HISTORIC PRESERVATION COMMISSION

Marc Elrich
County Executive

Karen Burditt
Chair

Date: March 31, 2025

MEMORANDUM

TO: Rabbiah Sabbakhan
Department of Permitting Services
FROM: Laura DiPasquale
Historic Preservation Section
Maryland-National Capital Park & Planning Commission
SUBJECT: Historic Area Work Permit #1109029 – Solar panel installation

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The Montgomery County Historic Preservation Commission (HPC) has reviewed the attached application for a Historic Area Work Permit (HAWP). This application was **approved** by HPC staff.

The HPC staff has reviewed and stamped the attached submission materials.

THE BUILDING PERMIT FOR THIS PROJECT SHALL BE ISSUED CONDITIONAL UPON ADHERENCE TO THE ABOVE APPROVED HAWP CONDITIONS AND MAY REQUIRE APPROVAL BY DPS OR ANOTHER LOCAL OFFICE BEFORE WORK CAN BEGIN.

Applicant: Peter Hendrickson; Tina Crouse (Agent)
Address: 66 Walnut Avenue, Takoma Park

This HAWP approval is subject to the general condition that the applicant will obtain all other applicable Montgomery County or local government agency permits. After the issuance of these permits, the applicant must contact this Historic Preservation Office if any changes to the approved plan are made. Once work is complete, the applicant will contact Laura DiPasquale at 301-495-2167 or laura.dipasquale@montgomeryplanning.org to schedule a follow-up site visit.

HISTORIC PRESERVATION COMMISSION

HAWP #: 1109029 at: 66 Walnut Avenue, Takoma Park

submitted on: 3/18/2025

has been reviewed and determined that the proposal fits into the following category/categories:

☐ Repair or replacement of a masonry foundation with new masonry materials that closely match the original in appearance;

☐ Installation of vents or venting pipes in locations not visible from the public right-of-way;

☐ New gutters and downspouts;

☐ Removal of vinyl, aluminum, asbestos, or other artificial siding when the original siding is to be repaired and/or replaced in kind;

☐ Removal of accessory buildings that are not original to the site or non-historic construction;

☐ Repair or replacement of missing or deteriorated architectural details such as trim or other millwork, stairs or stoops, porch decking or ceilings, columns, railings, balusters, brackets shutters, etc., with new materials that match the old in design, texture, visual characteristics, and, where possible materials, so long as the applicant is able to provide one extant example, photographic evidence, or physical evidence that serves as the basis for the work proposed;

☐ Construction of wooden decks that are at the rear of a structure and are not visible from a public right-of-way;

☐ Roof replacement with -compatible roofing materials, or with architectural shingles replacing 3-Tab asphalt shingles;

☐ Installation of storm windows or doors that are compatible with the historic resource or district;

☐ Repair, replacement or installation of foundation-level doors, windows, window wells, and areaways, or foundation vents, venting pipes, or exterior grills that do not alter the character-defining features and/or the historic character of the resource;

☐ Construction of fences that are compatible with the historic site or district in material, height, location, and design;

☐ Fence is lower than 48" in front of rear wall plane;

☐ Construction of walkways, parking pads, patios, driveways, or other paved areas that are not visible from a public right-of-way and measure no more than 150 square feet in size;

☐ Replacement of existing walkways, parking pads, patios, driveways, or other paved areas with materials that are compatible with the visual character of the historic site and district and that are no greater than the dimensions of the existing hardscape;

☐ Construction of small accessory buildings no larger than 250 square feet in size that are not visible from the public right-of-way;

☐ Installations of skylights on the rear of a structure that will not be visible from the public right-of-way, and would not remove or alter character-defining roof materials;

☑ Installation of solar panels and arrays in locations that are not readily visible from the public right-of-way or that are designed so as to have a minimal impact on the historic resource or the historic district (e.g., systems that are ground-mounted in areas other than the front or side yard of a corner lot, located on accessory or outbuildings, on non-historic additions, or on rear facing roof planes);

☐ Installation of car charging stations in any location on a property or in the right-of-way;

Installation of satellite dishes;

☐ Removal of trees greater than 6" in diameter (d.b.h.) that are dead, dying, or present an immediate hazard.

☐ Removal of trees greater than 6" in diameter (d.b.h.) in the rear of the property that will not impact the overall tree canopy of the surrounding district or historic site;

☐ Replacement tree required as a condition; and,

☐ Other minor alterations that may be required by the Department of Permitting Services post-Commission approval that would have no material effect on the historic character of the property.

Staff finds the proposal complies with Chapter 24A, the Secretary of the Interior's Standards for Rehabilitation, and any additional requisite guidance. Under the authority of COMCOR No. 24A.04.01, this HAWP is approved by Laura DiPasquale on 3/31/2025. The approval memo and stamped drawings follow.

Description of Property: Please describe the building and surrounding environment. Include information on significant structures, landscape features, or other significant features of the property:

Property Built in 1912

Description of Work Proposed: Please give an overview of the work to be undertaken:

-Install (28) roof mounted solar panels on detached structure

-Micro Inverters to be placed under each panel

-Utility disconnect to be installed next to utility meter along with electrical combiner box for micro inverters

REVIEWED

By Laura DiPasquale at 10:22 am, Mar 31, 2025

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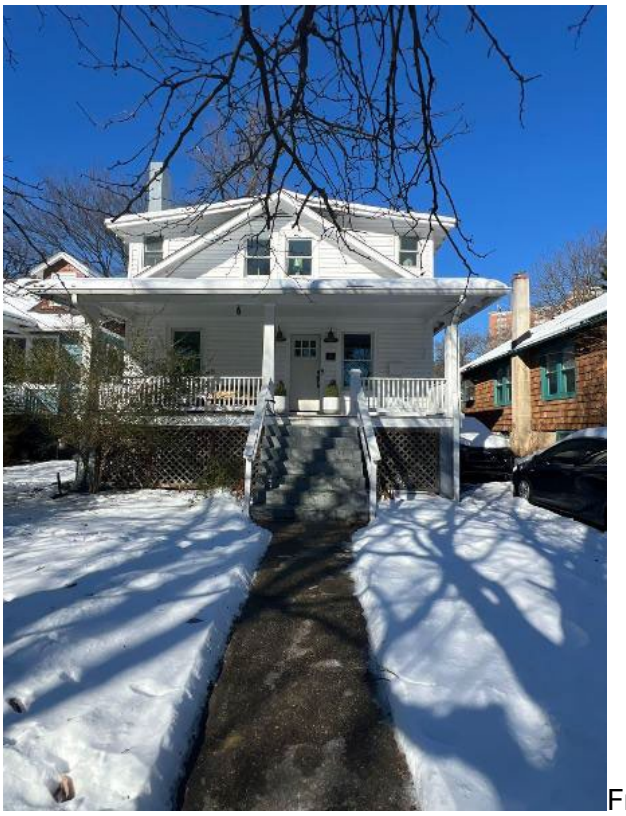
Montgomery County

Historic Preservation Commission

Karen Burdett



Front of House

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Back of Home

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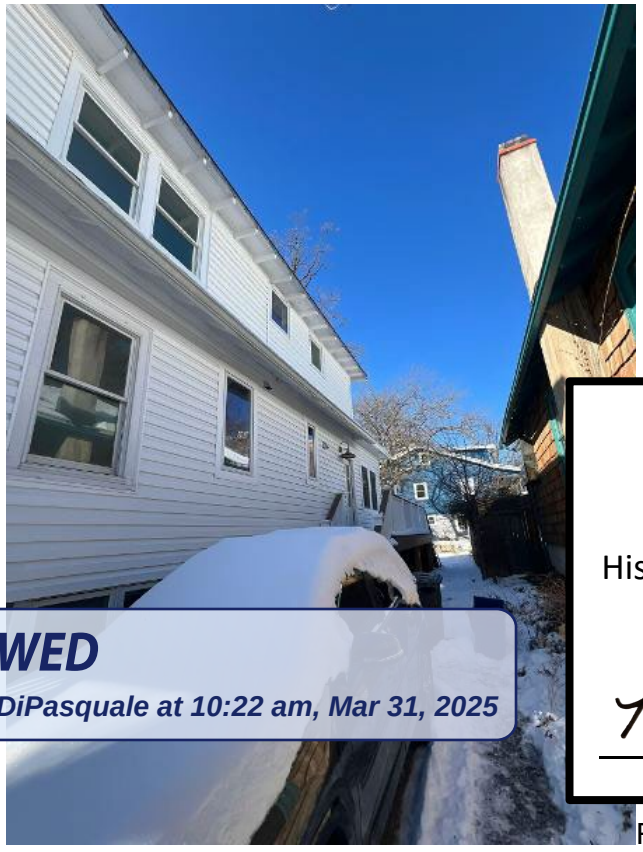
By Laura DiPasquale at 10:22 am, Mar 31, 2025

Left side of the House



Right side of the House

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By Laura DiPasquale at 10:22 am, Mar 31, 2025

Utility Meter before Install

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By Laura DiPasquale at 10:22 am, Mar 31, 2025

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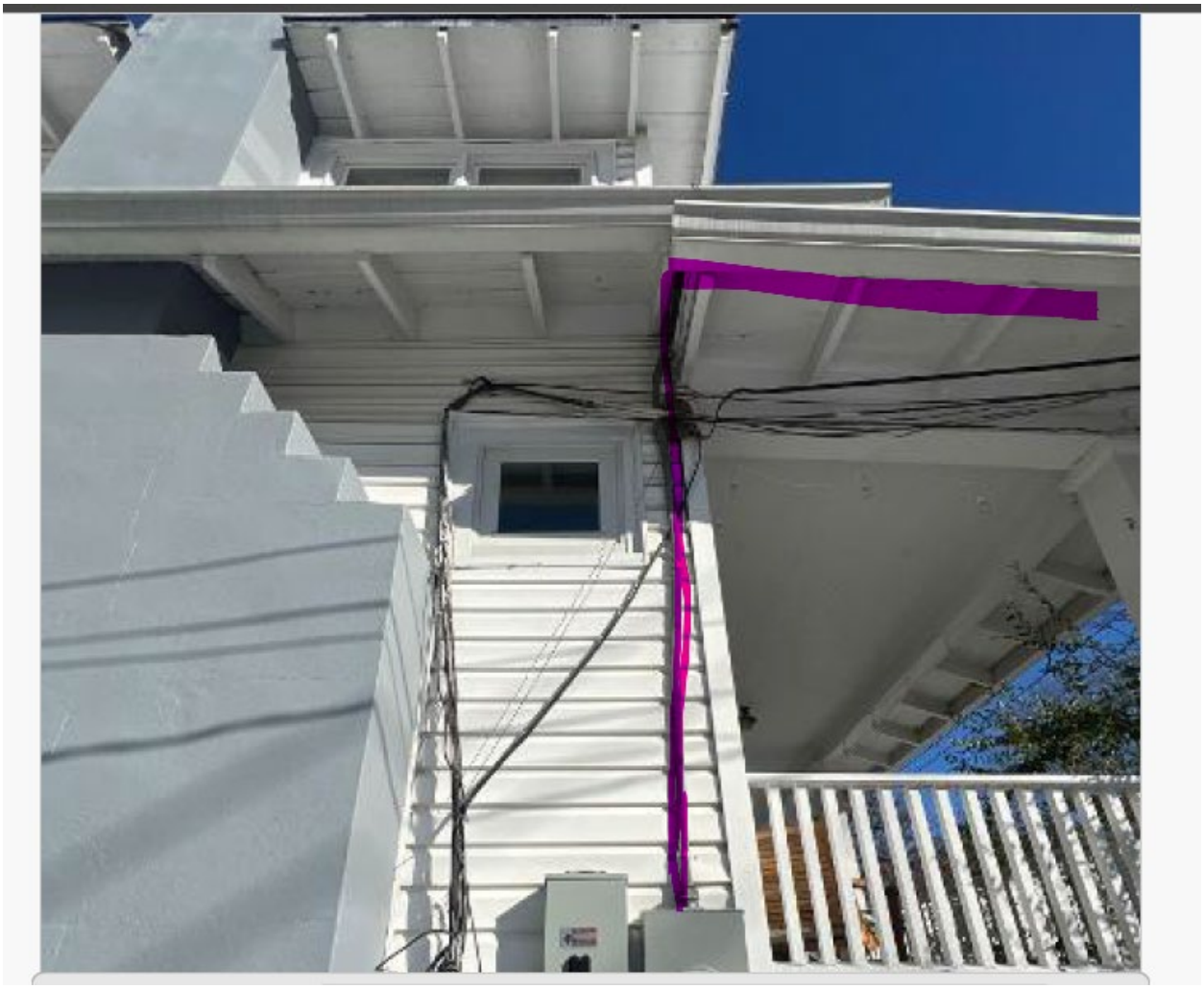

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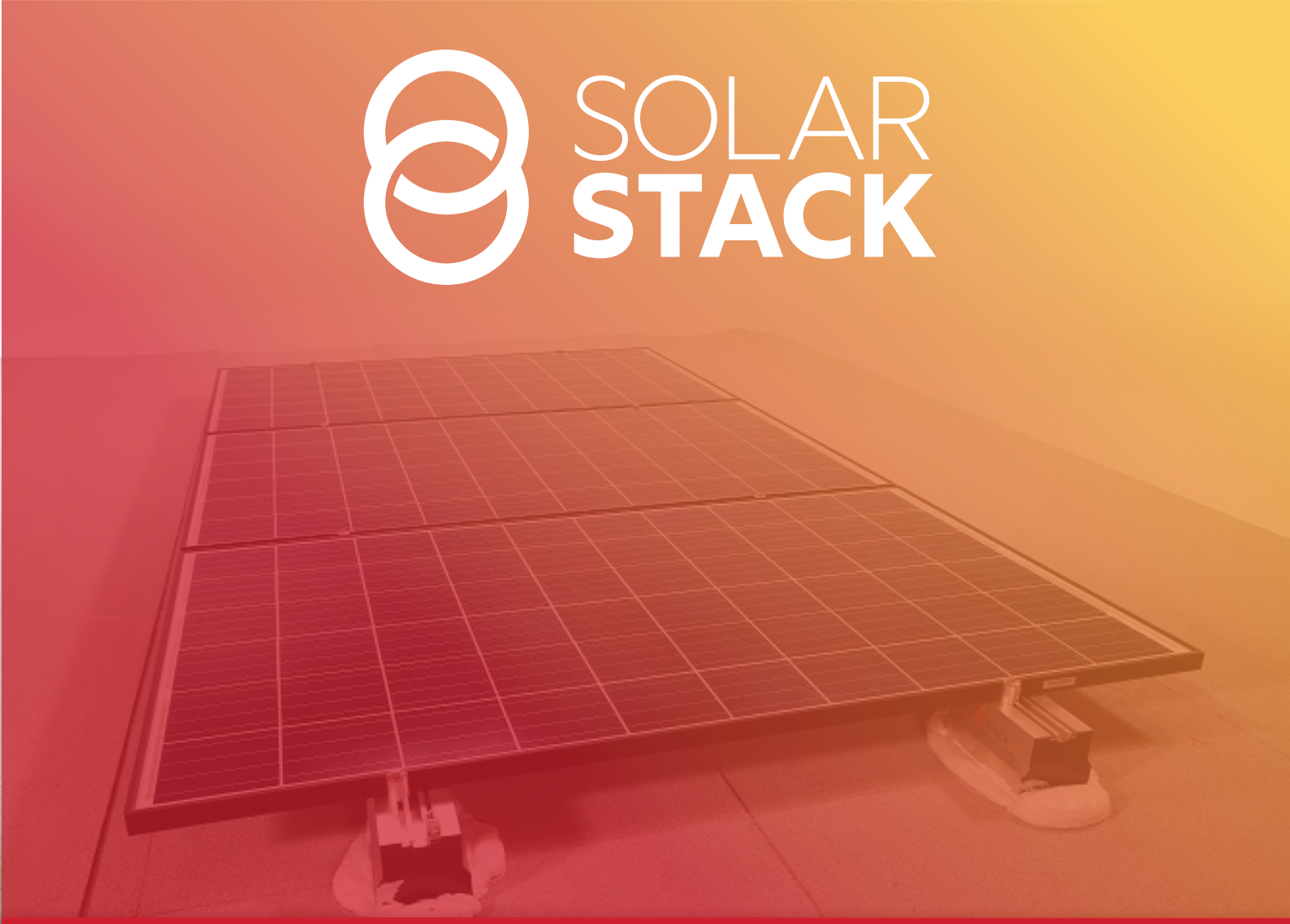
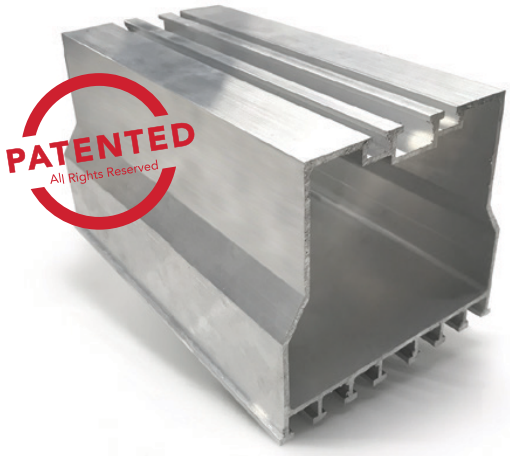
SOLAR STACK



INSTALLATION MANUAL v.1

SOLAR STACK MOUNTING SYSTEM FOR FLAT ROOFS



ZERO PENETRATION SOLAR MOUNTING PEDESTAL

US PATENT No 8,104,231 US PATENT 9,315,999

INNOV E

PRODUCTS FOR AR

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

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TABLE OF CONTENTS

INSTALLATION INSTRUCTIONS

REVIEWED
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BEFORE YOU START

Please carefully read through this installation manual before you begin installation, operation or maintenance work. Failure to follow these installation instructions may result in damage and injury. Please keep this manual safe for future reference.

This installation manual describes proper installation procedures and provides necessary standards required for product reliability. Warranty details are available on www.solarstack.com . All installers must thoroughly read this installation manual and have a clear understanding of the installation procedures prior to installation. Failure to follow these guidelines may result in property damage, bodily injury or even death.

IT IS THE INSTALLER'S RESPONSIBILITY TO:

Ensure safe installation of all electrical aspects of the array. All electrical installation and procedures should be conducted by a licensed electrician or solar contractor. Routine maintenance of a module or panel shall not involve breaking or disturbing the bonding path of the system. All work must comply with national, state and local installation procedures, product and safety standards.

Comply with all applicable local or national building and fire codes, including any that may supersede this manual.

Ensure all products are appropriate for the installation, environment, and array under the site's loading conditions.

Use only Solar Stack parts or parts recommended by Solar Stack. Substituting parts may void any applicable warranty.

Ensure provided information is accurate. Issues resulting from inaccurate information are the installer's responsibility.

Ensure bare copper grounding wire does not contact aluminum and zinc-plated steel components, to prevent risk of galvanic corrosion.

If loose components or loose fasteners are found during periodic inspection, re-tighten immediately. If corrosion is found, replace affected components immediately.

Provide an appropriate method of direct-to-earth grounding according to the latest edition of the National Electrical Code, including NEC 250: Grounding and Bonding, and NEC 690: Solar Photovoltaic Systems.

Disconnect AC power before servicing or removing modules, AC modules, micro inverters and power optimizers.

Review module manufacturer's documentation for compatibility and compliance with warranty terms and conditions.

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By Laura DiPasquale at 10:22 am, Mar 31, 2025

IMPORTANT NOTES

- Solar Stack Roof mounting systems are UL 2703 listed. Standard for safety UL/ANSI 2703, Mounting Systems, Mounting devices, Clamping/Retention Devices and Ground lugs for use with PV modules.

- Solar Stack systems have been evaluated for module-to-system bonding and mechanical load to the requirements of UL/ANSI 2703.

- This racking system may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

- Solar Stack mounting systems were evaluated assuming a 20 Amp maximum series fuse size.

- The system is a non-separately derived system. The following components have been evaluated for bonding as the fault current ground path: PV module, Mid Clamp, End Clamp, Pedestal and Ground Lugs.

- Solar Stack pedestals can be installed on E (Modified Bitumen), EPDM, PVC, TPO, Hypalon and C

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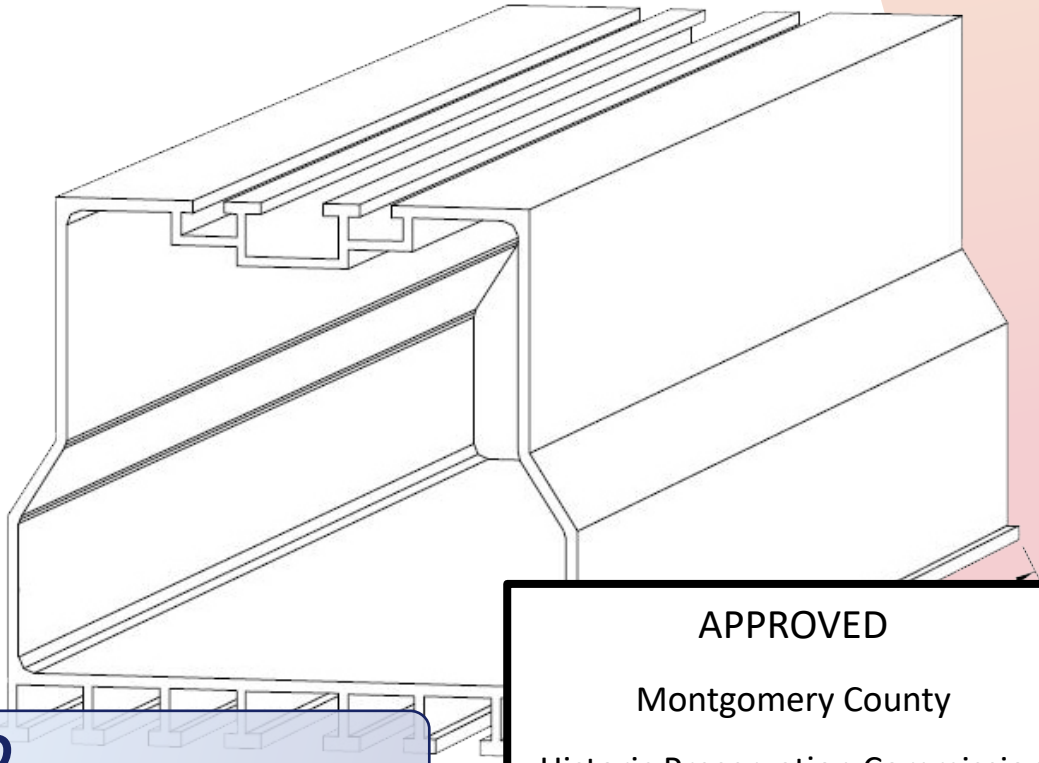
SOLAR STACK'S COMPONENTS

Solar Stack's innovative design incorporates a patented pedestal used in conjunction with a code-approved adhesive.

Solar Stack eliminates potentially disastrous roof penetrations and allows roof warranties (and the roof itself) to remain intact. Since there's no need for anchor penetrations or locating structural connection points, installation is significantly simplified. Solar Stack's streamlined design cuts labor and installation time in half, avoiding costly, damaging complications associated with accessing attic spaces and modifying structural connection points.

Additionally, Solar Stack eliminates crawling into hot or cold attic spaces to install solar panels. And because there's no drilling, you have total peace of mind that roof leaks won't result from installation. Solar Stack has undergone rigorous testing by accredited facilities and earned the most stringent certifications from the state of Florida for use in High-Velocity Hurricane Zones, ensuring its durability.



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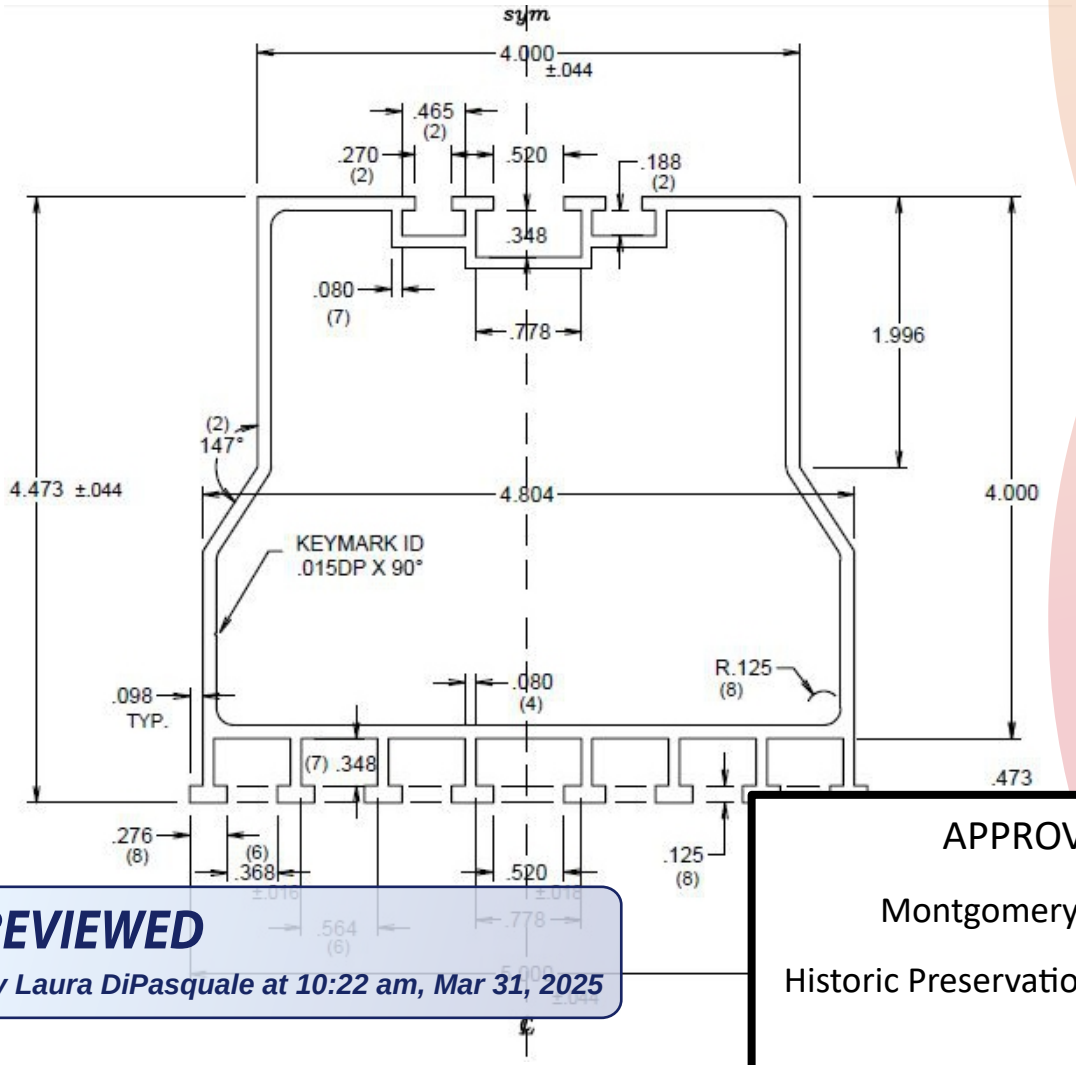
SOLAR STACK'S COMPONENTS

System/Components "SOLAR STACK " or "DOUBLE DOWN " Solar Pedestal Models

8 in. "SOLAR STACK " or "DOUBLE DOWN " Solar Pedestal
Overall Product Dimensions:
Length: 8.00 in.
Width: 5.00 in.
Height: 4.75 in.



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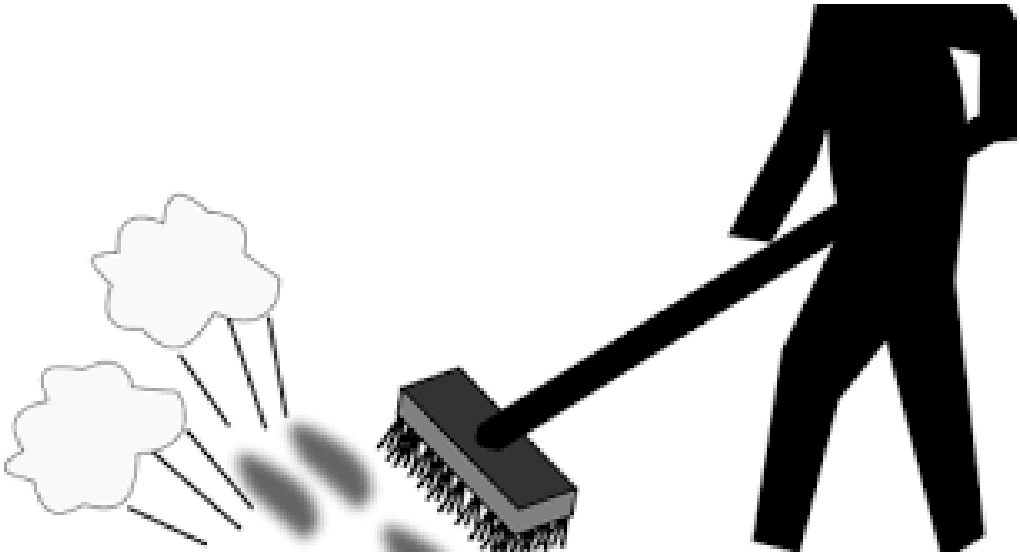
PREPARATION OF THE ROOF

Solar Stack pedestals can be installed on the Asphalt, Concrete and TPO roof. Clean the roof with a brush. Make sure that the place where the Solar Stack pedestals and solar panels are to be placed on the roof is clean, dry and flat. The presence of gravel, sand, stones, algae, dust, etc. can lead to instability of the system and/or can cause damage to the roof.

Surface Preparation. All roof surfaces must be free of any debris, dirt, grease, oil, and standing water before adhesive is applied. Clean the hole of any sawdust with appropriate tools and materials. Follow adhesive manufacturers application instructions.



In determining the location of the solar panels on the flat roof, it is very important to pay attention to the incoming sunlight. Throughout the day and throughout the year.

Place the solar panels on a roof that has no shadow. The shadow of a chimney, trees and nearby buildings have a detrimental effect on the yield of the solar panels.

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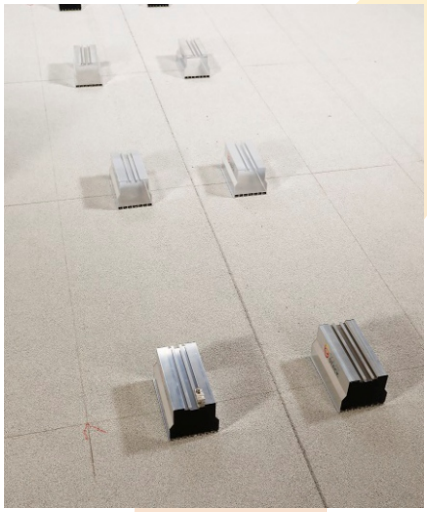
ARRAY LAYOUT

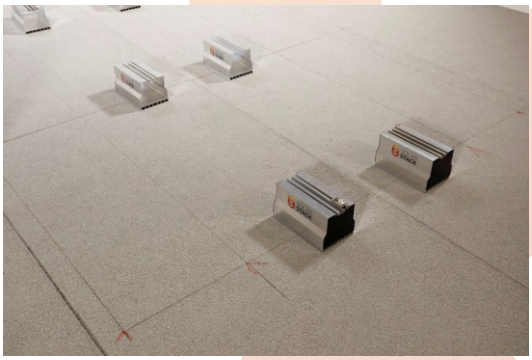
Using your engineered design, locate the array layout on the roof, and determine mount locations.

Measure and determine the spacing between the Solar Stack pedestals according to the solar array design.

Snap and mark the lines across the roof for all the mounts.

Prepare the Solar Stack pedestals and place them next to the marked lines where they will be installed.





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INSTALLING SOLAR STACK PEDESTALS

Determine the spacing of Solar Stack pedestals for your solar array design.

Surface Preparation. All roof surfaces must be free of any debris, dirt, grease, oil, and standing water before adhesive is applied. Clean the surface of roof of any sawdust with appropriate tools and materials. Follow adhesive manufacturers application instructions.

Approved adhesive types that can be used for installation of Solar Stack pedestals can be find in the following table.

Table 7.1
Uplift Resistance Loads/Pressure[2]

Uplift Load applied to the Top of "SOLAR STACK GEN 3" or "DOUBLE DOWN GEN 3" Assembly (90° To Roof Surface)

Adhesive Type:	GEN 3 Pedestal Size:	Paddy Dimensions:	Paddy Weight:	Ultimate Load[1]:
ICP Polyset® AH-160	12"	16-5/8" x 8-7/8"	79.9 grams	-833 LBF
ICP Polyset® AH-160	8"	12-3/8" x 8"	62.6 grams	-658 LBF
DOW Tile Bond	8"	10-1/2" x 7"	55 grams	-383 LBF
DOW Insta-Stik	8"	10-1/2" x 7"	59.8 grams	-400 LBF
DAP Stormbond	8"	10-1/2" x 7"	52.1 grams	-500 LBF

Notes:
1. Ultimate Loads with 0 margin of safety applied to the test loads.
2. Assembly was tested for vertical up.

Table 7-1 (Evaluation report for Florida product approval #FL 21074.6 R4)

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INSTALLING SOLAR STACK PEDESTALS

Dispense adhesive into location of mount, making room for expansion of adhesive.

(Note: All Polyurethane Foam Adhesives will expand up to 3 time's original sprayed size. Take care to allow for expansion and required contact area to Solar Stack Pedestal to ensure performance as designed.)

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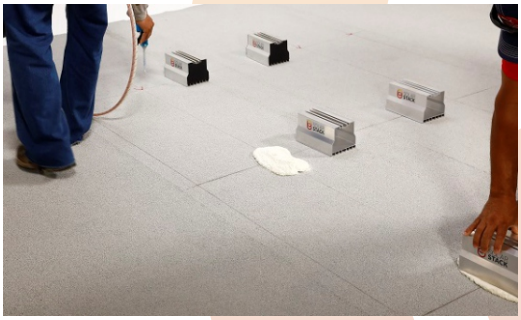

INSTALLING SOLAR STACK PEDESTALS

Install Solar Stack pedestal into fresh adhesive and allow to cure in accordance with adhesive manufacturer recommendations.

Adhesive is expanding and Ready for Solar Stack pedestal Installation.

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adhesive must be
e. This can be accomplished by coating with an exterior grade outdoor acrylic paint/coating or covering the foam adhesive with another method.

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INSTALLING THE MODULES

The next step is to lay down the solar modules and install them to the Solar Stack pedestals. Modules can be installed in portrait or landscape orientation, according to the engineering plans. As well as taking measurements, we'll check that the modules look straight – not just from where we're sitting on the roof, but from down on the ground too.

Modules will be connected with each other, according to the provided engineering plans in regards to the proper stringing.

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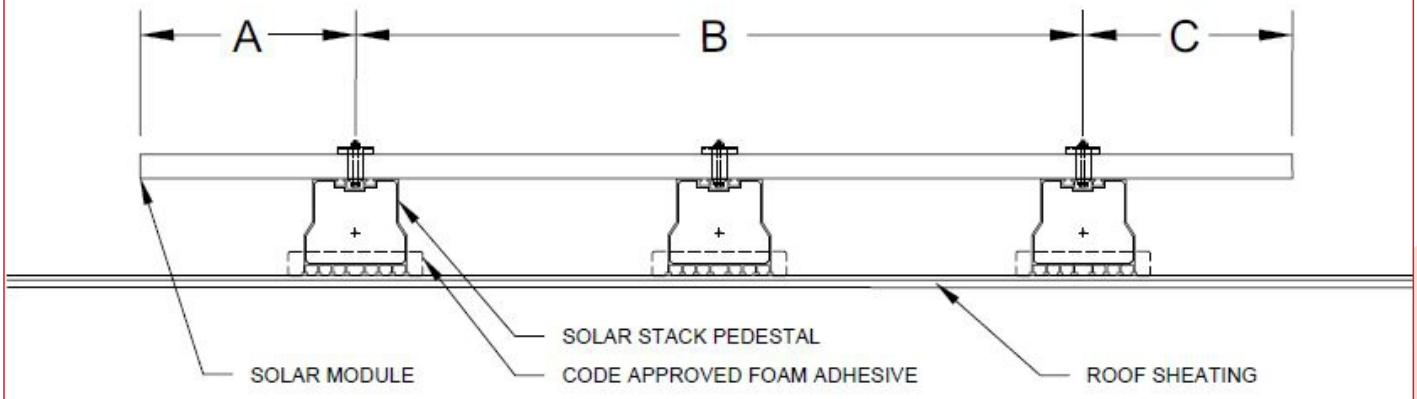
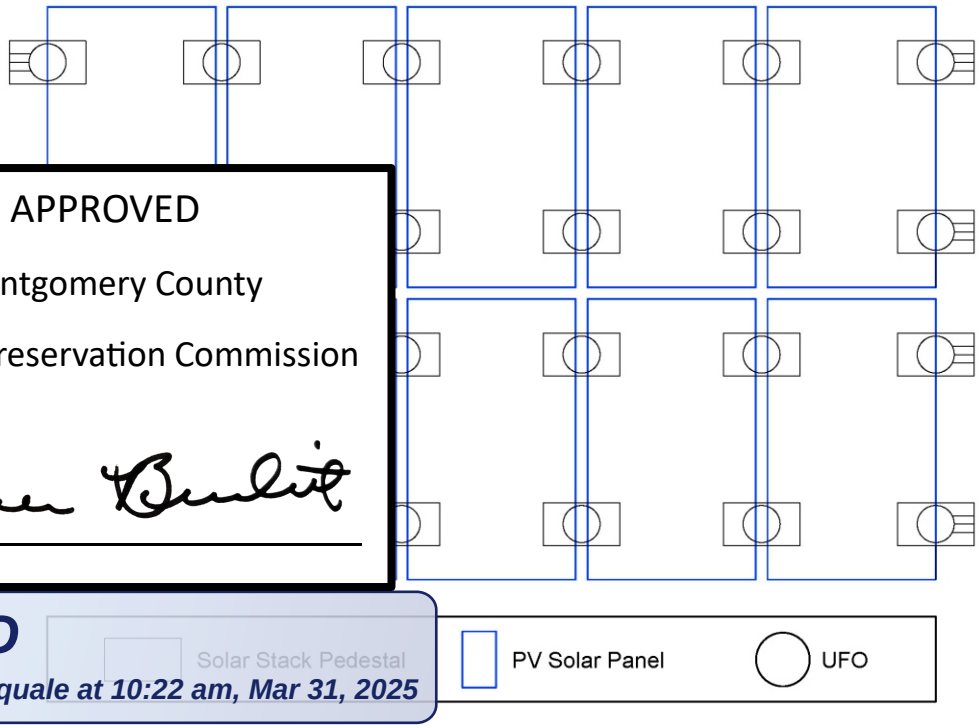
INSTALLING THE MODULES

This is a typical module, installed on the Solar Stack pedestals. Number of the required pedestals per module/raw, will be determined according to the provided engineering plans, in regards to the typical geographical region and existing wind loads. вf the modules are installed in HVHZ, than Roof underlayment must be approved and installed according to the local (AHJ) regulations and codes. йlacement of the pedestals and distance between them (A,B i C) must be determined according to the module manufacturer instructions.



Typical module layout with Solar Stacks mounts.



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IMPORTANT: Periodic re-inspection of the installation for loose components, loose fasteners and any corrosion, such that if found, the affected components are to be immediately replaced.

INSTALLING THE MODULE CLAMPS

Clamps hold the modules onto the frame. There are two types: end-clamps and mid-clamps. End-clamps are used at the end of a row of modules fixing the last one in place, while mid-clamps sit between two panels and ensure they're spaced equally.

Attach the modules using the clamps as noted on the drawing:

- Insert the middle clamps and tighten them.
- Insert the end clamps laterally in the pedestal. The end clamps are attached and then tightened at the height of the module frame.

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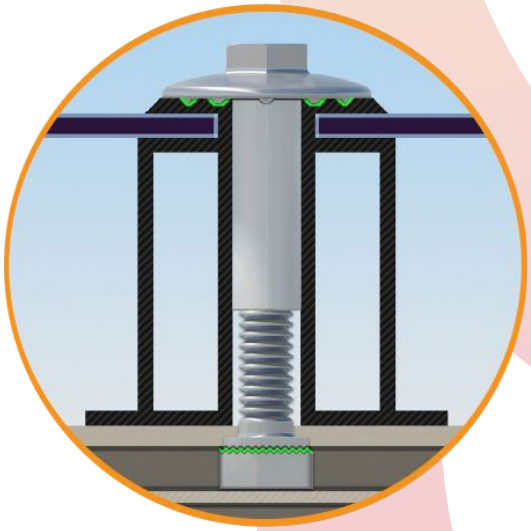
INSTALLING THE MODULE CLAMPS

Modules should be installed to the Solar Stack pedestals with the manufacturer approved middle/end clamps. There are different types of clamps available that can be used for the module installation. Solar Stack recommends Ironridge UFO clamps.

The Universal Fastening Object (UFO) - Ironridge racking, securely bonds solar modules to the Solar Stack pedestals. It comes assembled and lubricated and can fit wide range of module heights. Stopper Sleeve, snaps onto the UFO, and converts it into bonded end clamp.

The recommended torque to be applied to the following components and connections for proper assembly and bonding for both systems:

End Clamp	80 in-lbs.	Mid Clamp	80 in-lbs.



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GROUNDING

Grounding lug will be mounted at every row. Grounding lugs connects the PV modules to the grounding conductors. Attach the grounding lug to the Solar Stack Pedestal with hardware. Secure the grounding wire to the lug by tightening the set screw and torque Grounding Lug 120 in-lbs. at Pedestal terminal and 5 ft-lbs. at wire terminal.

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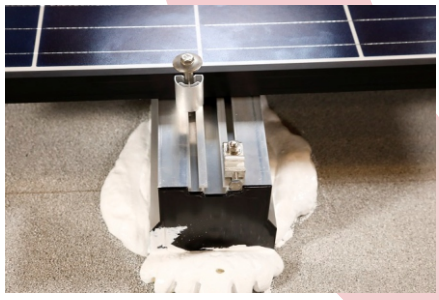

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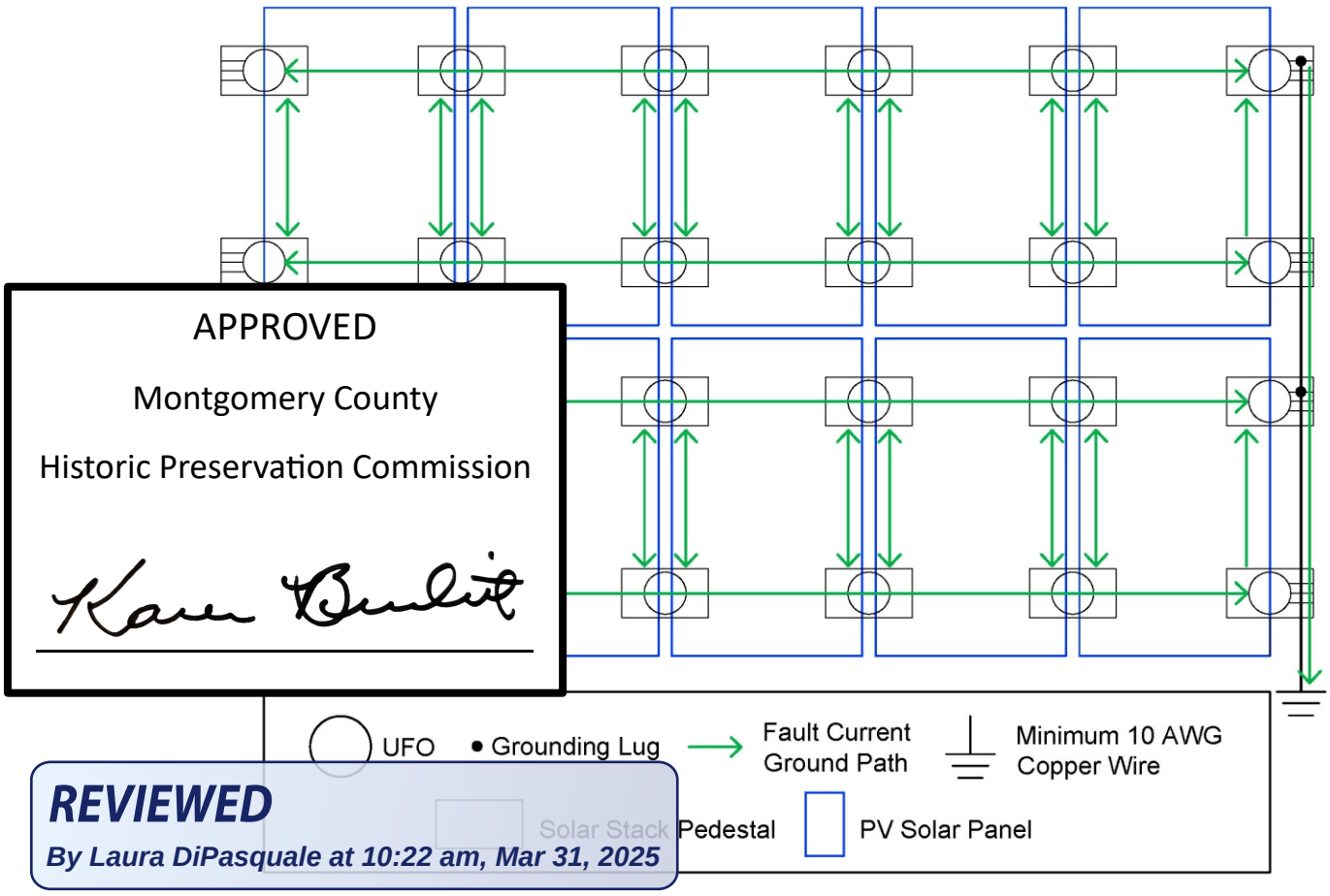
GROUNDING

Entire solar array must me grounded. Modules should be bonded to the Solar Stack pedestals with the manufacturer approved middle/end clamps. Solar Stack recommends Ironridge UFO clamps. The UFO family of components eliminates the need for separate grounding hardware by bonding PV modules directly to the Solar Stack pedestals. UFO hardware forms secure electrical bonds with both the module and the pedestal, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.

Grounding wire should be installed, in a way that will electrically bond the module rows between each other. Grounding lug will be installed on the Solar Stack pedestal (one per each row) and bond the grounding wire. Grounding wire should be min #10 AWG (Bare Copper wire) size. If other than specified, then must be determined by a Professional Engineer, in accordance to the National Electric Code.

Grounding conductors, from each row of the array, must be bonded together, in order to form a solid electrical connection/system, which will continue to the closest Junction or Combiner box. From that point, according to the Professional Engineer ampacity calculations, based on the NEC, proper grounding wire will continue to run all the way down to the determined system grounding point.



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The system is a non-separately derived system. The following components have been evaluated for bonding as the fault current ground path: PV module, Mid Clamp, End Clamp, Pedestal and Ground Lugs.

MODULE COMPATIBILITY

Solar Stack racking system may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

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Hi-MO 5

LR5-54HABB

390~415M

- Suitable for distributed projects
- Advanced module technology delivers superior module efficiency
  - M10 Gallium-doped Wafer
  - Integrated Segmented Ribbons
  - 9-busbar Half-cut Cell
- Globally validated bifacial energy yield
- High module quality ensures long-term reliability

25 25-year Warranty for Materials and Processing

30 30-year Warranty for Extra Linear Power Output

Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO9001:2015: ISO Quality Management System

ISO14001: 2015: ISO Environment Management System

ISO45001: 2018: Occupational Health and Safety

IEC62941: Guideline for module design qualification and type approval

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Karen Burditt

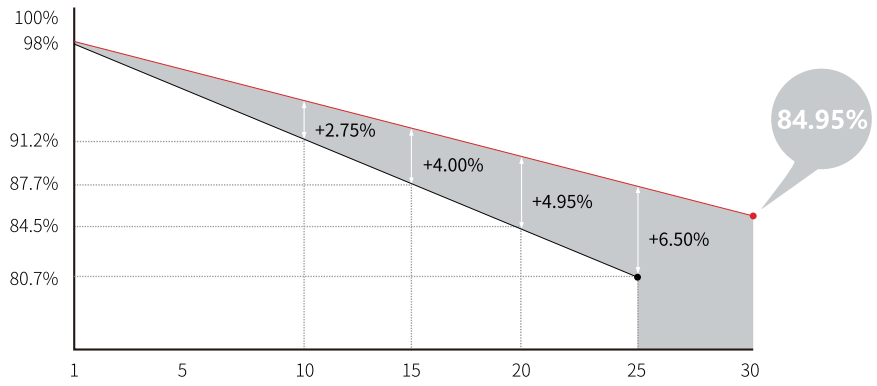
Hi-MO 5

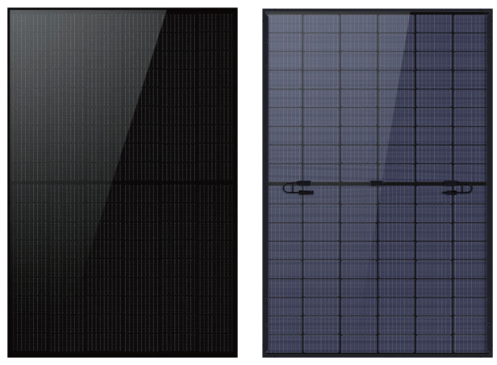
LR5-54HABB 390~415M

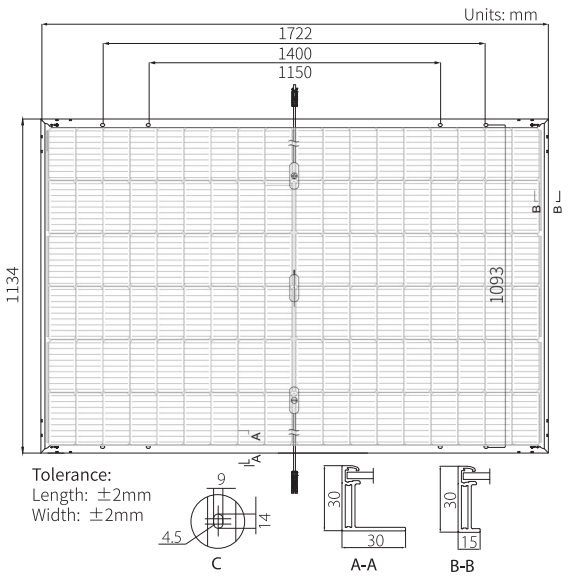
21.3%	0~3%	<2%	0.45%	HALF-CELL
MAX MODULE EFFICIENCY	POWER TOLERANCE	FIRST YEAR POWER DEGRADATION	YEAR 2-30 POWER DEGRADATION	Lower operating temperature

Additional Value

30-Year Power Warranty







Mechanical Parameters

Cell Orientation	108 (6×18)
Junction Box	IP68, three diodes
Output Cable	4mm², ±1200mm length can be customized
Glass	Dual glass, 2.0+1.6mm heat strengthened glass
Frame	Anodized aluminum alloy frame
Weight	22.5kg
Dimension	1722×1134×30mm
Packaging	36pcs per pallet / 216pcs per 20' GP / 936pcs or 792pcs(Only for USA) per 40' HC

Electrical Characteristics

STC : AM1.5 1000W/m² 25°C NOCT : AM1.5 800W/m² 20°C 1m/s Test uncertainty for Pmax: ±3%

Module Type	LR5-54HABB-390M		LR5-54HABB-395M		LR5-54HABB-400M		LR5-54HABB-405M		LR5-54HABB-410M		LR5-54HABB-415M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	390	291.5	395	295.2	400	299.0	405	302.7	410	306.5	415	310.2
Open Circuit Voltage (Voc/V)	36.58	34.39	36.81	34.61	37.05	34.84	37.29	35.06	37.53	35.29	37.77	35.51
Short Circuit Current (Isc/A)	13.57	10.95	13.65	11.01	13.72	11.07	13.79	11.13	13.87	11.19	13.94	11.25
Voltage at Maximum Power (Vmp/V)	30.47	28.43	30.70	28.64	30.94	28.86	31.18	29.09	31.42	29.31	31.66	29.54
Current at Maximum Power (Imp/A)	12.80	10.26	12.87	10.31	12.93	10.36	12.99	10.41	13.05	10.45	13.11	10.50
Module Efficiency(%)	20.0		20.2		20.5		20.7		21.0		21.3	

Electrical characteristics with different rear side power gain (reference to 400W front)

Pmax /W	Voc/V	Isc /A	Vmp/V	Imp /A	Pmax gain
420	37.05	14.41	30.94	13.58	5%
440	37.05	15.09	30.94	14.22	10%
460	37.15	15.78	31.04	14.87	15%
480	37.15	16.46	31.04	15.52	20%
500	37.15	17.15	31.04	16.16	25%

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	0°C ~ +85°C
	0 ~ 3%
	±3%
	500V (IEC/UL)
	30A
	45±2°C
	Class II
	70±5%
Fire Rating	UL Similar type 38 * IEC Class C

*Reference Standard: UL61730 Second Edition, Dated October 28, 2022

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

Temperature Ratings (STC)

Temperature Coefficient of Isc	+0.050%/°C
Temperature Coefficient of Voc	-0.265%/°C
Temperature Coefficient of Pmax	-0.340%/°C

REVIEWED

By Laura DiPasquale at 10:22 am, Mar 31, 2025

No.8369 Shangyuan Road, Xi'an Economic And Technological Development Zone, Xi'an, Shaanxi, China.

Web: www.longi.com

DATA SHEET

IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC), which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built using advanced 55-nm technology with high-speed digital logic and has superfast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the IQ Battery, IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL Listed as PV rapid shutdown equipment and conform with various regulations, when installed according to the manufacturer's instructions.

*Meets UL 1741 only when installed with IQ System Controller 2 or 3.
**IQ8 and IQ8+ support split-phase, 240 V installations only.

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By Laura DiPasquale at 10:22 am, Mar 31, 2025

Easy to install

- Lightweight and compact with plug-and-play connectors
- Power line communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Compliant with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) and IEEE 1547:2018 (UL 1741-SB)

NOTE:

- IQ8 Microinverters cannot be mixed with previous generations of Enphase microinverters (IQ7 Series, IQ6 Series, and so on) in the same system.
- IQ Microinverters ship with default settings that meet North America's IEEE 1547 interconnection standard requirements. Region-specific adjustments may be requested by an Authority Having Jurisdiction (AHJ) or utility representative according to the IEEE 1547 interconnection standard. An IQ Gateway is required to make these changes during installation.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)	UNITS	IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings[1]	W	235–350	235–440
Module compatibility	—	To meet compatibility, PV modules must be within maximum input DC voltage and maximum module I_{sc} listed below. Module compatibility can be checked at https://enphase.com/installers/microinverters/calculator.	
MPPT voltage range	V	27–37	27–45
Operating range	V	16–48	16–58
Minimum/Maximum start voltage	V	22/48	22/58
Maximum input DC voltage	V	50	60
Maximum continuous input DC current	A	10	12
Maximum input DC short-circuit current	A	25	
Maximum module (I_{sc})	A	20	
Overvoltage class DC port	—	II	
DC port backfeed current	mA	0	
PV array configuration	—	Ungrounded array; no additional DC side protection required; AC side protection requires maximum 20 A per branch circuit.	

OUTPUT DATA (AC)	UNITS	IQ8-60-2-US	IQ8PLUS-72-2-US
Peak output power	VA	245	300
Maximum continuous output power	VA	240	290
Nominal grid voltage (L-L)	V	240, split-phase (L-L), 180°	
Minimum and Maximum grid voltage[2]	V	211-264	
Maximum continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	47–68	
AC short-circuit fault current over three cycles	Arms	2	
Maximum units per 20 A (L-L) branch circuit[3]	—	16	13
Total harmonic distortion	%	<5	
Overvoltage class AC port	—	III	
AC port backfeed current	mA	30	
Power factor setting	—	1.0	
Grid-tied power factor (adjustable)	—	0.85 leading ... 0.85 lagging	
Peak efficiency	%	97.7	
CEC weighted efficiency	%	97	
Nighttime power consumption	mW	23	25

MECHANICAL DATA	
Ambient temperature range	-40°C to 60°C (-40°F to 140°F)
	4% to 100% (condensing)
	MC4
	212 mm (8.3 in) × 175 mm (6.9 in) × 30.2 mm (1.2 in)
	1.08 kg (2.38 lbs)
	Natural convection–no fans
	Yes
	PD3
	Class II double-insulated, corrosion-resistant polymeric enclosure
Environmental category/UV exposure rating	NEMA Type 6/Outdoor

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Karen Burditt

(1) No enforced DC/AC ratio.
(2) The range can be extended beyond nominal if required by the utility.
(3) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

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By Laura DiPasquale at 10:22 am, Mar 31, 2025

COMPLIANCE	
Certifications	CA Rule 21 (UL 1741-SA), UL 62109-1, IEEE 1547:2018 (UL 1741-SB), FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01. This product is UL Listed as PV rapid shutdown equipment and conforms with NEC 2014, NEC 2017, NEC 2020, and NEC 2023 section 690.12 and C22.1-2018 Rule 64-218 rapid shutdown of PV Systems, for AC and DC conductors, when installed according to the manufacturer's instructions.

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By Laura DiPasquale at 10:22 am, Mar 31, 2025

Revision history

REVISION	DATE	DESCRIPTION
DSH-00207-3.0	February 2024	Updated the information about IEEE 1547 interconnection standard requirements.
DSH-00207-2.0	October 2023	Included NEC 2023 specification in the “Compliance” section.
DSH-00207-1.0	September 2023	Updated module compatibility specification.

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CBUCK Engineering

Specialty Structural Engineering

CBUCK, Inc. Certificate of Authorization #8064

Evaluation Report

"SOLAR STACK"

Roof Solar Pedestal

Manufacturer:

SOLAR STACK INC.

1071 SW 30th Avenue

Deerfield Beach, Florida 33442

for

Florida Product Approval

 # FL 21074.2 R8

Florida Building Code 8th Edition (2023)

Method: **2 - B**

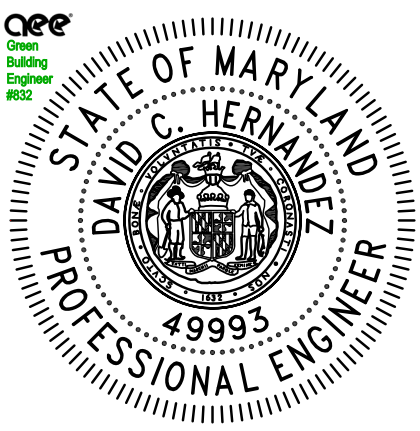
Category: **Roofing**

Sub - Category: **Roofing Accessories that are an Integral Part of the Roofing System**

Product Name: "SOLAR STACK"

Product Description: Roof Solar Pedestal

Product Material: Aluminum



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49993, EXP 10/06/2026.

David C Hernandez

Digitally signed by David C Hernandez
Date: 2025.01.06 05:37:56 -05'00'

This item has been digitally signed and sealed by James L. Buckner, P.E., on this date below. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

Prepared by:

James L. Buckner, P.E., SECB
Florida Professional Engineer # 31242
Florida Evaluation ANE ID: 1916
Project Manager: Diana Galloway
Report No. 22-525-SS-G4-hz-ER.2
(Revises 20-230-SS-G4-HVHZ-ER, FL21074.4 R6, R7)
Date: 2/14/2024

Contents:

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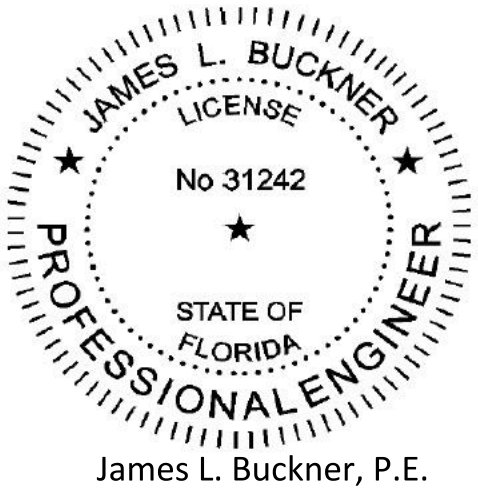

James L. Buckner, P.E.
FL31242

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By Laura DiPasquale at 10:22 am, Mar 31, 2025

CBUCK, Inc. dba CBUCK Engineering
Phone: (561) 491-9927 · Email: cbuck@cbuckinc.net · Website: www.cbuckinc.net
Business: 1374 Community Dr., Jupiter, FL 33458

1.0 Manufacturer: **SOLAR STACK INC.**
1071 SW 30th Avenue
Deerfield Beach, Florida 33442
(561) 276-9745
https://solarstack.com/

2.0 Product:

2.1 Product Name: "SOLAR STACK"

2.2 Product Description: Roof Solar Mounting Pedestal

3.0 Evaluation Scope:

3.1 Compliance with the following

Florida Building Code 8th Edition (2023), High Velocity Hurricane Zone (HVHZ)
Florida Building Code 8th Edition (2023), Outside High Velocity Hurricane Zone (Non-HVHZ)

3.2 Evaluation Method:

Florida Product Approval Rule: Method 2
Per Florida Administrative Code 61G20-3.005 (2) (b)

3.3 Evaluation Classification:

Category: Roofing
Subcategory: Roofing Accessories that are an Integral part of the Roofing System

3.4 Properties Evaluated

Structural (Wind Resistance) Properties: for one load path connection

3.5 Limits of Evaluation:

This product assembly evaluation is limited to compliance with section 3.1 to section 3.4 of this report.

4.0 Evaluated Uses:

SOLAR STACK INC. "SOLAR STACK" is used as a roof solar mounting pedestal,
Adhered to the Top of approved adhesives listed in this report.

5.0 Product Assembly Description:

5.1 General:

The SOLAR STACK INC. "SOLAR STACK" roof solar mounting pedestals are aluminum roof solar mounting pedestals that are adhered to the Top of foam adhesives list in this report.

6.0 Connection Assembly as Evaluated:

"SOLAR STACK" pedestal
Adhered to Top of Foam Adhesive

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7.0 One Structural Connection Performance:

7.1 Uplift Resistance:

Table 7.1
SOLAR STACK attached to Adhesive
Ultimate Uplift Resistance Loads (LBF)[1,2]

#	Uplift Load applied to the Top of "SOLAR STACK" Assembly (90° To Roof Surface)				
	Adhesive Type:	Pedestal Size: (Length)	Paddy Dimensions: (minimum)	Paddy Weight: Per pedestal (nominal)	Ultimate Load **Tension** (LBF)[1,2]
1	ICP AH-160 Blue	12"	4" dia. x 12" long x 1" high	83.6 grams	**-1025**
2	ICP AH-160 Blue	8"	4" dia. x 8" long x 1" high	51.7 grams	**-758**
3	ICP AH-160	6"	5"- 6" dia. x 6" long x 1-1/2" high	57.3 grams	**-600**
4	ICP AH-160	4"	4" dia. x 4" long x 1" high	49.9 grams	**-325**
5	DAP Stormbond 2 (fka Touch 'N Seal Storm Bond 2)	8"	6" dia. x 8" long x 1-1/2" high	44.2 grams	**-750**
6	DAP SmartBond	8"	6" dia. x 8" long x 1-1/2" high	49.5 grams	**-575**
7	DUPONT Tile Bond	12"	4" dia. x 12" long x 1" high	50.1 grams	**-1233**
8	DUPONT Tile Bond	8"	6" dia. x 8" long x 1-1/2" high	35.5 grams	**-875**
9	ICP APOC Polyset RTA-1	8"	5" dia. x 8" long x 1-1/2" high	47.3 grams	**-882**
10	ICP APOC Polyset RTA-1	6"	5" dia. x 6" long x 1-1/2" high	40.4 grams	**-432**
11	ICP APOC Polyset RTA-1	4"	5" dia. x 4" long x 1-1/2" high	27.1 grams	**-320**

Notes:
1. Ultimate Loads (LBF) with 0 margin of safety applied to the test loads.
2. Assembly was tested for vertical up.

8.0 Performance Standard:

The following Modified Test Standard was used to demonstrate compliance with the intent of the code per Method 2 of the Florida Administrative Code FAC 61G20-3005 (2) (b).

Modified-TAS 114-11 **–** *Test Procedure for Simulated Uplift Pressure Resistance of Adhered Roof System Assemblies. Testing Application Standard, (TAS) 114-95, Appendix D,*

Primary modifications;

The product tested was not a roof assembly.

The product was tested for one structural connection: Pedestal base to top of adhesive.

The intent of the test was to provide design load path resistance of a structural connection.

9.0 Code Compliance:

The product assembly described herein has demonstrated compliance with the intent of the Florida Building Code 8th Edition (2023), Section 1708.2.

10.0 Limitations and Conditions of Use:

10.1 This report evaluates the solar pedestal adhered to top of foam adhesive. This report is intended to be part of a complete load path design. Structural capacities of the bottom side of adhesive patty, other components and systems need to be combined for code wind design. Attachment to the top plate of the "SOLAR STACK" pedestal is outside the scope of this report.

10.2 Design of the roof adhesive to the building structure is outside the scope of this report.

10.3 Assembly was not evaluated for lateral loads.

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10.4 Scope of "Limitations and Conditions of Use" for this evaluation:
This evaluation report for "State Approval" contains technical documentation, specifications and installation method(s) which include "Limitations and Conditions of Use" throughout the report in accordance with Rule 61G20-3.005. Per Rule 61G20-3.004, the Florida Building Commission is the authority to approve products under "State Approval".

10.5 This report is a building code product evaluation per FLPE rule (FAC) 61G15-36 to comply with Florida product approval rule (FAC) 61G20-3. This evaluation report is part of the Florida Building Commission approval for the listed code related criteria. This report by James Buckner, P.E. and CBUCK Engineering is not a design certification of code compliance construction submittal documentation, per FBC section 107, for any individual structure, site specific or permit design.

10.6 All metal components and fasteners shall be corrosion resistant in accordance with applicable sections of FBC, including but not limited to Sections 1504.3.2, 1506.6 and 1507.4.4. For HVHZ areas, all roofing accessories shall comply with FBC Sections 1517.5 and 1517.6.

10.7 Fire Classification is outside the scope of Rule 61G20-3 and is therefore not included in this evaluation.

10.8 All pedestals shall be permanently labeled with the manufacturer's name and/or logo, and/or model.

10.9 This evaluation report approves the product assembly as described in this report for use in the High Velocity Hurricane Zone (HVHZ) code section. (Dade & Broward Counties)

10.10 Option for application outside "Limitations and Conditions of Use"
Rule 61G20-3.005(1)(e) allows engineering analysis for "project specific approval by the local authorities having jurisdiction in accordance with the alternate methods and materials authorized in the Code". Any modification of the product as evaluated in this report and approved by the Florida Building Commission is outside the scope of this evaluation and will be the responsibility of others.

11.0 Quality Assurance:

The manufacturer has demonstrated compliance of products in accordance with the Florida Building Code and Rule 61G20-3.005 (3) for manufacturing under a quality assurance program audited by an approved quality assurance entity through Keystone Certifications, Inc., (FBC Organization #QUA ID:1824).

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12.0 System/Components

12.1 "SOLAR STACK" Solar Pedestal

Attachment of solar panels to SOLAR STACK solar pedestals is outside the scope of this evaluation and shall be designed by others.

12.1.1 "SOLAR STACK" Solar Pedestal

Material Specifications:

Type:	Aluminum
Thickness:	0.095" (min.)
Alloy Type:	6005A T5

12.1.2 "SOLAR STACK" Solar Pedestal Sizes:

12.1.2.1 4" SOLAR STACK" Solar Pedestal

Overall Product Dimensions:

Length:	4.00 in.
Width:	5.00 in.
Height:	4.50 in.

12.1.2.2 6" SOLAR STACK" Solar Pedestal

Overall Product Dimensions:

Length:	6.00 in.
Width:	5.00 in.
Height:	4.50 in.

12.1.2.3 8" SOLAR STACK" Solar Pedestal

Overall Product Dimensions:

Length:	8.00 in.
Width:	5.00 in.
Height:	4.50 in.

12.1.2.4 12" SOLAR STACK" Solar Pedestal

Overall Product Dimensions:

Length:	12.00 in.
Width:	5.00 in.
Height:	4.50 in.

12.2 Roof Foam Adhesive:

Adhesion of "SOLAR STACK" system to top of foam adhesive shall have the following minimum characteristics and be in compliance with this report, FBC Chapter 15, applicable code sections, product approvals, and in accordance with roof adhesive manufacturer's limitations and recommendations.

12.2.1 Adhesive Option 1:

Product Name:	Polyset AH-160
Manufactured by:	ICP Adhesives and Sealants, Inc.
Type:	Two-Component Adhesive
Material:	Polyurethane froth
Current Approvals:	Florida Building Code: FL#6332.1 R10
	Miami-Dade County: NOA# 22-0614.10

12.2.2 Adhesive Option 2:

Product Name:	Polyset AH-160 Blue
Manufactured by:	ICP Adhesives and Sealants, Inc.
Type:	Two-Component Adhesive
Material:	Polyurethane froth
Current Approvals:	Florida Building Code: FL#6332.1 R10
	Miami-Dade County: NOA# 22-0614.10

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12.2.3 Adhesive Option 3:

Product Name:	Storm Bond 2K
Manufactured by:	DAP Products, Inc.
Type:	Two-Component Adhesive
Material:	Polyurethane froth
Current Approvals:	Miami-Dade County: NOA# 21-0928.02

12.2.4 Adhesive Option 4:

Product Name:	Storm Bond
Manufactured by:	DAP Products, Inc.
Type:	Single-Component Adhesive
Material:	Polyurethane froth
Current Approvals:	Florida Building Code: FL#14506.1
	Miami-Dade County: NOA# 21-0928.04

12.2.5 Adhesive Option 5:

Product Name:	Tile Bond
Manufactured by:	DuPont de Nemours, Inc.
Type:	Single-Component Adhesive
Material:	Polyurethane froth
Current Approvals:	Florida Building Code: FL#22525.1 R7
	Miami-Dade County: NOA# 22-0614.05

12.2.6 Adhesive Option 6:

Product Name:	APOC Polyset RTA-1
Manufactured by:	ICP Adhesives and Sealants, Inc.
Type:	Single-Component Adhesive
Material:	Polyurethane froth
Current Approvals:	Florida Building Code: FL#6276.1
	Miami-Dade County: NOA# 22-0618.08

13.0 Installation Method:

"SOLAR STACK" Pedestal to Top of Roof Adhesive:

Install the "SOLAR STACK" Solar Pedestal into the paddy of roof foam adhesive per above Table 7.1. SOLAR STACK Pedestals shall be firmly pressed into adhesive so that pedestal base and base perimeter is encapsulated in adhesive. (Refer to Table 7.1 and drawings at the end of this evaluation report.)

1. **Apply Roof adhesive:**
   Adhesive Type: **Refer to Table 7.1**
   Paddy weight: **Refer to Table 7.1**
   Adhesive Size: **Refer to Table 7.1**
   Paddy placement of roof tile adhesive shall be applied on clean, dry approved surface.
2. **"SOLAR STACK" Solar Pedestal**
   Install the "SOLAR STACK" Solar Pedestal into the paddy of Adhesive.
   Pedestal Size: **Refer to Table 7.1**

The SOLAR STACK INC. "SOLAR STACK" solar roof pedestal shall be installed in compliance with the installation method listed in this report and applicable code sections of FBC 8th Edition (2023). The installation method described herein is in accordance with the scope of this evaluation report. Refer to manufacturer's installation instructions as a supplemental guide.

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14.0 Evaluation Reference Data:

14.1 Modified TAS 114-95 Appendix D Uplift Test
By American Test Lab of South Florida (ATL) (FBC Organization #TST ID: 3782)
Report #: 1215.01.21, Dated: 12/22/21 (Syst 1,2)

14.2 Modified TAS 114-95 Appendix D Uplift Test
By American Test Lab of South Florida (ATL) (FBC Organization #TST ID: 3782)
Report #: 0222.02-19, Dated: 2/26/19 (Syst 5)

14.3 Modified TAS 114-95 Appendix D Uplift Test
By American Test Lab of South Florida (ATL) (FBC Organization #TST ID: 3782)
Report #: 0309.01-23, Dated: 3/15/23 (Syst 9)

14.4 Modified TAS 114-95 Appendix D Uplift Test
By American Test Lab of South Florida (ATL) (FBC Organization #TST ID: 3782)
Report #: 1105.01-21, Dated: 11/13/21 (Syst 7,8)

14.5 Modified TAS 114-95 Appendix D Uplift Test
By American Test Lab of South Florida (ATL) (FBC Organization #TST ID: 3782)
Report #: 0712.01-23, Dated: 7/17/23 (Sys 10,11)

14.6 Modified TAS 114-95 Appendix D Uplift Test
By American Test Lab of South Florida (ATL) (FBC Organization #TST ID: 3782)
Report #: 1003.01-22, Dated: 10/7/22 (Syst 3,4 12)

14.7 Quality Assurance
By Keystone Certifications, Inc., (FBC Organization #QUA ID:1824)
SOLAR STACK INC, Licensee #: 448
(FBC Organization #QUA ID:1824)

14.8 Engineering Analysis
By James L. Buckner, P.E. @ CBUCK Engineering
(FBC Organization # ANE 1916)

14.9 Test Standard Equivalency
By James L. Buckner, P.E. @ CBUCK Engineering
(FBC Organization # ANE 1916)

14.10 Letter Re: Product Name Change
By Tim Graboski with Ridged Systems LLC, dated 11/20/2018

14.11 Letter Re: Manufacture Name Change
By Tim Graboski with Ridged Systems LLC, dated 06/23/2023

14.12 Certification of Independence
By James L. Buckner, P.E. @ CBUCK Engineering
(FBC Organization # ANE 1916)

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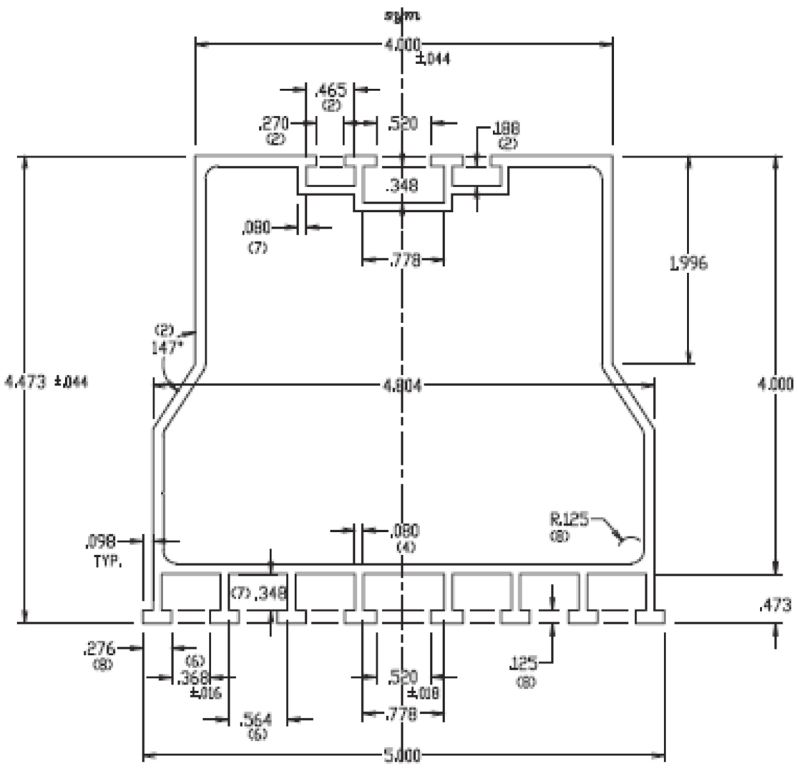
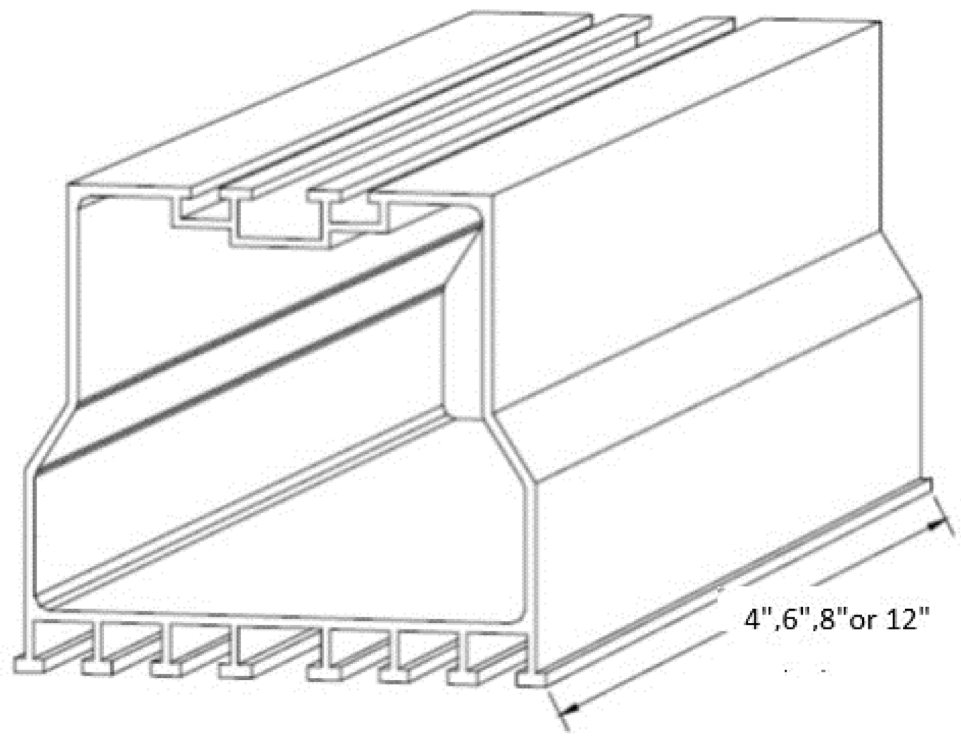
CBUCK, Inc. Certificate of Authorization #8064

Installation Method
SOLAR STACK INC.
"SOLAR STACK" Roof Pedestal



"SOLAR STACK "
Typical Profile View



"SOLAR STACK "
Isometric Profile View

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

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Montgomery County

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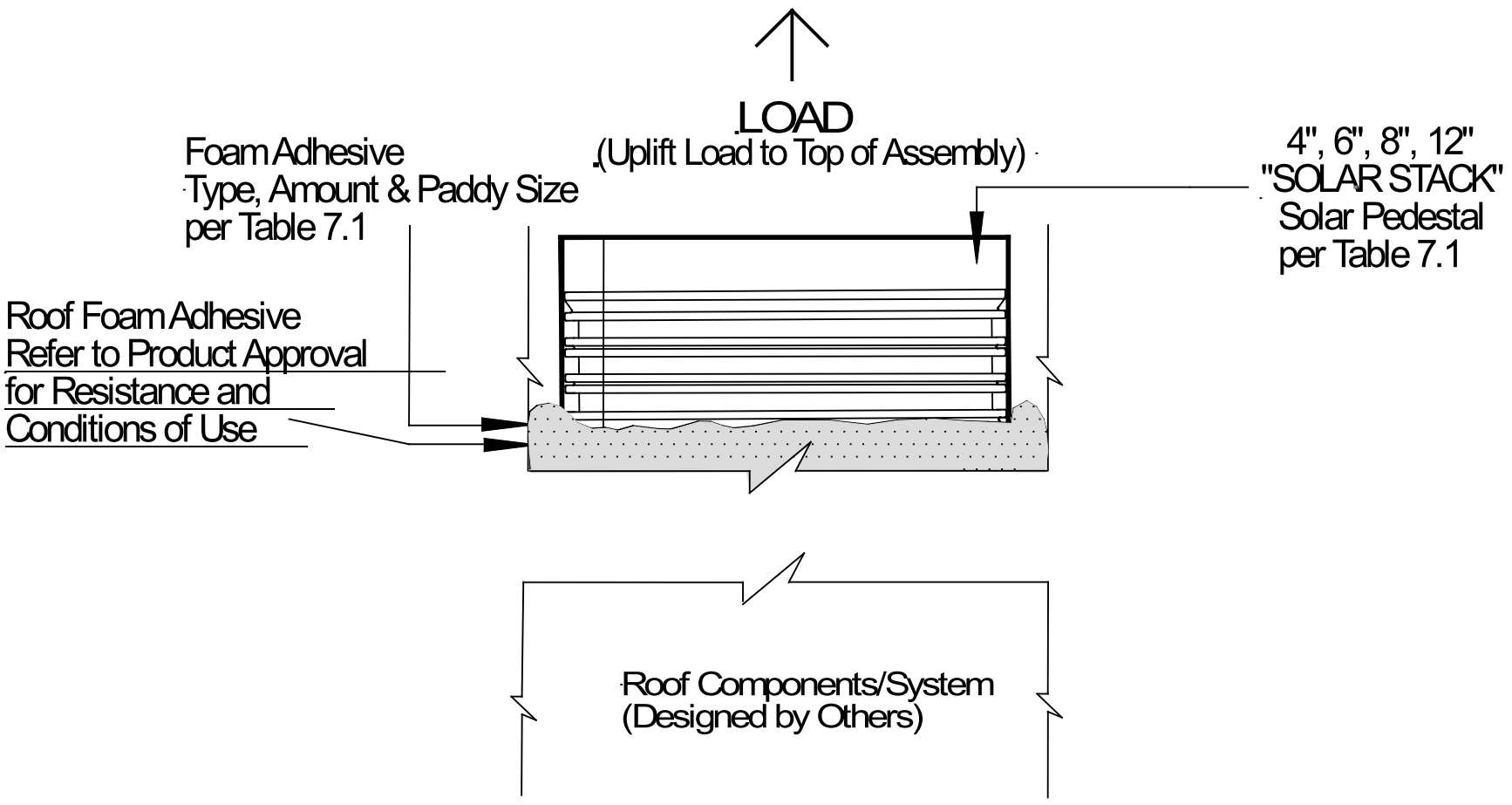
CBUCK, Inc. Certificate of Authorization #8064

Installation Method
SOLAR STACK INC.
"SOLAR STACK" Roof Pedestal



Typical Assembly
Section View

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

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Historic Preservation Commission

American Test Lab of South Florida
6801 NW 17 Ave Ft Lauderdale, FL 33309
office 954-972-6208 fax 954-972-6285
www.atlsf.com email:info@atlsf.com

TEST REPORT for STATIC UPLIFT RESISTANCE

Client: Solar Stack
1071 S.W. 30th Avenue
Deerfield Beach, Florida 33442
Attention: Tim Graboski

Report Date: 11/29/23
Report #: 1121.01-23

Test Authorized by:	Tim Graboski
Sampled by:	Client
Reference Test Method:	Test Procedure for Simulated Uplift Pressure Resistance of Adhered Roof System Assemblies. Testing Application Standard, (TAS) 114-95, Appendix D, Modified as Reported Below. Uplift Loading, as reported below
Miami-Dade Proposal #:	None provided
Manufacturer:	Solar Stack
Series/Model:	Solar Stack, Solar Panel Mounts
Overall Dimensions:	8" long x 5" wide x 4.500" high
Material:	Aluminum, alloy: 6005A temper: T-5
MDBNC Notification #:	1228-0050
MDBNC Lab Certificate #:	21-1228.03
Comments:	TAS 114-95, Appendix D was used as a reference. Deviations from the test method were: 1. The product was an adhered rigid component with a proposed use of attaching roof mounted solar panels. 2. The component dimensions are provided herein. 3. Incremental loads were applied in 15 lbf increments and held for 1 minute. 4. The requirement in section 7.1 for additional testing was

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David C. Hernandez, PE Digitally signed by David C. Hernandez, Date: 2025.02.21 10:53:02 -05'00'

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49993, EXP 10/06/2026.

Client: Solar Stack Report #:1121.01-23

Test Method: TAS 114-95, Appendix D (modified) Uplift

Description of Test Specimens:

Each test specimen consisted of one (1), 8" long, hollow, 0.095" thick, extruded aluminum Solar Stack unit. The top section was 4.030" wide and had three (3) recessed "C" channels the full length of the unit. The two (2) outside channels were 0.290" deep and spaced l.295" o.c. from each side. The top 0.100" was 0.270" wide then opened up to 0.465" wide. The top plane of the unit extended over each side of the channel 0.098". The center channel was 0.450" deep and spaced 2.015" o.c. from each side. The top 0.100" was 0.535" wide then opened up to 0.778" wide. The top plane of the unit extended over the channel 0.122". The top 1.996" of the sides was perpendicular to the top. The sides then flared out 147° for 0.725" then returned down 33°for 1.360" to the bottom side of the bottom wall of the unit. Extending 0.473" from the bottom wall were eight (8), "T" shaped legs that formed one (1), 0.778" wide center "C" channel the full length of the unit and three (3), 0.560" wide "C" channels on each side of the center channel. The center channel bottom opening was 0.520" and the bottom opening on the remaining six (6) channels was 0.368". The overall bottom width was 4.995". The interface of the side walls with the top and bottom walls were structural.

All units were adhered to one (1) layer of GAF GAFGLAS Mineral Surface Cap Sheet (White), GAFGGMS125WH, asphalt-coated glass mat cap sheet surfaced with mineral granules, manufactured by GAF. The membrane was adhered to one (1), 4' x 8' x 19/32" thick, APA 40/20 span rated plywood of with 4 plys, unknown grade, in a full mopping of ASTM D 312, type IV asphalt.

The sheathing was attached to a 2" x 6" frame, with intermediate supports spaced 24" on center, with #9 x 2-1/2" long deck screws with a flat #2 Phillips head spaced 6" on the panel edges at the intermediate supports. Each test specimen was set into a full bed of ICP Adhesives Polyset AH 160, Blue, manufactured by ICP Construction, Inc., Miami-Dade County Notice of Acceptance #:22-0614.10, using a ProPack 30 dispenser. For each test specimen, the bed of ICP Adhesive consisted of two (2), +/-4-1/2" diameter patties placed next to each other. The test specimens were nestled and pressed into the adhesive. Six (6) beds of adhesive, representative of the beds used to install the test specimens, were sprayed onto a plastic sheet and allowed to cure 72 hours. The beds were measured and weighed. The cured dimensions were 10" long x 6" wide x 1-1/4" thick. The average weight of the six (6) samples was 48.7 grams.

When cured the adhesive wrapped the bottom edges of the test specimens. The adhesive was allowed to cure a minimum 72 hours before testing.

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

Uplift Test Apparatus:

The test apparatus consisted of a hydraulic loading arm lift with an in-line load cell, (ATLSF Asset #:104), (model # SBO-2K, serial # 230152), equipped with a digital recorder capable of ll scale resolution, manufactured by Transducer Techniques, (model # DPM-3, serial #

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232838), last calibrated 10/13/23. Attached to the load cell was a turnbuckle connected to an eye connector threaded onto a 1/2"-14 steel bolt with a 0.743" hex head x 0.310" thick. The head of the bolt was inserted into the top center channel of each unit, at mid-length. The test deck was parallel to the floor and load was applied vertically and perpendicular to the floor.

Uplift Test Procedure:
The loading and load measurement device was rigidly connected to the load transfer device and the uplift load was gradually applied. The loads were applied in 15 lbf increments, until failure. Each load increment was maintained for one (1) minute.

Failure:
Failure was defined as the inability to achieve or maintain the next load increment for one (1) minute due to delamination of the test specimen from the membrane. The last load maintained for 1 minute and observed mode of failure is reported as the Ultimate load and the mode of failure was recorded.

Uplift Test Results:

Unit #	Weight (lbf.)	Ultimate Load (lbf.)
1	1.667	925
2	1.784	270
3	1.780	730
4	1.775	460
5	1.777	925
6	1.623	1015
average	1.734	720.8

Average Ultimate Load – Average Tile Weight with 2:1 Margin of Safety= 720.8-1.734/2 = 359.5
359.5 lbf/ 0.28 ft^2 = 1,284 psf
Specimen #1: Max. load 926.8 lbf.- The head of the bolt pulled out of the channel of the test unit.
Specimen #2: Max. load 285.4 lbf.- The membrane delaminated from the plywood substrate.
Specimen #3: Max. load 742.5 lbf.- There was cohesive failure in the membrane and foam adhesive.
Specimen #4: Max. load 465.1 lbf.- The membrane delaminated from the plywood substrate.
Specimen #5: Max. load 935.1 lbf.- There was cohesive failure in the foam adhesive.
Specimen #6: Max. load 1121.4 lbf.- The head of the bolt pulled out of the channel of the test unit.

Disclaimer: This test report was prepared by American Test Lab of South Florida, (ATLSF), for the exclusive use of the above named client and does not constitute certification of this product. The results relate to the particular specimens tested and does not imply that the quality of similar or identical products manufactured or installed from specifications or shop drawings identical to the product tested. ATLSF is an independent testing laboratory and assumes that all information provided by the client is accurate and does not guarantee or warrant any product tested or installed.

Client: Solar Stack Report #:1121.01-23
Test Method: TAS 114-95, Appendix D (modified) Uplift

American Test Lab of South Florida, its employees, and witnessing engineers do not own, operate, or are controlled by any manufacturer and have no financial interest in the manufacture, manufacture of any related parts, specification, or installation of this or a competing product.

The attached die drawing, dated 1/3/18, as verified and marked with the ATLSF stamp is part of this report.

End of report.

Test Conducted by:
Tony Porcello

Test Report Prepared by:

Tony Porcello
President
American Test Lab of South Florida

Test Report Reviewed by:

Stephen W. Warter, P.E.
Reg. State of Florida # 54395
American Test Lab of South Florida

STEPHEN WARTER LICENSE No 54395 STATE OF FLORIDA PROFESSIONAL ENGINEER

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

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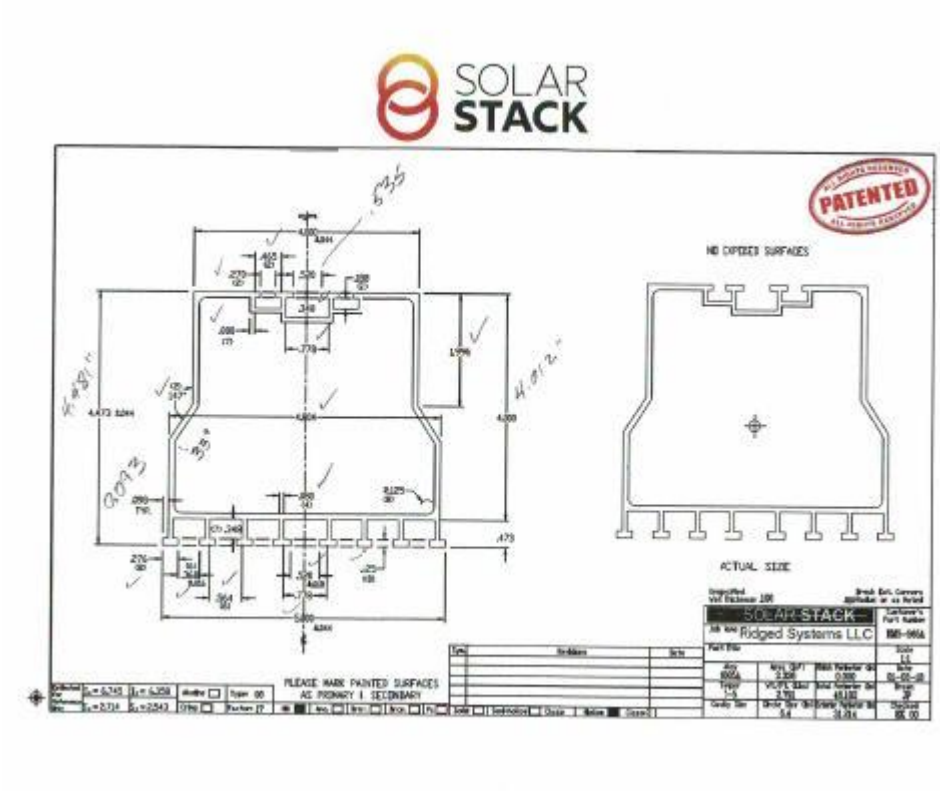
Montgomery County
Historic Preservation Commission

Client: Solar Stack Report #:1121.01-23

Test Method: TAS 114-95, Appendix D (modified) Uplift

Die Drawing of Test Product.



Photographs #1: Test Assembly

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

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Client: Solar Stack Report #:1121.01-23

Test Method: TAS 114-95, Appendix D (modified) Uplift

Photographs #2, #3, & #4: Sample Patties

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

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Montgomery County
Historic Preservation Commission

Client: Solar Stack Report #:1121.01-23

Test Method: TAS 114-95, Appendix D (modified) Uplift

Photographs #5-#10: – Test Specimens in order tested

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

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Montgomery County
Historic Preservation Commission

Client: Solar Stack Report #:1121.01-23

Test Method: TAS 114-95, Appendix D (modified) Uplift

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

Client: Solar Stack Report #:1121.01-23

Test Method: TAS 114-95, Appendix D (modified) Uplift

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REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

Client: Solar Stack Report #:1121.01-23

Test Method: TAS 114-95, Appendix D (modified) Uplift

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

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Montgomery County
Historic Preservation Commission

COVER LETTER
SOLAR STACK – Roof solar mounting pedestal

Date: January 9, 2025
Re: Solar Stack pedestal – Cover Letter
Subj: State of Maryland, USA

SOLAR STACK Florida Product Approval (FL#21074) is in compliance with:

- ASCE 7-16 IRC – 2018 IBC - 2018

Performance evaluation is summarized in Table 7.1 below:

7.0 One Structural Connection Performance:

7.1 Uplift Resistance:

Table 7.1
SOLAR STACK attached to Adhesive
Ultimate Uplift Resistance Loads (LBF)[1,2]

#	Uplift Load applied to the Top of "SOLAR STACK" Assembly (90° To Roof Surface)				
	Adhesive Type:	Pedestal Size: (Length)	Paddy Dimensions: (minimum)	Paddy Weight: Per pedestal (nominal)	Ultimate Load **Tension** (LBF)[1,2]
1	ICP AH-160 Blue	12"	4" dia. x 12" long x 1" high	83.6 grams	**-1025**
2	ICP AH-160 Blue	8"	4" dia. x 8" long x 1" high	51.7 grams	**-758**
3	ICP AH-160	6"	5"- 6" dia. x 6" long x 1-1/2" high	57.3 grams	**-600**
4	ICP AH-160	4"	4" dia. x 4" long x 1" high	49.9 grams	**-325**
5	DAP Stormbond 2 (fka Touch 'N Seal Storm Bond 2)	8"	6" dia. x 8" long x 1-1/2" high	44.2 grams	**-750**
6	DAP SmartBond	8"	6" dia. x 8" long x 1-1/2" high	49.5 grams	**-575**
7	DUPONT Tile Bond	12"	4" dia. x 12" long x 1" high	50.1 grams	**-1233**
8	DUPONT Tile Bond	8"	6" dia. x 8" long x 1-1/2" high	35.5 grams	**-875**
9	ICP APOC Polyset RTA-1	8"	5" dia. x 8" long x 1-1/2" high	47.3 grams	**-882**
10	ICP APOC Polyset RTA-1	6"	5" dia. x 6" long x 1-1/2" high	40.4 grams	**-432**
11	ICP APOC Polyset RTA-1	4"	5" dia. x 4" long x 1-1/2" high	27.1 grams	**-320**

Notes:
1. Ultimate Loads (LBF) with 0 margin of safety applied to the test loads.
2. Assembly was tested for vertical up.

The installation of solar rack system shall be as follows:

The unified panel assembly shall be supported on Solar Stack adhered solar mounting feet (pedestal) providing an average of 2.5 mounting feet per module. The brackets, clamps, bolts, screws, nuts, etc that attach the PV modules to the top side of the Solar Stack pedestals (8 inches long and 5 inches wide). Foot attachment to the roof shall be provided with a minimum of 2 per module long side and shared between modules. Mounting feet shall be adhered to the roof deck per the manufacturer's standard installation details to attach the Solar Stack to the roof membrane.

Solar panel mounting systems installed parallel to the plane of a roof shall be no more than 12" above the roof when measured perpendicular to the roof surface. When installed as per the above specifications the system shall meet required 115 MPH wind load, 10 PSF Dead Load, 20 PSF Live Load and 35 PSF Ground Snow load requirements

This review is for structural review only and does not express or imply any review of the roofing materials for weather tightness, condition, or lifespan. Review of the roofing materials should be performed by the installation contractor or a certified roofing professional. Should you have any further questions or comments please feel free to contact our office.

Respectfully,

David C Hernandez

Digitally signed by David C Hernandez
Date: 2025.01.15 05:32:36 -05'00'

Green Building Engineer #832

STATE OF MARYLAND
DAVID C. HERNANDEZ
49993
PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49993, EXP 10/06/2026.

REVIEWED
By Laura DiPasquale at 10:22 am, Mar 31, 2025

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Historic Preservation Commission

Critter Guard

SolarStack

David C. Hernande
Digitally signed by David C. Hernande
Date: 2025.03.06 10:07:57 -05:00

STATE OF MARYLAND · DAVID C. HERNANDEZ · 49993 · PROFESSIONAL ENGINEER

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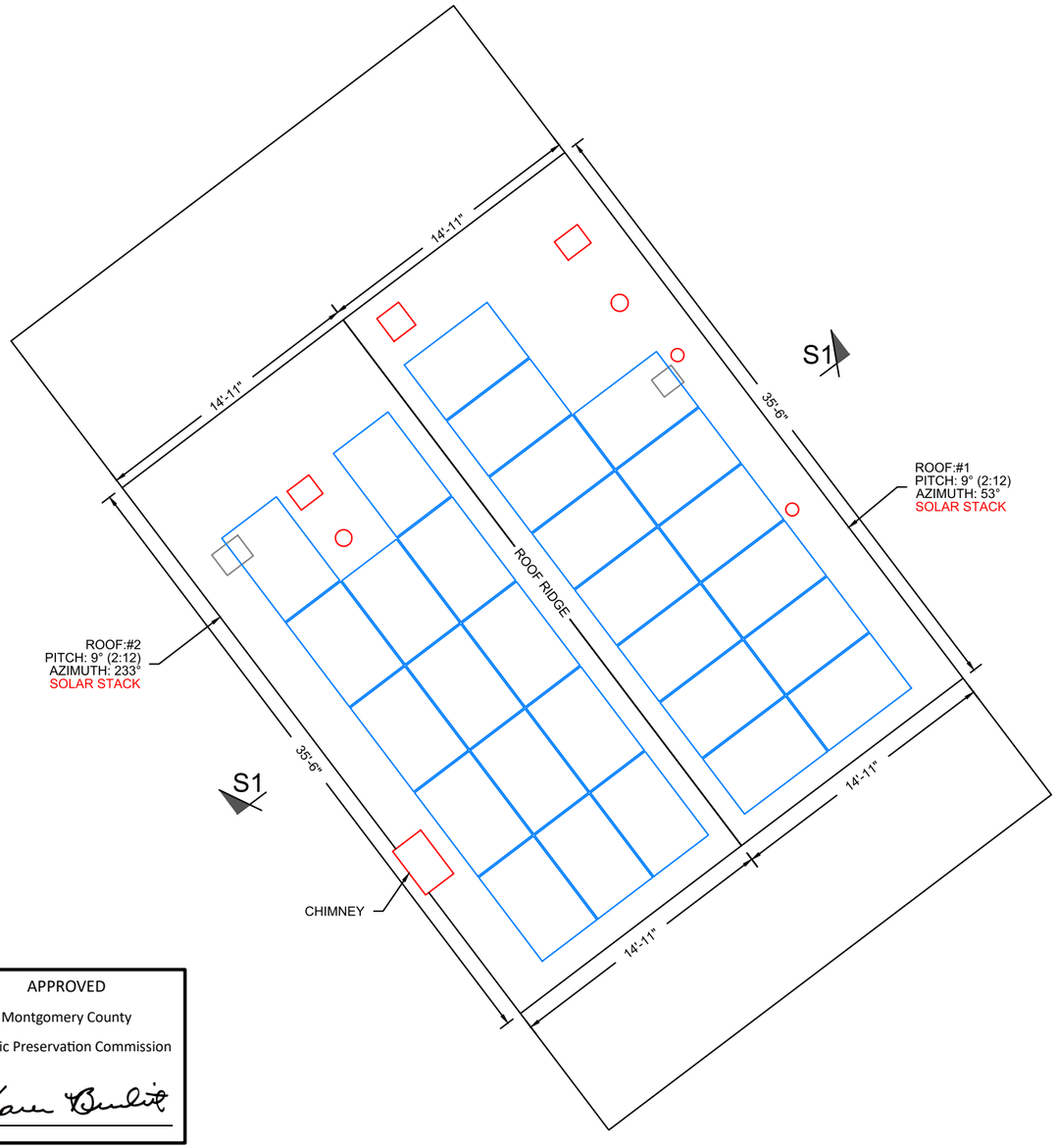

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PLAN VIEW TOTAL ROOF AREA: 1072 SQFT

SOLAR ARRAY AREA: 588.56 SQFT

THE SOLAR ARRAY IS 54.9% OF THE PLAN VIEW TOTAL ROOF AREA

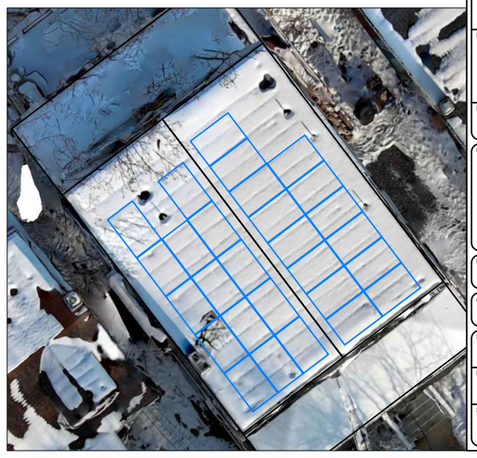
REVIEWED
By Laura DiPasquale at 10:24 am, Mar 31, 2025

NOTES:

1. THE SYSTEM SHALL INCLUDE (28) LONGI LR5-54HABB-400M.
2. SOLAR STACK MOUNT KIT WILL BE INSTALLED IN ACCORDANCE WITH SOLAR STACK INSTALLATION MANUAL.
3. REFER TO STRUCTURAL DRAWING FOR SECTIONS MARKED AND ADDITIONAL NOTES.

SOLAR PANEL LAYOUT

Scale: 1/8" = 1'–0"



Solar Energy World
Because Tomorrow Matters

Solar Energy World LLC.
14880 Sweitzer Lane
Laurel, MD 20707
(888) 497-3233

Building Code	International Residential Code (IRC) 2021
Electrical Code	National Electrical Code (NEC) 2020
Wind Speed / Snow Load	115 MPH / 30 PSF
Modules	(28) LONGi LR5-54HABB-400M
Inverter(s)	(28) IQ8+-72-M-US
DC System Size / AC System Size	11.200 kW / 8.120 kW
Customer Information	Peter Hendrickson 66 Walnut Ave Takoma Park, MD 20912
Partner/Lender	None
AHJ / Utility	Montgomery / Pepco
Sheet Name	Solar Panel Layout
Drawn By / Date	CB / March 5, 2025
Scale / Job Number / Sheet	AS NOTED / MD22936 / A-1

David C. Hernande
Digitally signed by David C. Hernande
Date: 2025.03.06 10:07:57 -05:00

STATE OF MARYLAND
DAVID C. HERNANDEZ
49993
PROFESSIONAL ENGINEER

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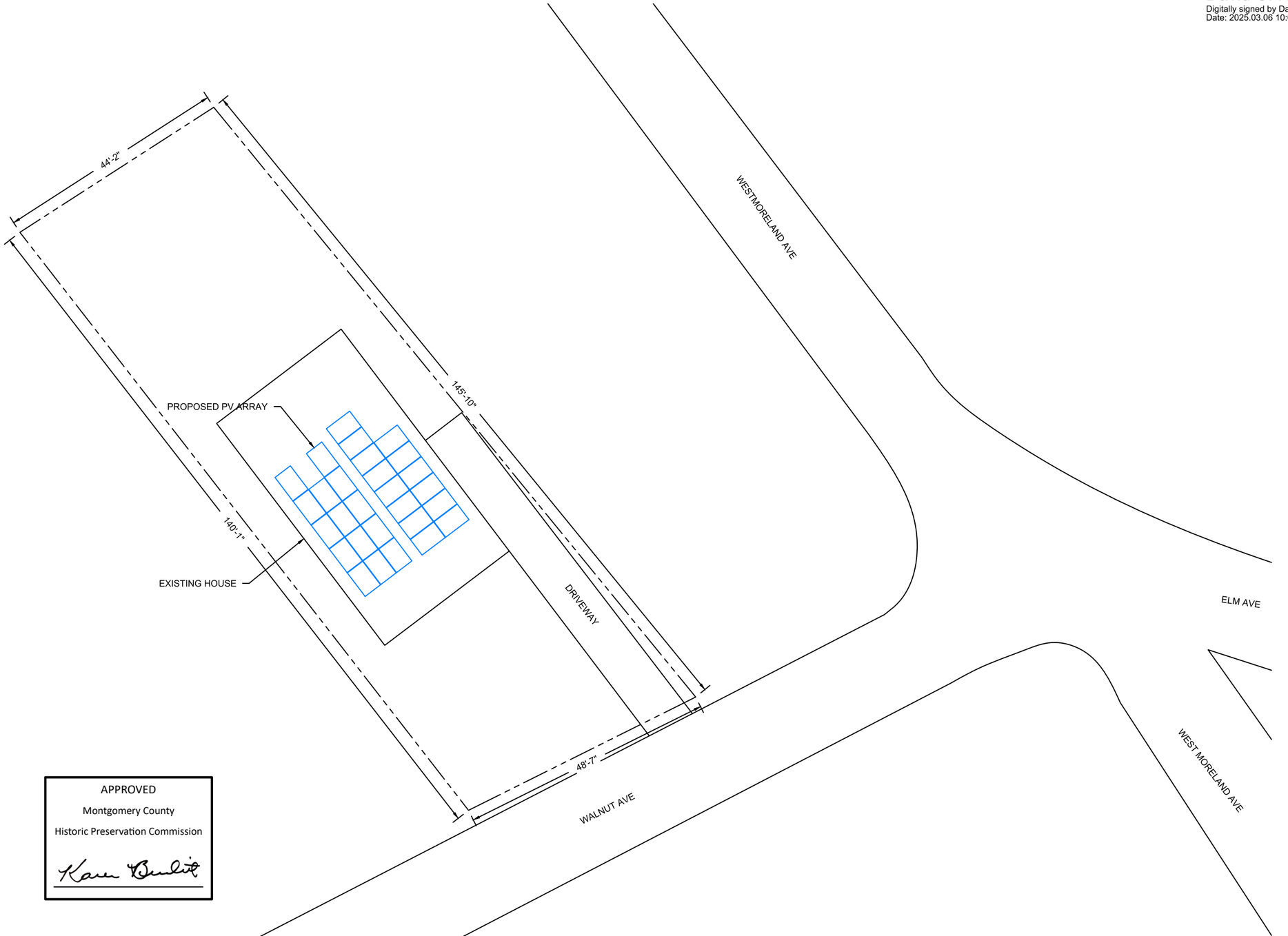

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Historic Preservation Commission

REVIEWED
By Laura DiPasquale at 10:24 am, Mar 31, 2025

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S

SITE PLAN
Scale: 1" = 20'–0"

Solar Energy World
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Solar Energy World LLC.
14880 Sweitzer Lane
Laurel, MD 20707
(888) 497-3233

Building Code	International Residential Code (IRC) 2021
Electrical Code	National Electrical Code (NEC) 2020
Wind Speed	115 MPH
Snow Load	30 PSF
Modules	(28) LONGi LR5-54HABB-400M
Inverter(s)	(28) IQ8+-72-M-US
DC System Size	11.200 kW
AC System Size	8.120 kW
Customer Information	Peter Hendrickson 66 Walnut Ave Takoma Park, MD 20912
Partner/Lender	None
AHJ	Montgomery
Utility	Pepco
Sheet Name	Site Plan
Drawn By	CB
Date	March 5, 2025
Scale	AS NOTED
Job Number	MD22936
Sheet	A-2

David C. Hernande
Digitally signed by David C. Hernande
Date: 2025.03.06 10:07:57 -05:00

STATE OF MARYLAND
DAVID C. HERNANDEZ
49993
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EQUIPMENT LOCATION PLAN
Scale: NTS

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Montgomery County
Historic Preservation Commission

REVIEWED
By Laura DiPasquale at 10:24 am, Mar 31, 2025

NOTE:

EQUIPMENT LOCATION PLAN IS APPROXIMATE, EXACT LOCATION TO BE VERIFIED WITH INSTALLATION CREW AND HOME OWNER AT THE TIME OF INSTALLATION.

Solar Energy World
Because Tomorrow Matters

Solar Energy World LLC.
14880 Sweitzer Lane
Laurel, MD 20707
(888) 497-3233

Building Code: International Residential Code (IRC) 2021
Electrical Code: National Electrical Code (NEC) 2020
Wind Speed: 115 MPH | Snow Load: 30 PSF
Modules: (28) LONGi LR5-54HABB-400M
Inverter(s): (28) IQ8+-72-M-US
DC System Size: 11.200 kW | AC System Size: 8.120 kW
Customer Information: Peter Hendrickson
66 Walnut Ave
Takoma Park, MD 20912
Partner/Lender: None
AHJ: Montgomery | Utility: Pepco
Sheet Name: Equipment Location Plan
Drawn By: CB | Date: March 5, 2025
Scale: AS NOTED | Job Number: MD22936 | Sheet: E-1

David C. Hernande
Digitally signed by David C. Hernande
Date: 2025.03.06 10:07:57 -05:00

STATE OF MARYLAND
DAVID C. HERNANDEZ
49993
PROFESSIONAL ENGINEER

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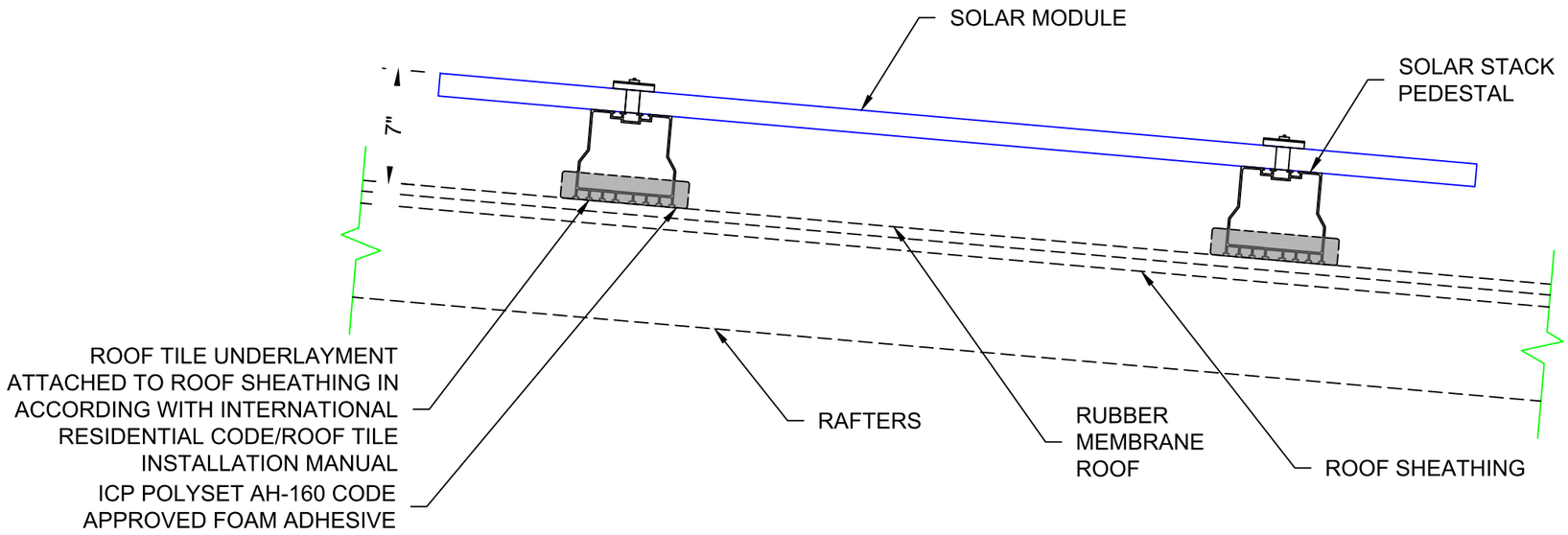

Structural Details		
S1	Rafter	2x8 O.C. 24"

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Montgomery County
Historic Preservation Commission

REVIEWED
By Laura DiPasquale at 10:24 am, Mar 31, 2025

NOTES:

1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF INTERNATIONAL RESIDENTIAL CODE (IRC 2021), LOADING CODE (ASCE 7-16), WOOD DESIGN CODE (NDS 2015), AND LOCAL REQUIREMENTS.
2. LOAD CRITERIA PER :
   - EXPOSURE CATEGORY "B"
   - GROUND SNOW LOAD, Pg = 30 PSF
   - LATERAL LOAD RISK CATEGORY "II"
   - ULTIMATE DESIGN WIND SPEED = 115 MPH
3. SOLAR PANELS AND RACKING SYSTEMS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATION.
4. FOLLOW ALL LOCAL AND FEDERAL SAFETY REQUIREMENTS.

STRUCTURAL ATTACHMENT DETAIL

Solar Energy World
Because Tomorrow Matters

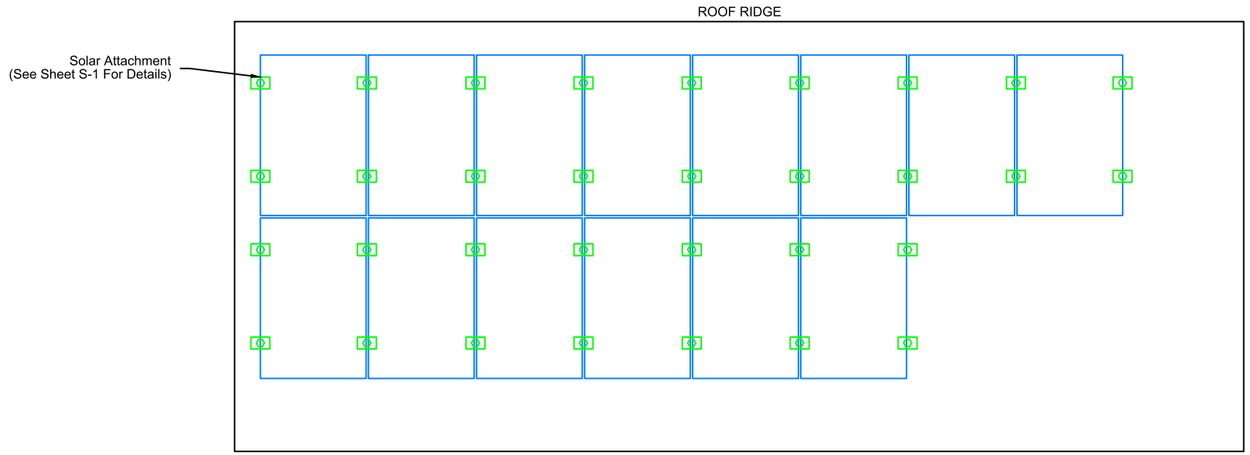
Solar Energy World LLC.
14880 Sweitzer Lane
Laurel, MD 20707
(888) 497-3233

Building Code: International Residential Code (IRC) 2021
Electrical Code: National Electrical Code (NEC) 2020
Wind Speed: 115 MPH | Snow Load: 30 PSF
Modules: (28) LONGi LR5-54HABB-400M
Inverter(s): (28) IQ8+-72-M-US
DC System Size: 11.200 kW | AC System Size: 8.120 kW
Customer Information: Peter Hendrickson, 66 Walnut Ave, Takoma Park, MD 20912
Partner/Lender: None
AHJ: Montgomery | Utility: Pepco
Sheet Name: Structural Attachment Details
Drawn By: CB | Date: March 5, 2025
Scale: AS NOTED | Job Number: MD22936 | Sheet: S-1

Bill Of Materials	
Product	Count
Solar Stack	66

David C. Hernande
Digitally signed by David C. Hernande
Date: 2025.03.06 10:07:57 -05:00

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49993, EXP. 10/06/2026.



SOLAR PANEL FOOTING PLAN R1

Scale: 3/16" = 1'-0"

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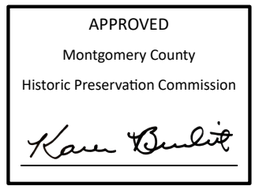
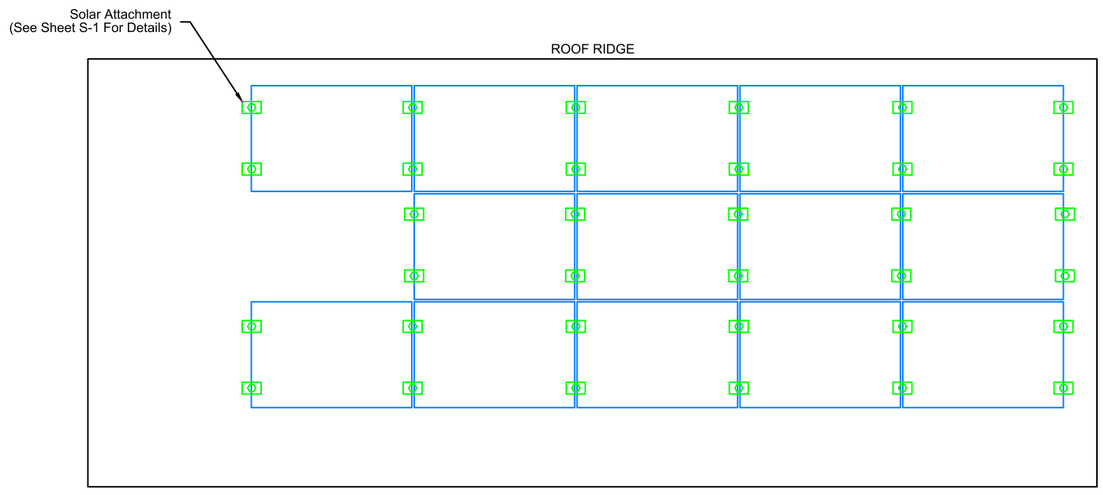




SOLAR PANEL FOOTING PLAN R2

Scale: 3/16" = 1'-0"

REVIEWED
By Laura DiPasquale at 10:24 am, Mar 31, 2025

NOTES:

1. SOLAR STACK SHALL BE INSTALLED IN ACCORDANCE WITH SOLAR STACK INSTALLATION MANUAL.

Solar Energy World
Because Tomorrow Matters

Solar Energy World LLC.
14880 Sweitzer Lane
Laurel, MD 20707
(888) 497-3233

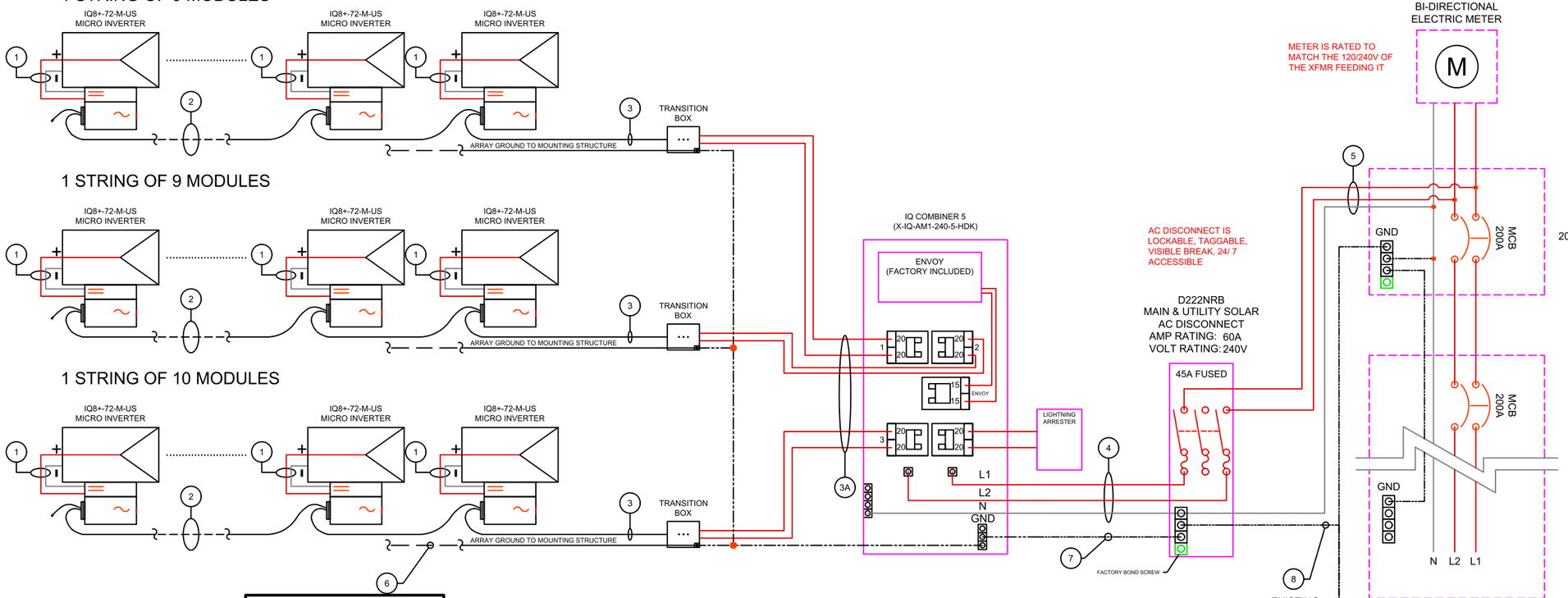
Building Code	International Residential Code (IRC) 2021
Electrical Code	National Electrical Code (NEC) 2020
Wind Speed: 115 MPH	Snow Load: 30 PSF
Modules	(28) LONGi LR5-54HABB-400M
Inverter(s)	(28) IQ8+-72-M-US
DC System Size: 11.200 kW	AC System Size: 8.120 kW
Customer Information	Peter Hendrickson 66 Walnut Ave Takoma Park, MD 20912
Partner/Lender	None
AHJ: Montgomery	Utility: Pepco
Sheet Name	Solar Panel Footing Plan
Drawn By: CB	Date: March 5, 2025
Scale: AS NOTED	Job Number: MD22936
Sheet: S-2	

SMART INVERTERS

1 STRING OF 9 MODULES

1 STRING OF 9 MODULES

1 STRING OF 10 MODULES



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Montgomery County

Historic Preservation Commission

REVIEWED

By Laura DiPasquale at 10:24 am, Mar 31, 2025

MODULE SPECIFICATIONS	
MODEL NUMBER	LR5-54HABB-400M
PEAK POWER	400 W
RATED VOLTAGE (Vmpp)	30.94 V
RATED CURRENT (Imp)	12.93 A
OPEN CIRCUIT VOLTAGE (Voc)	37.05 V
SHORT CIRCUIT CURRENT (Isc)	13.72 A
MAXIMUM SYSTEM VOLTAGE	1000VDC

INVERTER SPECIFICATIONS	
MODEL NUMBER	IQ8PLUS-72-M-US
MAXIMUM DC VOLTAGE	60 V
MAXIMUM POWER OUTPUT	290 W
NOMINAL AC VOLTAGE	240 VAC
MAXIMUM AC CURRENT	1.21 A
CEC EFFICIENCY	97.0%

ARRAY DETAILS		
NO. OF MODULES PER STRING	9	10
NO. OF STRINGS	2	1
ARRAY WATTS AT STC	3600	4000

3-LINE DIAGRAM

WIRE/CONDUIT SCHEDULE ARRAY			
TAG	DESCRIPTION	WIRE SIZE/TYPE	NOTES
1	Panel to Micro Inverter	PV Wire (Factory Made)	INTEGRATED
2	Micro Inverter to Micro Inverter	Pre-Manufactured Cable	
3	Micro Inverter to Transition Box	Pre-Manufactured Cable	
3A	Transition Box to Load Center	#10 THHN/THWN-2	INTEGRATED
4	Load Center to AC Disconnect	#8 Cu THHN/THWN-2	
5	AC Disconnect to Interconnection Point	#6 Cu THHN/THWN-2	
6	Equipment Grounding Conductor	#8 Cu Bare Copper Wire	
7	Equipment Grounding Conductor	#8 Cu THHN/THWN-2	
8	Grounding Electrode Conductor	#6 Cu	

GENERAL ELECTRIC NOTES: NEC2020

1. EQUIPMENT USED SHALL BE NEW, UNLESS OTHERWISE NOTED.
2. EQUIPMENT USED SHALL BE UL LISTED, UNLESS OTHERWISE NOTED.
3. EQUIPMENT SHALL BE INSTALLED PROVIDING ADEQUATE PHYSICAL WORKING SPACE AROUND THE EQUIPMENT AND SHALL COMPLY WITH NEC.
4. COPPER CONDUCTORS SHALL BE USED AND SHALL HAVE AN INSULATION RATING OF 600V, 90°C, UNLESS OTHERWISE NOTED
5. CONDUCTORS SHALL BE SIZED IN ACCORDANCE TO THE NEC. CONDUCTORS AMPACITY SHALL BE DE-RATED FOR TEMPERATURE INCREASE, CONDUIT FILL AND VOLTAGE DROP.
6. ALL CONDUCTORS, EXCEPT PV WIRE SHALL BE INSTALLED IN APPROVED CONDUITS OR RACEWAY. CONDUITS SHALL BE ADEQUATELY SUPPORTED AS PER NEC.
7. AC DISCONNECT SHOWN IS REQUIRED IF THE UTILITY REQUIRES VISIBLE-BLADE SWITCH.
8. EXPOSED NON-CURRENT CARRYING METAL PARTS SHALL BE GROUNDED AS PER NEC.
9. LINE SIDE INTER-CONNECTION SHALL COMPLY WITH NEC.
10. SMS MONITORING SYSTEM AND IT'S CONNECTION SHOWN IS OPTIONAL. IF USED, REFER TO SMS INSTALLATION MANUAL FOR WIRING METHODS AND OPERATION PROCEDURE.
11. ASHRAE FUNDAMENTAL OUTDOOR DESIGN TEMPERATURES DO NOT EXCEED 47°C IN THE U.S. (PHOENIX, AZ OR PALM SPRINGS, CA)
12. FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN ROOF MOUNTED SUNLIGHT CONDUIT USING THE OUTDOOR TEMPERATURE OF 47°C

12.1. 10AWG CONDUCTOR ARE GENERALLY ACCEPTABLE FOR MODULES WITH AN Isc OF 9.6 AMPS WITH A 15 AMP FUSE.

WIRE SIZING FOR OCPD

EX (Isc *(1.25)(1.25)(# OF STRINGS IN PARALLEL) = WIRE AMPACITY OR USING NEC TABLE 690.8

Solar Energy World
Because Tomorrow Matters

Solar Energy World LLC.
14880 Sweitzer Lane
Laurel, MD 20707
(888) 497-3233

Building Code: International Residential Code (IRC) 2021

Electrical Code: National Electrical Code (NEC) 2020

Wind Speed: 115 MPH | Snow Load: 30 PSF

Modules: (28) LONGi LR5-54HABB-400M

Inverter(s): (28) IQ8+-72-M-US

DC System Size: 11.200 kW | AC System Size: 8.120 kW

Customer Information: Peter Hendrickson, 66 Walnut Ave, Takoma Park, MD 20912

Partner/Lender: None

AHJ: Montgomery | Utility: Pepco

Sheet Name: Electrical 3-Line Diagram

Drawn By: CB | Date: March 5, 2025

Scale: AS NOTED | Job Number: MD22936 | Sheet: E-2

DEPARTMENT OF PERMITTING SERVICES

Marc Elrich
County Executive

Rabbiah Sabbakhan
Director

HISTORIC AREA WORK PERMIT APPLICATION

Application Date: 3/14/2025

Application No: 1109029
AP Type: HISTORIC
Customer No: 1408761

Affidavit Acknowledgement

The Contractor is the Primary applicant authorized by the property owner
This application does not violate any covenants and deed restrictions

Primary Applicant Information

Address	66 WALNUT AVE TAKOMA PARK, MD 20912
Othercontact	Solar Energy World (Primary)

Historic Area Work Permit Details

Work Type	ALTER
Scope of Work	Install (28) roof mounted solar panels, 11.20 kW

REVIEWED
By Laura DiPasquale at 10:24 am, Mar 31, 2025

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Montgomery County
Historic Preservation Commission

DAVID C. HERNANDEZ, PE

513-418-8812 4912 Prospect Ave., Blue Ash OH 45242 davehernandezpe@gmail.com

DATE: March 6, 2025

RE: 66 Walnut Ave, Takoma Park, MD 20912, USA

To Whom It May Concern,

As per your request, Exactus Energy has inspected the structure and has conducted a structural assessment of the building at the above address.

PV solar panels are proposed to be installed on roof areas as shown in the submitted plans. The panels of Roof 1 are clamped and attached to the roof with 8” Solar Stack Pedestal mounting system adhered with ICH POLYSET AH-160 foam adhesive. The PV system (PV modules, racking, mounting hardware, etc.) shall be installed according to the manufacturer’s approved installation specifications. The Engineer of Record and Exactus Energy claim no responsibility for misuse or improper installation.

It was found that the roof structures satisfactorily meet the applicable standards included in the 2021 IBC/IRC and ASCE 7-16 as well as the design criteria shown below:

Design Criteria:

Risk Category	= II
Exposure Category	= B
Wind speed	= 115 mph
Ground snow load	= 30 psf
Roof dead load	= 12 psf
Solar system dead load	= 9.3 psf

Overall, the roof area is structurally adequate to support the PV alteration with no modifications or reinforcements.

This letter was completed in accordance to recognized design standards, professional engineering experience, and judgement. Prior to installation, the on-site contractor must notify Exactus Energy if there are any discrepancies, or damages to the members, that was not addressed in the plan set.

If you have any further questions, please do not hesitate to contact me.

Acknowledged by:

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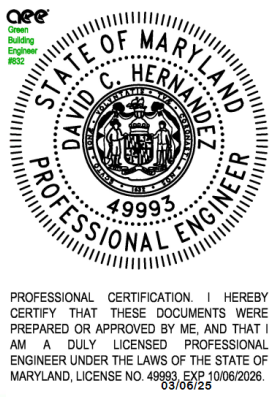
Montgomery County

Historic Preservation Commission

REVIEWED

By Laura DiPasquale at 10:24 am, Mar 31, 2025

David C. Hernandez, PE Digitally sign
Date: 2025.0



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 49993, EXP 10/06/2026.
03/06/25

DAVID C. HERNANDEZ, PE

513-418-8812 4912 Prospect Ave., Blue Ash OH 45242 davehernandezpe@gmail.com

SEISMIC CHECK

Breakdown of Loads		
Rolled Composition:	4	psf
Insulation:	1.5	psf
Plywood Sheathing:	1.5	psf
Rafters:	1	psf
Misc:	1	psf
Live load:	20	psf

Existing Roof Seismic Weight			
Element	Unit Weight (psf)	Area (Sq.ft)	Weight (lbs)
Roof DL	9	1072.00	9648
Exterior Walls	8	2479.68	19837.44
Interior Walls	6	2479.68	14878.08
Existing Seismic Weight @Roof Level, We =			44363.52

New PV System Seismic Weight			
Element	Unit Weight (psf)	Area (Sq.ft)	Weight (lbs)
Pv System	3	588.56	1765.68
Seismic Weight of New PV System, Wpv =			1765.68

% Increase in Lateral (Seismic) Weight @Roof Level Due to PV System Addition, %-increase = Wpv / We	3.98%	< 10% - Pass

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Historic Preservation Commission

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By Laura DiPasquale at 10:24 am, Mar 31, 2025

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN	Mar. 6, 2025 05:57	Roof 1 and Roof 2.wwb

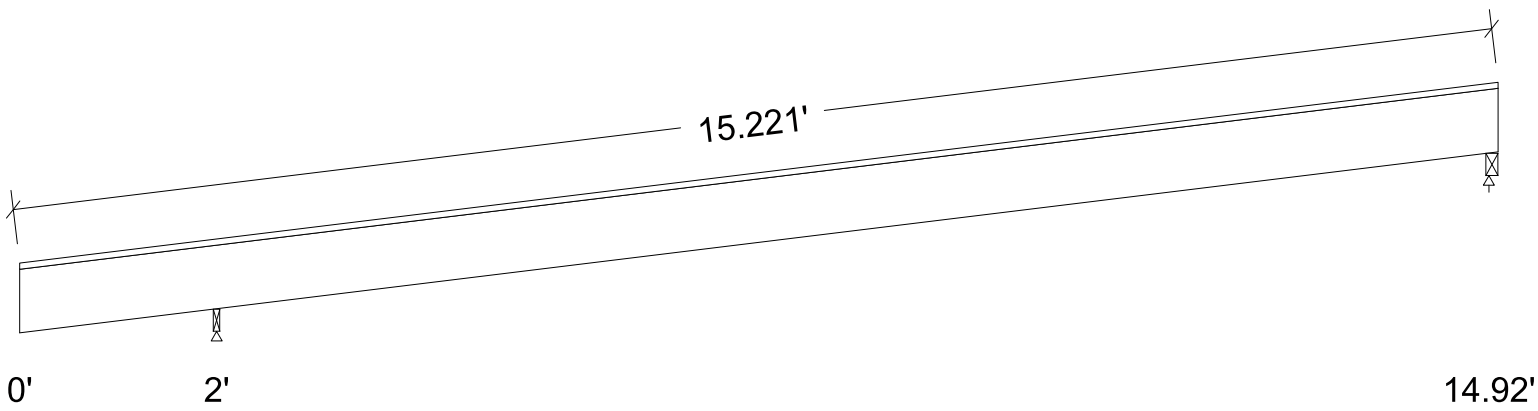
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
D-ROOF	Dead	Full Area	No			12.00(24.0")		psf
S1	Snow	Partial Area	No	0.00	2.80	23.10(24.0")		psf
L1	Roof live	Partial Area	No	0.00	2.80	20.00(24.0")		psf
S2	Snow	Partial Area	No	13.40	14.92	23.10(24.0")		psf
L2	Roof live	Partial Area	No	13.40	14.92	20.00(24.0")		psf
S3	Snow	Partial Area	No	2.80	13.40	23.10(24.0")		psf
D-PV	Dead	Partial Area	No	2.80	13.40	3.00(24.0")		psf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:						
Dead			244			186
Snow			398			291
Roof Live			121			52
Factored:						
Total			641			478
Bearing:						
F'theta			433			433
Capacity						
Joist			767			975
Support			641			1195
Des ratio						
Joist			0.84			0.49
Support			1.00			0.40
Load comb			#3			#3
Length			0.80			1.50
Min req'd			0.80**			0.74
Cb			1.47			1.00
Cb min			1.47			1.00
Cb support			1.25			1.25
Fcp sup			425			425

**Minimum bearing length governed by the required width of the supporting member.

Lumber-soft, S-P-F, No.1/No.2, 1-1/2"x7-3/4"

Supports: All - Lumber-soft Beam, S-P-F No.1/No.2

Roof joist ngth: 15.31'; Clear span(horz): 1.938', 12.875'; Volume = 1.2 cu.ft.; Pitch: 2/12

Lateral supp m = at supports; Repetitive factor: applied where permitted (refer to online help);

s section PASSES the design code check.

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Historic Preservation Commission

REVIEWED
By Laura DiPasquale at 10:24 am, Mar 31, 2025

WARNING: This CUSTOM SIZE is not in the database. Refer to online help.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 58	Fv' = 155	psi	fv/Fv' = 0.37
Bending(+)	fb = 1218	Fb' = 1389	psi	fb/Fb' = 0.88
Bending(-)	fb = 113	Fb' = 679	psi	fb/Fb' = 0.17
Deflection:				
Interior Live	0.34 = L/456	0.65 = L/240	in	0.53
Total	0.69 = L/229	0.87 = L/180	in	0.79
Cantil. Live	-0.16 = L/150	0.20 = L/120	in	0.80
Total	-0.32 = L/75	0.27 = L/90	in	1.20

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	135	1.15	1.00	1.00	-	-	-	-	1.00	1.00	3
Fb'+	875	1.15	1.00	1.00	1.000	1.200	-	1.15	1.00	1.00	3
Fb'-	875	1.15	1.00	1.00	0.489	1.200	-	1.15	1.00	1.00	3
Fcp'	425	-	1.00	1.00	-	-	-	-	1.00	1.00	-
E'	1.4 million		1.00	1.00	-	-	-	-	1.00	1.00	3
Emin'	0.51 million		1.00	1.00	-	-	-	-	1.00	1.00	3

CRITICAL LOAD COMBINATIONS:

```
Shear     : LC #3  = D + S
Bending(+): LC #3  = D + S
Bending(-): LC #3  = D + S
Deflection: LC #3  = D + S  (live)
            LC #3  = D + S  (total)
Bearing   : Support 1 - LC #3 = D + S
            Support 2 - LC #3 = D + S
D=dead S=snow Lr=roof live
All LC's are listed in the Analysis output
Load combinations: ASD Basic from ASCE 7-16 2.4
```

CALCULATIONS:

```
V max = 494, V design = 447 (NDS 3.4.3.1(a)) lbs; M(+) = 1524 lbs-ft; M(-) = 141 lbs-ft
EI = 81.46e06 lb-in^2
"Live" deflection is due to all non-dead loads (live, wind, snow…)
Total deflection = 1.50 permanent + "live"
Bearing: Allowable bearing at an angle F'theta  calculated for each support
as per NDS 3.10.3
Lateral stability(-):  Lu = 13.13'  Le = 20.81'  RB = 29.3; Lu based on full span
```

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Continuous or Cantilevered Beams: NDS Clause 4.2.5.5 requires that normal grading provisions be extended to the middle 2/3 of 2 span beams and to the full length of cantilevers and other spans.
4. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
5. SLOPED BEAMS: level bearing is required for all sloped beams.
6. The critical deflection value has been determined using maximum back-span deflection. Cantilever deflections do not govern design.

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Historic Preservation Commission

REVIEWED

By Laura DiPasquale at 10:24 am, Mar 31, 2025

ASCE 7 - 16 WIND CALCULATION FOR: Roof 1 & Roof 2

Project Address: 66 Walnut Ave, Takoma Park, MD 20912, USA

DESIGN CRITERIA

Ultimate Wind Speed: 115 mph

Exposure Category: B

a: 3 ft

Velocity Pressure Exposure Coefficient, *Kz*: 0.57

Topographic Factor, *Kzt*: 1

Wind Directionality Factor, *Kd*: 0.85

Ground Elevation Factor, *Ke*: 1

Solar Array Pressure Equalization Factor, *ya*: 0.66

Array Edge Factor, γE: 1

Solar Array Dead Load: 9.3 psf

Mean Roof Height: 15 ft

Roof Pitch: 9°

Roof Type: Monoslope

Module Name, Dimensions, Area: LONGi LR5-54HABB-400M, 40.87in X 69.1in, 2824.12 sqin

CALCULATION

Velocity Pressure Due to Wind: $q_h = 0.00256(Kz)(Kzt)(Kd)(I)(V^2)$ $(Ch\ 26. Eq\ 26.10-1)$

Actual Uplift Pressure: $\mathrm{p} = 0.6D + 0.6W$ $(Ch\ 2.4.1\ LC\ \#7/a)$

Wind Uplift Pressure: $p = qh\ (GCp)(yE\ )(ya\ )$ $(Ch\ 29. Eq\ 29.4-7)$

Roof Zone	1	2	2'	3	3'
External Pressure Coefficient (GCp)	-1.1	-1.3	-1.6	-1.8	-2.6
Actual Uplift Pressure (p)	-2.46 psf	-3.91 psf	-6.08 psf	-7.53 psf	-13.32 psf
Tributary Area (AT)	9.81 sqft	9.81 sqft	9.81 sqft	9.81 sqft	9.81 sqft
Uplift Force (P)	-24.1 lbs	-38.3 lbs	-59.61 lbs	-73.82 lbs	-130.65 lbs

Uplift Capacity

Attachment Type = ICP POLYSET AH-160 foam adhesive - 8" Solar Stack pedestal

Hardware Pullout Capacity = 416.66 lbs/in (per appended manufacturer's test reports)

Safety Factor = 3

Maximum Uplift Force = 130.648

Allowable Pullout Capacity = 416.66/3 = 138.88 lbs

Allowable Pullout Capacity = 138.88 lbs > Uplift Force per Bolt = 130.65 lbs, Therefore OK.

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Historic Preservation Commission

REVIEWED

By Laura DiPasquale at 10:24 am, Mar 31, 2025

EXACTUS ENERGY

NEW AGE ENGINEERING

TEST REPORT for STATIC UPLIFT RESISTANCE

Report #:0427.01-20

Client: Solar Stack

Test Method: TAS 114-95, Appendix D (modified)

PVC Deck: Tropical - #9900 TPO Primer

Specimen #	Weight (gr.)	Load (lbf)	Failure Type
1	796.2	550	1 & 2
2	795.6	600	1 & 2
3	797.9	500	1 & 2

PVC Deck: Tropical - #9900 TPO Primer + TAPCO 911 Eternalastic Coating

Specimen #	Weight (gr.)	Load (lbf)	Failure Type
1	797.8	400	1 & 2
2	796.4	500	1 & 2
3	794.9	450	1 & 2

TPO Deck: Tropical - #9900 TPO Primer

Specimen #	Weight (gr.)	Load (lbf)	Failure Type
1	808.0	450	1
2	803.5	350	1 & 2
3	810.0	500	1

TPO Deck: Tropical - #9900 TPO Primer + TAPCO 911 Eternalastic Coating

Specimen #	Weight (gr.)	Load (lbf)	Failure Type
1	808.4	400	1 & 2
2	809.5	250	1 & 2
3	807.5	400	1

EPDM Deck: Tropical - #990 EPDM Primer

Specimen #	Weight (gr.)	Load (lbf)	Failure Type
1	810.6	450	1 & 2
2	803.3	450	1 & 2
3	810.4	350	1 & 2

EPDM Deck: Tropical - #990 EPDM Primer + TAPCO 911 Eternalastic Coating

Specimen #	Weight (gr.)	Load (lbf)	Failure Type
1	807.7	450	1 & 2
2	810.5	350	1 & 2 & 4
3	809.7	400	1

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Historic Preservation Commission

REVIEWED

By Laura DiPasquale at 10:25 am, Mar 31, 2025

EXACTUS ENERGY
NEW AGE ENGINEERING

Solar Energy World
Because Tomorrow Matters

Project Roof Mounted Solar PV Installation Property Owner Peter Hendrickson

Address 66 Walnut Ave, Takoma Park, MD 20912, USA

☑ I reviewed the design of the photovoltaic (PV) system, as designed by the manufacturer, and the design criteria utilized for the mounting equipment and panel mounting assembly (rack system) for the installation of (28) panels supported by the rack system, as shown on the drawings prepared for the above referenced address. I certify that the configurations and design criteria meet the standards and requirements of the International Residential Code (IRC) in COMCOR 08.00.02.

☑ The attachment of the rack system to the building at the above address, including the location, number, and type of attachment points; the number of fasteners per attachment point; and the specific type of fasteners (size, diameter, length, minimum embedment into structural framing, etc.) meets the standards and requirements of the IRC adopted by Montgomery County in COMCOR 08.00.02.

☑ I evaluated the existing roof structure of the building at the above address and analyzed its capacity to support the additional loads imposed by the PV system. I certify that no structural modifications of the existing roof structure are required. The existing roof structure meets the standards and requirements of the IRC, adopted by Montgomery County in COMCOR 08.00.02, necessary to support the PV system.

□ I evaluated the existing roof structure of the building at the above address and analyzed its capacity to support the additional loads imposed by the PV system. Structural modifications of the existing roof structure are required. I certify that the roof structure, as modified on the drawings for this project, will support the additional loads imposed by the PV system. I further certify that design of the modified roof structure meets the standards and requirements of the IRC, adopted by Montgomery County in COMCOR 08.00.02.

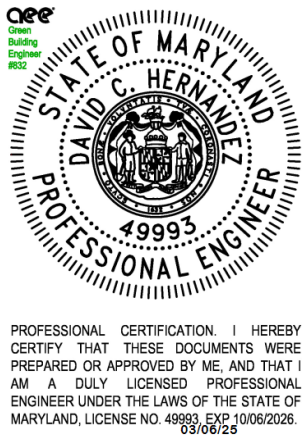
☑ I prepared or approved the construction documents for the mounting equipment, rack system, roof structure for this project.

Re-installations:
□ I certify that the reinstallation of the photovoltaic system (PV) as shown on the approved drawings for permit _____ (show original permit #) does not alter the approval under the permit or make the PV system, attachment to the building, and roof framing unsafe.

49993
Maryland PE License Number

Date 03/06/2025

Seal



Signature David C. Hernandez, PE Digitally signed by David C. Hernandez, Date: 2025.03.06 10:07:57 -05:00

Updated 11/14/2024

APPROVED
Montgomery County
Historic Preservation Commission

REVIEWED
By Laura DiPasquale at 10:25 am, Mar 31, 2025

City of Takoma Park

Housing and Community Development Department

Main Office 301-891-7119
Fax 301-270-4568
www.takomaparkmd.gov

7500 Maple Avenue
Takoma Park, MD 20912

MUNICIPALITY LETTER

March 14, 2025

To: Peter Hendrickson
66 Walnut Avenue, Takoma Park, MD 20912
peterdhendrickson@gmail.com 412-418-6894

To: Department of Permitting Services
2425 Reedie Drive, 7th floor
Wheaton, Maryland 20902

From: Planning and Development Services Division

THIS IS NOT A PERMIT – For Informational Purposes Only

VALID FOR ONE YEAR FROM DATE OF ISSUE

The property owner is responsible for obtaining all required permits from Montgomery County and the City of Takoma Park. If this property is in the **Takoma Park Historic District,** it is subject to Montgomery County Historic Preservation requirements.

Representative Name: Tina Crouse tcrouse@solarenergyworld.com 410-570-4157
Location of Project: 66 Walnut Avenue, Takoma Park, MD 20912
Proposed Scope of Work: Install (28) roof mounted solar panels, 11.20 kW

The purpose of this municipality letter is to inform you that the City of Takoma Park has regulations and city permit requirements that may apply to your project. This municipality letter serves as notification that, in addition to all Montgomery County requirements, you are required to comply with all City permitting requirements, including:

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Montgomery County
Historic Preservation Commission

- Tree Impact Assessment/Tree Protection Plan
- Stormwater management
- City Right of Way

Failure to comply with these requirements could result in the issuance of a Stop Work Order and other administrative actions within the provisions of the law. Park's permit requirements are attached on page 2.

REVIEWED
By Laura DiPasquale at 10:25 am, Mar 31, 2025

The issuance of this letter does not indicate approval of the project nor does it authorize the property owner to proceed with the project. The City retains the right to review and comment on project plans during the Montgomery County review process.

City Of Takoma Park

The City of Takoma Park permits for the following issues:

Tree Impact Assessment/Tree Protection Plan/Tree Removal Application:

Construction activities that occur within 50 feet of any urban forest tree (7 and 5/8" in trunk diameter or greater), located on the project property or on an adjacent property, may require a Tree Impact Assessment and possibly a Tree Protection Plan Permit. Make sure to submit a request for a Tree Impact Assessment and schedule a site visit with the City's Urban Forest Manager if any urban forest tree is in the vicinity of proposed construction activities. See the Tree Permits section of the City website for the specific conditions in which a Tree Impact Assessment is required. Depending on the Urban Forest Manager's conclusion following the Tree Impact Assessment, you may need to prepare a full Tree Protection Plan and apply for a Tree Protection Plan Permit as well. Separately, the removal of any urban forest tree will require a Tree Removal Permit application. The tree ordinance is detailed in the City Code, section 12.12. For permit information check: https://takomaparkmd.gov/services/permits/tree-permits. The City's Urban Forest Manager can be reached at 301-891-7612 or urbanforestmanager@takomaparkmd.gov.

Stormwater Management:

If you plan to develop or redevelop property, you may be required to provide appropriate stormwater management measures to control or manage runoff, as detailed in City Code section 16.04. All commercial or institutional development in the city must apply for a Stormwater Management Permit regardless of the size of the land disturbance. Additions or modifications to existing detached single-family residential properties do not require a Stormwater Management permit if the project does not disturb more than 5,000 square feet of land area. For more information visit: https://takomaparkmd.gov/government/public-works/stormwater-management-program/. The City Engineer should be contacted to determine if a City permit is required. The City Engineer can be reached at 301-891-7620.

City Right of Way:

- To place a **construction dumpster or storage container** temporarily on a City right of way (usually an adjacent road), you will need to obtain a permit. A permit is not required if the dumpster is placed in a privately-owned driveway or parking lot.
- If you plan to install a new **driveway apron**, or enlarge or replace an existing driveway apron, you need a Driveway Apron Permit.
- If you plan to construct a **fence** in the City right of way, you need to request a Fence Agreement. If approved, the Agreement will be recorded in the Land Records of Montgomery County.

For more information and applications for City permits, see: https://takomaparkmd.gov/services/permits/ or contact the Department of Public Works at 301-891-7633.

Failure to comply with the City's permitting requirements could result in the issuance of a Stop Work Order and other administrative actions within the provisions of the law.

eSigned via SeamlessDocs.com
Tina Crouse
Key: 38bf2056622713c0bf979ea7ee94776a

Tina Crouse

APPROVED
Montgomery County
Historic Preservation Commission

03-10-2025

eSigned via SeamlessDocs.com
Takoma Park Planning Division
Key: 19fe84f123e68a3ff457621905 9d5fbe

03-14-2025

REVIEWED
By Laura DiPasquale at 10:25 am, Mar 31, 2025