pack	Mill

# QSplice™ External Structural Splice



Item Code	Part Number	Description	Finish
QMR-ESS A 15	834	QSplice External, Standard, 15 Pack	Mill
QMR-ESH A 15	835	QSplice External, Heavy, 15 Pack	Mill

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 FUQUAY-VARINA, NC 27526

SHEET NAME  
**EQUIPMENT  
 SPECIFICATION**

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

SHEET NUMBER  
**PV-11A**



## Universal End Clamp with QClick™ Technology



Black

Mill

Item Code	Part Number	Description	Finish
QMR-UEC3045 A 20	860	Universal End Clamp, 30-45mm, 20 Pack	Mill
QMR-UEC3850 A 20	861	Universal End Clamp, 38-50mm, 20 Pack	Mill
QMR-UEC3045 B 20	865	Universal End Clamp, 30-45mm, 20 Pack	Black
QMR-UEC3850 B 20	866	Universal End Clamp, 38-50mm, 20 Pack	Black
QMR-UEC3045BP A 20	862	Universal End Clamp, 30-45mm, w/ Bonding, 20 Pack	Mill
QMR-UEC3850BP A 20	863	Universal End Clamp, 38-50mm, w/ Bonding, 20 Pack	Mill
QMR-UEC3045BP B 20	867	Universal End Clamp, 30-45mm, w/ Bonding, 20 Pack	Black
QMR-UEC3850BP B 20	868	Universal End Clamp, 38-50mm, w/ Bonding, 20 Pack	Black

## Mid Clamp with QClick™ Technology



Black

Mill

Item Code	Part Number	Description	Finish
QMR-UMC3045BP 1.2 A 20	872	Universal Mid Clamp, 30-45mm, w/ Bonding, 20 Pack	Mill
QMR-UMC3850BP 1.2 A 20	873	Universal Mid Clamp, 38-50mm, w/ Bonding, 20 Pack	Mill
QMR-UMC3045BP 1.2 B 20	877	Universal Mid Clamp, 30-45mm, w/ Bonding, 20 Pack	Black
QMR-UMC3850BP 1.2 B 20	878	Universal Mid Clamp, 38-50mm, w/ Bonding, 20 Pack	Black

## Single-Slot L-Foot



Item Code	Part Number	Description	Finish
QMC-LF A 12	692	Single-slot L-foot, 12 Pack	Mill
QMC-LF B 12	693	Single-slot L-foot, 12 Pack	Black

## End Caps



Heavy

Standard

Light

Item Code	Part Number	Description	Finish
QMR-CPL B 50	885	End Cap Light, 50 Pack	Black
QMR-CPS B 50	886	End Cap Standard, 50 Pack	Black
QMR-CPH B 50	887	End Cap Heavy, 50 Pack	Black



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 1866 CHRISTIAN LIGHT RD.,  
 FUQUAY-VARINA, NC 27526

### SHEET NAME

EQUIPMENT  
 SPECIFICATION

### SHEET SIZE

ANSI B  
 11" X 17"

### SHEET NUMBER

PV-11B

### T-Bolt



Item Code	Part Number	Description	Finish
QMR-TB A 300	880	T-Bolt w/ Nut, 300 Pack	stainless steel

### Grounding Lug



Item Code	Part Number	Description	Finish
QMR-GL A 50	890	WEEB Lug w/ T-Bolt, 50 Pack	n/a

### Wire Clip



*Works with both PV and Trunk Cabling*

Item Code	Part Number	Description	Finish
QMR-WCA 300	892	Trunk/PV Cable, 300 Pack	stainless steel

### WEEB BMC



Item Code	Part Number	Description	Finish
QMR-ECWA 50	891	WEEB BMC, 50 Pack	stainless steel



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EQUIPMENT  
 SPECIFICATION

#### SHEET SIZE

ANSI B  
 11" X 17"

#### SHEET NUMBER

PV-11C



# S-5!<sup>®</sup>

## The Right Way!

### ProteaBracket™

ProteaBracket™ is the most versatile standing seam metal roof attachment solution on the market, fitting most trapezoidal sheet profiles with and without intermediate insulation. It features an adjustable attachment base and multiple solar module attachment options (illustrated on back) to accommodate varying widths and heights. There are no messy sealants to apply and no chance for leaks; the ProteaBracket comes with factory-applied, adhesive rubber sealant to ensure quick installation and a weather-proof fit.

Installation is simple! The ProteaBracket is mounted directly onto the crown profile, straddling the profile. No surface preparation is necessary; simply wipe away excess oil and debris, align, and apply. Secure ProteaBracket through its pre-punched holes, using the hardened drill point S-5!<sup>®</sup> screws.

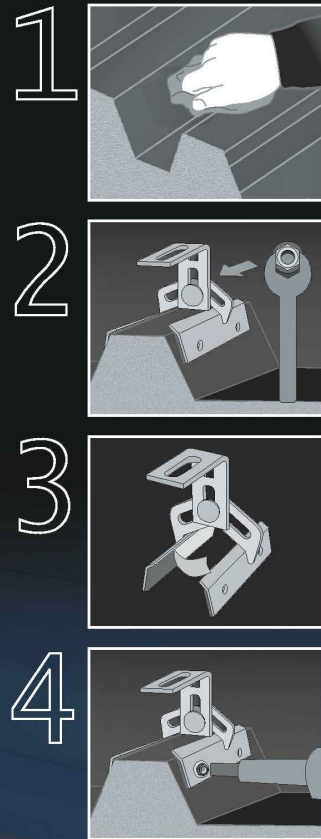
ProteaBracket is the perfect match for our S-5-PV Kit and spares you the hassle of cold-bridging! For a solar attachment solution that is both economical and easy to use, choose ProteaBracket.\*

\*When ProteaBracket is used in conjunction with the S-5-PV Kit, an additional nut is required during installation.

S-5!<sup>®</sup> ProteaBracket™ is a versatile bracket that adjusts easily to most trapezoidal roof profiles.

ProteaBracket™

888-825-3432 | www.S-5.com



# S-5!<sup>®</sup>

## The Right Way!

ProteaBracket™ is the perfect solar attachment solution for most trapezoidal exposed-fastened metal roof profiles! No messy sealants to apply. The factory-applied adhesive rubber sealant weather-proofs and makes installation easy!

Each ProteaBracket™ comes with a factory-applied, adhesive rubber sealant on the base. A structural A2 stainless steel bimetal attachment bracket, ProteaBracket is compatible with most common metal roofing materials. All four pre-punched holes must be used to achieve tested strength. Mounting hardware is furnished with the ProteaBracket. For design assistance, ask your distributor, or visit [www.S-5.com](http://www.S-5.com) for the independent lab test data that can be used for load-critical designs and applications. Also, please visit our website for more information including metallurgical compatibilities and specifications. S-5!<sup>®</sup> holding strength is unmatched in the industry.

### Multiple Attachment Options:

Side Rail Option



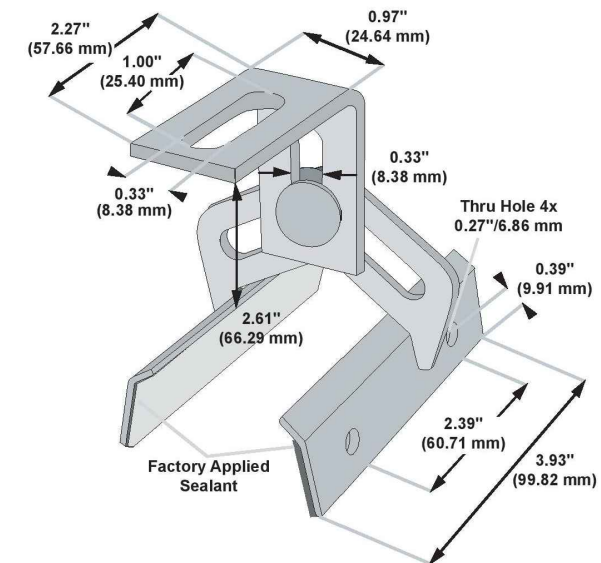
Top Rail Option



S-5-PV Kit Option

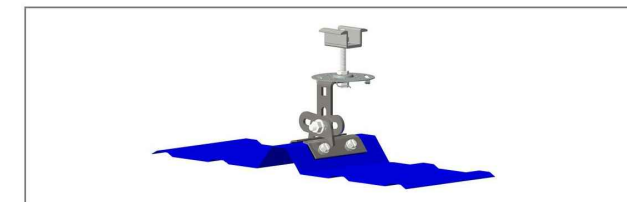


### ProteaBracket™



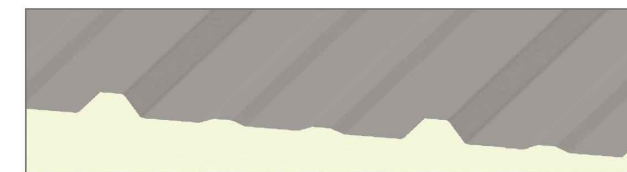
Please note: All measurements are rounded to the second decimal place.

### Example Applications



S-5-PV Kit demonstrated with a ProteaBracket on a trapezoidal profile.

### Example Profile



**S-5!<sup>®</sup> Warning! Please use this product responsibly!**  
 Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, bolt torque, patents, and trademarks, visit the S-5! website at [www.S-5.com](http://www.S-5.com).  
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REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal  
  
 DATE: 3/29/2021

PROJECT NAME & ADDRESS

PETER ORMUND  
 RESIDENCE  
 1866 CHRISTIAN LIGHT RD.,  
 FUQUAY-VARINA, NC 27526

SHEET NAME  
**EQUIPMENT SPECIFICATION**

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

SHEET NUMBER  
**PV-12**