

Chief Executive Officer
Michael Thurmond

DEPARTMENT OF PLANNING & SUSTAINABILITY

Director
Andrew A. Baker, AICP

Application for Certificate of Appropriateness

Date Received: _____ Application No.: _____
Address of Subject Property: 2058 Edinburgh Terrace NE Atlanta GA 30307
Applicant: Creative Solar USA E-Mail: Scott.Nicholls@CreativeSolarUSA
Applicant Mailing Address: 2931 Lewis Street Kennesaw GA

Applicant Phone(s): 770-985-7438 Fax: _____

Applicant's relationship to the owner: Owner ☐ Architect: ☐ Contractor/Builder ☒ Other ☐

Owner(s): Courtney Ellis E-Mail: amb - Coe @ MSN . com
Aming Bhatia E-Mail: amb - Coe @ MSN . com

Owner(s) Mailing Address: 2058 Edinburgh Terrace NE Atlanta GA 30307

Owner(s) Telephone Number: 404-274-1734

Approximate age or date of construction of the primary structure on the property and any secondary structures affected by this project: Home built 1940

Nature of work (check all that apply):

New construction ☐ Demolition ☐ Addition ☐ Moving a building ☐ Other building changes ☐
New accessory building ☐ Landscaping ☐ Fence/Wall ☐ Other environmental changes ☐
Sign installation or replacement ☐ Other ☒

Description of Work: Installation of 8.82 KW worth of Solar Panels to the Roof of Home

This form must be completed in its entirety before the Planning Department accepts it. The form must be accompanied by supporting documents (plans, material, color samples, photos, etc.). Provide eight (8) collated sets of the application form and all supporting documentation. If plans/drawings are included, provide eight (8) collated sets on paper no larger than 11" x 17" and three (3) additional sets at scale. All documents submitted in hard copy must also be submitted in digital form (.pdf format). All relevant items from the application checklist must be addressed. An application which lacks any of the required attachments shall be determined incomplete and will not be accepted.

[Signature] 5/11/2020
Signature of Applicant/Date

Revised 1/26/17

DEPARTMENT OF PLANNING & SUSTAINABILITY

Authorization of a Second Party to Apply for a Certificate of Appropriateness

This form is required if the individual making the request is not the owner of the property.

(I) / (We),

Amara M. Bhatia

being (owner) (owners) of the property 2058 Edinburgh Ter NE,
hereby delegate authority to Creative Solar

to file an application in (my) (our) behalf.

[Signature] / 05/11/2020
Signature of Owner/Date

Please review the following information

Approval of this Certificate of Appropriateness does not release the recipient from compliance with all other pertinent county, state, and federal regulations.

Before making any changes to your approved plans, contact the preservation planner (404/371- 2155). Some changes may fall within the scope of the existing approval, but others will require review by the preservation commission. If work is performed which is not in accordance with your certificate, the Preservation Commission will issue a cease and desist order and you may be subject to other penalties including monetary fines and/or required demolition of the non-conforming work.

If your project requires that the county issue a Certificate of Occupancy at the end of construction, the preservation planner will need to inspect the completed project to ensure that the work has been completed in accord with the Certificate of Appropriateness. The review may be conducted either before or after your building inspection. If you will be requiring a Certificate of Occupancy, please notify the preservation planner when your project nears completion. If the work as completed is not the same as that approved in the Certificate of Appropriateness you will not receive a Certificate of Occupancy. You may also be subject to other penalties including monetary fines and/or required demolition of the non-conforming work.

If you do not commence construction within twelve months of the date of approval, your Certificate of Appropriateness will become void. You will need to apply for a new certificate if you still intend to do the work.

Please contact the preservation planner, David Cullison (404/371-2155), if you have any questions.

Revised 1/26/17

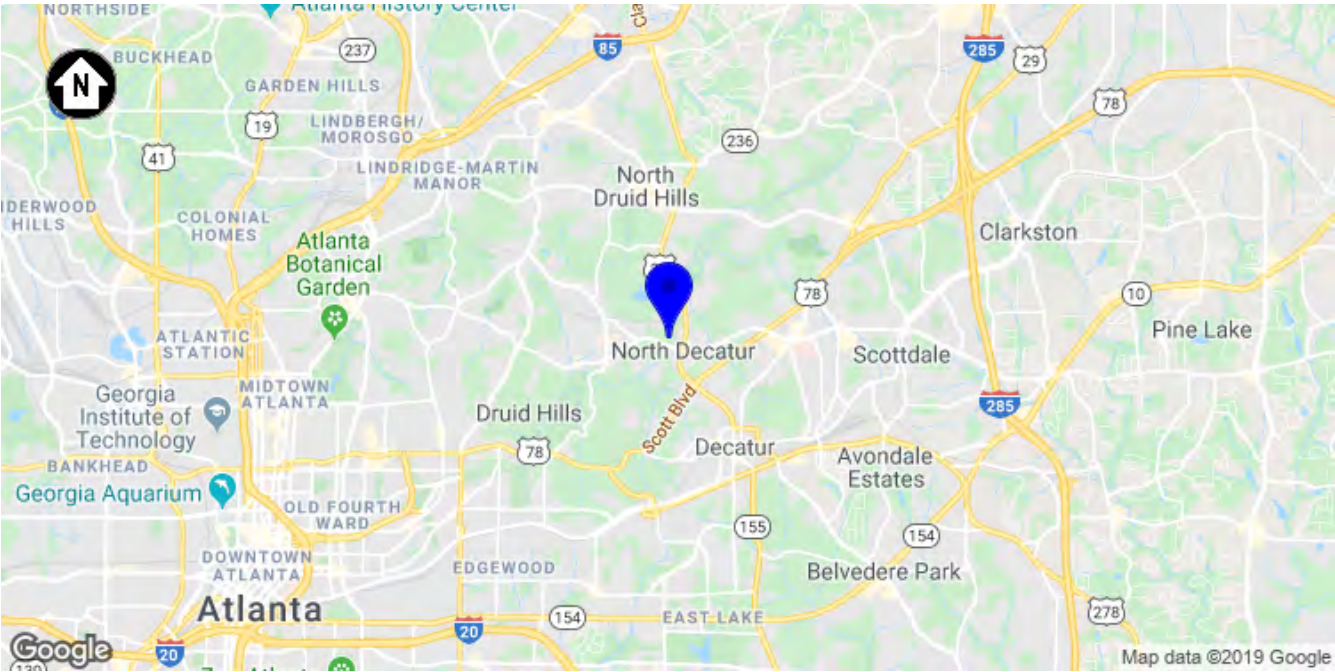
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	MOUNTING SYSTEM DATASHEET
	MOUNTING SYSTEM ENGINEERING LETTER
	UL 2703 GROUND AND BONDING CERTIFICATION
	ANCHOR DATASHEET

PROJECT DETAILS	
PROPERTY OWNER	COURTNEY AND AMINA ELLIS/BHATIA
PROPERTY ADDRESS	2058 EDINBURGH TERRACE NE, ATLANTA, GA 30307 US
APN	
ZONING	RESIDENTIAL
USE AND OCCUPANCY CLASSIFICATION	ONE- OR TWO-FAMILY DWELLING GROUP (GROUP R3)
AHJ	CITY OF ATLANTA
UTILITY COMPANY	GEORGIA POWER CO
METER SERIAL NUMBER	2859246
ELECTRICAL CODE	2017 NEC (NFPA 70)
FIRE CODE	2012 IFC

CONTRACTOR INFORMATION	
COMPANY	CREATIVE SOLAR USA
LICENSE NUMBER	EN211480
ADDRESS	PO BOX 1066, KENNESAW, GA 30156
PHONE NUMBER	(770) 485-7438
CONTRACTOR SIGNATURE	



1 PLOT
PV-1 SCALE: NTS



2 LOCALE
PV-1 SCALE: NTS

SCOPE OF WORK
THIS PROJECT INVOLVES THE INSTALLATION OF A PHOTOVOLTAIC POWER SYSTEM. SOLAR PANELS WILL BE RACKED USING A PREENGINEERED RACKING SYSTEM. THE RACKED MODULES WILL BE ELECTRICALLY CONNECTED WITH DC TO AC POWER INVERTERS AND INTERCONNECTED TO THE LOCAL UTILITY USING MEANS AND METHODS CONSISTENT WITH THE RULES ENFORCED BY THE LOCAL UTILITY AND PERMITTING JURISDICTION.


THIS DOCUMENT HAS BEEN PREPARED FOR THE PURPOSE OF DESCRIBING THE DESIGN OF A PROPOSED PV SYSTEM WITH ENOUGH DETAIL TO DEMONSTRATE COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS. THE DOCUMENT SHALL NOT BE RELIED UPON AS A SUBSTITUTE FOR FOLLOWING MANUFACTURER INSTALLATION INSTRUCTIONS. THE SYSTEM SHALL COMPLY WITH ALL MANUFACTURERS LISTING AND INSTALLATION INSTRUCTIONS, AS WELL AS ALL APPLICABLE CODES. NOTHING IN THIS DOCUMENT SHALL BE INTERPRETED IN A WAY THAT OVERRIDES THEM. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ALL CONDITIONS, DIMENSIONS, AND DETAILS IN THIS DOCUMENT.

SYSTEM DETAILS	
DESCRIPTION	NEW GRID-INTERACTIVE PHOTOVOLTAIC SYSTEM WITH NO BATTERY STORAGE
DC RATING OF SYSTEM	9,380W
AC RATING OF SYSTEM	8,120W
AC OUTPUT CURRENT	33.9A
INVERTER(S)	28 X ENPHASE IQ7PLUS-72-2-US
MODULE	Q-CELLS Q.PEAK DUO BLK-G6 335
ARRAY WIRING	(1) BRANCH OF 10 IQ7PLUS-72-2-US MICROINVERTERS (2) BRANCH OF 9 IQ7PLUS-72-2-US MICROINVERTERS

INTERCONNECTION DETAILS	
POINT OF CONNECTION	NEW LOAD-SIDE AC CONNECTION PER NEC 705.12(B) AT MSP
UTILITY SERVICE	120/240V 1φ
ELECTRICAL PANEL	MAIN SERVICE PANEL W/225A BUSBAR 200A MCB

SITE DETAILS	
ASHRAE EXTREME LOW	-8°C (18°F)
ASHRAE 2% HIGH	33°C (91°F)
CLIMATE DATA SOURCE	GAINESVILLE/LEE GIL (KGVL)
WIND SPEED	110 MPH (ASCE7-10)
RISK CATEGORY	II
WIND EXPOSURE CATEGORY	
GROUND SNOW LOAD	10 PSF

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GRID-TIED SOLAR POWER SYSTEM

ELLIS/BHATIA RESIDENCE
2058 EDINBURGH TERRACE NE
ATLANTA, GA 30307

PROJECT SUMMARY

DOC ID: 126339-157450-1
DATE: 11/22/19
CREATOR: D.R.
REVIEWER:

REVISIONS

PV-1



1 SITE PLAN
PV-2 SCALE: 1" = 20'

GENERAL NOTES	
1	EQUIPMENT LIKELY TO BE WORKED UPON WHILE ENERGIZED SHALL BE INSTALLED IN LOCATIONS THAT SATISFY MINIMUM WORKING CLEARANCES PER NEC 110.26.
2	CONTRACTOR SHALL USE ONLY COMPONENTS LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY FOR THE INTENDED USE.
3	CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL EQUIPMENT, CABLES, ADDITIONAL CONDUITS, RACEWAYS, AND OTHER ACCESSORIES NECESSARY FOR A COMPLETE AND OPERATIONAL PV SYSTEM.
4	ALL EMT CONDUIT FITTINGS SHALL BE LISTED AS WEATHERPROOF FITTINGS AND INSTALLED TO ENSURE A RAINTIGHT FIT, PER NEC 358.42.

- 1 (N) PROPOSED ROOF-MOUNTED PHOTOVOLTAIC ARRAY. 2:12 (10°) SLOPED ROOF, 10 PV MODULES (BLACK FRAME, BLACK BACKSHEET), 283° AZIMUTH
- 2 (N) TRANSITION BOX (JB2), OUTDOOR , OUTPUT CIRCUIT CONDUCTORS SHALL BE RUN IN EMT CONDUIT OVER ROOF NO CLOSER THAN 0.5" ABOVE ROOF SURFACE
- 3 (N) PROPOSED ROOF-MOUNTED PHOTOVOLTAIC ARRAY. 2:12 (10°) SLOPED ROOF, 9 PV MODULES (BLACK FRAME, BLACK BACKSHEET), 13° AZIMUTH
- 4 (N) TRANSITION BOX (JB3), OUTDOOR , OUTPUT CIRCUIT CONDUCTORS SHALL BE RUN IN EMT CONDUIT OVER ROOF NO CLOSER THAN 0.5" ABOVE ROOF SURFACE
- 5 (N) PROPOSED ROOF-MOUNTED PHOTOVOLTAIC ARRAY. 2:12 (10°) SLOPED ROOF, 9 PV MODULES (BLACK FRAME, BLACK BACKSHEET), 101° AZIMUTH
- 6 (E) MAIN SERVICE PANEL (MSP), OUTDOOR
- 7 (N) AC COMBINER (C1), OUTDOOR , OUTPUT CIRCUIT CONDUCTORS SHALL BE RUN IN EMT CONDUIT OVER ROOF NO CLOSER THAN 0.5" ABOVE ROOF SURFACE
- 8 (E) UTILITY METER, OUTDOOR
- 9 (N) VISIBLE, LOCKABLE, LABELED AC DISCONNECT LOCATED WITHIN 10 FT OF UTILITY METER (SW1), OUTDOOR
- 10 (N) TRANSITION BOX (JB1), OUTDOOR , OUTPUT CIRCUIT CONDUCTORS SHALL BE RUN IN EMT CONDUIT OVER ROOF NO CLOSER THAN 0.5" ABOVE ROOF SURFACE

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GRID-TIED SOLAR POWER SYSTEM

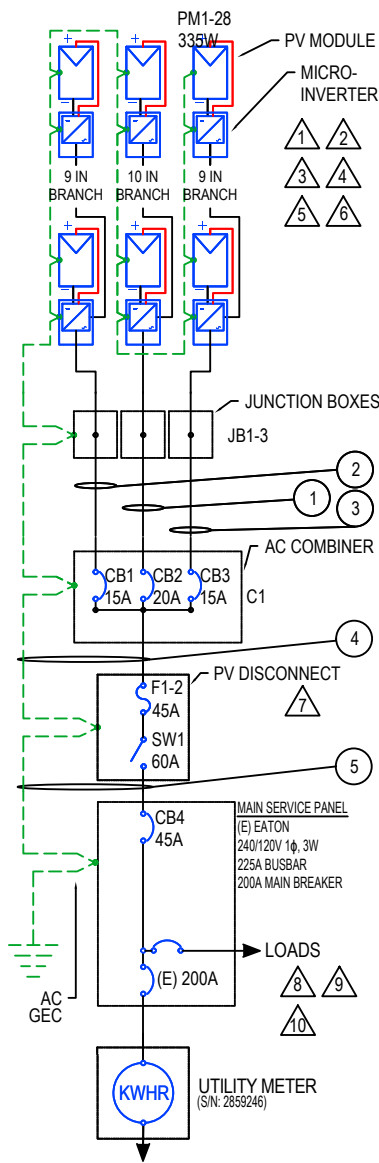
ELLIS/BHATIA RESIDENCE
2058 EDINBURGH TERRACE NE
ATLANTA, GA 30307

SITE PLAN

DOC ID: 126339-157450-1
DATE: 11/22/19
CREATOR: D.R.
REVIEWER:

REVISIONS

PV-2



MODULES												
REF.	QTY.	MAKE AND MODEL			PMAX	PTC	ISC	IMP	VOC	VMP	TEMP. COEFF. OF VOC	FUSE RATING
PM1-28	28	Q-CELLS Q.PEAK DUO BLK-G6 335			335W	314W	10.47A	9.97A	40.4V	33.6V	-0.109V/°C (-0.27%/°C)	20A

INVERTERS											
REF.	QTY.	MAKE AND MODEL		AC VOLTAGE	GROUND	MAX OCPD RATING	RATED POWER	MAX OUTPUT CURRENT	MAX INPUT CURRENT	MAX INPUT VOLTAGE	CEC WEIGHTED EFFICIENCY
I1-28	28	ENPHASE IQ7PLUS-72-2-US		240V	NOT SOLIDLY GROUNDED	--	290W	1.2A	15.0A	60V	97.0%

PASS-THRU BOXES AND COMBINERS											
REF.	QTY.	MAKE AND MODEL					RATED CURRENT		MAX RATED VOLTAGE		
C1	1	ENPHASE IQ COMBINER OR EQUIV.					16A		240VAC		

DISCONNECTS					
REF.	QTY.	MAKE AND MODEL		RATED CURRENT	MAX RATED VOLTAGE
SW1	1	EATON DG222NRB OR EQUIV.		60A	240VAC

OCPDS				
REF.	QTY.	RATED CURRENT		MAX VOLTAGE
CB1,3	2	15A		240VAC
CB2	1	20A		240VAC
F1-2	2	45A		240VAC
CB4	1	45A		240VAC

SYSTEM SUMMARY			
	BRANCH 1	BRANCH 2	BRANCH 3
INVERTERS PER BRANCH	9	10	9
MAX AC CURRENT	10.89A	12.1A	10.89A
MAX AC OUTPUT	2,610W	2,900W	2,610W
ARRAY STC POWER		9,380W	
ARRAY PTC POWER		8,780W	
MAX AC CURRENT		34A	
MAX AC POWER OUTPUT		8,120W	
DERATED AC POWER OUTPUT		8,120W	

- ### NOTES
- 1

THE DC AND AC CONNECTORS OF THE LISTED ENPHASE IQ7PLUS-72-2-US CONFORM TO NEC 690.17(E) REQUIREMENT THAT INVERTERS INCLUDE DISCONNECTS FROM ALL SOURCES OF POWER.
- 2

MICROINVERTER BRANCH CIRCUIT CONDUCTORS ARE MANUFACTURED ENPHASE Q CABLES LISTED FOR USE IN 20A OR LESS CIRCUITS OF ENPHASE IQ MICROINVERTERS. THEY ARE ROHS, OIL RESISTANT, AND UV RESISTANT. THEY CONTAIN TWO 12 AWG CONDUCTORS OF TYPE THHN/THWN-2 DRY/WET AND CERTIFIED TO UL3003 AND UL 9703. THE CABLE'S DOUBLE INSULATED RATING REQUIRES NO NEUTRAL OR GROUNDED CONDUCTOR.
- 3

DC PV CONDUCTORS ARE NOT SOLIDLY-GROUNDED. NO DC PV CONDUCTOR SHALL BE WHITE- OR GRAY-COLORED
- 4

ALL METAL ENCLOSURES, RACEWAYS, CABLES AND EXPOSED NONCURRENT-CARRYING METAL PARTS OF EQUIPMENT SHALL BE GROUNDED TO EARTH AS REQUIRED BY NEC 250.4(B) AND PART III OF NEC ARTICLE 250 AND EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45. THE GROUNDING ELECTRODE SYSTEM SHALL ADHERE TO 690.47(A) AND 250.169. THE DC GROUNDING ELECTRODE SHALL BE SIZED ACCORDING TO 250.166
- 5

AN AUXILIARY GROUNDING ELECTRODE MAY BE INSTALLED IN COMPLIANCE WITH NEC SECTION 690.47(B).
- 6

MAX DC VOLTAGE OF PV MODULE IS EXPECTED TO BE 44.0V AT -8°C (-8°C - 25°C) X -0.109V/°C + 40.41V = 44.0V).
- 7

PV SYSTEM DISCONNECT SHALL BE A VISIBLE KNIFE-BLADE TYPE DISCONNECT THAT IS ACCESSIBLE AND LOCKABLE BY THE UTILITY. THE DISCONNECT SHALL BE LOCATED WITHIN 10 FT OF UTILITY METER.
- 8

POINT-OF-CONNECTION IS ON LOAD SIDE OF SERVICE DISCONNECT, IN COMPLIANCE WITH NEC 705.12(B). OUTPUT IS BACKFED THROUGH BREAKER IN MAIN PANEL.
- 9

THE PV BREAKER SHALL NOT BE MARKED FOR "LINE" AND "LOAD".
- 10

THE PV BREAKER SHALL BE LOCATED AT THE OPPOSITE END OF THE BUSBAR FROM THE MAIN BREAKER.

CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS														
ID	TYPICAL	CONDUCTOR	CONDUIT / CABLE	CURRENT-CARRYING CONDUCTORS IN CONDUIT / CABLE	OCPD	EGC	TEMP. CORR. FACTOR	FILL FACTOR	CONT. CURRENT	MAX. CURRENT (125%)	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	AMP. @ TERM. TEMP. RATING
1	1	12 AWG THWN-2, COPPER	0.5" DIA. EMT	2	15A	12 AWG THWN-2, COPPER	0.96 (33°C)	1.0	10.89A	13.61A	30A	28.8A	90°C	30A
2	1	12 AWG THWN-2, COPPER	0.5" DIA. EMT	2	20A	12 AWG THWN-2, COPPER	0.96 (33°C)	1.0	12.1A	15.13A	30A	28.8A	90°C	30A
3	1	12 AWG THWN-2, COPPER	0.5" DIA. EMT	2	15A	12 AWG THWN-2, COPPER	0.96 (33°C)	1.0	10.89A	13.61A	30A	28.8A	90°C	30A
4	1	6 AWG THWN-2, COPPER	0.75" DIA. EMT	2	45A	8 AWG THWN-2, COPPER	0.96 (33°C)	1.0	33.88A	42.35A	75A	72A	75°C	65A
5	1	6 AWG THWN-2, COPPER	0.75" DIA. EMT	2	45A	8 AWG THWN-2, COPPER	0.96 (33°C)	1.0	33.88A	42.35A	75A	72A	75°C	65A

- ### GENERAL ELECTRICAL NOTES
- 1

UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
- 2

MODULES CONFORM TO AND ARE LISTED UNDER UL 1703.
- 3

CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC ARTICLE 300.6 (C) (1) AND ARTICLE 310.8 (D).
- 4

CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC ARTICLE 310.8 (C).

- ### GROUNDING NOTES
- 1

ALL EQUIPMENT SHALL BE PROPERLY GROUNDED PER THE REQUIREMENTS OF NEC ARTICLES 250 & 690
- 2

PV MODULES SHALL BE GROUNDED TO MOUNTING RAILS USING MODULE LUGS OR RACKING INTEGRATED
- 3

GROUNDING CLAMPS AS ALLOWED BY LOCAL JURISDICTION. ALL OTHER EXPOSED METAL PARTS SHALL BE GROUNDED USING UL-LISTED LAY-IN LUGS.
- 4

INSTALLER SHALL CONFIRM THAT MOUNTING SYSTEM HAS BEEN EVALUATED FOR COMPLIANCE WITH UL 2703 "GROUNDING AND BONDING" WHEN USED WITH PROPOSED PV MODULE.
- 5

ALL GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE
- 6


IF THE EXISTING MAIN SERVICE PANEL DOES NOT HAVE A VERIFIABLE GROUNDING ELECTRODE, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.
- 7

AC SYSTEM GROUNDING ELECTRODE CONDUCTOR (GEC) SHALL BE A MINIMUM SIZE #8AWG WHEN INSULATED, #6AWG IF BARE WIRE.
- 8

EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC ARTICLE 690.45, AND BE A MINIMUM OF #10AWG WHEN NOT EXPOSED TO DAMAGE, AND #6AWG SHALL BE USED WHEN EXPOSED TO DAMAGE
- 9

GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLOR CODED GREEN, OR MARKED GREEN IF #4AWG OR LARGER

P-126339



GRID-TIED SOLAR POWER SYSTEM

ELLIS/BHATIA RESIDENCE
2058 EDINBURGH TERRACE NE
ATLANTA, GA 30307

SINGLE-LINE DIAGRAM

PROJECT ID: 126339

DATE: 11/22/19

CREATED BY: D.R.

CHECKED BY:

REVISIONS

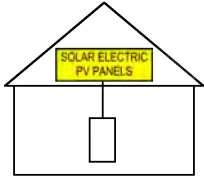
PV-3

JB1 - TRANSITION BOX (ENPHASE IQ COMBINER)
3
JB2 - TRANSITION BOX (ENPHASE IQ COMBINER)
3
JB3 - TRANSITION BOX (ENPHASE IQ COMBINER)
3
C1 - AC COMBINER (ENPHASE IQ COMBINER)
3
SW1 - DISCONNECT (EATON DG222NRB)
345
I1 - INVERTER (ENPHASE IQ7PLUS-72-2-US)
3
I10 - INVERTER (ENPHASE IQ7PLUS-72-2-US)
3
I11 - INVERTER (ENPHASE IQ7PLUS-72-2-US)
3
I12 - INVERTER (ENPHASE IQ7PLUS-72-2-US)
3
I13 - INVERTER (ENPHASE IQ7PLUS-72-2-US)
3
I14 - INVERTER (ENPHASE IQ7PLUS-72-2-US)
3

1SEE NOTE NO. 4 (MSP)

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE 'OFF' POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY.



NEC 690.56(C)(1)

3EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT (JB1, JB2, JB3, C1, SW1, I1, I10, I11, I12, I13, I14, I15, I16, I17, I18, I19, I2, I20, I21, I22, I23, I24, I25, I26, I27, I28, I3, I4, I5, I6, I7, I8, I9)

! WARNING !

ELECTRIC SHOCK HAZARD. TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

NEC 690.13(B)

4AC SOLAR DISCONNECT (SW1, CB4 IN MSP)

PV SYSTEM DISCONNECT

NEC 690.13(B)

7SOLAR BREAKER (MSP)

! WARNING !

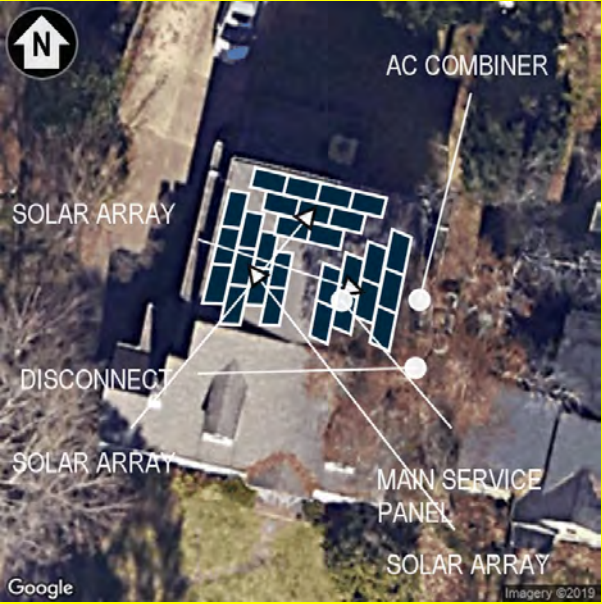
INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.

NEC 705.12(B)(2)(3)(B)

2POINT-OF-INTERCONNECTION OR AT MAIN SERVICE DISCONNECT (MSP)

! CAUTION !

POWER TO THIS BUILDING IS ALSO FROM ROOF MOUNTED SOLAR ARRAYS WITH SAFETY DISCONNECTS AS SHOWN



INSTALLED BY CREATIVE SOLAR USA • 7704857438

NEC 690.56(B)

5AC DISCONNECT (SW1, CB4 IN MSP)

MAXIMUM AC OPERATING CURRENT: 33.9A
MAXIMUM AC OPERATING VOLTAGE: 240V

NEC 690.54

6ANY AC ELECTRICAL PANEL THAT IS FED BY BOTH THE UTILITY AND THE PHOTOVOLTAIC SYSTEM (MSP)


! WARNING !

DUAL POWER SOURCE. SECOND SOURCE IS PHOTOVOLTAIC SYSTEM.

NEC 705.12(B)(3)

LABELING NOTES	
1	ALL PLAQUES AND SIGNAGE REQUIRED BY 2017 NEC AND 2012 IFC WILL BE INSTALLED AS REQUIRED.
2	LABELS, WARNING(S) AND MARKING SHALL COMPLY WITH ANSI Z535.4, WHICH REQUIRES THAT DANGER, WARNING, AND CAUTION SIGNS USED THE STANDARD HEADER COLORS, HEADER TEXT, AND SAFETY ALERT SYMBOL ON EACH LABEL. THE ANSI STANDARD REQUIRES A HEADING THAT IS AT LEAST 50% TALLER THAN THE BODY TEXT, IN ACCORDANCE WITH NEC 110.21(B).
3	A PERMANENT PLAQUE OR DIRECTORY SHALL BE INSTALLED PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF NOT IN THE SAME LOCATION IN ACCORDANCE WITH NEC 690.56(B).
4	LABEL(S) WITH MARKING, "TURN RAPID SHUTDOWN SWITCH TO THE 'OFF' POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY," SHALL BE LOCATED WITHIN 3 FT OF SERVICE DISCONNECTING MEANS THE TITLE SHALL UTILIZE CAPITALIZED LETTERS WITH A MINIMUM HEIGHT OF 3/8" IN BLACK ON A YELLOW BACKGROUND, AND REMAINING TEXT SHALL BE CAPITALIZED WITH A MINIMUM HEIGHT OF 3/16" IN BLACK ON WHITE BACKGROUND

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SAFETY LABELS

DOC ID: 126339-157450-1
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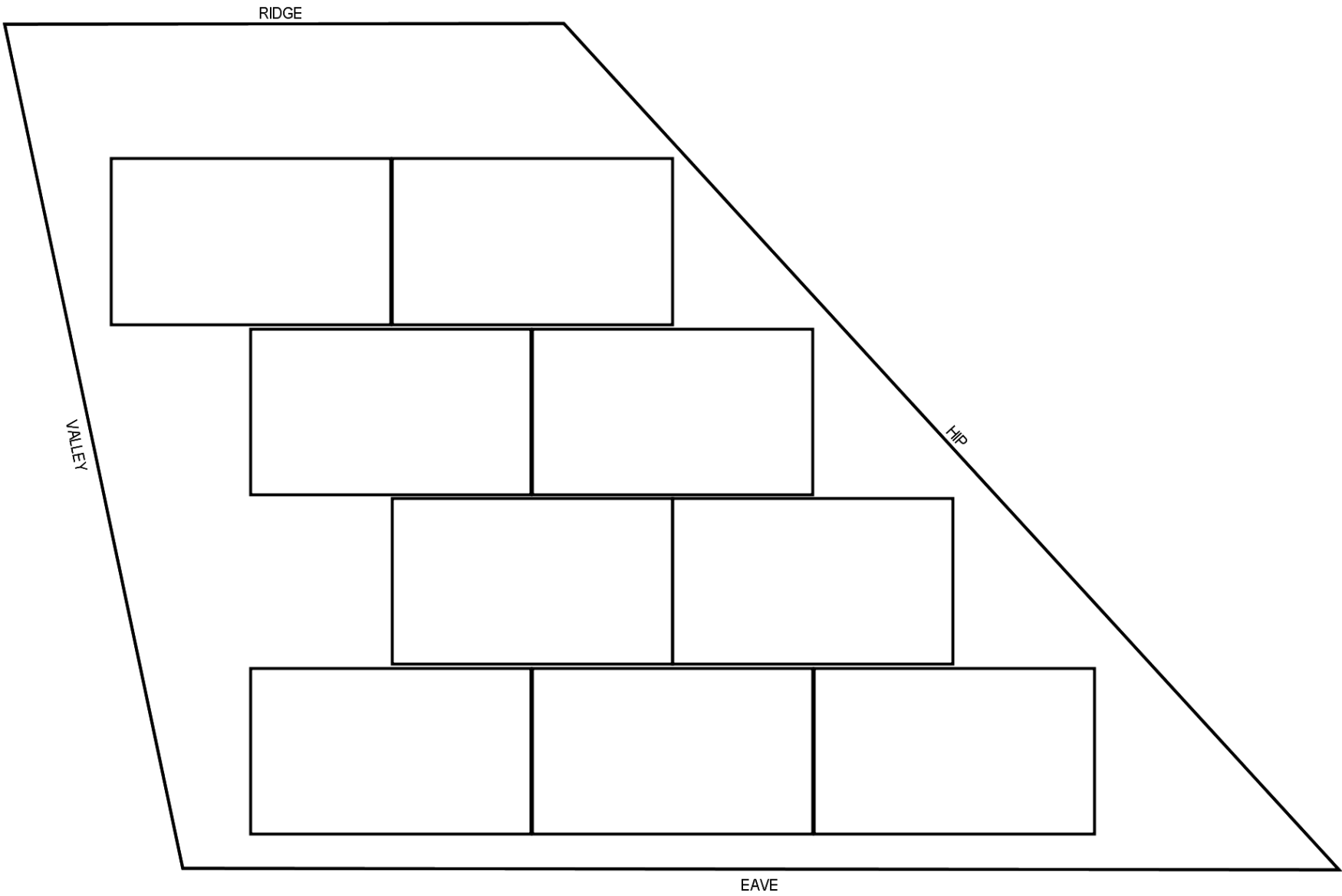
PV-4

ROOF PROPERTIES	
ROOF MATERIAL	COMPOSITION SHINGLE (1 LAYER)
SLOPE	2/12 (9.5°)
MEAN ROOF HEIGHT	21.4FT
DECK SHEATHING	15/32" OSB
CONSTRUCTION	RAFTERS (2X8'S), 16IN OC

MODULE MECHANICAL PROPERTIES	
MODEL	Q-CELLS Q.PEAK DUO BLK-G6 335
DIMENSIONS (AREA)	68.5IN X 40.6IN X 1.3IN (19.3 SQ FT)
WEIGHT	43.9LB

MOUNTING SYSTEM PROPERTIES	
MAX. ALLOW. RAIL SPAN	80.0IN (ZONES 1, 2, AND 3)
MAX. MOUNT SPACING	80.0IN (ZONES 1, 2, AND 3)
MAX. ALLOW. CANTILEVER	32.0IN (ZONES 1, 2, AND 3)
GROUNDING AND BONDING	TIN-PLATED, SOLID COPPER LAY-IN LUGS LISTED UNDER UL 2703

NOTES	
1	RAFTER LOCATIONS ARE APPROXIMATE. ACTUAL LOCATIONS MAY DIFFER AND CONTRACTOR MAY NEED TO ADJUST MOUNT LOCATIONS. IN NO CASE SHALL THE MOUNT SPACING EXCEED "MAX. MOUNT SPACING"



WIND ZONE I



WIND ZONE II



WIND ZONE III

P-126339



GRID-TIED SOLAR POWER SYSTEM

ELLIS/BHATIA RESIDENCE
2058 EDINBURGH TERRACE NE
ATLANTA, GA 30307

ATTACHMENT
PLAN

DOC ID: 126339-157450-1
DATE: 11/22/19
CREATOR: D.R.
REVIEWER:

REVISIONS	

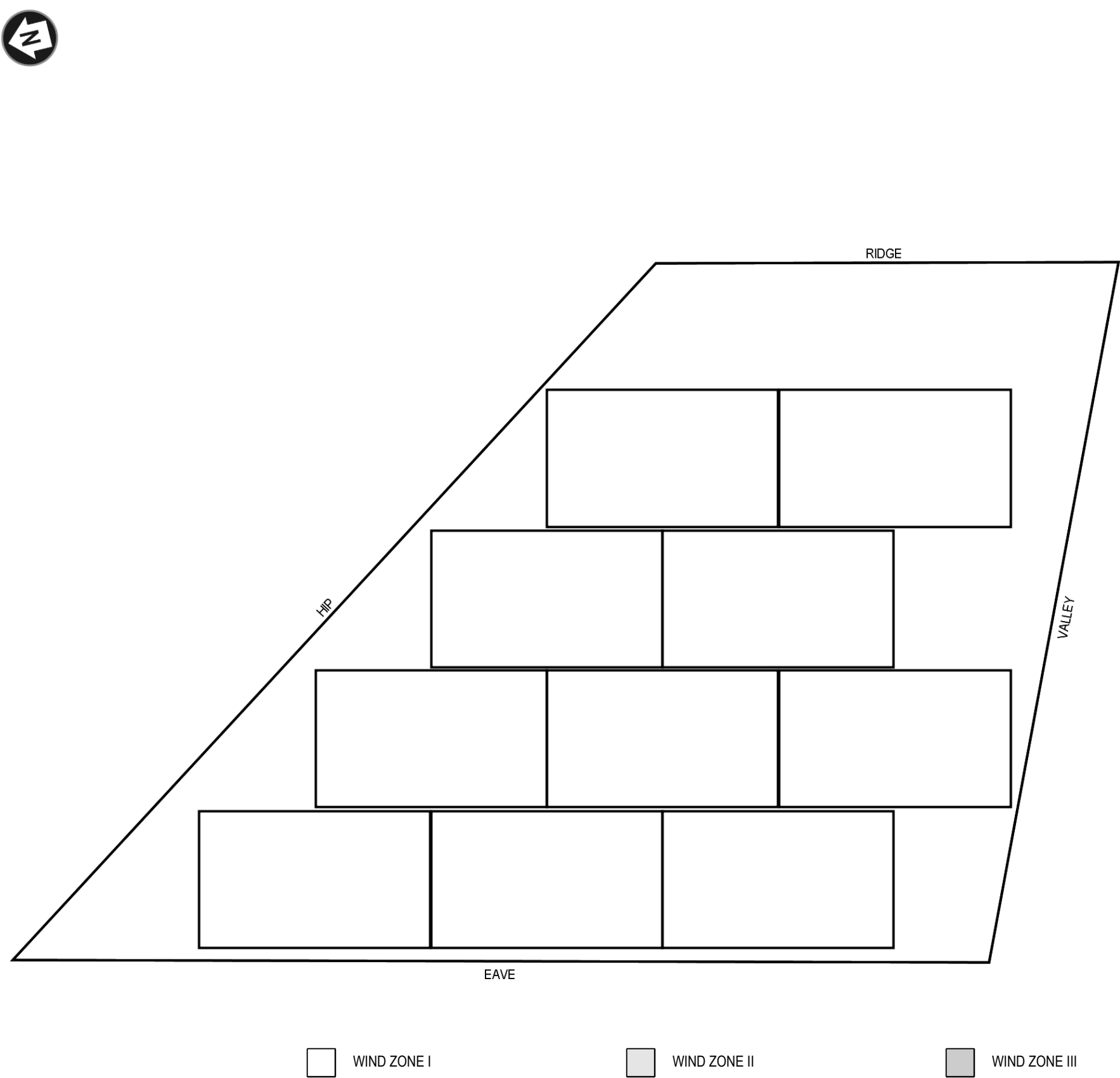
PV-5.1

ROOF PROPERTIES	
ROOF MATERIAL	COMPOSITION SHINGLE (1 LAYER)
SLOPE	2/12 (9.5°)
MEAN ROOF HEIGHT	21.4FT
DECK SHEATHING	15/32" OSB
CONSTRUCTION	RAFTERS (2X8'S), 16IN OC


MODULE MECHANICAL PROPERTIES	
MODEL	Q-CELLS Q.PEAK DUO BLK-G6 335
DIMENSIONS (AREA)	68.5IN X 40.6IN X 1.3IN (19.3 SQ FT)
WEIGHT	43.9LB

MOUNTING SYSTEM PROPERTIES	
MAX. ALLOW. RAIL SPAN	80.0IN (ZONES 1, 2, AND 3)
MAX. MOUNT SPACING	80.0IN (ZONES 1, 2, AND 3)
MAX. ALLOW. CANTILEVER	32.0IN (ZONES 1, 2, AND 3)
GROUNDING AND BONDING	TIN-PLATED, SOLID COPPER LAY-IN LUGS LISTED UNDER UL 2703

NOTES	
1	RAFTER LOCATIONS ARE APPROXIMATE. ACTUAL LOCATIONS MAY DIFFER AND CONTRACTOR MAY NEED TO ADJUST MOUNT LOCATIONS. IN NO CASE SHALL THE MOUNT SPACING EXCEED "MAX. MOUNT SPACING"



P-126339



GRID-TIED SOLAR POWER SYSTEM

ELLIS/BHATIA RESIDENCE
2058 EDINBURGH TERRACE NE
ATLANTA, GA 30307

ATTACHMENT PLAN

DOC ID: 126339-157450-1

DATE: 11/22/19

CREATOR: D.R.

REVIEWER:

REVISIONS

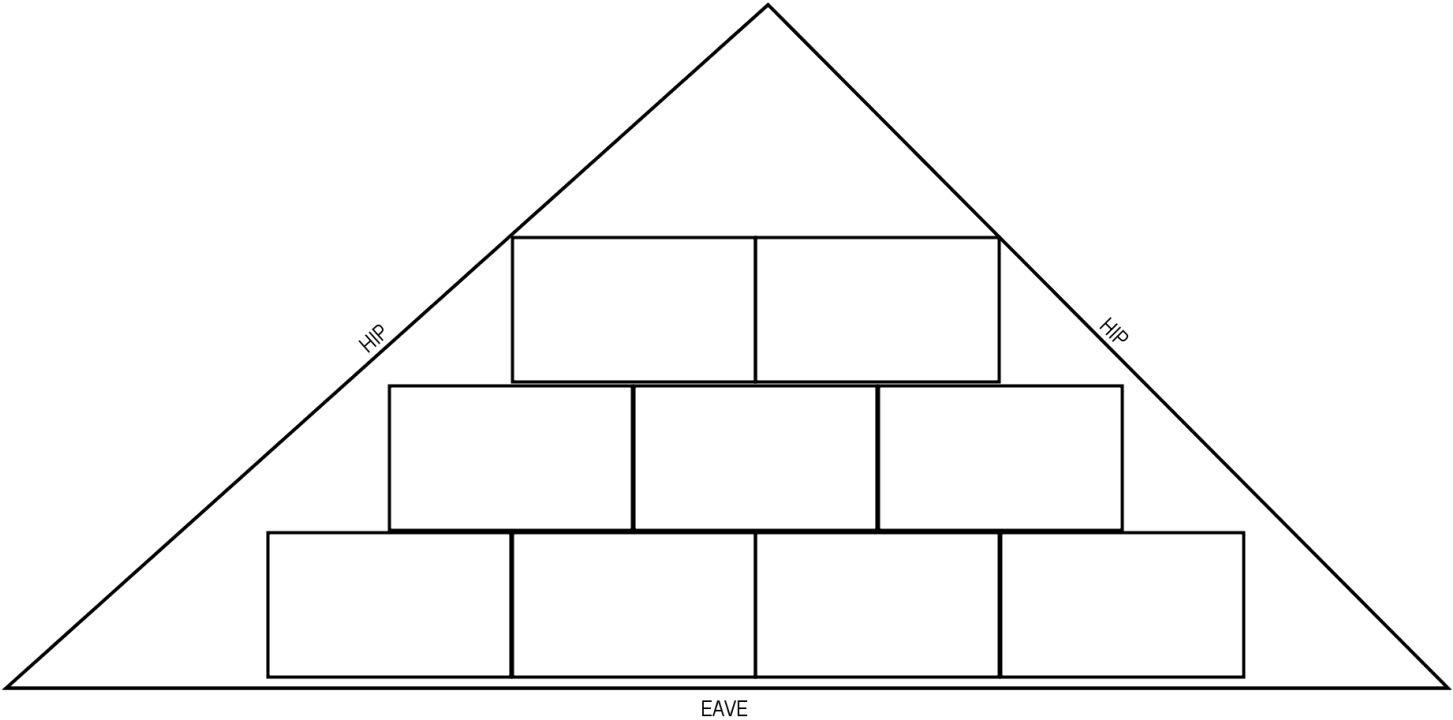
PV-5.2

ROOF PROPERTIES	
ROOF MATERIAL	COMPOSITION SHINGLE (1 LAYER)
SLOPE	2/12 (9.5°)
MEAN ROOF HEIGHT	21.3FT
DECK SHEATHING	15/32" OSB
CONSTRUCTION	RAFTERS (2X8'S), 16IN OC

MODULE MECHANICAL PROPERTIES	
MODEL	Q-CELLS Q.PEAK DUO BLK-G6 335
DIMENSIONS (AREA)	68.5IN X 40.6IN X 1.3IN (19.3 SQ FT)
WEIGHT	43.9LB

MOUNTING SYSTEM PROPERTIES	
MAX. ALLOW. RAIL SPAN	80.0IN (ZONES 1, 2, AND 3)
MAX. MOUNT SPACING	80.0IN (ZONES 1, 2, AND 3)
MAX. ALLOW. CANTILEVER	32.0IN (ZONES 1, 2, AND 3)
GROUNDING AND BONDING	TIN-PLATED, SOLID COPPER LAY-IN LUGS LISTED UNDER UL 2703

NOTES	
1	RAFTER LOCATIONS ARE APPROXIMATE. ACTUAL LOCATIONS MAY DIFFER AND CONTRACTOR MAY NEED TO ADJUST MOUNT LOCATIONS. IN NO CASE SHALL THE MOUNT SPACING EXCEED "MAX. MOUNT SPACING"



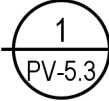
WIND ZONE I



WIND ZONE II



WIND ZONE III



ATTACHMENT PLAN (ORTHOGONAL PROJECTION)
SCALE: 1/4" = 1'

P-126339



GRID-TIED SOLAR POWER SYSTEM

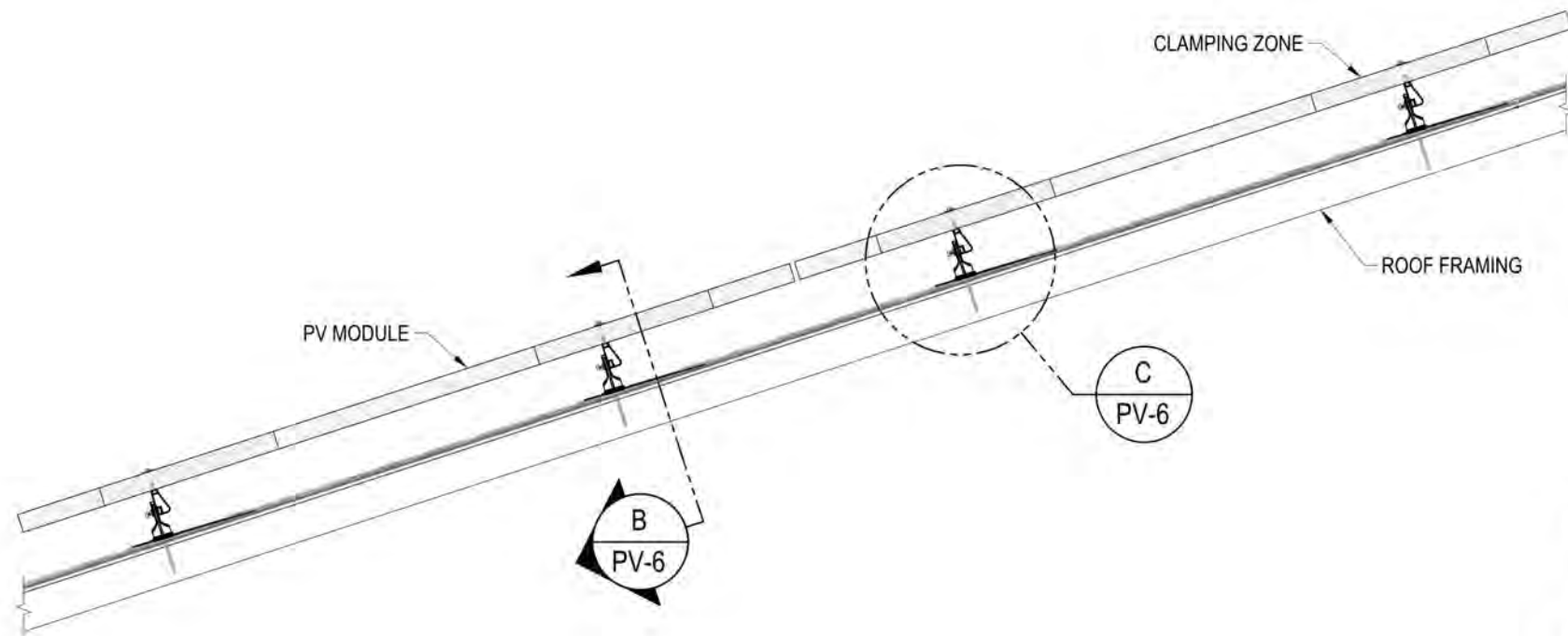
ELLIS/BHATIA RESIDENCE
2058 EDINBURGH TERRACE NE
ATLANTA, GA 30307

ATTACHMENT
PLAN

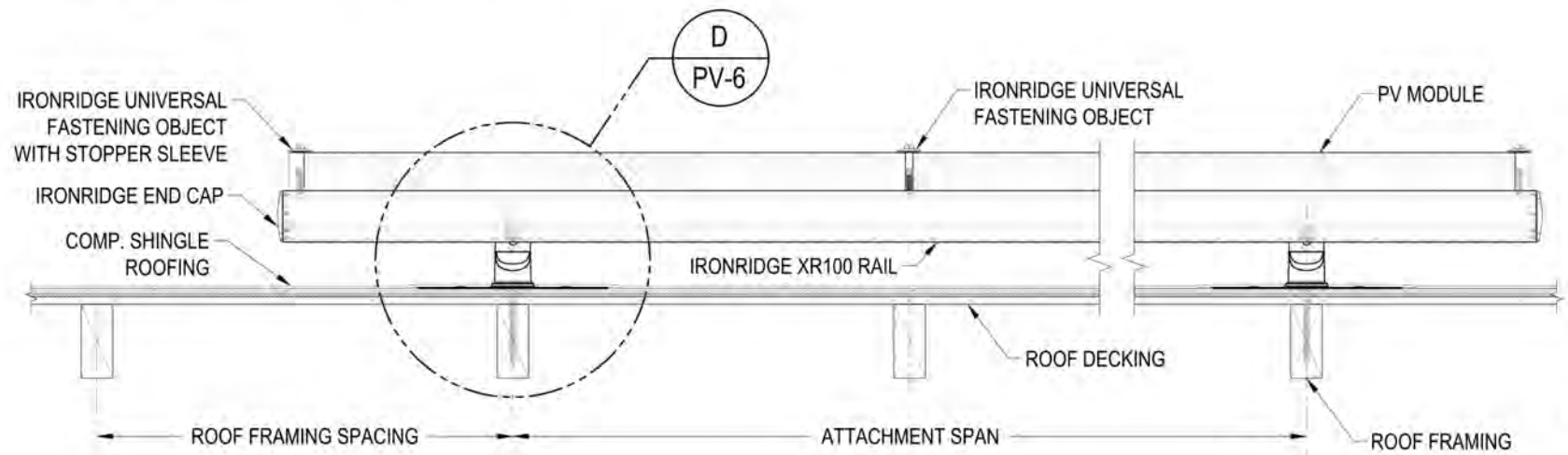
DOC ID: 126339-157450-1	
DATE: 11/22/19	
CREATOR: D.R.	
REVIEWER:	

REVISIONS	

PV-5.3

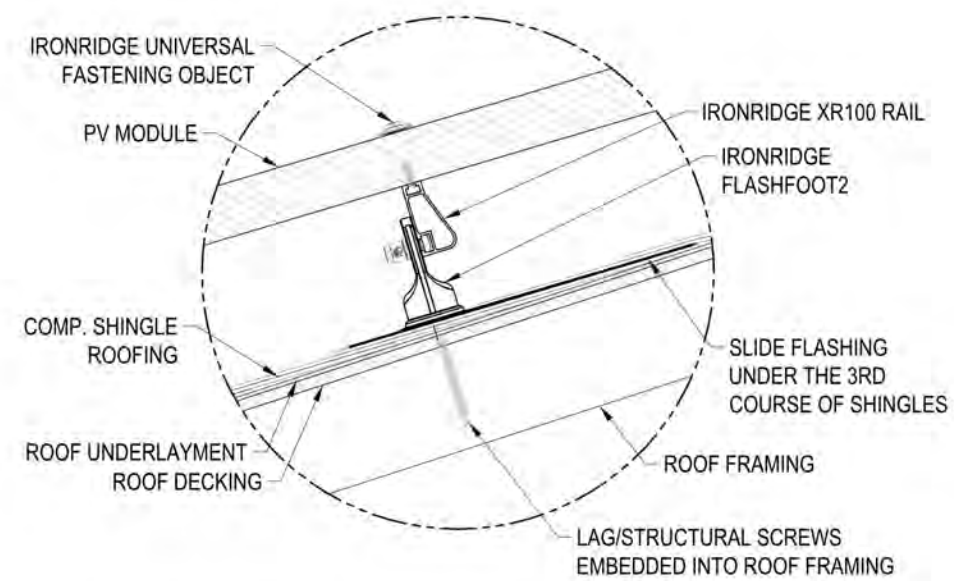


A RACKING ELEVATION (TRANSVERSE VIEW)
PV-6 SCALE: NTS

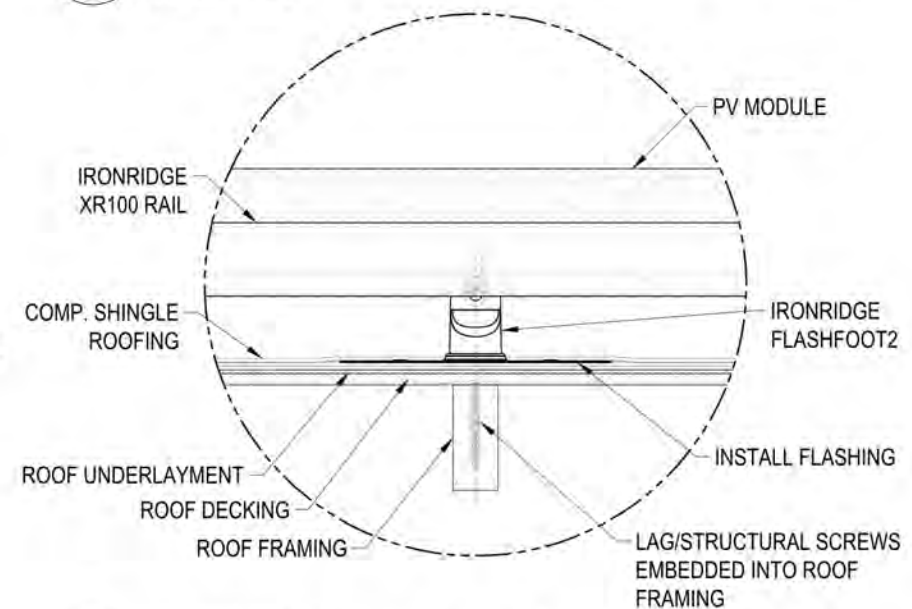


B RACKING ELEVATION (LONGITUDINAL VIEW)
PV-6 SCALE: NTS

MOUNTING SYSTEM NOTES	
1	FLASHING SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS.
2	IF THERE IS ANY CONFLICT BETWEEN WHAT IS DEPICTED HERE AND INSTRUCTIONS PROVIDED BY A MANUFACTURER, THE MANUFACTURER'S INSTRUCTIONS SHALL SUPERCEDE.



C ATTACHMENT DETAIL (TRANSVERSE VIEW)
PV-6 SCALE: NTS



D ATTACHMENT DETAIL (LONGITUDINAL VIEW)
PV-6 SCALE: NTS

P-126339



GRID-TIED SOLAR POWER SYSTEM

ELLIS/BHATIA RESIDENCE
2058 EDINBURGH TERRACE NE
ATLANTA, GA 30307

ATTACHMENT DETAILS

DOC ID: 126339-157450-1
DATE: 11/22/19
CREATOR: D.R.
REVIEWER:

REVISIONS

PV-6




1 FIRE SAFETY PLAN
PV-7 SCALE: 1" = 20'

GENERAL NOTES	
1	ROOF ACCESS POINTS SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES, OR SIGNS. (IFC 605.11.3.1)
2	PANELS/MODULES INSTALLED ON RESIDENTIAL BUILDINGS WITH ROOF HIPS AND VALLEYS SHALL BE LOCATED NO CLOSER THAN 18 INCHES (457 MM) TO A HIP OR A VALLEY WHERE PANELS/MODULES ARE TO BE PLACED ON BOTH SIDES OF A HIP OR VALLEY. WHERE PANELS ARE TO BE LOCATED ON ONLY ONE SIDE OF A HIP OR VALLEY THAT IS OF EQUAL LENGTH, THE PANELS SHALL BE PERMITTED TO BE PLACED DIRECTLY ADJACENT TO THE HIP OR VALLEY. (IFC 605.11.3.2.3)
3	PANELS/MODULES INSTALLED ON RESIDENTIAL BUILDINGS SHALL BE LOCATED NO HIGHER THAN 3 FEET (914 MM) BELOW THE RIDGE IN ORDER TO ALLOW FOR FIRE DEPARTMENT SMOKE VENTILATION OPERATIONS. (IFC 605.11.3.2.4)

- 1 ROOF ACCESS POINT
- 2 ROOF ACCESS POINT
- 3 ROOF ACCESS POINT
- 4 ROOF ACCESS POINT
- 5 ROOF ACCESS POINT
- 6 1.0 FT. WIDE SMOKE-VENTILATION SETBACK
- 7 0.5 FT. WIDE FIRE ACCESS PATHWAY
- 8 THIS SYSTEM UTILIZES MICROINVERTERS. THERE ARE NO DC CIRCUITS OUTSIDE OF THE ARRAY PERIMETER OR INSIDE THE BUILDING.
- 9 CABLES, WHEN RUN BETWEEN ARRAYS, SHALL BE ENCLOSED IN CONDUIT.

P-126339



GRID-TIED SOLAR POWER SYSTEM

ELLIS/BHATIA RESIDENCE
2058 EDINBURGH TERRACE NE
ATLANTA, GA 30307

FIRE SAFETY PLAN

DOC ID: 126339-157450-1
DATE: 11/22/19
CREATOR: D.R.
REVIEWER:

REVISIONS

PV-7

Conductor, Conduit, and OCPD Sizing Validation

1. Maximum System Voltage Test

1.1. Enphase inverter w/28 Q-Cells Q.PEAK DUO BLK-G6 335 (335W)s

Array Properties	
Array Type	Microinverter Array
System Description	Enphase inverter w/28 Q-Cells Q.PEAK DUO BLK-G6 335 (335W)s
Module	Q.PEAK DUO BLK-G6 335 (335W)
Highest number of modules in series in a PV Source Circuit	1
Design Low Temp.	-8°C
Module Voc	40.41V
Temp. Coefficient Voc	-0.109V/C

NEC Code Calculations

A. Maximum Voltage of PV Source Circuit	44.01V
see 690.7(A)	

NEC 690.7(A) requires that if the PV module manufacturer provides a temperature coefficient of open-circuit voltage, it must be used to calculate the PV array's maximum system voltage. It includes an information note recommending the use of the ASHRAE 'Extreme Annual Mean Minimum Design Dry Bulb Temperature' as the design low temperature. Using these values, the module Voc (40.41V) will increase to 44.01V at the design low temperature (-8°C).

(-8°C - 25°C) X -0.109V/C + 40.41V = 44.01V
The module Voc at the design low temperature is 44.01V.
44.01V X 1 = 44.01V

NEC Code Validation Tests		
1.	PV Source Circuit maximum Voc must not exceed 600V 44.01V < 600V = true	PASS

2. Wire, Conduit, and OCPD Code Compliance Validation

2.1. #1: AC Branch Output: Transition Box to AC Combiner

Circuit Section Properties	
Conductor	12 AWG THWN-2, Copper
Equipment Ground Conductor (EGC)	12 AWG THWN-2, Copper
OCPD(s)	15A
Raceway/Cable	0.5" dia. EMT
Lowest Terminal Temperature Rating	90°C
Maximum Wire Temperature	33°C
Power Source Description	Branch of 9 IQ7PLUS-72-2-US microinverters
Current	10.89A
Voltage	240V

NEC Code Calculations

A. Continuous Current	10.89A
see Article 100	

Equipment maximum rated output current is 9 X 1.21A = 10.89A

B. Ampacity of Conductor	30A
see Table 310.15(B)(16)	

Ampacity (30°C) for a copper conductor with 90°C insulation in conduit/cable is 30A.

C. Derated Ampacity of Conductor	28.8A
see Table 310.15(B)(3)(c), Table 310.15(B)(3)(a), and Article 100	

The temperature factor for 90°C insulation at 33°C is 0.96.
The fill factor for a conduit/cable that has 2 wires is 1.
The ampacity derated for Conditions of Use is the product of the conductor ampacity (30A) multiplied by the temperature factor (0.96) and by the fill factor (1).
30A X 0.96 X 1 = 28.8A

D. Max Current for Terminal Temp. Rating	30A
see 110.14(C)	

The lowest temperature limit for this conductor at any termination is 90°C.
Using the method specified in 110.14(C), the maximum current permitted to ensure that the device terminal temperature does not exceed its 90°C rating would be the amount referenced in the 90°C column in Table 310.15(B)(16), which is 30A.

E. Minimum Allowed OCPD Rating	14A
see 240.4	

NEC 690.9(B) requires that the OCPD be rated for no less than 1.25 times the Continuous Current of the circuit.
10.89A X 1.25 = 13.61A

F. Maximum Allowed OCPD Rating	20A
see 240.4(D)	

NEC 240.4(D) requires that OCPD rating not exceed 20A when protecting a Copper 12 AWG conductor.

G. Minimum Required EGC Size	14 AWG
see Table 250.122	

The smallest EGC size allowed is 14 AWG for OCPD rating 15A according to Table 250.122.

H. Minimum Recommended Conduit Size	0.5" dia.
see 300.17	

The total area of all conductors is 0.0399in². With a maximum fill rate of 0.4, the recommended conduit diameter is 0.5.

Qty	Description	Size	Type	Area	Total Area
2	Conductor	12 AWG	THWN-2	0.0133in²	0.0266in²
1	Equipment Ground	12 AWG	THWN-2	0.0133in²	0.0133in²
3					0.0399in²

0.0399in² / 0.4 = 0.0997in² (Corresponding to a diameter of 0.5")

NEC Code Validation Tests

1.	OCPD rating must be at least 125% of Continuous Current (240.4) 15A >= 10.89A X 1.25 = true	PASS
2.	Derated ampacity must exceed OCPD rating, or rating of next smaller OCPD (240.4) 28.8A >= 15A (OCPD Rating) = true	PASS
3.	OCPD rating must not exceed max OCPD rating for conductor (240.4) 15A (OCPD Rating) <= 20A = true	PASS
4.	Derated Ampacity must be greater than or equal to the Continuous Current (Article 100) 28.8A >= 10.89A = true	PASS
5.	Conductor Ampacity must be at least 125% of Continuous Current (215.2(A)(1)) 30A > 10.89A x 1.25 = true	PASS
6.	Max current for terminal must be at least 125% of the Continuous Current. (110.14(C)) 30A >= 10.89A X 1.25 = true	PASS
7.	EGC must meet code requirements for minimum size (Table 250.122) 12 AWG >= 14 AWG = true	PASS
8.	Conduit must meet code recommendation for minimum size (300.17) 0.5in. >= 0.5in. = true	PASS

2.2. #2: AC Branch Output: Transition Box to AC Combiner

Circuit Section Properties

Conductor	12 AWG THWN-2, Copper
Equipment Ground Conductor (EGC)	12 AWG THWN-2, Copper
OCPD(s)	20A
Raceway/Cable	0.5" dia. EMT
Lowest Terminal Temperature Rating	90°C
Maximum Wire Temperature	33°C
Power Source Description	Branch of 10 IQ7PLUS-72-2-US microinverters
Current	12.1A
Voltage	240V

NEC Code Calculations

A. Continuous Current	12.1A
see Article 100	

Equipment maximum rated output current is 10 X 1.21A = 12.1A

B. Ampacity of Conductor	30A
see Table 310.15(B)(16)	

Ampacity (30°C) for a copper conductor with 90°C insulation in conduit/cable is 30A.

C. Derated Ampacity of Conductor	28.8A
see Table 310.15(B)(3)(c), Table 310.15(B)(3)(a), and Article 100	

The temperature factor for 90°C insulation at 33°C is 0.96.
The fill factor for a conduit/cable that has 2 wires is 1.
The ampacity derated for Conditions of Use is the product of the conductor ampacity (30A) multiplied by the temperature factor (0.96) and by the fill factor (1).
30A X 0.96 X 1 = 28.8A

D. Max Current for Terminal Temp. Rating	30A
see 110.14(C)	

The lowest temperature limit for this conductor at any termination is 90°C.
Using the method specified in 110.14(C), the maximum current permitted to ensure that the device terminal temperature does not exceed its 90°C rating would be the amount referenced in the 90°C column in Table 310.15(B)(16), which is 30A.

E. Minimum Allowed OCPD Rating	15A
see 240.4	

NEC 690.9(B) requires that the OCPD be rated for no less than 1.25 times the Continuous Current of the circuit.
12.1A X 1.25 = 15.12A rounded down to 15A

F. Maximum Allowed OCPD Rating	20A
see 240.4(D)	

NEC 240.4(D) requires that OCPD rating not exceed 20A when protecting a Copper 12 AWG conductor.

G. Minimum Required EGC Size	12 AWG
see Table 250.122	

The smallest EGC size allowed is 12 AWG for OCPD rating 20A according to Table 250.122.

H. Minimum Recommended Conduit Size	0.5" dia.
see 300.17	

The total area of all conductors is 0.0399in². With a maximum fill rate of 0.4, the recommended conduit diameter is 0.5.

Qty	Description	Size	Type	Area	Total Area
2	Conductor	12 AWG	THWN-2	0.0133in²	0.0266in²
1	Equipment Ground	12 AWG	THWN-2	0.0133in²	0.0133in²
3					0.0399in²

0.0399in² / 0.4 = 0.0997in² (Corresponding to a diameter of 0.5")

NEC Code Validation Tests

1.	OCPD rating must be at least 125% of Continuous Current (240.4) 20A >= 12.1A X 1.25 = true	PASS
2.	Derated ampacity must exceed OCPD rating, or rating of next smaller OCPD (240.4) 28.8A >= 20A (OCPD Rating) = true	PASS
3.	OCPD rating must not exceed max OCPD rating for conductor (240.4) 20A (OCPD Rating) <= 20A = true	PASS
4.	Derated Ampacity must be greater than or equal to the Continuous Current (Article 100) 28.8A >= 12.1A = true	PASS
5.	Conductor Ampacity must be at least 125% of Continuous Current (215.2(A)(1)) 30A > 12.1A x 1.25 = true	PASS
6.	Max current for terminal must be at least 125% of the Continuous Current. (110.14(C)) 30A >= 12.1A X 1.25 = true	PASS
7.	EGC must meet code requirements for minimum size (Table 250.122) 12 AWG >= 12 AWG = true	PASS
8.	Conduit must meet code recommendation for minimum size (300.17) 0.5in. >= 0.5in. = true	PASS

2.3. #3: AC Branch Output: Transition Box to AC Combiner

Circuit Section Properties

Conductor	12 AWG THWN-2, Copper
Equipment Ground Conductor (EGC)	12 AWG THWN-2, Copper
OCPD(s)	15A
Raceway/Cable	0.5" dia. EMT
Lowest Terminal Temperature Rating	90°C
Maximum Wire Temperature	33°C
Power Source Description	Branch of 9 IQ7PLUS-72-2-US microinverters
Current	10.89A
Voltage	240V

NEC Code Calculations

A. Continuous Current	10.89A
see Article 100	

Equipment maximum rated output current is 9 X 1.21A = 10.89A

B. Ampacity of Conductor	30A
see Table 310.15(B)(16)	

Ampacity (30°C) for a copper conductor with 90°C insulation in conduit/cable is 30A.

C. Derated Ampacity of Conductor	28.8A
see Table 310.15(B)(3)(c), Table 310.15(B)(3)(a), and Article 100	

The temperature factor for 90°C insulation at 33°C is 0.96.
The fill factor for a conduit/cable that has 2 wires is 1.
The ampacity derated for Conditions of Use is the product of the conductor ampacity (30A) multiplied by the temperature factor (0.96) and by the fill factor (1).
30A X 0.96 X 1 = 28.8A

D. Max Current for Terminal Temp. Rating	30A
see 110.14(C)	

The lowest temperature limit for this conductor at any termination is 90°C.
Using the method specified in 110.14(C), the maximum current permitted to ensure that the device terminal temperature does not exceed its 90°C rating would be the amount referenced in the 90°C column in Table 310.15(B)(16), which is 30A.

E. Minimum Allowed OCPD Rating	14A
see 240.4	

NEC 690.9(B) requires that the OCPD be rated for no less than 1.25 times the Continuous Current of the circuit.
10.89A X 1.25 = 13.61A

F. Maximum Allowed OCPD Rating	20A
see 240.4(D)	

NEC 240.4(D) requires that OCPD rating not exceed 20A when protecting a Copper 12 AWG conductor.

G. Minimum Required EGC Size	14 AWG
see Table 250.122	

The smallest EGC size allowed is 14 AWG for OCPD rating 15A according to Table 250.122.

H. Minimum Recommended Conduit Size	0.5" dia.
see 300.17	

The total area of all conductors is 0.0399in². With a maximum fill rate of 0.4, the recommended conduit diameter is 0.5.

Qty	Description	Size	Type	Area	Total Area
2	Conductor	12 AWG	THWN-2	0.0133in²	0.0266in²
1	Equipment Ground	12 AWG	THWN-2	0.0133in²	0.0133in²
3					0.0399in²

0.0399in² / 0.4 = 0.0997in² (Corresponding to a diameter of 0.5")

NEC Code Validation Tests

1.	OCPD rating must be at least 125% of Continuous Current (240.4) 15A >= 10.89A X 1.25 = true	PASS
2.	Derated ampacity must exceed OCPD rating, or rating of next smaller OCPD (240.4) 28.8A >= 15A (OCPD Rating) = true	PASS
3.	OCPD rating must not exceed max OCPD rating for conductor (240.4) 15A (OCPD Rating) <= 20A = true	PASS
4.	Derated Ampacity must be greater than or equal to the Continuous Current (Article 100) 28.8A >= 10.89A = true	PASS
5.	Conductor Ampacity must be at least 125% of Continuous Current (215.2(A)(1)) 30A > 10.89A x 1.25 = true	PASS
6.	Max current for terminal must be at least 125% of the Continuous Current. (110.14(C)) 30A >= 10.89A X 1.25 = true	PASS
7.	EGC must meet code requirements for minimum size (Table 250.122) 12 AWG >= 14 AWG = true	PASS
8.	Conduit must meet code recommendation for minimum size (300.17) 0.5in. >= 0.5in. = true	PASS

2.4. #4: AC Combiner Output: AC Combiner to Utility Disconnect

Circuit Section Properties

Conductor	6 AWG THWN-2, Copper
Equipment Ground Conductor (EGC)	8 AWG THWN-2, Copper
OCPD(s)	45A
Raceway/Cable	0.75" dia. EMT
Lowest Terminal Temperature Rating	75°C
Maximum Wire Temperature	33°C
Power Source Description	Enphase inverter w/28 Q-Cells Q.PEAK DUO BLK-G6 335 (335W)s
Current	33.88A
Voltage	240V

NEC Code Calculations

A. Continuous Current33.88A

see Article 100

Equipment maximum rated output current is 33.88A

B. Ampacity of Conductor75A

see Table 310.15(B)(16)

Ampacity (30°C) for a copper conductor with 90°C insulation in conduit/cable is 75A.

C. Derated Ampacity of Conductor72A

see Table 310.15(B)(3)(c), Table 310.15(B)(3)(a), and Article 100

The temperature factor for 90°C insulation at 33°C is 0.96.
The fill factor for a conduit/cable that has 2 wires is 1.
The ampacity derated for Conditions of Use is the product of the conductor ampacity (75A) multiplied by the temperature factor (0.96) and by the fill factor (1).
75A X 0.96 X 1 = 72A

D. Max Current for Terminal Temp. Rating65A

see 110.14(C)

The lowest temperature limit for this conductor at any termination is 75°C.
Using the method specified in 110.14(C), the maximum current permitted to ensure that the device terminal temperature does not exceed its 75°C rating would be the amount referenced in the 75°C column in Table 310.15(B)(16), which is 65A.

E. Minimum Allowed OCPD Rating42A

see 240.4

NEC 690.9(B) requires that the OCPD be rated for no less than 1.25 times the Continuous Current of the circuit.
33.88A X 1.25 = 42.35A rounded down to 42A

F. Minimum Required EGC Size8 AWG

see 250.122(B)

Where conductors are oversized, the EGC must be oversized by the same rate. Table 250.122, gives a minimum EGC size of 10 AWG.
Multiplied by the oversize rate, this yields 16.49735kcmil corresponding to 8 AWG.
(26.24kcmil / 16.51kcmil) X 10.38kcmil = 16.49735kcmil

G. Minimum Recommended Conduit Size0.75" dia.

see 300.17

The total area of all conductors is 0.1746in². With a maximum fill rate of 0.4, the recommended conduit diameter is 0.75".

Qty	Description	Size	Type	Area	Total Area
2	Conductor	6 AWG	THWN-2	0.0507in²	0.1014in²
1	Neutral	8 AWG	THWN-2	0.0366in²	0.0366in²
1	Equipment Ground	8 AWG	THWN-2	0.0366in²	0.0366in²
4					0.1746in²

0.1746in² / 0.4 = 0.4365in² (Corresponding to a diameter of 0.75")

NEC Code Validation Tests

1.	OCPD rating must be at least 125% of Continuous Current (240.4) 45A >= 33.88A X 1.25 = true	PASS
2.	Derated ampacity must exceed OCPD rating, or rating of next smaller OCPD (240.4) 72A >= 45A (OCPD Rating) = true	PASS
3.	Derated Ampacity must be greater than or equal to the Continuous Current (Article 100) 72A >= 33.88A = true	PASS
4.	Conductor Ampacity must be at least 125% of Continuous Current (215.2(A)(1)) 75A > 33.88A x 1.25 = true	PASS
5.	Max current for terminal must be at least 125% of the Continuous Current. (110.14(C)) 65A >= 33.88A X 1.25 = true	PASS
6.	EGC must meet code requirements for minimum size (Table 250.122) 8 AWG >= 10 AWG = true	PASS
7.	Conduit must meet code recommendation for minimum size (300.17) 0.75in. >= 0.75in. = true	PASS

2.5. #5: Utility Disconnect Output: Utility Disconnect to Main Service Panel

Circuit Section Properties

Conductor	6 AWG THWN-2, Copper
Equipment Ground Conductor (EGC)	8 AWG THWN-2, Copper
OCPD(s)	45A
Raceway/Cable	0.75" dia. EMT
Lowest Terminal Temperature Rating	75°C
Maximum Wire Temperature	33°C
Power Source Description	Enphase inverter w/28 Q-Cells Q.PEAK DUO BLK-G6 335 (335W)s
Current	33.88A
Voltage	240V

NEC Code Calculations

A. Continuous Current33.88A

see Article 100

Equipment maximum rated output current is 33.88A

B. Ampacity of Conductor75A

see Table 310.15(B)(16)

Ampacity (30°C) for a copper conductor with 90°C insulation in conduit/cable is 75A.

C. Derated Ampacity of Conductor72A

see Table 310.15(B)(3)(c), Table 310.15(B)(3)(a), and Article 100

The temperature factor for 90°C insulation at 33°C is 0.96.
The fill factor for a conduit/cable that has 2 wires is 1.
The ampacity derated for Conditions of Use is the product of the conductor ampacity (75A) multiplied by the temperature factor (0.96) and by the fill factor (1).
75A X 0.96 X 1 = 72A

D. Max Current for Terminal Temp. Rating65A

see 110.14(C)

The lowest temperature limit for this conductor at any termination is 75°C.
Using the method specified in 110.14(C), the maximum current permitted to ensure that the device terminal temperature does not exceed its 75°C rating would be the amount referenced in the 75°C column in Table 310.15(B)(16), which is 65A.

E. Minimum Allowed OCPD Rating42A

see 240.4

NEC 690.9(B) requires that the OCPD be rated for no less than 1.25 times the Continuous Current of the circuit.
33.88A X 1.25 = 42.35A rounded down to 42A

F. Minimum Required EGC Size8 AWG

see 250.122(B)

Where conductors are oversized, the EGC must be oversized by the same rate. Table 250.122, gives a minimum EGC size of 10 AWG.
Multiplied by the oversize rate, this yields 16.49735kcmil corresponding to 8 AWG.
(26.24kcmil / 16.51kcmil) X 10.38kcmil = 16.49735kcmil

G. Minimum Recommended Conduit Size0.75" dia.

see 300.17

The total area of all conductors is 0.1746in². With a maximum fill rate of 0.4, the recommended conduit diameter is 0.75".

Qty	Description	Size	Type	Area	Total Area
2	Conductor	6 AWG	THWN-2	0.0507in²	0.1014in²
1	Neutral	8 AWG	THWN-2	0.0366in²	0.0366in²
1	Equipment Ground	8 AWG	THWN-2	0.0366in²	0.0366in²
4					0.1746in²

0.1746in² / 0.4 = 0.4365in² (Corresponding to a diameter of 0.75")

NEC Code Validation Tests

1.	OCPD rating must be at least 125% of Continuous Current (240.4) 45A >= 33.88A X 1.25 = true	PASS
2.	Derated ampacity must exceed OCPD rating, or rating of next smaller OCPD (240.4) 72A >= 45A (OCPD Rating) = true	PASS
3.	Derated Ampacity must be greater than or equal to the Continuous Current (Article 100) 72A >= 33.88A = true	PASS
4.	Conductor Ampacity must be at least 125% of Continuous Current (215.2(A)(1)) 75A > 33.88A x 1.25 = true	PASS
5.	Max current for terminal must be at least 125% of the Continuous Current. (110.14(C)) 65A >= 33.88A X 1.25 = true	PASS
6.	EGC must meet code requirements for minimum size (Table 250.122) 8 AWG >= 10 AWG = true	PASS
7.	Conduit must meet code recommendation for minimum size (300.17) 0.75in. >= 0.75in. = true	PASS



powered by
Q.ANTUM DUO

Q.PEAK DUO BLK-G6

330-345

ENDURING HIGH
PERFORMANCE



Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY

Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.5%.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID and Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

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



A RELIABLE INVESTMENT

Inclusive 12-year product warranty and 25-year linear performance guarantee².



STATE OF THE ART MODULE TECHNOLOGY

Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

¹ APT test conditions according to IEC/TS 62804-1:2015, method B (-1500V, 168h)
² See data sheet on rear for further information

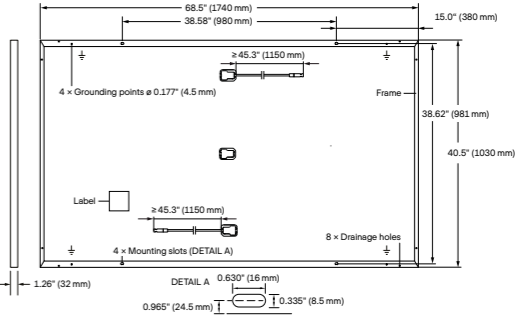
THE IDEAL SOLUTION FOR:



Rooftop arrays on
residential buildings

MECHANICAL SPECIFICATION

Format	68.5 × 40.6 × 1.26 in (including frame) (1740 × 1030 × 32 mm)
Weight	43.9 lbs (19.9 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 20 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 × 1.26-2.36 × 0.59-0.71 in (53-101 × 32-60 × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 45.3 in (1150 mm), (-) ≥ 45.3 in (1150 mm)
Connector	Stäubli MC4, Amphenol UTX, Renhe 05-6, Tongling TL-Cable01S, JMTHY JM601; IP68 or Friends PV2e; IP67

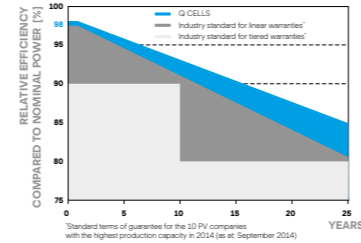


ELECTRICAL CHARACTERISTICS

POWER CLASS			330	335	340	345
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W / -0 W)						
Minimum	Power at MPP ¹	P _{MPP} [W]	330	335	340	345
	Short Circuit Current ¹	I _{SC} [A]	10.41	10.47	10.52	10.58
	Open Circuit Voltage ¹	V _{OC} [V]	40.15	40.41	40.66	40.92
	Current at MPP	I _{MPP} [A]	9.91	9.97	10.02	10.07
	Voltage at MPP	V _{MPP} [V]	33.29	33.62	33.94	34.25
	Efficiency ¹	η [%]	≥ 18.4	≥ 18.7	≥ 19.0	≥ 19.3
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ²						
Minimum	Power at MPP	P _{MPP} [W]	247.0	250.7	254.5	258.2
	Short Circuit Current	I _{SC} [A]	8.39	8.43	8.48	8.52
	Open Circuit Voltage	V _{OC} [V]	37.86	38.10	38.34	38.59
	Current at MPP	I _{MPP} [A]	7.80	7.84	7.89	7.93
	Voltage at MPP	V _{MPP} [V]	31.66	31.97	32.27	32.57

¹ Measurement tolerances P_{MPP} ± 3%; I_{SC}, V_{OC} ± 5% at STC; 1000 W/m², 25 ± 2 °C, AM 1.5 G according to IEC 60904-3 • 2800 W/m², NMOT, spectrum AM 1.5 G

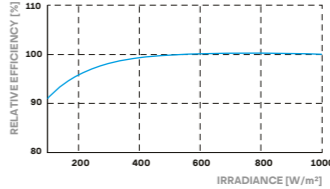
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.54% degradation per year. At least 93.1% of nominal power up to 10 years. At least 85% of nominal power up to 25 years.

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

PERFORMANCE AT LOW IRRADIANCE



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

TEMPERATURE COEFFICIENTS							
Temperature Coefficient of I _{SC}	α	[%/K]	+0.04	Temperature Coefficient of V _{OC}	β	[%/K]	-0.27
Temperature Coefficient of P _{MPP}	γ	[%/K]	-0.36	Normal Module Operating Temperature	NMOT	[°F]	109±5.4 (43±3°C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V _{sys}	[V]	1000	Safety Class	II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating	C (IEC) / TYPE 2 (UL)
Max. Design Load, Push / Pull ³	[lbs / ft ²]	75 (3600 Pa) / 55 (2667 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull ³	[lbs / ft ²]	113 (5400 Pa) / 84 (4000 Pa)		

³ See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 1703, VDE Quality Tested, CE-compliant, IEC 61215:2016, IEC 61730:2016, Application Class II, U.S. Patent No. 9,893,215 (solar cells)



PACKAGING INFORMATION

Number of Modules per Pallet	32
Number of Pallets per 53' Trailer	28
Number of Pallets per 40' HC-Container	24
Pallet Dimensions (L × W × H)	71.5 × 45.3 × 46.9 in (1815 × 1150 × 1190 mm)
Pallet Weight	1505 lbs (683 kg)

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

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748-5996 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.com/na

Enphase IQ Combiner (X-IQ-AM1-240-B)

The **Enphase IQ Combiner™** with Enphase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV installations by providing a consistent, pre-wired solution for residential applications.



Smart

- Includes IQ Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular

Simple

- Three pre-installed 20 A / 240 VAC circuit breakers
- Provides production metering and optional consumption monitoring.

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year warranty

Enphase IQ Combiner

MODEL NUMBER	
IQ Combiner X-IQ-AM1-240-B	IQ Combiner with Enphase IQ Envoy™ for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional consumption monitoring (+/- 2.5%).
ACCESSORIES (order separately)	
Enphase Mobile Connect™ CELLMODEM-03 (4G / 12-year data plan) CELLMODEM-01 (3G / 5-year data plan)	Plug and play industrial grade cellular modem with data plan for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.)
Consumption Monitoring CT CT-200-SPLIT	Split core current transformers enable whole home consumption metering (+/- 2.5%).
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
Solar branch circuit breakers	Three 2-pole 20 A/240 VAC DIN rail-mounted breakers
Maximum system voltage	240 VAC
Rated output current	48 A
Rated input current, each input	16 A
Maximum fuse/circuit breaker rating (output)	60 A
Production Metering CT	200 A solid core pre-installed and wired to IQ Envoy
MECHANICAL DATA	
Dimensions (WxHxD)	38.0 x 38.7 x 20.3 cm (15.0" x 15.3" x 8.0")
Weight	5.1 kg (11.2 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Vented, natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire size	14 to 6 AWG copper conductors for branch inputs. 14 to 4 AWG copper conductors for combined output. Follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Ethernet	802.3, Cat5E (or Cat 6) UTP Ethernet cable - not included
Cellular	Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G) - not included
COMPLIANCE	
Compliance, Combiner	UL 1741
Compliance, IQ Envoy	UL 916 CAN/CSA C22.2 No. 61010-1 47 CFR, Part 15, Class B, ICES 003 IEC/EN 61010-1:2010, EN50065-1, EN61000-4-5, EN61000-6-1, EN61000-6-2 Metering: ANSI C12.20 accuracy class 0.5



Powering Business Worldwide

pe.eaton.com

Product compliance: No Data

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Eaton general duty cartridge fuse safety switch

DG222NRB

UPC:782113144221

Dimensions:

- **Height:** 14.38 IN
- **Length:** 14.8 IN
- **Width:** 9.7 IN

Weight:10 LB

Notes:Maximum hp ratings apply only when dual element fuses are used. 3-Phase hp rating shown is a grounded B phase rating, UL listed.

Warranties:

- Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

Specifications:

- **Type:** General duty, cartridge fused
- **Amperage Rating:** 60A
- **Enclosure:** NEMA 3R
- **Enclosure Material:** Painted galvanized steel
- **Fuse Class Provision:** Class H fuses
- **Fuse Configuration:** Fusible with neutral
- **Number Of Poles:** Two-pole
- **Number Of Wires:** Three-wire
- **Product Category:** General duty safety switch
- **Voltage Rating:** 240V

Supporting documents:

- [Eatons Volume 2-Commercial Distribution](#)
- [Eaton Specification Sheet - DG222NRB](#)

Certifications:

- UL Listed



Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready **Enphase IQ 7 Micro™** and **Enphase IQ 7+ Micro™** dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.



Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable

- Optimized for high powered 60-cell and 72-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ 7+ Micro is required to support 72-cell modules.

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)		IQ7-60-2-US / IQ7-60-B-US		IQ7PLUS-72-2-US / IQ7PLUS-72-B-US	
Commonly used module pairings ¹	235 W - 350 W +		235 W - 440 W +		
Module compatibility	60-cell PV modules only		60-cell and 72-cell PV modules		
Maximum input DC voltage	48 V		60 V		
Peak power tracking voltage	27 V - 37 V		27 V - 45 V		
Operating range	16 V - 48 V		16 V - 60 V		
Min/Max start voltage	22 V / 48 V		22 V / 60 V		
Max DC short circuit current (module Isc)	15 A		15 A		
Overvoltage class DC port	II		II		
DC port backfeed current	0 A		0 A		
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit				
OUTPUT DATA (AC)		IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power	250 VA		295 VA		
Maximum continuous output power	240 VA		290 VA		
Nominal (L-L) voltage/range ²	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V	
Maximum continuous output current	1.0 A (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)	
Nominal frequency	60 Hz		60 Hz		
Extended frequency range	47 - 68 Hz		47 - 68 Hz		
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms		
Maximum units per 20 A (L-L) branch circuit ³	16 (240 VAC)	13 (208 VAC)	13 (240 VAC)	11 (208 VAC)	
Overvoltage class AC port	III		III		
AC port backfeed current	0 A		0 A		
Power factor setting	1.0		1.0		
Power factor (adjustable)	0.85 leading ... 0.85 lagging		0.85 leading ... 0.85 lagging		
EFFICIENCY	@240 V	@208 V	@240 V	@208 V	
Peak efficiency	97.6 %	97.6 %	97.5 %	97.3 %	
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %	
MECHANICAL DATA					
Ambient temperature range	-40°C to +65°C				
Relative humidity range	4% to 100% (condensing)				
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)				
Connector type (IQ7-60-B-US & IQ7PLUS-72-B-US)	Friends PV2 (MC4 intermateable). Adaptors for modules with MC4 or UTX connectors: - PV2 to MC4: order ECA-S20-S22 - PV2 to UTX: order ECA-S20-S25				
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)				
Weight	1.08 kg (2.38 lbs)				
Cooling	Natural convection - No fans				
Approved for wet locations	Yes				
Pollution degree	PD3				
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure				
Environmental category / UV exposure rating	NEMA Type 6 / outdoor				
FEATURES					
Communication	Power Line Communication (PLC)				
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.				
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.				
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.				

1. No enforced DC/AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/module-compatibility>.
2. Nominal voltage range can be extended beyond nominal if required by the utility.
3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit enphase.com

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2018-11-19



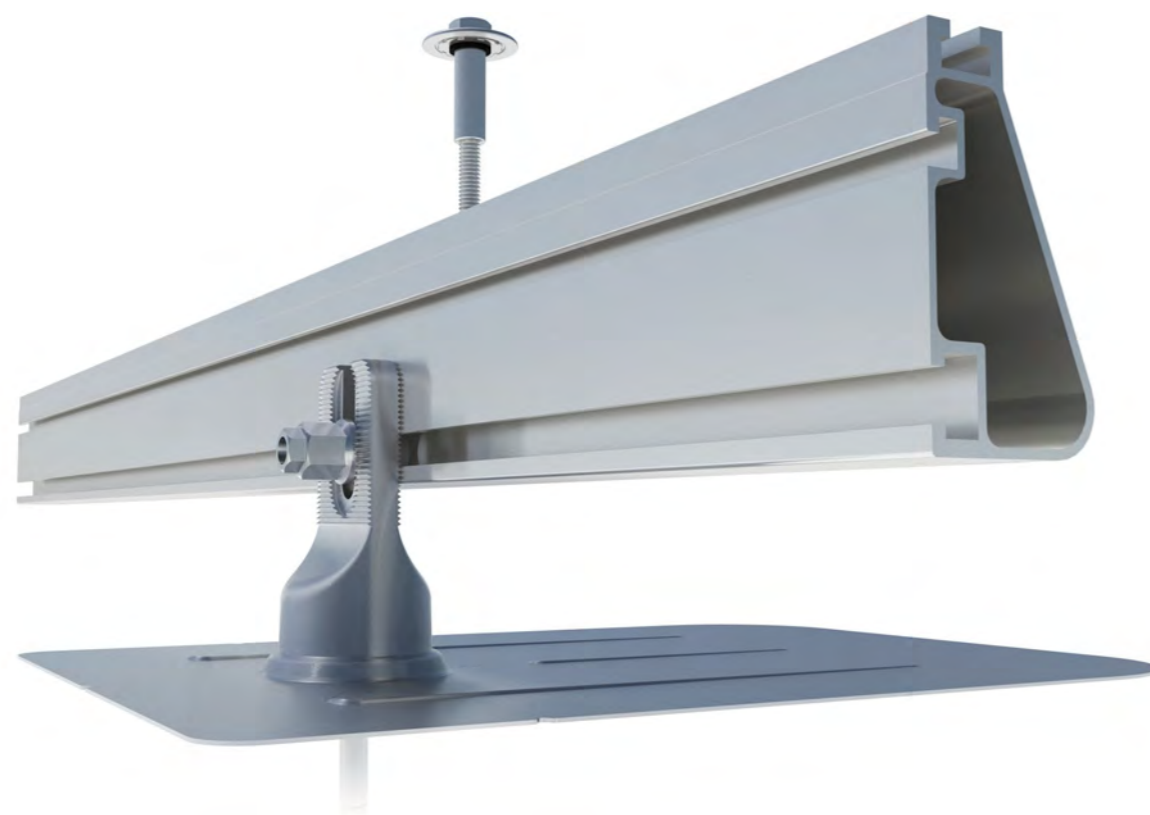
To learn more about Enphase offerings, visit enphase.com





Datasheet

Flush Mount System



Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs in solar. Every component has been tested to the limit and proven in extreme environments.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 25-year warranty.



Strength Tested

All components evaluated for superior structural performance.



Class A Fire Rating

Certified to maintain the fire resistance rating of the existing roof.



UL 2703 Listed System

Entire system and components meet newest effective UL 2703 standard.



PE Certified

Pre-stamped engineering letters available in most states.



Design Assistant

Online software makes it simple to create, share, and price projects.



25-Year Warranty

Products guaranteed to be free of impairing defects.

Datasheet

XR Rails ☺

XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6' spanning capability
- Moderate load capability
- Clear and black finish

XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear and black finish

XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish

Bonded Splices



All rails use internal splices for seamless connections.

- Self-drilling screws
- Varying versions for rails
- Forms secure bonding

Clamps & Grounding ☺

UFOs



Universal Fastening Objects bond modules to rails.

- Fully assembled & lubed
- Single, universal size
- Clear and black finish

Stopper Sleeves



Snap onto the UFO to turn into a bonded end clamp.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

CAMO



Bond modules to rails while staying completely hidden.

- Universal end-cam clamp
- Tool-less installation
- Fully assembled

Grounding Lugs



Connect arrays to equipment ground.

- Low profile
- Single tool installation
- Mounts in any direction

Attachments ☺

FlashFoot2



Flash and mount XR Rails with superior waterproofing.

- Twist-on Cap eases install
- Wind-driven rain tested
- Mill and black finish

Conduit Mount



Flash and mount conduit, strut, or junction boxes.

- Twist-on Cap eases install
- Wind-driven rain tested
- Secures 3/4" or 1" conduit

Slotted L-Feet



Drop-in design for rapid rail attachment.

- Secure rail connections
- Slot for vertical adjusting
- Clear and black finish

Bonding Hardware



Bond and attach XR Rails to roof attachments.

- T & Square Bolt options
- Nut uses 7/16" socket
- Assembled and lubricated

Resources



Design Assistant

Go from rough layout to fully engineered system. For free.

[Go to IronRidge.com/design](https://www.ironridge.com/design)



NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems.

[Go to IronRidge.com/training](https://www.ironridge.com/training)



1495 Zephyr Avenue
Hayward, CA 94544
1-800-227-9523
IronRidge.com

Attn: Corey Geiger, COO, IronRidge Inc.

Date: September 7th, 2018

Re: Structural Certification and Span Tables for IronRidge Flush Mount System

This letter addresses the structural performance and code compliance of IronRidge's Flush Mount System. The Flush Mount System is a proprietary rooftop mounting system used to support photovoltaic (PV) modules installed in portrait or landscape orientation and set parallel to the underlying roof surface. PV modules are supported by extruded aluminum XR Rails and secured to the rails with IronRidge mounting clamps. The XR Rails are side mounted to a selected roof attachment with 3/8" stainless steel bonding hardware and then attached directly to the roof structure or to a stanchion that is fastened to the underlying roof structure. Assembly details of a typical Flush Mount installation and its core components are shown in Exhibit EX-0015.

The IronRidge Flush Mount System is designed and certified to the structural requirements of the reference standards listed below, for the load conditions and configurations tabulated in the attached span tables.

- ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures (ASCE 7-10)
- 2015 International Building Code (IBC-2015)
- 2014 & 2015 Georgia State Amendments to International Building Code (2012)
- 2015 Aluminum Design Manual (ADM-2015)

The tables included in this letter provide the maximum allowable spans of XR Rails in the Flush Mount System for the respective loads and configurations listed, covering wind exposure categories B, C, & D, roof zones 1, 2 & 3, and roof slopes from 0° to 45°. The span tables are applicable provided that the following conditions are met:

1. *Span* is the distance between two adjacent roof attachment points (measured at the center of the attachment fastener)
2. The underlying roof pitch, measured between roof surface and horizontal plane, is 45° or less.
3. The *mean roof height*, defined as the average of the roof eave height and the roof ridge height measured from grade, does not exceed 30 feet.
4. Module length shall not exceed the listed maximum dimension provided for the respective span table and module width shall not exceed 48".
5. All Flush Mount components shall be installed in a professional workmanlike manner per IronRidge's *Flush Mount installation manual* and other applicable standards for general roof construction practice.



1495 Zephyr Avenue
Hayward, CA 94544
1-800-227-9523
IronRidge.com

The span tables provided in this letter are certified based on the structural performance of IronRidge XR Rails only with no consideration of the structural adequacy of the chosen roof attachments, PV modules, or the underlying roof supporting members. It is the responsibility of the installer or system designer to verify the structural capacity and adequacy of the aforementioned system components in regards to the applied or resultant loads of any chosen array configuration.

Sincerely,

Gang Xuan, PE, LEED AP
Senior Structural Engineer

FRAMELESS MODULE KITS

Insert Frameless Kit T-bolt in top rail slot. Place star washer over T-bolt, allowing it to rest on top of rail. Secure module clamps with a hex nut and torque to **80 in-lbs**.

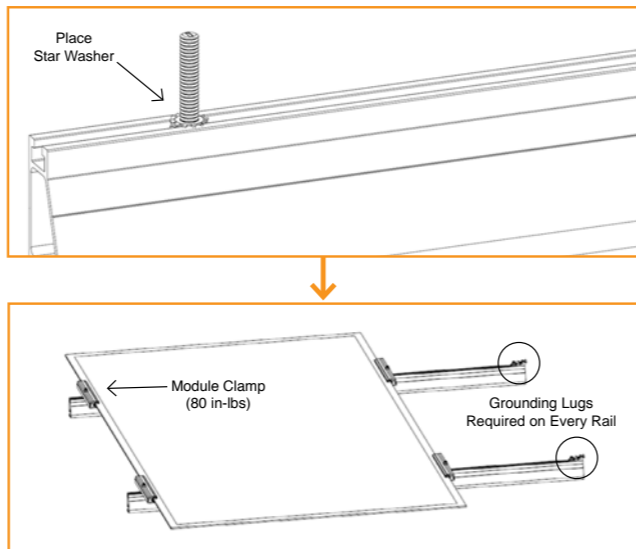
☞ **Tested or evaluated module clamps:**

- Sunforson silver or black SFS-UTMC-200(B) mid and SFS-UTEC-200(B) end clamps.
- Sunpreme silver or black mid and end clamps with part numbers 7500105X where "X" is 1, 5, 6 or 7.
- IronRidge silver or black mid and end clamps with part numbers FMLS-XC-001-Y where "X" is E or M and "Y" is B or blank.

☞ **Follow module manufacturer's installation instructions to install the module clamps.**

☞ **Frameless modules require using a Grounding Lug on every rail.**

☞ **For Sunpreme Modules Only: If required to use slide prevention hardware, see Module Slide Prevention Addendum (Version 1.10).**



MODULE COMPATIBILITY

The Flush Mount System may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions. Unless otherwise noted, “xxx” refers to the module power rating and both black and silver frames are included in the certification.

MAKE	MODELS
Amerisolar	Amerisolar modules with 35, 40 and 50 mm frames AS-bYxxxZ Where "b" can be 5 or 6; "Y" can be M, P, M27, P27, M30, or P30; "xxx" is the module power rating; and "Z" can be blank, W or WB
Astronergy Solar	Astronergy modules with 30, 35, 40 and 45 mm frames aaSMbbyyC/zz-xxx Where “aa” can be CH or A; "bb" can be 60, 66, or 72; “yy” can be blank, 10 or 12; "C" can M, P, M(BL), M-HC, M(BL)-HC, P-HC, (DG), or (DGT); “zz” can be blank, HV, F-B, or F-BH ; and “xxx” is the module power rating Astronergy frameless modules CHSM6610P(DG)-xxx Where “xxx” is the module power rating
Auxin	Auxin modules with 40 mm frames AXN6y6zAxxx Where "y" can be M or P; "z" can be 08, 09, 10, 11, or 12; "A" can be F or T; and "xxx" is the module power rating
Axitec	Axitec Modules with 35 and 40 mm frames AC-xxxY/aaZZb Where "xxx" is the module power rating; "Y" can be M, P or MH; "aa" can be blank, 125- or 156-; "ZZ" can be 54, 60, 72, 120, or 144; "b" can be S or SB
Boviet	Boviet modules with 40mm frames BVM66aaYY-xxx Where "aa" can be 9, 10 or 12; "YY" is M or P; and "xxx" is the module power rating
BYD	Where "xxx" is the module power rating; "Y" can be M, P or MH; "aa" can be blank, 125- or 156-; "ZZ" can be 54, 60, 72, 120, or 144; "b" can be S or SB
Canadian Solar	Canadian Solar modules with 30, 35 and 40 mm frames CSbY-xxxZ Where "b" can be 1, 3 or 6; "Y" can be H, K, P, U, V, W, or X; "xxx" refers to the module power rating; and "Z" can be M, P, MS, PX , M-SD, P-AG, P-SD, MB-AG, PB-AG, MS-AG, or MS-SD Canadian Solar frameless modules CSbY-xxx-Z Where "b" can be 3 or 6; "Y" is K, P, U, or X; "xxx" is the module power rating, and "Z" can be M-FG, MS-FG, P-FG, MB-FG, or PB-FG
CertainTeed	CertainTeed modules with 35 and 40 frames CTxxxYZZ-AA Where "xxx" is the module power rating; "Y" can be M, P or HC; "ZZ" can be 00,01, 10, or 11; and "AA" can be 01, 02, 03 or 04
CSUN	Csun modules with 35 and 40 mm frames YYxxx-zzAbb Where "YY" is CSUN or SST; xxx is the module power rating; "zz" is blank, 60, or 72; and "A" is blank, P or M; "bb" is blank, BB, BW, or ROOF
Ecosolargy	Ecosolargy modules with 35, 40 and 50 mm frames ECOxxxYzzA-bbD Where "xxx" is the module power rating; "Y" can be A, H, S, or T; "zz" can be 125 or 156; "A" can be M or P; "bb" can be 60 or 72; and "D" can be blank or B

MODULE COMPATIBILITY

ET Solar	ET Solar modules with 35, 40 and 50 mm frames ET-Y6ZZxxxAA Where “Y” can be P, L, or M; “ZZ” can be 60 or 72; “xxx” refers to the module power rating; and “AA” can be WB, WW, BB, WBG, WWG, WBAC, WBCO, WWCO, WWBCO or BBAC
Flex	Flex modules with 35, 40 and 50 mm frames and model identifier FXS-xxxYY-ZZ; where "xxx" is the module power rating; "YY" can be BB or BC; and "ZZ" can be MAA1B, MAA1W, MAB1W, SAA1B, SAA1W, SAC1B, SAC1W, SAD1W, SBA1B, SBA1W, SBC1B, or SBC1W
GCL	GCL modules with 35 mm and 40 mm frames GCL-a6/YY xxx Where "a" can be M or P; "YY" can be 60, 72, or 72H; and xxx is the module power rating
GigaWatt Solar	Gigawatt modules with 40 mm frames GWxxxYY Where “xxx” refers to the module power rating; and “YY” can be either PB or MB
Hansol	Hansol modules with 35 and 40 frames HSxxxYY-zz Where "xxx" is the module power rating; "YY" can be PB, PD, PE, TB, TD, UB, UD, or UE; and "zz" can be AN1, AN3, AN4, HV1, or JH2
Hanwha Solar	Hanwha Solar modules with 40, 45 and 50 mm frames HSLaaP6-YY-1-xxxZ Where "aa" can be either 60 or 72; "YY" can be PA or PB; "xxx" refers to the module power rating; and "Z" can be blank or B
Hanwha Q CELLS	Hanwha Q CELLS Modules with 32, 35, 40 and 42mm frames and model identifier aaYY-ZZ-xxx where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, or PEAK DUO; and "ZZ" can be G3, G3.1, G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC, G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, EC-G4.4, G5, BLK-G5, L-G5, L-G5.1, L-G5.2, L-G5.2/H, L-G5.3, G6, G6+, BLK-G6, L-G6, L-G6.1, L-G6.2, L-G6.3, G7, BLK-G6+, BLK-G7, G7.2, G8, BLK-G8, G8+, BLK-G8+ L-G7, L-G7.1, L-G7.2, L-G7.3, L-G8, L-G8.1, L-G8.2, or L-G8.3; and "xxx" is the module power rating
Heliene	Heliene modules with 40 mm frames YYZZxxx Where "YY" can be 36, 60, 72, or 96; "ZZ" can be M, P, or MBLK; and "xxx" is the module power rating
HT-SAAE	HT-SAAE modules with 40 mm frames HT72-156Z-xxx Where "Z" can be M, P, M-C, P-C, M(S), M(VS), M(V), P(V), M(V)-C, P(V)-C; and "xxx" is the module power rating
Hyundai	Hyundai modules with 33, 35, 40 and 50 mm frames HiY-SxxxZZ Where "Y" can be A, M or S; "xxx" refers to the module power rating; and "ZZ" can be HG, HI, KI, MI, MF, MG, RI, RG(BF), RG(BK), SG, TI, or TG
Itek	Itek Modules with 40 and 50 mm frames IT-xxx-YY Where "xxx" is the module power rating; and "YY" can be blank, HE, or SE, or SE72
JA Solar	JA Solar modules with 35, 40 and 45 mm frames JAyyzz-bbww-xxx/aa Where “yy” can be M, P, M6 or P6; “zz” can be blank, (K), (L), (R), (V), (BK), (FA), (TG), (FA)(R), (L)(BK), (L)(TG), (R)(BK), (R)(TG), (V)(BK), (BK)(TG), or (L)(BK)(TG); “bb” can be 48, 60, or 72; “ww” can be S01, S02, S03, S09, or S10; “xxx” is the module power rating; and “aa” can be MP, SI, SC, PR, 3BB, 4BB, 4BB/RE, 5BB
Jinko	Jinko modules with 35 and 40 mm frames JKMYxxxZZ-aa Where "Y" can either be blank or S; "xxx" is the module power rating; "ZZ" can be P, PP, M; and "aa" can be blank, 60, 60B, 60H, 60L, 60BL, 60HL, 60HBL, 60-J4, 60B-J4, 60B-EP, 60(Plus), 60-V, 60-MX, 72, 72-V, 72H-V, 72L-V, 72HL-V or 72-MX Jinko frameless modules JKMxxxPP-DV Where "xxx" is the module power rating
Kyocera	Kyocera Modules with 46mm frames KYxxxZZ-AA Where "Y" can be D or U; "xxx" is the module power rating; "ZZ" can be blank, GX, or SX; and "AA" can be LPU, LPU, LPU, LPS, LPB, LFB, LFB2, LFB2, LPB2, 3AC, 3BC, 3FC, 4AC, 4BC, 4FC, 4UC, 5AC, 5BC, 5FC, 5UC, 6BC, 6FC, 8BC, 6MCA, or 6MPA
LG	LG modules with 35, 40 and 46 mm frames LGxxxYaZ-bb Where "xxx" is the module power rating; "Y" can be A, E, N, Q, S; "a" can be 1 or 2; "Z" can be C, K, T, or W; and "bb" can be A3, A5, B3, G3, G4, K4, or V5
Longi	Longi modules with 30, 35 and 40 mm frames LRa-YYZZ-xxxM Where "a" can be 4 or 6; "YY" can be blank, 60 or 72; "ZZ" can be blank, BK, BP, HV, PB, PE, PH, HBD, HPB, or HPH; "xxx" is the module power rating
Mission Solar	Mission Solar modules with 40 mm frames MSEbbxxxZZaa Where "bb" can be blank or 60A; "xxx" is the module power rating; "ZZ" can be blank, MM, SE, SO or SQ, and "aa" can be blank, 1J, 4J, 4S, 5K, 5T, 6J, 6S, 6W, 8K, 8T, or 9S
Mitsubishi	Mitsubishi modules with 46 mm frames PV-MYYxxxZZ Where "YY" can be LE or JE; xxx is the module power rating; and "ZZ" can be either HD, HD2, or FB

MODULE COMPATIBILITY

Motech	IM and XS series modules with 40, 45 and 50 mm frames
Neo Solar Power	Neo Solar Power modules with 35 mm frames D6YxxxZZaa Where "Y" can be M or P; xxx is the module power rating; "ZZ" can be B3A, B4A, E3A, E4A, H3A, H4A; and "aa" can be blank, (TF), ME or ME (TF)
Panasonic	Panasonic modules with 35 and 40 mm frames BHNxxxYYzzA Where "xxx" refers to the module power rating; "YY" can be either KA, SA or ZA; "zz" can be either 01, 02, 03, 04, 06, 06B, 11, 11B, 15, 15B, 16, 16B, 17, or 18; and "A" can be blank, E or G
Peimar	Peimar modules with 40 mm frames SGxxxYzz Where "xxx" is the module power rating; "Y" can be M or P; and "zz" can be blank, (BF), or (FB)
Phono Solar	Phono Solar modules with 35, 40 and 45 mm frames PSxxxY-ZZ/A Where xxx refers to the module power rating; "Y" can be M or P; "ZZ" can be 20 or 24; and "A" can be F, T or U
Prism Solar	Prism Solar frameless modules BiYY-xxxBSTC Where "YY" can be 48, 60, 60S, 72 or 72S; and "xxx" is the module power rating
REC Solar	REC modules with 30, 38 and 45 mm frames RECxxxYYZZ Where "xxx" is the module power rating; "YY" can be AA, M, NP, PE, PE72, TP, TP2, TP2M, TP2SM, or TP2S; and "ZZ" can be blank, Black, BLK, BLK2, SLV, or 72
Renesola	ReneSola modules with 35, 40 and 50 mm frames JCxxxY-ZZ Where "xxx" refers to the module power rating; "Y" can be F, M or S; and "ZZ" can be Ab, Ab-b, Abh, Abh-b, Abv, Abv-b, Bb, Bb-b, Bbh, Bbh-b, Bbv, Bbv-b, Db, or Db-b
Renogy	Renogy Modules with 40 and 50 mm frames RNG-xxxY Where "xxx" is the module power rating; and "Y" can be D or P
Risen	Risen Modules with 35 and 40 mm frames RSMyy-6-xxxZZ Where "yy" can be 60 or 72; "xxx" is the module power rating; and "ZZ" can be M or P Frameless modules RSMyy-6-xxxZZ Where "yy" can be 60 or 72; "xxx" is the module power rating; and "ZZ" can be MDG or PDG
S-Energy	S-Energy modules with 40 frames SNxxxY-ZZ Where "xxx" is the module power rating; "Y" can be M or P; and "ZZ" can be 10, or 15
Seraphim Energy Group	Seraphim modules with 35 and 40 mm frames SEG-6YY-xxxZZ Where "YY" can be MA, MB, PA, or PB; "xxx" is the module power rating; and "ZZ" can be BB, BW, WB or WW
Seraphim USA	Seraphim modules with 40 and 50 mm frames SRP-xxx-6YY Where "xxx" is the module power rating; and "YY" can be MA, MB, PA, PB, QA-XX-XX, and QB-XX-XX
Sharp	Sharp modules with 35 and 40 mm frames NUYYxxx Where "YY" can be SA or SC; and "xxx" is the module power rating
Silfab	Silfab Modules with 38 mm frames SYY-Z-xxx Where "YY" can be SA or LA; SG or LG; "Z" can be M, P, or X; and "xxx" is the module power rating
Solaria	Solaria modules with 40 mm frames PowerXT xxxY-ZZ Where "xxx" is the module power rating; "Y" can be R or C; and "ZZ" can be AC, BD, BX, BY, PD, PX, PZ, WX or WZ
Solarcity	Solarcity modules with 40 mm frames SCxxxYY Where "xxx" is the module power rating; and "YY" can be blank, B1 or B2
SolarTech	SolarTech modules with 42 mm frames STU-xxxYY Where "xxx" is the module power rating; and "YY" can be PERC or HJT
SolarWorld AG / Industries GmbH	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 31, 33 or 46 mm frames SW-xxx Where "xxx" is the module power rating
SolarWorld Americas Inc.	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 33 mm frames SWA-xxx Where "xxx" is the module power rating
Stion	Stion Thin film modules with 35 mm frames STO-xxx or STO-xxxA Thin film frameless modules STL-xxx or STL-xxxA Where "xxx" is the module power rating
SunEdison	SunEdison Modules with 35, 40 and 50 mm frames SE-YxxxZABCDE Where "Y" can be B, F, H, P, R, or Z; "xxx" refers to the module power rating; "Z" can be 0 or 4; "A" can be B,C,D,E,H,I,J,K,L,M, or N ; "B" can be B or W; "C" can be A or C; "D" can be 3, 7, 8, or 9; and "E" can be 0, 1 or 2

MODULE COMPATIBILITY

Suniva	Suniva modules with 35, 38, 40, 46 and 50 mm frames OPTxxx-AA-B-YYY-Z MVXxxx-AA-B-YYY-Z Where "xxx" is the module power rating; "AA" is either 60 or 72; "B" is either 4 or 5; "YYY" is either 100,101,700,1B0, or 1B1; and "Z" is blank or B
Sunpower	Sunpower standard (G3 or G4) or InvisiMount (G5) 40 and 46 mm frames SPR-Zb-xxx-YY Where "Z" is either A, E, P or X; "b" can be blank, 17, 18, 19, 20, 21, or 22; "xxx" is the module power rating and "YY" can be blank, BLK, COM, C-AC, D-AC, E-AC, G-AC, BLK-C-AC, or BLK-D-AC
Sunpreme	Sunpreme frameless modules GXB-xxxYY Where "xxx" is the module power rating; and "YY" can be blank or SL
Sunspark	Sunspark modules with 40 mm frames SYY-xxZ Where "YY" can be MX or ST; "xxx" is the module power rating; and "Z" can be P or W
Suntech	Vd, Vem, Wdb, Wde, and Wd series modules with 35, 40 and 50 mm frames
Talesun	Talesun modules with 35 and 40 frames TP6yyZxxx-A Where "yy" can be 60, 72, H60 or H72; "Z" can be M, or P; "xxx" is the module power rating; and "A" can be blank, B, or T
Trina	Trina Modules with 30, 35, 40 and 46mm frames TSM-xxxYYZZ Where "xxx" is the module power rating; "YY" can be DD05, DD06, DE14, DE15, DEG15, PA05, PC05, PD05, PD06, PA14, PC14, PD14, PE14, or PE15 ; and "ZZ" can be blank, .05, .08, .10, .18, .08D, .18D, 0.82, .002, .00S, 05S, 08S, A, A.05, A.08, A.10, A.18, A(II), A.05(II), A.08(II), A.082(II), A.10(II), A.18(II), H, H(II), H.05(II), H.08(II), HC.20(II), HC.20(II), or M Frameless modules TSM-xxxYY Where "YY" can be either DEG5(II), DEG5.07(II), DEG5.40(II), DEG5.47(II), DEG14(II), DEG14C(II), DEG14C.07(II), DEG14.40(II), PEG5, PEG5.07, PEG5.40, PEG5.47, PEG14, or PEG14.40
Vikram	Vikram solar modules with 40 mm frames Syy.ZZ.AAA.bb Where "yy" can be M, P, MBB, MH, MS, MHBB, or PBB; "ZZ" can be 60 or 72; "AAA" is the module power rating; and "bb" can be 03.04 or 05
Winaico	Winaico modules with 35 and 40 mm frames Wsy-xxxz6 Where "y" can be either P or T; "xxx" is the module power rating; and "z" can be either M or P
Yingli	Panda, YGE and YGE-U series modules with 35, 40 and 50 mm frames



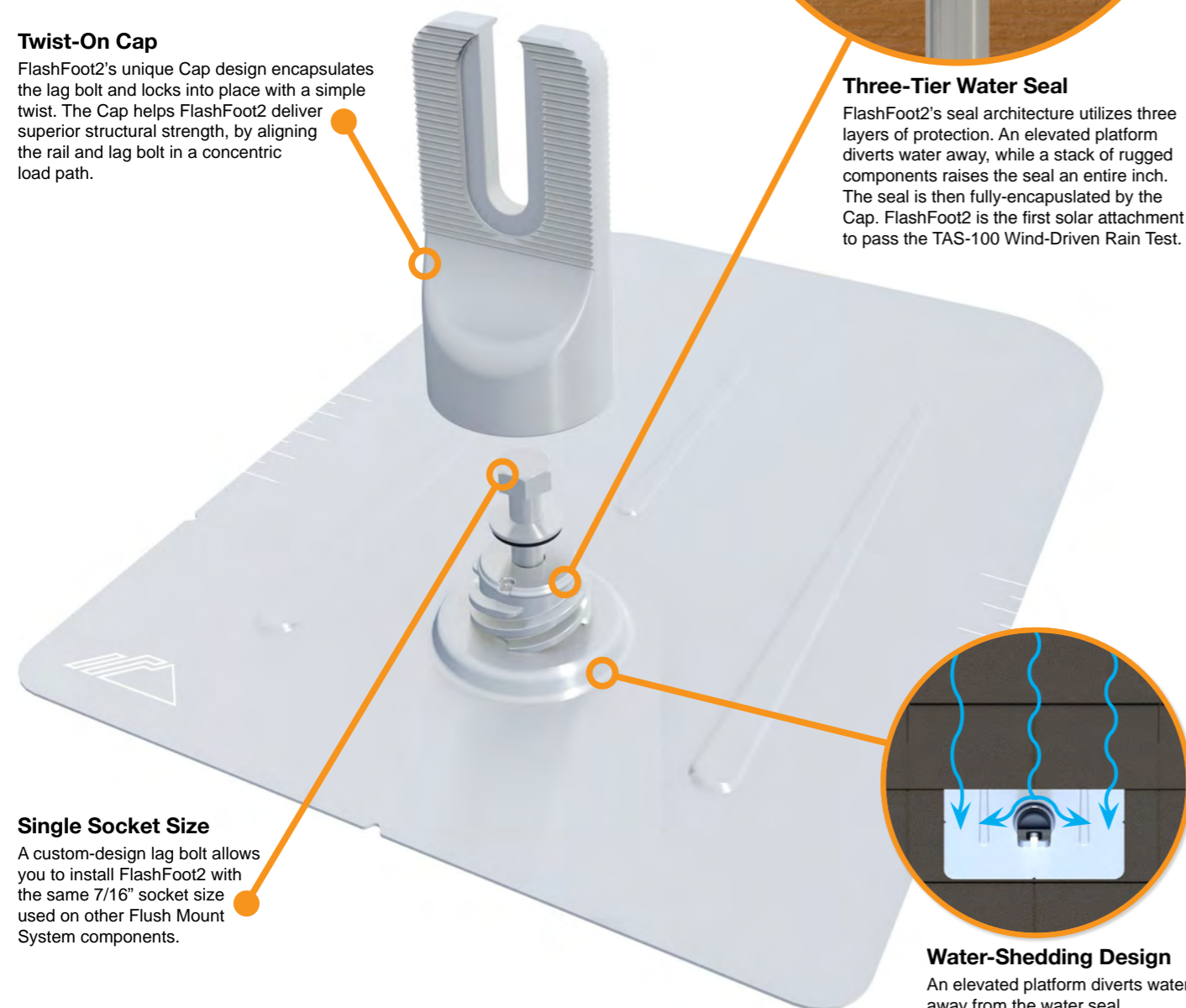
FlashFoot2

The Strongest Attachment in Solar

IronRidge FlashFoot2 raises the bar in solar roof protection. The unique water seal design is both elevated and encapsulated, delivering redundant layers of protection against water intrusion. In addition, the twist-on Cap perfectly aligns the rail attachment with the lag bolt to maximize mechanical strength.

Twist-On Cap

FlashFoot2's unique Cap design encapsulates the lag bolt and locks into place with a simple twist. The Cap helps FlashFoot2 deliver superior structural strength, by aligning the rail and lag bolt in a concentric load path.



Three-Tier Water Seal

FlashFoot2's seal architecture utilizes three layers of protection. An elevated platform diverts water away, while a stack of rugged components raises the seal an entire inch. The seal is then fully-encapsulated by the Cap. FlashFoot2 is the first solar attachment to pass the TAS-100 Wind-Driven Rain Test.

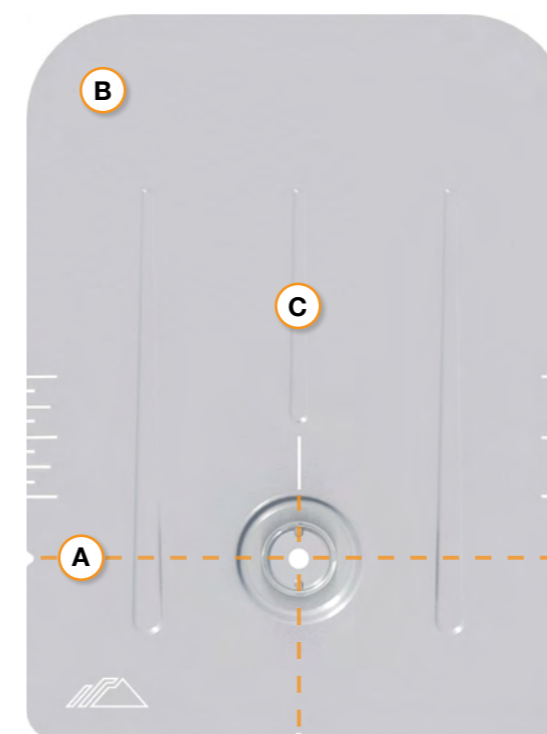
Single Socket Size

A custom-design lag bolt allows you to install FlashFoot2 with the same 7/16" socket size used on other Flush Mount System components.

Water-Shedding Design

An elevated platform diverts water away from the water seal.

Installation Features



A Alignment Markers

Quickly align the flashing with chalk lines to find pilot holes.

B Rounded Corners

Makes it easier to handle and insert under the roof shingles.

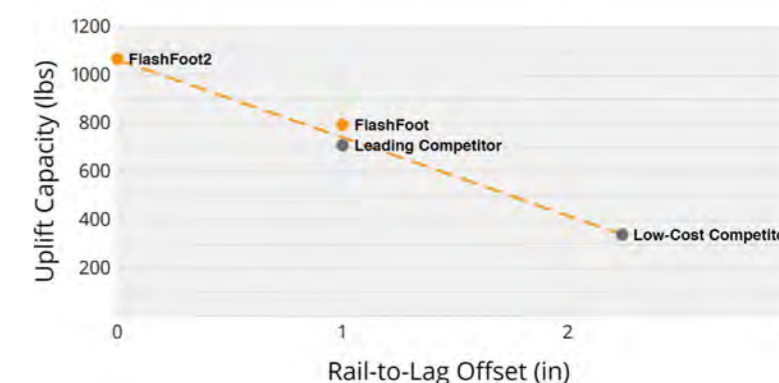
C Reinforcement Ribs

Help to stiffen the flashing and prevent any bending or crinkling during installation.

Benefits of Concentric Loading

Traditional solar attachments have a horizontal offset between the rail and lag bolt, which introduces leverage on the lag bolt and decreases uplift capacity.

FlashFoot2 is the only product to align the rail and lag bolt. This concentric loading design results in a stronger attachment for the system.



Testing & Certification

Structural Certification

Designed and Certified for Compliance with the International Building Code & ASCE/SEI-7.

Water Seal Ratings

Water Sealing Tested to UL 441 Section 27 "Rain Test" and TAS 100-95 "Wind Driven Rain Test" by Intertek. Ratings applicable for composition shingle roofs having slopes between 2:12 and 12:12.

UL 2703

Conforms to UL 2703 Mechanical and Bonding Requirements. See Flush Mount Install Manual for full ratings.

DEPARTMENT OF PLANNING & SUSTAINABILITY

How to Obtain a Certificate of Appropriateness

1. Contact the DeKalb County Department of Planning and Sustainability for an application form. You may pick this up at the DeKalb County Department of Planning and Sustainability, 330 West Ponce de Leon Avenue, Suite 300 floor, in Decatur, or you may make your request by mail, telephone (404) 371-2247, or fax (404) 371-2813, or visit the website at <http://www.dekalbcountyga.gov/planning-and-sustainability/planning-sustainability>.
2. Complete and submit the application. Please provide as much supporting material as possible, (plans, material, color samples, photos, etc.). Provide eight (8) collated sets of the application form and all supporting documentation. If plans/drawings are included, provide eight (8) collated sets on paper no larger than 11" x 17" and three (3) additional sets at scale. All documents submitted in hard copy must also be submitted in digital form (.pdf format). If all documents are not provided the application will not be complete and will not be accepted.
3. A sign will be provided when the Certificate of Appropriateness is accepted. The applicant must post the sign on the subject property in a visible location, no more than ten feet from the road, at least ten days before the meeting.
4. Applications will be reviewed by the DeKalb County Historic Preservation Commission at its monthly meeting. In most months, the Historic Preservation Commission meets on the third Monday at 7 p.m. at the Maloof Auditorium, 1300 Commerce Drive in Decatur. In unusual circumstances meeting dates and location may be changed.
5. The Historic Preservation Commission may approve, approve with modifications or deny an application. The applicant or any affected person as defined by county code may appeal the decision to the DeKalb County Board of Commissioners. Please contact the Department of Planning and Sustainability if you wish to file an appeal. The commission is required to make a decision on an application within 45 days of the date of filing, although this time can be extended if the applicant agrees to a deferral.
5. Although not required, applicants are encouraged to attend the Historic Preservation Commission meetings. Applicants may make presentations, but presentations are not required. The commissioners may have questions for the applicant.
7. Approval of a Certificate of Appropriateness does not release the recipient from compliance with all other county, state and federal regulations.

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DEPARTMENT OF PLANNING & SUSTAINABILITY

Sign Posting Requirements for a Certificate of Appropriateness

The DeKalb County Code requires that citizens who may be affected by the approval of a Certificate of Appropriateness must be notified of the hearing where that decision will take place. The notification is accomplished by requiring the applicant to post one or more signs on the property for which a certificate of appropriateness is being considered. The sign gives the date, time, and location of the meeting and the telephone number of the county historic preservation planner. The sign must be posted no later than ten days before the date of the preservation commission meeting and must remain in place until after the meeting.

When an applicant submits an application for a Certificate of Appropriateness, the applicant must request a sign from the Planning Department. If the property is bounded by more than one public street, a sign must be posted facing each street. It is the applicant's responsibility to obtain and post the sign appropriately. If you file your application by mail or fax, you must make arrangements to pick up the sign.

The sign must be posted prominently in the center of the front yard, facing the street, and within ten feet of the street or sidewalk, although the sign may not be posted between the street and the sidewalk. It is best to attach the sign to a four-foot tall stake, but attaching it to an existing support is usually acceptable. The sign may not be posted inside a house except in the case of a purpose-built commercial structure where front yard posting is impossible or impractical.

The signs are made of relatively thin cardstock. They should either be waterproofed or additional support should be added. The sign may be laminated, covered with clear plastic, or secured to heavier backing, such as heavy cardboard or plywood. If the sign is destroyed or becomes illegible during the ten day posting period, the applicant must contact the historic preservation planner for a replacement sign, which must be posted as soon as possible.

If the sign is not posted, is not posted for the full ten day period, or is posted inappropriately, the DeKalb County Historic Preservation Commission may deny the application or may defer consideration of the application until the following month.

Revised 1/26/17

DEPARTMENT OF PLANNING & SUSTAINABILITY

Design Checklist for a Certificate of Appropriateness

This checklist was created to help applicants prepare a complete application. Omissions and inaccurate information can lead to deferrals and/or denials of applications. Please review the checklist with the project’s architect, designer, or builder. All items will not be applicable to all projects. New construction will involve all categories. Three copies of drawings at scale (plus nine reduced sets) should be submitted. Please address questions regarding applicability to your project to the DeKalb County Preservation Planner at 404-371-2155, e-mail dccullis@dekalbcountyga.gov. Applicants are also referred to the DeKalb County website, <http://www.dekalbcountyga.gov/planning-and-sustainability/planning-sustainability>.

I have reviewed the “Design Manual for the Druid Hills Local Historic District”	Y	N
I have reviewed the DeKalb County Tree Ordinance	Y	N
I have reviewed applicable zoning codes regarding lot coverage, garage sizes, stream buffers	Y	N

1. General

- a. Label all drawings with the address of the site, owners’ name, and contact phone number.
- b. Number all drawings.
- c. Include a graphic scale on reductions.
- d. Date all revisions.
- e. Indicate all unverified numbers with +/- signs
- e. Include photos of the existing condition of the property.

2. Site Plan (existing and proposed) to include

- a. Topographical plan with significant trees sized and located;
- b. Setback compared to adjacent houses (ask surveyor to show corners of adjacent houses);
- c. Distance between houses;
- d. Façade width to finished face of material;
- e. Grading and elevations across site;
- f. Dirt removal or regrading if more than 18”;
- g. Tree protection plan;
- h. Tree removal and replacement plan

3. Driveways and Walkways

- a. Location and relationship to house;
- b. Width;
- c. Material;
- d. Curb cut and apron width

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4. Fences & Retaining Walls

- a. Placement on lot;
- b. Height of fence or wall. If retaining wall, height on both sides;
- c. Material;
- d. Railing if necessary

5. Elevations and Floor Plans <<Indicate all unverified numbers with +/- signs>>

- a. Plans for all floors (drawn to scale, 1/4"=1' preferred);
- b. House orientation on site plan;
- c. Scalable elevations for front, rear, left, right;
- d. Height, grade to ridge;
- e. Streetscape comparison showing heights of two flanking houses on each side;
- f. Height from grade to first floor level at all four corners;
- g. Height from grade or finished floor line to eaves at all four corners;
- h. Ceiling heights of each floor, indicating if rough or finished;
- i. Height of space between the ceiling and finished floor above;
- j. Two people of 5'-6" and 6' height shown;
- k. Landscaping plan

6. Additions

- a. Placement shown on elevations and floor plan;
- b. Visibility from rights-of-way and paths;
- c. Photos of all facades;
- d. Design proportioned to main house;
- e. Landscaping plan;
- f. Materials and their combinations

7. Roof Plan

- a. Shape and pitch of roof;
- b. Roofing material;
- c. Overhang;
- d. Louvers and vents;
- e. Chimney height and material

8. Dormers

- a. Construction details provided;
- b. Shape and size of dormer (show dimensions on drawings);
- c. Overhang;
- d. Size of window(s), with nominal size of sash (show dimensions on drawings)

9. Skylights

- a. Profile;
- b. Visibility from right-of-way;
- c. Material (plastic lens or glass);
- d. Shown in plan and elevation to scale

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10. Façade

- a. Consistency in style;
- b. Materials and their combinations
 - brick size and color
 - stone type and color
 - fiber-cement (e.g. Hardieplank) or wood siding
 - shake or shingle
 - other
- c. Height of foundation at corners;
- d. Ceiling heights comparable to area of influence: basement, first floor, second floor;
- e. Detailing: soldier course, brackets, fascia board; water table;
- f. Height from grade to roof ridge;
- g. Dimensions, proportions and placement of windows, doors

11. Entrance

- a. Height and width of door;
- b. Design of door (e.g. 6-panel, craftsman);
- c. Material of door;
- d. Overhang;
- e. Portico height;
- f. Size and height of columns or posts;
- g. Railing

12. Windows

- a. Consistent with original as well as the area of influence;
- b. Size and proportion similar to original;
- c. Pane orientation and size similar to original;
- d. Type (e.g. double hung, casement);
- e. Fenestration on walls visible from right-of-way;
- f. Simulated divided light (SDL) or true divided light (TDL): location of muntins between the glass, behind the glass or permanently affixed on exterior;
- g. Material of window and any cladding;
- h. Width of muntins compared to original (show dimensions on drawings);
- i. Shutters or canopies
- j. Dimensions of windows and doors.

13. Materials

- a. Show all materials and label them on drawings;
- b. Provide samples of brick or stone;
- c. Provide samples if new or unusual materials

DEPARTMENT OF PLANNING & SUSTAINABILITY

14. Garages / Accessory Buildings

- a. Visibility from street;
- b. Placement on site;
- c. Scale, style appropriate for house;
- d. Show dimensions on drawings;
- e. Materials;
- f. Square footage appropriate for lot size;
- g. Garage door size and design
- h. Show height from grade to eaves and to top of roof

15. Demolitions

- a. Provide documentation from engineer concerning feasibility of rehabilitation;
- b. Provide photographs of structure to be demolished;
- c. Provide plan for proposed redevelopment

Revised 1/26/17

