

MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION
STAFF REPORT

Address:	7110 Sycamore Ave., Takoma Park	Meeting Date:	8/15/18
Resource:	Contributing Resource Takoma Park Historic District	Report Date:	8/8/18
Applicant:	Joan Marsh	Public Notice:	8/1/18
Review:	HAWP	Tax Credit:	n/a
Case Number:	37/03-18DDD	Staff:	Dan Bruechert
Proposal:	Roof Solar Panel Installation		

STAFF RECOMMENDATION

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

ARCHITECTURAL DESCRIPTION

SIGNIFICANCE: Contributing to the Takoma Park Historic District
STYLE: Bungalow
DATE: c.1910-20

The subject property is a one-story side gable bungalow with shiplap siding.

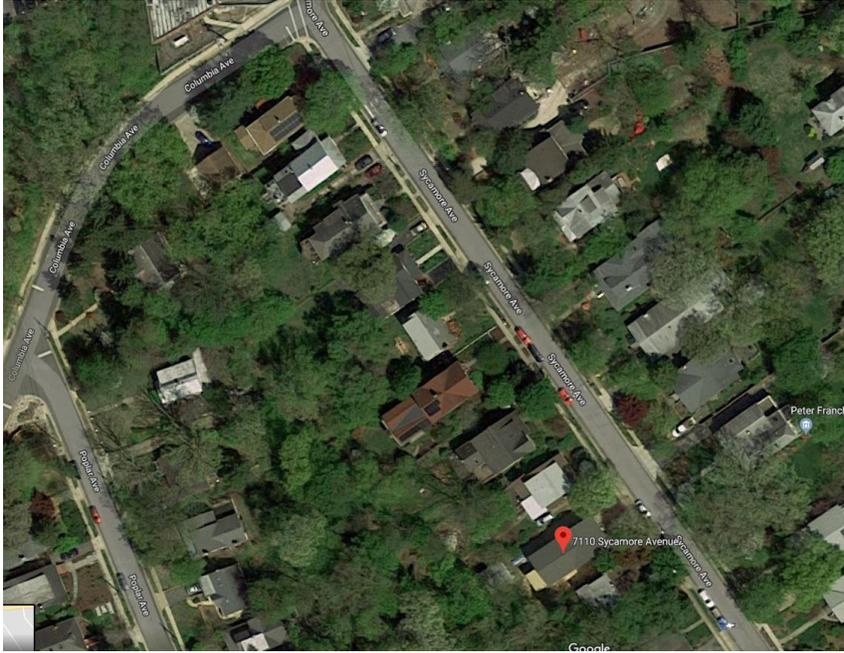


Figure 1: 7110 Sycamore showing the rear addition under construction.

In May 2017, the HPC approved a significant rehabilitation project including the construction of a rear addition.

PROPOSAL

The applicant proposes to install a roof solar array on the rear gable roof addition.

APPLICABLE GUIDELINES

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

Takoma Park Historic District Design Guidelines

There are two very general, broad planning and design concepts which apply to all categories. These are:

The design review emphasis will be restricted to changes that are at all visible from the public right-of-way, irrespective of landscaping or vegetation (it is expected that the majority of new additions will be reviewed for their impact on the overall district), and,

The importance of assuring that additions and other changes to existing structures act to reinforce and continue existing streetscape, landscape, and building patterns rather than to impair the character of the district.

Contributing Resources should receive a more lenient review than those structures that have been classified as Outstanding. This design review should emphasize the importance of the resource to the overall streetscape and its compatibility with existing patterns rather than focusing on a close scrutiny of architectural detailing. In general, however, changes to Contributing Resources should respect the predominant architectural style of the resource. As stated above, the design review emphasis will be restricted to changes that are *at all visible from the public right-of-way*, irrespective of landscaping or vegetation.

Some of the factors to be considered in reviewing HAWPs on Contributing Resources include:

All exterior alterations, including those to architectural features and details, should be generally consistent with the predominant architectural style and period of the resource and should preserve the predominant architectural features of the resource; exact replication of existing details and features is, however, not required

Minor alterations to areas that do not directly front on a public right-of-way such as vents, metal stovepipes, air conditioners, fences, skylights, etc. – should be allowed as a matter of course; alterations to areas that do not directly front on a public way-of-way which involve the replacement of or damaged to original ornamental or architectural features are discouraged, but may be considered and approved on a case-by-case basis

Some non-original building materials may be acceptable on a case-by-case basis; artificial siding on areas visible to the public right-of-way is discouraged where such materials would replace or damage original building materials that are in good condition

All changes and additions should respect existing environmental settings, landscaping, and patterns of open space.

Montgomery County Code, Chapter 24A Historic Resources Preservation

(b) The commission shall instruct the director to issue a permit, or issue a permit subject to such conditions as are found to be necessary to insure conformity with the purposes and requirements of this chapter, if it finds that:

- (1) The proposal will not substantially alter the exterior features of an historic site or historic resource within an historic district; or
- (2) The proposal is compatible in character and nature with the historical, archeological, architectural or cultural features of the historic site or the historic district in which an historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter;

Secretary of the Interior's Standards for Rehabilitation

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, space and spatial relationships that characterize a property will be avoided.
5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportions, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

STAFF DISCUSSION

The applicant proposes to install 16 (sixteen) roof-mounted solar panels on the northwest side of the rear gable addition. Staff finds this proposal adheres to the general guidance for the historic district and supports approval.

The proposed solar array contains 16 (sixteen) 65" × 37" (sixty-five inch by thirty-seven inch) panels arranged in a 4×4 (four by four) arrangement. The panels will be installed on the northwest slope of the rear gable addition. The wiring for the solar panels will be run to the interior of the house and will not be visible from the public right-of-way. The majority of the panels will not be visible from the surrounding district; however, the lowest row of panels will likely be visible from the public right-of-way to the right of the house.

As the proposal will be installed on a non-historic addition to the building, Staff finds that it will not impact the historic fabric of the house complying with Standards 9 and 10. The solar array will be installed toward the rear of the house to minimize its impact on the streetscape and will not have a significant impact on the surrounding district or any of the house's historic features, per the *Design Guidelines*. Staff supports approval of this HAWP.

STAFF RECOMMENDATION

Staff recommends the HPC **approve** the HAWP application; and with the general condition applicable to all Historic Area Work Permits that **the applicant will present 3 permit sets of drawings to HPC staff for review and stamping prior to submission for permits (if applicable)**. After issuance of the Montgomery County Department of Permitting Services (DPS) permit, the applicant will arrange for a field inspection by calling the DPS Field Services Office at 240-777-6370 prior to commencement of work and not more than two weeks following completion of work.



HISTORIC PRESERVATION COMMISSION
301/563-3400

APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Email: support@ipsunpower.com Contact Person: Micah Feigelson
Daytime Phone No.: 814-826-4750

Tax Account No.: _____
Name of Property Owner: Joan Marsh Daytime Phone No.: 301-346-9790
Address: 7110 Sycamore Ave., Takoma Park, MD, 20912
Street Number City Street Zip Code
Contractor: Epsun Power Phone No.: 866-484-7786
Contractor Registration No.: 114192
Agent for Owner: Micah Feigelson Daytime Phone No.: 814-826-4750

LOCATION OF BUILDING/PREMISE

House Number: 7110 Street: Sycamore Avenue
Town/City: Takoma Park Nearest Cross Street: Sycamore Ave & Columbia Av.
Lot: _____ Block: _____ Subdivision: _____
Liber: _____ Folio: _____ Parcel: _____

E 91 9h 8

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CHECK ALL APPLICABLE: Construct Extend Alter/Renovate Move Install Wreck/Raze Revision Repair Revocable

CHECK ALL APPLICABLE: A/C Slab Room Addition Porch Deck Shed Solar Fireplace Woodburning Stove Fence/Wall (complete Section 4) Single Family Other: _____

1B. Construction cost estimate: \$ 4752.05

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

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. Type of sewage disposal: 01 WSSC 02 Septic 03 Other: _____
2B. Type of water supply: 01 WSSC 02 Well 03 Other: _____

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. Height _____ feet _____ inches
3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:
 On party line/property line Entirely on land of owner On public right of way/easement

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

[Signature] Date: 7/25/2018
Signature of owner or authorized agent Date

Approved: _____ For Chairperson, Historic Preservation Commission
Disapproved: _____ Signature: _____ Date: _____
Application/Permit No.: _____ Date Filed: _____ Date Issued: _____

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

1. **WRITTEN DESCRIPTION OF PROJECT**

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

The property is a residential house that is undergoing a permitted addition in the backyard and renovations by the owner. The solar system will be built on the NW-facing roof of the addition. The historical front of the house will not be affected by the solar system, as seen on page 2 of the attached plans.

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

This is a 4.8KW rooftop solar installation of 16 black panels on the NW-facing backyard portion of the roof. The roof addition is a permitted construction by the property owner. The wiring conduit and inverter will be installed inside the house, and will not be seen from the historical front of the property.

2. **SITE PLAN**

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

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

3. **PLANS AND ELEVATIONS**

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

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

4. **MATERIALS SPECIFICATIONS**

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

5. **PHOTOGRAPHS**

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

6. **TREE SURVEY**

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

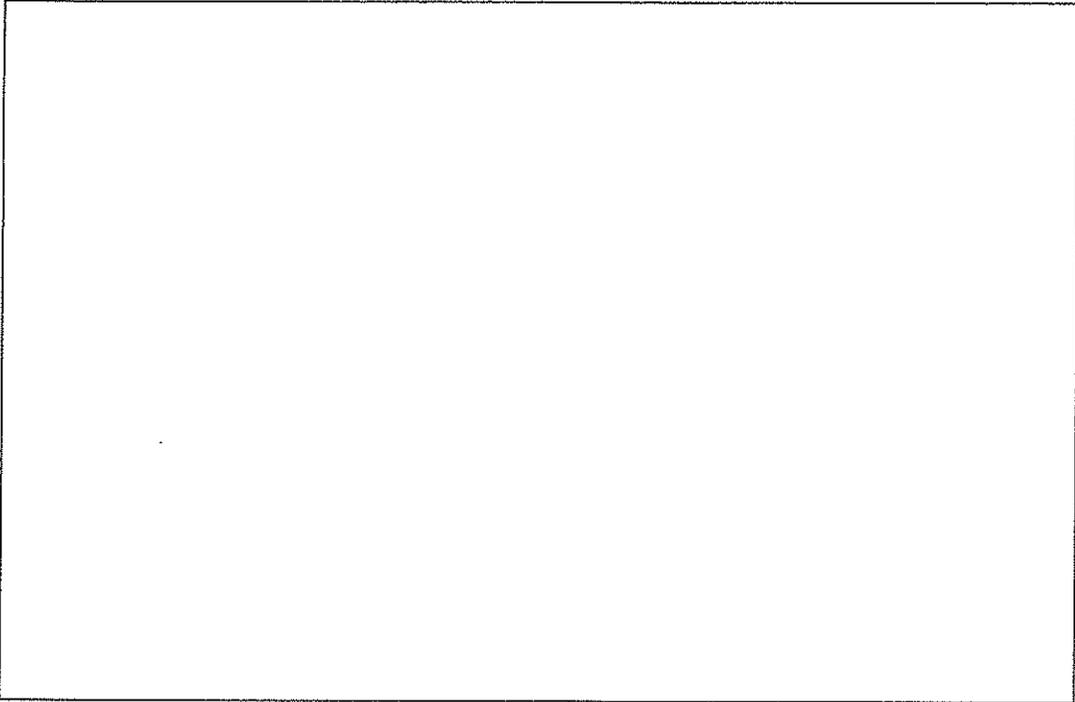
7. **ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

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

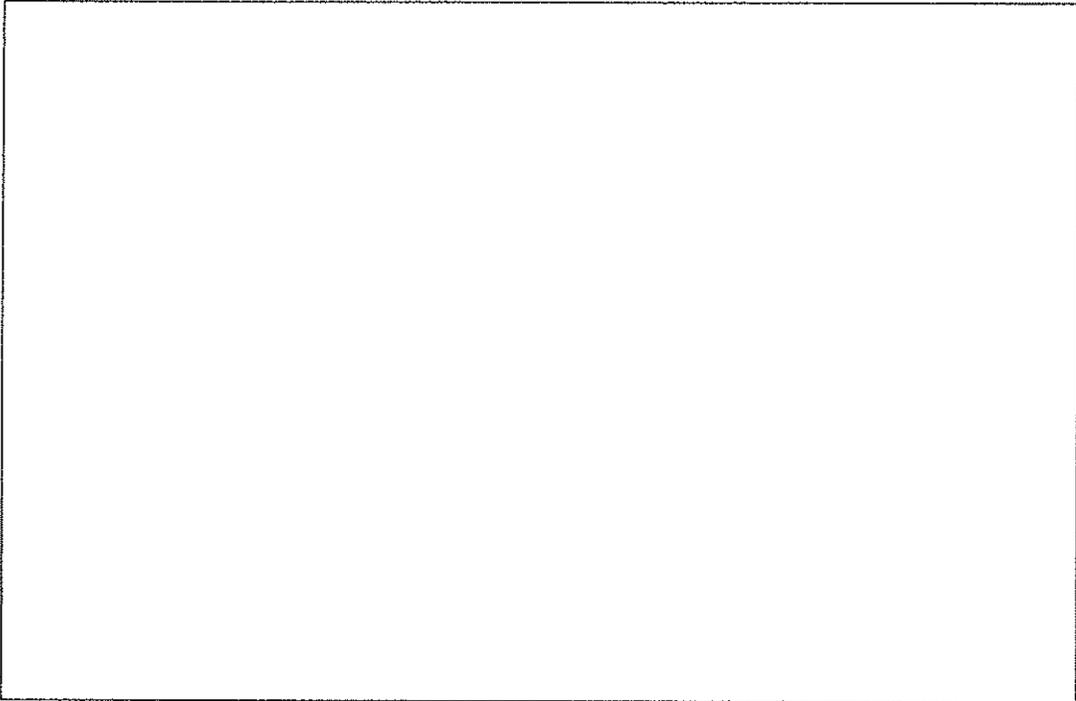
HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFYING
 [Owner, Owner's Agent, Adjacent and Confronting Property Owners]

Owner's mailing address	Owner's Agent's mailing address
Joan Marsh 328 Lincoln Avenue Takoma Park, MD, 20912	Ipson Power 9504 Poplar Leaf Court Fairfax, VA, 22031
Adjacent and confronting Property Owners mailing addresses	
Thomas Lalonde 7112 Sycamore Avenue Takoma Park, MD, 20912	James Meen 7113 Sycamore Avenue Takoma Park, MD, 20912
Joan Marsh 7110 Sycamore Avenue Takoma Park, MD, 20912	Peter Franchot Trustee 7111 Sycamore Avenue Takoma Park, MD, 20912
Steven Shofar 7108 Sycamore Avenue Takoma Park, MD, 20912	Paul Wapner 7107 Sycamore Avenue Takoma Park, MD, 20912

Existing Property Condition Photographs (duplicate as needed)



Detail: _____



Detail: _____

Applicant: _____

Page: __



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 .

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 :

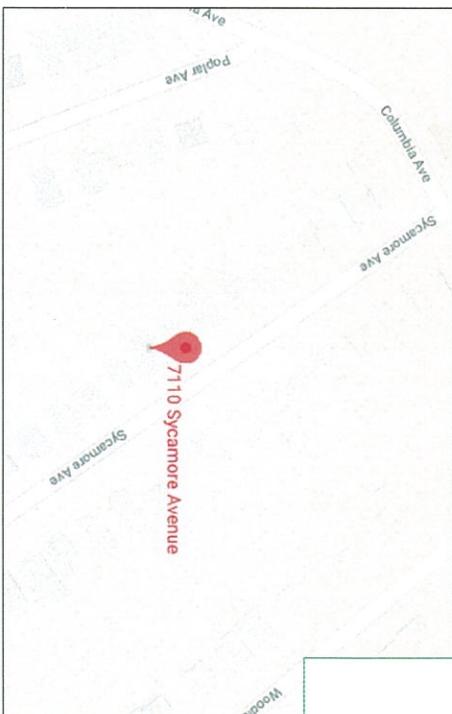
- BUILDING : IBC 2012, DCMR, 12-2013, ASCE 7-10, NDS2012
- ELECTRICAL : NEC 2011
- FIRE : NFPA 2012

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

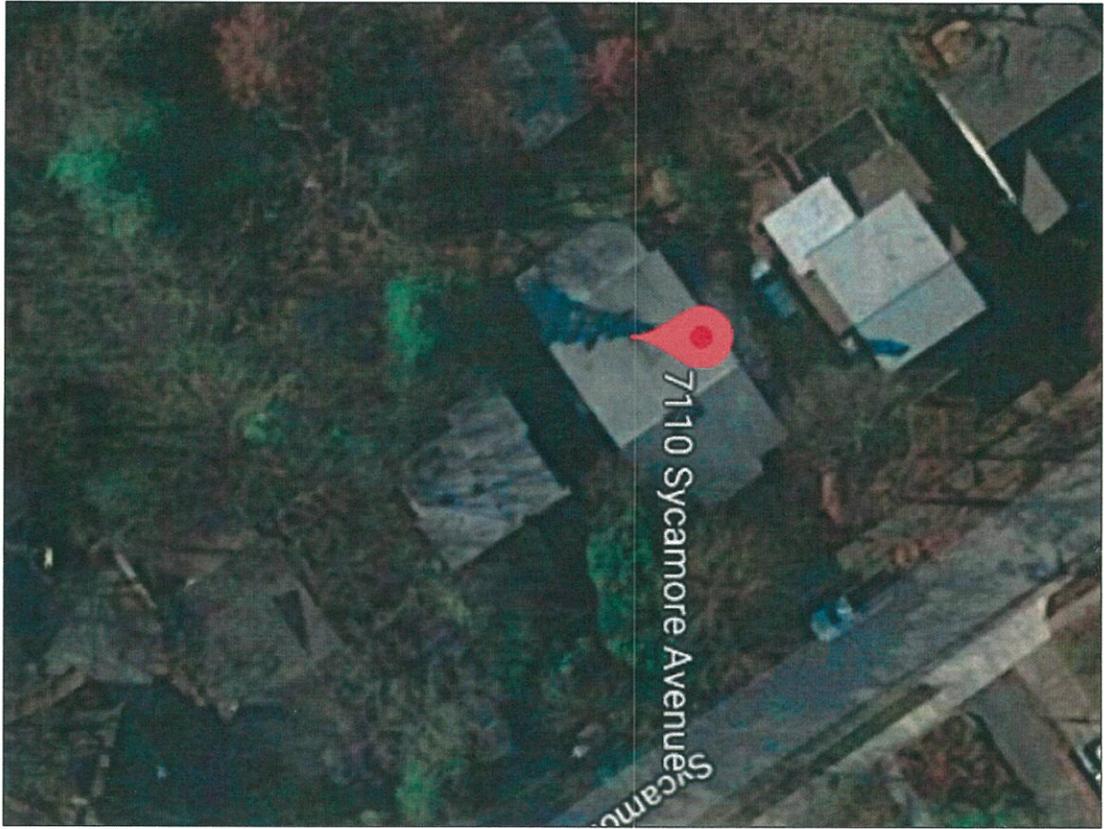
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OWNER:
 OWEN PHILBIN
 7110 SYCAMORE AVE,
 TAKOMA PARK, MD 20912

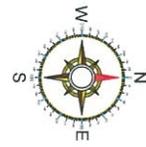
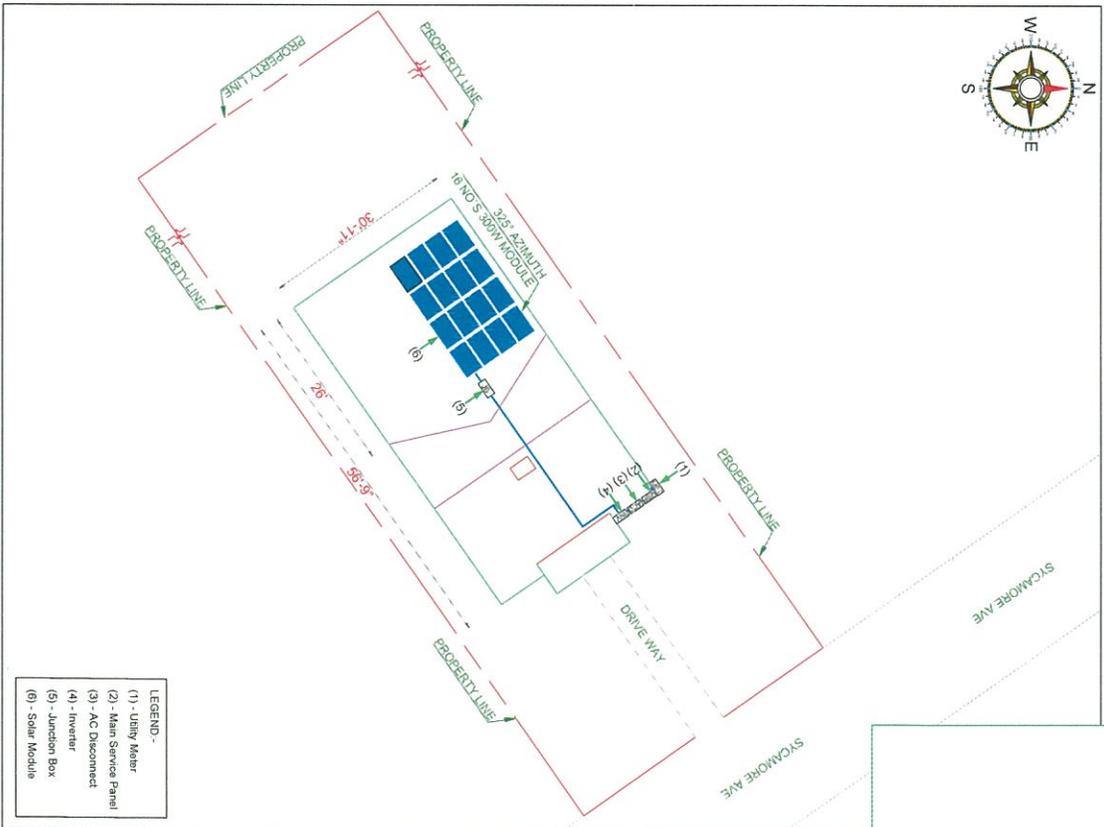
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Job ID : IP-1608
 Sheet No : G001
 Page No : 01 of 14



PROPERTY MAP



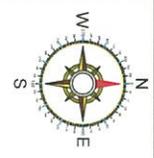
- LEGEND -
- (1) - Utility Meter
 - (2) - Main Service Panel
 - (3) - AC Disconnect
 - (4) - Inverter
 - (5) - Junction Box
 - (6) - Solar Module

Job ID	IP-19-08
Sheet No	Z001
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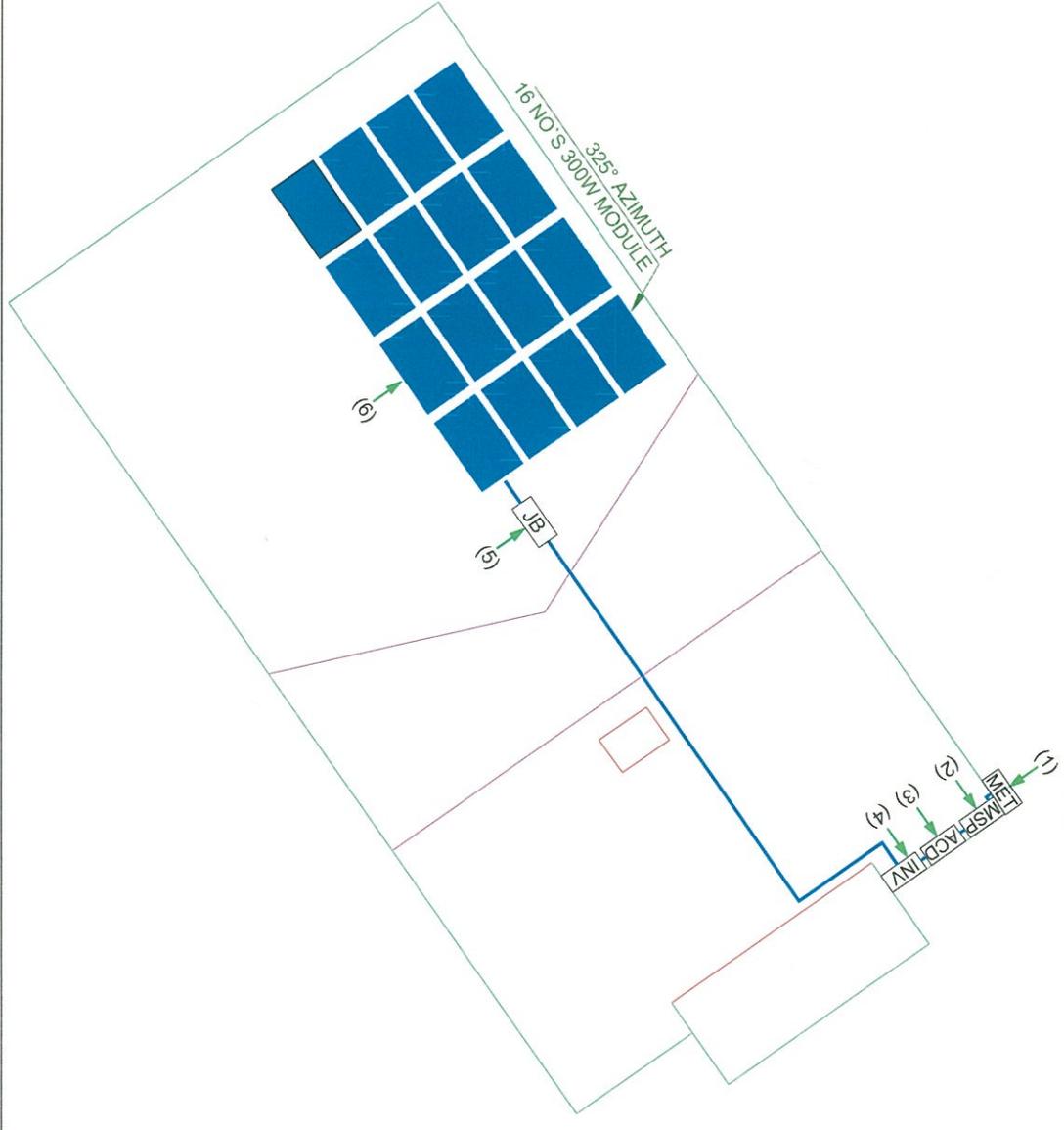
OWNER:
OWEN PHILBIN
7110 SYCAMORE AVE,
TAKOMA PARK, MD 20912

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



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

PV LAYOUT



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

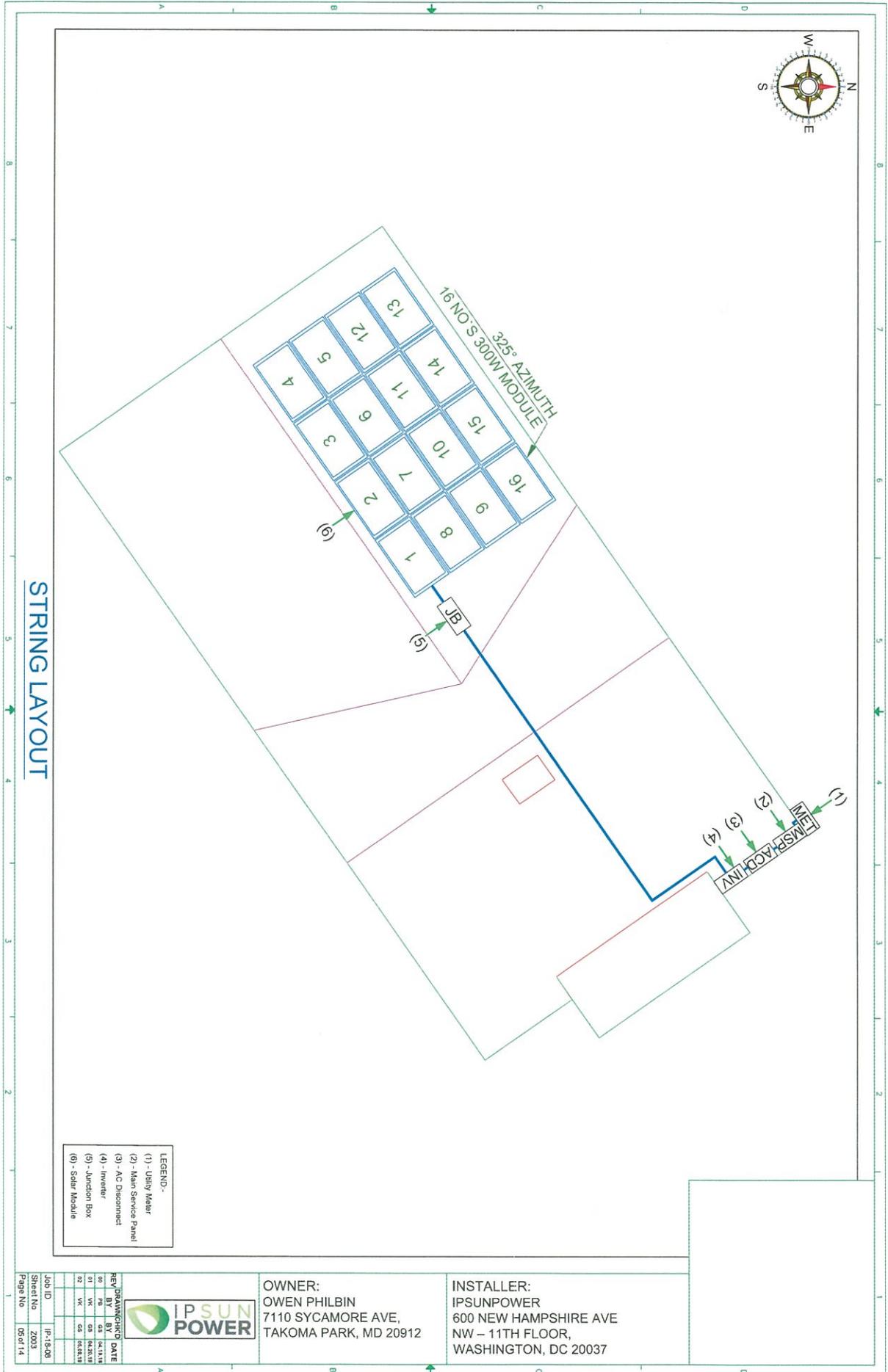
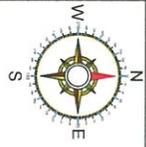
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03	04.23.14		

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 Sheet No: 2002
 Page No: 04 of 14



OWNER:
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 7110 SYCAMORE AVE,
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STRING LAYOUT

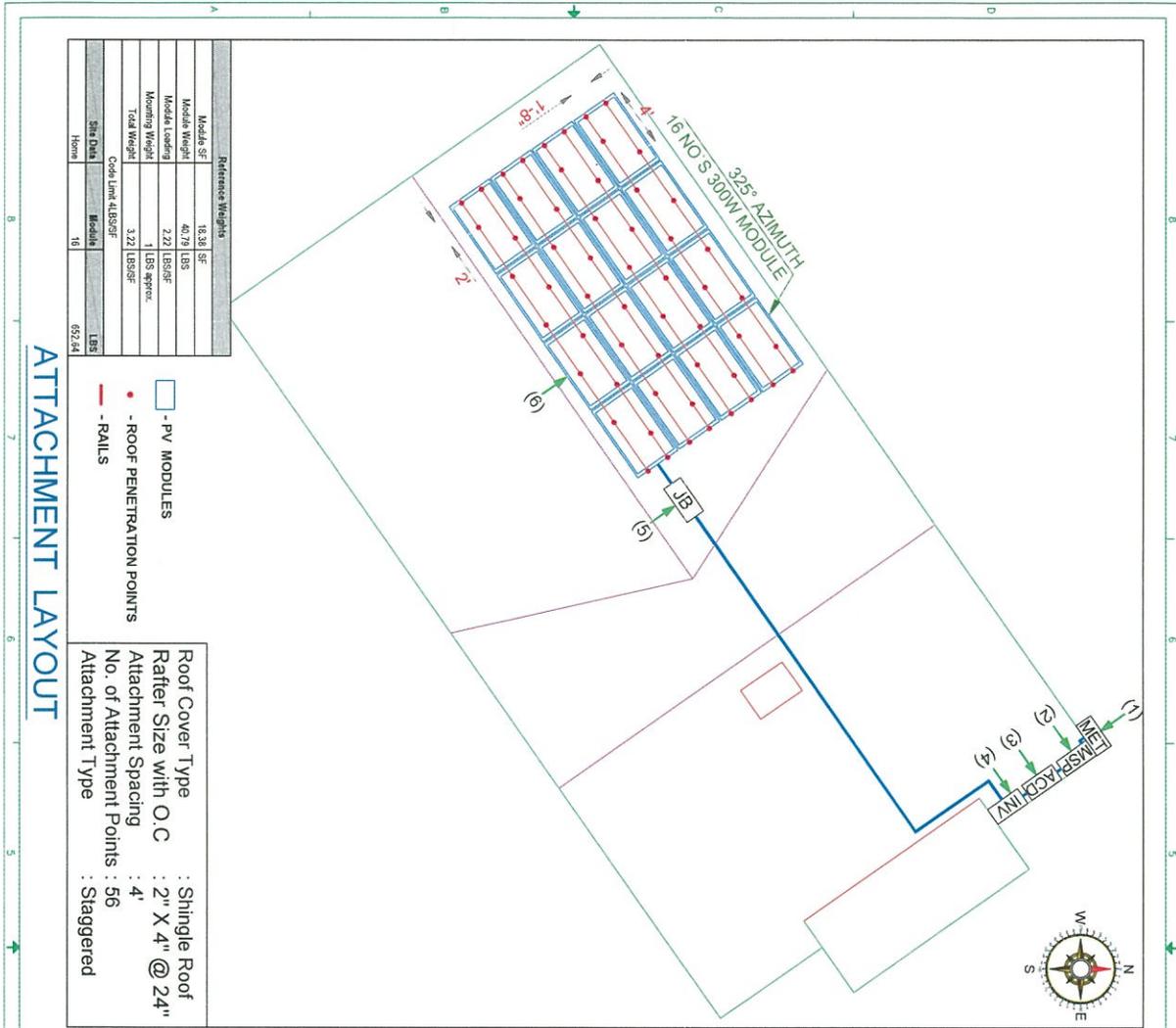
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 - (2) - Main Service Panel
 - (3) - AC Disconnect
 - (4) - Inverter
 - (5) - Junction Box
 - (6) - Solar Module

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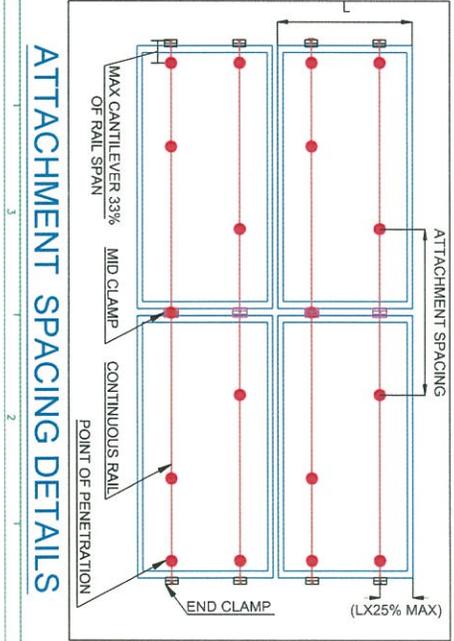
INSTALLER:
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 WASHINGTON, DC 20037



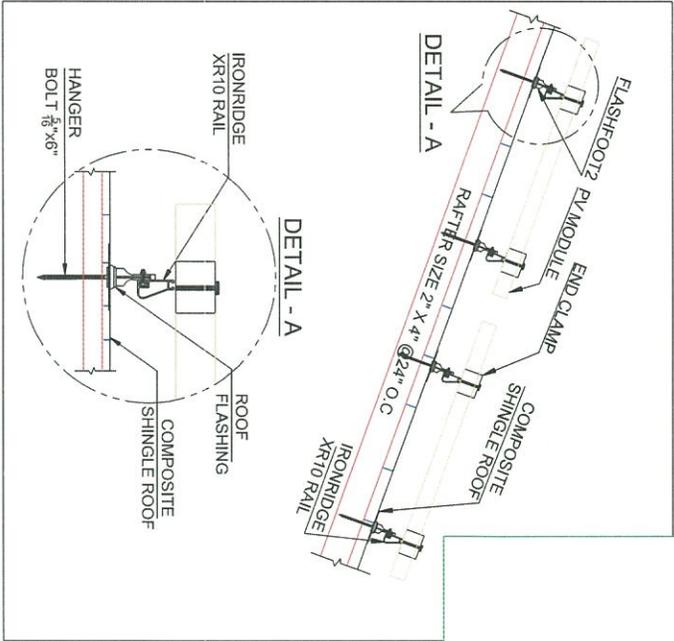
Reference Weights	
Module SF	16.34 SF
Module Weight	40.79 LBS
Module Loading	2.27 LBS/SF
Mounting Weight	1 LBS approx.
Total Weight	3.27 LBS/SF
Code Limit 4LBS/SF	
Site Data	Module
Home	16
	LBS
	652.64

ATTACHMENT LAYOUT

- - PV MODULES
 - - ROOF PENETRATION POINTS
 - - RAILS
- Roof Cover Type : Shingle Roof
 Rafter Size with O.C : 2" X 4" @ 24"
 Attachment Spacing : 4'
 No. of Attachment Points : 56
 Attachment Type : Staggered



ATTACHMENT SPACING DETAILS



ATTACHMENT DETAILS

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Page No	06 of 14

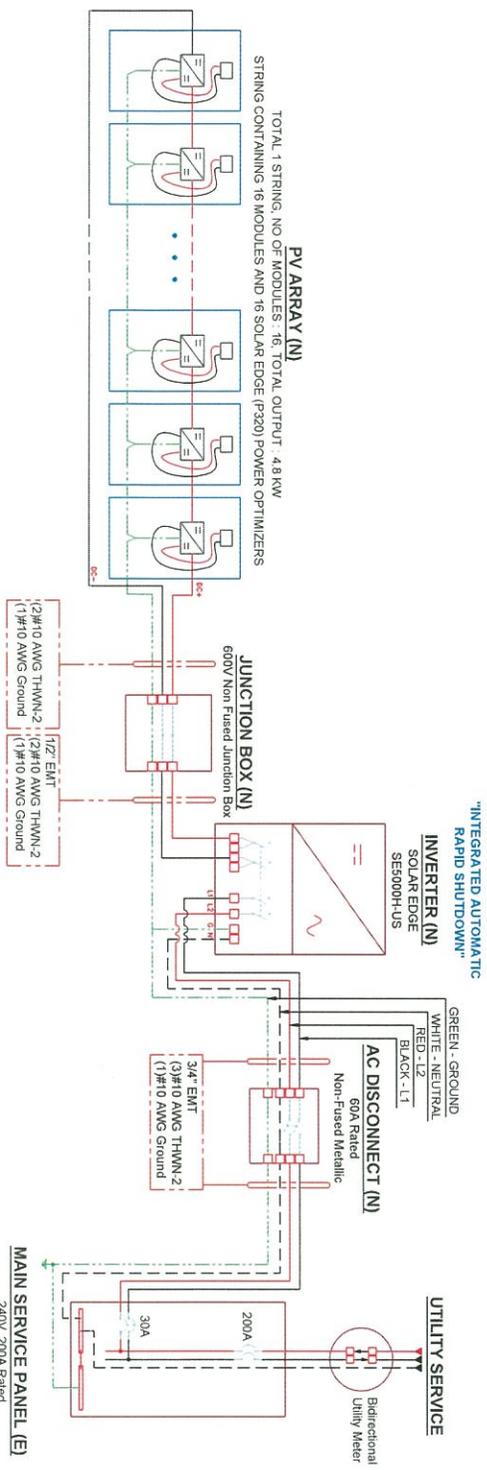


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INSTALLER:
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 600 NEW HAMPSHIRE AVE
 NW - 11TH FLOOR,
 WASHINGTON, DC 20037

4.8 KW DC PROPOSED PV SYSTEM THREE LINE DIAGRAM

(N)NEW
(E)EXISTING



REV	DATE	BY	CHK
01	11/14/14	GS	PKR
02	05/14/14	GS	PKR
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OWNER:
OWEN PHILBIN
7110 SYCAMORE AVE,
TAKOMA PARK, MD 20912

INSTALLER:
IP SUN POWER
600 NEW HAMPSHIRE AVE
NW - 11TH FLOOR,
WASHINGTON, DC 20037

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

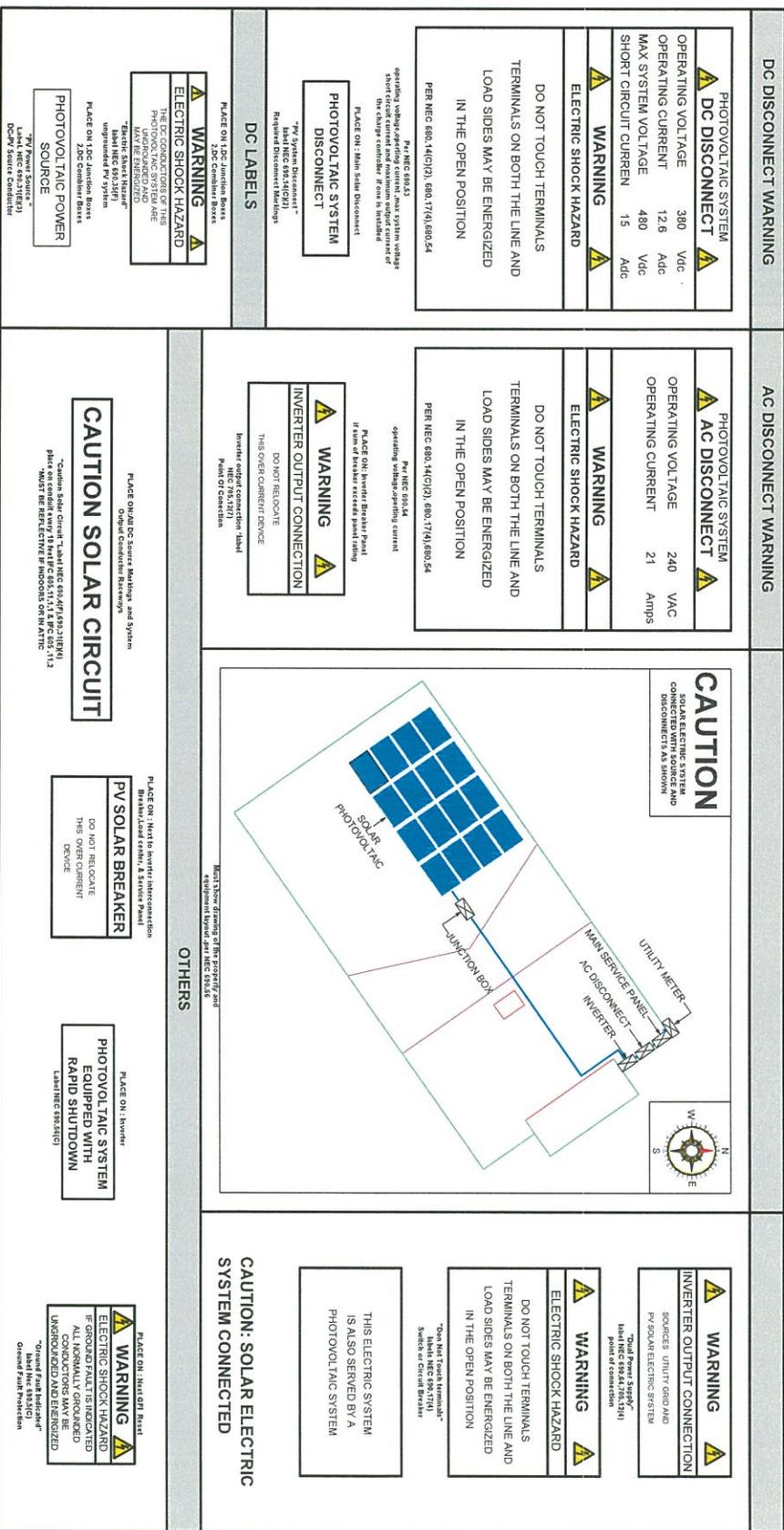
SYSTEM LABELING DETAIL:

All Plaques 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 lettering a minimum of 3/8" in height on plastic engraved plaques. 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, 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 roof/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

PHOTOVOLTAIC 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 690.14(C)(2), 690.17(G), 690.54

operating voltage, photovoltaic system with short circuit current and maximum output current of the charge controller. If one is included

PLACE ON: Main Side Disconnect

PHOTOVOLTAIC SYSTEM DISCONNECT

PER SYSTEM REQUIREMENTS
THIS LABEL IS REQUIRED
IF THE SYSTEM IS A
PHOTOVOLTAIC SYSTEM
REQUIRE DISCONNECT LABELINGS

PLACE ON: 12C Junction Boxes
23C Combiner Boxes

WARNING ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNINSULATED AND SHOULD BE IDENTIFIED

Label NEC 690.54(F)

PHOTOVOLTAIC POWER SOURCE

UPGRADED PV SYSTEM
PLACE ON: 12C Junction Boxes
23C Combiner Boxes

Label NEC 690.54(F)

AC DISCONNECT WARNING

PHOTOVOLTAIC 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 690.14(C)(2), 690.17(G), 690.54

operating voltage, operating current if name of breaker exceeds panel rating

PLACE ON: Inverter Breaker Panel

WARNING INVERTER OUTPUT CONNECTION

DO NOT RELOCATE THIS OVER CURRENT DEVICE

Handle, cabinet, connections, label

Label NEC 690.54(F)

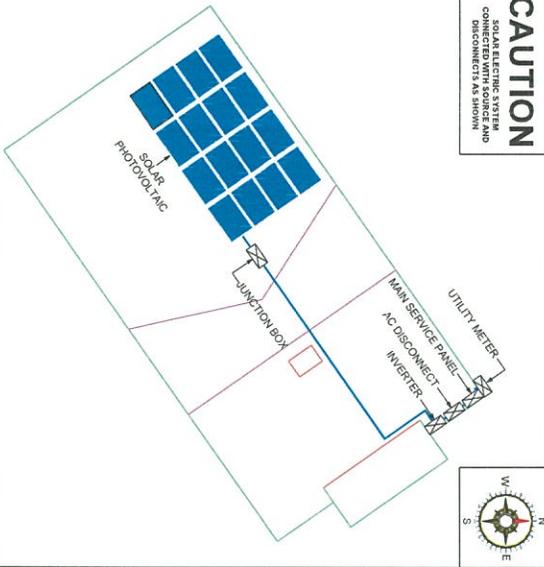
PLACE ON: 12C Junction Boxes
23C Combiner Boxes

Label NEC 690.54(F)

CAUTION SOLAR CIRCUIT

Caution Solar Circuit Label NEC 690.47(4)(2)(b)(4) MUST BE REFLECTIVE IF MOUNTED ON A WALL

CAUTION SOLAR ELECTRIC SYSTEM AND DISCONNECTS AS SHOWN



WARNING INVERTER OUTPUT CONNECTION

SOURCES: UTILITY GRID AND PHOTOVOLTAIC SYSTEM

Label NEC 690.54(F)(5)(1)

point of connection

WARNING ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS
TERMINALS ON BOTH THE LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

Label NEC 690.54(F)(5)(1)

point of connection

THIS ELECTRIC SYSTEM IS ALSO SERVED BY A PHOTOVOLTAIC SYSTEM

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

WARNING ELECTRIC SHOCK HAZARD

IF GROUND FAULTS INDICATED ALL NORMALLY GROUNDED UNINSULATED AND ENERGIZED

Label NEC 690.54(C)

Ground Fault Indicator Ground Fault Protection

OTHERS

PLACE ON: Inverter

PV SOLAR BREAKER

DO NOT RELOCATE THIS DEVICE

PLACE ON: Inverter

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

Label NEC 690.54(F)(5)(1)

REV	DATE	BY	CHKD
01	03/15/18	PS	PS
02	03/15/18	PS	PS
03	03/15/18	PS	PS
04	03/15/18	PS	PS



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

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

Job ID: IP-18-08
Sheet No: E003
Page No: 09 of 14

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

More Multi Solutions

THE **HoneyM plus**

FRAMED 60-CELL MODULE

60 CELL MONOCRYSTALLINE MODULE

275-305W POWER OUTPUT RANGE

18.6% MAXIMUM EFFICIENCY

0~+5W POSITIVE POWER TOLERANCE

Excellent low light performance on cloudy days, mornings and evenings

- Advanced surface treatment
- Back surface field
- Selective emitter

Maximize limited space with top end efficiency

- Up to 186 w/m² power density
- 10% increase in power output or 9% more energy production at high operating temperatures

Highly reliable due to stringent quality control

- Class III industrial grade IUP, TC, IR, and many more
- In-house testing goes well beyond certification requirements
- 100% EL double inspection

Certified to withstand the most challenging environmental conditions

- 2400 Pa wind load
- 5400 Pa snow load
- 35 mm hail stones at 97 km/h

LINEAR PERFORMANCE WARRANTY

Comprehensive Products And System Certificates

ISO 9001:2015 Certified Quality Management System
 ISO 14001:2015 Environmental Management System
 ISO 45001:2018 Occupational Health and Safety Management System
 CE, TUV, IEC, ISO 9001, ISO 14001, ISO 45001

More Multi Solutions

THE **HoneyM plus**

FRAMED 60-CELL MODULE

PRODUCT POWER RANGE

TYP. DC OUTPUT: 285-305W
 TYP. DC CURRENT: 275-300W

EXPLANATION OF THE METRIC VALUES

ELECTRICAL DATA TABLE

Module Temperature (T _{mod})	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
Maximum Power (P _{max}) [W]	295	291	287	284	280	277	274	271
Maximum Power (P _{max}) [W/m ²]	292	288	285	282	279	276	273	270
Maximum Power (P _{max}) [W/m ²]	292	288	285	282	279	276	273	270
Maximum Power (P _{max}) [W/m ²]	292	288	285	282	279	276	273	270
Open Circuit Voltage (V _{oc}) [V]	38.2	38.0	37.8	37.6	37.4	37.2	37.0	36.8
Open Circuit Voltage (V _{oc}) [V]	38.2	38.0	37.8	37.6	37.4	37.2	37.0	36.8
Short Circuit Current (I _{sc}) [A]	8.28	8.28	8.28	8.28	8.28	8.28	8.28	8.28
Short Circuit Current (I _{sc}) [A]	8.28	8.28	8.28	8.28	8.28	8.28	8.28	8.28
Module Efficiency (η) [%]	18.8	18.7	18.6	18.5	18.4	18.3	18.2	18.1

TECHNICAL DATA

Module Dimensions: 60x166x4.0 mm (23.6x65.3x1.57 in) (incl. frame)

Weight: 11.6 kg (25.6 lb)

Area: 1.0 m² (10.76 sq ft)

Backsheet: Backsheet (EVA/ETFE)

Frame: Silver Anodized Aluminum Alloy (6000A1)

Color: High-Reflective (RAL 9006) or High-Reflective (RAL 9006) or High-Reflective (RAL 9006)

Connector: MC4

TEMPERATURE RANGES

Module Temperature: -40°C to +85°C

Operating Temperature: -40°C to +85°C

Temperature Coefficient of P_{max}: -0.45%/°C

Temperature Coefficient of V_{oc}: -0.29%/°C

Temperature Coefficient of I_{sc}: 0.02%/°C

MECHANICAL SPECIFICATIONS

Wind Speed: 2400 Pa (50 m/s)

Snow Load: 5400 Pa (50 m/s)

Hail: 25 mm (1 in) diameter at 23 m/s (50 mph)

Job ID	IP-18-08
Sheet No	E004
Page No	10 of 14



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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SolarEdge Power Optimizer

Module Add-On For North America
 P320 / P370 / P400 / P405 / P505



POWER OPTIMIZER

- PV power optimization at the module-level**
- Specifically designed to work with SolarEdge inverters
 - Up to 25% more energy
 - Superior efficiency (99.5%)
 - Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
 - Flexible system design for maximum space utilization
 - Fast installation with a single bolt
 - Real generation monitoring with module-level monitoring
 - Compliant with arc fault protection and rapid shutdown NEC requirements (when installed as part of the SolarEdge system)
 - Module-level voltage shutdown for installer and fire-greater safety

USE COMMON SENSE AND FOLLOW THE MANUFACTURER'S INSTRUCTIONS. ALWAYS USE PROPER SAFETY PROCEDURES. ALWAYS USE PROPER SAFETY PROCEDURES. ALWAYS USE PROPER SAFETY PROCEDURES.
 www.solar-edge.com



SolarEdge Power Optimizer

Module Add-On for North America
 P320 / P370 / P400 / P405 / P505

INPUT	P320 (for High-Power 6-cell modules)	P370 (for 20 and 27-cell modules)	P400 (for 24 56-cell modules)	P405 (for Sun film cell modules)	P505 (for higher current modules)
Max Input Power (DC Power)	120	120	400	400	500
Absolute Maximum Input Voltage	48	60	60	115	83
Typical Maximum Input Voltage	48	60	60	115	83
Max Operating Temp	8-48	8-60	8-80	12.5-105	12.5-93
Max Operating Temp (for 27-cell modules)	11	11	10.5	10.5	9.3
Max Operating Temp (for 56-cell modules)	11	11	10.5	10.5	9.3
Max Operating Temp (for Sun film cell modules)	11	11	10.5	10.5	9.3
Max Input Current	2.5	2.0	2.0	2.0	2.0
Max Input Voltage	48V	60V	60V	115V	83V
Max Input Power	120W	120W	400W	400W	500W
Max Output Voltage	48V	60V	60V	115V	83V
Max Output Current	2.5A	2.0A	2.0A	2.0A	2.0A
Max Output Power	120W	120W	400W	400W	500W
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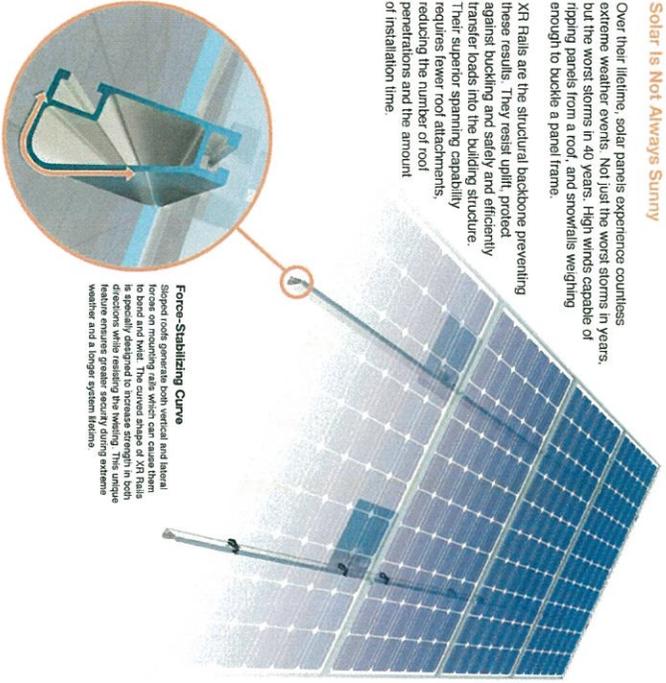
XR Rail Family

Tech Brief

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 roof attachments, reducing the number of roof penetrations and the amount of installation time.



Force-Stabilizing Curve
 Sloped rails generate both vertical and lateral forces on mounting rails which can cause them to bend and warp. The curved shape of XR Rails allows them to resist these forces in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifespan.

Compatible with Flat & Pitched Roofs

- XR Rails are compatible with Flat-Roof and other pitched roof attachments.
- Handles other mounting options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of marine-grade aluminum with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

XR Rail Family

Tech Brief

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 sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves 6 foot spans, while ensuring light and economical:

- 6' spanning capability
- Moderate load capacity
- Heavy duty anodized finish
- Internal splices available



XR100
 XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maintaining spans up to 9 feet.

- 6' spanning capability
- Heavy load capacity
- Heavy duty anodized finish
- Internal splices available



XR1000
 XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme conditions and spans 12 feet or more for commercial applications.

- 12' spanning capability
- Extreme load capacity
- Heavy duty 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 criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load	Rail Span					
	4'	5'-4"	6'	8'	10'	12'
Snow (PSF)	100	120	140	160	180	200
Wind (MPH)	None	None	None	None	None	None
	XR10	XR10	XR100	XR100	XR1000	XR1000
10-20						
	100	120	140	160	180	200
30						
	100	120	140	160	180	200
40						
	100	120	140	160	180	200
50-70						
	100	120	140	160	180	200
80-90						
	100	120	140	160	180	200

REV	DESCRIPTION	DATE
02	PH	05.14.14
01	PS	05.14.14
00	PS	05.14.14
Job ID	IP-18-08	
Sheet No	5001	
Page No	13 of 14	



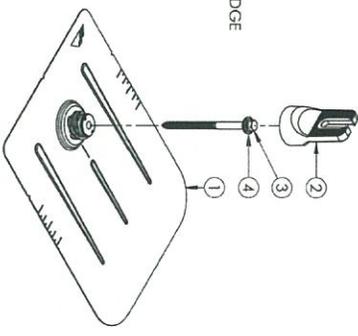
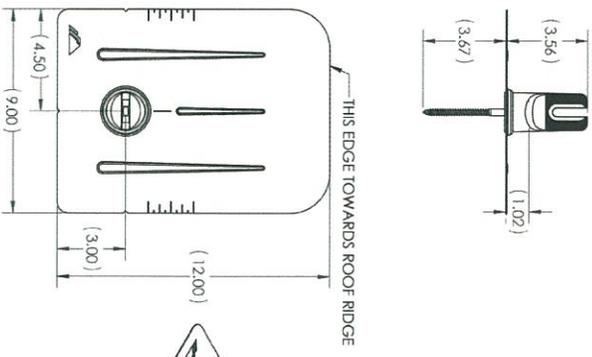
OWNER:
 OWEN PHILBIN
 7110 SYCAMORE AVE,
 TAKOMA PARK, MD 20912

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

MOUNT ACCORDING TO MOUNTING MFG INSTRUCTIONS AND CIVIL/STRUCTURAL DIRECTIONS
 USE FASTENERS SUITABLE TO SURFACE BEING ATTACHED. LAG-SCREWS FOR WOOD, NUTS (LOCKING) AND BOLTS FOR METAL STRUCTURES
 MOUNT # 4 ON CENTER UNLESS OTHERWISE NOTED OR REQUIRED TO CONNECT TO STRUCTURAL MEMBERS



FlashFoot 2

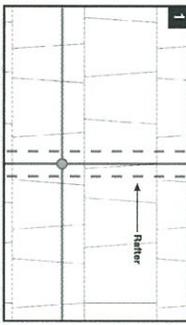


NO.	PART NUMBER	DESCRIPTION	QTY.
1	FM-100-006	ASSY. FLASHING, MILL	1
2	FM-100-008	SCREW, LAG, HEX, 5/16, W/ CUSTOM HEAD, 7/16 HEX W/ FLANGE 4.75L	1
3	23-3118-475LGF	WASHER, EPDM BACKED	1
4	25-3102-000S	WASHER, EPDM BACKED	1

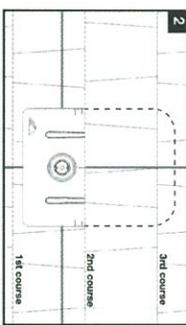
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Installation

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



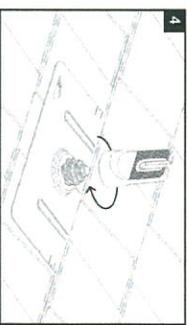
1. Locate rafters and snap vertical and horizontal lines to mark flashing locations. Drill 1/4" pilot holes, then fill with roofing manufacturer's approved sealant.



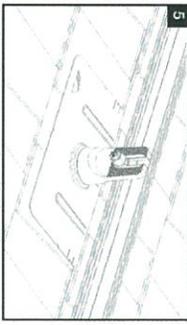
2. Slide flashing, between 1st and 2nd course, so the top is at least 3/4" above the edge of the 3rd course and the bottom is above the edge of the 1st course.



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 EW or NS rails and rotate 180 degrees. FlashFoot 2 is now installed and ready for IronRidge XR Rails.



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

Structural Certification
 Designed and Certified for Compliance with the International Building Code (IBC) Section 503.2.1.
Water Seal Ratings
 Water Seal Rating tested to UL 441 (Section 27" Rain Test) and UL 2703 (Section 27" Rain Test) and meets the requirements of the International Building Code (IBC) Section 503.2.1. Ratings applicable for composition shingle roofs having steps between 2:12 and 12:12.
UL 2703
 Complies with UL 2703 Mechanical and Bonding Requirements. See IronRidge Flash Mount Installation Manual for full ratings.

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REV	DATE	BY	CHKD



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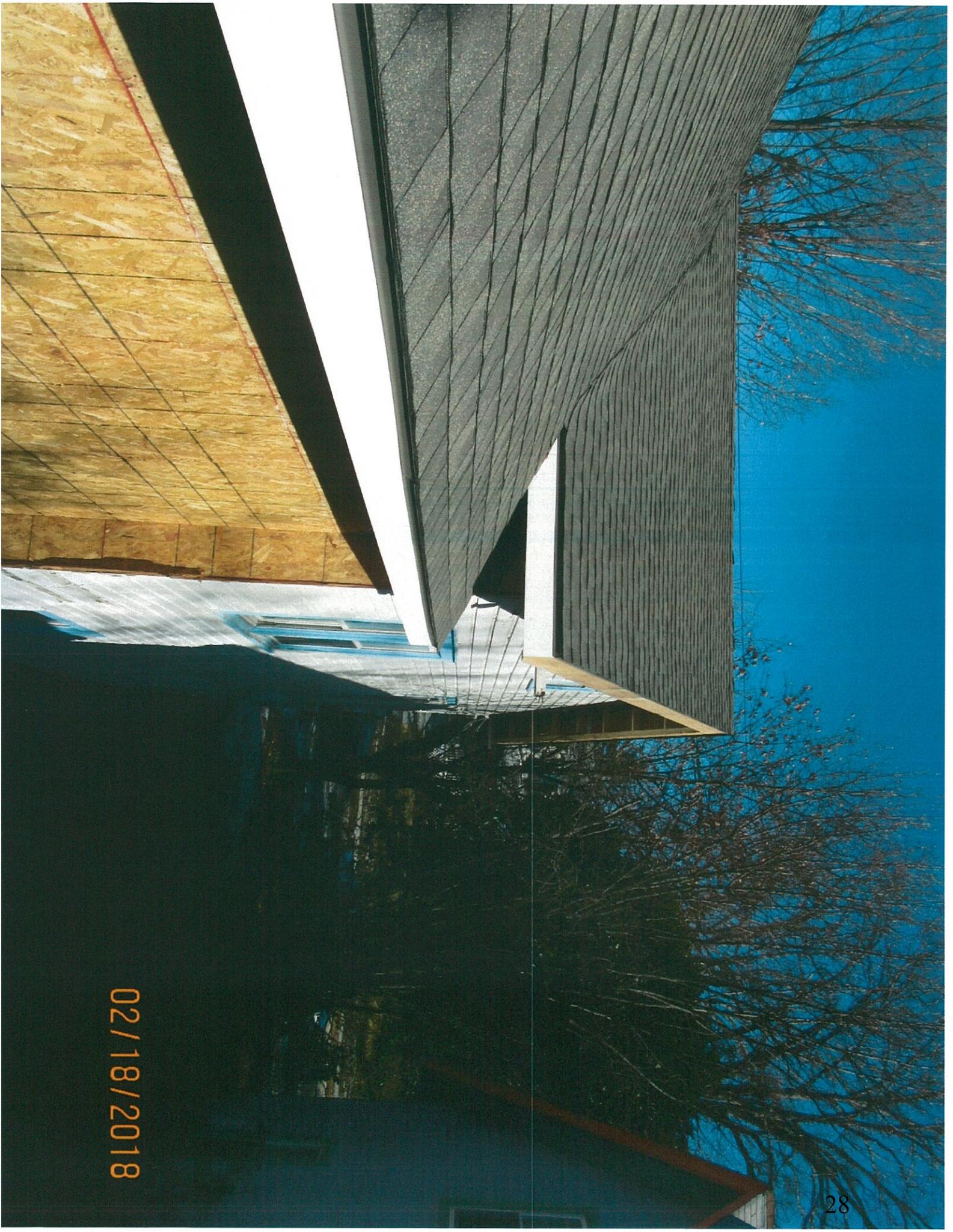
Job ID: IP-15-08
 Sheet No: 5002
 Page No: 14 of 14











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