



HISTORIC PRESERVATION COMMISSION

Marc Elrich
County Executive

Sandra I. Heiler
Chairman

Date: September 27, 2019

MEMORANDUM

TO: Hadi Mansouri
Department of Permitting Services

FROM: Michael Kyne
Historic Preservation Section
Maryland-National Capital Park & Planning Commission

SUBJECT: Historic Area Work Permit #888509: Solar panel installation

The Montgomery County Historic Preservation Commission (HPC) has reviewed the attached application for a Historic Area Work Permit (HAWP). This application was **Approved** at the September 25, 2019 HPC meeting.

The HPC staff has reviewed and stamped the attached construction drawings.

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

Applicant: Harry Montgomery
Address: 211 Market St., Brookeville

This HAWP approval is subject to the general condition that the applicant will obtain all other applicable Montgomery County or local government agency permits. After the issuance of these permits, the applicant must contact this Historic Preservation Office if any changes to the approved plan are made. Once work is complete the applicant will contact Michael Kyne at 301.563.3400 or michael.kyne@montgomeryplanning.org to schedule a follow-up site visit.



REVIEWED

By Michael Kyne at 1:27 pm, Sep 27, 2019

Project: Montgomery Residence

Property Owner: Harry Montgomery

Address: 211 Market St., Brookeville, MD 20833

APPROVED
Montgomery County
Historic Preservation Commission

Sandra L. Heiler

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.

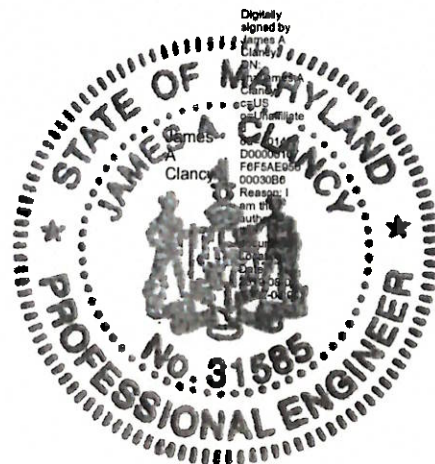
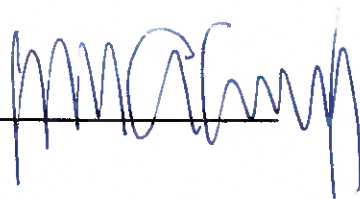
I approved the construction documents for the mounting equipment, rack system, roof structure for this project.

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/m² • AM 1.5 • Temperature 25 °C • NOCT 800 W/m² • 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 ² | | 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 ²), MC4 compatible | |

| Warranties | | SILFAB SLA Monocrystalline | |
|-------------------------|--|----------------------------|------------------------------------|
| Module product warranty | | | 12 years |
| | | | 25 years |
| | | | ≥ 97% end of 1 st year |
| | | | ≥ 90% end of 12 th year |
| | | | ≥ 82% end of 25 th year |

| Certifications | | SILFAB SLA Monocrystalline | |
|----------------|--|--|--|
| Product | | APPROVED - 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 | |

REVIEWED

Linear power performance guarantee

By Michael Kyne at 1:27 pm, Sep 27, 2019



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

- Pallet Count: 26
- Container Count: 936

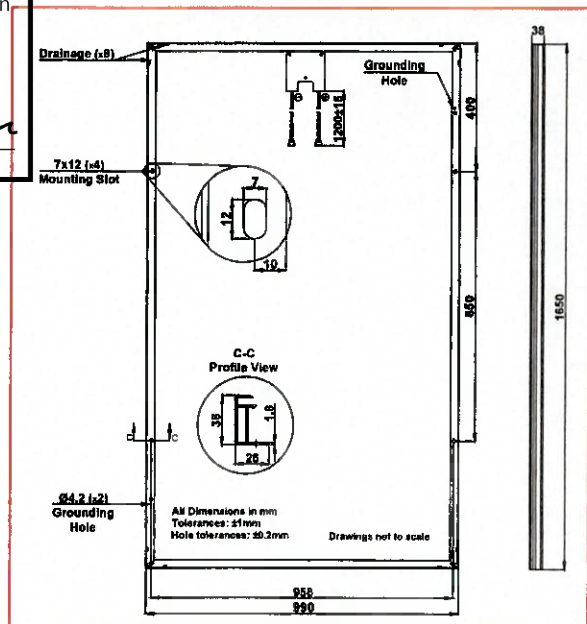


Silfab Solar Inc.
 240 Courtney Park Drive East • Mississauga,
 Ontario Canada L5T 2S5
 Tel +1 905-255-2501 • Fax +1 905-696-0267
 info@silfab.ca • www.silfab.ca

APPROVED - ULC ORD
 Montgomery County
 Historic Preservation Commission

 TOP PERFORMER 2017
 DNV-GL
 RELIABILITY SCORECARD

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



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 ^m | | | | | | | 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 ^m | 8.5 | 10.5 | 13.5 | 16.5 | 20 | 27 | 30.5 | Adc |
| Maximum Input Current @208V ^m | - | 9 | - | 13.5 | - | - | 27 | Adc |
| Max. Input Short Circuit Current | 45 | | | | | | | Adc |
| Reverse-Polarity Protection | Yes | | | | | | | |
| Ground-Fault Isolation Detection | 600ks 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 | RS485, Ethernet, ZigBee (optional), Cellular (optional) |
| Revenue Grade Data, Alerts | Optional ^m |
| Rapid Shutdown - NEC 2017 690.12 | Down upon AC Grid Disconnect |

REVIEWED

By Michael Kyne at 1:27 pm, Sep 27, 2019

STANDARD COMPLIANCE

| | | | | | | | | |
|--|---|--|-------------|---------------------------------------|-------------|--|-------------|---------|
| Safety | UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.I. M-07 | | | | | | | |
| Grid Connection Standards | APPROVED IEEE 1547, Rule 21, Rule 14 (H1) | | | | | | | |
| Emissions | Montgomery County Part 15 Class B | | | | | | | |
| Historic Preservation Commission | 3/4" minimum / 14-6 AWG | | | | | | | |
| 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) | 17.1 x 14.6 x 8.8 / 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 | | 26.3 / 11.9 | | 38.8 / 17.6 | lb / kg |
| Noise | < 25 | | | < 50 | | | | dBA |
| Cooling | Natural Convection | | | | | | | |
| Operating Temperature Range | -40 to +140 / -25 to +60 ^m (-40°F / -40°C option) ^m | | | | | | | °F / °C |
| Protection Rating | NEMA 4X (Inverter with Safety Switch) | | | | | | | |

^m For other regional settings please contact SolarEdge support

ⁿ A higher current source may be used, the inverter will limit its input current to the values stated

^o Revenue grade inverter P/N: SExxxx-US000NINC2

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

^q -40 version P/N: SExxxx-US000NNU4

REVIEWED

By Michael Kyne at 1:28 pm, Sep 27, 2019

APPROVED
 Montgomery County
 Historic Preservation Commission
Sandra L. Heiler



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

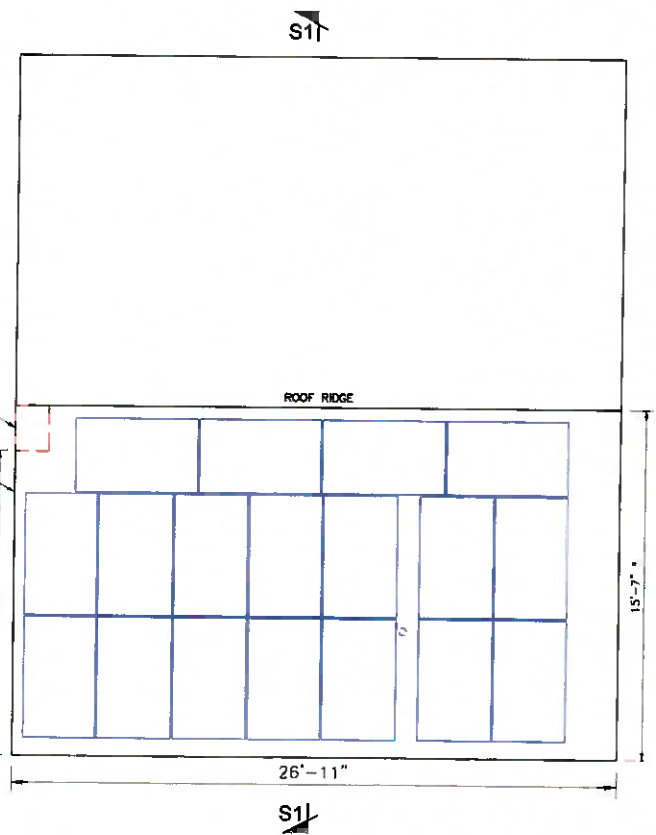
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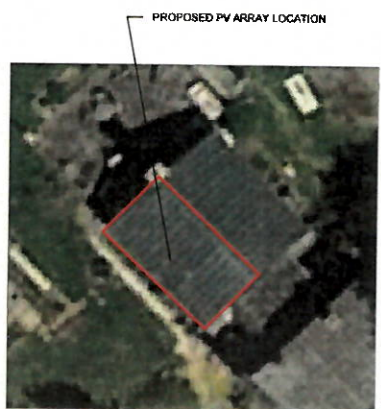
| REV | DESCRIPTIONS | BY | DATE |
|-----|--------------------------|-----|----------|
| 01 | Made EDC1, S001 and S002 | JMP | 6/1/2019 |
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Project Name and Address
 Harry Montgomery
 211 Market St.
 Brookeville, MD 20833
 5.58 kW

Drawn by
 CJA
 Date
 1-AUG-2019
 Sheet
A001
 Notes
 AS NOTED



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



- NOTES:**
1. THE SYSTEM SHALL INCLUDE [18] SHfob SLA-M 310W
 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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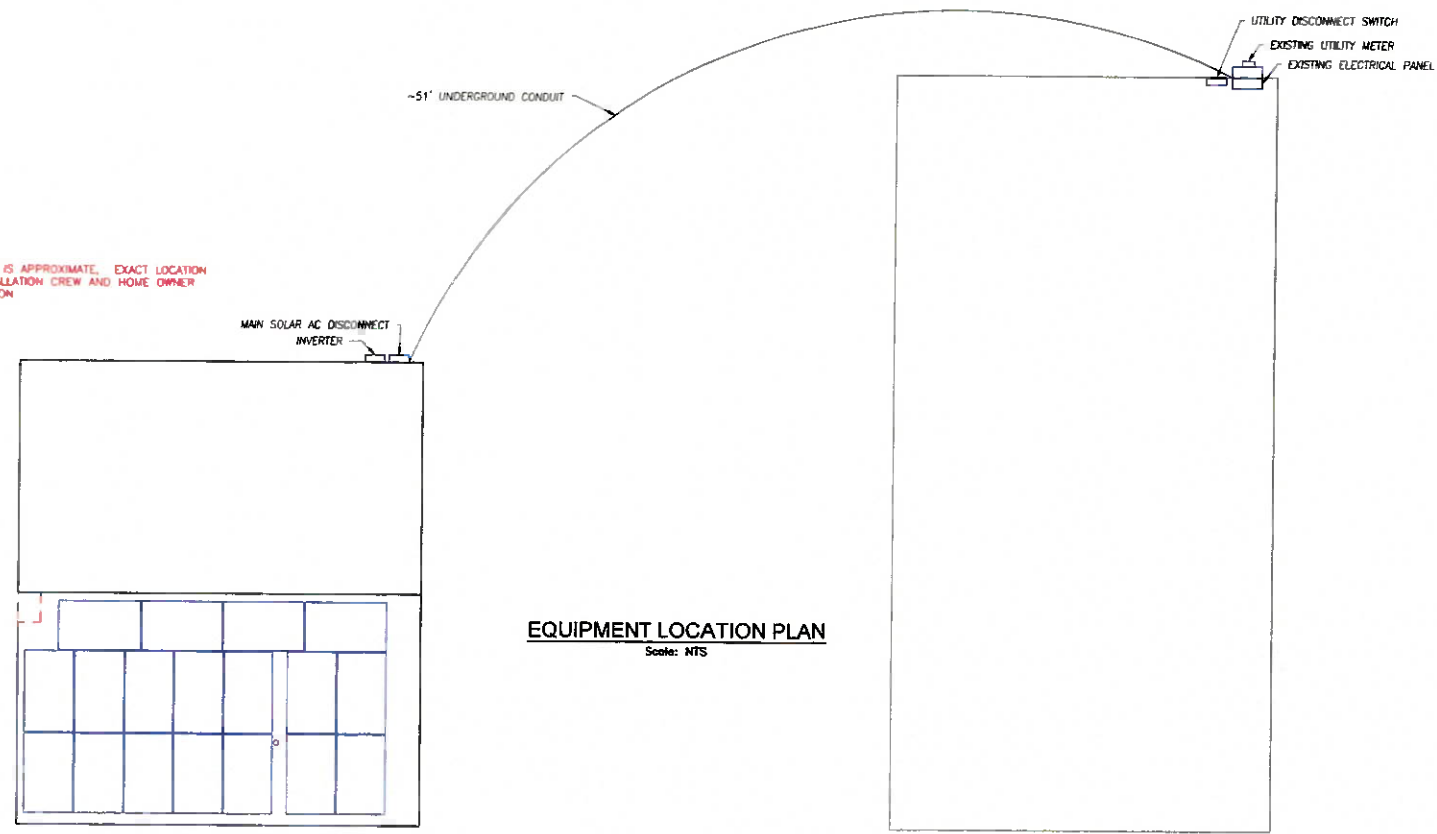
Revisions

| REV | DESCRIPTIONS | BY | DATE |
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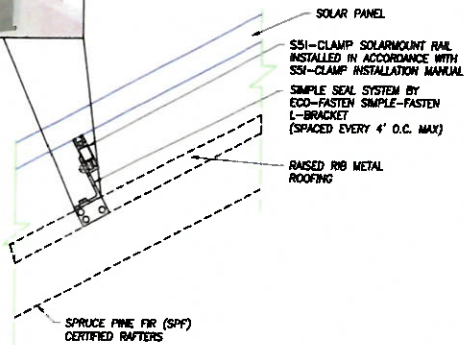
Project Name and Address
Harry Montgomery
 211 Market St.
 Brookeville, MD 20833
 5.58 kW

Drawn by: **C.JA**
 Date: **1-AUG-2019**
 Status: **AS NOTED**

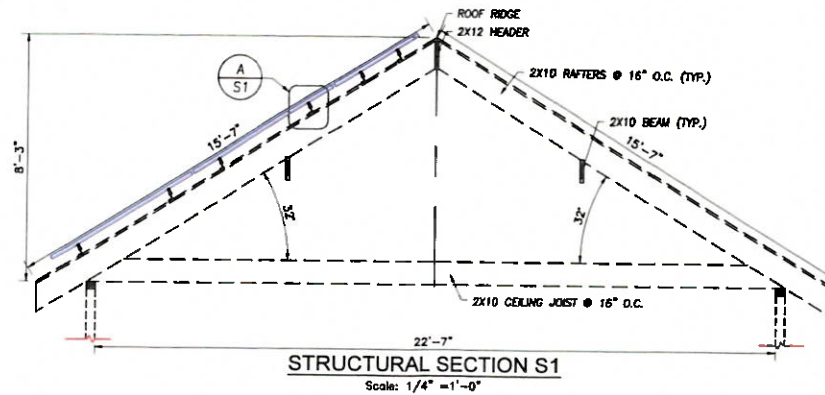
E001



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
S001



STRUCTURAL SECTION S1
Scale: 1/4" = 1'-0"

NOTES

1. 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.
2. LOAD CRITERIA PER
 - EXPOSURE CATEGORY "B"
 - GROUND SNOW LOAD $P_g = 30$ PSF
 - RISK CATEGORY "II"
 - ULTIMATE DESIGN WIND SPEED = 115 MPH
3. SOLAR PANELS AND RACKING SYSTEMS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATION
4. FOLLOW ALL LOCAL AND FEDERAL SAFETY REQUIREMENTS



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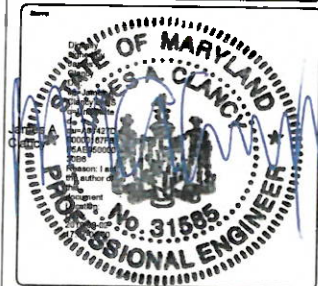
Project Name and Address
Harry Montgomery
211 Market St.
Brookeville, MD 20833
5.58 kW

Drawn by: CJA
Date: 1-AUG-2019
Scale: AS NOTED
Sheet: **S001**



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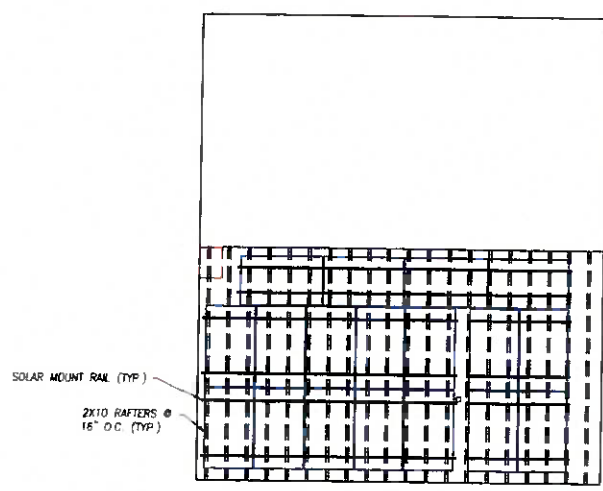
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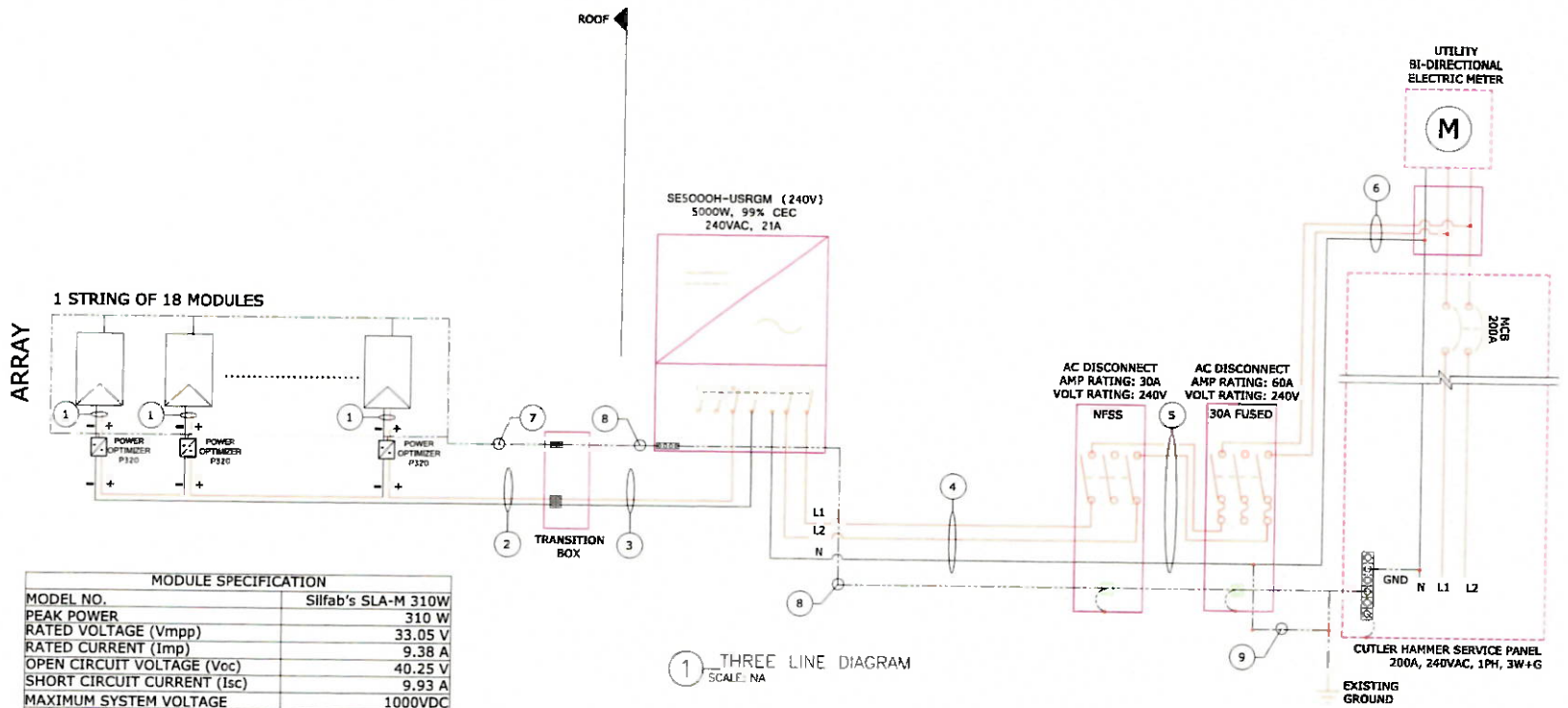
Project Name and Address:
 Harry Montgomery
 211 Market St.
 Brookeville, MD 20833
 5.58 kW

| | |
|------------------------|-------------|
| Drawn by CJA | S002 |
| Date 1-AUG-2019 | |
| Notes AS NOTED | |



SOLAR PANEL FOOTING PLAN
 Scale: 1/8" = 1'-0"

- 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



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. 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 | #8 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 IT'S CONNECTION SHOWN IS OPTIONAL, IF USED, REFER TO SMS INSTALLATION MANUAL FOR WIRING METHODS AND OPERATION PROCEDURE.
 - ASHRAE FUNDAMENTAL OUTDOOR DESIGN TEMPERATURES DO NOT EXCEED 47°C IN THE U.S. (PHOENIX, AZ OR PALM SPRINGS, CA)
 - FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN ROOF MOUNTED SUNLIGHT CONDUIT USING THE OUTDOOR TEMPERATURE OF 47°C
 - 10AWG CONDUCTOR ARE GENERALLY ACCEPTABLE FOR MODULES WITH AN Isc OF 9.6 AMPS WITH A 15 AMP FUSE.
- Wire sizing for OCPD
 $Ex(Isc \times (1.25)(1.25) \times \# \text{ of strings in parallel}) = \text{wire ampacity or using NEC table 690.8}$

ENGINEER'S STAMP

Harry Montgomery
 5.58 kW
 Three Line Electrical Drawing

211 Market St.
 Brooklyn, MD 20833

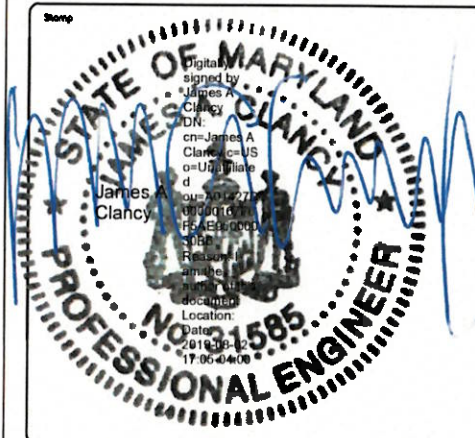
| NO. | DATE | DESCRIPTION |
|-----|----------|-------------|
| 1 | 08/05/19 | |

DATE DRAWN: 08/05/19
 DRAWN BY: DTK
 SHEET: E1



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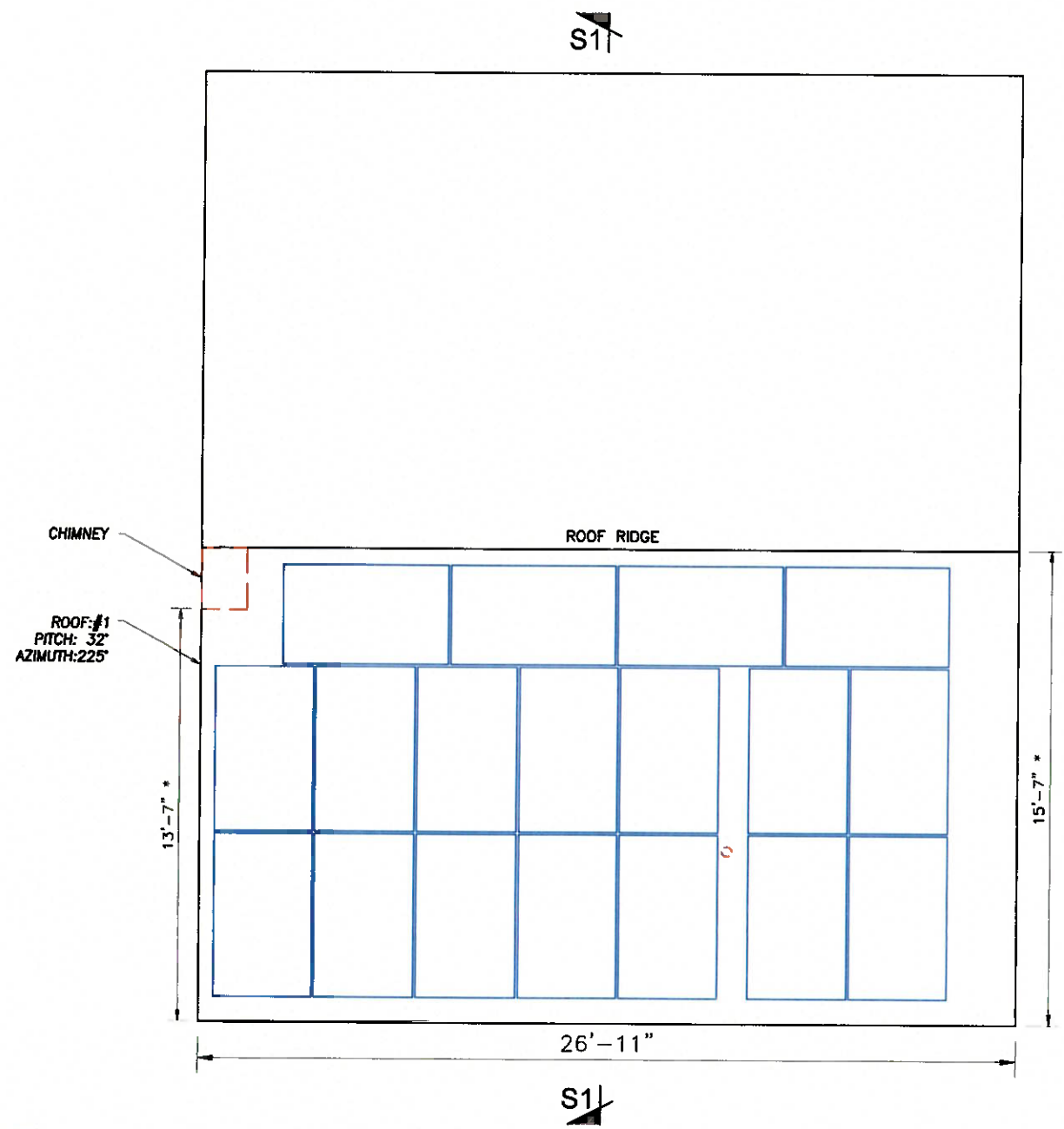
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| REV | DESCRIPTIONS | BY | DATE |
|-----|--------------------------|-----|----------|
| 01 | Made E001, S001 and S002 | JMP | 8/1/2019 |
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Project Name and Address
 Harry Montgomery
 211 Market St.
 Brookeville, MD 20833
 5.58 kW

| | |
|--------------------|-------------|
| Drawn By CJA | A001 |
| Date 1-AUG-2019 | |
| Scale AS NOTED | |



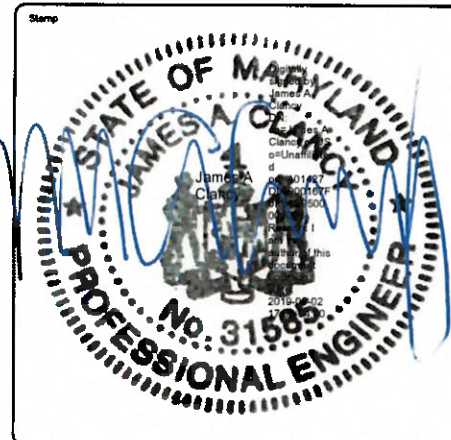
SOLAR PANEL LAYOUT
 Scale: 3/16" = 1'-0"

- 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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 Elkridge, MD 21075
 (888) 497-3233

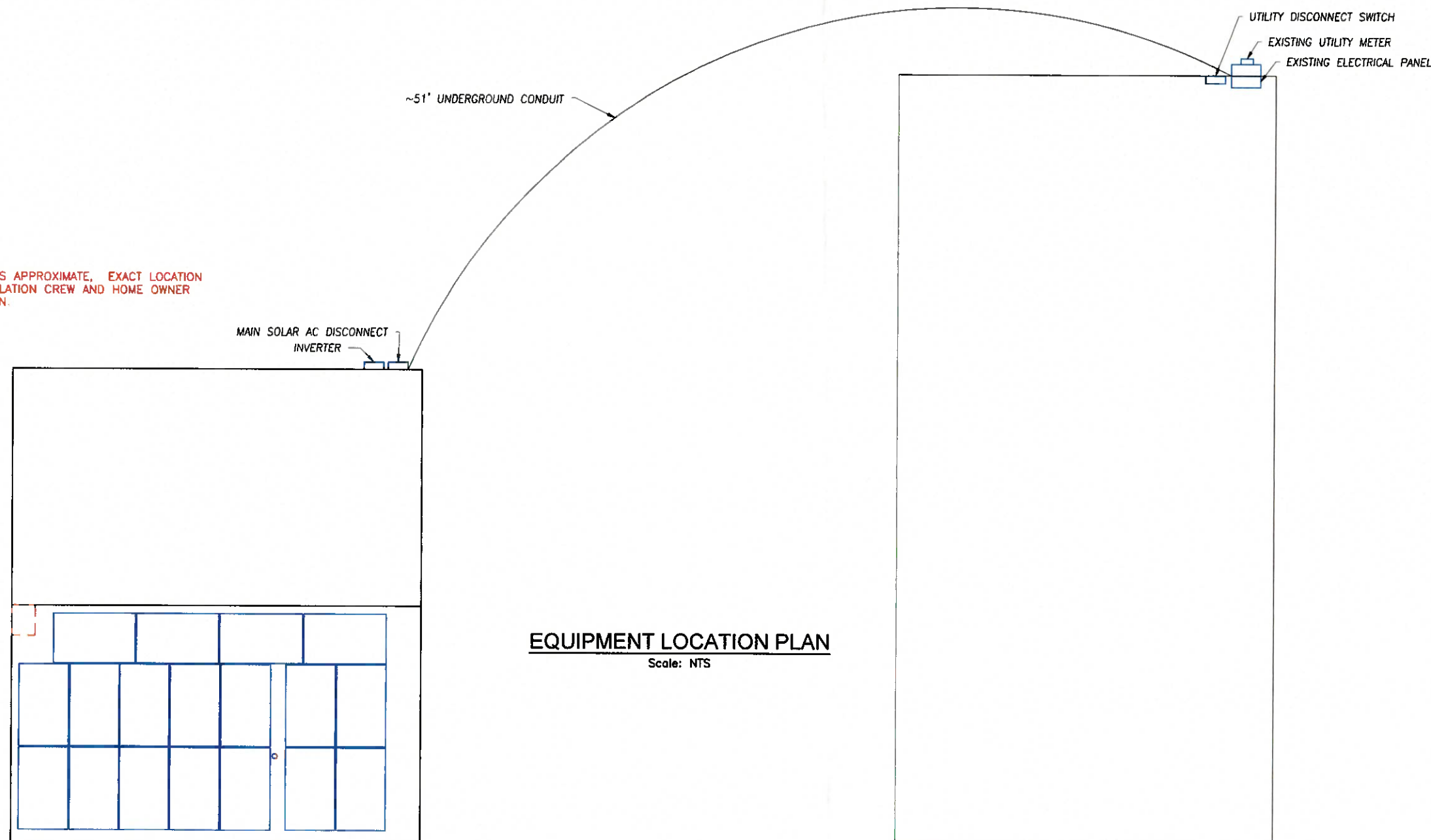
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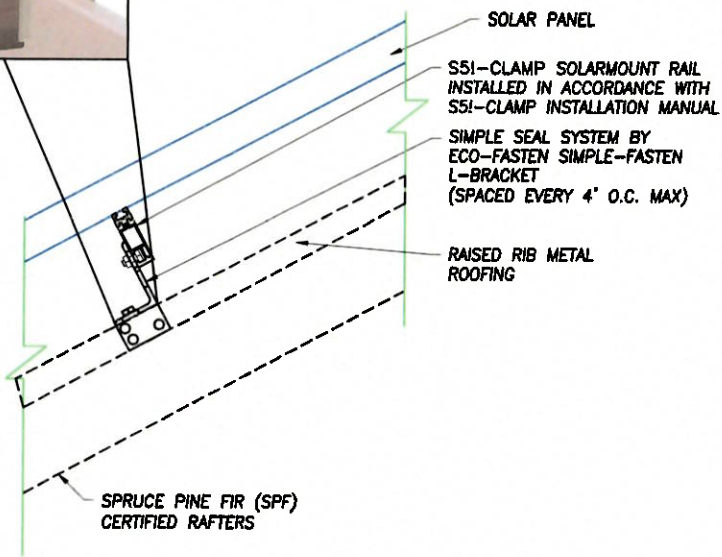
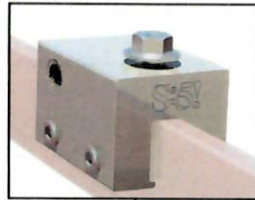
Project Name and Address
 Harry Montgomery
 211 Market St.
 Brookeville, MD 20833
 5.58 kW

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

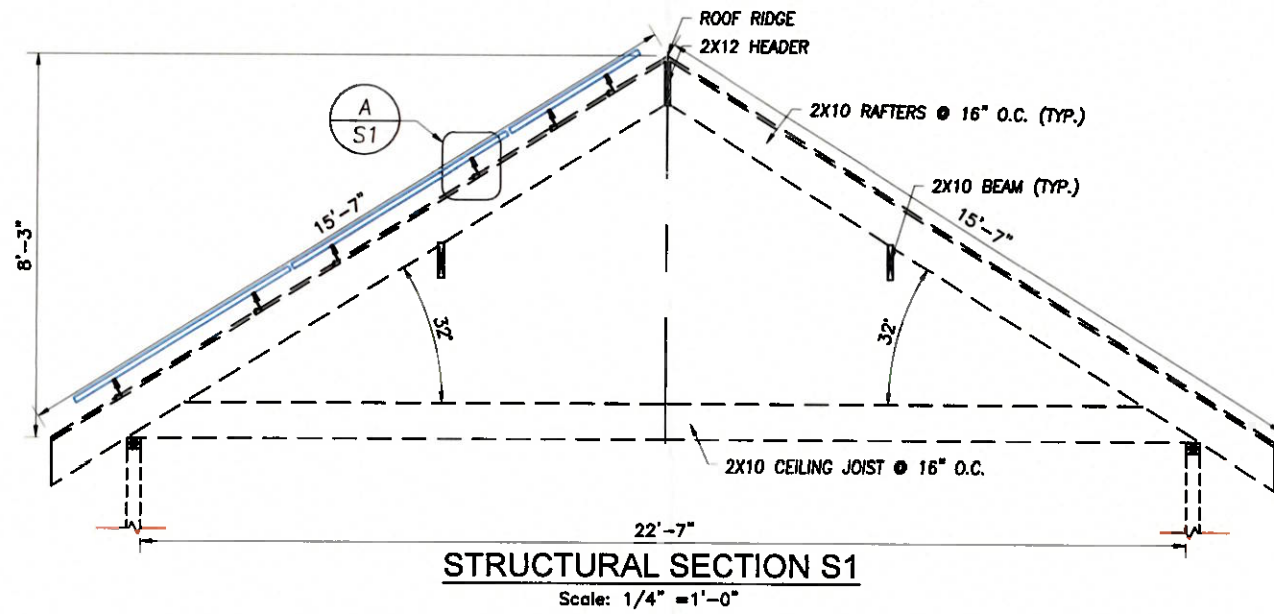


EQUIPMENT LOCATION PLAN
 Scale: NTS

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 S001



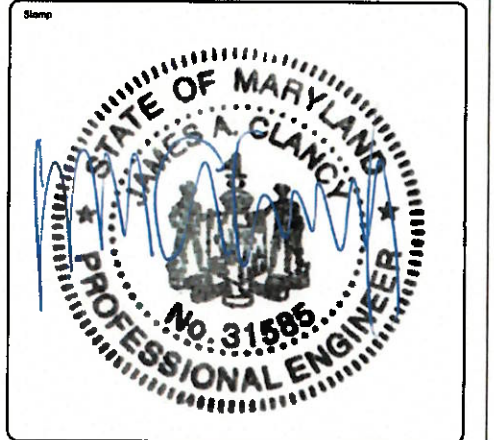
NOTES:

- 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



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Because Tomorrow Matters
Solar Energy World LLC.
5681 Main Street
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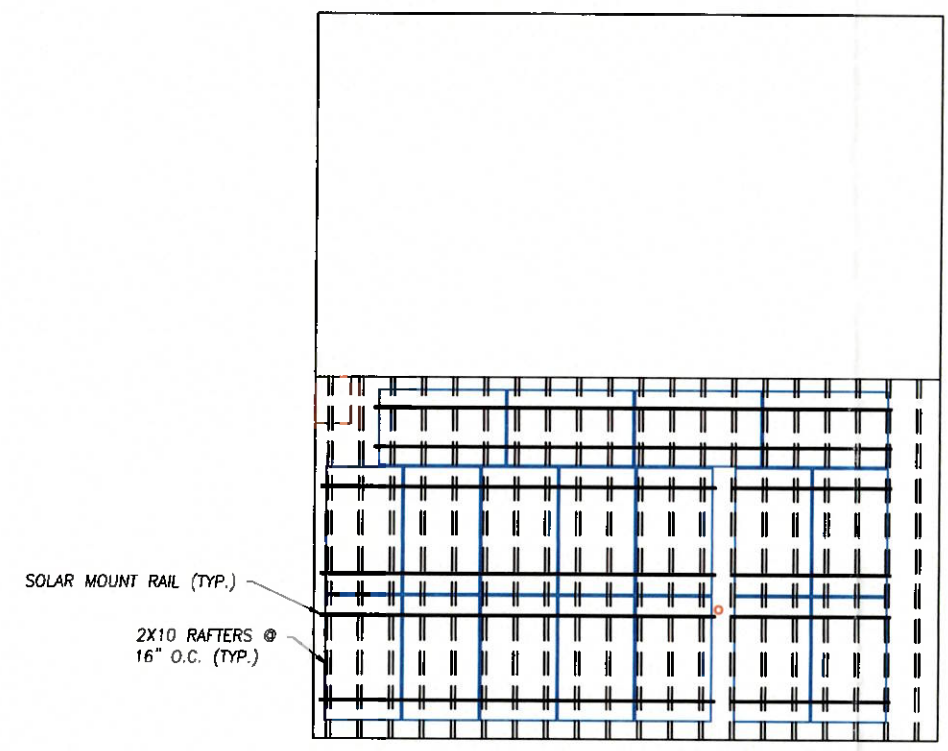
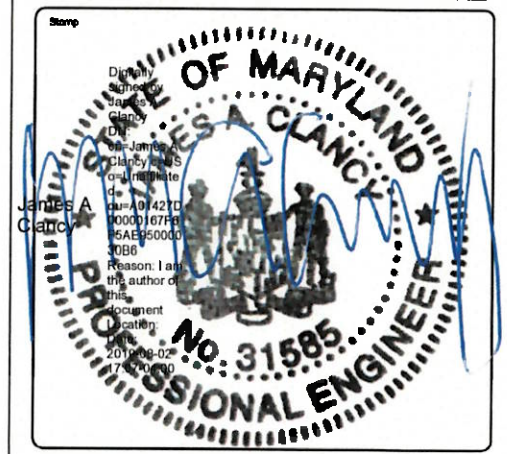
Drawn by: CJA
Date: 1-AUG-2019
Scale: AS NOTED

Sheet: **S001**



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SOLAR PANEL FOOTING PLAN
 Scale: 1/8" = 1'-0"

NOTES:

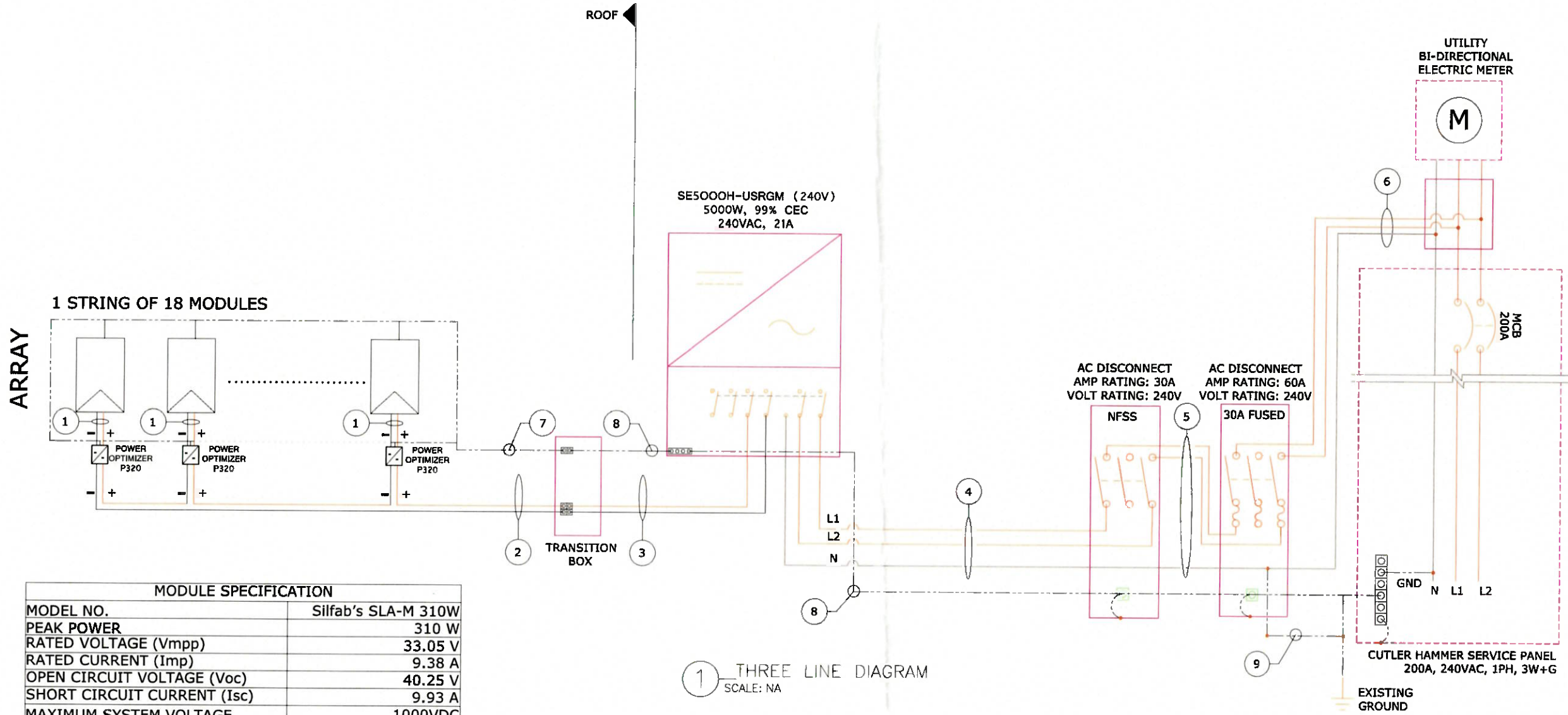
1. SNAPNRACK SOLAR MOUNT RAIL SHALL BE INSTALLED IN ACCORDANCE WITH SNAPNRACK INSTALLATION MANUAL.
2. S5-CLAMP FOR RAISED RIDGE METAL ROOF SEE DETAIL A

Revisions

| REV | DESCRIPTIONS | BY | DATE |
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 Brookeville, MD 20833
 5.58 kW

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|---|----------------------|
| Drawn by CJA Date 1-AUG-2019 Scale AS NOTED | Sheet S002 |
|---|----------------------|



1 THREE LINE DIAGRAM
SCALE: NA

| MODULE SPECIFICATION | |
|--|---------------------|
| MODEL NO. | Silfab's SLA-M 310W |
| PEAK POWER | 310 W |
| RATED VOLTAGE (V _{mpp}) | 33.05 V |
| RATED CURRENT (I _{mp}) | 9.38 A |
| OPEN CIRCUIT VOLTAGE (V _{oc}) | 40.25 V |
| SHORT CIRCUIT CURRENT (I _{sc}) | 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 |

| 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 IT'S CONNECTION SHOWN IS OPTIONAL. IF USED, REFER TO SMS INSTALLATION MANUAL FOR WIRING METHODS AND OPERATION PROCEDURE.
 - ASHRAE FUNDAMENTAL OUTDOOR DESIGN TEMPERATURES DO NOT EXCEED 47°C IN THE U.S. (PHOENIX, AZ or PALM SPRINGS, CA)
 - FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN ROOF MOUNTED SUNLIGHT CONDUIT USING THE OUTDOOR TEMPERATURE OF 47°C
 - 10AWG CONDUCTOR ARE GENERALLY ACCEPTABLE FOR MODULES WITH AN I_{sc} OF 9.6 AMPS WITH A 15 AMP FUSE.
- Wire sizing for OCPD
 $Ex(I_{sc} \times (1.25)(1.25)) / (\# \text{ of strings in parallel}) = \text{wire ampacity or using NEC table 690.8}$

ENGINEER'S STAMP
Harry Montgomery
5.58 kW
 211 Market St.
 Brookeville, MD 20833
Three Line Electrical Drawing

| REV | DATE | DESCRIPTION |
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| OPPORTUNITY | |
| PROJECT | |
| DATE DRAWN | 08/05/18 |
| DRAWN BY | DTK |
| DNS #: | REV.** |
| SHEET | E1 |