City of Belle Isle Job Site Permit Card ELECTRICAL PHOTO VOLTAIC 2022-04-058

Class: Residential
Parcel Number: 18-23-30-4384-00-427

Site Address: 2818 Alsace Ct. Belle Isle, FL. 32812
Municipality: Belle Isle

Description of Work: Electrical – PHOTO VOLTAIC

Comments: SEE APPLICATION

Issued: 3 Guys Solar, LLC
License # EC13002507
Contact # 407-866-0080

Payment/ Issued Date & Method: 4 / 29 / 2022

☐ Picked up by _____ ☐ Forwarded to the mailing address ☑ Emailed

☐ **Visa** ☐ **Master Card** ☑ **Amex** ☐ **Discover** ☐ **Check / Money Order#**

8200G

OSHA approved ladder/access to the ROOF must be made available to the Inspector.

ELECTRICAL	INSPECTOR	DATE	COMMENTS
380 Final / PHOTO VOLTAIC			

To schedule your inspection(s), please visit our website:
http://uesbidportal.uesorl.com/citizenportal/
Please follow the prompts to schedule your inspection.

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

City of Belle Isle

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

RECEIVED BY IN PERSON APR 21 2022

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.

DATE OF APPLICATION: 4/19/22 **PERMIT NUMBER** 2022-04-058

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

Project Address 2818 Alsace Court, Belle Isle FL ___32809 X 32812

Property Owner Jeffory Short & Troy Loutsenhizer Phone (407)234-2758

Property Owner's Mailing Address 2818 Alsace Court City Belle Isle

State fl Zip Code 32812 **Parcel Id Number:** 18-23-30-4384-00-427

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

Class of Building: Old ☐ New ☐ **Type of Building:** Residential ☒ Commercial ☐ Other ☐

Type of Work: New ☒ Alteration ☐ 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) ___

Other: Install Solar PV system

4.29.2022 PAID Rec# 82006

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

☑ **VALUATION OF JOB** (VALUATION OF ALL MATERIALS, LABOR, AND FIXTURES INSTALLED $ 35,424

WO 2022-04-20754942

Plan Lix **Building Official:** Allan Johnson **Date** 4/28/22

Verified Contractor's Licenses & Insurance are on file jn **Date** 4.28.2022

New

Pending ~~Received~~

Permit Fee = $ 212.00
Review Fee = $ 106.00
1% BCAIB Fee = $ 3.18
1.5% DCA Fee = $ 4.77
TOTAL Permit = $ 325.95 ✓

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 ___ LICENSE # EC13002507

LICENSE HOLDER NAME Andrew White COMPANY NAME 3 Guys Solar

Street Address 4382 LB McLeod Rd

City Orlando State fl Zip Code 32811 Phone Number (407)866-0080

Email Address permits@3guyssolar.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 ___

Permit Number: 2022.04.058
Folio/Parcel Identification Number: 18-23-30-4384-00-427
Prepared by: 3 Guys Solar LLC
4382 LB McLeod Rd
Orlando FL 32811
Return to: 3 Guys Solar LLC
4382 LB McLeod Rd Orlando FL 32811

DOC# 20220261557
04/22/2022 11:09:14 AM Page 1 of 1
Rec Fee: $10.00
Phil Diamond, Comptroller
Orange County, FL
IP - Ret To: 3 GUYS SOLAR LLC

RECEIVED
APR 22 2022

NOTICE OF COMMENCEMENT

State of Florida, County of Orange
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, and street address if available)
   lake conway estates section four second addition 1/106 lot 427, 2818 Alsace ct. Belle isle, fl 32812
2. **General description of improvement**
   Installation of Solar Pv system
3. **Owner information or Lessee information if the Lessee contracted for the improvement**
   Name Jeffery Short, Troy Loutsenhizer
   Address 2818 Alsace ct, Belle isle, fl 32818
   Interest in Property
   Name and address of fee simple titleholder (if different from Owner listed above)
   Name 3 Guys Solar, LLC
   Address 4382 LB Mcleod Road Orlando FL 32811
4. **Contractor**
   Name 3 Guys Solar Telephone Number
   Address 4382 LB Mcleod Rd. Orlando FL. 32811
5. **Surety** (if applicable, a copy of the payment bond is attached)
   Name Telephone Number
   Address Amount of Bond $
6. **Lender**
   Name Telephone Number
   Address
7. **Persons within the State of Florida designated by Owner upon whom notices or other documents may be served as provided by §713.13(1)(a)7, Florida Statutes.**
   Name Telephone Number
   Address
8. **In addition to himself or herself, Owner designates the following to receive a copy of the Lienor's Notice as provided in §713.13(1)(b), Florida Statutes.**
   Name Telephone Number
   Address
9. **Expiration date of notice of commencement** (the expiration date may not be before the completion of construction and final payment to the contractor, but will be 1 year from the date of recording unless a different date is specified)

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.

Under penalty of perjury, I declare that I have read the foregoing notice of commencement and that the facts stated in it are true to the best of my knowledge and belief.

Signature of Owner or Lessee, or Owner's or Lessee's Authorized Officer/Director/Partner/Manager — Signatory's Title/Office

The foregoing instrument was acknowledged before me this 5 day of 4/22 (month/year) by Jeffrey Short (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)

Signature of Notary Public - State of Florida — Print, type, or stamp commissioned name of Notary Public

Claudia I Brito
Comm.#HH091623
Expires: Apr. 19, 2025
Bonded Thru Aaron Notary

Personally Known ___ OR Produced ID X
Type of ID Produced Drivers License

State of FLORIDA, County of ORANGE
I hereby certify that this is a true copy of the document as reflected in the Official Records
PHIL DIAMOND, COUNTY COMPTROLLER
BY: P.D. Galbash, D.C.
DATED: April 22, 2022

COUNTY COMPTROLLER SEAL ORANGE COUNTY FLORIDA

PV Contract

3 Guys Solar, LLC
4382 LB McLeod Rd,
Orlando, FL 32811
Phone: (407) 865-9338
www.3GuysSolar.com
License # EC13002507 & CVC57007

Date: 04/04/22

RECEIVED APR 21 2022

Buyer's Info:

Lead source: Paul Lederhos

Buyer's name:	Troy Loutsenhizer & Jeff Short		
Address:	2818 Alsace Court	**Utility Provider:**	DUKE
City,St,ZIP:	Belle Isle, FL 32812	**Installation type:**	Roof Installation
Phone:	407-234-2758	**Roof Material:**	Shingle
email:	tb6888@gmail.com js81997@gmail.com	**Sales Rep:**	Luiz Brito

Project Description:

Quantity	Description	
Kilowatts **14.76**	Complete Solar PV System including: **1.** Structural and electrical drawings **2.** Pulling electric permit and paying standard permit fee. **3.** Installation of racking and seal roof pentrations using flashings. **4.** Run out wire and connect wiring to PV modules. **5.** Module deliver to the roof and physical connection to structure. **6.** Connect Solar's DC/AC wiring to homes AC branch circuits **7.** Commission system and program inverters. **8.** Have system inspected by local building department. **9.** 41 EnPhase IQ8+ Micro inverter(s) with 25 years warranty and monitoring included **10.** 41 Q-Cells 360 Mono B/B PV Modules **11.** **13.** Estimated Annual Production of 22,317 Kwh/year	**Total:** **$35,424**

Payment Terms:

(X) CASH
10% Down payment + 50% Permit Approval + 30% Balance after installation + 10% after meter changed.
For PV systems greater than 11.7KW the Power Companies requires the utility customer provide proof of $1 Million property insurance. Customer to provide proof of insurance prior to PV system installation and 3GS is not responsible for providing or the cost of this insurance. Initial: TL

BUYER HEREBY ACKNOWLEDGES THAT HE/SHE HAS READ THIS AGREEMENT IN FULL AND AGREES TO THE TERMS THEREOF:

I. Price and Terms of Payments Payment. The purchase price for the Product, including technical materials, is a total of **$35,424** (USD) Check one: inclusive (X) exclusive ( ) of the cost of installation. Buyer shall make the milestone payments to Seller in accordance with the terms described herein. All payback calculations presented by Seller are estimates only. All payback calculations should be confirmed with your state, utility company, or any other source of such paybacks. Customer is fully responsible for structural and roof conditions.

II. Installation Schedule. Seller shall finish the installation of Product purchased pursuant to this Agreement to Buyer at an estimated time of ten to 60 days the date on which Seller receives Buyer's Down Payment. Meter placement is provided by the utility company and does not fall under our contract. Finish the installation shall be defined as completion of all applicable, building, electrical and mechanical inspections successfully completed and the system fully operational. Not meter replacement.

III. Sense Consumption Monitoring System. if installed by 3 Guys Solar, LLC , the warranty and support are fulfilled directly by Sense™. The monitoring included will be to evaluate the entire production of the solar system. Sense offers a more detailed program that can be set up, including mobile alerts, consumption by each outlet around the home, and etc. this set up is completely up to the customer discretion, and set up of such is done individually by the homeowner should they chose to utilize. IT Tech Support is offered by Sense's Customer Support. 3 Guys Solar will not be responsible for assistance on set up and support beyond the installation of the solar monitoring.

IV. Federal and State Rebates. Buyer shall, at his or her option and without Seller's involvement, apply for any federal and state rebates, tax credits or any other governmental incentives made available by federal and state governments for the purchase of solar systems. Seller shall not be liable in any way to Buyer or to any third party for filing for or obtaining of any such rebates or Tax Credit. Seller also does not guarantee and shall not be liable for tax credit or rebate applicable to Buyer or the issuance and delivery of the rebate payment.

V. Limited Warranty. 3 Guys Solar, LLC provides comprehensive labor/workmanship and production warranty for your entire system for a period of 20 years from the date of equipment installation start up.

The **labor/workmanship warranty** begins once the system is fully installed.

3 Guys Solar also provides **limited roof warranty** against defects or leaks related to our installation for a period of 20 years from date of installation. Roof warranty covers all labor and materials required in repairing any roof leaks but is not responsible for damages outside the solar array or within the structure.

The equipment used on your project, such as solar modules, inverters, optimizers, communication gateway and mounting hardware have warranty covered directly by the manufacturer. Consult manufacturer's warranty documentation for length of warranty and terms. 3 Guys Solar will assist in manufacture warranty claims and provide quality labor/workmanship within the warranty period stated above for the original homeowner whom purchased/installed with 3 Guys Solar.

Production warranty will be offered by 3 Guys Solar for each 12 month period for the lifetime of 20 years. The first 10 years the production will guarantee 90% from given estimated KWh mentioned on Page 1 of this contract, for the remainder 10 years the production will be guaranteed of 80% from given estimated KWh mentioned on Page 1 of this contract. All assessments must be done on 12 month period and will not be provided with less than. On the 12th month mark we will calculate your production to the compared percentage relevant to the year of your system, should your production be less than the warrantied percentage, 3 Guys Solar will calculate the KWh missing on your production compared to the KWh being sold from your electrical company and pay you this difference in the form of check. Should your production be over the warrantied percentage relevant to the year of your system, 3 Guys Solar will calculate as over production rolled into future years to balance your system's overall production. This limited warranty is exclusive for original homeowner(s) whom signed contract directly with 3 Guys Solar and will not be transferable to any other persons. This production warranty will not be valid should there be shading or damages to the system caused there after the final inspection done from original installation time.

The limited warranty does not cover damages caused by Acts of God, natural disasters, fire, hurricanes, theft or tampering by unauthorized personnel. Purchaser is responsible to carry property home insurance that covers the solar equipment from natural disasters.

VI. Dispute Resolution. If any dispute arises between any of the Parties regarding the validity, interpretation, implementation or alleged material breach of any provision of this Agreement, they shall endeavor to settle such dispute amicably and in good faith. In the case of failure by the Parties to resolve the dispute in the manner set out above within 30 (thirty) days from the date when the dispute arose, the dispute shall be referred to a mutually acceptable sole arbitrator. The place of the court of arbitration shall be Seminole County, Florida, U.S.A. The arbitration proceedings shall be conducted in accordance with the applicable Florida Arbitration Code and shall be conducted in the English language. The arbitrator's decision shall be final and legally binding, and judgment may be entered thereon. The arbitrator shall also decide on the costs of the arbitration proceedings. The cost of arbitration shall be borne by the losing party or by both parties in proportions decided by the arbitrators. The arbitrator's award shall be limited to actual damages only. The parties agree that any arbitration or other action in relation to an alleged breach of this Agreement shall be commenced within one year of the date of the breach, without regard to the date the breach is discovered. Any arbitration or other action not commenced within that one-year period shall be barred, without regard to any other limitations period set forth by law or statute.

VII. Right of Rescission. Notwithstanding other provisions of this Agreement, Buyer has the right to terminate this Agreement without penalty no later than by midnight of the third (3rd) business day from the date of execution of this Agreement. See the attached notice of cancellation for an explanation of those rights. The cancellation must be clear of intent, written in English and postmarked before midnight of the third business date after the date on which Buyer signs this Agreement. For the purposes of this provision, a "business day" shall include Monday through Saturday but shall not include Sun-days or any legal holiday on which the U.S. Postal Service does not deliver mail. If the buyer terminates this Agreement after the three (3) days Right of Rescission, cost incurred by seller or a minimum of 30% of contract what is higher, will be charge to the buyer. Cost such as administrative, site survey, engineering, permitting and/or restocking fee will apply.

Buyer	4/4/2022 **Date**	**3 GS Representative**	4/4/2022 **Date**
Troy Loutsenhizer		Luiz Brito	
Jeff Short			

Pursuant to Sales management approval, a successful site survey review & credit approval.

Ron DeSantis, Governor

Halsey Beshears, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

ELECTRICAL CONTRACTORS LICENSING BOARD

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

WHITE, ANDREW NATHAN

3 GUYS SOLAR, LLC
4382 LB MCLEOD ROAD
ORLANDO FL 32811

LICENSE NUMBER: EC13002507

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.

Ron DeSantis, Governor

Halsey Beshears, Secretary

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

WHITE, ANDREW NATHAN

3 GUYS SOLAR, LLC
4382 LB MCLEOD ROAD
ORLANDO FL 32811

LICENSE NUMBER: CVC57007

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): 4/6/2022

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
Blackadar Insurance Agency, Inc.
1436 N Ronald Reagan Blvd
Longwood FL 32750

CONTACT NAME: Patti Tommaso
PHONE (A/C, No, Ext): 407-831-3832 **FAX (A/C, No):** 407-830-4681
E-MAIL ADDRESS: Patti@blackadar.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : American Builders Insurance Co	
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED 3GUYSSO-01
3 Guys Solar, LLC
4382 LB McLeod Rd.
Orlando FL 32811

COVERAGES **CERTIFICATE NUMBER:** 1115825210 **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			PKG015157609	6/11/2021	6/11/2022	EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 100,000
							MED EXP (Any one person)	$ 5,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	X POLICY PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$
	DED RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						PER STATUTE OTH-ER	
	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N / A (Mandatory in NH)						E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						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)
Qualifier: Andrew White #EC13002507 & CVC57007
Certificate Holder is included as an Additional Insured with regard to General Liability when required by written contract.

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
Patti Tommaso

CERTIFICATE OF LIABILITY INSURANCE

Date: 4/6/2022

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: 92-71-580

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

3 Guys Solar, LLC

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@lioninsurancecompany.com

Project Name:

ISSUE 04-06-22 (BP)

Begin Date: 8/28/2017

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.

Tax Collector Scott Randolph **Local Business Tax Receipt** **Orange County, Florida**

2021 **EXPIRES** **9/30/2022**

5000	BUSINESS OFFICE	$30.00	1 EMPLOYEE	1802	ELECTRICAL CONTRACT	$30.00	5000-1184205 1 EMPLOYEE
1802	SOLAR CONTRACTOR	$30.00	1 EMPLOYEE				

TOTAL TAX	$90.00
PREVIOUSLY PAID	$90.00
TOTAL DUE	$0.00

WHITE ANDREW N

3 GUYS SOLAR LLC
WHITE ANDREW N
4382 L B MCLEOD RD
ORLANDO FL 32811

4382 L B MCLEOD RD
A - ORLANDO, 32811

PAID: $90.00 0099-01006851 7/29/2021

Tax Collector Scott Randolph **Local Business Tax Receipt** **Orange County, Florida**

This local Business Tax Receipt is in addition to and not in lieu of any other tax required by law or municipal ordinance. Businesses are subject to regulation of zoning, health and other lawful authorities. This receipt is valid from October 1 through September 30 of receipt year. **Delinquent penalty is added October 1.**

2021 **EXPIRES** **9/30/2022**

5000	BUSINESS OFFICE	$30.00	1 EMPLOYEE	1802	ELECTRICAL CONTRACT	$30.00	5000-1184205 1 EMPLOYEE
1802	SOLAR CONTRACTOR	$30.00	1 EMPLOYEE				

TOTAL TAX	$90.00
PREVIOUSLY PAID	$90.00
TOTAL DUE	$0.00

WHITE ANDREW N

3 GUYS SOLAR LLC
WHITE ANDREW N
4382 L B MCLEOD RD
ORLANDO FL 32811

4382 L B MCLEOD RD
A - ORLANDO, 32811

PAID: $90.00 0099-01006851 7/29/2021

SCOTT RANDOLPH, TAX COLLECTOR • ORANGE COUNTY, FLORIDA •

This receipt is official when validated by the Tax Collector.

Orange County Code requires this local Business Tax Receipt to be displayed conspicuously at the place of business in public view. It is subject to inspection by all duly authorized officers of the County.

2021 - 2022

CITY OF ORLANDO
PERMITTING SERVICES

Local Business Tax Receipt

(Formerly known as "Business License " changed per state law HB1269-2006)

NOTICE-THIS TAX RECEIPT ONLY EVIDENCES PAYMENT OF THE LOCAL BUSINESS TAX PURSUANT TO CH.205, FLORIDA STATUTES. IT DOES NOT PERMIT THE HOLDER TO OPERATE IN VIOLATION OF ANY CITY, STATE, OR FEDERAL LAW. CITY PERMITTING MUST BE NOTIFIED OF ANY MATERIAL CHANGE TO THE INFORMATION FOUND HEREIN BELOW. THIS RECEIPT DOES NOT CONSTITUTE AN ENDORSEMENT OR APPROVAL OF THE HOLDER'S SKILL OR COMPETENTCY.

Business Name
3 GUYS SOLAR LLC ANDREW WHITE
EC13002507
4382 L B MCLEOD RD
ORLANDO, FL 32811

Case Number: BUS-0043268

Issued Date: 07/28/2021

Expiration Date: 09/30/2022

Business Owner
3 GUYS SOLAR LLC

Business Location
4382 L B MCLEOD RD
ORLANDO, FL

Business type(s):

Description	Year
CONTRA 1524 CONTRACTOR DBPR	2022

CITY OF ORLANDO
PERMITTING SERVICES

Local Business Tax Receipt
City Hall, 400 South Orange Avenue, First Floor
Post Office Box 4990
Orlando, Florida 32802-4990

Phone: 407.246.2204 Fax: 407.246.3420

Email: businesstax@orlando.gov

Prompt! Interactive Voice Response System: 407.246.4444
Visit our website: orlando.gov/permits

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. 2075942

Project No:	0115.1600536.0000-0115-0007	**Date:**	04/28/2022
Project Name:	2022-04-058 Electrial Permit Install solar PV System	**Permitting Authority:**	Belle Isle
Address:	City of Belle Isle, 2818 Alsace Court - COBI, Belle Isle, FL 32812		
Permit Type:	Electrical	**Client:**	City of Belle Isle, FL
Permit No:	2022-04-058	**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:

Allen L. Johnson

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Work Order No. 2075942

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Sub Type:	Initial Plans Review		

Result:

Approved 4/28/2022

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Duly Authorized Representative:

Allen L. Johnson

Allen Johnson

PX1653

powered by Q.ANTUM DUO Z

PRELIMINARY

Q.PEAK DUO BLK-G10+

350-370

ENDURING HIGH PERFORMANCE

TÜVRheinland CERTIFIED — Quality Controlled PV — www.tuv.com ID 1111232615

ntv GERMANY'S MOST POPULAR PROVIDER Life & Living Award 2021 1st Place Solar Technology

25 YR Warranty Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Yield Security

BREAKING THE 20 % EFFICIENCY BARRIER
Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9 %.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY
Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behaviour.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING
High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT
Inclusive 25-year product warranty and 25-year linear performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (–1500 V, 96 h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

Rooftop arrays on residential buildings

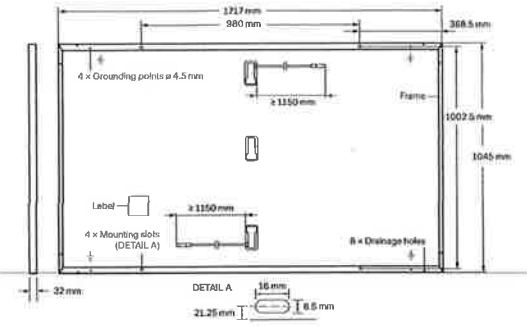
2818 Alsace ct

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	1717 mm × 1045 mm × 32 mm (including frame)
Weight	19.9 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 20 monocrystalline Q.ANTUM solar half cells
Junction box	53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥1150 mm, (–) ≥1150 mm
Connector	Stäubli MC4; IP68

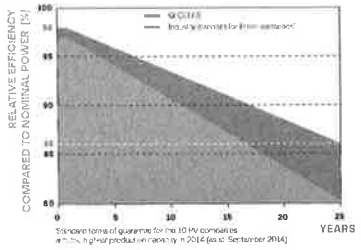


ELECTRICAL CHARACTERISTICS

POWER CLASS				350	355	360	365	370
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)								
Minimum	Power at MPP[1]	P_{MPP}	[W]	350	355	360	365	370
	Short Circuit Current[1]	I_{SC}	[A]	10.97	11.00	11.04	11.07	11.10
	Open Circuit Voltage[1]	V_{OC}	[V]	41.11	41.14	41.18	41.21	41.24
	Current at MPP	I_{MPP}	[A]	10.37	10.43	10.49	10.56	10.62
	Voltage at MPP	V_{MPP}	[V]	33.76	34.03	34.31	34.58	34.84
	Efficiency[1]	η	[%]	≥19.5	≥19.8	≥20.1	≥20.3	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]								
Minimum	Power at MPP	P_{MPP}	[W]	262.6	266.3	270.1	273.8	277.6
	Short Circuit Current	I_{SC}	[A]	8.84	8.87	8.89	8.92	8.95
	Open Circuit Voltage	V_{OC}	[V]	38.77	38.80	38.83	38.86	38.90
	Current at MPP	I_{MPP}	[A]	8.14	8.20	8.26	8.31	8.37
	Voltage at MPP	V_{MPP}	[V]	32.24	32.48	32.71	32.94	33.17

[1]Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², 25±2 °C, AM 1.5 according to IEC 60904-3 • [2]800 W/m², NMOT, spectrum AM 1.5

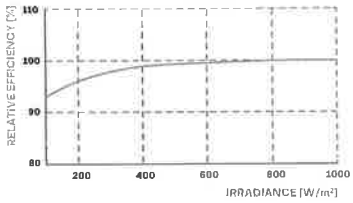
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% 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 organisation 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]	–0.34	Nominal Module Operating Temperature	NMOT	[°C]	43±3

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	V_{SYS}	[V]	1000	PV module classification	Class II
Maximum Reverse Current	I_R	[A]	20	Fire Rating based on ANSI / UL 61730	C / TYPE 2
Max. Design Load, Push / Pull		[Pa]	3600 / 2660	Permitted Module Temperature on Continuous Duty	–40 °C - +85 °C
Max. Test Load, Push / Pull		[Pa]	5400 / 4000		

QUALIFICATIONS AND CERTIFICATES

Quality Controlled PV - TÜV Rheinland; IEC 61215:2016; IEC 61730:2016. This data sheet complies with DIN EN 50380. QCPV Certification ongoing.

www.tuv.com ID 1111220277

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 GmbH
Sonnenallee 17-21, 06766 Bitterfeld-Wolfen, Germany | **TEL** +49 (0)3494 66 99-23444 | **FAX** +49 (0)3494 66 99-23000 | **EMAIL** sales@q-cells.com | **WEB** www.q-cells.com

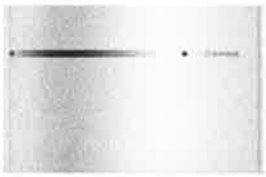
Engineered in Germany

ENPHASE

DATA SHEET

IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first grid-forming microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Grid-forming

- Complies with the latest advanced grid support
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

IQ8SP-DS-0002-01-EN-US-2021-10-19

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings[1]	W	235 – 350	235 – 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell and 72-cell/144 half-cell
MPPT voltage range	V	27 – 37	29 – 45
Operating range	V	25 – 48	25 – 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current[2] [module Isc]	A	15	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	

OUTPUT DATA (AC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range[3]	V	240 / 211 – 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 – 68	
Max units per 20 A (L-L) branch circuit[4]		16	13
Total harmonic distortion		<5%	
Overvoltage class AC port		III	
AC port backfeed current	mA	30	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging	
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	

MECHANICAL DATA	
Ambient temperature range	-40°C to +60°C (-40°F to +140°F)
Relative humidity range	4% to 100% (condensing)
DC Connector type	MC4
Dimensions (HxWxD)	212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")
Weight	1.08 kg (2.38 lbs)
Cooling	Natural convection – no fans
Approved for wet locations	Yes
Acoustic noise at 1 m	<60 dBA
Pollution degree	PD3
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure
Environ. category / UV exposure rating	NEMA Type 6 / outdoor

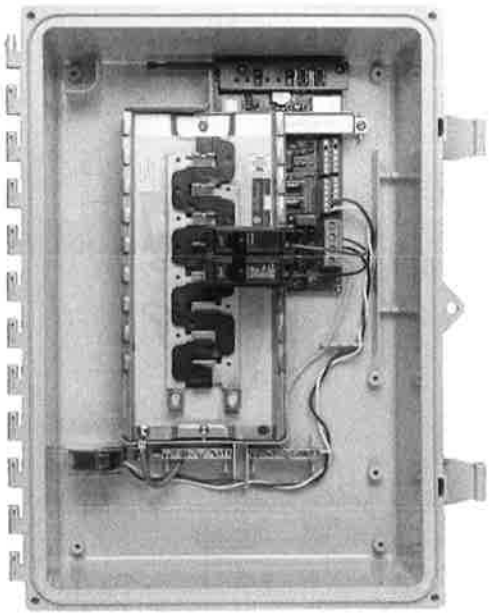
COMPLIANCE	
Certifications	CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.

(1) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility (2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

Enphase IQ Combiner 3

(X-IQ-AM1-240-3)

The **Enphase IQ Combiner 3™** with Enphase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV 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 Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring

Simple

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

Reliable

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

UL LISTED

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

ENPHASE.

Enphase IQ Combiner 3

MODEL NUMBER	
IQ Combiner 3 X-IQ-AM1-240-3	IQ Combiner 3 with Enphase IQ Envoy™ printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional* consumption monitoring (+/- 2.5%).
ACCESSORIES and **REPLACEMENT PARTS** (not included, order separately)	
Enphase Mobile Connect™ CELLMODEM-03 (4G / 12-year data plan) CELLMODEM-01 (3G / 5-year data plan) CELLMODEM-M1 (4G based LTE-M / 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%).
Circuit Breakers BRK-10A-2-240 BRK-15A-2-240 BRK-20A-2P-240	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
EPLC-01	Power line carrier (communication bridge pair), quantity 2
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 3 (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Envoy printed circuit board (PCB) for Combiner 3
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating (output to grid)	65 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. continuous current rating (input from PV)	64 A
Max. total branch circuit breaker rating (input)	80A of distributed generation / 90A with IQ Envoy breaker included
Production Metering CT	200 A solid core pre-installed and wired to IQ Envoy
MECHANICAL DATA	
Dimensions (WxHxD)	49.5 x 37.5 x 16.8 cm (19.5" x 14.75" 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
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
Cellular	Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G) or CELLMODEM-M1 (4G based LTE-M) (not included)
COMPLIANCE	
Compliance, 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)
Compliance, IQ Envoy	UL 60601-1/CANCSA 22.2 No. 61010-1

* Consumption monitoring is required for Enphase Storage Systems.

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

2018-09-13

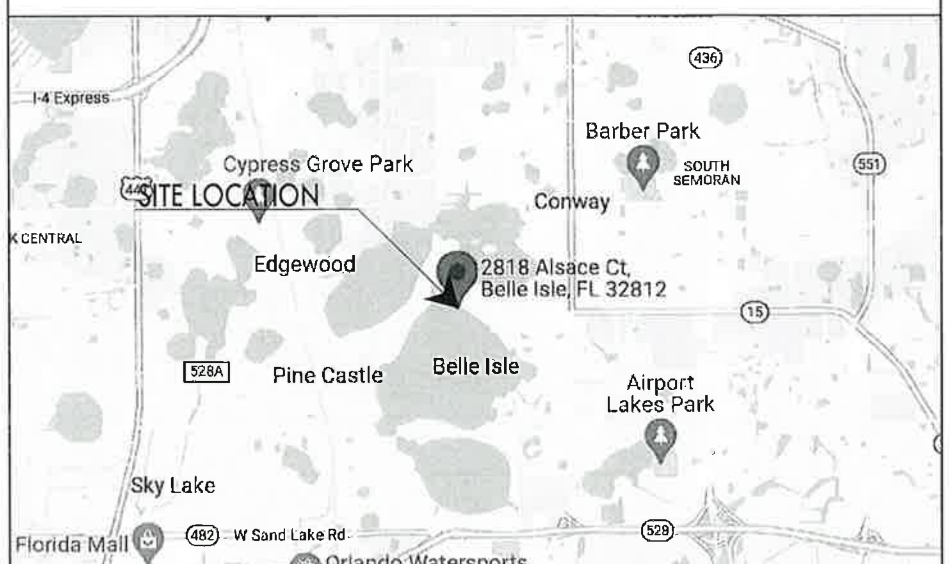
ENPHASE.

SYSTEM DESIGN	
SYSTEM TYPE	UTILITY GRID INTERACTIVE
RATED DC POWER	14760 W
RATED AC POWER	11890 W
PV MODULE	QCELLS 360W x (41)
INVERTER(S)	ENPHASE IQ8+ x (41)
ENERGY STORAGE SYSTEM	NONE
STORAGE CAPACITY	N/A
EXISTING ELECTRICAL	120/240 VAC, 1ϕ

GOVERNING CODES & STANDARDS
2020 FLORIDA BUILDING CODE (7TH EDITION)
2020 FLORIDA RESIDENTIAL CODE (7TH EDITION)
2017 NATIONAL ELECTRIC CODE (NFPA 70)
SEI/ASCE 7-16
UNDERWRITERS LABORATORIES STANDARDS (UL)

SITE SPECIFICATIONS	
WIND SPEED (Vult)	140 MPH
WIND EXPOSURE	C
RISK CATEGORY	II
GROUND SNOW LOAD	0 PSF
MOUNTING METHOD	ROOF-MOUNTED (FLUSH)

SITE LOCATION MAP



A SOLAR PV SYSTEM IMPROVEMENT FOR:
LOUTSENHIZER RESIDENCE

SOLAR IMPROVEMENT CONSTRUCTION DOCUMENTS FOR THE EXISTING RESIDENTIAL GRID TIED ELECTRICAL SYSTEM

BILL OF MATERIALS	
41	QCELLS 360W MODULES
41	ENPHASE IQ8+ MICROINVERTERS
41	ENPHASE Q CABLE
4	ENPHASE 6 FT EXTENSION CABLES
4	ENPHASE END CAPS
1	ENPHASE IQ COMBINER
8	IRONRIDGE XR-100 RAILS - 17 FT.
10	IRONRIDGE XR-100 RAILS - 14 FT.
0	IRONRIDGE XR-100 RAILS - 11 FT.
10	IRONRIDGE XR-100 SPLICE KITS
20	IRONRIDGE XR-100 END CAPS
156	IRONRIDGE UFO CLAMPS
20	IRONRIDGE UFO END SLEEVES
56	UNIRAC FLASHLOC COMP MOUNTS
5	GROUND LUGS
1	NEMA 3R ROOF JUNCTION BOX

PLAN SHEET DESCRIPTION	
PV.0	COVER SHEET
PV.1	PHOTOVOLTAIC MODULE LAYOUT & ROOF PLAN
PV.2	STRUCTURAL ATTACHMENT DETAILS
PV.3	ELECTRICAL DIAGRAM & SCHEDULES
PV.4	ELECTRICAL NOTES & WARNING LABELS

RECEIVED APR 21 2022 BY:

Reviewed for Code Compliance Universal Engineering Sciences

2022-04-058

UMA SOLAR
950 SUNSHINE LN, ALTAMONTE SPRINGS, FL
WWW.UMASOLAR.COM
ENGINEERING@UMASOLAR.COM

WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALE DIMENSIONS. CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB AND THIS OFFICE MUST BE NOTIFIED OF ANY VARIATION FROM THE DIMENSIONS AND CONDITIONS SHOWN BY THESE DRAWINGS

REV	DATE	REMARK	BY

PROJECT:

PHOTOVOLTAIC SOLAR ENERGY SYSTEM

PROJECT NAME: LOUTSENHIZER RESIDENCE
PROJECT ADDRESS: 2818 ALSACE COURT
BELLE ISLE, FL 32812

DATE	4/6/22
DRAWN BY:	JLA
CHECKED BY:	JLA
REC. NO. #	29127
SCALE	AS NOTED

DRAWING #
PV.0
SHEET 1 OF 5

JOHN L. ANTONELLI, P.E.
FL PE #81305

JOHN LOUIS ANTONELLI LICENSE No. 81305 STATE OF FLORIDA PROFESSIONAL ENGINEER

ICON LEGEND

(M) ELECTRIC METER	INVERTER
MSP MAIN SERVICE PANEL	ROOF WIND ZONE 3
LC LOAD CENTER	ROOF OBSTACLE
PLP PROTECTED LOADS PANEL	FIRE SETBACK ZONE
CBP COMBINER PANEL	MOUNTING RAIL
JUNCTION BOX	MOUNTING POINT
AC DISCONNECT	CONDUIT
TRANSFER SWITCH	

EXISTING ROOF NOTES

1. EXISTING ROOF IS ROLLED ASPHALT ROOFING OVER WOOD DECKING & MINIMUM 2X4 S.Y.P. WOOD TRUSSES.
   - NOTE: ROOF CONSTRUCTION IS BASED ON INFORMATION PROVIDED TO THE DESIGNER. ALL ROOF PENETRATIONS SHALL BE FLASHED AND/OR SEALED USING APPROVED PRODUCTS & METHODS PER LOCAL GOVERNING CODE.
2. ROOFTOP SOLAR COMPONENTS REPRESENT A GRAVITY LOAD OF 3 PSF.
   - PV MODULES = 2.5 PSF
   - MOUNTING EQUIPMENT = 0.25 PSF
   - MISCELLANEOUS ACCESSORIES = 0.25 PSF
3. EXISTING ROOF IS ASSUMED TO BE DESIGNED FOR A MINIMUM LIVE LOAD OF 20 PSF. PER FBC 1607.12.5.1 ROOF SURFACES COVERED BY SOLAR PV MODULES SHALL BE CONSIDERED INACCESSIBLE AND, THUS, THE LOAD IMPOSED BY THE SOLAR PV MODULES WOULD BE LESS THAN THE LIVE LOAD RATING & ABLE TO SUSTAIN THE ADDITIONAL GRAVITY LOAD IMPOSED BY THE SOLAR PV MODULES AND ASSOCIATED ATTACHMENTS.
4. MODULE LOCATION ON ROOF MAY BE ALTERED IN THE FIELD SO LONG AS EQUIPMENT IS MOUNTED AS SHOWN ON SHEET PV.2.

2020 FRC R324.6 ROOF ACCESS REQUIREMENTS

R324.6 ROOF ACCESS AND PATHWAYS
EXCEPTIONS:

1. DETACHED, NON-HABITABLE STRUCTURES SHALL NOT BE REQUIRED TO PROVIDE ROOF ACCESS.
2. ROOF ACCESS, PATHWAYS, & SETBACKS NEED NOT BE PROVIDED WHERE THE CODE OFFICIAL HAS DETERMINED THAT ROOFTOP OPERATIONS WILL NOT BE EMPLOYED.
3. THESE REQUIREMENTS SHALL NOT APPLY TO ROOFS WITH SLOPES OF 2:12 (17% SLOPE) OR LESS.

R324.6.1 PATHWAYS

1. (2) OR MORE 36" PATHWAYS ON SEPARATE ROOF PLANES FROM EAVE TO RIDGE.
2. (1) OR MORE 36" PATHWAYS ON ROOF PLANES ADJACENT TO THE STREET OR DRIVEWAY.
3. (1) OR MORE 36" PATHWAYS ON ROOF PLANES WITH PV ARRAYS EITHER ON, ADJACENT TO, OR STRADDLING THE SAME & ADJACENT ROOF PLANES FROM EAVE TO RIDGE.

R324.6.2 SETBACK AT RIDGE

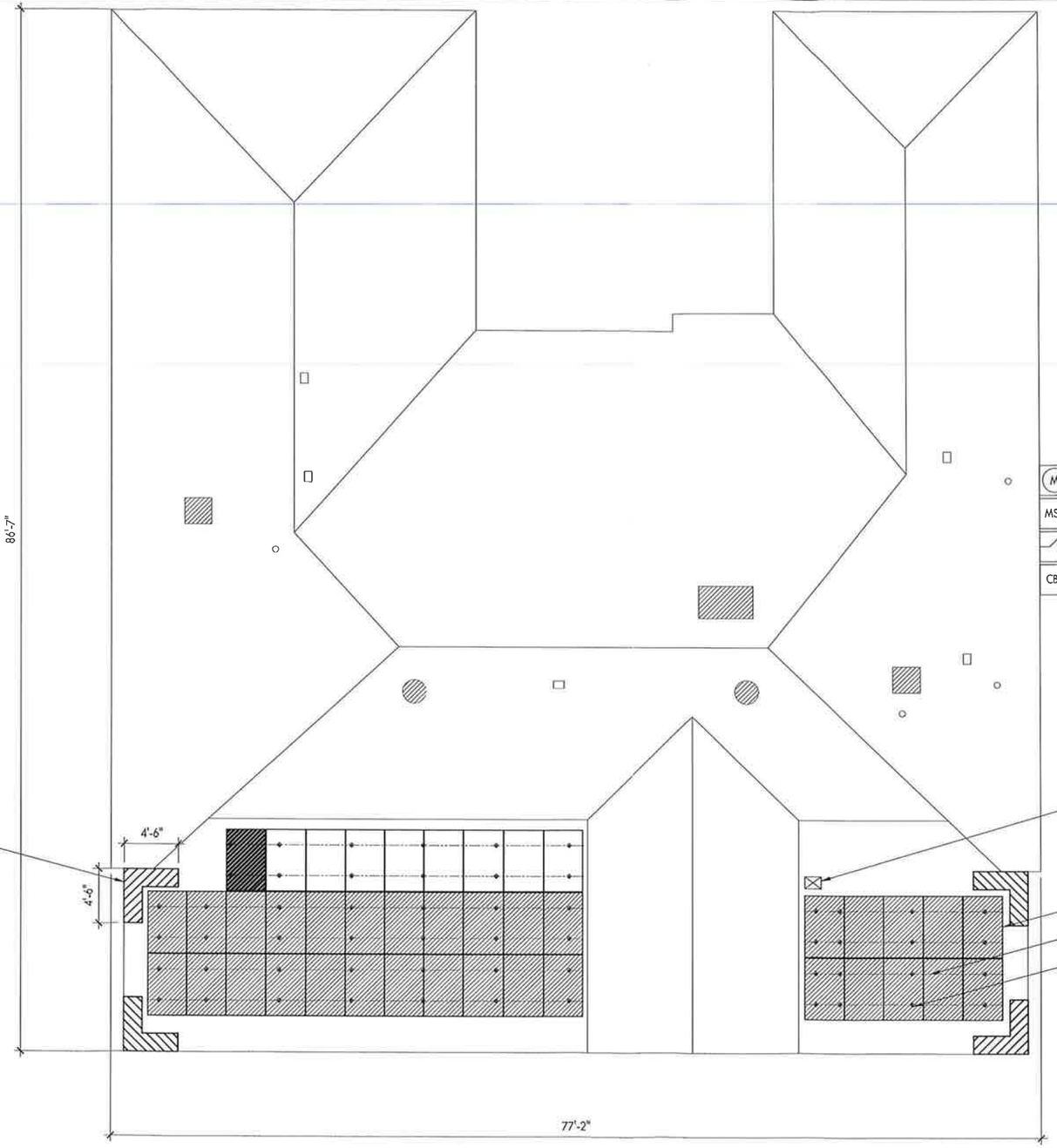
FOR PV ARRAYS OCCUPYING < 33% OF THE PLAN VIEW TOTAL ROOF AREA, A MIN. 18" CLEAR SETBACK IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE. FOR PV ARRAYS OCCUPYING > 33% OF THE PLAN VIEW TOTAL ROOF AREA, A MIN. 36" CLEAR SETBACK IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.

R324.6.2.2 EMERGENCY ESCAPE AND RESCUE OPENING

PANELS AND MODULES INSTALLED ON DWELLINGS SHALL NOT BE PLACED ON THE PORTION OF A ROOF THAT IS BELOW AN EMERGENCY ESCAPE AND RESCUE OPENING. A MIN. 36" PATHWAY SHALL BE PROVIDED TO THE EMERGENCY ESCAPE AND RESCUE OPENING.

ROOF LAYOUT NOTES

ROOF LAYOUT SHOWN MAY BE ADJUSTED IN THE FIELD BY THE INSTALLER TO ACCOUNT FOR ISSUES CAUSED BY ROOF OBSTACLES, TRUSS ALIGNMENT, OR SHADING. SO LONG AS THE MODULES ARE MOUNTED AND SECURED TO THE ROOF AS SHOWN ON PV.2 THE LAYOUT MAY BE ALTERED AND ALL ROOF ORIENTATIONS MAY BE UTILIZED.



PHOTOVOLTAIC MODULE LAYOUT & ROOF PLAN
SCALE: 3/32" = 1'-0"

1 / PV.1

Reviewed for Code Compliance Universal Engineering Sciences

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REV	DATE	REMARK	BY

PROJECT:

PHOTOVOLTAIC SOLAR ENERGY SYSTEM
PROJECT NAME: LOUTSENHIZER RESIDENCE
PROJECT ADDRESS: 2818 ALSACE COURT
BELLE ISLE, FL 32812

DATE	4/6/22
DRAWN BY:	JLA
CHECKED BY:	JLA
REC. NO. #	29127
SCALE	AS NOTED

DRAWING #
PV.1
SHEET 2 OF 5

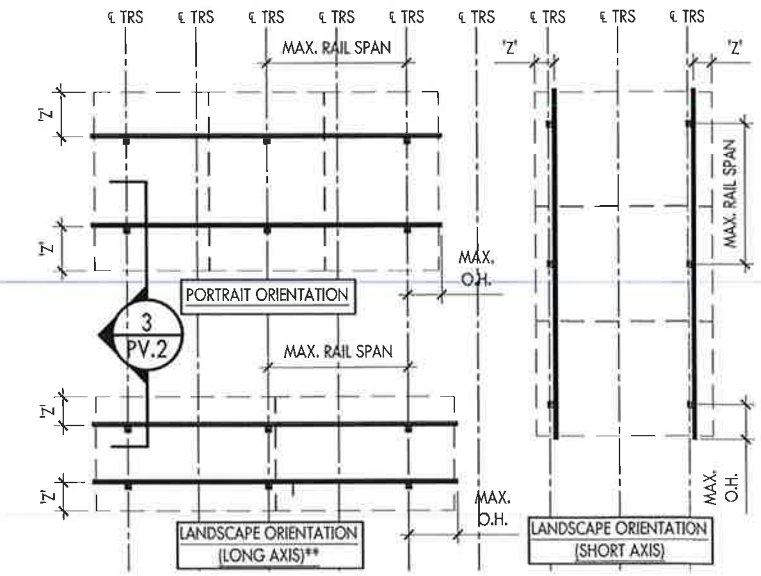
JOHN LOUIS ANTONELLI LICENSE NO. 81305 STATE OF FLORIDA PROFESSIONAL ENGINEER
JOHN D'ANTONELLI P.E.
FL PE #81305
4/21/2022

PHOTOVOLTAIC MODULE GENERAL NOTES:

1. APPLICABLE CODES & STANDARDS:
   - 2020 FLORIDA BUILDING CODE (7TH EDITION)
   - 2020 FLORIDA RESIDENTIAL CODE (7TH EDITION)
   - ASCE-7-16 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.
2. BOLT DIAMETER AND EMBEDMENT LENGTHS ARE DESIGNED PER 2020 FLORIDA BUILDING CODE (7TH EDITION) REQUIREMENTS. ALL BOLT CAPACITIES ARE BASED ON A 5/16" STAINLESS STEEL LAG BOLT IN SOUTHERN YELLOW PINE (SYP) ENGINEERED WOOD ROOF TRUSS AS EMBEDMENT MATERIAL.
3. ALL LAG BOLTS THIS SHEET SHALL BE ASTM A276 TYPE 304 STAINLESS STEEL.
4. ALL WIND DESIGN CRITERIA AND PARAMETERS ARE FOR LOW-SLOPE RESIDENTIAL ROOFS, CONSIDERING FROM A 0° TO A MAXIMUM 7° (0/12 TO A MAXIMUM 2/12 PITCH) ROOF IN SCHEDULE. RESIDENTIAL ROOF SHALL NOT EXCEED 30'-0" MEAN ROOF HEIGHT. FIELD VERIFY.
5. ROOF SEALANTS SHALL CONFORM TO ASTM C920 AND ASTM 6511, AND IS THE RESPONSIBILITY OF THE CONTRACTOR TO PILOT FILL ALL HOLES. CONTRACTOR SHALL ENSURE ALL ROOF PENETRATIONS TO BE INSTALLED AND SEALED PER 2020 FLORIDA RESIDENTIAL CODE (7TH EDITION) OR LOCAL GOVERNING CODE.
6. THIS SHEET REFLECTS STRUCTURAL CONNECTIONS ONLY.
7. THIS DRAWING COVERS ALL PV MODULES WITH A NOMINAL SIZE OF 39" X 78" OR LESS.
8. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER INSTRUCTIONS.

EXPOSURE C - RISK CATEGORY II - LOW-SLOPE ROOF > 0°-7°									
Vult (MPH)	Vasd WIND PRESSURES (PSF)								EMBED. DEPTH REQ.
	WIND ZONE 1'		WIND ZONE 1		WIND ZONE 2		WIND ZONE 3		
	(+)	(-)	(+)	(-)	(+)	(-)	(+)	(-)	
140	16.0	-18.1	16.0	-34.1	16.0	-46.1	16.0	-64.2	3"
	MAXIMUM RAIL SPANS & OVERHANGS								
	SPAN	O.H.	SPAN	O.H.	SPAN	O.H.	SPAN	O.H.	
	6'-0"	2'-4"	6'-0"	2'-4"	6'-0"	2'-4"	4'-0"	1'-7"	

- PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARD AND AWAY FROM SURFACES, RESPECTIVELY.
- GROUPS ARE MADE UP OF ROOF WIND ZONES WITH IDENTICAL WIND PRESSURES. SEE DETAIL BELOW FOR WIND ZONE LOCATIONS. "---" IN TABLE INDICATE CONDITIONS WHERE INSTALLATION IS NOT ALLOWABLE.
- SCHEDULE REFLECTS COMPONENTS AND CLADDING (C&C) NOMINAL WIND PRESSURES WITH EXPOSURE "C", RISK CATEGORY II, ENCLOSED BUILDING AND h < 60'-0" PER ASCE 7-16 AND 2020 FLORIDA BUILDING CODE.
- LAG BOLT DEPTH REQUIRED IN WOOD MEMBER SHALL EXCLUDE ANY ROOF DECKING THICKNESS.

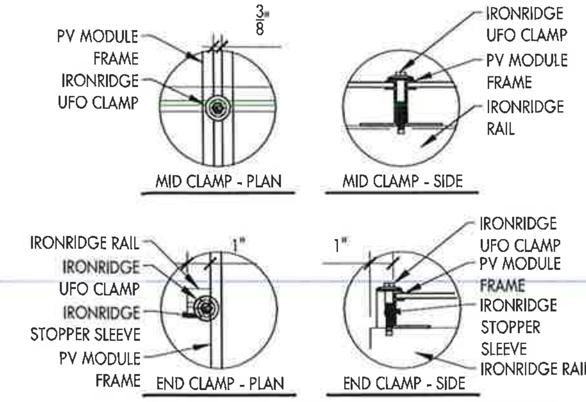


NOTES:
1. SEE SCHEDULE THIS SHEET FOR MAXIMUM RAIL SPAN.
2. SEE SCHEDULE THIS SHEET FOR MAX. RAIL OVERHANG. MAX. O.H. IS RAIL SPAN X 0.40.
3. 'Z' IS ALLOWABLE DISTANCE BETWEEN RAIL AND MODULE EDGE PER MODULE MANUFACTURER.

** LONG AXIS MOUNTING NOT ALLOWED FOR ALL MODULES. CHECK MANUFACTURER REQUIREMENTS.

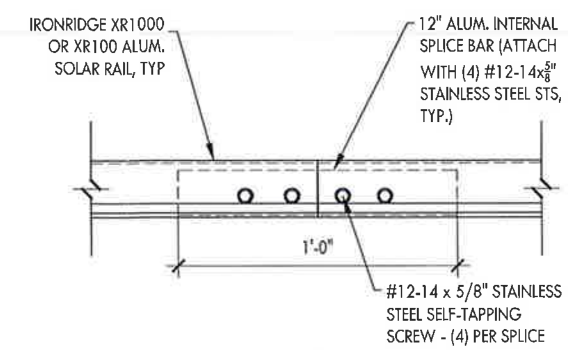
TYPICAL PHOTOVOLTAIC MODULE MOUNTING PLANS

SCALE: 3/16"=1'-0" (2 / PV.2)



END & MID CLAMP CONNECTION DETAILS

SCALE: 1 1/2"=1'-0"



TYPICAL SOLAR RAIL BEAM SPLICE DETAIL

SCALE: 1 1/2"=1'-0"

SEE DETAILS THIS SHEET FOR APPROVED MOUNTING HARDWARE

UNIRAC FLASHLOC COMP

APPROVED MOUNTING HARDWARE

SCALE: N.T.S.

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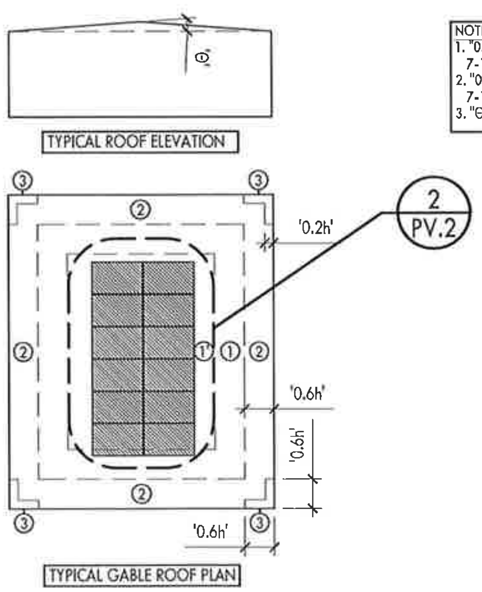
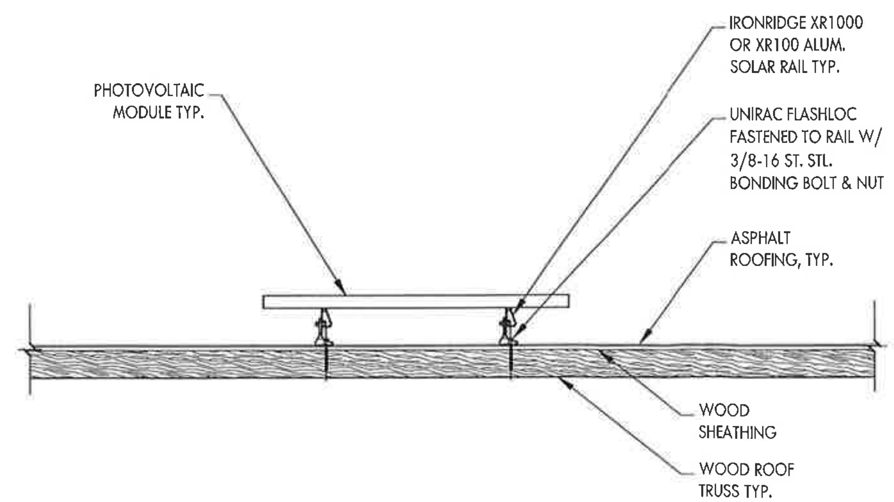


NOTES:
1. "0.2h" DIMENSION DEFINED PER ASCE 7-16 SHALL BE 1.50 FT.
2. "0.6h" DIMENSION DEFINED PER ASCE 7-16 SHALL BE 4.50 FT.
3. "Θ" DIMENSION IS ROOF PITCH, 0°-7°.

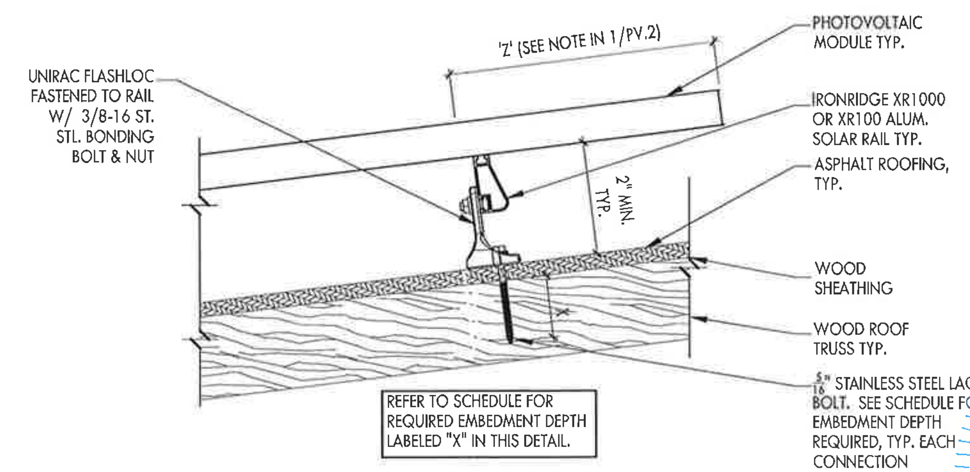
TYPICAL PHOTOVOLTAIC MODULE LAYOUT - LOW-SLOPE ROOFS - ROOF WIND ZONE PLAN

SCALE: N.T.S. (1 / PV.2)



TYPICAL PV PANEL IRONRIDGE FLUSH MOUNT SECTION

SCALE: 1/2"=1'-0" (3 / PV.2)



TYPICAL ROOF CONNECTION DETAIL

SCALE: 1 1/2"=1'-0" (4 / PV.2)

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REV	DATE	REMARK	BY

PROJECT:

PHOTOVOLTAIC SOLAR ENERGY SYSTEM

PROJECT NAME: LOUTSENHIZER RESIDENCE
PROJECT ADDRESS: 2818 ALSACE COURT
BELLE ISLE, FL 32812

DATE	4/6/22
DRAWN BY:	JLA
CHECKED BY:	JLA
REC. NO. #	29127
SCALE	AS NOTED

DRAWING #
PV.2
SHEET 3 OF 5

JOHN LOUIS ANTONELLI LICENSE No. 81305 STATE OF FLORIDA PROFESSIONAL ENGINEER
JOHN L. ANTONELLI, P.E. FL PE #81305

PHOTOVOLTAIC SYSTEM POWER TABLE									
DC-SIDE	PV MODULE	DC-INPUT	AC-SIDE	MICROINVERTER	BRANCH NO. 1	BRANCH NO. 2	BRANCH NO. 3	BRANCH NO. 4	HOME RUN
MODULE QTY.	1	1	QTY.	1	11	10	10	10	41
SERIES	1	1	MODEL	IQ8+	---	---	---	---	---
PARALLEL	1	1	MANUFACTURER	ENPHASE	---	---	---	---	---
MANUFACTURER	QCELLS	---	CONT. POWER	290 W	3190 W	2900 W	2900 W	2900 W	11890 W
MODEL	DUO BLK G10+	---	VOLTAGE	240 VAC	240 VAC	240 VAC	240 VAC	240 VAC	240 VAC
RATED POWER	360 W	360 W	CONT. CURRENT	1.21 A AC	13.31 A AC	12.10 A AC	12.10 A AC	12.10 A AC	49.61 A AC
Voc	41.18 VDC	41.18 VDC	FREQUENCY	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ
Isc	11.04 ADC	11.04 ADC	MODULE QTY.	1	11	10	10	10	41
Vmpp	34.31 VDC	34.31 VDC	MAX. BRANCH	13	---	---	---	---	---
Impp	10.49 ADC	10.49 ADC	OCPD RATING	---	20 A	20 A	20 A	20 A	80 A

** MODULE CHARACTERISTICS AT STC: CELL TEMPERATURE @ 25° C, SPECTRUM AM1.5, IRRADIANCE @ 1000 W/M²

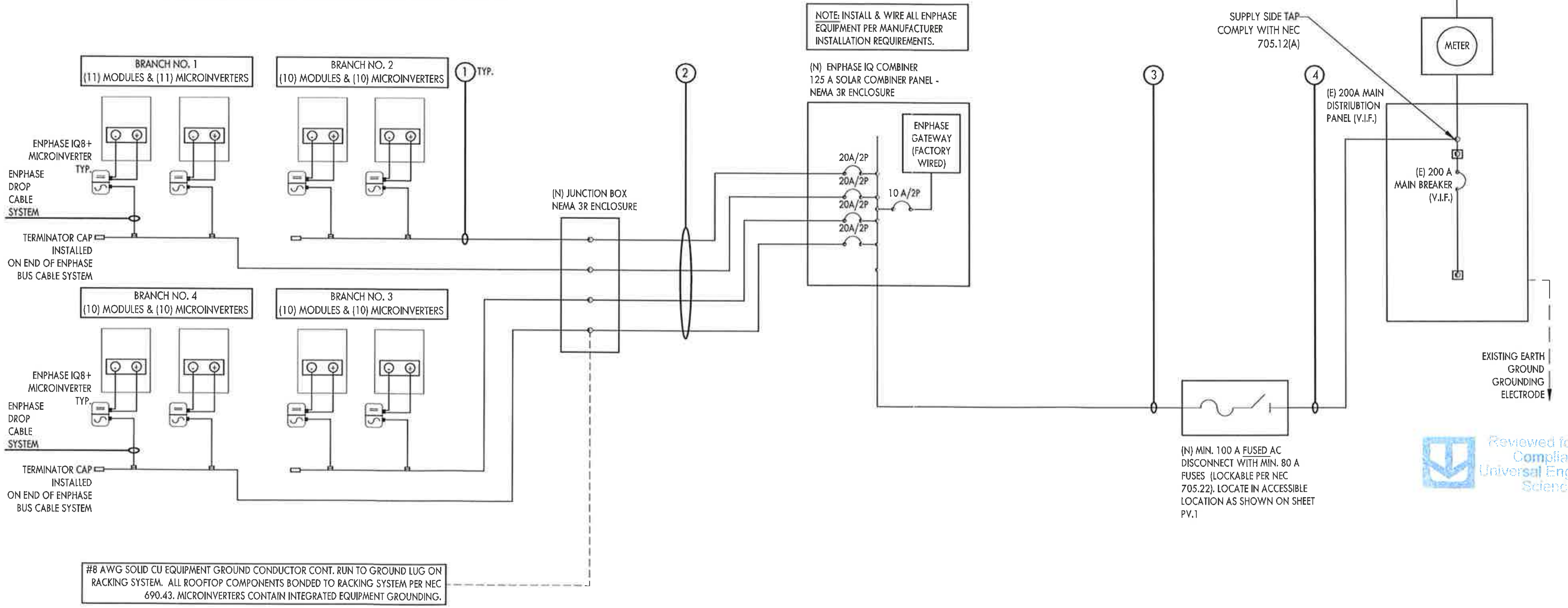
NOTES:
1. REFER TO SHEET PV.4 FOR ALL APPLICABLE ELECTRICAL NOTES.
2. SYSTEM MEETS REQUIREMENTS OF NEC 2017 690.12 FOR RAPID SHUTDOWN. INSTALL PER MANUFACTURER INSTRUCTIONS.
3. ALL CONDUCTORS SHALL BE COPPER UNLESS NOTED OTHERWISE. MINIMUM CONDUCTOR SIZES SHOWN THIS SHEET.
4. ALL PANELS DOWNSTREAM OF A LOAD SIDE INTERCONNECTION TO BE PROTECTED BY PREEXISTING OR ADDITIONAL OCPD PER NEC 408.36.
5. THIS SHEET IS DIAGRAMMATIC IN NATURE AND MAY NOT DEPICT ALL REQUIRED COMPONENTS OR CIRCUITS AS THEY MAY EXIST. THE PURPOSE OF THIS DIAGRAM IS TO SHOW THE MAJOR POWER SYSTEM COMPONENTS AND CIRCUITS. CONSULT EQUIPMENT MANUFACTURERS' INSTALLATION MANUALS PRIOR TO INSTALLATION AND COMMISSIONING.

ELECTRICAL CERTIFICATION STATEMENT

SUBJECT PV SYSTEM HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE NEC 2017, AND/OR THOSE SET FORTH BY THE FLORIDA SOLAR ENERGY CENTER CERTIFICATION, INCLUDING MAXIMUM NUMBER OF MODULE STRINGS, MAXIMUM NUMBER OF MODULES PER STRING, MAXIMUM OUTPUT, MODULE MANUFACTURER AND MODEL NUMBER, INVERTER MANUFACTURER AND MODEL NUMBER, AS APPLICABLE.

WIRE & CONDUIT SCHEDULE									
CIRCUIT	TYPE	MIN. CONDUIT SIZE	PHASE CONDUCTOR		NEUTRAL CONDUCTOR		GROUND CONDUCTOR		MAX. CIRCUIT LENGTH
			QTY.	SIZE (AWG)	QTY.	SIZE (AWG)	QTY.	SIZE (AWG)	
1	AC	---	2/BRANCH	#12	---	---	1	#8 BARE CU	86'
2	AC	3/4"	8	#12	---	---	1	#12	86'
3	AC	1"	2	#4	1	#8	1	#8	168'
4	AC	1"	2	#4	1	#8	---	---	168'
5									

1. CONDUCTOR & CONDUIT SIZES SHOWN ARE MINIMUM REQUIRED. LARGER SIZES MAY BE USED.
2. ALL CONDUCTORS SHALL BE THHN OR THWN-2 UNLESS OTHERWISE NOTED.
3. MAXIMUM CIRCUIT LENGTHS ARE BASED ON A MAXIMUM 2% VOLTAGE DROP.
4. MICROINVERTER OUTPUT CIRCUIT MAY BE ROMEX, NM-B CABLE, ETC. IF RUN INDOORS. ADHERE TO WIRE SIZE SHOWN.



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REV	DATE	REMARK	BY

PROJECT:

PHOTOVOLTAIC SOLAR ENERGY SYSTEM
PROJECT NAME: LOUTSENHIZER RESIDENCE
PROJECT ADDRESS: 2818 ALSACE COURT
BELLE ISLE, FL 32812

DATE	4/6/22
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DRAWING #
PV.3
SHEET: 4 OF 5

JOHN L. ANTONELLI P.E. FL PE #81305
JOHN LOUIS ANTONELLI LICENSE No. 81305 STATE OF FLORIDA PROFESSIONAL ENGINEER
4/21/22

PV ELECTRICAL NOTES:

GENERAL

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL LOCAL AND NATIONAL CODE REQUIREMENTS.
2. OBTAIN ALL PERMITS AND APPROVALS FROM GOVERNING AGENCIES PRIOR TO THE COMMENCEMENT OF WORK.
3. EQUIPMENT SHALL BE INSTALLED PER THE 2017 NATIONAL ELECTRICAL CODE (NEC), ALL APPLICABLE OR GOVERNING CODES, MANUFACTURER REQUIREMENTS, AND PER THE GOVERNING UTILITY COMPANY.
4. METALLIC CONDUIT OR TYPE MC METAL CLAD CABLE SHALL BE USED WITHIN THE BUILDING FOOTPRINT PER NEC 2017 690.31(G).

WIRING & CONNECTIONS

1. ALL CONDUCTORS SHALL BE COPPER AND ARE SIZED BASED ON NEC 2017 310.
2. TO PREVENT AN INCREASE IN AC VOLTAGE LEVEL AND AVOID ANY NUISANCE FAULTS, IT IS RECOMMENDED TO SIZE CONDUCTOR FOR A TOTAL VOLTAGE DROP OF 2% OR LESS PER INVERTER MANUFACTURER.
3. ALL EQUIPMENT SHALL BE LISTED PER NEC 2017 690.4(B).
4. THE TOTAL AREA OF ALL CONDUCTORS, SPLICES, AND TAPS INSTALLED AT ANY CROSS SECTION OF THE WIRING DOES NOT EXCEED 75% OF THE CROSS-SECTIONAL AREA OF THE SPACE. NEC 312.8(A)(2).
4. INTERCONNECTION METHOD SHALL COMPLY WITH NEC 705.12.
5. FOR LOAD SIDE CONNECTION: GRID-INTERACTIVE PV SYSTEM CURRENT PLUS MAIN BREAKER RATING MUST BE LESS THAN, OR EQUAL TO, 120% OF MAIN SERVICE BUS RATING AND BREAKERS MUST BE MOUNTED AT OPPOSITE END OF MAIN BREAKER PER NEC 705.12(B)(2)(3)(b). IF EXISTING EQUIPMENT DOES NOT ALLOW FOR THIS A SUPPLY SIDE CONNECTION MAY BE USED PER NEC 705.12(A).
6. FOR SUPPLY SIDE CONNECTION: CONNECTION SHALL BE MADE USING ILSCO INSULATION PIERCING CONNECTORS (IPC), OR EQUAL APPROVED COMPONENTS. MAKE, MODEL, AND RATING OF INTERCONNECTION SHALL BE EQUAL TO, OR GREATER THAN, OUTPUT RATING OF PV SYSTEM.
7. ALL OVERCURRENT PROTECTION DEVICES ARE SIZED PER NEC 2017 240.4(B) & 210.19(A)(1).
8. CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 2017 300.6 (C)(1) AND 310.10(D).
9. SYSTEM COMPLIES WITH 690.12 RAPID SHUTDOWN AND ASSOCIATED LABELING AS PER NEC 690.56(C).

GROUNDING & BONDING

1. THE ENTIRE ARRAY IS BONDED ACCORDING TO (NEC 690.46 - 250.120 PARAGRAPH (C). THE GROUND IS CARRIED AWAY FROM THE GROUNDING LUG USING #6 BARE COPPER WIRE OR #8 THWN-2 COPPER WIRE.
2. EACH MODULE IS BONDED TO THE MOUNTING SYSTEM USING BONDING CLAMPS. MOUNTING SYSTEM COMPLIES WITH UL 2703.
3. NEUTRAL AND EQUIPMENT GROUNDING CONDUCTOR BONDED AS PER NEC 2017 250.24(C).
4. EQUIPMENT GROUNDING CONDUCTOR IS CONNECTED TO A GROUNDING ELECTRODE SYSTEM PER NEC 250.54.
5. AC SYSTEM GROUNDING ELECTRODE CONDUCTOR (GEC) SHALL BE A MINIMUM SIZE #8 AWG WHEN INSULATED, #6 AWG IF BARE COPPER.
6. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 2017 690.45, 250.120(C), AND 250.122 & BE A MINIMUM OF #10 AWG WHEN NOT EXPOSED TO DAMAGE, AND #6 AWG SHALL BE USED WHEN EXPOSED TO DAMAGE.

LABELING

1. ALL WARNING SIGN(S) OR LABEL(S) SHALL COMPLY WITH 2017 NEC ARTICLE 110.21(B).
2. LABEL WARNINGS SHALL ADEQUATELY WARN OF THE HAZARD. LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT, AND LABELS REQUIRED SHALL BE SUITABLE FOR THE ENVIRONMENT.
3. PV POWER CIRCUIT LABELS SHALL APPEAR ON EVERY SECTION OF THE WIRING SYSTEM THAT IS SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.
4. PER NEC 690.13, PROVIDE A WARNING SIGN AT ALL LOCATIONS WHERE TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION. SIGN SHALL READ "WARNING - ELECTRIC SHOCK HAZARD - DO NOT TOUCH TERMINALS".
5. PER NEC 2017 705.10, PROVIDE A PERMANENT PLAQUE OR DIRECTORY SHOWING ALL ELECTRIC POWER SOURCES ON THE PREMISES AT SERVICE ENTRANCE.

MICROINVERTER SYSTEMS

1. SYSTEM IS CONSIDERED AN AC MODULE SYSTEM. NO DC CONDUCTORS ARE PRESENT IN CONDUIT, COMBINER, JUNCTION BOX, DISCONNECT. AND COMPLIES WITH NEC 2017 690.6 - NO DC DISCONNECT AND ASSOCIATED DC LABELING ARE REQUIRED.
2. NO TERMINALS SHALL BE ENERGIZED IN THE OPEN POSITION IN THIS AC MODULE SYSTEM, NEC 690.13, 690.6.
3. WHERE APPLICABLE: INTERCONNECTION SHALL COMPLY WITH NEC 2017 705.12(A) AS PERMITTED BY NEC 230.82(6).
4. CONDUCTORS IN CONDUIT ARE AC CONDUCTORS BRANCH CIRCUITS AND NOT PV SOURCE CIRCUIT PER NEC 2017 690.6.
5. ALL GROUNDING SHALL COMPLY WITH NEC 2017 690.47(A) IN THAT THE AC MODULES WILL COMPLY WITH NEC 250.64.
6. MICROINVERTER BUS CABLE SYSTEM MUST BE A MINIMUM OF 2 IN. ABOVE THE ROOF SURFACE.

⚠ WARNING

DUAL POWER SUPPLY

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

REQ'D BY: NEC 705.12(B)(3) — 1

APPLY TO:
INSTALL ON INVERTER BREAKER IN AC SERVICE PANEL AT THE POINT OF INTERCONNECTION. (AS REQUIRED)

⚠ WARNING

INVERTER OUTPUT CONNECTION DO NOT RELOCATE OVERCURRENT DEVICE

REQ'D BY: NEC NEC 705.12(B)(2)(3)(b) — 2

APPLY TO:
NSTALL ON INVERTER BREAKER IN AC SERVICE PANEL AT THE POINT OF INTERCONNECTION. (AS REQUIRED)

PHOTOVOLTAIC SYSTEM DISCONNECT

REQ'D BY: NEC 690.13(B) — 3

APPLY TO:
AC DISCONNECT SWITCHES

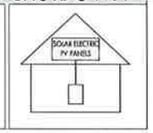
PHOTOVOLTAIC SYSTEM DISCONNECT
AC CURRENT: 49.61 A
VOLTAGE: 240 VAC

REQ'D BY: NEC 690.54 — 4

APPLY TO:
PV SYSTEM MAIN AC DISCONNECT
INSTALL ON INVERTER BREAKER IN AC SERVICE PANEL AT THE POINT OF INTERCONNECTION.

SOLAR PV 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



REQ'D BY: NEC 690.56(C)(1)(a) — 5

APPLY TO:
PV SYSTEM MAIN AC DISCONNECT
INSTALL LABEL ON COVER OF OR WITHIN 3 FEET FROM SERVICE DISCONNECTING MEANS MEANS TO WHICH WITH PV SYSTEM IS CONNECTED.

SIGNAGE REQUIREMENTS

1.) RED BACKGROUND W/ WHITE LETTERING, OR:
2.) WHITE BACKGROUND W/ BLACK LETTERING
3.) MIN. 3/8" LETTER HEIGHT
4.) ALL CAPITAL LETTERS
5.) ARIAL OR SIMILAR FONT
6.) WEATHER RESISTANT MATERIAL, PER UL 969
7.) ALL LABELING TO COMPLY WITH REQUIRES IN NEC 690 & 705.

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PV.4
SHEET 5 OF 5

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4-11-2022
STATE OF
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