

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: Ipsun 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: _____

E919h8

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 Single Family
- Fence/Wall (complete Section 4) 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] 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.

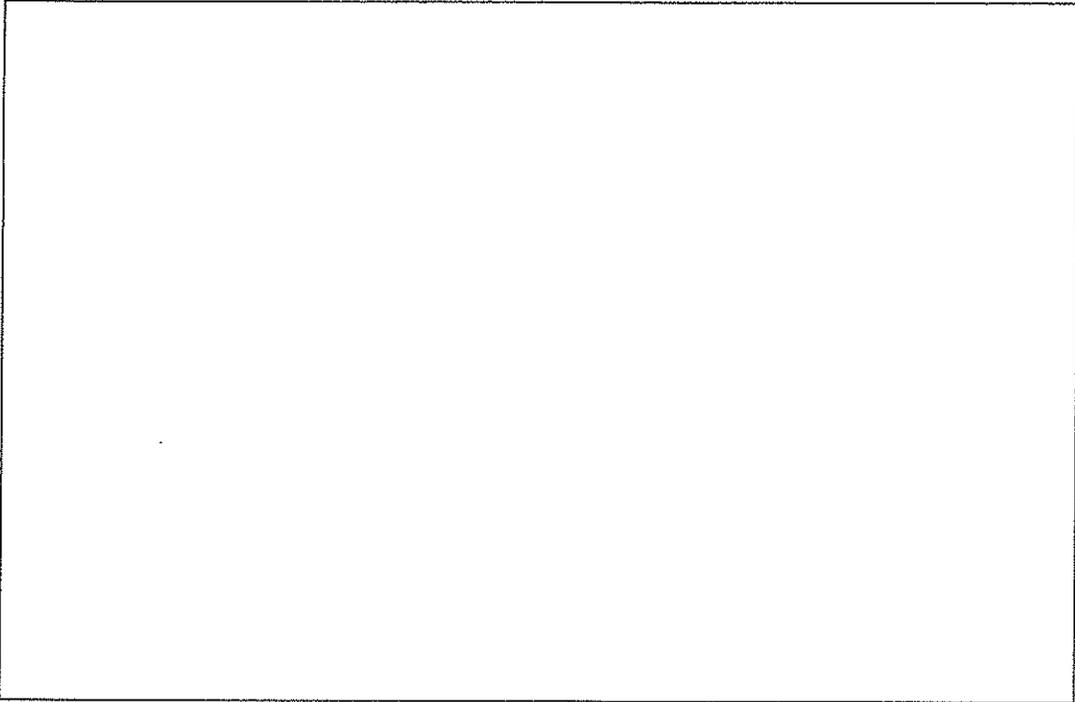
7. **ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

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.

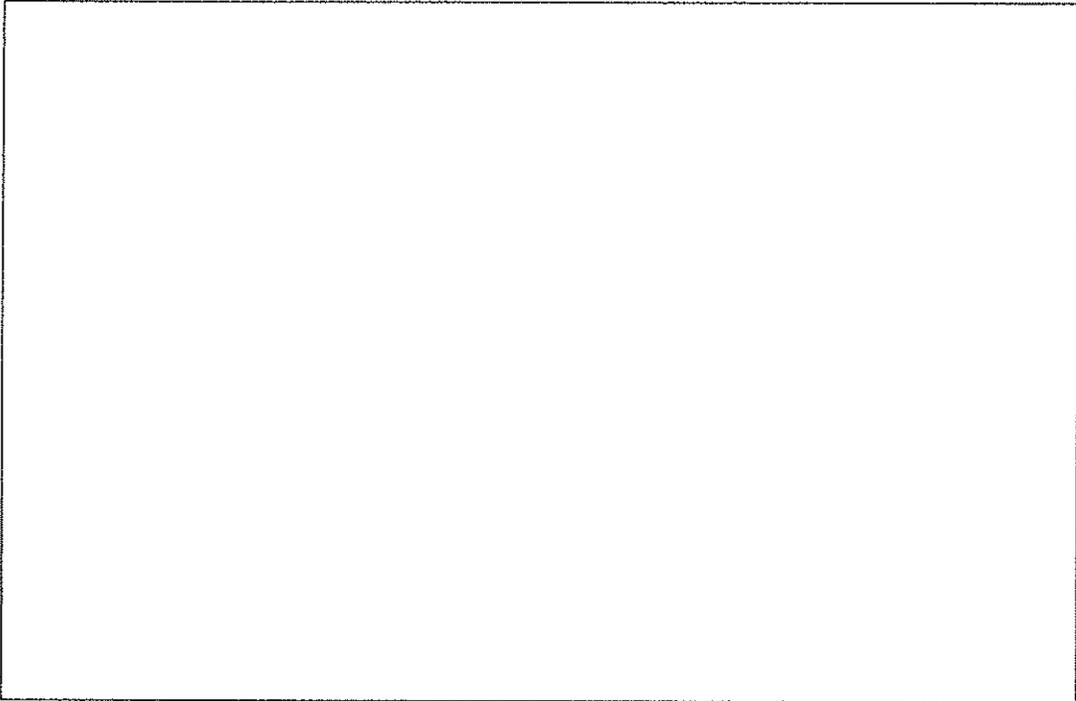
HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFYING
 [Owner, Owner's Agent, Adjacent and Confronting Property Owners]

Owner's mailing address	Owner's Agent's mailing address
Joan Marsh 328 Lincoln Avenue Takoma Park, MD, 20912	Ipsun 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: _____



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 :

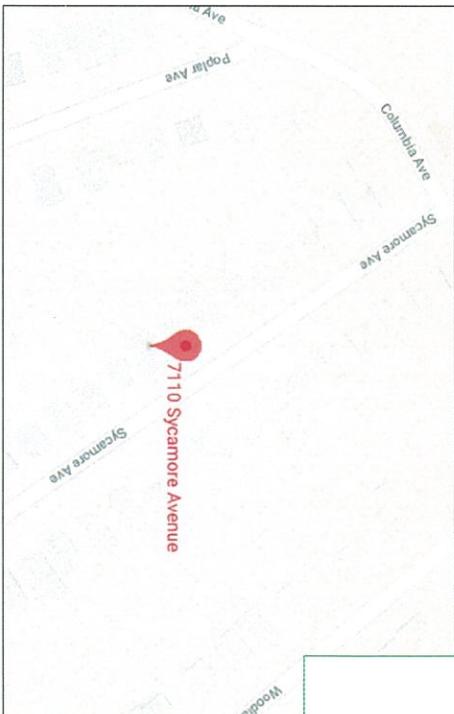
- BUILDING : IBC 2012, DCMR, 12-2013, ASCE 7-10, NDS2012
- ELECTRICAL : NEC 2011
- FIRE : NFPA 2012

OWNER :

OWEN PHILBIN
 7110 SYCAMORE AVE,
 TAKOMA PARK, MD 20912

INSTALLER:

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



SINGLE FAMILY RESIDENCE

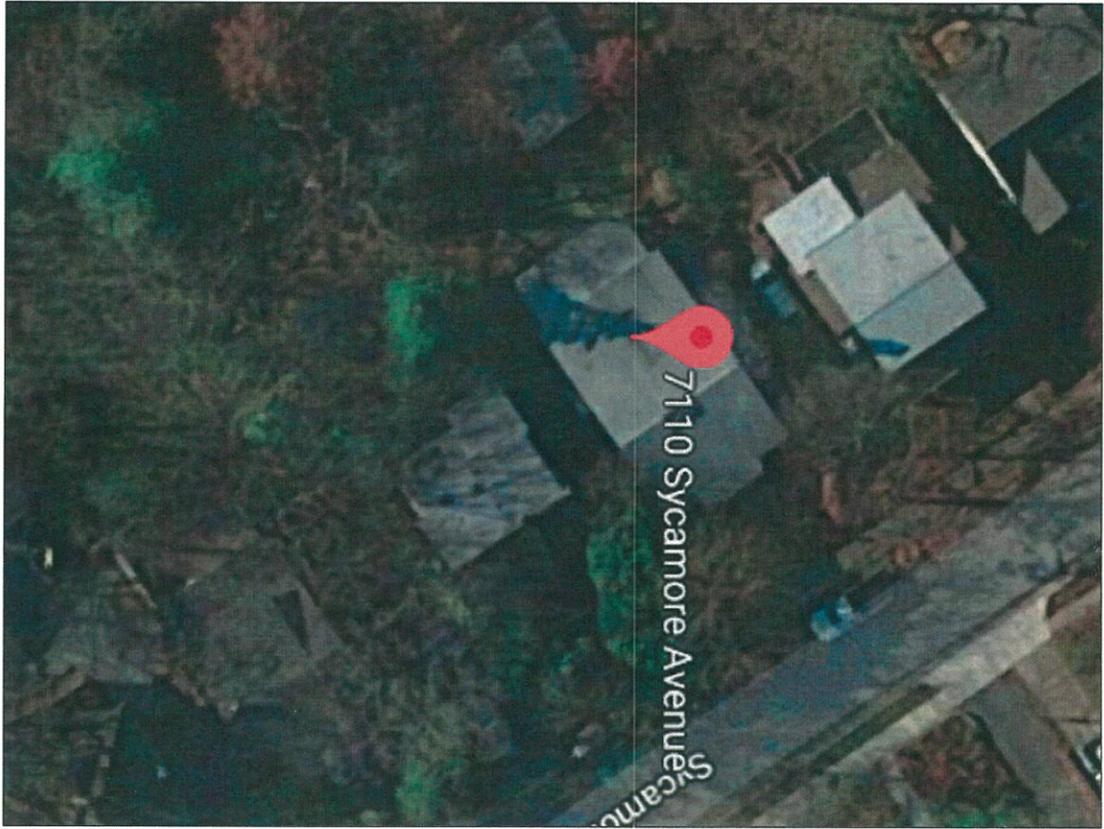
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OWNER:
 OWEN PHILBIN
 7110 SYCAMORE AVE,
 TAKOMA PARK, MD 20912

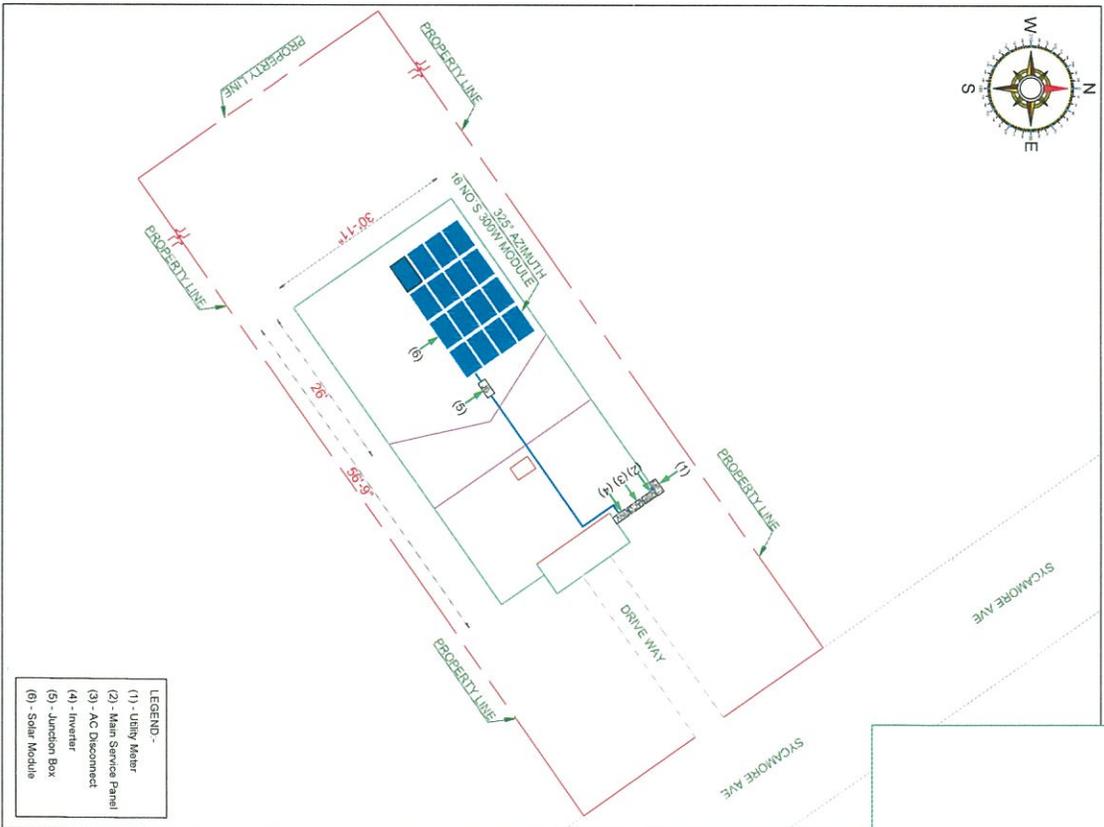
INSTALLER:
 IPSUNPOWER
 600 NEW HAMPSHIRE AVE
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 WASHINGTON, DC 20037



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 Sheet No : G001
 Page No : 01 of 14



PROPERTY MAP



PROPERTY LAYOUT

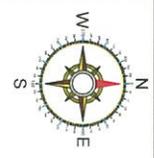
- LEGEND -
- (1) - Utility Meter
 - (2) - Main Service Panel
 - (3) - AC Disconnect
 - (4) - Inverter
 - (5) - Junction Box
 - (6) - Solar Module

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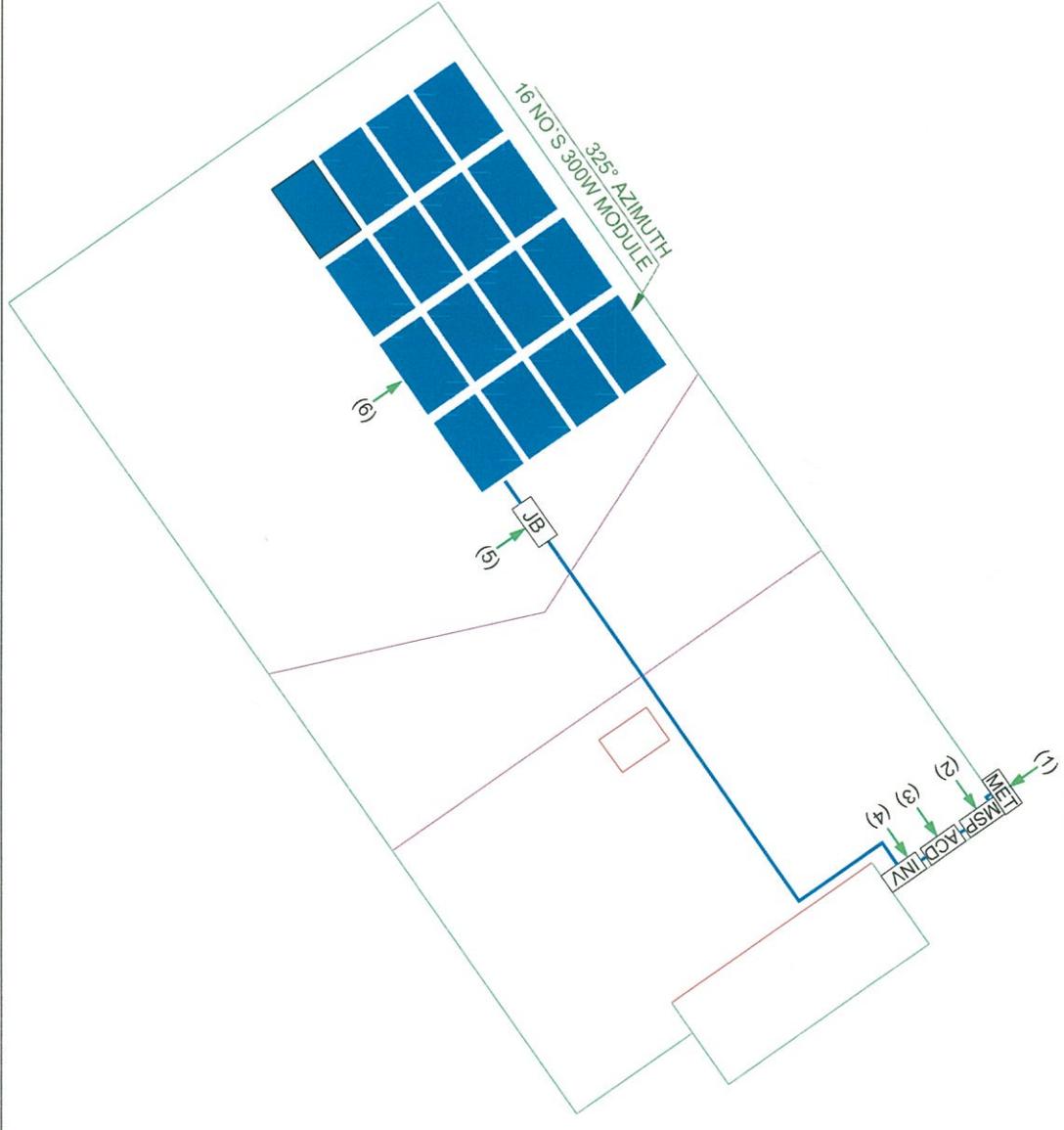
OWNER:
OWEN PHILBIN
7110 SYCAMORE AVE,
TAKOMA PARK, MD 20912

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

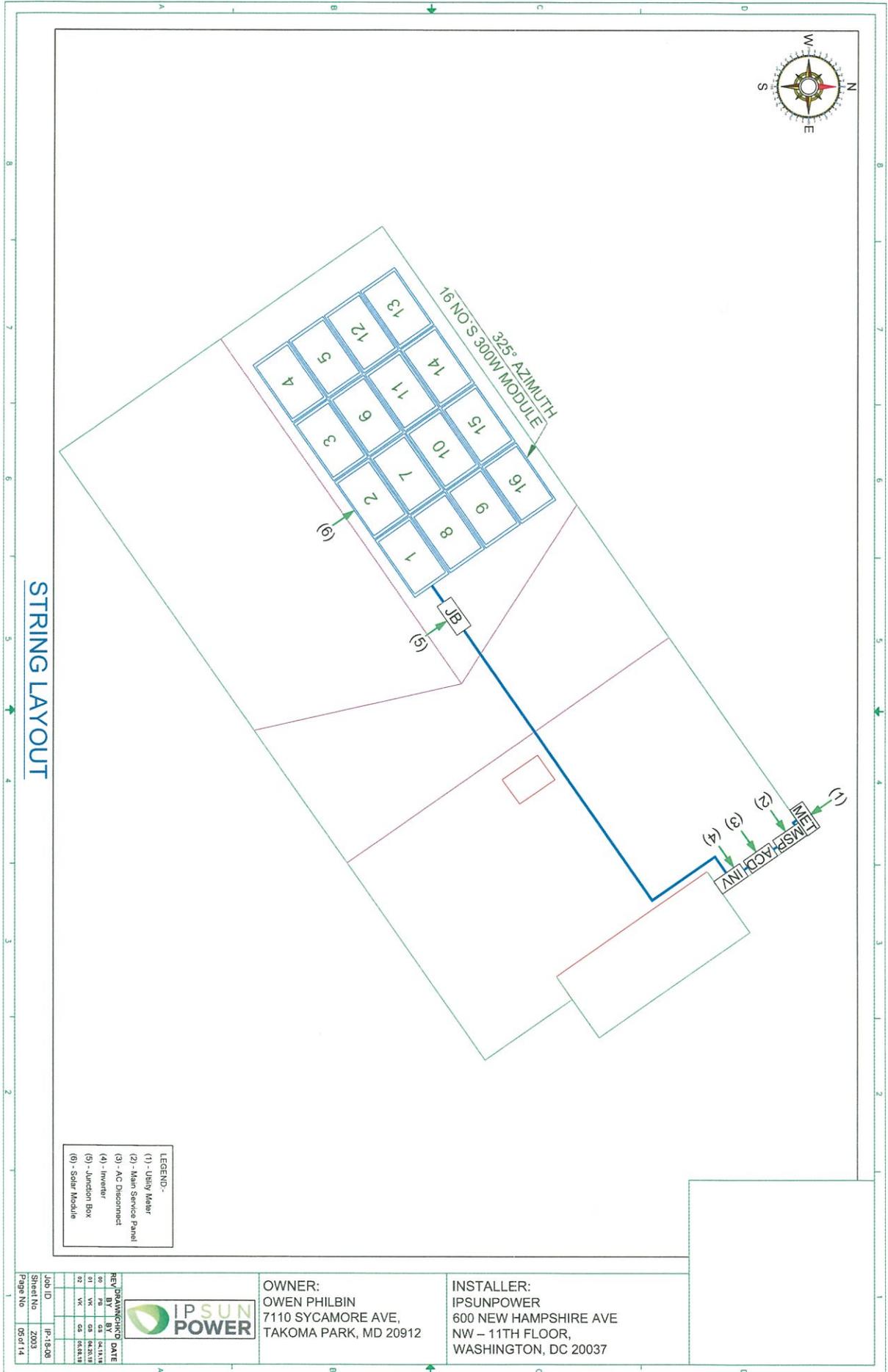
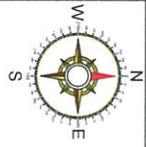
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02	04.23.14		
03	04.23.14		

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 Sheet No : 2002
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OWNER:
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 TAKOMA PARK, MD 20912

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STRING LAYOUT

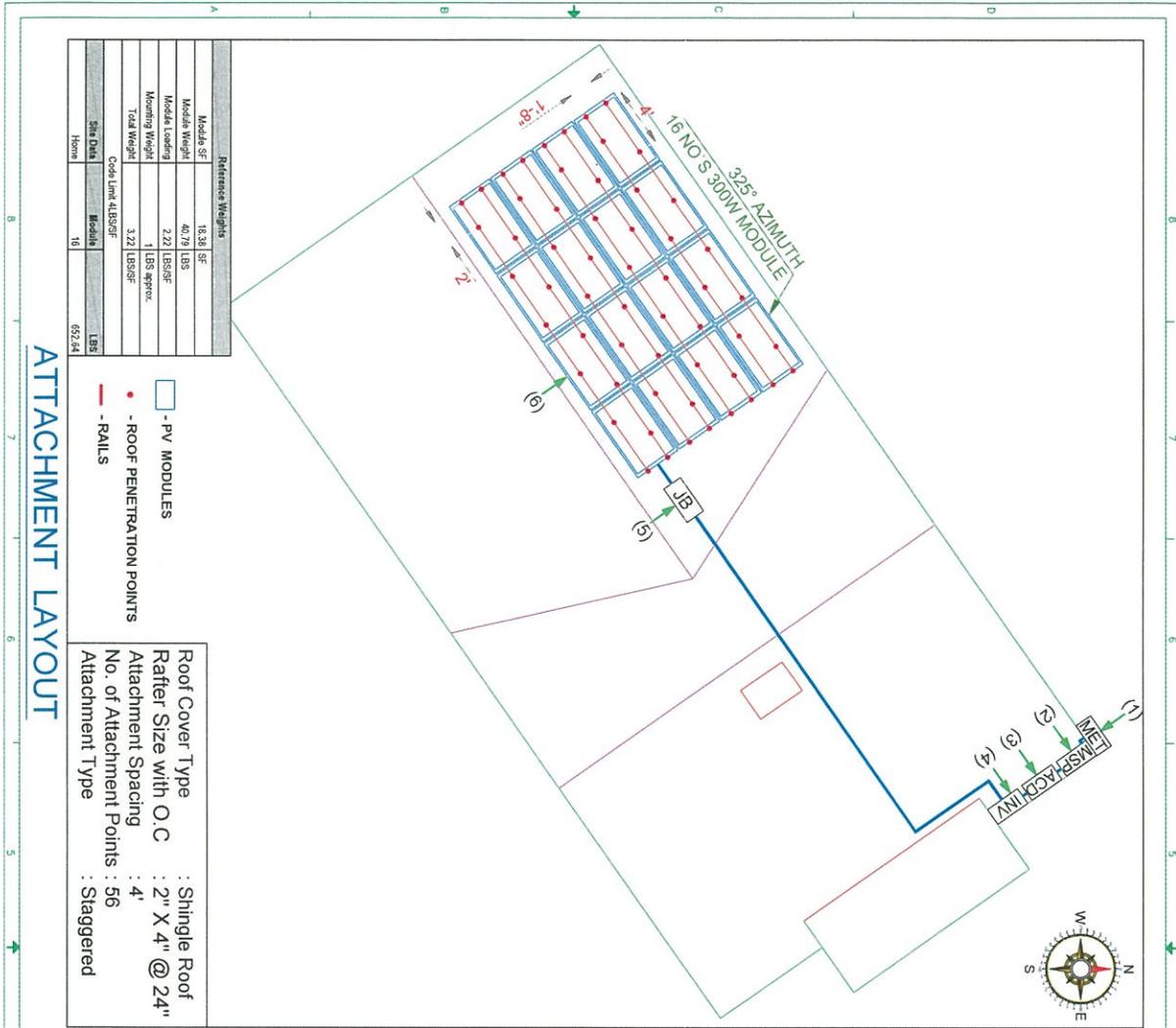
- LEGEND:-**
- (1) - Utility Meter
 - (2) - Main Service Panel
 - (3) - AC Disconnect
 - (4) - Inverter
 - (5) - Junction Box
 - (6) - Solar Module

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OWNER:
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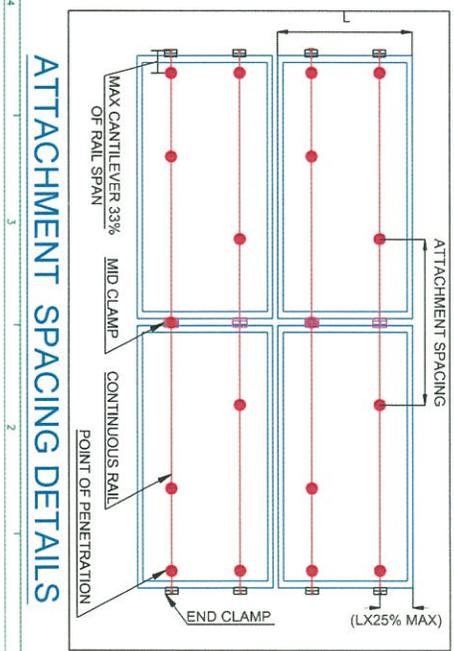


Reference Weights	
Module SF	16.34 SF
Module Weight	40.79 LBS
Module Loading	2.27 LBS/SF
Mounting Weight	1 LBS approx.
Total Weight	3.27 LBS/SF
Code Limit 4LBS/SF	
Site Data	Module
Home	16
	LBS
	652.64

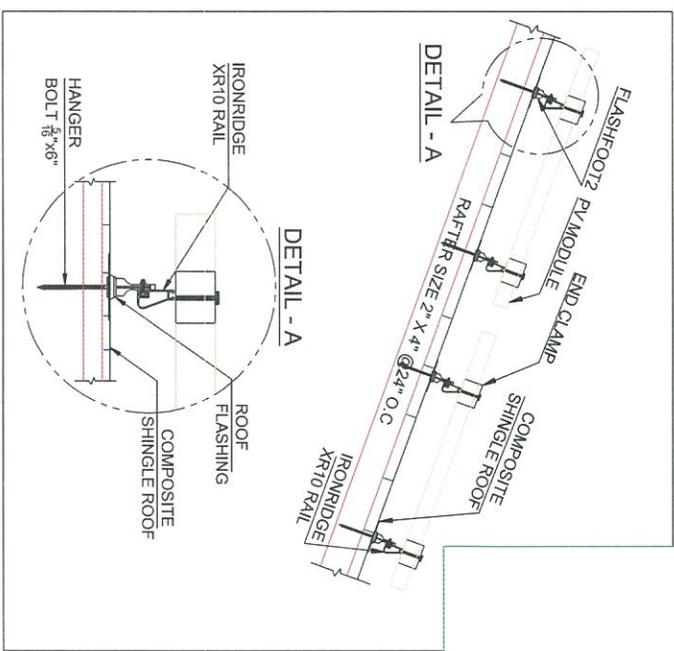
ATTACHMENT LAYOUT

- 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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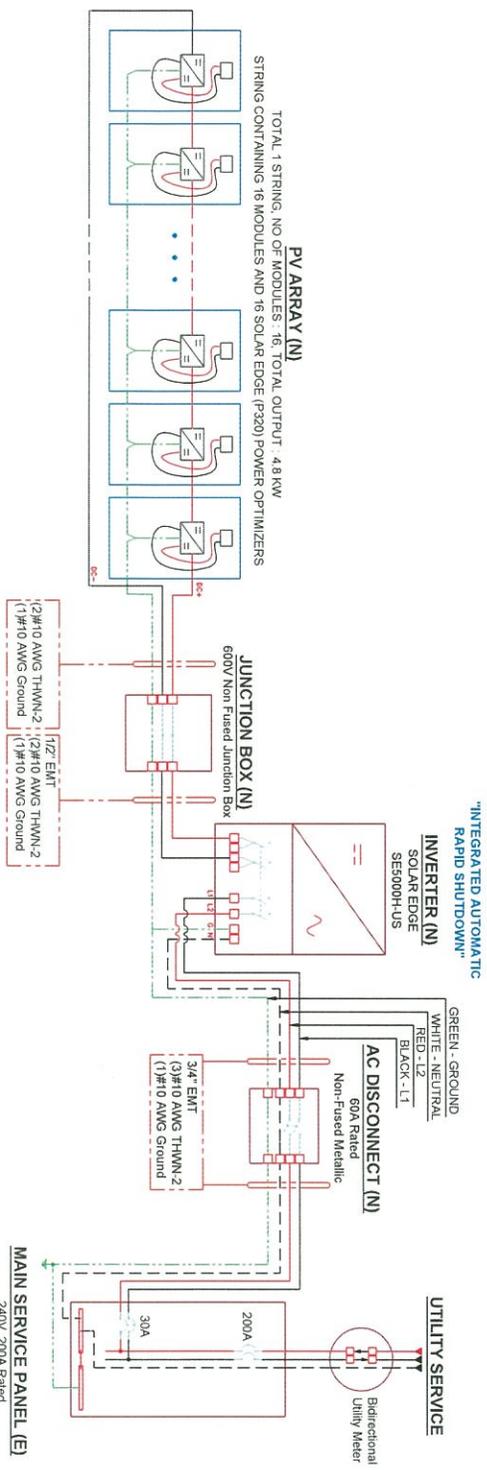


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 600 NEW HAMPSHIRE AVE
 NW - 11TH FLOOR,
 WASHINGTON, DC 20037

4.8 KW DC PROPOSED PV SYSTEM THREE LINE DIAGRAM

(N)NEW
(E)EXISTING



REV	DATE	BY	CHK	APP
01	10/14/14	GS	PKS	PKS
02	05/14/14	GS	PKS	PKS
03	05/14/14	GS	PKS	PKS
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19	05/14/14	GS	PKS	PKS
20	05/14/14	GS	PKS	PKS



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

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

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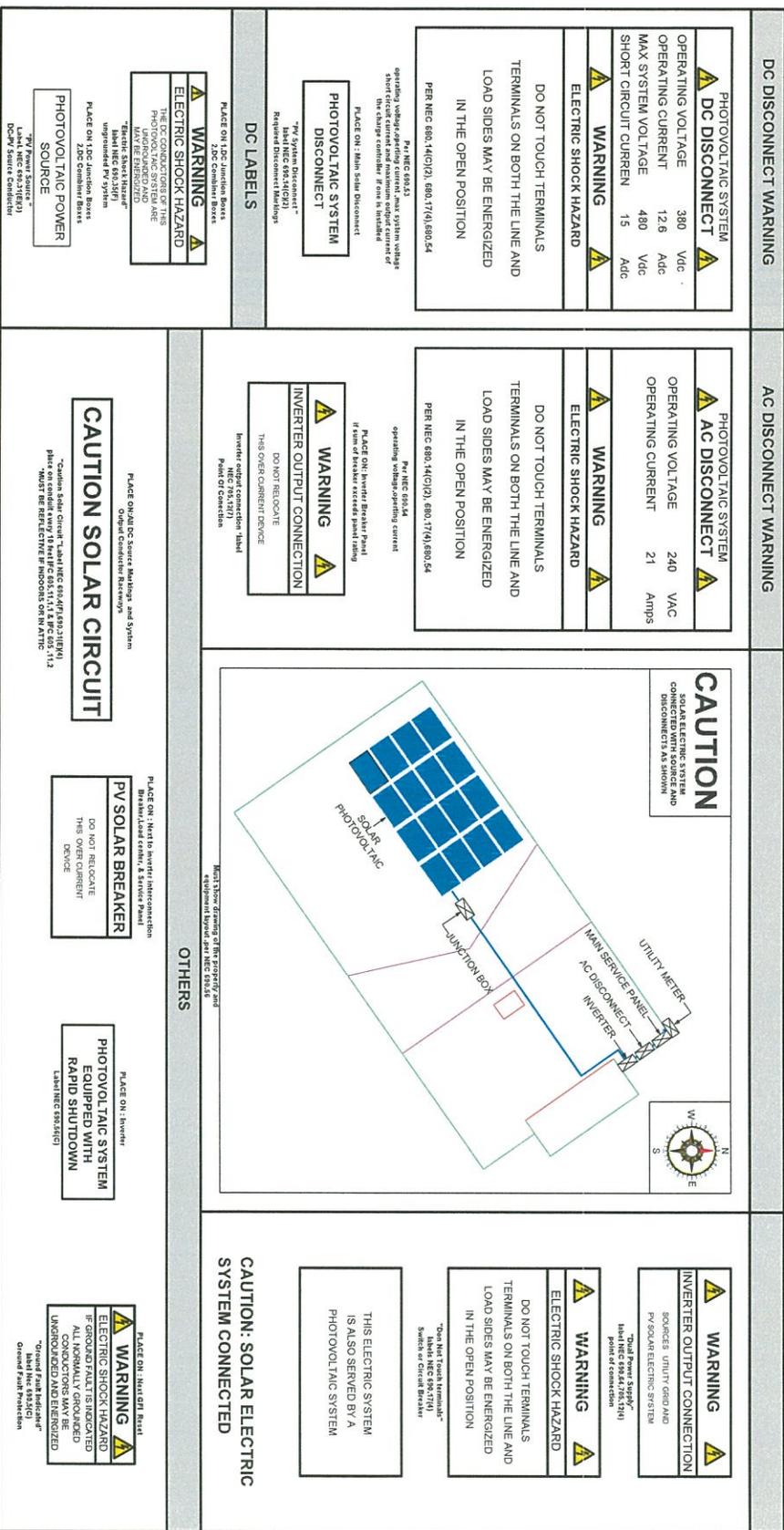
SYSTEM LABELING DETAIL:

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 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(d), 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

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(d), 690.54

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

PLACE ON: 15C Junction Boxes

PHOTOVOLTAIC SYSTEM DISCONNECT

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(d), 690.54

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(d), 690.54

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

PLACE ON: Inverter Breaker Panel

INVERTER OUTPUT CONNECTION DISCONNECT

WARNING DO NOT RELOCATE THIS OVER CURRENT DEVICE

handle, cabinet, conductor, label

PER NEC 690.14(C)(2), 690.17(d), 690.54

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

PLACE ON: 15C Junction Boxes

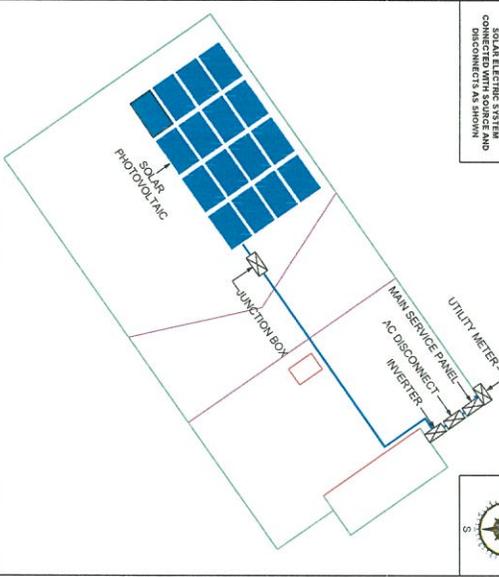
PHOTOVOLTAIC SYSTEM DISCONNECT

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(d), 690.54

CAUTION



CAUTION SOLAR ELECTRIC SYSTEM AND PHOTOVOLTAIC SYSTEM DISCONNECTS AS SHOWN

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(d), 690.54

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

PLACE ON: Inverter Breaker Panel

INVERTER OUTPUT CONNECTION DISCONNECT

WARNING DO NOT RELOCATE THIS OVER CURRENT DEVICE

handle, cabinet, conductor, label

PER NEC 690.14(C)(2), 690.17(d), 690.54

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

PLACE ON: 15C Junction Boxes

PHOTOVOLTAIC SYSTEM DISCONNECT

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(d), 690.54

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

PLACE ON: Inverter Breaker Panel

CAUTION SOLAR CIRCUIT

WARNING DO NOT RELOCATE THIS DEVICE

handle, cabinet, conductor, label

PER NEC 690.14(C)(2), 690.17(d), 690.54

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

INVERTER OUTPUT CONNECTION	
SOURCES: UTILITY GRID AND PHOTOVOLTAIC SYSTEM	

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(d), 690.54

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

PLACE ON: Inverter Breaker Panel

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

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(d), 690.54

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

PLACE ON: Inverter Breaker Panel

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

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(d), 690.54

REV	DATE	BY	CHKD
01	03/15/18	IP	OS
02	03/15/18	WK	OS
03	03/15/18	WK	OS
04	03/15/18	WK	OS

Job ID	IP-18-08
Sheet No	E003
Page No	09 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 # ON CENTER UNLESS OTHERWISE NOTED OR REQUIRED TO CONNECT TO STRUCTURAL MEMBERS

More Multi Solutions

THE Honeywell 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
- Black surface film
- Anti-reflection

Maximize limited space with top end efficiency

- Up to 186 w/m² power density
- 16% increase in power output or 9% more energy production at high operating temperatures

Highly reliable due to stringent quality control

- Over 30 industrial tests (UL, IEC, and many more)
- 16-hour testing cycles 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 hailstones 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

Honeywell plus

FRAMED 60-CELL MODULE

PRODUCT POWER RATING

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

EXPLANATION OF THE METRIC VALUES

ELECTRICAL DATA TABLE

Module Power (W)	205	209	212	216	220	224	227
Maximum Power (W)	202	204	205	209	212	216	217
Maximum Power (W) at 1% TOL	199	201	202	206	209	213	214
Maximum Power (W) at 2% TOL	196	198	199	203	206	210	211
Maximum Power (W) at 3% TOL	193	195	196	200	203	207	208
Maximum Power (W) at 4% TOL	190	192	193	197	200	204	205
Maximum Power (W) at 5% TOL	187	189	190	194	197	201	202
Maximum Power (W) at 6% TOL	184	186	187	191	194	198	199
Maximum Power (W) at 7% TOL	181	183	184	188	191	195	196
Maximum Power (W) at 8% TOL	178	180	181	185	188	192	193
Maximum Power (W) at 9% TOL	175	177	178	182	185	189	190
Maximum Power (W) at 10% TOL	172	174	175	179	182	186	187

TECHNICAL DATA

Module Dimensions: 60x60x4.0 (mm) / 23.6x23.6x1.57 (in)

Weight: 11.6 kg (25.6 lb)

Area: 0.36 m² (4.16 sq ft)

Material: Monocrystalline Silicon

Cell Type: PERC (Passivated Emitter Rear Cell)

Cell Size: 156.75 mm x 156.75 mm (6.17 in x 6.17 in)

Cell Area: 247.9 cm² (38.4 sq ft)

Module Efficiency: 18.6%

TEMPERATURE RANGES

Operating Temperature: -40°C to +85°C (-40°F to +185°F)

Storage Temperature: -40°C to +125°C (-40°F to +257°F)

Temperature Coefficient of Pmax: -0.45%/°C (-0.25%/°F)

MECHANICAL SPECIFICATIONS

Wind Load: 2400 Pa (54 psf)

Snow Load: 5400 Pa (119 psf)

Hail Load: 25 mm (1 in) diameter at 97 km/h (60 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-time 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 inverter and fire-glass safety

USE COMMON SENSE AND FOLLOW THE MANUFACTURER'S INSTRUCTIONS. 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 21-cell modules)	P400 (for 22 & 24-cell modules)	P405 (for Sun film cellular 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 100°C Output)	11	11	10	10	10
Max Operating Temp (for 120°C Output)	11	11	10	10	10
Max Operating Temp (for 150°C Output)	11	11	10	10	10
Max Operating Temp (for 180°C Output)	11	11	10	10	10
Max Operating Temp (for 200°C Output)	11	11	10	10	10
Max Operating Temp (for 220°C Output)	11	11	10	10	10
Max Operating Temp (for 240°C Output)	11	11	10	10	10
Max Operating Temp (for 260°C Output)	11	11	10	10	10
Max Operating Temp (for 280°C Output)	11	11	10	10	10
Max Operating Temp (for 300°C Output)	11	11	10	10	10
Max Operating Temp (for 320°C Output)	11	11	10	10	10
Max Operating Temp (for 340°C Output)	11	11	10	10	10
Max Operating Temp (for 360°C Output)	11	11	10	10	10
Max Operating Temp (for 380°C Output)	11	11	10	10	10
Max Operating Temp (for 400°C Output)	11	11	10	10	10
Max Operating Temp (for 420°C Output)	11	11	10	10	10
Max Operating Temp (for 440°C Output)	11	11	10	10	10
Max Operating Temp (for 460°C Output)	11	11	10	10	10
Max Operating Temp (for 480°C Output)	11	11	10	10	10
Max Operating Temp (for 500°C Output)	11	11	10	10	10
Max Operating Temp (for 520°C Output)	11	11	10	10	10
Max Operating Temp (for 540°C Output)	11	11	10	10	10
Max Operating Temp (for 560°C Output)	11	11	10	10	10
Max Operating Temp (for 580°C Output)	11	11	10	10	10
Max Operating Temp (for 600°C Output)	11	11	10	10	10
Max Operating Temp (for 620°C Output)	11	11	10	10	10
Max Operating Temp (for 640°C Output)	11	11	10	10	10
Max Operating Temp (for 660°C Output)	11	11	10	10	10
Max Operating Temp (for 680°C Output)	11	11	10	10	10
Max Operating Temp (for 700°C Output)	11	11	10	10	10
Max Operating Temp (for 720°C Output)	11	11	10	10	10
Max Operating Temp (for 740°C Output)	11	11	10	10	10
Max Operating Temp (for 760°C Output)	11	11	10	10	10
Max Operating Temp (for 780°C Output)	11	11	10	10	10
Max Operating Temp (for 800°C Output)	11	11	10	10	10
Max Operating Temp (for 820°C Output)	11	11	10	10	10
Max Operating Temp (for 840°C Output)	11	11	10	10	10
Max Operating Temp (for 860°C Output)	11	11	10	10	10
Max Operating Temp (for 880°C Output)	11	11	10	10	10
Max Operating Temp (for 900°C Output)	11	11	10	10	10
Max Operating Temp (for 920°C Output)	11	11	10	10	10
Max Operating Temp (for 940°C Output)	11	11	10	10	10
Max Operating Temp (for 960°C Output)	11	11	10	10	10
Max Operating Temp (for 980°C Output)	11	11	10	10	10
Max Operating Temp (for 1000°C Output)	11	11	10	10	10
Max Operating Temp (for 1020°C Output)	11	11	10	10	10
Max Operating Temp (for 1040°C Output)	11	11	10	10	10
Max Operating Temp (for 1060°C Output)	11	11	10	10	10
Max Operating Temp (for 1080°C Output)	11	11	10	10	10
Max Operating Temp (for 1100°C Output)	11	11	10	10	10
Max Operating Temp (for 1120°C Output)	11	11	10	10	10
Max Operating Temp (for 1140°C Output)	11	11	10	10	10
Max Operating Temp (for 1160°C Output)	11	11	10	10	10
Max Operating Temp (for 1180°C Output)	11	11	10	10	10
Max Operating Temp (for 1200°C Output)	11	11	10	10	10
Max Operating Temp (for 1220°C Output)	11	11	10	10	10
Max Operating Temp (for 1240°C Output)	11	11	10	10	10
Max Operating Temp (for 1260°C Output)	11	11	10	10	10
Max Operating Temp (for 1280°C Output)	11	11	10	10	10
Max Operating Temp (for 1300°C Output)	11	11	10	10	10
Max Operating Temp (for 1320°C Output)	11	11	10	10	10
Max Operating Temp (for 1340°C Output)	11	11	10	10	10
Max Operating Temp (for 1360°C Output)	11	11	10	10	10
Max Operating Temp (for 1380°C Output)	11	11	10	10	10
Max Operating Temp (for 1400°C Output)	11	11	10	10	10
Max Operating Temp (for 1420°C Output)	11	11	10	10	10
Max Operating Temp (for 1440°C Output)	11	11	10	10	10
Max Operating Temp (for 1460°C Output)	11	11	10	10	10
Max Operating Temp (for 1480°C Output)	11	11	10	10	10
Max Operating Temp (for 1500°C Output)	11	11	10	10	10
Max Operating Temp (for 1520°C Output)	11	11	10	10	10
Max Operating Temp (for 1540°C Output)	11	11	10	10	10
Max Operating Temp (for 1560°C Output)	11	11	10	10	10
Max Operating Temp (for 1580°C Output)	11	11	10	10	10
Max Operating Temp (for 1600°C Output)	11	11	10	10	10
Max Operating Temp (for 1620°C Output)	11	11	10	10	10
Max Operating Temp (for 1640°C Output)	11	11	10	10	10
Max Operating Temp (for 1660°C Output)	11	11	10	10	10
Max Operating Temp (for 1680°C Output)	11	11	10	10	10
Max Operating Temp (for 1700°C Output)	11	11	10	10	10
Max Operating Temp (for 1720°C Output)	11	11	10	10	10
Max Operating Temp (for 1740°C Output)	11	11	10	10	10
Max Operating Temp (for 1760°C Output)	11	11	10	10	10
Max Operating Temp (for 1780°C Output)	11	11	10	10	10
Max Operating Temp (for 1800°C Output)	11	11	10	10	10
Max Operating Temp (for 1820°C Output)	11	11	10	10	10
Max Operating Temp (for 1840°C Output)	11	11	10	10	10
Max Operating Temp (for 1860°C Output)	11	11	10	10	10
Max Operating Temp (for 1880°C Output)	11	11	10	10	10
Max Operating Temp (for 1900°C Output)	11	11	10	10	10
Max Operating Temp (for 1920°C Output)	11	11	10	10	10
Max Operating Temp (for 1940°C Output)	11	11	10	10	10
Max Operating Temp (for 1960°C Output)	11	11	10	10	10
Max Operating Temp (for 1980°C Output)	11	11	10	10	10
Max Operating Temp (for 2000°C Output)	11	11	10	10	10
Max Operating Temp (for 2020°C Output)	11	11	10	10	10
Max Operating Temp (for 2040°C Output)	11	11	10	10	10
Max Operating Temp (for 2060°C Output)	11	11	10	10	10
Max Operating Temp (for 2080°C Output)	11	11	10	10	10
Max Operating Temp (for 2100°C Output)	11	11	10	10	10
Max Operating Temp (for 2120°C Output)	11	11	10	10	10
Max Operating Temp (for 2140°C Output)	11	11	10	10	10
Max Operating Temp (for 2160°C Output)	11	11	10	10	10
Max Operating Temp (for 2180°C Output)	11	11	10	10	10
Max Operating Temp (for 2200°C Output)	11	11	10	10	10
Max Operating Temp (for 2220°C Output)	11	11	10	10	10
Max Operating Temp (for 2240°C Output)	11	11	10	10	10
Max Operating Temp (for 2260°C Output)	11	11	10	10	10
Max Operating Temp (for 2280°C Output)	11	11	10	10	10
Max Operating Temp (for 2300°C Output)	11	11	10	10	10
Max Operating Temp (for 2320°C Output)	11	11	10	10	10
Max Operating Temp (for 2340°C Output)	11	11	10	10	10
Max Operating Temp (for 2360°C Output)	11	11	10	10	10
Max Operating Temp (for 2380°C Output)	11	11	10	10	10
Max Operating Temp (for 2400°C Output)	11	11	10	10	10
Max Operating Temp (for 2420°C Output)	11	11	10	10	10
Max Operating Temp (for 2440°C Output)	11	11	10	10	10
Max Operating Temp (for 2460°C Output)	11	11	10	10	10
Max Operating Temp (for 2480°C Output)	11	11	10	10	10
Max Operating Temp (for 2500°C Output)	11	11	10	10	10
Max Operating Temp (for 2520°C Output)	11	11	10	10	10
Max Operating Temp (for 2540°C Output)	11	11	10	10	10
Max Operating Temp (for 2560°C Output)	11	11	10	10	10
Max Operating Temp (for 2580°C Output)	11	11	10	10	10
Max Operating Temp (for 2600°C Output)	11	11	10	10	10
Max Operating Temp (for 2620°C Output)	11	11	10	10	10
Max Operating Temp (for 2640°C Output)	11	11	10	10	10
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Max Operating Temp (for 2680°C Output)	11	11	10	10	10
Max Operating Temp (for 2700°C Output)	11	11	10	10	10
Max Operating Temp (for 2720°C Output)	11	11	10	10	10
Max Operating Temp (for 2740°C Output)	11	11	10	10	10
Max Operating Temp (for 2760°C Output)	11	11	10	10	10
Max Operating Temp (for 2780°C Output)	11	11	10	10	10
Max Operating Temp (for 2800°C Output)	11	11	10	10	10
Max Operating Temp (for 2820°C Output)	11	11	10	10	10
Max Operating Temp (for 2840°C Output)	11	11	10	10	10
Max Operating Temp (for 2860°C Output)	11	11	10	10	10
Max Operating Temp (for 2880°C Output)	11	11	10	10	10
Max Operating Temp (for 2900°C Output)	11	11	10	10	10
Max Operating Temp (for 2920°C Output)	11	11	10	10	10
Max Operating Temp (for 2940°C Output)	11	11	10	10	10
Max Operating Temp (for 2960°C Output)	11	11	10	10	10
Max Operating Temp (for 2980°C Output)	11	11	10	10	10
Max Operating Temp (for 3000°C Output)	11	11	10	10	10
Max Operating Temp (for 3020°C Output)	11	11	10	10	10
Max Operating Temp (for 3040°C Output)	11	11	10	10	10
Max Operating Temp (for 3060°C Output)	11	11	10	10	10
Max Operating Temp (for 3080°C Output)	11	11	10	10	10
Max Operating Temp (for 3100°C Output)	11	11	10	10	10
Max Operating Temp (for 3120°C Output)	11	11	10	10	10
Max Operating Temp (for 3140°C Output)	11	11	10	10	10
Max Operating Temp (for 3160°C Output)	11	11	10	10	10
Max Operating Temp (for 3180°C Output)	11	11	10	10	10
Max Operating Temp (for 3200°C Output)	11	11	10	10	10
Max Operating Temp (for 3220°C Output)	11	11	10	10	10
Max Operating Temp (for 3240°C Output)	11	11	10	10	10
Max Operating Temp (for 3260°C Output)	11	11	10	10	10
Max Operating Temp (for 3280°C Output)	11	11	10	10	10
Max Operating Temp (for 3300°C Output)	11	11	10	10	10
Max Operating Temp (for 3320°C Output)	11	11	10	10	10
Max Operating Temp (for 3340°C Output)	11	11	10	10	10
Max Operating Temp (for 3360°C Output)	11	11	10	10	10
Max Operating Temp (for 3380°C Output)	11	11	10	10	10
Max Operating Temp (for 3400°C Output)	11	11	10	10	10
Max Operating Temp (for 3420°C Output)	11	11	10	10	10
Max Operating Temp (for 3440°C Output)	11	11	10	10	10
Max Operating Temp (for 3460°C Output)	11	11	10	10	10
Max Operating Temp (for 3480°C Output)	11	11	10	10	10
Max Operating Temp (for 3500°C Output)	11	11	10	10	10
Max Operating Temp (for 3520°C Output)	11	11	10	10	10
Max Operating Temp (for 3540°C Output)	11	11	10	10	10
Max Operating Temp (for 3560°C Output)</					

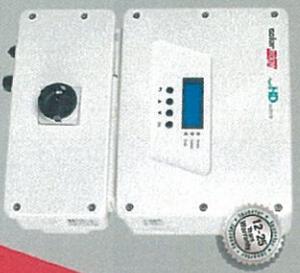
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INVERTERS



SolarEdge Single Phase Inverters

for North America
 SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US /
 SE7800H-US / SE10000H-US / SE11400H-US



Optimized Installation with HD-Wave technology

- Specially designed to work with power optimizers
- Spectacular efficiency
- Record breaking efficiency
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPIC Rule 21 grid compliance
- Extremely small
- High reliability without any electrolytic capacitors
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.2% accuracy)
- Simple configuration and commissioning with smartphone app and built-in Wi-Fi (SE1000H-US, SE11400H-US)



USE CAREFULLY. READ INSTRUCTIONS AND WARNINGS. ALWAYS USE PROPER WIRING AND CONNECTION PRACTICES. ALWAYS USE PROPER SAFETY PROCEDURES.
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 SOLAR EDGE TECHNOLOGIES, INC. 10000 WILSON AVENUE, SUITE 100, FORT WORTH, TEXAS 76154-4000
 WWW.SOLAREDGE.COM



Single Phase Inverters for North America

OUTPUT	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7800H-US	SE10000H-US	SE11400H-US
Rated AC Power Output	3000	3800 @ 240V	5000	6000	7800	10000	11400
Max AC Power Output	3000	3800 @ 240V	5000	6000	7800	10000	11400
AC Output Voltage (Min-Max)	✓	✓	✓	✓	✓	✓	✓
AC Output Voltage Min-Max	✓	✓	✓	✓	✓	✓	✓
AC Output Voltage Min-Max	✓	✓	✓	✓	✓	✓	✓
Max. Input/Output Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
DC Input Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
DC Input Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
DC Input Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
DC Input Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
DC Input Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
DC Input Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
DC Input Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
DC Input Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
DC Input Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
DC Input Current	16	21	21	25	32	42	47.5
DC Input Voltage Range	13.5	16	21	25	32	42	47.5
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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



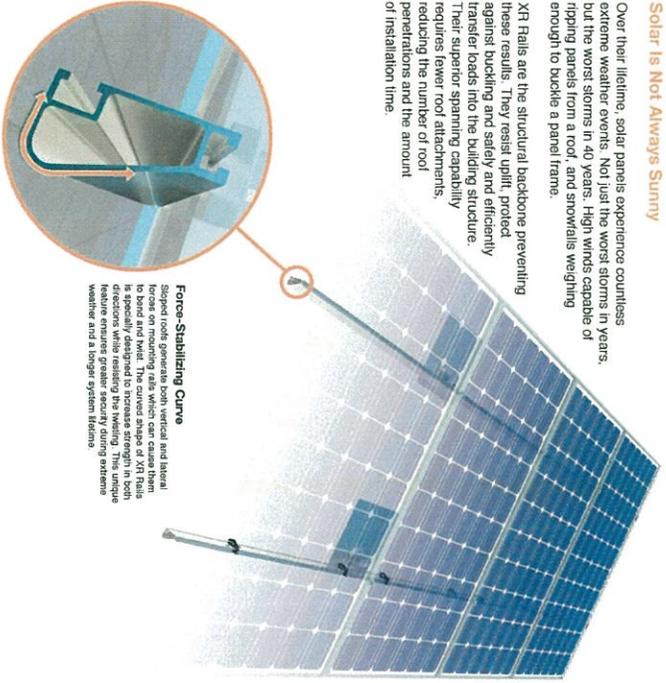
XR Rail Family

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 tools 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 all 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.

- 8' 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 climates 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)	100	120	140	160	180	200
None	XR10	XR10	XR100	XR100	XR1000	XR1000
10-20						
30						
40						
50-70						
80-90						

REV	DESCRIPTION	DATE
02	PH	05.14.14
01	PH	05.14.14
00	PH	05.14.14
JOB ID: IP-18-08		
SHEET NO: 5001		
PAGE NO: 13 of 14		



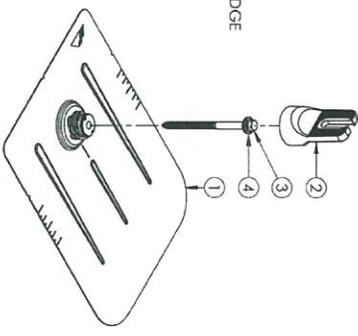
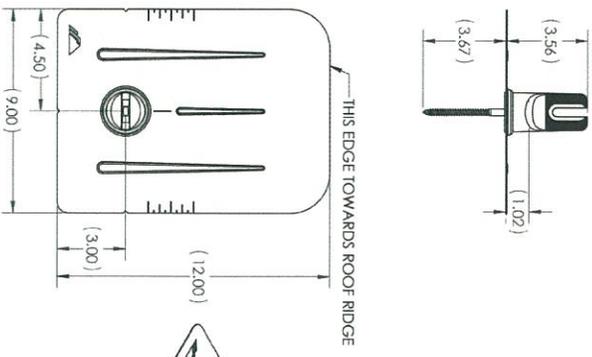
OWNER:
 OWEN PHILBIN
 7110 SYCAMORE AVE,
 TAKOMA PARK, MD 20912

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

MOUNT ACCORDING TO MOUNTING MFG INSTRUCTIONS AND CIVIL/STRUCTURAL DIRECTIONS
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 MOUNT # 4 ON CENTER UNLESS OTHERWISE NOTED OR REQUIRED TO CONNECT TO STRUCTURAL MEMBERS



FlashFoot 2

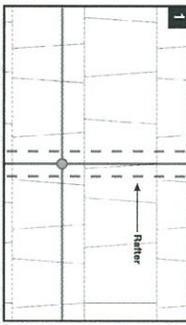


NO.	PART NUMBER	DESCRIPTION	QTY.
1	FM-100-006	ASSY. FLASHING, MILL	1
2	FM-100-008	SCREW, LAG, HEX, 5/16, W/ CUSTOM HEAD, 7/16 HEX W/ FLANGE 4.75L	1
3	23-3118-475LGF	WASHER, EPDM BACKED	1
4	25-3102-000S	WASHER, EPDM BACKED	1

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Installation

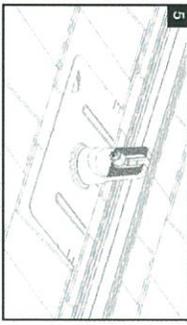
Tools Required: tape measure, chalk line, stud finder, roofing bar, caulking gun, driver with 1/4" bit and 7/16" hex socket.



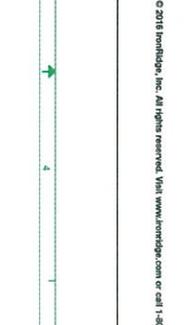
1. Locate rafters and snap vertical and horizontal lines to mark flashing locations. Drill 1/4" pilot holes, then fill with roofing manufacturer's approved sealant.



2. 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.



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



4. Attach rail to other side of the open slot using bonding hardware. Level rail at desired height, then torque to 250 ft-lbs (21 ft-lbs).

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REV	DATE	BY	CHK	DATE
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02	11.14.14			
03	11.14.14			
04	11.14.14			

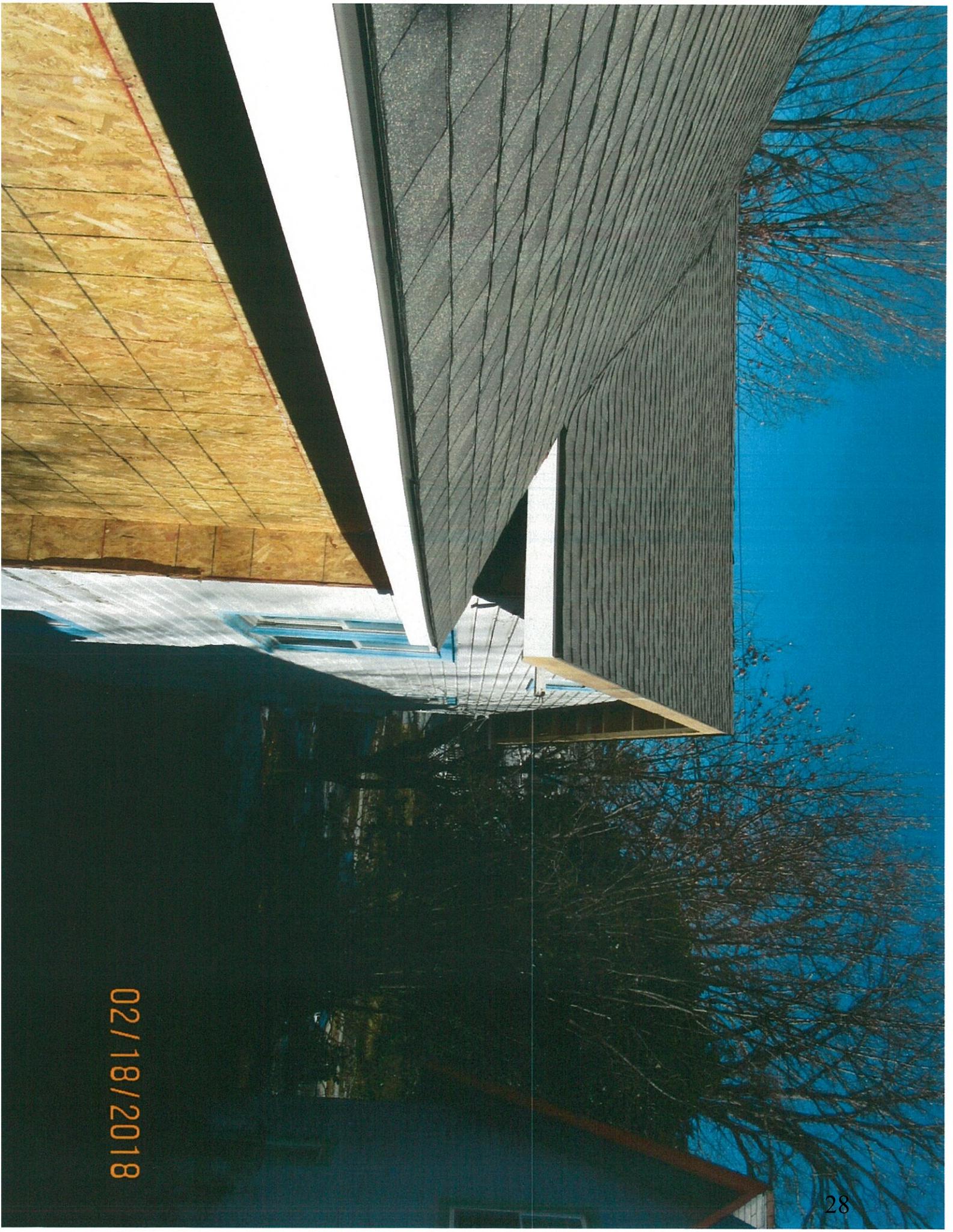
Job ID: IP-15-08
 Sheet No: 5002
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