HISTORIC PRESERVATION COMMISSION

Marc Elrich
County Executive

Robert Sutton
Chairman

Date: June 16, 2023

MEMORANDUM

TO: Rabbiah Sabbakhan
Department of Permitting Services
FROM: Michael Kyne
Historic Preservation Section
Maryland-National Capital Park & Planning Commission
SUBJECT: Historic Area Work Permit #1029926: 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 with one (1) condition** at the June 14, 2023 HPC meeting.

1. **The applicant shall submit an amended drawing that illustrates the setback of the panels from the rake of the one-story addition.**

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: Brendan Casey (Alexis Hawkins, Agent)
Address: 7 Philadelphia Avenue, Takoma Park

This HAWP approval is subject to the general condition that the applicant will obtain all other applicable Montgomery County or local government agency permits. After the issuance of these permits, the applicant must contact this Historic Preservation Office if any changes to the approved plan are made. Once work is complete the applicant will contact Michael Kyne at 301.563.3403 or Michael.Kyne@montgomeryplanning.org to schedule a follow-up site visit.

FOR STAFF ONLY:
HAWP#_____
DATE ASSIGNED_____

APPLICATION FOR HISTORIC AREA WORK PERMIT

HISTORIC PRESERVATION COMMISSION
301.563.3400

APPLICANT:

Name: Brendan Casey E-mail: brendancasey1+ipsun@gmail.com

Address: 7 Philadelphia Ave City: Takoma Park Zip: 20912

Daytime Phone: 9083997895 Tax Account No.: 01060008

AGENT/CONTACT (if applicable):

Name: Alexis Hawkins E-mail: permits@ipsunsolar.com

Address: 9504 Poplar Leaf Ct. City: Fairfax Zip: 22031

Daytime Phone: 866-484-7786 Contractor Registration No.: 14411

LOCATION OF BUILDING/PREMISE: MIHP # of Historic Property

Is the Property Located within an Historic District? ☑ Yes/District
☐ No/Individu

Is there an Historic Preservation/Land Trust/Environmental Easer e a map of the easement and documentation from the Easement Ho

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Historic Preservation Commission

Are oth /Reviews ?
(Conditional Use, Variance, Record Plat, etc.?) If YES, include infor
supplemental information.

Building Number: _____ Street: 7 Philadelphia Ave, Takoma Park, MD 20912

Town/City: Takoma Park Nearest Cross Street: _____

Lot: 17 Block: 2 Subdivision: 0025 Parcel: 0000

TYPE OF WORK PROPOSED: See the checklist on Page 4 to verify that all supporting items for proposed work are submitted with this application. Incomplete Applications will not be accepted for review. Check all that apply:

- ☐ New Construction
- ☐ Addition
- ☐ Demolition
- ☐ Grading/Excavation
- ☐ Deck/Porch
- ☐ Fence
- ☐ Hardscape/Landscape
- ☐ Roof
- ☐ Shed/Garage/Accessory Structure
- ☑ Solar
- ☐ Tree removal/planting
- ☐ Window/Door
- ☐ Other:_____

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

Alexis Hawkins 5/2/23

Signature of owner or authorized agent Date

HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFING

[Owner, Owner's Agent, Adjacent and Confronting Property Owners]

Owner's mailing address	**Owner's Agent's** mailing address
7 Philadelphia Ave, Takoma Park, MD 20912	9504 Poplar Leaf Ct. Fairfax, VA 22031

Adjacent and confronting Property Owners mailing addresses

9 Philadelphia Ave, Takoma Park, MD 20912	5 Philadelphia Ave, Takoma Park, MD 20912
29 Holt Place, Takoma Park 20912	6 Philadelphia Avenue, Takoma Park 20912
8 Philadelphia Avenue, Takoma Park 20912	10 Philadelphia Avenue, Takoma Park 20912

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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:

This is a 6.885 kW DC rooftop PV solar system installation.

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Work Item 1: _____

Description of Current Condition:	Proposed Work:

Work Item 2: _____

Description of Current Condition:	Proposed Work:
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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/Landscaing	*	*		*	*	*	*
Tree Removal	*	*		*	*	*	*
Siding/ Roof Changes	*	*	*	*	*		*
Window/ Door Changes	*	*	*	*	*		*
Masonry Repair/ Repoint	*	*	*	*	*		*
Signs	*	*	*	*	*		*

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By Michael Kyne at 2:40 pm, Jun 16, 2023

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By Michael Kyne at 2:43 pm, Jun 16, 2023

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BRENDAN CASEY PROPERTY : 7 PHILADELPHIA AVE, TAKOMA PARK MD 20912

SOLAR PHOTOVOLTAIC SYSTEM: 6.885 KW

EQUIPMENT SUMMARY:

SOLAR MODULES: 17 x Q CELLS 405 Q.PEAK DUO BLK ML-G10+ - 405W MODULES

INVERTER(S): 17 x - ENPHASE - IQ8M-72-2-US MICROINVERTERS

RACKING: SnapNrack Deckfoot

SHEET INDEX:

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. 59489 Expiration Date: 06/05/2024

STATE OF MARYLAND · PHONG TRUONG · 59489 · PROFESSIONAL ENGINEER

APPLICABLE CODES AND STANDARDS:

BUILDING: IBC 2018, 12-2013, ASCE 7-16, NDS2018, IRC 2018

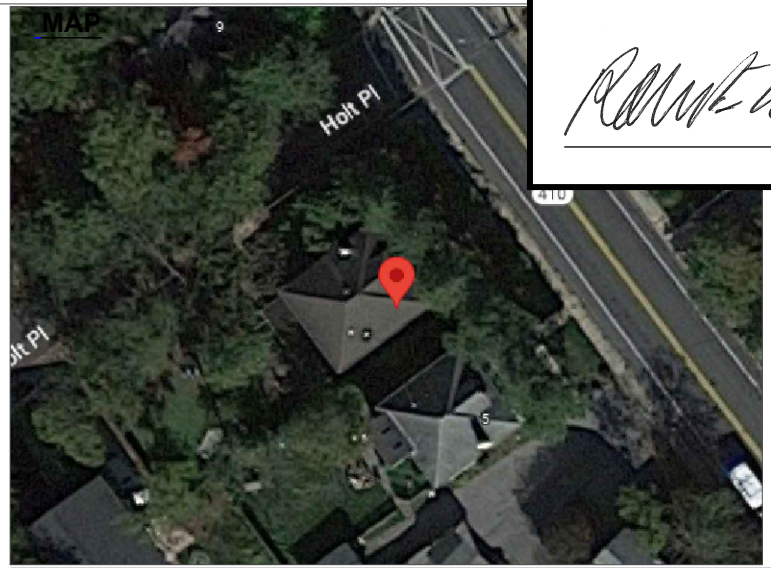
ELECTRICAL: NEC 2017

FIRE: NFPA 2018

ADDRESS

OWNER:
IP20230201MD
BRENDAN CASEY
7 PHILADELPHIA AVE, TAKOMA PARK MD 20912

INSTALLER:
IPSUN POWER, INC DBA IPSUN SOLAR
2817 Dorr Ave Suite D
Fairfax, VA 22031
PHONE: +1 (866) 484-7786
EMAIL: support@ipsunsolar.com

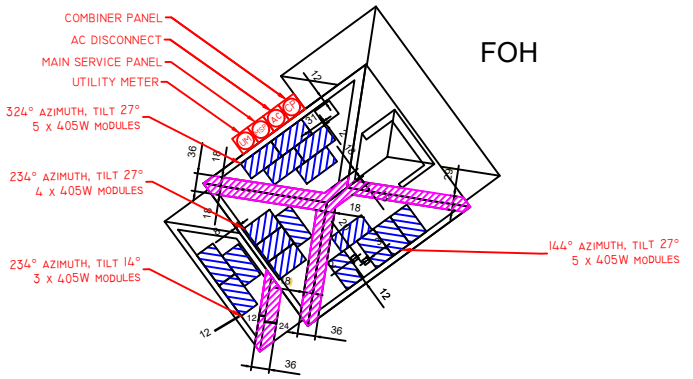


ANSI Z535.4-2011 Product Safety Signs and Labels, provides guidelines for suitable font sizes, words, colors, symbols, and location requirements for labels. NEC 110.21(B)(1)

PV ARRAY

The face of the panels will need to be "equal to or less than 6 inches from the roof

THE MODULES FOLLOW THE SLOPE OF THE ROOF



Final Production Estimate: 6229kWh
This is your final solar production estimate. Please compare this number to your proposal and present any questions to your sales representative.

IPSUN SOLAR

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CHEKED BY	1	3/3/2023
JM	JM	

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EMAIL: support@ipsunsolar.com

OWNER:
IP20230201MD
BRENDAN CASEY
7 PHILADELPHIA AVE, TAKOMA PARK MD 20912

GENERAL NOTES

ELECTRICAL CONSTRUCTION GENERAL NOTES:

1.ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC (NATIONAL ELECTRIC CODE), NFPA (NATIONAL FIRE PROTECTION ASSOCIATION), AND ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES, LAWS AND REGULATIONS. ALL WORK SHALL CONFORM TO APPLICABLE STATE AND FEDERAL SAFETY CODES INCLUDING OSHA .

2.WORK UNDER THIS CONTRACT SHALL INCLUDE, BUT NOT BE LIMITED TO, FURNISHING, INSTALLING AND CONNECTION OF ALL ELECTRICAL EQUIPMENT AND TESTING OF ALL SYSTEMS AND SUB-SYSTEMS WITHIN THE SCOPE OF THIS CONTRACT. ANY ERRORS, OMISSION, OR UNCERTAINTY SHALL BE BROUGHT TO THE ATTENTION OF THE PRIME CONTRACTOR AND OR OWNER PRIOR TO CONSTRUCTION.

3.CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY AND SECURITY OF THE WORKSITE. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

4.NOTIFY THE PRIME CONTRACTOR OR OWNER IMMEDIATELY AFTER DISCOVERING ANY HAZARDOUS MATERIAL LIKE ASBETOS.

5.DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED. VERIFY THE EXACT LOCATIONS AND CONDITIONS OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS PRIOR TO ANY WORK. LOCATIONS FOR EQUIPMENT SHALL BE TAKEN FROM THE OTHER SHEETS WHERE THEY OCCUR. EXTEND WIRING FROM ALL JUNCTION BOXES, CONTROL PANELS, PUMPS, RECEPTACLES, SWITCHES, ETC. AND MAKE ALL FINAL CONNECTIONS TO EQUIPMENT AS REQUIRED.

6.THE INTENT OF THESE DRAWINGS IS FOR A COMPLETE ELECTRICAL SYSTEM. ANY ERRORS OR UNCERTAINTY SHALL BE BROUGHT TO THE ATTENTION OF THE PRIME CONTRACTOR AND ENGINEER AS SOON AS FOUND.

7.THE COMPLETE ELECTRICAL INSTALLATION SHALL BE TESTED AS A COMPLETE WORKING SYSTEM.

8.WE WILL RESTORE ALL DAMAGES RESULTING FROM WORK AND LEAVE PREMISES IN CLEAN CONDITION WHEN FINISHED WITH WORK.

9.ALL ITEMS ARE NEW (NEW) UNLESS NOTED AS EXISTING (EXIST) AS MARK IN THE TABLE.

10.ALL CONDUITS SHALL BE EMT, INTERMEDIATE METAL CONDUIT, OR RIGID STEEL OR PVC. MINIMUM SIZE SHALL BE 1/2". ALL CONDUIT, BOXES AND ELECTRICAL FITTINGS SHALL BE STEEL OR PVC.

11.ALL EXTERIOR EQUIPMENT SHALL BE IN WEATHERPROOF (NEMA 3R) ENCLOSURES. ALL NEW WIRING SHALL BE IN CONDUIT, SUITABLE FOR SUN EXPOSURE AND WET LOCATIONS. FIELD APPLIED COATING ARE NOT ACCEPTABLE.

12.INVERTERS MUST COMPLY WITH UL 1741 TO PREVENT ISLANDING ON POWER FAILURE. THE INVERTER SHALL PUT NOT POWER ON TO THE GRID IF THE GRID IS OFF-LINE. ALL SYSTEM COMPONENTS (MODULES AND INVERTERS ETC) SHALL BE UL LISTED.

13.MOUNT TO ROOF USING UL APPROVED MOUNTING HARDWARE. FOLLOWING MANUFACTURERS DIRECTIONS. MOUNTING HARDWARE EVERY 4' ON CENTER UNLESS OTHERWISE NOTED.

14.OBTAIN THE BEST INFORMATION ON UNDERGROUND UTILITIES IN AREAS BEING TRENCHED. USE 'DIG ALERT' OR OTHER LOCATING SERVICE BEFORE DIGGING.

GROUNDING NOTES

1. ALL EQUIPMENT SHALL BE PROPERLY GROUNDED PER THE REQUIREMENTS OF NEC ARTICLES 250 & 690.
2. PV MODULES SHALL BE GROUNDED TO MOUNTING RAILS USING MODULE LUGS OR RACKING INTEGRATED GROUDING CLAMPS AS ALLOWED BY LOCAL JURISDICTION. ALL OTHER EXPOSED METAL PARTS SHALL BE GROUNDED USING UL-LISTED LAY-IN LUGS.
3. IF THE EXISTING MAIN SERVICE PANELS DOES NOT HAVE A VERIFABLE GROUNDING ELECTRODE, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.
4. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC ARTICLE 690.45, AND BE A MINIMUM OF #10AWG WHEN NOT EXPOSED TO DAMAGE, AND #6AWG SHALL BE USED WHEN EXPOSED TO DOMAGE.

REVIEWED
By Michael Kyne at 2:43 pm, Jun 16, 2023

ADDERS	
Squirrel Guard	X
New Construction	
Skirt	
Trenching	
0	
Breaker Box upgrade	
Supply Side Connection	
Lumin	
Solar on Deatched Garage (No Trenching)	
Battery Storage	
Consumption meter	X
Ipsun Platinum protection	X
Custom Enphase Combiner Box Location	
Energy storage in a Basement or Townhouse	

CLIENT NO

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SELLER INFO	
NAME	Josh Butler
PHONE	703 826 4786
EMAIL	josh.butler@ipsunsolar.com

IPSUN SOLAR

DATE	SHEET	PAGE
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REVIEW	DRAWING BY	CHEKED BY
1	JM	JM

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PHONE: +1 (866) 484-7786
EMAIL: support@ipsunsolar.com

OWNER:
IP2023020 1MD
BRENDAN CASEY
7 PHILADELPHIA AVE, TAKOMA PARK MD 20912

BILL OF MATERIALS

Zilla Flashing		Breaker Box upgrade	
Trenching		Consumption meter	X
EV charger			

SIGNATURES:
Warehouse (print):

Fiel Coordinator:

Electrician:

Part Number	Qty	Description
X-IQ-AM1-240-3-ES	1	AC Combiner Box with IQ Envoy PCB, 80A, Single-Phase Software.
QO230	1	Breaker, 30A, 2P, 120/240V, Type QO SQUARE D QO
DG221URB	1	Safety Switch, 30A, 2P, 240V, Type DG, Non-Fusible, NEMA 3R
BR220	2	Breaker, 20A, 2P, 120/240V, Type BR, 10 Kaic
CT-200-SPLIT	2	ENP CT-200-SPLIT CURRENT TRANSFORMER

NOTES:

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IPSUN SOLAR

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CHEKED BY	JM	PAGE
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INSTALLER:
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REVIEWED
By Michael Kyne at 2:43 pm, Jun 16, 2023

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Historic Preservation Commission

BILL OF MATERIALS

NOTES:

SIGNATURES:
Warehouse (print):

Fiel Coordinator:

Roof lead:

Part Number	Qty	Description
232-01106	40	232-01106
232-02536	15	SNAPNRACK, UR-40 RAIL, 172IN, MILL
242-02071	20	SNAPNRACK, ULTRA RAIL MID CLAMP, BLACK
242-02215	40	SNAPNRACK, UNIVERSAL END CLAMP
242-02173	56	SNAPNRACK, SPEEDSEAL DECKFOOT, SILVER
242-02175	224	SNAPNRACK, SEALING WASHER WOOD SCREW, #14 X 2-3-4IN, SS
242-02101	15	SNAPNRACK, GROUND LUG ASSEMBLY, 6-12 AWG
242-92093	17	SNAPNRACK, MLPE RAIL ATTACHMENT KIT

Zilla Flashing		Breaker Box upgrade	
Trenching		Consumption meter	X
EV charger			

Part Number	Qty	Description
Q.PEAK DUOBLK ML-G10+ 405	17	Q.PEAK DUOBLK ML-G10+ 405
IQ8M-72-2-US	17	Enphase IQ 8M microinverter, compatible with 72-cell PV modules, 295VA
0799-5B	3	SolaDeck Outdoor Pass-thru Enclosure, with 7 rail and 5-position ground block
Q12-17-240	17	Q Cable for 60 cell 1.7m landscape module pitch.
242-04105	120	6'' Array Edge Screen Clip (40 per 100' of mesh)
232-04077	3	6'' Animal Guard Screen 100ft
Q-CONN-10M	2	Q-CONN-10M (male)
Q-CONN-10F	2	Q-CONN-10F (female)
100-SRC	3	STRAIN RELIEF CONNECTOR
Q-TERM-10	2	Enphase IQ Terminator Cap

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1	JM	JM
DATE	SHEET	PAGE
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REVIEWED
By Michael Kyne at 2:43 pm, Jun 16, 2023

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Montgomery County
Historic Preservation Commission

BRENDAN CASEY RESIDENCE 7 PHILADELPHIA AVE, TAKOMA PARK MD 2

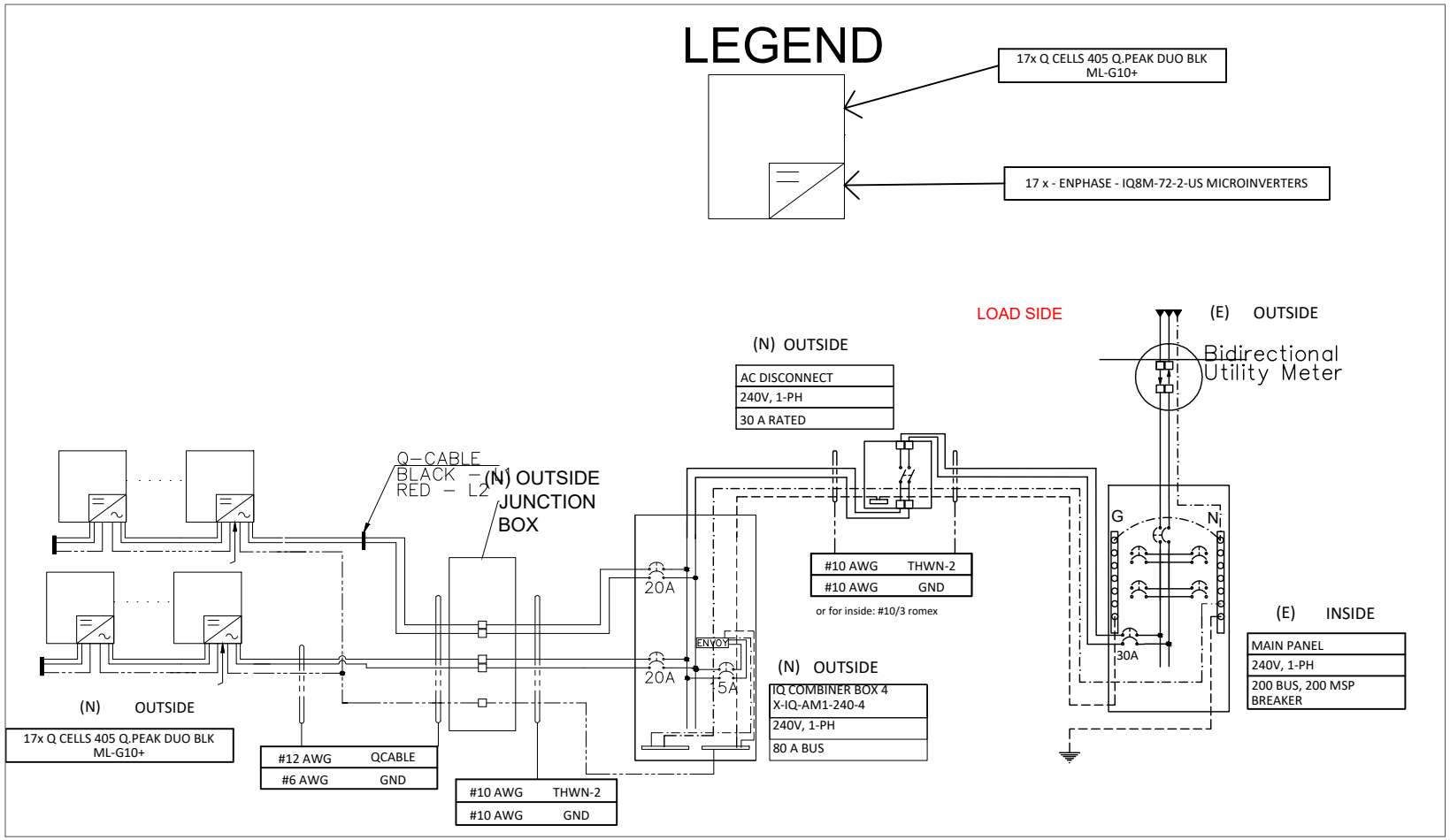
SOLAR PHOTOVOLTAIC SYSTEM: 6.885 KW

ELECTRICAL THREE LINE DIAGRAM

SYSTEM		
NUMBER OF STRINGS		
NUMBER OF MODULES		
MAX PV ON 1 STRING		
NUMBER OF INVERTER		
MODULE MODEL		
INVERTER MODEL		
MAX AC OUTPUT CURRENT	23.02	A
OPERATING AC VOLTAGE	240	V

MICROINVERTERS SYSTEM
17 x - ENPHASE - IQ8M-72-2-US MICROINVERTERS

LOAD SIDE



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1	JM	JM
DATE	SHEET	PAGE
3/3/2023	E001	

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7 PHILADELPHIA AVE, TAKOMA PARK MD 20912

APPROVED
Montgomery County
Historic Preservation Commission

PHILADELPHIA AVE, TAKOMA PARK MD 209

SOLAR PHOTOVOLTAIC SYSTEM: 6.885 KW

ELECTRICAL SYSTEM DETAILS

DESCRIPTION	EQUIPMENT RATING (A)	WIRE SIZE
Q CELLS 405		#12 AWG
FROM PV TO JUNCTION BOX	20	#12 AWG
FROM THE JUNCTION BOX TO IQ COMBINER BOX	20	#12 AWG
FROM COMBINER BOX TO AC DISCONNECT	30	#10 AWG
FROM AC DISCONNECT TO THE MAIN SERVICE PANEL	30	#10 AWG

DESCRIPTION	EQUIPMENT RATING (A)	WIRE SIZE

MICROINVERTERS SYSTEM

17 x - ENPHASE - IQ8M-72-2-US MICROINVERTERS

MODULE RATING SPECS		
Q CELLS 405		
Q.PEAK DUO BLK ML-G10+		
Pmax	405	Wp
Vmp	37.39	V
Imp	10.83	A
Voc	45.34	V
Isc	11.17	A
SYSTEM CONFIGURATION		
NUMBER OF STRINGS	2	
NUMBER OF MODULES	17	
MAX PV ON 1 STRING	11	
NUMBER OF INVERTERS	17	
MODULE MODEL	Q CELLS 405 Q.PEAK DUO BLK ML-G10+	
INVERTER MODEL	ENPHASE IQ8M-72-2-US	
PV SERVICE DISCONNECT		A
DC WATTS STC	6,885.00	W
MAX AC OUTPUT CURRENT	23.02	A
OPERATING AC VOLTAGE	240	V

1ST INVERTER RATING SPECS		
ENPHASE	IQ8M-72-2-US	
NOMINAL INPUT		A DC
MAX. SHORT CIRCUIT	15	A DC
OUTPUT VOLTAGE	240	V AC
Imax	1.354	A AC
Inec	1.693	A(@125%)
OUTDOOR	NEMA 6	ENCLOSURE
UL 1741 / IEEE 1547		
2ND INVERTER RATING SPECS		

	BILL OF MATERIAL										
	REF. DES.	QTY.	MANYFACTURER	MODEL NUMBER	DESCRIPTION						
1	SOLAR MODULES	17	Q CELLS 405	Q.PEAK DUO BLK ML-G10+	SOLAR PANEL	405	W	1000	V (UL)		
4	JUNCTION BOX	1	SOLADECK	0799-5B	ARRAY JUNCTION BOX	600	V				
	INVERTER	17	ENPHASE	IQ8M-72-2-US	INVERTERS	0.325	kW	NEMA 6		240	V AC
6	AC DISCONNECT	1	TBD	TBD	AC DISCONNECT	30	A	NON-FUSED			
5	IQ COMBINER BOX	1	120/240	V	unfinished	AMPS					
7	MSP	1	TBD	TBD	MAIN SERVICE PANEL	200	A	LOAD SIDE		240	V AC
8	MONITORING	1	Enphase Envoy								

PV SYSTEM DC DISCONNECT			
OPERATING CURRENT	x		A DC
OPERATING VOLTAGE			V DC
MAX. SYSTEM VOLTAGE			V DC
SHORT CIRCUIT CURRENT	x		A DC

WIRING AND CONDUIT SCHEDULE

DC SCHEDULE

ITEM		DESCRIPTION	ID	QTY	Voc (V)	Vmpp (V) STC	Impp (A) STC	ISC (A) STC	Max Circuit current (A)	Nominal Power	Minimum Ampacity (A)	Adjusted Ampacity (A)	OCPD rating (A)	Multiple conductor Derate	Temperature Derate	IPSUN SELECTION	WIRE TYPE	EDG	WIRE TYPE	K	D (ft)	Min VD	Cmil	DV (%)	TEMP MAX	TOTAL NO OF CONDUCTORS	NO. OF CURRENT CARRYING CONDUCTORS
1	MODULE	Q CELLS 405	A	17	45.34	37.39	10.83	11.17	13.9625	405	17.5	22.9		1	0.76	#12 AWG	PV		COPPER	12.9					52°C	2	2
							Total nominal power			6885																	

AC SCHEDULE

ITEM		DESCRIPTION	ID	QTY	VOLTAGE (V)	Max Circuit current (A)	Power	Minimum Ampacity (A)	Adjusted Ampacity (A)	EQUIPMENT rating (A)	Multiple conductor Derate	Temperature Derate	IPSUN SELECTION	WIRE TYPE	EDG	WIRE TYPE	K	D (ft)	Min VD	Cmil	DV (%)	TEMP MAX	TOTAL NO OF CONDUCTORS	NO. OF CURRENT CARRYING CONDUCTORS
4		FROM PV TO JUNCTION BOX	G	2	240	14.9	5525	18.7	24.2	20	0.8	0.96	#12 AWG	QCABLE	#6 AWG	COPPER						40°C	5	4
5		FROM THE JUNCTION BOX TO IQ COMBINER BOX	H	2	240	14.9	5525	18.7	24.2	20	0.8	0.96	#12 AWG	THWN-2	#10 AWG	THWN-2	12.9	70	7.2	6530	1.72%	40°C	5	4
6	AC WIRING	FROM COMBINER BOX TO AC DISCONNECT	I	1	240	23.0	5525	28.8	28.8	30	1	1	#10 AWG	THWN-2	#10 AWG	THWN-2	12.9	10	7.2	10380	0.24%	40°C	4	2
7		FROM AC DISCONNECT TO THE MAIN SERVICE PANEL	J	1	240	23.0	5525	28.8	28.8	30	1	1	#10 AWG	THWN-2	#10 AWG	THWN-2	12.9	10	7.2	10380	0.24%	40°C	4	2
		Total nominal power					5525																	

DATE	SHEET	PAGE
3/3/2023	E002	
1	JM	JM
REVIEW	DRAWING BY	CHEKED BY

INSTALLER:
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OWNER:
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BRENDAN CASEY
7 PHILADELPHIA AVE, TAKOMA PARK MD 20912

SYSTEM LABELING DETAIL :

Alternate Power Source Placard shall be metallic or plastic with engraved or machine printed letters in a contrasting color to the plaque, include the location of meter, disconnects array and a footprint of the entire building and site. This plaque will be attached by pop rivets, screws or other approved fasteners. If exposed to sunlight, it shall be UV resistant.
Photovoltaic DC conductors entering the building shall be installed in a raceway and shall be identified every 10 feet -- and within 1 foot of turns or bends and within 1 foot above penetrations of roof/ceiling assemblies, walls, or barriers labeled.

LABEL FONT REQUIREMENTS :

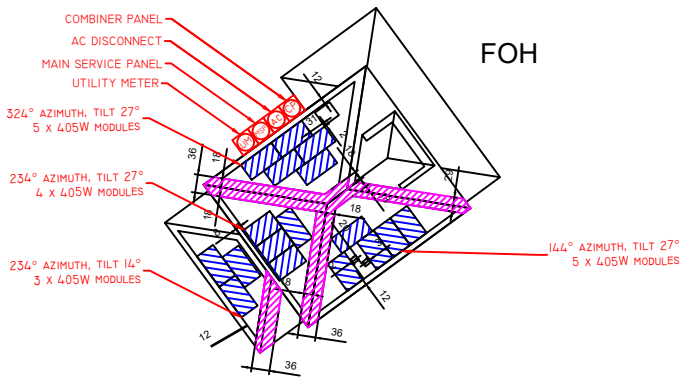
Red back ground. White lettering. ("WARNING"-3/8" LETTERS). All capital letters. Arial or similar font. Weather-resistant material UL 969.
110.21(B) Field-Applied Hazard Markings. Where caution, warning, or danger signs or labels are required by this Code, the labels shall meet the following requirements.
(1)The marking shall adequately warn of the hazard using effective words and/or colors and/or symbols.
Informational Note: ANSI Z535.4-2011, Product Safety Signs and Labels, provides guidelines for suitable font sizes, words, colors, symbols, and location requirements for labels.
(2)The label shall be permanently affixed to the equipment or wiring method and shall not be hand written.
Exception to (2): Portions of labels or markings that are variable, or that could be subject to changes, shall be permitted to be hand written and shall be legible.
(3)The label shall be of sufficient durability to withstand the environment involved

DC DISCONNECT WARNING		
PHOTOVOLTAIC SYSTEM DC DISCONNECT		
OPERATING VOLTAGE		V DC
OPERATING CURRENT		A DC
MAX SYSTEM VOLTAGE		V DC
SHORT CIRCUIT CURRENT		A DC
WARNING: PHOTOVOLTAIC POWER SOURCE		
ELECTRIC SHOCK HAZARD		
DO NOT TOUCH TERMINALS; TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION		
PER NEC 690,14 (c.)(2), 690.17(4), 690.54		
Per NEC 690.53 operating voltage, operating current, max system voltage, short circuit current, and maximum output current of the charge controller if one is installed PLACE ON: Main Solar Disconnect		
PHOTOVOLTAIC SYSTEM DISCONNECT		
"PV System Disconnect" label NEC 690.14(c.)(2) Required Disconnect Markings		

AC DISCONNECT WARNING		
PHOTOVOLTAIC SYSTEM AC DISCONNECT		
OPERATING VOLTAGE	240	V AC
OPERATING CURRENT	23	Amps
WARNING: PHOTOVOLTAIC POWER SOURCE		
ELECTRIC SHOCK HAZARD		
DO NOT TOUCH TERMINALS; TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION		
PER NEC 690,14 (c.)(2), 690.17(4), 690.54		
Per NEC 690.54 operating voltage, operating current PLACE ON: Inverter Breaker Panel if sum of breaker exceeds panel rating		
WARNING: PHOTOVOLTAIC POWER SOURCE		
INVERTER OUTPUT CONNECTION		
DO NOT RELOCATE THIS OVER CURRENT DEVICE		
Inverter output connection "label NEC 705.12(7) Point of Connection		

The face of the panels will need to be "equal to or less than 6 inches from the roof

THE MODULES FOLLOW THE SLOPE OF THE ROOF



WARNING: PHOTOVOLTAIC POWER SOURCE
INVERTER OUTPUT CONNECTION
SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM
"Dual Power Supply" label NEC 690.64, 705.12(4) point of connection
WARNING: PHOTOVOLTAIC POWER SOURCE
ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS; TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
"Do Not Touch terminals" labels NEC 690.17(4) Switch or Circuit Breaker
THIS ELECTRIC SYSTEM IS ALSO SERVED BY A PHOTOVOLTAIC SYSTMM
CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

DC LABELS
PLACE ON 1.DC Junction Boxes 2. DC Combiner Boxes
WARNING: PHOTOVOLTAIC POWER SOURCE
ELECTRIC SHOCK HAZARD
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED
"Electric shock hazard" label NEC 690.35(F) ungrounded PV system PLACE ON 1.DC Junction Boxes 2. DC Combiner Boxes

OTHERS

PLACE ON: All DC Source Markings and System Output Conductor Raceways	PLACE ON: Next to inverter interconnection Breaker, Load center, & Service Panel	PLACE ON: inverter	PLACE ON: Next GFI Reset
CAUTION SOLAR CIRCUIT	PV SOLAR BREAKER	PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN	**WARNING: PHOTOVOLTAIC POWER SOURCE** ELECTRIC SHOCK HAZARD IF GROUND FAULT IS INDICATED, ALL NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED
	DO NOT RELOCATE THIS OVER CURRENT DEVICE		

SYSTEM LABELING DETAILS

IPSUN SOLAR

DATE	SHEET	PAGE
3/3/2023	E003	
REVIEW	DRAWING BY	CHEKED BY
1	JM	JM

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REVIEWED
By Michael Kyne at 2:43 pm, Jun 16, 2023

APPROVED
Montgomery County
Historic Preservation Commission

SNAPNRACK

MODULES FOLLOW THE E OF THE ROOF

The face of the panels will need to be "equal to or less than 6 inches from the roof

SNAPNRACK UR SPEEDSEAL DECKFOOT FOR COMPOSTION ROOF MOUNTING ONTO WOOD DECKING

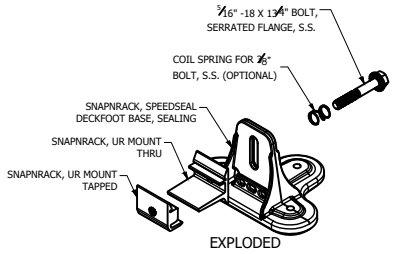
REFER TO SNAPNRACK ENGINEERING CHARTS FOR APPLICABLE RAIL SPANS. "BIN" NUMBER ON CHART SHOULD MATCH "BIN" NUMBER ON THIS DRAWING

(X4) #14 FULLY THREADED WOOD SCREWS, S.S. MUST EMBED FULLY INTO WOOD DECK

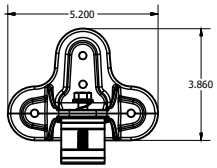
REFER TO SNAPNRACK INSTALLATION MANUAL FOR 5/16" HARDWARE TORQUE SPECIFICATIONS

RAIL CAN MOUNT ON EITHER SIDE OF SPEEDSEAL DECKFOOT. SPEEDSEAL DECKFOOT CAN MOUNT UP, DOWN, OR ACROSS THE SLOPE OF THE ROOF

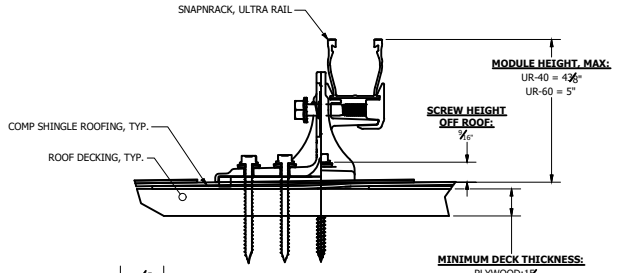
FOR ADDITIONAL LEVELING DETAILS, REFER TO SNAPNRACK DETAIL DRAWING "SNR-DC-00447 ULTRA RAIL, COMPONENT DETAIL, ULTRA RAIL LEVELING SPACER"



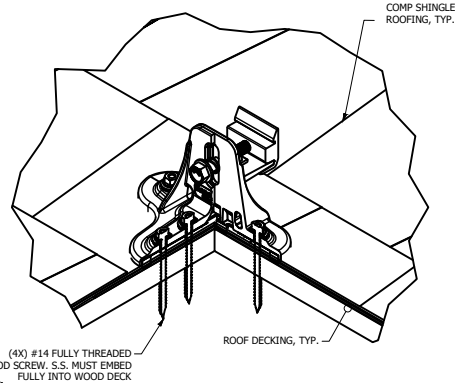
EXPLODED



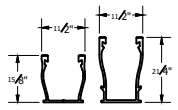
TOP



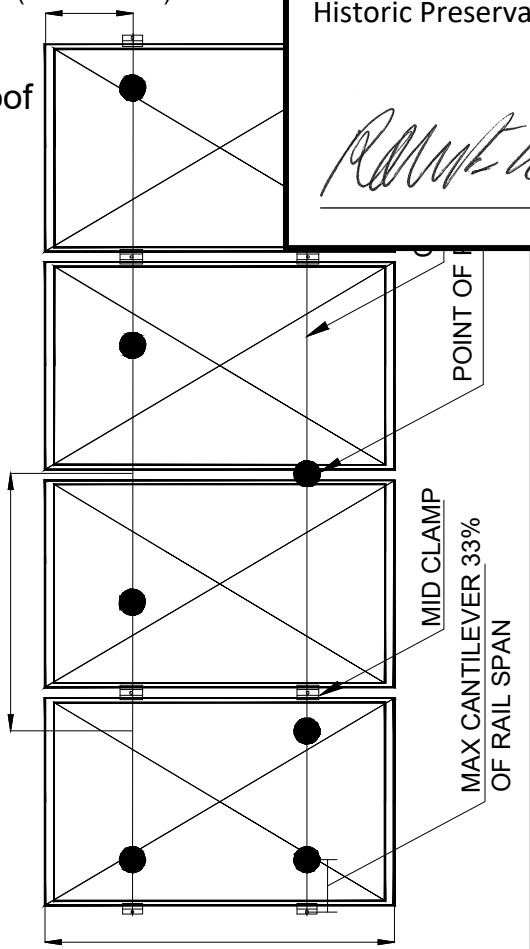
ATTACHMENT DETAIL SECTION VIEW



INSTALLATION OVERVIEW



UR-40 RAIL | UR-60 RAIL
FOR USE WITH SNAPNRACK ULTRA SERIES RAILS



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. 59489 Expiration Date: 06/05/2024

STATE OF MARYLAND · PHONG TRUONG · 59489 · PROFESSIONAL ENGINEER

MODULE SURFACE 4" ABOVE AND 4' BELOW ROOF SURFACE

SYSTEME WEIGHT	2.0	PSF

Unstaggered attachment @	48	inches
Max Cantiliver	16	inches
Max distance of rails from the frame	18	inches
Rafter span	16	inches

ROOF		
ROOF ATTACHMENT	FLUSH	
ROOF TYPE	ASPHALT SHINGLES	
RAFTER SIZE	2x6 @ 16"	
ROOF AREA	1890	sq.ft.
ARRAY AREA	359	sq.ft.
PV % AREA	19%	
LAG EMBEDMENT	2.5	inches

ATTACHMENT DETAILS

IPSUN SOLAR

REVIEW	1	DATE	3/3/2023
DRAWING BY	JM	SHEET	S001
CHEKED BY	JM	PAGE	

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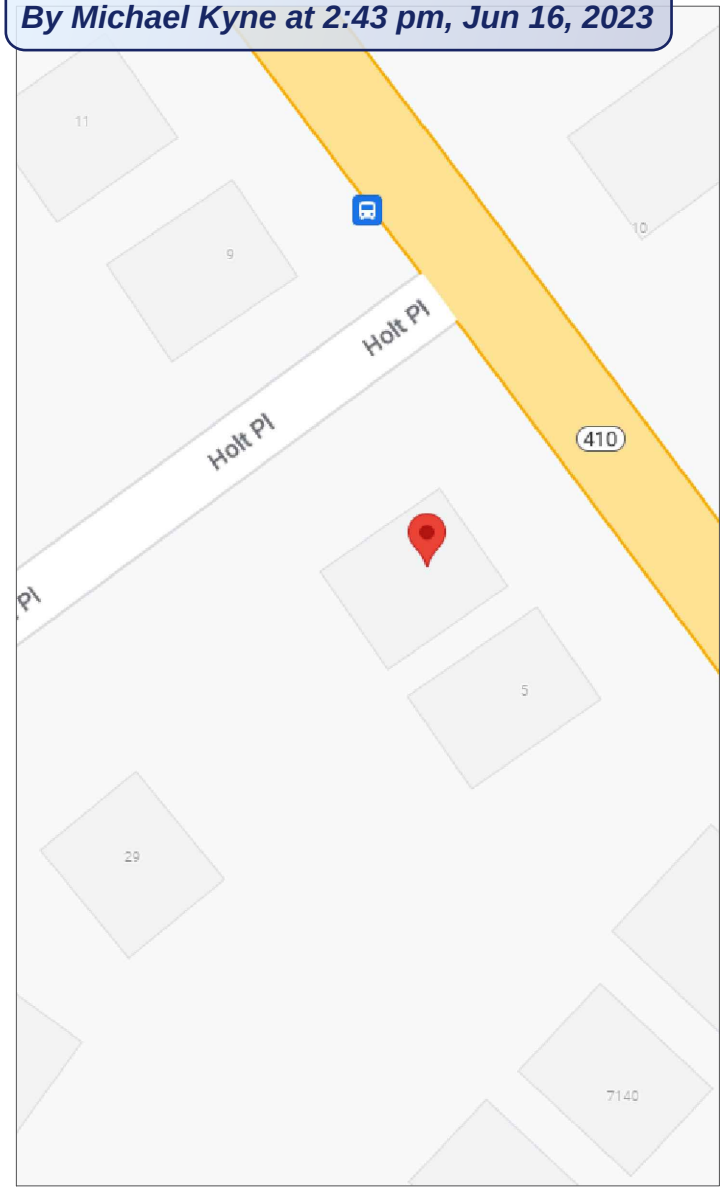
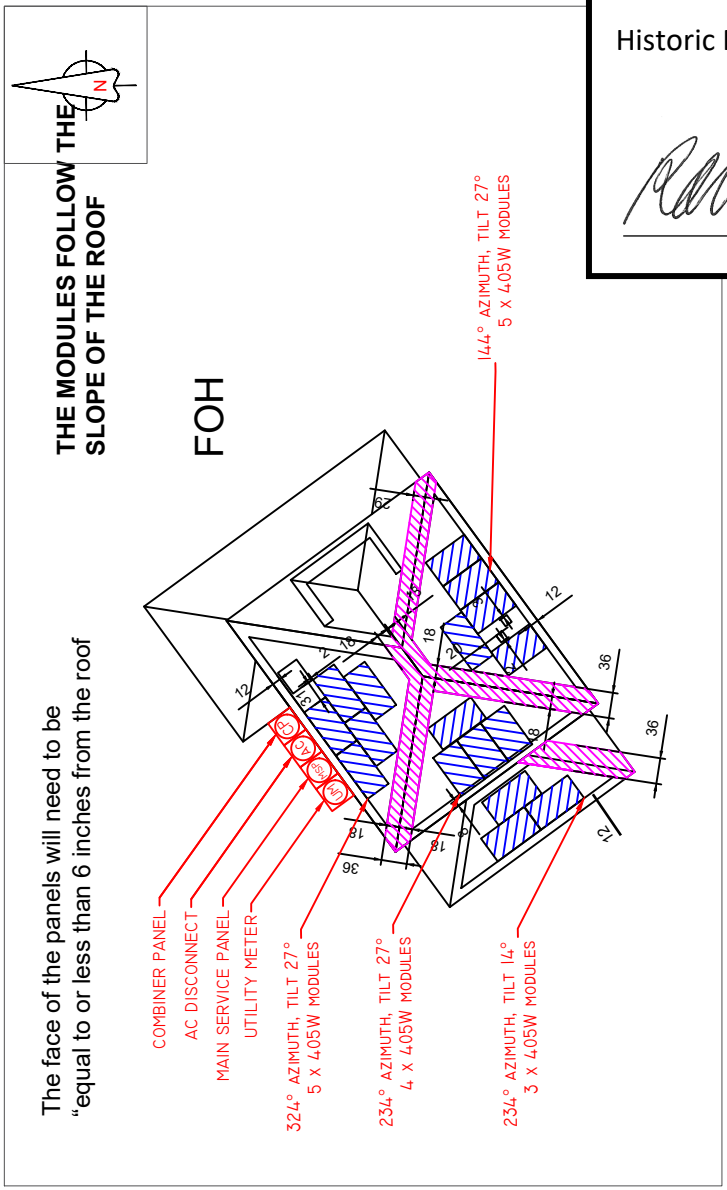


PROPERTY LAYOUT



ROOF MAP

OWNER:
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RAFTER LENGTH	15.5	ft
PITCH	27	°
RUN	13.8	ft
TOTAL WIDTH	27.6	ft

SNOW	30psf
RISK CATEGORY	II
WIND EXPOSURE CATEGORY	B
WIND SPEED	115MPH

SCALE: $\frac{1}{16}$"=1'-0"
0 2' 4' 6' 8'

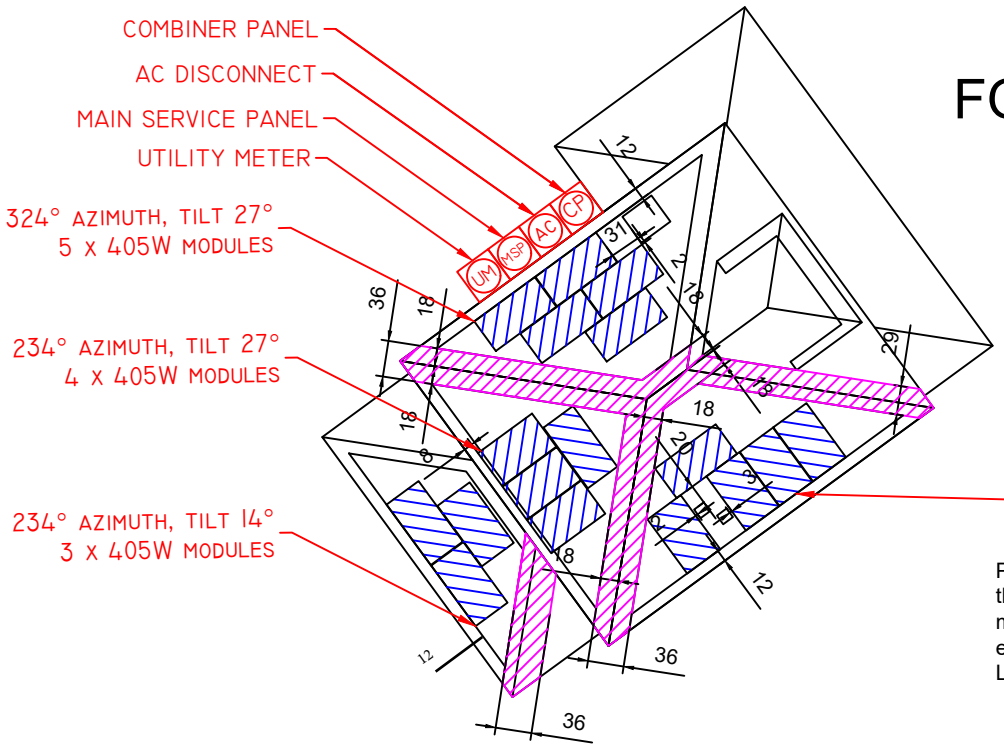
ROOF ATTACHMENT	
ROOF TYPE	
RAFTER SIZE	
ROOF AREA	189
ARRAY AREA	359
PV % AREA	
LAG EMBEDMENT	2.5

PV LAYOUT

1.5FT SETBACK FROM THE RIDGE + 3FT FROM THE BOTTOM TO THE TOP OF THE ROOF (1SIDE)

The face of the panels will need to be "equal to or less than 6 inches from the roof

THE MODULES FOLLOW THE SLOPE OF THE ROOF



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PHONG TRUONG
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PROFESSIONAL ENGINEER

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IPSUN SOLAR

3/3/2023	Z002		
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By Michael Kyne at 2:42 pm, Jun 16, 2023

THE MAXIMUM CAPACITY OF MODULES ON 1 STRING	
ENPHASE	
ENPHASE IQ8M	
11 MODULES	

SCALE: $\frac{1}{16}$"=1'-0"

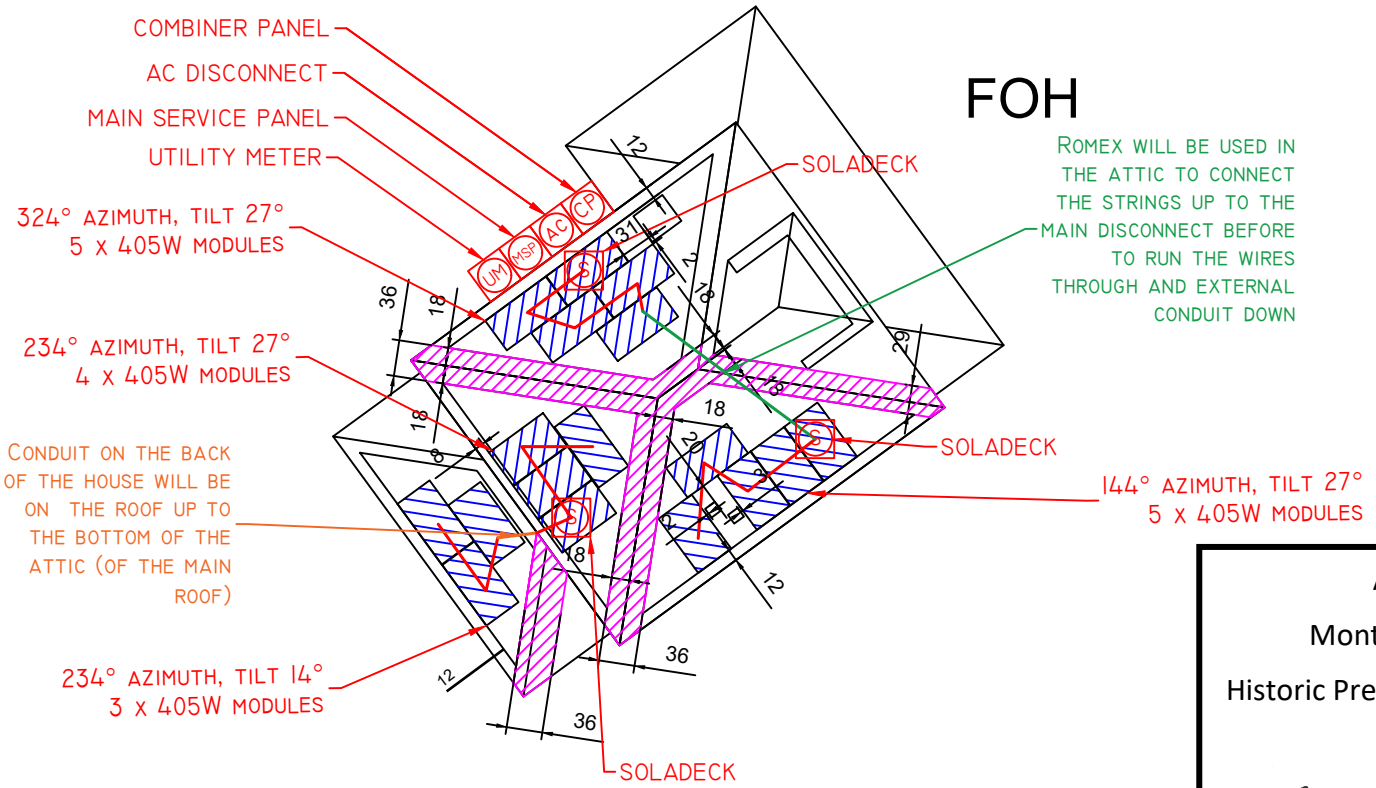
0 2' 4' 6' 8'

STRING LAYOUT

LEGEND:
— : string

The face of the panels will need to be "equal to or less than 6 inches from the roof

THE MODULES FOLLOW THE SLOPE OF THE ROOF



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By Michael Kyne at 2:42 pm, Jun 16, 2023

ATTACHMENT LAYOUT

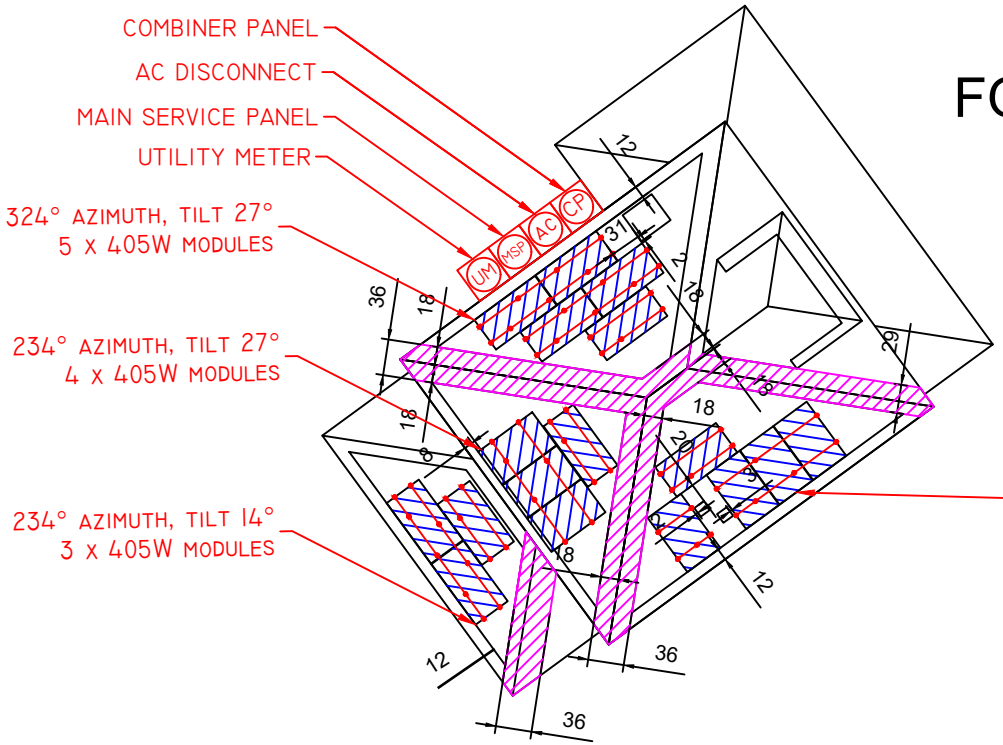
DETAILS ON S001

SCALE: 1/16"=1'-0"
0 2' 4' 6' 8'

The face of the panels will need to be "equal to or less than 6 inches from the roof

THE MODULES FOLLOW THE SLOPE OF THE ROOF

FOH



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IPSUN SOLAR

3/3/2023	Z004
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By Michael Kyne at 2:40 pm, Jun 16, 2023

Data Sheet

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed

UL LISTED

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE

Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 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° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Par Production metering: ANSI C12.20 accuracy cla Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit **enphase.com**

REVIEWED
By Michael Kyne at 2:40 pm, Jun 16, 2023

APPROVED
Montgomery County
Historic Preservation Commission

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By Michael Kyne at 2:42 pm, Jun 16, 2023

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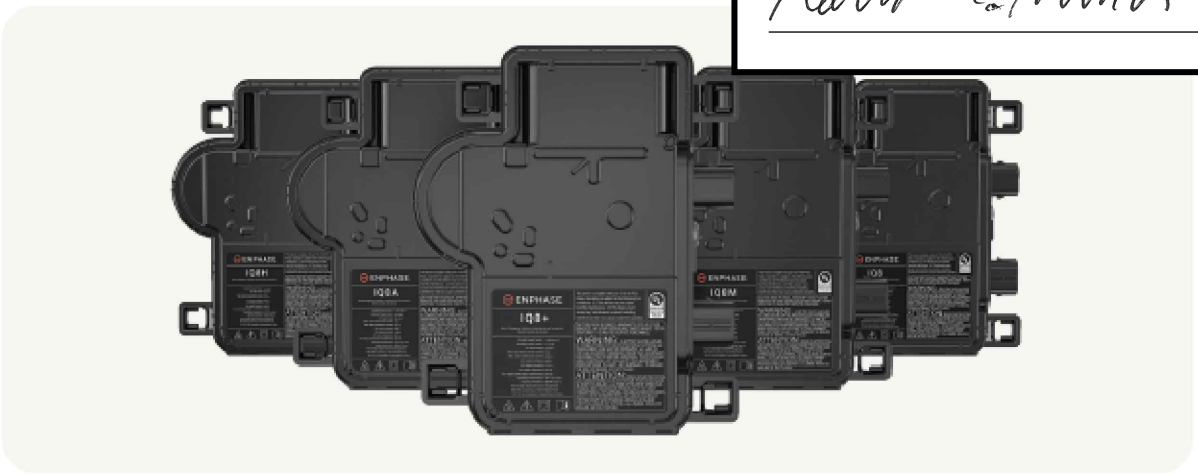
ENPHASE.



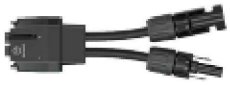
IQ8 Series Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

UL CERTIFIED SAFETY

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

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

IQ8SE-DS-0001-01-EN-US-2021-10-19

IQ8 Series Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US	IQ8M-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US[1]
Commonly used module pairings[2]	W	235 – 350	235 – 440	260 – 460	295 – 500	320 – 540+	295 – 500+
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell and 72-cell/144 half-cell				
MPPT voltage range	V	27 – 37	29 – 45	33 – 45	36 – 45	38 – 45	38 – 45
Operating range	V	25 – 48	25 – 58				
Min/max start voltage	V	30 / 48	30 / 58				
Max input DC voltage	V	50	60				
Max DC current[3] [module Isc]	A	15					
Overvoltage class DC port		II					
DC port backfeed current	mA	0					
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit					
OUTPUT DATA (AC)		**IQ8-60-2-US**	**IQ8PLUS-72-2-US**	**IQ8M-72-2-US**	**IQ8A-72-2-US**	**IQ8H-240-72-2-US**	**IQ8H-208-72-2-US**
Peak output power	VA	245	300	330	366	384	366
Max continuous output power	VA	240	290	325	349	380	360
Nominal (L-L) voltage/range[4]	V	240 / 211 – 264					208 / 183 – 250
Max continuous output current	A	1.0	1.21	1.35	1.45	1.58	1.73
Nominal frequency	Hz	60					
Extended frequency range	Hz	50 – 68					
Max units per 20 A (L-L) branch circuit[5]		16	13	11	11	10	9
Total harmonic distortion		<5%					
Overvoltage class AC port		III					
AC port backfeed current	mA	30					
Power factor setting		1.0					
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging					
Peak efficiency	%	97.5	97.6	97.6	97.6	97.6	97.4
CEC weighted efficiency	%	97	97	97	97.5	97	97
Night-time power consumption	mW	60					
MECHANICAL DATA							
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)					
Relative humidity range		4% to 100% (condensing)					
DC Connector type		MC4					
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")					
Weight		1.08 kg (2.38 lbs)					
Cooling		Natural convection – no fans					
Approved for wet locations		Yes					
Acoustic noise at 1 m		<60 dBA					
Pollution degree		PD3					
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure					
Environ. category / UV exposure rating		NEMA Type 6 / outdoor					
COMPLIANCE							
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 C This product is UL Listed as PV Rapid Shut Down Equipment and cor 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, manufacturer's instructions.					

(1) The IQ8H-208 variant will be operating in grid-tied mode only at 208V AC. (2) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility (3) Maximum continuous input DC current is 10.6A (4) Nominal voltage range can be extended beyond nominal if required by the utility. (5) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

REVIEWED
By Michael Kyne at 2:40 pm, Jun 16, 2023

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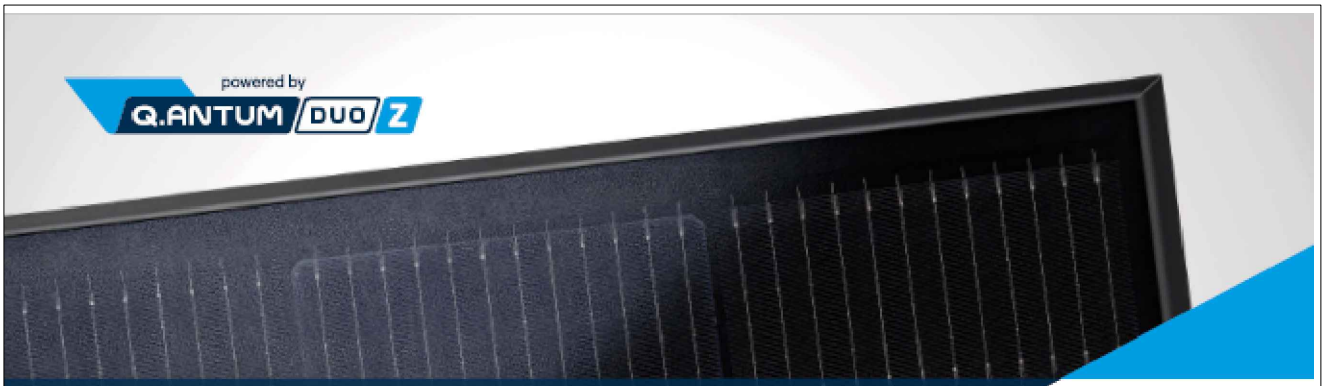
Montgomery County
Historic Preservation Commission

powered by Q.ANTUM DUO Z



Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE

25 YR Warranty
Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES 2021

Q CELLS Yield Security

BREAKING THE 20% EFFICIENCY BARRIER
Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY
Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING
High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT
Inclusive 25-year product warranty and 25-year linear performance warranty[2].

[1] APT test conditions according to IEC/TS 62804-1:2015, method A (-1500V, 96h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

Rooftop arrays on residential buildings

Engineered in Germany

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By Michael Kyne at 2:42 pm, Jun 16, 2023

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Montgomery County
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REVIEWED
By Michael Kyne at 2:42 pm, Jun 16, 2023

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Montgomery County
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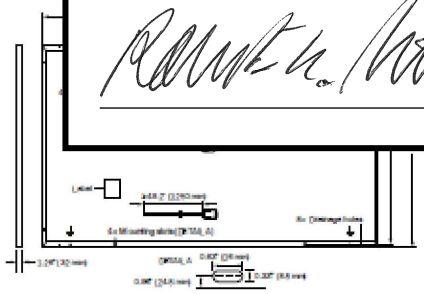
MECHANICAL SPECIFICATION

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥ 49.2 in (1250 mm), (-) ≥ 49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

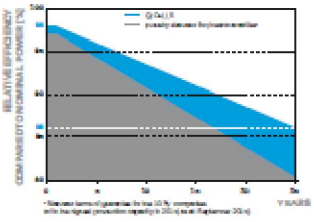


ELECTRICAL CHARACTERISTICS

POWER CLASS			385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5W / −0W)							
Minimum	Power at MPP[3]	P_{MPP} [W]	385	390	395	400	405
	Short Circuit Current[3]	I_{SC} [A]	11.04	11.07	11.10	11.14	11.17
	Open Circuit Voltage[3]	V_{OC} [V]	45.19	45.23	45.27	45.30	45.34
	Current at MPP	I_{MPP} [A]	10.59	10.65	10.71	10.77	10.83
	Voltage at MPP	V_{MPP} [V]	36.36	36.62	36.88	37.13	37.39
	Efficiency[3]	η [%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP} [W]	288.8	292.6	296.3	300.1	303.8
	Short Circuit Current	I_{SC} [A]	8.90	8.92	8.95	8.97	9.00
	Open Circuit Voltage	V_{OC} [V]	42.62	42.65	42.69	42.72	42.76
	Current at MPP	I_{MPP} [A]	8.35	8.41	8.46	8.51	8.57
	Voltage at MPP	V_{MPP} [V]	34.59	34.81	35.03	35.25	35.46

[1] Measurement tolerances P_{MPP} ± 3%; I_{SC}; V_{OC} ± 5% at STC: 1000 W/m², 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • [2] 800 W/m², NMOT, spectrum AM 1.5

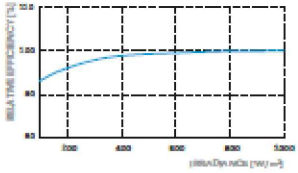
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organization of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS						
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	−0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	−0.34	Nominal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 2
Max. Design Load, Push / Pull[4]	[lbs/ft²]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (−40 °C up to +85 °C)
Max. Test Load, Push / Pull[4]	[lbs/ft²]	113 (5400 Pa) / 84 (4000 Pa)			

[4] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells), QCPV Certification ongoing.

PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	1656 lbs 751 kg	24 pallets	24 pallets	32 modules

Specifications subject to technical changes © Q CELLS Q.ANTUM DUO BLK ML-G10+ 385-405_2023-05_Rev01_NA

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

SNAPNRACK

SNAPNRACK UR SPEEDSEAL DECKFOOT FOR COMPOSTION ROOF MOUNTING ONTO WOOD DECKING

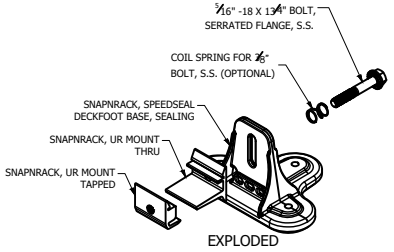
REFER TO SNAPNRACK ENGINEERING CHARTS FOR APPLICABLE RAIL SPANS. "BIN" NUMBER ON CHART SHOULD MATCH "BIN" NUMBER ON THIS DRAWING

(X4) #14 FULLY THREADED WOOD SCREWS, S.S. MUST EMBED FULLY INTO WOOD DECK

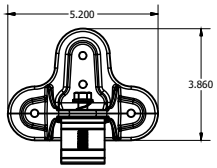
REFER TO SNAPNRACK INSTALLATION MANUAL FOR 5/16" HARDWARE TORQUE SPECIFICATIONS

RAIL CAN MOUNT ON EITHER SIDE OF SPEEDSEAL DECKFOOT. SPEEDSEAL DECKFOOT CAN MOUNT UP, DOWN, OR ACROSS THE SLOPE OF THE ROOF

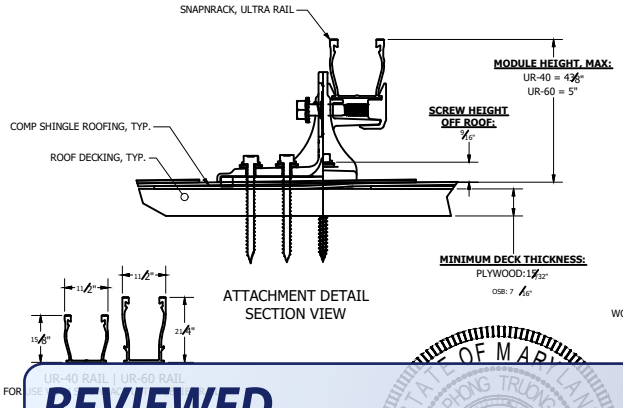
FOR ADDITIONAL LEVELING DETAILS, REFER TO SNAPNRACK DETAIL DRAWING "SNR-DC-00447 ULTRA RAIL, COMPONENT DETAIL, ULTRA RAIL LEVELING SPACER"



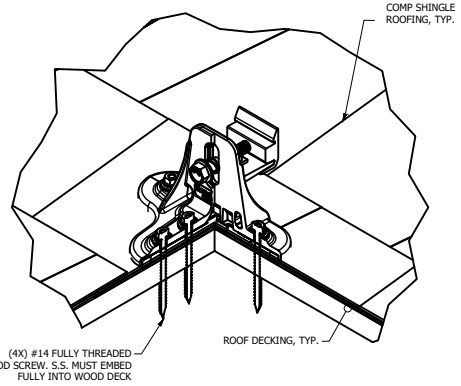
EXPLODED



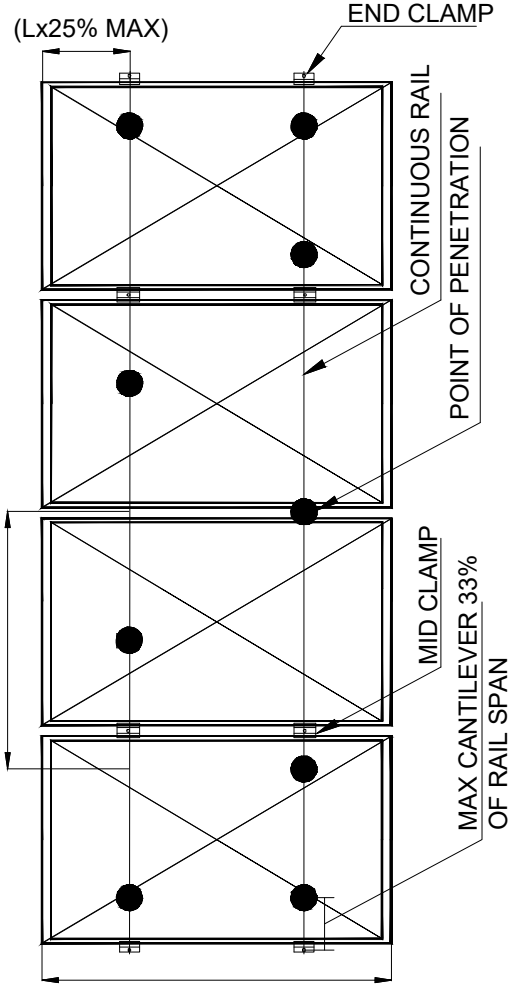
TOP



ATTACHMENT DETAIL SECTION VIEW



INSTALLATION OVERVIEW



ATTACHMENT DETAILS

REVIEWED
By Michael Kyne at 2:40 pm, Jun 16, 2023

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. 59489 Expiration Date: 06/05/2024

STATE OF MARYLAND · PHONG TRUONG · 59489 · PROFESSIONAL ENGINEER

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Historic Preservation Commission

MODULE SURFACE 4" ABOVE AND 4' BELOW ROOF SURFACE

SYSTEME WEIGHT	2.0	PSF

Unstaggered att	ROOF
	FLUSH
	ASPHALT SHINGLES
	2x6 @ 16"
Max Cant	1890 sq.ft.
Max distance o the frar	359 sq.ft.
	19%
Rafter sp	2.5 inches

IPSUN SOLAR

REVIEW	1	DATE	3/3/2023
DRAWING BY	JM	SHEET	S001
CHEKED BY	JM	PAGE	

INSTALLER:
IPSUN POWER, INC DBA IPSUN SOLAR
2817 Dorr Ave Suite D
Fairfax, VA 22031
PHONE: +1 (866) 484-7786
EMAIL: support@ipsunsolar.com

OWNER:
IP2023020IMD
BRENDAN CASEY
7 PHILADELPHIA AVE, TAKOMA PARK MD 20912

SpeedSeal™ DeckFoot Training Guide – Standard Composition

Overview

- This training guide outlines best practices for installing achment with integrated chemical flashing on composition shingle plement the Ultra Rail Installation Manual and provide detailed i ices that produce high quality systems and maintain constructio e of this guide is experienced rooftop solar installers with a str struction best practices, and a basic understanding of the Ultra R

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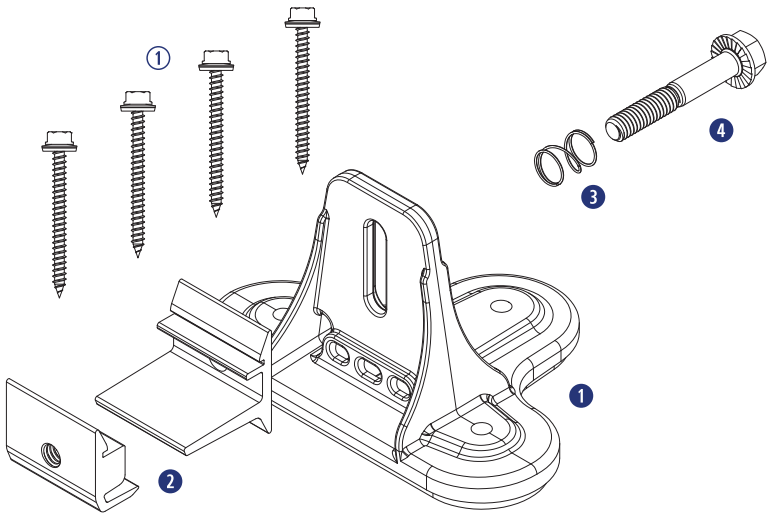
Required Tools

- Caulking Gun
- Drill Driver or Impact Driver
- Hex Socket

Materials Included

1. (1) SnapNrack SpeedSeal™ DeckFoot
2. (1) SnapNrack Ultra Rail Mount
3. (1) SnapNrack Ultra Mount Spring
4. (1) 5/16”-18 X 2-1/2” SS Flange Bolt

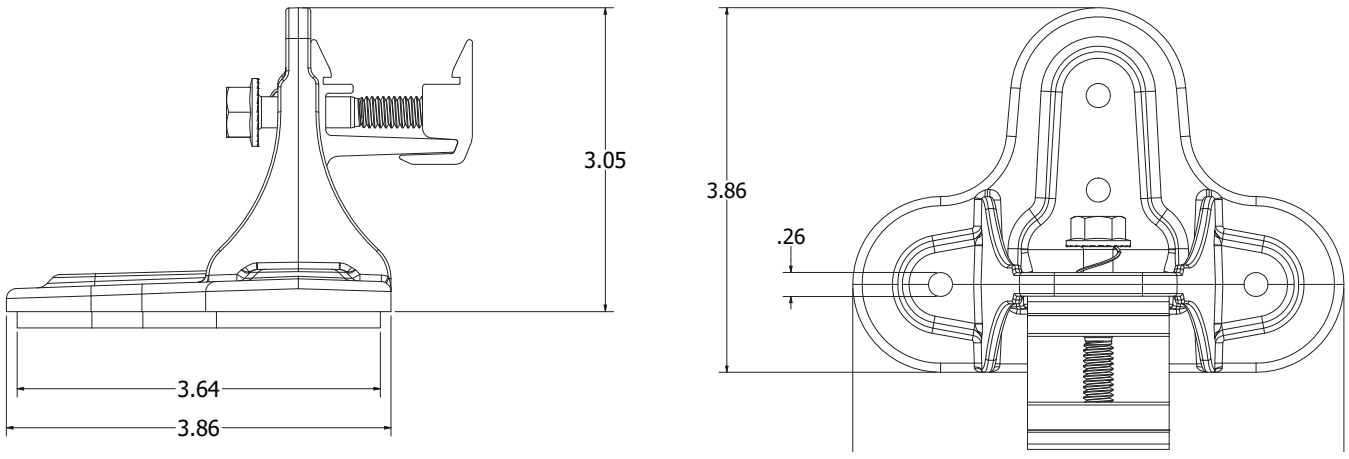


Other Materials Required

① (4) SnapNrack 1/4" ,or #14 Stainless Steel Lag, or Self-Drilling Screw with EPDM-Backed Washer

② Roof Sealant: SnapNrack recommends Chem Link sealants:
- M-1® Universal Adhesive & Sealant
- DuraLink® 35 Multi-Purpose Sealant
- DuraLink® 50 Super Adhesion Sealant

Application Note:
Install on composition shingle roofs.



Dimensioned SpeedSeal™ DeckFoot

SpeedSeal™ DeckFoot Installation

1. Using roof attachment locations drawn during system layout, check positioning of SpeedSeal™ DeckFoot for proper alignment on one shingle course only.

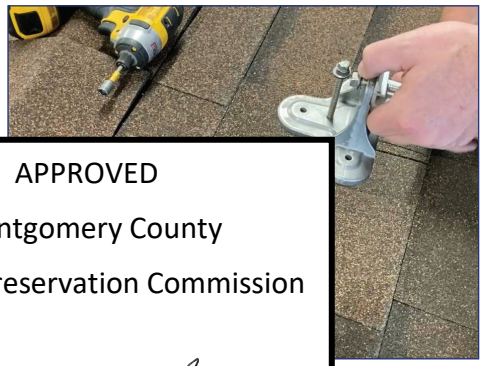
Best Practice: SpeedSeal™ DeckFoot should never be installed across two shingle courses.

Install Note: Fill any seam in shingles within 4" of a deck screw with sealant prior to installing SpeedSeal™ DeckFoot.

2. Fill all four cavities on bottom of SpeedSeal™ DeckFoot created by sealant ring with roof sealant to ensure a water tight seal.

Installation Note: Do not prep out attachments with sealant. Add sealant as mounts are installed to avoid sealant drying before installation.

3. Fill any seam between composition shingles within 4" of deck screws with sealant before attaching the DeckFoot. Typically, there are seams every 36" along a course of comp shingle



Install Note: Another option is to attach the D so the screws are more than 4" from the seam. *require additional mounts*

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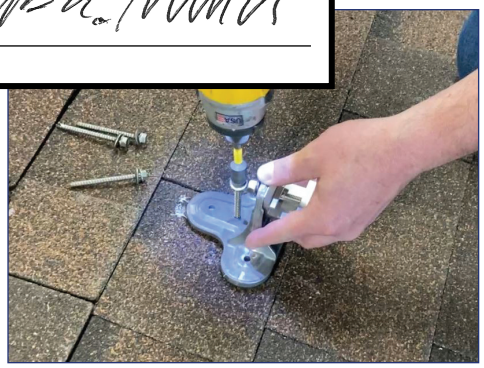
By Michael Kyne at 2:40 pm, Jun 16, 2023

4. Insert first screw through SpeedSeal™ DeckFoot mounting hole and drive into roof.

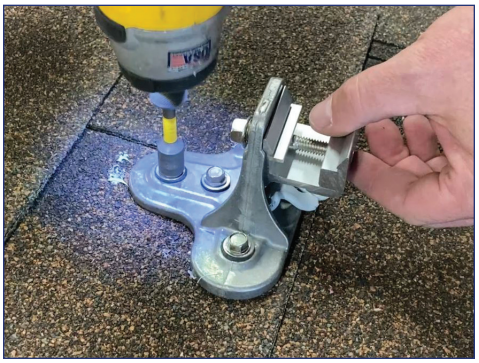


Best Practice: Remove any dirt or debris from roof surface before SpeedSeal™ DeckFoot is installed.

SpeedSeal™ DeckFoot Installation

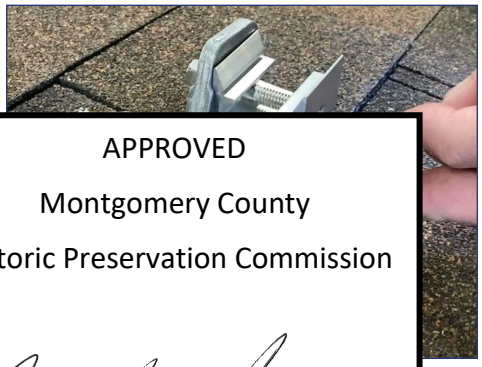
5 Tighten the screw until the rubber sealing washer is slightly squished out around the metal washer.

Best Practice: To avoid over tightening the screws a drill driver can be used with the clutch set to provide just enough torque to squish the rubber gasket.



6 Repeat Steps 3 and 4 for the remaining three screws.

Install Note: Roof sealant should seep out from all three sealant vents located underneath the Ultra Rail Mount, which ensures that a sufficient amount of roof sealant has been applied. If sealant is not seen from all three vents, remove SpeedSeal™ DeckFoot and add more sealant before reinstalling.driver can be used with the clutch set to provide just enough torque to squish the rubber gas



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By Michael Kyne at 2:40 pm, Jun 16, 2023

7 **Optional rafter attachment step:** After locating and marking rafters on the roof use four (4) ¼" x 2¾" SS screws and washers to attach the DeckFoot to rafters and decking by following steps 1-5 above. The two screws in the center of the DeckFoot must be embedded into the rafter.

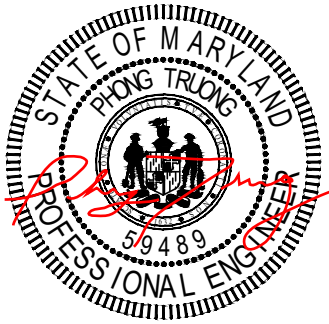
STRUCTURAL CALCULATIONS FOR PV INSTALLATION

Prepared for

SOLAR-ROOF-CHECK

Ipsun Power, Inc
9504 Poplar Leaf Court
Fairfax VA, 22031
USA
866-484-7786

USER:	**JulienMeyfroidt**
COMPANY NAME:	**Ipsun Power, Inc**
SRC JOB ID:	**38678**
JOB REPORT DATE:	**2023-03-03/Rev C**
JOB NUMBER:	**IP20230201MD**
JOB NAME:	**Brendan Casey**
JOB ADDRESS:	**7 Philadelphia Avenue**
	Takoma Park, MD 20912



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. 59489 Expiration Date: 06/05/2024

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By Michael Kyne at 2:40 pm, Jun 16, 2023

Program Version: 2020-05-08:7

City of Takoma Park

Housing and Community Developm

Main Office 301-891-7119
Fax 301-270-4568
www.takomaparkmd.gov

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Historic Preservation Commission

REVIEWED
By Michael Kyne at 2:40 pm, Jun 16, 2023

LETTE

April 12, 2023

To: Brendan Casey
7 Philadelphia Ave, Takoma Park, MD 20912
brendancasey1+ipsun@gmail.com 9083997895

To: Department of Permitting Services
2425 Reedie Drive, 7th floor
Wheaton, Maryland 20902

From: Planning and Development Services Division

THIS IS NOT A PERMIT – For Informational Purposes Only

VALID FOR ONE YEAR FROM DATE OF ISSUE

The property owner is responsible for obtaining all required permits from Montgomery County and the City of Takoma Park. If this property is in the **Takoma Park Historic District,** it is subject to Montgomery County Historic Preservation requirements.

Representative Name: Shannon Killebrew permits@ipsunsolar.com 8664847786
Location of Project: 7 Philadelphia Ave, Takoma Park, MD 20912
Proposed Scope of Work: Installation of 6.88 kW roof mounted PV solar system.

The purpose of this municipality letter is to inform you that the City of Takoma Park has regulations and city permit requirements that may apply to your project. This municipality letter serves as notification that, in addition to all Montgomery County requirements, you are required to comply with all City permitting requirements, including:

- Tree Impact Assessment/Tree Protection Plan
- Stormwater management
- City Right of Way

Failure to comply with these requirements could result in the issuance of a Stop Work Order and other administrative actions within the provisions of the law. Details of Takoma Park's permit requirements are attached on page 2.

The issuance of this letter does not indicate approval of the project nor does it authorize the property owner to proceed with the project. The City retains the right to review and comment on project plans during the Montgomery County review process.

City Of Takoma Park

The City of Takoma Park permits for the following issues:

Tree Impact Assessment/Tree Protection Plan/Tree Removal Application:

Construction activities that occur within 50 feet of any urban forest tree (7 and 5/8" in trunk diameter or greater), located on the project property or on an adjacent property, may require a Tree Impact Assessment and possibly a Tree Protection Plan Permit. Make sure to submit a request for a Tree Impact Assessment and schedule a site visit with the City's Urban Forest Manager if any urban forest tree is in the vicinity of proposed construction activities. See the Tree Permits section of the City website for the specific conditions in which a Tree Impact Assessment is required. Depending on the Urban Forest Manager's conclusion following the Tree Impact Assessment, you may need to prepare a full Tree Protection Plan and apply for a Tree Protection Plan Permit as well. Separately, the removal of any urban forest tree will require a Tree Removal Permit application. The tree ordinance is detailed in the City Code, section 12.12. For permit information check: https://takomaparkmd.gov/services/permits/tree-permits. The City's Urban Forest Manager can be reached at 301-891-7612 or urbanforestmanager@takomaparkmd.gov.

Stormwater Management:

If you plan to develop or redevelop property, you may be required to provide appropriate stormwater management measures to control or manage runoff, as detailed in City Code section 16.04. All commercial or institutional development in the city must apply for a Stormwater Management Permit regardless of the size of the land disturbance. Additions or modifications to existing detached single-family residential properties do not require a Stormwater Management permit if the project does not disturb more than 5,000 square feet of land area. For more information visit: https://takomaparkmd.gov/government/public-works/stormwater-management-program/. The City Engineer should be contacted to determine if a City permit is required. The City Engineer can be reached at 301-891-7620.

City Right of Way:

- To place a **construction dumpster or storage container** temporarily on a City right of way (usually an adjacent road), you will need to obtain a permit. A permit is not required if the dumpster is placed in a privately-owned driveway or parking lot.
- If you plan to install a new **driveway apron**, or enlarge or replace an existing driveway apron, you need a Driveway Apron Permit.
- If you plan to construct a **fence** in the City right of way, you need to request a Fence Agreement. If approved, the Agreement will be recorded in the Land Records of Montgomery County.

For more information and applications for City permits, see: https://takomaparkmd.gov/services/permits/ or contact the Department of Public Works at 301-891-7633.

Failure to comply with the City's permitting requirements could result in the issuance of a Stop Work Order and other administrative actions within the provisions of the law.

eSigned via SeamlessDocs.com
Shannon Killebrew
Key: 38bf2056622713c0bf979ea7ee94776a

Shannon Killebrew

eSigned via SeamlessDocs.com

REVIEWED
By Michael Kyne at 2:40 pm, Jun 16, 2023

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