



HISTORIC PRESERVATION COMMISSION

Isiah Leggett
County Executive

William Kirwan
Chairman

Date: August 16, 2018

MEMORANDUM

TO: Diane Schwartz Jones
Department of Permitting Services

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

SUBJECT: Historic Area Work Permit: 846167: Rooftop solar 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 August 15, 2018 Historic Preservation Commission 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: Joan Marsh
Address: 7110 Sycamore Ave., 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 Dan Bruechert at 301.563.3408 or dan.bruechert@montgomeryplanning.org to schedule a follow-up site visit.





May 2, 2018

Ipsun Power
600 New Hampshire Ave, NW 11th Floor
Washington, DC, 20037

Subject: Structural Certification for Installation of Solar Panels
Job Number: 2018-01510
Client: Owen Philbin
Address: 7110 Sycamore Avenue, Takoma Park, MD 20912

Attn.: To Whom It May Concern

A field observation of the condition of the existing framing system was performed by an audit team from Ipsun Power. From the field observation of the property, the existing roof structure was observed as follows:

The existing roof structure consists of:

- Composition Shingle over Roof Plywood is supported by 2x4 @ 24"o.c. SPF#2 at ARRAY 1. The top chords are sloped at approximately 25 degree and have a maximum projected horizontal span of 5 ft 11 in between load bearing supports.

Design Criteria:

- Applicable Codes = 2015 IBC/IRC, ASCE 7-10, and NDS-12
- Ground Snow Load = 30 psf; Roof Snow Load = 20.8 psf ARRAY 1
- Roof Dead Load = 6.6 psf ARRAY 1
- Basic Wind Speed = 115 mph Exposure Category C

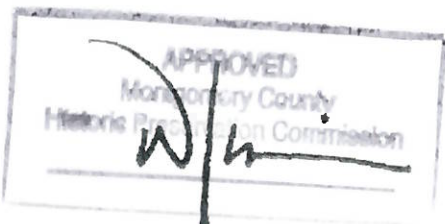
As a result of the completed field observation and design checks:

- ARRAY 1: it is adequate to support the loading imposed by the installation of solar panels and modules. Therefore, no structural upgrades are required.

I certify that the capacity of the structural roof framing that directly supports the additional gravity loading due to the solar panel supports and modules had been reviewed and determined to meet or exceed the requirements without structural upgrade in accordance with the 2015 IBC.

If you have any questions on the above, do not hesitate to call.

Prepared By:
PZSE, Inc. - Structural Engineers
Roseville, CA



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. 43542 , EXPIRATION DATE 5/28/2019

TP 8/16/18

OWEN PHILBIN RESIDENCE : 7110 SYCAMORE AVE, TAKOMA PARK, MD 20912
4.8 KW DC ROOF MOUNTED PHOTOVOLTAIC SYSTEM

EQUIPMENT SUMMARY :

- 16 NO'S - TRINA SOLAR TSM-DD05A 300W MODULE
- 01 NO - SOLAR EDGE SE5000H-US INVERTERS WITH
- 16 NO'S OF P320 DC POWER OPTIMIZERS

SHEET INDEX :

- G001 COVER SHEET
- G002 GENERAL NOTES
- Z001 PROPERTY MAP & PROPERTY LAYOUT
- Z002 PV LAYOUT
- Z003 STRING LAYOUT
- Z004 ATTACHMENT LAYOUT & DETAILS
- E001 ELECTRICAL THREE LINE DIAGRAM
- E002 BOQ & SYSTEM DETAILS
- E003 SYSTEM LABELING DETAILS
- E004 MODULE DATA SHEET
- E005 POWER OPTIMIZER DATA SHEET
- E006 INVERTER DATA SHEET
- S001 ATTACHMENT DATA SHEET
- S002 ATTACHMENT DATA SHEET

APPLICABLE CODES AND STANDARDS :

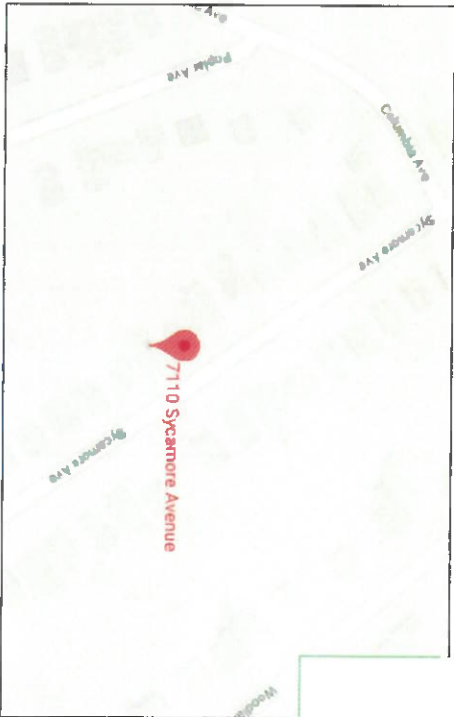
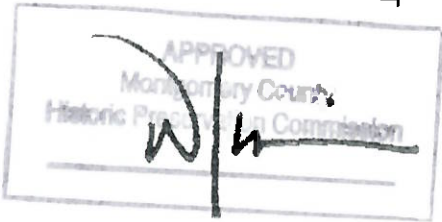
- BUILDING : IBC 2012, DCMR, 12-2013, ASCE 7-10, NDS2012
- ELECTRICAL : NEC 2011
- FIRE : NFPA 2012

OWNER :

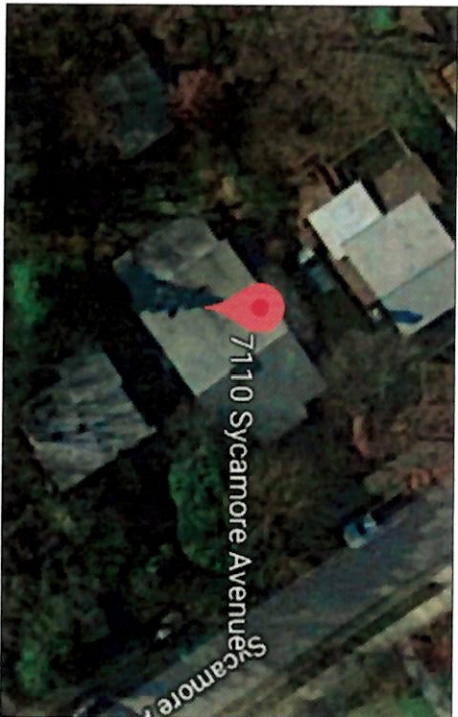
OWEN PHILBIN
 7110 SYCAMORE AVE,
 TAKOMA PARK, MD 20912

INSTALLER:

IPSUNPOWER
 600 NEW HAMPSHIRE AVE
 NW - 11TH FLOOR,
 WASHINGTON, DC 20037



VICINITY MAP



SINGLE FAMILY RESIDENCE

INSTALLER:
 IPSUNPOWER
 600 NEW HAMPSHIRE AVE
 NW - 11TH FLOOR,
 WASHINGTON, DC 20037

OWNER:
 OWEN PHILBIN
 7110 SYCAMORE AVE,
 TAKOMA PARK, MD 20912



REV	DATE	BY	DATE
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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.
2. ALL WORK SHALL CONFORM TO APPLICABLE STATE AND FEDERAL SAFETY CODES INCLUDING OSHA. NO HOT WORK IS AUTHORIZED. ALL HOT WORK SHALL BE APPROVED IN WRITING WITH THE GENERAL CONTRACTOR AND OWNER.
3. 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, OMISSIONS OR OBTUSION SHALL BE BROUGHT TO THE ATTENTION OF THE PRIME CONTRACTOR AND OR OWNER PRIOR TO CONSTRUCTION.
4. COORDINATE ALL WORK WITH ARCHITECTURAL, MECHANICAL AND STRUCTURAL DRAWINGS. INSTALL ALL WORK TO CLEAR NEW AND EXISTING ARCHITECTURAL AND STRUCTURAL MEMBERS. NOTIFY SUCH AS PIPE, DUCT, ETC. SHALL BE IN CONTRACT WITH ANY ELECTRICAL EQUIPMENT.
5. 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.
6. DO NOT SCALE DRAWINGS. LARGER SCALE DRAWINGS HAVE PRECEDENCE OVER SMALL SCALE DRAWINGS. SPECIFICATIONS HAVE PRECEDENCE OVER DRAWINGS. NOTIFY THE PRIME CONTRACTOR IMMEDIATELY AFTER DISCOVERY OF ANY DISCREPANCY BETWEEN DRAWINGS, SPECIFICATIONS OR FIELD CONDITIONS.
7. NOTIFY THE PRIME CONTRACTOR OR OWNER IMMEDIATELY AFTER DISCOVERING ANY HAZARDOUS MATERIAL.
8. DRAWINGS ARE DIAGNOSTIC 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 EXACT FITTING SHALL BE SHOWN ON OTHER SHEETS WHERE THEY OCCUR. EXTENDING WORK FROM ALL JUNCTION BOXES, CONTROL PANELS, PUMPS, RECEPTACLES, SWITCHES, ETC. AND MAKE ALL FINAL CONNECTIONS TO EQUIPMENT AS REQUIRED.
9. 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 POSSIBLE.
10. THE COMPLETE ELECTRICAL INSTALLATION SHALL BE TESTED AS A COMPLETE WORKING SYSTEM.
11. RESTORE ALL DAMAGES RESULTING FROM WORK AND LEAVE PREMISES IN CLEAN CONDITION WHEN FINISHED WITH WORK.
12. ALL TYPES OF SWITCHES, RECEPTACLES, WALL PLATES AND LIGHTING FIXTURES SHALL BE AS APPROVED BY PRIME CONTRACTOR OR OWNER. VERIFY MATERIALS AND COLOR AND LOCATION. SUBMIT CATALOG CUTS OR SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT.
13. ALL ITEMS ARE NEW UNLESS NOTED AS EXISTING (E).
14. REMOVE ALL INDICATED ITEMS. REMOVE ALL EXPOSED CONDUITS. REMOVE WIRES TO NEAREST CONCEALED JUNCTION BOX OR PANEL. ABANDON IN PLACE EXISTING WIRES CONCEALED CONDUITS NOT EXPOSED BY CONSTRUCTION.
15. ALL EQUIPMENT SHALL BE SECURED IN ACCORDANCE WITH GOVERNING SEISMIC REGULATIONS. PROVIDE EXPANSION AND DEFLECTION FITTINGS IN CONDUITS REQUIRED BY CALIFORNIA ELECTRIC CODE.
16. FIRE STOP ALL PENETRATIONS THROUGH FIRE RATED SURFACES. SEE DETAIL DS.
17. PROVIDE GROUND ROD, GROUNDING ELECTRODE AND BONDING FOR ALL SERVICE ENTRANCE EQUIPMENT, BUILDING STRUCTURAL STEEL, COLD WATER PIPES AND TRANSFORMER PER CEC (CALIFORNIA ELECTRIC CODE) WITH AN AIR.
18. ALL NEW CIRCUIT BREAKERS SHALL BE RATED 10000 AIC OR HIGHER UNDO.
19. ALL CONDUITS SHALL BE EMT. INTERMEDIATE METAL CONDUIT OR RIGID STEEL. MINIMUM SIZE SHALL BE 1". ALL CONDUIT BOXES AND ELECTRICAL FITTINGS SHALL BE STEEL.
20. DO NOT USE THE WORKING SPACE WITHIN ANY EXT. SOCK OR ASSOCIATED JUNCTION BOX FOR ANY OTHER CIRCUIT.
21. PROVIDE EXPANSION AND DEFLECTION FITTINGS IN CONDUITS CROSSING BUILDING EXPANSION AND SEISMIC JOINTS. SEE DETAILS ES.
22. PROVIDE JUNCTION AND/OR ROLL BOXES WHEN NECESSARY OR REQUIRED BY CEC.
23. ALL CONDUCTORS SHALL BE COPPER. THIN #12 AWG. MINIMUM. UNLESS IN A NET LOCATION IN WHICH CASE THIN SHALL BE USED.
24. INSTALL GREEN INSULATED GROUND WIRE IN ALL CIRCUITS. SIZE PER NEC REQUIREMENTS OR THE SAME AS PHASE CONDUCTORS WHICH EVER IS LARGER UNLESS INDICATED OTHERWISE.
25. ALL NEW WIRING, CONDUIT AND JUNCTION BOXES SHALL BE CONCEALED WITHIN NEW WALLS, CEILINGS OR FLOOR SPACES. SURFACE MOUNT CONDUIT ON OLD WALLS AND CEILINGS. RUN ALL SURFACE RACKWAY TIGHT TO STRUCTURE. PARALLEL TO BALANCE LINES.
26. PAINT ALL EXPOSED ELECTRICAL CONDUITS AND BOXES SELECT NEUTRAL COLOR TO MATCH EXISTING PAINT COLOR.
27. NO FOREIGN EQUIPMENT SHALL BE LOCATED WITHIN THE SPACE ABOVE OR BELOW ELECTRICAL PANELS.

28. PROVIDE SOURCE ON ALL ELECTRICAL PANELS TO KEEP THE SPACE 36" IN FRONT OF THE PANELS FREE OF OBSTRUCTIONS.
29. PROVIDE WARNING LABEL ON ALL PANELS. WARNING ELECTRICAL ARC FLASH HAZARD. PERSONAL PROTECTION EQUIPMENT REQUIRED. FAILURE TO COMPLY CAN RESULT IN INJURY OR DEATH. REFER TO IAPCA 70E.
30. UPDATE PANEL BOARD DIRECTORY AS CIRCUITS ARE INSTALLED. PREPARE NEW TYPE WRITTEN PANEL SCHEDULES.
31. ALL EXTERIOR EQUIPMENT SHALL BE IN WEATHERPROOF (NEMA 3B) ENCLOSURES. ALL NEW WIRING SHALL BE IN CONDUIT. SURFACE FOR SUN EXPOSURE AND WET LOCATIONS. FIELD APPLIED COATING ARE NOT ACCEPTABLE.
32. DC SQUARE POWER SHALL BE NEGATIVELY GROUND.
33. ALL WIRING SHALL BE PER CODE REQUIREMENTS.
34. INVERTERS MUST COMPLY WITH UL 1741 TO PREVENT ISLANDING ON POWER FAILURE. THE INVERTER SHALL PUT NOT POWER ON TO THE GRID IS OFF-LINE.
35. NOTHING IN THESE PLANS SHALL BE CONSTRUED TO CONTRADICT NEC 14 OR LOCAL CODES.
36. ALL SYSTEM COMPONENTS (MODULES AND INVERTERS, ETC) SHALL BE UL LISTED.
37. MOUNT TO ROOF USING UL APPROVED MOUNTING HARDWARE. FOLLOWING MANUFACTURERS DIRECTIO: MOUNTING HARDWARE EVERY 4' ON CENTER UNLESS OTHERWISE NOTED.
38. MARK ALL DC CONDUIT "CAUTION SQUARE ELECTRIC SYSTEM CONNECTED". MARK ALL DISCONNECTS INCLUDING DISCONNECTS TO BE USED FOR CONTACT DISCONNECT. MARK THE MAIN SERVICE WITH "CAUTION SQUARE ELECTRIC SYSTEM CONNECTED". USE DURABLE MARKING WITH 3/8" WHITE LETTERS ON FIELD BACKBOARD.
39. MARK THE NEC REQUIRED CLEAR SPACE ON THE FLOOR IN FRONT OF ALL DEVICES BEING INSTALLED.
40. SUPPORT ALL ROOF MOUNTED CONDUIT WITH FLOOR SLEEPERS. 4" X 4" APPROVED SYSTEM.
41. OBTAIN THE BEST INFORMATION ON UNDERGROUND UTILITIES IN AREAS BEING TRENCHED. USE DIG ALERT OR OTHER LOCATING SERVICE BEFORE DIGGING.
42. SQUARE PANELS SHALL NOT BE INSTALLED OVER ANY PLUMBING OR MECHANICAL VENTS, EXHAUSTS OR CHIMNEYS.
43. REMOVE ALL INVERTER METER OR OTHER EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTION AND THE PHOTOVOLTAIC SOURCE AND/OR OUTPUT CIRCUIT GROUNDING CONDUCTOR.
44. ALL PV MODULES AND ASSOCIATED EQUIPMENT SHALL BE PROTECTED FROM ANY PHYSICAL DAMAGE AND ACCESS BY UNAUTHORIZED PERSONS.
45. NO PLASTIC ZIP TIES.

STORM WATER PREVENTION NOTES:

- STORM WATER POLLUTION PREVENTION DEVICES AND PRACTICES SHALL BE INSTALLED AND/OR INSTITUTED AS NECESSARY TO ENSURE COMPLIANCE WITH THE CITY WATER QUALITY STANDARDS CONTAINED IN LOCAL REGULATIONS, FEDERAL REGULATIONS AND ANY EROSION CONTROL PLAN ASSOCIATED WITH THIS PROJECT. ALL SUCH DEVICES AND PRACTICES SHALL BE MAINTAINED, INSPECTED AND/OR MONITORED TO ENSURE ADEQUACY AND PROPER FUNCTION THROUGHOUT THE DURATION OF THE CONSTRUCTION PROJECT.
- COMPLIANCE WITH THE WATER QUALITY STANDARDS AND ANY EROSION CONTROL PLAN ASSOCIATED WITH THIS PROJECT INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
1. ALL POLLUTANTS SHALL BE RETAINED ON SITE UNTIL PROPERLY DEPOSED OF AND MAY NOT BE TRANSPORTED FROM THE SITE VIA SHEET FLOW SWALES AREA DRAINS NATURAL DRAINAGE COURSES OR WIND.
 2. STOCKPILES OF CONSTRUCTION-RELATED MATERIALS SHALL BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY FORCES OF WIND OR WATER FLOW.
 3. TRUCKS AND CONSTRUCTION LOAD WASTES SHALL BE DEPOSITED INTO COVERED RECEPTACLE TO PREVENT CONTAMINATION OF RAINWATER AND DISPERSAL BY WIND.
- VISIBILITY FROM ADJACENT PROPERTY:**
1. THE SOLAR PANELS MAY BE PAINTED FROM ADJACENT PROPERTIES. PAINT ALL STRUCTURAL ELEMENTS TO MATCH THE EXISTING ROOFING.

REV.	DATE	BY	DATE
01	05/14/19	IP	05/14/19
02	05/14/19	IP	05/14/19

JOB ID: IP-18-08
 SHEET NO: 0002
 Page No: 02 of 14



OWNER:
OWEN PHILBIN
7110 SYCAMORE AVE.
TAKOMA PARK, MD 20912

INSTALLER:
IPSUNPOWER
600 NEW HAMPSHIRE AVE
NW - 11TH FLOOR,
WASHINGTON, DC 20037



PROPERTY MAP



PROPERTY LAYOUT

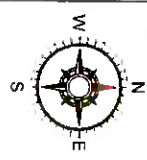
- LEGEND -
- (1) - Utility Meter
 - (2) - Main Service Panel
 - (3) - AC Disconnect
 - (4) - Inverter
 - (5) - Junction Box
 - (6) - Solar Module

JOB ID	IP-18-08
SHEET No	2001
Page No	001 of 14
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OWNER:
 OWEN PHILBIN
 7110 SYCAMORE AVE,
 TAKOMA PARK, MD 20912

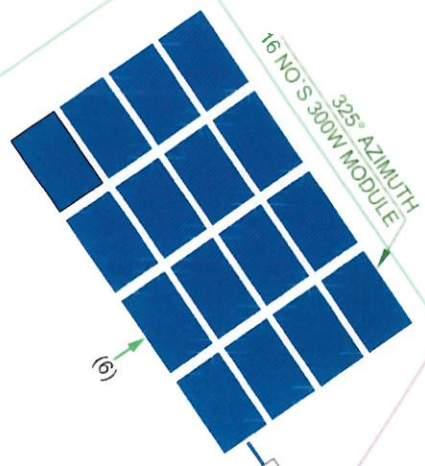
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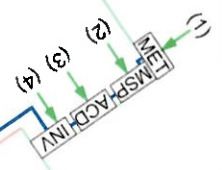
APPROVED
 Montgomery County
 Historic Preservation Commission

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ROOF AREA COVERAGE
 ROOF AREA IN SQ.FT : 464 Sq.ft
 ARRAY AREA IN SQ.FT : 301 Sq.ft
 ARRAY AREA : 65%



JB



PV LAYOUT

LEGEND:
 (1) - Utility Meter
 (2) - Main Service Panel
 (3) - AC Disconnect
 (4) - Inverter
 (5) - Junction Box
 (6) - Solar Module

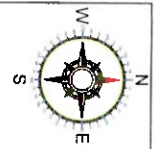
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04	IP	12/11/11

JOB ID : IP-18-08
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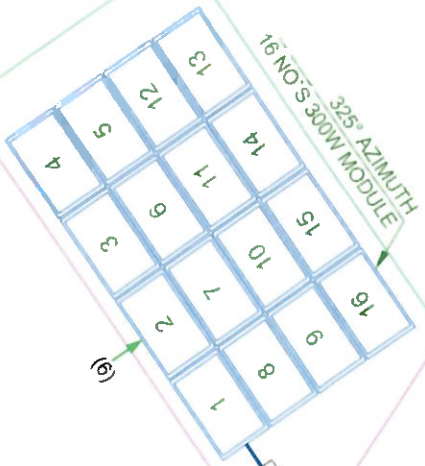


OWNER:
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 TAKOMA PARK, MD 20912

INSTALLER:
 IPSUNPOWER
 600 NEW HAMPSHIRE AVE
 NW - 11TH FLOOR,
 WASHINGTON, DC 20037



APPROVED
 Historic Preservation Commission
 Markham County



STRING LAYOUT

- LEGEND -
- (1) - Utility Meter
 - (2) - Main Service Panel
 - (3) - AC Disconnect
 - (4) - Inverter
 - (5) - Junction Box
 - (6) - Solar Module

Job ID	IP-18-08
Sheet No	2003
Page No	02 of 14



OWNER:
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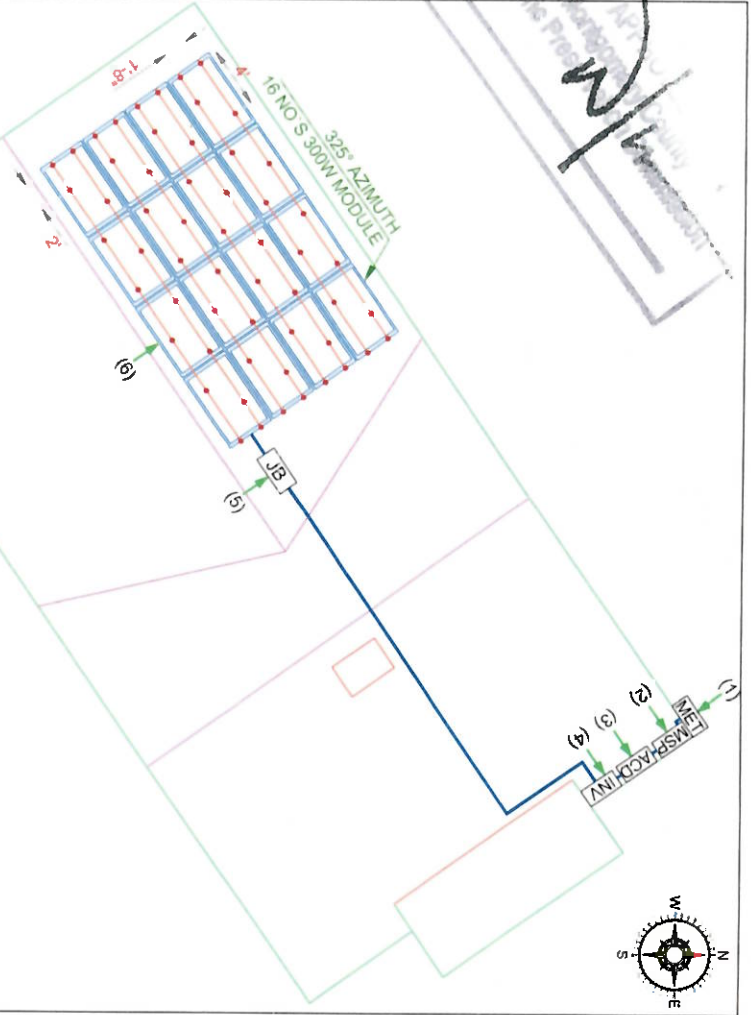
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 Mechanical
 Electrical
 Plumbing
 HVAC
 Fire Protection
 Security
 Telecommunications
 Other

Reference Weights	
Module SF	18.83 SF
Module Weight	40.79 LBS
Module Loading	2.22 LBS/SF
Mounting Weight	1 LBS/SPACING
Total Weight	3.22 LBS/SF
Clear Unit Allowance	
Site Data	Module
Height	16
	LBS
	682.84

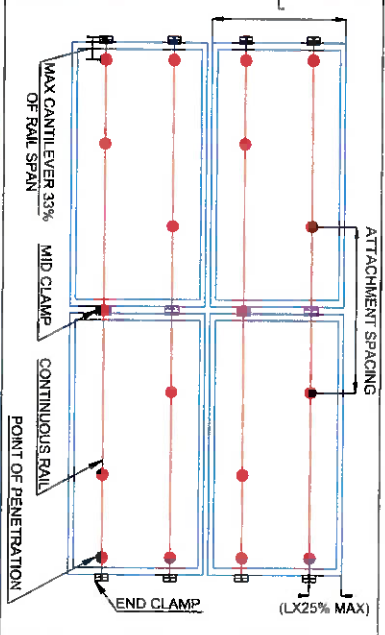
□ - PV MODULES
 • - ROOF PENETRATION POINTS
 - - RAILS

Roof Cover T Type : Shingle Roof
Rafter Size with O.C : 2" X 4" @ 24"
Attachment Spacing : 4'
No. of Attachment Points : 56
Attachment Type : Staggered

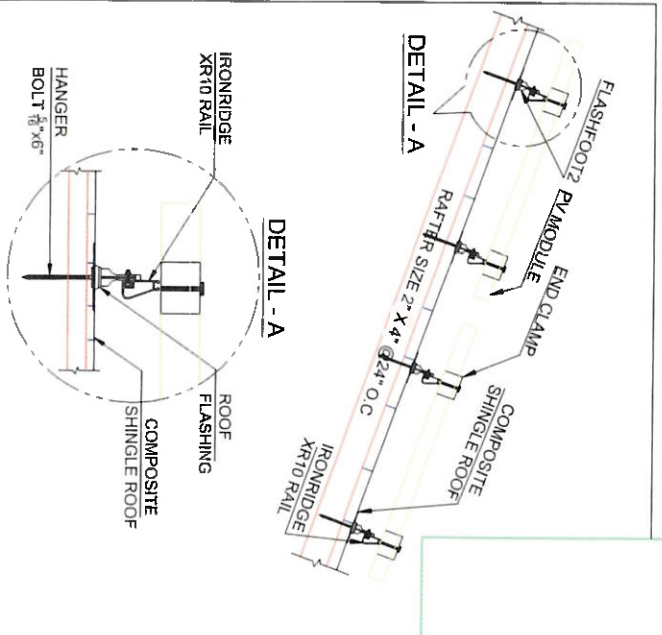
ATTACHMENT LAYOUT



ATTACHMENT SPACING DETAILS



ATTACHMENT DETAILS



REV	DATE	BY	DATE
01	04.14.18	04	14.11.18
02	04.14.18	04	14.11.18
03	04.14.18	04	14.11.18

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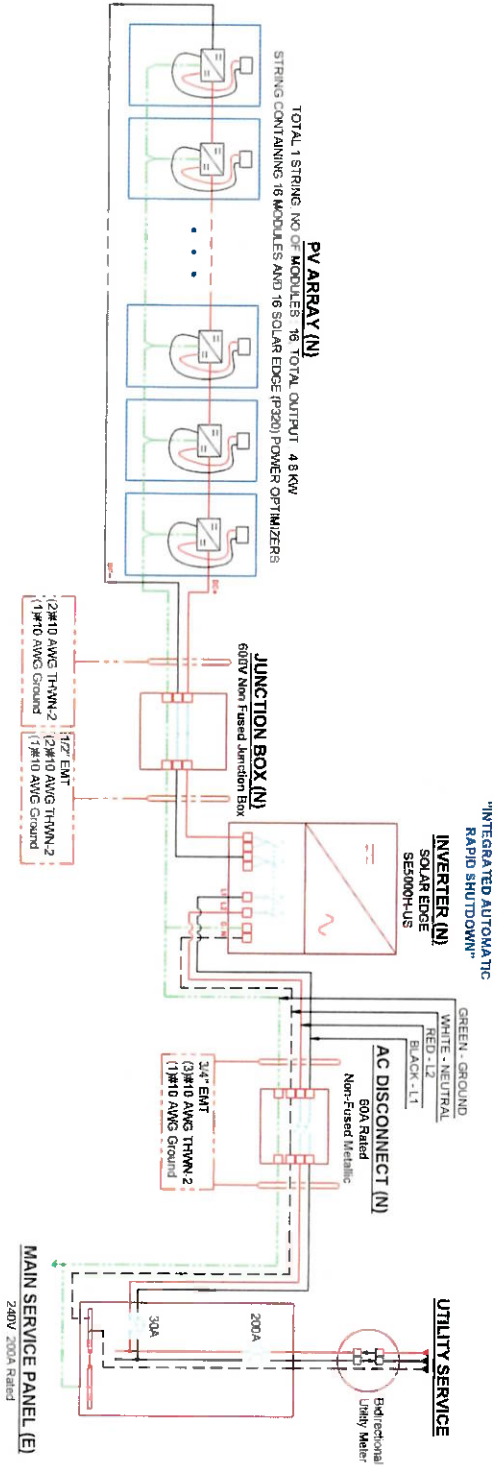


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INSTALLER:
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 WASHINGTON, DC 20037

4.8 kW DC PROPOSED PV SYSTEM THREE LINE DIAGRAM

(N) NEW
(E) EXISTING



APPROVED
Montgomery County
Historic Preservation Commission

OWNER:
OWEN PHILBIN
7110 SYCAMORE AVE,
TAKOMA PARK, MD 20912

INSTALLER:
IPSUNPOWER
600 NEW HAMPSHIRE AVE
NW - 11TH FLOOR,
WASHINGTON, DC 20037



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02	04.11.14	ES	ES
03	04.11.14	ES	ES

Job ID: ip-18-08
Sheet No: E001
Page No: 07 of 14

BILL OF MATERIALS

REF. DES.	QTY	MANUFACTURER	MODEL NUMBER	DESCRIPTION
SOLAR MODULES	16	TRINA SOLAR	TSM-D05A	SOLAR PANEL
INVERTER	1	SOLAREDGE	SE5000H-US	INVERTER
APP	1	TRINA SOLAR	TRN-3000-1	APP
AC DISCONNECT	1	TRINA SOLAR	TRN-AC-DIS-1	AC DISCONNECT
ARRAY JUNCTION BOX	1	TRINA SOLAR	TRN-ARRAY-JB-1	ARRAY JUNCTION BOX


System Configuration	
Number of strings	1
Number of Modules	16
Modules Per string	1 X 16
Number of Inverter	1
Module Model	TSM-D05A
Inverter Model	SE5000H-US
PV Service Disconnect	30 A
DC W/hts. STC	4800 W
Max AC output Current	21 A
Operating AC Voltage	240 V

Module Rating Specs	
TRINA SOLAR	
TSM-D05A	
Pmax -	300 Wp
Vmp -	32.6 V
Imp -	9.19 A
Voc -	39.9 V
Isc -	9.64 A

ITEM	DESCRIPTION	ID	QTY	Vol (V)	Watt (W) STC	Imp (A) STC	Voc (V) STC	Max Output Current (A)	Max Output Voltage (V)	Max Output Power (W)	Min. System Voltage (V)	Max. System Voltage (V)	Max. System Power (W)	Min. System Current (A)	Max. System Current (A)	Max. System Power (W)	Min. System Voltage (V)	Max. System Voltage (V)	Max. System Power (W)	Min. System Current (A)	Max. System Current (A)	Max. System Power (W)
1	MODULE	TRINA SOLAR	16	30.9	32.6	9.19	39.9	300	32.6	984	15.1	39.9	500	25.3	27.8	30	1.00	0.96	29.6	48	30.4	91.8
2	STRING ONE STRING	ARRAY JUNCTION BOX (A) PV	1	30.9	32.6	9.19	39.9	300	32.6	984	15.1	39.9	500	25.3	27.8	30	1.00	0.96	29.6	48	30.4	91.8
3	ARRAY JUNCTION BOX TO INVERTER	ARRAY JUNCTION BOX	1	30.9	32.6	9.19	39.9	300	32.6	984	15.1	39.9	500	25.3	27.8	30	1.00	0.96	29.6	48	30.4	91.8
AC DISCONNECT																						
4	AC DISCONNECT	AC DISCONNECT	1	30.9	32.6	9.19	39.9	300	32.6	984	15.1	39.9	500	25.3	27.8	30	1.00	0.96	29.6	48	30.4	91.8
5	AC DISCONNECT TO MAIN SERVICE PANEL	AC DISCONNECT	1	30.9	32.6	9.19	39.9	300	32.6	984	15.1	39.9	500	25.3	27.8	30	1.00	0.96	29.6	48	30.4	91.8
DC DISCONNECT																						
6	DC DISCONNECT	DC DISCONNECT	1	30.9	32.6	9.19	39.9	300	32.6	984	15.1	39.9	500	25.3	27.8	30	1.00	0.96	29.6	48	30.4	91.8

Inverter Rating Specs	
Normal Input	13.5 A DC
Max Short Circuit I/P	45 A DC
Output Voltage	240 V AC
Inrush	26.25 A (@ 125%)
Outdoor	NEKA 3R Enclosure
	UL 1741 / IEEE 1547

PV System DC Disconnect	
Operating Current	1 X 9.19 A DC
Operating Voltage	380 V DC
Max System Voltage	480 V DC
Short Circuit Current	1 X 12.06 A DC

APPROVED

 Owen Philbin
 Manager/Project Commission

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REV. DATE	BY	DATE
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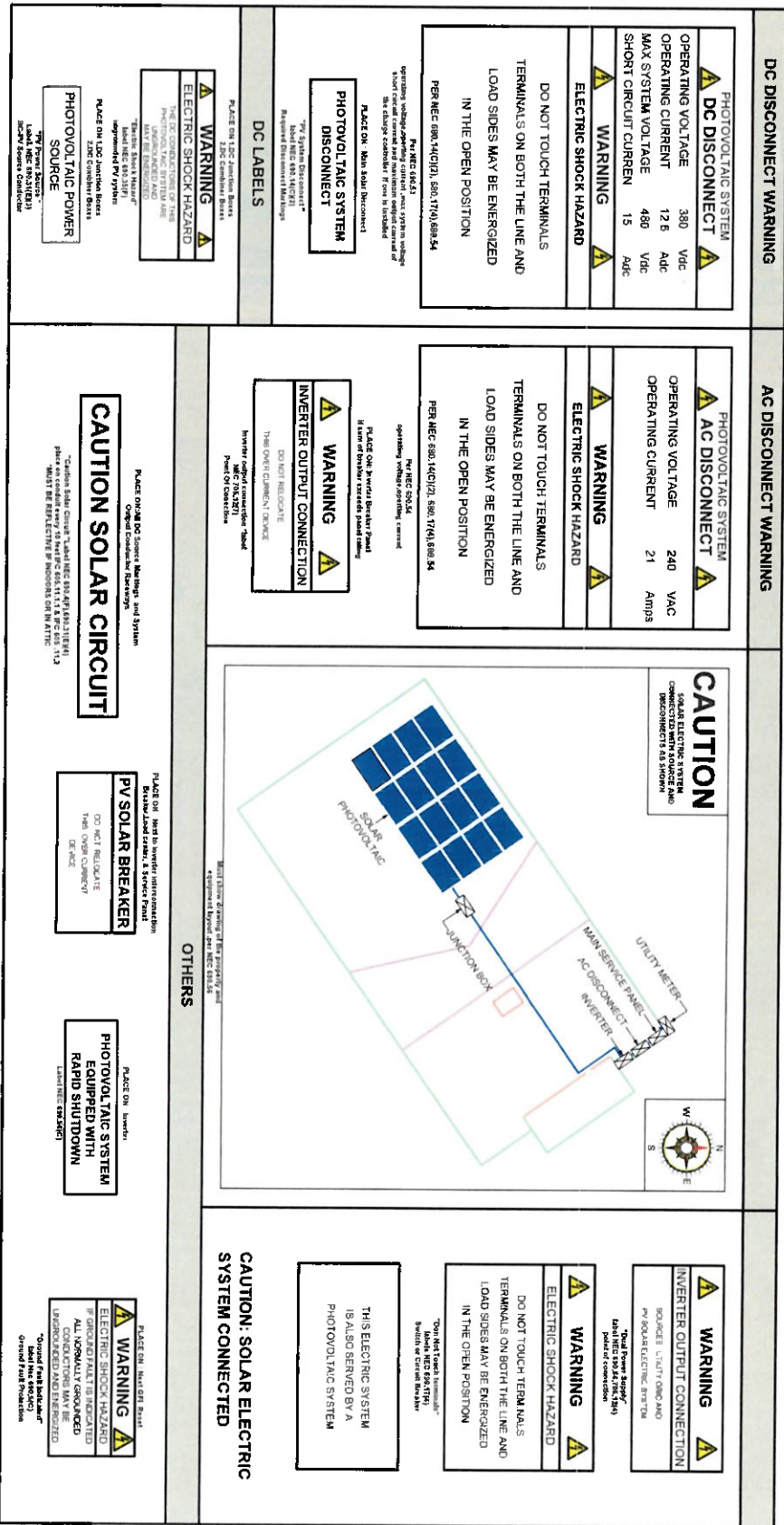
SYSTEM LABELING DETAIL:

All Plaque and signage required by the 2013 edition of California Electrical Code, NEC will be installed as required. Plaques consist of white lettering on red background with text written in capital letters a maximum of 2/8" in height on Plastic Engraved Plaque. Alternate Power Source Plaque shall be metallic or plastic with engraved or machine printed letters in a contrasting color to the plaque, include the location of meter, disconnect, inverter, the 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 metallic raceway and shall be identified every 5 feet - and within 1 foot of turns or bends and within 1 foot above and below penetrations of roofing/ceiling assemblies, walls, or barriers labeled "Caution Solar Circuit" or equivalent. Examples of all required warning labels per NEC and CEC 690 below:

SIGNAGE REQUIREMENT:

RED BACKGROUND WHITE LETTERING ("WARNING"- 3/8" LETTERS) ALL CAPITAL LETTERS ARIAL OR SIMILAR FONT WEATHER - RESISTANT MATERIAL, UL 969

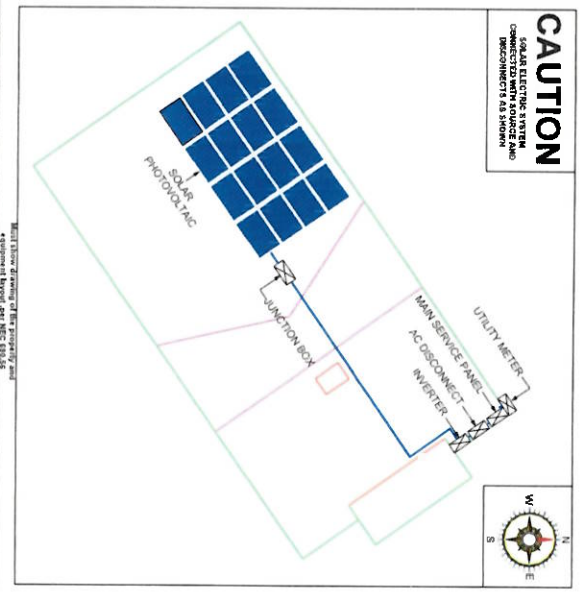


DC DISCONNECT WARNING

PHOTOVOLTAGIC SYSTEM	
DC DISCONNECT	
OPERATING VOLTAGE	380 VDC
OPERATING CURRENT	12.6 Adc
MAX SYSTEM VOLTAGE	480 VDC
SHORT CIRCUIT CURRENT	15 Adc
WARNING	
ELECTRIC SHOCK HAZARD	
DO NOT TOUCH TERMINALS	
TERMINALS ON BOTH THE LINE AND	
LOAD SIDES MAY BE ENERGIZED	
IN THE OPEN POSITION	
PER NEC 690.41(C)(1), 690.47(A), 690.54	

AC DISCONNECT WARNING

PHOTOVOLTAGIC SYSTEM	
AC DISCONNECT	
OPERATING VOLTAGE	240 VAC
OPERATING CURRENT	21 Amps
WARNING	
ELECTRIC SHOCK HAZARD	
DO NOT TOUCH TERMINALS	
TERMINALS ON BOTH THE LINE AND	
LOAD SIDES MAY BE ENERGIZED	
IN THE OPEN POSITION	
PER NEC 690.41(C)(1), 690.47(A), 690.54	



CAUTION

100A ELECTRIC SYSTEM
CONNECTED WITH SOURCE AND
DISCONNECTS AS SHOWN

WARNING	INVERTER OUTPUT CONNECTION
SOURCE: UL1741 (RSC) AND PV SOURCE ELECTRIC SYSTEM	
Total Power Supply UL1741 (RSC) (UL1741-300) Product connection	
WARNING	ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS	
TERMINALS ON BOTH THE LINE AND	
LOAD SIDES MAY BE ENERGIZED	
IN THE OPEN POSITION	
Total Watt output terminals UL1741 (RSC) (UL1741-300) Product connection	
THIS ELECTRIC SYSTEM IS ALSO SERVED BY A PHOTOVOLTAGIC SYSTEM	

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

DC LABELS

WARNING	ELECTRIC SHOCK HAZARD
THE DC CONNECTIONS OF THIS PHOTOVOLTAGIC SYSTEM ARE MAY BE ENERGIZED	
Total Power Supply UL1741 (RSC) (UL1741-300) Product connection	
PLACE ON: 120C Junction Boxes 120C Combiner Boxes	
PLACE ON: 120C Junction Boxes 240C Combiner Boxes	
Total Power Supply UL1741 (RSC) (UL1741-300) Product connection	
PLACE ON: 120C Junction Boxes 240C Combiner Boxes	
Total Power Supply UL1741 (RSC) (UL1741-300) Product connection	

CAUTION SOLAR CIRCUIT

Total Power Supply
UL1741 (RSC) (UL1741-300)
Product connection

PV SOLAR BREAKER

DO NOT RELY ON THIS
FOR PROTECTION

PHOTOVOLTAGIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

Labels Not Shown

WARNING	ELECTRIC SHOCK HAZARD
IF INDICATED BY THIS LABEL ALL CONDUCTING PARTS ARE ELECTRICALLY ENERGIZED	
Total Power Supply UL1741 (RSC) (UL1741-300) Product connection	

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MOUNT ACCORDING TO MOUNTING MFG INSTRUCTIONS AND CIVIL STRUCTURAL DRAWINGS
 USE FASTENERS SUITABLE TO SURFACE BEING ATTACHED. LAG SCREWS FOR WOOD, NUTS (LOCKING) AND BOLTS FOR METAL STRUCTURES
 MOUNT A CELL CENTER UNLESS OTHERWISE NOTED OR REQUIRED TO CONNECT TO STRUCTURAL MEMBERS

60 CELL MONOCRYSTALLINE MODULE
275-305W POWER OUTPUT RANGE
18.6% MAXIMUM EFFICIENCY
0~+5W POSITIVE POWER TOLERANCE

THE Honeyplus
FRAMED 60-CELL MODULE

Excellent low light performance on cloudy days, mornings and evenings

- Advanced surface treatment
- Back surface field
- Specialty silicon

Maximize limited space with top end efficiency

- Up to 96 sq ft power density
- Highly efficient solar cells for space saving production of high operating temperatures

Highly reliable due to stringent quality control

- From 1000 hours mean life to 10+ years
- Highly reliable glass and bonded interface requirements
- IPPC UL double inspection
- IPPC UL double inspection

Certified to withstand the most challenging environmental conditions

- IPPC UL double inspection
- IPPC UL double inspection
- IPPC UL double inspection

UNUSUAL PERFORMANCE WARRANTY

Comprehensive Products And System Certifications

- IPPC UL double inspection
- IPPC UL double inspection
- IPPC UL double inspection

60 CELL MONOCRYSTALLINE MODULE
275-305W POWER OUTPUT RANGE
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- Highly efficient solar cells for space saving production of high operating temperatures

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UNUSUAL PERFORMANCE WARRANTY

Comprehensive Products And System Certifications

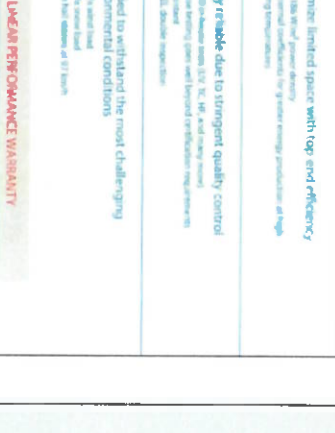
- IPPC UL double inspection
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- IPPC UL double inspection

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 WASHINGTON, DC 20037

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USE FASTENERS SUITABLE TO MOUNTING SURFACE BEING ATTACHED. USE SCREWS FOR WOOD, NUTS (LOCKING) AND BOLTS FOR METAL STRUCTURES.

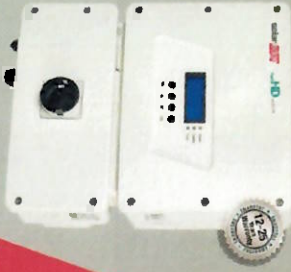
MOUNT A ONE CENTER UNLESS OTHERWISE NOTED OR REQUIRED TO CONNECT TO STRUCTURAL MEMBERS.

INVERTERS



SolarEdge Single Phase Inverters for North America

SE3000H-US / SE3000H-US / SE3000H-US / SE6000H-US / SE7000H-US / SE10000H-US / SE1400H-US



Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Superior energy efficiency
- Field replaceable inverter for longer strings
- Integrated real time protection and surge protection for NEC 2014 and 2012, per article 690.11 and 690.12
- UL1741 SA certified for CPUC, NYS 21 and Nevada, &
- IEC 62109 certified
- IEC 60321-1 certified for fire retardant equipment
- Built on modular-level components
- Onboard, non-volatile, non-volatile memory
- Onboard, non-volatile, non-volatile memory
- For per-unit production and commissioning with multi-phase sites and built on VMP1 (SE1000H-US, SE1400H-US)



Single Phase Inverters for North America

SE3000H-US / SE3000H-US / SE3000H-US / SE3000H-US / SE3000H-US / SE3000H-US / SE3000H-US / SE3000H-US / SE3000H-US

OUTPUT	SE3000H-US	SE3000H-US	SE3000H-US	SE3000H-US	SE3000H-US	SE3000H-US	SE3000H-US	SE3000H-US	SE3000H-US	
Rated Power Output	3000	3000	3000	3000	3000	3000	3000	3000	3000	
Max. A. Power Output	3000	3000	3000	3000	3000	3000	3000	3000	3000	
AC Output Voltage (VAC)	120	120	120	120	120	120	120	120	120	
AC Output Voltage Range (VAC)	100-130	100-130	100-130	100-130	100-130	100-130	100-130	100-130	100-130	
AC Output Frequency (Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	
AC Output Frequency Range (Hz)	45-65	45-65	45-65	45-65	45-65	45-65	45-65	45-65	45-65	
AC Output Phase	Single	Single	Single	Single	Single	Single	Single	Single	Single	
AC Output Power Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
AC Output Power Factor Range	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
AC Output Efficiency	95%	95%	95%	95%	95%	95%	95%	95%	95%	
AC Output Efficiency Range	90%	90%	90%	90%	90%	90%	90%	90%	90%	
AC Output THD	5%	5%	5%	5%	5%	5%	5%	5%	5%	
AC Output THD Range	3%	3%	3%	3%	3%	3%	3%	3%	3%	
AC Output Protection	Overcurrent, Overvoltage, Undervoltage, Overtemperature, Short Circuit, Ground Fault, Reverse Polarity, DC Voltage, AC Voltage, AC Frequency, AC Phase, AC Power Factor, AC Output Power, AC Output Efficiency, AC Output THD, AC Output Protection	Overcurrent, Overvoltage, Undervoltage, Overtemperature, Short Circuit, Ground Fault, Reverse Polarity, DC Voltage, AC Voltage, AC Frequency, AC Phase, AC Power Factor, AC Output Power, AC Output Efficiency, AC Output THD, AC Output Protection	Overcurrent, Overvoltage, Undervoltage, Overtemperature, Short Circuit, Ground Fault, Reverse Polarity, DC Voltage, AC Voltage, AC Frequency, AC Phase, AC Power Factor, AC Output Power, AC Output Efficiency, AC Output THD, AC Output Protection	Overcurrent, Overvoltage, Undervoltage, Overtemperature, Short Circuit, Ground Fault, Reverse Polarity, DC Voltage, AC Voltage, AC Frequency, AC Phase, AC Power Factor, AC Output Power, AC Output Efficiency, AC Output THD, AC Output Protection	Overcurrent, Overvoltage, Undervoltage, Overtemperature, Short Circuit, Ground Fault, Reverse Polarity, DC Voltage, AC Voltage, AC Frequency, AC Phase, AC Power Factor, AC Output Power, AC Output Efficiency, AC Output THD, AC Output Protection	Overcurrent, Overvoltage, Undervoltage, Overtemperature, Short Circuit, Ground Fault, Reverse Polarity, DC Voltage, AC Voltage, AC Frequency, AC Phase, AC Power Factor, AC Output Power, AC Output Efficiency, AC Output THD, AC Output Protection	Overcurrent, Overvoltage, Undervoltage, Overtemperature, Short Circuit, Ground Fault, Reverse Polarity, DC Voltage, AC Voltage, AC Frequency, AC Phase, AC Power Factor, AC Output Power, AC Output Efficiency, AC Output THD, AC Output Protection	Overcurrent, Overvoltage, Undervoltage, Overtemperature, Short Circuit, Ground Fault, Reverse Polarity, DC Voltage, AC Voltage, AC Frequency, AC Phase, AC Power Factor, AC Output Power, AC Output Efficiency, AC Output THD, AC Output Protection	Overcurrent, Overvoltage, Undervoltage, Overtemperature, Short Circuit, Ground Fault, Reverse Polarity, DC Voltage, AC Voltage, AC Frequency, AC Phase, AC Power Factor, AC Output Power, AC Output Efficiency, AC Output THD, AC Output Protection	Overcurrent, Overvoltage, Undervoltage, Overtemperature, Short Circuit, Ground Fault, Reverse Polarity, DC Voltage, AC Voltage, AC Frequency, AC Phase, AC Power Factor, AC Output Power, AC Output Efficiency, AC Output THD, AC Output Protection



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Job ID: IP-18-08
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APPROVED
Historic Preservation Commission

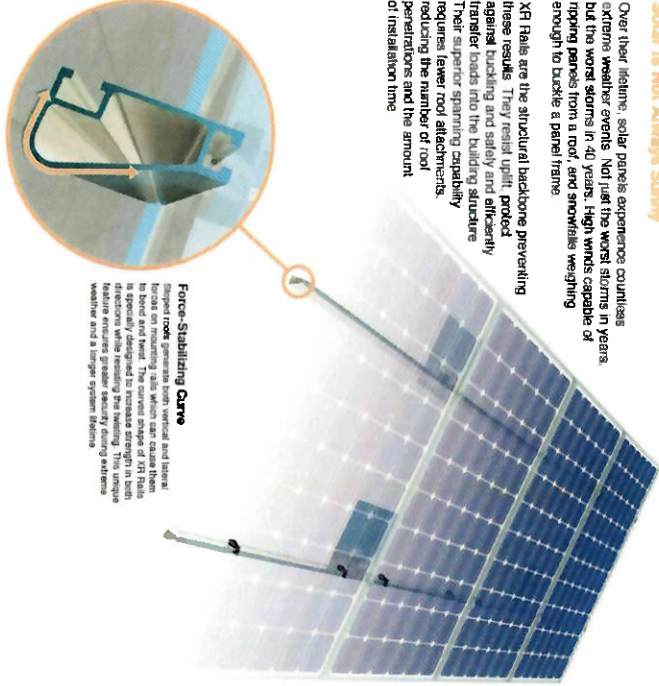
MOUNT ACCORDING TO MOUNTING INSTRUCTIONS AND CONSTRUCT RAIL DIRECTIONS
 USE FASTENERS SUITABLE TO SURFACE BEING ATTACHED. USE SCREWS FOR WOOD, NUTS (LOCK NUT) AND BOLTS FOR METAL STRUCTURES
 MOUNT 4 CY CENTER UNLESS OTHERWISE NOTED OR REQUIRED TO CONNECT TO STRUCTURAL MEMBERS

IRONRIDGE

Solar is Not Always Sunny

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

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



Force-Stabilizing Curve

Slope-roof generates both vertical and lateral loads on mounting rails which can cause them to buckle. XR Rail's force-stabilizing curve is specially designed to resist buckling in both directions while resisting the loading. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

- XR Rails are compatible with Flat-Roof and roof attachments
- IronRidge offers a range of tie-rod options for flat roof mounting applications

Corrosion-Resistant Materials

All XR Rails are made of anodized aluminum alloy. Their powder-coat anodized finish protects against corrosion and structural damage, while also providing a more attractive appearance.

XR Rail Family

Light Rail

XR Rail Family

Heavy Rail

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads while minimizing material costs. Depending on your location, there is an XR Rail to match.



XR10

- XR10 is a light, low-profile mounting rail designed for use in low-wind regions. It features a low profile while retaining light load capacity.
- 8 spanning capability
- Medium load capacity
- Clear anodized finish
- Internal splices available



XR100

- XR100 is the ultimate residential mounting rail, designed for use in moderate wind and snow conditions. It also allows mounting spans up to 8 feet.
- 8 spanning capability
- Heavy load capacity
- Clear & back-anodized finish
- Internal splices available



XR1000

- XR1000 is a heavyweight heavy-duty mounting rail. It's built to handle the most demanding conditions, with more for commercial applications.
- 12 spanning capability
- Extreme load capacity
- Clear anodized finish
- Internal splices available

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following codes: ASCE 7-10, Flood Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 50 ft. Visit ironridge.com for detailed span tables and certifications.

Load	Rail Span				
	5'-0"	6'-0"	8'-0"	10'-0"	12'-0"
Show (psf)	100				
Wind (psf)	120				
None	140	XR10			
	160		XR100		
	100			XR1000	
10-20	120				
	140				
	180				
	100				
30	160				
	100				
40	160				
50-70	160				
80-90	160				

Approved by Historic Preservation Commission

REV	DATE	BY	DATE
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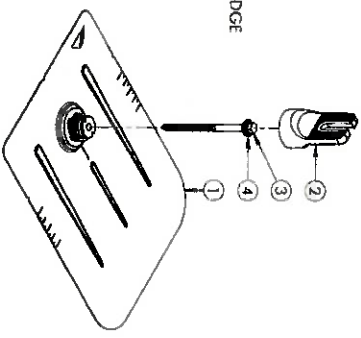
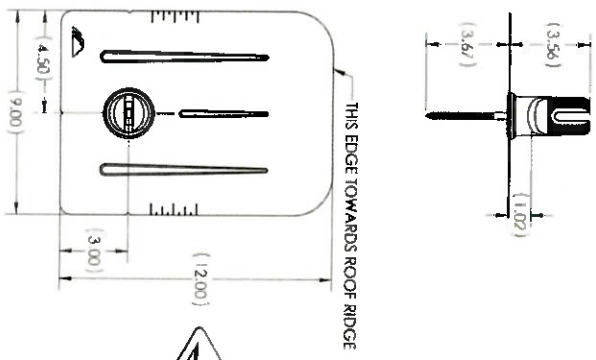
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FlashFoot 2

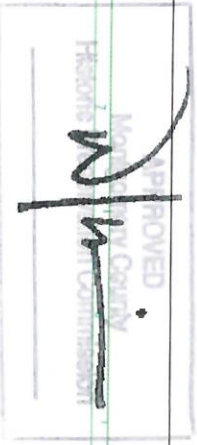
MOUNT ACCORDING TO MOUNTING AND CONSTRUCTION INSTRUCTIONS AND CONSTRUCTION DETAILS. USE FASTENERS SUITABLE TO SURFACE BEING ATTACHED. LAG SCREWS FOR WOOD, NUTS, LOCKWASHERS AND BOLTS FOR METAL STRUCTURES. MOUNT 4" ON CENTER UNLESS OTHERWISE SPECIFIED OR REQUIRED TO CONNECT TO STRUCTURAL MEMBERS.



NO.	PART NUMBER	DESCRIPTION	QTY.
1	FM-100-006	ASSY. FLASHING, MILL	1
2	FM-100-008	ASSY. CAP. MILL	1
3	23-318-475LGF	SCREW, LAG, HEX, 5/16, W/ CUSTOM HEAD, 7/16 HEX W/ FLANGE 475L	1
4	25-3102-0005	WASHER, EPDM BACKED	1

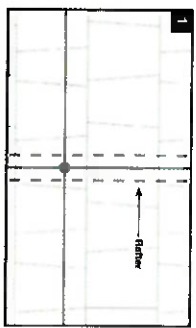
*Kit of materials shown on this page FlashFoot 2 assembly

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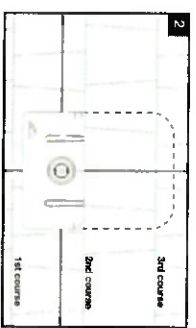


Installation

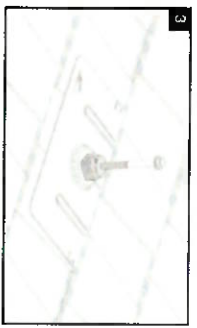
Tools Required: tape measure, chalk line, stud finder, roofing bar, caulking gun, driver with 1/4" bit and 7/16" hex socket.



1. Locate rafters and stud vertical and horizontal lines to mark flashing locations. Drill 1/4" pilot holes, then fit with roofing manufacturer's approved sealant.



2. Slide flashing, between 1st and 2nd course so the top is at least 3/4" above the edge of the 3rd course and the bottom is above the edge of the 1st course.



3. Line up pilot hole with flashing hole and insert lag bolt with bonded washer through flashing. Tighten lag bolt until fully seated.



4. Place cap onto flashing in desired orientation for EMW or NS rafter and rotate 180 degrees. FlashFoot 2 is now installed and ready for IronRidge XR Rafters.



5. Attach rafter to either side of the open side using bonding hardware. Level rafter at desired height, then torque to 250 in-ft-lbs (21 ft-lbs).

Structural Certification
Designed and Certified for Compliance with the International Building Code & ASCE 7-10
Water Seal Flashing
Water Sealing Tested to UL 441 Section 27 "Rain, Tear" and TMS 1003S "Wind Driven Rain Test" by Intertek. Intertek Report No. 15175 and 15176.
UL 2700
See Intertek's Flash Mount Installation Manual for full range of applications.

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REV.	DATE	BY	DATE
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