



## HISTORIC PRESERVATION COMMISSION

**Marc Elrich**  
*County Executive*

**Karen Burditt**  
*Chair*

Date: 5/20/2025

### **MEMORANDUM**

TO: Rabbiah Sabbakhan  
Department of Permitting Services  
FROM: Dan Bruechert  
Historic Preservation Section  
Maryland-National Capital Park & Planning Commission  
SUBJECT: Historic Area Work Permit #1112342 - Solar Panels

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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 with one condition** at the May 14, 2025 HPC meeting.

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: Tina Crouse  
Address: 232 Park Ave., 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 Dan Bruechert at 301-563-3408 or [dan.bruechert@montgomeryplanning.org](mailto:dan.bruechert@montgomeryplanning.org) to schedule a follow-up site visit.



APPROVED

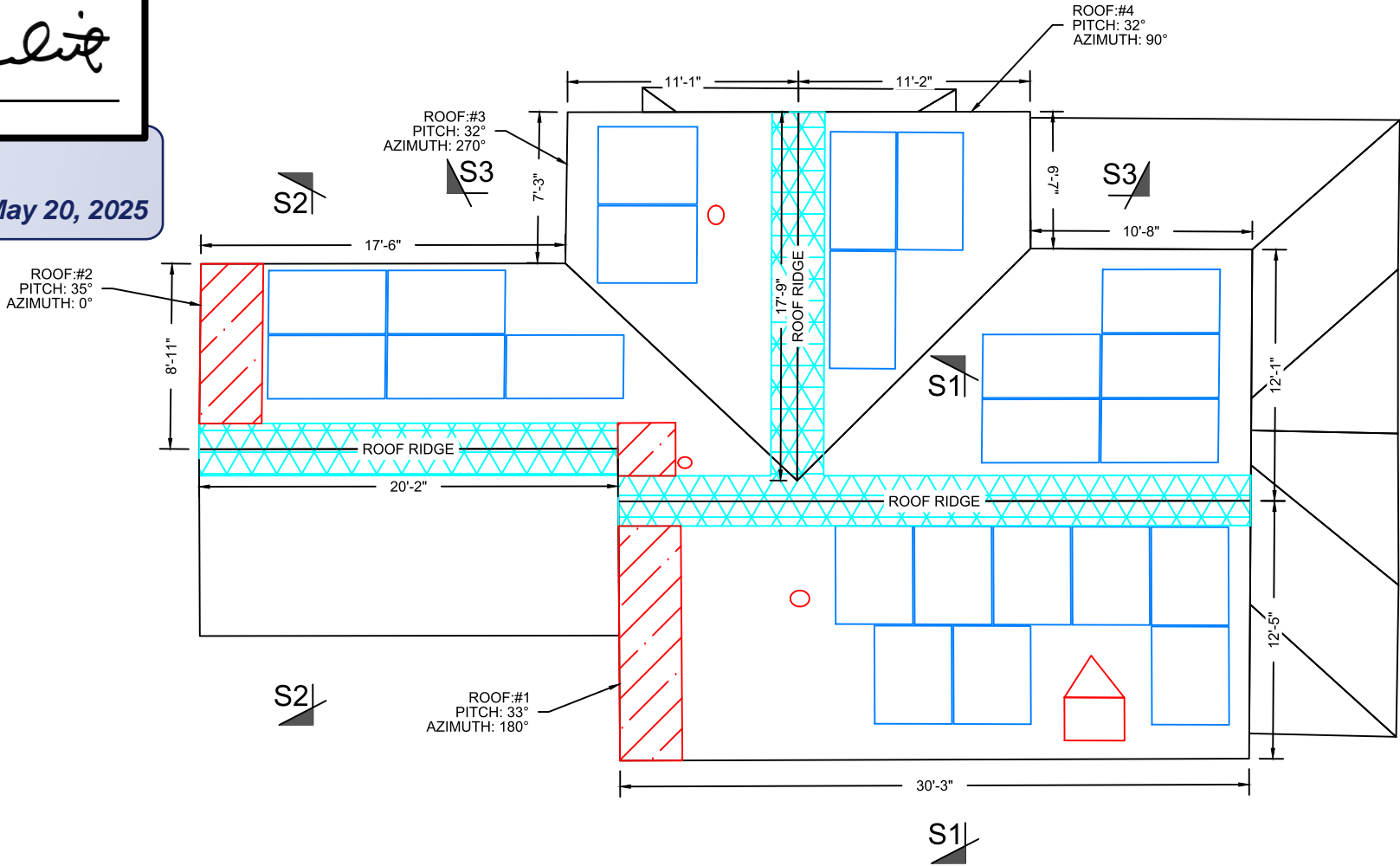
Montgomery County

Historic Preservation Commission

*Karen Buechert*

REVIEWED

By Dan Bruechert at 1:38 pm, May 20, 2025



- KEY
- FIRE SAFETY ZONE
- 3' PATHWAYS FROM LOWEST ROOF EDGE TO RIDGE PROVIDED PER R324.6.1
- 1'6" PATHWAYS PROVIDED ON BOTH SIDES OF RIDGE PER R324.6.2

PLAN VIEW TOTAL ROOF AREA: 1832 SQFT

SOLAR ARRAY AREA: 483.00 SQFT

THE SOLAR ARRAY IS 26.4% OF THE PLAN VIEW TOTAL ROOF AREA

- NOTES:
- THE SYSTEM SHALL INCLUDE (23) HANWHA Q.TRON BLK M-G2+ 435W.
  - SNAPNRACK TOPSPEED WILL BE INSTALLED IN ACCORDANCE WITH SNAPNRACK INSTALLATION MANUAL.
  - REFER TO STRUCTURAL DRAWING FOR SECTIONS MARKED AND ADDITIONAL NOTES.

SOLAR PANEL LAYOUT

Scale: 1/8" = 1'-0"

**SolarEnergyWorld**

Because Tomorrow Matters

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

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Building Code  
International Residential Code (IRC) 2021

Electrical Code  
National Electrical Code (NEC) 2023

Wind Speed  
115 MPH

Snow Load  
30 PSF

Modules  
(23) HANWHA Q.TRON BLK  
M-G2+ 435W

Inverter(s)  
(23) IQ8MC-72-M-US

DC System Size  
10.005 kW

AC System Size  
7.360 kW

Customer Information  
Jessica Landman  
232 Park Ave  
Takoma Park, MD 20912

Permit/Lender  
None

City  
Montgomery County

Utility  
Pepco

Sheet Name  
Solar Panel Layout

Drawn By  
AMP

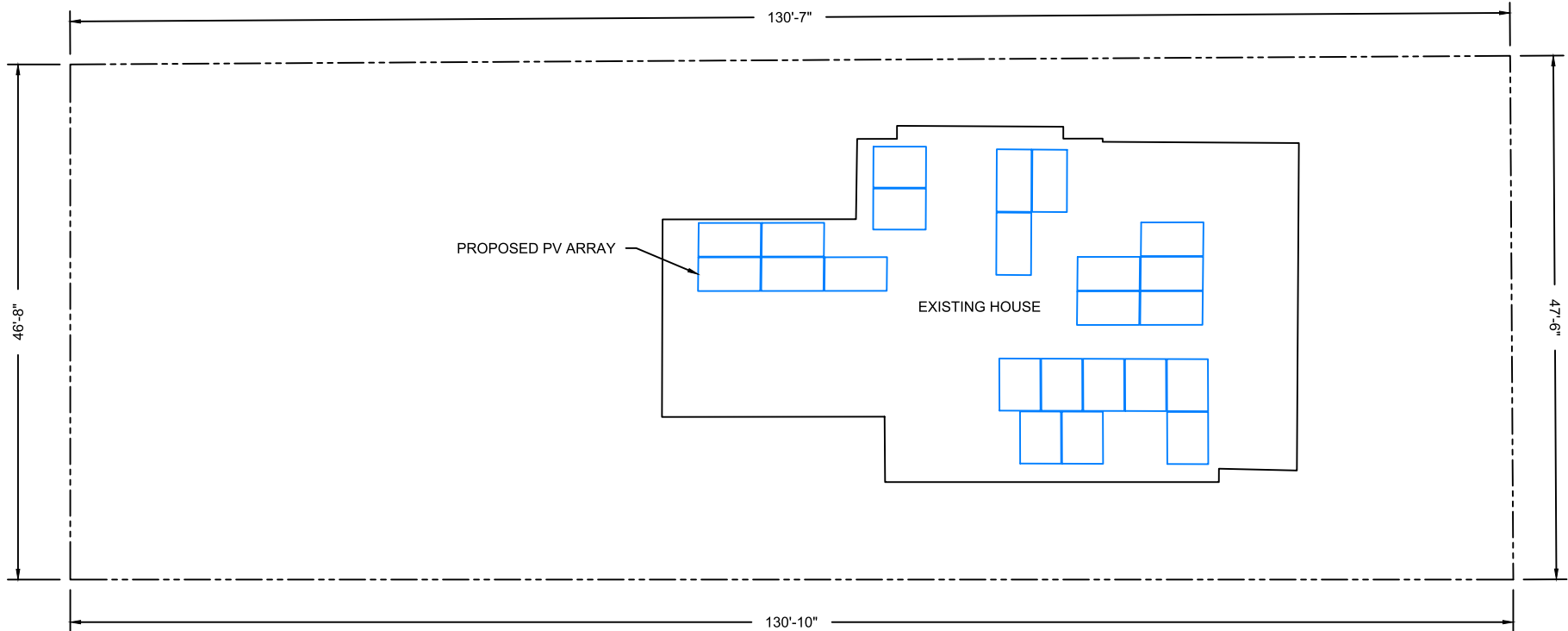
Date  
April 4, 2025

Scale  
AS NOTED

Job Number  
MD2417218

Sheet  
A-1





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Montgomery County

Historic Preservation Commission




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By Dan Bruechert at 1:38 pm, May 20, 2025

SITE PLAN

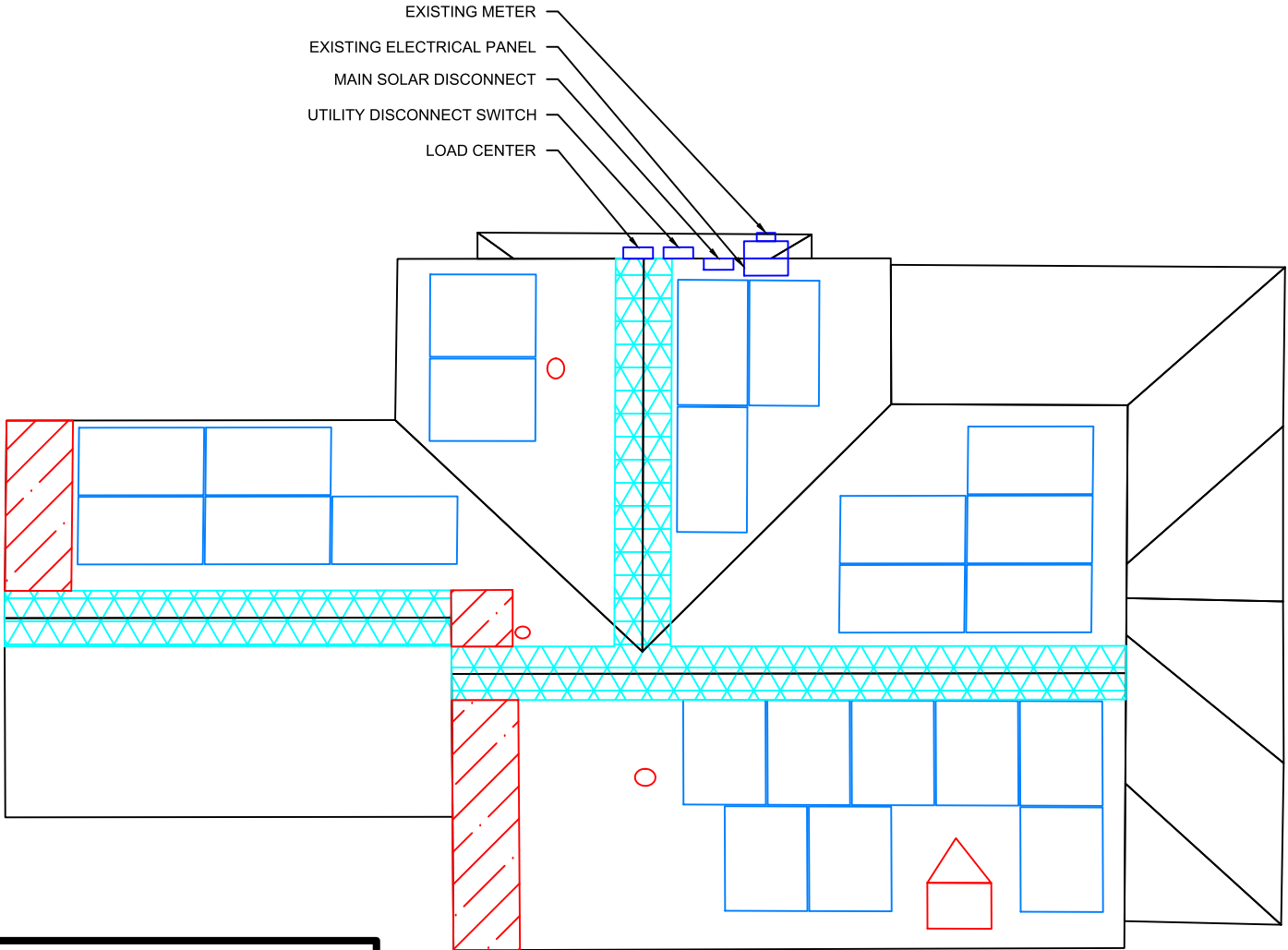
Scale: 1" = 15'-0"

  
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National Electrical Code (NEC) 2023		
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Modules		
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Inverter(s)		
(23) IQ8MC-72-M-US		
DC System Size	AC System Size	
10.005 kW	7.360 kW	
Customer Information		
Jessica Landman 232 Park Ave Takoma Park, MD 20912		
Partner/Lender		
None		
Utility	Utility	
Montgomery County	Pepco	
Sheet Name		
Site Plan		
Drawn By	Date	
AMP	April 4, 2025	
Scale	Job Number	Sheet
AS NOTED	MD2417219	A-2



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Montgomery County

Historic Preservation Commission

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By Dan Bruechert at 1:38 pm, May 20, 2025

EQUIPMENT LOCATION PLAN

Scale: NTS

NOTE:

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

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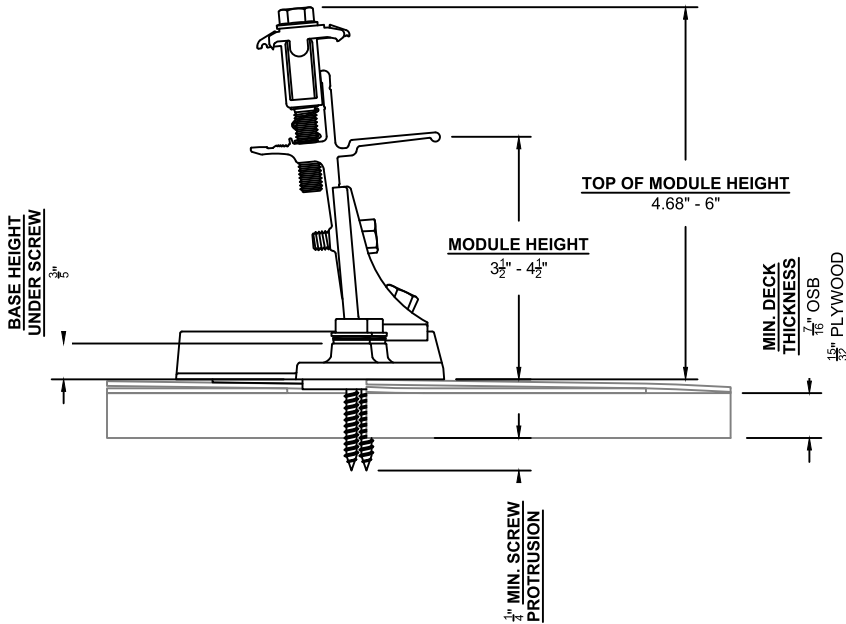
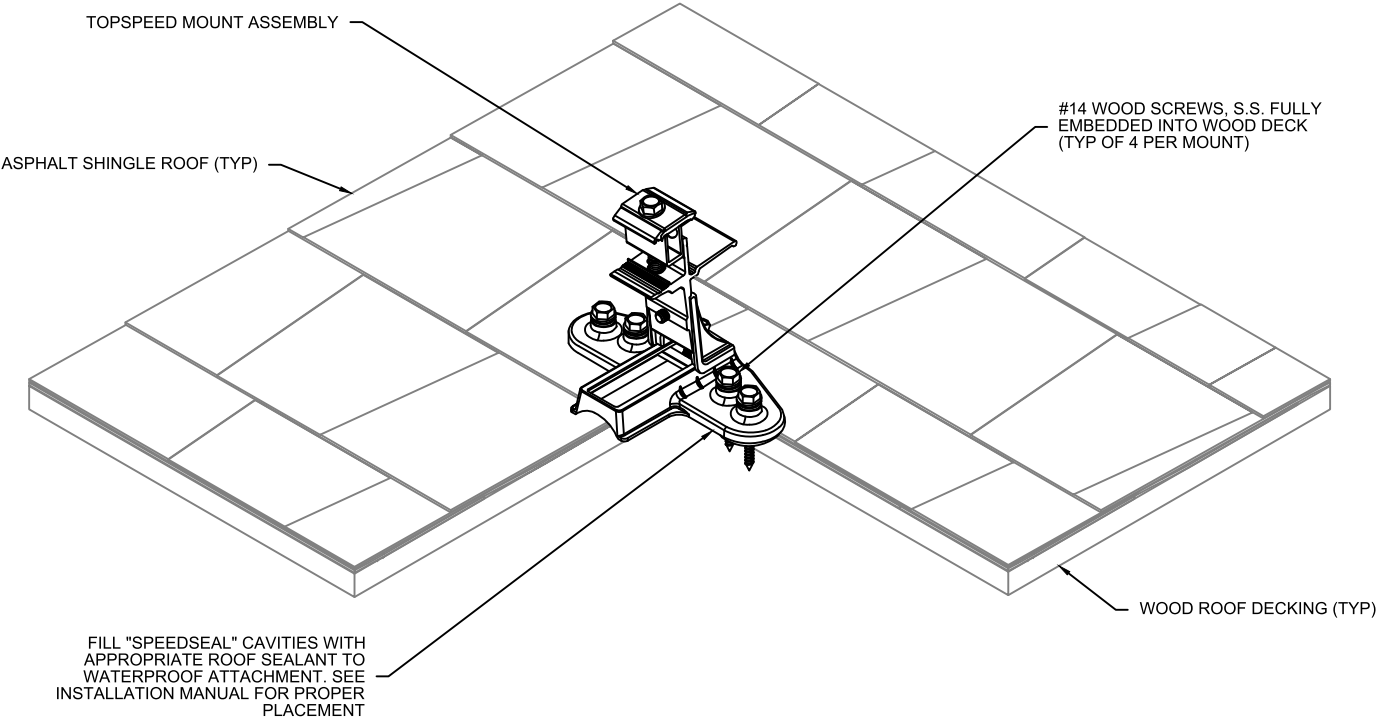
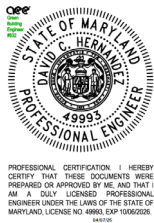
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115 MPH	30 PSF	
Modules		
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Inverter(s)		
(23) IQ8MC-72-M-US		
DC System Size	AC System Size	
10.005 kW	7.360 kW	
Customer Information		
Jessica Landman 232 Park Ave Takoma Park, MD 20912		
Partner/Lender		
None		
APJ	Utility	
Montgomery County	Pepco	
Sheet Name		
Equipment Location Plan		
Drawn By	Date	
AMP	April 4, 2025	
Scale	Job Number	Sheet
AS NOTED	MD2417220	E-1





Structural Details		
S1	Rafter	2x6 O.C. 24"
S2	Rafter	2x8 O.C. 16"
S3	Rafter	2x10 O.C. 16"

- NOTES:
- 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.
  - LOAD CRITERIA PER :
    - EXPOSURE CATEGORY "B"
    - GROUND SNOW LOAD, Pg = 30 PSF
    - LATERAL LOAD RISK CATEGORY "II"
    - ULTIMATE DESIGN WIND SPEED = 115 MPH
  - SOLAR PANELS AND RACKING SYSTEMS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATION.
  - FOLLOW ALL LOCAL AND FEDERAL SAFETY REQUIREMENTS.

STRUCTURAL ATTACHMENT DETAIL

APPROVED  
Montgomery County  
Historic Preservation Commission

*Karen Bruechert*

**REVIEWED**  
By Dan Bruechert at 1:38 pm, May 20, 2025



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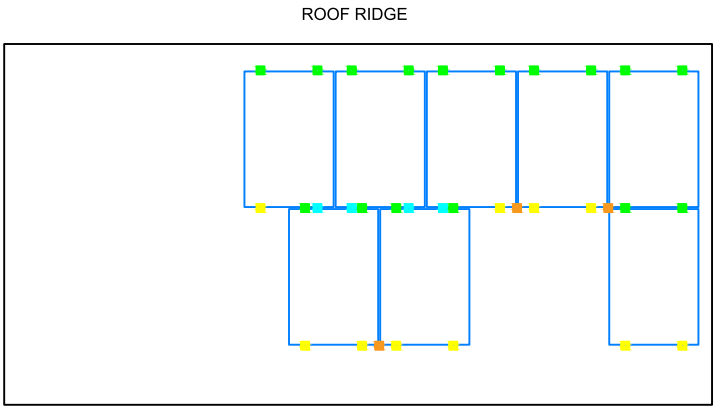
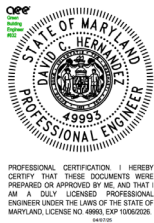
Building Code International Residential Code (IRC) 2021	
Electrical Code National Electrical Code (NEC) 2023	
Wind Speed 115 MPH	Snow Load 30 PSF

Modules (23) HANWHA Q.TRON BLK M-G2+ 435W	
Inverter(s) (23) IQ8MC-72-M-US	
DC System Size 10.005 kW	AC System Size 7.360 kW

Customer Information  
Jessica Landman  
232 Park Ave  
Takoma Park, MD 20912

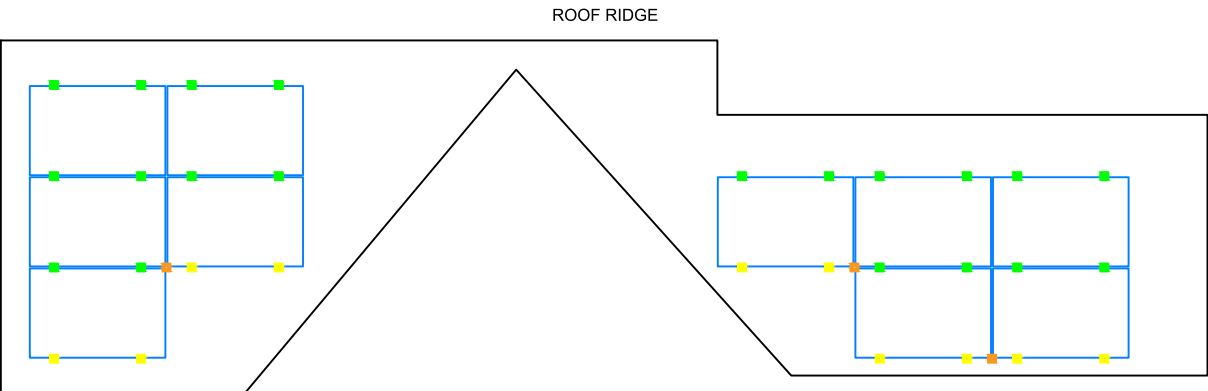
Permit/Lender None	
City Montgomery County	Utility Pepco

Sheet Name Structural Attachment Details		
Drawn By AMP	Date April 4, 2025	
Scale AS NOTED	Job Number MD2417221	Sheet S-1



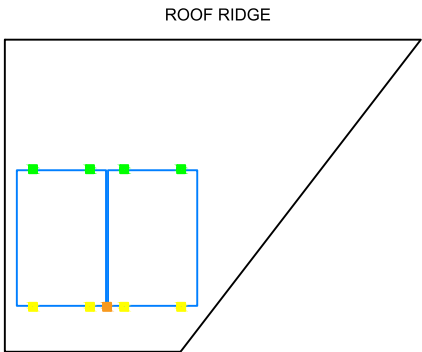
SOLAR PANEL FOOTING PLAN R1

Scale: 1/8" = 1'-0"



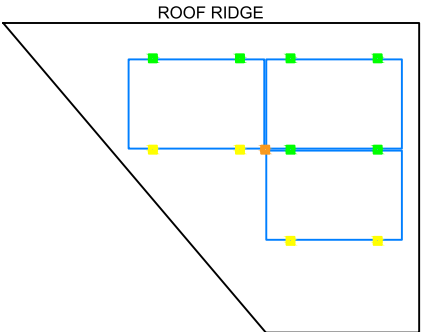
SOLAR PANEL FOOTING PLAN R1

Scale: 1/8" = 1'-0"



SOLAR PANEL FOOTING PLAN R3

Scale: 1/8" = 1'-0"



SOLAR PANEL FOOTING PLAN R4

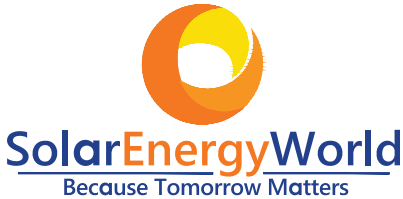
Scale: 1/8" = 1'-0"

KEY

- MOUNTS WITHOUT SPACERS
- MOUNTS WITH SPACERS
- CLAMPS WITHOUT SPACERS
- CLAMPS WITH SPACERS

NOTES:

- SNAPNRACK TOPSPEED SHALL BE INSTALLED IN ACCORDANCE WITH SNAPNRACK INSTALLATION MANUAL.
- ADD TOPSPEED CLAMP IF GREATER THAN (SOLAR PANEL LENGTH / 4) FOR LANDSCAPE OR (SOLAR PANEL WIDTH / 4) FOR PORTRAIT
- NO SOLAR PANEL SHALL CANTILEVER MORE THAN 1/4 SOLAR PANEL LENGTH OR WIDTH DEPENDING ON ORIENTATION. UNLESS FOR MANUFACTURER SPECIFIED CLAMPING ZONE



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M-G2+ 435W

Inverter(s)  
(23) IQ8MC-72-M-US

DC System Size  
10.005 kW

AC System Size  
7.360 kW

Customer Information  
Jessica Landman  
232 Park Ave  
Takoma Park, MD 20912

Permit/Lender  
None

APU  
Montgomery County

Utility  
Pepco

Sheet Name  
Solar Panel Footing Plan

Drawn By  
AMP

Date  
April 4, 2025

Scale  
AS NOTED

Job Number  
MD2417222

Sheet  
S-2

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Historic Preservation Commission

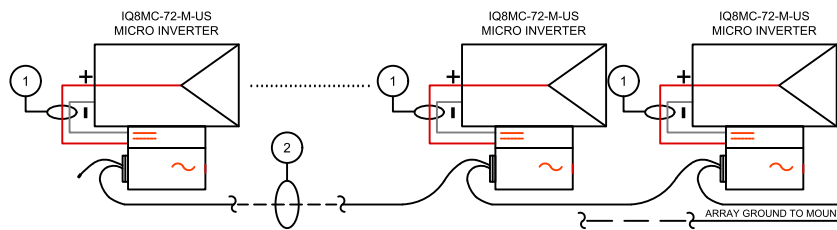
*Karen Buehert*

**REVIEWED**

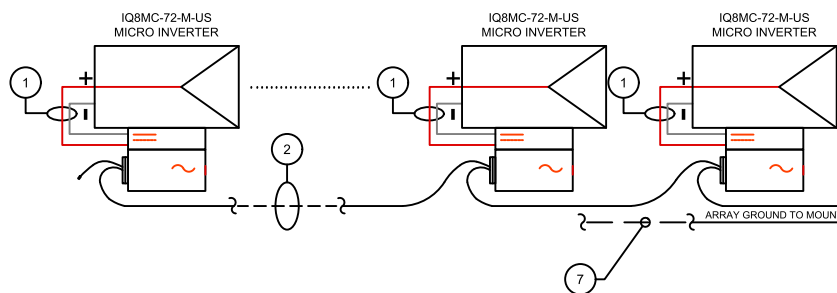
By Dan Bruechert at 1:38 pm, May 20, 2025

SMART INVERTERS

1 STRING OF 12 MODULES



1 STRING OF 11 MODULES



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*Karen Bruechert*

3-LINE DIAGRAM

MODULE SPECIFICATIONS	
MODEL NUMBER	QTRON BLK M-G2+ 435W
PEAK POWER	435 W
RATED VOLTAGE (V <sub>mpp</sub> )	33.33 V
RATED CURRENT (I <sub>mp</sub> )	13.12 A
OPEN CIRCUIT VOLTAGE (V <sub>oc</sub> )	39.60 V
SHORT CIRCUIT CURRENT (I <sub>sc</sub> )	13.82 A
MAXIMUM SYSTEM VOLTAGE	1000VDC
INVERTER SPECIFICATIONS	
MODEL NUMBER	IQ8MC-72-M-US
MAXIMUM DC VOLTAGE	60 V
MAXIMUM POWER OUTPUT	320 W
NOMINAL AC VOLTAGE	240 VAC
MAXIMUM AC CURRENT	1.33 A
CEC EFFICIENCY	97.0%
ARRAY DETAILS	
NO. OF MODULES PER STRING	12
NO. OF STRINGS	1
ARRAY WATTS AT STC	5220

REVIEWED

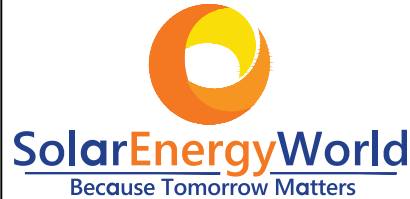
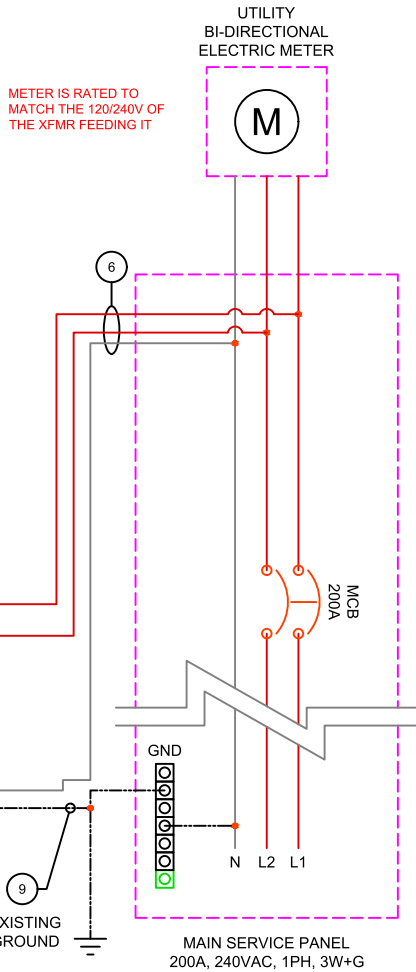
By Dan Bruechert at 1:38 pm, May 20, 2025

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 AC Disconnect	#8 Cu THHN/THWN-2	
6	AC Disconnect to Interconnection Point	#6 Cu THHN/THWN-2	
7	Equipment Grounding Conductor	#8 Cu Bare Copper Wire	
8	Equipment Grounding Conductor	#8 Cu THHN/THWN-2	
9	Grounding Electrode Conductor	#6 Cu	

GENERAL ELECTRIC NOTES: NEC2023

- EQUIPMENT USED SHALL BE NEW, UNLESS OTHERWISE NOTED.
- EQUIPMENT USED SHALL BE UL LISTED, UNLESS OTHERWISE NOTED.
- EQUIPMENT SHALL BE INSTALLED PROVIDING ADEQUATE PHYSICAL WORKING SPACE AROUND THE EQUIPMENT AND SHALL COMPLY WITH NEC.
- COPPER CONDUCTORS SHALL BE USED AND SHALL HAVE AN INSULATION RATING OF 600V, 90°C, UNLESS OTHERWISE NOTED.
- CONDUCTORS SHALL BE SIZED IN ACCORDANCE TO THE NEC. CONDUCTORS AMPACITY SHALL BE DE-RATED FOR TEMPERATURE INCREASE, CONDUIT FILL AND VOLTAGE DROP.
- ALL CONDUCTORS, EXCEPT PV WIRE SHALL BE INSTALLED IN APPROVED CONDUITS OR RACEWAY. CONDUITS SHALL BE ADEQUATELY SUPPORTED AS PER NEC.
- AC DISCONNECT SHOWN IS REQUIRED IF THE UTILITY REQUIRES VISIBLE-BLADE SWITCH.
- EXPOSED NON-CURRENT CARRYING METAL PARTS SHALL BE GROUNDED AS PER NEC.
- LINE SIDE INTER-CONNECTION SHALL COMPLY WITH NEC.
- SMS MONITORING SYSTEM AND IT'S CONNECTION SHOWN IS OPTIONAL. IF USED, REFER TO SMS INSTALLATION MANUAL FOR WIRING METHODS AND OPERATION PROCEDURE.
- ASHRAE FUNDAMENTAL OUTDOOR DESIGN TEMPERATURES DO NOT EXCEED 47°C IN THE U.S. (PHOENIX, AZ OR PALM SPRINGS, CA)
- FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN ROOF MOUNTED SUNLIGHT CONDUIT USING THE OUTDOOR TEMPERATURE OF 47°C
  - 10AWG CONDUCTOR ARE GENERALLY ACCEPTABLE FOR MODULES WITH AN I<sub>sc</sub> OF 9.6 AMPS WITH A 15 AMP FUSE.

WIRE SIZING FOR OCPD  
EX (I<sub>sc</sub> \*(1.25)/(1.25))/(# OF STRINGS IN PARALLEL) = WIRE AMPACITY OR USING NEC TABLE 690.8



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AC System Size  
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Permit/Lender  
None

City  
Montgomery County

Utility  
Pepco

Sheet Name  
Electrical 3-Line Diagram

Drawn By  
AMP

Date  
April 4, 2025

Scale  
AS NOTED

Job Number  
MD2417223

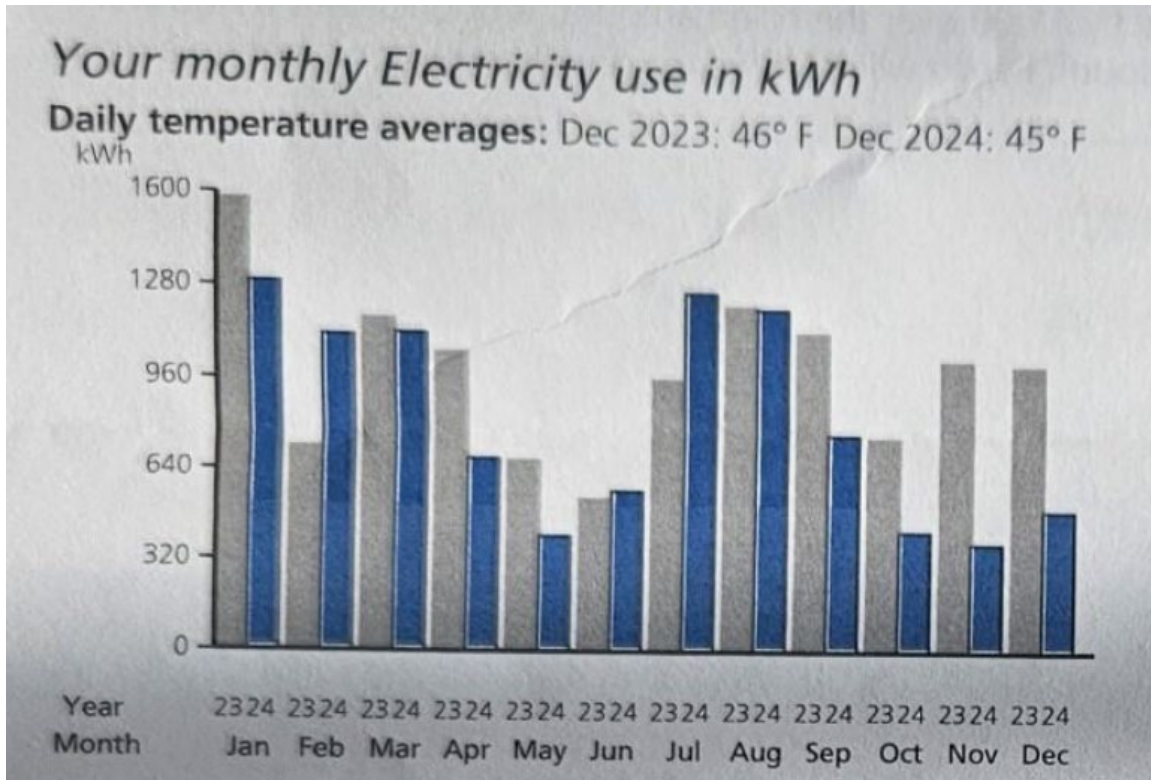
Sheet  
E-2

4/22/2025

To whom it may concern,

- Justification of panels on the house and heat map.

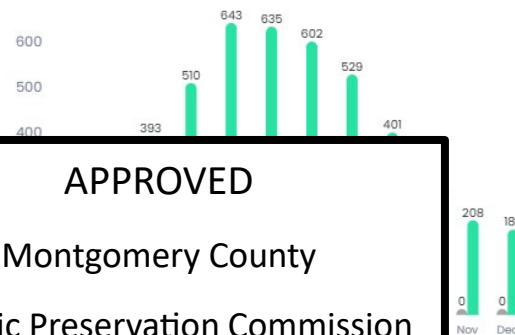
Monthly energy consumption for 232 Park Avenue, Takoma Park, MD 20912 vs the proposed system's monthly production



Monthly Average Solar Access



Monthly Consumption and Production (kWh)



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Montgomery County

Historic Preservation Commission

*Karen Benoit*

**REVIEWED**

By Dan Bruechert at 1:38 pm, May 20, 2025



- The home had an annual usage of roughly 9,600 kWh in 2024. Our proposed system is estimated to have 4,852 kWh in annual production.

The panels will vary in production based on their location on the structure, but this estimated production for the 23-panel system breaks down to roughly 211 kWh per panel annually.

#### **Justification for the Placement of the panels.**

- This site has two large trees overhanging the south-facing roof planes. The panels on R3 have the highest production per panel at 366 kWh annually, followed by the panels on R4 at 268 kWh per panel annually. The panels on R1 and R2 produce 178 kWh per panel annually.
- Relocating panels towards the back of the home would further decrease production per panel, reducing the system's total production.
- This design allows the homeowner to offset about 50% of their annual utility usage. Any movement of panels or reduction of the system size would further hinder this offset ability.

#### **Heat Maps**



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Montgomery County

Historic Preservation Commission

*Karen Buelit*

**REVIEWED**

By Dan Bruechert at 1:38 pm, May 20, 2025





Thank you,  
Aley Oberdorf  
Design Engineer



**REVIEWED**

*By Dan Bruechert at 1:39 pm, May 20, 2025*



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Montgomery County

Historic Preservation Commission

*Karen Benoit*

**REVIEWED**

*By Dan Bruechert at 1:39 pm, May 20, 2025*

# SnapNrack™

## Solar Mounting Solutions

### TopSpeed™ Mounting System

#### Installation Manual

[snapnrack.com](https://snapnrack.com)

SnapNrack's primary goal is to provide our customers with the lowest possible installed cost for mounting residential solar modules, without compromising the values the industry has come to expect: ease of use, quality, aesthetics, and safety. Designing with this goal in mind, we are proud to present the SnapNrack TopSpeed™ mounting system with SpeedSeal™ Technology.

SnapNrack has created a ground breaking system combining great features and benefits we are known for, with our TopSpeed™ System and the most up to date technical innovation in the industry, thus reducing parts while driving down labor, material, and total installation costs. Designed to work with standard module frames, achieving UL 2703 Listing for Grounding/Bonding and Fire Classification, providing integrated wire management, aesthetics and our industry leading "Snap-In" features, SnapNrack is providing the simplest and most cost effective solar mounting solution on the market with TopSpeed™ including integrated fasteners and SpeedSeal™ Technology.

### Advantages of Installing the SnapNrack TopSpeed™ System

**Modules are installed with a minimum number of parts**

This elimination of parts leads to a lower estimated system cost for both the installer and home owner.

**Built in Wire Management and Aesthetics**

Extensive wire management solutions have been designed specifically for the system that adapts to multiple possible mounting positions.

The system is designed to be aesthetically pleasing and sturdy with a skirt that provides considerable strength at the leading edge and an elegant look for those seeking high end looking systems.

**SnapNrack TopSpeed™ includes SpeedSeal™ Technology**

SpeedSeal™ Technology features integrated flashing. This eliminates loosening layers of composition and removing nails with a pry bar, leading to less damage to the roof, minimized potential roof leaks, and much faster installs.

**TopSpeed™ Mounts attach Directly to the Decking**

As well as all of the benefits associated with the standard SpeedSeal™ Technology, TopSpeed™ attaches to the roof sheathing and does not require rafter attachment. Simply attaching to the roof sheathing removes the requirement for finding rafters and drilling pilot holes, creating potential rafter misses that can cause leaks.

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## Certification Details

SnapNrack TopSpeed™ mounting system has been evaluated by Underwriters Laboratories (UL) and Listed to UL Standard 2703 for Grounding/Bonding, and Fire Classification.

### **Grounding/Bonding**

Only specific components have been evaluated for bonding, and are identified as being in the ground path. The TopSpeed™ components that have been evaluated for bonding are the Mount Assembly (Mount Clamp Top, Module Clamp Tower, Angle Bracket), Clamp Assembly, Universal Skirt, Universal Skirt Clamp, Ground Lugs, and Smart Clips.

Universal Skirt Spacers, Mount Channel Nut, and Mount Base are not required to be bonded to the system based on the exceptions in clause 9.1 of UL 2703 1st Ed. Wire management clips are utilized to route conductors away from these components and must be assembled according to the instructions.

This mounting system may be used to ground and/or mount a PV module complying with UL 1703 or UL 61703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions. See Appendix A for the list of modules tested for use with the TopSpeed™ System for integrated grounding.

Ground Lugs have been evaluated to both UL 467 and UL 2703 Listing requirements. The following ground lugs have been approved for use: SnapNrack model 242-92202, and Ilsco models GBL-4DBT and SGB-4.

The following components have been evaluated for bonding as the fault current ground path: TopSpeed™ Mount Assembly, (Mount Clamp Top, Module Clamp Tower, Angle Bracket), Clamp Assembly, Wire Management Clips, and Ground Lugs. In order to maintain the Listing for bonding, wire management clips must be assembled to route conductors away from parts that have not been evaluated for bonding.

A Listed (QIMS) and Unlisted Component (KDER3) grounding lug, SnapNrack part no. 242-92202, is attached to the module frame flange for the normal attachment of a Grounding Electrode Conductor, which provides bonding within the system and eventual connection to a Grounding Electrode, as required by the U.S. NEC. Details of part no. 242-92202 can be found in Volume 1, Section 4, and Volume 2, Section 2. When this method is used, the grounding symbol is stamped onto the body of the ground lug to identify the grounding terminal.

An alternate method of grounding, a UL Listed (KDER and QIMS) grounding lug, Ilsco (E34440 and E354420) model SGB-4 is attached to the module frame flange. When this method is used, the grounding terminal is identified by the green colored screws of the lug.

An alternate method of grounding, a UL Listed (KDER and QIMS) grounding lug, Ilsco (E34440 and E354420) model GBL-4BDT is attached to the module frame flange through the specified hardware and torque values. When this method is used, the grounding terminal is identified by the green colored set screw of the lug.

An alternate method of grounding, Enphase R/C (QIKH2)(QIMS2) model M250, M215 & C250 is bonded to the Listed PV module frame by the Enphase R/C (QIMS2) Model EFM-XXMM anodization piercing mounting/clamping kit. The total roof-mounted PV system is bonded (modules and microinverters) together and the assembly is bonded to ground through the Enphase R/C (QIMS2) Engage Cables; Model ETXX-240, ETXX-208 or ETXX-277, when properly grounded at the service entrance. R/C (QIMS2), Dynoraxx (E357716) photovoltaic bonding device cat. no. Dynobond is an optional component that may be used with this system. The Dynobond device has been evaluated to provide module to module bonding. The Dynobond device attaches to the frame flange of adjacent modules Listed (QIMS), SnapNrack MLPE Frame Attachment Kit model 242-02151 has been investigated to bond approved MLPE device back plates to frames of modules.



## Fire

SnapNrack TopSpeed™ has been investigated for a Class A System Fire Classification for Steep-Sloped and low sloped roofs with Type 1 and Type 2 modules. Because the system was tested at 5 inches above the test roof fixture, TopSpeed™ can be installed without any height restrictions due to System Fire Classification. See Appendix A for potential module-specific height restrictions due to module temperature. The Skirt is considered an optional component with respect to Fire Classification, as SnapNrack TopSpeed™ maintains the same Fire Classification Rating both with and without the skirt.

**NOTE:** Modules with an asterisk\* have a fire rating that is different from Type 1, Type 2 or Type 29. SNR systems have only been evaluated for use with Type 1, Type 2, or Type 29 modules. Modules with a different fire type rating should be considered to not have been evaluated for use with SNR systems with respect to a system fire rating.

## Inspection Practices

SnapNrack recommends a periodic re-inspection of the completed installation for loose components, loose fasteners, and any corrosion, such that if found, the affected components are to be immediately replaced.

# Component Details

## TopSpeed™ Structural Components



### TopSpeed™ Mount

SnapNrack TopSpeed™ Mount assembly including SpeedSeal™ base, clamp top, and (4) SnapNrack #14 SS Wood Screws with 1/2" Hex Head.



### TopSpeed™ Clamp

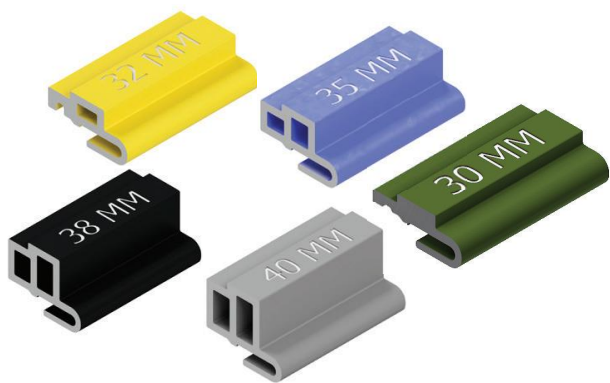
SnapNrack TopSpeed™ Clamp assembly including including Link bottom, Link top, and springs.



### Universal Skirt

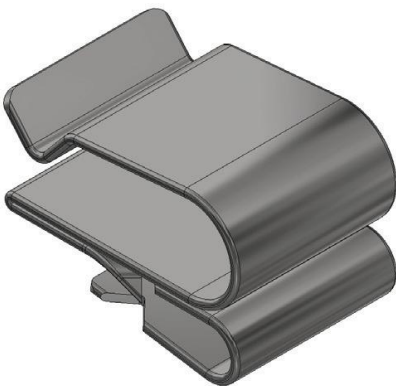
SnapNrack Universal Skirt in double portrait or single landscape lengths.

## Wire Managements Components



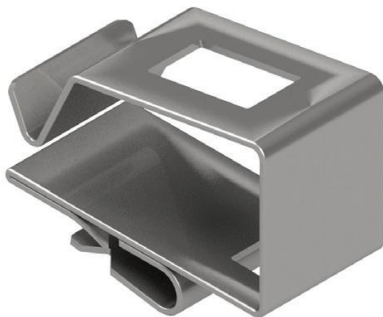
### Skirt Spacers

SnapNrack Universal Skirt Spacer for 40mm, 38mm, 35mm, 32mm, and 30mm modules.



### Smart Clip

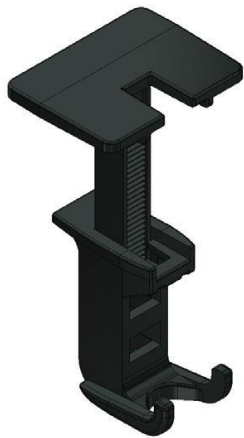
Module frame cable clip, holds two PV wires or Enphase IQ-Cables.



### Smart Clip XL

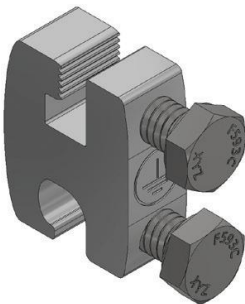
Module frame cable clip, holds six PV wires or four Enphase IQ-Cable.

## Grounding/MLPE Components



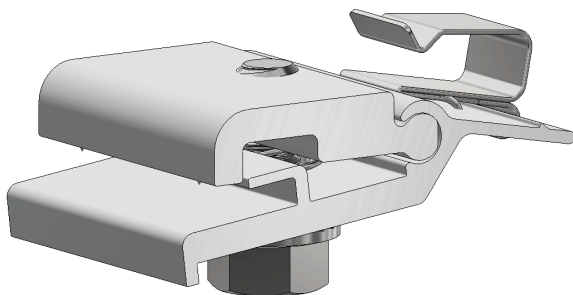
### Wire Saver

Designed to secure conductors that become loose and hang below the array, holds one conductor.



### Ground Lug

SnapNrack Ground Lug assembly used for attaching the Equipment Grounding Conductor on to one module or any TopSpeed™ Mount per array. 5



### MLPE Frame Attachment Kit

Attaches MLPEs (Module Level Performance Enhancers) and other related equipment to the module frame.

Hardware Torque Specifications

The recommended torque to be applied to components for proper assembly and bonding are as follows:

Hardware Description	Torque Specification
All TopSpeed™ ½” bolts; System Leveling Bolt, TopSpeed™ Mount Clamping Bolt, Clamp Bolt	16 ft-lb
Ground Lug model 242-92202 to Module Frame or anywhere on the TopSpeed™ Mount, and Ground Lug model 242-92202 to Grounding Electrode Conductor (6-12 SOL)	8 ft-lb
MLPE Frame Attachment Kit, MLPE Rail Attachment Kit	10 ft-lb
SolarEdge Frame Mounted Microinverter Bracket to Module Frame	11 ft-lb
Enphase Frame Mounted Microinverter Bracket to Module Frame	13 ft-lb
Ground Lug model SGB-4 to module	75 in-lb
Ground Lug model SGB-4 to Grounding Electrode Conductor (4-14 SOL or STR)	35 in-lb
Ground Lug model GBL-4DBT to module	35 in-lb
Ground Lug model GBL-4DBT to Grounding Electrode Conductor (10-14 SOL or STR)	20 in-lb
Ground Lug model GBL-4DBT to Grounding Electrode Conductor (8 SOL or STR)	25 in-lb
Ground Lug model GBL-4DBT to Grounding Electrode Conductor (4-6 SOL or STR)	35 in-lb

# Pre-Installation Requirements

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## Site Survey

- Measure the roof surfaces and develop an accurate drawing, including any obstacles such as chimneys and roof vents.
- If plans for the roof structure are available, verify that the plans match the final structure.
- Identify any roof access or setback areas as required by the local AHJ.
- Identify any construction issues that may complicate the process of locating rafters from the roof surface.
- If you find structural problems such as termite damage or cracked rafters that may compromise the structure's integrity consult a structural engineer.

## Design Guidance

- PV Designers should account for the 0.75 inch spacing between rows and columns of modules when creating the layout.
- Determine site conditions for calculating the engineering values, confirm site conditions and code versions comply with local AHJ requirements.
- Reference site conditions and system specifications in TopSpeed™ Structural Engineering Report to determine the number of attachments per module side.
- Insert SnapNrack installation details into design plan set specific to the project requirements.
- Draw roof attachment locations on plan set layout based on TopSpeed™ Structural Engineering.

### Best Practice:

If environmental load conditions require three TopSpeed™ attachments per module side this is only required when modules share attachments.

- Identify homerun and Junction Box locations based on rooftop wiring requirements.
- Mark distance from array edge to identifiable roof feature in x and y axes.

### Safety Guidance

- Always wear appropriate OSHA approved safety equipment when at active construction site.
- Appropriate fall protection or prevention gear should be used. Always use extreme caution when near the edge of a roof.
- Use appropriate ladder safety equipment when accessing the roof from ground level.

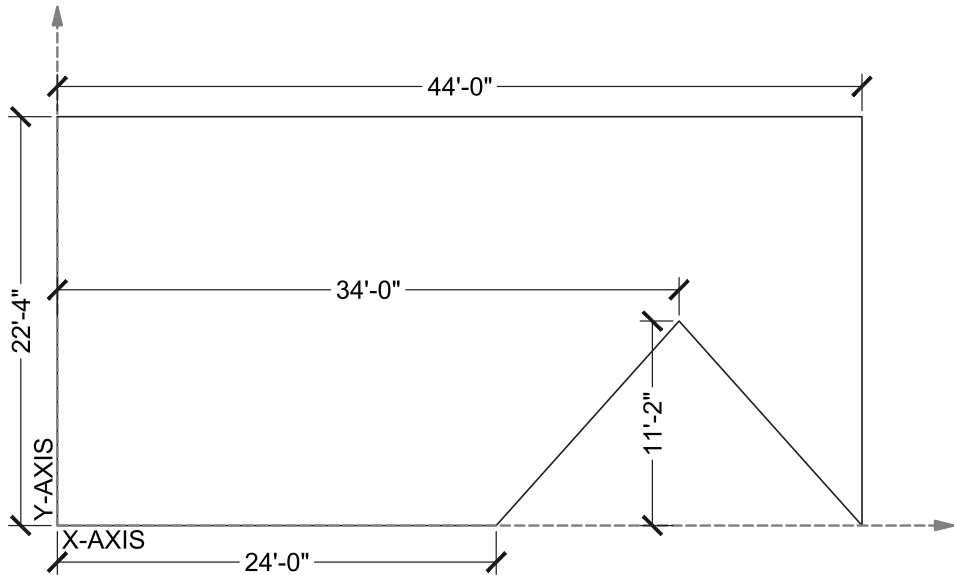


Image note: X-Axis described in this manual is cross-slope on the roof, Y-Axis is in line with the roof slope.

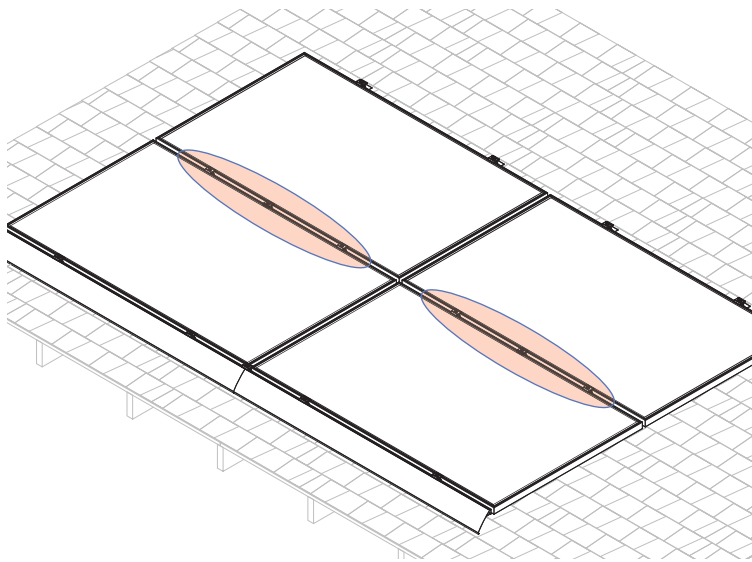
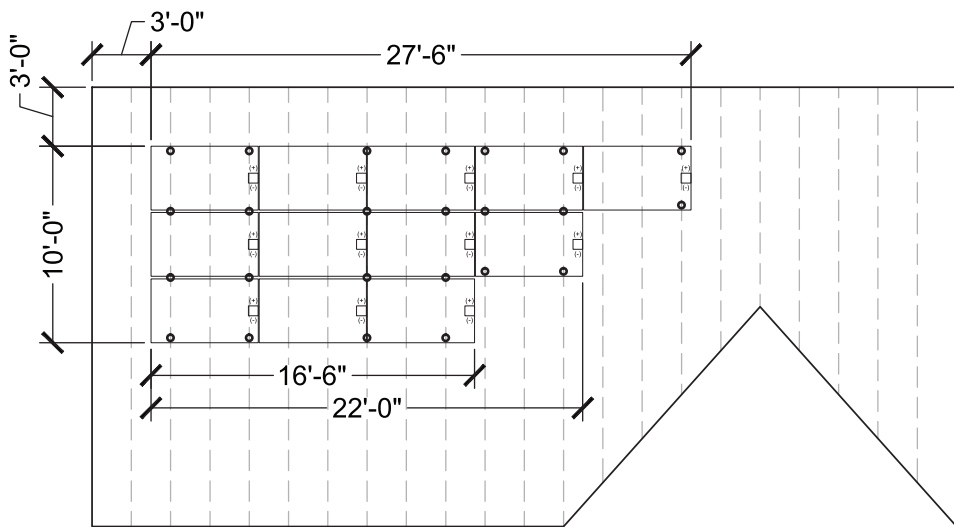


Image note: This four module array is installed in a high load configuration with three attachments per side where two modules share attachments. See highlighted area. As shown, three attachments are never required at the skirt or the top of the array.

### Safety Guidance Continued

- Safety equipment should be checked periodically for wear and quality issues.
- Always wear proper eye protection when required.

# TopSpeed™ Mount to Module Frame Installation

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## Required Tools

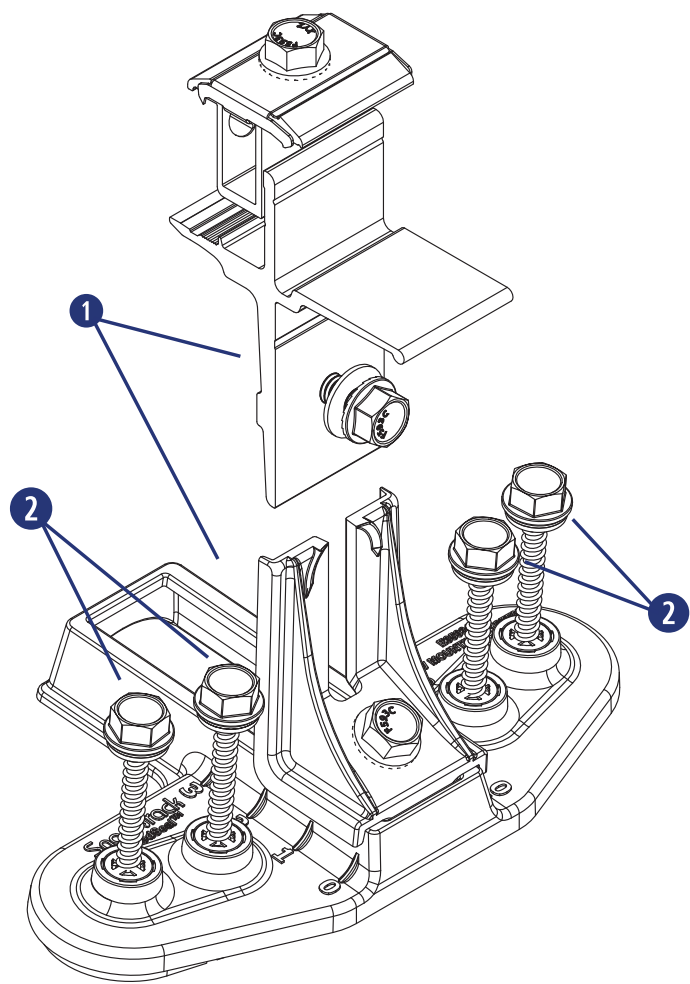
- Socket Wrench/Impact Driver
- Torque Wrench
- 1/2" Socket

## Materials Included - TopSpeed™ System with SpeedSeal™ Technology

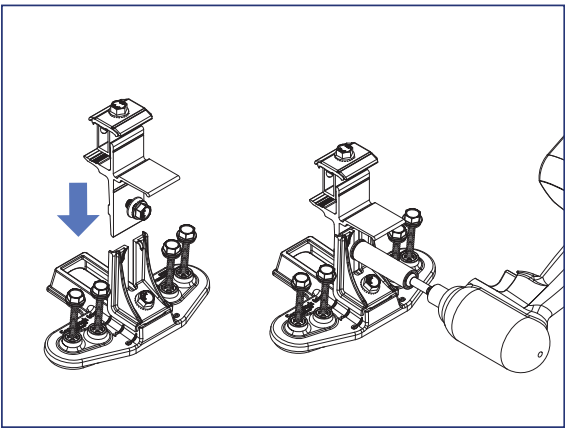
- 1 (1) SnapNrack TopSpeed™ Mount
- 2 (4) SnapNrack #14 Wood Screw with 1/2" Hex Head & sealing washer

### Best Practice:

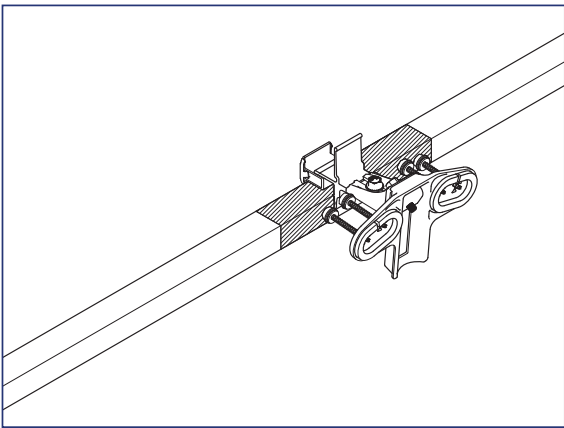
Attach all TopSpeed™ mounts as the modules are being prepped with MLPEs on the ground. Attach Mounts before attaching MLPEs to simplify wire management.



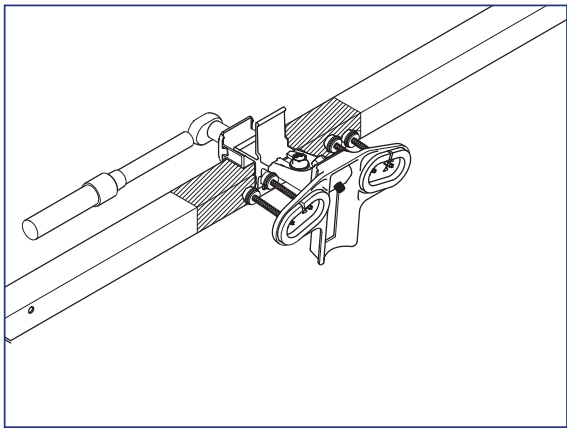
## INSTALLATION INSTRUCTIONS



1) Assemble all TopSpeed™ Mounts required for the installation. Slide the clamp tower assembly into the angle bracket riser and tighten the leveling bolt to 16 ft-lbs.



2) Position TopSpeed™ Mount clamp on the module frame within the module manufacturers required clamping zone.



3) Tighten 1/2" clamping bolt to 16 ft-lb. Only two Mounts are required per module on one side.



### Install Note:

For high load conditions add a third attachment in the middle of the module frame.



# TopSpeed™ Universal Skirt Layout

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## Required Tools

- Roof Marking Crayon or Chalk
- Tape Measure

## LAYOUT INSTRUCTIONS

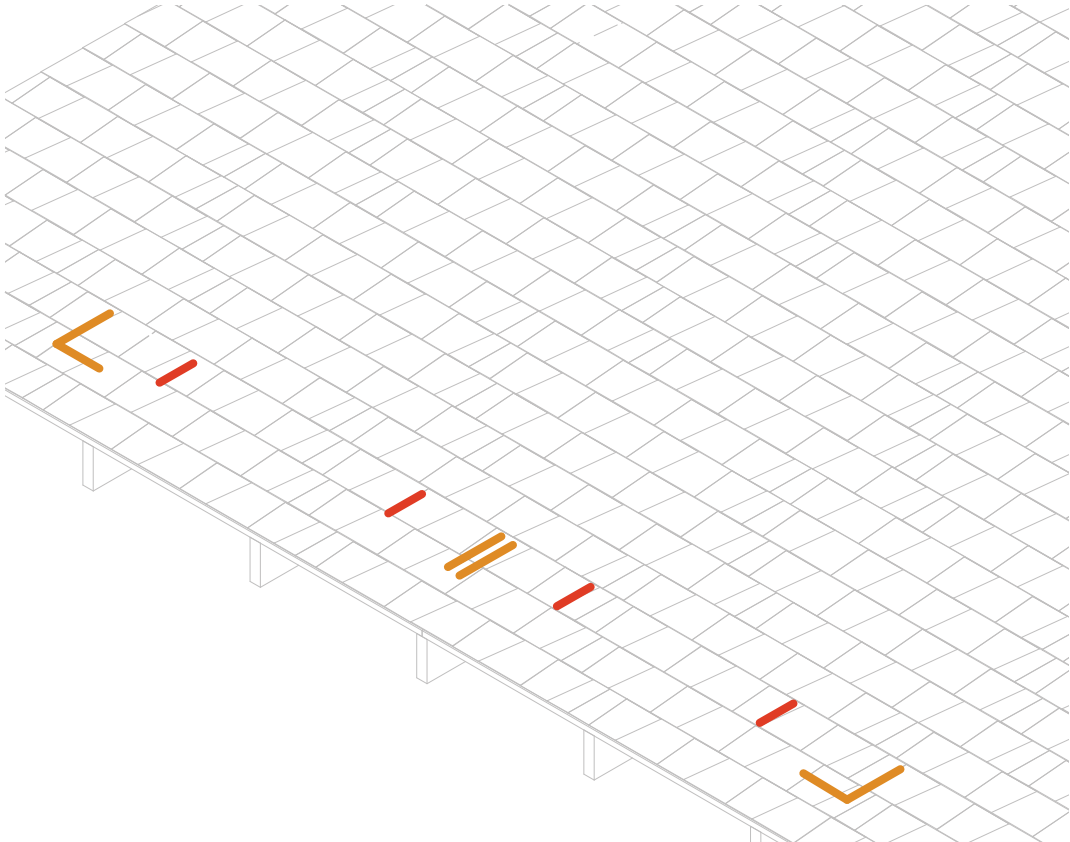
1) Use a tape measure to verify that all modules will fit properly on the roof surface.

2) On the roof draw the layout for the skirt installation including module gaps (recommended 0.75 inch gap), bottom corners, and locations of the two TopSpeed™ attachments per module that clamp to the skirt. Three attachments per module is never required at the skirt.



### Install Note:

If environmental load conditions require three TopSpeed™ attachments per module side this is only required when modules share attachments.



# TopSpeed™ Mount: Skirt Installation

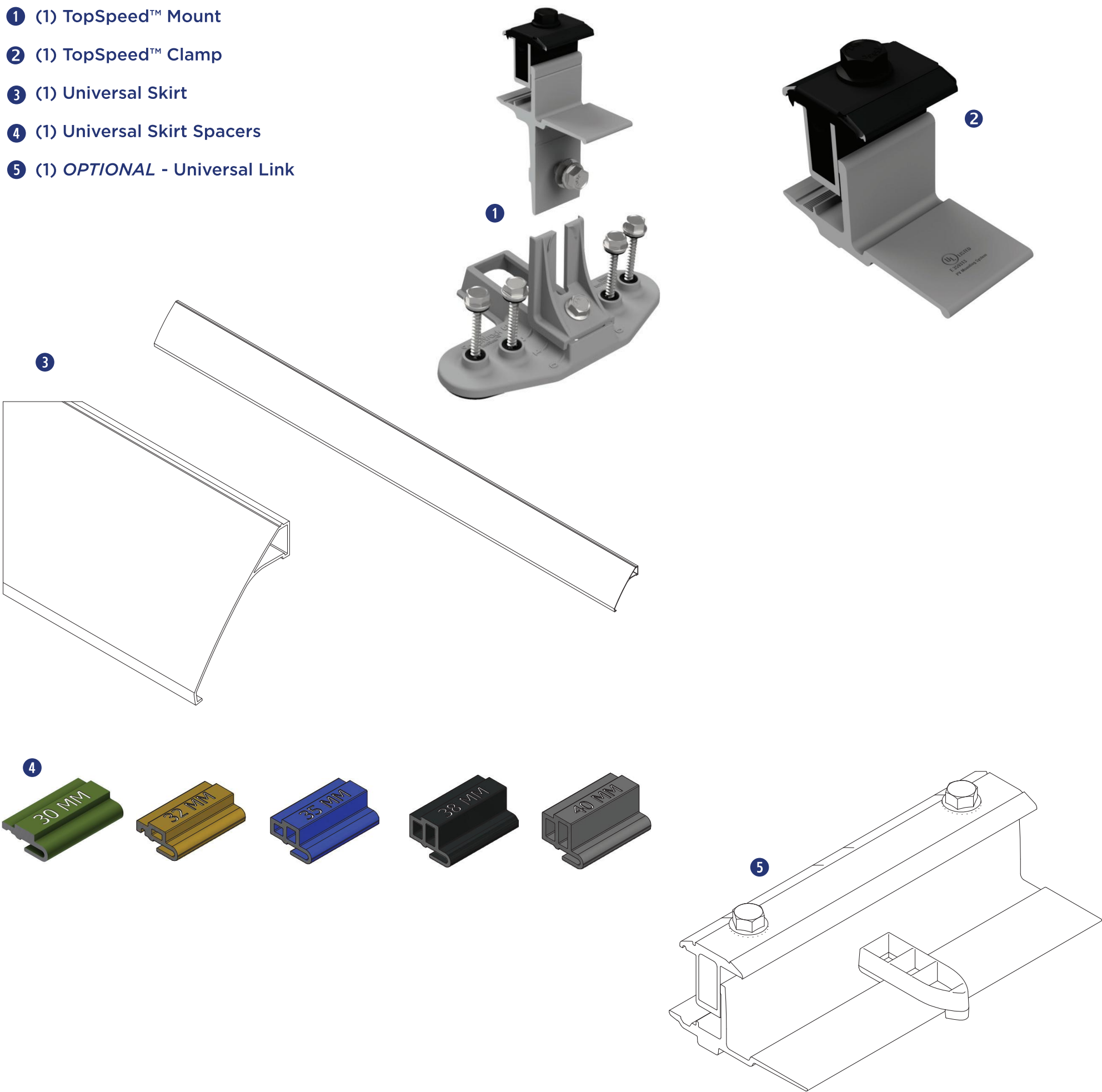
snapnrack.com

## Required Tools

- Socket Wrench/Impact Driver
- Torque Wrench
- 1/2" Socket
- Roofing sealant

## Materials Included - TopSpeed™ Mount with SpeedSeal™ Technology

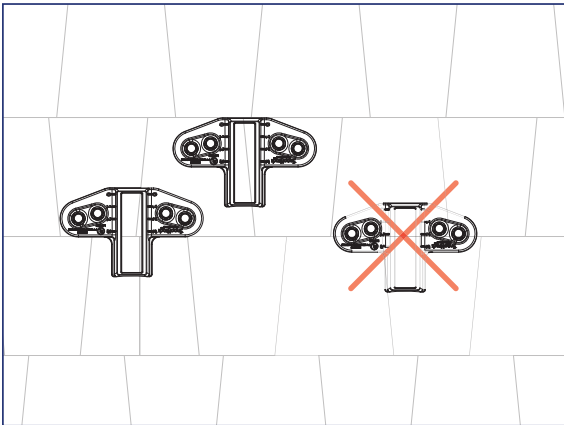
- 1 (1) TopSpeed™ Mount
- 2 (1) TopSpeed™ Clamp
- 3 (1) Universal Skirt
- 4 (1) Universal Skirt Spacers
- 5 (1) *OPTIONAL* - Universal Link



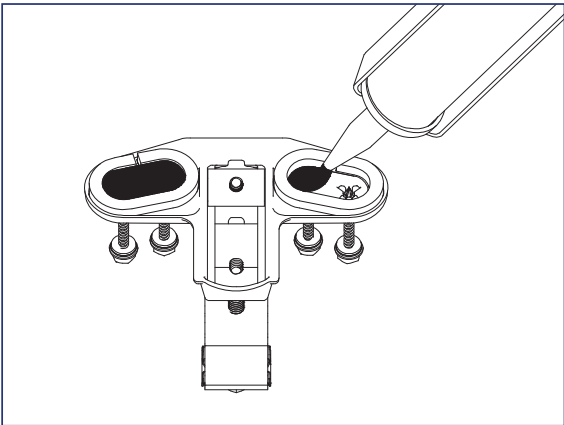
# TopSpeed™ Mount Skirt Installation

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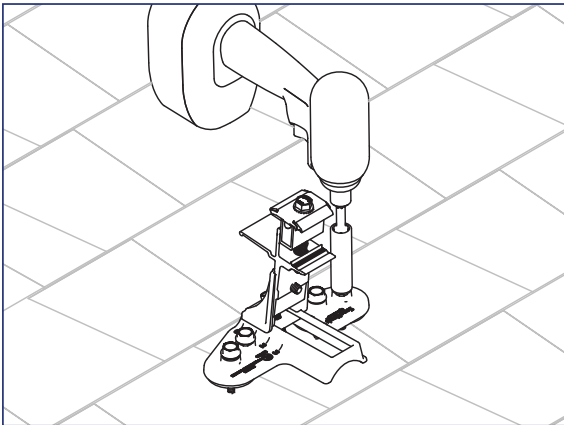
## INSTALLATION INSTRUCTIONS



1) Install TopSpeed™ Mounts at locations drawn during the skirt layout. Mounts must be installed entirely on one course of composition.



2) Fill both cavities on bottom of TopSpeed™ Mount created by SpeedSeal™ gasket with roof sealant to ensure a watertight seal.

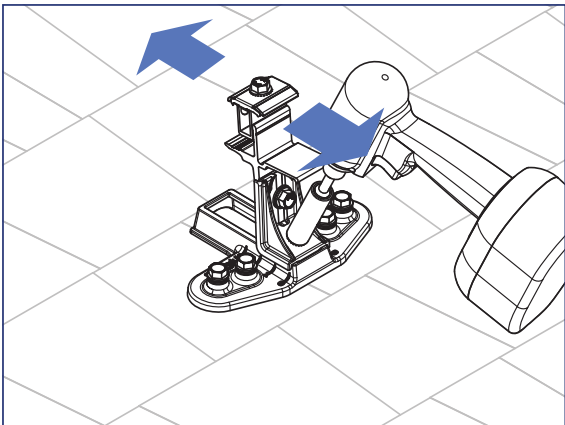


3) Attach TopSpeed™ Mount to roof using the (4) SnapNrack #14 Wood Screws with 1/2" hex head that are captured in the Mount.

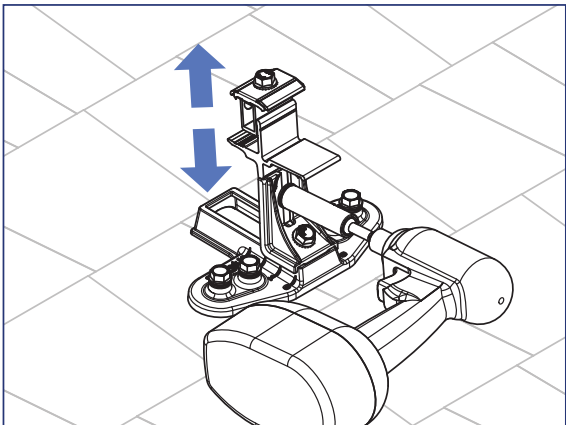


### Install Note:

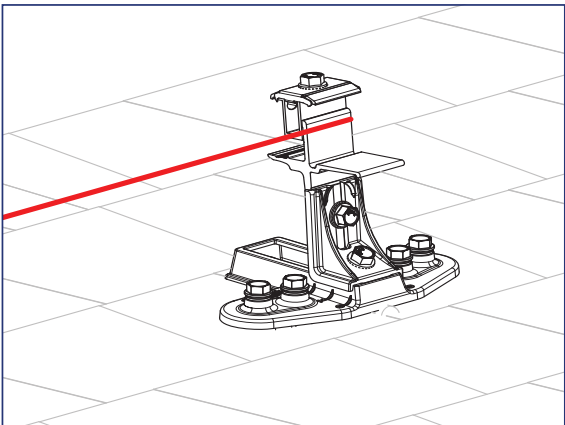
Roof sealant should be expelled from both vents of the TopSpeed™ Mount as it is installed to assure the proper amount of roof sealant has been applied. If sealant is not expelled from all four vents, remove TopSpeed™ Mount, add more sealant to the cavity, then reinstall.



4) Loosen Course Adjustment bolt and adjust end Mounts up or down until aligned with bottom edge of array as marked on the roof, then tighten the Course Adjustment bolt.



5) To set the TopSpeed™ Mount level loosen the Leveling bolt and move the clamp up or down, then tighten the Leveling bolt and torque to 16 ft-lb.



6) Pull string line tight from one corner mount to opposite corner mount to align and level all TopSpeed™ Mounts between the end mounts.

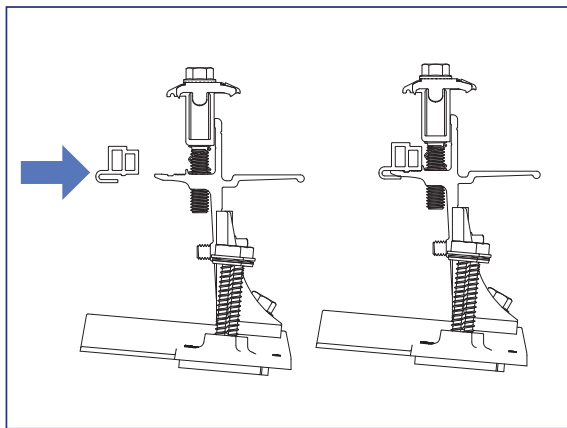


### Install Note:

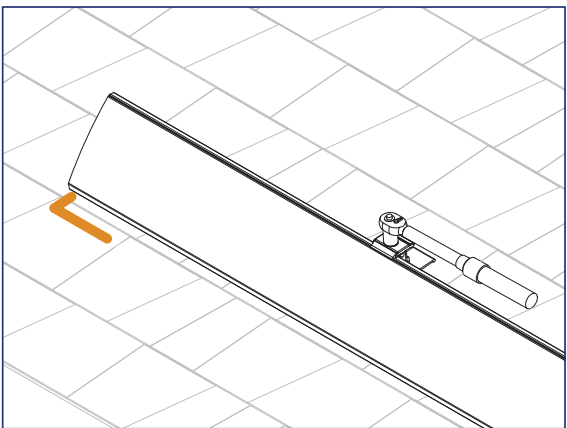
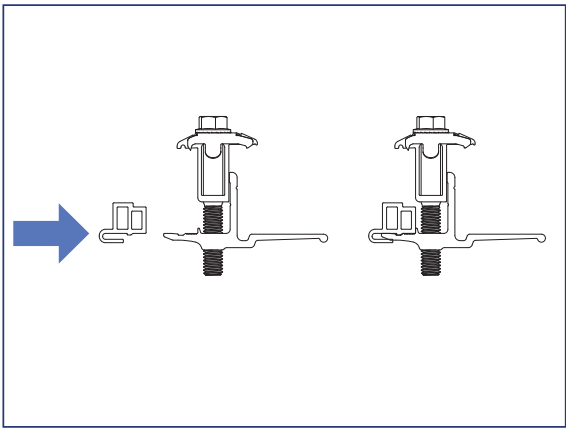
Use the string line alignment feature on Mounts to level and align the Mounts.

# TopSpeed™ Mount Skirt Installation

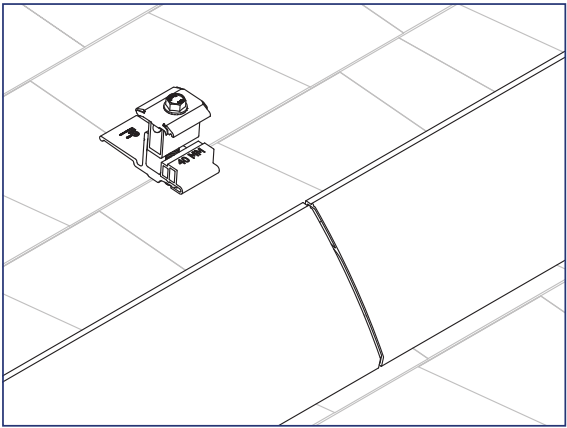
## INSTALLATION INSTRUCTIONS



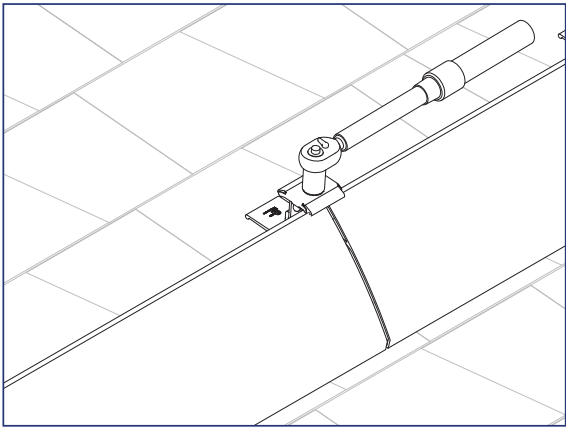
7) Universal Spacers will need to be added to Mounts and Clamps where Skirt will be installed.



8) Install Universal Skirt by holding the skirt in Mount, sliding Skirt to align with array layout marks, and clamping skirt into mount.



9) Use TopSpeed™ Clamps to connect multiple lengths of Array Skirt.



### Install Note:

Optionally use Universal Links to connect lengths of Array Skirt.

# Wire Management

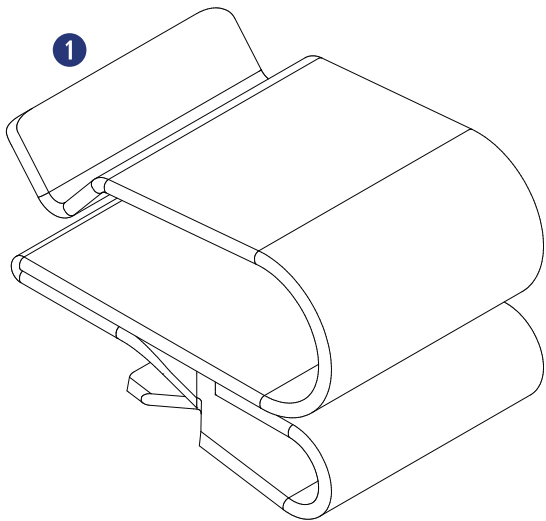
## Required Tools

- Socket Wrench
- Torque Wrench
- 1/2” Socket
- Electrician Tools

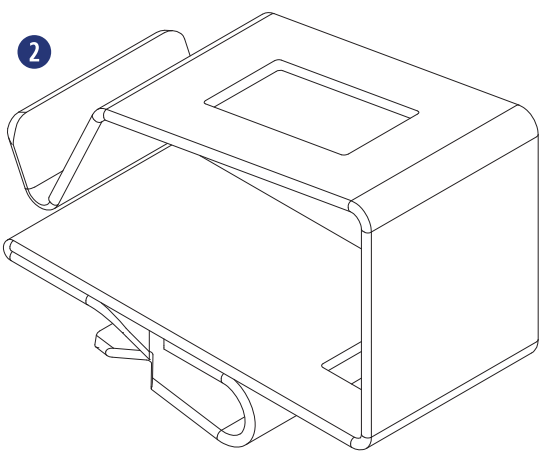
## Materials Included

### Smart Clips

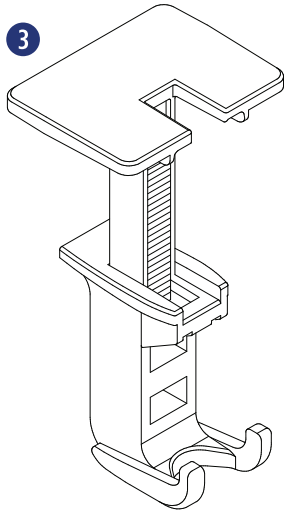
- 1 (1) Smart Clip [(2) PV Wire, (1) Enphase IQ Cable]
- 2 (1) Smart Clip XL [(6) PV Wire, (4) Enphase IQ]
- 3 (1) Wire Saver [(1) PV Wire]



Smart Clip



Smart Clip XL

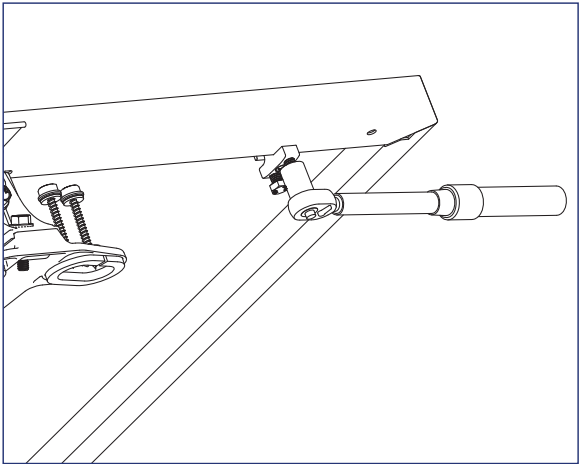


Wire Saver

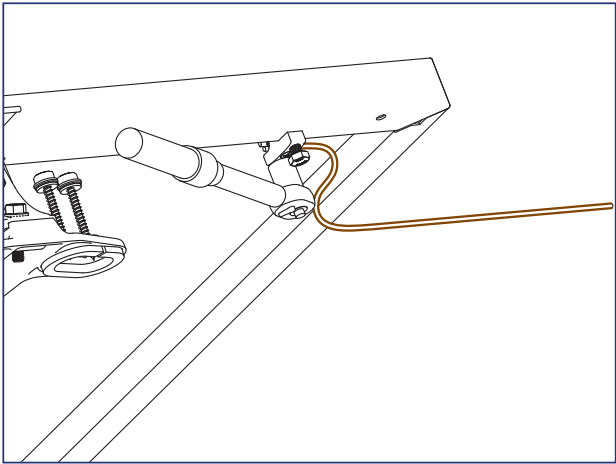


## INSTALLATION INSTRUCTIONS - GROUND LUG

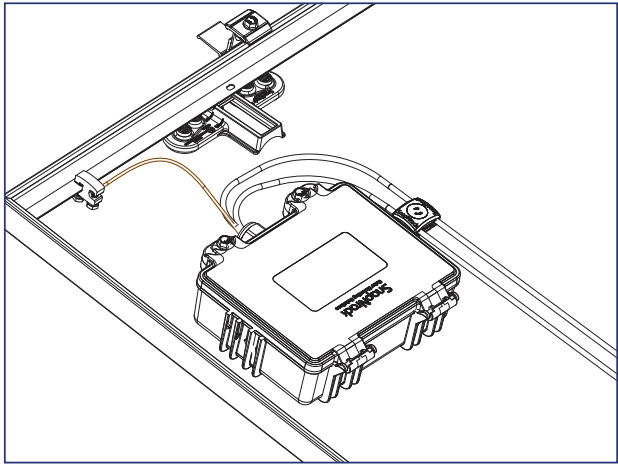
The SnapNrack Ground Lug to be used in accordance with the National Electric Code, ANSI/NFPA 70.



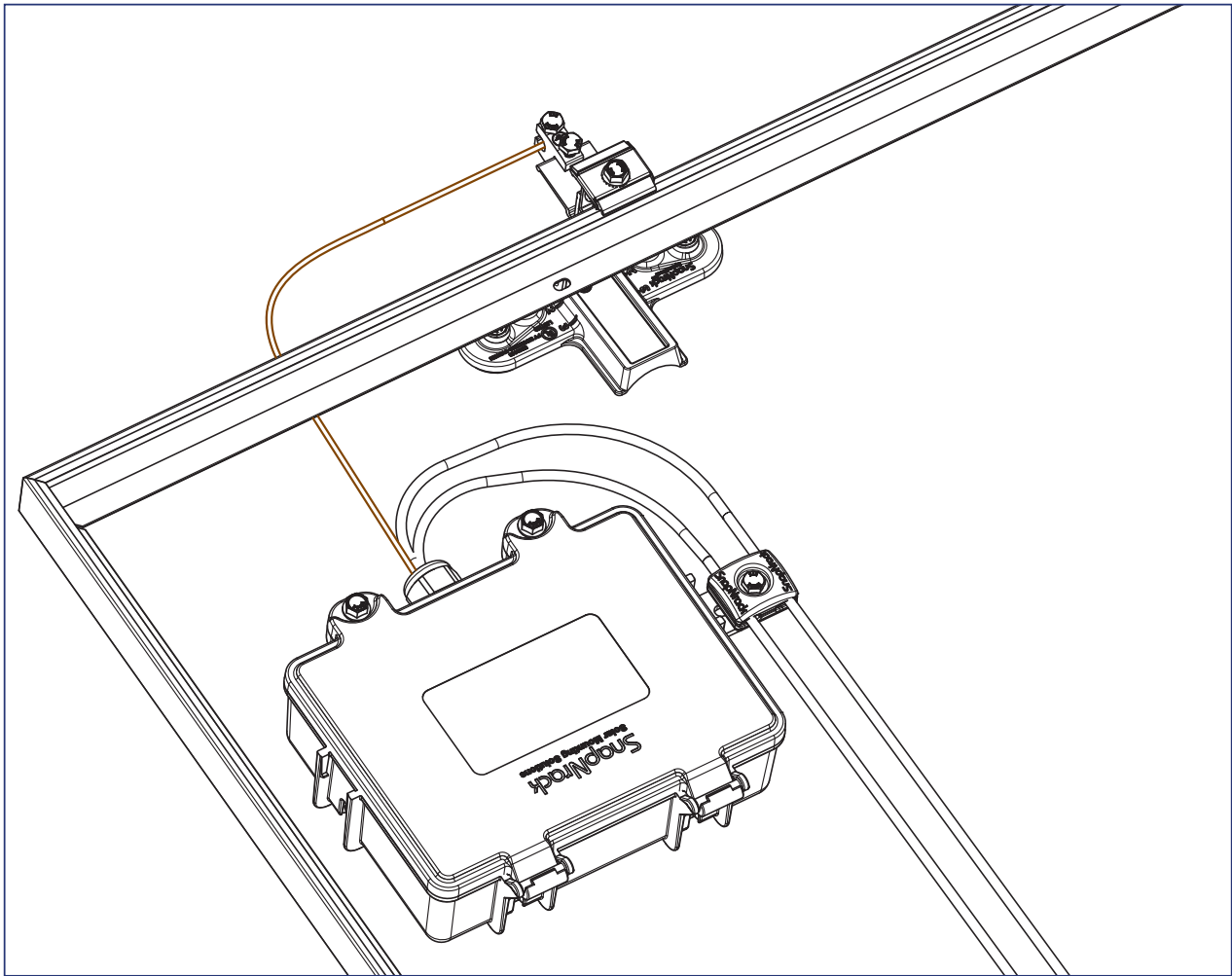
1) Ground Lug (242-92202) can be attached anywhere along the module frame or any TopSpeed™ Mount near the Junction Box. Torque module clamping bolt to 8 ft-lb.



2) Run 10 - 6 AWG, solid, bare copper GEC into Ground Lug channel, torque wire clamping bolt to 8 ft-lb.



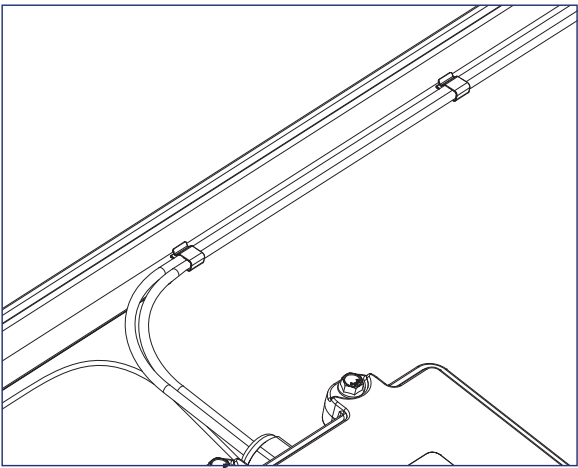
3) Run bare, solid EGC from Ground Lug R to Junction Box, bond bare EGC to stranded EGC in Junction Box. For details on installing the Junction Box reference the **Junction Box Installation Manual**.



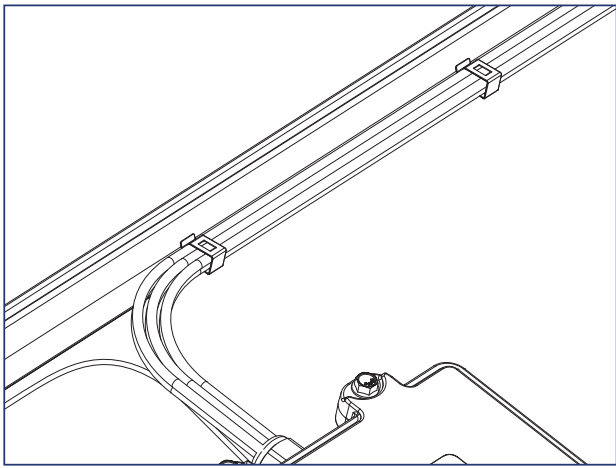
4) Optionally; Install Ground Lug on the Mount Landing Pad at the top of the array. Run bare copper between ground lug and Junction Box.

## INSTALLATION INSTRUCTIONS - SMART CLIPS

SmartClip and SmartClip XL should be used to route conductors in a neat and workmanlike manner away from all non-bonded components and support the conductors adequately to eliminate potential damage.



1) Use SnapNrack Smart Clip II to manage up two PV wires inside the module frame while prepping out the modules on the ground or installing modules on the roof.



2) Use SnapNrack Smart Clip XL to manage larger bundles of PV wire; up to 6 PV wires per clip

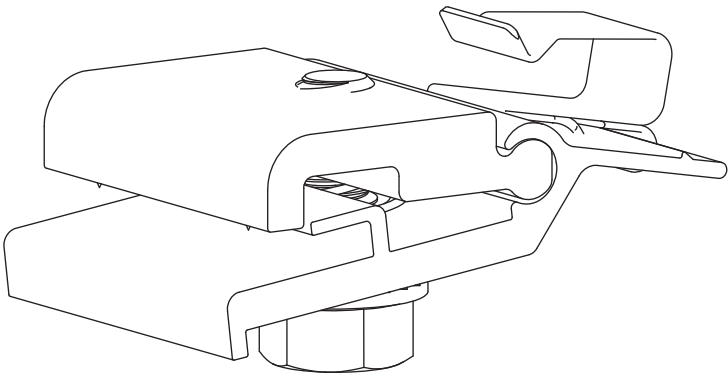
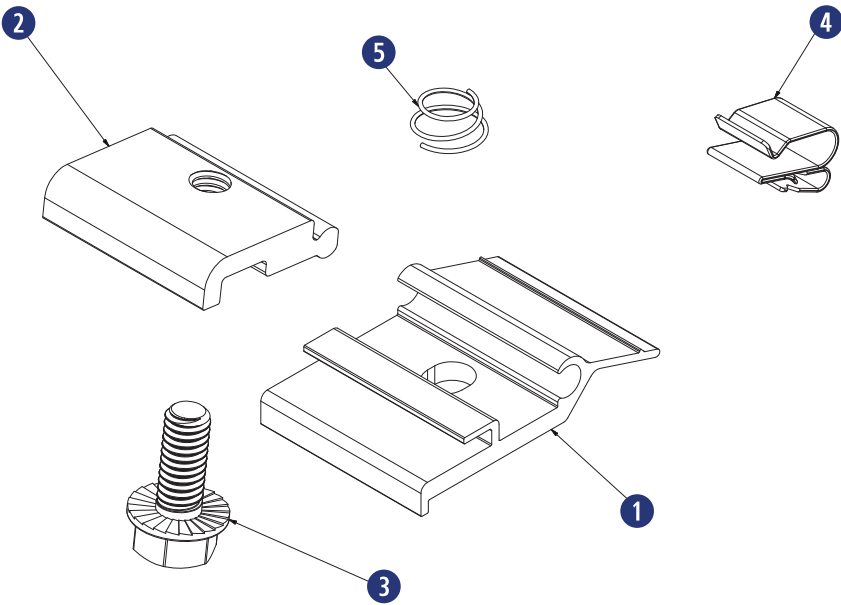
# MLPE & RSD Installation

## Required Tools

- Socket Wrench
- Torque Wrench
- 1/2” Socket

## Materials Included - MLPE Rail Attachment Kit

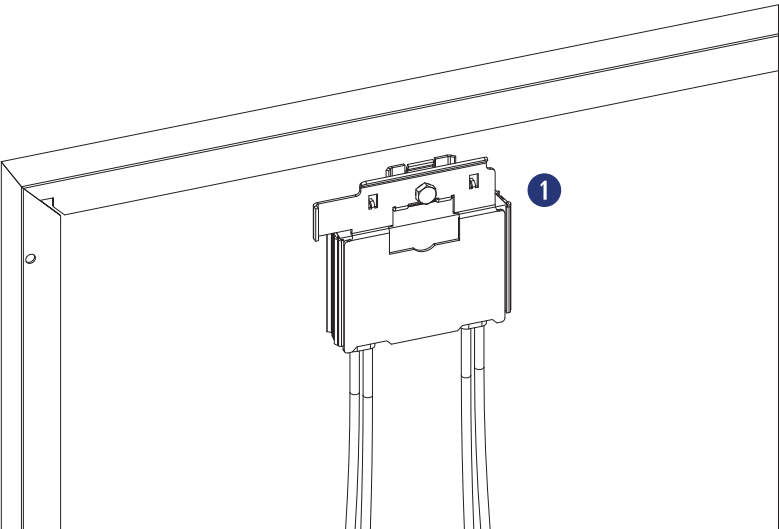
- ➊ (1) SnapNrack MLPE Frame Attachment Top
- ➋ (1) SnapNrack MLPE Frame Attachment Bottom
- ➌ (1) 5/16”-18 X 3/4” Serrated Flange Bolt SS
- ➍ (1) SnapNrack Smart Clip
- ➎ (1) SnapNrack MLPE Frame Attachment Coil Spring SS



## Materials Included

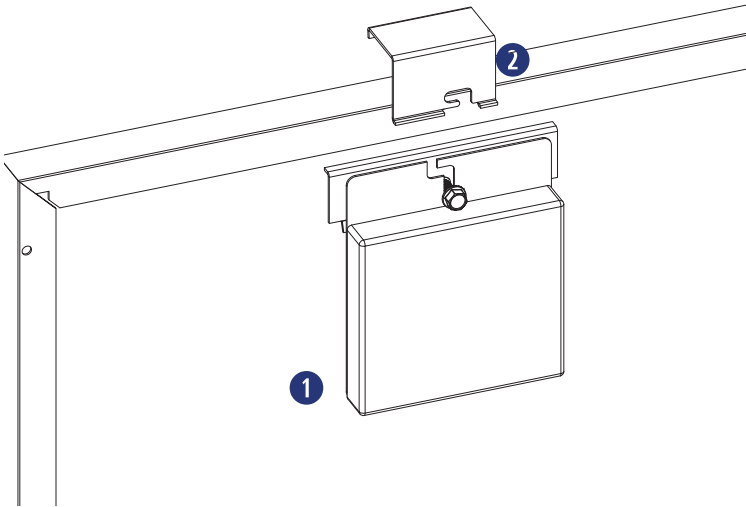
### SolarEdge Frame Mount

- ➊ (1) SolarEdge Optimizer w/ Frame-Mounted Module Add-On



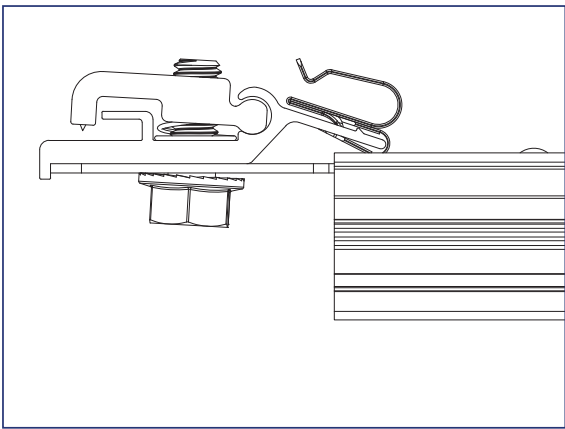
### Enphase Frame Mount

- ➊ (1) Enphase Microinverter
- ➋ (1) Enphase Frame Mount

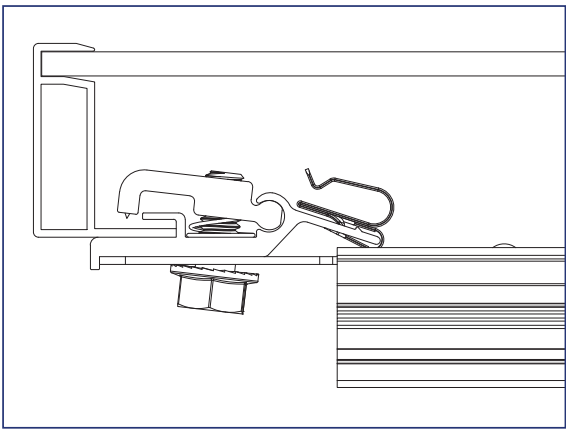


## INSTALLATION INSTRUCTIONS - SNAPNRACK MLPE FRAME ATTACHMENT KIT

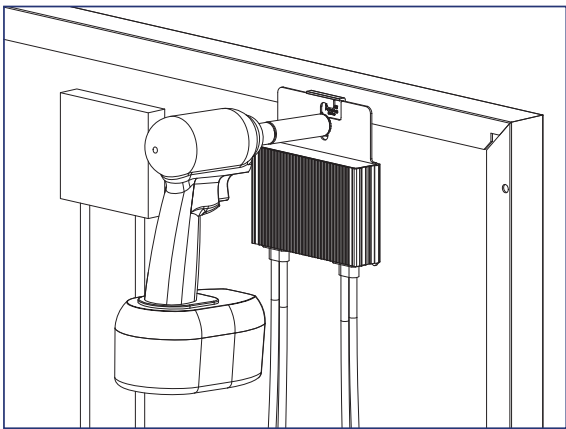
SnapNrack MLPE Frame Attachment kit are used to attach module level performance enhancing devices, and other devices such as an SRD (rapid shutdown device), directly to module frames, and provide integrated grounding/bonding for Devices grounded through metal back plate. (Refer to the list of tested MLPE devices on page XX of this manual).



1) Slide the backplate channel of the MLPE device under the MLPE Frame Attachment Kit bolt. The MLPE mounting plate should rest against the MLPE mounting plate backstop on the MLPE Frame Attachment Kit.



2) Position the MLPE Frame Attachment Kit on the module frame flange in a location that will not interfere with mounting system components. The module frame flange should rest against the module flange backstop on the MLPE Frame Attachment Kit.



3) Tighten the mounting bolt on the MLPE Frame Attachment Kit to 12 lb-ft (144 lb-in).



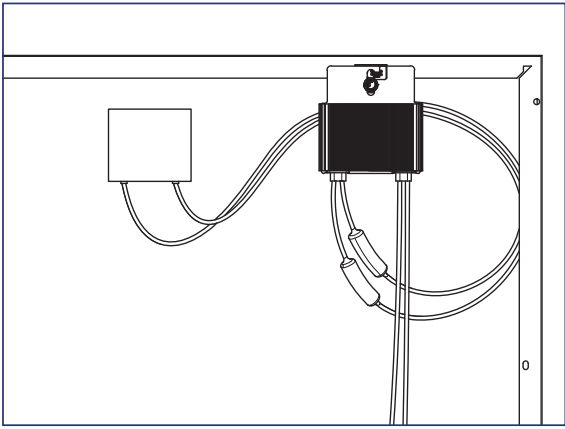
### Install Note:

The MLPE Frame Attachment Kit bonds the following components: Module Frame, MLPE backplate and Smart Clip.



### Install Note:

Avoid blocking module frame drainage holes when installing the MLPE Frame Attachment Kit.

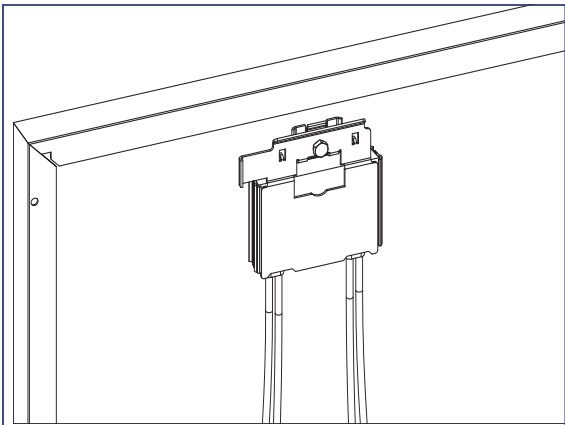


4) Connect the module leads to the input connectors on the MLPE device and manage conductors with the integrated Smart Clip.

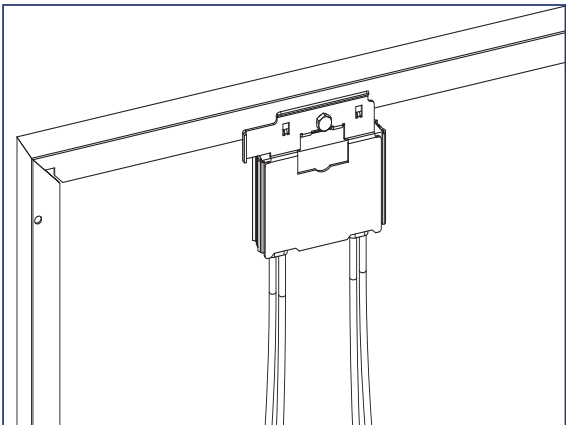


# MLPE & RSD Installation

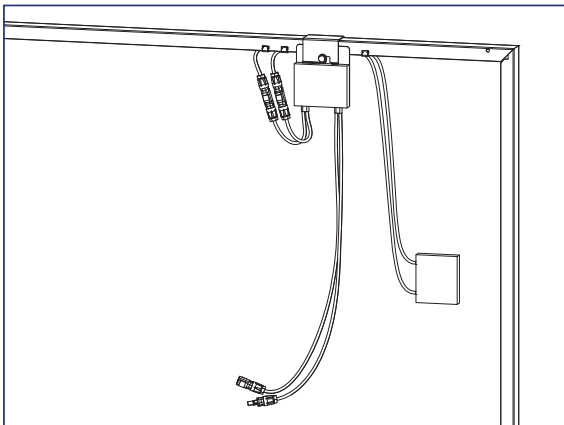
## INSTALLATION INSTRUCTIONS - SOLAREEDGE FRAME MOUNT




1) Locate the SolarEdge optimizer with Frame-Mounted Module Add-On at a location on the module frame that will not interfere with the TopSpeed™ Mounts.



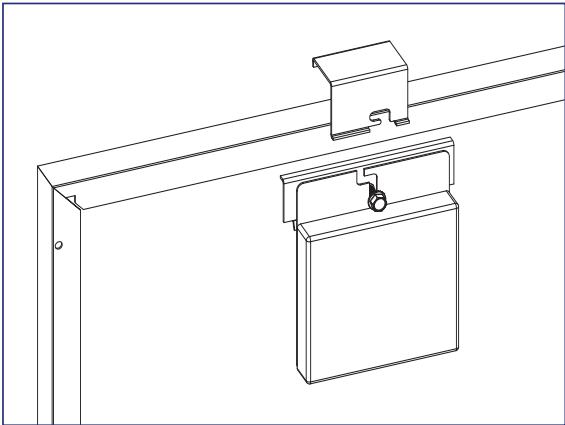
2) Install the optimizer mounting plate onto the module frame and tighten hardware to 11 ft-lbs.



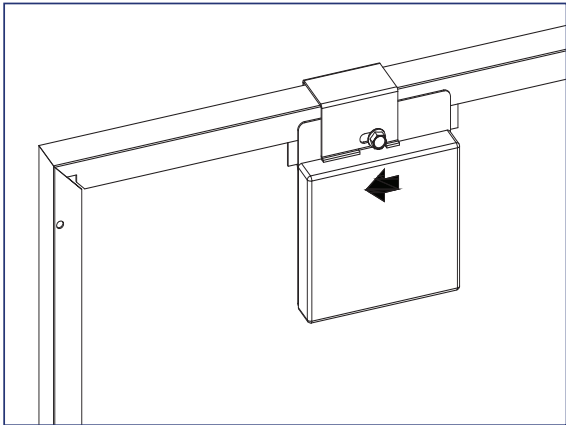
3) Connect the module leads to the input connectors on the optimizer and manage conductors with SnapNrack Smart Clips.

 **Install Note:**  
If module is mounted in portrait, install MLPE on long side, short side for landscape.


## INSTALLATION INSTRUCTIONS - ENPHASE FRAME MOUNT

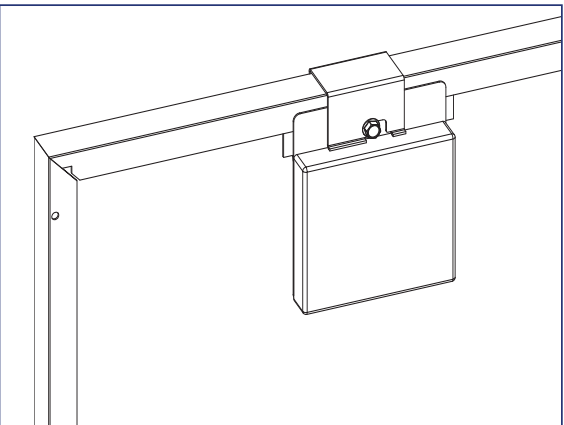


1) Locate the Enphase Frame Mount bracket clamp at a location on the module frame that will not interfere with the TopSpeed™ Mounts.




2) Slide the microinverter unit onto the bracket clamp, then move it slightly to the left.

 **Install Note:**  
The microinverter mounting flange should be on the outside of the module frame.



3) Tighten the hardware to 13 ft-lbs.

4) Connect module leads to microinverter DC connectors.

 **Install Note:**  
Refer to the Enphase Frame Mount installation guide for additional instructions.

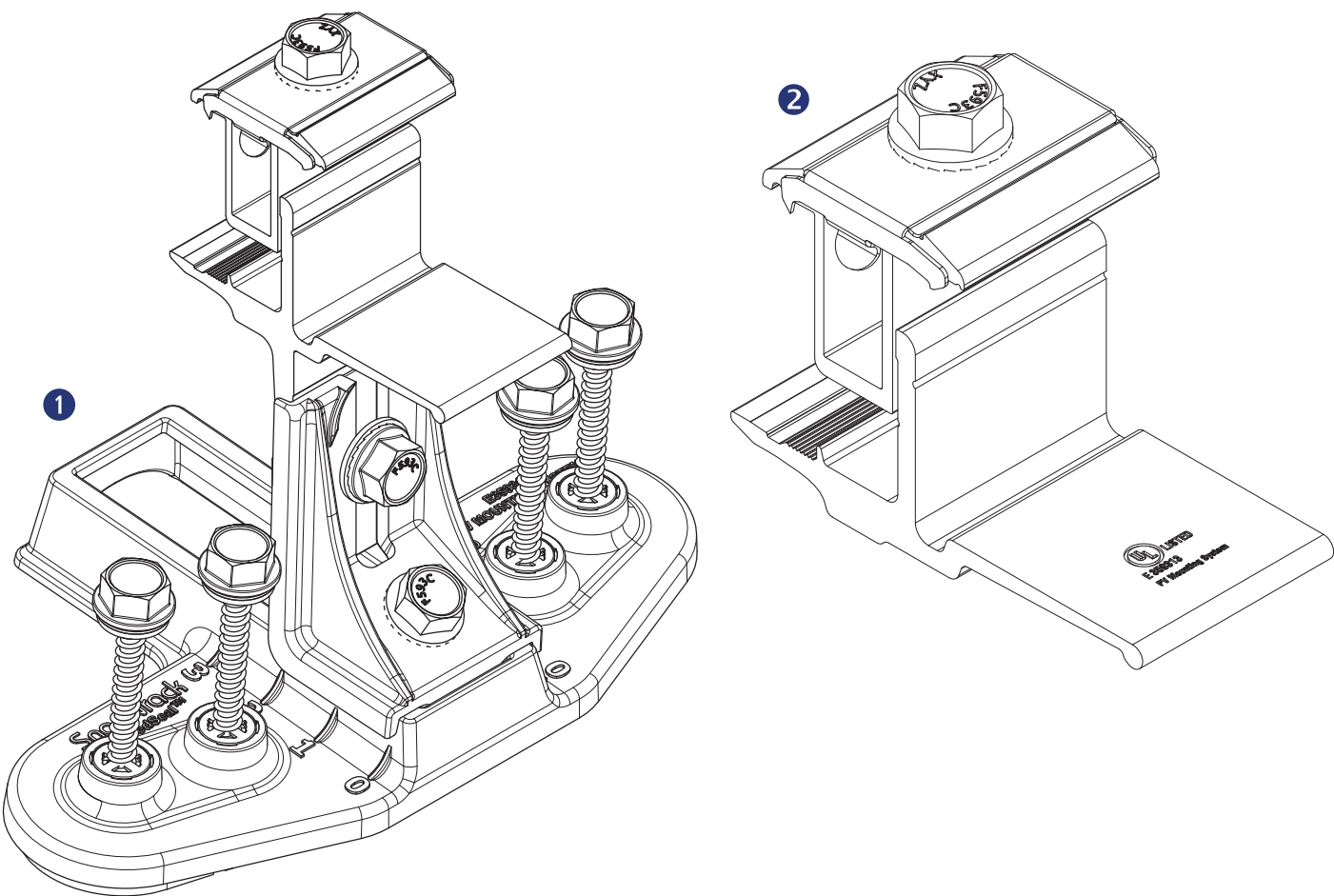
# Module Installation

## Required Tools

- Socket Wrench
- Torque Wrench
- 1/2” Socket
- Roofing Sealant

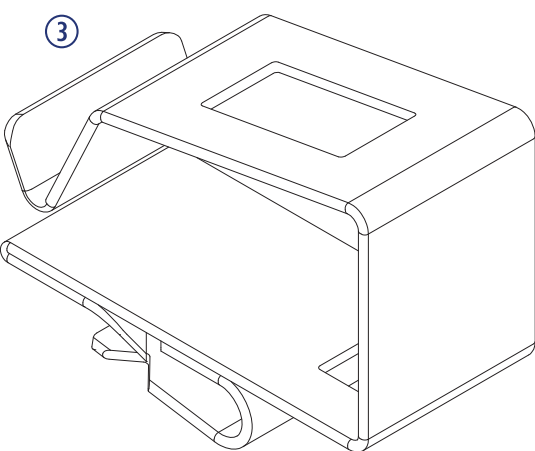
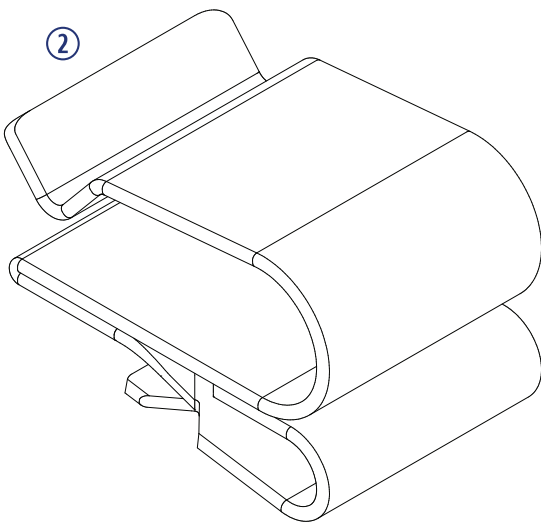
## Materials Included

- ① SnapNrack TopSpeed™ Mount
- ② SnapNrack TopSpeed™ Clamp



## Other Materials Required

- ② SnapNrack Smart Clip (2-5 per module)  
*See Wire Management section for details*
- ③ SnapNrack Smart Clip XL (10-20 per array)  
*See Wire Management section for details*



## INSTALLATION INSTRUCTIONS - BOTTOM ROW

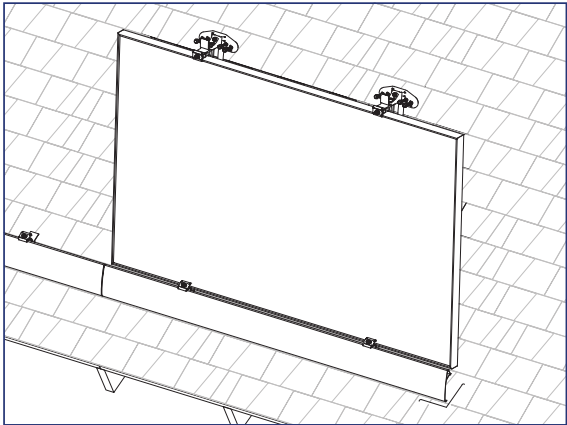
### Recommended Best Practice:

**Attach all TopSpeed™ mounts as the modules are being prepped with MLPEs on the ground. Attach Mounts before attaching MLPEs to simplify wire management.**

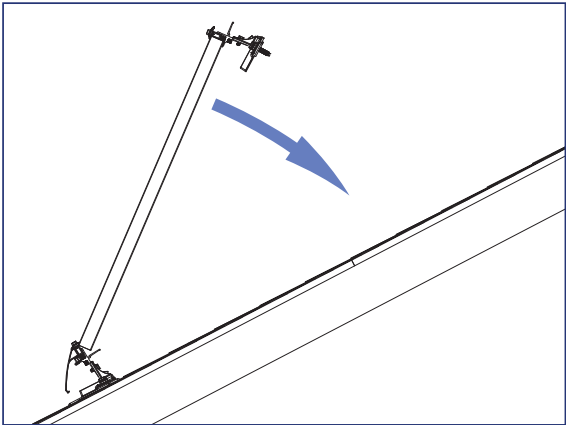
### Install Note:

It is recommended that module leads and connectors are prepared for installation using SnapNrack Smart Clips before being brought to the rooftop.

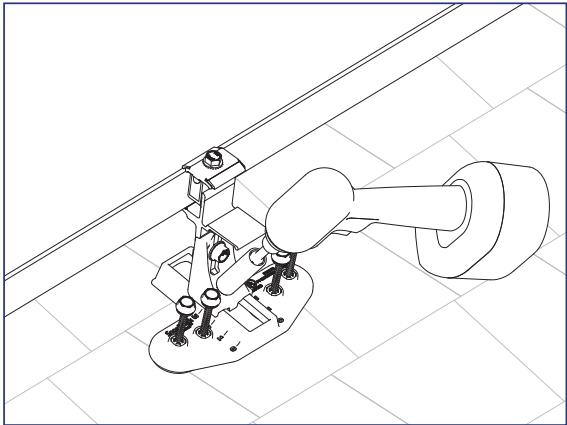
- With no MLPE, secure module leads to module frame to allow access to connectors while modules are installed
- Secure MLPE device to module frame with SnapNrack MLPE Frame Attachment Kit and connect module leads to MLPE, and manage leads by positioning connectors to allow access during installation



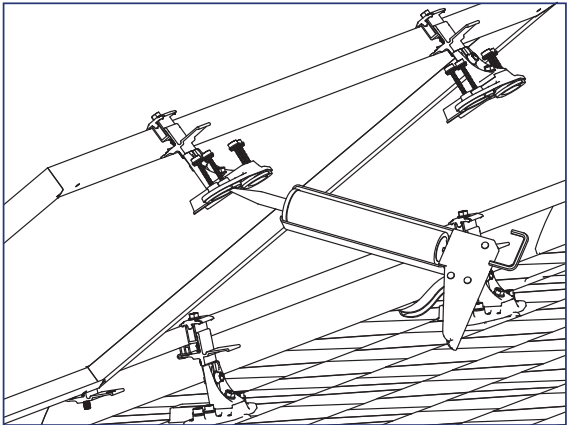
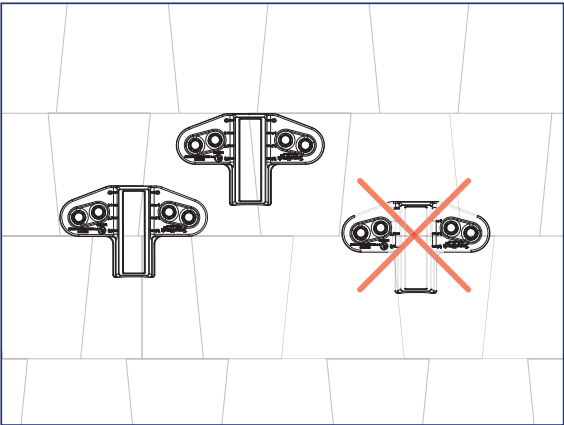
1) Rest downslope edge of module on the Mounts and/or Clamps position module so side edge is flush with marked edge of array layout or Skirt.



2) Lower upslope edge of module while simultaneously applying slight pressure to seat module into Mounts and/or Clamps.



3) When module is level with roof verify the Speedseal™ portion of the TopSpeed™ Mounts are positioned entirely on one course of composition. If required listen the 1/2" nut and adjust the base as needed then tighten the bolt.

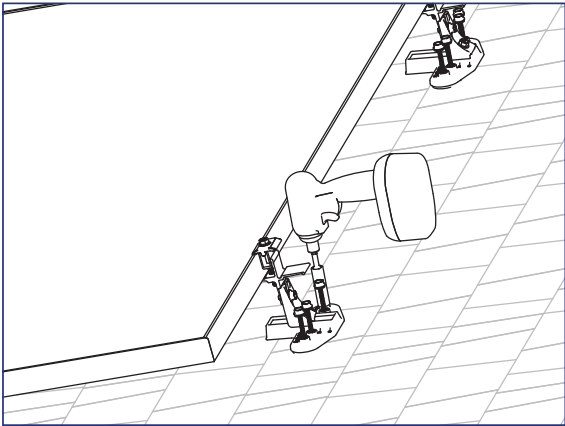


4) Lift the upslope edge of the module and fill the SpeedSeal™ reservoir with roofing sealant.

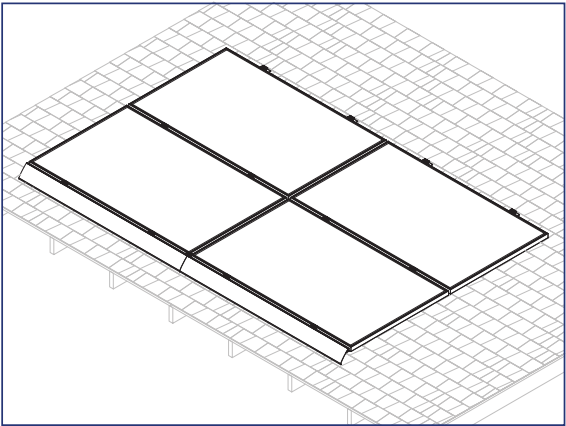
### Install Note:

Roof sealant should be expelled from both vents of the TopSpeed™ Mount as it is installed to assure the proper amount of roof sealant has been applied. If sealant is not expelled from all four vents, remove TopSpeed™ Mount, add more sealant to the cavity, then reinstall.

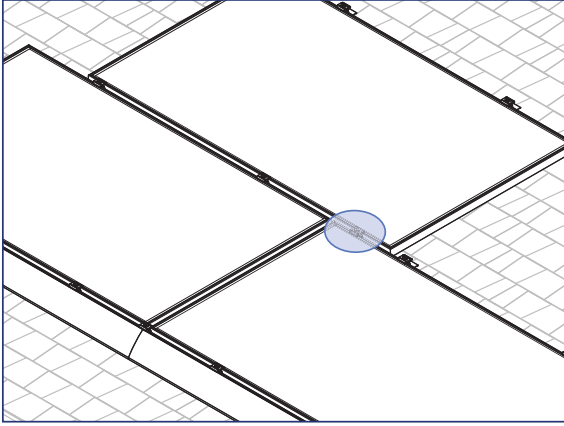
## INSTALLATION INSTRUCTIONS - BOTTOM ROW



5) Lower the module to the roof and drive the (4) pre installed Snapnrack #14 Wood Screws with 1/2" hex head into the roof sheathing.



6) Repeat steps 1 through 5 for additional modules in the array.



7) For staggered arrays and arrays with mixed orientation, use the TopSpeed™ Clamp as needed to support the modules.

### Install Note:

Roof sealant should be expelled from both vents of the TopSpeed™ Mount as it is installed to assure the proper amount of roof sealant has been applied. If sealant is not expelled from both vents, remove TopSpeed™ Mount, add more sealant to the cavity, then reinstall.

When installing a TopSpeed™ Clamp for support of an over cantilevered module, the clamp shall be installed 2-6" from the edge of the upslope (cantilevered) module.



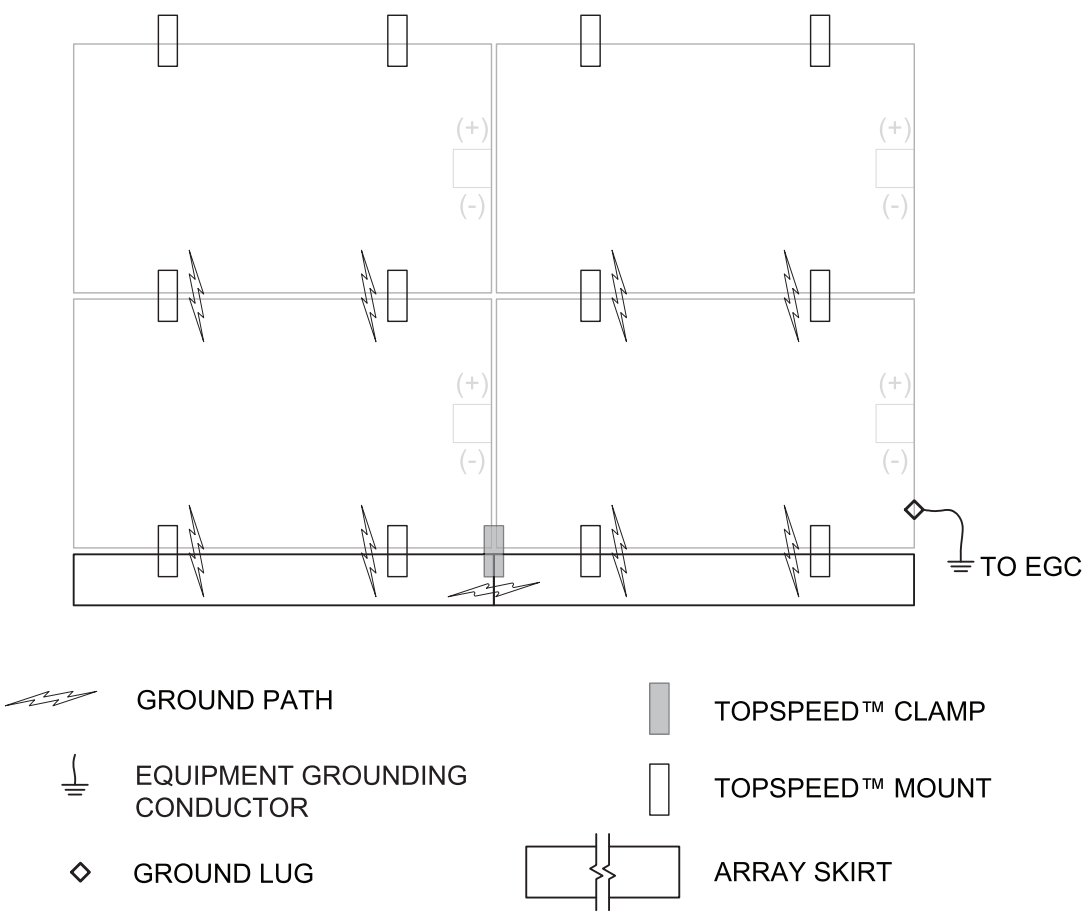
# Grounding Specifications

## GROUND PATH DETAILS

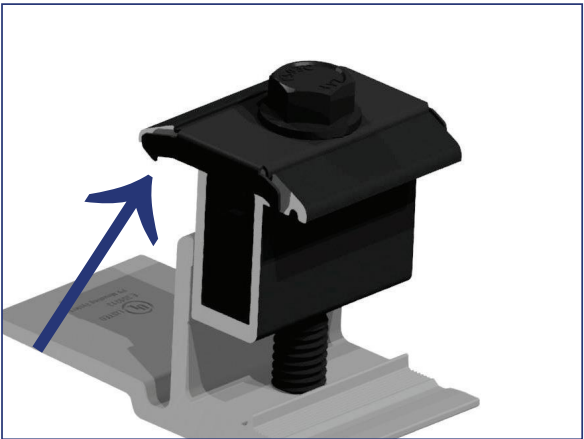
All TopSpeed™ components in the fault current ground path have been Certified to be used multiple times for grounding/bonding. The UL 2703 Listing does not specify a maximum number of uses for the Mount, Link, or Ground Lug. Review the requirements of the National Electrical Code (NEC) Article 250 to select the appropriate Equipment Grounding Conductor size based on the short-circuit current of the PV system.

When using Ground Lug R the following components are part of the fault current ground path:

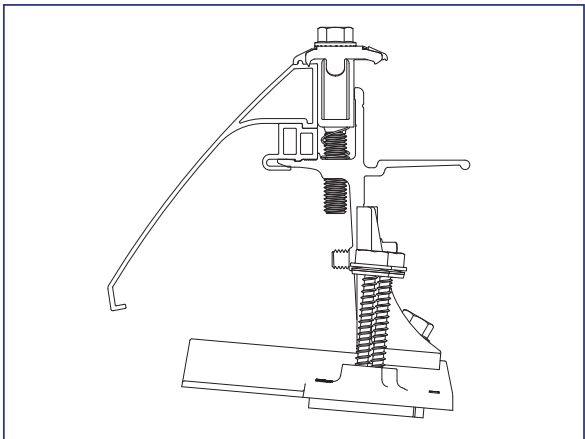
- SnapNrack, TopSpeed™ Mount
- SnapNrack, TopSpeed™ Clamp



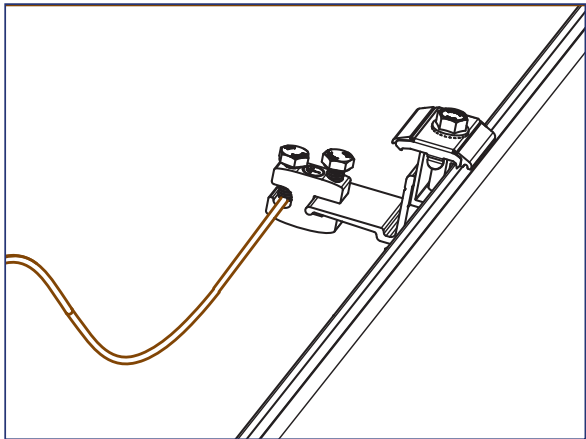
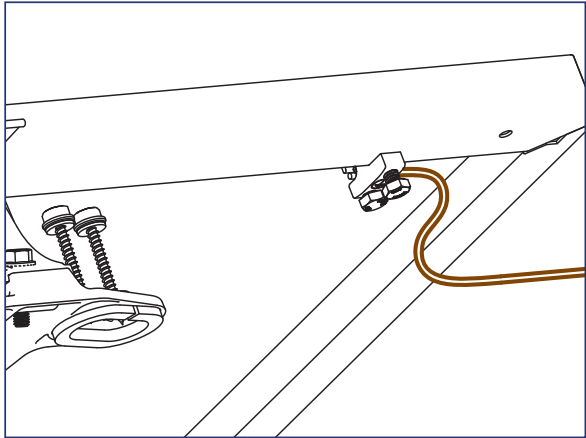
## GROUNDING METHOD DETAILS



1) Row to row module bonding provided by bonding clips in Mount assembly and Clamp assembly.

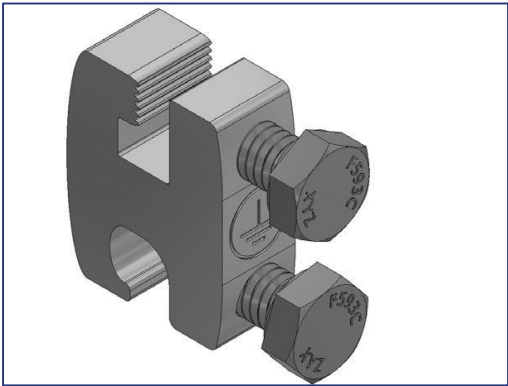


2) Column to column bonding provided by Universal Skirt and bonding clips in the Clamp assembly and/or the RL Universal Link assembly.  
Module heights evaluated for bonding with Link Bonding Clamps: 40mm, 38mm, 35mm, 32mm, 30mm



3) Each continuous array is connected to Equipment Grounding Conductor through Ground Lug (242-92202) installed on one module per array.

Optionally; Install Ground Lug on the Mount Landing Pad at the top of the array.



## GROUNDING MARKING DETAILS

The Ground Lug is marked with the ground symbol.

# Maintaining the Grounding Bonding When Removing a Module

## INSTRUCTION FOR MAINTAINING THE GROUNDING BONDING WHEN REMOVING A MODULE FOR SERVICING

**CAUTION:** Module removal may disrupt the bonding path and could introduce the risk of electric shock. Additional steps may be required to maintain the bonding path. Modules should only be removed by qualified persons in compliance with the instructions in this manual.

Module removal is not presented as a frequently expected occurrence and will not be required as part of routine maintenance.

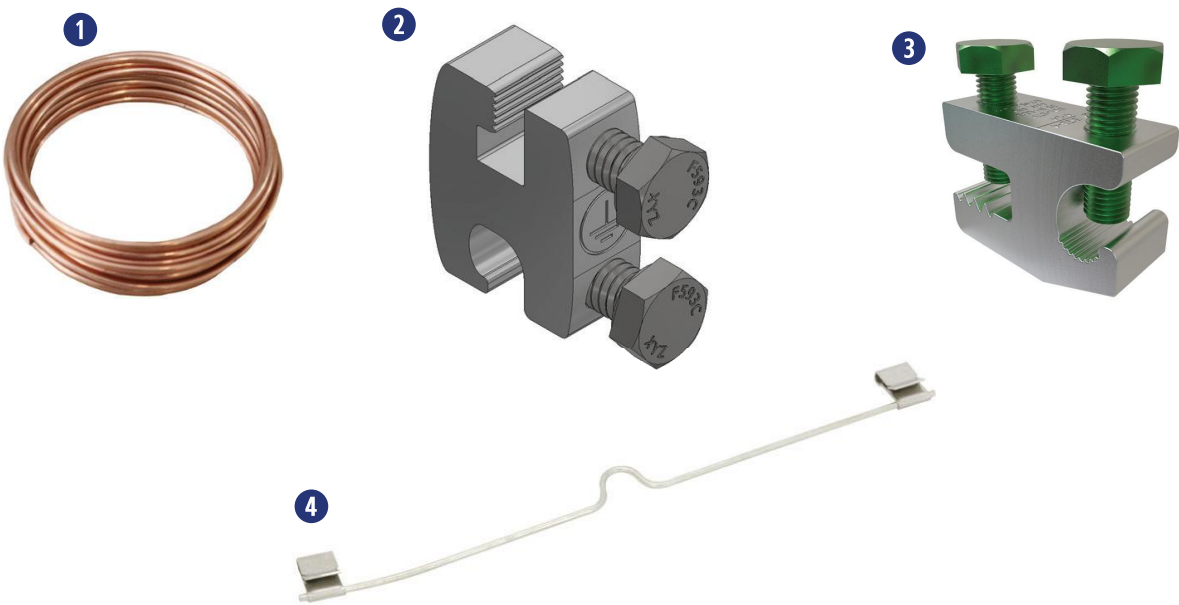
Scenarios that could result in a disruption of the bonding path are described, for example irregularly-shaped arrays, arrays consisting of individual rows, and any other scenario where module removal could disrupt the bonding path. In most cases, the removal of a module for servicing will not disturb or break grounding continuity. If a module is to be removed that will break continuity, these are the steps that must be taken to maintain a continuously bonded SnapNrack TopSpeed™ System.

### Required Tools

- Socket Wrench
- Torque Wrench
- 1/2” Socket
- 7/16” Socket

### Required Materials

- ① #10 Or Larger Bare Copper Conductor
- ② SnapNrack Ground Lug part no. 242-92202
- ③ Ilsco Part No. SGB-4
- ④ DnoRaxx Dynobond™

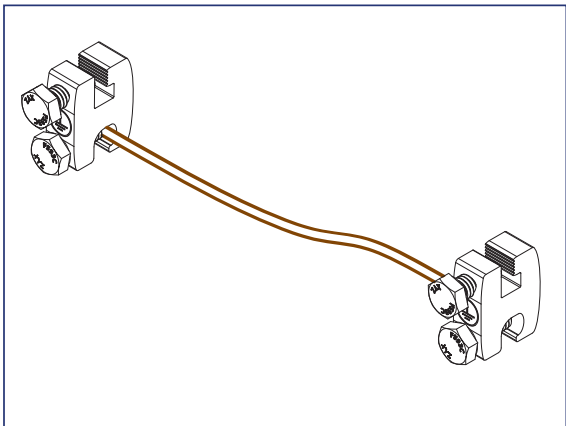


# Maintaining the Grounding Bonding When Removing a Module

## JUMPER ASSEMBLY INSTRUCTION & INSTALLATION

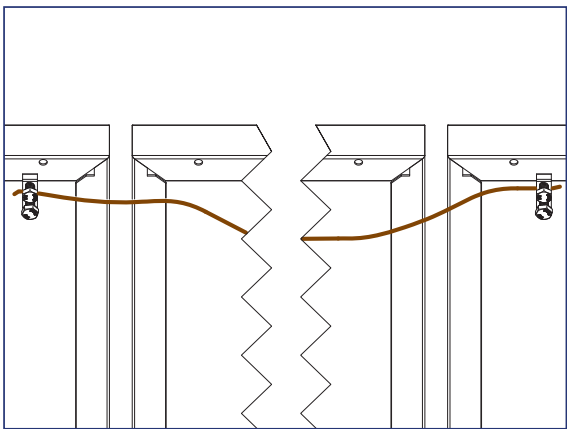
**CAUTION:** Do Not Remove the Module until the Jumper is installed

1) Identify the existing ground path at the location of module removal and choose an appropriate length of #10 bare copper to bridge the soon to be broken ground path.



*Example of assembled bonding jumper using (2) SnapNrack Ground Lugs*

- 2) Attach one ground lug to each end of #10 bare copper wire. See recommended options below:
1. (2) SnapNrack Ground Lug part no. 242-922022
  2. (2) Ilsco part no. SGB-4
  3. (1) DroRaxx DynoBond™



3) Before the module is removed, attach the assembled bonding jumper. Depending on where the module will be removed and choice of ground lug, jumper attachment locations will vary.

- SnapNrack Ground Lug part no. 242-92202 or Ilsco SGB-4 lugs can be attached to module frames or anywhere on the TopSpeed™ Mount.
- DynoRaxx DynoBond™ is approved and appropriate when a short bonding jumper is needed from module to module.

4) Service the array. With the bonding jumper installed, it is now safe to remove the module for service or maintenance.

5) After Servicing the array reinstall the module and original ground path. Only then Remove the bonding jumper.

**Caution:** Do not remove the bonding jumper until original ground path is established.

APPROVED MODULE & MLPE INFORMATION

SnapNrack TopSpeed™ System has been tested with the following UL Listed module series: The SnapNrack TopSpeed™ System employs top-down clamps and links which have been evaluated for frame-to-system bonding, at specific mounting torques and with the specific module series listed below. All wattage values are covered.

Module manufacturer approval letters can be found at [www.snapnrack.com](http://www.snapnrack.com).

Manufacturer	Model	
Aptos Solar	DNA-120-MF23-XXX	DNA-120-BF26-XXXW
	DNA-120-BF23-XXX	DNA-144-BF26-XXXW
	DNA-144-MF23-XXX	DNA-108-BF10-xxxW
	DNA-144-BF23-XXX	DNA-120-BF10-xxxW
	DNA-120-MF26-XXXW	DNA-108-MF10-xxxW
	DNA-144-MF26-XXXW	
Boviet Solar	BVM7612M-XXX-H-HC-BF-DG	
Canadian Solar	CS6K-XXX-M	CS1H-XXX-MS
	CS6K-XXX-M-SD	CS1H-XXX-MS-AB
	CS6K-XXX-P	CS3W-XXX-P
	CS6K-XXX-P-SD	CS3N-XXX-MS
	CS6K-XXX-MS	CS1Y-XXX-MS
	CS3K-XXX-P	CS3W-MB-AG
	CS3K-XXX-MS	CS3Y-MB-AG
	CS3U-XXX-MS	CS6W-XXXMB-AG
	CS3U-XXX-P	CS6R-XXXMS-HL
	CS1K-XXX-MS	CS3W-XXX-MS
CertainTeed	CTXXXHC11-06	
Chint Solar	CHSM6612M-XXX	CHSM72M-HC-XXX* (Astro 4)
	CHSM6612M(BL)-XXX	CHSM72M-HC-XXX* (Astro 5)
	CHSM6612M/HV-XXX	
Dehui Solar	DH-M760B-XXXW	DH-M760F-XXXW
	DH-M760W-XXXW	DH-M772F-XXXW
	DH-M772W-XXXW	
Freedom Forever	FF-MP-BBB-xxx	
Hanwha Q Cells	Q.PEAK DUO-G5-XXX	Q.PEAK DUO G10-XXX
	Q.PEAK DUO-BLK-G5-XXX	Q.PEAK DUO BLK G10-XXX
	Q.PLUS DUO-G5-XXX	Q.PEAK DUO G10+-XXX
	Q.PEAK DUO-G7-XXX	Q.PEAK DUO BLK G10+-XXX
	Q.PEAK DUO-BLK-G7-XXX	Q.PEAK DUO XL-G10.3-XXX
	Q.PEAK DUO-G7.2-XXX	Q.PEAK DUO XL-G10.c-XXX
	Q.PEAK DUO-G6+-XXX	Q.PEAK DUO XL-G10.d-XXX
	Q.PEAK DUO-BLK-G6+-XXX	Q.PEAK DUO L-G8.3/BFG-XXX
	Q.PEAK DUO-G6-XXX	Q.PEAK DUO L-G8.3/BGT-XXX
	Q.PEAK DUO-BLK-G6-XXX	Q.PEAK DUO ML-G10-XXX
	Q.PEAK DUO-G8+-XXX	Q.PEAK DUO BLK ML-G10+-XXX
	Q.PEAK DUO-BLK-G8+-XXX	Q.PEAK DUO ML-G10+-XXX



Manufacturer	Model	
Hanwha Q Cells	Q.PEAK DUO-G8-XXX	Q.PEAK DUO BLK ML-G10-XXX
	Q.PEAK DUO-BLK-G8-XXX	Q.PEAK DUO ML-G10.a+-XXX
	Q.PEAK DUO BLK-G6+/AC-XXX	Q.PEAK DUO BLK ML-G10.a+-XXX
	Q.PEAK DUO-ML-G9-XXX	Q.PEAK DUO ML-G10.a-XXX
	Q.PEAK DUO-BLK-ML-G9-XXX	Q.PEAK DUO BLK ML-G10.a-XXX
	Q.PEAK DUO-BLK-G9-XXX	Q.PEAK DUO BLK G10+/AC XXX
	Q.PEAK DUO-BLK-ML-G9+-XXX	Q.PEAK DUO BLK G10+/HL XXX
	Q.PEAK DUO-ML-G9+-XXX	Q.PEAK DUO BLK ML-G10+/t-XXX
	Q.PEAK DUO-BLK-ML-G9+-XXX	Q.PEAK DUO XL-G11.3 XXX
	Q.PEAK DUO XL-G9.2-XXX	Q.PEAK DUO XL-G11.3 BFG XXX
	Q.PEAK DUO XL-G9.3-XXX	Q.TRON-G1+ XXX
	Q.PEAK DUO XL-G9.3/BFG-XXX	Q.TRON BLK-G1+ XXX
	Q.PEAK DUO XL-G10.2-XXX	Q.TRON M-G2+ XXX
	Q.PEAK DUO XL-G10.3/BFG-XXX	Q.TRON BLK M-G2+ XXX
HT-SAAE	HT60-166M-XXX	HT60-182M-XXX
Heliene	60M-XXX	72M-XXX
	60P-XXX	72P-XXX
"Hyundai (All may be followed by "BK")"	HiA-SXXXMS	HiS-SXXXYI
	HiS-SXXXXY	HiS-SXXXXYH(BK)
	HiN-SxxxXG(BK)	
Hyperion/Runergy	HY-DH108P8-XXX(Y)	HY-DH144N8-XXX
	HY-DH144P8-XXX	HY-DH108N8-XXX
JA Solar	JAM60S09-XXX/PR	JAM72S10-XXX/PR
	JAM60S10-XXX/MR	JAM72S12-XXX/PR
	JAM60S10-XXX/PR	JAM60S17-XXX/MR
	JAM60S12-XXX/PR	JAM54S30-XXX/MR
	JAM72S09-XXX/PR	JAM54S31-XXX/MR
	JAM72S10-XXX/MR	JAM72D30-XXX/MB
Jinko Solar	JKMXXXM-60	JKMXXXP-72-V
	JKMXXXM-60L	JKMXXXPP-72
	JKMXXXM-60HL	JKMXXXPP-72-V
	JKMXXXM-60HBL	JKMSXXXP-72
	JKMXXXP-60	JKMXXXM-72HL-V
	JKMXXXP-60-J4	JKMXXXM-72HL-TV
	JKMXXXP-60-V	JKMXXXM-72HBL
	JKMXXXP-60B-J4	JKMXXXM-6TL3-B
	JKMXXXPP-60	JKMXXXM-6RL3-B
	JKMXXXPP-60-V	JKMXXXM-7RL3-V
	JKMXXXM-72	JKMXXXM-7RL3-TV
	JKMXXXM-72L-V	JKMXXXM-72HL4-V
	JKMXXXP-72	JKMXXXM-72HL4-TV
LG	LGXXXN1C-A5	LGXXXA1C-V5
	LGXXXN1K-A5	LGXXXM1C-L5
	LGXXXQ1C-A5	LGXXXM1K-L5
	LGXXXQ1K-A5	LGXXXN1C-N5

Manufacturer	Model	
LG	LGXXXS1C-A5	LGXXN1K-L5
	LGXXN2C-B3	LGXXN1K-A6
	LGXXN2W-B3	LGXXN1C-A6
	LGXXN1C-G4	LGXXN1W-A6
	LGXXN1K-G4	LGXXQ1C-A6
	LGXXS1C-G4	LGXXQ1K-A6
	LGXXN2C-G4	LGXXM1K-A6
	LGXXN2K-G4	LGXXM1C-A6
	LGXXN2W-G4	LGXXA1C-A6
	LGXXS2C-G4	LGXXQAC-A6
	LGXXS2W-G4	LGXXQAK-A6
	LGXXN1C-V5	LGXXN1K-B6
	LGXXN1W-V5	LGXXN2W-E6
	LGXXN2T-V5	LGXXN2T-E6
	LGXXN2T-J5	LGXXN1K-E6
	LGXXN1T-V5	LGXXN3K-V6
Longi	LR6-60-XXXM	LR4-60HPB-XXXM
	LR6-60BK-XXXM	LR4-60HIB-XXXM
	LR6-60HV-XXXM	LR4-60HPH-XXXM
	LR6-60PB-XXXM	LR4-60HIH-XXXM
	LR6-60PE-XXXM	LR6-60HIH-XXXM
	LR6-60PH-XXXM	LR6-60HIB-XXXM
	LR6-60HPB-XXXM	LR4-72HPH-XXXM
	LR6-60HPH-XXXM	
Meyer Burger	Meyer Burger Black*	Meyer Burger White*
mSolar	TXI6-XXX120BB	
Mission Solar	MSEXXS05T	MSEXXSQ4S
	MSEXXS05K	MSEXXS8K
	MSEXXSQ5T	MSEXXS8T
	MSEXXSQ5K	MSEXXS9S
	MSEXXM4J	MSE60AXXX
	MSEXXM6J	MSEXXSX5K
	MSEXXS06W	MSEXXSX5T
	MSEXXS04J	MSEXXSX6S
	MSEXXS06J	MSEXXSX6W
	MSEXXSQ6S	MSEXXSX5R
Next Energy Alliance	USNEA-XXXM3-60	USNEA-XXXM3-72
	USNEA-XXXM3B-60	USNEA-XXXM3B-72
Panasonic	VBHNXXXKA03	VBHXXXRA18N
	VBHNXXXKA04	VBHXXXRA03K
	VBHNXXXSA17	EVPVXXX(K)
	VBHNXXXSA18	EVPVXXXH
	VBHN325SA17E	EVPVXXXPK

# Appendix A

Manufacturer	Model	
Philadelphia Solar	PS-M144(HCBF)-XXXW	PS-M108(HC)-XXXW
	PS-M108(HCBF)-XXXW	
Phono Solar	PSXXXM-20/U	PSxxxM8GF-18/VH
	PSXXXMH-20/U	PSxxxM8GFH-18/VH
	PSxxxM8GF-24/TH	PSxxxM6-24/TH
	PSxxxM8GFH-24/TH	
REC (All may be followed by “BLK” or “BLACK”)	RECXXTP2	RECXXTP2SM 72 BLK2
	RECXXTP2-BLK	RECXXAA
	RECXXNP	RECXXTP3M
	RECXXTP2M	RECXXTP4
	RECXXTP2M 72	RECXXAA Pure
	RECXXTP2M 72 BLK	RECXXAA Pure-R
	RECXXTP2M 72 BLK2	RECXXNP2
	RECXXTP2SM 72	RECXXNP3
	RECXXTP2SM 72 BLK	
SEG Solar	SEG-400-BMB-HV	SEG-xxx-BMD-HV
	SEG-400-BMB-TB	SEG-xxx-BMD-TB
Silfab	SLAXXX-M	SILXXXNT
	SLAXXX-P	SILXXXHL
	SSAXXX-M	SILXXXBK
	SSAXXX-P	SILXXXNX
	SILXXXBL	SILXXXNU
	SILXXXML	SILXXXHC
	SILXXXNL	SILXXXHN
	SLGXXX-M	SILXXXBG
	SLGXXX-P	SIL-xxxHC+
	SSGXXX-M	SIL-xxxHM
	SSGXXX-P	
Solaria	Solaria PowerXT-XXXR-PX	Solaria PowerXT-XXXR-PM
	Solaria PowerXT-XXXR-BX	Solaria PowerXT-XXXR-PM-AC
	Solaria PowerXT-XXXR-AC	
Sunpower	SPR-AXXX-G-AC	SPR-MXXX-H-AC
	SPR-AXXX	SPR-MXXX
	SPR-AXXX-BLK-G-AC	SPR-MXXX-BLK-H-AC
	SPR-AXXX-BLK	SPR-MXXX-BLK
SunSpark	SST-XXXM3-60	SST-XXXM3-72
	SST-XXXM3B-60	SST-XXXM3B-72
Talesun	TP660M-XXX	TP672M-XXX
	TP660P-XXX	TP672P-XXX
Thornova	TS-BB54(XXX)	TS-BG60(XXX)
	TS-BB60(XXX)	TS-BG72(XXX)
	TS-BG54(XXX)	

Manufacturer	Model	
Trina	TSM-XXXDD05(II)	TSMXXXDD05H.05(II)
	TSM-XXXDD05A.05(II)	TSM-XXXDD06M.05(II)
	TSM-XXXDD05A.08(II)	TSM-XXXDE15H(II)
	TSM-XXXDD05A.082(II)	TSM-XXXDE15M(II)
	TSM-XXXPA05	TSMXXXDE06X.05(II)
	TSM-XXXPA05.05	TSMXXXDE09.05
	TSM-XXXPA05.08	TSM-XXXDE15V(II)
	TSM-XXXPD05	TSM-XXXDEG15VC.20(II)
	TSM-XXXPD05.002	TSM-XXXDEG18MC.20(II)
	TSM-XXXPD05.05	TSM-XXXDEG19C.20
	TSM-XXXPD05.05S	TSM-XXXDEG21C.20
	TSM-XXXPD05.08	TSM-XXXDE09C.05
	TSM-XXXPD05.082	TSM-XXXDE09C.07
	TSM-XXXPD05.08D	TSM-xxxNE09RC.05
	TSM-XXXPD05.08S	
Vikram Solar	SOMERA VSMHBB.60.XXX.05	PREXOS VSMDHT.60.XXX.05
	SOMERA VSMH.72.XXX.05	PREXOS VSMDHT.72.XXX.05
VSUN	VSUNXXX-144BMH-DG	VSUNXXX-108BMH
	VSUNXXX-120BMH	
ZNShine	ZXM6-60-XXX/M	ZXM6-NH144-XXXM
	ZXM6-NH120-XXXM	ZXM7-SH108-XXXM
	ZXM7-SHLDD144-XXXM	

**SnapNrack TopSpeed™ has been tested with the following Module Level Power Electronic (MLPE) devices:**

SnapNrack TopSpeed™ mounting systems has been tested with the following UL/NRTL Listed Module Level Power Electronic (MLPE) Devices. The back plates of the MLPEs have been evaluated for bonding to TopSpeed™ through the SnapNrack MLPE Frame Attachment Kit, model 242-02151.

MLPE Manufacturer	Model	
AP Smart	RSD-S-PLC	
Celestica International	DG-006-F001201x	DG-006-F001401x
Delta Electronics	GPI00010105	
Enphase	C250	IQ7PLUS-72-2-US
	M215	IQ7PLUS-72-B-US
	M250	IQ8-60
	IQ6-60-2-US	IQ8PLUS-72
	IQ6PLUS-72-2-US	IQ8A-72
	IQ7-60-2-US	IQ8H-208-72
	IQ7-60-B-US	IQ8H-240-72
Generec	S2502	
Ginlong Technologies	Solis-RSD-1G	
	Solis-MLRSD-R1-1G	Solis-MLRSD-R2-1G

MLPE Manufacturer	Model	
SolarEdge	P300-5NC4ARS	P320-5NC4ARS
	P370-5NC4AFS	P400-5NC4AFS
	P320	P340
	P370	P400
	P401	P405
	P485	P505
	P730	P800p
	P850	P860
	P950	P1100
	P1101	S440
	S500	
SMA	RSB-2S-US-10	
Tigo	TS4-R-F	TS4-R-M
	TS4-R-O	TS4-R-S
	TS4-R-M-DUO	TS4-R-O-DUO
	TS4-R-S-DUO	TS4-A-F
	TS4-A-2F	TS4-A-O
	TS4-A-S	



# Q.TRON BLK M-G2+ SERIES



415 - 440 Wp | 108 Cells  
22.5 % Maximum Module Efficiency

MODEL Q.TRON BLK M-G2+



### High performance Qcells N-type solar cells

Q.ANTUM NEO Technology with optimized module layout boosts module efficiency up to 22.5 %.



### A reliable investment

Inclusive 25-year product warranty and 25-year linear performance warranty<sup>1</sup>.



### Enduring high performance

Long-term yield security with Anti LeTID Technology, Anti PID Technology<sup>2</sup>, Hot-Spot Protect.



### Extreme weather rating

High-tech aluminium alloy frame, certified for high snow (8100 Pa) and wind loads (3600 Pa).



### Innovative all-weather technology

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



### The most thorough testing programme in the industry

Qcells is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

#### The ideal solution for:



Rooftop arrays on residential buildings



**REVIEWED**  
By Dan Bruechert at 1:40 pm, May 20, 2025

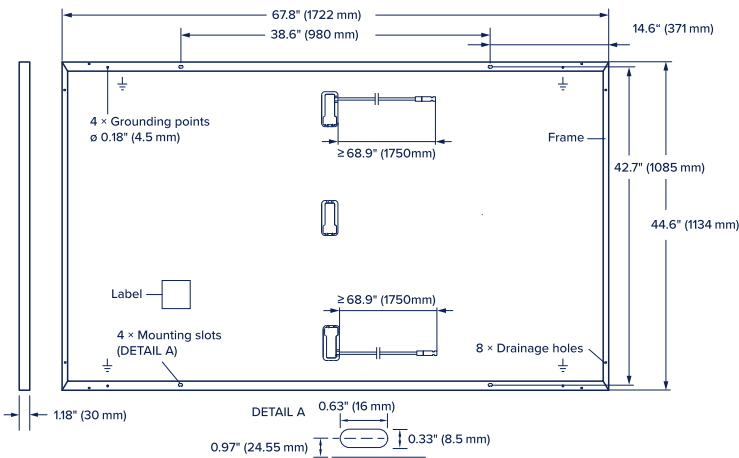
For further information, please contact your local Qcells representative or visit our website according to IEC/TS 62804-1:2015, method A (~1500 V, 96 h)



# Q.TRON BLK M-G2+ SERIES

## Mechanical Specification

Format	67.8 in × 44.6 in × 1.18 in (including frame) (1722 mm × 1134 mm × 30 mm)
Weight	46.7 lbs (21.2 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 18 monocrystalline Q.ANTUM NEO solar half cells
Junction box	2.09-3.98 in × 1.26-2.36 in× 0.59-0.71 in (53-101mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm <sup>2</sup> Solar cable; (+) ≥68.9 in (1750mm), (–) ≥68.9 in (1750mm)
Connector	Stäubli MC4; IP68



## Electrical Characteristics

POWER CLASS				415	420	425	430	435	440
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5 W / −0 W)									
Minimum	Power at MPP <sup>1</sup>	P <sub>MPP</sub>	[W]	415	420	425	430	435	440
	Short Circuit Current <sup>1</sup>	I <sub>SC</sub>	[A]	13.49	13.58	13.66	13.74	13.82	13.90
	Open Circuit Voltage <sup>1</sup>	V <sub>OC</sub>	[V]	38.47	38.75	39.03	39.32	39.60	39.88
	Current at MPP	I <sub>MPP</sub>	[A]	12.83	12.91	12.98	13.05	13.13	13.20
	Voltage at MPP	V <sub>MPP</sub>	[V]	32.34	32.54	32.74	32.94	33.14	33.33
	Efficiency <sup>1</sup>	η	[%]	≥21.3	≥21.5	≥21.8	≥22.0	≥22.3	≥22.5
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT <sup>2</sup>									
Minimum	Power at MPP	P <sub>MPP</sub>	[W]	313.7	317.5	321.2	325.0	328.8	332.6
	Short Circuit Current	I <sub>SC</sub>	[A]	10.87	10.94	11.00	11.07	11.14	11.20
	Open Circuit Voltage	V <sub>OC</sub>	[V]	36.50	36.77	37.04	37.31	37.58	37.84
	Current at MPP	I <sub>MPP</sub>	[A]	10.10	10.15	10.21	10.27	10.33	10.38
	Voltage at MPP	V <sub>MPP</sub>	[V]	31.07	31.26	31.46	31.65	31.84	32.03

<sup>1</sup>Measurement tolerances P<sub>MPP</sub> ±3%; I<sub>SC</sub>; V<sub>OC</sub> ±5% at STC: 1000 W/m<sup>2</sup>, 25 ±2 °C, AM 1.5 according to IEC 60904-3 • <sup>2</sup>800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5

### Qcells PERFORMANCE WARRANTY

At least 98.5% of nominal power during first year. Thereafter max. 0.33% degradation per year. At least 95.53% of nominal power up to 10 years. At least 90.58% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Qcells sales organisation of your respective country.

\*Standard terms of guarantee for the 5 PV companies with the highest production capacity in 2021 (February 2021)

### PERFORMANCE AT LOW IRRADIANCE

Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m<sup>2</sup>).

TEMPERATURE COEFFICIENTS							
Temperature Coefficient of I <sub>SC</sub>	α	[%/K]	+0.04	Temperature Coefficient of V <sub>OC</sub>	β	[%/K]	–0.24
Temperature Coefficient of P <sub>MPP</sub>	γ	[%/K]	–0.30	Nominal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3 °C)

## Properties for System Design

Maximum System Voltage	V <sub>sys</sub>	[V]	1000 (IEC)/1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating		[A DC]	25	Fire Rating based on ANSI/UL 61730	C / TYPE 2
Max. Design Load, Push / Pull <sup>3</sup>		[lbs / ft <sup>2</sup> ]	113 (5400 Pa) / 50 (2400 Pa)	Permitted Module Temperature on Continuous Duty	–40 °F up to +185 °F (–40 °C up to +85 °C)
Max. Test Load, Push / Pull <sup>3</sup>		[lbs / ft <sup>2</sup> ]	169 (8100 Pa) / 75 (3600 Pa)		

<sup>3</sup> See Installation Manual

## Qualifications and Certificates

Quality Controlled PV -  
TÜV Rheinland;  
IEC 61215:2016;  
IEC 61730:2016.  
This data sheet complies  
with DIN EN 50380.



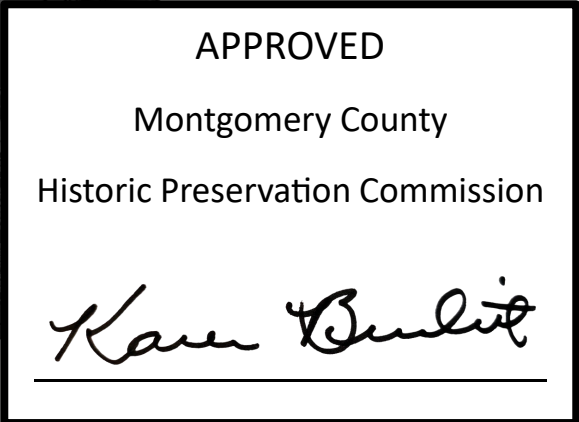
\*UL and California Energy Commission (CEC) listings pending



Qcells pursues minimizing paper output in consideration of the global environment.

Note: Installation instructions must be followed. Contact our technical service for further information on approved installation of this product.  
Hanwha Q CELLS America Inc. 400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL hqc-inquiry@qcells.com | WEB www.qcells.com





REVIEWED

By Dan Bruechert at 1:39 pm, May 20, 2025

# IQ8 and IQ8+ Microinverters

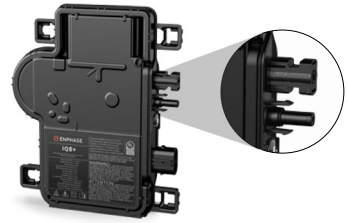
Our newest IQ8 Microinverters are the industry’s first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast 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 Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



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.



Connect PV modules quickly and easily to the IQ8 Series Microinverters that has Integrated MC4 connectors.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer’s instructions.

## Easy to install

- Lightweight and compact with plug-n-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

- Complies 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-SB) requirements

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IQ8SP-MC4-DS-0002-02-EN-US-2022-08-23

\* Only when installed with IQ System Controller 2, meets UL 1741.

\*\* IQ8 and IQ8Plus support split phase, 240V installations only.



# IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-M-US	IQ8PLUS-72-M-US
Commonly used module pairings <sup>1</sup>	W	235 – 350	235 – 440
Module compatibility		60-cell / 120 half-cell	60-cell / 120 half-cell, 66-cell / 132 half-cell and 72-cell / 144 half-cell
MPPT voltage range	V	27 – 37	29 – 45
Operating range	V	25 – 48	25 – 58
Min / Max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current <sup>2</sup> [module I <sub>sc</sub> ]	A	15	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration		1 x 1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		IQ8-60-M-US	IQ8PLUS-72-M-US
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage / range <sup>3</sup>	V	240 / 211 – 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 – 68	
AC short circuit fault current over 3 cycles	Arms	2	
Max units per 20 A (L-L) branch circuit <sup>4</sup>		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	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		Stäubli MC4	
Dimensions (H x W x D)		212 mm (8.3”) x 175 mm (6.9”) x 30.2 mm (1.2”)	
Weight		1.1 kg (2.43 lbs)	
Cooling		Natural convection – no fans	
Approved for wet locations		Yes	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
		CA Rule 21 (UL 1741-SB), UL 62109-1, UL1741 / IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN / CSA-C22.2 NO. 107.1-01	
Certifications		This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer’s instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility>.

(2) Maximum continuous input DC current is 10.6A. (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-MC4-DS-0002-02-EN-US-2022-08-23

# DAVID C. HERNANDEZ, PE

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

DATE: April 7, 2025

RE: 232 Park Ave, Takoma Park, MD 20912, USA

To Whom It May Concern,

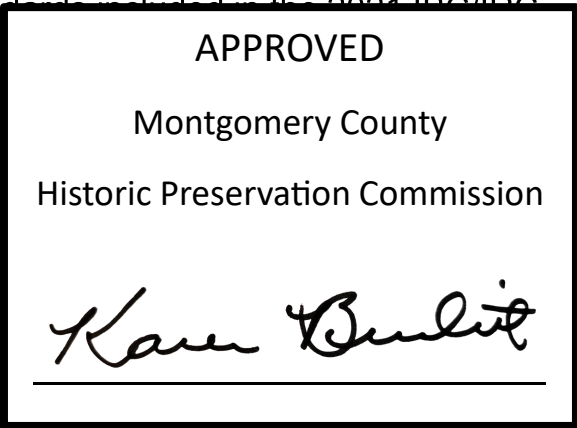
As per your request, Exactus Energy has inspected the structure and has conducted a structural assessment of the building at the above address.

PV solar panels are proposed to be installed on roof areas as shown in the submitted plans. The panels are clamped and attached to the roof decking with a rail-less mounting system. 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 including the 2004 IRC/IBC 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	= 9 psf
Solar system dead load	= 3 psf



REVIEWED  
By Dan Bruechert at 1:39 pm, May 20, 2025

Overall, the roof area is structurally adequate to support the PV.

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:

David C. Hernandez, PE



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, PE

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


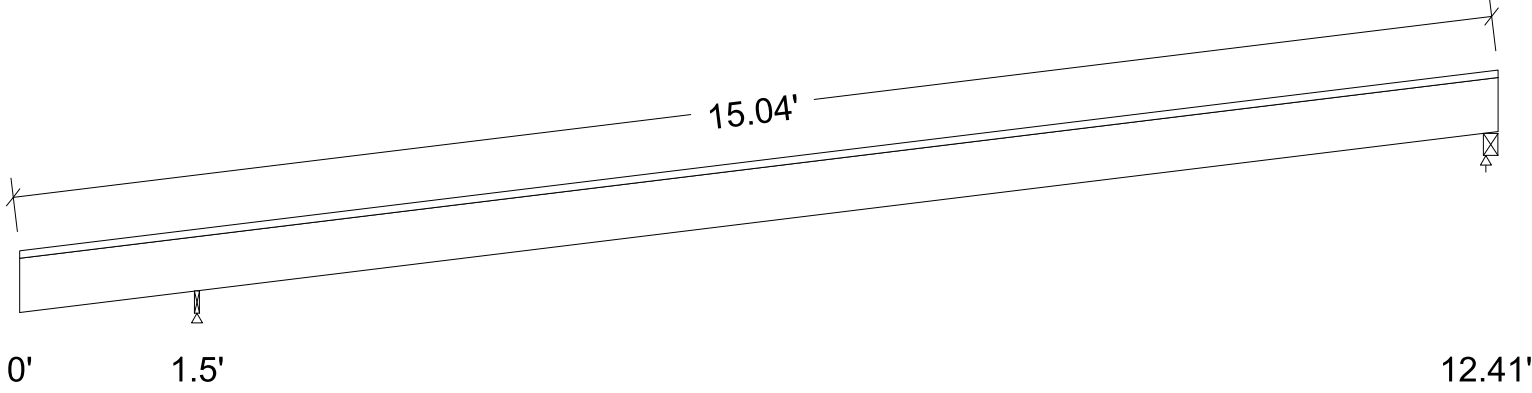
## SEISMIC CHECK

Breakdown of Loads		
Asphalt Shingles:	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	1832.00	16488
Exterior Walls	8	2737.50	21900
Interior Walls	6	2737.50	16425
Existing Seismic Weight @Roof Level, We =			54813

New PV System Seismic Weight			
Element	Unit Weight (psf)	Area (Sq.ft)	Weight (lbs)
Pv System	3	483.00	1449.00
Seismic Weight of New PV System, Wpv =			1449.00

% Increase in Lateral (Seismic) Weight @Roof Level Due to PV System Addition, %-increase = Wpv / We	2.64% < 10% - Pass
--	--------------------

<div><div></div><div><div>WoodWorks®</div><div>SOFTWARE FOR WOOD DESIGN</div></div></div>	<div>COMPANY</div> <div>Apr. 7, 2025 07:48</div>	<div>PROJECT</div> <div>232 Park Ave - Roof 1.wwb</div>																																																																																																									
<div>Design Check Calculation Sheet</div> <div>WoodWorks Sizer 13.2.1</div>																																																																																																											
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<div>Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :</div> <div></div> <table><tr><td>Unfactored:</td><td></td><td></td><td></td><td></td></tr><tr><td>Dead</td><td></td><td>195</td><td></td><td>151</td></tr><tr><td>Snow</td><td></td><td>219</td><td></td><td>173</td></tr><tr><td>Roof Live</td><td></td><td>40</td><td></td><td>37</td></tr><tr><td>Factored:</td><td></td><td></td><td></td><td></td></tr><tr><td>Total</td><td></td><td>414</td><td></td><td>325</td></tr><tr><td>Bearing:</td><td></td><td></td><td></td><td></td></tr><tr><td>F'theta</td><td></td><td>543</td><td></td><td>543</td></tr><tr><td>Capacity</td><td></td><td></td><td></td><td></td></tr><tr><td>Joist</td><td></td><td>729</td><td></td><td>1222</td></tr><tr><td>Support</td><td></td><td>414</td><td></td><td>1195</td></tr><tr><td>Des ratio</td><td></td><td></td><td></td><td></td></tr><tr><td>Joist</td><td></td><td>0.57</td><td></td><td>0.27</td></tr><tr><td>Support</td><td></td><td>1.00</td><td></td><td>0.27</td></tr><tr><td>Load comb</td><td></td><td>#3</td><td></td><td>#3</td></tr><tr><td>Length</td><td></td><td>0.52</td><td></td><td>1.50</td></tr><tr><td>Min req'd</td><td></td><td>0.52**</td><td></td><td>0.50*</td></tr><tr><td>Cb</td><td></td><td>1.72</td><td></td><td>1.00</td></tr><tr><td>Cb min</td><td></td><td>1.72</td><td></td><td>1.00</td></tr><tr><td>Cb support</td><td></td><td>1.25</td><td></td><td>1.25</td></tr><tr><td>Fcp sup</td><td></td><td>425</td><td></td><td>425</td></tr></table> <div><div>*Minimum bearing length setting used: 1/2" for end supports</div><div>**Minimum bearing length governed by the required width of the supporting member.</div></div>			Unfactored:					Dead		195		151	Snow		219		173	Roof Live		40		37	Factored:					Total		414		325	Bearing:					F'theta		543		543	Capacity					Joist		729		1222	Support		414		1195	Des ratio					Joist		0.57		0.27	Support		1.00		0.27	Load comb		#3		#3	Length		0.52		1.50	Min req'd		0.52**		0.50*	Cb		1.72		1.00	Cb min		1.72		1.00	Cb support		1.25		1.25	Fcp sup		425		425
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Fcp sup		425		425																																																																																																							
<div>Lumber-soft, S-P-F, No.1/No.2, 2x6 (1-1/2"x5-1/2")</div> <div>Supports: All - Lumber-soft Beam, S-P-F No.1/No.2</div> <div>Roof joist spaced at 24.0" c/c; Total length: 15.35'; Clear span(horz): 1.478', 10.868'; Volume = 0.9 cu.ft.; Pitch: 8/12</div> <div>Lateral support: top = continuous, bottom = at supports; Repetitive factor: applied where permitted (refer to online help);</div> <div>This section PASSES the design code check.</div>																																																																																																											

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 45	Fv' = 155	psi	fv/Fv' = 0.29
Bending(+)	fb = 1302	Fb' = 1504	psi	fb/Fb' = 0.87
Bending(-)	fb = 118	Fb' = 949	psi	fb/Fb' = 0.12
Deflection:				
Interior Live	0.43 = L/369	0.87 = L/180	in	0.49
Total	1.08 = L/145	1.31 = L/120	in	0.83
Cantil. Live	-0.18 = L/123	0.24 = L/90	in	0.73
Total	-0.46 = L/47	0.36 = L/60	in	1.26

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	1.300	-	1.15	1.00	1.00	3
Fb'-	875	1.15	1.00	1.00	0.631	1.300	-	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:


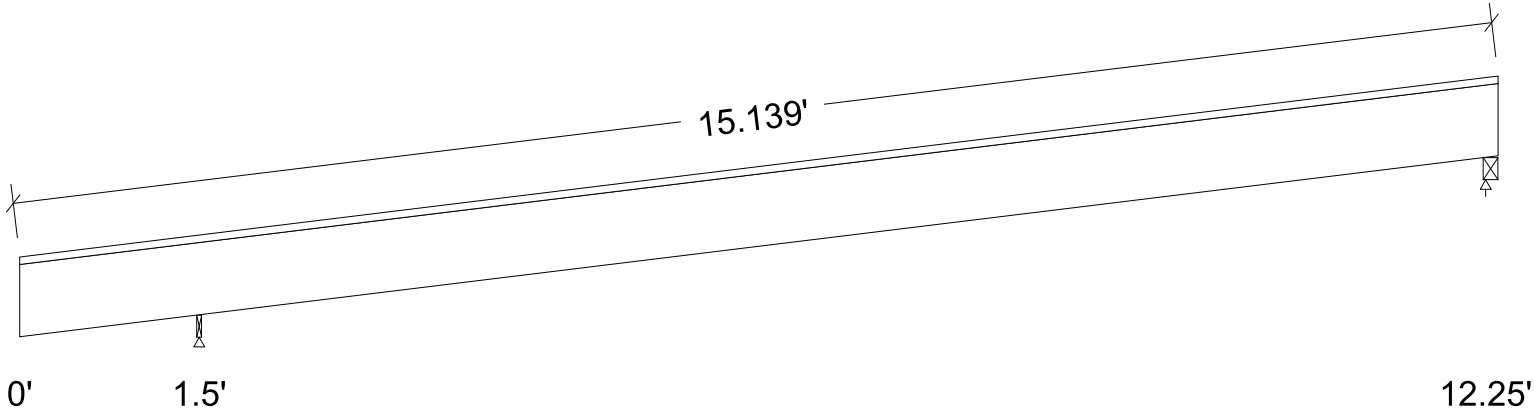
Shear : LC #3 = D + S  
Bending(+): LC #3 = D + S  
Bending(-): LC #3 = D + S  
Deflection: LC #3 = D + S (live)  
LC #3 = D + S (total)  
Bearing : Support 1 - LC #3 = D + S  
Support 2 - LC #3 = D + S  
Load Types: D=dead S=snow Lr=roof live  
Load combinations: ASD Basic from ASCE 7-16 2.4; all LC's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

CALCULATIONS:

V max = 267, V design = 248 (NDS 3.4.3.1(a)) lbs  
M(+) = 821 lbs-ft; M(-) = 75 lbs-ft  
EI = 29.12e06 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 = 20.25' RB = 24.4; 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.

<div><div></div><div><div>WoodWorks®</div><div>SOFTWARE FOR WOOD DESIGN</div></div></div>	<div>COMPANY</div> <div>Apr. 7, 2025 07:50</div>	<div>PROJECT</div> <div>232 Park Ave - Roof 2.wwb</div>																																																																																																																														
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Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 21	Fv' = 155	psi	fv/Fv' = 0.14
Bending(+)	fb = 475	Fb' = 1389	psi	fb/Fb' = 0.34
Bending(-)	fb = 45	Fb' = 722	psi	fb/Fb' = 0.06
Deflection:				
Interior Live	0.11 = < L/999	0.88 = L/180	in	0.13
Total	0.30 = L/518	1.32 = L/120	in	0.23
Cantil. Live	-0.05 = L/464	0.25 = L/90	in	0.19
Total	-0.13 = L/169	0.37 = L/60	in	0.35

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 0.520 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

Load Types: D=dead S=snow Lr=roof live

Load combinations: ASD Basic from ASCE 7-16 2.4; all LC's listed in the Analysis report

CALCULATIONS:

V max = 169, V design = 153 (NDS 3.4.3.1(a)) lbs

M(+) = 520 lbs-ft; M(-) = 50 lbs-ft

EI = 66.69e06 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


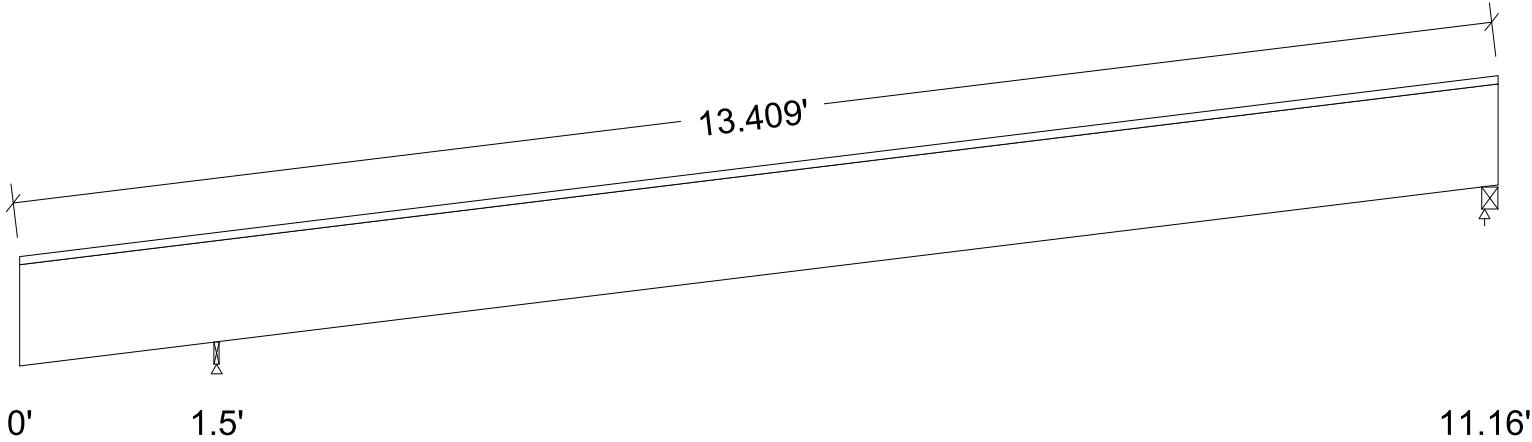
as per NDS 3.10.3

Lateral stability(-): Lu = 13.19' Le = 20.81' RB = 28.3; 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.
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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.
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Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 16	Fv' = 155	psi	fv/Fv' = 0.10
Bending(+)	fb = 261	Fb' = 1273	psi	fb/Fb' = 0.21
Bending(-)	fb = 28	Fb' = 627	psi	fb/Fb' = 0.04
Deflection:				
Interior Live	0.05 = < L/999	0.77 = L/180	in	0.06
Total	0.09 = < L/999	1.15 = L/120	in	0.08
Cantil. Live	-0.02 = < L/999	0.24 = L/90	in	0.09
Total	-0.04 = L/485	0.36 = L/60	in	0.12

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	1.100	-	1.15	1.00	1.00	3
Fb'-	875	1.15	1.00	1.00	0.493	1.100	-	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	1.00	3
Emin'	0.51 million	1.00	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  
Load Types: D=dead S=snow Lr=roof live  
Load combinations: ASD Basic from ASCE 7-16 2.4; all LC's listed in the Analysis report

CALCULATIONS:

V max = 172, V design = 147 (NDS 3.4.3.1(a)) lbs  
M(+) = 466 lbs-ft; M(-) = 50 lbs-ft  
EI = 138.50e06 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 = 11.50' Le = 18.88' RB = 30.5; 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.

APPROVED

Montgomery County

Historic Preservation Commission



REVIEWED

By Dan Bruechert at 1:39 pm, May 20, 2025

ASCE 7 - 16 WIND CALCULATION FOR: Roof 1  
Project Address: 232 Park Ave, Takoma Park, MD 20912, USA

DESIGN CRITERIA

Ultimate Wind Speed: 115 mph	Array Edge Factor, $\gamma_E$ : 1
Exposure Category: B	Solar Array Dead Load: 3 psf
a: 3.6 ft	Mean Roof Height: 18 ft
Velocity Pressure Exposure Coefficient, $K_z$ : 0.61	Roof Pitch: 33°
Topographic Factor, $K_{zt}$ : 1	Roof Type: Gable
Wind Directionality Factor, $K_d$ : 0.85	Module Name, Dimensions, Area: HANWHA Q.TRON BLK M-G2+ 435W, 44.6in X 67.8in, 3023.88 sqin
Ground Elevation Factor, $K_e$ : 1	
Solar Array Pressure Equalization Factor, $\gamma_a$ : 0.66 / 0.61	

CALCULATION

Velocity Pressure Due to Wind:	$q_h = 0.00256(K_z)(K_{zt})(K_d)(I)(V^2)$	(Ch 26. Eq 26.10 – 1)
Actual Uplift Pressure:	$p = 0.6D + 0.6W$	(Ch 2.4.1 LC #7/a)
Wind Uplift Pressure:	$p = q_h (GC_p)(\gamma_E)(\gamma_a)$	(Ch 29. Eq 29.4 – 7)

Portrait/ Landscape Orientation

Roof Zone	1	2e	2n	2r	3e	3r
External Pressure Coefficient (GCp)	-1.6	-1.6	-1.84	-1.6	-2.29	-1.84
Actual Uplift Pressure (p)	-8.68 psf	-8.68 psf	-10.25 psf	-8.68 psf	-13.08 psf	-10.25 psf
Tributary Area (AT)	15.96 sqft	15.96 sqft	15.96 sqft	15.96 sqft	15.96 sqft	15.96 sqft
Uplift Force (P)	-138.47 lbs	-138.47 lbs	-163.61 lbs	-138.47 lbs	-208.82 lbs	-163.61 lbs

Uplift Capacity

Attachment Type = 4 #14 Wood Screw Deck Mount	Safety Factor = 3
Hardware Pullout Capacity = 258 lbs	Duration Factor = 1.6
Embedment Depth = 0.5 in	
Maximum Uplift Force = 208.82 lbs	
Allowable Pullout Capacity = 258 lbs	
Allowable Pullout Capacity = 258 lbs > Uplift Force per Bolt = 208.82 lbs, Therefore OK. (Portrait)	

**ASCE 7 - 16 WIND CALCULATION FOR: Roof 2**  
**Project Address: 232 Park Ave, Takoma Park, MD 20912, USA**

**DESIGN CRITERIA**

Ultimate Wind Speed: 115 mph	Array Edge Factor, $\gamma_E$ : 1
Exposure Category: B	Solar Array Dead Load: 3 psf
a: 3.6 ft	Mean Roof Height: 18 ft
Velocity Pressure Exposure Coefficient, $K_z$ : 0.61	Roof Pitch: 35°
Topographic Factor, $K_{zt}$ : 1	Roof Type: Gable
Wind Directionality Factor, $K_d$ : 0.85	Module Name, Dimensions, Area: HANWHA Q.TRON BLK M-G2+ 435W, 44.6in X 67.8in, 3023.88 sqin
Ground Elevation Factor, $K_e$ : 1	
Solar Array Pressure Equalization Factor, $\gamma_a$ : 0.66 / 0.61	

**CALCULATION**

Velocity Pressure Due to Wind:	$q_h = 0.00256(K_z)(K_{zt})(K_d)(I)(V^2)$	(Ch 26. Eq 26.10 – 1)
Actual Uplift Pressure:	$p = 0.6D + 0.6W$	(Ch 2.4.1 LC #7/a)
Wind Uplift Pressure:	$p = q_h (GC_p)(\gamma_E)(\gamma_a)$	(Ch 29. Eq 29.4 – 7)

**Portrait/ Landscape Orientation**

Roof Zone	1	2e	2n	2r	3e	3r
External Pressure Coefficient (GCp)	-1.6	-1.6	-1.84	-1.6	-2.29	-1.84
Actual Uplift Pressure (p)	-8.71 psf	-8.71 psf	-10.29 psf	-8.71 psf	-13.12 psf	-10.29 psf
Tributary Area (AT)	15.96 sqft	15.96 sqft	15.96 sqft	15.96 sqft	15.96 sqft	15.96 sqft
Uplift Force (P)	-139.03 lbs	-139.03 lbs	-164.17 lbs	-139.03 lbs	-209.38 lbs	-164.17 lbs

**Uplift Capacity**

Attachment Type = 4 #14 Wood Screw Deck Mount	Safety Factor = 3
Hardware Pullout Capacity = 258 lbs	Duration Factor = 1.6
Embedment Depth = 0.5 in	

Maximum Uplift Force = 209.381 lbs

Allowable Pullout Capacity = 258 lbs

Allowable Pullout Capacity = 258 lbs > Uplift Force per Bolt = 209.38 lbs, Therefore OK.

ASCE 7 - 16 WIND CALCULATION FOR: Roof 3 & Roof 4  
Project Address: 232 Park Ave, Takoma Park, MD 20912, USA

DESIGN CRITERIA

Ultimate Wind Speed: 115 mph	Array Edge Factor, $\gamma_E$ : 1
Exposure Category: B	Solar Array Dead Load: 3 psf
a: 3 ft	Mean Roof Height: 18 ft
Velocity Pressure Exposure Coefficient, $K_z$ : 0.61	Roof Pitch: 32°
Topographic Factor, $K_{zt}$ : 1	Roof Type: Gable
Wind Directionality Factor, $K_d$ : 0.85	Module Name, Dimensions, Area: HANWHA Q.TRON BLK M-G2+ 435W, 44.6in X 67.8in, 3023.88 sqin
Ground Elevation Factor, $K_e$ : 1	
Solar Array Pressure Equalization Factor, $\gamma_a$ : 0.66 / 0.61	

CALCULATION

Velocity Pressure Due to Wind:	$q_h = 0.00256(K_z)(K_{zt})(K_d)(I)(V^2)$	(Ch 26. Eq 26.10 – 1)
Actual Uplift Pressure:	$p = 0.6D + 0.6W$	(Ch 2.4.1 LC #7/a)
Wind Uplift Pressure:	$p = q_h (GC_p)(\gamma_E)(\gamma_a)$	(Ch 29. Eq 29.4 – 7)

Portrait/ Landscape Orientation

Roof Zone	1	2e	2n	2r	3e	3r
External Pressure Coefficient (GCp)	-1.6	-1.6	-1.84	-1.6	-2.29	-1.84
Actual Uplift Pressure (p)	-8.66 psf	-8.66 psf	-10.23 psf	-8.66 psf	-13.07 psf	-10.23 psf
Tributary Area (AT)	15.96 sqft	15.96 sqft	15.96 sqft	15.96 sqft	15.96 sqft	15.96 sqft
Uplift Force (P)	-138.2 lbs	-138.2 lbs	-163.34 lbs	-138.2 lbs	-208.55 lbs	-163.34 lbs

Uplift Capacity

Attachment Type = 4 #14 Wood Screw Deck Mount	Safety Factor = 3
Hardware Pullout Capacity = 258 lbs	Duration Factor = 1.6
Embedment Depth = 0.5 in	

Maximum Uplift Force = 208.551 lbs

Allowable Pullout Capacity = 258 lbs

Allowable Pullout Capacity = 258 lbs > Uplift Force per Bolt = 208.55 lbs, Therefore OK.



Project Roof Mounted Solar PV Installation Property Owner Jessica Landman

Address 232 Park 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 (23) 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

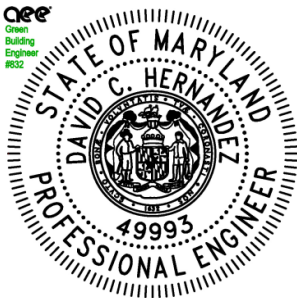
Maryland PE License Number

Date 04/07/2025

Seal

Signature David C. Hernandez, PE

Digitally signed by David C. Hernandez,  
Date: 2025.04.07 10:47:24 -04:00



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.  
04/07/25



Property Owners Name: \_\_\_\_\_

Property Owners Address: \_\_\_\_\_

Address of installation if different than owner's address:

\_\_\_\_\_

I certify that:

- o I prepared or approved the electrical drawings and related documents for the photovoltaic {PV} system at the above location.
- o The design of the PV system, and all electrical Installations and equipment, meets the standards and requirements of the National Electrical Code as adopted by Montgomery County *in* COMCOR 17.02.01.
- o I reviewed and completed the Worksheet for PV System, which was attached to the permit application for the PV system at the **above** location.

15732

State Master Electrician License Number

Date: \_\_\_\_\_

Signature: Matt Huan

APPROVED

Montgomery County

Historic Preservation Commission

Karen Buechert

**REVIEWED**

By Dan Bruechert at 1:39 pm, May 20, 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

April 08, 2025

**To:** Jessica Landman  
232 Park Avenue, Takoma Park, MD 20912  
mullaneyld@gmail.com 301-312-4193

**To:** Department of Permitting Services  
2425 Reddie Drive, 7<sup>th</sup> 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:** 232 Park Ave, Takoma Park, MD 20912

**Proposed Scope of Work:** Install (23) roof mounted solar panels, 10.00 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:

- 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. Details of Takoma Park's permit requirements are attached on page 2.

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](mailto: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: 38bf2056822713c0b979ea7ee94776a

Tina Crouse

04-08-2025

eSigned via SeamlessDocs.com  
*Takoma Park Planning Division*  
Key: 19fe84f123e98a3ff4576219059d5fba

04-08-2025





DEPARTMENT OF PERMITTING SERVICES

Marc Elrich  
*County Executive*

Rabbiah Sabbakhan  
*Director*

# HISTORIC AREA WORK PERMIT APPLICATION

Application Date: 4/8/2025

Application No: 1112342  
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 232 PARK AVE  
TAKOMA PARK, MD 20912

Othercontact Solar Energy World (Primary)

## Historic Area Work Permit Details

Work Type ALTER

Scope of Work Install (23) roof mounted solar panels, 10.00 kW