

09/18/2025

EMPWR Solar LLP

1007 Johnnie Dodds Boulevard Suite 111, Charleston, SC, 29464



Attn.: To Whom It May Concern

Job: Robert Shepard

Project Address: 98 Kipling Creek Drive, Fuquay-Varina, NC, 27526

After review, we certify that the alteration to the existing structure by installation of the PV system meets the prescriptive requirements of the applicable codes and criteria shown below:

All mounting equipment shall be installed per manufacturer's approved installation specifications.

Design Criteria

Code: 2018 NCBC, IEBC 2015, ASCE 7-10

Risk Category: II

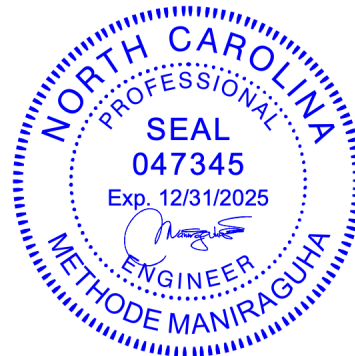
Live Load: 20 psf

Ult Wind Speed: 117.0 mph

Exposure Cat: C

Ground Snow: 15.0 psf

Min Snow Roof: N/A



Signed on: 09/18/2025

Current Renewables Engineering Inc.
Professional Engineer
info@currentrenewableseng.com

Gravity Checks:**Loads Pre-PV:**

	Check 1
D (psf):	6.602
D + L (psf):	26.602
D + S (psf):	16.997
D + 0.75L + 0.75S (psf):	29.398
Governing Load Value (psf):	29.398
Governing LC: D + 0.75L + 0.75S	
Governing C _D Factor:	1.250

Loads Post-PV:

	Check 1
D (psf):	9.602
D + S (psf):	16.531
Governing Load Value (psf):	16.531
Governing LC: D + S	
Governing C _D Factor:	1.150

Gravity Load Increase:

	Check 1
$((\text{Load}/C_D)_{\text{postPV}} / (\text{Load}/C_D)_{\text{prePV}}) - 1$:	-38.88%

The increase in gravity loads as a result of the solar system is less than 5% of the existing structure. Therefore, no further framing analysis is required.

Hardware Checks:**Attachment Check:**

	Check 1
Attachment Type:	Custom
Allowable Up Force (lbs):	1,004.00
Allowable Down Force (lbs):	2,056.00
Allowable Side Force (lbs):	240.00
Applied Uplift Force (lbs):	-97.72
Uplift DCR:	0.097
Applied Down Force (lbs):	108.68
Down DCR:	0.053
Applied Lateral Force (lbs):	32.77
Lateral DCR:	0.137

Seismic Check:

Existing Weight:

Wall Weight (psf):	17.00
Tributary Wall Area (ft ²):	2,610.00
Total Wall Weight (lbs):	44,370.00
Roof Weight (psf):	6.60
Roof Area (ft ²):	1,820.00
Total Roof Weight (lbs):	12,014.84
Total Existing Weight (lbs):	56,384.84

Additional PV Weight:

PV Panel Weight (lbs):	54.45
Number of Panels:	16
Total Additional PV Weight (lbs):	871.20

Weight Increase:

$$((\text{Existing W} + \text{Additional W}) \div (\text{Existing W})) - 1 = 1.55\%$$

The increase in weight as a result of the solar system is less than 10% of the existing structure. Therefore, no further seismic analysis is required.

Limits of Scope of Work and Liability:

Existing structure is assumed to have been designed and constructed following appropriate codes at time of erection, and assumed to have appropriate permits. The calculations produced are only for the roof framing supporting the proposed PV installation referenced in the stamped planset and were completed according to generally recognized structural analysis standards and procedures, professional engineering and design experience, opinions and judgements. Existing deficiencies which are unknown or were not observable during time of inspection are not included in this scope of work. All PV modules, racking, and mounting equipment shall be designed and installed per manufacturer's approved installation specifications. The Engineer of Record and the engineering consulting firm assume no responsibility for misuse or improper installation. This analysis is not stamped for water leakage. Framing was determined based on information in provided plans and/or photos, along with engineering judgement. Prior to commencement of work, the contractor shall verify the framing sizes, spacings, and spans noted in the stamped plans, calculations, and cert letter (where applicable) and notify the Engineer of Record of any discrepancies prior to starting construction. Contractor shall also verify that there is no damaged framing that was not addressed in stamped plans, calculations, and cert letter (where applicable) and notify the Engineer of Record of any concerns prior to starting construction.