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RETTEW ENGINEERING

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March 18, 2019

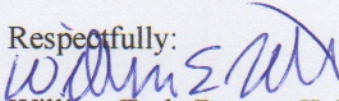
Mr. Aaron Davis  
Palmetto State Solar  
1200 Woodruff Rd.  
Greenville, SC 29607

Re: Solar Panels: Richardson, 701 East H Street, Erwin, NC

Dear Mr. Davis:

Mr. William Earle Rettew, II, PE, of our office has reviewed the site information and technical specifications for the existing single family dwelling at the property referenced above. The attachments for this system exceed the minimum requirements for the panels for both gravity and wind loads. The system design is in compliance with Wind and Seismic loads, wind controls. The Wind Speed of 115MPH (3 second gust) is required for this location. We noted that the existing roof covering is a single layer of composition shingles on 2x6 rafters spaced at 16" o.c. The weight of the solar panels is approximately the same weight as a second layer of shingles. It is common roofing practice to add a second layer of shingles without special permitting. We have examined the members and the loads and calculated that the rafters are not overloaded with the new panels. Our evaluation has concluded that this existing roof framing system is adequate for the installation of the Solar Panels specified in the "Drawings". The attachment to the roof is with 5/16" by 3" long stainless steel lag screws into the rafters. The manufacturer recommends staggering the load points to balance the roof loading. If you have any questions please call or email.

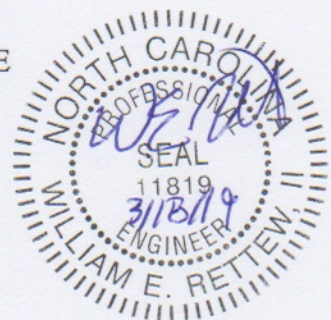
Respectfully:



William Earle Rettew, II, PE  
Structural Engineer

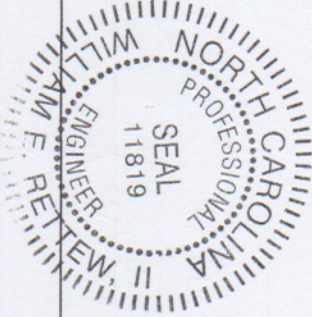
cc: Angela Lowrey

enclosure: 1 of 11



**PHOTOVOLTAIC GENERAL NOTES**

1. ALL MATERIALS, EQUIPMENT, INSTALLATION AND WORK PERFORMED SHALL BE IN ACCORDANCE WITH THE FOLLOWING CODES:
  - 2015 IBC
  - 2015 IRC
  - 2014 NEC
  - 2015 UMC
  - 2015 UPC
  - 2015 IFC
  - 2016 BUILDING ENERGY EFFICIENCY STANDARDS
2. EXISTING PLUMBING VENTS, SRYLIGHTS, EXHAUST OUTLETS, VENTILATION INTAKE AIR OPENINGS SHALL NOT BE COVERED BY THE SOLAR PHOTOVOLTAIC SYSTEM.
3. ALL EQUIPMENT SHALL BE LISTED AND LABELED BY A RECOGNIZED ELECTRICAL TESTING LABORATORY AND MUST OBEY THE LISTING REQUIREMENTS AND THE MANUFACTURER'S INSTRUCTIONS.
4. ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R 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 DISCONNECT DEVICES LOCATED SO AS TO PROVIDE OVERCURRENT PROTECTION FROM ALL SOURCES (NEC 690.34(A)).
7. AN INVERTER OR AN AC MODULE IN AN INTERACTIVE SOLAR PV SYSTEM SHALL AUTOMATICALLY DEENERGIZE ITS OUTPUT TO THE CONNECTED ELECTRICAL PRODUCTION AND DISTRIBUTION NETWORK UPON LOSS OF VOLTAGE IN THAT SYSTEM AND SHALL REMAIN IN THAT STATE UNTIL THE ELECTRICAL PRODUCTION AND DISTRIBUTION NETWORK VOLTAGE HAS BEEN RESTORED. (NEC 690.61)
8. DUE TO THE FACT THAT PV MODULES ARE ENERGIZED WHENEVER EXPOSED TO LIGHT, PV CONTRACTORS SHALL DISABLE THE ARRAY ELECTRICAL INSTALLATION AND SERVICE BY SHORT-CIRCUITING, OPENING CIRCUITS, OR COVERING THE ARRAY WITH OPaque COVERING (NEC 690.18)
9. PV EQUIPMENT, SYSTEMS AND ALL ASSOCIATED WIRING AND INTERCONNECTIONS SHALL ONLY BE INSTALLED BY QUALIFIED PERSONS (NEC 690.4(C)).
10. ALL CONDUCTORS EXPOSED TO WEATHER SHALL BE LISTED AND IDENTIFIED FOR USE IN DIRECT SUNLIGHT (NEC 690.31(C), NEC 310.10(D))
11. THE MODULE CONDUCTORS MUST BE TYPE USE-2 OR LISTED FOR PHOTOVOLTAIC (PV) WIRE (UL 4703 & 654 LISTED) (NEC 690.31(C))
12. ALL CONDUCTORS SHALL BE MARKED ON EACH END FOR UNIQUE IDENTIFICATION (NEC 690.31(B))
13. ALL GROUNDED CONDUCTORS SHALL BE MARKED ON EACH END FOR UNIQUE IDENTIFICATION AND SHALL BE PROPERLY COLOR IDENTIFIED AS WHITE (NEC 200.6)
14. WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED PER NEC 110.26)
15. ALL PHOTOVOLTAIC SYSTEM CONDUCTORS WILL BE 80°C RATED PER NEC 690.31 (A), TABLE 310.15(B)(16), TABLE 310.15(B)(17).
16. ALL NEC REQUIRED WARNING SIGNS, MARKINGS, AND LABELS SHALL BE POSTED ON EQUIPMENT AND DISCONNECTS
17. PV SYSTEM CONNECTED ON THE LOAD SIDE OF THE SERVICE DISCONNECTING MEANS OF THE OTHER SERVICE(S) AT ANY DISTRIBUTION EQUIPMENT FOR THE PREMISES SHALL MEET THE FOLLOWING (NEC 705.120):
  - A. EACH SOURCE CONNECTION SHALL BE MADE AT A DEDICATED CIRCUIT BREAKER OR FUSIBLE DISCONNECTING MEANS (NEC 705.120(1)(1))
  - B. THE SUM OF AMPERE RATINGS OF THE OVERCURRENT DEVICES IN CIRCUITS THAT ARE SUPPLYING THE LOAD ON CONDUCTOR SHALL NOT EXCEED 120% OF THE BUS BAR RATING OR CONDUCTOR RATING (NEC 705.120(1)(2))
  - C. THE INTERCONNECT POINT SHALL BE ON THE LINE SIDE OF ALL GROUND FAULT PROTECTION EQUIPMENT (NEC 705.120(1)(3))
  - D. EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING THE LOAD SHALL BE IDENTIFIED AS SUCH BY THE MANUFACTURER'S PRESENCE OF ALL SOURCES (NEC 705.120(1)(4))
  - E. CIRCUIT BREAKER, IF BACK-FED, SHALL BE SUITABLE FOR SUCH OPERATION (NEC 705.120(1)(5))
  - F. IF POWER SOURCE CIRCUIT BREAKER SHALL BE LOCATED AT THE OPPOSITE END OF THE MAIN SERVICE DISCONNECT (NEC 705.120(1)(7))
18. METALLIC RACEWAYS OR METALLIC ENCLOSURES ARE REQUIRED WIRING METHOD FOR INSIDE A BUILDING OR PV SYSTEM (NEC 690.31(G))
19. FLEXIBLE, RIGID STRANDED CABLES SHALL BE TERMINATED ONLY WITH TERMINALS LARGER THAN ARE IDENTIFIED AND LISTED FOR SUCH USE (NEC 690.31(H) & 110.14(A))
20. CONNECTORS SHALL BE OF LATCHING OR LOCKING TYPE, CONNECTORS THAT ARE REGULARLY ACCESSIBLE AND OPERATING OVER 30 VOLTS SHALL REQUIRE A TOOL TO OPEN AND SHALL BE MARKED TO NOT DISCONNECT UNDER LOAD OR NOT FOR CURRENT INTERRUPTING (NEC 690.32(C), NEC 690.32(E)(2))
21. THE ROOF MOUNTED PHOTOVOLTAIC MODULES, PANELS OR SOLAR VOLTAGE ROLL ROOFING MATERIAL SHALL HAVE THE SAME OR BETTER LISTED FIRE RESISTANCE RATING THAN THE BUILDING ROOF COVERING MATERIAL.
22. EQUIPMENT GROUNDING CONDUCTOR FOR PV MODULES SMALLER THAN 6 AWG SHALL BE PROTECTED FROM PHYSICAL DAMAGE BY A RACEWAY OR CABLE RAYOR (NEC 690.46 & 250.120(C))
23. EQUIPMENT GROUNDING CONDUCTOR FOR PV SOURCE AND PV OUTPUT CIRCUITS SHALL BE SIZED IN ACCORDANCE WITH 250.122, WHERE NO OVERCURRENT DEVICE IS INSTALLED AT THE PV MAX CIRCUIT CURRENT SHALL BE USED WHEN APPLYING TABLE 250.122. INCREASED IN EQUIPMENT GROUNDING CONDUCTOR SIZE TO ADDRESS VOLTAGE DROP CONSIDERATIONS SHALL NOT BE REQUIRED. (NEC 690.45)
24. THE STRANDED CABLES USED FOR BATTERY TERMINALS, DEVICES, AND CONNECTIONS FROM UPS AND TERMINALS LISTED AND MARKED FOR SUCH USE (NEC 900.74(A))
25. ALL EXTERIOR CONDUIT, FITTINGS, AND BOXES SHALL BE RAIN TIGHT AND APPROVED FOR USE IN WET LOCATIONS (NEC 314.15)



PROJECT INFORMATION	
NAME:	RICHARDSON, MARY
ADDRESS:	701 EAST H STREET, ERWIN, NC 28339
APN:	0615070325
JURISDICTION:	ERWIN
CONTRACTOR INFORMATION	
CONTRACTOR:	GREEN NRG GROUP INC.
ADDRESS:	9421 WINNETKA AVE. UNIT G, CHATSWORTH, CA 91311
PHONE:	888 - 589 - 4006
LICENSE #/TYPE:	U.32659

SYSTEM INFORMATION	
SIZE(kw):	11.680
MODULE TYPE:	JINKO SOLAR JKM365M-7ZH
INVERTER(S):	1 SOLAREEDGE SEL1400H-US 32 SOLAREEDGE P370 OPTIMIZER
INVERTER TYPE:	TRANSFORMERLESS

SCOPE OF WORK:	
INSTALL	(32) ROOF MOUNTED PV SOLAR MODULES, (1) SOLAREEDGE SEL1400H-US INVERTER(S)(240V), (32)DC/DC OPTIMIZERS.

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ROOF-MOUNTED PHOTOVOLTAIC PANEL SYSTEMS INSTALLED ON OR ABOVE THE ROOF COVERING SHALL BE TESTED, LISTED AND IDENTIFIED WITH A FIRE CLASSIFICATION (CLASS C MINIMUM) IN ACCORDANCE WITH UL 1703.

GREEN NRG GROUP INC. 9421 WINNETKA AVE. UNIT G CHATSWORTH, CA 91311 PHONE: 888 - 589 - 4006 U.32659 <b>Contractors Signature:</b>		<b>11.680 kW PHOTOVOLTAIC SYSTEM</b>		Project Name RICHARDSON, MARY 701 EAST H STREET ERWIN, NC 28339 0615070325	REVISIONS: 03.11.2019 R1 (M)
		DRAWN BY: RD	COVER PAGE		