City of Belle Isle Job Site Permit Card ELECTRICAL PHOTO VOLTAIC 2022-04-026

Class: Residential
Parcel Number: 20-23-30-4395-00-580.

Site Address: 3334 Honeysuckle Ln - Belle Isle, FL32812
. Municipality Belle Isle

Description of Work: Electrical – PHOTO VOLTAIC
Comments: SEE APPLICATION

Issued: URBAN SOLAR GROUP, INC., VERGONA, MICHAEL R
License # CVC56948
Contact # 561 609-2664

Payment/ Issued Date & Method: 4 / 22 / 2022
□ Picked up by _____
□ Forwarded to the mailing address
☑ Emailed

☑ Visa □ Master Card □ Amex □ Discover □ Check / Money Order#

7	3	5	4															

To schedule your inspection(s), please visit our website:
http://uesbidportal.uesorl.com/citizenportal/
Next-Day Inspection requests must be made by 3 pm.
For further assistance 407 581-8161 request scheduling. **PERMIT MUST BE POSTED ON SITE.**
You are responsible for scheduling and keeping track all of your inspections & permit expiration date.
Universal Engineering Sciences - 3532 Maggie Blvd., Orlando, FL 32811 407-581-8161 Fax 407-581-0313 www.universalengineering.com

ELECTRICAL	INSPECTOR	DATE	COMMENTS
380 Final / PHOTO VOLTAIC			

"WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT."

City of Belle Isle

Universal Engineering Sciences 3532 Maggie Blvd., Orlando, FL 32811
Tel 407-581-8161 * Fax 407-581-0313 * www.universalengineering.com

cobipermits@universalengineering.com

APPLICATION FOR ELECTRICAL PERMIT

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

RECEIVED APR 07 2022 BY: Fed EX

DATE OF APPLICATION: ____________ **PERMIT NUMBER** 2022-04-026

The undersigned hereby applies for a permit to make electrical installations as indicated below. PLEASE PRINT

Project Address 3334 Honeysuckle Ln, Belle Isle FL ___32809 X 32812

Property Owner Douglas Kallesen **Phone** 561-609-2664

Property Owner's Mailing Address 3334 Honeysuckle Ln **City** Belle Isle

State FL **Zip Code** 32812 **Parcel Id Number:** 20-23-30-4395-00-580

To obtain this information, please visit http://www.ocpafl.org/Searches/ParcelSearch.aspx

Class of Building: Old [x] New [ ] **Type of Building:** Residential [x] Commercial [ ] Other [ ]

Type of Work: New [ ] Alteration [x] Addition [ ] Repair [ ] Low Voltage New [ ] Existing [ ]

INDICATE THE QUANTITY OF ALL EQUIPMENT TO BE INSTALLED

Dishwasher ____	Exhaust Fan ____	Disposal ____	Water Heater ____
Hood Fan ____	Dryer ____	Paddle Fan ____	Outlets ____
Fixtures ____	Spa ____	Pool ____	Switches ____
Electric Signs ____	Meter Reset ____	Low Voltage ____	Stoves ____
Pumps ____	Motors ____	Air Conditioning (tons) ____	Furnace (KW) ____

Temporary Construction Pole ____ **One (1) New Meter Service** ____ Amperage/Voltage/Phase

Meter Service Upgrade from ____ (Amperage/Voltage/Phase) to ____ (Amperage/Voltage/Phase) = ____ (Difference in Size)

Relocate Existing Meter Service (No Service Size Change) ____ TUG - Temporary Underground ____

Other: PHOTO VOLTAIC

15TK
5x72

37
360
397÷2
198.50
595.50

[ ] **PERMIT FEE BASED ON METER SERVICE SIZE SCHEDULE** .... $____
(IF NO METER SERVICE WORK BEING DONE, USE VALUATION OF JOB FOR PERMIT FEE)

[x] **VALUATION OF JOB** (VALUATION OF ALL MATERIALS, LABOR, AND FIXTURES INSTALLED $ 72,626.44

WO 2074287

Building Official: [signature] PX143 Date 04-18-22

Verified Contractor's Licenses & Insurance are on file [initials] Date 4.7.2022

New

NOC ✓

Permit Fee = $ 397.-
Review Fee = $ 198.50
1% BCAIB Fee = $ 5.96
1.5% DCA Fee = $ 8.93
TOTAL Permit = $ 610.39

I hereby certify that the above is true and correct to the best of my knowledge.

I hereby make Application for Permit as outlined above, and if same is granted I agree to conform to all Florida Building Code Regulations and City Ordinances regulating same and in accordance with plans submitted. The issuance of this permit does not grant permission to violate any applicable Town and/or State of Florida codes and/or ordinances.

LICENSE HOLDER SIGNATURE [signature] **LICENSE #** CVC56948

LICENSE HOLDER NAME Michael Versone **COMPANY NAME** Urban Solar Group

Street Address 990 S. Rogers Cir #4

City Boca Raton **State** Fl **Zip Code** 33487 **Phone Number** 561-609-2664

Email Address permitting@urbansolar.com

NOTE: The Building Permit Number is required if the Electrical Installation is associated with any construction or alteration where a Building Permit has been issued.

Building Permit Number ____

22 April 2022
PAID
VISA 7354

UrbanSolar
We bring energy to life.

990 S. Rogers Circle, Suite 4 Boca
Raton, FL 33487
888-38-SOLAR

City of Belle Isle Building Dept.
1600 Nela Avenue
Belle Isle, Fl 32809

SCOPE OF WORK LETTER

Urban Solar Group, Inc. will be installing _31_ panels to the [X] roof top [ ] ground mount, [ ] with [X] without battery backup at _____ . We will provide a complete set of plans for your review. We also need to have a shutdown for this property 3334 Honeysuckle Lane Belle Isle, FL 32812.

Reason for shutdown: Over head service/ Rewire main

If you have any questions or need additional information, please don't hesitate to my office.

Sincerely,

Michael Vergona – Solar Contractor
CVC56948

DOC # 20220206179
03/31/2022 08:09 AM Page 1 of 1
Rec Fee: $10.00
Deed Doc Tax: $0.00
Mortgage Doc Tax: $0.00
Intangible Tax: $0.00
Phil Diamond, Comptroller
Orange County, FL
Ret To: SIMPLIFILE LC

AFTER RECORDING RETURN TO:
Urban Solar Group
990 S Rogers Circle, Suite 4
Boca Raton, FL 33487

PERMIT NUMBER 2022-04-026

NOTICE OF COMMENCEMENT

The undersigned hereby gives notice that improvement will be made to certain real property, and in accordance with Chapter 713, Florida Statutes, the following information is provided in this Notice of Commencement.

1. DESCRIPTION OF PROPERTY (Legal description of the property & street address, if available) TAX FOLIO NO. 20-23-30-4395-00-580

SUBDIVISION _____ BLOCK _____ TRACT _____ LOT 58 BLDG _____ UNIT _____

LAKE CONWAY SHORES 7/50 LOT 58

2. GENERAL DESCRIPTION OF IMPROVEMENT:
INSTALLATION OF SOLAR PV SYSTEM TO ROOFTOP

3. OWNER INFORMATION OR LESSEE INFORMATION IF THE LESSEE CONTRACTED FOR THE IMPROVEMENT:

a. Name and address: Kallesen Douglas L; Kallesen Desiree L 3334 Honeysuckle Ln Belle Isle, FL 32812

b. Interest in property: Owner

c. Name and address of fee simple titleholder (if different from Owner listed above): _____

4. a. CONTRACTOR'S NAME: Urban Solar Group
Contractor's address: 990 S. Rogers Cir Suite 4 Boca Raton, FL. 33487 b. Phone number: 561-609-2684

5. SURETY (if applicable, a copy of the payment bond is attached):

a. Name and address: _____

b. Phone number: _____ c. Amount of bond $ _____

6. a. LENDER'S NAME: _____

Lender's address: _____ b. Phone number: _____

7. Persons within the State of Florida designated by Owner upon whom notices or other documents may be served as provided by Section 713.13 (1) (a) 7., Florida Statutes:

a. Name and address: _____

b. Phone numbers of designated persons _____

8. a. In addition to himself or herself, Owner designates _____ of _____ to receive a copy of the Lienor's Notice as provided in Section 713.13 (1) (b), Florida Statutes.

b. Phone number of person or entity designated by Owner: _____

9. Expiration date of notice of commencement (the expiration date will be 1 year from the date of recording unless a different date is specified): _____, 20___

WARNING TO OWNER: ANY PAYMENTS MADE BY THE OWNER AFTER THE EXPIRATION OF THE NOTICE OF COMMENCEMENT ARE CONSIDERED IMPROPER PAYMENTS UNDER CHAPTER 713, PART I, SECTION 713.13, FLORIDA STATUTES, AND CAN RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE COMMENCING WORK OR RECORDING YOUR NOTICE OF COMMENCEMENT.

Douglas Kallesen
(Signature of Owner or Lessee, or Owner's or Lessee's Authorized Officer/Director/Partner/Manager)

Douglas Kallesen
(Print Name and Provide Signatory's Title/Office)

State of Florida
County of Palm Beach

The foregoing instrument was acknowledged before me by means of X physical presence or online notarization,
this 29 day of March, 2022
by Douglas Kallesen (name of person), as OWNER (type of authority,...e.g. officer, trustee, attorney in fact)
for _____ (name of party on behalf of whom instrument was executed)

Personally Known ___ or Produced Identification X Type of Identification Produced FLDL

XASHA CEBALLOS
MY COMMISSION # HH 174328
EXPIRES: September 11, 2026
Bonded Thru Notary Public Underwriters

_____
(Signature of Notary Public)
(Print, Type, or Stamp Commissioned Name of Notary Public)

UrbanSolar
We bring energy to life.

CONTRACT FOR SOLAR PV SYSTEM

ACCORDING TO FLORIDA'S CONSTRUCTION LIEN LAW (SECTIONS 713.001-713.37, FLORIDA STATUTES), THOSE WHO WORK ON YOUR PROPERTY OR PROVIDE MATERIALS AND SERVICES AND ARE NOT PAID IN FULL HAVE A RIGHT TO ENFORCE THEIR CLAIM FOR PAYMENT AGAINST YOUR PROPERTY. THIS CLAIM IS KNOWN AS A CONSTRUCTION LIEN. IF YOUR CONTRACTOR OR A SUBCONTRACTOR FAILS TO PAY SUBCONTRACTORS, SUB-SUBCONTRACTORS, OR MATERIAL SUPPLIERS, THOSE PEOPLE WHO ARE OWED MONEY MAY LOOK TO YOUR PROPERTY FOR PAYMENT, EVEN IF YOU HAVE ALREADY PAID YOUR CONTRACTOR IN FULL. IF YOU FAIL TO PAY YOUR CONTRACTOR, YOUR CONTRACTOR MAY ALSO HAVE A LIEN ON YOUR PROPERTY. THIS MEANS IF A LIEN IS FILED YOUR PROPERTY COULD BE SOLD AGAINST YOUR WILL TO PAY FOR LABOR, MATERIALS, OR OTHER SERVICES THAT YOUR CONTRACTOR OR A SUBCONTRACTOR MAY HAVE FAILED TO PAY. TO PROTECT YOURSELF, YOU SHOULD STIPULATE IN THIS CONTRACT THAT BEFORE ANY PAYMENT IS MADE, YOUR CONTRACTOR IS REQUIRED TO PROVIDE YOU WITH A WRITTEN RELEASE OF LIEN FROM ANY PERSON OR COMPANY THAT HAS PROVIDED TO YOU A "NOTICE TO OWNER." FLORIDA'S CONSTRUCTION LIEN LAW IS COMPLEX, AND IT IS RECOMMENDED THAT YOU CONSULT AN ATTORNEY.

TODAY'S DATE: 2/21/2022

Client Information			
Client Name:	Douglas Kallesen	HOA Name:	
Street Address:	3334 Honeysuckle Ln	HOA Phone:	
City, State, Zip:	Belle Isle FL 32812	HOA Address:	
Phone:	(407) 766-2026		
Email:	fikeysandstrings@aol.com	Referred By:	

Photovoltaic (PV) System Details			Total Investment Amount:
Panel Quantity:	Total Watts:	Panel Manufacturer: Aptos	Proposed Annual kWh Production: 20293
31	13,640.00	Panel Model: DNA-144 440w	Reviewed By: Chris Whitt
		Inverter: 31 IQ7PLUS-72-2-US	

BUYER'S RIGHT TO CANCEL

CLIENT acknowledges that he/she has read and received a copy of this contract, including Terms & Conditions contained, attached, or on the reverse side which are incorporated herein. All work on the above-mentioned property herein will be performed in a timely and professional manner. Buyer/client may cancel this contract without any penalty or obligation within three (3) business days from the above date by providing written notice by US Certified Mail, Return Receipt Requested to Urban Solar Inc. This cancellation must be clear in intent, written in English and postmarked before midnight of the third business day after you sign this contract. For the purposes of this Contract, a "Business Day" shall include Monday through Saturday but shall not include Sundays or any legal holiday on which the Postal Service does not deliver. This contract when signed represents the entire contract between buyer and seller, is accepted as satisfied, and is binding when accepted by Urban Solar, Inc. If the right to cancel period expires, the seller's contract may not be cancelled by the homeowner or applicant.

Customer Initial: DL

Cash Purchase
Payment 1 (25%) - Due upon execution of this agreement.
Payment 2 (50%) - Prior to first day of construction.
Payment 3 (25%) - On final Day of construction.

Finance Details			
Client's Annual kWh Usage: 17687	Pace: NA	Conventional: Sunlight Financial 72626.44	Application ID:
	Pace Estimated Monthly Payment: NA Refer to finance documents	Conventional Estimated Monthly Payment: 217.3 296.62 Refer to finance documents	*Customer Initial:* DL

UrbanSolar
We bring energy to life.

	Click here to enroll in our Express Engineering option. We will not contact you for solar panel layout changes during the engineering process unless the production of your system is negatively affected by 500 kWh's or more.	DL
X	Click here if there are energy efficiency products associated with this agreement. Urban Solar does not guarantee any savings dollar amount or kilowatt hour amount for any products such as pool pumps, water heater timers, hybrid heat pump water heaters, nest thermostats, or any product other than solar PV panels.	DL
X	Click here if there are trees on the property that could potentially shade some or all of the solar panels. The client shall be responsible for maintaining trees. Urban Solar is not responsible for solar panel production losses due to shading.	DL

**An "X" above along with client initials indicates agreement/acknowledgement*

Additional Comments and Notes:

Cell Card

The above comments or notes section is subject to company approval. No oral representations shall be honored by Urban Solar as a part of this contract unless in writing. All other terms and conditions can be found below starting on page 3. By Signing below, you agree to all terms and conditions and you certify that you are the homeowner and/or qualified decision maker of the above referenced project.

Accepted By: Douglas Kallesen Name: Douglas Kallesen Date: 2/21/2022

Accepted By: _____ Name: _____ Date: _____

Urban Solar: Chris Whitt Name: Chris Whitt Date: 2/21/2022

Urban Solar: Harold Garrido Name: Harold Garrido Date: 2/21/2022

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

UNIVERSAL ENGINEERING SCIENCES
Geotechnical Engineering | Construction Materials Testing and Inspection
Building Code Compliance | Environmental Services | Facilities Consulting

3532 Maggie Blvd, Orlando, FL 32811 - P: 407-581-8161 - F: 407.423.3106

Work Order No. 2074287

Project No:	0115.1900200.0000-0115-0003	**Date:**	04/14/2022
Project Name:	2022-04-026 electrical PhotoVoltaic permit	**Permitting Authority:**	Belle Isle
Address:	City of Belle Isle, 3334 Honeysuckle Lane - COBI, Belle Isle, FL 32812		
Permit Type:	Electrical	**Client:**	City of Belle Isle, FL
Permit No:	2022-04-026	**Contact:**	
Inspection Type:	Electrical		
Sub Type:	Initial Plans Review		

Result: Approved

I hereby affirm that to the best of my knowledge and belief, the above listed inspection was performed as indicated and the work was reviewed for compliance with the approved plans, and all pertinent sections of the Florida Building Code.

Duly Authorized Representative:

David J. Aldrich

UNIVERSAL ENGINEERING SCIENCES
Geotechnical Engineering | Construction Materials Testing and Inspection
Building Code Compliance | Environmental Services | Facilities Consulting

3532 Maggie Blvd, Orlando, FL 32811 - P: 407-581-8161 - F: 407.423.3106

Work Order No. 2074287

Project No:	0115.1900200.0000-0115-0003	**Date:**	04/14/2022
Project Name:	2022-04-026 electrical PhotoVoltaic permit	**Permitting Authority:**	Belle Isle
Address:	City of Belle Isle, 3334 Honeysuckle Lane - COBI, Belle Isle, FL 32812		
Permit Type:	Electrical	**Client:**	City of Belle Isle, FL
Permit No:	2022-04-026	**Contact:**	
Inspection Type:	Electrical		
Sub Type:	Initial Plans Review		

Result: Approved 04-18-22

I hereby affirm that to the best of my knowledge and belief, the above listed inspection was performed as indicated and the work was reviewed for compliance with the approved plans, and all pertinent sections of the Florida Building Code.

Duly Authorized Representative:

Allen L. Johnson

Allen Johnson

Ron DeSantis, Governor

Halsey Beshears, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE SOLAR CONTRACTOR HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

VERGONA, MICHAEL R

URBAN SOLAR GROUP, INC.
990 S ROGERS CIRCLE
SUITE 4
BOCA RATON FL 33487

LICENSE NUMBER: CVC56948

EXPIRATION DATE: AUGUST 31, 2022

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 4/5/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Insurance Office of America 1855 West State Road 434 Longwood FL 32750	**CONTACT NAME:** **PHONE (A/C, No, Ext):** 407-788-3000 **FAX (A/C, No):** 407-788-7933 **E-MAIL ADDRESS:**
INSURED URBASOL-01 Urban Solar Group, Inc. 990 S. Rogers Circle #4 Boca Raton FL 33487	**INSURER(S) AFFORDING COVERAGE** / **NAIC #** **INSURER A :** Gotham Insurance Company — 25569 **INSURER B :** New York Marine & General Insurance Company — 16608 **INSURER C :** **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** 1633016198 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	[X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC [ ] OTHER:			PK202100019194	9/20/2021	9/20/2022	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG $	$ 1,000,000 $ 100,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $
B	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [X] HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY			AU202100017242	9/20/2021	9/20/2022	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) $	$ 1,000,000 $ $ $ $
A	[X] UMBRELLA LIAB [X] OCCUR EXCESS LIAB [ ] CLAIMS-MADE DED RETENTION $			EX202100001971	9/20/2021	9/20/2022	EACH OCCURRENCE AGGREGATE $	$ 5,000,000 $ $
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N [ ] N/A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ $ $

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

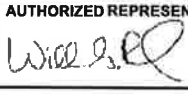
CERTIFICATE HOLDER

City of Belle Isle
1600 Nela Avenue
Belle Isle FL 32809

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



CERTIFICATE OF LIABILITY INSURANCE

Date: 4/5/2022

Producer: Plymouth Insurance Agency
2739 U.S. Highway 19 N.
Holiday, FL 34691
(727) 938-5562

Insured: South East Personnel Leasing, Inc. & Subsidiaries
2739 U.S. Highway 19 N.
Holiday, FL 34691

This Certificate is issued as a matter of information only and confers no rights upon the Certificate Holder. This Certificate does not amend, extend or alter the coverage afforded by the policies below.

Insurers Affording Coverage		NAIC #
Insurer A:	Lion Insurance Company	11075
Insurer B:		
Insurer C:		
Insurer D:		
Insurer E:		

Coverages

The policies of insurance listed below have been issued to the insured named above for the policy period indicated. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions, and conditions of such policies. Aggregate limits shown may have been reduced by paid claims.

INSR LTR	ADDL INSRD	Type of Insurance	Policy Number	Policy Effective Date (MM/DD/YY)	Policy Expiration Date(MM/DD/YY)	Limits	
		GENERAL LIABILITY ☐ Commercial General Liability ☐ Claims Made ☐ Occur ☐ ☐ General aggregate limit applies per: ☐ Policy ☐ Project ☐ LOC				Each Occurrence	$
						Damage to rented premises (EA occurrence)	$
						Med Exp	$
						Personal Adv Injury	$
						General Aggregate	$
						Products - Comp/Op Agg	$
		AUTOMOBILE LIABILITY ☐ Any Auto ☐ All Owned Autos ☐ Scheduled Autos ☐ Hired Autos ☐ Non-Owned Autos ☐ ☐				Combined Single Limit (EA Accident)	$
						Bodily Injury (Per Person)	$
						Bodily Injury (Per Accident)	$
						Property Damage (Per Accident)	$
		EXCESS/UMBRELLA LIABILITY ☐ Occur ☐ Claims Made ☐ Deductible				Each Occurrence	
						Aggregate	
A		**Workers Compensation and Employers' Liability** Any proprietor/partner/executive officer/member excluded? **NO** If Yes, describe under special provisions below.	WC 71949	01/01/2022	01/01/2023	X WC Statutory Limits ☐ OTHER	
						E.L. Each Accident	$1,000,000
						E.L. Disease - Ea Employee	$1,000,000
						E.L. Disease - Policy Limits	$1,000,000
Other			**Lion Insurance Company is A.M. Best Company rated A (Excellent). AMB # 12616**				

Descriptions of Operations/Locations/Vehicles/Exclusions added by Endorsement/Special Provisions: Client ID: 92-69-254

Coverage only applies to active employee(s) of South East Personnel Leasing, Inc. & Subsidiaries that are leased to the following "Client Company":

Urban Solar Group, Inc. dba Urban Solar

Coverage only applies to injuries incurred by South East Personnel Leasing, Inc. & Subsidiaries active employee(s), while working in: FL.

Coverage does not apply to statutory employee(s) or independent contractor(s) of the Client Company or any other entity.

A list of the active employee(s) leased to the Client Company can be obtained by faxing a request to (727) 937-2138 or email certificates@lloninsurancecompany.com

Project Name:

ISSUE 04-05-22 (PH)

Begin Date: 5/17/2021

CERTIFICATE HOLDER

CITY OF BELLE ISLE

1600 NELA AVENUE

BELLE ISLE, FL 32809

CANCELLATION

Should any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will endeavor to mail 30 days written notice to the certificate holder named to the left, but failure to do so shall impose no obligation or liability of any kind upon the insurer, its agents or representatives.

ANNE M. GANNON
CONSTITUTIONAL TAX COLLECTOR
Serving Palm Beach County
Serving *you.*

P.O. Box 3353, West Palm Beach, FL 33402-3353
www.pbctax.com Tel: (561) 355-2264

****LOCATED AT****
990 S ROGERS CIT STE 4
BOCA RATON, FL 33487

TYPE OF BUSINESS	OWNER	CERTIFICATION #	RECEIPT #/DATE PAID	AMT PAID	BILL #
23-0087 SOLAR CONTRACTOR	VERGONA MICHAEL	CVC56948	B21 597741 - 09/01/21	$27.50	B40155487

This document is valid only when receipted by the Tax Collector's Office.

STATE OF FLORIDA
PALM BEACH COUNTY
2021/2022 LOCAL BUSINESS TAX RECEIPT

URBAN SOLAR GROUP
URBAN SOLAR GROUP INC
990 S ROGERS CIR STE 4
BOCA RATON FL 33487-2836

10
6 - 3202

LBTR Number: 2016086973
EXPIRES: SEPTEMBER 30, 2022

This receipt grants the privilege of engaging in or managing any business profession or occupation within its jurisdiction and MUST be conspicuously displayed at the place of business and in such a manner as to be open to the view of the public.

2022-04-026

KALLESEN, DOUGLAS
NEW GRID-INTERACTIVE PHOTOVOLTAIC SYSTEM
DC SYSTEM SIZE (13.64 KW)

RECEIVED
APR 07 2022
BY:

GENERAL NOTES

SCOPE OF WORK
1. THE PROJECT IS NEW PHOTOVOLTAIC SYSTEM CONSISTING OF SOLAR ARRAY(S) AND ASSOCIATED POWER CONDITIONING EQUIPMENT.
2. ALL CONSTRUCTION SHALL COMPLY WITH THE ADOPTED EDITION OF THE INTERNATIONAL BUILDING CODE AND ELECTRIC CODE AS SPECIFIED IN THE PROJECT SPECIFIC NOTES.
3. IT SHALL ALSO COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE AND LOCAL ELECTRICAL UTILITY CODES, RULES AND REGULATIONS.
4. THE SYSTEM WILL BE INTERCONNECTED TO THE ELECTRICAL UTILITY GRID IN ACCORDANCE WITH THE REQUIREMENTS OF THE ADOPTED ELECTRIC AND THE ELECTRICAL UTILITY COMPANY.
5. THE CONTRACTOR SHALL PROVIDE LABOR FOR CONSTRUCTION OF THE ARRAY AND INSTALLATION OF ALL ELECTRICAL EQUIPMENT. THE CONTRACTOR WILL PROVIDE COMPETENT SUPERVISION FOR THE WORK TO BE ACCOMPLISHED. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL BY OWNER AS REQUESTED.
6. THERE WILL BE NO SUBMISSION FOR ANY EQUIPMENT WITH THE VENDOR PART NUMBER ON THE DRAWING WITHOUT WRITTEN APPROVAL OF THE PROFESSIONAL ENGINEER. COMMON ITEMS SUCH AS CONDUITS, WIRE, FITTINGS, ETC. ARE NOT
SPECIFIED BY VENDOR BUT THE SIZES CANNOT BE REDUCED.
7. THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS AGREE THAT IN ACCORDANCE WITH THE GENERALLY ACCEPTED CONSTRUCTION PRACTICES CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE SAFETY OF ALL PERSON AND PROPERTY, AND THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY
AND IS NOT LIMITED TO NORMAL WORKING HOURS.
8. CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS FURTHER AGREE TO DEFEND, INDEMNIFY AND HOLD HARMLESS THE DESIGN PROFESSIONAL FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT LIABILITY ARISING FROM THE
SOLE NEGLIGENCE OF THE DESIGN PERSONNEL.
9. CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRE TO REPAIR ANY DAMAGE DONE TO BUILDINGS, GROUNDS OR UTILITIES AT NO ADDITIONAL COST TO THE CUSTOMER. DEFECTIVE MATERIAL OR WORKMANSHIP WILL NOT BE ALLOWED ON THIS PROJECT.RESONABLE HOUSEKEEPING AND CLEAN UP
SHALL BE CONDUCTED BOTH DURING THE EXECUTION OF AND AT THE CONCLUSION OF THE PROJECT.
10. CONTRACTOR SHALL LOCATE ALL POST TENSION CABLES ON CONCRETE ROOFS AND SHALL VERIFY THAT SUCH CABLES DO NOT INTERFERE WITH THE LOCATIONS OF FASTENERS AS SHOWN IN THE ATTACHMENT DETAILS.

GENERAL
1. THE ACTUAL SYSTEM EQUIPMENT SPECIFICATIONS FOR THE PHOTOVOLTAIC SYSTEM ARE INCLUDED IN THE PV SYSTEM SPECIFICATION ON THE TITLE PAGE AND THROUGHOUT THE DRAWING AS NECESSARY FOR CLARITY.IN ADDITION THE ACTUAL VENDOR SPECIFICATION DATA SHEETS WILL BE INCLUDED AS PART OF THE PERMIT SUBMITTAL.
2. ONLY NEW MATERIAL WILL BE INSTALLED AS PART OF THE PROJECT. ALL NEW INSTALLED EQUIPMENT WILL BE APPROPRIATELY LISTED AND NEMA RATED. ALL NEW EQUIPMENT SHALL HAVE PERMANENT PLASTIC ENGRAVED IDENTIFICATION TAGS INSTALLED.
3. ALL CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF NEW RACEWAYS AND EQUIPMENT SHALL BE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL WORK SHALL BE PERFORMED BY TRADESMAN
EXPERIENCED IN WORK REQUIRED. ALL FINISHES SHALL MATCH THE EXISTING ADJACENT FINISHES. OPENING IN FIRE RATED WALLS WILL BE PATCHED IN A MANNER MAINTAINING THE ORIGINAL FIRE AND SMOKE RATING.
4. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CANNOT SHOW EVERY CONNECTION, JUNCTION BOX, WIRE,CONDUIT,
ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM.
5. CONTRACTOR SHALL COORDINATE ALL POWER OUTAGES WITH THE OWNER'S REPRESENTATIVE IN ADVANCE.
6. PANEL DESIGNATIONS SHOWN ON THESE DRAWINGS ARE GIVEN FOR CLARIFICATION OF THE CIRCUITING ONLY AND MAY
NOT CORRESPOND TO THE DESIGNATIONS FOUND IN THE FIELD.
7. ELECTRICAL TESTING SHALL BE IN COMPLIANCE WITH NFPA 70E

CONDUIT AND WIRE
1. ALL EXISTING CONDUIT RUNS ARE NOT SHOWN. CONTRACTOR SHALL VERIFY EXISTING CONDUIT LOCATIONS IN FIELD.
2. ALL CONDUCTORS SHALL BE INSTALLED IN A RACEWAY AS SPECIFIED IN THE DRAWINGS. THE EXCEPTION IS PV SOURCE CIRCUIT CONDUCTORS MADE OF PV WIRE CABLE. THESE CONDUCTORS MAY BE EXPOSED WITHIN THE PV ARRAY.
3. INDOOR EMT FITTINGS MAY BE COMPRESSION TYPE OR STEEL SET SCREW TYPE. OUTDOOR EMT FITTINGS MUST BE COMPRESSION RAINTIGHT TYPE.
4. A PULL ROPE SHALL BE INSTALLED IN ALL EMPTY CONDUITS.
5. CONDUCTORS MATERIAL, EITHER COPPER OR ALUMINUM IN SPECIFIED IN THE DRAWINGS. CONDUCTOR INSULATION TYPE SHALL BE THWN - 2 UNLESS OTHERWISE NOTED.

EQUIPMENT
1. ALL ELECTRICAL COMPONENTS INSTALLED OUTDOORS, EXPOSED TO WEATHER OR IN DAMP LOCATIONS SHALL BE RATED FOR NEMA 3R OR GREATER. INSTALLATION OF THESE COMPONENTS MUST COMPLY WITH THE
MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. ALL RACEWAYS, CABINETS, BOXES, FIXTURES SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN AN APPROVED MANNER.
3. AT THE COMPLETION OF THE PROJECT NEATLY TYPED ACCURATE PANEL BOARD DIRECTORIES INDICATING ALL BRANCH CIRCUITS AND SPARES WILL BE PROVIDED. ALL SPARES SHALL BE LEFT IN THE OFF POSITION.
4. ALL SAFETY SWITCHES SHALL BE HEAVY DUTY TYPE WITH COVER INTERLOCK AND HANDLE LOCK OFF PROVISIONS. SWITCHES SHALL BE MANUFACTURED BY A COMPANY CONSISTENT WITH OTHER INSTALLED EQUIPMENT WHENEVER POSSIBLE. PART NUMBERS, RATING AND FUSING SHALL BE AS SHOWN ON THE DRAWINGS.
5. CONTRACTOR SHALL ENSURE ALL CEC AND MAINTENANCE CLEARANCE REQUIREMENTS ARE MET FOR NEW EQUIPMENT AND MAINTAINED FOR EXISTING EQUIPMENT.
6. CONTRACTOR SHALL FIELD VERIFY EQUIPMENT CLEARANCE AND PLACEMENTS WHILE COORDINATING LOCATORS WITH
OTHER TRADES, CONSTRUCTION MANAGERS, AND SITE SUPERVISORS PRIOR TO PURCHASING AND INSTALLING EQUIPMENT.
7. EVERY STRUCTURE AND PORTION THEREOF, INCLUDING NONSTRUCTURAL COMPONENTS THAT ARE PERMANENTLY ATTACHED TO STRUCTURES AND THEIR SUPPORTS AND ATTACHMENTS, SHALL BE DESIGNED AND CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS IN ACCORDANCE WITH ASCE 7, EXCLUDING CHAPTER 14 AND APPENDIX
11A. THE SEISMIC DESIGN CATEGORY FOR A STRUCTURE IS PERMITTED TO BE DETERMINED IN ACCORDANCE WITH SECTION 1613 OR ASCE 7.
8. ALL CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL
LIGHTING AND RECEPTACLE OUTLETS, APPLIANCE AND COOLING, HEATING AN D VENTILATING EQUIPMENT, SHALL BE LOCATED
NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE JUNCTION OR DEVICE BOX NOR LESS THAN 15 INCHES
MEASURED TO THE BOTTOM OF THE JUNCTION OR DEVICE BOX ABOVE THE FINISHED FLOOR.
9. ALL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 - AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTACLES
SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE
HOUSING NOR LESS THAN 15 INCHES MEASURED TO THE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING ABOVE FINISHED FLOOR.

GROUNDING
1. THE GROUNDING SYSTEM SHALL MEET THE REQUIREMENTS OF THE NEC AND THE LOCAL ADOPTED CODE. ALL ELECTRICAL EQUIPMENT AND RACEWAYS SHALL BE PROPERLY GROUNDED.
2. AN INSULATED EQUIPMENT GROUNDING CONDUCTOR, IN ACCORDANCE WITH NEC CODE , SHALL BE PROVIDED IN ALL CONDUITS WITH CURRENT CARRYING CONDUCTORS. ALL LUGS AND CONNECTORS SHALL BE RATED FOR THE CONDUCTOR MATERIAL AND THE CONDITIONS OF USE.
3. THE GROUNDING RESISTIVITY WILL BE TESTED AFTER INSTALLATION TO CONFIRM 5 OHM OR LESS RESISTANCE FROM RACKING TO GROUND. IF GROUND RESISTANCE IS GREATER THAN 5 OHMS ADDITIONAL GROUNDING WILL BE INSTALLED UNTIL RESISTANCE IS LESS THAN 5 OHMS.

WIRING DEVICES
1. RECEPTACLES SHALL BE AS DESIGNED ON THE DRAWINGS AND SHOULD BE A BRAND CONSISTENT WITH OTHERS IN THE VICINITY WHENEVER POSSIBLE.
2. ALL WIRING DEVICES SHALL BE PROVIDED WITH APPROPRIATE COVER-PLATES. ANY EMPTY BOXES SHALL HAVE BLANK
COVER PLATES. COVER-PLATES SHALL BE LEXAN, PLASTIC OR STAINLESS STEEL IN FINISHED AREA. GALVANIZED COVER-PLATES MAY BE USED IN EQUIPMENT ROOMS.

LABELING AND PHASING
1. FOR LABELING USE NUMBERED UV RATED LABELS TO INDICATE STRING NUMBER.
2. AS A SUBSTITUTE FOR LABELS YELLOW TAPE MAY BE USED FOR PHASING
3. EACH METHOD DESCRIBED ABOVE WILL NEED TO BE PERFORMED ON BOTH POSITIVE AND NEGATIVE AT POINTS WHERE
CONDUCTORS ARE TERMINATED

SYSTEM DETAILS

DESCRIPTION	NEW GRID-INTERACTIVE PHOTOVOLTAIC SYSTEM WITH NO BATTERY STORAGE
DC RATING OF SYSTEM	SYSTEM SIZE : 13.64 KW DC STC
AC RATING OF SYSTEM	8.99 KW
MAX. AC OUT. CURRENT	37.51 A
NO. OF MODULES	(31) DNA-144-MF26-(440W) APTOS SOLAR
NO. OF INVERTERS	(31) ENPHASE IQ7PLUS-72-M-US MICROINVERTERS
POINT OF CONNECTION	LINE SIDE TAP
ARRAY STRINGING	(2) BRANCHES OF 10 MODULES (1) BRANCH OF 11 MODULES

SITE DETAILS

ASHRAE EXTREME LOW	-1°C
ASHRAE 2% HIGH	34°C
GROUND SNOW LOAD	0 PSF
WIND SPEED	140 MPH (ASCE 7-16)
RISK CATEGORY	II
WIND EXPOSURE CATEGORY	C

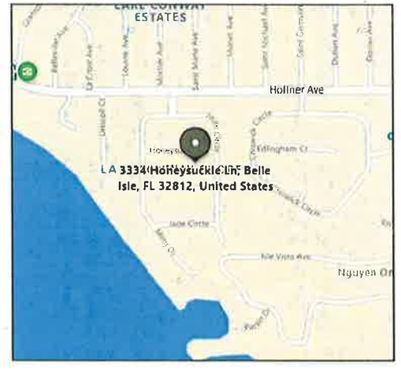
GOVERNING CODES

FLORIDA RESIDENTIAL CODE, 7TH EDITION 2020 (FRC)
FLORIDA BUILDING CODE, 7TH EDITION 2020 (FBC)
FLORIDA FIRE PREVENTION CODE, 7TH EDITION 2020 (FFPC)
NATIONAL ELECTRIC CODE, NEC 2017 CODE BOOK

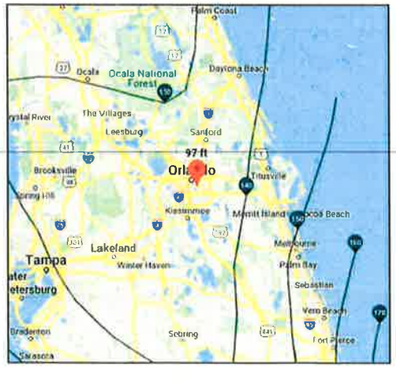
SHEET INDEX

SITE MAP (N.T.S)

VICINITY MAP



WIND FLOW MAP



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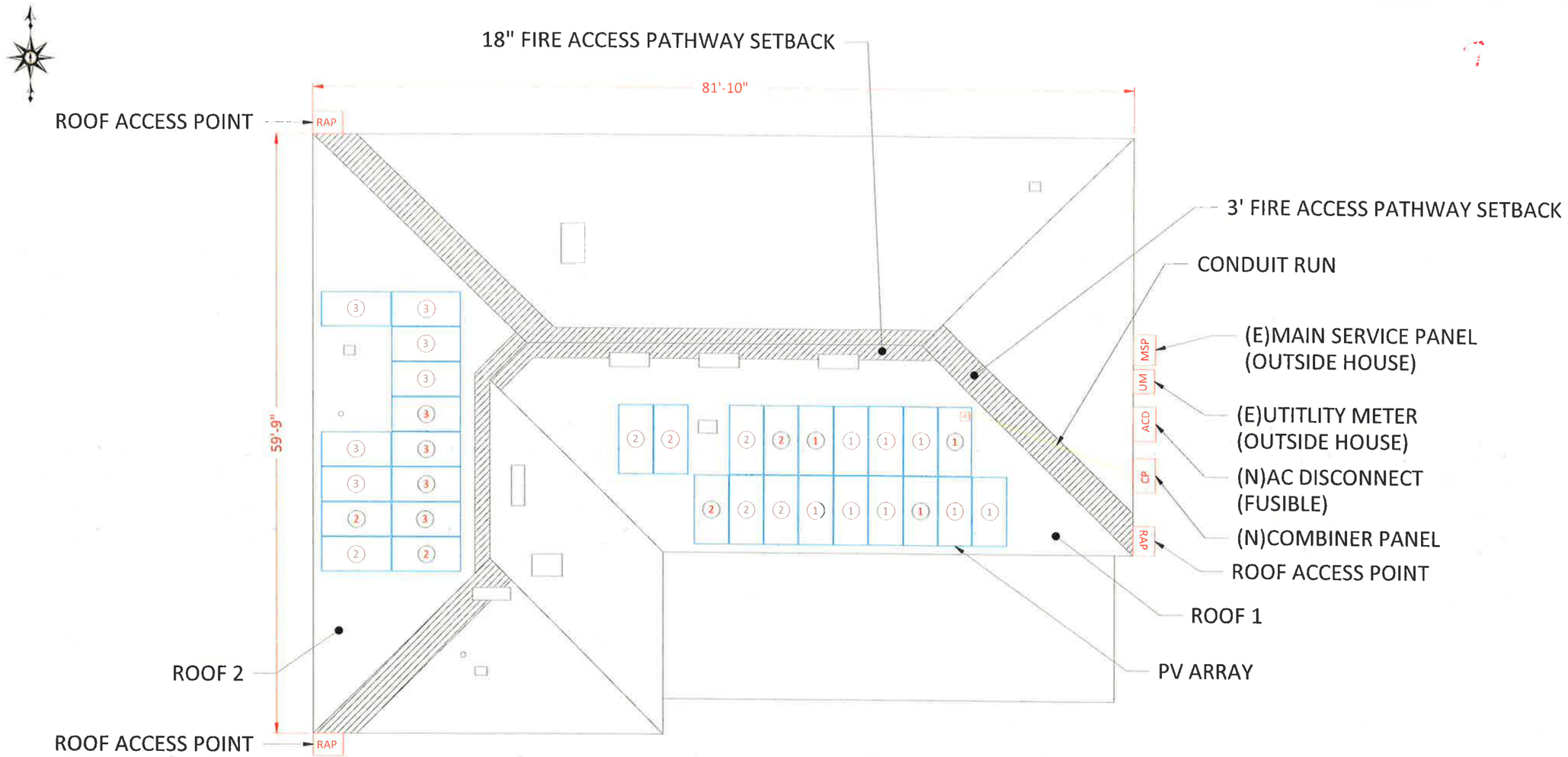
LICENSE
No. 83317
STATE OF FLORIDA
PROFESSIONAL ENGINEER

3/24/22

COVER PAGE
PV-1



EQUIPMENT SPECIFICATIONS

EQUIPMENT	DESCRIPTION	QUANTITY
MODULE	DNA-144-MF26-(440W) APTOS SOLAR	31
INVERTER	ENPHASE IQ7PLUS-72-M-US MICROINVERTERS	31
JUNCTION BOX	SOLTECTION RI-1 ROOFTOP	1
COMBINER PANEL	80A ENPHASE IQ COMBINER 4C	1
AC DISCONNECT	AC DISCONNECT 240V, 60 AMP FUSED WITH 50 AMP FUSES, NEMA 3R, UL LISTED	1
ATTACHMENT	QUICKMOUNT (L-MOUNT)	71
RACKING SYSTEM	IRONRIDGE (XR100) RAILS	-

ROOF SPECIFICATIONS

ROOF MATERIAL	ASPHALT SHINGLE
ROOF CONDITION	FAIR
RAFTERS	2"X4"@24" O.C.

SYSTEM INFORMATION

DC SYSTEM SIZE	13.64 KW
AC SYSTEM SIZE	8.99 KW

ROOF INFORMATION

ROOF	QUANTITY	SLOPE	AZIMUTH
ROOF 1	18	18.43°(4/12)	180°
ROOF 2	13	18.43°(4/12)	270°

NOTES:
1. LOCATION OF JUNCTION BOX(ES), AC DISCONNECTS(S), AC COMBINER PANEL(S), AND OTHER ELECTRICAL EQUIPMENT(S) RELEVANT TO PV INSTALLATION SUBJECT TO CHANGE BASED ON SITE CONDITIONS.
2. SETBACKS AT RIDGES CAN BE REDUCED TO 18 INCHES IN COMPLIANCE WITH FBC R 324.6.2:
TOTAL PLAN VIEW AREA = 4649.4 SQFT
TOTAL PV AREA = 31(82.48 IN)(40.90 IN)/(144 IN^2)
= 726.22 SQFT
(726.22 SQFT/4649.4 SQFT)100 = 15.62 %
TOTAL PV AREA POPULATES 15.62 % OF TOTAL PLAN VIEW AREA AND IS WITHIN THE 33% REQUIREMENT.

LEGENDS

- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- JB - JUNCTION BOX
- CP - COMBINER PANEL
- RAP - ROOF ACCESS POINT
- (1) - STRING TAG
- - CONDUIT RUN
- - FIRE SETBACK
- - ROOF OBSTRUCTION
- ACD - AC DISCONNECT

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3/10/22

FIRE SAFETY PLAN

PV-2

CONDUCTOR AND CONDUIT SCHEDULE

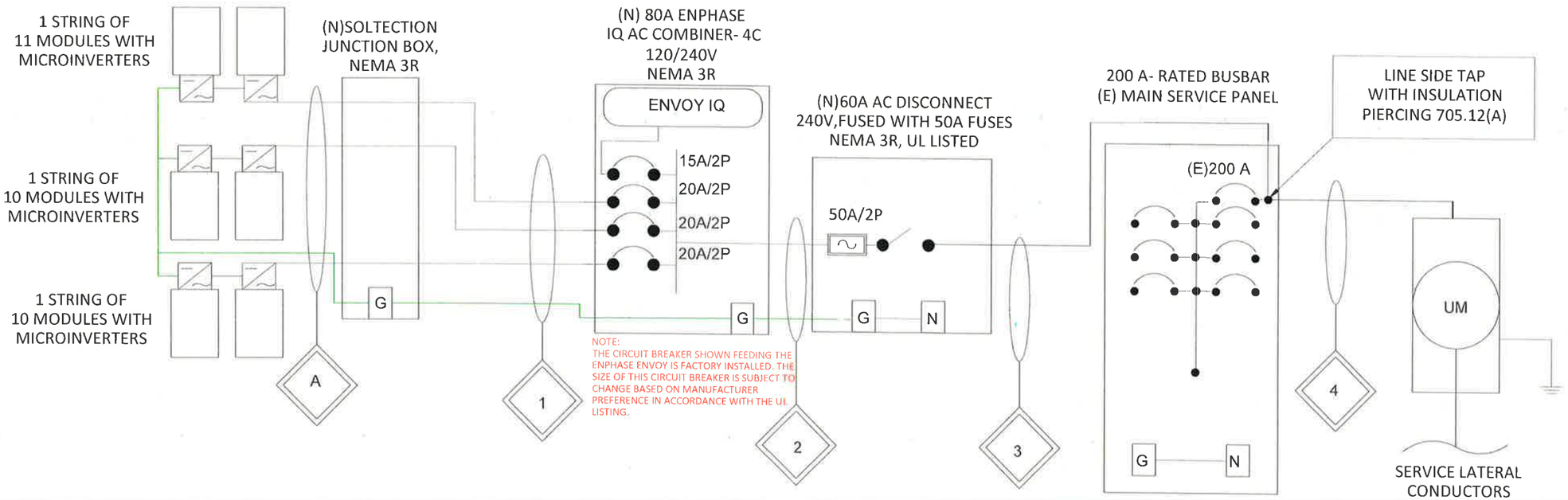
SR. NO.	DESCRIPTION	CONDUIT SIZE
A	ENPHASE Q CABLES, (1) #10 AWG THWN-2 (G)	
1	(3) #10 AWG THWN-2 (L1) ,(3) #10 AWG THWN-2 (L2) , (1) #10 AWG THWN-2 (G)	IN 3/4" CONDUIT RUN
2	(3) #8 AWG THWN-2 (L1,L2,N) , (1) #10 AWG THWN-2 (G)	IN 3/4" CONDUIT RUN
3	(3) #8 AWG THWN-2 (L1,L2,N)	IN 3/4" CONDUIT RUN
4	(3) 2/0 AWG THWN-2 (L1,L2,N)	IN 2" CONDUIT RUN

NOTE:
1.CONDUIT RUN - EMT, PVC, IMC, RMC, FMC, LFMC OR EQUIVALENT AS PER NEC.
2. ALL EQUIPMENT GROUNDING CONDUCTORS SMALLER THAN #6 AWG SHALL RUN BENEATH THE ARRAY(S) OR IN A CONDUIT RUN TO PROTECT FROM PHYSICAL DAMAGE PER NEC 690.46 AND NEC 250.120(C).
3. LEGEND: (E) = EXISTING, (N) = NEW; APPLICABLE TO CONDUCTORS, CONDUITS, ELECECTRICAL ENCLOSURES, ETC

MODULE SPECIFICATION	
MANUFACTURER	APTOS SOLAR
MODEL NO.	DNA-144-MF26-440W
PEAK POWER (Pmpp)	440 W
PEAK VOLTAGE (Vmpp)	41.0 V
PEAK CURRENT (Impp)	10.74 A
OPEN CIRCUIT VOLTAGE (Voc)	49.9 V
SHORT CIRCUIT CURRENT (Isc)	11.33 A

INVERTER SPECIFICATION	
MANUFACTURER	ENPHASE
MODEL NO.	IQ7PLUS-72-M-US
MAX. DC INPUT VOLTAGE	60V
MAX. CONT. OUTPUT POWER	290VA
NOMINAL AC OUTPUT VOLTAGE	240V
MAX. CONT. OUTPUT CURRENT	1.21A

ARRAY DETAILS	
DC SYSTEM SIZE	13.64 KW
AC SYSTEM SIZE	8.99 KW
TOTAL NO. OF MODULES	31
NO. OF MODULE PER STRING	2@10, 1@11
NO. OF STRING	3



NOTE:
1. UTILITY SHUTDOWN IS REQUIRED TO SAFELY PERFORM INSTALLATION.
2. MAIN SERVICE PANEL SHALL BE REWIRED TO PROPERLY CONFIGURE SERVICE CONDUCTORS. SERVICE CONDUCTORS FROM UTILITY METER SHALL BE CONNECTED TO EXISITING 200A MAIN CIRCUIT BREAKER IN MAIN SERVICE PANEL AND CONDUCTORS FEEDING THE SUB SERVICE PANEL SHALL BE CONNECTED TO THE MAIN LUGS IN MAIN SERVICE PANEL.
3. 2/0 AWG THWN-2 SHALL BE USED FOR REWIRING PURPOSES.
4. POLARIS TAPS SHALL BE USED TO EXTEND SERVICE CONDUCTORS IN THE MAIN SERVICE PANEL WHERE APPLICABLE.

NOTE:
IF NOT ALREADY PRESENT: #6 AWG COPPER GEC RUN TO TWO 5/8" X 8' GROUND RODS. GROUND RODS ARE AT A MINIMUM SEPARATION OF 6', BOND TO COLD WATER PIPE AND INTER-SYSTEM BONDING JUMPER PER NEC 250.66(A) AND NEC 250.52(A)(5).

PER FL. STATUE 377.705 (REVISED 7/1/2017) I, KIMANDY LAWRENCE PE#83317, AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE PV ELECTRICAL SYSTEM AND ELECTRICAL COMPONENTS ARE DESIGNED AND APPROVED USING THE STANDARDS CONTAINED IN THE MOST RECENT VERSION OF THE FLORIDA BUILDING CODE.

Reviewed for Code Compliance Universal Engineering Sciences

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8/2/22

ELECTRICAL LINE DIAGRAM

PV-3

ELECTRICAL CALCULATIONS:

1. CURRENT CARRYING CONDUCTOR

(A) BEFORE IQ COMBINER PANEL :

AMBIENT TEMPERATURE = 34°C
CONDUIT INSTALLED AT MINIMUM DISTANCE OF 7/8 INCHES ABOVE ROOF .....NEC 310.15(B)(3)(c)

TEMPERATURE DERATE FACTOR - (0.96) .....NEC 310.15(B)(2)(a)
GROUPING FACTOR - (0.8) .....NEC 310.15(B)(3)(a)

CONDUCTOR AMPACITY:

= (INV O/P CURRENT) x 1.25 / A.T.F / G.F ...NEC 690.8(B)
= [(11 x 1.21) x 1.25] / 0.96 / 0.8
= 21.66 A
SELECTED CONDUCTOR - #10 THWN-2 ...NEC 310.15(B)(16)

(B) AFTER IQ COMBINER PANEL:

TEMPERATURE DERATE FACTOR - (0.96)
GROUPING FACTOR - (1)

CONDUCTOR AMPACITY
= (TOTAL INV O/P CURRENT) x 1.25 / 0.96 / 1 ...NEC 690.8(B)
= [(31 x 1.21) x 1.25] / 0.96 / 1
= 48.84 A
SELECTED CONDUCTOR - #8 THWN-2 ...NEC 310.15(B)(16)

2. PV OVER CURRENT PROTECTION ...NEC 690.9(B)

= TOTAL INVERTER O/P CURRENT x 1.25
= (31 x 1.21) x 1.25 = 46.89 A
SELECTED OCPD IS 50A

SELECTED EQUIPMENT GROUNDING CONDUCTOR (EGC) = #10 THWN-2 ...NEC 250.122(A)

GENERAL ELECTRICAL NOTES:

1. THE DC AND AC CONNECTORS OF ENPHASE IQ7PLUS-72-M-US MICROINVERTERS ARE LISTED TO MEET REQUIREMENTS AS A DISCONNECT MEANS AS ALLOWED BY NEC 690.15(A).
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 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. 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).
4. PV SYSTEM DISCONNECT SHALL BE READILY ACCESSIBLE.
5. POINT-OF-CONNECTION SHALL BE MADE IN COMPLIANCE WITH NEC 705.12
6. UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
7. MODULES CONFORM TO AND ARE LISTED UNDER UL 1703.MICROINVERTERS CONFORM TO AND ARE LISTED UNDER UL 1741 AND IEEE 1547.
8. CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC ARTICLE 300.6(C)(1) AND ARTICLE 310.10 (D).
9. CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC ARTICLE 310.10 (C).
10. LINE SIDE TAP DISCONNECTS MUST BE LOCATED NO MORE THAN 10 FEET FROM THE TAP POINT PER NEC 690.15(A)
11. ALL DC WIRING RUNNING THROUGH THE BUILDING SHALL BE ENCLOSED IN METALLIC CONDUIT IN COMPLIANCE WITH NEC 690.31(G). THIS REQUIREMENT SHALL APPLY TO OPTIMIZER BASED SYSTEMS, BUT SHALL NOT APPLY TO MICROINVERTER BASED SYSTEMS.
12. A 10 AWG CU EQUIPMENT GROUNDING CONDUCTOR SHALL BE USED TO BOND RAILS AND OTHER ROOFTOP EQUIPMENT. THIS CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BY RUNNING UNDERNEATH THE ARRAY. IF THIS CONDUCTOR IS UNPROTECTED FROM PHYSICAL DAMAGE, THE CONDUCTOR SHALL BE INCREASED TO 6 AWG CU.

GROUNDING NOTES:

PV MODULE AND RACKING GROUNDING AS PER APPROVED INSTALLATION PRACTICE AND IN LINE WITH MANUFACTURE'S GUIDELINES.

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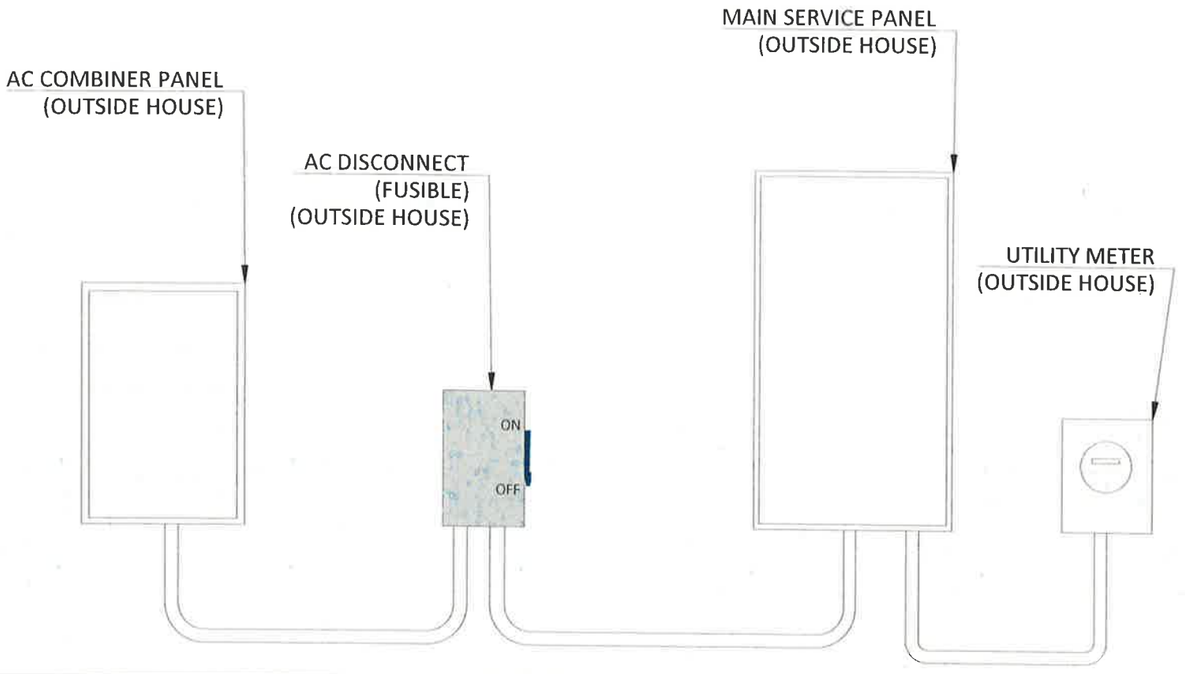
7/28/22

ELECTRICAL CALCULATIONS

PV-4

EQUIPMENT ELEVATION VIEW



SOLAR AC DISCONNECT

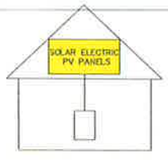
NOTICE

RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

NEC 2017 EDITION 690.56(C)(3)

SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN

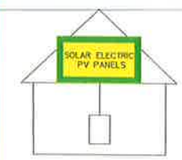
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY



NEC 2017 EDITION 690.56(C)(1)(a)

EMERGENCY RESPONDER: THIS SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSTION TO SHUTDOWN ENTIRE PV SYSTEM.



FLORIDA FIRE PREVENTION CODE SEVENTH EDITION 11.12.2.1.1.1

AC COMBINER PANEL

NOTICE

AC COMBINER AND DATA AQUISITION.
DO NOT ADD LOADS.

WARNING

AC VOLTAGE : 240V
MAX. OCPD: 50 A
MAX. CURRENT: 37.51 A

EMERGENCY CONTACT

561-609-2664

FLORIDA FIRE PREVENTION CODE SEVENTH EDITION 11.12.2.1.5

UTILITY METER

WARNING

⚠ DUAL POWER SOURCE ⚠

MAIN SERVICE PANEL

WARNING

⚠ DUAL POWER SOURCE ⚠

NOTES:
1.THE MATERIAL USED FOR THE PHOTOVOLTAIC SYSTEM LABELS SHALL BE REFLECTIVE, WEATHER RESISTANT, AND CONSTRUCTED OF DURABLE ADHESIVE MATERIAL OR ANOTHER APPROVED MATERIAL SUITABLE FOR THE ENVIRONMENT IN COMPLIANCE WITH NFPA 1-11.12.
2. FONT, TEXT HEIGHT , CAPITALIZATION , FONT COLOR(S), BACKGROUND COLOR(S), DIAGRAM COLOR(S)AND CONTENT OF PHOTOVOLTAIC SYSTEMS LABELS SHALL COMPLY WITH NFPA 1-11.12 AND NEC 2017 690.56 AS APPLICABLE FOR THE PHOTOVOLTAIC SYSTEM TO BE INSTALLED.

Reviewed for Code Compliance
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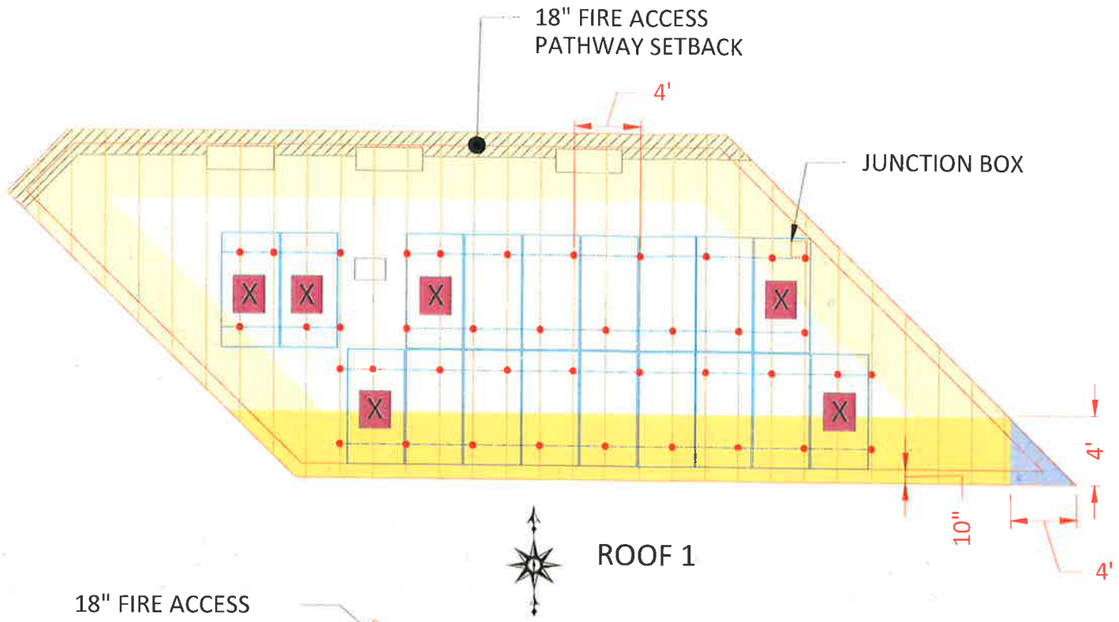
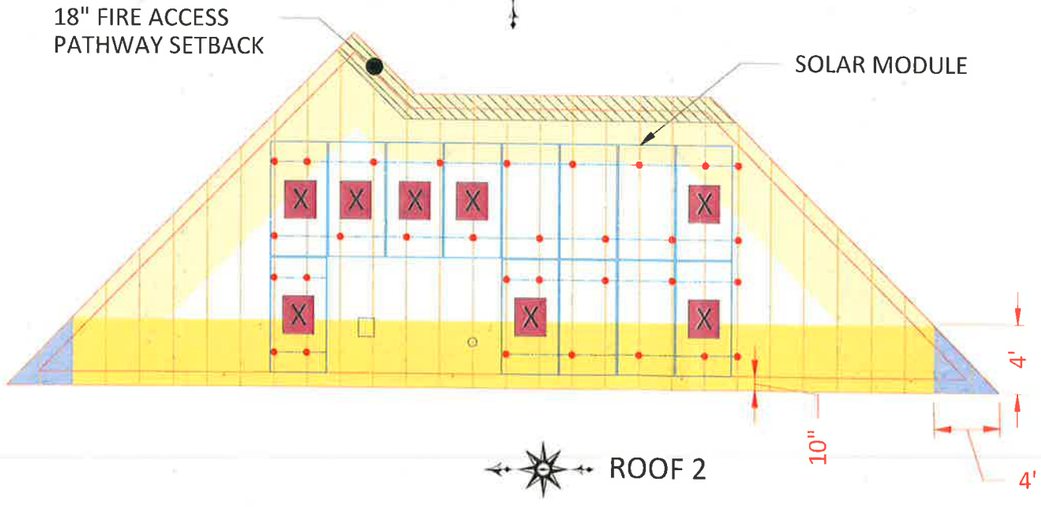
LABELS
PV-5





LEGENDS

- WIND ZONE 1
- WIND ZONE 1'

WIND ZONE 2

- WIND ZONE (2)
- WIND ZONE (2r)
- WIND ZONE (2e)
- WIND ZONE (2n)

WIND ZONE 3

- WIND ZONE (3)
- WIND ZONE (3r)
- WIND ZONE (3e)

WIND LOAD INFORMATION:

THIS SYSTEM HAS BEEN DESIGN TO MEET THE REQUIREMENTS OF THE 7TH EDITION OF THE FLORIDA BUILDING CODE AND USED THE FOLLOWING DESIGN PARAMETERS:
ULTIMATE WIND SPEED: 140 MPH
EXPOSURE CATEGORY: C
RISK CATEGORY: II
MEAN ROOF HEIGHT: 15 FT
ROOF SLOPE: 07°-20°

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10/2

EQUIPMENT SPECIFICATIONS

EQUIPMENT	DESCRIPTION	QUANTITY
MODULE	DNA-144-MF26-(440W) APTOS SOLAR	31
INVERTER	ENPHASE IQ7PLUS-72-M-US MICROINVERTERS	31
JUNCTION BOX	SOLTECTION RJ-1 ROOFTOP	1
COMBINER PANEL	80A ENPHASE IQ COMBINER 4C	1
AC DISCONNECT	AC DISCONNECT 240V, 60 AMP FUSED WITH 50 AMP FUSES, NEMA 3R, UL LISTED	1
ATTACHMENT	QUICKMOUNT (L-MOUNT)	71
RACKING SYSTEM	IRONRIDGE (XR100) RAILS	-

ROOF SPECIFICATIONS

ROOF MATERIAL	ASPHALT SHINGLE
ROOF CONDITION	FAIR
RAFTERS	2"X4"@24" O.C.

SYSTEM INFORMATION

DC SYSTEM SIZE	13.64 KW
AC SYSTEM SIZE	8.99 KW

ROOF INFORMATION

ROOF	QUANTITY	SLOPE	AZIMUTH
ROOF 1	18	18.43°(4/12)	180°
ROOF 2	13	18.43°(4/12)	270°

NOTES:

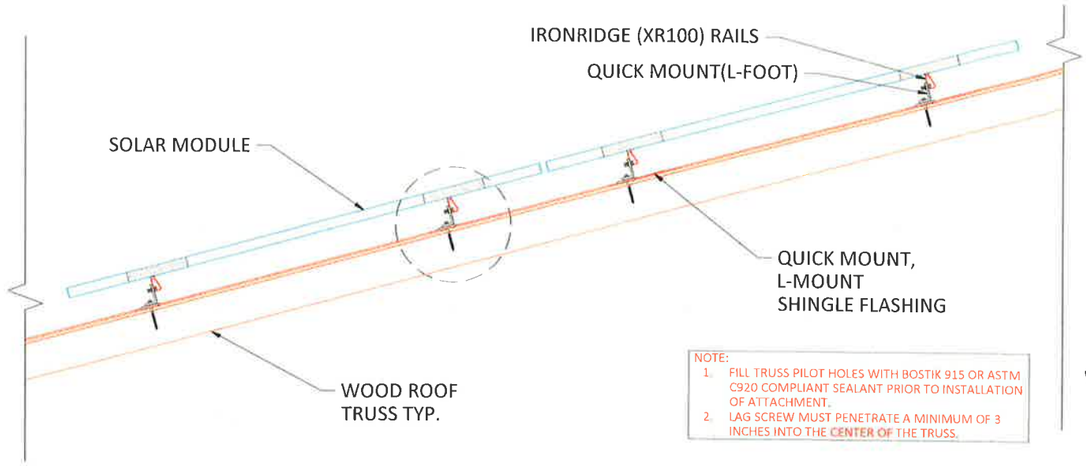
1. LOCATION OF JUNCTION BOX(ES), AC DISCONNECTS(S), AC COMBINER PANEL(S), AND OTHER ELECTRICAL EQUIPMENT(S) RELEVANT TO PV INSTALLATION SUBJECT TO CHANGE BASED ON SITE CONDITIONS.
2. TRUSS LOCATIONS ARE APPROXIMATE. ACTUAL LOCATIONS MAY DIFFER AND CONTRACTOR MAY NEED TO ADJUST MOUNT LOCATIONS. IN NO CASE SHALL THE MOUNT SPACING EXCEED "MAX. MOUNT SPACING"
3. PROPOSED PHOTOVOLTAIC LAYOUT IN COMPLIANCE WITH NFPA 1,2018 EDITION

LEGENDS

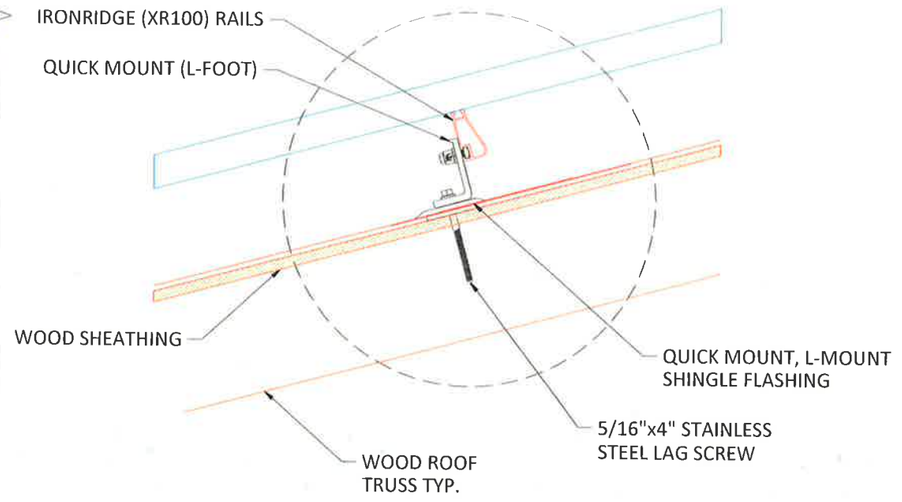
- PV ROOF ATTACHMENT
- RAILS
- RAFTERS/TRUSSES
- ROOF OBSTRUCTION
- JUNCTION BOX
- FIRE SETBACK
- EXPOSED MODULE

RACKING LAYOUT

PV-6



NOTE:
1. FILL TRUSS PILOT HOLES WITH BOSTIK 915 OR ASTM C920 COMPLIANT SEALANT PRIOR TO INSTALLATION OF ATTACHMENT.
2. LAG SCREW MUST PENETRATE A MINIMUM OF 3 INCHES INTO THE CENTER OF THE TRUSS.



NOTE:
RAIL SPAN LIMITS SHOWN RESPECTIVE TO WIND ZONE. VALUE IN PARENTHESES TO RIGHT OF RAIL SPAN LIMIT IS ALLOWABLE MODULE CANTILEVER.

Span limits		XR10	XR100	XR1000
Zone 1	Normal	5' 4" (2' 2")	8' 3" (3')	11' 9" (3')
	Exposed	4' 1" (1' 8")	6' 3" (2' 6")	8' 10" (3')
Zone 2r	Normal	4' 7" (1' 10")	7' 2" (2' 10")	9' 11" (3')
	Exposed	3' 7" (1' 5")	5' 6" (2' 2")	7' 3" (2' 11")
Zone 2e/3	Normal	4' 4" (1' 9")	6' 10" (2' 9")	9' 5" (3')
	Exposed	3' 5" (1' 4")	5' 4" (2' 2")	6' 3" (2' 6")

System Weight	
Total system weight	1,869.8 lbs
Weight/attachment	33.4 lbs
Racking weight	222.8 lbs
Distributed weight	2.5 psf

I CERTIFY THAT THE EXISTING ROOF AND BUILDING STRUCTURE CAN WITHSTAND ALL DEAD LOADS IMPOSED BY THE PHOTOVOLTAIC SYSTEM AND ALL WIND LOADS OF SPECIFIED INTENSITY IN ACCORDANCE WITH THE FLORIDA BUILDING CODE.

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PROFESSIONAL ENGINEER

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STRUCTURAL DETAILS

PV-7

WIND LOAD CALCULATIONS FOR MODULES INSTALLED ON ROOFS WITH A HEIGHT LESS THAN 60' BASED ON ASCE 7-16

SITE INFORMATION

FBC VERSION	7TH EDITION	RISK CATEGORY	II	
MEAN ROOF HEIGHT (ft)	15	EXPOSURE CATEGORY	C	PITCH
LEAST HORIZONTAL DIMENSION (ft)	43	ROOF SLOPE (°)	18.4	4 / 12
PARAPET HEIGHT (ft)	0	ROOF TYPE	HIP	
MODULE	APTOS 440W	ULTIMATE WIND SPEED	140 mph	
MODULE LENGTH (in)	82.48	NOMINAL WIND SPEED	108 mph	
MODULE WIDTH (in)	40.91	K_D	0.85	
MODULE DEPTH (mm)	35	K_{ZT}	1.00	
MODULE DEPTH (in)	1.37	K_z	0.85	
MODULE VERTICAL AREA = A_l (ft^2)	23.4	K_e	1.00	x
MODULE HORIZONTAL AREA = A_r (ft^2)	0.8	γ_E	1.0 OR 1.5	
HIGH VELOCITY HURRICANE ZONE?	NO	γ_a	0.688	

DESIGN CALCULATIONS PER ASCE 7-16 SECTION 29.4.4

VELOCITY PRESSURE (q_z) = $.00256*K_z K_{ZT} K_D V^2$

VELOCITY PRESSURE (ASD) 21.7 psf

WIDTH OF PRESSURE COEFFICIENT

43' * 10% = 4.3'

15' * 40% = 6'

ZONE WIDTH 'a' 4FT

EXTERNAL PRESSURE COEFFICIENT

Zone 1	0.55	-1.3
Zone 2e	0.55	-1.6
Zone 2r	0.55	-2.1
Zone 3	0.55	-1.6

DESIGN PRESSURES

	DOWN	UP NORMAL	UP EDGE OR EXPOSED	
Zone 1	16.0	-19.0	-28.5	psf
Zone 2e	16.0	-23.9	-35.9	psf
Zone 2r	16.0	-31.2	-46.8	psf
Zone 3	16.0	-23.9	-35.9	psf

MODULE ALLOWABLE PRESSURE **75.3** psf

ATTACHMENTS

ATTACHMENT TYPE	QUICKMOUNT L-MOUNT		
	NORMAL MODULES		EDGE/EXPOSED MODULES
MAXIMUM DISTANCE BETWEEN ATTACHMENTS ZONE 1	48	(in)	48
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 1 (lb)	261		392
MAXIMUM DISTANCE BETWEEN ATTACHMENTS ZONE 2e	48	(in)	48
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 2e (lb)	329		493
MAXIMUM DISTANCE BETWEEN ATTACHMENTS ZONE 2r	48	(in)	48
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 2r (lb)	429		643
MAXIMUM DISTANCE BETWEEN ATTACHMENTS ZONE 3	48	(in)	48
MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 3 (lb)	329		493
ALLOWABLE UPLIFT FORCE PER ATTACHMENT (lb)	756		
MIN. LAG PENETRATION INTO TRUSS (in)	3		
SCREW WITHDRAWAL RESISTANCE (lb)	1381		
MAX LATERAL FORCE PER ATTACHMENT (lb)	32		
ALLOWABLE LATERAL FORCE PER ATTACHMENT (lb)	384		
ALLOWABLE UPLIFT PERMID/END CLAMP (lb)	883		

NOTES

1. MODULE ALLOWABLE WIND PRESSURE OBTAINED FOR MANUFACTURER DATASHEET.
2. SEE ATTACHMENT PLAN FOR ACTUAL ATTACHMENT SPACING IN EACH ZONE
3. HVHZ DEFINED AS MIAMI-DADE AND BROWARD COUNTIES
4. LAG SCREW WITHDRAWAL RESISTANCE OBTAINED FROM THE USDA WOOD HANDBOOK, WOOD AS AN ENGINEERING MATERIAL
5. ROOF TRUSSES ARE #2 SOUTHERN YELLOW PINE
6. USE INCLUDED 5/16" x 4" LAG SCREWS TO SECURE MOUNT TO THE CENTER OF EACH TRUSS. MINIMUM LAG SCREW PENETRATION INTO TRUSS IS 3" USE ONE SCREW PER ATTACHMENT.
7. ANY EDGE AND/OR EXPOSED MODULES PRESENT IN PROPOSED INSTALLATION WHERE ANY WIND ZONE'S DESIGN PRESSURE EXCEEDS THE MODULE ALLOWABLE PRESSURE SHALL BE VERIFIED WITH WEIGHTED AVERAGE PRESSURE CALCULATIONS RESPECTIVE TO EACH MODULE CASE, AS APPLICABLE

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WIND LOAD CALCULATIONS

PV-8

DNA™ 144

Solar for Innovators

Residential I Commercial

Designed & Engineered in Silicon Valley
440W I 445W I 450W

Our DNA™ Split Cell Series impressively combines advanced solar technologies to maximize performance. Our patented Dual Nano Absorber (DNA™) Technology allows the panel to operate at high-efficencies in extreme temperatures. Contact our sales team today to learn more about our line of high-efficienty solar panels.

- Patented DNA™ technology boosts power performance & module efficiency
- Advanced split cell technology with 9 ultra-thin busbars allows for less resistance and more photon capture
- Ideal solution for applications affected by shading
- All-black design for pristine aesthetics No excessive silver bussing or ribbons
- Robust product design is reslient in extreme weather. Up to 5400 Pa snow load and 6200 Pa wind load

c UL us LISTED [PHOTOVOLTAIC MODULE OVER 600 VOLTS] E511348 · SP c US · ETL us Intertek UL61730-1, UL61730-2 · CE

30 Year Warranty | 3X IEC Standards | RETC Top Performer

Linear Performance Warranty

aptos solar technology
3140 De La Cruz Blvd., Ste 200
Santa Clara, CA 95054
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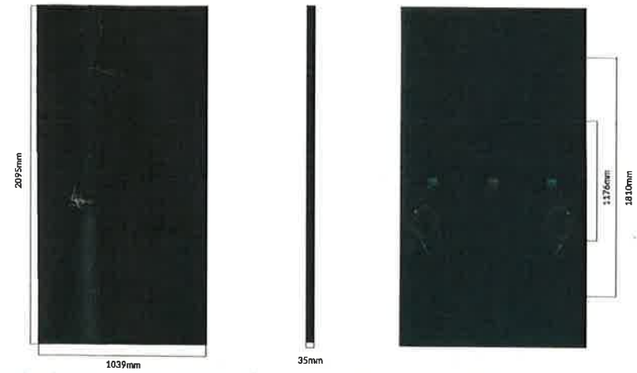
info@aptossolar.com

DNA™ 144

Solar for Innovators



Electrical Specifications

	DNA-144-MF26-440W	DNA-144-MF26-445W	DNA-144-MF26-450W
STCrated Output P_{mpp} (W)	440W	445W	450W
Module Efficiency	20.21%	20.43%	20.66%
Open Circuit Voltage V_{VOC} (V)	49.9	50.1	50.3
Short Circiut Current I_{SC} (A)	11.33	11.40	11.47
Rated Voltage V_{mmp} (V)	41.0	41.2	41.4
Rated Voltage I_{mmp} (A)	10.74	10.81	10.88

Standard Test Conditions for front-face of panel: 1000 W/m², 25°C, measurement uncertainty ≤3%

Temperature Coefficients

Temperature Coefficients P_{mmp}	-0.38%
Temperature Coefficients I_{sc}	+0.05%/°C
Temperature Coefficients V_{oc}	-0.29%/°C
Normal Operating Cell Temperature (NOCT)	44°C

Test Operating Conditions

Maximum Series Fuse	20A
Maximum System Voltage	1,000 VDC (UL&IEC)
Maximum Load Capacity (Tested to UL 1703)	5400 Pa Snow Load/ 6200 Pa Wind Load
Fire Performance Class	Class C/Type 1

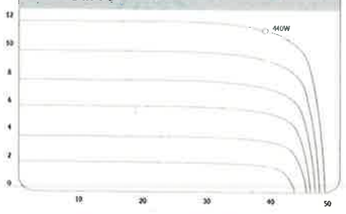
Packaging Configuration

Number of Modules per Pallet	30
Number of Pallets per 40ft. Container	22
Pallet Dimensions	2110 X 1120 X 2365
Pallet Weight (kg)	680
Contaiiner Weight (kg)	14960

Mechanical Properties

Cell Type	Monocrystalline
Glass	3.2mm, anti-reflection coating, high transmission, low iron, tempered glass
Frame	Anodized Aluminum Alloy
Junction Box	IP68
Dimensions	2095 X 1039 X 35mm
Output Cable	4mm2 (EU)12AWG,39.37in.(1200mm)
Weight	53.13lbs.(24.1kg)
Cable Length	1200mm
Encapsulant	POE

I-V Curve



Certifications

c UL us LISTED [PHOTOVOLTAIC MODULE OVER 600 VOLTS] E511348 · ETL us Intertek UL61730-1, UL61730-2 · CE · SP c US

Aptos Solar Technology reserves the right to make specification changes without notice

aptos

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MODULE DATASHEET

PV-9

Data Sheet
Enphase Microinverters
Region: AMERICAS

PRELIMINARY

Enphase IQ 7, and IQ 7+ Microinverters

with Integrated MC4 connectors

The high-powered smart grid-ready Enphase IQ 7 Series Microinverters™ with Integrated MC4 connectors 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, & 2020)

Productive and Reliable

- Optimized for high-powered 60-cell /120-half-cell and 72-cell /144-half-cell PV 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)

CERTIFIED

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

ENPHASE.

Enphase IQ 7 and IQ 7+ Microinverters with Integrated MC4 Connectors

PRELIMINARY

INPUT DATA (DC)	IQ7-60-M-US		IQ7PLUS-72-M-US	
Commonly used module pairings[1]	235 W - 350 W +		235 W - 440 W +	
Module compatibility	60-cell PV modules only		60-cell /120-half-cell and 72-cell /144-half-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	18mA		18mA	
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 %	96.5 %	97.0 %	96.5 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C (-40°F to +149°F)		-40°C to +65°C (-40°F to +149°F)	
Relative humidity range	4% to 100% (condensing)			
DC Connector type	Staubli made MC4			
Dimensions (HxWxD)	212 mm x 175 mm x 30.2 mm (without bracket)			
Weight	1.1 kg (2.4 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 means required by NEC 690 and C22.1-2018 Rule 64-220.			
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, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 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.
Note: Adapters 1 and 2 are qualified per UL subject 9703. Adapter 3 requires installers to field install their choice of connector.

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

ENPHASE.

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INVERTER DATASHEET

PV-10

soltection™
by vynckier

RJ-1

Residential Transition Box

The Soltection RJ-1 rooftop junction box with flashing provides a safe, secure, and NEMA 4X watertight solution for the Solar installer to penetrate the roof for attic runs and make the proper wire connections. The product is designed to be simple to install, minimize time on the roof, while additionally providing higher levels of protection for the point of penetration in the roof as well as electrical connections inside the junction box.

Key Features

- **Designed specifically for solar installations**
- **Light weight**
- **Non-metallic ---Will NOT rust/corrode**
- **Easy to drill/modify**
- **Captive screws in cover- will not fall out**
- **Minimal design, small footprint**
- **NEMA 4X rated**
- **All roof penetrations cover by Nema 4x enclosure**

Specifications

Enclosure

Material: Polycarb blend w/ UV Inhibitors
UV Stabilized: Yes
Impact Resistance: Yes
Weight: 2.73lb
Color: Graphite Black

Dimensions

Flashing Dimensions (Approximate): 13" x 18"
Enclosure Dimensions (Approximate): 8" x 8"
Total Product Height: 3.5"
Cubic Inches: 224 Cubic Inches

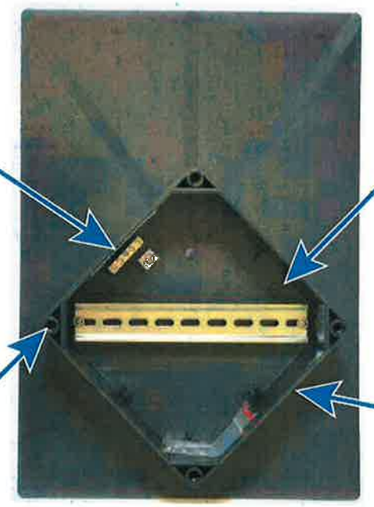
c UL us LISTED

Soltection by Vynckier
Vynckier Enclosure Systems
271 McCarty Street, Houston, TX 77029 USA
+1.866.227.0577
www.soltection.com

soltection™
by vynckier

RJ-1 Features & Benefits

Soltection's new RJ-1 is a junction box with integrated flashing to be used on residential solar installs with composite shingle roofing.



Key Features

- **Cost effective**
- **Light weight (2.73 lbs)**
- **Dark Graphite color- blends in with any rooftop**
- **Non-metallic: will not rust/corrode**
- **Easy to drill/modify**
- **Designed specifically with solar installer in mind**
- **Minimal design, small footprint**

c UL us LISTED

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www.soltection.com

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BUILDING DEPARTMENT SEAL STAMP

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CONTACT: (561) 444 8192
5700 LAKE WORTH ROAD SUITE 211
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FLORIDA REGISTRY# 33809

UrbanSolar
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SOLAR CONTRACTOR LICENSE: CVC56948

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JUNCTION BOX DATASHEET

PV-11

Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

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

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

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

Smart

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

Simple

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

Reliable

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

UL LISTED

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

ENPHASE.

Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

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

ENPHASE.

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COMBINER PANEL DATASHEET

PV-12

IRONRIDGE TECHBULLETIN

FLORIDA PRODUCT APPROVAL
STREAMLINES SOLAR DESIGN & PERMITTING

The First in Florida

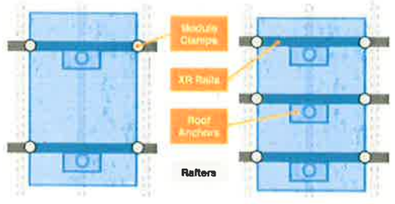
In 2020, IronRidge became the first High Velocity Hurricane Zone (HVHZ) approved solar system in accordance with 7-10 building code. We are happy to share that the Flush Mount System is now HVHZ-approved in accordance with 7-16 as well. We are committed to safe solar, even in extreme environments.

The rigorous evaluation process for Florida Product Approval includes testing for resistance to high wind forces (TAS 202) and wind-driven rain [TAS 100(A)], and ongoing auditing of quality assurance programs.

Our Florida Product Approval (FL#29843) covers all Flush Mount components and applies to all regions of the state of Florida both inside and outside the high-velocity hurricane zones (HVHZ), up to 100 PSF of wind pressure. The approval also lists allowable rail spans for configurations using either XR10, XR100, or XR1000 mounting rails as well as multiple IronRidge roof attachments.

FBC DIVISION PRODUCT APPROVAL FL#29843 STATE OF FLORIDA HIGH-VELOCITY HURRICANE ZONES

Approved Components & Configurations



2-Rail
Standard Rack Configuration

3-Rail
Extra Support for Module Frames

Module Clamps

UFO + Stopper
Universal Mid- and End-Clamp

CAMO
Hidden End Cam for Superior Aesthetics

XR Rails

XR10 Rail
Low-Profile Rail for Spans up to 48"

XR100 Rail
Ultimate Residential Rail for Spans up to 72"

XR1000 Rail
Paired with XR100 for 3-Rail Configurations

Approved Attachments

FlashVue
Composition Shingle Roof Attachment

FlashFoot2
Composition Shingle Roof Attachment

Knockout Tile
Flat, S-, and W-Tile Roof Attachment

Other Anchor Alternatives

L-Foot + Seam Clamp
Multiple Metal Roof Attachment Options

L-Foot + Anchor
Multiple Direct Anchoring Options

IRONRIDGE TECHBULLETIN

Pressure Tables

The following tables provide a quick reference for the maximum wind uplift pressures on gable and hip roofs at different tilt angles.

Roof Tilt Angle	Maximum Wind Uplift Pressure for Gable Roofs (psf)								
	Exposure B			Exposure C			Exposure D		
	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
8-20°	35	47	55	48	63	74	57	75	89
21-27°	27	39	44	37	53	59	44	63	71
28-45°	27	32	40	36	43	54	43	52	64

Roof Tilt Angle	Maximum Wind Uplift Pressure for Hip Roofs (psf)								
	Exposure B			Exposure C			Exposure D		
	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
8-20°	33	39	42	44	53	57	52	63	68
21-27°	22	32	32	30	43	43	35	52	52
28-45°	24	26	34	32	35	46	39	41	55

Footnotes:

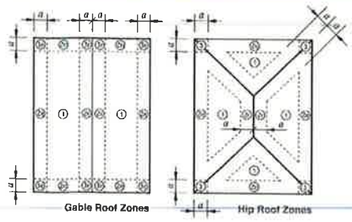
1. The pressure forces tabulated are per ASD (Allowable Stress Design) method and Florida Building Code 2020.
2. The pressure values are calculated based on the single module area of 22 sf as the maximum allowed and 25 ft building height defined as the average of the roof ridge and even height.
3. The tabulated values are based on the selected ultimate design wind speed V_{ult} of 175 mph. For other chosen ultimate wind speed ($V_{ult\text{-}other}$), the pressure shall be adjusted per the following equation: Pressure for $V_{ult\text{-}other}$ - = Pressure from the table x ($V_{ult\text{-}other}/175$)^2
4. The pressures are calculated for non-exposed modules in the array as defined by ASCE 7-16 Section 29.4.4. For exposed modules, the pressure shall be multiplied by an edge factor of 1.5.
5. The table is applicable to an array which maintains a minumum edge distance (to ridge, eave, side rake, or hip) of 2xh_2 (h_2 is the clearance from the roof surface to underside of the module), and contains modules with the maximum dimension not exceed 80.4".

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8-27°			28-45°		
Group	1	2	3	1	2	3
Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8-20°			21-27°			28-45°		
Group	1	2	3	1	2	3	1	2	3
Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3



Notation (Per ASCE 7-16)

a = 10% of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The hotional dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m).

θ = Angle of plane of roof from horizontal, in degrees.

The Florida PE seal is to certify the Pressure Tables on this page including the wind uplift pressure and the roof zone grouping, both of which are based on ASCE 7-16.

Gang Xuan
2021.05.25
'00'07- 09:51:05

GANG XUAN LICENSE No 80599 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been electronically signed and seal by Gang Xuan using a Digital Signature and date. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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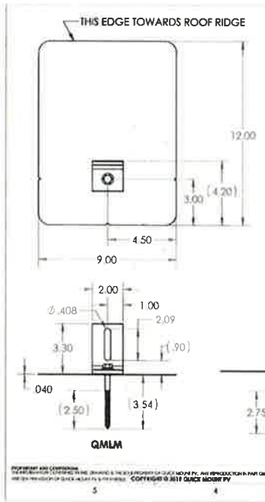
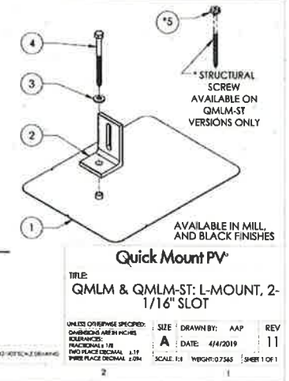
RACKING DATASHEET
PV-13

L-Mount | QMLM / QMLM-ST

Elevated Water Seal Technology®



ITEM NO.	DESCRIPTION	QTY.
1	FLASHING, ROUNDED CORNERS, 9" X 12" X .040", .438" HOLE, 5052, MILL	1
2	L-FOOT, 2" X 3.30" FOR .438" O.D. FASTENER, 2-1/16" SLOT, 6061-T6/6005A-T61, MILL	1
3	WASHER, SEALING, 5/16" ID X 3/4" OD, EPDM BONDED SS	1
4	LAG SCREW, HEX HEAD, 5/16" x 4", 18-8 SS	1
*5	STRUCTURAL SCREW, QMPV, T-30 HEX WASHER HEAD, 5/16" X 4-1/2", 18-8SS	1



Quick Mount PV®

TITLE: QMLM & QMLM-ST: L-MOUNT, 2-1/16" SLOT

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. TOLERANCES: FRACTIONALS ± 1/8, TWO PLACE DECIMAL ± .13, THREE PLACE DECIMAL ± .094

SIZE A | DRAWN BY: AAP | DATE: 4/4/2019 | SCALE: 1:1 | WEIGHT: 0.7365 | REV 11 | SHEET 1 OF 1

Quick Mount PV®
RESPECT THE ROOF

BI 7.2.3-44

Apr-2019 Rev 6

L-Mount Installation Instructions

Installation Tools Required: tape measure, roofing bar, chalk line, stud finder, caulking gun, sealant compatible with roofing materials, drill with 7/32" or 1/8" bit, drill or impact gun with 1/2" socket.

WARNING: Quick Mount PV products are NOT designed for and should NOT be used to anchor fall protection equipment.

Locate, choose, and mark centers of rafters to be mounted. Select the courses of shingles where mounts will be placed.

Carefully lift composition roof shingle with roofing bar, just above placement of mount. Remove nails as required and backfill holes with aproved sealant. See "Proper Flashing Placement" on next page.

Insert flashing between 1st and 2nd course. Slide up so top edge of flashing is at least ¾" higher than the butt-edge of the 3rd course and lower flashing edge is above the butt-edge of 1st course. Mark center for drilling.

If attaching with lag bolt use a 7/32" bit (Lag). Use a ¼" bit (ST) for attaching with the structural screw. Drill pilot hole into roof and rafter, taking care to drill square to the roof. Do not use mount as a drill guide. Drill a 2" deep hole into rafter.

Clean off any sawdust, and fill hole with sealant compatible with roofing materials.

Place L-foot onto elevated flute and rotate L-foot to desired orientation.

Prepare lag bolt or structural screw with sealing washer. Using a ½-inch socket on an impact gun, drive prepared lag bolt through L-foot until L-foot can no longer easily rotate. **DO NOT over-torque.** NOTE: Structural screw can be driven with T-30 hex head bit.

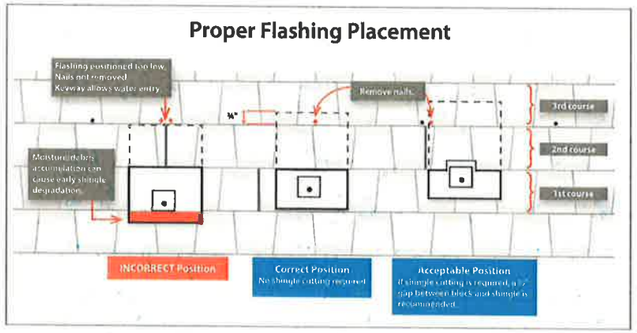
You are now ready for the rack of your choice. Follow all the directions of the rack manufacturer as well as the module manufacturer. NOTE: Make sure top of L-Foot makes solid contact with racking.

All roofing manufacturers' written instructions must also be followed by anyone modifying a roof system. Consult the roof manufacturer's specs and instructions prior to working on the roof.

BI 7.2.3-44

Apr-2019 Rev 6

Reference and Tips



Additional tips and information for installing mounts:

- See Quick Tips videos on nail removal, and more at: http://www.quickmountpv.com/support/videos.html
- It is not necessary or advisable to use nails or other fasteners to secure the perimeter of the flashing.
- The L-Mount is made to work with standard and high-definition composition/asphalt and wood shingle roofs with 5" to 5-5/8" courses. If the exposed surface of the course exceeds this measurement you may need to use our Classic Shake Mount instead.
- Depending on the season and climate, size and location of seal tabs, and quality of the shingles, the seal tabs that adhere the shingle courses together may not effectively seal the shingles to the flashings. If this is the case, simply add several quarter-sized dabs of manufacturer accepted sealant or asphalt roofing cement, meeting ASTM D 4586 Type II, between the flashing and the shingle above.
- Mounts should not be installed in areas of the roof susceptible to ice damming. Water ponding under the shingles can reach the bolt penetration.
- Take care not to damage the roofing material while working on the roof. Removing stone granules and deforming the shingles in any way can shorten the lifespan of the roofing. The value of the solar array is directly affected by the condition of the roof it is attached to.
- **CAUTION:** Prior to installation, check that proper screw embedment will be achieved for the necessary site load and roofing configurations.

BI 7.2.3-44

Apr-2019 Rev 6

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ATTACHMENT DATASHEET

PV-14

Bostik
smart adhesives

915

POLYURETHANE SEALANT & ADHESIVE

KEY FEATURES
- Tenacious bond to difficult substrates
- Permanently flexible
- Miami-Dade approval NOA 17-0329.18, 15-0520.01

DESCRIPTION

915 sealant is a one-component, smooth polyurethane adhesive capable of dynamic joint movement totaling 70% of original joint geometry (±35%). The sealant cures to a tough, flexible rubber when exposed to moisture present in the atmosphere.
Bostik 915 all seasons formula has physical properties that will remain relatively stable over time. The cured performance temperature range is -400F to 1500F. Where textured appearance is needed, please use Bostik 916.

APPLICABLE STANDARDS

- ASTM C920, TYPE S, GRADE NS, CLASS 35 USE NT, A AND M
- US Federal Specification TT-S 00230C (COMB-NBS) for one-component sealants as Class A, non-sag
- CARB, SCAQMD, and OTC compliant
- Canadian Specification CAN /CGSB 19.13-M87
- Miami-Dade County, Florida, NOA No.: 13.0423.10, 05/24/17
- Miami-Dade TAS 102- Static Uplift Resistance
- AAMA 808.3
- AAMA 100/200/300 installation requirements

BASIC USES

915 is designed for applications from foundation to finish and is ideal for, sealing expansion and control joints, tilt up joints, perimeters of doors, windows, and other wall penetrations. It has tenacious sealing and bonding performance for many roofing applications, metal roofs, gutters, roof tile installations, flashing and sheet metal applications.
915 cures to form a durable, flexible bond with most building materials such as stone, foam, masonry, ceramic, wood, steel, Kynar® coated metals and copper and most other metals.

INSTALLATION PROTOCOL

Miami-Dade County Considerations: Mate or join adjacent surfaces prior to the Bostik 915 skinning and subsequent curing, to maximize wetting potential of the sealant to the substrates. Allow full-cure, typically 7 days, prior to any mechanical stress testing procedures. It is recommended that adhesion testing be performed to capture batch control qualities of proposed substrates.

Joint Design: In general, more joint movement can be accommodated in a thin bead of sealant than a thick bead. Bostik 915 should be no thicker than 1/2" (12.7mm) and no thinner than 1/4" (6.4mm). In joints between 1/2" and 1", the ratio of sealant width to depth should be approximately 2:1. Sealant depth in joints between 1/4" and 1/2" should be 1/4" deep. Joints with dynamic movement should not be designed in widths less than 1/4".

Surface Preparation: Surfaces must be structurally clean, dry (no frost) and structurally sound, free of contaminants, including, but not limited to, dust, dirt, loose particles, tar, asphalt, rust, mill oil, etc. If substrate is painted or coated, scrape away all loose and weakly bonded paint or coating. Any paint or coating that cannot be removed must be tested to verify adhesion of the sealant or to determine the appropriate surface preparation if needed. (See ASP section on next page for details.)

Backer Rods and Bond Breaker Tapes: Bond breakers including, but not limited to, closed-cell polyethylene backer rods are used to control depth of the sealant bead, provide a firm tooling surface

This supersedes and replaces in its entirety all previously published versions of this document.
T1470 (Last revised on 03.19.19)

MIAMI-DADE COUNTY

DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786)315-2590 F (786) 31525-99
www.miamidade.gov/economy

NOTICE OF ACCEPTANCE (NOA)

Bostik, Inc.
11320 W. Watertown Plank Road
Wauwatosa, WI 53226-3413

SCOPE:
This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER - Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the Florida Building Code including the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: Bostik 915/915RT Sealant

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA renews NOA No.13-0423.10 and consists of pages 1 through 3.
The submitted documentation was reviewed by Jorge L. Acebo.

MIAMI-DADE COUNTY APPROVED

NOA No.: 17-0329.18
Expiration Date: 05/24/22
Approval Date: 05/04/17
Page 1 of 3

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Universal Engineering Sciences

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FLORIDA REGISTRY# 33809

UrbanSolar
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SOLAR CONTRACTOR LICENSE: CVC56948

KALLESEN, DOUGLAS

3334 HONEYSUCKLE LN
BELLE ISLE, FL 32812
28.478800, -81.340103

SIGNATURE WITH SEAL

SEALANT DATASHEET

PV-15

Tech Brief

IRONRIDGE

UFO Family of Components

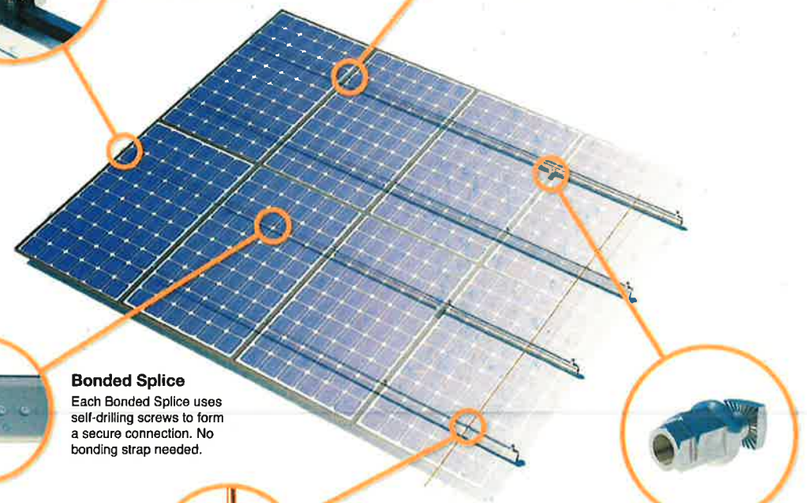
Simplified Grounding for Every Application

The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.

Stopper Sleeve
The Stopper Sleeve snaps onto the UFO, converting it into a bonded end clamp.

Universal Fastening Object (UFO)
The UFO securely bonds solar modules to XR Rails. It comes assembled and lubricated, and can fit a wide range of module heights.



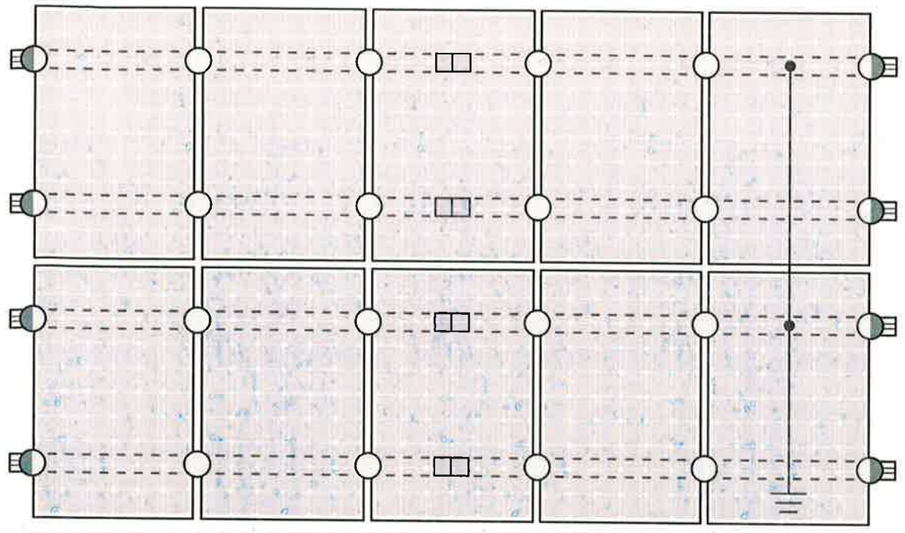
Bonded Splice
Each Bonded Splice uses self-drilling screws to form a secure connection. No bonding strap needed.

Grounding Lug
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.

Bonded Attachments
The bonding bolt attaches and bonds the L-foot to the rail. It is installed with the same socket as the rest of the system.

Tech Brief

System Diagram



UFO | Stopper Sleeve | Grounding Lug | Bonded Splice | Ground Wire

Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to IronRidge.com/UFO

Cross-System Compatibility

Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✔	✔	XR1000 Only
UFO/Stopper	✔	✔	✔
Bonded Splice	✔	✔	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Enphase - M250-72, M250-60, M215-60, C250-72 Darfon - MIG240, MIG300, G320, G640 SolarEdge - P300, P320, P400, P405, P600, P700, P730		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		

Reviewed for Code Compliance Universal Engineering Sciences

BUILDING DEPARTMENT SEAL STAMP

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GROUNDING & BONDING DATASHEET

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