

April 24, 2023

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

Scott
Wyssling, PE

Digitally signed by Scott Wyssling, PE
DN: C=US, S=Utah, L=Alpine, O=Wyssling
Consulting, OU=Engineering, CN="Scott
Wyssling, PE",
E=swyssling@wysslingconsulting.com
Reason: I am the author of this document
Location: your signing location here
Date: 2023.04.24 15:09:04-06'00'
Foxit PDF Editor Version: 11.1.0

Re: Engineering Services
Johnson Residence
615 Southwest Oleander Place, Lake City FL
15.600 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: 2x6 dimensional lumber at 24" on center.
Roof Material: Metal Roofing
Roof Slopes: 14.04 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 = 130 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.

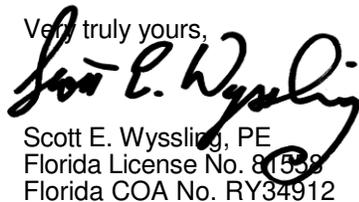
D. Solar Panel Anchorage

1. The solar panels shall be mounted in accordance with the most recent S-5! 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. System will be attached to the metal roofing material utilizing the patented S-5! Connection. Installation of the connections shall be in accordance with the manufacturer's recommendations.
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.

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
Florida COA No. RY34912

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Wyssling Consulting, PLLC
76 N Meadowbrook Drive Alpine UT 84004
Florida License # RY34912

Date Signed 4/24/2023

ARRAY DESCRIPTION						
ROOF	# OF MODULES	AZIMUTH	TILT	RAFTER SIZE	RAFTER SPACING	ROOF MATERIAL
#1	6	360	3/12 (14.04°)	2X4	24"O.C.	METAL
#2	7	270	3/12 (14.04°)	2X4	24"O.C.	METAL
#3	8	180	3/12 (14.04°)	2X4	24"O.C.	METAL
#4	8	90	3/12 (14.04°)	2X4	24"O.C.	METAL
#5	10	180	3/12 (14.04°)	2X4	24"O.C.	METAL

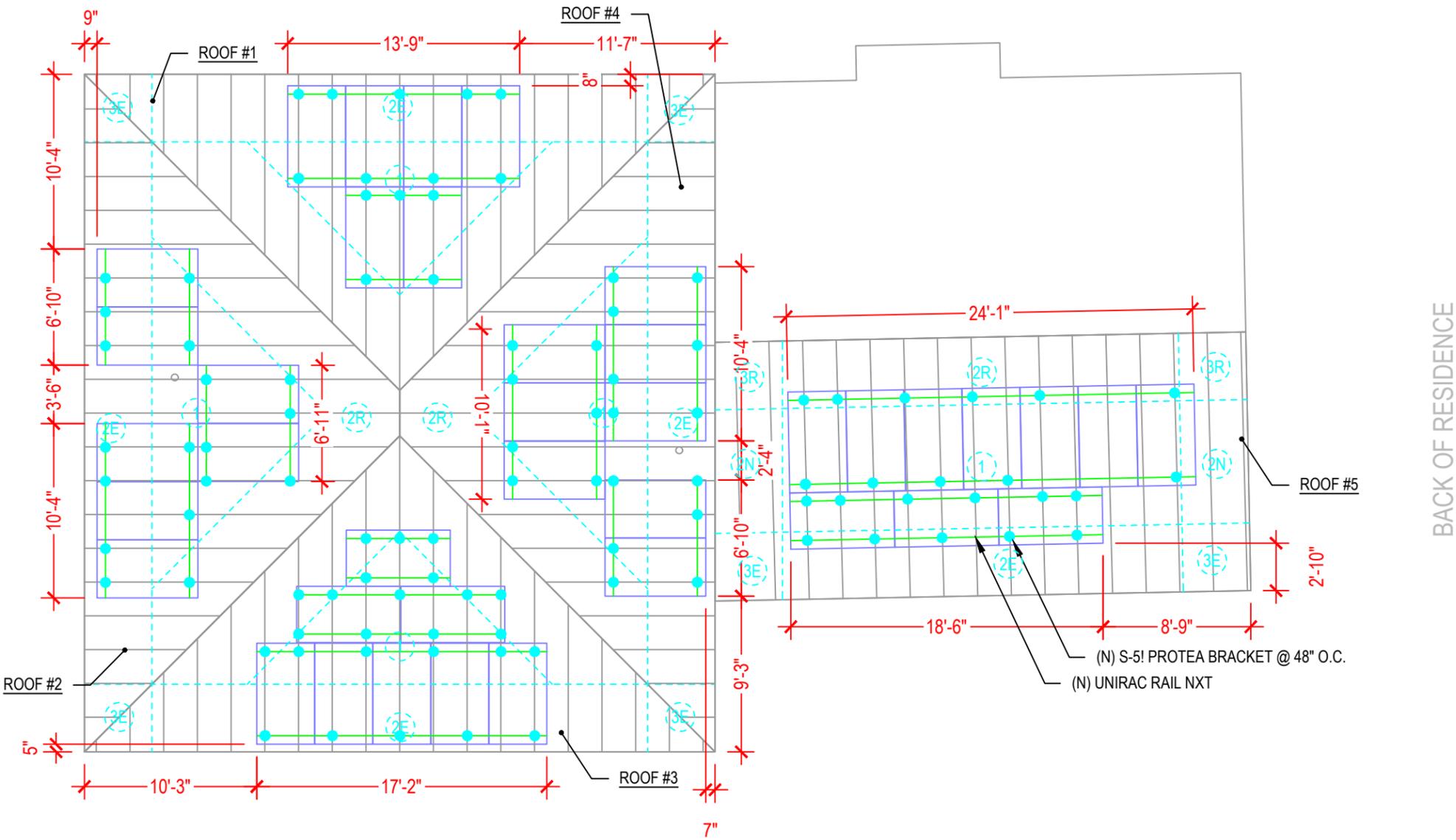
DESIGN SPECIFICATION	
RISK CATEGORY	II
CONSTRUCTION	SFD
ZONING	RESIDENTIAL
SNOW LOAD (ASCE 7-16)	0 PSF
EXPOSURE CATEGORY	B
WIND SPEED (ASCE 7-16)	130 MPH



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- ROOF'S GENERAL NOTES**
- CONTRACTOR/INSTALLER TO VERIFY ROOF CONDITIONS FOR PROPER INSTALLATION OF THE PV SYSTEM.
 - CONTRACTOR/INSTALLER TO NOTIFY THE OWNER IMMEDIATELY OF ANY ROOF DEFICIENCIES AND/OR REPAIR REQUIRED TO INSTALL THE PV SYSTEM. EOR DOES NOT ASSUME ANY RESPONSIBILITY FOR THE INSTALLATION OF ANY PV SYSTEM ON DEFICIENT ROOFS.
 - CONTRACTOR/INSTALLER ASSUMES ALL RESPONSIBILITY TO INSTALL AS PER MANUFACTURER STANDARDS.



LEGEND	
(E)	- EXISTING
(N)	- NEW

1 | ROOF PLAN AND MODULES
 S-0 | SCALE: NTS



AKE SOLAR
 ATLANTIC KEY ENERGY LLC
 12600 CHALLENGER PARKWAY
 SUITE 200
 ORLANDO, FL 32826
 1 (407) 988-0273

Lumio iX
 PROJECT NAME & ADDRESS

MARIANNE JOHNSON
 RESIDENCE
 PROJECT # P-0074754
 615 SOUTHWEST OLEANDER PLACE
 LAKE CITY, FL 32025

SIGNATURE WITH SEAL

REVISIONS		
DESCRIPTION	DATE	REV

Drawn by: A.A.
 Date: 04/24/2023

SHEET NAME
ROOF PLAN AND MODULES
 SHEET NUMBER
S-0

S-5![®]

The Right Way![™]

NEW

**NOW AVAILABLE
IN ALUMINUM**

ProteaBracket[™]



ProteaBracket[™]

A versatile bracket for mounting solar PV to trapezoidal roof profiles

ProteaBracket[™] is now made in aluminum. Still the most versatile trapezoidal metal roof attachment solution on the market, the S-5! ProteaBracket just got better!

The bracket features an adjustable attachment base and module attachment options to accommodate different roof profile dimensions and mounting options.

Our pre-applied EPDM gasket with peel and stick adhesive makes installation a snap, ensuring accurate and secure placement the first time.

With no messy sealants, faster installation, and a weather-proof fit, ProteaBracket offers you the most versatile solar attachment solution available.

ProteaBracket[®] can be used for rail mounting or "direct-attach" with S-5! PVKIT[™]

Features and Benefits

- 34% lighter - saves on shipping
- Stronger L-Foot[™]
- Load-tested for engineered application
- Corrosion-resistant materials
- Adjustable - Fits rib profiles up to 3"
- Peel-and-Stick prevents accidental shifting during installation
- Fully pre-assembled
- 25-year warranty*

888-825-3432 | www.S-5.com

*See www.S-5.com for details.

*When ProteaBracket is used in conjunction with the S-5! PVKIT, an additional nut is required during installation.

The right way to attach solar PV to trapezoidal roof profiles!

S-5![®]

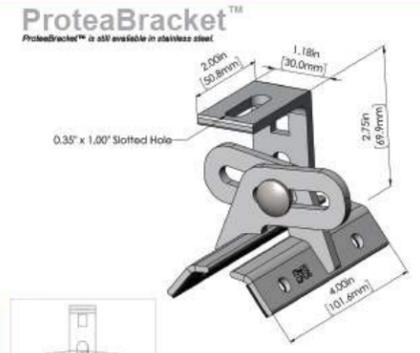
The Right Way![™]

ProteaBracket[™] is the perfect solar attachment solution for most trapezoidal rib, exposed-fastened metal roof profiles!

ProteaBracket[™] is compatible with common metal roofing materials and comes with a pre-applied EPDM gasket on the base.

Note: All four pre-punched holes must be used to achieve tested strength. Fasteners are provided.

For design assistance, ask your distributor, or visit www.S-5.com for the independent lab test data that can be used for load-critical designs and applications. Also, please visit our website for more information including metallurgical compatibilities and specifications.

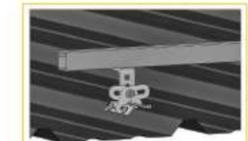


S-5![®] holding strength is unmatched in the industry.

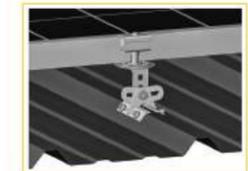
Multiple Attachment Options:



Side Mount Rail



Bottom Mount Rail



W/S-5!
PVKIT[™]
(rail-less)

ProteaBracket fits profiles up to 3 inches

INSTALLATION: No surface preparation needed. (1) Wipe away excess oil and debris. (2) Peel off adhesive release paper. (3) Align and mount bracket directly onto crown of panel. (4) Secure ProteaBracket through pre-punched holes, using piercing-point S-5! screws.

S-5![®] Warning! Please use this product responsibly!
Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, bolt torque, joints, and trademarks, visit the S-5! website at www.S-5.com.
Copyright © 2019, Metal Roof Innovations, Ltd. S-5! Products are patents protected. S-5! is a registered trademark, trade name, and copyright. Version 07/2019.

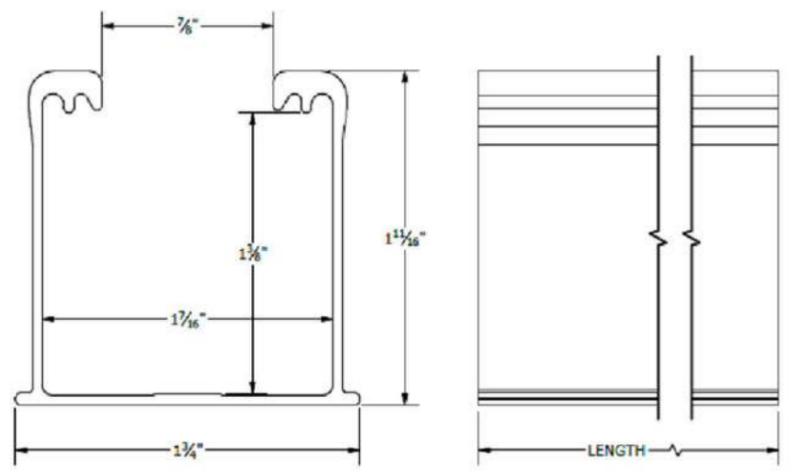
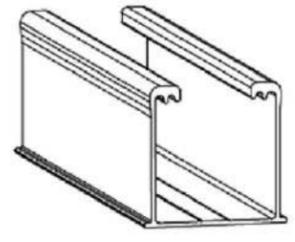
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PART # TABLE		
P/N	DESCRIPTION	LENGTH
084RLM1	NXT UMount RAIL 84" MILL	84"
084RLD1	NXT UMount RAIL 84" DARK	84"
168RLM1	NXT UMount RAIL 168" MILL	168"
168RLD1	NXT UMount RAIL 168" DARK	168"
208RLM1	NXT UMount RAIL 208" MILL	208"
208RLD1	NXT UMount RAIL 208" DARK	208"
246RLM1	NXT UMount RAIL 246" MILL	246"
246RLD1	NXT UMount RAIL 246" DARK	246"
171RLM1	NXT UMount RAIL 171" MILL	171.50"
171RLD1	NXT UMount RAIL 171" DARK	171.50"



UNIRAC
411 BROADWAY BLVD. NE
BUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
WWW.UNIRAC.COM

PRODUCT LINE:	NXT UMount
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	RAIL
REVISION DATE:	11/17/2022

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

NU-P01
SHEET



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ORLANDO, FL 32826
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PROJECT NAME & ADDRESS

MARIANNE JOHNSON
RESIDENCE
PROJECT # P-0074754
615 SOUTHWEST OLEANDER PLACE
LAKE CITY, FL 32025

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Date: 04/24/2023

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EQUIPMENT SPECIFICATIONS
SHEET NUMBER
S-1

NXT HORIZON®

UNIRAC
BETTER SOLAR STARTS HERE

UNIRAC
25
YEAR
FULL-SYSTEM WARRANTY

DISCOVER YOUR NXT HORIZON®

The culmination of over two decades of experience. Thoughtful design, rigorous engineering, world-class support, and a reliable supply chain are the foundation of what makes us confident that NXT HORIZON® is the NXT Level of DESIGN, SIMPLICITY, and VALUE.

STRONGHOLD™ RAIL CLAMP
DARK: SHCLMPD1
MILL: SHCLMPM1
Adaptable rail connection to attachments allows click-in feature compatibility with almost all of Unirac's attachments.

STRONGHOLD™ ATTACHMENT KIT
DARK: SHCPKTD1
MILL: SHCPKTM1
Rail clicks into the clamps attached to the Stronghold™ base. Open slot in L-foot allows drop-in rail clamp.

Alternative attachment options:
SOLAR-HOOKS (All varieties)
FLASHKIT PRO (DARK: 3C40E5D, MILL: 004055A)
FLASHLOC™ DUO (DARK: 004275D, MILL: 3C4975M)

STRONGHOLD™ RAIL
DARK: 168RLD1
MILL: 168RLM1
Strong, lightweight open channel rail with invisible, easy, unfailing and integrated wire management system.

NXT HORIZON™ RAIL SPLICE
RLSPICM1
Structural internal splice that does not interfere with roof connection nor module connection. Pre-assembled thread cutting bolts.

NXT HORIZON™ COMBO CLAMP
DARK: CCLAMPD1
MILL: CCLAMPM1
Clicks into rail anywhere (even where there are cables!) Self-standing clamp with spring combines as both mid and end clamp. Clamps 30-40 mm modules.

1/2 inch module spacing for efficiency.
Unirac-quality bonding that works both as mid and end clamps.

NXT HORIZON™ CAP KIT
ENDCAPD1
Make the install look clean with the end cap kit designed to complement the module end clamp and rail ends.

WIRE MANAGEMENT OPTONS

NXT HORIZON™ MLPE & LUG CLAMP
LUGMLPE1
Works as either MLPE Mount or Grounding Lug connection to the rail. Why source two parts when one can do the job?

NXT HORIZON™ WIRE MANAGEMENT CLIP
WRMCLPD1
Aesthetic, yet functional accessory that works to help installers keep wires inside the rail. No zip-ties required. Optional zip tie loop for extra wire management capabilities!

NXT HORIZON™ NORTH/SOUTH WIRE MANAGEMENT CLIP
WRMCNSD1
An elegant solution to help installers get to the home run. The same hardware works to provide both easy entry to rail and adjustability for cable thickness.

ALL NXT HORIZON® SYSTEMS INCLUDE A FREE PERMITTING PLANSET DESIGN - FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR EMAIL NXTPERMITS@UNIRAC.COM



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