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June 29, 2022
revised July 19, 2022

Lumio Solar
12600 Challenger Parkway, Suite 200
Orlando, FL 32826

Re: Engineering Services
Green Residence
117 Southeast Jolene Way, Lake City FL
9.600 kW System

To Whom It May Concern:

We have received information regarding solar panel installation on the roof of the above referenced structure. Our evaluation of the structure is to verify the existing capacity of the roof system and its ability to support the additional loads imposed by the proposed solar system.

A. Site Assessment Information

1. Site visit documentation identifying attic information including size and spacing of framing for the existing roof structure.
2. Design drawings of the proposed system including a site plan, roof plan and connection details for the solar panels. This information will be utilized for approval and construction of the proposed system.

B. Description of Structure:

Roof Framing: Prefabricated wood trusses at 24" on center. All truss members are constructed of 2 x 4 dimensional lumber.
Roof Material: Composite Asphalt Shingles
Roof Slopes: 27 +/- degrees
Attic Access: Accessible
Foundation: Permanent

C. Loading Criteria Used

- **Dead Load**
 - Existing Roofing and framing = 7 psf
 - New Solar Panels and Racking = 3 psf
 - TOTAL = 10 PSF
- **Live Load** = 20 psf (reducible) – 0 psf at locations of solar panels
- **Ground Snow Load** = 0 psf
- **Wind Load** based on ASCE 7-16
 - Ultimate Wind Speed = 120 mph (based on Risk Category II)
 - Exposure Category B

Analysis performed of the existing roof structure utilizing the above loading criteria is in accordance with the FBC 2020 7th Edition, including provisions allowing existing structures to not require strengthening if the new loads do not exceed existing design loads by 105% for gravity elements and 110% for seismic elements. This analysis indicates that the existing framing will support the additional panel loading without damage, if installed correctly.

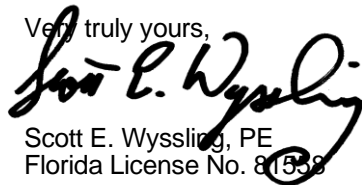
D. Solar Panel Anchorage

1. The solar panels shall be mounted in accordance with the most recent Unirac installation manual. If during solar panel installation, the roof framing members appear unstable or deflect non-uniformly, our office should be notified before proceeding with the installation.
2. The maximum allowable withdrawal force for a $\frac{5}{16}$ " lag screw is 235 lbs per inch of penetration as identified in the National Design Standards (NDS) of timber construction specifications. Based on a minimum penetration depth of $2\frac{1}{2}$ ", the allowable capacity per connection is greater than the design withdrawal force (demand). Considering the variable factors for the existing roof framing and installation tolerances, the connection using one $\frac{5}{16}$ " diameter lag screw with a minimum of $2\frac{1}{2}$ " embedment will be adequate and will include a sufficient factor of safety.
3. Considering the wind speed, roof slopes, size and spacing of framing members, and condition of the roof, the panel supports shall be placed no greater than 48" on center.
4. Panel supports connections shall be staggered to distribute load to adjacent framing members.

Based on the above evaluation, this office certifies that with the racking and mounting specified, the existing roof system will adequately support the additional loading imposed by the solar system. This evaluation is in conformance with the *FBC 2020 7th Edition*, current industry standards and practice, and is based on information supplied to us at the time of this report.

Should you have any questions regarding the above or if you require further information do not hesitate to contact me.

Very truly yours,


Scott E. Wyssling, PE
Florida License No. 81558

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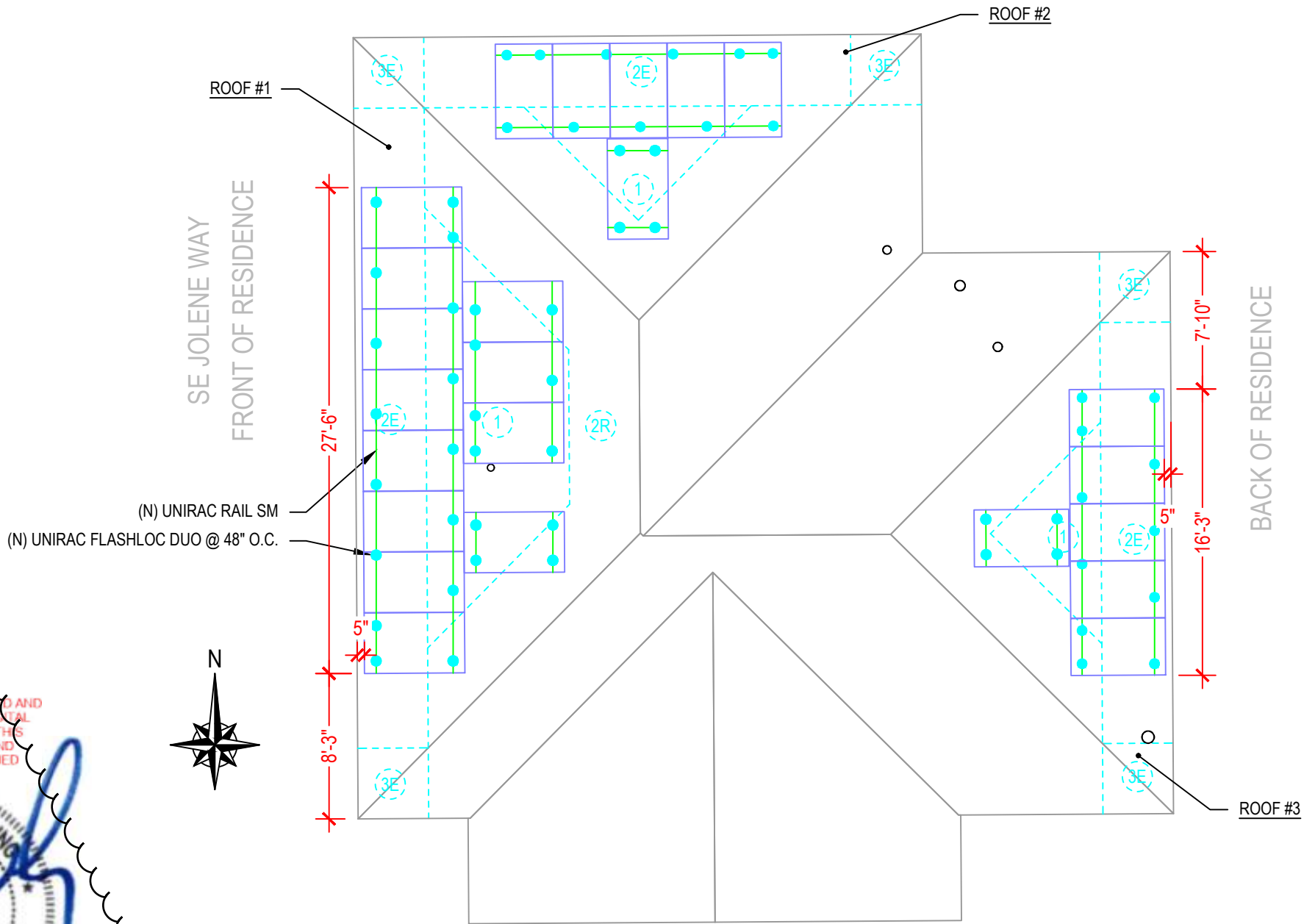
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Date Signed 07-19-22

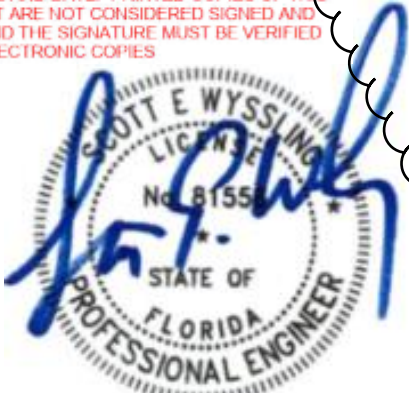
ARRAY DESCRIPTION					
ROOF	# OF MODULES	AZIMUTH	TRUSS SIZE	TRUSS SPACING	ROOF MATERIAL
#1	12	270°	2X4	24" O.C.	ASPHALT SHINGLE
#2	6	360°	2X4	24" O.C.	ASPHALT SHINGLE
#3	6	90°	2X4	24" O.C.	ASPHALT SHINGLE

DESIGN SPECIFICATION	
RISK CATEGORY	II
CONSTRUCTION	SFD
ZONING	RESIDENTIAL
SNOW LOAD (ASCE 7-16)	0 PSF
EXPOSURE CATEGORY	B
WIND SPEED (ASCE 7-16)	120 MPH

LEGEND	
(E)	- EXISTING
(N)	- NEW



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Date Signed 07-19-22

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WINTER PARK, FL 32792
+1 (407) 988-0273

PROJECT NAME & ADDRESS

JOSH GREEN
RESIDENCE
117 SE JOLENE WAY
LAKE CITY, FL 32025

ENGINEER CONTACT INFORMATION

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LICENSE# 81558
76 N MEADOWBROOK DR.,
ALPINE, UT 84004

SIGNATURE WITH SEAL

REVISIONS		
DESCRIPTION	DATE	REV
LAYOUT CHANGE	07/19/2022	A

Drawn by: N.R.
Checked by: S.W.
Date: 6/29/22

SHEET NAME

ROOF PLAN AND
MODULES

SHEET NUMBER

S-0

1 | ROOF PLAN AND MODULES

S-0 | SCALE: NTS