BARUN CORP

October 22, 2021

RE: CERTIFICATION LETTER

Project Address: Allen Residence
227 Southwest Bellflower Drive
Lake City, FL 32024

Design Criteria:

- Applicable Codes = 2020 FLBC/FLEBC 7th Edition, 2020 FLRC 7th Edition, ASCE 7-16 and 2018 NDS
- Risk Category = II
- Wind Speed = 119 mph, Exposure Category C, Partially/Fully Enclosed Method
- Ground Snow Load = 0 psf
- ROOF 1 : 2 x 4 @ 24" OC, Roof DL = 7 psf, Roof LL/SL = 19 psf (Non-PV), Roof LL/SL = 0 psf (PV)

To Whom It May Concern,

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

Existing roof structural framing has been reviewed for additional loading due to installation of PV Solar System on the roof. The structural review applies to the sections of roof that is directly supporting the solar PV system.

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, the PV module assembly including attachment hardware has been reviewed to be in accordance with the manufacturer's specifications and to meet and/or exceed the requirements set forth by the referenced codes.

Sincerely,

Yuri Yurianto, S.E., P.E.

FL
YURIANTO YURIANTO
LICENSE
No. 86261
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Yurianto Yurianto

Digitally signed by Yurianto Yurianto
DN: cn=Yurianto Yurianto, o=Unaffiliated, ou=A01410D00000176B07CE8250000A7A2
Reason: I am the author of this document
Location:
Date: 2021-10-22 13:42:05:00

By Yuri at 1:42:22 PM, 10/22/2021

This item has been electronically signed and sealed by Yurianto Yurianto, SE, PE. on the date and/or time stamp shown using a digital signature. Printed copies of this document are not considered signed and sealed and the signature must be verified by a 3rd Party Certificate Authority on any electronic copy.

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RESULTS SUMMARY

ALLEN RESIDENCE, 227 SOUTHWEST BELLFLOWER DRIVE, LAKE CITY, FL 32024

MOUNTING PLANE STRUCTURAL EVALUATION (BASED ON IEBC 5% IMPACT CHECK)		
ROOF	**ROOF PITCH (deg.)**	**RESULT**
ROOF 1	25°	**OK**

STANDOFF HARDWARE EVAULATION FOR WIND UPLIFT	
ROOF	**UPLIFT DCR**
ROOF 1	45.3%

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LOAD CALCULATION

ROOF 1

ALLEN RESIDENCE, 227 SOUTHWEST BELLFLOWER DRIVE, LAKE CITY, FL 32024

PV SYSTEM DEAD LOAD (PV-DL)		
PV module weight		2.5 psf
Hardware assembly weight		0.5 psf
	PV-DL	**3.00 psf**

ROOF DEAD LOAD (R-DL)	MATERIAL		
Existing Roofing Material	Comp Roof	1 layers	2.5 psf
Underlayment			0.5 psf
Plywood Sheathing			1.5 psf
Framing Weight	2 x 4	@ 24 in. O.C.	0.73 psf
Vaulted ceiling		No	0 psf
Miscellaneous			1.5 psf
Total Roof Dead Load		**R-DL**	**6.73 psf**

REDUCED ROOF LIVE LOAD (Lr)	EXPRESSION	VALUE	
Roof Live Load	L_o	20.0 psf	
Member Tributary Area	A_t	< 200 sf	
ROOF 1 Pitch		6/12	*or 25°*
Trubutary Area Reduction	R_1	1	
Slope Roof Reduction	R_2	0.925	
Reduced Roof Live Load	**$Lr = L_o (R_1) (R_2)$**	**18.50 psf**	

SNOW LOAD	VALUE	
Ground Snow Load	p_g	0
Effective Roof Slope		25°
Snow Importance Factor	I_s	1.0
Snow Exposure Factor	C_e	1.0
Snow Thermal Factor	C_t	1.1
Minimum Flat Roof Snow Load	$p_{f\text{-}min}$	0
Flat Roof Snow Load	**p_f**	**0.00**

SLOPED ROOF SNOW LOAD ON ROOF	(All other surfaces)	
Roof Slope Factor	$C_{s\text{-}roof}$	1.00
	$p_{s\text{-}roof}$	**0.00**

SLOPED ROOF SNOW LOAD ON PV PANEL	(Unobstructed slippery surfaces)	
Roof Slope Factor	$C_{s\text{-}pv}$	0.75
	$p_{s\text{-}pv}$	**0.00**

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IEBC 5% IMPACT CHECK

ROOF 1

ALLEN RESIDENCE, 227 SOUTHWEST BELLFLOWER DRIVE, LAKE CITY, FL 32024

	EXISTING	WITH PV PANEL	
Roof Dead Load (DL) =	6.73	9.73	psf
Roof Live Load (Lr) =	18.50	0.00	psf
Roof Snow Load (SL) =	0.00	0.00	psf

	EXISTING	WITH PV PANEL	
(DL + Lr) / Cd =	20.18	10.81	psf
(DL + SL) / Cd =	5.85	8.46	psf
Maximum Gravity Load =	20.18	10.81	psf

Load Increase (%) =	-46.44%	OK
IEBC Provision :	2018	

The requirements of section 806.2 of 2018 IEBC are met and the structure is permitted to remain unaltered.

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WIND CALCULATION

ROOF 1

ALLEN RESIDENCE, 227 SOUTHWEST BELLFLOWER DRIVE, LAKE CITY, FL 32024

SITE INFORMATION			
Ultimate Wind Speed (mph) =	119	Roof Pitch (deg.) =	25°
Risk Category :	II	Roof Type :	Hip
Exposure Category :	C	Kd =	0.85
Mean Roof Height (ft) =	20	Kzt =	1
Solar Array Dead Load (psf) =	3.00	Kz =	0.90

DESIGN CALCULATIONS			
qh = 0.00256*Kz*Kzt*Kd*Ke*V^2 =		27.79	
a (ft) =		4.50	
Array Edge Factor (γE) =		1.50	
Solar Array Pressure Eq. Factor (γa) =		0.60	
Hardware Type :	SFM INFINITY \ ROCKIT MICRORAIL		
Allowable Load (lb) =	982.50	lbs, S.Pine 2.5" Embedment	
Max. X - Spacing (ft) (Zone 1)	4.00	Effective Wind Area (ft^2)	
Max. Y - Spacing (ft) (Zone 1)	6.80	27.20	
Max. X - Spacing (ft) (Zone 2e & 2r)	4.00	Effective Wind Area (ft^2)	
Max. Y - Spacing (ft) (Zone 2e & 2r)	3.40	13.60	
Max. X - Spacing (ft) (Zone 3)	3.00	Effective Wind Area (ft^2)	
Max. Y - Spacing (ft) (Zone 3)	1.70	5.10	

ROOF ZONE	GCp (-) UPLIFT	UPLIFT PRESSURE (psf)	PULLOUT FORCE (lbs)
1	-1.20	-16.38	445.46
2e & 2r	-2.00	-28.38	386.01
3	-2.00	-28.38	144.75

* Wind calculation is based on ASCE 7-16, 29.4 - C&C, LC#7: 0.6D + 0.6W used.