



City of Belle Isle Job Site Card Electrical PERMIT 2019-08-008

PERMIT MUST BE POSTED ON SITE - A permit expires in 6 months if approved inspections are not recorded /scheduled within that time frame. You are responsible for scheduling and keeping track of all your inspections -

UES copy

Permit Number: 2019- 08-008

Issue Date: 08/05/2019

Site Address: 3738 Rothbury Dr 32812

Parcel #: 20-23-30-9375-00-490

Class: Residential **Subdivision:**

Description of Work: Electrical – SOLAR PHOTOVOLTAIC SYSTEM ROOF MOUNT.

Issued: ALL AMERICAN SOLAR LLC

Business Phone: 407 879-5803

Name: LORENZ, STEVEN MICHAEL

Contractor License: CVC56961

Payment Date & Method: 8 / 9 / 2019 Picked up or sent by BEN A. Emailed

Visa Master Card Amex Discover Check / Money Order # 3658

Schedule Inspections via Email at: BDscheduling@universalengineering.com BY 3:00 PM CUT OFF TIME
Inspection Results Will Be Sent Out the Following Business Day

"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."

ELECTRICAL	INSPECTOR	DATE	COMMENTS
300 Temp Pole			
310 TUG			
320 Underground			
330 Rough			
340 Footer Steel Bonding			
350 Pool Light			
360 PrePower			
370 Meter ReSet			
380 Final			

Inspection requests are to be emailed to BDscheduling@UniversalEngineering.com; a confirmation email will be sent back to you upon scheduling. **Next-Day Inspection requests must be made by 3pm.** Please include the following in your request: Permit #, project address, type of inspection, date of the requested inspection, a contact name & a contact phone number. AM or PM may be requested but cannot be guaranteed. Universal Engineering Sciences - 3532 Maggie Blvd., Orlando, FL 32811 Tel 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

in person
RECEIVED AUG - 1 2019

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: 8-1-19 PERMIT NUMBER 2019-08-008

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

Project Address 3738 Rothbury Dr, Belle Isle FL 32809 32812
 Property Owner David Trigg Phone 407-927-2203
 Property Owner's Mailing Address 3738 Rothbury Dr City Belle Isle
 State _____ Zip Code _____ Parcel Id Number: 20 23 30 9375 00 490
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) _____

check 3658
PAID
8-9-19
PAID

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

Meter Service Upgrade from _____ to _____ = _____
Amperage/Voltage/Phase Amperage/Voltage/Phase Difference in Size

Relocate Existing Meter Service (No Service Size Change) _____

Other: solar photovoltaic system roof mount.

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 \$ 31,093)

Building Official: [Signature] Date 8/2/19
 Verified Contractor's Licenses & Insurance are on file [Signature] Date 8-1-19

Permit Fee = \$ 192 *1ST IK 37*
 Review Fee = \$ 96 *5x31 155*
 1% BCAIB Fee = \$ 2.88 *192:*
 1.5% DCA Fee = \$ 4.32 *96*
 TOTAL Permit = \$ 295.20 *288*

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 # CVC56961
 LICENSE HOLDER NAME Steven Lorenz COMPANY NAME All American Solar LLC
 Street Address 1060 E Industrial Dr Suite A
 City Orange City State FL Zip Code 32763 Phone Number 407 879-5803
 Email Address Finance@AllAmericanSolarLLC.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 _____

153478



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

POWER OF ATTORNEY

Date: 08/01/2016

Permit #: 2019-08-008

I hereby name and appoint Ben Adams of _____
(print name)

All American Solar LLC to be my lawful attorney-in-fact to act for
(company name)

me and apply to the City of Belle Isle Building Department for a Solar Photovoltaic permit
(type of permit)

for work to be performed at the following location:

3738 Rothbury Dr Belle Isle, FL 32812, Belle Isle, FL 32809 32812 and
(street address)

to sign my name and do all things necessary to this appointment.

Certified Contractor's Printed Name: Steven Lorenz

License Number: CVC56961

Certified Contractor's Signature: _____
(Handwritten signature of Steven Lorenz)

The foregoing instrument was acknowledged before me this 3rd days of July of 2019
by Steven Lorenz who is personally known to me or who produced
_____ as identification and who did not take an oath.

State of Florida
County of Orange
Shawn M. Bing
Notary Public, Orange County, Florida.



ALL AMERICAN SOLAR LLC
 10600 E. INDUSTRIAL DR STE A
 ORANGE CITY, FL 32763
 PERMIT NUMBER: 2019-00-008



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.: 20-23-30-9375-00-490

SUBDIVISION _____ BLOCK _____ TRACT _____ LOT _____ BLDG _____ UNIT _____
Windsor Place Phase 2 30/81 Lot 49

2. GENERAL DESCRIPTION OF IMPROVEMENT: SOLAR

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

a. Name and address: David Tuggle 3738 Rothbury Dr Orlando 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: Steven Lorenz of All American Solar LLC
 Contractor's address: 10600 E Industrial Dr Suite A Orange City FL 32763 b. Phone number: 954 295 8190

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

a. Name and address: N/A

b. Phone number: N/A c. Amount of bond: \$ N/A

6. a. LENDER'S NAME: Servite Finance Company

Lender's address: 555 S Federal Hwy #200 Boca Raton FL 33432 b. Phone number: 866-254-0497

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: N/A

b. Phone numbers of designated persons: N/A

8. a. In addition to himself or herself, Owner designates N/A of N/A 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: N/A

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.

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

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

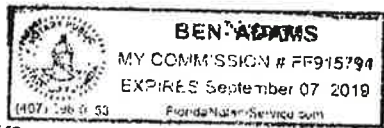
State of FLORIDA
 County of ORANGE

The foregoing instrument was acknowledged before me this 1st day of August, 2019

by David Tuggle as owner

for David Tuggle (name of party on behalf of whom instrument was executed)

Personally Known _____ or Produced Identification Type of Identification Produced Driver License



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

State of FLORIDA, County of ORANGE
 I hereby certify that this is a true copy of the document as recorded in the Official Records
 PHIL DIAMOND, COUNTY COMPTROLLER
 BY [Signature]
 DATED: 8/7/19



Property Record - 20-23-30-9375-00-490

Orange County Property Appraiser •
http://www.ocpafl.org

Property Summary as of 07/31/2019

Property Name

3738 Rothbury Dr

Names

Tuggle David

Municipality

BI - Belle Isle

Property Use

0103 - Single Fam Class III

Mailing Address

3738 Rothbury Dr
Belle Isle, FL 32812-2213

Physical Address

3738 Rothbury Dr
Orlando, FL 32812



QR Code For Mobile Phone











302320937500490 08/24/2006



Value and Taxes

Historical Value and Tax Benefits

Tax Year Values	Land	Building(s)	Feature(s)	Market Value	Assessed Value
2018  	\$75,000	+ \$196,424	+ \$11,000 =	\$282,424 (6.8%)	\$227,563 (2.1%)
2017  	\$65,000	+ \$191,343	+ \$8,000 =	\$264,343 (2.2%)	\$222,882 (2.1%)
2016  	\$65,000	+ \$185,623	+ \$8,000 =	\$258,623 (4.8%)	\$218,298 (.70%)
2015  	\$65,000	+ \$170,793	+ \$11,000 =	\$246,793	\$216,781

GODWIN ENGINEERING AND DESIGN, LLC

8378 Foxtail Loop, Pensacola, FL 32526 | (850)712-4219 | chad@godwineng.com

July 19, 2019

To: City of Belle Isle Building Department
1600 Nela Avenue
Belle Isle, FL 32809

Re: Tuggle - Residential PV Roof Mount Installation
3738 Rothbury Drive
Belle Isle, FL 32812

Plan Reviewer,

This letter is regarding the installation of a new roof mounted Solar PV System on the existing residential structure at the address above. I have reviewed the attachment plan and have determined that the roof mounted PV system is in compliance with the applicable sections of the following Codes as amended and adopted by the jurisdiction:

2017 Florida Building Code 6th Edition, FBC
ASCE 7 Min. Design Loads for Buildings & Other Structures

Per 2017 FBC, the Roof Mounted PV system will be subject to the following design criteria:
Design Wind Speed(V_{ult}) - 140mph 3 sec gust, Exposure Category - B

The PV System consist of the modules, railing, and connection hardware. The system will add a dead load of approximately 3 psf to the roof.

The existing roof covering is Asphalt Shingle with min. ½" plywood decking and 2" x 4" roof trusses 24" O.C. The roofing, decking, and roof trusses are in good condition. The existing structure will be adequate for supporting the additional PV dead load and wind loads.

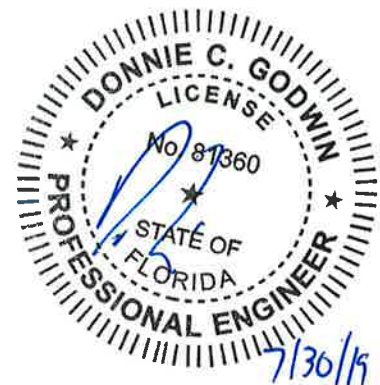
The securement method of the PV system is to be flush mounted to the asphalt shingle roof with the Ironridge railing and flashings/attachments. The attachments can be attached up to 72" apart. The mounts should be staggered, where possible, to allow distribution of the design loads evenly to the structure. The mounts shall be installed with a min. 5/16" lag screw with minimum 2-5/16" thread length.

Please see attached documents and contact me should you have any questions.

Sincerely,

D. Chad Godwin, PE 81360
Exp. 02/28/2021

PO BU1970
Reviewed for Code
Compliance
Universal Engineering
Sciences
8/2/19



BUILDING DESIGN PROPERTIES
 BASIC WIND SPEED
 ROOF PITCH
 MEAN ROOF HEIGHT
 ROOF SETBACK
 ADJUSTMENT FACTOR FOR BUILDING HEIGHT AND EXPOSURE
 TOPOGRAPHICAL FACTOR
 EXPOSURE
 EFFECTIVE WIND AREA

SYMBOL	VALUE	UNIT
V	140	mph
θ	> 7 to 27	degrees
h	15	ft
a	3	ft
λ	1.00	
K_{zt}	1	
B	10	sf

Figure 26.5-1C, page 249a

Figure 30.5-1, pg 347

Figure 26.8-1, pg 252

VARIABLE DESCRIPTION
 NET DESIGN WIND PRESSURE (UPLIFT)
 NET DESIGN WIND PRESSURE (DOWN)
 NET DESIGN WIND PRESSURE (UP)
 NET DESIGN WIND PRESSURE (DOWN)

SYMBOL	ZONE 1			ZONE 2			ZONE 3			UNIT
	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE		
P_{net30}	-32.3	-56.2	-83.1						psf	
P_{net30}	20.3	20.3	20.3						psf	
$P_{net up}$	-32.30	-56.20	-83.10						psf	
$P_{net down}$	20.30	20.30	20.30						psf	

REFERENCE: ASCE 7-10

Figure 30.5-1, pg 346

Figure 30.5-1, pg 346

Calculation: $P_{net up} = \lambda \times K_{zt} \times P_{net30}$

Calculation: $P_{net down} = \lambda \times K_{zt} \times P_{net30}$

DESCRIPTION
 DEAD LOAD
 SNOW LOAD
 DESIGN WIND LOAD
 ASD DESIGN LOAD (UPLIFT)
 DOWNFORCE CASE 1
 DOWNFORCE CASE 2
 DOWNFORCE CASE 3

SYMBOL	VALUE	VALUE	VALUE	UNIT
D	3	3	3	psf
S	0	0	0	psf
W	-32.30	-56.20	-83.10	psf
P_{design}	-22.70	-41.21	-62.05	psf
P_{design}	3	3	3	psf
P_{design}	23.30	23.30	23.30	psf
P_{design}	18.23	18.23	18.23	psf

Calculation: $P_{design} = D + \text{SQRT}(0.6)W$ (asd)

Calculation: $P_{design} = 1.0D + 1.0S$

Calculation: $P_{design} = 1.0D + 1.0W$

Calculation: $P_{design} = 1.0D + 0.75S + 0.75W$

DESIGN FACTORS & CALCULATIONS FOR THE USE OF L-FOOT TO ROOF TRUSS

DESCRIPTION
 MODULE WIDTH
 TOTAL DESIGN LOAD (UPLIFT)
 TOTAL DESIGN LOAD (DOWNFORCE)
 DISTRIBUTED LOAD (UPLIFT)
 DISTRIBUTED LOAD (DOWNFORCE)
 RAIL SPAN BETWEEN ANCHORS POINTS
 POINT LOAD (UPLIFT)
 POINT LOAD (DOWNFORCE)

SYMBOL	VALUE	VALUE	VALUE	UNIT
B	3.28	3.28	3.28	ft
P	-22.70	-41.21	-62.05	psf
P	23.30	23.30	23.30	psf
w	-37.22	-67.58	-101.75	plf
w	38.21	38.21	38.21	plf
L	6	6	6	ft
R	-223.33	-405.49	-610.52	lbs
R	229.27	229.27	229.27	lbs

Calculation: $w = PB/2$ *Assumes 2 ralls per row

Calculation: $w = PB/2$ *Assumes 2 ralls per row

Calculation: $R = PLB/2$ *Assumes 2 ralls per row

Calculation: $R = PLB/2$ *Assumes 2 ralls per row

L-FOOT CONNECTED BY LAG SCREW TO ROOF TRUSS/ RAFTER

Specific Gravity, Rafter
 Min. Dia. of Lag Screw, 5/16
 Pullout Value of
 # of Lag screws
 Thread Length
 Design Pullout Value per Mount
 SAFETY FACTOR

G	0.55	0.55	0.55	
D	0.3125	0.3125	0.3125	in
W	306.87	306.87	306.87	lbs/in
	1	1	1	
T_d	2.3125	2.3125	2.3125	in
W_t	709.64	709.636	709.636	
SF	3.18	1.75	1.16	

Table 11.2A, NDS 2005, page 68 (Southern Pine)

$W = 1800 G^{3/2} D^{3/4}$

Table L2, NDS 2005

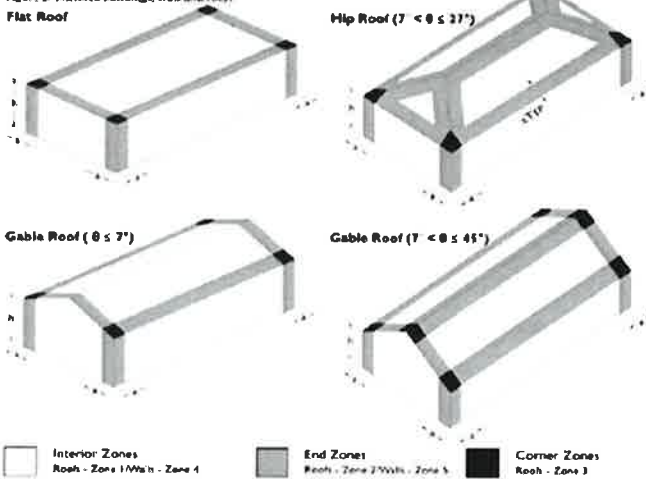
$W_t = W * \# \text{ of Lags} * T_d$

Calculation: $SF = W_t/R$ (Uplift)

Step 3: Determine Roof Zone (continued)

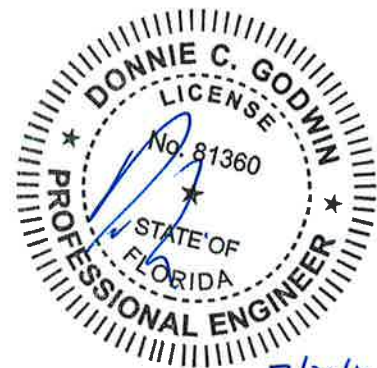
Using Roof Zone Setback Length, a, determine the roof zone locations according to your roof type, gable, hip or mansard. Determine in which roof zone your pv system is located. Zone 1, 2 or 3 according to figure 2.

Figure 2 Enclosed buildings, wall and roof.

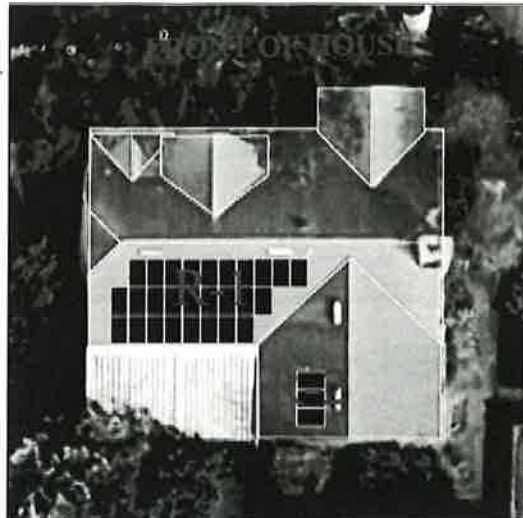


Interior Zones: Roofs - Zone 1/Walls - Zone 4
 End Zones: Roofs - Zone 2/Walls - Zone 3
 Corner Zones: Roofs - Zone 3

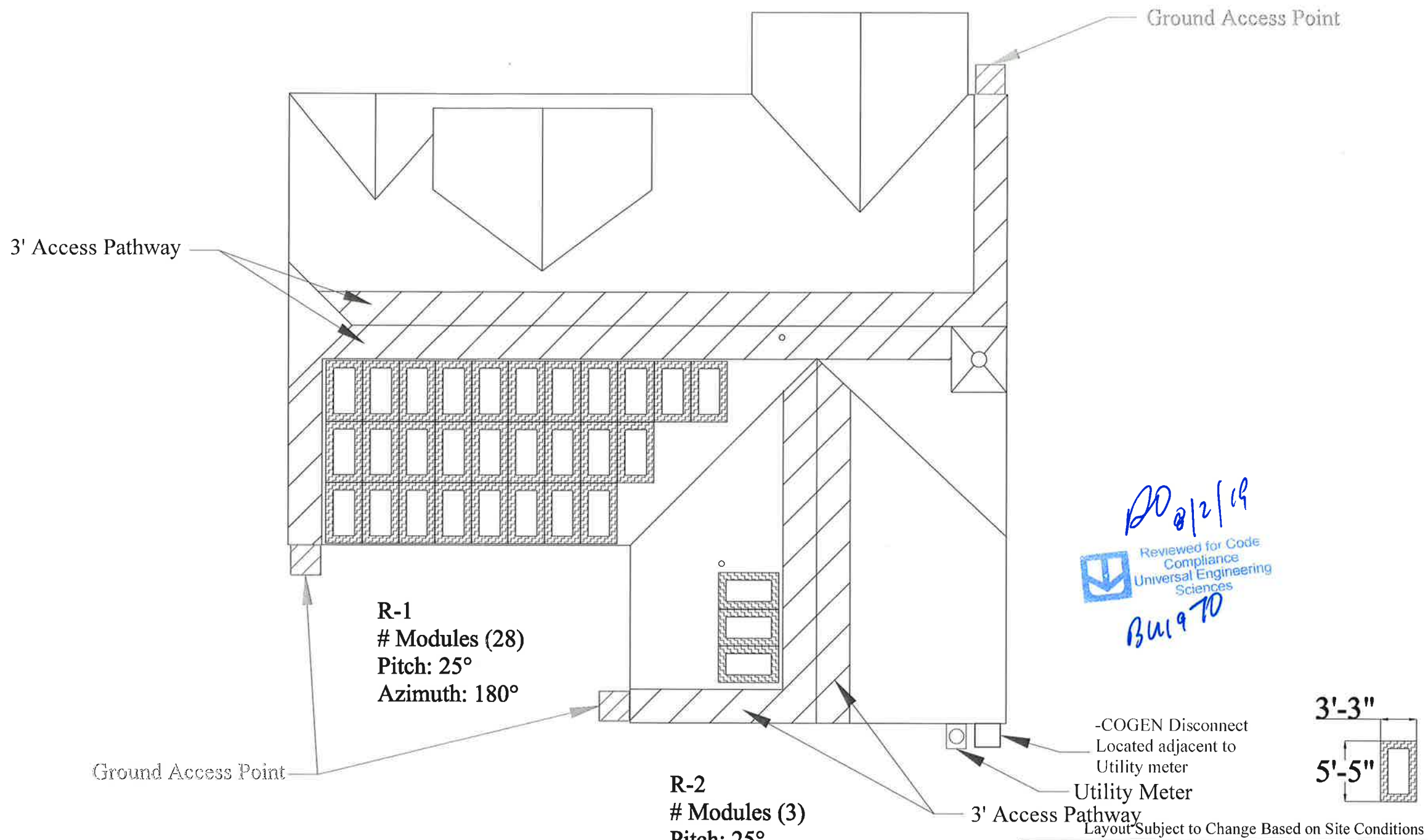
Source: ASCE 7-10, Minimum Design Loads for Buildings and Other Structures, Chapter 6, p. 41



7/30/19



FRONT OF HOUSE



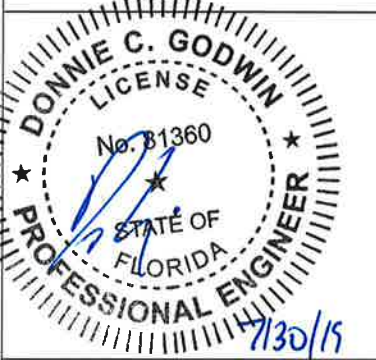
DO 8/2/19
 Reviewed for Code Compliance
 Universal Engineering Sciences
Buig TO

Inverter Type: Enphase
 PV Panel: (31) Silfab 310W
 Racking: Iron Ridge
 Total Wattage: 9,610W
 Roof Type: Composition Shingles
 Wind Load: 7 to 27 Deg
 Fastener Type: Use 5/16" Dia 4" Lags

Sheet Index

- S-1 Cover Sheet / Site Plan
- S-2 Detail
- E-1 One - Line
- S-1A Mounting Plan

General Notes:
 -Enphase IQ7 Micro Inverter are located on roof behind each module.
 -First responder access maintained and from adjacent roof.
 -Wire run from array to connection is 40 feet.



Godwin Engineering and Design, LLC
 8378 Foxtail Loop
 Pensacola, FL 32526
 D. Chad Godwin, PE
 Chad@godwineng.com

Legend	
	First responder access
	Chimney
	Utility Meter
	Satellite
	PV Disconnect
	Vent Pipe

Meets Florida Fire Prevention Code

 Represents all Fire Clearance including Alternative methods
 1st Responder Access minimum of 36" unobstructed as per Section R324 of the 2015 IRC

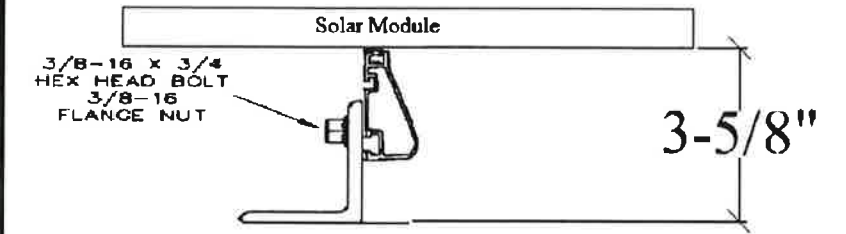
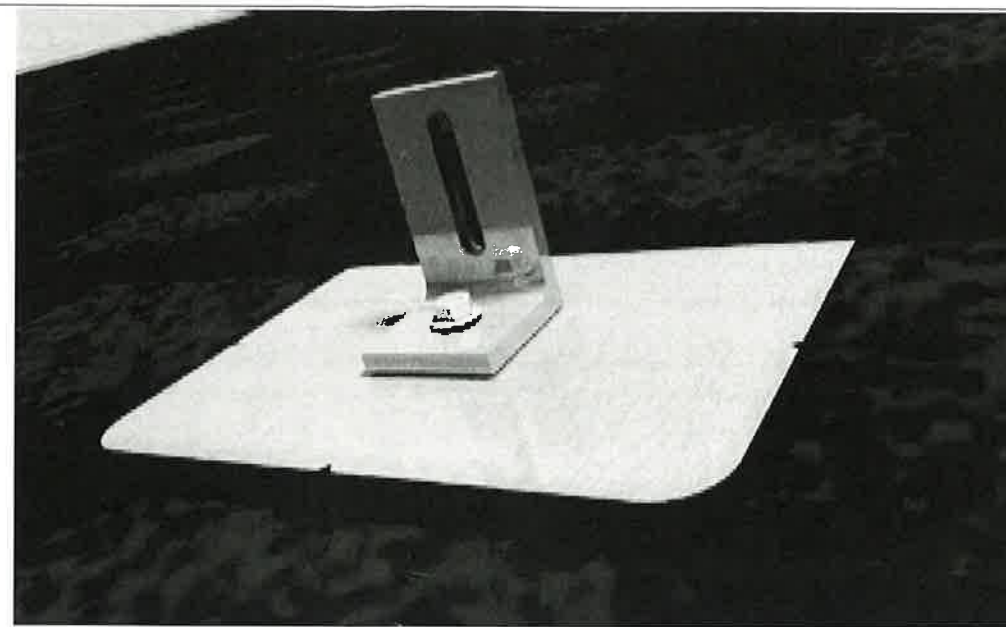
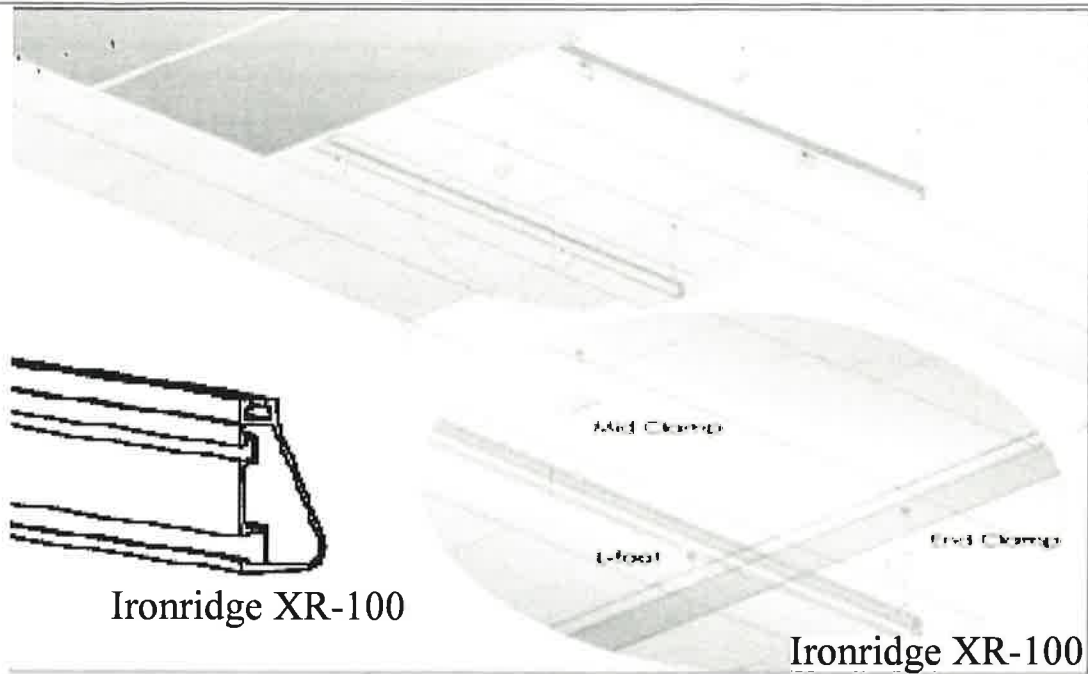
Customer Info:
 David Tuggle
 3738 Rothbury Dr,
 Belle Isle, FL
 32812

1060 East Industrial Dr, Suite A
 Orange City, FL 32763
 954-295-8190

Date:	7.19.19
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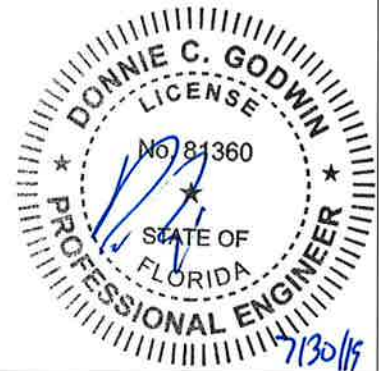
2017 FL Residential Code, 6th Edition (2015 International Residential Code - 2nd Printing modified by the FL Building Standards and Codes 2017 Uniform Code Supplement), 2015 International Energy Conservation Code, County of Orange Code, 2014 National Electric Code.



General Notes:

- L Feet are secured to roof rafters.
@ 72" O.C. using 5/16" x 4" stainless steel Lag bolts.
- Subject roof has One layer.
- All penetrations are sealed and flashed.

Godwin Engineering and Design, LLC
 8378 Foxtail Loop
 Pensacola, FL 32526
 D. Chad Godwin, PE
 Chad@godwineng.com



Roof Section	Pitch	Roof Rafter and Spacing	Overhang	Notes:
R1-R2	6/12	2"x4" @ 24 O.C.	20"	Truss

Designed as per ASCE7-10

Modules mounted flush to roof no higher than 6" above surface.

Inverter Type: Enphase
 PV Panel: (31) Silfab 310W
 Racking: Iron Ridge
 Total Wattage: 9,610W
 Roof Type: Composition Shingles
 Wind Load: 7 to 27 Deg
 Fastener Type: Use 5/16" Dia 4" Lags

Customer Info:

David Tuggle
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 Belle Isle, FL
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1060 East Industrial Dr, Suite A
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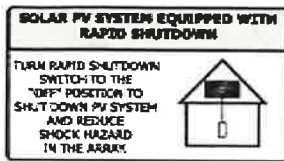
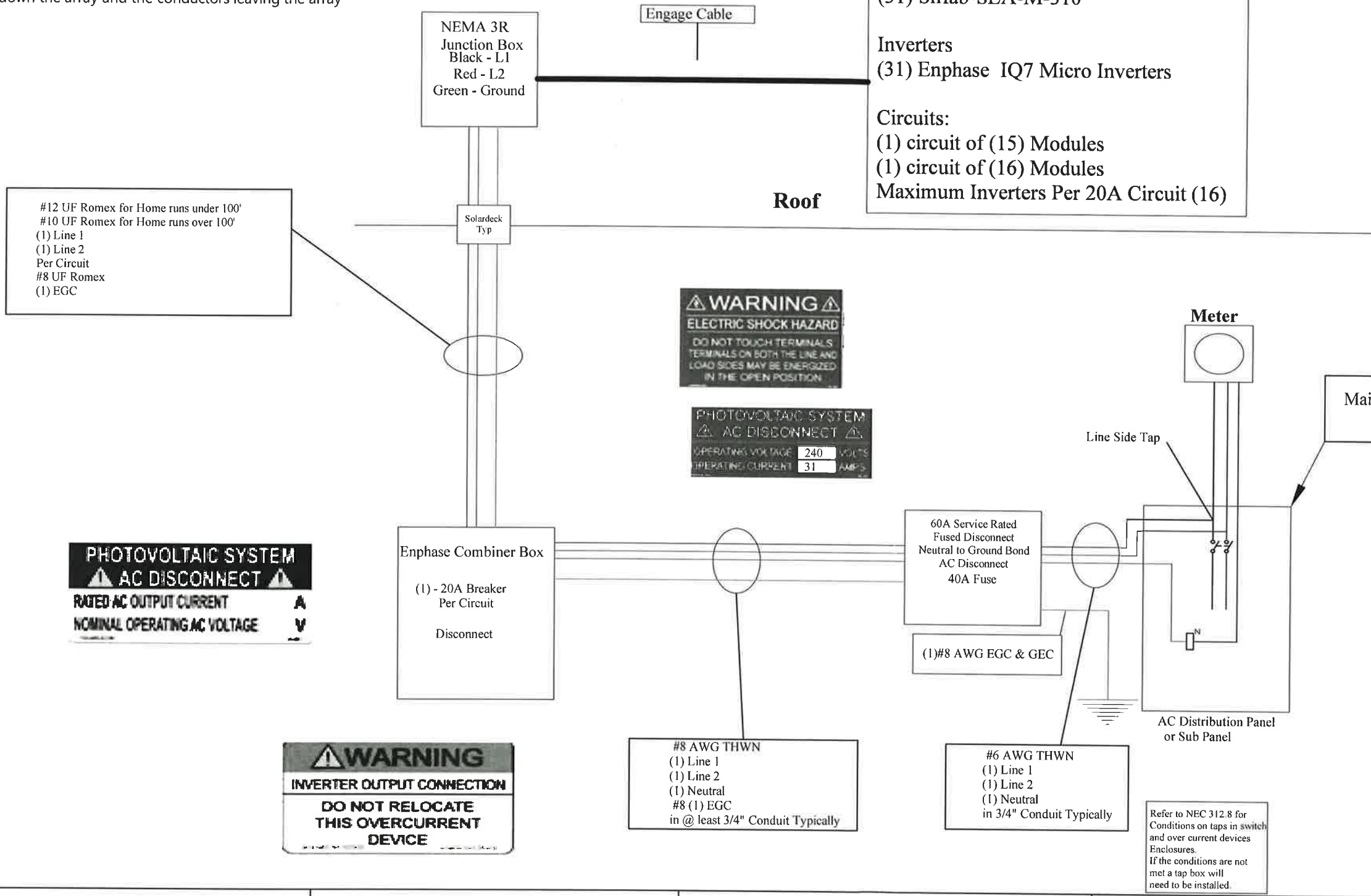


Figure 690.56(C)(1)(a) Label for PV Systems that Shut down the array and the conductors leaving the array



Enphase Output Ckt Per String	
To Overcurrent Protection Device	
AC Max Output Current	16
AC Max Output Current * 1.25%	20
Overcurrent Protection (A)	20
No. of Current Carrying Cond	<4
Conductor Gauge (AWG)	10
Enphase Total Output Ckt	
AC Max Output Current	31
AC Max Output Current * 1.25%	38.8
Overcurrent Protection (A)	40
No. of Current Carrying Cond	<4
Conductor Gauge (AWG)	8

WARNING
ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH THE LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION.

PHOTOVOLTAIC SYSTEM
AC DISCONNECT
OPERATING VOLTAGE 240 VOLTS
OPERATING CURRENT 31 AMPS

PHOTOVOLTAIC SYSTEM
AC DISCONNECT
RATED AC OUTPUT CURRENT **A**
NOMINAL OPERATING AC VOLTAGE **V**

WARNING
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE
THIS OVERCURRENT
DEVICE

Reviewed for Code Compliance
Universal Engineering Sciences



Godwin Engineering and Design, LLC
8378 Foxtail Loop
Pensacola, FL 32526
D. Chad Godwin, PE
Chad@godwineng.com



1060 East Industrial Dr, Suite A
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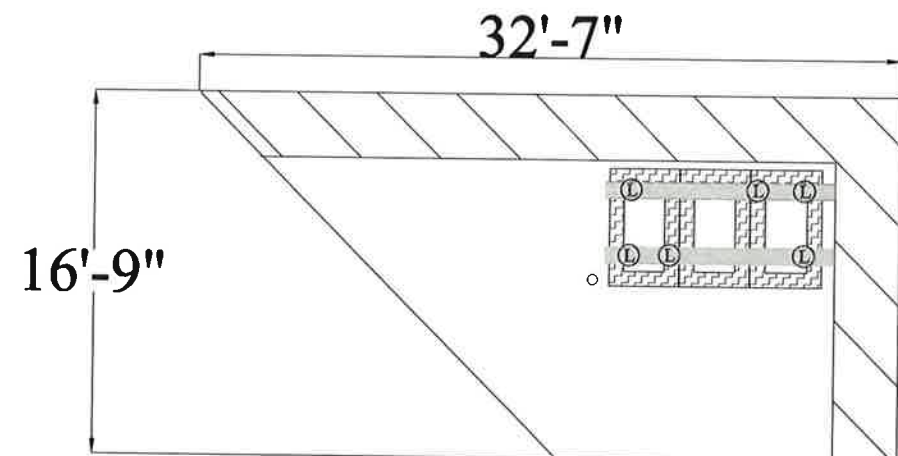
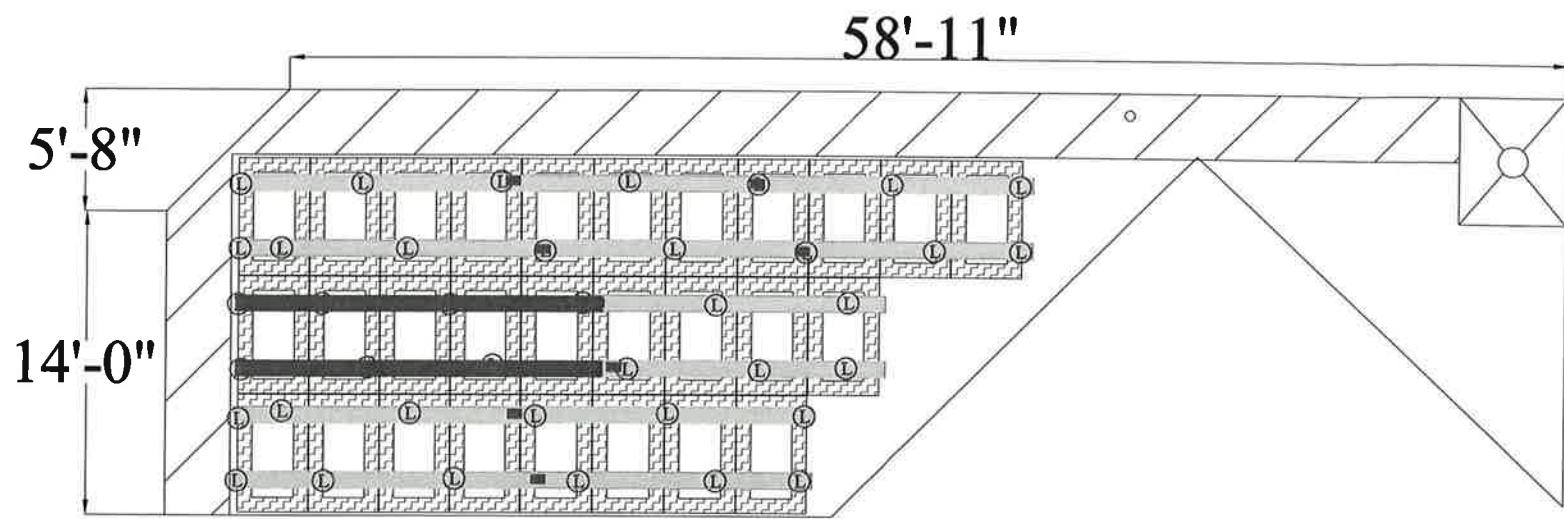
In Case of Emergency Call
All American Solar
at 954-295-8190

Note:
-All wiring to meet the 2014 NEC and Florida electric codes.
60A Disconnect
-Type of conduit to be determined on site by contractor.

GEC NOTES
Provide a grounding electrode system for an ungrounded system per 690.47(C)(3).
- GEC must be installed per 250.64
- GEC must be continuous un-spliced or irreversibly spliced from inverter to existing service ground system or continuous from the arrays to the existing service ground system.
- If GEC is not continuous from the array to the existing service ground an additional ground system must be provided from the arrays to a grounding electrode per 690.47(D)
- GEC must be min #8 AWG and installed in conduit

Customer Info:
David Tuggle
3738 Rothbury Dr,
Belle Isle, FL
32812

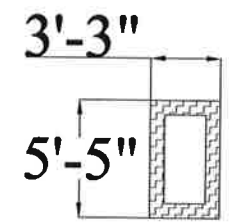
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R-1
 # Modules (28)
 Pitch: 25°
 Azimuth: 180°

- 17' 2
- 14' 14
- 7'
- 4'
- Splice Bar 8
- Flashings 45
- UFO's 70
- Sleeves/End Caps 16
- Solardecks 2
- Ground Lugs 4

R-2
 # Modules (3)
 Pitch: 25°
 Azimuth: 270°

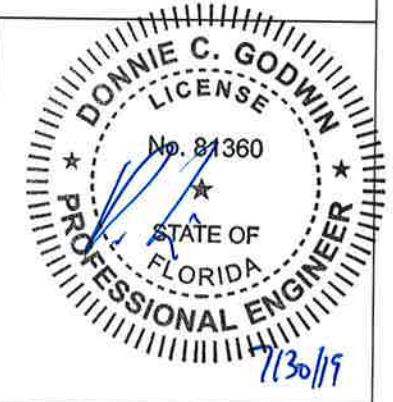



Max cantilever is 24" as per manufacturer spec.
 Max Cantilever = Max Span * (1/3) = 72 * (1/3) = 24"

Inverter Type:	Enphase
PV Panel:	(31) Silfab 310W
Racking:	Iron Ridge
Total Wattage:	9,610W
Roof Type:	Composition Shingles
Wind Load:	7 to 27 Deg
Fastener Type:	Use 5/16" Dia 4" Lags

Customer Info:
David Tuggle
 3738 Rothbury Dr,
 Belle Isle, FL
 32812

Godwin Engineering and Design, LLC
 8378 Foxtail Loop
 Pensacola, FL 32526
 D. Chad Godwin, PE
 Chad@godwineng.com



 1060 East Industrial Dr, Suite A Orange City, FL 32763 954-295-8190	
Date:	7.19.19
Drawn by:	TP
Checked by:	.
Rev #: 00	
Rev Date:	
Page:	S-1A

Silfab
SOLAR

SLA-M 310 Wp



60 Cell Monocrystalline PV Module

INDUSTRY LEADING WARRANTY

All our products include an industry leading 25-year product workmanship and 30-year performance warranty.

35+ YEARS OF SOLAR INNOVATION

Leveraging over 35+ years of worldwide experience in the solar industry, Silfab is dedicated to superior manufacturing processes and innovations such as Bifacial and Back Contact technologies, to ensure our partners have the latest in solar innovation.

NORTH AMERICAN QUALITY

Silfab is the largest and most automated solar manufacturer in North America. Utilizing premium quality materials and strict quality control management to deliver the highest efficiency, premium quality PV modules 100% made in North America.



CHUBB
*Chubb provides error and omission insurance to Silfab Solar Inc.

BAA / ARRA COMPLIANT

Silfab panels are designed and manufactured to meet Buy American Act Compliance. The US State Department, US Military and FAA have all entrusted Silfab panels in their solar installations.

LIGHT AND DURABLE

Engineered to accommodate low load bearing structures up to 5400Pa. The light-weight frame is exclusively designed for wide-ranging racking compatibility and durability.

LOWEST DEFECT RATE

Total automation ensures strict quality controls during the entire manufacturing process at our ISO certified facilities. 48.18 ppm as per December 2018.

DOMESTIC PRODUCTION

Silfab is 100% North American which means our customer service is direct, efficient and local. Your solar panels can be delivered anywhere in the Continental USA within days.

AESTHETICALLY PLEASING

All black sleek design doesn't compromise on quality.

PID RESISTANT

PID Resistant due to advanced cell technology and material selection. In accordance to IEC 62804-1

Electrical Specifications		SILFAB SLA Monocrystalline	
Test Conditions		STC	NOCT
Module Power (Pmax)	Wp	310	234
Maximum power voltage (Vpmax)	V	33.05	29.7
Maximum power current (Ipmax)	A	9.38	7.88
Open circuit voltage (Voc)	V	40.25	37.2
Short circuit current (Isc)	A	9.93	8.14
Module efficiency	%	19.0	17.9
Maximum system voltage (VDC)	V		1000
Series fuse rating	A		20
Power Tolerance	Wp		-0/+5

Measurement conditions: STC 1000 W/m² • AM 1.5 • Temperature 25 °C • NOCT 800 W/m² • AM 1.5 • Measurement uncertainty ≤ 3%
• Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by -0/+5W.

Temperature Ratings		SILFAB SLA Monocrystalline	
Temperature Coefficient Isc	%/K		0.03
Temperature Coefficient Voc	%/K		-0.30
Temperature Coefficient Pmax	%/K		-0.38
NOCT (± 2°C)	°C		45
Operating temperature	°C		-40/+85

Mechanical Properties and Components		SILFAB SLA Monocrystalline	
Module weight (± 1 kg)	kg		19
Dimensions (H x L x D; ± 1mm)	mm		1650 x 990 x 38
Maximum surface load (wind/snow)*	N/m ²		2400 Pa upward / 5400 Pa downward
Hail impact resistance			Ø 25 mm at 83 km/h
Cells			60 - Si monocrystalline - 4 or 5 busbar - 156.75 x 156.75 mm
Glass			3.2 mm high transmittance, tempered, antireflective coating
Backsheet			Multilayer polyester-based
Frame			Anodized Al (Black)
Bypass diodes			3 diodes-45V/12A, IP67/IP68
Cables and connectors (See installation manual)			1200 mm Ø 5.7 mm (4 mm ²), MC4 compatible

Warranties		SILFAB SLA Monocrystalline	
Module product workmanship warranty			25 years**
			30 years
			≥ 97% end of 1 st year
			≥ 90% end of 12 th year
			≥ 82% end of 25 th year
			≥ 80% end of 30 th year

Certifications		SILFAB SLA Monocrystalline	
Product			ULC ORD C1703, UL 1703, IEC 61215, IEC 61730-1 and IEC 61730-2 Certified. FSEC and CEC listed. IEC 62716 Ammonia Corrosion, IEC 61701:2011 Salt Mist Corrosion Certified
Factory			UL Fire Rating: Type 2 (Type 1 on request) ISO9001:2015

*Please refer to the Safety and Installation Manual for mounting specifications.
**12 year extendable to 25 years subject to registration and conditions outlined under "Warranty" at www.silfabsolar.com.

▲ Warning: Read the installation and User Manual before handling, installing and operating modules.

Third-party generated pan files from Fraunhofer-Institute for Solar Energy Systems ISE are available for download at: www.silfabsolar.com/downloads

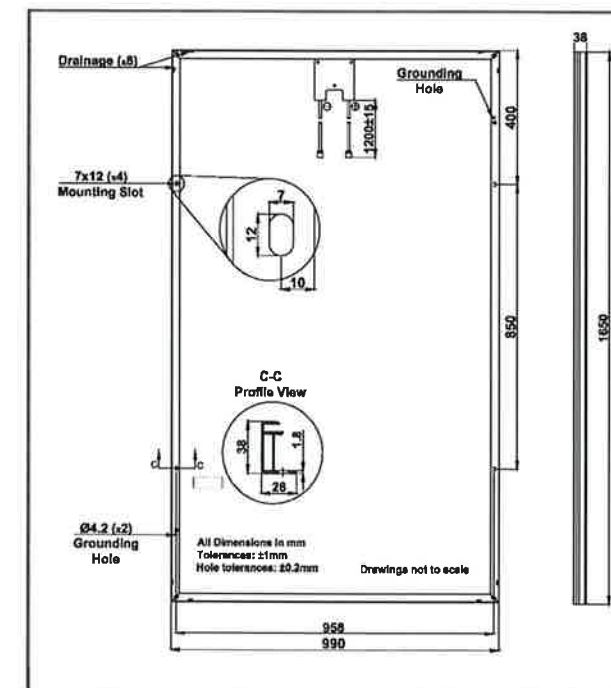


■ Modules Per Pallet: 26
■ Pallets Per Truck: 36
■ Modules Per Truck: 936



Silfab Solar Inc.
240 Courtney Park Drive East
Mississauga ON L5T 2Y3 Canada
Tel +1 905-255-2501 | Fax +1 905-696-0267
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Silfab Solar Inc.
800 Cornwall Ave
Bellingham WA 98225 USA
Tel +1 360-569-4733



Enphase IQ 7 and IQ 7+ Microinverters

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

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

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

Easy to Install

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

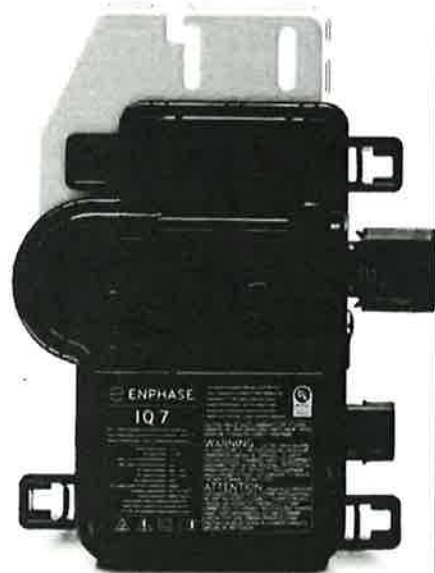
Productive and Reliable

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

Smart Grid Ready

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

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



To learn more about Enphase offerings, visit enphase.com



Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US / IQ7-60-B-US		IQ7PLUS-72-2-US / IQ7PLUS-72-B-US	
Commonly used module pairings ¹	235 W - 350 W +		235 W - 440 W +	
Module compatibility	60-cell PV modules only		60-cell and 72-cell PV modules	
Maximum input DC voltage	48 V		60 V	
Peak power tracking voltage	27 V - 37 V		27 V - 45 V	
Operating range	16 V - 48 V		16 V - 60 V	
Min/Max start voltage	22 V / 48 V		22 V / 60 V	
Max DC short circuit current (module Isc)	15 A		15 A	
Overvoltage class DC port	II		II	
DC port backfeed current	0 A		0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)	IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range ²	240 V /	208 V /	240 V /	208 V /
	211-264 V	183-229 V	211-264 V	183-229 V
Maximum continuous output current	1.0 A (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit ³	16 (240 VAC)	13 (208 VAC)	13 (240 VAC)	11 (208 VAC)
Overvoltage class AC port	III		III	
AC port backfeed current	0 A		0 A	
Power factor setting	1.0		1.0	
Power factor (adjustable)	0.7 leading ... 0.7 lagging		0.7 leading ... 0.7 lagging	
EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak CEC efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)			
Connector type (IQ7-60-B-US & IQ7PLUS-72-B-US)	Friends PV2 (MC4 intermateable). Adaptors for modules with MC4 or UTX connectors: - PV2 to MC4: order ECA-S20-S22 - PV2 to UTX: order ECA-S20-S25			
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)			
Weight	1.08 kg (2.38 lbs)			
Cooling	Natural convection - No fans			
Approved for wet locations	Yes			
Pollution degree	PD3			
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure			
Environmental category / UV exposure rating	NEMA Type 6 / outdoor			
FEATURES				
Communication	Power Line Communication (PLC)			
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy			
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.			
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE 1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.			



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

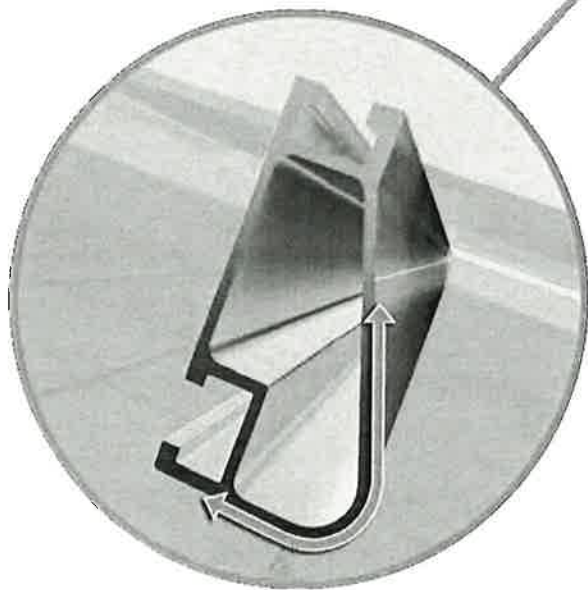
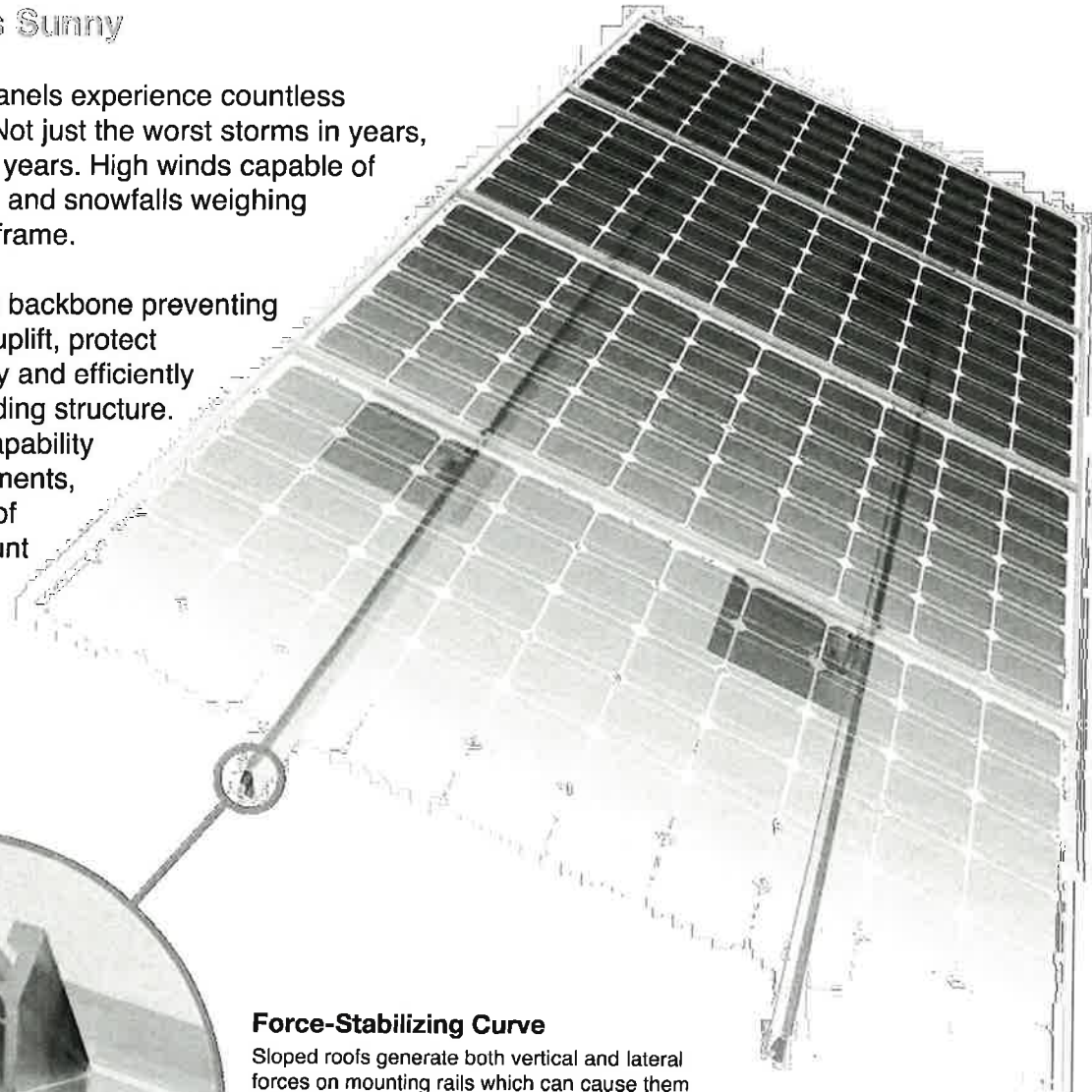
To learn more about Enphase offerings, visit enphase.com



Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



XR Rail Family

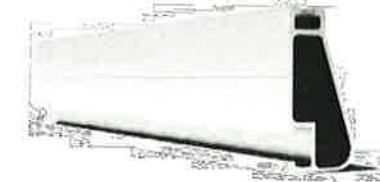
The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.



XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves 6 foot spans, while remaining light and economical.

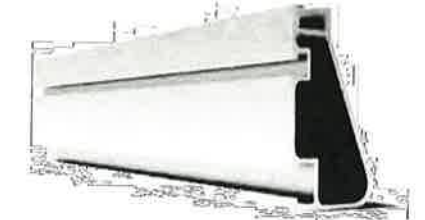
- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available



XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 8 feet.

- 8' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available



XR1000

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

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

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





RICK SCOTT, GOVERNOR

JONATHAN ZACHEM, 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

LORENZ, STEVEN MICHAEL

ALL AMERICAN SOLAR LEC
1060 E INDUSTRIAL DR STE A
ORANGE CITY FL 32763

LICENSE NUMBER: CVC56961

EXPIRATION DATE: AUGUST 31, 2020

Always verify licenses online at MyFloridaLicense.com



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JIMMY PATRONIS
CHIEF FINANCIAL OFFICER

STATE OF FLORIDA
DEPARTMENT OF FINANCIAL SERVICES
DIVISION OF WORKERS' COMPENSATION

**** CERTIFICATE OF ELECTION TO BE EXEMPT FROM FLORIDA WORKERS' COMPENSATION LAW ****

CONSTRUCTION INDUSTRY EXEMPTION

This certifies that the individual listed below has elected to be exempt from Florida Workers' Compensation law.

EFFECTIVE DATE: 7/12/2019

EXPIRATION DATE: 7/11/2021

PERSON: STEVEN M LORENZ

EMAIL: STEVELORENZ@ALLAMERICANSOLARLLC.COM

FEIN: 473984047

BUSINESS NAME AND ADDRESS:

ALL AMERICAN SOLAR LLC

1060 EAST INDUSTRIAL DR SUITE A
ORANGE CITY, FL 32763

SCOPE OF BUSINESS OR TRADE:

Plumbing NOC and Drivers Roofing - All Kinds and
Drivers

IMPORTANT: Pursuant to Chapter 440.05(14), F.S., an officer of a corporation who elects exemption from this chapter by filing a certificate of election under this section may not recover benefits or compensation under this chapter. Pursuant to Chapter 440.05(12), F.S., Certificates of election to be exempt... apply only within the scope of the business or trade listed on the notice of election to be exempt. Pursuant to Chapter 440.05(13), F.S., Notices of election to be exempt and certificates of election to be exempt shall be subject to revocation if, at any time after the filing of the notice or the issuance of the certificate, the person named on the notice or certificate no longer meets the requirements of this section for issuance of a certificate. The department shall revoke a certificate at any time for failure of the person named on the certificate to meet the requirements of this section.

All American Solar, LLC
1060 Industrial Dr Unit A & B
Orange City FL 32763

CITY OF ORANGE CITY LOCAL BUSINESS TAX RECEIPT

LICENSE # LIC-9-15-7934

License Type: Contractor-sub

Amt. Paid: \$ 171.25

Stipulations: *** Sign Permits Required for all wall and monument
signage (including face changes)

Date Issued: 07/17/2018

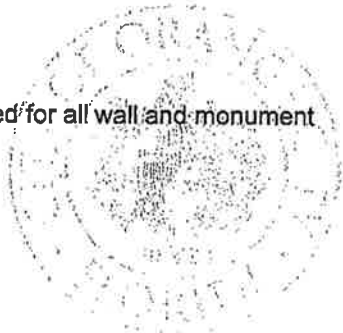
Expires: 09/30/2019

Annual Inspections

\$50.00

Contractor Sub - 0250 - FYa

\$121.25



All American Solar, LLC
1060 Industrial Dr Unit A & B
Orange City FL 32763

CITY OF ORANGE CITY

205 E. Graves Avenue

Orange City, FL 32763