

# PROJECT DESCRIPTION:

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

NEW SYSTEM SIZE: 5.44 kW DC STC  
 EXISTING SYSTEM SIZE: 3.20 kW DC STC  
 TOTAL SYSTEM SIZE: 8.64kW DC STC

ARRAY AREA: ROOF#1 - 181.40 SQ FT  
 ARRAY AREA: ROOF#2 - 126.98 SQ FT

### APPLICABLE CODES & STANDARDS

NCBC 2018  
 NEC 2017

### AUTHORITIES HAVING JURISDICTION

BUILDING : HARNETT COUNTY  
 ZONING : HARNETT COUNTY  
 UTILITY : DUKE ENERGY PROGRESS

### EQUIPMENT SUMMARY

36 HANWHA QCELL Q.PEAK DUO-G5 320 MODULES  
 06 GENERAC PV LINK S2502 POWER OPTIMIZERS  
 02 GENERAC PWRCELL X7602 7600W INVERTERS

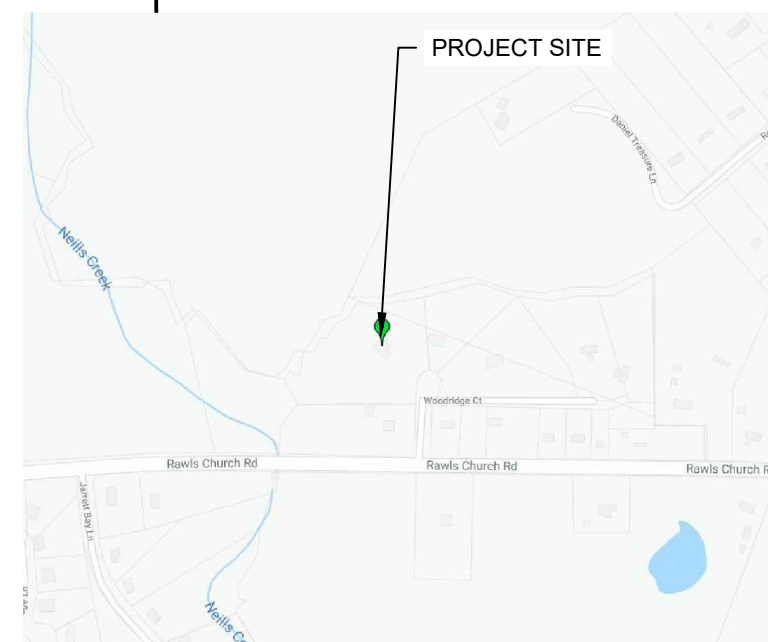
### DESIGN SPECIFICATIONS

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



2 HOUSE PHOTO

PV-1 SCALE: NTS



3 VICINITY MAP

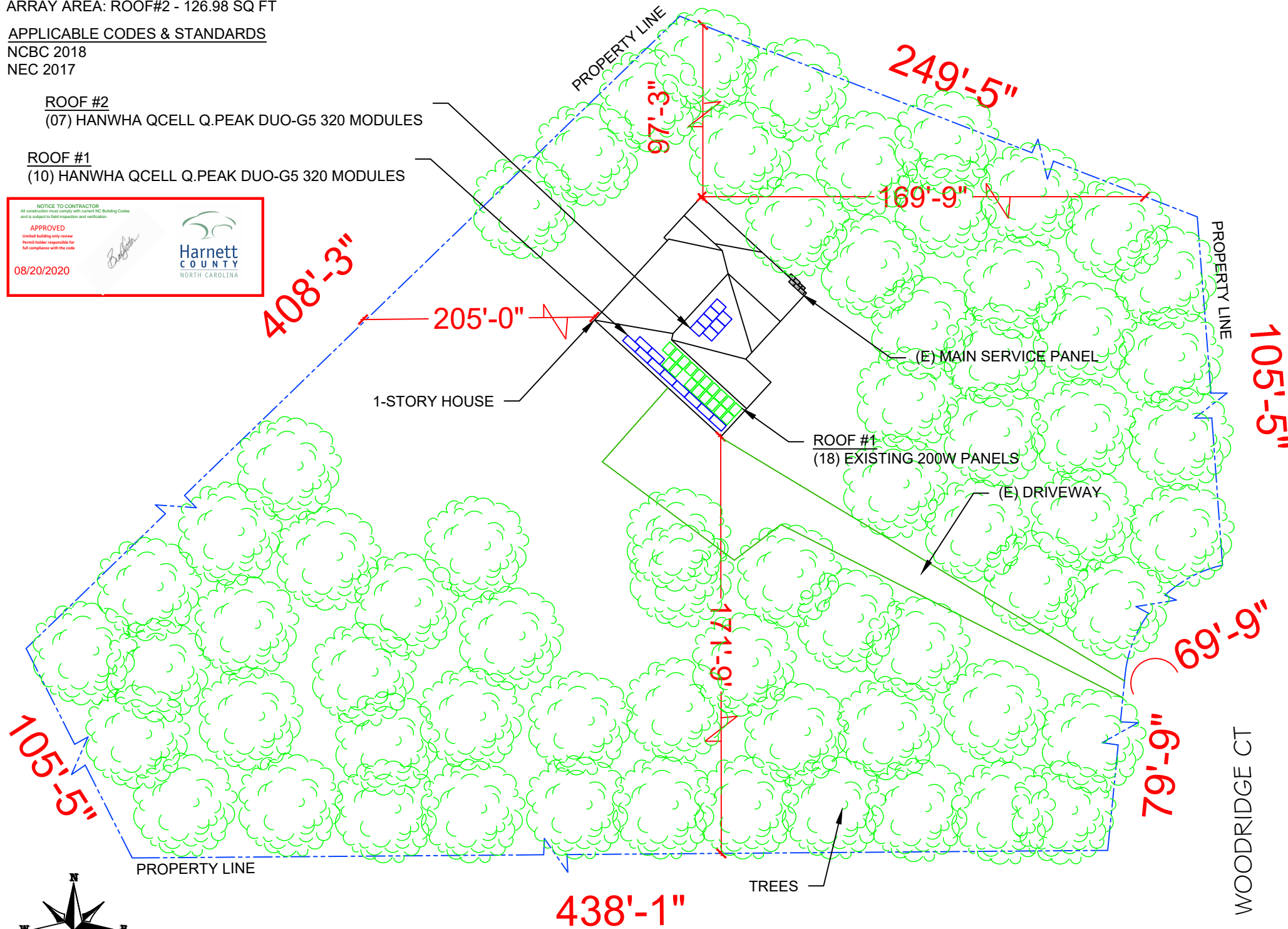
PV-1 SCALE: NTS

### SHEET INDEX

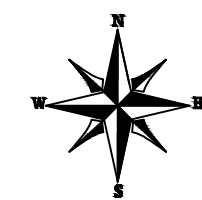
- PV-1 PLOT PLAN & VICINITY MAP
- PV-2 ROOF PLAN & MODULES
- PV-2A STRING LAYOUT
- PV-3 ATTACHMENT DETAIL
- PV-4 ELECTRICAL LINE DIAGRAM
- PV-5 WIRING CALCULATIONS
- PV-6 to 12 EQUIPMENT SPECIFICATIONS

ROOF #2  
 (07) HANWHA QCELL Q.PEAK DUO-G5 320 MODULES

ROOF #1  
 (10) HANWHA QCELL Q.PEAK DUO-G5 320 MODULES



INSTALL NOTE - ADDING (17) HANWHA 320W  
 PANELS TO EXISTING (18) 200 W PANELS



1 PLOT PLAN & VICINITY MAP

PV-1 SCALE: Custom

**POWERHOME**  
 POWER HOME SOLAR, LLC  
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 919 N. MAIN ST.  
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 Email: info@powerhome.com  
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REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal  
 DATE: 07/21/2020

### PROJECT NAME & ADDRESS

ANTHONY J MENNELLA  
 RESIDENCE  
 57 WOODRIDGE CT,  
 ANGIER, NC - 27501

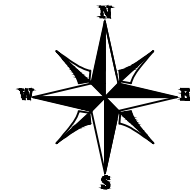
SHEET NAME  
**PLOT PLAN & VICINITY MAP**

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

SHEET NUMBER  
**PV-1**

# MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 17 MODULES  
 MODULE TYPE = HANWHA QCELL Q.PEAK DUO-G5 320 MODULES  
 MODULE WEIGHT = 41.2 LBS / 18.7 KG.  
 MODULE DIMENSIONS = 66.3"x 39.4" = 18.14 SF  
 UNIT WEIGHT OF ARRAY = 2.27 PSF



ROOF DESCRIPTION				
ROOF TYPE			COMPOSITION SHINGLE	
ROOF	ROOF TILT	AZIMUTH	FRAMING SIZE	FRAMING SPACING
#1	42.51°	222°	SEE STRUCTURAL LETTER	
#2	42.51°	133°		

ARRAY AREA & ROOF AREA CALC'S				
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	10	181.40	588.98	31
#2	7	126.98	371	34

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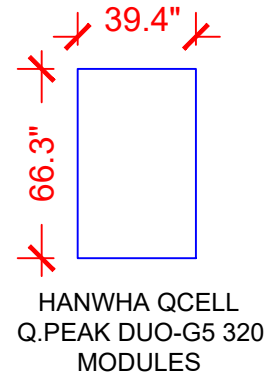
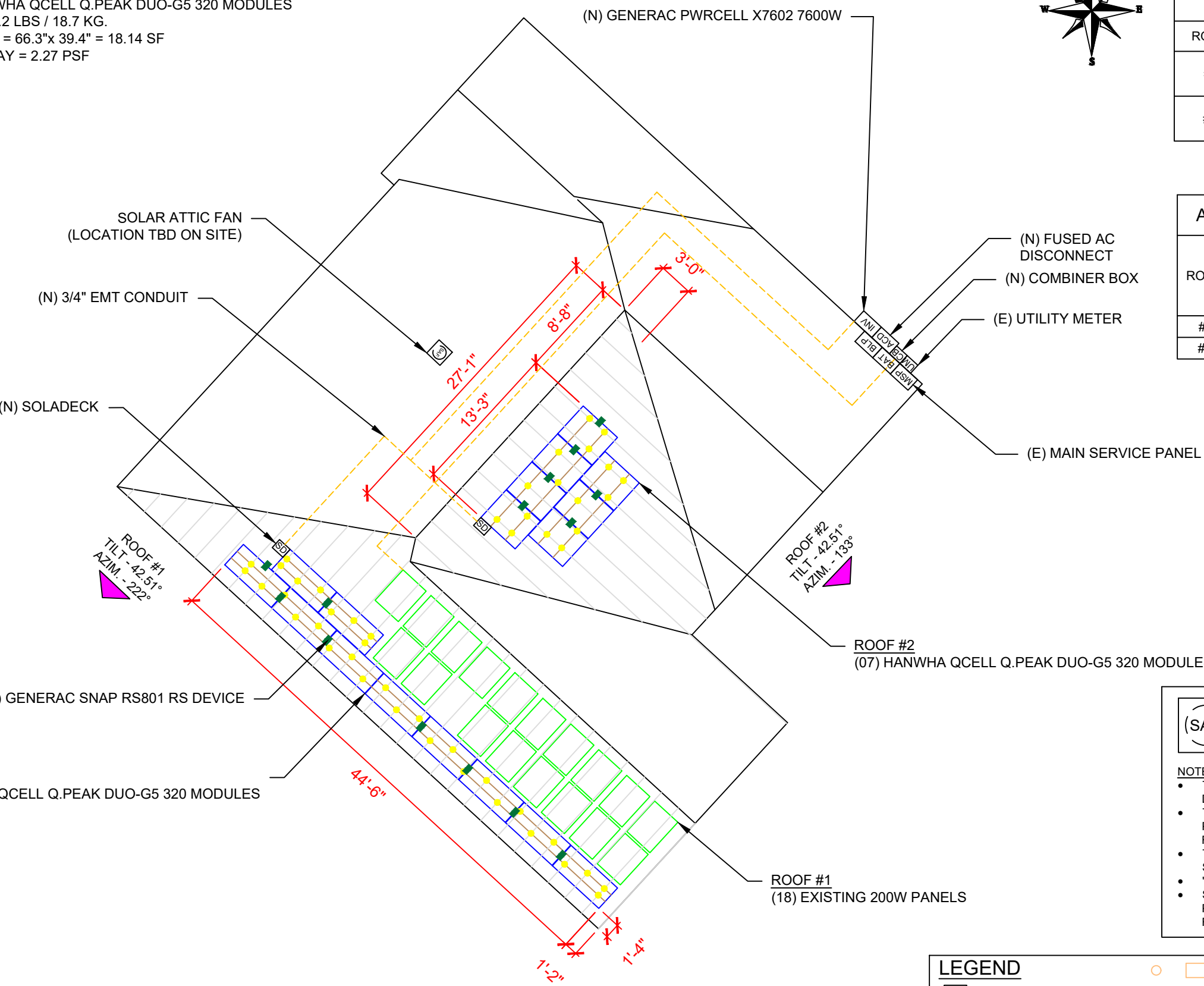
PROJECT NAME & ADDRESS

**ANTHONY J MENNELLA**  
 RESIDENCE  
 57 WOODRIDGE CT,  
 ANGIER, NC - 27501

SHEET NAME  
**ROOF PLAN & MODULES**

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

SHEET NUMBER  
**PV-2**



**(SAF) SOLAR ATTIC FAN**

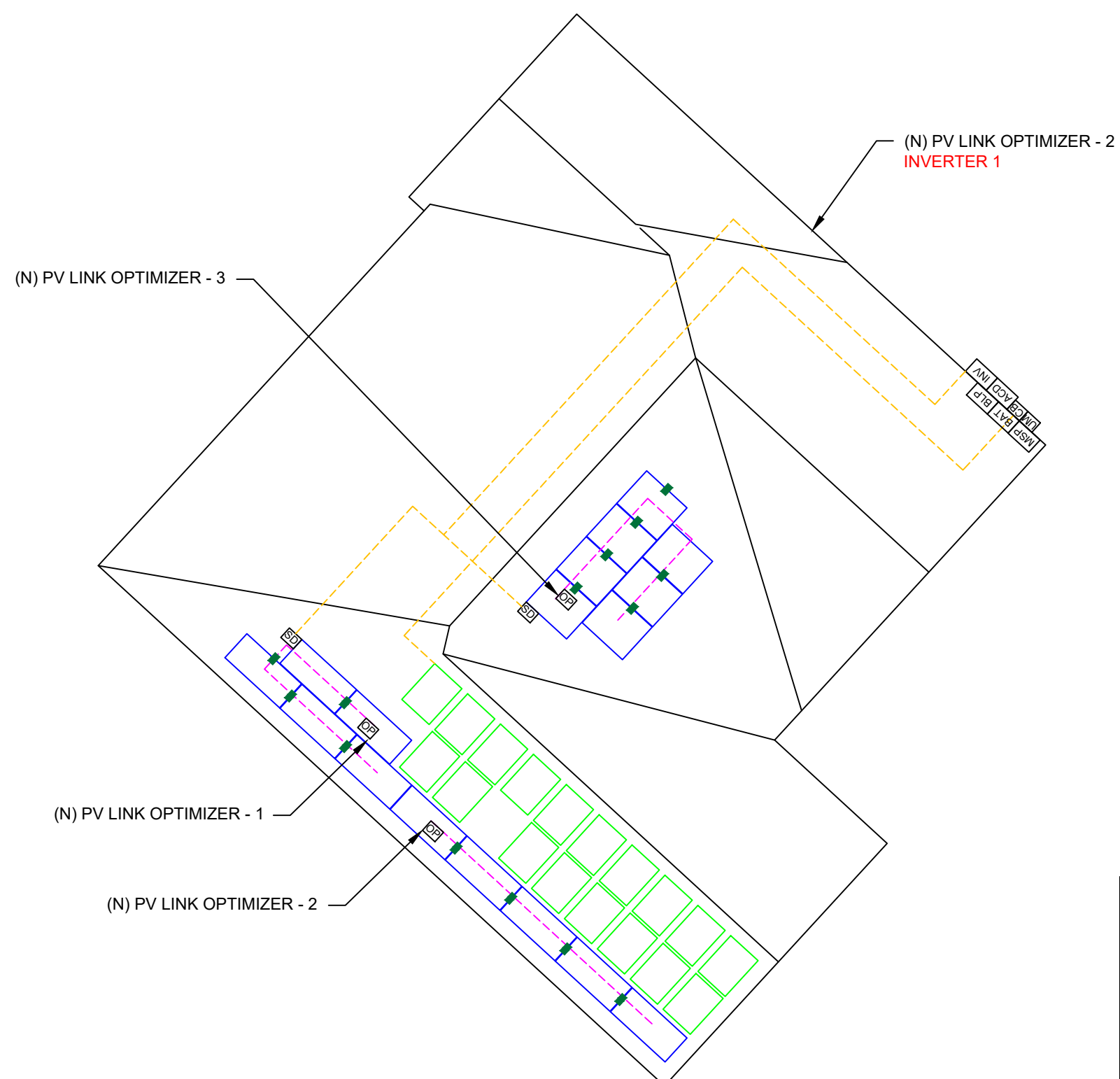
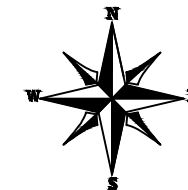
NOTES:

- THE LOCATION OF THE SAF SHOULD BE DETERMINED ON SITE.
- THE SAF SHOULD BE LOCATED 30"-36" FROM THE PEAK OF THE ROOF OR ABOUT 5 ROWS DOWN FROM THE RIDGE.
- THE SAF SHOULD NOT BE MOUNTED ON ANY STRUCTURAL MEMBER LIKE TRUSS/RAFTER.
- "CAN VENTS" CAN BE REPLACED BY SAF.
- SAF CANNOT BE MOUNTED ON A METAL ROOF. PLEASE CARRY GABLE VENT FANS FOR METAL ROOF INSTALLATION (IF APPLICABLE).

**LEGEND**

- SD** - SOLADECK
- INV** - INVERTER
- ACD** - AC DISCONNECT
- MSP** - MAIN SERVICE PANEL
- OP** - PV LINK OPTIMIZER
- - VENT, ATTIC FAN (ROOF OBSTRUCTION)
- - ROOF ATTACHMENT
- - -** - RAFTERS
- - - - -** - CONDUIT
- - RAPID SHUTDOWN
- CB** - COMBINER BOX

**INSTALL NOTE - ADDING (17) HANWHA 320W PANELS TO EXISTING (18) 200 W PANELS**



INSTALL NOTE - ADDING (17) HANWHA 320W  
PANELS TO EXISTING (18) 200 W PANELS

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	17	HANWHA QCELL Q.PEAK DUO-G5 320 MODULES
OPTIMIZER	3	GENERAC PV LINK S2502 POWER OPTIMIZERS
GENERAC SNAP RS	17	GENERAC SNAPRS MODEL RS801
INVERTER	1	GENERAC PWRCELL X7602 7600W INVERTER
AC DISCONNECT	1	100A FUSED, (2) 80A FUSES, 240V, NEMA 3R, UL LISTED
COMBINER BOX	1	COMBINER BOX
BATTERY	1	GENERAC PWRCELL9 BATTERY
BACKUP PANEL	1	125A, BACKUP PANEL, 240V
SOLADECK	2	SOLADECKS 600 V, NEMA 3R, UL LISTED
RAILS	20	QRAIL LIGHT 14 FT. BLACK
SPLICE KIT	10	QSPLICE INTERNAL LIGHT
WEEB BMC	20	WEEB BMC MILL
MODULE CLAMPS	26	UNIVERSAL MID CLAMP
GROUNDING LUG	4	WEEB LUG W/ T-BOLT
END CLAMPS	16	UNIVERSAL END CLAMPS
ATTACHMENT	54	L-MOUNT ATTACHMENT (QUICKMOUNT)
T-BOLT	62	T-BOLT W/ NUT M8 X 20MM

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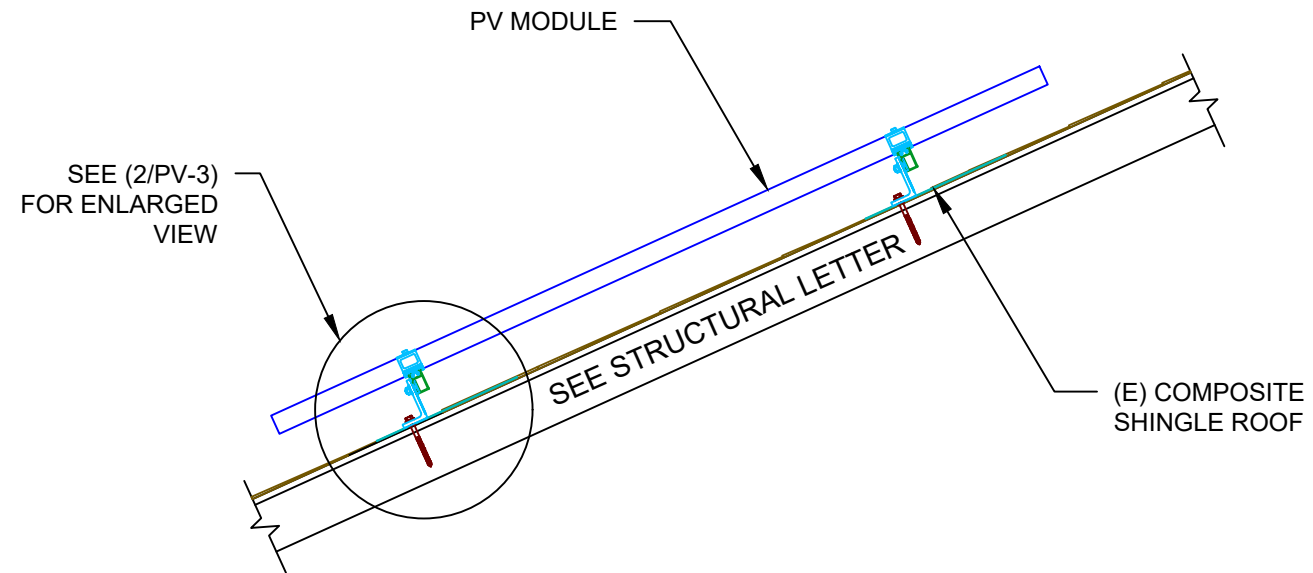
PROJECT NAME & ADDRESS

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 57 WOODRIDGE CT,  
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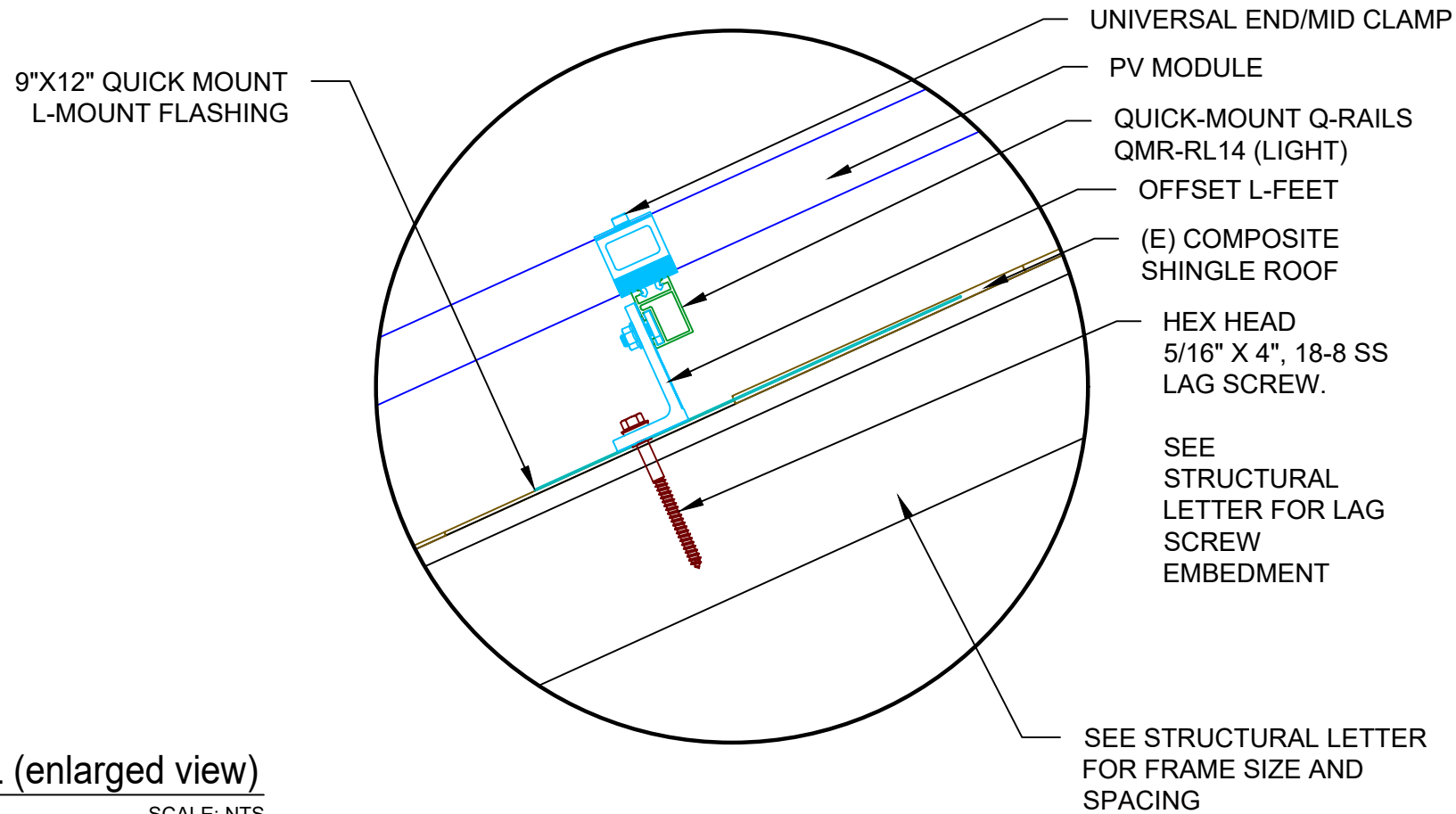
SHEET NAME  
**STRING  
 LAYOUT**

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

SHEET NUMBER  
**PV-2A**



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



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

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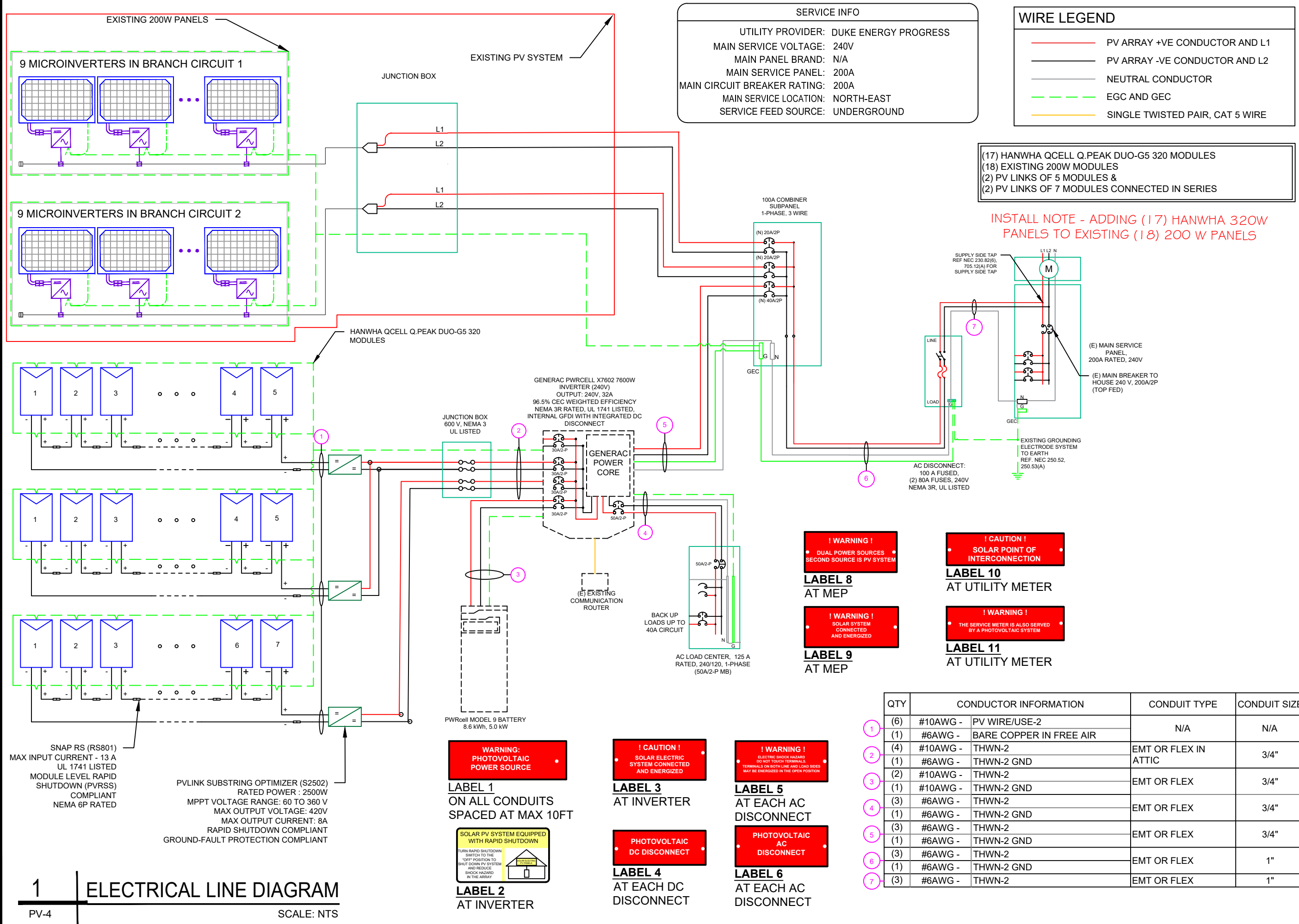
PROJECT NAME & ADDRESS

**ANTHONY J MENNELLA**  
 RESIDENCE  
 57 WOODRIDGE CT,  
 ANGIER, NC - 27501

SHEET NAME  
**ATTACHMENT  
 DETAIL**

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

SHEET NUMBER  
**PV-3**



**SERVICE INFO**

UTILITY PROVIDER: DUKE ENERGY PROGRESS  
 MAIN SERVICE VOLTAGE: 240V  
 MAIN PANEL BRAND: N/A  
 MAIN SERVICE PANEL: 200A  
 MAIN CIRCUIT BREAKER RATING: 200A  
 MAIN SERVICE LOCATION: NORTH-EAST  
 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

(17) HANWHA QCELL Q.PEAK DUO-G5 320 MODULES  
 (18) EXISTING 200W MODULES  
 (2) PV LINKS OF 5 MODULES &  
 (2) PV LINKS OF 7 MODULES CONNECTED IN SERIES

**INSTALL NOTE - ADDING (17) HANWHA 320W PANELS TO EXISTING (18) 200 W PANELS**

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DESCRIPTION	DATE	REV

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**PROJECT NAME & ADDRESS**

ANTHONY J MENNELLA  
 RESIDENCE  
 57 WOODRIDGE CT,  
 ANGIER, NC - 27501

SHEET NAME  
**ELECTRICAL LINE DIAGRAM**

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

SHEET NUMBER  
**PV-4**

**! WARNING !**  
 DUAL POWER SOURCES  
 SECOND SOURCE IS PV SYSTEM

**LABEL 8**  
 AT MEP

**! CAUTION !**  
 SOLAR POINT OF  
 INTERCONNECTION

**LABEL 10**  
 AT UTILITY METER

**! WARNING !**  
 SOLAR SYSTEM  
 CONNECTED  
 AND ENERGIZED

**LABEL 9**  
 AT MEP

**! WARNING !**  
 THE SERVICE METER IS ALSO SERVED  
 BY A PHOTOVOLTAIC SYSTEM

**LABEL 11**  
 AT UTILITY METER

**! 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

**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 2**  
 AT INVERTER

**PHOTOVOLTAIC  
 DC DISCONNECT**

**LABEL 4**  
 AT EACH DC  
 DISCONNECT

**PHOTOVOLTAIC  
 AC DISCONNECT**

**LABEL 6**  
 AT EACH AC  
 DISCONNECT

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

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	-11°
AMBIENT TEMP (HIGH TEMP 2%)	31°
CONDUIT HEIGHT	0.5"
ROOF TOP TEMP	53°

**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	6
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)	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)	22.72A
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	

**FROM BATTERY TO INVERTER:**

EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER NEC TABLE 310.15 (B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	2
CONDUIT FILL CORRECTION PER NEC TABLE 310.15(B)(3)(a)	1
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)	26.25A
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)	38.40A
Result should be greater than (26.25A) otherwise less the entry for circuit conductor size and ampacity	

**AC CONDUCTOR AMPACITY CALCULATIONS:  
FROM INVERTER TO BACK-UP PANEL:**

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)	42.5A
1.25 X INVERTER OUTPUT CURRENT (BACKUP POWER)	
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 (42.5A) otherwise less the entry for circuit conductor size and ampacity	

**AC CONDUCTOR AMPACITY CALCULATIONS:  
FROM COMBINER TO POI:**

No. OF INVERTER	2
EXPECTED WIRE TEMP (In Celsius)	31°
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	4 AWG
CIRCUIT CONDUCTOR AMPACITY PER NEC TABLE 310.15(B)(16)	95A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	80A
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)	91.2A
Result should be greater than (80A) otherwise less the entry for circuit conductor size and ampacity	

**AC CONDUCTOR AMPACITY CALCULATIONS:  
FROM INVERTER TO COMBINER PANEL:**

No. OF INVERTER	1
EXPECTED WIRE TEMP (In Celsius)	31°
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: 07/21/2020

**PROJECT NAME & ADDRESS**

**ANTHONY J MENNELLA  
RESIDENCE  
57 WOODRIDGE CT,  
ANGIER, NC - 27501**

SHEET NAME  
**WIRING  
CALCULATIONS**

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

SHEET NUMBER  
**PV-5**



# 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:



Engineered in Germany

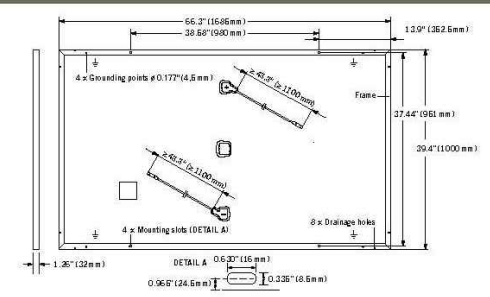


<sup>1</sup> APT test conditions according to IEC/TS 62804-1:2015, method B (-1500V, 168h)  
<sup>2</sup> See data sheet on rear for further information.



### MECHANICAL SPECIFICATION

<b>Format</b>	66.3 in × 39.4 in × 1.26 in (including frame) (1685 mm × 1000 mm × 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 × 20 monocrystalline Q.ANTUM solar half-cells
<b>Junction box</b>	2.76-3.35 in × 1.97-2.76 in × 0.51-0.83 in (70-85 mm × 50-70 mm × 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

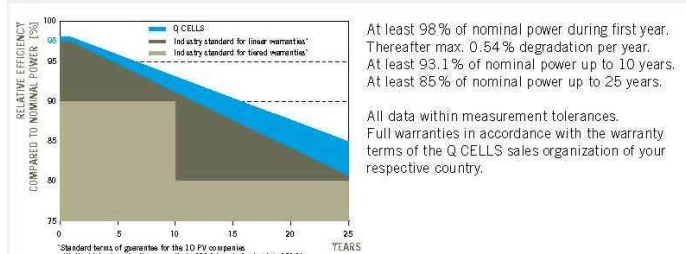


### ELECTRICAL CHARACTERISTICS

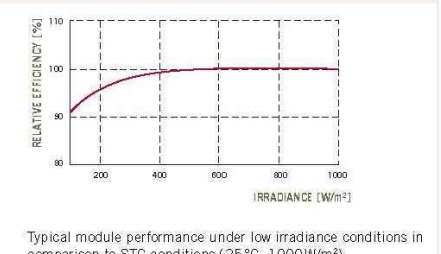
POWER CLASS		315	320	325	330	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5W / -0W)						
Minimum	<b>Power at MPP<sup>1</sup></b>	<b>P<sub>MPP</sub></b> [W]	315	320	325	330
	<b>Short Circuit Current<sup>1</sup></b>	<b>I<sub>SC</sub></b> [A]	10.04	10.09	10.14	10.20
	<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<sup>1</sup></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



### PERFORMANCE AT LOW IRRADIANCE



### 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>1</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



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.

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300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA | TEL +1 949 748 59 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\_JVA

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Email: info@powerhome.com  
Web: www.powerhome.com

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/21/2020

### PROJECT NAME & ADDRESS

**ANTHONY J MENNELLA  
RESIDENCE**  
57 WOODRIDGE CT,  
ANGIER, NC - 27501

SHEET NAME  
**EQUIPMENT  
SPECIFICATION**

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

SHEET NUMBER  
**PV-6**

### FEATURES:

No autotransformer or battery inverter needed

User-selectable modes

Free system monitoring



# GENERAC PWRCELL

Inverter  
Model: X7602, X11402

Solar-plus-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.

### ADDITIONAL FEATURES

- 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 and zero-export
- Free system monitoring included via PWRview Web Portal and Mobile App

AC OUTPUT/ GRID-TIE	MODEL X7602	MODEL X11402
RATED AC POWER OUTPUT	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

AC OUTPUT/ BACKUP	MODEL X7602	MODEL X11402
RATED AC BACKUP POWER OUTPUT	8000 W	8000 W
MAXIMUM AC BACKUP POWER OUTPUT	12000 W	12000 W
AC BACKUP OUTPUT VOLTAGE	120/240, 1Ø VAC	120/240, 1Ø VAC
AC FREQUENCY	60 HZ	60 HZ
AC CIRCUIT BREAKER	50 A	50 A
THD (VOLTAGE)	< 2%	< 2%
AUTOMATIC SWITCHOVER TIME	< 1 Seconds	< 1 Seconds
TYPICAL NIGHTTIME POWER CONSUMPTION	30 W	30 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
MAX INPUT CURRENT	20 A	30 A
REVERSE-POLARITY PROTECTION	YES	YES
GROUND-FAULT ISOLATION DETECTION	YES	YES
TRANSFORMERLESS, UNGROUNDED	YES	YES

DC INPUT/ BATTERY	MODEL X7602	MODEL X11402
MAXIMUM CONTINUOUS POWER	8000 W	8000 W
INTERNAL DC DISTRIBUTION BREAKERS	4X 2P30A	4X 2P30A
DC FUSES ON PLUS AND MINUS	40 A	40 A
2-POLE DISCONNECTION	YES	YES

EFFICIENCY	MODEL X7602	MODEL X11402
PEAK EFFICIENCY	97%	98%
CEC WEIGHTED EFFICIENCY	96.5%	97.5%

## 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

### ADDITIONAL FEATURES

SUPPORTED COMMUNICATION INTERFACES	CANbus, RS4854, Ethernet
SYSTEM MONITORING	PWRview Web Portal and Mobile App
CRITICAL LOADS DISCONNECT <sup>1</sup>	Yes
MANUAL INVERTER BYPASS SWITCH	Automatic
WARRANTY	10 Years

### STANDARDS COMPLIANCE

SAFETY	UL1741 SA, CSA 22.2
GRID CONNECTION STANDARDS	IEEE1547, Rule 21, Rule 14H
EMISSIONS	FCC part15 class B

### DIMENSIONS AND INSTALLATION SPECIFICATIONS

WIRE GAUGE RANGE	10 - 8 AWG
TOTAL AC KNOCKOUTS X SIZE	2" x 0.75", 2 x 1"
TOTAL DC KNOCKOUTS X SIZE	5" x 1"
DIMENSIONS (L, W, H)	24.5" x 19.25" x 8"
WEIGHT	62.7 lb
COOLING	Forced convection
NOISE	< 40 dBA
OPERATING TEMPERATURE	-20 to 50 °C*
PROTECTION RATING	NEMA 3R

### INSTALLATION GUIDELINES

BATTERY TYPES SUPPORTED	PWRcell battery module
MODULE STRING SIZE PER PV LINK OPTIMIZER	2-9 PV modules
MAXIMUM RECOMMENDED DC POWER FROM PV	10kW (1Ø), 15kW (3Ø)
BATTERIES PER INVERTER	Up to 2

<sup>3</sup> 3Ø inverters offer islanding for 1Ø loads, \* Modbus, \*Reduced power at extreme temperatures

Specifications subject to change without notice.

**GENERAC**

Generac Power Systems, Inc.  
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DESCRIPTION	DATE	REV

Signature with Seal

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### PROJECT NAME & ADDRESS

ANTHONY J MENNELLA  
RESIDENCE  
57 WOODRIDGE CT,  
ANGIER, NC - 27501

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-7





**FEATURES:**

Easy installation

Low cost, high efficiency solution

NEC 2017 and 2020 PVRSS compliant

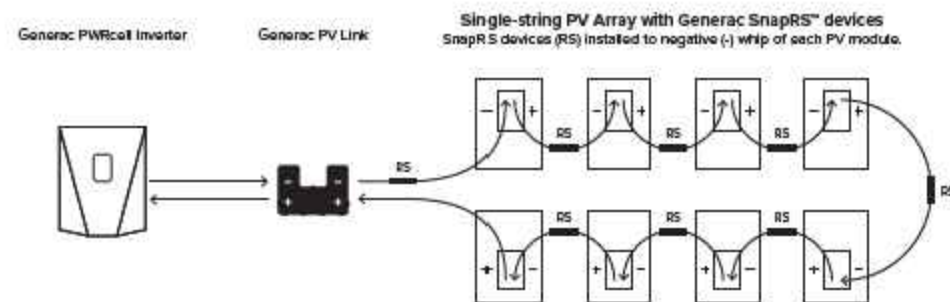
# SnapRS™

Instant Rapid Shutdown Compliance  
Model: RS801

The Generac SnapRS is NEC 2017 compliant, and doesn't require any extra hardware to mount, no pairing and no fussy digital communications. Just snap a Generac SnapRS disconnect device to each PV module for total rapid shutdown performance. When signaled by the inverter, SnapRS units break the PV circuit, reducing array voltage to <80V in seconds.

**SYSTEM DESIGN**

Snap a Generac SnapRS disconnect device to the negative whip (-) of each module in the solar array for simple NEC-2017 module-level rapid shutdown compliance. SnapRS devices isolate array voltage when a rapid shutdown command is given by a connected Islanding Inverter



**ADDITIONAL FEATURES**

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

# Specifications



**SNAPRS (RS801)**

PV MODULE MAX VOC	75 V	OPERATING TEMPERATURE	-40 to 70 °C
EFFICIENCY	99.9%	CERTIFICATIONS	UL1741
MAX INPUT CURRENT	13 A	WEIGHT	100 g
SHUTDOWN TIME	< 10 Seconds	DIMENSIONS (L,W,H)	1" x 1" x 7"
ENCLOSURE RATING	NEMA 6P	WARRANTY	25 Years

*Specifications subject to change without notice.*



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**ANTHONY J MENNELLA  
RESIDENCE**  
57 WOODRIDGE CT,  
ANGIER, NC - 27501

SHEET NAME  
**EQUIPMENT  
SPECIFICATION**

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

SHEET NUMBER  
**PV-8**



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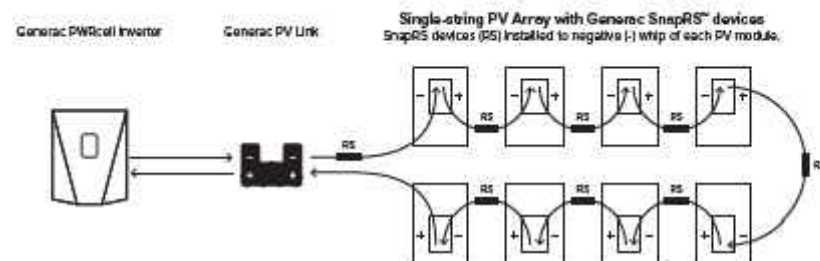
## PV Link™

S2500 Series sub-string optimizer  
Model: S2502

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

### ADDITIONAL FEATURES

- Quick connections with MC4 connectors
- 2500W capacity
- Compatible with high-voltage smart batteries
- Cost-effective solution for high-performance PV
- Ground-fault protection



### FEATURES:

Fast, simple installation

Lower failure risk than module-level optimizers

NEC 2017 rapid shutdown compliant with SnapRS™

## Specifications



### PWRCELL PV LINK (S2502)

RATED POWER	2500 W	PROTECTIONS	Ground-fault, Arc-fault (Arc-fault Type 1 AFCI, Integrated)
PEAK EFFICIENCY	99%	MAX OPERATING TEMP	70 °C
MPPT VOLTAGE RANGE	60-360 VMP	SYSTEM MONITORING	PWRview Web Portal and Mobile App
MAX INPUT VOLTAGE	420 VOC; max when cold	ENCLOSURE	Type 3R
MAX OUTPUT	420 VOC	WEIGHT	7.3 lb
NOMINAL OUTPUT (REBUS™)	380 VDC	DIMENSIONS (L,W,H)	2" x 15.4" x 9.6"
MAX OUTPUT CURRENT	8 A	COMPLIANCE	UL 1741, CSA 22.2
MAX SHORT CIRCUIT CURRENT (ISC)	18 A	WARRANTY	25 Years
STANDBY POWER	< 1W		



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RESIDENCE  
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ANGIER, NC - 27501

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-9

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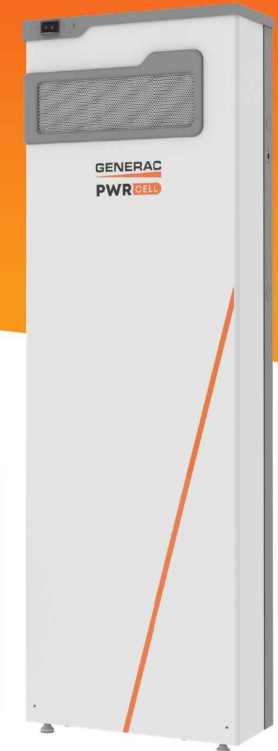
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**FEATURES:**

Connect up to 2 PWRcells to a single PWRcell Inverter

Plug-and-play with PWRcell Inverters and PV Links

Residential and commercial application ready



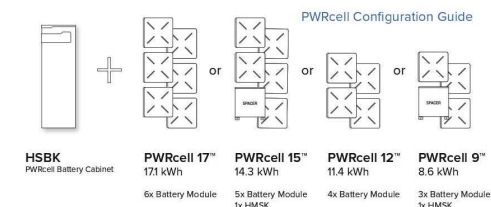
**GENERAC**  
**PWRCELL**

Battery  
Model: 9, 12, 15, 17

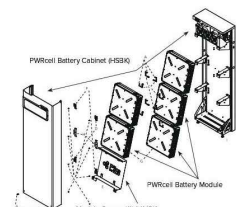
No other smart battery offers the flexibility of PWRcell. Whether for backup power or smart energy management, the PWRcell battery has power and capacity options for every need, without sacrificing flexibility or function.

The PWRcell battery series allows system owners the flexibility to scale from the economical 8.6kWh PWRcell 9™ to the massive 17.1 kWh PWRcell 17™ by adding additional PWRcell battery modules, the gold standard in storage.

**PWRCELL CONFIGURATION GUIDE**



**PWRCELL ASSEMBLY**



**PWRCELL BATTERY DESIGN**

PWRcell is a modular smart battery platform that allows for a range of configurations to suit any need, small or large. PWRcell can be built in capacities ranging from 8.6-17.1kWh. When needs change, PWRcell can be upgraded with additional modules. Use the chart above to understand what components you need for your chosen PWRcell configuration.

**ADDITIONAL FEATURES**

- Connect as many as two 2 PWRcells to a single PWRcell Inverter™ for up to 34.2kWh of storage
- Best-in-class battery backup power
- Plug-and-play with PWRcell Inverters™ and PV Links™
- Time-of-use (TOU) and zero-export ready
- Residential and commercial application ready

**Specifications**

PWRCELL MODEL	9	12	15	17
BATTERY MODULES	3	4	5	6
USABLE ENERGY	8.6 kWh	11.4 kWh	14.3 kWh	17.1 kWh
POWER: RATED CONTINUOUS	3.4 kW	4.5 kW	5.6 kW	6.7 kW
POWER: 60 MINUTES	4.2 kW	5.6 kW	7.0 kW	8.4 kW
POWER: 2 MINUTES	5.0 kW	6.7 kW	8.4 kW	10.0 kW
REBUS VOLTAGE: INPUT/OUTPUT	360-420 VDC			
MODULE VOLTAGE	46.8 VDC			
ROUND-TRIP EFFICIENCY	96.5 %			
OPERATING TEMPERATURE	-10 to 45 °C*			
RECOMMENDED TEMPERATURE	13 to 30 °C			
MAXIMUM INSTALLATION ALTITUDE	9834 ft, (3000 m)			
DIMENSIONS (L,W,H)	68" x 22" x 10"			
WEIGHT (ENCLOSURE)	115 lb, (52 kg)			
WEIGHT (INSTALLED)	280 lb, (127 kg)	335 lb, (152 kg)	390 lb, (178 kg)	445 lb, (202 kg)
WARRANTY: LI-ION MODULES	10 Years, (22.6 MWh)	10 Years, (30.2 MWh)	10 Years, (37.8 MWh)	10 Years, (45.3 MWh)
WARRANTY: ELECTRONICS AND ENCLOSURE	10 Years			
COMMUNICATION PROTOCOL	REbus DC Nanogrid™			
COMPLIANCE	UL 9540, UL 1973, UL 1642, CSA 22.2			

\*Reduced power at extreme temperatures

Specifications subject to change without notice.

**UPGRADING PWRCELL**

Inside of the PWRcell battery, the PWRcell battery modules are stacked 2-deep on three levels, allowing for up to six modules to be connected in series. Upgrade an existing PWRcell battery by adding modules and a module spacer (HMSK) if required. PWRcell 9 and PWRcell 15 require a module spacer.

Generac offers a convenient PWRcell Battery Upgrade Kit (HMUK) to help replace lost or misplaced hardware. A PWRcell Battery Upgrade Kit may be purchased from your Generac distributor.

Refer to the table to the right for material requirements related to upgrading PWRcell.

**UPGRADE MATERIAL REQUIREMENTS**

Starting Configuration	Ending Configuration		
	PWRCELL 17	PWRCELL 15	PWRCELL 12
PWRCELL 9	+ 3 x PWRCell Mod + 2 x HMUK*	+ 2 x PWRCell Mod + 1 x HMUK*	+ 1 x PWRCell Mod + 1 x HMUK*
PWRCELL 12	+ 2 x PWRCell Mod + 1 x HMUK*	+ 1 x PWRCell Mod + 1 x HMSK	
PWRCELL 15	+ 1 x PWRCell Mod + 1 x HMUK*		

\*HMUK (Upgrade kit) only required if original hardware is unavailable



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SHEET NAME  
**EQUIPMENT SPECIFICATION**

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

SHEET NUMBER  
**PV-9A**



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## 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

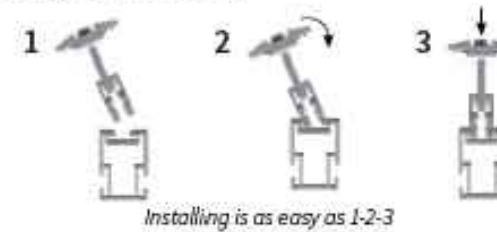
QRail is engineered for optimal structural performance. The system is certified to UL 2703, fully code compliant and backed by a 25-year warranty. QRail is available in Light, Standard and Heavy versions to match all geographic locations. QRail is compatible with virtually all modules and works on a 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.



Installing is as easy as 1-2-3



**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.



Installs in seconds — no tools or hardware required

## 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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#### SHEET NAME

EQUIPMENT  
SPECIFICATION

#### SHEET SIZE

ANSI B  
11" X 17"

#### SHEET NUMBER

PV-10

# QRail™ Configurations



# 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

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

**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: 07/21/2020

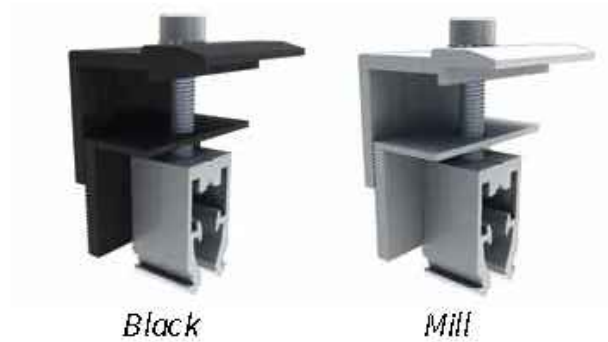
PROJECT NAME & ADDRESS  
  
**ANTHONY J MENNELLA  
 RESIDENCE**  
 57 WOODRIDGE CT,  
 ANGIER, NC - 27501

SHEET NAME  
**EQUIPMENT  
 SPECIFICATION**

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

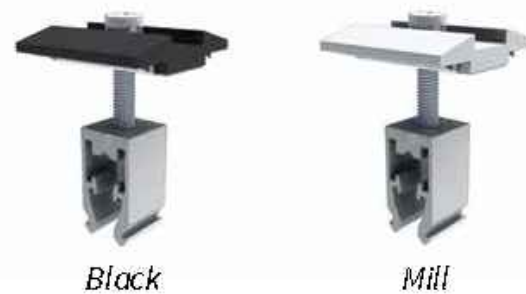
SHEET NUMBER  
**PV-10A**

## Universal End Clamp with QClick™ Technology



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



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



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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**ANSI B  
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SHEET NUMBER  
**PV-10B**

## T-Bolt



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

## 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

## Grounding Lug



Item Code	Part Number	Description	Finish
QMR-GL A 50	880	WEEB Lug w/ T-Bolt, 50 Pack	n/a

## WEEB BMC



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



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SHEET SIZE  
 ANSI B  
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SHEET NUMBER  
 PV-11

# L-Mount | QMLM / QMLM-ST

Elevated Water Seal Technology®

ITEM NO.	DESCRIPTION	QTY.
1	FLASHING, ROUNDED CORNERS, 9" X 12" X .040", .438" HOLE, 5052, MILL	1
2	L-FOOT, 2" X 3.30" FOR .438" O.D. FASTENER, 2-1/16" SLOT, 6061-T6/6005A-T61, MILL	1
3	WASHER, SEALING, 5/16" ID X 3/4" OD, EPDM BONDED SS	1
4	LAG SCREW, HEX HEAD, 5/16" X 4", 18-8 SS	1
*5	STRUCTURAL SCREW, GMPV, T-30 HEX WASHER HEAD, 5/16" X 4-1/2", 18-855	1

**QMLM** dimensions: 9.00" width, 12.00" height, 4.50" offset, 3.00" offset, 2.00" offset, 1.00" offset, 2.09" offset, 3.30" offset, .040" offset, (2.50) offset, (3.54) offset, .90" offset.

**QMLM-ST** dimensions: 2.75" offset, 4.04" offset.

**Quick Mount PV**  
 TITLE: QMLM & QMLM-ST: L-MOUNT, 2-1/16" SLOT  
 UNLESS OTHERWISE SPECIFIED: SIZE A, DRAWN BY: AAP, REV 11, DATE: 4/4/2019, SCALE: 1:1, WEIGHT: 0.7665, SHEET 1 OF 1  
 DIMENSIONS ARE IN INCHES, TOLERANCES: FRACTIONAL 1/16", TWO PLACE DECIMAL ±.01, THREE PLACE DECIMAL ±.004  
 DO NOT SCALE DRAWING

## L-Mount Installation Instructions

**Installation Tools Required:** tape measure, roofing bar, chalk line, stud finder, caulking gun, sealant compatible with roofing materials, drill with 7/32" or 1/8" bit, drill or impact gun with 1/2" socket.

**WARNING:** Quick Mount PV products are NOT designed for and should NOT be used to anchor fall protection equipment.

- Locate, choose, and mark centers of rafters to be mounted. Select the courses of shingles where mounts will be placed.
- Carefully lift composition roof shingle with roofing bar, just above placement of mount. Remove nails as required and backfill holes with approved sealant. See "Proper Flashing Placement" on next page.
- Insert flashing between 1st and 2nd course. Slide up so top edge of flashing is at least 3/4" higher than the butt-edge of the 3rd course and lower flashing edge is above the butt-edge of 1st course. Mark center for drilling.
- If attaching with lag bolt use a 7/32" bit (Lag). Use a 1/8" bit (ST) for attaching with the structural screw. Drill pilot hole into roof and rafter, taking care to drill square to the roof. Do not use mount as a drill guide. Drill a 2" deep hole into rafter.
- Clean off any sawdust, and fill hole with sealant compatible with roofing materials.
- Place L-foot onto elevated flute and rotate L-foot to desired orientation.
- All roofing manufacturers' written instructions must also be followed by anyone modifying a roof system. Consult the roof manufacturer's specs and instructions prior to working on the roof.
- You are now ready for the rack of your choice. Follow all the directions of the rack manufacturer as well as the module manufacturer. NOTE: Make sure top of L-Foot makes solid contact with racking.

Prepare lag bolt or structural screw with sealing washer. Using a 1/2-inch socket on an impact gun, drive prepared lag bolt through L-foot until L-foot can no longer easily rotate. **DO NOT over-torque.** NOTE: Structural screw can be driven with T-30 hex head bit.  
 BI 7.2.3-44

You are now ready for the rack of your choice. Follow all the directions of the rack manufacturer as well as the module manufacturer. NOTE: Make sure top of L-Foot makes solid contact with racking.

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SHEET NUMBER  
 PV-12

**Quick Mount PV**  
 RESPECT THE ROOF

Apr-2019 Rev 6