Initial Application Date: 3/16 Application # 1850013594

CU# _____

COUNTY OF HARNETT RESIDENTIAL LAND USE APPLICATION

Central Permitting 108 E. Front Street, Lillington, NC 27546 Phone: (910) 893-7525 ext:2 Fax: (910) 893-2793 www.harnett.org/permits

SCANNED

**A RECORDED SURVEY MAP, RECORDED DEED (OR OFFER TO PURCHASE) & SITE PLAN ARE REQUIRED WHEN SUBMITTING A LAND USE APPLICATION.

DATE

LANDOWNER: BENNIE WILLIAMS SR. Mailing Address: 322 COMMANCHE DR.

City: ERWIN State: NC Zip: 28339 Contact No: 9109166360 Email: _____

APPLICANT*: SOLSTICE ELECTRIC LLC Mailing Address: 824 ALDERLEAF DR

City: FUQUAY VARINA State: NC Zip: 27526 Contact No: 9195387996 Email: SERVICE@SOLSTICEELECTRIC.COM

*Please fill out applicant information if different than landowner

CONTACT NAME APPLYING IN OFFICE: SCOTT LEWIS Phone # 9107290220

PROPERTY LOCATION: Subdivision: N/A Lot #: N/A Lot Size: 25.63 ACRES

State Road #: HWY 401 State Road Name: NC HWY 401 / 322 Commanche Dr. Map Book & Page: 2015, 142

Parcel: 12-056-5005007 PIN: 0575032537.000

Zoning: RA-20R Flood Zone: 500 YR Watershed: NO Deed Book & Page: 3069, 0292 Power Company*: DUKE ENERGY

RA-20R-25.63 ACRES MIN FLOOD RISK

*New structures with Progress Energy as service provider need to supply premise number N/A from Progress Energy.

PROPOSED USE:

☐ SFD: (Size ____x____) # Bedrooms:___ # Baths:___ Basement(w/wo bath):____ Garage:____ Deck:____ Crawl Space:____ Slab:____ Monolithic Slab:____

(Is the bonus room finished? (___) yes (___) no w/ a closet? (___) yes (___) no (if yes add in with # bedrooms)

☐ Mod: (Size ____x____) # Bedrooms___ # Baths___ Basement (w/wo bath)____ Garage:____ Site Built Deck:____ On Frame____ Off Frame____

(Is the second floor finished? (___) yes (___) no Any other site built additions? (___) yes (___) no

☐ Manufactured Home: ___SW ___DW ___TW (Size_____x_____) # Bedrooms: ____ Garage:___(site built?___) Deck:___(site built?___)

☐ Duplex: (Size ____x____) No. Buildings:_____ No. Bedrooms Per Unit:_____

☐ Home Occupation: # Rooms:_____ Use:_____ Hours of Operation:_____ #Employees:_____

☒ Addition/Accessory/Other: (Size ____x____) Use: ROOF MOUNTED 3.48 KW SOLAR ARRAY Closets in addition? (___) yes (___) no

Water Supply: _____ County _____ Existing Well _____ New Well *(# of dwellings using well _____)* ***Must have operable water before final**

Sewage Supply: _____ New Septic Tank *(Complete Checklist)* ✓ Existing Septic Tank *(Complete Checklist)* _____ County Sewer

Does owner of this tract of land, own land that contains a manufactured home within five hundred feet (500') of tract listed above? (___) yes (✓) no

Does the property contain any easements whether underground or overhead (___) yes (✓) no

Structures (existing or proposed): Single family dwellings: ✓ Manufactured Homes:_____ Other (specify):_____

Required Residential Property Line Setbacks:

	Minimum	Actual
Front		
Rear		
Closest Side		
Sidestreet/corner lot		
Nearest Building on same lot		

Comments: ROOF MOUNTED SO PROPERTY SETBACK SHOULD NOT APPLY

APPLICATION CONTINUES ON BACK

SPECIFIC DIRECTIONS TO THE PROPERTY FROM LILLINGTON: 10 MI SOUTH ON HWY 401 TURN LEFT ON COMMANCHE DR.

If permits are granted I agree to conform to all ordinances and laws of the State of North Carolina regulating such work and the specifications of plans submitted. I hereby state that foregoing statements are accurate and correct to the best of my knowledge. Permit subject to revocation if false information is provided.

Signature of Owner or Owner's Agent — **Date** 3/18/2014

*****It is the owner/applicants responsibility to provide the county with any applicable information about the subject property, including but not limited to: boundary information, house location, underground or overhead easements, etc. The county or its employees are not responsible for any incorrect or missing information that is contained within these applications.*****

****This application expires 6 months from the initial date if permits have not been issued****

Application #_____

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: BENNIE WILLIAMS Phone: 910 916 6360

Owner (s) Mailing Address: 322 COMMANCHE DRIVE
ERWIN, NC, 28339

Land Owner Name (s): SAME AS ABOVE Phone: _____

Construction or Site Address: _____

PIN # 0575032537.000 Parcel # 12-0565005007

Job Cost: $10,500 Description of Work to be done INSTALLATION OF 10 SOCAR PAVELS & INVERTER

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:
10 MILES SOUTH ON 401 HWY, COMMANCHE DR ON LEFT.

Subdivision: N/A Lot #: N/A

I SCOTT LEWIS (Contractors Name) will provide the ELECTRICAL (Trade) labor on this structure.

I am the building owner or my NC state license number is 31513-L, 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.

SOLSTICE ELECTRIC LLC
Contractor's Company Name

9195387996
Telephone

824 ALDERLEAF DR, FUQUAY-VARINA, NC 27526
Address

SERVICE@SOLSTICEELECTRIC.COM
Email Address

31513-L
License #

Structure Owner / Contractor Signature: _____ Date: 3/16/2018

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**

PHOTOVOLTAIC GENERAL NOTES

1. ALL MATERIALS, EQUIPMENT, INSTALLATION AND WORK SHALL COMPLY WITH THE FOLLOWING APPLICABLE CODES:

- 2015 IBC
- 2015 IRC
- 2014 NEC
- 2015 IMC
- 2015 IPC
- 2015 BUILDING ENGERGY EFFICIENCY STANDARDS

2. EXISTING PLUMBING VENTS, SKYLIGHTS, EXHAUST OUTLETS, VENTILATION INTAKE OR OPENINGS SHALL NOT BE COVERED BY PHOTOVOLTAIC SYSTEM.

3. ALL EQUIPMENT SHALL BE LISTED AND LABELED BY A RECOGNIZED ELECTRICAL TESTING LABORATORY AND INSTALLED PER THE LISTING REQUIREMENTS AND THE MANUFACTURERS INSTRUCTIONS. (NEC 690.4(D))

4. ALL OUTDOOR EQUIPMENT SHALL BE NEMA3R RATED, INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES.

5. ALL EQUIPMENT SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH NEC ARTICLE 250

6. ALL CIRCUITS CONNECTED TO MORE THAN ONE SOURCE SHALL HAVE OVER CURRENT DEVICES LOCATED SO AS TO PROVIDE OVER CURRENT PROTECTION FROM ALL SOURCES [NEC 690.9(A)]

7. ALL PHOTOVOLTAIC (PV) MODULES SHALL BE MOUNTED ON THE ROOF. ADDITIONAL EQUIPMENT OF THE PV SYSTEM SHALL BE LOCATED OUTSIDE THE BUILDING NEAR THE MAIN ELECTRICAL SERVICE [NEC 690.14(C)]

8. THE UTILITY INTERACTIVE INVERTERS SHALL AUTOMATICALLY DE-ENERGIZE ITS OUTPUT TO THE CONNECTED ELECTRICAL PRODUCTION AND DISTRIBUTION NETWORK UPON LOSS OF VOLTAGE IN THE SYSTEM AND SHALL REMAIN IN THAT STATE UNTIL THE GRID PROVIDER VOLTAGE HAS BEEN RESTORED [NEC 690.61]

9. DUE TO THE FACT THAT PV MODULES ARE ENERGIZED WHENEVER EXPOSED TO LIGHT, PV CONTRACTOR SHALL DISABLE THE ARRAY DURING INSTALLATION AND SERVICE BY SHORT CIRCUITING, OPEN CIRCUITING OR COVERING THE ARRAY [NEC 690.18]

10. ALL CONDUIT EXPOSED TO WEATHER SHALL BE LISTED AND IDENTIFIED FOR USE IN DIRECT SUNLIGHT [NEC 690.31(B) 310.10(D)]

11. THE MODULE CONDUCTORS MUST BE TYPE USE-2 ORL LISTED FOR PHOTOVOLTAIC (PV) WIRE [NEC 690.31(B)]

12. ALL CONDUCTORS SHALL BE MARKED ON EACH END FOR UNIQUE IDENTIFICATION.

14. ALL THE NEC REQUIRED WARNING SIGNS, MARKINGS AND LABELS SHALL BE POSTED ON EQUIPMENT AND DISCONNECTS PRIOR TO ANY INSPECTION TO BE PERFORMED BY THE BUILDING DEPARTMENT INSPECTOR.

15. PV SYSTEM CONNECTED ON THE LOAD SIDE OF THE SERVICE DISCONNECTING MEANS OF THE OTHER SOURCE(S) AT ANY DISTRIBUTION EQUIPMENT ON THE PREMISES SHALL MEET THE FOLLOWING [NEC 690.64 & 705.12]

A. EACH SOURCE CONNECTION SHALL BE MADE AT A DEDICATED CIRCUIT BREAKER OR FUSIBLE DISCONNECTING MEANS [NEC 705.12(D)(1)]
B. THE SUM OF OF THE AMPERE RATING OF THE OVER CURRENT DEVICES IN CURRENTS SUPPLYING POWER TO THE BUS BAR OR CONDUCTOR SHALL NOT EXCEED 120% OF THE RATING OF BUS BAR OR CONDUCTOR [NEC 705.12(D)(2)]
C. THE INTERCONNECTION POINT SHALL BE ON THE LINE SIDE OF ALL GROUND-FAULT PROTECTION EQUIPMENT [NEC 705.32]
D. EQUIPMENT CONTAINING OVER CURRENT IN CIRCUITS SUPPLYING POWER TO A BUS BAR OR CONDUCTOR SHALL BE MARKED TO INDICATE THE PRESENCE OF ALL SOURCES. [NEC 705.12 (D)(4)]
E. CIRCUIT BREAKER, IF BACKFEED SHALL BE SUITABLE FOR SUCH OPERATION [NEC 705.12(D)(5)
F. TO MINIMIZE OVERHEATING OF THE BUS BAR IN THE PANEL BOARD MAIN CIRCUIT BREAKER AND THE PV POWER SOURCE CIRCUIT BREAKER SHALL BE PHYSICALLY LOCATED AT THE OPPOSITE END OF THE BUS BAR.

16. METALLIC RACEWAYS OR METALLIC ENCLOSURES ARE REQUIRED METHOD FOR INSIDE A BUILDING FOR PV SYSTEM. [NEC 690.31(E)]

17. FLEXIBLE, FINE STRANDED CABLES SHALL BE TERMINATED ONLY WITH TERMINALS, LUGS, DEVICES OR CONNECTORS THAT ARE IDENTIFIED AND LISTED FOR SUCH USE. [690.31(E)]

18. CONNECTORS SHALL BE OF LATCHING OR LOCKING TYPE. CONNECTORS THAT ARE READILY ACCESSIBLE AND OPERATING OVER 30 VOLTS SHALL REQUIRE A TOOL TO OPEN AND SHALL BE MARKED "DO NOT DISCONNECT UNDER LOAD" OR "NOT FOR CURRENT INTERRUPTING" [NEC 690.33(C) & (E)(2)

19.EQUIPMENT GROUNDING CONDUCTOR FOR PV MODULES SMALLER THAN #6 AWG SHALL BE PROTECTED FROM PHYSICAL DAMAGE BY RACEWAY OR CABLE ARMOR, [NEC 690.46 & 250.120(C)]

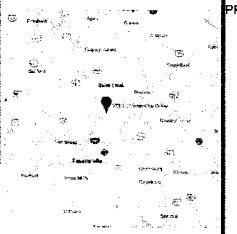
20. EQUIPMENT GROUNDING CONDUCTOR FOR PV SYSTEMS WITHOUT GROUND FAULT PROTECTION (GFP) AND INSTALLED ON NON-DWELLING UNIT MUST HAVE AMPACITY OF AT LEAST 2 TIMES THE TEMPERATURE AND CONDUIT FILL CORRECTED CIRCUIT CONDUCTOR AMPACITY. [NEC 690.45(B)]

21. FINE STRANDED CABLES USED FOR BATTERY TERMINALS DEVICES AND CONNECTIONS REQUIRE LUGS AND TERMINALS LISTED AND IDENTIFIED FOR USE [NEC 690.74]

Plan Review
HARNETT COUNTY CENTRAL PERMITTING
APPLICATION # 18500435 94
JOB NAME Solstice Electric LLC
DATE PLANS RECEIVED 3/20/18
SITE PLANS APPROVED 4-10-18
APPROVED BY BJ

PROJECT INFORMATION

PROJECT NAME:	WILLIAMS RESIDENCE
PROJECT ADDRESS:	322 COMMANCHE DRIVE ERWIN, NC 28339
BUILDING DEPARTMENT JURISDICTION:	CITY OF ERWIN
PV SYSTEM SIZE IN KILOWATTS:	3.48 KW
UTILITY INTERACTIVE:	UTILITY INTERACTIVE
CONTRACTOR:	
CONTACT NUMBERS:	
EMAIL ADDRESS:	
CONTRACTOR LICENSE NUMBER:	
LICENSE EXPIRATION:	



322 Commanche Drive

VICINITY MAP

GreenSolar TECH
CONTRACTOR SIGNATURE X

PROJECT DESCRIPTION

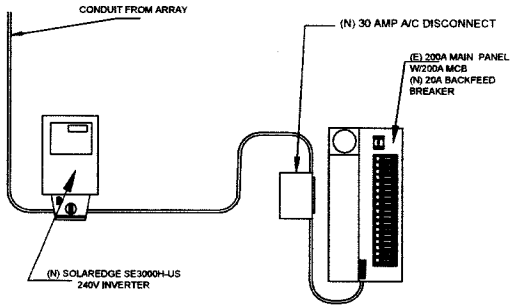
3.48 KW ROOF MOUNTED PHOTOVOLTAIC ELECTRICAL SYSTEM 12-SOLARWORLD 290W MODULES 1-SOLAR EDGE SE-3000H-US 240V INVERTER CORRUGATED STEEL TILT 26°

PROJECT INFORMATION:
OWNER:
BENNIE WILLIAMS
ADDRESS:
322 COMMANCHE DRIVE
ERWIN, NC 28339

START DATE: 3/9/2018
PRINT DATE: Mar 9, 2018 (3:04 PM)
DWG. SCALE:NOTED
DRAWN BY: ANDY GLEDHILL

TITLE PAGE

SHEET #: PV1



EQUIPMENT ELEVATION

NOTES:

1. ALL PV SYSTEM COMPONENTS SHALL BE LISTED BY A RECOGNIZED TESTING AGENCY (I.E. UL ETC)

2. ALL WIRING MATERIAL SHALL BE SUITABLE FOR THE SUN EXPOSURE AND WET LOCATIONS. FIELD APPLIED PROTECTIVE COATINGS ARE NOT ACCEPTABLE.

3. WHERE THE TERMINAL OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A WARNING SIGN SHALL BE MOUNTED ON OR ADJACENT TO THE DISCONNECTING MEANS,. THE SIGN SHALL BE CLEARLY LEGIBLE AND HAVE THE FOLLOWING WORDS:

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

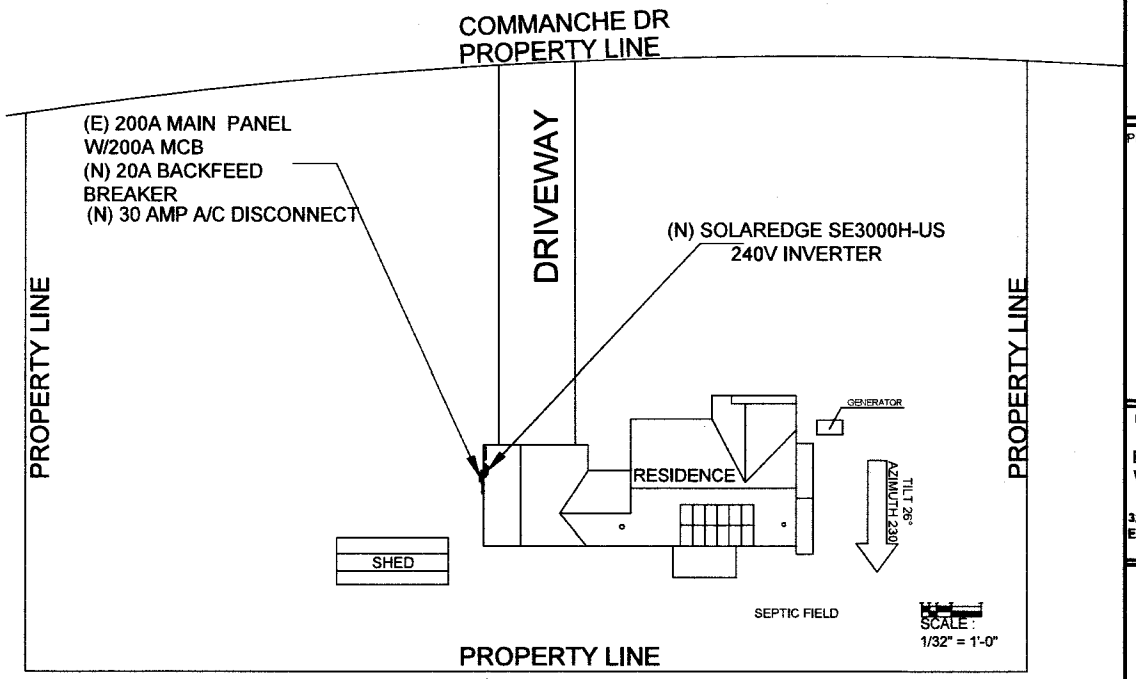
4. ALL PV MODULES AND ASSOCIATED EQUIPMENT AND WIRING MATERIAL SHALL BE PROTECTED FROM PHYSICAL DAMAGE.

5. IN ONE AND TWO FAMILY DWELLINGS, LIVE PARTS IN PV SOURCE CIRCUITS AND PV OUTPUT CIRCUITS OVER 150 VOLTS TO GROUND SHALL NOT BE ACCESSIBLE TO OTHER THAN QUALIFIED PERSONS WHILE ENGERGIZED.

6. ALL FIELD INSTALLED JUNCTION, PULL AND OUTLET BOXES LOCATED BEHIND MODULES OR PANELS SHALL BE ACCESSIBLE DIRECTLY OR DISPLACEMENT OF A MODULE(S) OR PANEL(S) SECURED BY REMOVABLE FASTENERS.

7. REMOVAL OF A DWP-INTERACTIVE INVERTER OR OTHER EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTOR AND THE PHOTOVOLTAIC SOURCE AND/OR OUTPUT CIRCUIT GROUNDED CONDUCTOR.

8. THE ROOF MOUNTED PHOTOVOLTAIC MODULES, PANELS OR SOLAR VOLTAIC ROLL ROOFING MATERIAL SHALL HAVE THE SAME OR BETTER LISTED FIRE-RESISTANCE RATING THAN THE BUILDING ROOF COVERING MATERIAL



GreenSolar TECH
CONTRACTOR SIGNATURE X

PROJECT DESCRIPTION

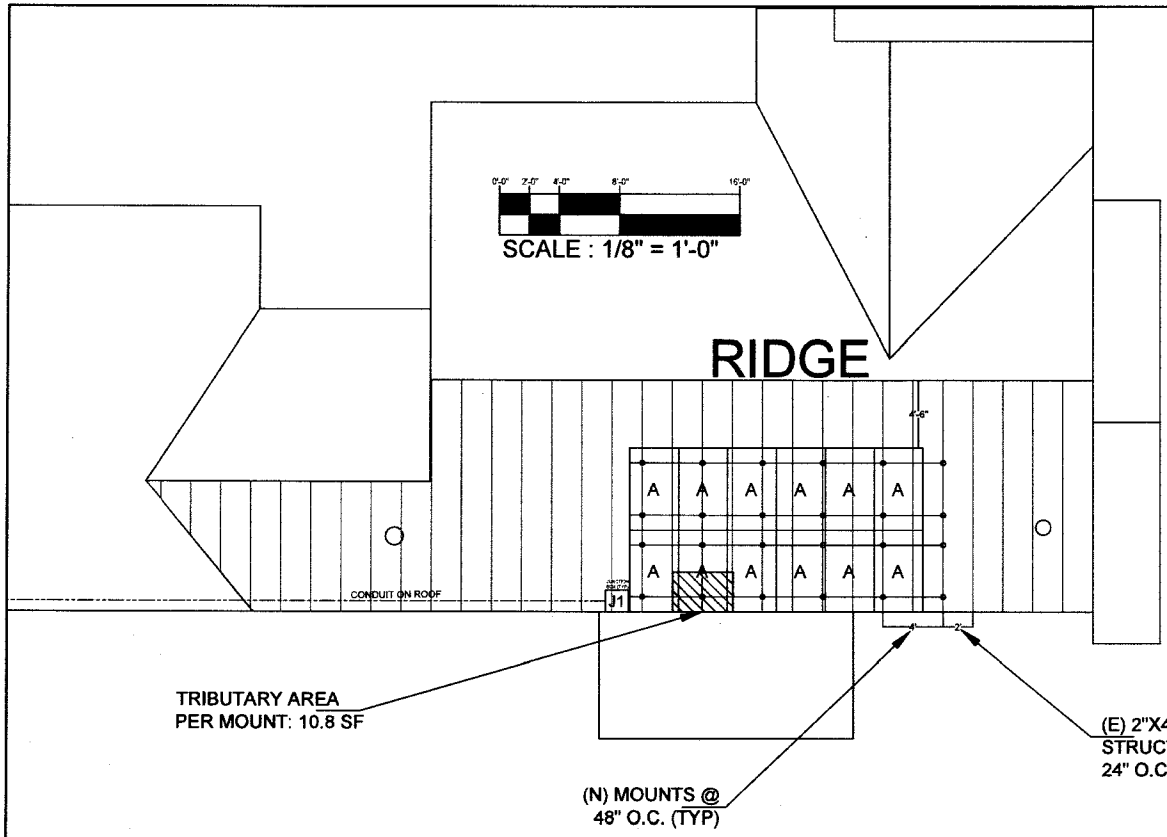
3.48 KW
ROOF MOUNTED
PHOTOVOLTAIC
ELECTRICAL
SYSTEM
12-SOLARWORLD
290W MODULES
1-SOLAR EDGE
SE-3000H-US 240V
INVERTER
CORRUGATED
STEEL
TILT 26°

PROJECT INFORMATION:
OWNER:
BENNIE
WILLIAMS
ADDRESS:
322 COMMANCHE DRIVE
ERWIN, NC 28339

START DATE:
3/9/2018
PRINT DATE: Mar 9, 2018 (3:04 PM)
DWG. SCALE:NOTED
DRAWN BY:
ANDY GLEDHILL

SITE PLAN

SHEET #:
PV2



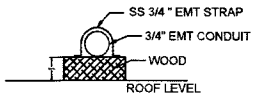
GENERAL NOTES

1. ALL ELECTRICAL SYSTEMS SHALL COMPLY WITH THE LATEST N.E.C.

2. ALL ROOFING PENETRATIONS SHALL EMBED IN STRUCTURAL MEMBERS AND PROPER FLASHING SEALANT SHALL BE USED TO PROVED WATERTIGHT ASSEMBLY.

3. NO PLUMBING OR MECHANICAL VENT SHALL BE COVERED BY COLLECTORS.

CONDUIT DETAIL (TYP)

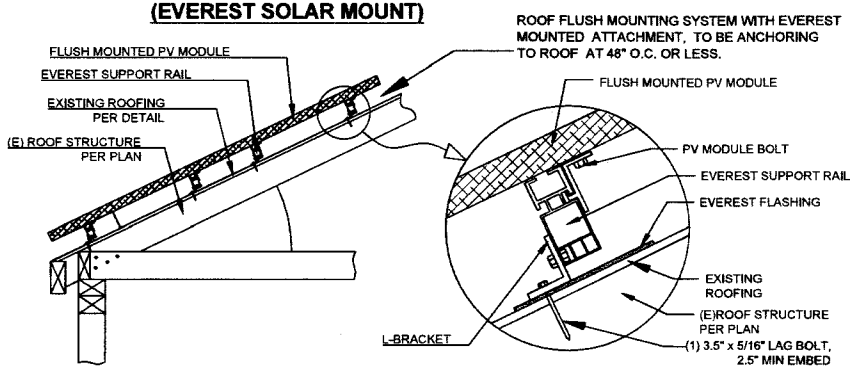


SYSTEM SPECIFICATIONS	
PV SYSTEM MODULES	SOLARWORLD 290
NUMBER OF MODULES	12
MODULES PER STRING	1X12
INVERTER MANUFACTURER	SOLAR EDGE
INVERTER MODEL	SE-3000H-US
NUMBER OF INVERTERS	1
ROOF MATERIAL	CORRUGATED STEEL
ROOF SLOPE, RISE/RUN	26°
MOUNTING EQUIPMENT	S-5! VERSA
RACKING SYSTEM	EVEREST
PV SYSTEM WEIGHT, LBS/ SF	2.57 LBS/SF
AREA OF PV ARRAY	211.2 SF
PERCENTAGE OF ROOF COVERED	15.6%
HEIGHT ABOVE ROOF	3"-5"

POINT LOAD CALCULATION

ITEM	# OR LIN FT	WEIGHT PER (LBS)	TOTAL WEIGHT (LBS)
PANELS	12	39.7	476.4
RAILS	78	0.8	62.4
RACKING PARTS	12	0.4	4.8
TILT LEGS	0	3.5	0
MICRO INVERTERS	0	3.5	0
			543.60LBS
LBS / SQ FT	543.6/211.2=2.57LBS/SF		
LBS / MOUNT = LBS/SF X TRIBUTARY AREA = 2.57LBS/SF X 10.8 SF =27.79LBS/MOUNT			

TYPICAL ELEVATION DETAIL (EVEREST SOLAR MOUNT)



GreenSolar TECH

CONTRACTOR SIGNATURE &

PROJECT DESCRIPTION

3.48 KW ROOF MOUNTED PHOTOVOLTAIC ELECTRICAL SYSTEM
12-SOLARWORLD 290W MODULES
1-SOLAR EDGE SE-3000H-US 240V INVERTER
CORRUGATED STEEL
TILT 26°

PROJECT INFORMATION:
OWNER:
BENNIE WILLIAMS
ADDRESS:
322 COMMANCHE DRIVE
ERWIN, NC 28339

START DATE: 3/9/2018
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DWG. SCALE:NOTED
DRAWN BY: ANDY GLEDHILL

PV LAYOUT

SHEET #:
PV3

3.48 KW ROOF MOUNTED PV SYSTEM

SYSTEM NOTES:
1- SOLAR EDGE SE-3000H-US 240V INVERTER
1 STRING OF 12
12 MODULES TOTAL

CALCULATIONS: INVERTER A
MAX SYSTEM VOLTAGE = 240V
MAX CIRCUIT CURRENT = 15A X1.25 = 18.75A
AC OUTPUT: 12.5A X 1.25 =15.63A

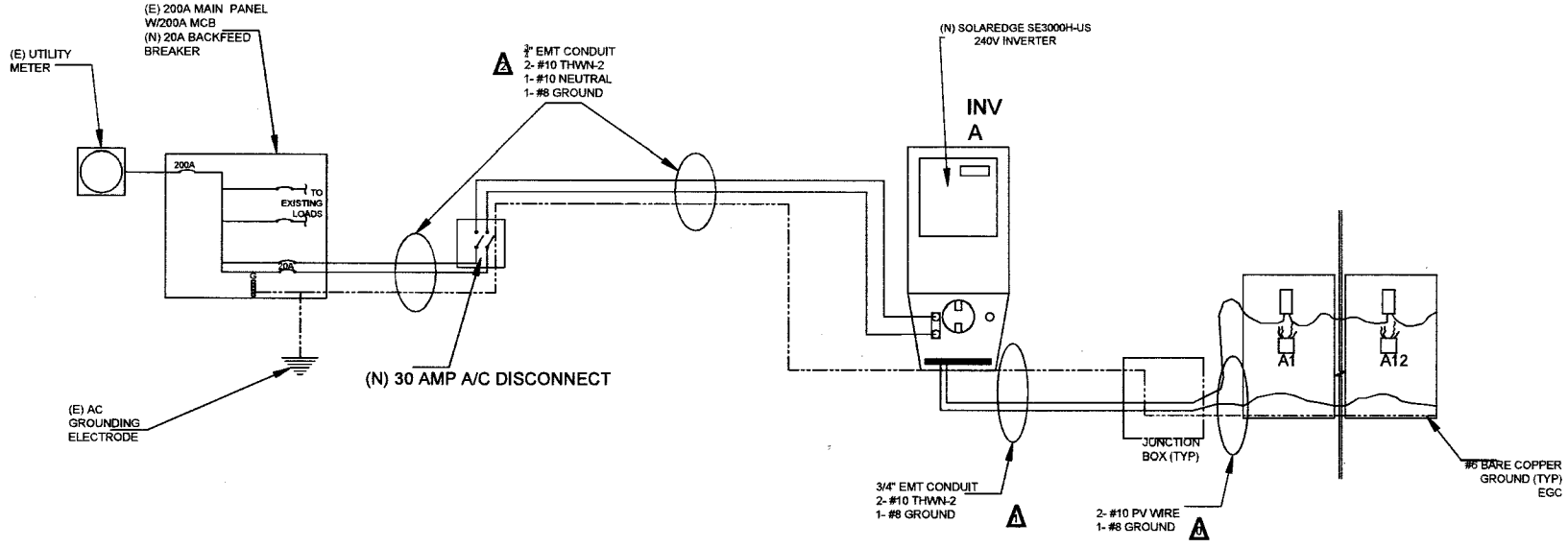
INVERTER A DATA (provided by manufacturer)	
MAKE OF INVERTER	SOLAREDGE
MODEL NUMBER	SE3000H-US
MAX. DC VOLT RATING	480V
MAX. POWER @ 40 C	4650W
NOMINAL AC VOLTAGE	211-264V @ 240V
MAX. AC CURRENT	12.5A
MAX. OCPD	INCLUDED

Power Optimizer Data (provided by manufacturer)	
DC/DC Converter Ratings at Standard Test Conditions	
MAKE OF OPTIMIZER	SOLAREDGE
MODEL NUMBER	P300
MAX. OUTPUT CURRENT	15A
OPERATING OUTPUT VOLTAGE	5-60V

MODULE DATA (provided by manufacturer)	
MODULE RATINGS AT STC (Standard Test Conditions	
MAKE OF MODULE	SOLARWORLD
MODEL NUMBER	SW290 MONO
MAX. POWER POINT (MPP) CURRENT (IMPP)	9.33A
MAX. POWER POINT (MPP) VOLTAGE (VMPP)	31.4V
OPEN CIRCUIT VOLTAGE (VOC)	39.9V
SHORT CIRCUIT CURRENT (ISC)	9.97A
MAX. SERIES FUSE (OCPD)	16A
MAX. POWER (PMAX)	290W
MAX. VOLTAGE (TYPICAL LESS THAN 600V DC)	600V

BUSS BAR CALCULATION

200 AMP X 1.2 = 240 AMP
240 AMP - 200 AMP MCB = 40 AMP
ALLOWABLE BACKFEED



A PERMANENT WARNING LABEL SHALL BE APPLIED TO THE DISTRIBUTION EQUIPMENT WITH THE FOLLOWING OR EQUIVALENT MARKING

WARNING
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE OVERCURRENT DEVICE

WIRE DERATE TABLE

TEMPERATURE RATING OF WIRE 90° C

TAG I.D.	WIRE SIZE AWG	AMPACITY OF WIRE	CONDUIT ABOVE ROOF	AMBIENT TEMP (F°)	TEMP ADDER (F°)	TEMP CORRECTION FACTOR	NUMBER OF CURRENT CARRYING CONDUCTORS	DERATE FACTOR	ALLOWABLE AMPACITY	ACTUAL AMPACITY	VERIFY
1	10	40	>7/8"-3-1/2"	102°	40°	0.65	2	1	26	18.75	OK
2	10	40	ON WALL	102°	40°	0.91	2	1	36.4	15.63	OK

GreenSolar TECH
CONTRACTOR SIGNATURE X

PROJECT DESCRIPTION
3.48 KW ROOF MOUNTED PHOTOVOLTAIC ELECTRICAL SYSTEM
12-SOLARWORLD 290W MODULES
1-SOLAR EDGE SE-3000H-US 240V INVERTER
CORRUGATED STEEL
TILT 26°

PROJECT INFORMATION:
OWNER:
BENNIE WILLIAMS
ADDRESS:
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ERWIN, NC 28339

START DATE: 3/9/2018
PRINT DATE: Mar 9, 2018 (3:04 PM)
DWG. SCALE:NOTED
DRAWN BY: ANDY GLEDHILL

THREE LINE DIAGRAM

SHEET #: PV4

LABELING AND WARNING SIGNS

A. PURPOSE

PROVIDE EMERGENCY RESPONDERS WITH APPROPRIATE WARNING AND GUIDANCE WITH RESPECT TO ISOLATING THE SOLAR ELECTRIC SYSTEM. THIS CAN FACILITATE IDENTIFYING ENERGIZED ELECTRICAL LINES THAT CONNECT THE SOLAR PANELS TO THE INVERTER, AS SHOULD NOT BE CUT WHEN VENTING FOR SMOKE REMOVAL.

B. MAIN SERVICE DISCONNECT:

1. RESIDENTIAL BUILDINGS- THE MARKING MAY BE PLACED WITHIN THE MAIN SERVICE DISCONNECT. THE MARKING SHALL BE PLACED ON THE OUTSIDE COVER IF THE MAIN SERVICE DISCONNECT IS OPERABLE WITH THE SERVICE PANEL CLOSED.

2. COMMERCIAL BUILDINGS- THE MARKINGS SHALL BE PLACED ADJACENT TO THE MAIN SERVICE DISCONNECTCLEARLY VISIBLE FROM THE LOCATION WHERE THE LEVER IS OPERATED

3. MARKINGS, VERBIAGE, FORMAT AND TYPE OF MATERIAL

a. VERBIAGE: CAUTION; SOLAR ELECTRIC SYSTEM CONNECTED
b. FORMAT:

(1) WHITE LETTERING ON A RED BACKGROUND
(2) MINIMUM 3/8 INCH LETTER HEIGHT
(3) ALL LETTERS SHALL BE CAPITALIZED
(4) ARIAL OR SIMILAR FONT, NON-BOLD

c. MATERIAL:

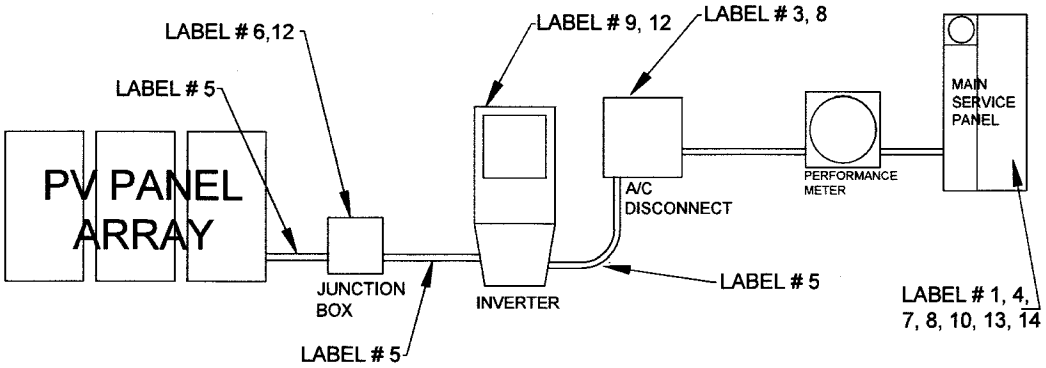
(1) REFLECTIVE, WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT (USE UL-969) AS STANDARD FOR WEATHER RATING): DURABLE ADHESIVE MATERIALS MEET THIS REQUIREMENT.

C. MARKING REQUIREMENTS ON DC CONDUIT, RACEWAYS, ENCLOSURES, CABLE ASSEMBLIES, DC COMBINERS AND JUNCTION BOXES;

1. MARKING: PLACEMENT, VERBIAGE, FORMAT AND TYPE OF MATERIAL.

a. PLACEMENT: MARKINGS SHALL BE PLACED EVERY 10 (TEN) FEET ON ALL INTERIOR AND EXTERIOR DC CONDUITS, RACEWAYS, ENCLOSURES AND CABLE ASSEMBLIES, AT TURNS ABOVE AND/OR BELOW PENETRATIONS, ALL DC COMBINERS AND JUNCTION BOXES.
b. VERBIAGE: CAUTION SOLAR CIRCUIT
c. THE FORMAT AND TYPE OF MATERIAL SHALL ADHERE TO SECTION B-3.B & C ABOVE

D. INVERTERS ARE NOT REQUIRED TO HAVE CAUTION MARKINGS



NOTE: THIS IS A GENERIC DIAGRAM INTENDED FOR THE LOCATION OF WARNING LABELS. NOT ALL EQUIPMENT DEPICTED HERE MAY BE A PART OF THIS PROJECT, OR IN THIS ORDER

#1
WARNING
ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

#2
D/C DISCONNECT TO BE PERMANENTLY MARKED AS FOLLOWS
PHOTOVOLTAIC "D/C" DISCONNECT
TO BE LOCATED ON EXTERNAL D/C DISCONNECT

#3
A/C DISCONNECT TO BE PERMANENTLY MARKED AS FOLLOWS
PHOTOVOLTAIC "A/C" DISCONNECT
TO BE LOCATED ON EXTERNAL A/C DISCONNECT

#4
WARNING
ELECTRIC SHOCK HAZARD
IF GROUND FAULT IS INDICATED NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

#5
CAUTION: SOLAR P.V. CIRCUIT
TO BE APPLIED TO ALL INTERIOR AND/OR EXTERIOR CONDUIT AND RACEWAYS EVERY 10 (TEN) FEET, AT TURNS AND ABOVE AND OR/BELOW ALL PENETRATIONS

#6
ELECTRIC SERVICE PANEL TO BE PERMANENTLY MARKED AS FOLLOWS
WARNING
DUAL POWER SUPPLY
PHOTOVOLTAIC SYSTEM
TO BE LOCATED ON EXTERIOR OF MAIN ELECTRICAL PANEL

#7
Caution
PHOTOVOLTAIC SYSTEM CIRCUIT BREAKER IS BACKFED
TO BE PLACED AT DEDICATED CIRCUIT BREAKER (NEC 690.64(B)(4)(7))

#8
Caution
SOLAR ELECTRIC SYSTEM CONNECTED
TO BE APPLIED TO THE INSIDE OR THE OUTSIDE OF THE MAIN ELECTRICAL PANEL

#9
SYSTEM CHARACTERISTICS

SYSTEM SIZE:	3.48	KW
SYSTEM OPEN CIRCUIT VOLTAGE:	480	V DC
SYSTEM OPERATING VOLTAGE:	360	V DC
SYSTEM OPERATING CURRENT:	9.33	AMPS
SYSTEM SHORT CIRCUIT CURRENT:	15.0	AMPS

TO PLACED INSIDE DC DISCONNECT (NEC 690.53)

#10
A/C SYSTEM CHARACTERISTICS

SYSTEM VOLTAGE:	240	VOLTS
MAXIMUM CURRENT:	25.00	AMPS

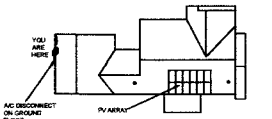
TO BE LOCATED AT POINT OF INTERCONNECTION

#11
WARNING
INVERTER OUTPUT CONNECTION DO NOT RELOCATE OVERCURRENT DEVICE
AS PERMANENT WARNING LABEL SHALL BE APPLIED TO THE DISTRIBUTION EQUIPMENT 2008 NEC 690.64(B)(7).

#12
WARNING
ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

#13
PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN
TO BE LOCATED AT MAIN SERVICE PANEL

#14
CAUTION
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



GreenSolar TECH
CONTRACTOR SIGNATURE X

PROJECT DESCRIPTION

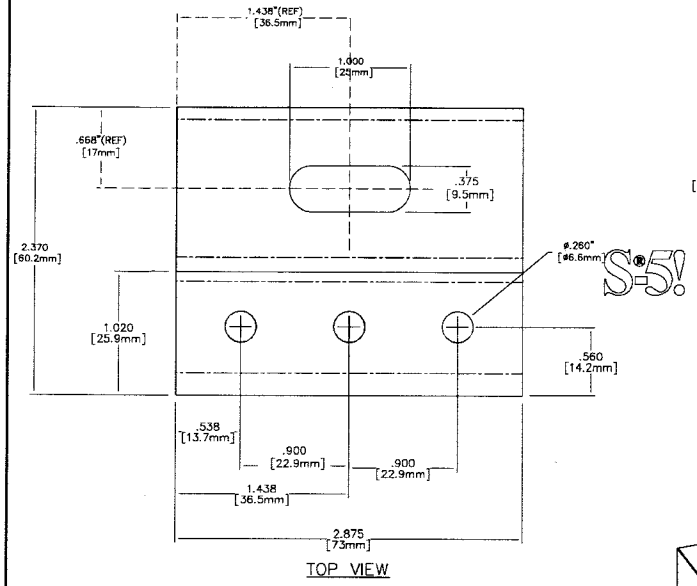
3.48 KW ROOF MOUNTED PHOTOVOLTAIC ELECTRICAL SYSTEM
12-SOLARWORLD 290W MODULES
1-SOLAR EDGE SE-3000H-US 240V INVERTER
CORRUGATED STEEL
TILT 26°

PROJECT INFORMATION:
OWNER:
BENNIE WILLIAMS
ADDRESS:
322 COMMANCHE DRIVE
ERWIN, NC 28339

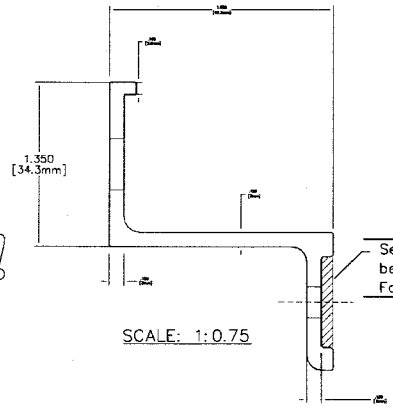
START DATE: 3/9/2018
PRINT DATE: Mar 9, 2018 (3:04 PM)
DWG. SCALE:NOTED
DRAWN BY: ANDY GLEDHILL

WARNING LABELS

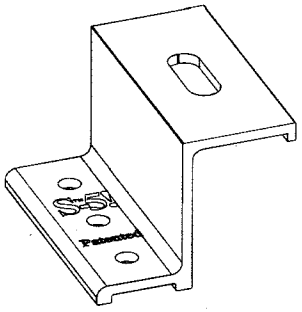
SHEET #: PV5

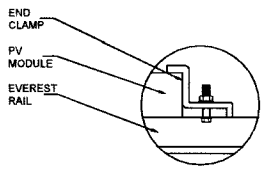


TOP VIEW

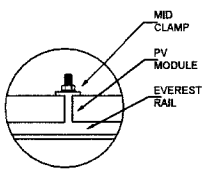


SCALE: 1:0.75





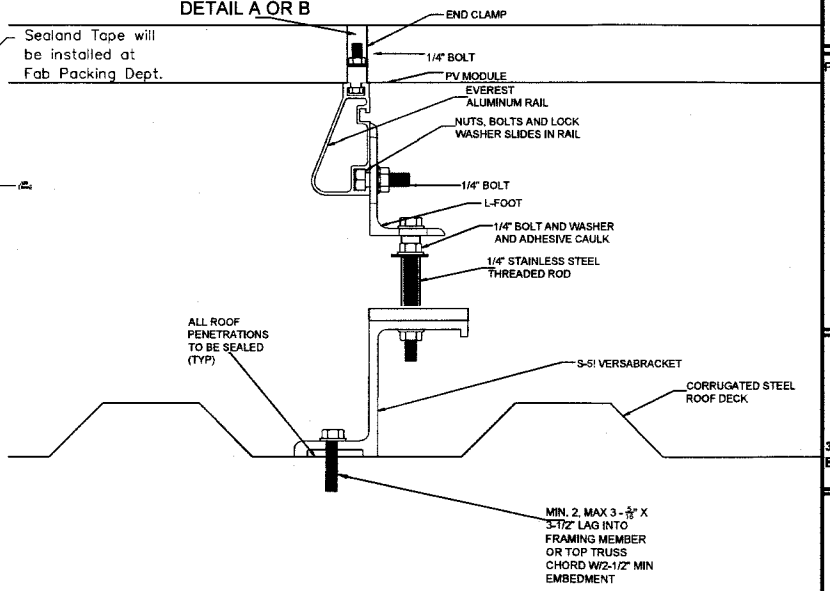
DETAIL A



DETAIL B

DETAIL A OR B

Sealand Tape will be installed at Fab Packing Dept.



GreenSolar TECH

CONTRACTOR SIGNATURE X

PROJECT DESCRIPTION

3.48 KW
ROOF MOUNTED
PHOTOVOLTAIC
ELECTRICAL
SYSTEM
12-SOLARWORLD
290W MODULES
1-SOLAR EDGE
SE-3000H-US 240V
INVERTER
CORRUGATED
STEEL
TILT 26°

PROJECT INFORMATION:
OWNER:
BENNIE
WILLIAMS

ADDRESS:
322 COMMANCHE DRIVE
ERWIN, NC 28339

START DATE:
3/9/2018
PRINT DATE: Mar 9, 2018 (3:04 PM)
DWG. SCALE:NOTED
DRAWN BY:
ANDY GLEDHILL

DETAILS

SHEET #:
PV6

VECTOR
ENGINEERS

18. 43594

VSE Project Number: U2620-0100-181

April 4, 2018

Green Solar Technologies
ATTENTION: Jake Stevenson
6400 Laure Canyon Blvd, #400
North Hollywood, CA 91606

REFERENCE: Bennie Williams Residence: 322 Commanche Drive, Erwin, NC 28339
Solar Array Installation

To Whom It May Concern:

We have reviewed the documents and photographs provided by Green Solar Technologies relating to the installation of the solar array at the above-referenced site. Based upon our review, it is our conclusion that the installation of the solar array on this existing roof will not adversely affect this structure. It is our understanding that the structural components of the existing roof framing are in good condition and free of damage. The design of the solar panel racking (mounts, rails, etc.) is by the manufacturer or contractor. Please note a representative of Vector Structural Engineering has not physically observed the roof framing. The North Carolina Board of Examiners for Engineers and Surveyors recommends that the professional engineer or an employee of the professional engineer perform a visual inspection of the roof framing. Alternatively, the building official of the authority having jurisdiction may perform or arrange for the required inspection in lieu of inspection by the professional engineer.

Design Parameters

Code: North Carolina Building Code, 2012 Edition (2009 IBC)
Occupancy Category: II
Design wind speed: 97 mph (3-sec gust) per ASCE 7-05
Wind exposure category: C
Ground snow load: 10 psf (verify with local Building department)

Existing Roof Structure

Roof structure: 2x4 manufactured trusses @ 24" O.C.
Roofing material: composite shingles
Roof slope: 14°

Connection to Roof

Mounting connection: (1) S-5! VersaBracket 47 at max. 48 in. O.C.
(2) rails per row of panels, panel height not to exceed 5'-6"

VSE Project Number: U2620-0100-181
Bennie Williams Residence
4/4/2018

Conclusions

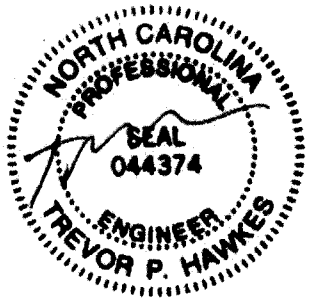
Our conclusion regarding the adequacy of the existing roof is based on the fact that the additional weight of the solar array is 3 psf or less. In the area of the solar array, other live loads will not be present or will be greatly reduced. The gravity loads in the area of the solar array are decreased; thus, the stresses of the structural elements are decreased. Therefore, the requirements of Section 807.4 of the 2015 NCEBC (2012 IEBC) are met and the structure is permitted to remain unaltered.

The solar array will be flush-mounted (no more than 6" above the roof surface) and parallel to the roof surface. Thus, we conclude that any additional wind loading on the structure related to the addition of the proposed solar array is negligible. The attached calculations verify the capacity of the connections of the solar array to the existing roof against wind (uplift), the governing load case. Because the increase in lateral forces is less than 10%, this addition meets the requirements of the exception in Section 807.5 of the 2015 NCEBC (2012 IEBC). Thus the existing structure is permitted to remain unaltered.

Limitations

Installation of the solar panels must be performed in accordance with manufacturer recommendations. All work performed must be in accordance with accepted industry-wide methods and applicable safety standards. The contractor shall notify Vector Structural Engineering, LLC should any damage, deterioration or discrepancies between the as-built condition of the structure and the condition described in this letter be found. Particular attention must be paid to the maximum allowable spacing of connections and the location of solar panels relative to roof edges. Connections to existing roof framing must be staggered, except at array ends, so as not to overload any existing structural member. The use of solar panel support span tables provided by others is allowed only where the building type, site conditions, site-specific design parameters, and solar panel configuration match the description of the span tables. Electrical engineering is the responsibility of others. Waterproofing around the roof penetrations is the responsibility of others. Vector Structural Engineering assumes no responsibility for improper installation of the solar array.

VECTOR STRUCTURAL ENGINEERING, LLC
NC Firm License: COA #P-0742



04/04/2018

Trevor Hawkes, P.E.
NC License: 044374 - Expires: 12/31/2018
Project Engineer

Enclosures

TPH/wic

VECTOR ENGINEERS

JOB NO.: U2620-0100-181
SUBJECT: WIND PRESSURE

PROJECT: Bennie Williams Residence

Components and Cladding Wind Calculations

Label: Solar Panel Array

Note: Calculations per ASCE 7-05

SITE-SPECIFIC WIND PARAMETERS:

Basic Wind Speed [mph]:	97
Exposure Category:	C
Occupancy Category:	II
Importance Factor, I:	1.0

Notes:

ADDITIONAL INPUT & CALCULATIONS:

Height of Roof, h [ft]:	25	(Approximate)	
Comp/Cladding Location:	Gable/Hip Roofs 7° < θ ≤ 27°	Hip?	No
Enclosure Classification:	Enclosed Buildings		
Zone 1 GC_p:	0.9	Figure 6-11C	(enter largest abs. value)
Zone 2 GC_p:	1.7		(enter largest abs. value)
Zone 3 GC_p:	2.6		(enter largest abs. value)
α:	9.5	Table 6-2	
z_g [ft]:	900	Table 6-2	
K_h:	0.95	Table 6-3	
K_{zt}:	1	Equation 6-3	
K_d:	0.85	Table 6-4	
Velocity Pressure, q_h [psf]:	19.4	Equation 6-15	
GC_{pi}:	0	Figure 6-5	(largest abs. value)

OUTPUT:

$$p = q_h[(GC_p)-(GC_{pi})]$$ Equation 6-4

Zone 1 Pressure, p [psf]:	17.4	psf (1.0 W, Interior Zones*)
Zone 2 Pressure, p [psf]:	32.9	psf (1.0 W, End Zones*)
Zone 3 Pressure, p [psf]:	50.3	psf (1.0 W, Corner Zones* within a) (a= 3 ft)

VECTOR ENGINEERS

JOB NO.: U2620-0100-181
SUBJECT: CONNECTION

PROJECT: Bennie Williams Residence

S-5! VersaBracket 47 Connection

Capacity:

Fastener: S-5! VersaBracket 47

Total Capacity: 628 lbs

Demand:

Zone	Pressure (1.0 Wind) (psf)	Max Spacing (ft)	Max. Trib. Area (ft^2)	Max. Uplift Force (lbs)
1	17.4	4	12	209
2	32.9	4	12	395
3	50.3	4	12	604

Demand< Capacity: **CONNECTION OKAY**

*Capacity per ICC Report or Manufacturer Recommendations

VersaBracket 47 - Load Negative Normal to Seam

Units: Imperial

Safety Factor: 3

SHOW RESULTS

SUBSTRATE	MATERIAL	FASTENER TYPE	FASTENER QTY	ULTIMATE LOAD (lbs)	FAILURE MODE	SAFETY FACTOR	ALLOWABLE LOAD (lbs)
Wood Deck	1/2" OSB	14 x 1.5" TYPE 17 w/washer 3/8" HWH	3	532 lbs	A	3	177.3 lbs
Steel Purlin	16ga Steel	14 x 1.5" T-3 w/washer 3/8" HWH	2	887 lbs	A	3	295.7 lbs
Wood Purlin/Rafter	2x4 Timber (2" Vertical)	14 x 1.5" TYPE 17 w/washer 3/8" HWH	2	1,317 lbs	A/B	3	439.0 lbs
Wood Purlin/Rafter	2x4 Timber (4" Horizontal)	14 x 1.5" TYPE 17 w/washer 3/8" HWH	3	1,886 lbs	A/B	3	628.7 lbs

VECTOR ENGINEERS

JOB NO.: U2620-0100-181
SUBJECT: GRAVITY LOADS

PROJECT: Bennie Williams Residence

CALCULATE ESTIMATED GRAVITY LOADS

ROOF DEAD LOAD (D)			Increase due to pitch	Original loading
Roof Pitch/12		3.0		
Composite Shingles		2.1	1.03	2.0 psf
1/2" Plywood		1.0	1.03	1.0 psf
Framing		3.0 psf		
Insulation		0.5 psf		
1/2" Gypsum Clg.		2.0 psf		
M, E & Misc		1.5 psf		
	DL	10 psf		
	PV Array DL	3 psf		

ROOF LIVE LOAD (Lr)

Existing Design Roof Live Load [psf]	20	ASCE 7-05, Table 4-1
Roof Live Load With PV Array [psf]	0	

SNOW LOAD (S):	Existing	w/ Solar Panel Array	
Roof Slope [x:12]:	3.0	3.0	
Roof Slope [°]:	14	14	
Snow Ground Load, p_g [psf]:	10	10	ASCE 7-05, Section 7.2
Terrain Category:	C	C	ASCE 7-05, Table 7-2
Exposure of Roof:	Fully Exposed	Fully Exposed	ASCE 7-05, Table 7-2
Exposure Factor, C_e:	0.9	0.9	ASCE 7-05, Table 7-2
Thermal Factor, C_t:	1.1	1.1	ASCE 7-05, Table 7-3
Risk Category:	II	II	ASCE 7-05, Table 1-1
Importance Factor, I_s:	1.0	1.0	ASCE 7-05, Table 7-4
Flat Roof Snow Load, p_f [psf]:	7	7	ASCE 7-05, Equation 7-1
Minimum Roof Snow Load, p_m [psf]:	10	10	ASCE 7-05, Section 7.3.4
Unobstructed Slippery Surface?	No	Yes	ASCE 7-05, Section 7.4
Slope Factor Figure:	Figure 7-2b	Figure 7-2b	ASCE 7-05, Section 7.4
Roof Slope Factor, C_s:	1.00	0.93	ASCE 7-05, Figure 7-2
Sloped Roof Snow Load, p_s [psf]:	7	6	ASCE 7-05, Equation 7-2
Design Snow Load, S [psf]:	10	10	

VECTOR ENGINEERS

JOB NO.: U2620-0100-181
SUBJECT: LOAD COMPARISON

PROJECT: Bennie Williams Residence

Summary of Loads

	Existing	With PV Array
D [psf]	10	13
Lr [psf]	20	0
S [psf]	10	10

Maximum Gravity Loads:

	Existing	With PV Array	
$D + L_r$ [psf]	30	13	ASCE 7-05, Section 2.4.1
D + S [psf]	20	23	ASCE 7-05, Section 2.4.1
Maximum Gravity Load [psf]:	30	23	

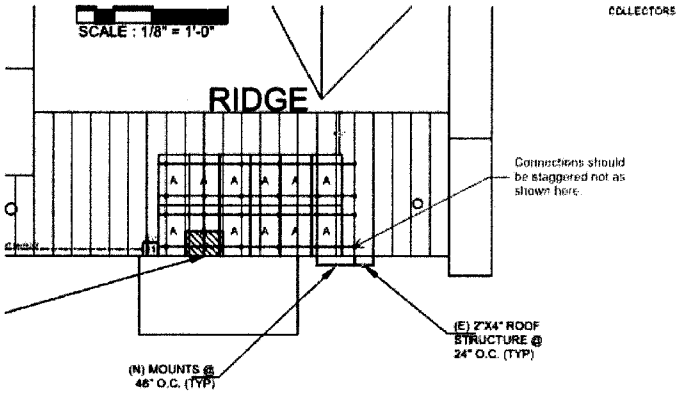
Ratio Proposed Loading to Current Loading: **77%** **OK**

The gravity loads in the area of the solar array are decreased; thus, the stresses of the structural elements are decreased. Therefore, the requirements of Section 807.4 of the 2015 NCEBC (2012 IEBC) are met and the structure is permitted to remain unaltered.

VECTOR ENGINEERS

JOB NO.: U2620-0100-181
SUBJECT: SOLAR LAYOUT

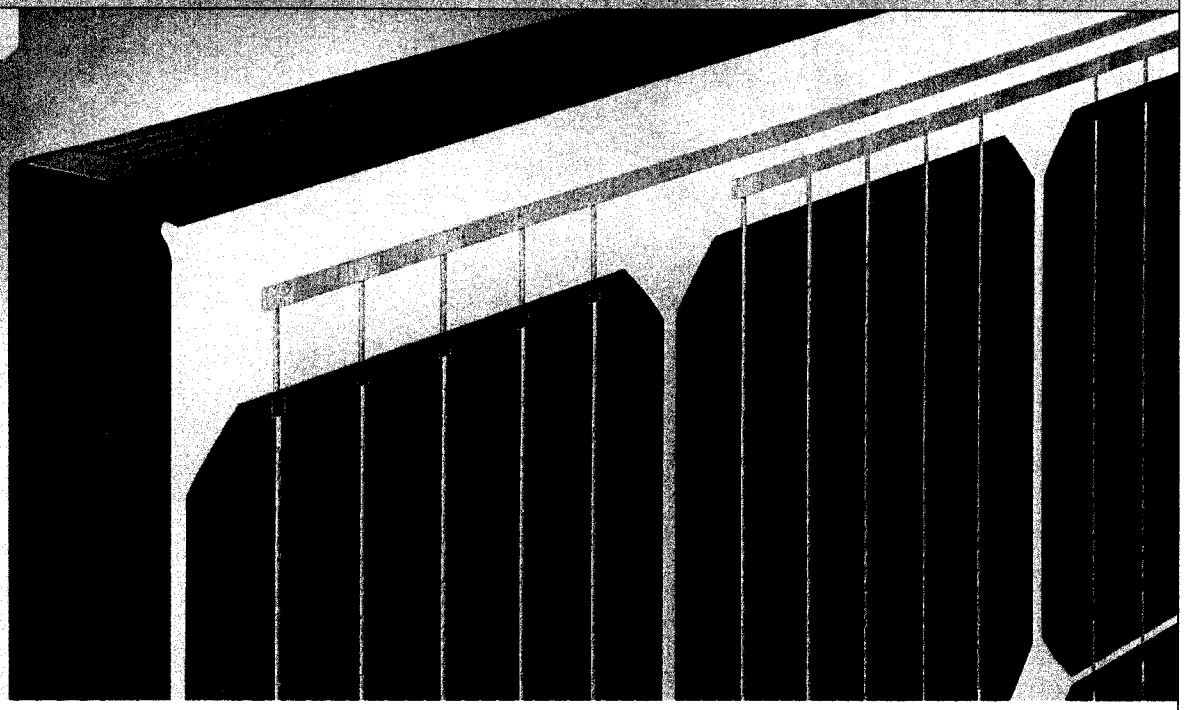
PROJECT: Bennie Williams Residence



Sunmodule Plus
SW 290 - 300 MONO

SOLARWORLD
REAL VALUE

Data sheet



QUALITY BY SOLARWORLD

SolarWorld's foundation is built on more than 40 years of ongoing innovation, continuous optimization and technology expertise. All production steps from silicon to module are established at our production sites ensuring the highest possible quality for our customers. Our modules come in a variety of different sizes and power, making them suitable for all global applications – from residential solar systems to large-scale power plants.

- Extremely tough and stable, despite its light weight – able to handle loads up to 178 psf (8.5 kN/m²)
- Tested in extreme weather conditions – hail-impact tested and resistant to salt spray, frost, ammonia, dust and sand
- Proven guarantee against hotspots and PID-free to IEC 62804-1
- SolarWorld Efficells™ for the highest possible energy yields
- Patented corner design with integrated drainage for optimized self-cleaning
- High-transmissive glass with anti-reflective coating
- Long-term safety and guaranteed top performance – 25-year linear performance warranty; 20-year product warranty

MADE IN USA
OF US & IMPORTED PARTS

VDE
Quality Tested
ID. 40045046

www.solarworld.com

Sunmodule® Plus
SW 290 - 300 MONO

SOLARWORLD
REAL VALUE

PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)*

		SW 290	SW 295	SW 300
Maximum power	P_{max}	290 Wp	295 Wp	300 Wp
Open circuit voltage	V_{oc}	39.6 V	39.8 V	40.0 V
Maximum power point voltage	V_{mpp}	31.9 V	32.3 V	32.6 V
Short circuit current	I_{sc}	9.75 A	9.78 A	9.83 A
Maximum power point current	I_{mpp}	9.20 A	9.25 A	9.31 A
Module efficiency	η_m	17.3 %	17.59 %	17.89 %

Measuring tolerance (P_{max}) traceable to TUV Rheinland: +/- 2% (TUV Power controlled, ID 0000039351)

*STC: 1000W/m², 25°C, AM 1.5

PERFORMANCE AT 800 W/m², NOCT, AM 1.5

		SW 290	SW 295	SW 300
Maximum power	P_{max}	219.6 Wp	223.6 Wp	226.7 Wp
Open circuit voltage	V_{oc}	36.7 V	36.9 V	37.0 V
Maximum power point voltage	V_{mpp}	29.5 V	29.9 V	30.2 V
Short circuit current	I_{sc}	7.99 A	8.01 A	8.06 A
Maximum power point current	I_{mpp}	7.43 A	7.47 A	7.52 A

Minor reduction in efficiency under partial load conditions at 25 °C: at 200 W/m², 97% (+/-3%) of the STC efficiency (1000 W/m²) is achieved.

PARAMETERS FOR OPTIMAL SYSTEM INTEGRATION

Power sorting	-0 Wp / +5 Wp
Maximum system voltage SC II / NEC	1000 V
Maximum reverse current	25 A
Number of bypass diodes	3
Operating temperature	-40 to +85 °C
*Maximum design loads (Two rail system)**	113 psf downward, 64 psf upward
*Maximum design loads (Three rail system)**	178 psf downward, 64 psf upward

*Please refer to the Sunmodule installation instructions for the details associated with these load cases.

COMPONENT MATERIALS

Cells per module	60
Cell type	Monocrystalline PERC
Cell dimensions	6 in x 6 in (156 mm x 156 mm)
Front	Tempered safety glass with ARC (EN 12150)
Back	Multi-layer polymer backsheet, white
Frame	Black anodized aluminum
J-Box	IP65
Connector	PV wire (UL4703) with Amphenol UTX connectors
Module fire performance	(UL 1703) Type 1

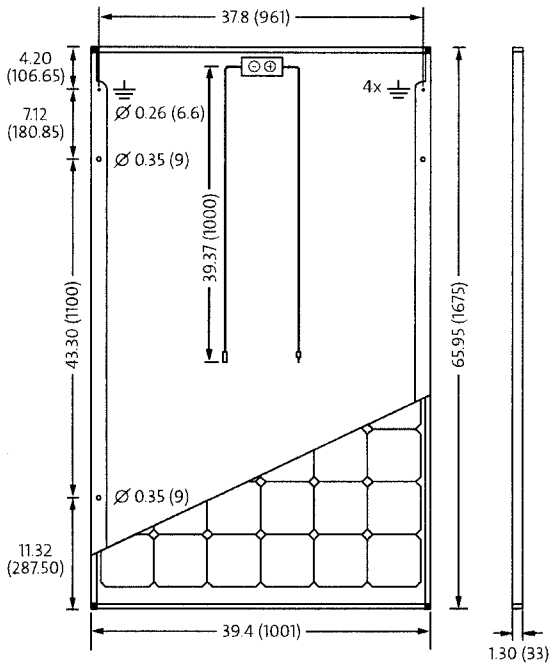
DIMENSIONS / WEIGHT

Length	65.95 in (1675 mm)
Width	39.40 in (1001 mm)
Height	1.30 in (33 mm)
Weight	39.7 lb (18.0 kg)

THERMAL CHARACTERISTICS

NOCT	46 °C
TC I_{sc}	0.07 % /C
TC V_{oc}	-0.29 % /C
TC P_{mpp}	-0.39 % /C

ISO 9001
ISO 14001
Certified



All units provided are imperial. SI units provided in parentheses.

ORDERING INFORMATION

Order number	*Description*
82000482	Sunmodule Plus SW 290 mono (black frame)
82000430	Sunmodule Plus SW 295 mono (black frame)
82000432	Sunmodule Plus SW 300 mono (black frame)

CERTIFICATES AND WARRANTIES

Certificates	IEC 61730	IEC 61215	UL 1703
	IEC 62716	IEC 60068-2-68	IEC 61701
Warranties	Product Warranty		20 years
	Linear Performance Guarantee		25 years

SolarWorld AG reserves the right to make specification changes without notice. This data sheet complies with the requirements of EN 50380.

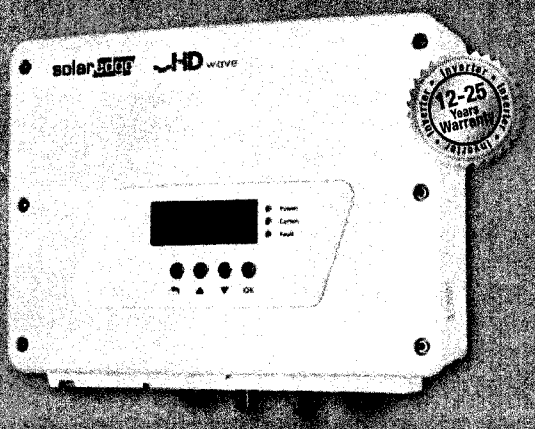
SW-01-7506US 20170201

solaredge

INVERTERS

SolarEdge Single Phase Inverters

SE2200H, SE3000H, SE3500H, SE3680H
SE4000H, SE5000H, SE6000H



Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Extremely small, lightweight and easy to install
- High reliability without any electrolytic capacitors
- Built-in module-level monitoring
- Outdoor and indoor installation
- Fixed voltage inverter for longer strings
- Smart Energy Management control
- Compatible with the StorEdge Interface for StorEdge™ applications

HD wave

Single Phase Inverters

SE2200H, SE3000H, SE3500H, SE3680H
SE4000H, SE5000H, SE6000H

	SE2200H	SE3000H	SE3500H	SE3680H	SE4000H	SE5000H	SE6000H	
OUTPUT								
Rated AC Power Output	2200	3000	3500	3680	4000	5000[1]	6000	VA
Maximum AC Power Output	2200	3000	3500	3680	4000	5000[1]	6000	VA
AC Output Voltage (nominal)	220 / 230							Vac
AC Output Voltage Range	184 - 264.5							Vac
AC Frequency (nominal)	50 / 60 ± 5							Hz
Maximum Continuous Output Current	10	14	16	16	18.5	23	27.5	A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power	3400	4650	5425	5700	6200	7750	9300	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380							Vdc
Maximum Input Current	6.5	9	10	10.5	11.5	13.5	16.5	Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600kΩ Sensitivity							
Maximum Inverter Efficiency	99.2							%
European Weighted Efficiency	98.3	98.8				99		%
Nighttime Power Consumption	< 2.5							W
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), WiFi (optional), Cellular (optional)							
Smart Energy Management	Export Limitation, Home Energy Management, StorEdge applications							
STANDARD COMPLIANCE								
Safety	IEC-62109-1/2, AS-3100							
Grid Connection Standards	AS-4777, VDE-AR-N-4105, VDE 0126-1-1, UTE C15-712, G83/2, G59/3, CEI-021, EN 50438, IEC61727, IEC62116, ÖNORM, TF3.2.1, C10-11, NRS 097-2-1							
Emissions	IEC61000-6-2, IEC61000-6-3, IEC61000-3-11, IEC61000-3-12, FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output - Supported Cable Diameter	9 - 16							mm
AC - Supported Wire Cross Section	1 - 16							mm^2
DC Input	1 x MC4				2 x MC4 pair			
Dimensions (H x W x D)	280 x 370 x 142							mm
Noise	< 25							dBA
Weight	7.8					9	10.6	kg
Cooling	Natural Convection							
Operating Temperature Range	-20 to +60[2] (-40°C option)							°C
Protection Rating	IP65 - Outdoor and Indoor							

[1] 4600VA in Germany
[2] For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note.pdf

CE RoHS

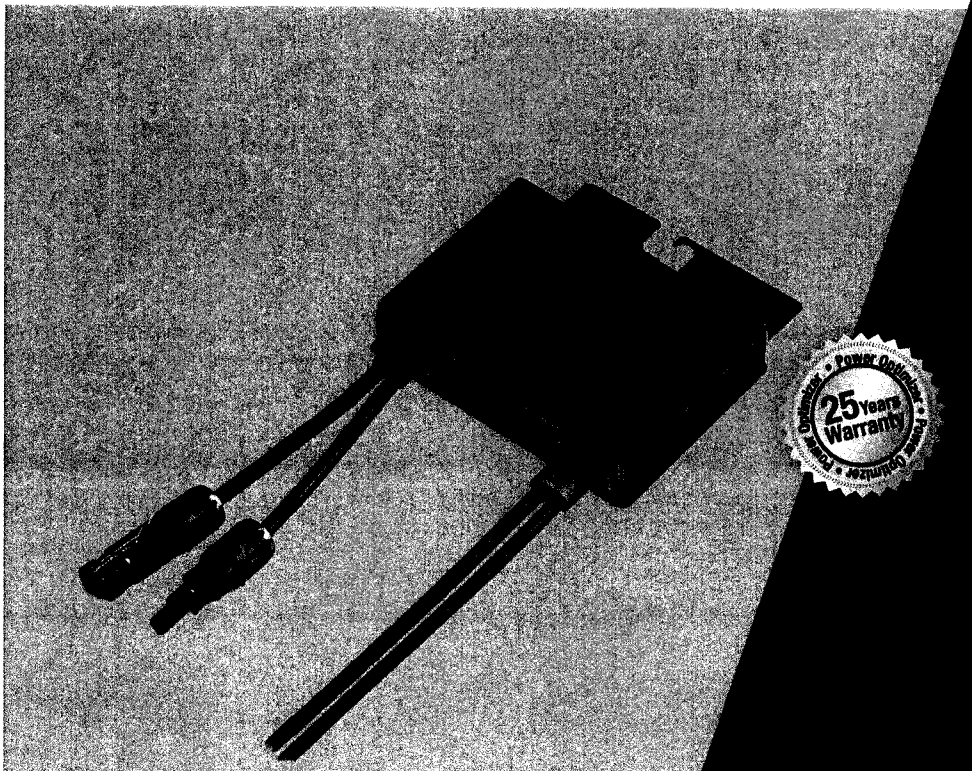
solaredge

SolarEdge Power Optimizer

Module Add-On For North America

P300 / P320 / P370 / P400 / P405

POWER OPTIMIZER



PV power optimization at the module-level

- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety

SolarEdge Power Optimizer

Module Add-On for North America

P300 / P320 / P370 / P400 / P405

	P300 (for 60-cell modules)	P320 (for high-power 60-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P405 (for thin film modules)	
INPUT						
Rated Input DC Power[1]	300	320	370	400	405	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	125	Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	12.5 - 105	Vdc
Maximum Short Circuit Current (Isc)	10	11		10.1		Adc
Maximum DC Input Current	12.5	13.75		12.63		Adc
Maximum Efficiency	99.5					%
Weighted Efficiency	98.8					%
Overvoltage Category	II					
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)						
Maximum Output Current	15					Adc
Maximum Output Voltage	60				85	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)						
Safety Output Voltage per Power Optimizer	1					Vdc
STANDARD COMPLIANCE						
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3					
Safety	IEC62109-1 (class II safety), UL1741					
RoHS	Yes					
INSTALLATION SPECIFICATIONS						
Maximum Allowed System Voltage	1000					Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters					
Dimensions (W x L x H)	128 x 152 x 27.5 / 5 x 5.97 x 1.08			128 x 152 x 35 / 5 x 5.97 x 1.37	128 x 152 x 50 / 5 x 5.97 x 1.96	mm / in
Weight (including cables)	630 / 1.4			750 / 1.7	845 / 1.9	gr / lb
Input Connector	MC4 Compatible		MC4 / Amphenol AH4	MC4 Compatible		
Output Wire Type / Connector	Double Insulated; MC4 Compatible		Double Insulated; MC4 / Amphenol AH4	Double Insulated; MC4 Compatible		
Output Wire Length	0.95 / 3.0		1.2 / 3.9			m / ft
Operating Temperature Range	-40 - +85 / -40 - +185					°C / °F
Protection Rating	IP68 / NEMA6P					
Relative Humidity	0 - 100					%

[1] Rated STC power of the module. Module of up to +5% power tolerance allowed.

PV SYSTEM DESIGN USING A SOLAREDGE INVERTER[2][3]	SINGLE PHASE HD-WAVE	SINGLE PHASE	THREE PHASE 208V	THREE PHASE 480V	
Minimum String Length (Power Optimizers)	8		10	18	
Maximum String Length (Power Optimizers)	25		25	50	
Maximum Power per String	5700 (6000 with SE7600H-US)	5250	6000	12750	W
Parallel Strings of Different Lengths or Orientations	Yes				

[2] For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf.
[3] It is not allowed to mix P405 with P300/P370/P400/P600/P700 in one string.

HARNETT COUNTY CENTRAL PERMITTING
P.O. BOX 65
LILLINGTON, NC 27546
For Inspections Call: (910) 893-7525 Fax: (910) 893-2793

Date 5/01/18

Application Number 18-50043594
Property Address . . . . . 322 COMANCHE DR
PARCEL NUMBER . . 12-0565- - -0050- -07-
Application description . . . CP STANDALONE TRADE - RESIDENTIAL
Subdivision Name . . . . . .
Property Zoning . . . . . RES/AGRI DIST - RA-20R

Permit . . . . . RESIDENTIAL ELECTRICAL PERMIT

Additional desc . .
Phone Access Code . 1234509

Required Inspections

Seq	Phone Insp#	Insp Code	Description	Initials	Date
999	211	E211	R*ELEC ABOVE CEILING	_____	__/__/__
999	217	E217	R*ELEC RECONNECT	_____	__/__/__
999	205	E205	R*ELEC UNDER SLAB	_____	__/__/__
999	215	E215	R*ELEC. UND. POOL	_____	__/__/__
999	213	E213	R*ELECTRICAL UNDERGROUND	_____	__/__/__
999	131	R131	ONE TRADE FINAL	_____	__/__/__
999	125	R125	ONE TRADE ROUGH IN	_____	__/__/__

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Application type description CP STANDALONE TRADE - RESIDENTIAL
Subdivision Name . . . . . .
Property Zoning . . . . . RES/AGRI DIST - RA-20R

Owner

WILLIAMS BENNIE D JR
322 COMANCHE DRIVE
ERWIN NC 28339

Contractor

SOLSTICE ELECTRIC, LLC
824 ALDERLEAF DRIVE
FUQUAY-VARINA NC 27526
(919) 538-7996

Applicant

SOLSTICE ELECTRIC LLC
824 ALDERLEAF DR
FUQUAY-VARINA NC 27526
(919) 538-7996

--- Structure Information 000 000 ROOF MOUNT SOLAR ARRAY
Flood Zone . . . . . FLOOD ZONE X
Other struct info . . . . . PROPOSED USE ELECTRICAL
WATER SUPPLY UNKNOWN

Permit . . . . . RESIDENTIAL ELECTRICAL PERMIT
Additional desc . .
Phone Access Code . 1234509
Issue Date . . . . 5/01/18 Valuation 0
Expiration Date . . 5/01/19

Special Notes and Comments
T/S: 03/20/2018 09:12 AM LLUCAS ----
322 COMMANCHE DR - ERWIN
10 MILES SOUTH ON HWY 401 - TURN LEFT
ON COMMANCHE DR

_____

_____

HARNETT COUNTY CASH RECEIPTS
*** CUSTOMER RECEIPT ***

Oper: BPETRICH Type: CP Drawer: 1
Date: 5/01/18 51 Receipt no: 337363

Year	Number	Amount
2018	50043594	

322 COMANCHE DR
ERWIN, NC 28339

B1	BP - PERMIT FEES	$80.00

ELECTRIC - ROOF MOUNT SOL

SOLSTICE ELECTRIC

Tender detail	
CP CREDIT CARD	$80.00
Total tendered	$80.00
Total payment	$80.00

Trans date: 5/01/18 Time: 13:27:21

** THANK YOU FOR YOUR PAYMENT **