

**MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION**  
**STAFF REPORT**

<b>Address:</b>	6812 Westmoreland Avenue, Takoma Park	<b>Meeting Date:</b>	3/25/2026
<b>Resource:</b>	Contributing Resource <b>Takoma Park Historic District</b>	<b>Report Date:</b>	3/18/2026
<b>Applicant:</b>	David Snyder EDGE Energy (Agent)	<b>Public Notice:</b>	3/11/2026
<b>Review:</b>	RETROACTIVE HAWP	<b>Tax Credit:</b>	No
<b>Permit Number:</b>	1147819	<b>Staff:</b>	Devon Murtha
<b>PROPOSAL:</b>	Retroactive solar panel installation		

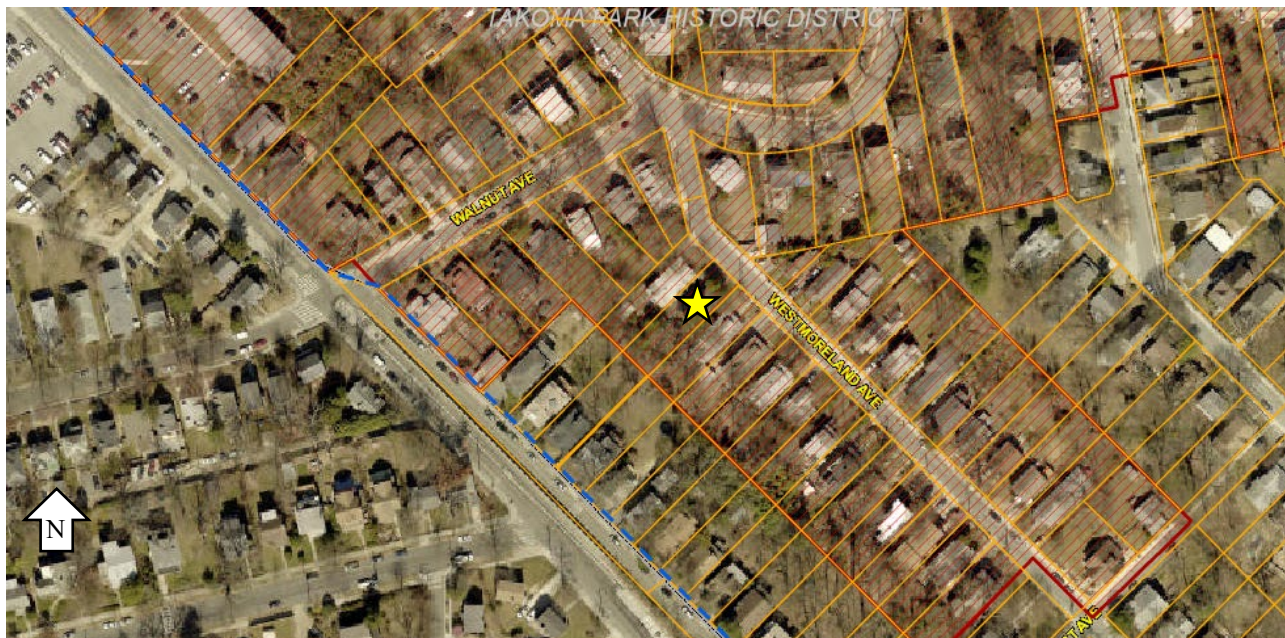
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**STAFF RECOMMENDATION**

Staff recommends that the HPC **approve** the Historic Area Work Permit (HAWP) application.

**ARCHITECTURAL DESCRIPTION**

**SIGNIFICANCE:** Contributing Resource within the Takoma Park Historic District  
**STYLE:** Colonial Revival  
**DATE:** c. 1920s



*Figure 1: Aerial view of 6812 Westmoreland Avenue within the Takoma Park Historic District.*

The subject property is located along Westmoreland Avenue and contains a one-story house with a hipped metal roof and front porch (*Figure 2*). It is a Contributing Resource within the Takoma Park Historic

District. In 2023, the HPC approved the construction of a one-story addition to the rear of the house, and in 2025, the HPC approved minor alterations to this proposal.<sup>1</sup>



*Figure 2: Subject property from the right-of-way along Westmoreland Avenue (c. 1992).*

## **PROPOSAL**

The applicant is seeking retroactive approval for the installation of twenty-four (24) solar panels in four (4) arrays on the main roof of the subject property. The Sunpower SPR-X21-350-BLK-E-AC series solar panels are mounted on Iron Ridge rails onto the standing seam roof. The load center and disconnect switch will be installed on the northeast corner of the house.

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<sup>1</sup> See HAWP for revision here:  
[https://mcatlas.org/tiles6/06\\_HistoricPreservation\\_PhotoArchives/HAWP/HPC%202025-09-17/6812%20Westmoreland%20Avenue,%20Takoma%20Park%20-%201025413%20REVISION%20-%20Approval.pdf](https://mcatlas.org/tiles6/06_HistoricPreservation_PhotoArchives/HAWP/HPC%202025-09-17/6812%20Westmoreland%20Avenue,%20Takoma%20Park%20-%201025413%20REVISION%20-%20Approval.pdf).

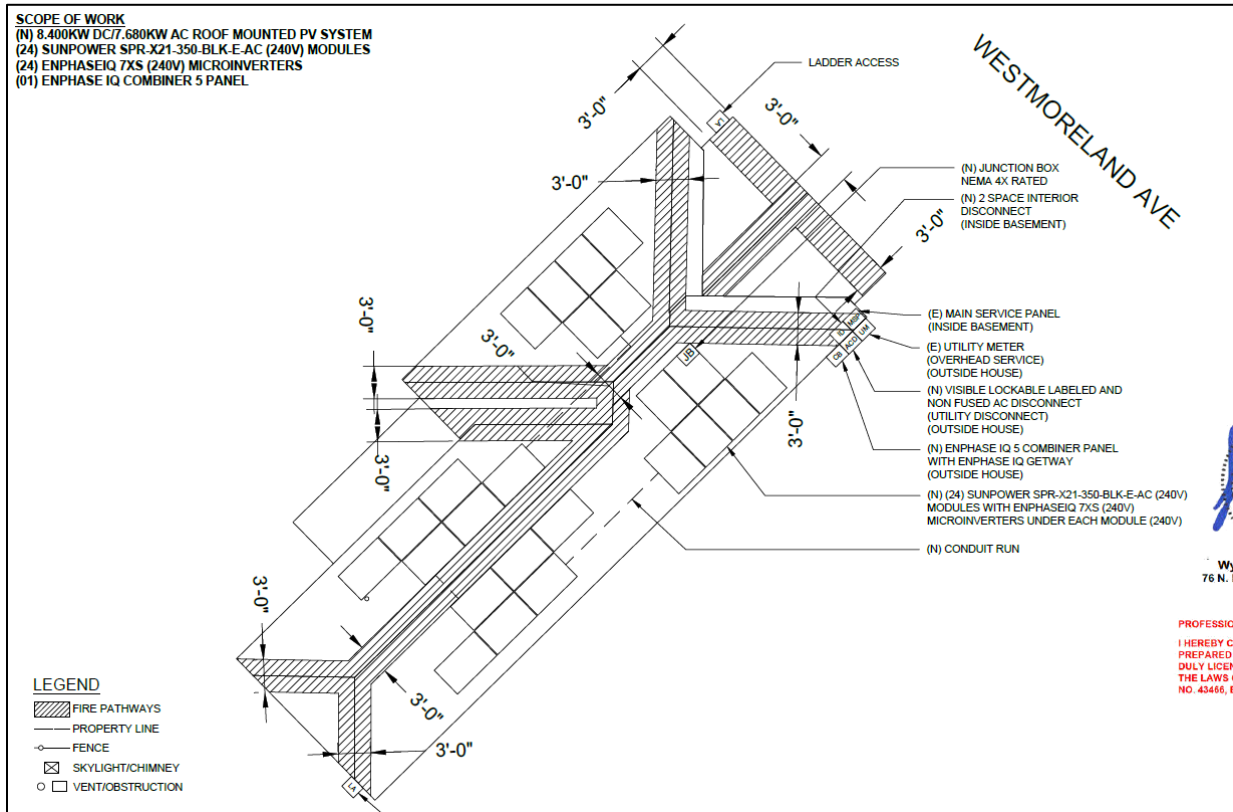


Figure 3: The site plan shows the proposed location of the solar panels and the equipment location.

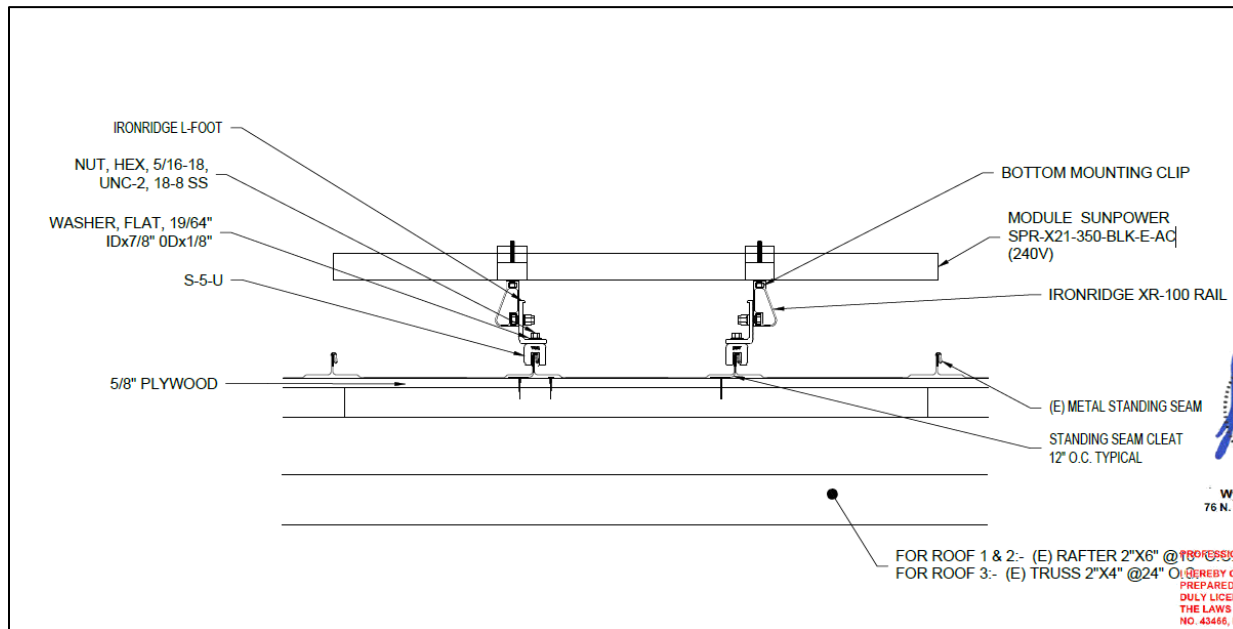


Figure 4: Installation diagram for the solar panels.

**APPLICABLE GUIDELINES**

The Historic Preservation Office and Historic Preservation Commission (HPC) consult several documents when reviewing alterations and new construction within the Takoma Park Historic District. These documents include the historic preservation review guidelines in the approved and adopted amendment for

the *Takoma Park Historic District (Guidelines)*, *Montgomery County Code Chapter 24A (Chapter 24A)*, and the *Secretary of the Interior's Standards for Rehabilitation (Standards)*, and the HPC's *Policy No. 20-01: Addressing Emergency Climate Mobilization Through The Installation of Roof-Mounted Solar Panels*, The pertinent information in these four documents is outlined below.

### ***Takoma Park Historic District Guidelines***

There are two broad planning and design concepts which apply to all categories. These are:

- The design review emphasis will be restricted to changes that are all visible from the public right-of-way, irrespective of landscaping or vegetation (it is expected that the majority of new additions will be reviewed for their impact on the overall district), and
- The importance of assuring that additions and other changes to existing structures act to reinforce and continue existing streetscape, landscape, and building patterns rather than to impair the character of the historic district.

Most of the buildings in the Takoma Park Historic District have been assessed as being “Contributing Resources.” While these buildings may not have the same level of architectural or historical significance as Outstanding Resources or may have lost some degree of integrity, collectively, they are the basic building blocks of the Takoma Park district. They are important to the overall character of the district and the streetscape due to their size, scale, and architectural qualities, rather than for their particular architectural features.

Contributing Resources should receive a more lenient review than those structures that have been classified as Outstanding. This design review should emphasize the importance of the resource to the overall streetscape and its compatibility with existing patterns rather than focusing on a close scrutiny of architectural detailing. In general, however, changes to Contributing Resources should respect the predominant architectural style of the resource. As stated above, the design review emphasis will be restricted to changes that are at all visible from the public right-of-way, irrespective of landscaping or vegetation.

Some of the factors to be considered in reviewing HAWPs on Contributing Resources include:

- All exterior alterations, including those to architectural features and details, should be generally consistent with the predominant architectural style and period of the resource and should preserve the predominant architectural features of the resource; exact replication of existing details and features is, however, not required.
- Minor alterations to areas that do not directly front on a public right-of-way -such as vents, metal stovepipes, air conditioners, fences, skylights, etc. should be allowed as a matter of course;
- Alterations to areas that do not directly front on a public right-of-way which involve the replacement of or damage to original ornamental or architectural features are discouraged but may be considered and approved on a case-by-case basis.
- Alterations to features that are not visible at all from the public right-of-way should be allowed as a matter of course.
- All changes and additions should respect existing environmental settings, landscaping, and patterns of open space.

### ***Montgomery County Code, Chapter 24A-8***

The following guidance which pertains to this project are as follows:

- (b) The commission shall instruct the director to issue a permit, or issue a permit subject to such conditions as are found to be necessary to ensure conformity with the purposes and requirements of this chapter, if it finds that:
  - (1) The proposal will not substantially alter the exterior features of an historic site or historic resource within an historic district; or
  - (2) The proposal is compatible in character and nature with the historical, archeological, architectural or cultural features of the historic site or the historic district in which an historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter;
  - (6) In balancing the interests of the public in preserving the historic site or historic resource located within an historic district, with the interests of the public from the use and benefit of the alternative proposal, the general public is better served by granting the permit.

(Ord. No. 9-4, § 1; Ord. No. 11-59.)

***Secretary of the Interior’s Standards for Rehabilitation***

The Secretary of the Interior defines rehabilitation as “the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features, which convey its historical, cultural, or architectural values.” The applicable *Standards* are as follows:

- 2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
- 9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
- 10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

***Historic Preservation Commission Policy No. 20-01: Addressing Emergency Climate Mobilization Through The Installation of Roof-Mounted Solar Panels***

Now, THEREFORE:

WHEREAS, Historic Area Work Permit decisions are guided by the criteria in Section 24A, The Secretary of the Interior’s Standards for Rehabilitation, and pertinent guidance from applicable master plan amendments and/or site or district-specific studies;

WHEREAS, The Secretary of the Interior’s Standards for Rehabilitation as interpreted by the National Park Service limit the placement of rooftop solar panels under Standards 2, 9, and 10 to less conspicuous locations;

WHEREAS, the County Council has established a Climate Emergency;

WHEREAS, the Historic Preservation is a body established by the County Executive and County Council;

WHEREAS, Section 24-8(b)(6) states, “In balancing the interest of the public in preserving the historic site or historic resource located within an historic district, with the interests of the public from the use and benefit of the alternative proposal, the general public welfare is better served by granting the permit;”

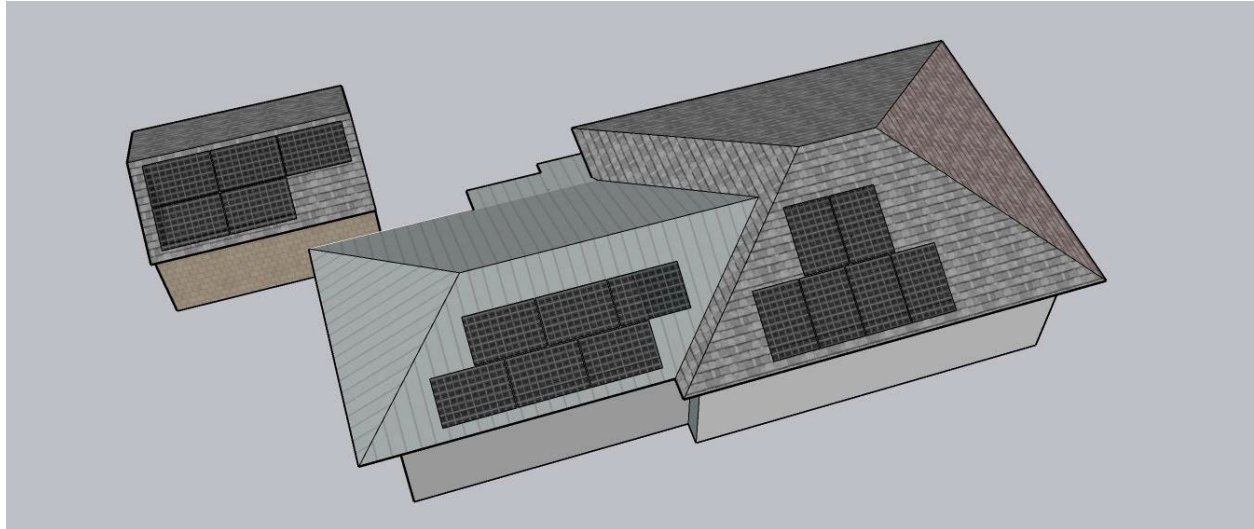
WHEREAS, the widespread use of solar panels, both for hot water and for electricity production, will reduce greenhouse gases in the county, in accordance with the aims of the Emergency Climate Mobilization resolution (Resolution No.: 18-974), it shall be the policy of the Historic Preservation Commission that:

1. The preferred locations for solar panel installation(s) on a designated historic site or an historic resource located within an historic district is a) on the rear of the property, b) on non-historic building additions, c) on accessory structures, or d) in ground-mounted arrays;
2. If it is not feasible to install solar panels in one of the identified preferred locations due to resource orientation or other site limitations; and,
3. The roof is determined to be neither architecturally significant, nor a character-defining feature of the resource, nor is it a slate or tile roof, that unless it can be demonstrated that the solar array will be installed without damaging the historic character of the resource or historic fabric; then
4. The public welfare is better served by approving a Historic Area Work Permit for solar panels on all visible side or front roof slopes under Section 24A-8(b)(6).
5. A Historic Area Work Permit (HAWP) is required for all work referenced in this policy.

**STAFF DISCUSSION**

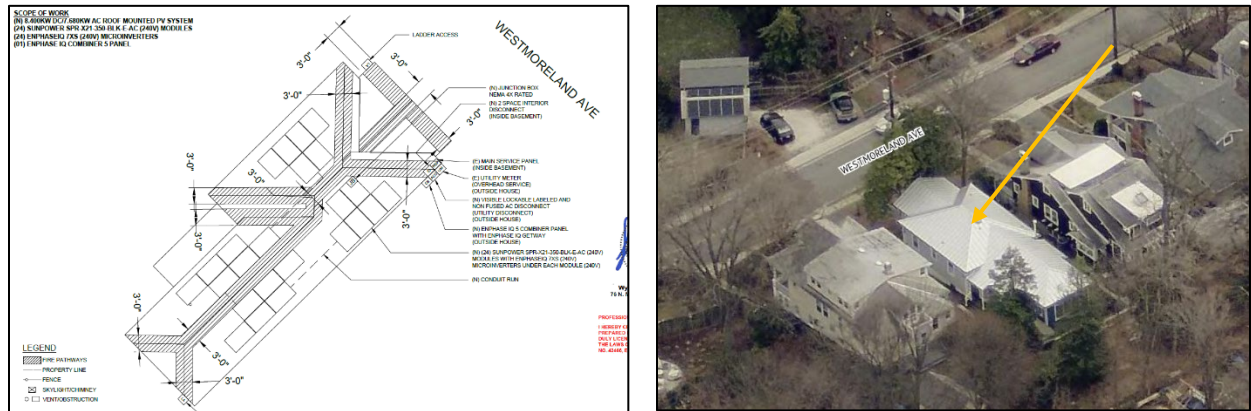
Staff supports the installation of the solar panels, as proposed and installed, and recommends approval.

A scheme for the installation of solar panels on the subject property was conceptually reviewed by the HPC during the review of HAWP No. 1025413 for the rear addition. This scheme involved the installation of seventeen (17) solar panels on the southeast elevation of the main house and the addition, and on the garage (Figure 5). In the Staff Report, Staff wrote that “At the Preliminary Consultation, the HPC found the proposed illustrative layout was appropriate, but noted that the proposal lacked the level of specificity necessary to be evaluated as a HAWP.” The applicant did not come in for a HAWP to install this scheme.



**Figure 5: Proposed solar panels from HAWP No. 1025413 (2023).**

The new scheme for solar panels, as proposed and installed, differs slightly from the initial scheme. Twenty-four (24) panels were installed on both the northwest and southeast elevations of the main house, and no panels were installed on the garage.



**Figure 6: Proposed and installed plan (left) and aerial of the subject property (right).**

Staff evaluated the proposed placement of the solar panels on the subject property against the guidance provided by *Historic Preservation Commission Policy No. 20-01*. In determining the most appropriate placement of solar panels, the policy outlines several preferred locations, including (in order of preference), in ground-mounted arrays, on accessory structures, on non-historic building additions, and on the rear of the property.

Staff finds that the primary and secondary preferred locations are not feasible for this project. The applicants cannot install ground-mounted arrays due to the small, suburban lot size and substantial tree coverage. The applicants also submitted a heat map showing that that rear of the property received very little sunlight due to the tree canopy cover. Although not specifically called out in the shade map, Staff can infer that the location of the garage, immediately under a large tree, makes the roof planes infeasible locations for solar panel installation (*Figure 7*).



*Figure 7: Annual irradiance map.*

Two (2) of the proposed arrays are installed on the non-historic rear addition, which is a tertiary preferred location. Due to the relatively small size of the addition and constraints placed by the surrounding vegetation, Staff finds that no additional panels can fit of these two roof slopes.

Two (2) arrays are installed on the side-facing roofs of the subject property, which are non-preferred locations. Staff notes that *Policy 24-01* allows for installation of panels on non-preferred location if it is not feasible to install solar panels in one of the identified preferred locations due to resource orientation or other site limitations; and if the roof is determined to be neither architecturally significant, nor a character-defining feature of the resource, nor is it a slate or tile roof. Staff finds that in this case, the applicants have submitted compelling justification that there are no alternate roof slopes, and that only the non-preferred locations are feasible. The HPC typically allows for installation of systems of non-preferred locations, provided that the applicants demonstrate that the system will generate 100% or less of the energy needed for the house. The homeowners estimated annual production is 11,600 Kwh and the system is estimated to produce 7,694 Kwh, which is far below the 100% threshold.

Staff acknowledges that two of the arrays are minimally visible from some vantage points along Westmoreland Avenue (*Figure 8*); however, per the *Guidelines*, Staff finds that their installation will not impact the existing pattern of the streetscape. The panels have also been installed in an orderly manner, close to the roof slope.



**Figure 8: View of roof from right-of-way. The location of panels is notated with a yellow arrow.**

Additionally, photovoltaic systems are already an established element of the district; the HPC has approved the installation of solar panels in locations visible from the right-of-way on similar resources. In 2022, the HPC approved panels on a Contributing Resource at 49 Elm Avenue, located across the street from the subject property. (Figure 9).



**Figure 9: Aerial view showing the subject property annotated with a yellow star, and nearby houses with solar panels visible from the right-of-way circled in red.**

After full and fair consideration of the applicant's submission, staff finds the proposal, as modified by the conditions, consistent with the Criteria for Issuance in Chapter 24A-8(b)(1), (2), , having found the proposal is consistent with the *Secretary of the Interior's Standards for Rehabilitation* #2, 9, and 10, and *Takoma Park Historic District Guidelines*, and the HPC's Policy No. 20-01 as outlined above.

**STAFF RECOMMENDATION**

Staff recommends that the HPC **approve** the Historic Area Work Permit (HAWP) application.

under the Criteria for Issuance in Chapter 24A-8(b)(1) and (2), having found that the proposal will not substantially alter the exterior features of the historic resource and is compatible in character with the purposes of Chapter 24A;

*The Takoma Park Historic District Guidelines;*

and with the *Secretary of the Interior's Standards for Rehabilitation # 2, 9, and 10;*

and with the *Historic Preservation Commission Policy No. 20-01: Addressing Emergency Climate Mobilization Through The Installation of Roof-Mounted Solar Panels;*

and with the general condition that the applicant shall present an electronic set of drawings, if applicable, to HPC staff for review and stamping prior to submission for the Montgomery County Department of Permitting Services (DPS) building permits;

and with the general condition that final project design details, not specifically delineated by the Commission, shall be approved by HPC staff or brought back to the HPC as a revised HAWP application at staff's discretion;

and with the general condition that the applicant shall notify the HPC staff if they propose to make **any alterations** to the approved plans. Once the work is completed the applicant will contact the staff person assigned to this application at 301-495-1328 or [devon.murtha@montgomeryplanning.org](mailto:devon.murtha@montgomeryplanning.org) to schedule a follow-up site visit.

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

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

Work Item 1: _____	
Description of Current Condition:	Proposed Work:

Work Item 2: _____	
Description of Current Condition:	Proposed Work:

Work Item 3: _____	
Description of Current Condition:	Proposed Work:

**HISTORIC AREA WORK PERMIT  
CHECKLIST OF  
APPLICATION REQUIREMENTS**

	Required Attachments						
Proposed Work	I. Written Description	2. Site Plan	3. Plans/ Elevations	4. Material Specifications	5. Photographs	6. Tree Survey	7. Property Owner Addresses
New Construction	*	*	*	*	*	*	*
Additions/ Alterations	*	*	*	*	*	*	*
Demolition	*	*	*		*		*
Deck/Porch	*	*	*	*	*	*	*
Fence/Wall	*	*	*	*	*	*	*
Driveway/ Parking Area	*	*		*	*	*	*
Grading/Excavation/ Landscaping	*	*		*	*	*	*
Tree Removal	*	*		*	*	*	*
Siding/ Roof Changes	*	*	*	*	*		*
Window/ Door Changes	*	*	*	*	*		*
Masonry Repair/ Repoint	*	*	*	*	*		*
Signs	*	*	*	*	*		*



6854 Distribution Dr  
Beltsville, MD 20705  
Toll Free: 888-586-3343  
Fax: 888-586-2849

Hi HAWP Team,

Due to roof layout and shading constraints at 6812 Westmoreland Ave, there is no viable space on the rear roof planes to accommodate the system. It is significant enough to where even moving one panel will drop the production and thus reduce solar savings to our homeowner. The side roof planes are the only locations that allow for maximum solar production. Please see pictures of the panels attached along with the aurora shade report.

Currently the annual production for the solar panels at Snyder's residence is 7,694 Kwh. The Snyder residence estimated annual consumption is 11,600.

Thank you for your time and consideration on this matter. Please let me know if you have any questions or any further information is needed.

Thank you,  
EDGE Energy Team

# SNYDER HOUSE

**AHJ**  
CITY OF TAKOMA PARK

**UTILITY**  
POTOMAC ELECTRIC POWER CO

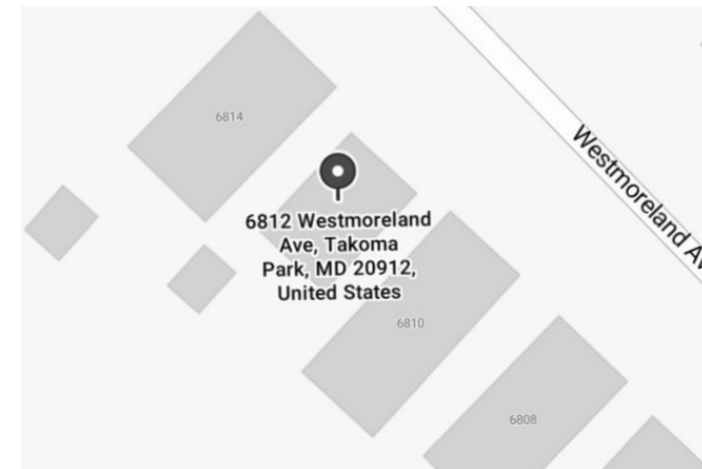
**SCOPE OF WORK**  
(N) 8.400KW DC/7.680KW AC ROOF MOUNTED PV SYSTEM  
(24) SUNPOWER SPR-X21-350-BLK-E-AC (240V) MODULES  
(24) ENPHASEIQ 7XS (240V) MICROINVERTERS  
(01) ENPHASE IQ COMBINER 5 PANEL

**CODES AND STANDARDS WITH AMENDMENTS**

2021 IRC  
2021 IBC  
2020 NEC  
STATE OF MARYLAND FIRE PREVENTION CODE  
NFPA 1 & 101, 2018

**ENVIRONMENTAL**  
WIND SPEED: 115 MPH  
SNOW LOAD: 30 PSF  
EXPOSURE CATEGORY: C

**VICINITY MAP**



**CONTRACTOR**



EDGE ENERGY  
6854 DISTRIBUTION DRIVE,  
BELTSVILLE, MD, USA  
+1 434 568 7220  
LIC TYPE: MHIC, STATE  
ELECTRICAL LICENSE  
LIC NO.: 126720,13228

PROJECT INFO & ADDRESS

SNYDER HOUSE  
**6812 WESTMORELAND AVE,  
TAKOMA PARK,  
MD 20912, USA**  
**SYSTEM SIZE**  
DC SIZE: 8.400 KW DC-(STC)  
AC SIZE: 7.680 KW AC

**GENERAL NOTES**

**PROJECT NOTES:**  
- THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURER'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.  
- THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION  
- GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE MICRO INVERTERS IN ACCORDANCE WITH NEC 690.41(B)  
- ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC 690.4: PV MODULES: UL1703, IEC61730, AND IEC61215, AND NFPA 70 CLASS C FIRE INVERTERS: UL 1741 CERTIFIED, IEEE 1547, 929, 519 COMBINER BOX(ES): UL 1703 OR UL 1741 ACCESSORY  
- MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.  
- ALL INVERTERS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4. SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3].  
- ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.

METER NO: 112129287

**SHEET INDEX**

- PV-1 COVER SHEET
- PV-2 SITE PLAN-1
- PV-2.1 SITE PLAN-2
- PV-3 ATTACHMENT PLAN
- PV-3.1 STRUCTURAL PLAN
- PV-4 ELECTRICAL
- PV-4.1 ELECTRICAL CALCULATIONS
- PV-5 LABELS
- PV-6 RESOURCE DOCUMENT
- PV-6.1 RESOURCE DOCUMENT
- PV-6.2 RESOURCE DOCUMENT
- PV-6.3 RESOURCE DOCUMENT
- PV-6.4 RESOURCE DOCUMENT
- PV-6.5 RESOURCE DOCUMENT
- PV-6.6 RESOURCE DOCUMENT



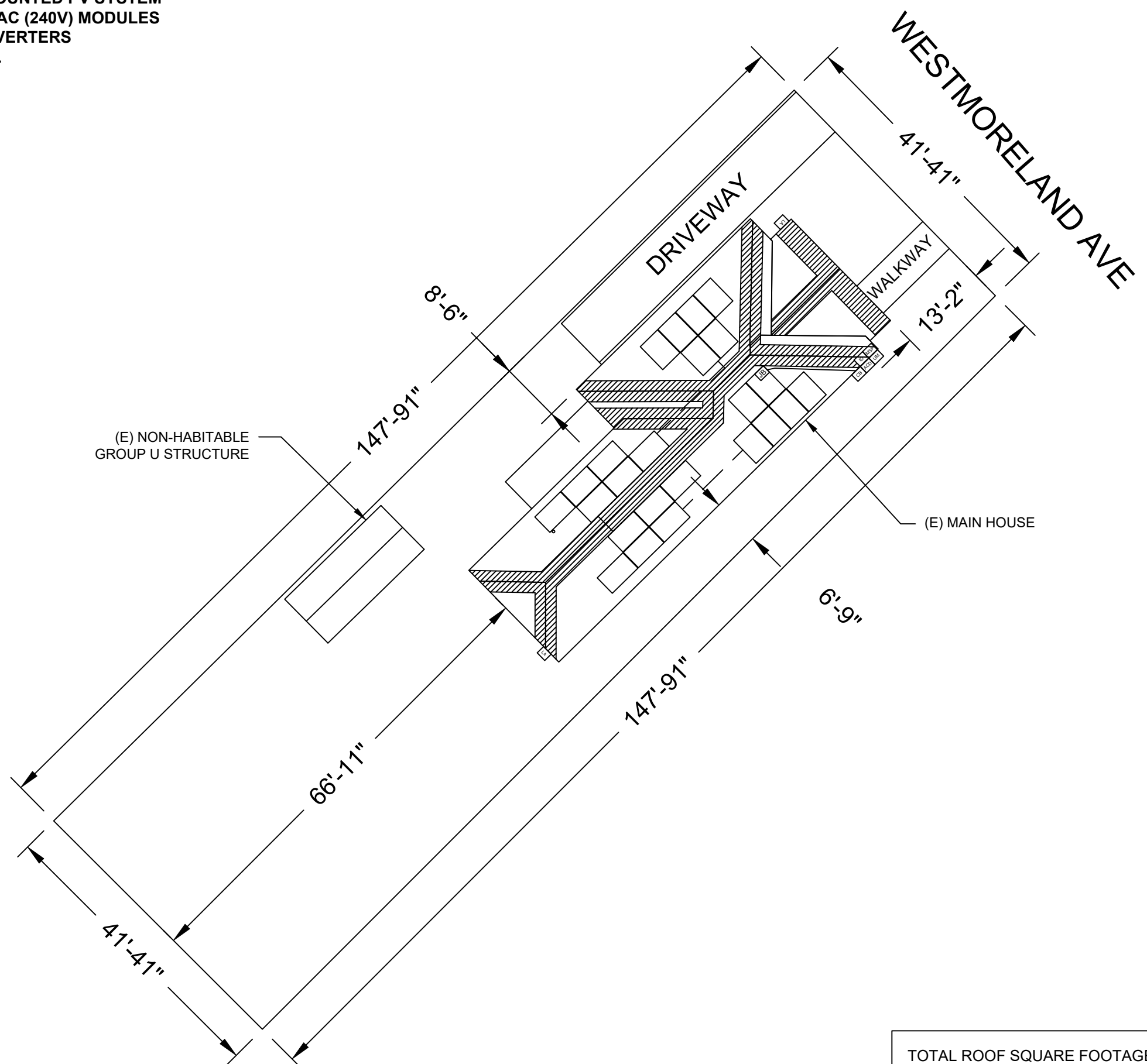
**Wyssling Consulting, PLLC**  
76 N. Meadowbrook Drive, Alpine UT  
Maryland COA # 58509  
Signed 11/10/2025

**PROFESSIONAL CERTIFICATION**  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 43466, EXPIRATION DATE: 4/11/2027

DRAWN BY	AK
DATE	11/8/2025
REVISION	
SIGNATURE	
PV-1	

**COVER SHEET**

**SCOPE OF WORK**  
 (N) 8.400KW DC/7.680KW AC ROOF MOUNTED PV SYSTEM  
 (24) SUNPOWER SPR-X21-350-BLK-E-AC (240V) MODULES  
 (24) ENPHASEIQ 7XS (240V) MICROINVERTERS  
 (01) ENPHASE IQ COMBINER 5 PANEL



(E) NON-HABITABLE GROUP U STRUCTURE

(E) MAIN HOUSE

- LEGEND**
- FIRE PATHWAYS
  - PROPERTY LINE
  - FENCE
  - SKYLIGHT/CHIMNEY
  - VENT/OBSTRUCTION

**SITE PLAN-1**  
 SCALE: 1/16" = 1'-0"

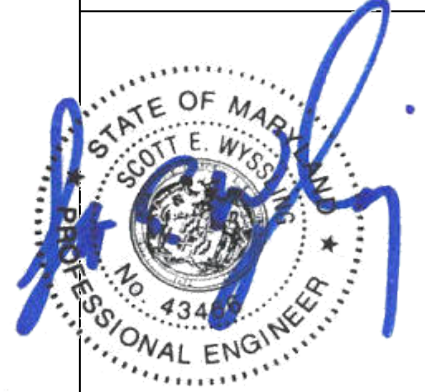
TOTAL ROOF SQUARE FOOTAGE IS: 1786.84 FT<sup>2</sup>  
 NEW ARRAY SQUARE FOOTAGE IS: 421 FT<sup>2</sup>  
 COVERED BY SOLAR IS: 23.56%

**CONTRACTOR**



EDGE ENERGY  
 6854 DISTRIBUTION DRIVE,  
 BELTSVILLE, MD, USA  
 +1 434 568 7220  
 LIC TYPE: MHIC, STATE  
 ELECTRICAL LICENSE  
 LIC NO.: 126720, 13228

PROJECT INFO & ADDRESS  
 SNYDER HOUSE  
 6812 WESTMORELAND  
 AVE,  
 TAKOMA PARK,  
 MD 20912, USA  
 SYSTEM SIZE  
 DC SIZE: 8.400 KW DC-(STC)  
 AC SIZE: 7.680 KW AC



Wyssling Consulting, PLLC  
 76 N. Meadowbrook Drive, Alpine UT  
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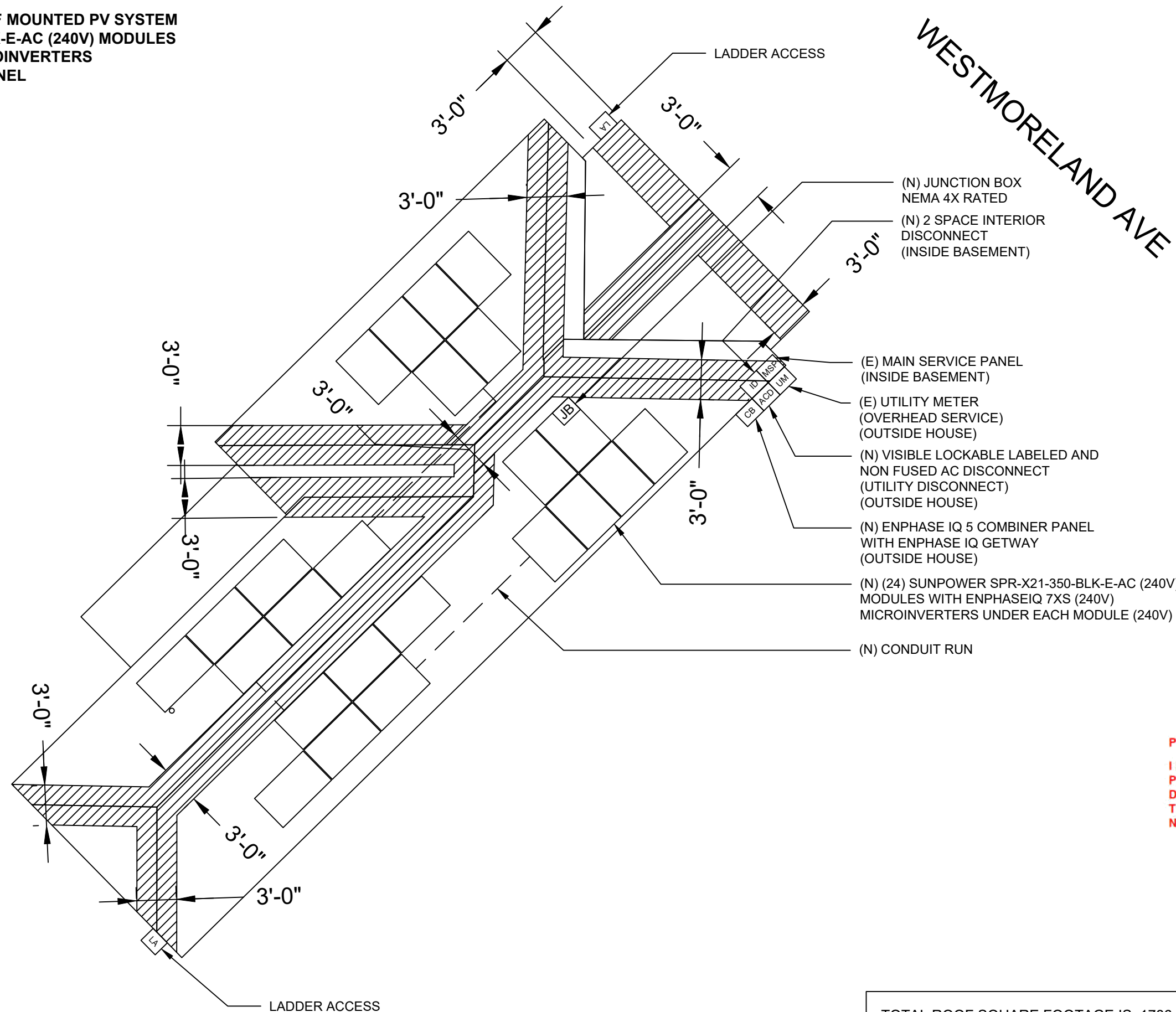
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DATE	11/8/2025
REVISION	
SIGNATURE	
	PV-2

**SITE PLAN-1**

**SCOPE OF WORK**

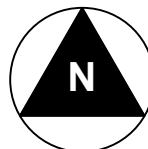
- (N) 8.400KW DC/7.680KW AC ROOF MOUNTED PV SYSTEM
- (24) SUNPOWER SPR-X21-350-BLK-E-AC (240V) MODULES
- (24) ENPHASEIQ 7XS (240V) MICROINVERTERS
- (01) ENPHASE IQ COMBINER 5 PANEL



- (N) JUNCTION BOX NEMA 4X RATED
- (N) 2 SPACE INTERIOR DISCONNECT (INSIDE BASEMENT)
- (E) MAIN SERVICE PANEL (INSIDE BASEMENT)
- (E) UTILITY METER (OVERHEAD SERVICE) (OUTSIDE HOUSE)
- (N) VISIBLE LOCKABLE LABELED AND NON FUSED AC DISCONNECT (UTILITY DISCONNECT) (OUTSIDE HOUSE)
- (N) ENPHASE IQ 5 COMBINER PANEL WITH ENPHASE IQ GETWAY (OUTSIDE HOUSE)
- (N) (24) SUNPOWER SPR-X21-350-BLK-E-AC (240V) MODULES WITH ENPHASEIQ 7XS (240V) MICROINVERTERS UNDER EACH MODULE (240V)
- (N) CONDUIT RUN

**LEGEND**

- FIRE PATHWAYS
- PROPERTY LINE
- FENCE
- SKYLIGHT/CHIMNEY
- VENT/OBSTRUCTION



**SITE PLAN-2**  
SCALE: 1/8"=1'-0"

TOTAL ROOF SQUARE FOOTAGE IS: 1786.84 FT<sup>2</sup>  
NEW ARRAY SQUARE FOOTAGE IS: 421 FT<sup>2</sup>  
COVERED BY SOLAR IS: 23.56%

**CONTRACTOR**



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LIC TYPE: MHIC, STATE  
ELECTRICAL LICENSE  
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SNYDER HOUSE  
**6812 WESTMORELAND AVE,**  
**TAKOMA PARK, MD 20912, USA**  
**SYSTEM SIZE**  
DC SIZE: 8.400 KW DC-(STC)  
AC SIZE: 7.680 KW AC



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DRAWN BY	AK
DATE	11/8/2025
REVISION	
SIGNATURE	
	PV-2.1

**SITE PLAN-2**

# ROOF SECTION(S)

ROOF 1	ROOF MATERIAL - METAL- STANDING SEAM RAFTER SIZE - 2"X6" O.C. SPACING - 16" MODULES - 12
ROOF 2	ROOF MATERIAL - METAL- STANDING SEAM RAFTER SIZE - 2"X6" O.C. SPACING - 16" MODULES - 6
ROOF 3	ROOF MATERIAL - METAL- STANDING SEAM RAFTER SIZE - 2"X6" O.C. SPACING - 16" MODULES - 6

□ - CLAMP

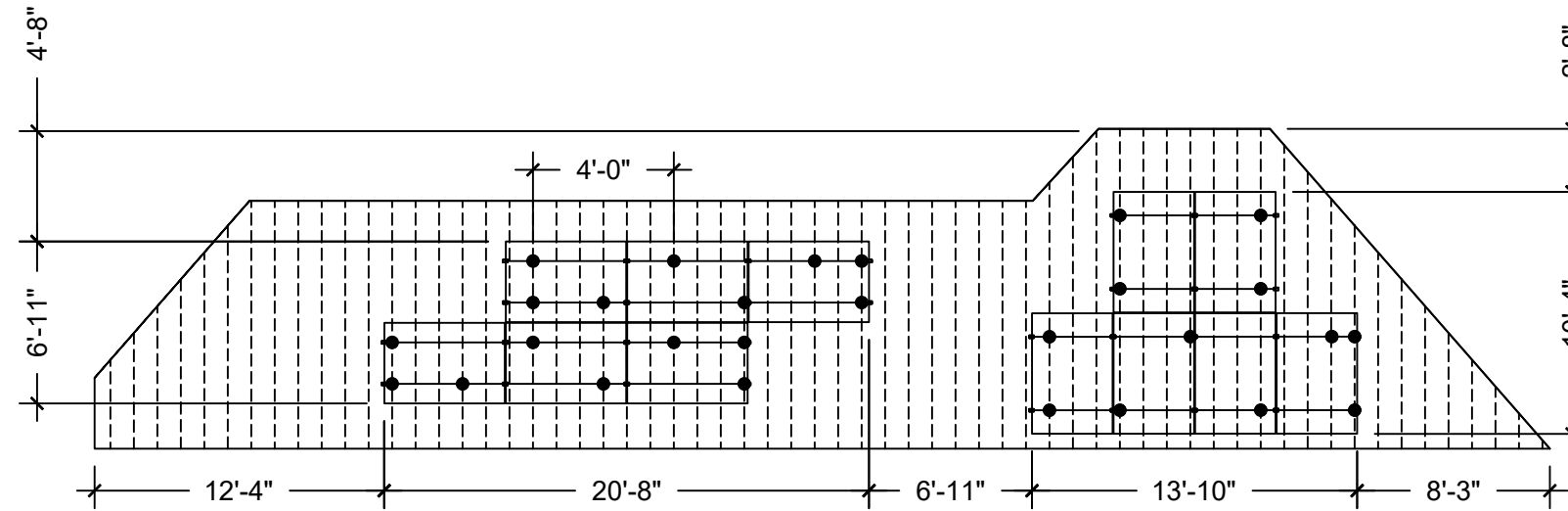
● - S-5-U

— - IRONRIDGE XR-100 RAIL

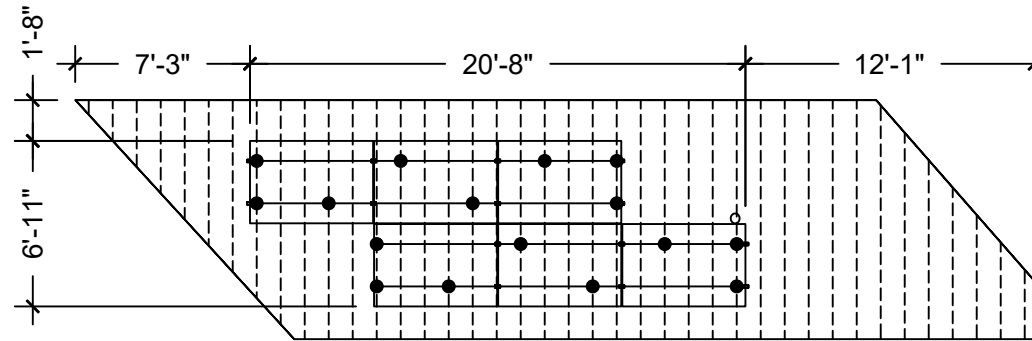
- - - - - METAL- STANDING SEAM @ 12"O.C

56 - TOTAL MOUNT

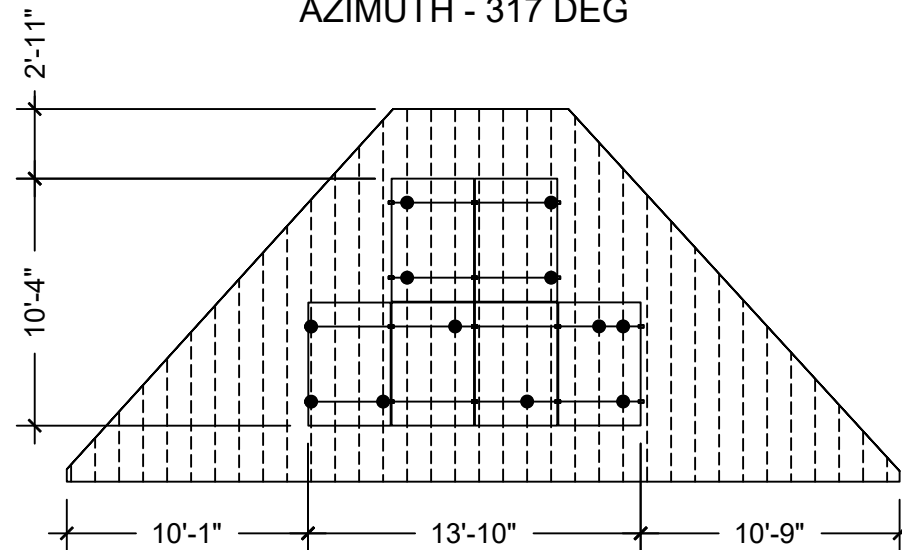
DEAD LOAD CALCULATION			
BOM	QUANTITY	LBS/UNIT	TOTAL WEIGHT(LBS)
SUNPOWER SPR-X21-350-BLK-E-AC (240V) MODULES	24	42.9	1029.60
MID-CLAMP	32	0.26	8.32
END-CLAMP	32	0.36	11.52
RAIL LENGTH	28	9.55	267.40
SPLICE BAR	12	0.5	6.00
S-5-U	56	0.4	22.40
TOTAL WEIGHT OF THE SYSTEM (LBS)			1345.24
TOTAL ARRAY AREA ON THE ROOF (SQ.FT)			421
WEIGHT PER SQ.FT. (LBS)			3.20
WEIGHT PER PENETRATION (LBS)			24.02



ARRAY 1  
TILT- 27 DEG  
AZIMUTH - 137 DEG



ARRAY 2  
TILT- 27 DEG  
AZIMUTH - 317 DEG



ARRAY 3  
TILT- 27 DEG  
AZIMUTH - 317 DEG

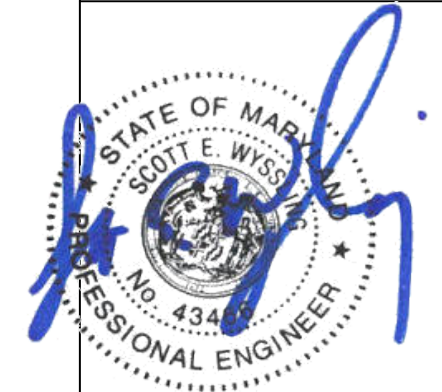
## CONTRACTOR



**EDGE ENERGY**  
6854 DISTRIBUTION DRIVE,  
BELTSVILLE, MD, USA  
+1 434 568 7220  
LIC TYPE: MHIC, STATE  
ELECTRICAL LICENSE  
LIC NO.: 126720,13228

### PROJECT INFO & ADDRESS

SNYDER HOUSE  
**6812 WESTMORELAND  
AVE,  
TAKOMA PARK,  
MD 20912, USA**  
**SYSTEM SIZE**  
DC SIZE: 8.400 KW DC-(STC)  
AC SIZE: 7.680 KW AC



**Wyssling Consulting, PLLC**  
76 N. Meadowbrook Drive, Alpine UT  
Maryland COA # 58509  
Signed 11/10/2025

### PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 43466, EXPIRATION DATE: 4/11/2027

DRAWN BY	AK
DATE	11/8/2025
REVISION	
SIGNATURE	
	PV-3

## ATTACHMENT PLAN

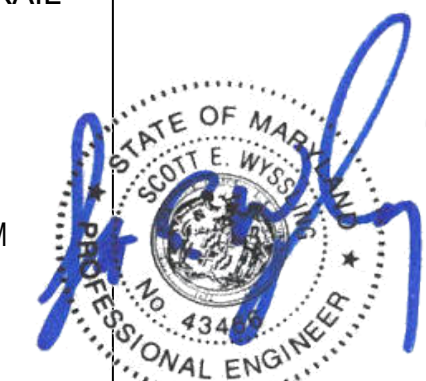
1 | ATTACHMENT PLAN  
SCALE: 1/8" = 1'-0"

**CONTRACTOR**



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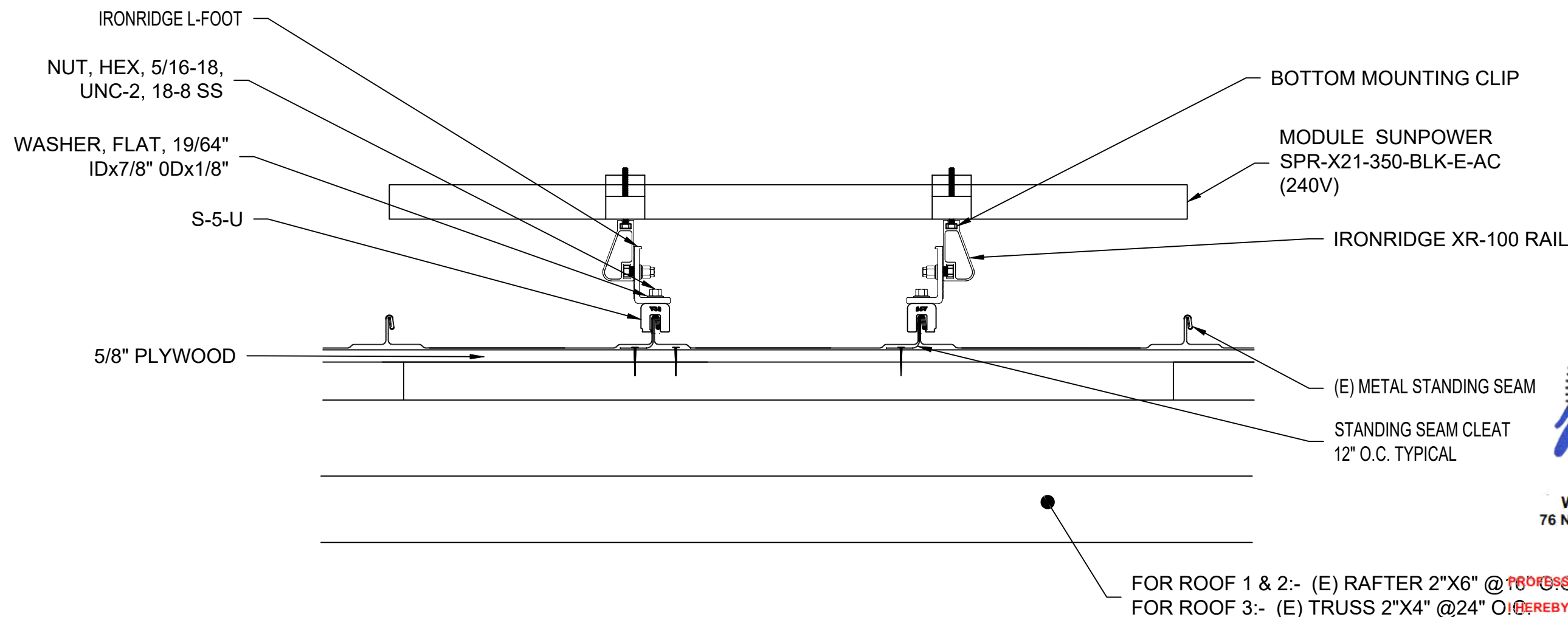
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REVISION	

SIGNATURE  
 PV-3.1

**STRUCTURAL PLAN**



**1 | STRUCTURAL PLAN**  
**SCALE:NTS**

# Shade Report - Snyder House

Customer  
—

Designer  
Roger Meza

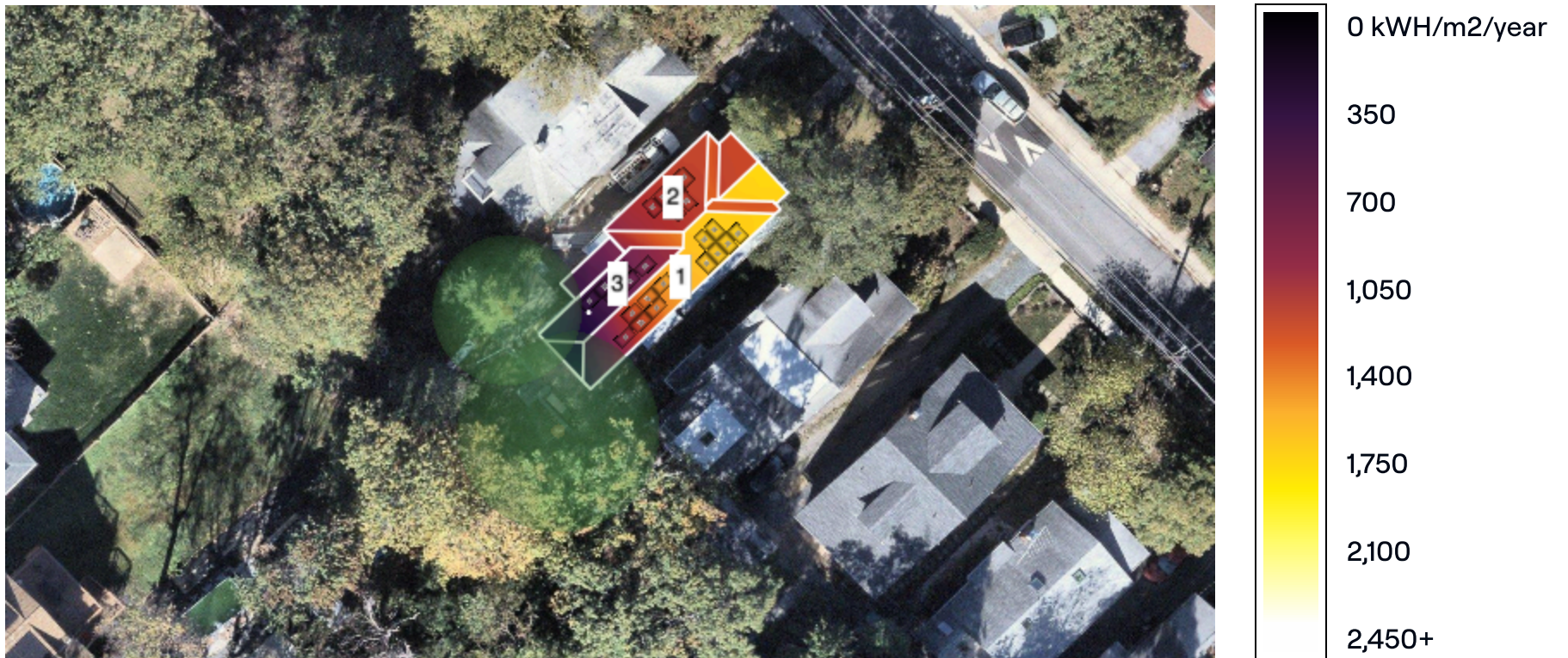
Organization  
EDGE Energy

Address  
6812 Westmoreland Ave, Takoma  
Park, MD 20912, USA

Coordinates  
38.9724186, -77.00943560000002

Date  
Feb 23, 2026

## Annual irradiance



## Summary

Array ID	Panel count	Azimuth	Pitch	Annual TOF	Annual solar access	Annual TSRF
1	12	137°	27°	95%	81%	77%
2	6	317°	27°	66%	89%	58%
3	6	317°	27°	66%	52%	34%
Weighted average by panel count:					75.8%	61.5%

## Monthly solar access % across arrays

Array ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	69	72	78	84	88	90	90	85	80	73	71	69
2	60	63	80	96	98	98	98	98	86	67	59	63
3	38	34	38	50	60	63	64	56	41	35	36	41

# Shade Report - Snyder House

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Roger Meza

Organization  
EDGE Energy

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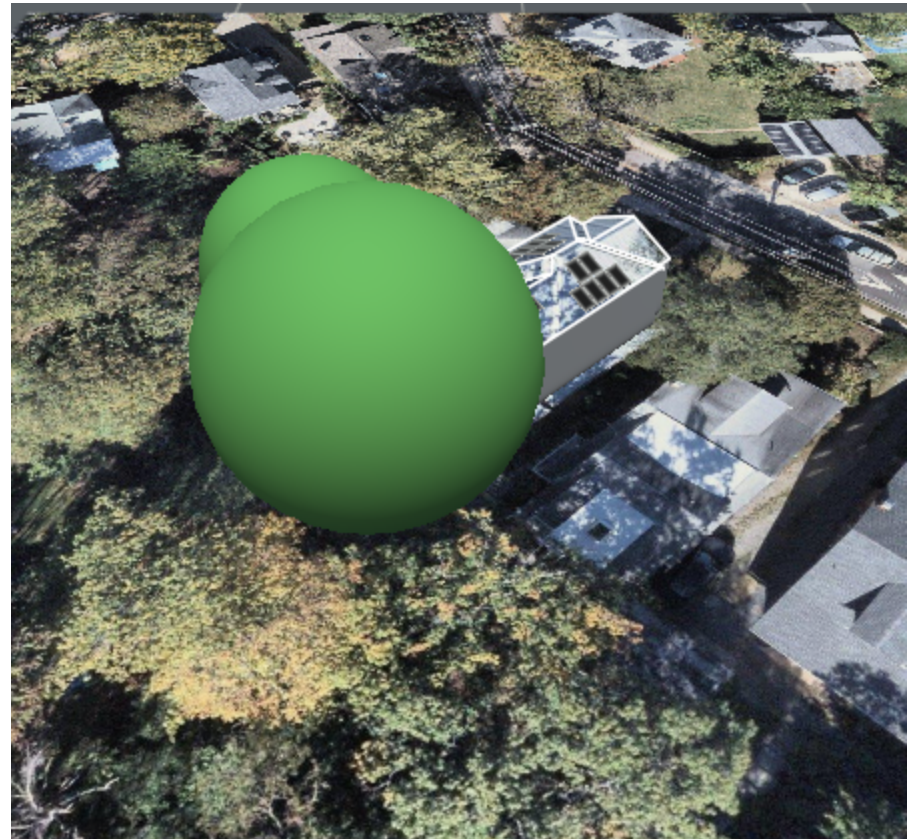
Coordinates  
38.9724186, -77.00943560000002

Date  
Feb 23, 2026

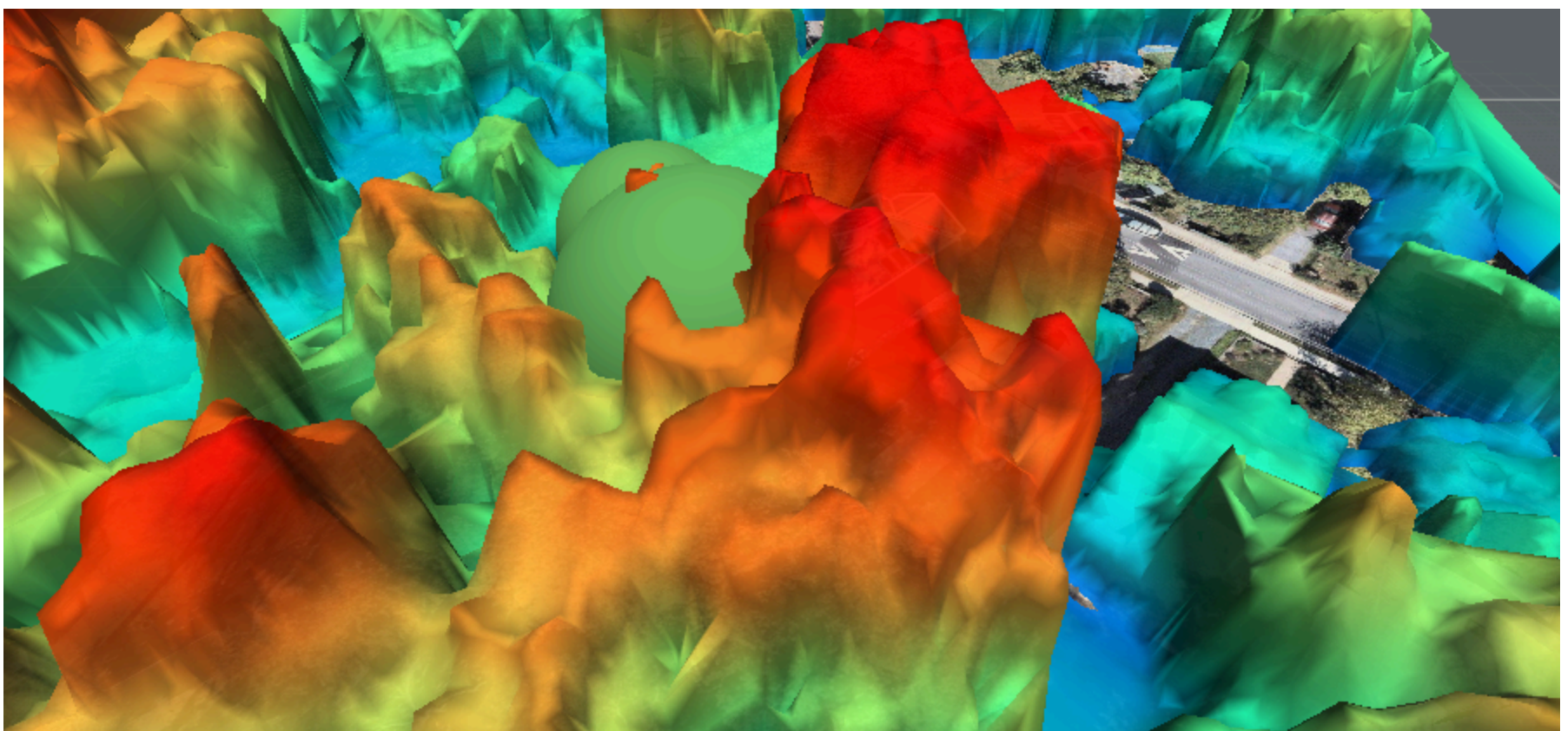
Zoomed out satellite view



3D model



3D model with LIDAR overlay



# Shade Report - Snyder House

Customer  
—

Designer  
Roger Meza

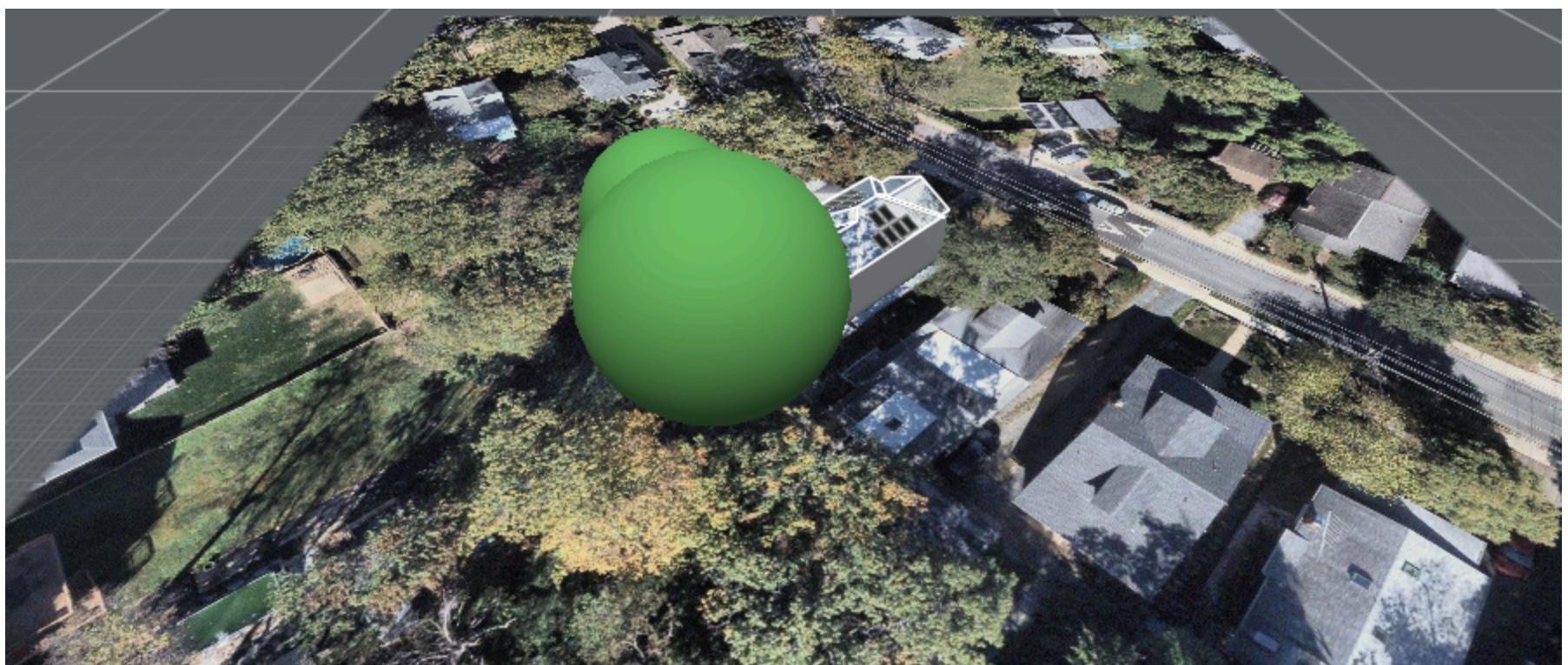
Organization  
EDGE Energy

Address  
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Park, MD 20912, USA

Coordinates  
38.9724186, -77.00943560000002

Date  
Feb 23, 2026

## Street view with corresponding 3D model



I, **Roger Meza**, certify that I have generated this shading report to the best of my abilities, and I believe its contents to be accurate.







November 10, 2025

Edge Energy  
6854 Distribution Drive,  
Beltsville, MD

Re: Engineering Services  
Snyder Residence  
6812 Westmoreland Avenue, Takoma Park, MD  
8.400 kW System

To Whom It May Concern:

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

**A. Site Assessment Information**

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

**B. Description of Structure:**

**Roof Framing:** 2 x 6 dimensional lumber spaced at 16" on center.  
**Roof Material:** Metal Roofing  
**Roof Slope:** 27 degrees  
**Attic Access:** Accessible  
**Foundation:** Permanent

**C. Loading Criteria Used**

- **Dead Load**
  - Existing Roofing and framing = 7 psf
  - New Solar Panels and Racking = 3 psf
  - TOTAL = 10 PSF
- **Live Load** = 20 psf (reducible) – 0 psf at locations of solar panels
- **Ground Snow Load** = 30 psf
- **Wind Load** based on ASCE 7-16
  - Ultimate Wind Speed = 115 mph (based on Risk Category II)
  - Exposure Category C

*Analysis performed of the existing roof structure utilizing the above loading criteria is in accordance with the Maryland Residential Code (2021 International Residential Code). This analysis indicates that the existing framing will support the additional panel loading without damage, if installed correctly.*

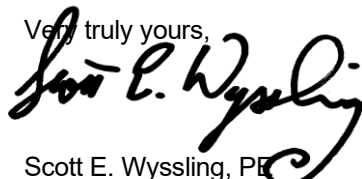
**D. Solar Panel Anchorage**

1. The solar panels shall be mounted in accordance with the most recent "S-5 Installation Manual". If during solar panel installation, the roof framing members appear unstable or deflect non-uniformly, our office should be notified before proceeding with the installation.
2. System will be attached to the metal roofing material utilizing the patented S-5 connection. Installation of the connections shall be in accordance with the manufacturer's recommendations.
3. Considering the wind speed, roof slopes, size and spacing of framing members, and condition of the roof, the panel supports shall be placed no greater than 48" on center.

Based on the above evaluation, this office certifies that with the racking and mounting specified, the existing roof system will adequately support the additional loading imposed by the solar system. This evaluation is in conformance with the Maryland Residential Code (2021 IRC), current industry standards, and is based on information supplied to us at the time of this report.

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

Very truly yours,



Scott E. Wyssling, PE  
Maryland License No. 43466  
Maryland COA #58509



**Wyssling Consulting, PLLC**  
76 N. Meadowbrook Drive, Alpine UT  
Maryland COA # 58509  
Signed 11/10/2025

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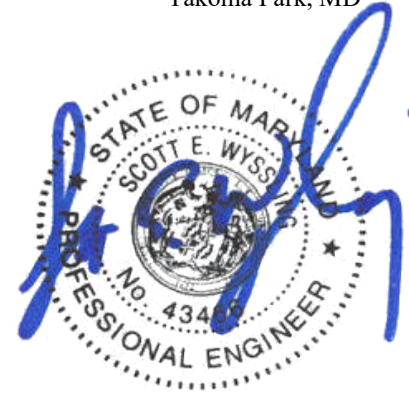
## Wind Uplift

### Rooftop Solar Panels Parallel to Roof Surface

ASCE 7-16, Section 29.4.4

V =	115	Basic Wind Speed		
Exposure	C	ASCE 7-16, Section 26.7		
K <sub>z</sub> =	0.85	Velocity Pressure Coefficient, ASCE 7-16, Figure 26.10-1		
K <sub>zt</sub> =	1	Topographic Factor, ASCE 7-16, Section 26.8.2		
K <sub>d</sub> =	0.85	Directionality Factor, ASCE 7-16, Section 26.6		
K <sub>e</sub> =	0.982	Ground Elevation Factor, ASCE 7-16, Section 26.9		
q <sub>h</sub> =	24.0 psf	q <sub>h</sub> = 0.00256K <sub>z</sub> K <sub>zt</sub> K <sub>d</sub> K <sub>e</sub> V <sup>2</sup> (ASCE 7-16 Eq. 26.10-1)		
Roof Angle =	27	deg		
Roof Type	Hip			
S <sub>anchor</sub> =	48 in	Horizontal spacing of roof anchors		
A <sub>trib</sub> =	11.30 sf	Panel Area tributary to each roof anchor		
GC <sub>p</sub>		External Pressure Coefficient, ASCE 7-16, Figure 30.3-2		
Roof Zone	<b>Zone 1</b>	<b>2e</b>	<b>2r</b>	<b>Zone 3</b>
	-1.39	-1.99	-1.99	-1.99
g <sub>a</sub> =	0.79	Pressure Equalization Factor, ASCE 7-16 Figure 29.4.-8		
g <sub>E</sub> =	1.00	Edge Array Factor, ASCE 29.4.4 edges < 0.5*building height, and panel spacing < 48"		

Snyder Residence  
6812 Westmoreland Avenue,  
Takoma Park, MD



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p<sub>net</sub> = q<sub>h</sub>GC<sub>p</sub>g<sub>a</sub>g<sub>E</sub> = Design Wind Pressure, ASCE 7-16, Equation 29.4-7

Roof Zone	<b>1</b>	<b>2e</b>	<b>2r</b>
	-27 psf	-38 psf	-38 psf
	<b>Use 27 psf</b>	<b>Use 38 psf</b>	<b>Use 38 psf</b>
x 0.6 =	<b>16 psf</b>	<b>23 psf</b>	<b>23 psf</b>

Connection to Existing Roof Framing

F.S. =	1	Additional Factor of Safety applied to withdrawal force, if desired		
A <sub>trib</sub> =	11.3	ft <sup>2</sup>		
DL <sub>panel</sub> =	3 psf			
Roof Zone	<b>1</b>	<b>2e</b>	<b>2r</b>	<b>Zone 3</b>
W <sub>uplift</sub> =	27 psf	38 psf	38 psf	38 psf
	P <sub>lag</sub> = F.S. x A <sub>trib</sub> x (0.6D - 0.6W) = <b>Withdrawal force for each roof anchor</b>			
Roof Zone	<b>1</b>	<b>2e</b>	<b>2r</b>	<b>Zone 3</b>
	<b>-161.8 lbs</b>	<b>-239.6 lbs</b>	<b>-239.6 lbs</b>	<b>-239.6 lbs</b>

Connection Capacity: S-5-U = 456 lbs, per manuf.

Roof Zone	<b>1</b>	<b>2e</b>	<b>2r</b>	<b>Zone 3</b>
<b>DEMAND =</b>	<b>162 lbs</b>	<b>240 lbs</b>	<b>240 lbs</b>	<b>240 lbs</b>
<b>CAPACITY =</b>	<b>456 lbs</b>	<b>456 lbs</b>	<b>456 lbs</b>	<b>456 lbs</b>
	<b>up to 72in ok</b>	<b>up to 72in ok</b>	<b>up to 72in ok</b>	<b>up to 72in ok</b>

This analysis compares the capacity of the S-5-U only. For capacity of the complete mounting system, please see manufacturer's

## Existing Rafter Analysis Roof Section 1

### Existing Rafter Properties

Lumber = Spruce-Pine-Fir  
 Grade = No. 2  
 Nominal size = 2x6      A = 8.25 in<sup>2</sup>      E = 1400000 psi      S = 7.56 in<sup>3</sup>      I = 20.80 in<sup>4</sup>  
 Rafter Spacing = 16 in o.c.  
 Max Span = 11.50 ft Between supports  
 Roof Slope = 27 °

Snyder Residence  
 6812 Westmoreland Avenue,  
 Takoma Park, MD

### Loading of Existing Rafter

#### Roof Dead Load

2 psf Metal  
 2 psf 1/2" Plywood Sheathing  
 2 psf 2x6 @ 16 in. o.c.  
 1 psf Ceiling, Mechanical, Electrical  
 0 psf Miscellaneous

**7 psf TOTAL**

#### Roof Live Load

20 psf

#### Ground Snow Load

30 psf

$w_{DL} = DL \times \text{spacing} = 9.3 \text{ plf}$  Uniform Dead Load of Existing Structure  
 $w_{DL} = DL \times \text{spacing} = 3.6 \text{ plf}$  Partially distributed Dead Load of Panels  
 $w_{LR} = L_R \times \text{spacing} = 21.2 \text{ plf}$  Partially distributed uniform Roof Live Load  
 $pf = 0.7 C_e C_t I pg = 23 \text{ psf}$  Flat Roof Snow Load (ASCE 7 Eq. 7.3-1)  
 Horiz Projection of Snow Load 23 psf Based on  $C_t=1.1$  for unheated attic - Dist load away from panels  
 $C_s = 0.782$  Roof Slope Factor (ASCE 7 Fig. 7-2b), based on  $C_t=1.2$  for open-air structures (panels)  
 $p_s = C_s \times pf = 19.7 \text{ psf}$  Sloped Roof Snow Load (ASCE 7 Eq. 7.4-1)  
 $w_S = S \times \text{spacing} = 26.3 \text{ plf}$  Partially distributed uniform Roof Snow Load

$w_{DL} = DL \times \text{spacing} = 9.33 \text{ plf}$  Uniform Dead Load of Existing Structure  
 $w_{LL} = LL \times \text{spacing} = 26.67 \text{ plf}$  Partially distributed uniform Live Load

#### Beginning and ending locations of Live or Snow Load along rafter span ( $w_{LL}$ )

$x_{start1} = 0.00 \text{ ft}$        $x_{start2} = 12.92 \text{ ft}$   
 $x_{end1} = 1.75 \text{ ft}$        $x_{end2} = 13.50 \text{ ft}$



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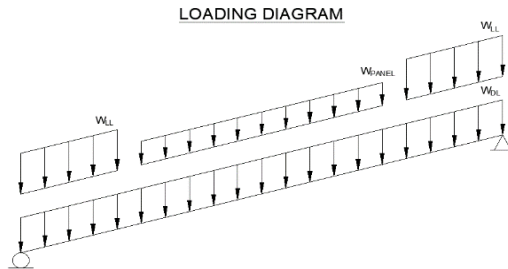
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Beginning and ending locations of Panel Dead and/or Snow Load along rafter span ( $W_{\text{PANEL}}$ )

$$x_{\text{start}} = 1.75 \text{ ft}$$

$$x_{\text{end}} = 12.92 \text{ ft}$$



**Results**

Load Combination	V	M	D	D
DL + LL	95.41	193.2	0.126	<b>L / 1094</b>
DL + S (upper)	214.86	564.69	0.126	<b>L / 1094</b>
DL + S (lower)	214.86	564.69	0.126	<b>L / 1094</b>
0.6DL - 0.6W	32.20	92.58	0.076	<b>L / 1824</b>

**Capacity of Wood Rafter**

Adjustment Factors

	Shear	Moment	
$C_D =$	1.15	1.15	Load Duration Factor, NDS Table 2.3.2
$C_M =$	1	1	Wet Service Factor, NDS Table 4A
$C_t =$	1	1	Temperature Factor, NDS Table 10.3.4
$C_L =$		1	Beam Stability Factor, NDS Section 3.3.3
$C_F =$		1.3	Size Factor, NDS Table 4A
$C_{fu} =$		1	Flat Use Factor, NDS Table 4A
$C_i =$	1	1	Incising Factor, NDS Section 4.3.8
$C_r =$		1.15	Repetitive Member Factor, NDS Table 4A

$$F_b = 875 \text{ psi Reference Design Allowable Bending Stress, NDS Table 4A}$$

$$F_v = 135 \text{ psi Reference Design Allowable Shear Stress, NDS Table 4A}$$

$$F'_b = F_b \times \text{Adjustment Factors} = \mathbf{1504 \text{ psi}} \text{ (allowable bending stress)}$$

$$f_{b \text{ upper}} = M/S = \mathbf{896 \text{ psi}} \text{ (actual bending stress determined from } M_{\text{max}})$$

$$f_{b \text{ lower}} = M/S = \mathbf{896 \text{ psi}} \text{ (actual bending stress determined from } M_{\text{max}})$$

**OK IN BENDING**

$$F'_v = F_v \times \text{Adjustment Factors} = \mathbf{155 \text{ psi}} \text{ (allowable shear stress)}$$

$$f_{v \text{ upper}} = 3V/2bd = \mathbf{39 \text{ psi}} \text{ (actual shear stress determined from } V_{\text{max}})$$

$$f_{v \text{ lower}} = 3V/2bd = \mathbf{39 \text{ psi}} \text{ (actual shear stress determined from } V_{\text{max}})$$

**OK IN SHEAR**



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 AC SIZE: 7.680 KW AC

ELECTRICAL ONLY



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DRAWN BY AK

DATE 11/8/2025

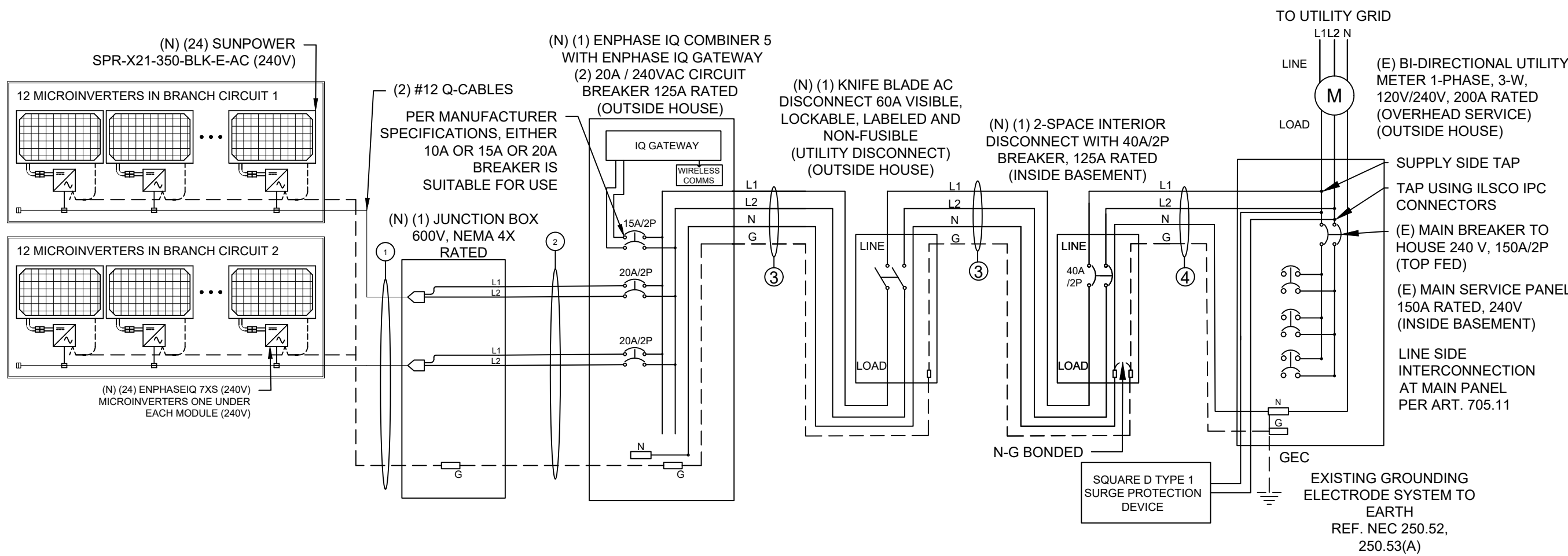
REVISION

SIGNATURE

PV-4

**ELECTRICAL**

METER NO: 112129287



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NOTE:  
 - ALL CONDUCTORS ARE COPPER UNLESS OTHERWISE NOTED.  
 - THE MICROINVERTERS COMPLY WITH SMART INVERTER REQUIREMENTS PER IEEE 1547-2018 & UL-1741-SB.

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	SUNPOWER SPR-X21-350-BLK-E-AC (240V) MODULE
TEMP. COEFF. VOC	-0.29%/C
MODULE DIMENSION	61.3"L x 41.2"W x 1.6"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASEIQ 7XS (240V) MICROINVERTER
NOMINAL AC VOLTAGE RATING	240V/ 211-264V
MAX AC CURRENT	1.31A
MAX MODULES PER STRING	12 MODULES
MAX OUTPUT POWER	320 VA

ID	PHASE CONDUCTOR AND NEUTRAL QTY, SIZE AND TYPE PER CONDUIT			GROUND CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT			CONDUIT SIZE	CONDUIT TYPE
	QTY	SIZE	TYPE	QTY	SIZE	TYPE		
1	2	AWG #12	Q-CABLE	1	AWG #6	BARE COPPER EGC IN FREE AIR	N/A	FREE AIR
2	4	AWG #10	THWN-2	1	AWG #10	THWN-2	3/4"	EMT/FMC
3	3	AWG #6	THWN-2	1	AWG #8	THWN-2	1"	EMT/FMC/NM CABLE
4	3	AWG #6	THWN-2	1	AWG #6	THWN-2	1"	EMT/FMC

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-12°
AMBIENT TEMP (HIGH TEMP 2%)	34°
CONDUIT HEIGHT	7/8"
ROOF TOP TEMP	56°
CONDUCTOR TEMPERATURE RATE	75°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.29%/C

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
0.80	4-6
0.70	7-9
0.50	10-20

**CALCULATIONS:**

**1. CURRENT CARRYING CONDUCTOR**

**(A) BEFORE IQ COMBINER PANEL**

AMBIENT TEMPERATURE - (34)°C ...NEC 310.15(B)(1)  
 TEMPERATURE DERATE FACTOR - 0.94 ...NEC 310.15(B)(1)  
 GROUPING FACTOR - 0.8...NEC 310.15(C)(1)

**CONDUCTOR AMPACITY**

= (INV O/P CURRENT ) x 1.25 / A.T.F / G.F ...NEC 690.8(B)  
 = [(12 x 1.31) x 1.25] / [0.94 x 0.8]  
 = 26.13A

SELECTED CONDUCTOR - #10 THWN-2 ...NEC 310.16

**(B) AFTER IQ COMBINER PANEL**

TEMPERATURE DERATE FACTOR - 0.94  
 GROUPING FACTOR - 1

**CONDUCTOR AMPACITY**

= (TOTAL INV O/P CURRENT) x 1.25 / 0.94/ 1 ...NEC 690.8(B)  
 = [(24 x 1.31) x 1.25] / [0.94 x 1]  
 = 41.81 A

SELECTED CONDUCTOR - #6 THWN-2 ...NEC 310.16

**2. PV OVER CURRENT PROTECTION ...NEC 690.9(B)**  
 = TOTAL INVERTER O/P CURRENT x 1.25  
 = (24 x 1.31) x 1.25 = 39.30 A

**PROFESSIONAL CERTIFICATION**

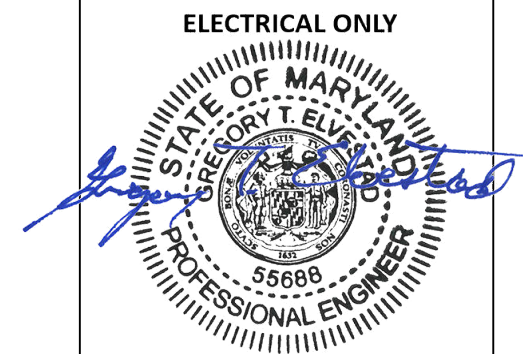
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55688, EXPIRATION DATE: 2/18/2026.

**CONTRACTOR**



EDGE ENERGY  
 6854 DISTRIBUTION DRIVE,  
 BELTSVILLE, MD, USA  
 +1 434 568 7220  
 LIC TYPE: MHIC, STATE  
 ELECTRICAL LICENSE  
 LIC NO.: 126720,13228

PROJECT INFO & ADDRESS  
 SNYDER HOUSE  
 6812 WESTMORELAND  
 AVE,  
 TAKOMA PARK,  
 MD 20912, USA  
 SYSTEM SIZE  
 DC SIZE: 8.400 KW DC-(STC)  
 AC SIZE: 7.680 KW AC



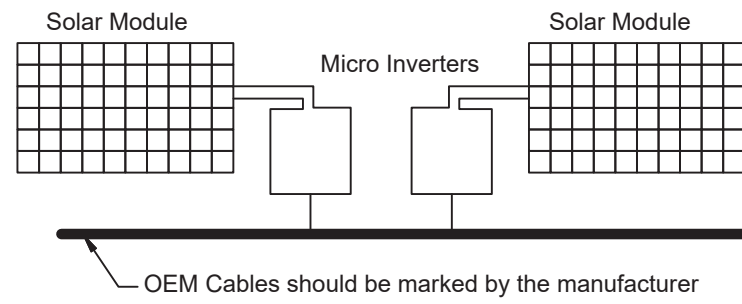
Wyssling Consulting, PLLC  
 76 N Meadowbrook Drive, Alpine UT 84004  
 Maryland COA #58509

Signed 11/11/2025

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DATE	11/8/2025
REVISION	

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 PV-4.1

**ELECTRICAL  
 CALCULATIONS**



AC JUNCTION BOX  
NEC 690.31(G)(3)

IQ COMBINER PANEL  
Outside Door  
1

NEC 690.13(B) NEC 705.11  
NEC 690.56(B) NEC 705.12(B)(3)  
NEC 705.10

AC Disconnect  
5,6

NEC 690.13(B)  
NEC 690.54  
NEC 690.56(C)  
NEC 705.12(B)(3)

2 SPACE INTERIOR DISCONNECT  
5,6

NEC 690.13(B)  
NEC 690.54  
NEC 690.56(C)  
NEC 705.12(B)(3)

MAIN SERVICE PANEL  
Outside Door 2  
Inside Door 4  
\*Custom Directory Placard

NEC 690.13(B)  
NEC 690.56(B)  
NEC 705.10  
NEC 705.11  
NEC 705.12(B)(3)

**1** PHOTOVOLTAIC SYSTEM COMBINER PANEL DO NOT ADD LOADS

**2** **WARNING:** DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

**3** CAUTION: SOLAR CIRCUIT

**4** **WARNING** INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

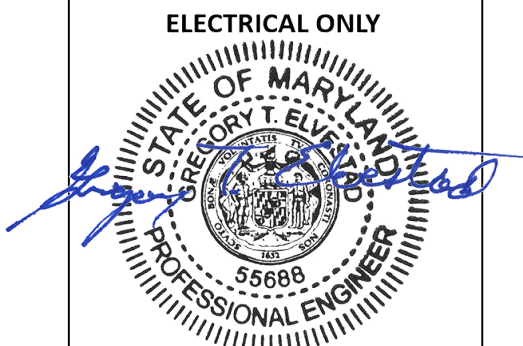
**5** SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

**6** PHOTOVOLTAIC SYSTEM AC DISCONNECT RATED AC OUTPUT CURRENT 31.44 AMPS NOMINAL OPERATING AC VOLTAGE 240 VOLTS

**PROFESSIONAL CERTIFICATION**

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Wysling Consulting, PLLC  
76 N Meadowbrook Drive, Alpine UT 84004  
Maryland COA #58509

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PV-5

**LABELS**

**CONTRACTOR**



**EDGE ENERGY**  
6854 DISTRIBUTION DRIVE,  
BELTSVILLE, MD, USA  
+1 434 568 7220  
LIC TYPE: MHIC, STATE  
ELECTRICAL LICENSE  
LIC NO.: 126720, 13228

PROJECT INFO & ADDRESS  
SNYDER HOUSE  
**6812 WESTMORELAND AVE,**  
**TAKOMA PARK,**  
**MD 20912, USA**  
SYSTEM SIZE  
DC SIZE: 8.400 KW DC-(STC)  
AC SIZE: 7.680 KW AC



**EDGE ENERGY**  
**6854 DISTRIBUTION DRIVE,**  
**BELTSVILLE, MD, USA**  
**+1 434 568 7220**  
**LIC TYPE: MHIC, STATE**  
**ELECTRICAL LICENSE**  
**LIC NO.: 126720,13228**

PROJECT INFO & ADDRESS

**SNYDER HOUSE**  
**6812 WESTMORELAND**  
**AVE,**  
**TAKOMA PARK,**  
**MD 20912, USA**  
**SYSTEM SIZE**  
**DC SIZE: 8.400 KW DC-(STC)**  
**AC SIZE: 7.680 KW AC**

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DATE 11/8/2025

REVISION

SIGNATURE

PV-6

**RESOURCE DOCUMENT**

X-Series: **X21-350-BLK** | X21-335-BLK | X20-327-BLK SunPower® Residential AC Module

AC Electrical Data		
Inverter Model: Enphase IQ 7XS (IQ7XS-96-ACM-US)	@240 VAC	@208 VAC
Peak Output Power	320 VA	320 VA
Max. Continuous Output Power	315 VA	315 VA
Nom. (L-L) Voltage/Range <sup>2</sup> (V)	240 / 211-264	208 / 183-229
Max. Continuous Output Current (A)	1.31	1.51
Max. Units per 20 A (LL) Branch Circuit <sup>3</sup>	12 (single phase)	10 (two pole) wye
CEC Weighted Efficiency	97.5%	97.0%
Nom. Frequency	60 Hz	
Extended Frequency Range	47-68 Hz	
AC Short Circuit Fault Current Over 3 Cycles	5.8 A rms	
Overvoltage Class AC Port	III	
AC Port Backfeed Current	18 mA	
Power Factor Setting	1.0	
Power Factor (adjustable)	0.7 lead. / 0.7 lag.	

No active phase balancing for three-phase installations

DC Power Data			
	X21-350-BLK-E-AC	X21-335-BLK-E-AC	X20-327-BLK-E-AC
Nom. Power <sup>5</sup> (Pnom)	350 W	335 W	327 W
Power Tol.	+5/-0%	+5/-0%	+5/-0%
Module Efficiency	21.5%	21.0%	20.4%
Temp. Coef. (Power)	-0.29%/°C	-0.29%/°C	-0.29%/°C
Shade Tol.	<ul style="list-style-type: none"> <li>• Three bypass diodes</li> <li>• Integrated module-level maximum power point tracking</li> </ul>		

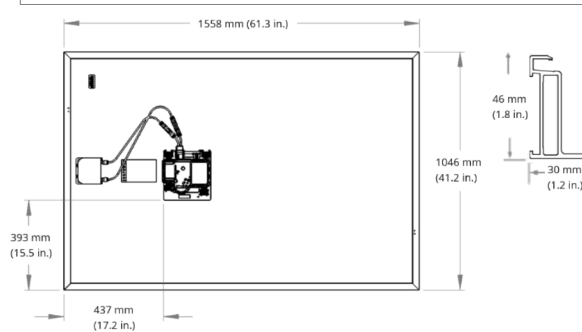
Tested Operating Conditions	
Operating Temp.	-40°F to +185°F (-40°C to +85°C)
Max. Ambient Temp.	122°F (50°C)
Max. Load	Wind: 62 psf, 3000 Pa, 305 kg/m <sup>2</sup> front & back Snow: 125 psf, 6000 Pa, 611 kg/m <sup>2</sup> front
Impact Resistance	1 inch (25 mm) diameter hail at 52 mph (23 m/s)

Mechanical Data	
Solar Cells	96 Monocrystalline Maxeon Gen III
Front Glass	High-transmission tempered glass with anti-reflective coating
Environmental Rating	Outdoor rated
Frame	Class 1 black anodized (highest AAMA rating)
Weight	42.9 lbs (18.5 kg)
Recommended Max. Module Spacing	1.3 in. (33 mm)

<sup>1</sup> SunPower 360 W compared to a conventional module on same-sized arrays (260 W, 16% efficient, approx. 1.6 m<sup>2</sup>), 4% more energy per watt (based on third-party module characterization and PVSIM), 0.75%/yr slower degradation (Campeau, Z. et al. "SunPower Module Degradation Rate," SunPower white paper, 2013).  
<sup>2</sup> Based on search of datasheet values from websites of top 10 manufacturers per IHS, as of January 2017.  
<sup>3</sup> #1 rank in "Fraunhofer PV Durability Initiative for Solar Modules: Part 3," PV Tech Power Magazine, 2015. Campeau, Z. et al. "SunPower Module Degradation Rate," SunPower white paper, 2013.  
<sup>4</sup> Factory set to 1547a-2014 default settings. CA Rule 21 default settings profile set during commissioning. See the Equinox Installation Guide #518101 for more information.  
<sup>5</sup> Standard Test Conditions (1000 W/m<sup>2</sup> irradiance, AM 1.5, 25°C). NREL calibration standard: SOMS current, LACCS FF and voltage. All DC voltage is fully contained within the module.  
<sup>6</sup> This product is UL Listed as PVRSE and conforms with NEC 2014 and NEC 2017 690.12; and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors; when installed according to manufacturer's instructions.

See [www.sunpower.com/facts](http://www.sunpower.com/facts) for more reference information.  
 For more details, see extended datasheet [www.sunpower.com/datasheets](http://www.sunpower.com/datasheets) Specifications included in this datasheet are subject to change without notice.  
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Warranties, Certifications, and Compliance	
Warranties	<ul style="list-style-type: none"> <li>• 25-year limited power warranty</li> <li>• 25-year limited product warranty</li> </ul>
Certifications and Compliance	<ul style="list-style-type: none"> <li>• UL 1703</li> <li>• UL 1741 / IEEE-1547</li> <li>• UL 1741 AC Module (Type 2 fire rated)</li> <li>• UL 62109-1 / IEC 62109-2</li> <li>• FCC Part 15 Class B</li> <li>• ICES-0003 Class B</li> <li>• CAN/CSA-C22.2 NO. 107.1-01</li> <li>• CA Rule 21 (UL 1741 SA)<sup>4</sup> (includes Volt/Var and Reactive Power Priority)</li> <li>• UL Listed PV Rapid Shutdown Equipment<sup>6</sup></li> </ul> <p>Enables installation in accordance with:</p> <ul style="list-style-type: none"> <li>• NEC 690.6 (AC module)</li> <li>• NEC 690.12 Rapid Shutdown (inside and outside the array)</li> <li>• NEC 690.15 AC Connectors, 690.33(A)-(E)(1)</li> </ul> <p>When used with InvisiMount racking and InvisiMount accessories (UL 2703):</p> <ul style="list-style-type: none"> <li>• Module grounding and bonding through InvisiMount</li> <li>• Class A fire rated</li> </ul> <p>When used with AC module Q Cables and accessories (UL 6703 and UL 2238)<sup>6</sup>:</p> <ul style="list-style-type: none"> <li>• Rated for load break disconnect</li> </ul>
PID Test	Potential-induced degradation free



**SUNPOWER®**  
 Module Fire Performance: Type 2  
 Please read the Safety and Installation Instructions for details. 531946 RevA



**SUNPOWER®**

X-Series: X21-350-BLK | X21-335-BLK | X20-327-BLK

SunPower® Residential AC Module

Built specifically for use with the SunPower Equinox™ system, the only fully integrated solution designed, engineered and warranted by one manufacturer.



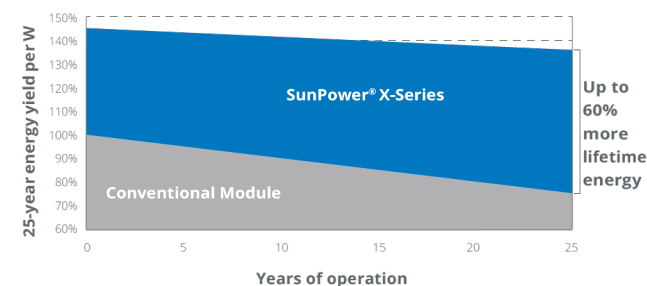
**Maximum Power. Minimalist Design.**

Industry-leading efficiency means more power and savings per available space. With fewer modules required and hidden microinverters, less is truly more.



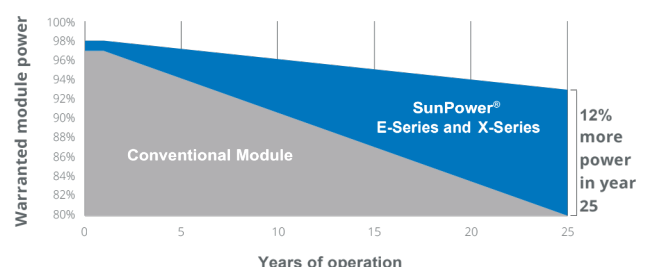
**Highest Lifetime Energy and Savings.**

Designed to deliver 60% more energy over 25 years in real-world conditions like partial shade and high temperatures.<sup>1</sup>

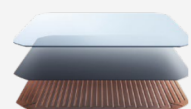


**Best Reliability. Best Warranty.**

With more than 25 million modules deployed around the world, SunPower technology is proven to last. That's why we stand behind our module and microinverter with the industry's best 25-year Combined Power and Product Warranty, including the highest Power Warranty in solar.



**Fundamentally Different. And Better.**



The SunPower® Maxeon® Solar Cell

- Enables highest-efficiency modules available.<sup>2</sup>
- Unmatched reliability<sup>3</sup>
- Patented solid metal foundation prevents breakage and corrosion



Factory-integrated Microinverter

- Simpler, faster installation
- Integrated wire management, rapid shutdown
- Engineered and calibrated by SunPower for SunPower modules



**EDGE ENERGY**  
**6854 DISTRIBUTION DRIVE,**  
**BELTSVILLE, MD, USA**  
**+1 434 568 7220**  
**LIC TYPE: MHIC,STATE**  
**ELECTRICAL LICENSE**  
**LIC NO.: 126720,13228**

PROJECT INFO & ADDRESS

SNYDER HOUSE  
**6812 WESTMORELAND**  
**AVE,**  
**TAKOMA PARK,**  
**MD 20912, USA**  
**SYSTEM SIZE**  
 DC SIZE: 8.400 KW DC-(STC)  
 AC SIZE: 7.680 KW AC

Product data sheet  
 Characteristics

**HEPD80**  
 SPD, HEPD type 1, 120/240 V, 1 PH, 3 wire,  
 80 kA



Main

Product	Surge protection device
Surge Arrester Type	Electrical distribution network
Range	Square D
Device Short Name	HEPD
Accessory Category	Mounting accessory

Complementary

Surge Current	80 kA per phase
Voltage Rating	120/240 V AC
Number of Phases	1 phase
Wiring Configuration	3-wire (isolated ground)
Connection	Wire AWG 14
MCOV	150 V
Nominal Discharge Current	10 kA
Rated Current	10 kA
SCCR	25 kA
Local Signalling	1 LED green normal operation 1 LED green off
Mounting Location	Side
Mounting Support	Bracket
Product destination	Load center
Input voltage	600 V L-N 600 V L - G 1000 V L - L 900 V N - G
Height	3.23 in (82.04 mm)
Width	3.72 in (94.49 mm)
Depth	2.10 in (53.34 mm)
Cable length	34 in (863.60 mm)

Environment

Enclosure Rating	NEMA 4X
Enclosure Material	non-metallic
Standards	UL 1449 CUL UL 1449:ed. 4 type I
Ambient Operating	-40...149 °F (-40...65 °C)

Ordering and shipping details

Category	08461 - SURGE PROTECTION RESI
Discount Schedule	DE1B
GTIN	00785901008729
Nbr. of units in pkg.	1
Package weight(Lbs)	1.2 lb(US) (0.54 kg)
Returnability	Yes
Country of origin	US

Packing Units

Package 1 Height	3.50 in (8.890 cm)
Package 1 width	6.00 in (15.240 cm)
Package 1 Length	8.00 in (20.320 cm)

Offer Sustainability

EU RoHS Directive	Compliant <a href="#">EU RoHS Declaration</a>
Mercury free	Yes
RoHS exemption information	<a href="#">Yes</a>
China RoHS Regulation	<a href="#">China RoHS Declaration</a>

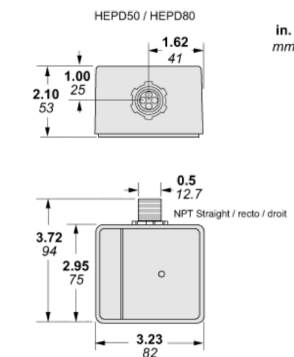
Contractual warranty

Warranty	18 months
----------	-----------

Product data sheet  
 Dimensions Drawings

HEPD80

Approximate Dimensions



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PV-6 1

**RESOURCE DOCUMENT**



DATA SHEET



X-IQ-AMI-240-5  
X-IQ-AMI-240-5C

## IQ Combiner 5/5C

The IQ Combiner 5/5C consolidates interconnection equipment into a single enclosure and streamlines IQ Series Microinverters and IQ Gateway installation by providing a consistent, pre-wired solution for residential applications. IQ Combiner 5/5C uses wired control communication and is compatible with IQ System Controller 3/3G and IQ Battery 5P.

The IQ Combiner 5/5C, IQ Series Microinverters, IQ System Controller 3/3G, and IQ Battery 5P provide a complete grid-agnostic Enphase Energy System.



**IQ Series Microinverters**  
The high-powered smart grid-ready IQ Series Microinverters (IQ6, IQ7, and IQ8 Series) simplify the installation process.



**IQ System Controller 3/3G**  
Provides microgrid interconnection device (MID) functionality by automatically detecting grid failures and seamlessly transitioning the home energy system from grid power to backup power.



**IQ Battery 5P**  
Fully integrated AC battery system. Includes six field-replaceable IQ8D-BAT Microinverters.



**IQ Load Controller**  
Helps prioritize essential appliances during a grid outage to optimize energy consumption and prolong battery life.



5-year limited warranty



### Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect (CELLMODEM-MI-06-SP-05), only with IQ Combiner 5C
- Supports flexible networking: Wi-Fi, Ethernet, or cellular
- Provides production metering (revenue grade) and consumption monitoring

### Easy to install

- Mounts to one stud with centered brackets
- Supports bottom, back, and side conduit entries
- Supports up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80 A total PV branch circuits
- Bluetooth-based Wi-Fi provisioning for easy Wi-Fi setup

### Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Helps prioritize essential appliances during a grid outage to optimize energy consumption and prolong battery life.
- 5-year limited warranty
- 2-year labor reimbursement program coverage included for both the IQ Combiner SKUs<sup>1</sup>
- UL1741 Listed

<sup>1</sup>For country-specific warranty information, see the <https://enphase.com/installers/resources/warranty> page.  
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IQC-5-5C-DSH-00007-3.0-EN-US-2024-03-01

## IQ Combiner 5/5C

MODEL NUMBER	
IQ Combiner 5 (X-IQ-AMI-240-5)	IQ Combiner 5 with IQ Gateway printed circuit board for integrated revenue-grade PV production metering (ANSI CT2.20 ±0.5%), consumption monitoring (±2.5%), and IQ Battery monitoring (±2.5%). Includes a silver solar shield to deflect heat.
IQ Combiner 5C (X-IQ-AMI-240-5C)	IQ Combiner 5C with IQ Gateway printed circuit board for integrated revenue-grade PV production metering (ANSI CT2.20 ±0.5%), consumption monitoring (±2.5%) and IQ Battery monitoring (±2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-MI-06-SP-05). Includes a silver solar shield to deflect heat.
WHAT'S IN THE BOX	
IQ Gateway printed circuit board	IQ Gateway is the platform for total energy management for comprehensive, remote maintenance, and management of the Enphase Energy System
Busbar	80 A busbar with support for 1 × IQ Gateway breaker and 4 × 20 A breaker for installing IQ Series Microinverters and IQ Battery 5P
IQ Gateway breaker	Circuit breaker, 2-pole, 10 A/15 A
Production CT	Pre-wired revenue-grade solid-core CT, accurate up to ±0.5%
Consumption CT	Two consumption metering clamp CTs, shipped with the box, accurate up to ±2.5%
IQ Battery CT	One battery metering clamp CT, shipped with the box, accurate up to ±2.5%
CTRL board	Control board for wired communication with IQ System Controller 3/3G and the IQ Battery 5P
Enphase Mobile Connect (only with IQ Combiner 5C)	4G-based LTE-MI cellular modem (CELLMODEM-MI-06-SP-05) with a 5-year T-Mobile data plan
Accessories kit	Spare control headers for the COMMS-KIT-02 board
ACCESSORIES AND REPLACEMENT PARTS (NOT INCLUDED, ORDER SEPARATELY)	
CELLMODEM-MI-06-SP-05	4G-based LTE-MI cellular modem with a 5-year T-Mobile data plan
CELLMODEM-MI-06-AT-05	4G-based LTE-MI cellular modem with a 5-year AT&T data plan
Circuit breakers (off-the-shelf)	Supports Eaton BR2XX, Siemens Q2XX and GE/ABB THQL21XX Series circuit breakers (XX represents 10, 15, 20, 30, 40, 50, or 60). Also supports Eaton BR220B, BR230B, and BR240B circuit breakers compatible with the hold-down kit.
Circuit breakers (provided by Enphase)	BRK-10A-2-240V, BRK-15A-2-240V, BRK-20A-2P-240V, BRK-15A-2P-240V-B, and BRK-20A-2P-240V-B (more details in the "Accessories" section)
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 5/5C
XA-ENV2-PCBA-5	IQ Gateway replacement printed circuit board (PCB) for IQ Combiner 5/5C
X-IQ-NA-HD-125A	Hold-down kit compatible with Eaton BR-B Series circuit breakers (with screws)
XA-COMMS2-PCBA-5	Replacement COMMS-KIT-02 printed circuit board (PCB) for IQ Combiner 5/5C
ELECTRICAL SPECIFICATIONS	
Rating	80 A
System voltage and frequency	120/240 VAC, 60 Hz
Busbar rating	125 A
Fault current rating	10 kAIC
Maximum continuous current rating (input from PV/storage)	64 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR, Siemens Q, or GE/ABB THQL Series distributed generation (DG) breakers only (not included)
Maximum total branch circuit breaker rating (input)	80 A of distributed generation/95 A with IQ Gateway breaker included
IQ Gateway breaker	10 A or 15 A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-CLAMP)	A pair of 200 A clamp-style current transformers is included with the box
IQ Battery metering CT	200 A clamp-style current transformer for IQ Battery metering, included with the box

<sup>1</sup> A plug-and-play industrial-grade cell modem for systems of up to 60 microinverters. Available in the United States, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.

IQC-5-5C-DSH-00007-3.0-EN-US-2024-03-01

MECHANICAL DATA	
Dimensions (W × H × D)	37.5 cm × 49.5 cm × 16.8 cm (14.75" × 19.5" × 6.63"). Height is 21.06" (53.5 cm) with mounting brackets
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40°C to 46°C (-40°F to 115°F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	<ul style="list-style-type: none"> <li>20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors</li> <li>60 A breaker branch input: 4 to 1/0 AWG copper conductors</li> <li>Main lug combined output: 10 to 2/0 AWG copper conductors</li> <li>Neutral and ground: 14 to 1/0 copper conductors</li> <li>Always follow local code requirements for conductor sizing</li> </ul>
Communication (in-premise connectivity)	Built-in CTRL board for wired communication with IQ Battery 5P and IQ System Controller 3/3G. Integrated power line communication for IQ Series Microinverters
Altitude	Up to 2,600 meters (8,530 feet)
COMMUNICATION INTERFACES	
Integrated Wi-Fi	802.11b/g/n (dual band 2.4 GHz/5 GHz), for connecting the Enphase Cloud through the internet
Wi-Fi range (recommended)	10 m (32.8 feet)
Bluetooth	BLE4.2, 10 m range to configure Wi-Fi SSID
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included), for connecting to the Enphase Cloud through the internet
Cellular/Mobile Connect	CELLMODEM-MI-06-SP-05 or CELLMODEM-MI-06-AT-05 (included with IQ Combiner 5C)
Digital I/O	Digital input/output for grid operator control
USB 2.0	Mobile Connect, COMMS-KIT-01 for IQ Battery 3/3T/10/10T, COMMS-KIT-02 for IQ Battery 5P
Access point (AP) mode	For connection between the IQ Gateway and a mobile device running the Enphase Installer App
Metering ports	Up to two Consumption CTs, one IQ Battery CT, and one Production CT
Power line communication	90–110 kHz
Web API	See <a href="https://developer-v4.enphase.com">https://developer-v4.enphase.com</a>
Local API	See <a href="#">guide for local API</a>
COMPLIANCE	
IQ Combiner with IQ Gateway	UL 1741, CAN/CSA C22.2 No. 107.1, Title 47 CFR, Part 15, Class B, ICES 003, NOM-208-SCFI-2016, UL 60601-1/CANCSA 22.2 No. 61010-1, IEEC 1547: 2018 (UL 1741-SB, 3rd Ed.), IEEC 2030.5/CSIP Compliant, Production metering: ANSI CT2.20 accuracy class 0.5 (PV production)
COMPATIBILITY	
PV	Microinverters IQ6, IQ7, and IQ8 Series Microinverters
COMMS-KIT-01 <sup>1</sup>	IQ System Controller EP200G101-M240US00
	IQ System Controller 2 EP200G101-M240US01
COMMS-KIT-02 <sup>2</sup>	IQ Battery ENCHARGE-3-1P-NA, ENCHARGE-10-1P-NA, ENCHARGE-3T-1P-NA, ENCHARGE-10T-1P-NA
	IQ System Controller 3 SC200D111C240US01, SC200G111C240US01
	IQ Battery IQBATTERY-5P-1P-NA

<sup>2</sup> For information about IQ Combiner 5/5C compatibility with the 2<sup>nd</sup>-generation batteries, refer to the [compatibility matrix](#).  
<sup>3</sup> IQ Combiner 5/5C comes pre-equipped with COMMS-KIT-02.

IQC-5-5C-DSH-00007-3.0-EN-US-2024-03-01

## CONTRACTOR



**EDGE ENERGY**  
**6854 DISTRIBUTION DRIVE,**  
**BELTSVILLE, MD, USA**  
**+1 434 568 7220**  
**LIC TYPE: MHIC,STATE**  
**ELECTRICAL LICENSE**  
**LIC NO.: 126720,13228**

### PROJECT INFO & ADDRESS

**SNYDER HOUSE**  
**6812 WESTMORELAND**  
**AVE,**  
**TAKOMA PARK,**  
**MD 20912, USA**  
**SYSTEM SIZE**  
**DC SIZE: 8.400 KW DC-(STC)**  
**AC SIZE: 7.680 KW AC**

DRAWN BY AK

DATE 11/8/2025

REVISION

SIGNATURE

PV-6.2

**RESOURCE DOCUMENT**

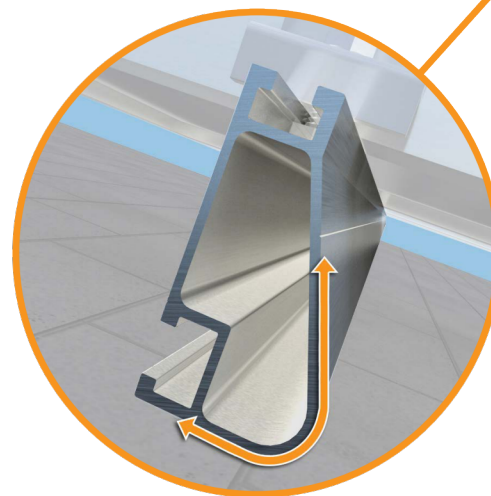
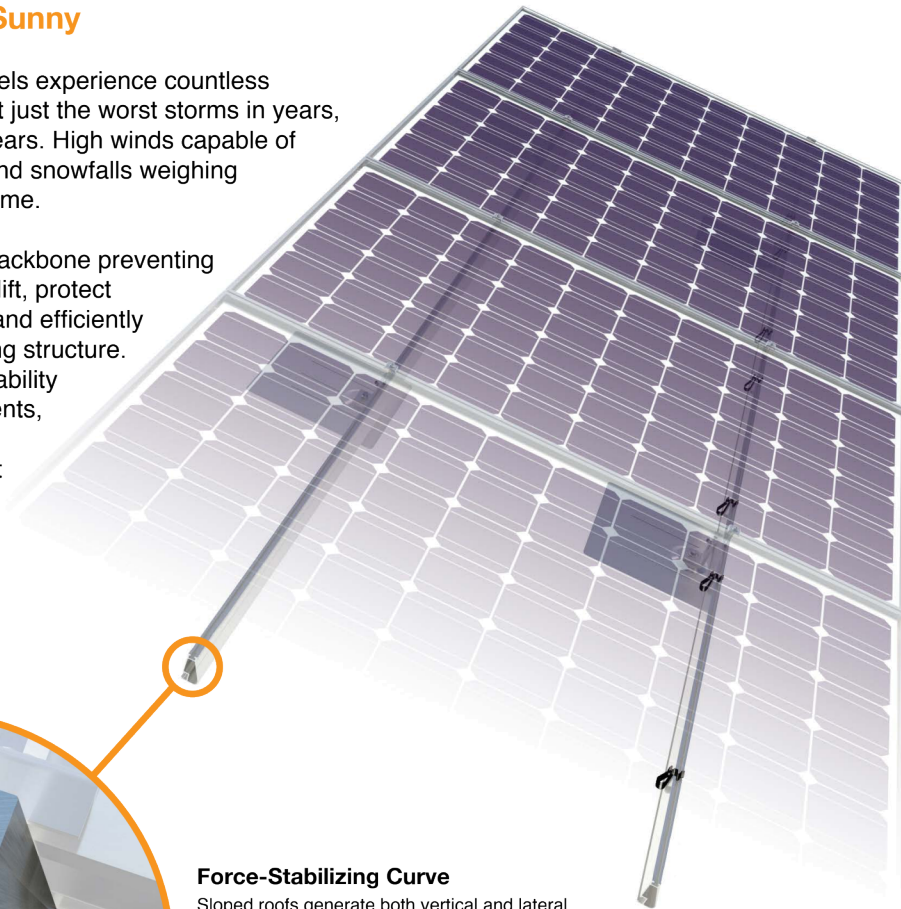


## XR Rail Family

### Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



#### Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

#### Compatible with Flat & Pitched Roofs



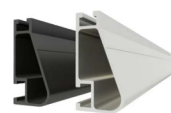
XR Rails are compatible with FlashFoot and other pitched roof attachments.



IronRidge offers a range of tilt leg options for flat roof mounting applications.

#### Corrosion-Resistant Materials

All XR Rails are made of marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



## XR100 Rail

See Description / Length

Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.582 in <sup>2</sup>
Section Modulus (X-axis)	0.297 in <sup>3</sup>
Moment of Inertia (X-axis)	0.390 in <sup>4</sup>
Moment of Inertia (Y-axis)	0.085 in <sup>4</sup>
Torsional Constant	0.214 in <sup>3</sup>
Polar Moment of Inertia	0.126 in <sup>4</sup>

APPROVED MATERIALS:  
6005-T6, 6005A-T61, 6105-T5, 6N01-T6  
(34,000 PSI YIELD STRENGTH MINIMUM)

Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-100-132A	XR-100-132B	XR100, Rail 132" (11 Feet)	6000-Series Aluminum	7.50 lbs.
XR-100-168A	XR-100-168B	XR100, Rail 168" (14 Feet)		9.55 lbs.
XR-100-204A	XR-100-204B	XR100, Rail 204" (17 Feet)		11.60 lbs.

v1.1



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LIC NO.: 126720, 13228

PROJECT INFO & ADDRESS

SNYDER HOUSE  
**6812 WESTMORELAND AVE,**  
**TAKOMA PARK,**  
**MD 20912, USA**  
**SYSTEM SIZE**  
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AC SIZE: 7.680 KW AC

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**RESOURCE DOCUMENT**

EDGE ENERGY  
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 BELTSVILLE, MD, USA  
 +1 434 568 7220  
 LIC TYPE: MHIC, STATE  
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PROJECT INFO & ADDRESS

SNYDER HOUSE  
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SIGNATURE

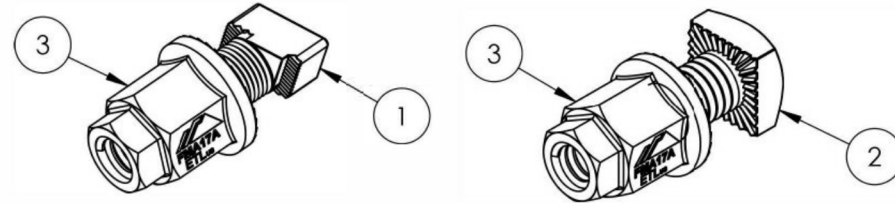
PV-6.4

**RESOURCE DOCUMENT**

Cut Sheet



Bonding Hardware

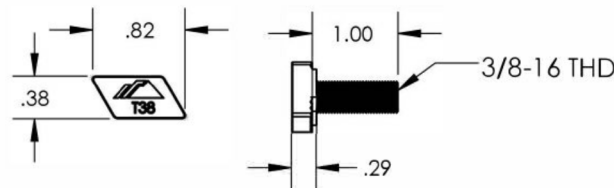


ITEM NO.	DESCRIPTION
1	BOLT, T CSTM, 3/8-16
2	BOLT, BONDING 3/8-16 SQ HEAD
3	NUT, BONDING STEP

BONDING HARDWARE

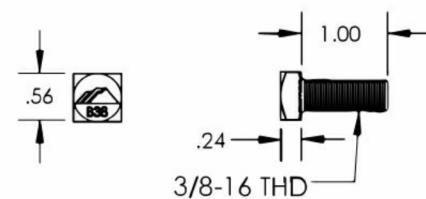
Part Number	Description
BHW-TB-02-A1	T-BOLT, BONDING HARDWARE
BHW-SQ-02-A1	SQUARE-BOLT, BONDING HARDWARE

1) BOLT, T CSTM, 3/8-16



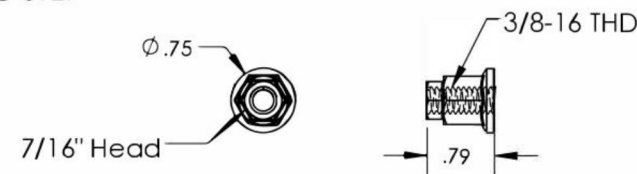
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

2) BOLT, BONDING 3/8-16 SQ HEAD



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

3) NUT, BONDING STEP



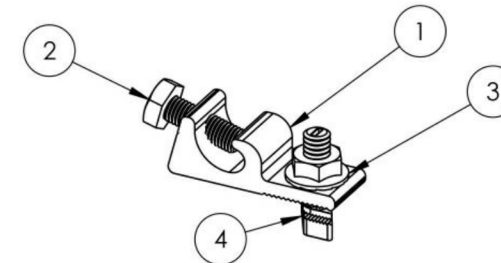
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.30

Cut Sheet



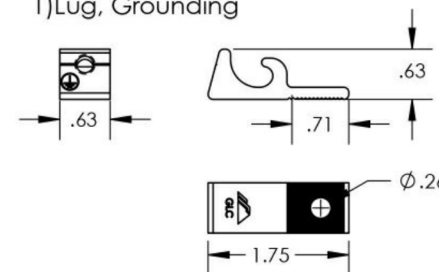
Grounding Lug



ITEM NO.	DESCRIPTION
1	LUG, GROUNDING, LAY-IN - LOW PROFILE
2	BOLT, 1/4-28 X .750" HEX CS SST
3	NUT, FLANGE HEX 1/4-20 SST
4	BOLT, T CSTM 1/4-20 X 1.188" LOCK SS

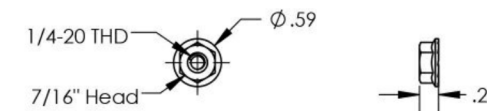
Part Number	Description	Wire Size Range (AWG)
XR-LUG-03-A1	GROUNDING LUG, LOW PROFILE	4-10

1) Lug, Grounding



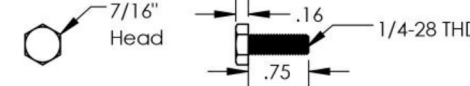
Property	Value
Material	Tin Plated Copper
Finish	Clear Matte

3) Nut, Flange Hex 1/4-20



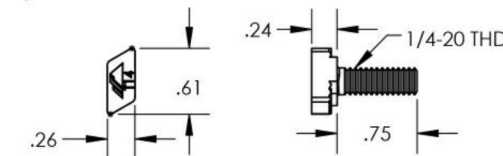
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

2) Bolt, 1/4-28 x .750 Hex



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

4) Bolt, T CSTM 1/4-20 x .750



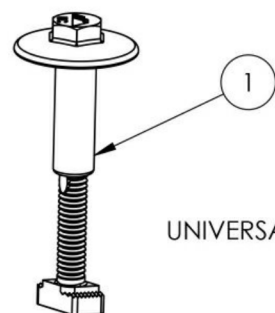
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.10



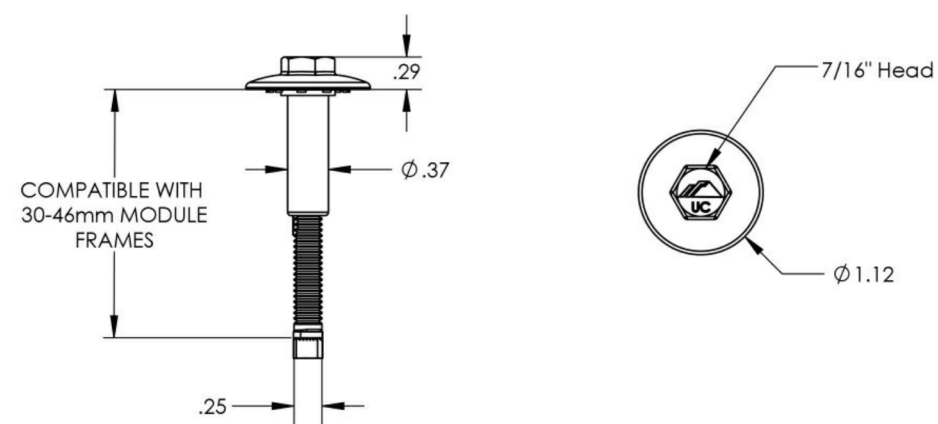
## Universal Fastening Object

Cut Sheet



UNIVERSAL FASTENING OBJECT

ITEM NO.	DESCRIPTION
UFO-CL-01-A1	UNIVERSAL MODULE CLAMP, CLEAR
UFO-CL-01-B1	UNIVERSAL MODULE CLAMP, BLACK



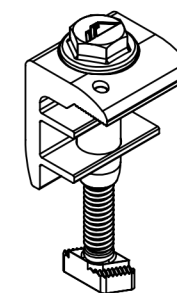
Property	Value
Material	300 Series Stainless Steel
Finish	Clear and Black

v1.30

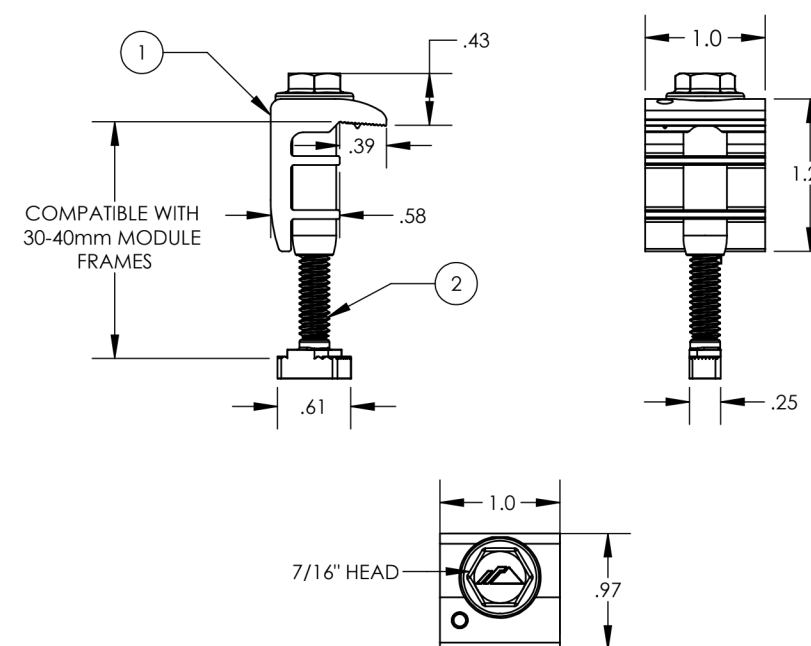


## End Fastening Object

Cut Sheet



PART NO.	DESCRIPTION
UFO-END-01-A1	END FASTENING OBJECT (END CLAMP, 30-40mm), MILL
UFO-END-01-B1	END FASTENING OBJECT (END CLAMP, 30-40mm), BLACK



ITEM NO.	MATERIAL	FINISH
1	6000 SERIES ALUMINUM	MILL OR BLACK
2	300 SERIES STAINLESS STEEL	CLEAR AND BLACK

v1.0

### CONTRACTOR



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#### PROJECT INFO & ADDRESS

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**RESOURCE  
DOCUMENT**

# S-5!<sup>®</sup>

## The Right Way!<sup>®</sup>

### S-5-U Clamp

The S-5-U clamp is by far our most popular and most versatile clamp. It fits about 85% of the standing seam profiles manufactured in North America—including most structural and architectural profiles. It can be used on vertically oriented seams and, by rotating the clamp 90 degrees, it can also be used on most horizontal 2" seam profiles.

Its simple design, generous dimensioning, and multiple hole orientations are what make the S-5-U clamp so versatile for use with the S-5!<sup>®</sup> snow retention products, such as ColorGard<sup>®</sup>, as well as with other heavy-duty applications.

Installation is as simple as setting the specially patented round-point setscrews into the clamp, placing the clamp on the seam, and tightening them to the specified tension. Then, affix ancillary items using the bolt provided with the product. Go to [www.S-5.com/tools](http://www.S-5.com/tools) for information and tools available for properly attaching and tensioning S-5! clamps.

### S-5-U Mini Clamp

The S-5-U Mini is a bit shorter than the S-5-U and has one setscrew rather than two. The mini is the choice for attaching all kinds of rooftop accessories: signs, walkways, satellite dishes, antennas, rooftop lighting, lightning protection systems, solar arrays, exhaust stack bracing, conduit, condensate lines, mechanical equipment—just about anything!\*

\*S-5! mini clamps are not compatible with, and should not be used with S-5! SnoRail™/SnoFence™ or ColorGard<sup>®</sup> snow retention systems.



The S-5-U clamp is our most popular and versatile clamp, fitting about 85% of the standing seam profiles in North America.

The right way to attach almost anything to metal roofs!

S-5-U and S-5-U Mini

888-825-3432 | [www.S-5.com](http://www.S-5.com) | 

# S-5!<sup>®</sup>

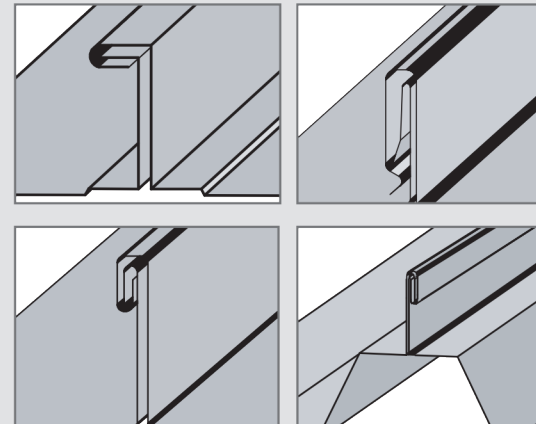
## The Right Way!<sup>®</sup>

The strength of the S-5-U clamp is in its simple design. The patented setscrews will slightly dimple the metal seam material but not pierce it—leaving the roof manufacturer's warranty intact.

The S-5-U and S-5-U Mini clamps are each furnished with the hardware shown to the right. Each box also includes a bit tip for tightening setscrews using an electric screw gun. A structural aluminum attachment clamp, the S-5-U is compatible with most common metal roofing materials excluding copper. All included hardware is stainless steel. Please visit [www.S-5.com](http://www.S-5.com) for more information including CAD details, metallurgical compatibilities and specifications.

The S-5-U clamp has been tested for load-to-failure results on most major brands and profiles of standing seam roofing. The independent lab test data found at [www.S-5.com](http://www.S-5.com) can be used for load-critical designs and applications. S-5!<sup>®</sup> holding strength is unmatched in the industry.

### Example Profiles



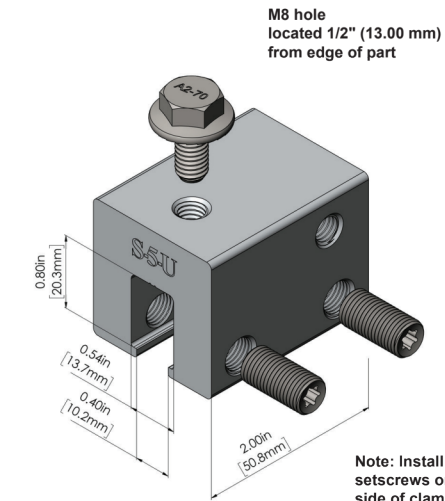
For horizontal seams under 0.65", do not use this clamp. Visit [www.S-5.com](http://www.S-5.com) for more detailed information and proper clamp usage.

### S-5!<sup>®</sup> Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. Visit the website at [www.S-5.com](http://www.S-5.com) for complete information on patents and trademarks. For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses. Clamp setscrew tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel, and between 130 and 150 inch pounds for all other metals and thinner gauges of steel. Consult the S-5! website at [www.S-5.com](http://www.S-5.com) for published data regarding holding strength.

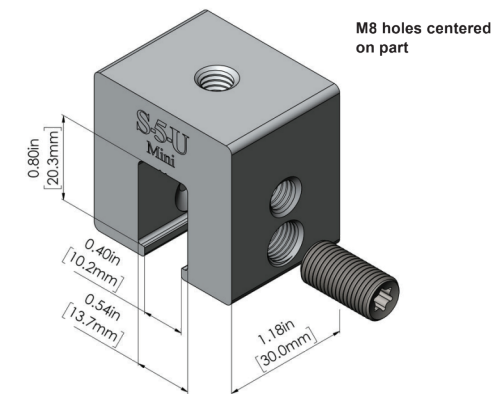
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### S-5-U Clamp



Note: Install both setscrews on same side of clamp.

### S-5-U Mini Clamp



Please note: All measurements are rounded to the second decimal place.

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