



## HISTORIC PRESERVATION COMMISSION

Marc Elrich  
*County Executive*

Sandra I. Heiler  
*Chairman*

Date: December 23, 2019

### MEMORANDUM

TO: Hadi Mansouri  
Department of Permitting Services

FROM: Dan Bruechert  
Historic Preservation Section  
Maryland-National Capital Park & Planning Commission

SUBJECT: Historic Area Work Permit #896587: Solar Panel Installation

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The Montgomery County Historic Preservation Commission (HPC) has reviewed the attached application for a Historic Area Work Permit (HAWP). This application was **Approved** at the December 18, 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: Maryam Salass (Kelli Delacruz, Agent)  
Address: 25 Oxford St., Chevy Chase

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



JURISDICTIONAL NOTES:

APPROVED  
Montgomery County  
Historic Preservation Commission

*Sandra L. Heiler*

GOVERNING CODES

- ALL WORK SHALL CONFORM TO THE FOLLOWING CODES
- a. 2014 NATIONAL ELECTRICAL CODE
  - b. 2015 INTERNATIONAL BUILDING CODE
  - c. 2015 INTERNATIONAL RESIDENTIAL CODE
  - d. ANY OTHER LOCAL AMENDMENTS

**REVIEWED**

By Dan.Bruechert at 1:07 pm, Dec 23, 2019

SHEET INDEX:

- PV 0.0 - COVER SHEET
- PV 1.0 - SITE PLAN
- S 1.0 - MOUNT DETAILS
- S 1.1 - MOUNT DIAGRAM
- E 1.0 - ELECTRICAL DIAGRAM
- E 2.0 - ELECTRICAL NOTES
- E 3.0 - WARNING LABELS
- E 4.0 - WARNING LABEL LOCATIONS

GENERAL ELECTRICAL NOTES:

1. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE. FOR ROOF-MOUNTED SYSTEMS, WIRING MUST BE PERMANENTLY AND COMPLETELY HELD OFF OF THE ROOF SURFACE.
2. ANY CODE VIOLATIONS EVIDENT IN THE INTERCONNECTION PANEL WILL BE CORRECTED ON INSTALLATION.
3. SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH ALL RELEVANT CODE
4. RAPID SHUTDOWN INITIATION TAKES PLACE AT THE AC DISCONNECT. RAPID SHUTDOWN COMMENCES UPON LOSS OF UTILITY SOURCE VOLTAGE.
5. SEE 'E 1.0 AND 'E 2.0 FOR DIAGRAMS, CALCULATIONS, SCHEDULE AND SPECIFICATIONS.

GENERAL STRUCTURAL NOTES:

- a. THE SOLAR PANELS ARE TO BE MOUNTED TO THE ROOF FRAMING USING THE ROCK-IT SYSTEM BY ECOFASTEN. THE MOUNTING FEET ARE TO BE SPACED AS SHOWN IN THE DETAILS, AND MUST BE STAGGERED TO ADJACENT FRAMING MEMBERS TO SPREAD OUT THE ADDITIONAL LOAD.
- b. UNLESS NOTED OTHERWISE, MOUNTING ANCHORS SHALL BE 3/8" LAG SCREWS WITH A MINIMUM OF 2 1/2" PENETRATION INTO ROOF FRAMING.
- c. THE PROPOSED PV SYSTEM ADDS 2.8 psf TO THE ROOF FRAMING SYSTEM.
- d. ROOF LIVE LOAD = 20 psf TYPICAL, 0 psf UNDER NEW PV SYSTEM.
- e. GROUND SNOW LOAD = 30 psf
- f. WIND SPEED = 115 mph
- g. EXPOSURE CATEGORY = B

PHOTOVOLTAIC SYSTEM SPECIFICATIONS:

SYSTEM SIZE - 14.490kW DC | 10.580kW AC  
 MODULE TYPE & AMOUNT - (46) LG LG315N1K-V5  
 MODULE DIMENSIONS - (L/W/H) 66.38" / 40.08" / 1.57"  
 INVERTER - (46) Enphase Energy IQ6-60-2-US  
 INTERCONNECTION METHOD - SUPPLY TAP

**vivint.Solar**

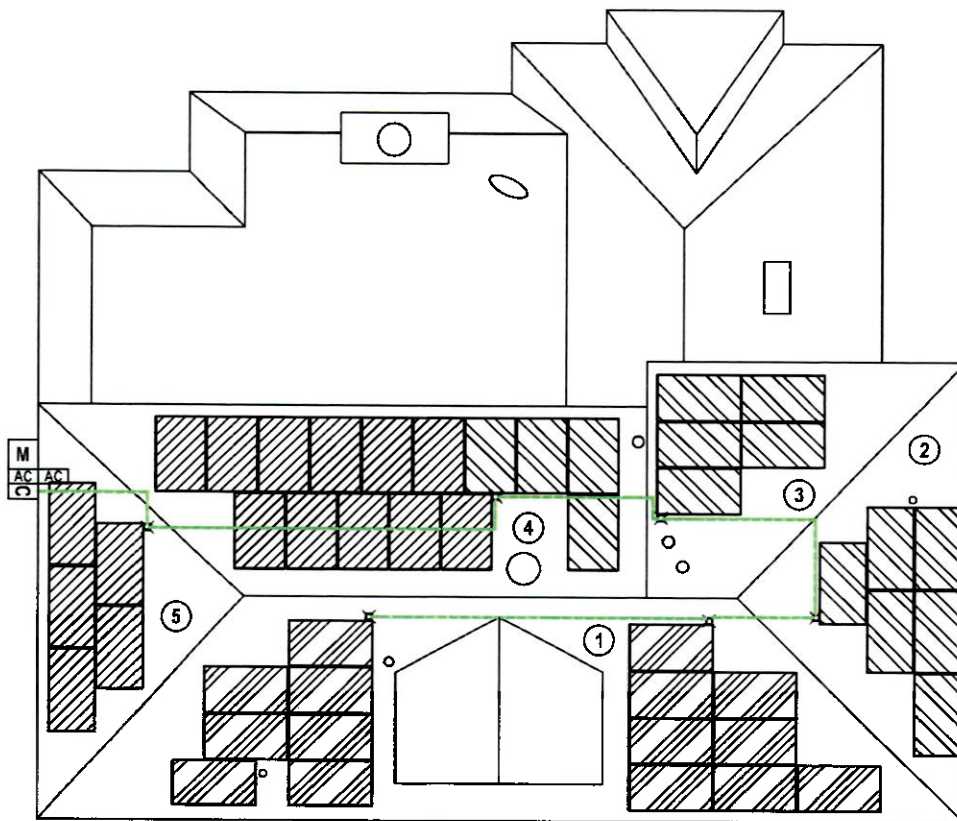
1800 ASHTON BLVD. LEHI, UT, 84043  
 1.877.404.4129  
 MD LICENSE: HIC-130385  
 ME.11692

HASHIM RESIDENCE

25 OXFORD ST  
 CHEVY CHASE, MD, 20815-4230  
 UTILITY ACCOUNT #: 5502 4452 496

SERVICE #: S-0217175  
 REGIONAL OPERATING CENTER: MD-01  
 DATE: 10/8/2019  
 DRAWN BY: DIN

**COVER SHEET**






25 OXFORD ST  
FRONT OF HOUSE.



# SITE PLAN

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

### PV CIRCUIT(S)




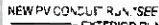
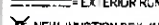

-  #1, 16 MODULES
-  #2, 15 MODULES
-  #3, 15 MODULES

### ROOF SECTION(S):

- ① SLOPE - 23  
AZIMUTH - 180  
MATERIAL -  
COMPOSITION SHINGLE
- ② SLOPE - 22  
AZIMUTH - 90  
MATERIAL -  
COMPOSITION SHINGLE
- ③ SLOPE - 18  
AZIMUTH - 0  
MATERIAL -  
COMPOSITION SHINGLE
- ④ SLOPE - 23  
AZIMUTH - 0  
MATERIAL -  
COMPOSITION SHINGLE
- ⑤ SLOPE - 22  
AZIMUTH - 270  
MATERIAL -  
COMPOSITION SHINGLE

### SYSTEM LEGEND

PV SYSTEM SIZE  
NEW \*4.480kW DC | 10.580kW AC

-  EXISTING INTERIOR MAIN SERVICE PANEL & POINT OF INTERCONNECTION, TIED TO UTILITY METER #NYA108697335.
-  NEW PV SYSTEM AC DISCONNECT(RSD) LOCATED WITHIN 10' OF MSP.
-  NEW DEDICATED PV SYSTEM COMBINER PANEL... 46 NEW LG LG335N1K-V5 MODULES NEW EN-PHASE ENERGY IQ6-60-2-US INVERTERS MOUNTED ON THE BACK OF EACH MODULE.
- NEW PV CONDUIT RUN: SEE EE1.0 CONDUIT SCHEDULE  
 = EXTERIOR RUN  
 = ATTIC RUN
-  NEW JUNCTION BOX (MOUNTED WITH SOLADECK)

PROFESSIONAL CERTIFICATION I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME, AND THAT I AM A D.U.Y. LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
 LICENSE # 52248  
 EXPIRATION DATE 6-30-2022



APPROVED

Montgomery County

Historic Preservation Commission

*Sandra L. Heiler*

**vivint.Solar**  
1.877.404.4129

**HASHIM RESIDENCE**  
25 OXFORD ST  
CHEVY CHASE MD 20815-4230  
UTILITY ACCOUNT # 5502 4452 496

SERVICE # S-5217-75  
REGIONAL OPERATING CENTER MD-01  
DATE: 10/7/2019  
DRAWN BY: DJM

PV 1.0

**REVIEWED**

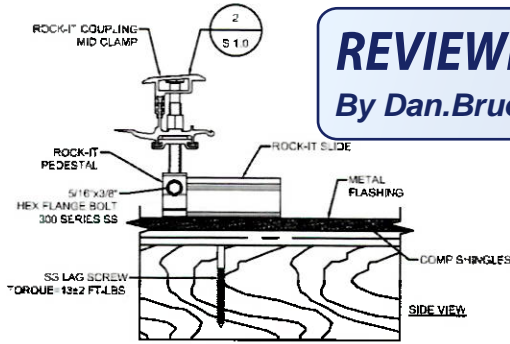
By Dan.Bruechert at 1:10 pm, Dec 23, 2019

APPROVED  
Montgomery County  
Historic Preservation Commission

*Sandra L. Heiler*

**REVIEWED**

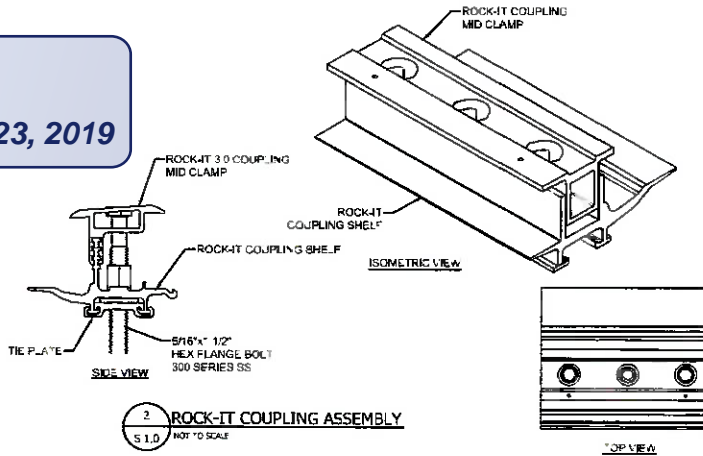
By Dan.Bruechert at 1:07 pm, Dec 23, 2019



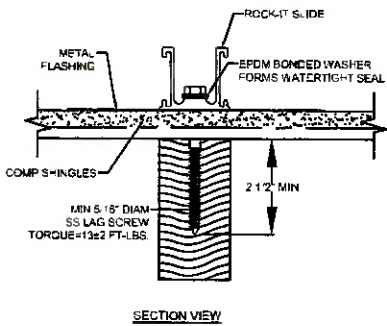
1 ROCK-IT MOUNT DETAIL  
S 1.0 NOT TO SCALE



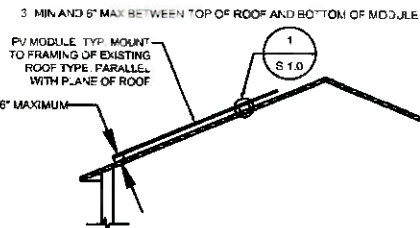
8 ILSCO SGB-4 GROUNDING LUGS  
S 1.0 NOT TO SCALE



2 ROCK-IT COUPLING ASSEMBLY  
S 1.0 NOT TO SCALE

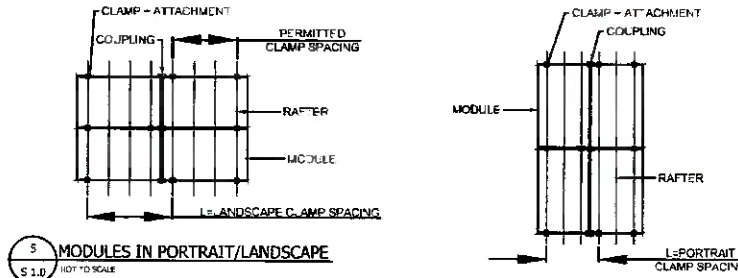


4 PV SYSTEM MOUNTING DETAIL  
S 1.0 NOT TO SCALE

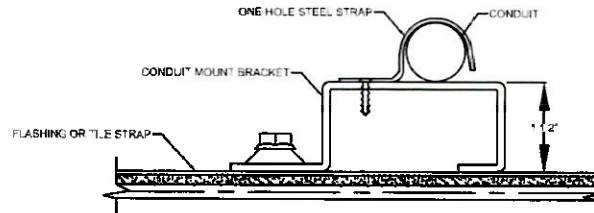


6 PV ARRAY TYP. ELEVATION  
S 1.0 NOT TO SCALE

3 SECTION VIEW  
S 1.0 NOT TO SCALE



5 MODULES IN PORTRAIT/LANDSCAPE  
S 1.0 NOT TO SCALE



7 CONDUIT MOUNTING DETAIL  
S 1.0 NOT TO SCALE

**MOUNT DETAILS**

SCALE: NOT TO SCALE

**MOUNTING LEGEND**

PROFESSIONAL CERTIFICATION I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE # 52248  
EXPIRATION DATE 6-30-2023



**vivint.Solar**  
1.877.404.4129

**HASHIM RESIDENCE**  
25 OXFORD ST  
CHEVY CHASE, MD 20815-4230  
UTILITY ACCOUNT # 5502 4452 496

SERVICE # S-6217-75  
REGIONAL OPERATING CENTER HQ-01  
DATE 10/6/2019  
DRAWN BY DR

S 1.0

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 Montgomery County  
 Historic Preservation Commission

*Sandra L. Heiler*



**REVIEWED**

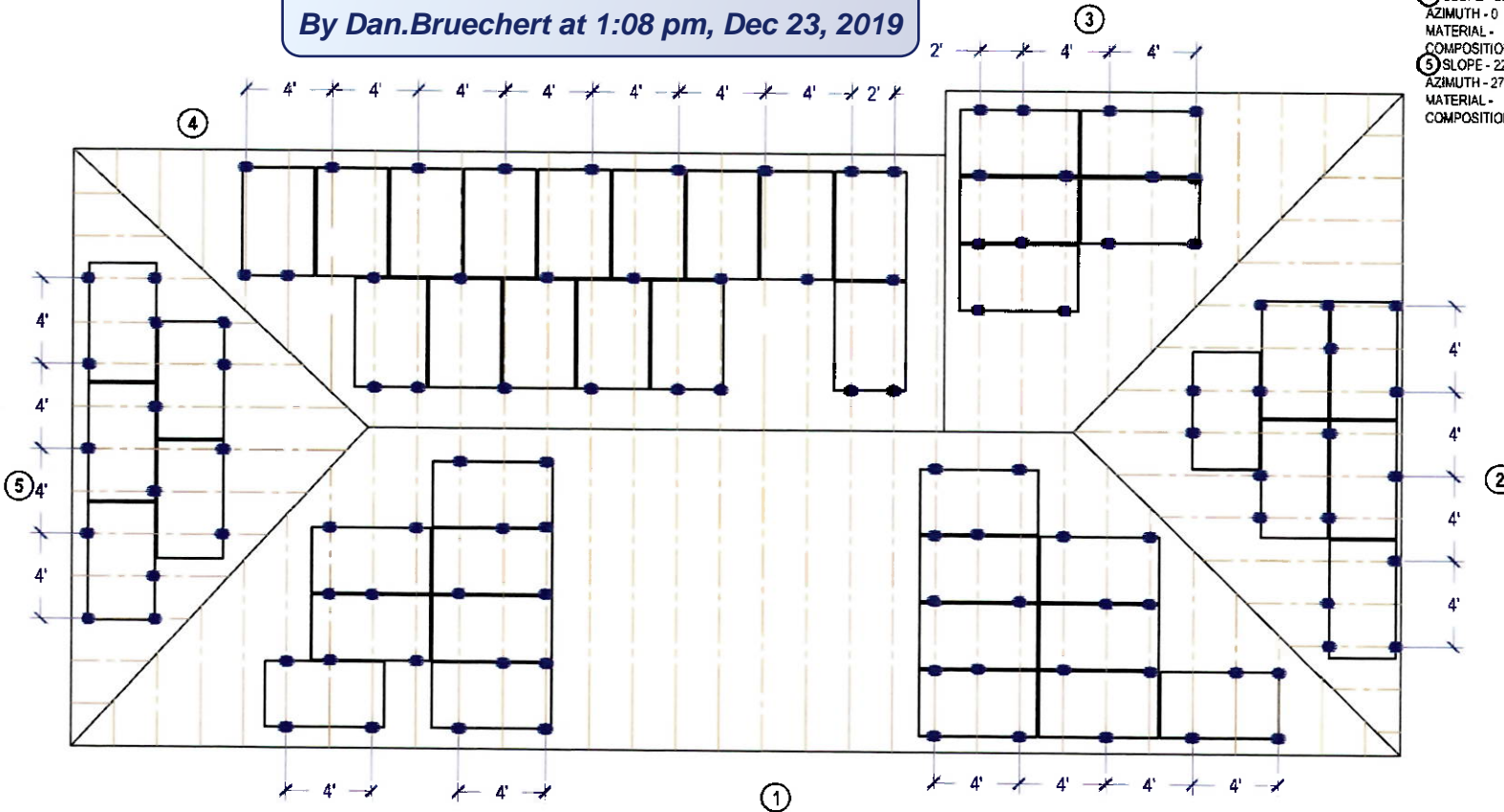
By Dan.Bruechert at 1:08 pm, Dec 23, 2019

**ROOF SECTION(S):**

- ① SLOPE - 23  
 AZIMUTH - 180  
 MATERIAL -  
 COMPOSITION SHINGLE
- ② SLOPE - 22  
 AZIMUTH - 90  
 MATERIAL -  
 COMPOSITION SHINGLE
- ③ SLOPE - 18  
 AZIMUTH - 0  
 MATERIAL -  
 COMPOSITION SHINGLE
- ④ SLOPE - 23  
 AZIMUTH - 0  
 MATERIAL -  
 COMPOSITION SHINGLE
- ⑤ SLOPE - 22  
 AZIMUTH - 270  
 MATERIAL -  
 COMPOSITION SHINGLE

**MOUNTING LEGEND**

RAFTER =   
 MOUNTING FEET = 



**MOUNT DIAGRAM**

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

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 LICENSE # 52248  
 EXPIRATION DATE 6-30-2020



**vivint.Solar**  
 1.877.404.4129

**HASHIM RESIDENCE**  
 25 OXFORD ST  
 CHEVY CHASE, MD, 20815-4230  
 UTILITY ACCOUNT # 5502 4452 496

SERVICE # S-6217-75  
 REGIONAL OPERATING CENTER M3-01  
 DATE 10/12/2019  
 DRAWN BY DIN

**S 1.1**

APPROVED  
 Montgomery County  
 Historic Preservation Commission

*Sandra L. Heiler*

Photovoltaic System	
DC System Size (Watts)	14490
AC System Size (Watts)	10580
Total Module Count	46

Conduit Conductor Schedule (Unless Otherwise Specified Conductors Shall be Copper)					
Tag	Description	Wire Gauge	# of Conductors/Color	Conduit Type	Conduit Size
3	Inverter Output (Enphase Q Cable)	12 AWG	3(L1, L2, G)	Free Air	N/A
1	EGC (Bare Copper Ground)	6 AWG	1 BARE	Free Air	N/A
2	Inverter Output (THWN-2)	10 AWG	6(3L1, 3L2)	FMC	3/4"
2	EGC (THWN-2)	12 AWG	1(GRN)	FMC	3/4"
3	Inverter Output (THWN-2)	10 AWG	6(3L1, 3L2)	EMT	3/4"
3	EGC (THWN-2)	12 AWG	1(GRN)	EMT	3/4"
4	Inverter Output (THWN-2)	6 AWG	3(L1, L2, N) B/R/W	EMT	3/4"
4	EGC (THWN-2)	10 AWG	1(GRN)	EMT	3/4"
5	Service Feeder (THWN-2)	6 AWG	3(L1, L2, N) B/R/W	EMT	3/4"
5	GEC (THWN-2)	8 AWG	1(GRN)	EMT	3/4"

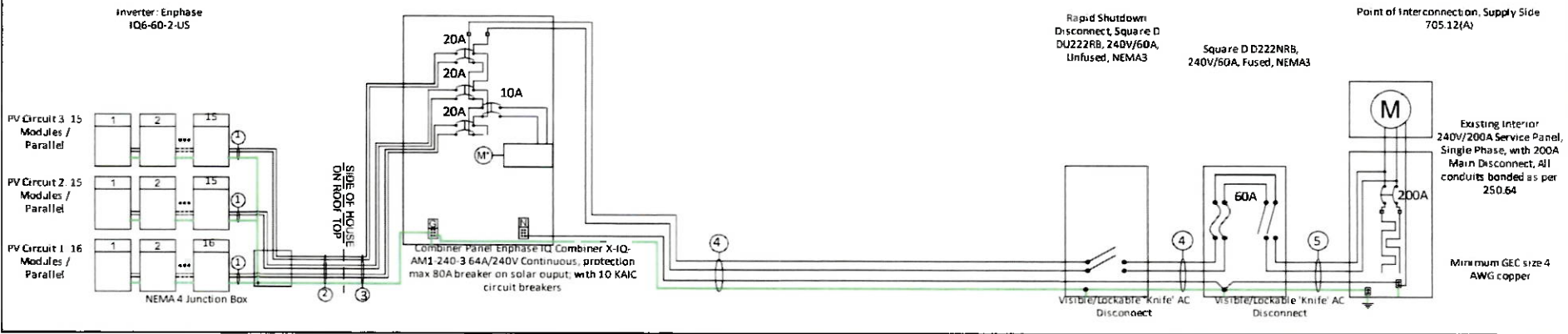
**REVIEWED**  
 By Dan.Bruechert at 1:08 pm, Dec 23, 2019

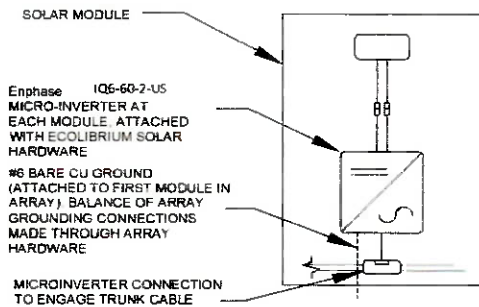
**vivint.solar**

Created: 10/11/19

INSTALLER: VIVINT SOLAR  
 INSTALLER NUMBER: 1.877.404.4129  
 MD LICENSE: 11692  
 6217175

SHEET NAME:  
 3-Line Drawing  
 SHEET NUMBER  
**E. 1**





Inverter Make/Model	Enphase IQ5-60-2-US	
Max. Dc Volt Rating	48	Volts
Max. Power at 40 C	230	Watts
Nominal AC Voltage	240	Volts
Max. AC Current	0.96	Amps
Max. OCPD Rating	20	Amps
Max. Panels/Circuit	16	
Short Circuit Current	15	Amps

PV Module Rating @ STC		
Module Make/Model	LG LG315N1K-V5	
Max. Power-Point Current (Imp)	9.58	Amps
Max. Power-Point Voltage (Vmp)	32.9	Volts
Open-Circuit Voltage (Voc)	40.7	Volts
Short-Circuit Current (Isc)	10.15	Amps
Max. Series Fuse (OCPD)	20	Amps
Nom. Max. Power at STC (Pmax)	315	Watts
Max. System Voltage	1000(UL/IEC)	
Voc Temperature Coefficient	-0.27	%/C

AC Output Current According to art. 690.8(B)(1)	44.16	Amps
Nominal AC Voltage	240	Volts
THIS PANEL IS FED BY MULTIPLE SOURCES (UTILITY AND SOLAR)		

Rooftop conductor ampacities designed in compliance with art. 690.8, Tables 310.15(B)(2)(a), 310.15(B)(3)(a), 310.15(B)(3)(c), 310.15(B)(16), Chapter 9 Table 4, 5, & 9 Location specific temperature obtained from ASHRAE 2017 data tables.

ASHRAE 2017 - RONALD REAGAN WASHINGTON NATL  
 Highest Monthly 2% D.B. Design Temp.: 35.3 °C  
 Lowest Min. Mean Extreme D.B.: -14.5 °C

### Conductor Calculations

Wire gauge calculated from code art. 310.15(B)(16) with ambient temperature calculations from art. 310.15(B)(2)(a)

For "On Roof" conductors we use the 90°C column ampacity, 0.5"-3.5" off-the-roof temperature adjustment from 310.15(B)(3)(c), and raceway fill adjustments from 310.15(B)(16) Conduit shall be installed at least 1" above the roof deck

For "Off Roof" conductors we use the 75°C column ampacity, or the 90°C column ampacity with the relevant ambient temperature and raceway fill adjustments, whichever is less.

The rating of the conductor after adjustments MUST be greater than, or equal to, the continuous duty uprated output current.

Calculation Example - Wire Rating (90°C) x Ambient Temperature Adjustment x Conduit Fill Adjustment >= Continuous Duty Output Current

(Tag 2 Attic):

$$\text{Inverter Output: } 10 \text{ AWG rated } 40 \text{ A}, \quad 40 \text{ A} \times 0.71 \times 0.8 = 22.72 \text{ A} \geq 19.2 \text{ A}$$

(Tag 3 On Roof):

$$\text{Inverter Output: } 10 \text{ AWG rated } 40 \text{ A}, \quad 40 \text{ A} \times 0.71 \times 0.8 = 22.72 \text{ A} \geq 19.2 \text{ A}$$

(Tag 4 Off Roof):

$$\text{Inverter Output: } 6 \text{ AWG rated } 65 \text{ A}, \quad 65 \text{ A} \geq 55.2 \text{ A}$$

(Tag 5 Off Roof):

$$\text{Service Feeder: } 6 \text{ AWG rated } 65 \text{ A}, \quad 65 \text{ A} \geq 60 \text{ A}$$

### OCPD Calculations

Breakers sized according to continuous duty output current. P.V. circuit nominal current based off # of modules per Circuit X 1.25 (art. 690.8(A)) x (0.96 Max AC current per micro-inverter)

Circuit #1 = 16 modules, Output Current w/ continuous duty = 19.2 <= 20A Breaker  
 Circuit #2 = 15 modules, Output Current w/ continuous duty = 18 <= 20A Breaker  
 Circuit #3 = 15 modules, Output Current w/ continuous duty = 18 <= 20A Breaker  
 system output current w/ continuous duty = 55.2 <= 60A (System OCPD)

### Other Notes

- Designed according to and all code citations are relevant to the 2014 National Electrical Code.
- All interior raceways carrying DC current shall be metallic

APPROVED  
 Montgomery County  
 Historic Preservation Commission

*Sandra L. Skiler*

**REVIEWED**

By Dan.Bruechert at 1:08 pm, Dec 23, 2019

Infall Hashim Residence 25 OXFORD ST Chevy Chase, MD 20815 Utility Account: 5502 4452 496	
INSTALLER: VIVINT SOLAR INSTALLER NUMBER: 1.877.404.4129 MD LICENSE: 11692	Created: 10/11/19 6217175
SHEET NAME:	Notes Page
SHEET NUMBER:	E. 2

Conduit, Raceways, and J Boxes (Labeled Every 10') Per 690.31(G)(3) & (4)

**WARNING: PHOTOVOLTAIC POWER SOURCE**

Interactive System Point of Interconnection Per 690.54

**PHOTOVOLTAIC AC POWER SOURCE  
RATED AC OUTPUT CURRENT: 44.16 A  
NOM. OPERATING AC VOLTAGE: 240 V**

**PV System Disconnects Per 690.13(B)  
PV SYSTEM DISCONNECT**

All Disconnecting Means Per 690.13(B) & 690.15(D)

**WARNING  
ELECTRICAL SHOCK HAZARD  
TERMINALS ON THE LINE AND LOAD SIDES  
MAY BE ENERGIZED IN THE OPEN POSITION**

Power Source Output Connection, Adjacent to Back-fed Breaker Per 705.12

**WARNING  
POWER SOURCE OUTPUT CONNECTION  
DO NOT RELOCATE THIS OVERCURRENT  
DEVICE**

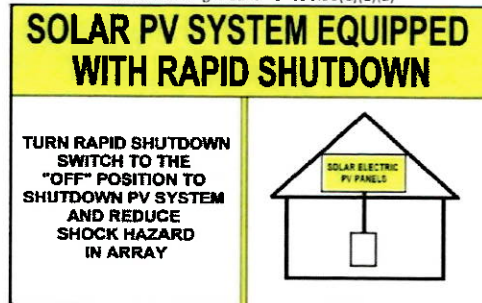
Rapid Shutdown Switch Per 690.56(C)(3)

**RAPID SHUTDOWN SWITCH FOR  
SOLAR PV SYSTEM**

Plaques and Directories at the Service Equipment (MSP) and the Location of All System Disconnects Per 690.56(B) & 705.10



PV With Rapid Shutdown, Installed Within 3 ft of the Service Disconnecting Means Per 690.56(C)(1)(a)



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Montgomery County  
Historic Preservation Commission  
*Sandra L. Heiler*

ALL STICKERS DESCRIBED HEREIN SHALL BE MADE OF WEATHERPROOF ADHESIVE. THEY SHALL BE REFLECTIVE, THEY SHALL CONTAIN NO SMALLER THAN 3/8" WHITE ARIAL FONT TEXT, AND HAVE A RED BACKGROUND, UNLESS OTHERWISE DEPICTED OR DESCRIBED. ALL PLACARDS SHALL BE WEATHER-RESISTANT, PERMANENTLY ETCHED PLACARDS. HANDWRITTEN SIGNS WILL NOT BE ACCEPTABLE.

**REVIEWED**  
By Dan.Bruechert at 1:08 pm, Dec 23, 2019

Jafar Hashim Residence 25 OXFORD ST Chevy Chase, MD 20815 Utility Account 5502 4452 496	vivent.solar	Created: 10/11/19
INSTALLER: VIVINT SOLAR INSTALLER NUMBER: 1.877.404.4129 MD LICENSE: 11692 6217175		SHEET NAME:
Warning Labels Page		SHEET NUMBER:
		<b>E. 3</b>

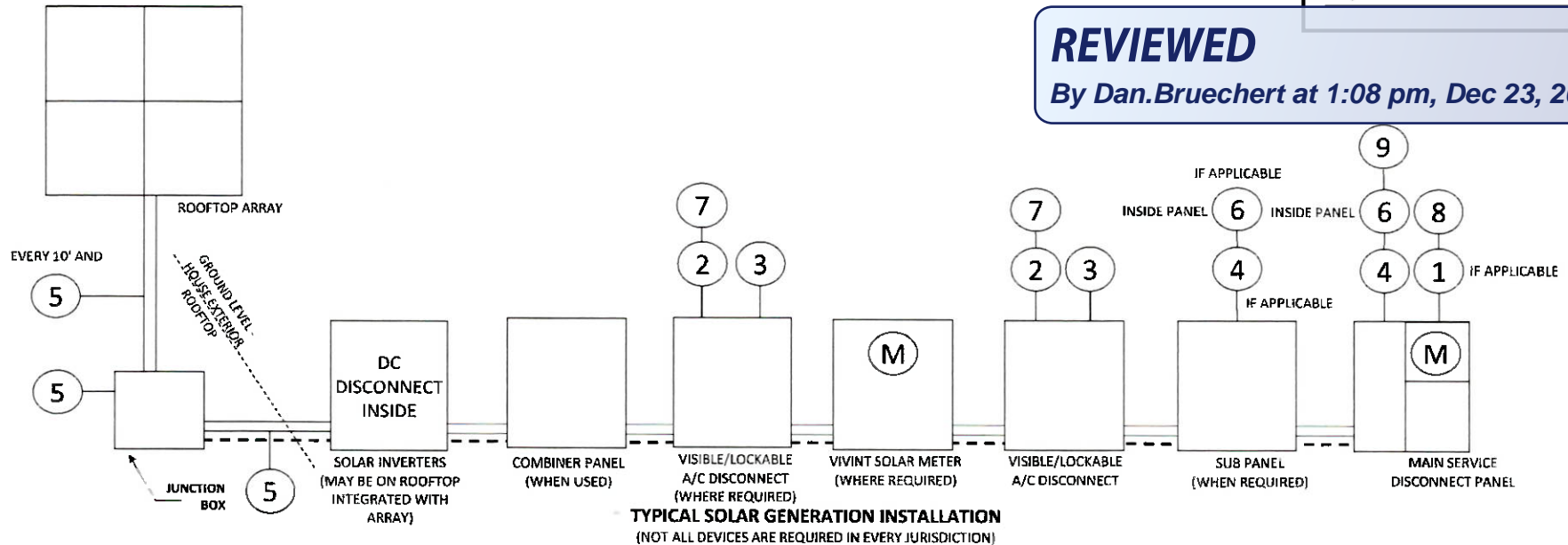


- 1 MAIN BREAKER DE-RATED TO \*\*\* DUE TO SOLAR CIRCUITS  
MAX OF \*\*\*AMPS PV SOURCE ALLOWED  
DO NOT INCREASE MAIN BREAKER RATING  
Property of Vivint Solar
- 2 WARNING  
ELECTRICAL SHOCK HAZARD  
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION  
Property of Vivint Solar
- 3 PV SYSTEM DISCONNECT  
Property of Vivint Solar
- 4 PHOTOVOLTAIC AC POWER SOURCE  
RATED AC OUTPUT CURRENT: \*\*\* A  
NOM. OPERATING AC VOLTAGE: \*\*\* V  
Property of Vivint Solar
- 5 WARNING: PHOTOVOLTAIC POWER SOURCE  
Property of Vivint Solar
- 6 WARNING  
POWER SOURCE OUTPUT CONNECTION  
DO NOT RELOCATE THIS OVERCURRENT DEVICE  
Property of Vivint Solar
- 7 RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM  
Property of Vivint Solar
- 8 SITE PLAN PLACARD SHOWING ADDITIONAL POWER SOURCE AND DISCONNECT LOCATIONS. PLACARD SHALL BE MOUNTED ON EXTERIOR OF ELECTRICAL PANEL  
Property of Vivint Solar
- 9 PV rapid shutdown label required by 690.56(C)(1) indicated on E.3

\*\*\* value calculated for each account. for specific value see the previous warning label page

APPROVED  
Montgomery County  
Historic Preservation Commission  
*Sandra L. Heiler*

**REVIEWED**  
By Dan.Bruechert at 1:08 pm, Dec 23, 2019



ALL STICKERS DESCRIBED HEREIN SHALL BE MADE OF WEATHERPROOF ADHESIVE, THEY SHALL BE REFLECTIVE, THEY SHALL CONTAIN NO SMALLER THAN 3/8" WHITE ARIAL FONT TEXT, AND HAVE A RED BACKGROUND, UNLESS OTHERWISE DEPICTED OR DESCRIBED. ALL PLACARDS SHALL BE WEATHER-RESISTANT, PERMANENTLY ETCHED PLACARDS. HANDWRITTEN SIGNS WILL NOT BE ACCEPTABLE.

THESE PLACARDS SHALL BE PLACED ON ALL INTERIOR AND EXTERIOR DIRECT-CURRENT (DC) CONDUIT, ENCLOSURES, RACE-WAYS, CABLE ASSEMBLIES, JUNCTION BOXES COMBINER BOXES, AND DISCONNECTS TO ALERT THE FIRE SERVICE TO AVOID CUTTING THEM. MARKINGS SHALL BE PLACED ON ALL DC CONDUIT EVERY 10 FT (3048 MM), ABOVE AND BELOW PENETRATIONS OF ROOF/CEILING ASSEMBLIES, WALLS OR BARRIERS.

Installer: Vivint Solar	6217175
Warning Labels Page	
SHEET NUMBER	E. 4
INSTALLED: VIVINT SOLAR	
INSTALLER NUMBER: 1.877.404.4129	
MD LICENSE: 11692	
SHEET NAME:	
Created: 10/11/19	
Utility Account: 5502 4452 496	
Chevy Chase, MD 20815	
25 OXFORD ST	
Jafar Hashim, Residence	