HEWITT SOLUTIONS, PLLC
DESIGN & ENGINEERING SERVICES

PROJECT: Nelson Residence

ADDRESS: 146 Purvis Lane, Cameron, NC 28326

SUBJECT: Roof Structural Review

DATE: September 17, 2020

To whom it may concern:

I, Ricky L Hewitt, Jr., PE, have reviewed the manufacturer's installation details and requirements for the proposed PV system that is to be installed by Powerhome Solar. This review includes evaluation of the existing structures ability to handle the gravitational loads associated with the addition of PV system. In my professional opinion, I believe it to be adequate based on the following conditions and assumptions:

a. The structure conformed and was built to the building code requirements at time of construction.
b. Truss bracing required by original truss designer/manufacturer installed as required, if required.
c. The solar array displaces roof live loads that the roof was originally designed to carry because the area of panels is inaccessible (less than 24" between panel and roof).
d. The conditions of the overall roof structure are consistent with those represented in the initial site inspection photos and as provided by contractor in Site Survey package.
e. Snow loads remain unaffected by PV system.
f. Wind Speed and Ground Snow Load to be revised, if necessary, as directed by Building Official.
g. The data and calculations provided in this letter.

SITE INFORMATION:

CATEGORY	CONDITION
WIND SPEED	*120 mph*
EXPOSURE CATEGORY	*B*
GROUND SNOW LOAD	*10 psf*
MEAN ROOF HEIGHT	*<30 ft*
ROOF PITCH	*40 degrees*
CONSTRUCTION TYPE	*Truss*
RAFTER SIZE, SPACING	*2x4 truss @ 24" O.C.*
ROOFING MATERIAL	*Plywood & shingles*

Based on the above listed site data, the dead load capacity of the top chord of the truss is determined to be at least 10 psf per standard truss design requirements. Therefore, the calculations indicate the total roof system (including PV system) is less than the 10 psf dead load that the calculations indicate it is rated for.

DEAD LOAD			
EXISTING	ROOF DECKING	*1.5*	PSF
	SHINGLES	*2.3*	PSF
	TRUSS	*2.0*	PSF
	MISC.	*1.0*	PSF
PROPOSED	PV SYSTEM	*3.0*	PSF
TOTAL		**9.8**	**PSF**

SUMMARY:

In my professional opinion, the existing roof has been evaluated and determined to be adequate for carrying the additional dead load associated with the proposed PV system.

- All construction shall conform to all pertinent state and local building codes and ordinances.
- Recommend alternating roof attachments between rafters to best distribute the loads.
- Consult the engineer-of-record if conditions other than specified in this letter are encountered.
- Attachment shall be 5/16” lag screw with minimum 2.5” embedment installed per manufacturer’s specifications with a maximum of 48” spacing unless otherwise approved by engineer.

Regards,

Ricky L. Hewitt, Jr. PE
Owner & Engineer
Hewitt Solutions, *PLLC*
(252) 267-2525