HEWITT SOLUTIONS, PLLC
DESIGN & ENGINEERING SERVICES

PROJECT: Schmid Residence

ADDRESS: 269 English Springer Dr., Raleigh, NC 27501

SUBJECT: Roof Structural Review

DATE: January 12, 2021

To whom it may concern:

I, Ricky L Hewitt, Jr., PE, have reviewed the site information 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 the additional gravitational loads imposed by the PV system to be acceptable for the project roof based on the following conditions and assumptions:

a. The structure conformed and was built to the building code requirements at time of construction.
b. 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).
c. 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.
d. Snow loads remain unaffected by PV system.
e. Wind Speed and Ground Snow Load to be revised, if necessary, as directed by Building Official.
f. Current Ground Snow Load (GSL) is equal to or less than GSL at time of original construction.
g. The data and calculations provided in this letter.

SITE INFORMATION:

CATEGORY	CONDITION
WIND SPEED	*120 mph*
EXPOSURE CATEGORY	*B*
GROUND SNOW LOAD	*15 psf*
MEAN ROOF HEIGHT	*<30 ft*
ROOF PITCH	*27 & 30 & 43 degrees*
CONSTRUCTION TYPE	*Rafter*
RAFTER SIZE, SPACING	*2x6 @ 16" O.C.*
MAX. HORIZ SPAN	**21'-4"*
ROOFING MATERIAL	*plywood & shingles*

**actual max rafter span is 14'4" or less*

DEAD LOAD TABULATION

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

ANALYSIS:

Based on the above listed site data (rafter size, spacing, span), the dead load capacity of the roof is calculated as at least 10 psf per TABLE R802.4.1(1) of the 2018 North Carolina Residential Code. Therefore, the tabulation indicates the total roof system (including PV system) is less than the dead load that it is understood to be rated for. Attachment gravitational point loads are calculated at approximately 20 lbs which is less than the industry recommended maximum of 45 lb.

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 spacing of 48” unless otherwise permitted by engineer.
- Attachments and racking shall be installed according to manufacturer’s specifications, including maximum allowable cantilever.

Ricky Hewitt Jr., PE

Digitally signed by Ricky Hewitt Jr., PE
Date: 2021.01.12 12:51:10 -05'00'

Regards,

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