

August 28, 2025

Certification Letter

Project/Job # 2752828

Project Address:

Lucchesi Residence
3715 Rawls Church Rd
Fuquay-Varina, NC 27526

AHJ
Tesla Operations Center

Harnett County
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 = 20 psf
- MP2: RDL = 10 psf, RLL = 20 psf, PVSL = 12.1 psf

Note: Per IBC 1613.1; Seismic check is not required because $S_s = 0.173 < 0.4g$ and Seismic Design Category (SDC) = B < 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 building provisions 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.

Digitally signed by
Henry Zhu
Date: 2025-08-28
11:21:25 -07:00



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 | 20.0 psf | Table 7-1 |

| MP Specific Design Information | | | | | | | |
|--------------------------------|-----------------|---------------------------------|--|--|--|--|--|
| MP Name | | MP2 | | | | | |
| Design Info | Roofing | Comp Roof | | | | | |
| | Standoff | ZS Comp V4 with Flashing Insert | | | | | |
| | Pitch | 18° | | | | | |
| | SL/RLL: PV | 12.1 psf | | | | | |
| | SL/RLL: Non-PV | 20.0 psf | | | | | |
| | Edge Zone Width | 5.2 ft | | | | | |

| Standoff Spacing and Layout | | | | | | | |
|-----------------------------|-------------------|-----------|--|--|--|--|--|
| MP Name | | MP2 | | | | | |
| Landscape | Applied Wind Zone | WZ1 | | | | | |
| | Wind Pressure | -16.3 psf | | | | | |
| | X-Spacing | 64" | | | | | |
| | X-Cantilever | 24" | | | | | |
| | Y-Spacing | 41" | | | | | |
| | Y-Cantilever | NA | | | | | |
| | Uplift DCR | 58.7% | | | | | |
| | X-Spacing | 48" | | | | | |
| | X-Cantilever | 16" | | | | | |
| | Y-Spacing | 74" | | | | | |
| Portrait | Y-Cantilever | NA | | | | | |
| | Uplift DCR | 79.6% | | | | | |
| | Layout | Staggered | | | | | |
| | | | | | | | |
| Landscape | Applied Wind Zone | WZ2 | | | | | |
| | Wind Pressure | -28.9 psf | | | | | |
| | X-Spacing | 48" | | | | | |
| | X-Cantilever | 20" | | | | | |
| | Y-Spacing | 41" | | | | | |
| | Y-Cantilever | NA | | | | | |
| | Uplift DCR | 82.0% | | | | | |
| | X-Spacing | 32" | | | | | |
| | X-Cantilever | 11" | | | | | |
| | Y-Spacing | 74" | | | | | |
| Portrait | Y-Cantilever | NA | | | | | |
| | Uplift DCR | 98.8% | | | | | |
| | Layout | Staggered | | | | | |
| | | | | | | | |
| Landscape | Applied Wind Zone | WZ3 | | | | | |
| | Wind Pressure | -45.3 psf | | | | | |
| | X-Spacing | 32" | | | | | |
| | X-Cantilever | 12" | | | | | |
| | Y-Spacing | 41" | | | | | |
| | Y-Cantilever | NA | | | | | |
| | Uplift DCR | 87.5% | | | | | |
| | X-Spacing | | | | | | |
| | X-Cantilever | | | | | | |
| | Y-Spacing | | | | | | |
| Portrait | Y-Cantilever | | | | | | |
| | Uplift DCR | NA | | | | | |
| | 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 | | MP2 | | | | | |
| Member Evaluation Results | Member Impact | Check OK | | | | | |
| | Results | | | | | | |