

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

<b>Address:</b>	211 Market St., Brookeville	<b>Meeting Date:</b>	9/25/2019
<b>Resource:</b>	Primary Resource <b>Brookeville Historic District</b>	<b>Report Date:</b>	9/18/2019
<b>Applicant:</b>	Harry Montgomery	<b>Public Notice:</b>	9/11/2019
<b>Review:</b>	HAWP	<b>Tax Credit:</b>	N/A
<b>Case Number:</b>	23/65-19D	<b>Staff:</b>	Dan Bruechert
<b>Proposal:</b>	Solar Panel Installation		

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**STAFF RECOMMENDATION**

Staff recommends that the HPC **approve** the HAWP application.

**ARCHITECTURAL DESCRIPTION**

**SIGNIFICANCE:** Primary Resource within the Brookeville Historic District  
**STYLE:** Gothic Revival  
**DATE:** c.1870



*Figure 1: 211 Market St.*

## **PROPOSAL**

The applicant proposes to install 18 (eighteen) solar panels on a non-historic addition at the rear of the house.

## **APPLICABLE GUIDELINES**

When reviewing alterations and new construction within the Brookeville Historic District several documents are to be utilized as guidelines to assist the Commission in developing their decision. These documents include the *Brookeville Historic District Master Plan Amendment (Plan)*, *Montgomery County Code Chapter 24A (Chapter 24A)*, and the *Secretary of the Interior's Standards for Rehabilitation (Standards)*. The pertinent information in these documents is outlined below.

### ***Brookeville Historic District Master Plan Amendment***

The *Brookeville Historic District Master Plan Amendment* (#23/65) identifies Primary Resources, Secondary Resources, and Spatial Resources. 211 Market St. is a Primary Resource.

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

- (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 insure 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;
- (d) In the case of an application for work on an historic resource located within an historic district, the commission shall be lenient in its judgment of plans for structures of little historical or design significance or for plans involving new construction, unless such plans would seriously impair the historic or architectural value of surrounding historic resources or would impair the character of the historic district. (Ord. No. 9-4, § 1; Ord. No. 11-59.)

### **Secretary of the Interior's Standards for Rehabilitation**

- 2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, space and spatial relationships that characterize a property will be avoided.
- 9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportions, and massing to protect the integrity of the property and its environment.
- 10. New additions and adjacent or related new construction will 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.

## **STAFF DISCUSSION**

The applicant proposes to install 18 (eighteen) roof-mounted solar panels on the western side of the house's non-historic, one-story, metal-roofed, rear gable addition to the house at 211 Market St. Staff

finds that the use of solar panels is appropriate as it is on a non-historic element and to the rear of the house. Staff recommends approval of the HAWP.

The subject property is at the northeast corner of the intersection of Water St., Market St., and High St. The proposed solar panels will not be visible from either High St. or Market St. Water St., which borders the subject property to the west, is a gravel road identified in the Brookeville Comprehensive Plan as a secondary street:

“Town secondary streets, North, South, and north High (now Water Street) originally had no homes directly facing them but served to access mostly later 20th century development rear properties. Literally side streets, they were for the most part “unimproved” rights-of-way that provided views of side and rear yards for the various scale of homesteads in Town. As of this Plan (2009), there have been houses built on North Street and on a new street - Water Street.”

Because of the categorization of Water St. as a secondary street, Staff finds that the views of the subject property from Water St. should be evaluated as less historically significant than views from High St. or Market St. Staff finds that the view of the solar array visible from Water St. will not detract from the historic character of the surrounding district.

The proposed solar panels will be installed using roof-mounted rails and will not require a full rack system to be installed on the roof. This method has the benefit of allowing the panels to be installed closer to the roof surface, lessening the visual impact to the roofline. Staff finds that this proposal will not detract from the historic character of the house or the surrounding district, per 24A-8(b)(1) and Standard 2.

The required inverter box will be installed on the east of the existing addition and will not be visible from the public right-of-way. A buried conduit will connect the inverter to the existing utility meter and panel. This conduit will not be at all visible after installation, as it will be buried. As the applicant is taking advantage of the existing electric hardware, the proposed change will not have an impact on the historic character of the building (per 24A-8(b)(1)). Additionally, this work will be reversible should the applicant or a future owner ever decide to remove the solar array (per Standards 9 and 10).

Staff finds that the proposed installation of 18 (eighteen solar panels), on a non-historic addition, at the rear, and only visible from a street identified by the Town of Brookeville as having secondary significance, is appropriate and recommends approval of this HAWP.

### **STAFF RECOMMENDATION**

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

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

and with the general condition that the applicant shall present the **3 permit sets of drawings, if applicable, to Historic Preservation Commission (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 Commission as a revised HAWP application at staff's discretion;

and with the general condition that the applicant shall notify the Historic Preservation 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 301-563-3400 or [dan.bruechert@montgomeryplanning.org](mailto:dan.bruechert@montgomeryplanning.org) to schedule a follow-up site visit.



HISTORIC PRESERVATION COMMISSION  
301/563-3400

DPS - #8

# APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Email: dstokes@solarenergyworld.com Contact Person: John Stokes  
Daytime Phone No.: 410-579-2082  
Tax Account No.: 00731767  
Name of Property Owner: Montgomery, Harry Daytime Phone No.: 301-580-5829  
Address: 211 Brookville Market St 20833  
Street Number City Street Zip Code  
Contractor: Solar Energy World Phone No.: 410-579-2087  
Contractor Registration No.: 37-0284821  
Agent for Owner: John Stokes Daytime Phone No.: 410-579-2082

## LOCATION OF BUILDING/PREMISE

House Number: 211 Street: Market St.  
Town/City: Brookville Nearest Cross Street: Water St.  
Lot: \_\_\_\_\_ Block: \_\_\_\_\_ Subdivision: 0005 - Lot in Brookville  
Liber: 05325 Folio: 00703 Parcel: P426

## PART ONE: TYPE OF PERMIT ACTION AND USE

### 1A. CHECK ALL APPLICABLE:

- ☐ Construct ☐ Extend ☐ Alter/Renovate  
☐ Move ☒ Install ☐ Wreck/Raze  
☐ Revision ☐ Repair ☐ Revocable

### CHECK ALL APPLICABLE:

- ☐ A/C ☐ Slab ☐ Room Addition ☐ Porch ☐ Deck ☐ Shed  
☒ Solar ☐ Fireplace ☐ Woodburning Stove ☐ Single Family  
☐ Fence/Wall (complete Section 4) ☐ Other: \_\_\_\_\_

1B. Construction cost estimate: \$ 13,000

1C. If this is a revision of a previously approved active permit, see Permit # \_\_\_\_\_

## PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. Type of sewage disposal: 01 ☒ WSSC 02 ☐ Septic 03 ☐ Other: \_\_\_\_\_  
2B. Type of water supply: 01 ☒ WSSC 02 ☐ Well 03 ☐ Other: \_\_\_\_\_

## PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. Height \_\_\_\_\_ feet \_\_\_\_\_ inches

3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:

- ☐ On party line/property line ☐ Entirely on land of owner ☐ On public right of way/easement

I hereby certify that I have the authority to make the foregoing application, that the application is correct, and that the construction will comply with plans approved by all agencies listed and I hereby acknowledge and accept this to be a condition for the issuance of this permit.

Signature of owner or authorized agent

08-30-19

Date

Approved: \_\_\_\_\_ For Chairperson, Historic Preservation Commission

Disapproved: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Application/Permit No.: \_\_\_\_\_ Date Filed: \_\_\_\_\_ Date Issued: \_\_\_\_\_

**THE FOLLOWING ITEMS MUST BE COMPLETED AND THE  
REQUIRED DOCUMENTS MUST ACCOMPANY THIS APPLICATION.**

**1. WRITTEN DESCRIPTION OF PROJECT**

- a. Description of existing structure(s) and environmental setting, including their historical features and significance:

Single Family Dwelling in historic Brookville

- b. General description of project and its effect on the historic resource(s), the environmental setting, and, where applicable, the historic district:

Install 18 Roof mounted Solar Panels on Southern facing Roof only  
Trees obstruct view of panels from main street (Market St.)

**2. SITE PLAN**

Site and environmental setting, drawn to scale. You may use your plot. Your site plan must include:

- the scale, north arrow, and date;
- dimensions of all existing and proposed structures; and
- site features such as walkways, driveways, fences, ponds, streams, trash dumpsters, mechanical equipment, and landscaping.

**3. PLANS AND ELEVATIONS**

You must submit 2 copies of plans and elevations in a format no larger than 11" x 17". Plans on 8 1/2" x 11" paper are preferred.

- Schematic construction plans, with marked dimensions, indicating location, size and general type of walls, window and door openings, and other fixed features of both the existing resource(s) and the proposed work.
- Elevations (facades), with marked dimensions, clearly indicating proposed work in relation to existing construction and, when appropriate, context. All materials and fixtures proposed for the exterior must be noted on the elevations drawings. An existing and a proposed elevation drawing of each facade affected by the proposed work is required.

**4. MATERIALS SPECIFICATIONS**

General description of materials and manufactured items proposed for incorporation in the work of the project. This information may be included on your design drawings.

**5. PHOTOGRAPHS**

- Clearly labeled photographic prints of each facade of existing resource, including details of the affected portions. All labels should be placed on the front of photographs.
- Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

**6. TREE SURVEY**

If you are proposing construction adjacent to or within the dripline of any tree 6" or larger in diameter (at approximately 4 feet above the ground), you must file an accurate tree survey identifying the size, location, and species of each tree of at least that dimension.

**7. ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

For All projects, provide an accurate list of adjacent and confronting property owners (not tenants), including names, addresses, and zip codes. This list should include the owners of all lots or parcels which adjoin the parcel in question, as well as the owner(s) of lot(s) or parcel(s) which lie directly across the street/highway from the parcel in question.

PLEASE PRINT (IN BLUE OR BLACK INK OR TYPE THIS INFORMATION ON THE FOLLOWING PAGE.  
PLEASE STAY WITHIN THE GUIDES OF THE TEMPLATE, AS THIS WILL BE PHOTOCOPIED DIRECTLY ONTO MAILING LABELS.

**HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFYING**  
 [Owner, Owner's Agent, Adjacent and Confronting Property Owners]

<b>Owner's mailing address</b> 211 Market St. Brookeville, MD 20833	<b>Owner's Agent's mailing address</b> 5681 Main St. Elkridge, MD 21075
<b>Adjacent and confronting Property Owners mailing addresses</b>	
Anderson, Garrett + Beth 104 Water St. Brookeville, MD 20833	
Harris, Christ + Nicole 301 Market St. Brookeville, MD 20833	
Kassarai, Harry 215 Long Trail Ln Rockville, MD 20850	

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

	Required Attachments						
Proposed Work	1. 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	*	*		*	*	*	*
Major Landscaping/Grading	*	*		*	*	*	*
Tree Removal	*	*		*	*	*	*
Siding/ Roof Changes	*	*	*	*	*		*
Window/ Door Changes	*	*	*	*	*		*
Masonry Repair/ Repoint	*	*	*	*	*		*
Signs	*	*	*	*	*		*

PLEASE SEE INSTRUCTIONS ON DPS' HAWP APPLICATION FOR FURTHER DETAILS REGARDING APPLICATION REQUIREMENTS.

NOTE: Historic Area Work Permits are not required for ordinary maintenance projects, such as painting, gutter repair, roof repair with duplicate materials, and window repairs. All replacement materials must match the original exactly and be of the same dimensions.

**ALL HAWPS MUST BE FILED AT DPS:  
255 ROCKVILLE PIKE,  
ROCKVILLE, MARYLAND, 20850.**





Approaching From Water St.

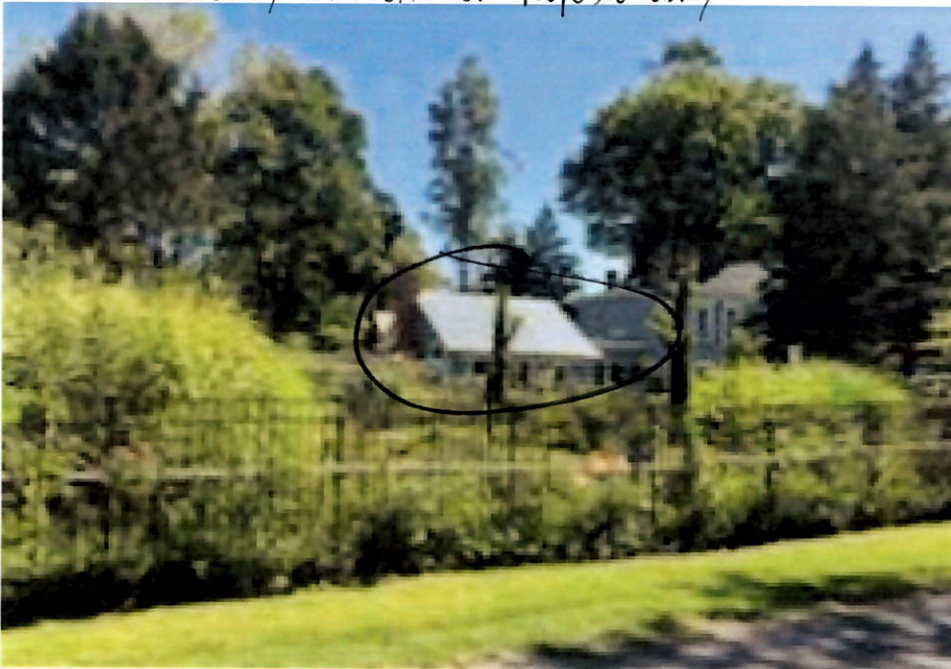


view from 104 Water St.



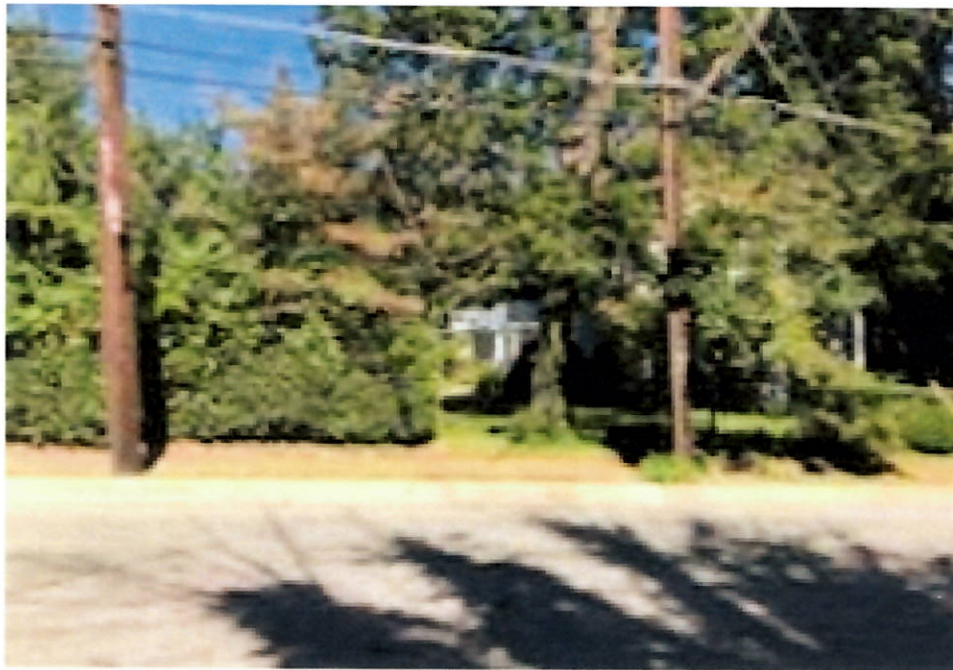


Directly in Front of Proposed array



View From 301 Market St.





View From 1 High St. Directly across st.



**Project:** Montgomery Residence

**Property Owner:** Harry Montgomery

**Address:** 211 Market St., Brookeville, MD 20833

☒ 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 00 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) and International Existing Building Code (IEBC) adopted by Montgomery County 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 and IEBC 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 and IEBC, 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 and IEBC, adopted by Montgomery County in COMCOR 08.00.02.

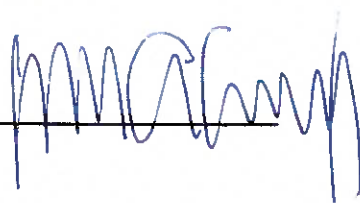
☒ I approved the construction documents for the mounting equipment, rack system, roof structure for this project.

Maryland PE License Number:

Date: 8.02.19

Seal:

Signature



Electrical Specifications		SILFAB SLA Monocrystalline	
Test Conditions		STC	NOCT
Module Power (Pmax)	Wp	310	234
Maximum power voltage (Vpmax)	V	33.05	29.7
Maximum power current (Ipmax)	A	9.38	7.88
Open circuit voltage (Voc)	V	40.25	37.2
Short circuit current (Isc)	A	9.93	8.14
Module efficiency	%	19.0	17.9
Maximum system voltage (VDC)	V	1000	
Series fuse rating	A	15	
Power Tolerance	Wp	-0/+5	

Measurement conditions: STC 1000 W/m<sup>2</sup> • AM 1.5 • Temperature 25 °C • NOCT 800 W/m<sup>2</sup> • AM 1.5 • Measurement uncertainty ± 3%  
 • Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by -0/+5W.

Temperature Ratings		SILFAB SLA Monocrystalline	
Temperature Coefficient Isc	%/K	0.03	
Temperature Coefficient Voc	%/K	-0.30	
Temperature Coefficient Pmax	%/K	-0.38	
NOCT (± 2°C)	°C	45	
Operating temperature	°C	-40/+85	

Mechanical Properties and Components		SILFAB SLA Monocrystalline	
Module weight (± 1 kg)	kg	19	
Dimensions (H x L x D; ± 1mm)	mm	1650 x 990 x 38	
Maximum surface load (wind/snow)*	N/m <sup>2</sup>	5400	
Hail impact resistance		Ø 25 mm at 83 km/h	
Cells		60 - Si monocrystalline - 4 or 5 busbar - 156.75 x 156.75 mm	
Glass		3.2 mm high transmittance, tempered, antireflective coating	
Backsheet		Multilayer polyester-based	
Frame		Anodized Al	
Bypass diodes		3 diodes-45V/12A, IP67/IP68	
Cables and connectors (See installation manual)		1200 mm Ø 5.7 mm (4 mm <sup>2</sup> ), MC4 compatible	

Warranties		SILFAB SLA Monocrystalline	
Module product warranty		12 years	
		25 years	
		≥ 97% end of 1 <sup>st</sup> year	
		≥ 90% end of 12 <sup>th</sup> year	
Linear power performance guarantee		≥ 82% end of 25 <sup>th</sup> year	

Certifications		SILFAB SLA Monocrystalline	
Product		ULC ORD C1703, UL 1703, IEC 61215, IEC 61730, IEC 61701, CEC listed	
Factory		UL Fire Rating: Type 2 (Type 1 on request) ISO 9001:2008	



Warning: Read the installation and User Manual before handling, installing and operating modules.

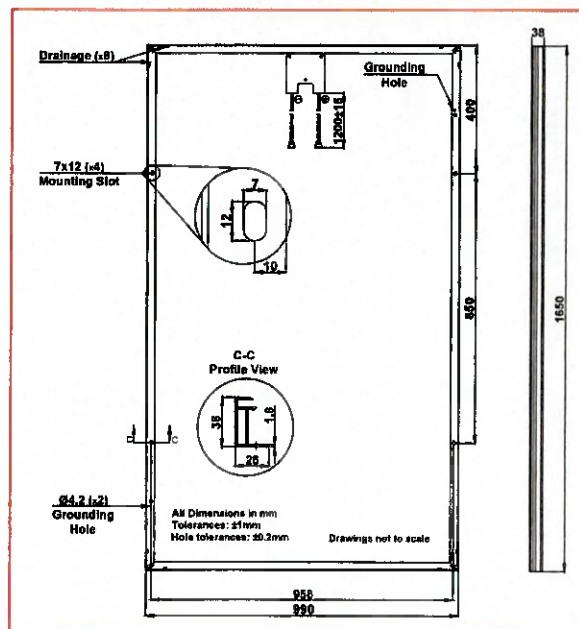
Third-party generated pan files from PV Evolution Labs available for download at:  
[www.silfab.ca/downloads](http://www.silfab.ca/downloads)



■ Pallet Count: 26  
 ■ Container Count: 936



Silfab Solar Inc.  
 240 Courtneypark Drive East • Mississauga,  
 Ontario Canada L5T 2S5  
 Tel +1 905-255-2501 • Fax +1 905-696-0267  
[info@silfab.ca](mailto:info@silfab.ca) • [www.silfab.ca](http://www.silfab.ca)





# / Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/  
SE7600H-US / SE10000H-US / SE11400H-US

SE3000H-US SE3800H-US SE5000H-US SE6000H-US SE7600H-US SE10000H-US SE11400H-US

## OUTPUT

Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5 <sup>m</sup>							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							

## INPUT

Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V <sup>(1)</sup>	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V <sup>(2)</sup>	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600k $\Omega$ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W

## ADDITIONAL FEATURES

Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)
Revenue Grade Data, ANSI C12.20	Optional <sup>m</sup>
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect

## STANDARD COMPLIANCE

Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)
Emissions	FCC Part 15 Class B

## INSTALLATION SPECIFICATIONS

AC Output Conduit Size / AWG Range	3/4" minimum / 14-6 AWG			3/4" minimum /14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	3/4" minimum / 1-2 strings / 14-6 AWG			3/4" minimum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174			21.3 x 14.6 x 7.3 / 540 x 370 x 185		in / mm
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9	38.8 / 17.6		lb / kg
Noise	< 25			<50		dBA
Cooling	Natural Convection					
Operating Temperature Range	-40 to +140 / -25 to +60 <sup>(H)</sup> (-40°F / -40°C option) <sup>(H)</sup>					°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)					

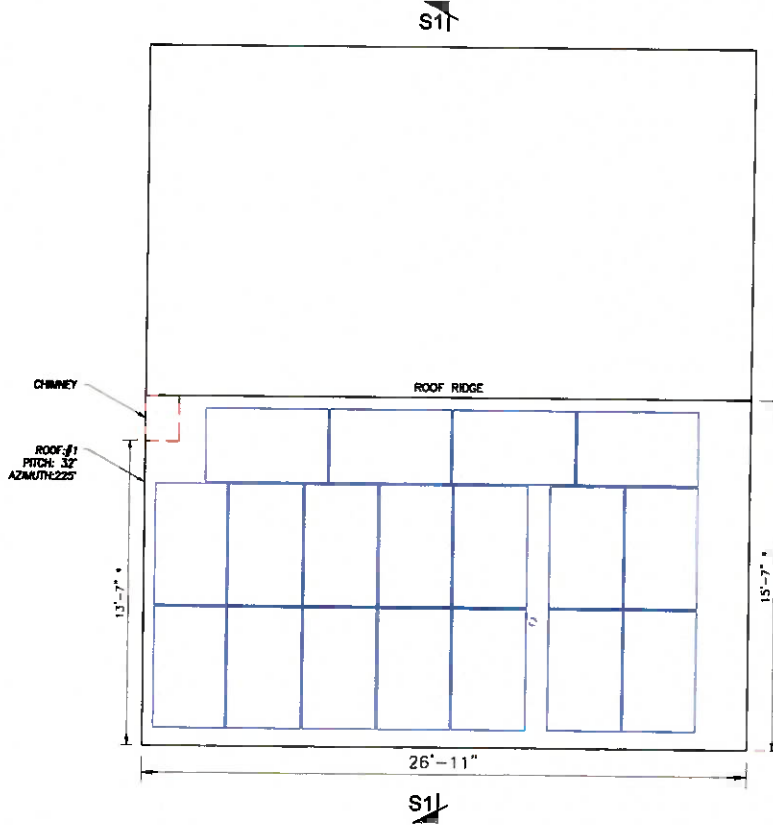
<sup>m</sup> For other regional settings please contact SolarEdge support

<sup>m</sup> A higher current source may be used, the inverter will limit its input current to the values stated

<sup>m</sup> Revenue grade inverter P/N: SExxxH-US000NNC2

<sup>m</sup> For power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>

<sup>m</sup> -40 version P/N: SExxxH-US000NNU4



**SOLAR PANEL LAYOUT**  
Scale: 3/16" = 1'-0"

**NOTES:**

1. THE SYSTEM SHALL INCLUDE [16] S110b SLA-M 310W
2. S11-CLAMP SOLAR MOUNT RAIL WILL BE INSTALLED IN ACCORDANCE WITH S11-CLAMP INSTALLATION MANUAL.
3. DIMENSIONS MARKED (\*) ARE ALONG ROOF SLOPE.
4. REFER TO STRUCTURAL DRAWING FOR SECTIONS MARKED AND ADDITIONAL NOTES.



**SolarEnergyWorld**  
*Because Tomorrow Matters*  
Solar Energy World LLC.  
5681 Main Street  
Elkridge, MD 21075  
(888) 497-3233

This drawing is the property of Solar Energy World Inc. The information herein contained shall be used for the sole benefit of Solar Energy World. It shall not be disclosed to others outside the recipient's organization, in whole or in part, without the written permission of Solar Energy World, except in connection with the sale and use of the respective Solar Energy equipment.



REV	DESCRIPTIONS	BY	DATE
01	Made EDC1, S001 and S002	JMP	6/1/2019

Project Name and Address  
Harry Montgomery  
211 Market St.  
Brookeville, MD 20833  
5.58 kW

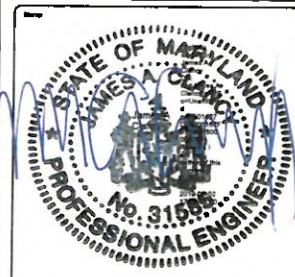
Drawn by: CJA  
Date: 1-AUG-2019  
Scale: AS NOTED

Sheet: **A001**



**SolarEnergyWorld**  
*Because Tomorrow Matters*  
Solar Energy World LLC  
5681 Main Street  
Elkridge, MD 21075  
(888) 497-3233

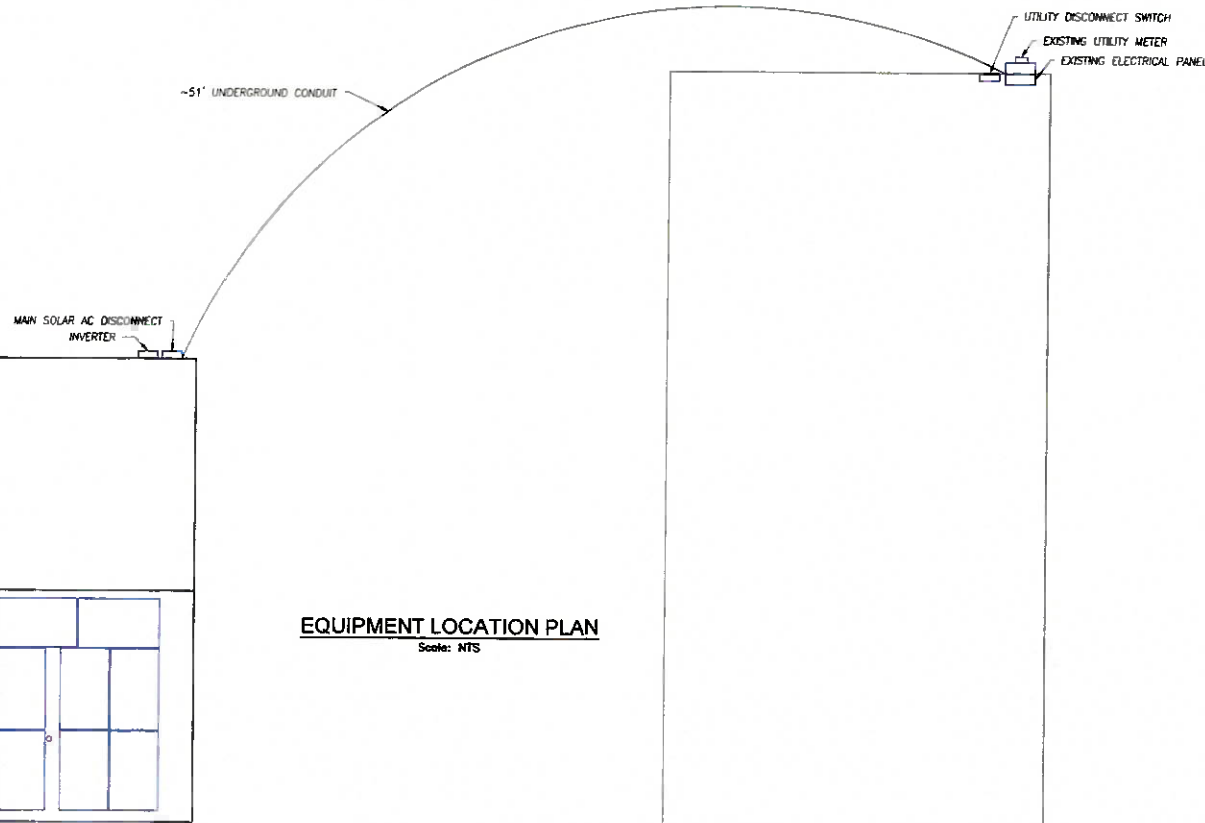
This drawing is the property of Solar Energy World Inc. The information herein contained shall be used for the sole benefit of Solar Energy World. It shall not be disclosed to others outside the recipient's organization, in whole or in part, without the written permission of Solar Energy World, except in connection with the sale and use of the respective Solar Energy equipment.



Revisions			
REV	DESCRIPTIONS	BY	DATE

Project Name and Address  
**Harry Montgomery**  
211 Market St.  
Brookeville, MD 20833  
5.58 kW

Drawn by <b>CJA</b>	Sheet <b>E001</b>
Date <b>1-AUG-2019</b>	
Scale <b>AS NOTED</b>	

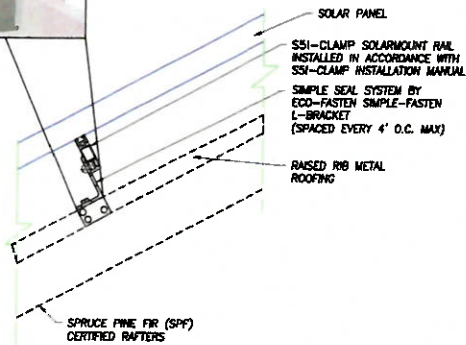


**EQUIPMENT LOCATION PLAN**  
Scale: NTS

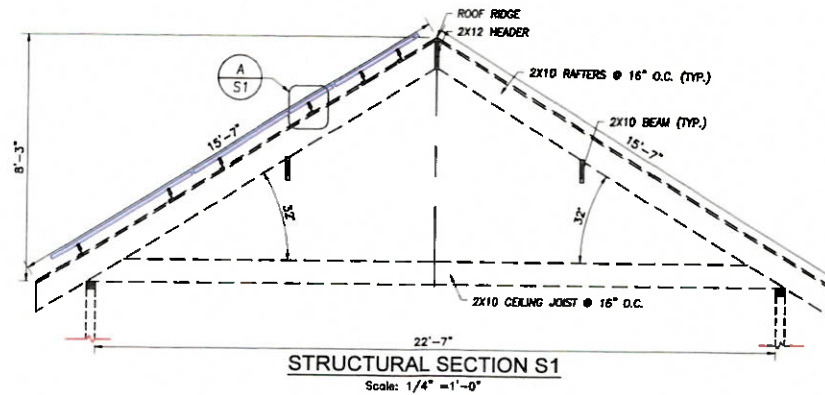
**NOTE:**

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





DETAIL A  
Scale: NTS



#### NOTES

- ALL WORK SHALL COMPLY WITH REQUIREMENTS OF INTERNATIONAL RESIDENTIAL CODE (IRC 2015), LOADING CODE (ASCE 7-10), WOOD DESIGN CODE (NDS 2015) AND LOCAL REQUIREMENTS.
- LOAD CRITERIA PER
  - EXPOSURE CATEGORY "B"
  - GROUND SNOW LOAD  $P_g = 30$  PSF
  - 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



**SolarEnergyWorld**  
Because Tomorrow Matters  
Solar Energy World LLC  
5681 Main Street  
Elkridge, MD 21075  
(888) 497-3233

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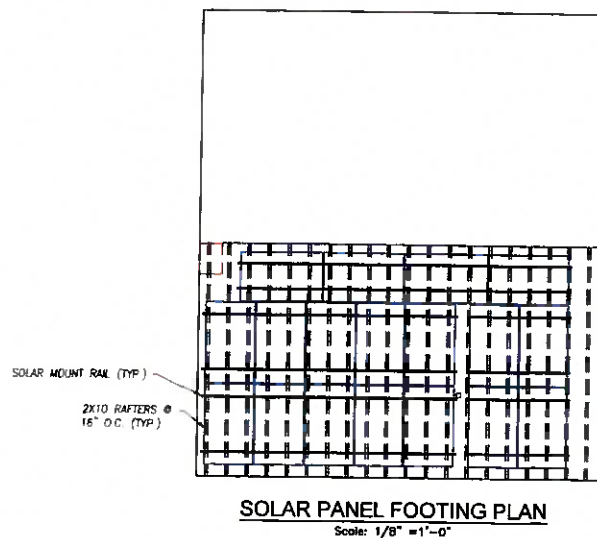


REV	DESCRIPTIONS	BY	DATE

Project Name and Address  
**Harry Montgomery**  
211 Market St.  
Brookeville, MD 20833  
5.58 kW

Drawn by  
**CJA**  
Date  
**1-AUG-2019**  
Scale  
**AS NOTED**

Sheet  
**S001**



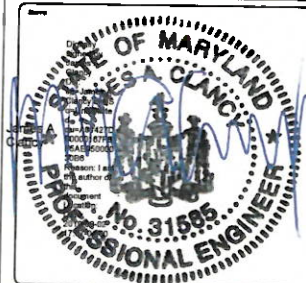
**NOTES:**

1. SNAPRACK SOLAR MOUNT RAIL SHALL BE INSTALLED IN ACCORDANCE WITH SNAPRACK INSTALLATION MANUAL.
2. SS-CLAMP FOR RAISED RIDGE METAL ROOF SEE DETAIL A



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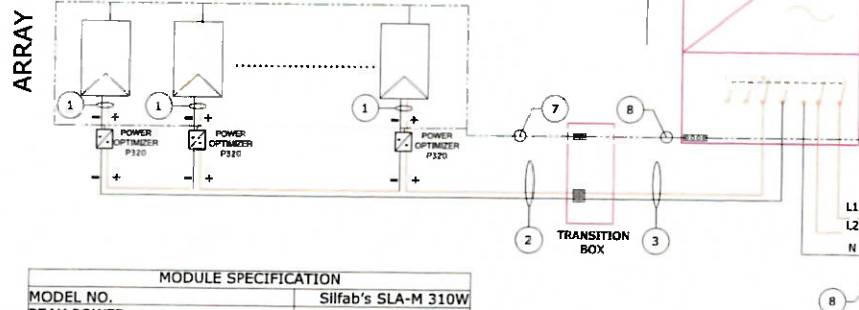


Revision			
REV	DESCRIPTION	BY	DATE

Project Name and Address  
**Harry Montgomery**  
 211 Market St.  
 Brookeville, MD 20833  
 5.58 kW

<small>Drawn by</small> <b>CJA</b> <small>Date</small> <b>1-AUG-2019</b> <small>Scale</small> <b>AS NOTED</b>	<small>Sheet</small> <div style="font-size: 2em; font-weight: bold;">S002</div>
--	--

# 1 STRING OF 18 MODULES



1 THREE LINE DIAGRAM  
SCALE: NA

MODULE SPECIFICATION	
MODEL NO.	Silfab's SLA-M 310W
PEAK POWER	310 W
RATED VOLTAGE (Vmpp)	33.05 V
RATED CURRENT (Imp)	9.38 A
OPEN CIRCUIT VOLTAGE (Voc)	40.25 V
SHORT CIRCUIT CURRENT (Isc)	9.93 A
MAXIMUM SYSTEM VOLTAGE	1000VDC
Optimizer Specifications	
OPTIMIZER MODEL	P320
MAXIMUM DC VOLTAGE	48 V
MAXIMUM POWER OUTPUT	320 W
MAXIMUM DC CURRENT OUTPUT	15 A
MAXIMUM DC CURRENT INPUT	13.75 A
Inverter Specifications	
INVERTER MODEL	SE5000H-USRGM
MAXIMUM DC VOLTAGE	480 V
MAXIMUM POWER OUTPUT	5000 W
NOMINAL AC VOLTAGE	240 VAC
MAXIMUM AC CURRENT	21 A
ARRAY DETAILS	
NO. OF MODULES PER STRINGS	18
NO. OF STRINGS	1
ARRAY WATTS AT STC	5580
MAX. VOLTAGE	480
690.53 Label Info.	
RATED VOLTAGE	380 V
RATED CURRENT	14.68A
MAX. SYSTEM VOLTAGE	480 V
SHORT CIRCUIT CURRENT	15 A

WIRE/CONDUIT SCHEDULE ARRAY			
TAG	DESCRIPTION	WIRE SIZE/TYPE	NOTES
1	Panel to Optimizer	#10 PV WIRE 2KV RATED	Integrated
2	Optimizer to Transition Box	#10 PV WIRE	
3	Transition Box to DC Disconnect	#10 THHN/THWN-2	
	DC Disconnect to Inverter	NA	Integrated
4	Inverter to AC disconnect	#10 Cu THHN/THWN-2	
5	AC disconnect to AC disconnect	#10 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	#8 Cu	

## GENERAL ELECTRICAL NOTES: NEC2014

- 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 INSULATION RATING 600V, 90°C, UNLESS OTHERWISE NOTED.
- CONDUCTORS SHALL BE SIZED IN ACCORDANCE TO 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 ITS 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 Isc OF 9.6 AMPS WITH A 15 AMP FUSE.

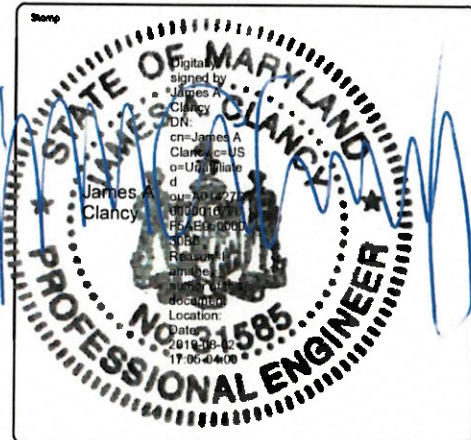
Wire sizing for OCDP  
 $Ex(Isc \times (1.25)(1.25)(\# \text{ of strings in parallel})) = \text{wire ampacity or using NEC table 690.8}$

REVISIONS	DATE	DESCRIPTION
1	08/05/19	DRY
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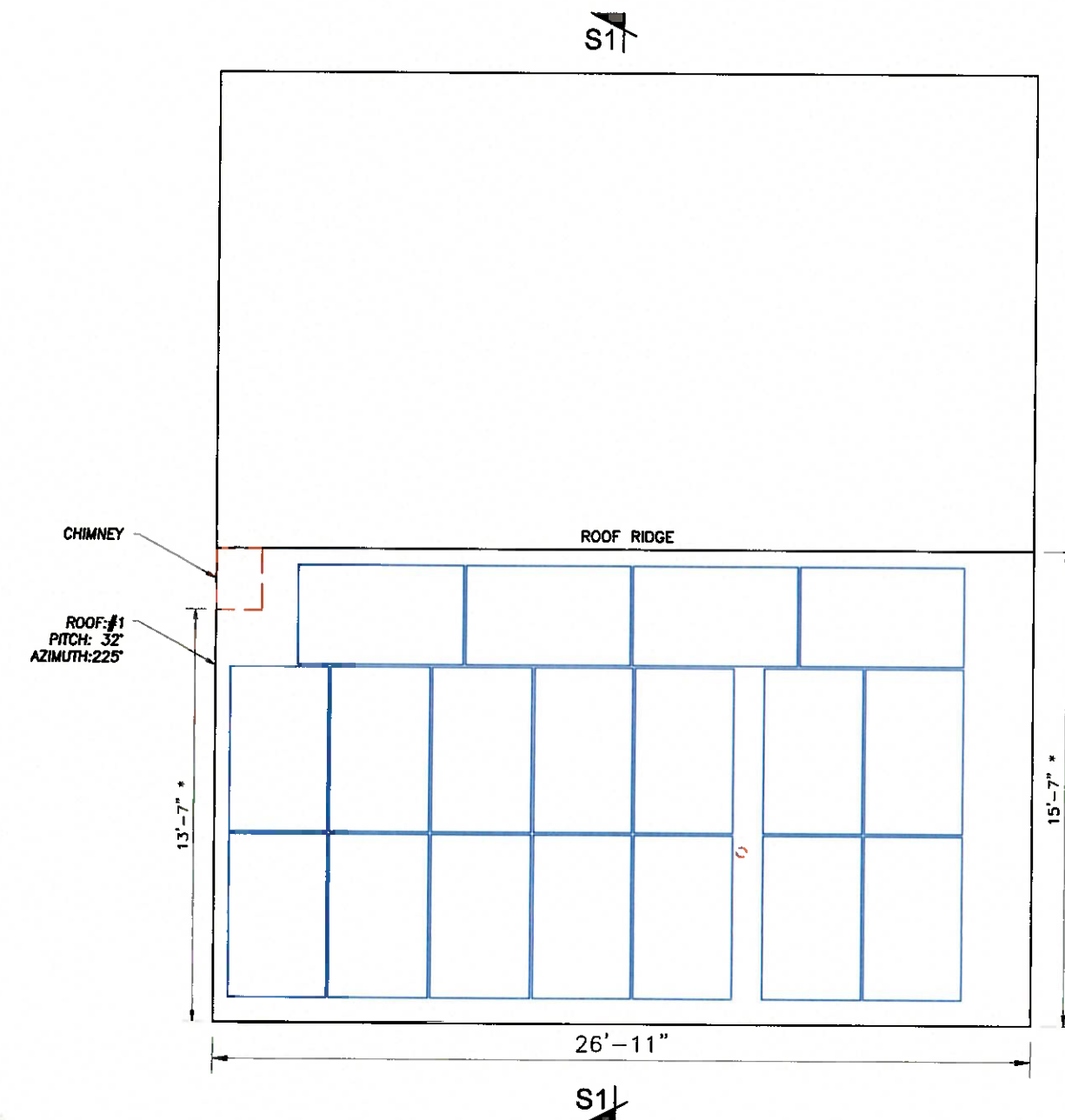
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Revisions			
REV	DESCRIPTIONS	BY	DATE
01	Made E001, S001 and S002	JMP	8/1/2019

Project Name and Address  
Harry Montgomery  
211 Market St.  
Brookeville, MD 20833  
5.58 kW

Drawn by CJA	<b>A001</b>
Date 1-AUG-2019	
Scale AS NOTED	



**SOLAR PANEL LAYOUT**  
Scale: 3/16" = 1'-0"

**NOTES:**

1. THE SYSTEM SHALL INCLUDE [18] Silfab SLA-M 310M
2. SSI-CLAMP SOLAR MOUNT RAIL WILL BE INSTALLED IN ACCORDANCE WITH SSI-CLAMP INSTALLATION MANUAL.
3. DIMENSIONS MARKED (\*) ARE ALONG ROOF SLOPE.
4. REFER TO STRUCTURAL DRAWING FOR SECTIONS MARKED AND ADDITIONAL NOTES.

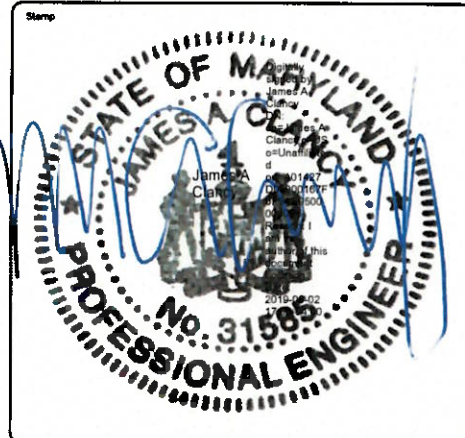






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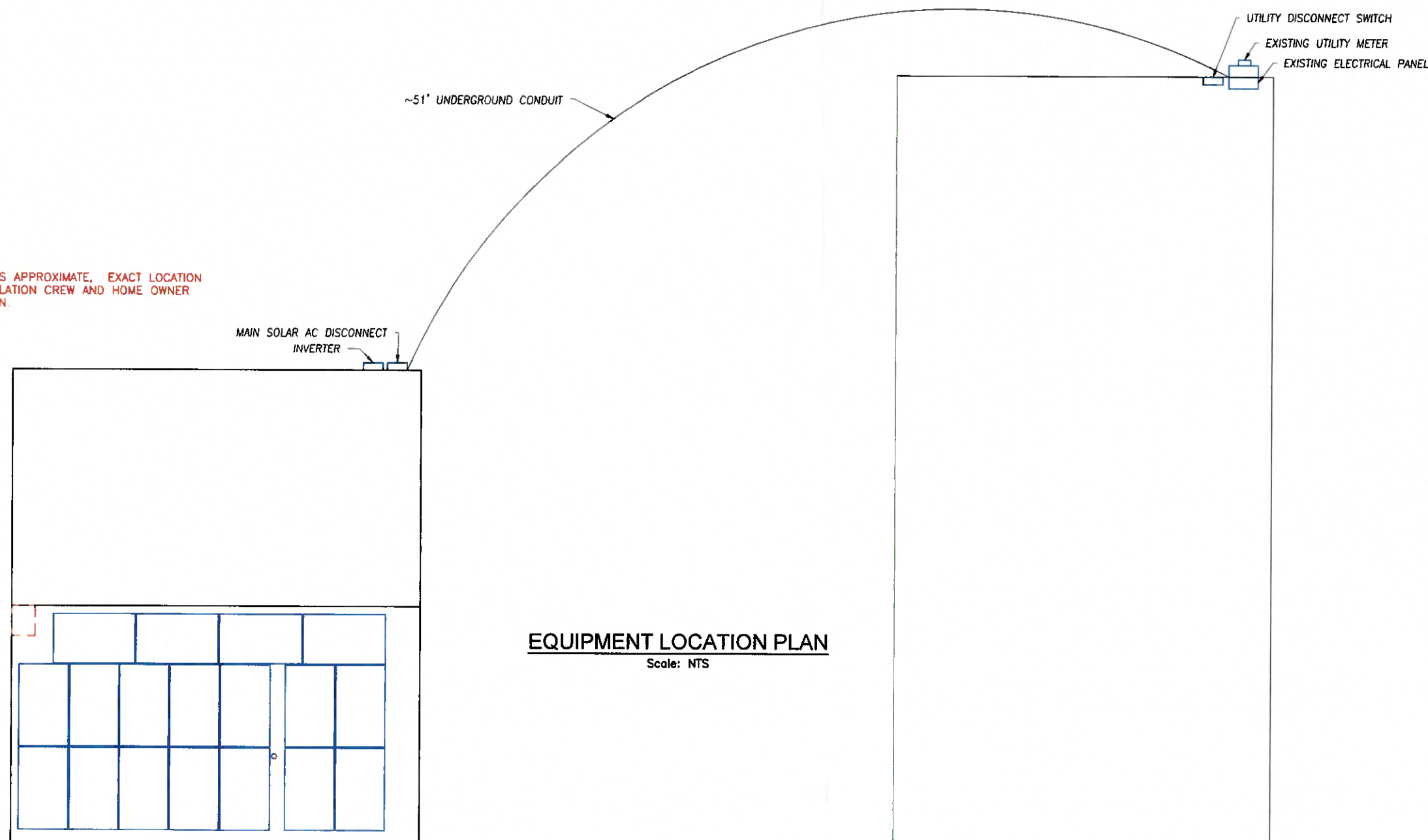
Revisions			
REV	DESCRIPTIONS	BY	DATE

Project Name and Address  
Harry Montgomery  
211 Market St.  
Brookeville, MD 20833  
5.58 kW

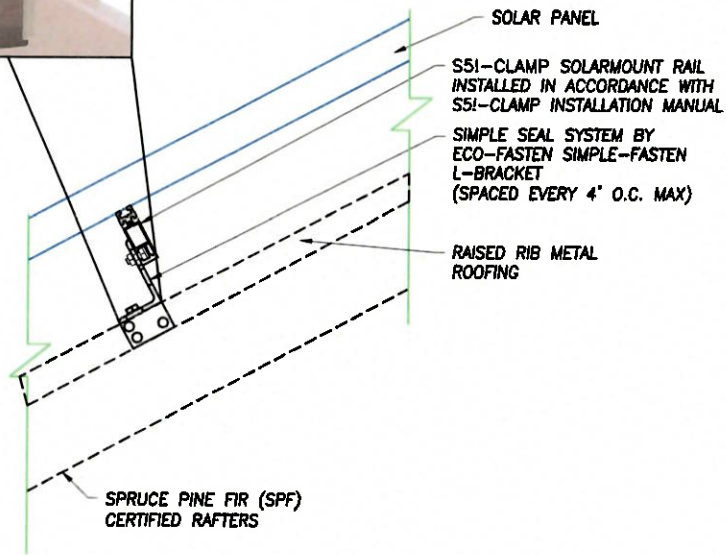
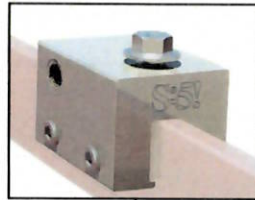
Drawn by CJA	<b>E001</b>
Date 1-AUG-2019	
Scale AS NOTED	

**NOTE:**

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

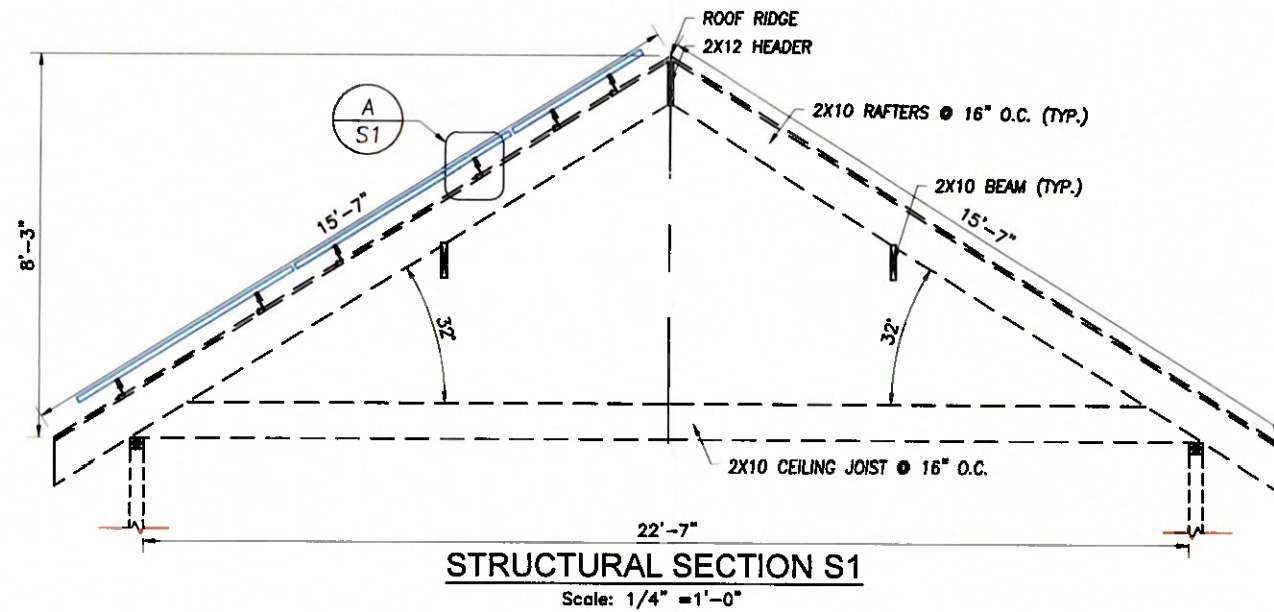


**EQUIPMENT LOCATION PLAN**  
Scale: NTS



DETAIL  
Scale: NTS

A  
S001



#### NOTES:

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  - GROUND SNOW LOAD,  $P_g = 30$  PSF
  - RISK CATEGORY "II"
  - ULTIMATE DESIGN WIND SPEED = 115 MPH
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#### Stamp



#### Revisions

REV	DESCRIPTIONS	BY	DATE

#### Project Name and Address

Harry Montgomery  
211 Market St.  
Brookeville, MD 20833  
5.58 kW

Drawn by  
CJA

Date  
1-AUG-2019

Scale  
AS NOTED

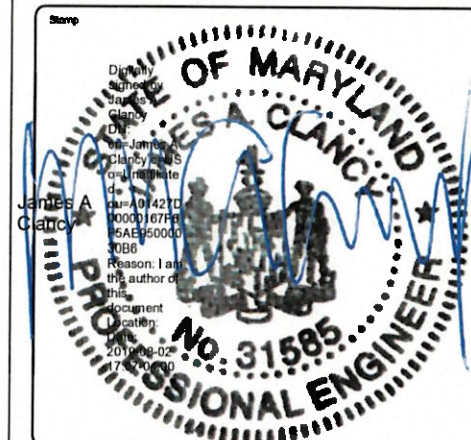
Sheet

**S001**



**SolarEnergyWorld**  
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Elkridge, MD 21075  
(888) 497-3233

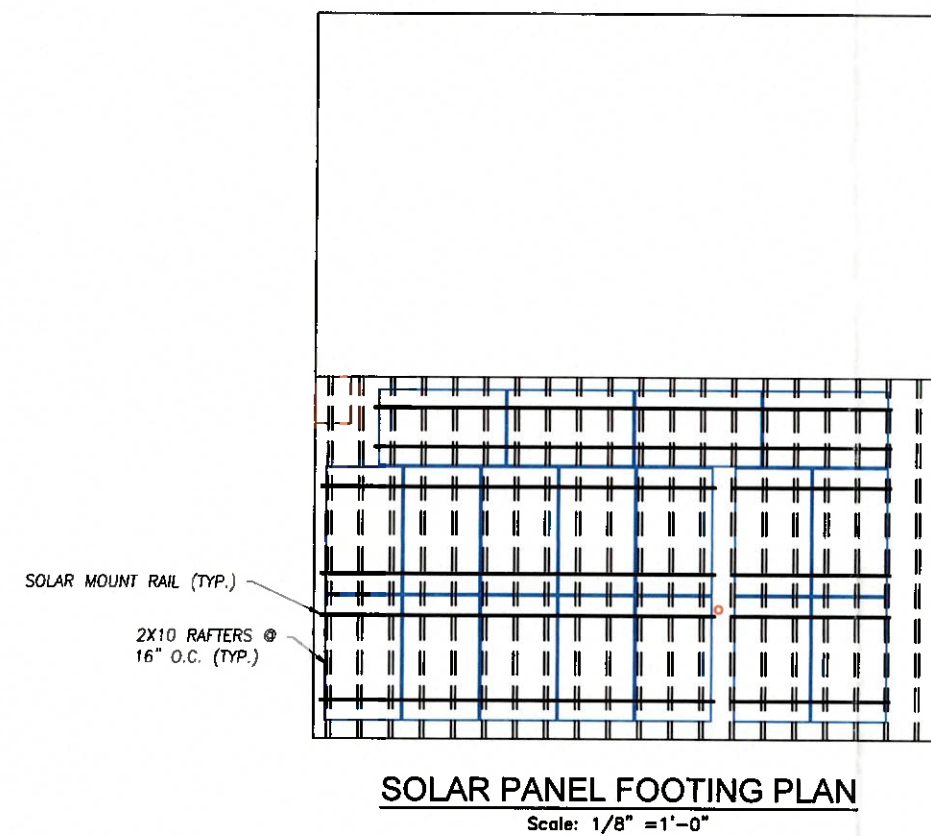
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Revisions			
REV	DESCRIPTIONS	BY	DATE

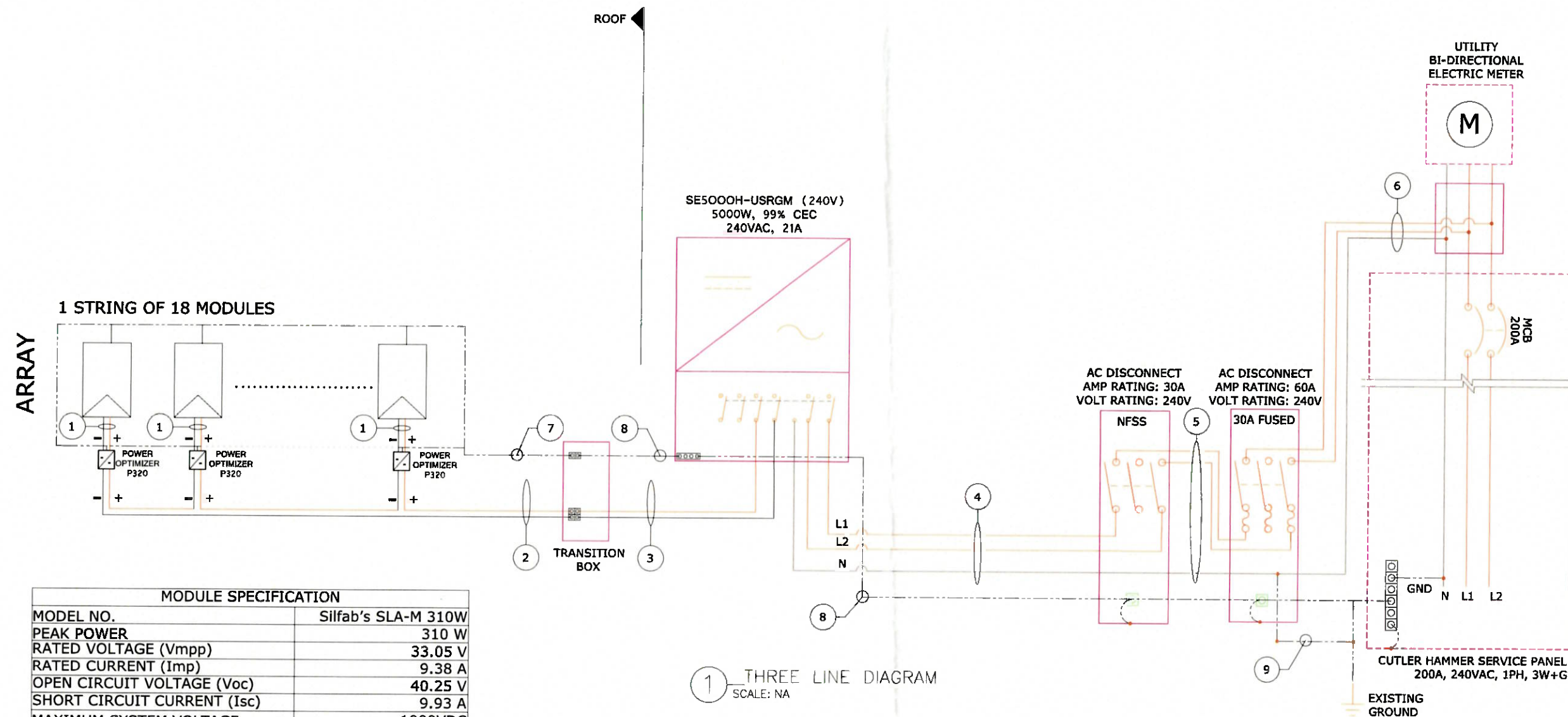
Project Name and Address  
Harry Montgomery  
211 Market St.  
Brookeville, MD 20833  
5.58 kW

Drawn by CJA	Sheet <b>S002</b>
Date 1-AUG-2019	
Scale AS NOTED	



- NOTES:**
- 1. SNAPNRACK SOLAR MOUNT RAIL SHALL BE INSTALLED IN ACCORDANCE WITH SNAPNRACK INSTALLATION MANUAL.
  - 2. S5-CLAMP FOR RAISED RIDGE METAL ROOF SEE DETAIL A





MODULE SPECIFICATION	
MODEL NO.	Silfab's SLA-M 310W
PEAK POWER	310 W
RATED VOLTAGE (Vmpp)	33.05 V
RATED CURRENT (Imp)	9.38 A
OPEN CIRCUIT VOLTAGE (Voc)	40.25 V
SHORT CIRCUIT CURRENT (Isc)	9.93 A
MAXIMUM SYSTEM VOLTAGE	1000VDC
Optimizer Specifications	
OPTIMIZER MODEL	P320
MAXIMUM DC VOLTAGE	48 V
MAXIMUM POWER OUTPUT	320 W
MAXIMUM DC CURRENT OUTPUT	15 A
MAXIMUM DC CURRENT INPUT	13.75 A
Inverter Specifications	
INVERTER MODEL	SE5000H-USRGM
MAXIMUM DC VOLTAGE	480 V
MAXIMUM POWER OUTPUT	5000 W
NOMINAL AC VOLTAGE	240 VAC
MAXIMUM AC CURRENT	21 A
ARRAY DETAILS	
NO. OF MODULES PER STRINGS	18
NO. OS STRINGS	1
ARRAY WATTS AT STC	5580
MAX. VOLTAGE	480
690.53 Label Info.	
RATED VOLTAGE	380 V
RATED CURRENT	14.68A
MAX. SYSTEM VOLTAGE	480 V
SHORT CIRCUIT CURRENT	15 A

MODEL NO.	Silfab's SLA-M 310W
PEAK POWER	310 W
RATED VOLTAGE (V <sub>mpp</sub> )	33.05 V
RATED CURRENT (I <sub>mp</sub> )	9.38 A
OPEN CIRCUIT VOLTAGE (V <sub>oc</sub> )	40.25 V
SHORT CIRCUIT CURRENT (I <sub>sc</sub> )	9.93 A
MAXIMUM SYSTEM VOLTAGE	1000VDC

## Optimizer Specifications

OPTIMIZER MODEL	P320
MAXIMUM DC VOLTAGE	48 V
MAXIMUM POWER OUTPUT	320 W
MAXIMUM DC CURRENT OUTPUT	15 A
MAXIMUM DC CURRENT INPUT	13.75 A

### Inverter Specifications

INVERTER MODEL	SE5000H-USRGM
MAXIMUM DC VOLTAGE	480 V
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## ARRAY DETAILS

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NO. OS STRINGS	1
ARRAY WATTS AT STC	5580
MAX. VOLTAGE	480

690.53 Label Info.

RATED VOLTAGE	380 V
RATED CURRENT	14.68A
MAX. SYSTEM VOLTAGE	480 V
SHORT CIRCUIT CURRENT	15 A

WIRE/CONDUIT SCHEDULE ARRAY			
TAG	DESCRIPTION	WIRE SIZE/TYPE	NOTES
1	Panel to Optimizer	#10 PV WIRE 2KV RATED	Integrated
2	Optimizer to Transition Box	#10 PV WIRE	
3	Transition Box to DC Disconnect	#10 THHN/THWN-2	
	DC Disconnect to Inverter	NA	Integrated
4	Inverter to AC disconnect	#10 Cu THHN/THWN-2	
5	AC disconnect to AC disconnect	#10 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	#8 Cu	

TAG	DESCRIPTION	WIRE SIZE/TYPE	NOTES
1	Panel to Optimizer	# 10 PV WIRE 2KV RATED	Integrated
2	Optimizer to Transition Box	#10 PV WIRE	
3	Transition Box to DC Disconnect	#10 THHN/THWN-2	
	DC Disconnect to Inverter	NA	Integrated
4	Inverter to AC disconnect	#10 Cu THHN/THWN-2	
5	AC disconnect to AC disconnect	#10 Cu THHN/THWN-2	
6	AC disconnect to Interconnection Point	#6 Cu THHN/THWN-2	
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8	Equipment Grounding Conductor	#8 Cu THHN/THWN-2	
9	Grounding Electrode Conductor	#8 Cu	

① THREE LINE DIAGRAM  
SCALE: NA

SCALE: NA

- GENERAL ELECTRICAL NOTES: NEC2014**

**SOLAR ENERGY WORLD LLC.**  
5681 Main Street  
Elkridge, MD 21075  
888-497-3233  
301-497-3251; F

ENGINEER'S STAMP

Harry Montgomery  
5.58 kW  
2111 Market St.  
Brookville, MD 20833  
Three Line Electrical Drawing

[illegible]

OPPORTUNITY	
PROJECT	
DATE DRAWN	08/05/19
DRAWN BY	DTK
DMS #:	REV. **
SHEET	