

**Harnett County Central Permitting**

PO Box 65 Lillington, NC 27546 - Ph: 910-893-7525 - Fx: 910-893-2793 - www.harnett.org/permits

**Certification of Work Performed By Owner/Contractor  
(Individual Trade Application)**

Owner (s) of Structure: Samantha and Jeremy Zanolini Phone: 301-876-1260(Sam); 570-578-3110 (Jeremy)

Owner (s) Mailing Address: 330 Timberline Drive  
Sanford,NC 27332

Land Owner Name (s): Samantha and Jeremy Zanolini Phone: \_\_\_\_\_

Construction or Site Address: 330 Timberline Drive, Sanford,NC 27332

PIN # 9586-99-0750.000 Parcel # 03958713 0020 37

Job Cost: \$46,772.00 Description of Work to be done 22 panel, roof-mount PV system and Tesla Powerwall 2 home battery, under NCDOL opt 2

Mechanical: New Unit With Ductwork  New Unit Without Ductwork  Gas Piping  Other

Electrical\*: 200 Amp  <200 Amp  Service Change  Service Reconnect  Other   
\* For Progress Energy customers we need the premise number

Plumbing: Water/Sewer Tap  Number of Baths  Water Heater

Specific Directions to Job from Lillington:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

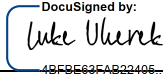
Subdivision: THE SUMMIT Lot #: 117

I Luke Uherek will provide the electrical labor on this structure.  
(Contractors Name) (Trade)

I am the building owner or my NC state license number is 33569-U, which entitles me to perform such work on the above structure legally. All work shall comply with the State Building Code and all other applicable State and local laws, ordinances and regulations.

NC SOLAR NOW INC  
Contractor's Company Name  
2509 Atlantic Ave, Raleigh NC 27604  
Address  
33569-U  
License # \_\_\_\_\_

919-833-9096  
Telephone  
permitting@gmail.com  
Email Address

Structure Owner / Contractor Signature:  \_\_\_\_\_ Date: 3/30/2022

By signing this application you affirm that you have obtained permission from the above listed license holder to purchase permits on their behalf. If doing the work as owner you understand that you cannot rent, lease or sell the listed property for 12 months after completion of the listed work.

**\*Company name, address, & phone must match information on license**



Application # \_\_\_\_\_

Harnett County Central Permitting  
420 McKinney Pkwy Lillington, NC 27546  
PO Box 65 Lillington, NC 27546

910-893-7525 ext. 1 Fax 910-893-2793 www.harnett.org/permits

\* Must be owner/occupier or licensed contractor. Address, company name & phone must match information on license.

**Application for Residential Building and Trades Permit**

Owner's Name: \_\_\_\_\_ Date \_\_\_\_\_

Site Address: \_\_\_\_\_ Phone \_\_\_\_\_

Subdivision: \_\_\_\_\_ Lot \_\_\_\_\_

Description of Proposed Work: \_\_\_\_\_ Total Job Cost \_\_\_\_\_

**General Contractor Information**

Building Contractor's Company Name \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_ Email Address \_\_\_\_\_

License # \_\_\_\_\_ **HEATED SQ FT** \_\_\_\_\_ **GARAGE SQ FT** \_\_\_\_\_

**Electrical Contractor Information**

Description of Work \_\_\_\_\_ Service Size: \_\_\_\_\_ Amps T-Pole: \_\_\_ Yes \_\_\_ No

Electrical Contractor's Company Name \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_ Email Address \_\_\_\_\_

License # \_\_\_\_\_

**Mechanical/HVAC Contractor Information**

Description of Work \_\_\_\_\_

Mechanical Contractor's Company Name \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_ Email Address \_\_\_\_\_

License # \_\_\_\_\_

**Plumbing Contractor Information**

Description of Work \_\_\_\_\_ # Baths \_\_\_\_\_

Plumbing Contractor's Company Name \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_ Email Address \_\_\_\_\_

License # \_\_\_\_\_

**Insulation Contractor Information**

Insulation Contractor's Company Name & Address \_\_\_\_\_ Telephone \_\_\_\_\_

**\*NOTE: General Contractor / owner must fill out and sign the second page of this application.**



I hereby certify that I have the authority to make necessary application, that the application is correct and that the construction will conform to the regulations in the Building, Electrical, Plumbing and Mechanical codes, and the Harnett County Zoning Ordinance. I state the information on the above contractors is correct as known to me and that **by signing below I have obtained all subcontractors permission to obtain these permits** and if **any** changes occur including listed contractors, site plan, number of bedrooms, building and trade plans, Environmental Health permit changes or proposed use changes, I certify it is my responsibility to notify the Harnett County Central Permitting Department of any and all changes.

**EXPIRED PERMIT FEES - 6 Months to 2 years permit re-issue fee is \$150.00. After 2 years re-issue fee is as per current fee schedule.**

\_\_\_\_\_  
Signature of Owner/Contractor/Officer(s) of Corporation

\_\_\_\_\_  
Date

**Affidavit for Worker's Compensation N.C.G.S. 87-14**

The undersigned applicant being the:

\_\_\_\_\_ General Contractor    \_\_\_\_\_ Owner    \_\_\_\_\_ Officer/Agent of the Contractor or Owner

Do hereby confirm under penalties of perjury that the person(s), firm(s) or corporation(s) performing the work set forth in the permit:

\_\_\_\_\_ Has three (3) or more employees and has obtained workers' compensation insurance to cover them.

\_\_\_\_\_ Has one (1) or more subcontractors(s) and has obtained workers' compensation insurance to cover them.

\_\_\_\_\_ Has one (1) or more subcontractors(s) who has their own policy of workers' compensation insurance covering themselves.

\_\_\_\_\_ Has no more than two (2) employees and no subcontractors.

While working on the project for which this permit is sought it is understood that the Central Permitting Department issuing the permit may require certificates of coverage of worker's compensation insurance prior to issuance of the permit and at any time during the permitted work from any person, firm or corporation carrying out the work.

Sign w/Title: \_\_\_\_\_ Date: \_\_\_\_\_

**DO NOT REMOVE!**

### Details: Appointment of Lien Agent

Entry #: 1664126

Filed on: 03/30/2022

Initially filed by: ncsolarnow

#### Designated Lien Agent

Chicago Title Company, LLC

**Online:** [www.liensnc.com](http://www.liensnc.com) (<http://www.liensnc.com>)

**Address:** 223 S. West Street, Suite 900 /

Raleigh, NC 27603

**Phone:** 888-690-7384

**Fax:** 913-489-5231

**Email:** [support@liensnc.com](mailto:support@liensnc.com) (<mailto:support@liensnc.com>)

#### Project Property

330 Timberline Drive  
Sanford, NC 27332  
Harnett County

#### Property Type

1-2 Family Dwelling

#### Print & Post



**Contractors:**

Please post this notice on the Job Site.

**Suppliers and Subcontractors:**

Scan this image with your smart phone to view this filing. You can then file a Notice to Lien Agent for this project.

#### Owner Information

Zanolini, Samantha  
330 Timberline Drive  
Sanford, NC 27332  
United States  
Email: [permitting@ncsolarnow.com](mailto:permitting@ncsolarnow.com)  
Phone: 301-876-1260

#### Date of First Furnishing

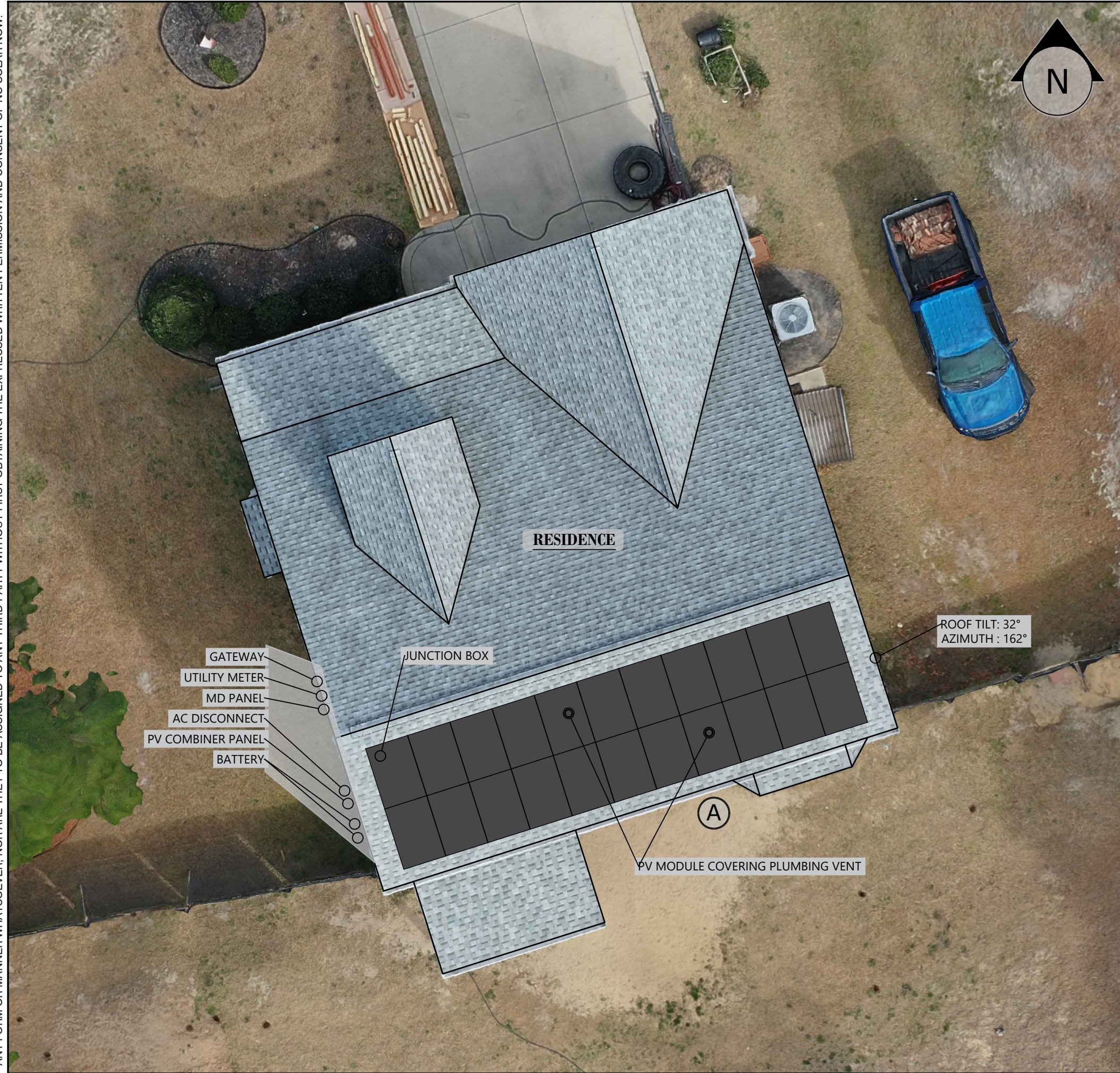
03/25/2022

[View Comments \(0\)](#)

**Technical Support Hotline:** (888) 690-7384



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PV MATERIAL SUMMARY: DISTRIBUTOR	
FAM365E7G-BB	22
IQ7PLUS-72-2-US	22
Q-12-10-240	25
Q-SEAL-10	3
Q-TERM-10	2
XR-10-168B	4
XR-10-204B	6
XR10-BOSS-01-M1	8
UFO-CL-01-B1	48
UFO-STP-35MM-B1	8
XR-LUG-03-A1	2
4 IN QB1	43
MI-BHW	22
GC66803 Geocel Sealant	3
SOLADECK 0799-5B	1
HEYCO S6468 EDGE SCREEN 8" X 100'	1
HEYCO S6438 EDGE SCREEN CLIPS (10)	10
TESLA POWERWALL 2	2
TESLA BACKUP GATEWAY GEN 2	1

CLIENT INFO	
JEREMY ZANOLINI 330 TIMBERLINE DRIVE SANFORD, NC 27332	

PROJECT INFO	
DC INPUT:	8.030 kW
AC EXPORT:	6.380 kW
DOI INSPT. METHOD:	OPTION 2

CODE REFERENCES	
NATION ELECTRICAL CODE v. 2017	
NC FIRE PROTECTION CODE v. 2018	
NC BUILDING CODE v. 2018	
NC RESIDENTIAL CODE v. 2018	
ACSE v. 7-10	

SITE CONDITIONS	
WIND SPEED:	117 MPH
RISK CATEGORY:	II
EXPOSURE:	B
SNOW:	10 PSF

SHEET INDEX	
PV-1:	COVER SHEET
PV-2:	PV STRUCTURAL
PV-3:	PV ELECTRICAL
PV-4:	PV EQUIPMENT LABELS
PV-5:	PV INSTALL GUIDE

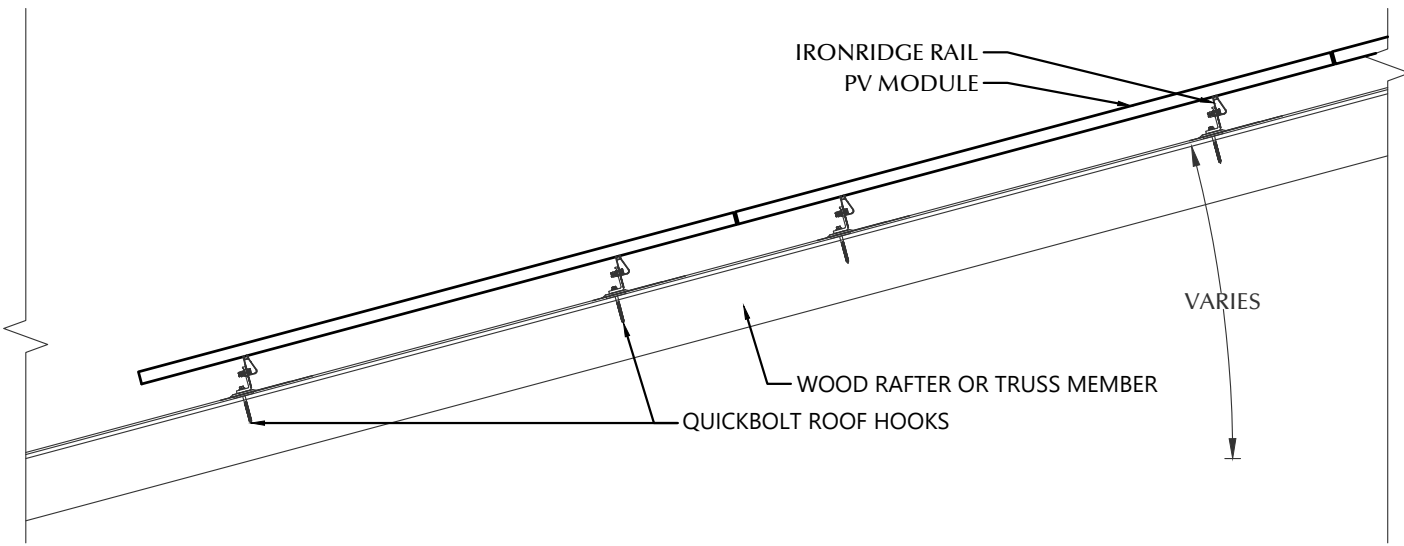
DESIGNER INFO	
DESIGNER	MCP
ENGINEER	AWK
DATE	3/21/2022
VERSION	P1

PV SYSTEM COVER PAGE

**PV-1.1**



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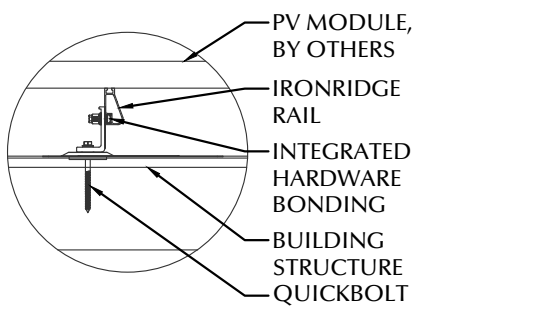
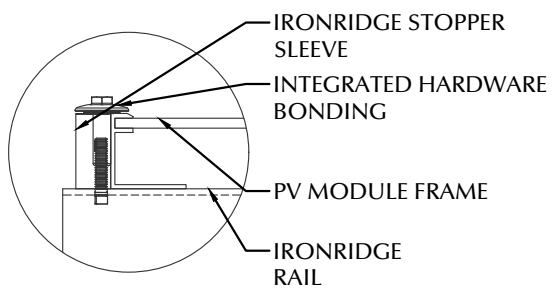
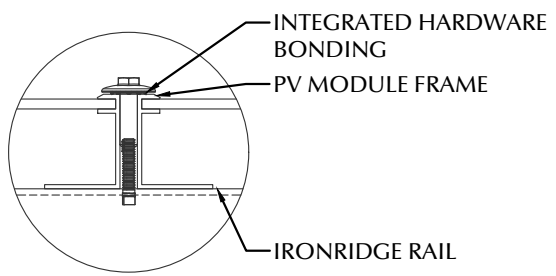
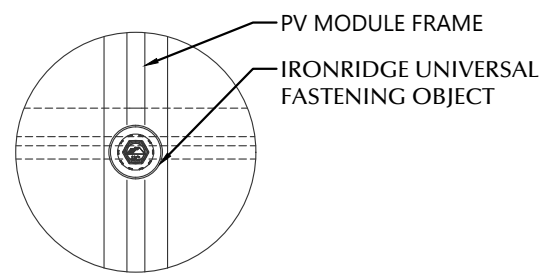
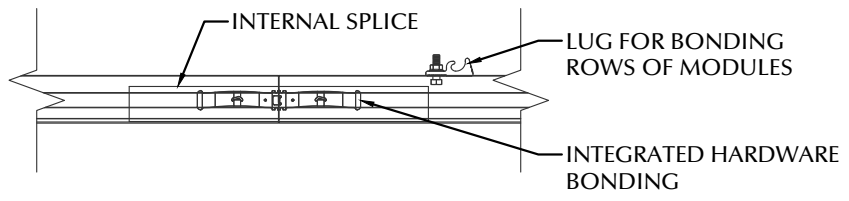
**STATEMENT OF STRUCTURAL COMPLIANCE**

THE EXISTING ROOF STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE ADDITIONAL LOADS OF THE PROPOSED PV SYSTEM. IN ADDITION, THE RACKING AND FASTENING SYSTEM SHALL BE CAPABLE OF SECURING THE SYSTEM TO THE STRUCTURE UNDER DESIGN CONDITIONS WHEN INSTALLED PROPERLY AND IN ACCORDANCE WITH THE RACKING AND FASTENING ARRANGEMENT DETAILED WITHIN THESE DRAWINGS.

NAME: ANDREW W. KING, PE  
 SIGNED: *Andrew W. King*

PV MODULES	
MAKE	URECO
MODEL	FAM365E7G-BB
WIDTH	41.26 IN
LENGTH	69.37 IN
THICKNESS	35 MM
WEIGHT	43.21 LBS.
ARRAY AREA	437 SQFT.
ARRAY WEIGHT	1093 LBS.

ROOF SUMMARY	
STRUCTURE:	
TYPE	TRUSSES
MATERIAL	SOUTHERN PINE #2
SIZE	2 X 4
SPACING	24 IN O.C.
ALLOWABLE SPAN	88 IN
PITCH	7/12
DENSITY	30 LBS./CU.FT.
DECKING:	
TYPE	OSB
MATERIAL	COMPOSITE
THICKNESS	7/16 IN
WEIGHT	1.60 LBS./SQFT
ROOFING:	
TYPE	ASPHALT SHINGLE
MATERIAL	ASPHALT
WEIGHT	2.30 LBS./SQFT.

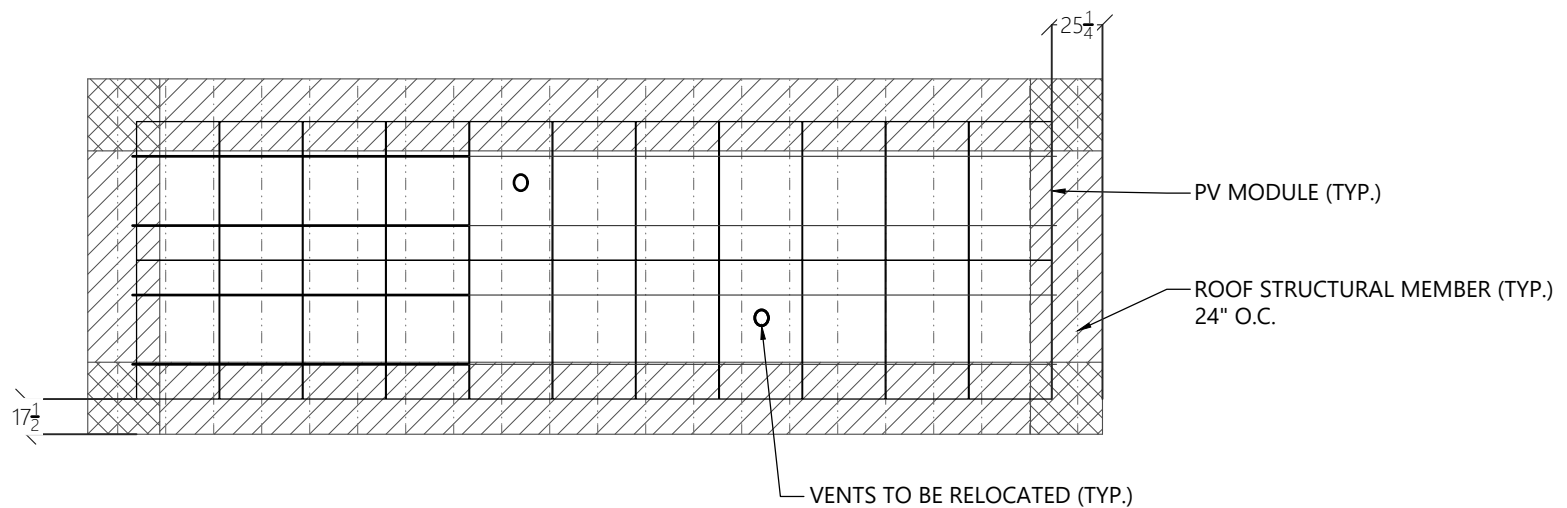


**1 ROOF FASTENER DETAIL**  
NOT TO SCALE

ROOF MOUNT SUMMARY		
MAXIMUM (IN)	MOUNT SPACING	RAIL OVERHANG
WIND ZONE 1	72 IN	19 IN
WIND ZONE 2	48 IN	19 IN
WIND ZONE 3	48 IN	19 IN

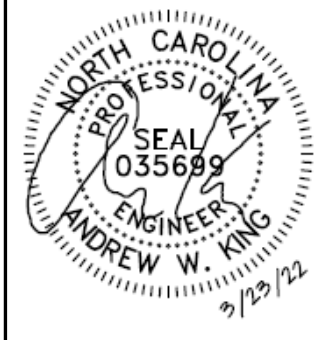
ROOF LOADING	
GROUND SNOW LOAD:	15 LBS./SQFT.
LIVE LOAD	20 LBS./SQFT.
DEAD LOAD	
ROOFING	3.9 LBS./SQFT.
PV ARRAY	2.5 LBS./SQFT.
TOTAL	6.4 LBS./SQFT.
WIND LOAD:	
UPLIFT ZONE 1	-24.6 LBS./SQFT.
UPLIFT ZONE 2	-29.0 LBS./SQFT.
UPLIFT ZONE 3	-29.0 LBS./SQFT.
DOWNWARD	23.0 LBS./SQFT.
FASTENER LOAD:	
UPLIFT ZONE 1	-423 LBS.
UPLIFT ZONE 2	-333 LBS.
UPLIFT ZONE 3	-333 LBS.
DOWNWARD	396 LBS.

ROOF MOUNT & FASTENER	
ROOF MOUNT:	
MAKE	QUICKBOLT
MODEL	4 IN QB1
MATERIAL	STAINLESS / EPDM
FASTENER:	
MAKE	QUICK SCREWS
MODEL	HANGER BOLT
MATERIAL	304 SS
SIZE	5/16-18 X 5-1/4"
GENERAL:	
WEIGHT	0.56 LBS.
FASTENERS PER MOUNT	1
MAX. PULL-OUT FORCE	960.0 LBS.
SAFETY FACTOR	2
DESIGN PULL-OUT FORCE	480.0 LBS.



**2 ROOF A ARRAY LAYOUT**  
1/8" = 1'-0"

MOUNTING RAILS	
MAKE	IRONRIDGE
MODEL	XR10
MATERIAL	ALUMINUM
WEIGHT	0.425 LBS/IN
SPACING	35 IN



**CLIENT INFO**  
 JEREMY ZANOLINI  
 330 TIMBERLINE DRIVE  
 SANFORD, NC 27332

**PROJECT INFO**  
 DC INPUT: 8.030 kW  
 AC EXPORT: 6.380 kW  
 DOI INSPT. METHOD: OPTION 2

**CODE REFERENCES**  
 NATION ELECTRICAL CODE v. 2017  
 NC FIRE PROTECTION CODE v. 2018  
 NC BUILDING CODE v. 2018  
 NC RESIDENTIAL CODE v. 2018  
 ACSE v. 7-10

**SITE CONDITIONS**  
 WIND SPEED: 117 MPH  
 RISK CATEGORY: II  
 EXPOSURE: B  
 SNOW: 10 PSF

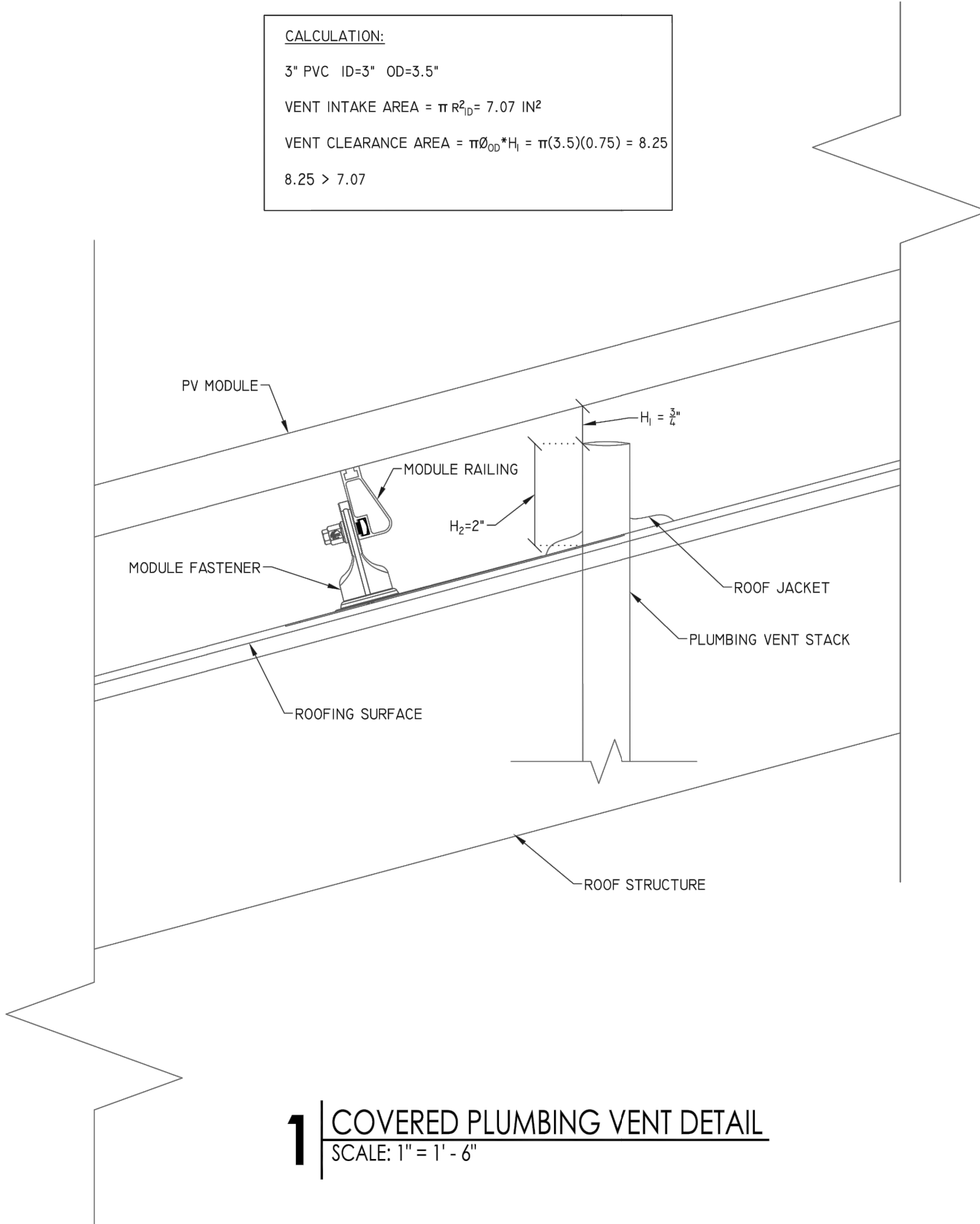
**SHEET INDEX**  
 PV-1: COVER SHEET  
 PV-2: PV STRUCTURAL  
 PV-3: PV ELECTRICAL  
 PV-4: PV EQUIPMENT LABELS  
 PV-5: PV INSTALL GUIDE

**DESIGNER INFO**  
 DESIGNER: MCP  
 ENGINEER: AWK  
 DATE: 3/21/2022  
 VERSION: P1

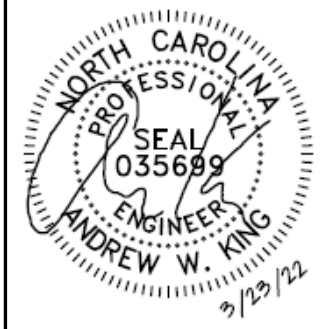
**PV SYSTEM STRUCTURAL**

**PV-2.1**

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**1** COVERED PLUMBING VENT DETAIL  
SCALE: 1" = 1' - 6"



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JEREMY ZANOLINI  
330 TIMBERLINE DRIVE  
SANFORD, NC 27332

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**DESIGNER INFO**

DESIGNER: MCP  
ENGINEER: AWK  
DATE: 3/21/2022  
VERSION: P1

PV SYSTEM  
STRUCTURAL

**PV-2.2**

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## CONDUCTOR SCHEDULE

TAG	CURRENT CARRYING CONDUCTORS			GROUNDING CONDUCTORS			CONDUIT/RACEWAY			NOTES
	QTY.	SIZE	INSULATION	QTY.	SIZE	INSULATION	QTY.	SIZE	LOCATION	
C1	4	10 AWG	DG CABLE	1	6 AWG	BARE	-	-	FREE AIR	1
C2	4	10 AWG	THWN-2	1	10 AWG	THWN-2	1	3/4"	EXT/INT	2,4
C3	3	8 AWG	THWN-2	1	10 AWG	THWN-2	1	3/4"	EXTERIOR	2,4
C4	6	10 AWG	THWN-2	1	10 AWG	THWN-2	1	1"	EXTERIOR	2,4
C5	3	4/0 AWG ALUMINUM	XHHW	1	3 AWG	THWN-2	1	2"	EXTERIOR	2,4
C6	3	4/0 AWG ALUMINUM	XHHW	-	-	-	1	2"	EXTERIOR	2,4
XC	-	-	-	-	-	-	-	-	-	3

**NOTES:**

1. MANUFACTURER PROVIDED, UL LISTED WIRING HARNESS FOR USE ON EXPOSED ROOFS
2. CONDUIT SIZE SHOWN IS CODE MINIMUM. LARGER SIZES ARE ALLOWED.
3. EXISTING CONDUCTORS, FIELD VERIFY
4. EQUIPMENT TERMINAL RATING SHALL BE A MINIMUM OF 75°C AT BOTH END OF CONDUCTOR

## PV MODULE

MAKE	URECO
MODEL	FAM365E7G-BB
NOM. POWER (PNOM)	365 WATTS
NOM. VOLT. (VMPP)	34.2 VOLTS
O.C. VOLT. (VOC)	40.7 VOLTS
MAX. SYS. VOLT.	1000 VOLTS
NOM. CURR. (IMPP)	10.7 AMPS
S.C. CURR. (ISC)	11.4 AMPS
TEMP. COEF. (PMPP)	-0.35 %/C
TEMP. COEF. (Voc)	-0.27 %/C
MAX SERIES FUSE	20 AMPS
UL LIST. (Y/N)	YES

## MD PANEL (NEW)

MAKE	SQUARE D
MODEL	QO LOAD CENTER
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
BUS RATING	200 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	YES
MAIN BREAKER RATING	200 AMPS

## UTILITY METER (NEW)

MAKE	MILBANK
MODEL	OUTD-LAN UAT417-XGF
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
BUS RATING	200 AMPS
UL LIST. (Y/N)	YES

- REMOVE EXISTING METER COMBO PANEL AND REPLACE WITH METER BASE THAT FEEDS GATEWAY

## PV COMBINER PANEL

MAKE	ENPHASE
MODEL	X-IQ-AM1-240-3-ES
INPUT:	
MAX BRANCH CIRCUITS	4 TOTAL
BRANCH CIRCUIT OCPD	50 AMPS
OUTPUT:	
MAX POWER	15600 WATTS
NOM. VOLTAGE	240 VOLTS
BUS RATING	125 AMPS
MAIN BREAKER Y/N	NO
ENCL. RATING	NEMA TYPE 3R
UL LIST. (Y/N)	YES

## JUNCTION BOX

MAKE	SOLADECK
PROTECT. RATING	NEMA TYPE 3R
UL LIST. (Y/N)	YES

## ENERGY MANAGEMENT (NEW)

MAKE	TESLA
MODEL	BACKUP GATEWAY 2
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
DISCONNECT CURR.	200 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	YES
MAIN BREAKER RATING	200 AMPS

- TROUGH MAY BE USED IF NECESSARY
- INSTALL INTERNAL PANELBOARD
- PLACE BATTERY AND PV COMBINER PANEL BREAKERS ON INTERNAL PANELBOARD
- INSTALL BONDING JUMPER FROM NEUTRAL TO GROUND
- INSTALL 200A EATON MAIN BREAKER TO SERVE AS SERVICE DISCONNECT SWITCH

## EMERGENCY STOP (NEW)

MAKE	EATON
MODEL	M22-PVT
ENCL. RATING	NEMA 4X
UL LIST. (Y/N)	YES

## DC / AC INVERTER

MAKE	ENPHASE
MODEL	IQ7PLUS-72-2-US
DC INPUT:	
POWER RANGE (WATTS)	235-440
MIN/MAX START VOLT.	22 / 60
OPERATING VOLT. RANGE	16-60
MAX. CURRENT	15 AMPS
MODULE COMPATIBILITY	60 & 72 CELL
AC OUTPUT:	
MAX. POWER	295 WATTS
NOM. POWER	290 WATTS
NOM. VOLT.	211-240-264
MAX. CURR.	1.21 AMPS
DC DISC. (Y/N)	NO
RAPID SHUTDOWN (Y/N)	YES
PROTECT. RATING	NEMA TYPE 6
UL LIST. (Y/N)	YES
MAX BRANCH CIRCUIT	13

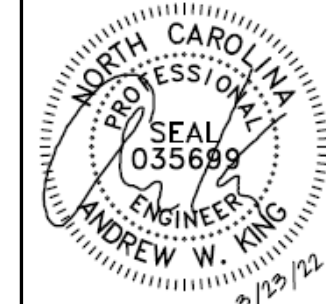
## AC DISCONNECT

MAKE	GENERIC
MODEL	NA
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
AMP RATING	60 AMPS
UL LIST. (Y/N)	YES
FUSED (Y/N)	NO
FUSE RATING	N/A

- LOAD-BREAK RATED
- VISIBLE OPEN
- LOCKABLE IN OPEN POSITION
- INSTALL ADJACENT TO METER
- DISCONNECT TO BE READILY ACCESSIBLE TO UTILITY COMPANY PERSONNEL AT ALL TIMES

## ENERGY STORAGE SYSTEM (NEW)

MAKE	TESLA
MODEL	POWERWALL 2
USABLE ENERGY	13.5 kWh
NOM. VOLT.	240 VOLTS
REAL POWER CONT.	5000 WATTS
UL LIST. (Y/N)	YES
OCPD	30 AMPS
PROTECT RATING	NEMA 3R



### CLIENT INFO

JEREMY ZANOLINI  
330 TIMBERLINE DRIVE  
SANFORD, NC 27332

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DC INPUT: 8.030 kW  
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### CODE REFERENCES

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### DESIGNER INFO

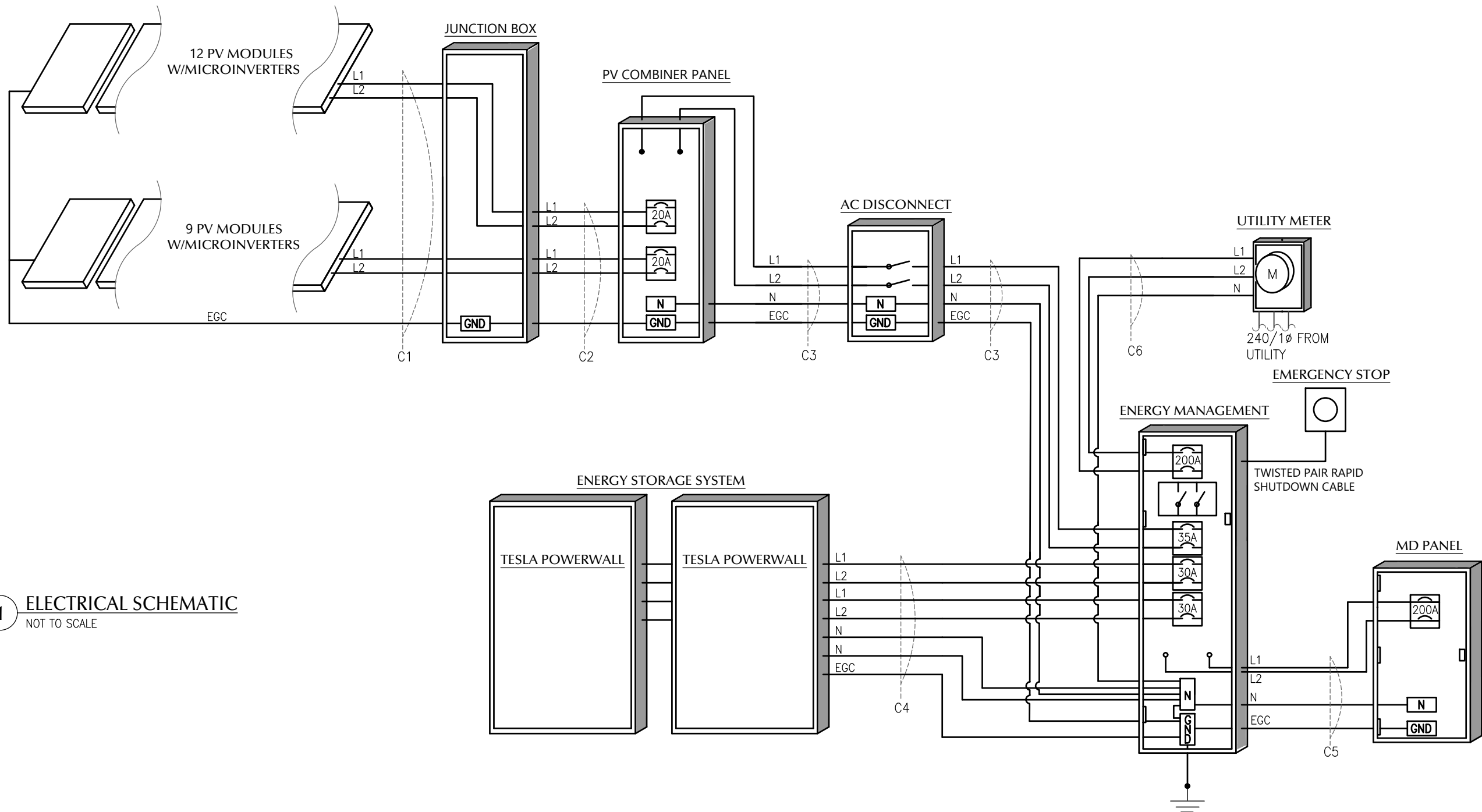
DESIGNER: MCP  
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PV SYSTEM  
ELECTRICAL

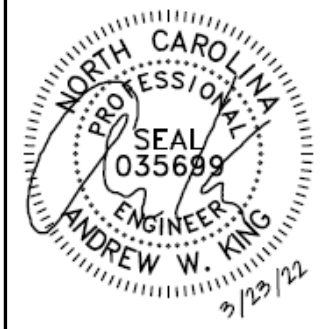
# PV-3.1



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**1 ELECTRICAL SCHEMATIC**  
NOT TO SCALE



**CLIENT INFO**

JEREMY ZANOLINI  
330 TIMBERLINE DRIVE  
SANFORD, NC 27332

**PROJECT INFO**

DC INPUT: 8.030 kW  
AC EXPORT: 6.380 kW  
DOI INSPT. METHOD: OPTION 2

**CODE REFERENCES**

NATION ELECTRICAL CODE v. 2017  
NC FIRE PROTECTION CODE v. 2018  
NC BUILDING CODE v. 2018  
NC RESIDENTIAL CODE v. 2018  
ACSE v. 7-10

**SITE CONDITIONS**

WIND SPEED: 117 MPH  
RISK CATEGORY: II  
EXPOSURE: B  
SNOW: 10 PSF

**SHEET INDEX**

PV-1: COVER SHEET  
PV-2: PV STRUCTURAL  
PV-3: PV ELECTRICAL  
PV-4: PV EQUIPMENT LABELS  
PV-5: PV INSTALL GUIDE

**DESIGNER INFO**

DESIGNER: MCP  
ENGINEER: AWK  
DATE: 3/21/2022  
VERSION: P1

**PV SYSTEM ELECTRICAL**

**PV-3.2**

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

NEC 690.13 (B)  
 PLACE ON PV SYSTEM DISCONNECTING MEANS.

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

NEC 705.12 (B)(2)(3)(b)  
 PLACE ADJACENT TO BACK-FED BREAKER

**⚠ WARNING**  
**DUAL POWER SUPPLY**  
 SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

NEC 705.12 (B)(3)  
 PLACE ON ALL EQUIPMENT THAT IS SUPPLIED BY BOTH POWER SOURCES

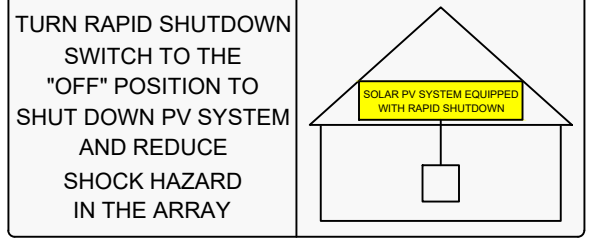
**WARNING: PHOTOVOLTAIC POWER SOURCE**

NEC 690.31 (G)(3)&(4)  
 PLACE ON ALL JUNCTION BOXES, EXPOSED RACEWAYS, AND OTHER WIRING METHODS EVERY 10' AND ON EVERY SECTION SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.

**RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM**

NEC 690.56 (C)(3)  
 PLACE ON RAPID SHUTDOWN SWITCH OR EQUIPMENT WITH INTEGRATED RAPID SHUTDOWN \*REFLECTIVE\*

**SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN**



NEC 690.56 (C)(1)(a)  
 PLACE WITHIN 3FT OF SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED AND SHALL INDICATE THE LOCATIONS OF RAPID SHUTDOWN SWITCHES

**PV SYSTEM DISCONNECT**

NEC 690.13 (B)  
 PLACE ON PV SYSTEM DISCONNECTING MEANS.

**PHOTOVOLTAIC POWER SOURCE**  
 OPERATING AC VOLTAGE 240 V  
 MAXIMUM OPERATING AC OUTPUT CURRENT 26.62 A

NEC 690.54  
 PLACE ON INTERCONNECTION DISCONNECTING MEANS

**⚠ WARNING**  
 THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR.

NEC 705.12 (B)(2)(3)(c)  
 PLACE ON PV COMBINER PANEL.

**⚠ WARNING**  
**THREE POWER SOURCES**  
 SOURCES: UTILITY GRID, BATTERY AND PV SOLAR ELECTRIC SYSTEM

NEC 705.12 (B)(3)  
 PLACE ON ALL EQUIPMENT THAT IS SUPPLIED BY BOTH POWER SOURCES

SERVICE DISCONNECT LOCATED:  
 EXTERIOR WEST WALL OF RESIDENCE

BATTERY DISCONNECT LOCATED:  
 EXTERIOR WEST WALL OF RESIDENCE

PV DISCONNECT LOCATED:  
 EXTERIOR WEST WALL OF RESIDENCE

NEC 705.10  
 PLACE AT SERVICE EQUIPMENT AND PV SYSTEM DISCONNECTING MEANS.

**BATTERY DISCONNECT**

PLACE ON EMERGENCY STOP SWITCH

**WARNING:**  
 IN THE EVENT OF A UTILITY OUTAGE, THIS PANEL IS FED FROM ENERGY STORAGE SYSTEM.

PLACE ON BACKED UP LOAD PANEL(S).

**GENERATION PANEL:**  
 IN THE EVENT OF AN EMERGENCY, TURN OFF ALL BREAKERS TO DISCONNECT BACKUP POWER SOURCE(S).

PLACE ON BACKUP GATEWAY

**LABEL NOTES**

1. LABELS SHOWN ARE HALF THEIR ACTUAL REQUIRED SIZE.
2. LABEL MATERIAL SHALL BE SUITABLE FOR THE EQUIPMENT ENVIRONMENT.
3. DC CONDUIT SHALL BE MARKED WITH REQUIRED LABEL EVERY 10 FEET.
4. LABELS WILL BE APPLIED IN ACCORDANCE WITH THE NEC. SOME LABELS MAY NOT BE NECESSARY.

**DC WIRING NOTES**

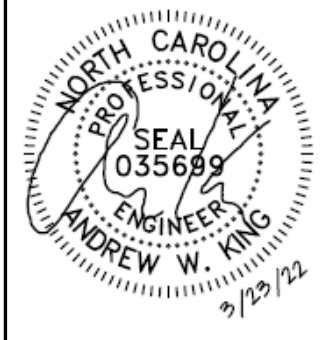
1. CONDUCTORS SHALL BE COPPER, RATED AT NOT LESS THAN 600 VOLTS FOR RESIDENTIAL CONSTRUCTION AND NOT LESS THAN 1000 VOLTS FOR COMMERCIAL CONSTRUCTION.
2. MINIMUM SIZE SHALL BE #10 AWG UNLESS OTHERWISE NOTED ON THE DRAWINGS.
3. EXPOSED WIRING CONDUCTOR INSULATION SHALL BE TYPE PV WIRE, USE-2, OR RHW-2 WHERE THE OUTER LAYER OF THE INSULATION IS UV, SUNLIGHT, AND MOISTURE RESISTANT.
6. EXTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THWN-2 AND INSTALLED IN ELECTRICAL METALLIC TUBING(EMT) OR RIGID POLYVINYL CHLORIDE CONDUIT(PVC). ALTERNATIVELY, METAL CLAD CABLE(MC) CAN BE USED AS WELL WHEN RATED FOR USE IN WET LOCATIONS.
7. INTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THHN-2 AND INSTALLED IN ELECTRICAL METALLIC TUBING(EMT), FLEXIBLE METAL CONDUIT(FMC), OR METAL CLAD CABLE(MC).
6. USE SCHEDULE 40 PVC OUTDOORS WHERE NOT SUBJECT TO PHYSICAL DAMAGE OR BELOW FLOOR SLAB. USE SCHEDULE 80 PVC OUTDOORS WHERE SUBJECT TO PHYSICAL DAMMAGE
7. MINIMUM CONDUIT SIZE TO BE 1/2".
8. WIRING METHODS TO CONFORM TO ARTICLES 330, 334, 348, 350, 352, 356, AND 358 OF THE 2017 NEC.

**AC WIRING NOTES**

1. CONDUCTORS SHALL BE COPPER RATED AT NOT LESS THAN 600 VOLTS.
2. MINIMUM SIZE SHALL BE #14 AWG UNLESS OTHERWISE NOTED ON THE DRAWINGS.
3. EXTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THWN AND INSTALLED IN ELECTRICAL METALLIC TUBING(EMT), RIGID POLYVINYL CHLORIDE CONDUIT(PVC), LIQUID-TIGHT FLEXIBLE METAL CONDUIT(LFMC), OR LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT(LFNC) . ALTERNATIVELY, METAL CLAD CABLE(MC) CAN BE USED AS WELL WHEN RATED FOR USE IN WET LOCATIONS.
4. INTERIOR WIRING CONDUCTOR INSULATION SHALL BE TYPE THHN AND INSTALLED IN ELECTRICAL METALLIC TUBING(EMT), FLEXIBLE METAL CONDUIT(FMC), METAL CLAD CABLE(MC), OR ROMEX.
5. USE SCHEDULE 40 PVC OUTDOORS WHERE NOT SUBJECT TO PHYSICAL DAMAGE OR BELOW FLOOR SLAB. USE SCHEDULE 80 PVC OUTDOORS WHERE SUBJECT TO PHYSICAL DAMMAGE
6. MINIMUM CONDUIT SIZE TO BE 1/2".
7. WIRING METHODS TO CONFORM TO ARTICLES 330, 334, 348, 350, 352, 356, AND 358 OF THE 2017 NEC.

**CONSTRUCTION NOTES**

1. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE NEC, STATE, AND LOCAL APPLICABLE CODES.
2. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS, BEST PRACTICES, AND SPECIFICATIONS.
3. ENSURE REQUIRED MAINTENANCE ACCESS AND CLEARANCES ARE MAINTAINED.
4. WIRES SHALL BE RATED AND LABELED "SUNLIGHT RESISTANT" WHERE EXPOSED TO AMBIENT CONDITIONS.
5. FUSES 0 - 600 AMPS SHALL BE UL CLASS "RK-1" LOW PEAK DUAL ELEMENT TIME DELAY WITH 200,000 AMPERE INTERRUPTING RATING AS MANUFACTURED BY BUSSMANN, UNLESS NOTED OTHERWISE.
6. ALL TERMINALS/LUGS SHALL BE 75° RATED. ALL TERMINALS, SPlicing CONNECTORS, LUGS, ETC SHALL BE IDENTIFIED FOR USE WITH THE MATERIAL (CU/AL) OF THE CONDUCTOR AND SHALL BE PROPERLY INSTALLED.
7. PROVIDE A PULLWIRE IN ALL EMPTY CONDUITS.
8. ALL PENETRATIONS THROUGH EXTERIOR ROOFS SHALL BE FLASHED IN A WATERPROOF MANNER.
9. ALL PENETRATIONS THROUGH ATTIC FIRE BARRIERS SHALL BE SEALED WITH FIRE-BARRIER SEALANT CAULK.
10. SUPPORT ALL CONDUIT AND EQUIPMENT IN ACCORDANCE W/ NEC. ANY SUSPENDED MATERIALS SHALL BE DIRECTLY SUPPORTED BY THE BUILDING STRUCTURE.
11. METAL CONDUIT COUPLINGS CAN BE COMPRESSION TYPE, THREADED, OR BE SET-SCREW TYPE. PLASTIC CONDUIT COUPLINGS TO BE SOCKET GLUED TYPE.
12. A COMPLETE GROUNDING SYSTEM SHALL BE PRESENT OR PROVIDED AND INSTALLED IN ACCORDANCE WITH ARTICLE 250 OF THE NEC, AND AS SHOWN ON THE DRAWINGS.
13. EACH ELECTRICAL APPLIANCE SHALL BE PROVIDED WITH A NAMEPLATE GIVING THE IDENTIFYING NAME AND THE RATING IN VOLTS AND AMPERES, OR VOLTS AND WATTS. IF THE APPLIANCE IS TO BE USED ON A SPECIFIC FREQUENCY OR FREQUENCIES, IT SHALL BE SO MARKED. WHERE MOTOR OVERLOAD PROTECTION EXTERNAL TO THE APPLIANCES IS REQUIRED, THE APPLIANCE SHALL BE SO MARKED.
14. WHERE APPLICABLE, GROUNDING ELECTRODE CONDUCTOR TO BE CONTINUOUS. GROUNDING CRIMPS TO BE IRREVERSIBLE.
15. PHOTOVOLTAIC SYSTEMS SHALL BE PERMANENTLY MARKED AT VARIOUS EQUIPMENT LOCATIONS TO IDENTIFY THAT A PHOTOVOLTAIC SYSTEM IS INSTALLED AND THAT VARIOUS DANGERS ARE PRESENT.
16. EACH PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS SHALL BE PERMANENTLY MARKED TO IDENTIFY IT AS A PHOTOVOLTAIC SYSTEM DISCONNECT.
17. WHERE ALL TERMINALS OF A DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A WARNING SIGN SHALL BE MOUNTED ON OR ADJACENT TO THE DISCONNECT.
18. A PERMANENT LABEL FOR THE DIRECT-CURRENT PHOTOVOLTAIC POWER SOURCE SHALL BE PROVIDED AT THE DC DISCONNECT MEANS.
19. A PERMANENT PLAQUE OR DIRECTORY, DENOTING ALL ELECTRIC POWER SOURCES SERVING THE PREMISES, SHALL BE INSTALLED AT EACH SERVICE EQUIPMENT LOCATION AND AT LOCATIONS OF ALL POWER PRODUCTION SOURCES.
20. ALL MODULE GROUND CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC SECTION 690.4 (C)
21. A NORTH CAROLINA REGISTERED DESIGN PROFESSIONAL WILL BE REQUIRED TO SEAL THE STRUCTURAL DESIGN AT THE TIME OF PERMIT APPLICATION IF ANY OF THE FOLLOWING EXIST AND ARE ATTESTED TO BY THE APPLICANT:
  - I. THE WEIGHT OF THE PV SYSTEM EXCEEDS THREE (3) POUNDS PER SQUARE FOOT(PSF)
  - II. THE ROOF POSSESSES MORE THAN ONE (1) LAYER OF ASPHALT SHINGLES
  - III. THE ROOFING MATERIAL CONSISTS OF A TYPE OTHER THAN ASPHALT SHINGLES OR METAL
  - IV. THE ROOF IS LOCATED IN A 140 MPH OR GREATER WIND ZONE



**CLIENT INFO**

JEREMY ZANOLINI  
 330 TIMBERLINE DRIVE  
 SANFORD, NC 27332

**PROJECT INFO**

DC INPUT: 8.030 kW  
 AC EXPORT: 6.380 kW  
 DOI INSPT. METHOD: OPTION 2

**CODE REFERENCES**

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**SITE CONDITIONS**

WIND SPEED: 117 MPH  
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**DESIGNER INFO**

DESIGNER MCP  
 ENGINEER AWK  
 DATE 3/21/2022  
 VERSION P1

**PV SYSTEM EQUIPMENT LABELS**

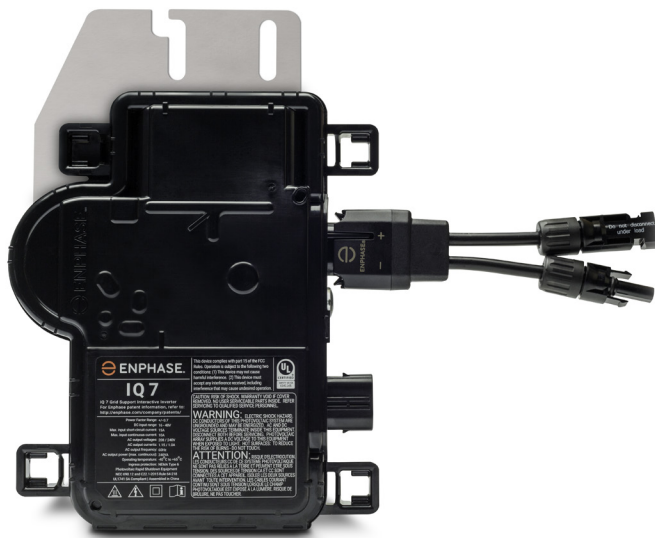
**PV-4.1**

# Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready **Enphase IQ 7 Micro™** and **Enphase IQ 7+ Micro™** dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.



## Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

## Productive and Reliable

- Optimized for high powered 60-cell and 72-cell\* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

## Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

\* The IQ 7+ Micro is required to support 72-cell modules.





## Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US / IQ7-60-B-US		IQ7PLUS-72-2-US / IQ7PLUS-72-B-US	
Commonly used module pairings <sup>1</sup>	235 W - 350 W +		235 W - 440 W +	
Module compatibility	60-cell PV modules only		60-cell and 72-cell PV modules	
Maximum input DC voltage	48 V		60 V	
Peak power tracking voltage	27 V - 37 V		27 V - 45 V	
Operating range	16 V - 48 V		16 V - 60 V	
Min/Max start voltage	22 V / 48 V		22 V / 60 V	
Max DC short circuit current (module I <sub>sc</sub> )	15 A		15 A	
Overvoltage class DC port	II		II	
DC port backfeed current	0 A		0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)	IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range <sup>2</sup>	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit <sup>3</sup>	16 (240 VAC)	13 (208 VAC)	13 (240 VAC)	11 (208 VAC)
Overvoltage class AC port	III		III	
AC port backfeed current	0 A		0 A	
Power factor setting	1.0		1.0	
Power factor (adjustable)	0.85 leading ... 0.85 lagging		0.85 leading ... 0.85 lagging	
EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)			
Connector type (IQ7-60-B-US & IQ7PLUS-72-B-US)	Friends PV2 (MC4 intermateable). Adaptors for modules with MC4 or UTX connectors: - PV2 to MC4: order ECA-S20-S22 - PV2 to UTX: order ECA-S20-S25			
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)			
Weight	1.08 kg (2.38 lbs)			
Cooling	Natural convection - No fans			
Approved for wet locations	Yes			
Pollution degree	PD3			
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure			
Environmental category / UV exposure rating	NEMA Type 6 / outdoor			
FEATURES				
Communication	Power Line Communication (PLC)			
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.			
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.			
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.			

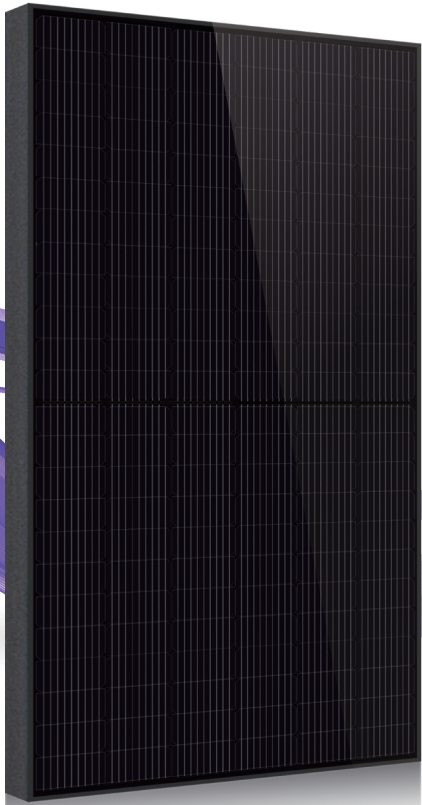
1. No enforced DC/AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/module-compatibility>.

2. Nominal voltage range can be extended beyond nominal if required by the utility.

3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)





FAM\_E7G-BB / 120 cells  
 345W - 365 W  
 Mono-Crystalline PV Module

URE Peach module uses URE state-of -the art cell cutting technology, and advanced module manufacturing experiences.



## Key Features



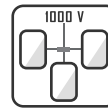
Positive power tolerance  
 +0 ~ +5 watt



100% EL inline inspection  
 Better module reliability



Withstand heavy loading  
 front load 5400 Pa & rear load 2400 Pa



Design for 1000 VDC  
 Reduce the system BOS effectively



Excellent low light performance  
 3.5% relative eff. Reduction at low  
 (200W/m<sup>2</sup>)



### Electrical Data

Model - STC		FAM345E7G-BB	FAM350E7G-BB	FAM355E7G-BB	FAM360E7G-BB	FAM365E7G-BB
Maximum Rating Power (Pmax)	[W]	345	350	355	360	365
Module Efficiency	[%]	18.68	18.95	19.22	19.50	19.77
Open Circuit Voltage (Voc)	[V]	39.90	40.10	40.30	40.50	40.70
Maximum Power Voltage	[V]	33.40	33.60	33.80	34.00	34.20
Short Circuit Current (Isc)	[A]	11.13	11.19	11.26	11.35	11.43
Maximum Power Current	[A]	10.33	10.42	10.51	10.59	10.68

\*Standard Test Condition (STC): Cell Temperature 25 °C, Irradiance 1000 W/m<sup>2</sup>, AM 1.5  
 \*Values without tolerance are typical numbers.Measurement tolerance: ± 3%

### Mechanical Data

Item	Specification
Dimensions	1762 mm (L) <sup>1</sup> x 1048 mm (W) <sup>1</sup> x 35 mm (D) <sup>2</sup> / 69.37" (L) <sup>1</sup> x 41.26" (W) <sup>1</sup> x 1.38" (D) <sup>2</sup>
Weight	19.6 kg / 43.21 lbs
Solar Cell	Mono / 83 mm x 166mm
Front Glass	White toughened safety glass, 3.2mm thickness
Frame	Black anodized aluminum profile
Junction Box	IP ≥67, 3 diodes
Connectors Type	MC4 Compatible
Cable	500mm (cable length can be customized), 4mm <sup>2</sup>
Packaging Configuration	31 pcs Per Pallet, 806 pcs per 40' HQ container

<sup>1</sup> : With assembly tolerance of ± 2 mm [ ± 0.08" ]  
<sup>2</sup> : With assembly tolerance of ± 0.8 mm [ ± 0.03" ]

### Operating Conditions

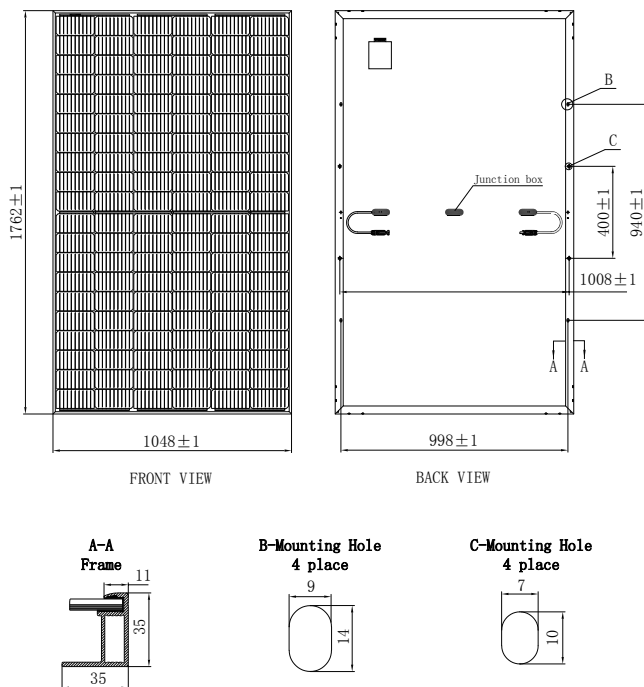
Item	Specification
Mechanical Load	5400 Pa
Maximum System Voltage	1000 VDC
Series Fuse Rating	20 A
Operating Temperature	-40 to 85 °C

### Temperature Characteristics

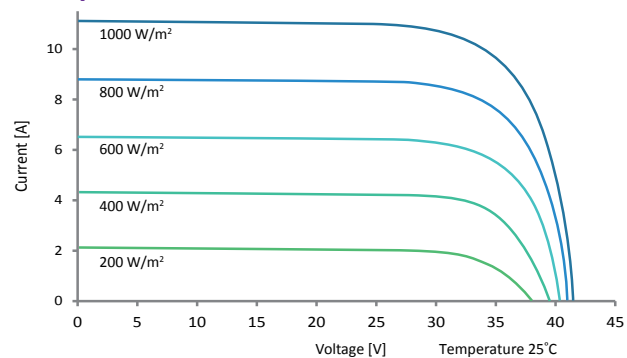
Item	Specification
Nominal Module Operating Temperature	45 °C ± 2°C
Temperature Coefficient of Isc	0.048 % / °C
Temperature Coefficient of Voc	-0.27 % / °C
Temperature Coefficient of Pmax	-0.35 % / °C

\*Nominal module operating temperature (NMOT): Air mass AM 1.5, irradiance 800W/m<sup>2</sup>, temperature 20°C, windspeed 1 m/s.  
 \*Reduction in efficiency from 1000W/m<sup>2</sup> to 200W/m<sup>2</sup> at 25°C: 3.5 ± 2%.

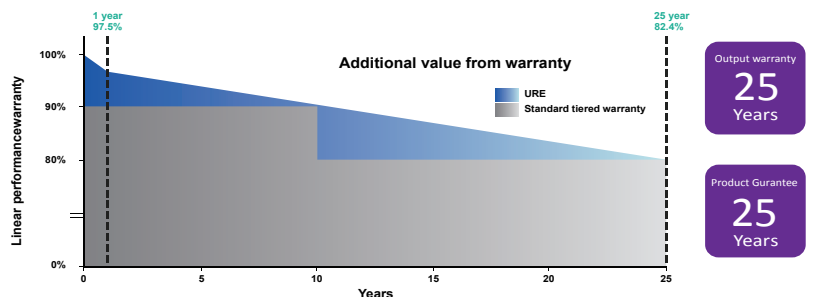
### Engineering Drawing (mm)



### Dependence on Irradiance



### Reliability with Warranty



For more information, please visit us at [www.urecorp.com](http://www.urecorp.com)