1 Tesla Road, Austin, TX 78725
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Version #98.2 - 1
PIL
NAS

December 18, 2024

Certification Letter

Project/Job # 2752560	
Project Address:	Alsobrook Residence 12583 McDougald Rd Broadway, NC 27505
AHJ	Harnett County
Tesla Operations Center	Raleigh NC

Design Criteria:

- Applicable Codes = Structure: 2018 NCEBC (IEBC 2015); PV: 2018 NCRC/NCBC (IRC/IBC 2015), ASCE 7-10, and 2015 NDS
- Risk Category = II
- Wind Speed = 120 mph (3-s Gust - Vult), Exposure Category C, Envelope Procedure for C&C
- Ground Snow Load = 15 psf
- MP1: RDL = 9.5 psf, RLL = 12.5 psf, PVSL = 4.6 psf

Note: Per IBC 1613.1; Seismic check is not required because Ss = 0.188 < 0.4g and Seismic Design Category (SDC) = C < D

To Whom It May Concern,

A structural evaluation of loading was conducted for the above address based on the design criteria listed above.

Based on this evaluation, I certify that the alteration to the existing structure by installation of the PV system meets the prescriptive compliance requirements of the applicable existing building and/or new building provisions adopted/referenced above.

Additionally, I certify that the PV module assembly including all standoffs supporting it have been reviewed to be in accordance with the manufacturer's specifications and to meet and/or exceed all requirements set forth by the referenced codes for loading.

The PV assembly hardware specifications are contained in the plans/docs submitted for approval.

Installer shall verify existing roof framing is in suitable condition and does not exhibit any signs of structural damage which may diminish the capacity of its members or connections prior to commencement of PV installation. Installer verification of the mounting plane noted above is required because some or all of the framing was not observed prior to the structural evaluation performed for this report.

NORTH CAROLINA PROFESSIONAL SEAL 051417 ENGINEER YONG HENG ZHU
Structural Only
NC Firm D-0427

Digitally signed by Henry Zhu
Date: 2024.12.18 11:37:52 -08'00'

STRUCTURAL EVALUATION & HARDWARE DESIGN RESULTS SUMMARY TABLES

Jobsite Specific Design Criteria			
Design Standard		ASCE 7-10	
Risk Category		II	
Ultimate Wind Speed	V-Ult	120 mph	Fig. 1609A
Exposure Category		C	Section 26.7
Ground Snow Load	pg	15.0 psf	Table 7-1

MP Specific Design Information								
	MP Name	**MP1**						
Design Info	**Roofing**	**Comp Roof**						
	Standoff	**ZS Comp V4 with Flashing Insert**						
	Pitch	**44°**						
	SL/RLL: PV	**4.6 psf**						
	SL/RLL: Non-PV	**12.5 psf**						
	Edge Zone Width	**5.9 ft**						

Standoff Spacing and Layout								
	MP Name	**MP1**						
	Applied Wind Zone	**WZ1**						
	Wind Pressure	-16.2 psf						
Landscape	**X-Spacing**	72"						
	X-Cantilever	24"						
	Y-Spacing	41"						
	Y-Cantilever	NA						
	Uplift DCR	67.2%						
Portrait	**X-Spacing**	48"						
	X-Cantilever	16"						
	Y-Spacing	74"						
	Y-Cantilever	NA						
	Uplift DCR	81.0%						
	Layout	Staggered						
	Applied Wind Zone	**WZ2**						
	Wind Pressure	-19.7 psf						
Landscape	**X-Spacing**	72"						
	X-Cantilever	24"						
	Y-Spacing	41"						
	Y-Cantilever	NA						
	Uplift DCR	82.9%						
Portrait	**X-Spacing**	48"						
	X-Cantilever	16"						
	Y-Spacing	74"						
	Y-Cantilever	NA						
	Uplift DCR	99.8%						
	Layout	Staggered						
	Applied Wind Zone	**WZ3**						
	Wind Pressure	-19.7 psf						
Landscape	**X-Spacing**	72"						
	X-Cantilever	24"						
	Y-Spacing	41"						
	Y-Cantilever	NA						
	Uplift DCR	82.9%						
Portrait	**X-Spacing**	48"						
	X-Cantilever	16"						
	Y-Spacing	74"						
	Y-Cantilever	NA						
	Uplift DCR	99.8%						
	Layout	Staggered						

1. X and Y are maximums that are always relative to the structure framing that supports the PV. X is across framing members and Y is along framing members.
2. Where present, the green and red hatching in Applied Wind Zone rows corresponds to hatching on the Site Plan page of the plan set.

Structure Qualification Results								
	MP Name	**MP1**						
	Member Evaluation Results	Member Impact Check OK						