

**Architectural Review Board Application  
Full Board Review**

Application Date: 4/15/21

**Project Address:** 430 E Intendencia Street, Pensacola, FL 32502

**Applicant:** Matthew Lopez

**Applicant's Address:** 430 E Intendencia Street, Pensacola, FL 32502

**Email:** mdlopez77@hotmail.com **Phone:** (850) 255-6969

**Property Owner:** Matthew Lopez

**District:** ☒ PHD ☐ NHPD ☐ OEHPD ☐ PHBD ☐ GCD

(If different from Applicant)

Application is hereby made for the project as described herein:

- ☒ Residential Homestead – \$50.00 hearing fee
- ☐ Commercial/Other Residential – \$250.00 hearing fee

*\* An application shall be scheduled to be heard once all required materials have been submitted and it is deemed complete by the Secretary to the Board. You will need to include ten (10) copies of the required information. Please see pages 3 – 4 of this application for further instruction and information.*

**Project specifics/description:**

**Installation of 15.96 kW PV solar system on roof.**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

*I, the undersigned applicant, understand that payment of these fees does not entitle me to approval and that no refund of these fees will be made. I have reviewed the applicable zoning requirements and understand that I must be present on the date of the Architectural Review Board meeting.*

DocuSigned by:  
Matthew Lopez  
A8648F0CD4E64D1...

Applicant Signature

4/15/21

Date

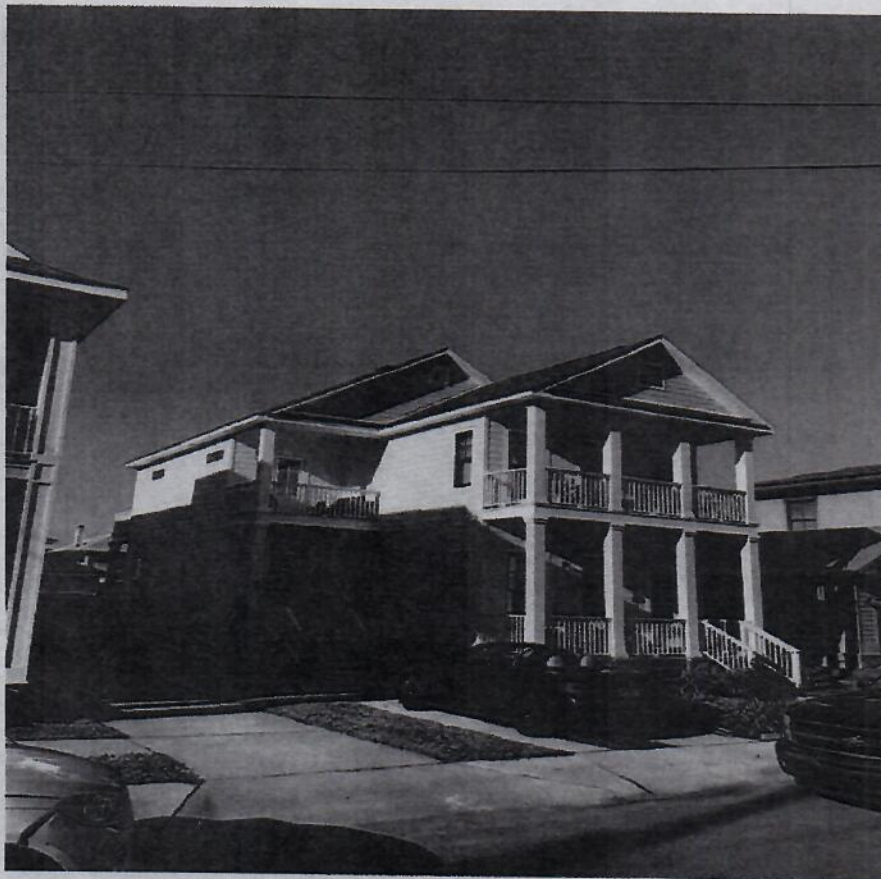
**Planning Services**  
222 W. Main Street \* Pensacola, Florida 32502  
(850) 435-1670  
Mail to: P.O. Box 12910 \* Pensacola, Florida 32521



430 E Intendencia St, Pensacola, FL 32502











POWER



PROJECT DESCRIPTION:

42x380 HANWHA: Q.PEAK DUO BLK ML- G9+ (380W) MODULES  
ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES  
SYSTEM SIZE: 15.960 kW DC STC  
ARRAY AREA #1: 489.84 SQ FT.  
ARRAY AREA #2: 285.74 SQ FT.  
ARRAY AREA #3: 81.64 SQ FT.

EQUIPMENT SUMMARY

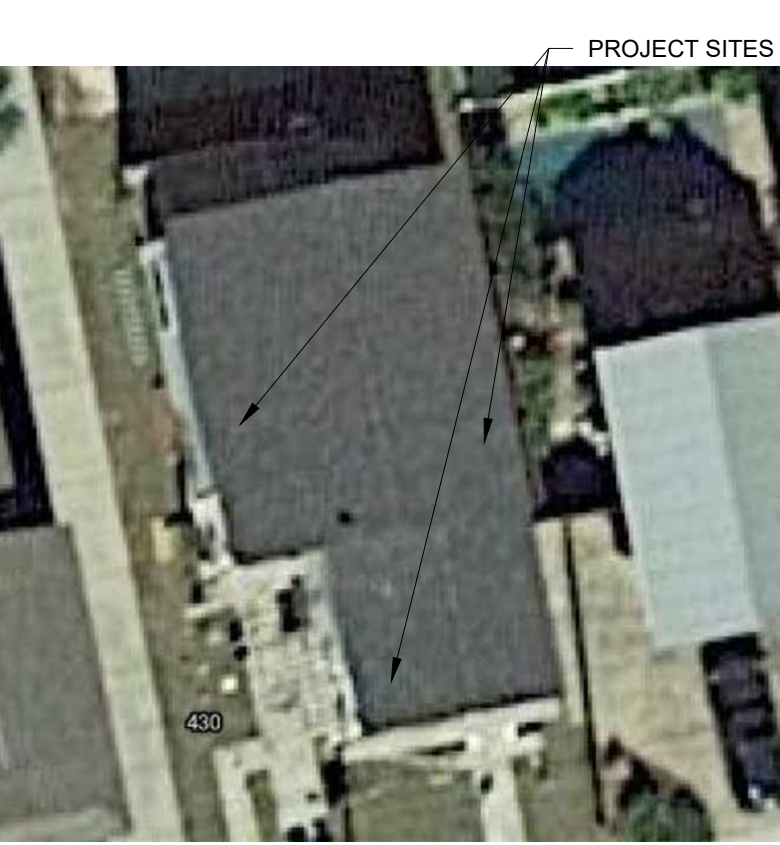
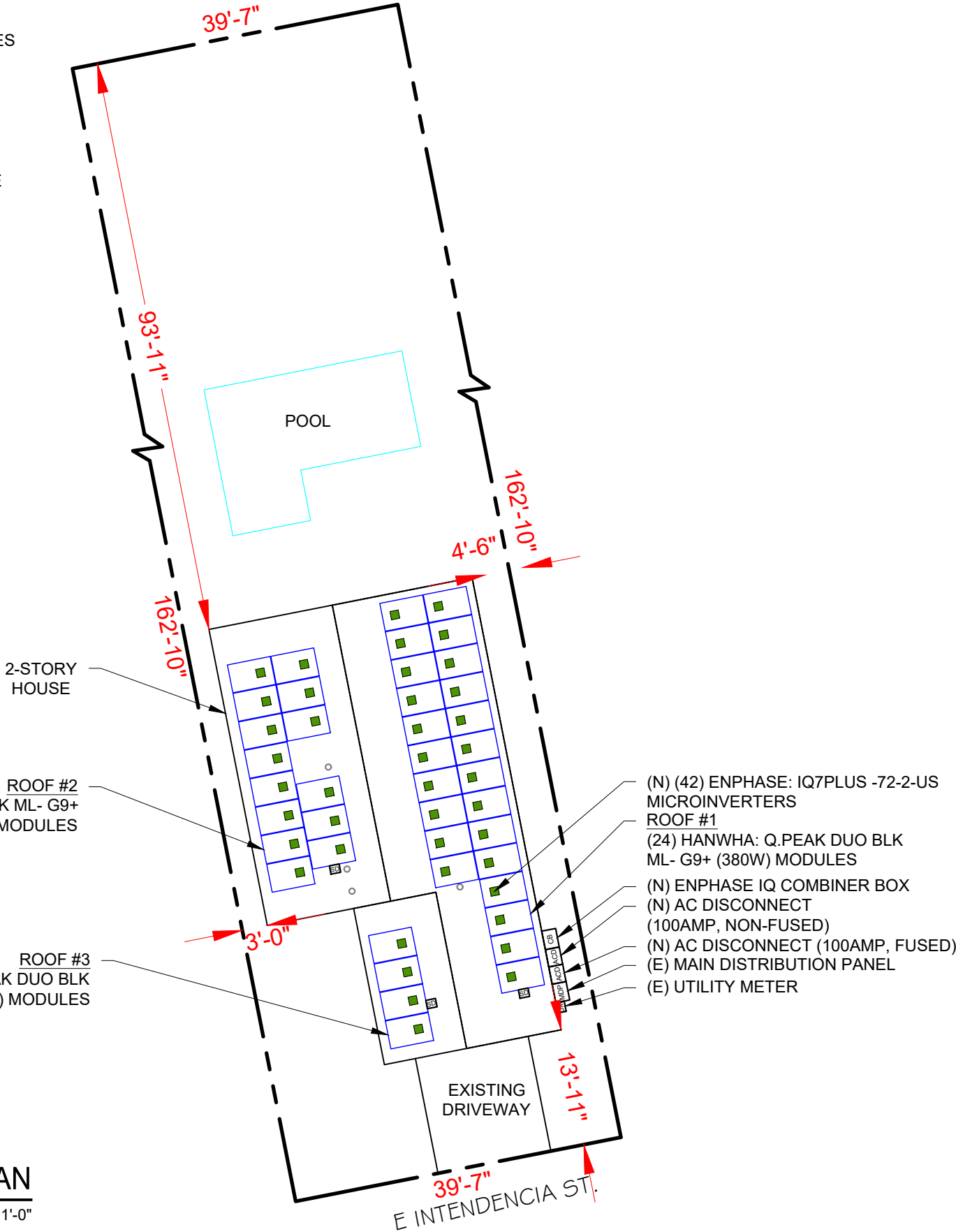
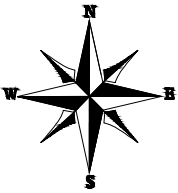
42 HANWHA: Q.PEAK DUO BLK ML- G9+ (380W) MODULES  
42 ENPHASE: IQ7PLUS -72-2-US MICROINVERTERS

SHEET INDEX

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S-02.1 STRUCTURAL ATTACHMENT CALCULATION  
E-01 ELECTRICAL LINE DIAGRAM  
E-02 WIRING CALCULATIONS  
E-03 SYSTEM LABELING

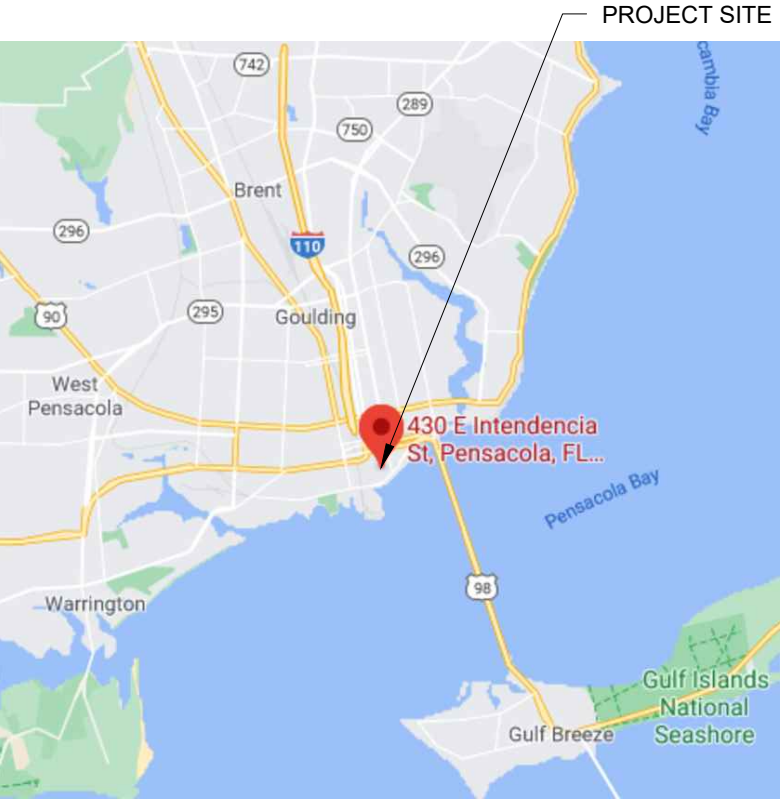
DS-01 MODULE DATA SHEET  
DS-02 INVERTER DATA SHEET  
DS-03 COMBINER BOX DATA SHEET  
DS-04 RAIL DATA SHEET  
DS-05 ATTACHMENT DATA SHEET  
DS-06 DYNOBOND DATA SHEET

GOVERNING CODES :  
FLORIDA RESIDENTIAL CODE, 7TH EDITION 2020 (FRC)  
FLORIDA PLUMBING CODE, 7TH EDITION 2020 (FPC)  
FLORIDA BUILDING CODE, 7TH EDITION 2020 EDITION (FBC)  
FLORIDA MECHANICAL CODE, 7TH EDITION 2020 (FMC)  
NEC 2017 CODE BOOK  
ASCE 7-16



2 HOUSE PHOTO

A-00 SCALE: NTS



3 VICINITY MAP

A-00 SCALE: NTS



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DESCRIPTION	DATE	REV

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Ermocrates E Castillo  
Date:  
2021.04.09  
10:10:02

PROJECT NAME

LOPEZ RESIDENCE

430 E INTENDENCIA ST,  
PENSACOLA, FL 32502

SHEET NAME

PLOT PLAN &  
VICINITY MAP

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

A-00

1 PLOT PLAN WITH ROOF PLAN

A-00 SCALE: 1/16" = 1'-0"



MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 42 MODULES  
MODULE TYPE = HANWHA: Q.PEAK DUO BLK ML- G9+ (380W) MODULES  
MODULE WEIGHT = 42.99 LBS / 19.5 KG.  
MODULE DIMENSIONS = 72.4" x 40.6" = 20.41 SF  
UNIT WEIGHT OF ARRAY = 2.11 PSF

ROOF	ROOF TYPE	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)	TILT	AZIMUTH	TRUSS SIZE	TRUSS SPACING
#1	ASPHALT SHINGLE	489.84	830.50	58.98	30.3°	79°	2"X4"	24" O.C.
#2	ASPHALT SHINGLE	285.74	540.00	52.91	30.3°	259°	2"X4"	24" O.C.
#3	ASPHALT SHINGLE	81.64	190.00	42.97	30.3°	259°	2"X4"	24" O.C.

GENERAL INSTALLATION PLAN NOTES:

1) ROOF ATTACHMENTS TO SYP TRUSSES SHALL BE INSTALLED AS SHOWN IN SHEET S-02 AND AS FOLLOWS FOR EACH WIND ZONE:

WIND ZONES	Non-Exposed Modules		Edge/Exposed Modules	
	Span	Cantilever	Span	Cantilever
Zone 1	4'-0"	1'-4"	2'-0"	0'-8"
Zone 1'	X	X	X	X
Zone 2e	4'-0"	1'-4"	2'-0"	0'-8"
Zone 2n	2'-0"	0'-8"	2'-0"	0'-8"
Zone 2r	4'-0"	1'-4"	2'-0"	0'-8"
Zone 3e	2'-0"	0'-8"	2'-0"	0'-8"
Zone 3r	4'-0"	1'-4"	2'-0"	0'-8"

SEE SHEET S-02.1 FOR SUPPORTING CALCULATIONS.

2) EXISTING RESIDENTIAL BUILDING IS AN ASPHALT SHINGLE ROOF WITH MEAN ROOF HEIGHT 25 FT AND SYP 2"X4" WOOD ROOF TRUSSES SPACED 24" O.C. EXISTING ROOF SLOPE FOR SOLAR SYSTEM RETROFIT IS 30.3 DEGREES. CONTRACTOR TO FIELD VERIFY AND SHALL REPORT TO THE ENGINEER IF ANY DISCREPANCIES EXIST BETWEEN PLANS AND IN FIELD CONDITIONS.

\* I CERTIFY THAT THE INSTALLATION OF THE MODULES IS IN COMPLIANCE WITH FBC: RESIDENTIAL CHAPTER 3.BUILDING STRUCTURE WILL SAFELY ACCOMMODATE LATERAL AND UPLIFT WIND LOADS, AND EQUIPMENT DEAD LOADS. \*

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REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER



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E Castillo  
Date:  
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PROJECT NAME

LOPEZ RESIDENCE  
430 E INTENDENCIA ST.,  
PENSACOLA, FL 32502

SHEET NAME

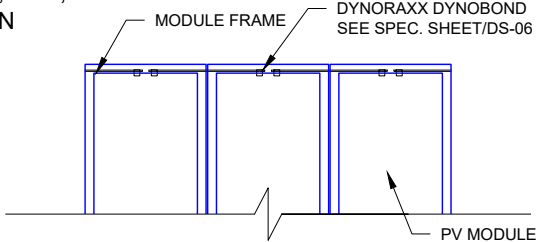
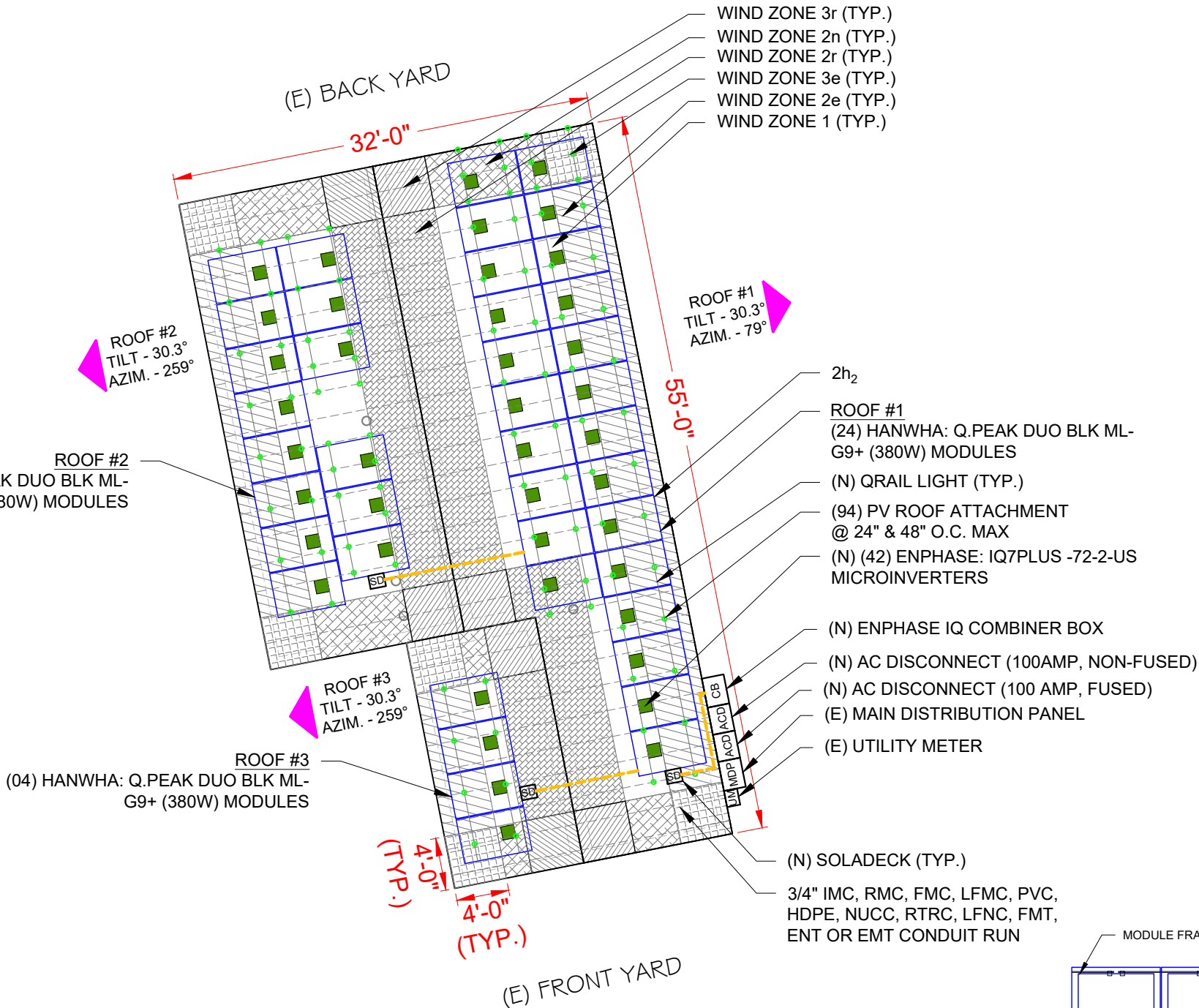
ROOF PLAN &  
MODULES

SHEET SIZE

ANSI B  
11" X 17"

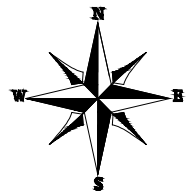
SHEET NUMBER

S-01



LEGEND

- UM - UTILITY METER
- SD - SOLADECK
- - MICROINVERTER
- ACD - AC DISCONNECT
- MDP - MAIN DISTRIBUTION PANEL
- □ - VENT, ATTIC FAN (ROOF OBSTRUCTION)
- - PV ROOF ATTACHMENT
- - - - TRUSSES
- - - - CONDUIT
- CB - COMBINER BOX



1 ROOF PLAN & MODULES

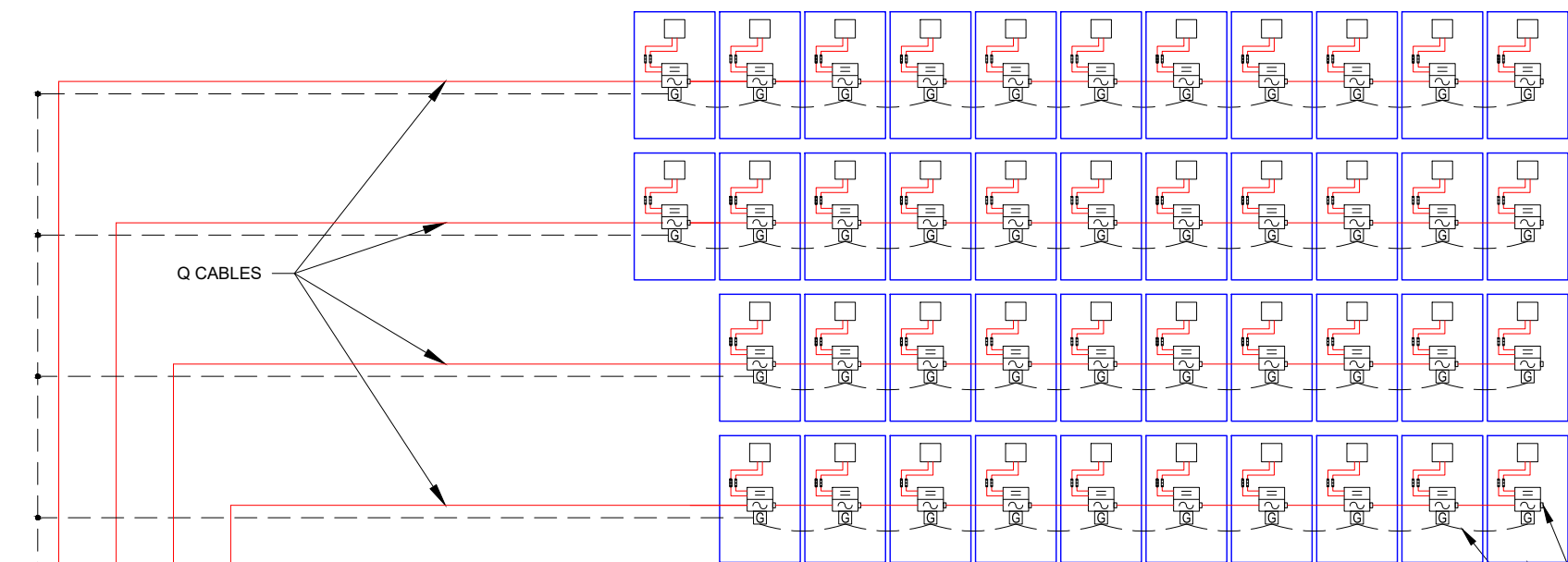
S-01

SCALE: 3/32" = 1'-0"





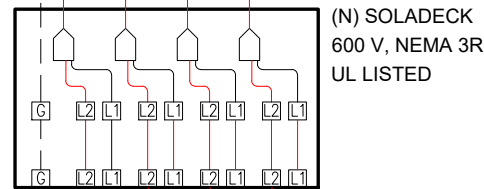




SOLAR ARRAY (15.960 KW-DC STC)  
(42) HANWHA: Q.PEAK DUO BLK ML- G9+ (380W) MODULES  
(02) BRANCHES OF 11 MODULES  
(02) BRANCHES OF 10 MODULES

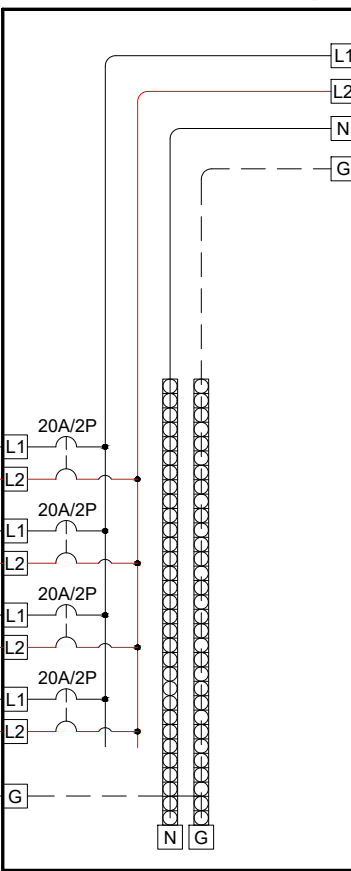
- NOTE:**
- SUBJECT PV SYSTEMS HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE NEC 2017, AND THOSE SET FORTH BY THE FLORIDA SOLAR ENERGY CENTER CERTIFICATION, INCLUDING MAXIMUM NUMBER OF MODULE STRINGS, MAXIMUM NUMBER OF MODULES PER STRING, MAXIMUM OUTPUT, MODULE MANUFACTURER AND MODEL NUMBER, INVERTER MANUFACTURER AND MODEL NUMBER, AS APPLICABLE
  - PER NEC 705.12(B)(2)(3)(c) THE SUM OF THE AMPERE RATINGS OF ALL OVERCURRENT DEVICES ON PANELBOARDS, BOTH LOAD AND SUPPLY DEVICES SHALL NOT EXCEED THE AMPACITY OF THE BUSBAR
  - EXCEPTION No. 3: NEC 230.90(A) THE SUM OF THE RATINGS OF CIRCUIT BREAKERS OR FUSES SHALL BE PERMITTED TO EXCEED THE AMPACITY OF THE SERVICE CONDUCTORS, PROVIDED THE CALCULATED LOAD DOES NOT EXCEED THE AMPACITY OF THE SERVICE CONDUCTORS. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PERFORM LOAD CALCULATIONS AND ENSURE THE REQUIREMENTS OF NEC 705.12 AND/OR 230.90(A) EXCEPTION No. 3 ARE MET.
  - PROVIDE TAP BOX IN COMPLIANCE WITH NEC 312.8 IF PANEL GUTTER SPACE IS INADEQUATE.

ENPHASE: IQ7PLUS -72-2-US  
MICROINVERTERS  
PV MODULES  
DYNOBOND JUMPER

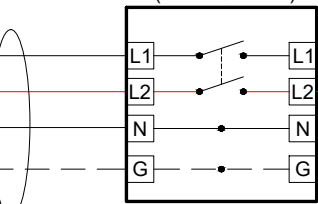


(N) SOLADECK  
600 V, NEMA 3R  
UL LISTED  
  
(4) 10/2 ROMEX RUN IN ATTIC  
OR  
(4) #10 AWG THWN-2 - RED  
(4) #10 AWG THWN-2 - BLACK  
(1) #10 AWG THWN-2 GND  
IN 3/4" IMC, RMC, FMC, LFMC,  
PVC, HDPE, NUCC, RTRC,  
LFNC, EMT, FMT OR ENT  
CONDUIT RUN

(N) 125A ENPHASE IQ COMBINER 3  
(X-IQ-AM1-240-3) [WITH UPTO (4)  
2-POLE BREAKERS AND ENVOY  
COMMUNICATION GATEWAY]

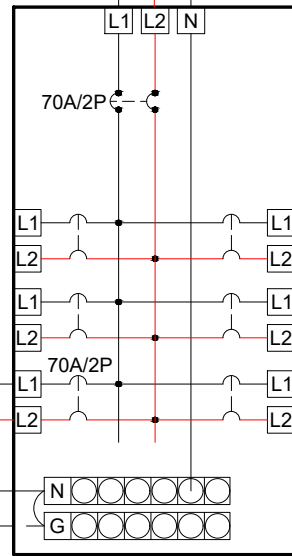


(N) AC DISCONNECT:  
240V, 100AMP RATED,  
NEMA 3R, UL LISTED,  
LOCKABLE & NON FUSIBLE  
(IF REQUIRED)



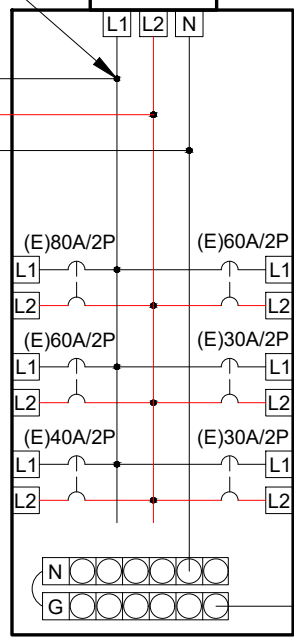
(3) #4 AWG THWN-2  
(1) #8 AWG THWN-2 GND  
IN 1-1/4" IMC, RMC, FMC, LFMC,  
PVC, HDPE, NUCC, RTRC,  
LFNC, EMT, FMT OR ENT  
CONDUIT RUN

LINE TAP USING INSULATION  
PIERCING PER NEC 705.12(A)



TO UTILITY GRID

BI-DIRECTIONAL  
UTILITY METER  
1-PHASE, 240V



EXISTING GROUNDING  
ELECTRODE SYSTEM

(3) #4 AWG THWN-2  
IN 1" IMC, RMC, FMC,  
LFMC, PVC, HDPE,  
NUCC, RTRC, LFNC,  
EMT, FMT OR ENT  
CONDUIT RUN

# 1 | ELECTRICAL LINE DIAGRAM

E-01

SCALE: NTS

## REVISIONS

DESCRIPTION	DATE	REV

## PROJECT INSTALLER



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Ermocrates  
E Castillo  
Date:  
2021.04.09  
10:10:05

## PROJECT NAME

LOPEZ RESIDENCE

430 E INTENDENCIA ST,  
PENSACOLA, FL 32502

## SHEET NAME

ELECTRICAL  
LINE DIAGRAM


## SHEET SIZE

ANSI B  
11" X 17"

## SHEET NUMBER

E-01





**WARNING**

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

LABEL LOCATION:  
AC DISCONNECT, POINT OF INTERCONNECTION  
(PER CODE: NEC 690.13(B))



**WARNING** DUAL POWER SOURCE  
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:  
POINT OF INTERCONNECTION  
(PER CODE: NEC 705.12(B)(2)(3)(b))

**SOLAR PV SYSTEM IS  
EQUIPPED WITH  
RAPID SHUTDOWN**

LABEL LOCATION:  
AC DISCONNECT  
(PER CODE: NEC690.56(C)(3))

- ADHESIVE FASTENED SIGNS:
- THE LABEL SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED.
  - WHERE REQUIRED ELSEWHERE IN THIS CODE, ALL FIELD APPLIED LABELS, WARNINGS, AND MARKINGS SHOULD COMPLY WITH ANSI Z535.4 [NEC 110.21(B) FIELD MARKING].
  - ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [IFC 605.11.1.3]

**PHOTOVOLTAIC SYSTEM AC DISCONNECT**  
RATED AC OPERATING CURRENT 50.82 AMPS  
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:  
AC DISCONNECT, POINT OF INTERCONNECTION  
(PER CODE: NEC690.54)

**WARNING**  
INVERTER OUTPUT CONNECTION DO NOT  
RELOCATE THIS OVERCURRENT DEVICE

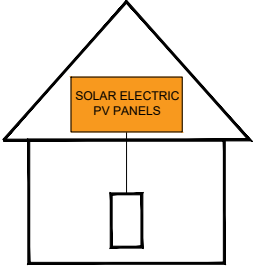
LABEL LOCATION:  
POINT OF INTERCONNECTION  
(PER CODE: NEC 705.12(B)(2)(3)(b))

DATA PER PANEL			
NOMINAL OPERATING AC VOLTAGE -	240	V	
NOMINAL OPERATING AC FREQUENCY-	60	Hz	
MAXIMUM AC POWER-	290	VA	
MAXIMUM AC CURRENT-	1.21	A	
MAXIMUM OVERCURRENT DEVICE RATING FOR AC MODULE PROTECTION PER CIRCUIT-	20	A	

LABEL LOCATION:  
COMBINER BOX  
(PER CODE: NEC690.52)

**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



LABEL LOCATION:  
AC DISCONNECT, POINT OF INTERCONNECTION  
(PER CODE: NEC 690.56(C)(1)(a), IFC 605.11.3.1(1))


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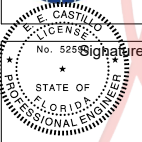
**CASTILLO ENGINEERING  
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REVISIONS		
DESCRIPTION	DATE	REV



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PROJECT NAME

LOPEZ RESIDENCE

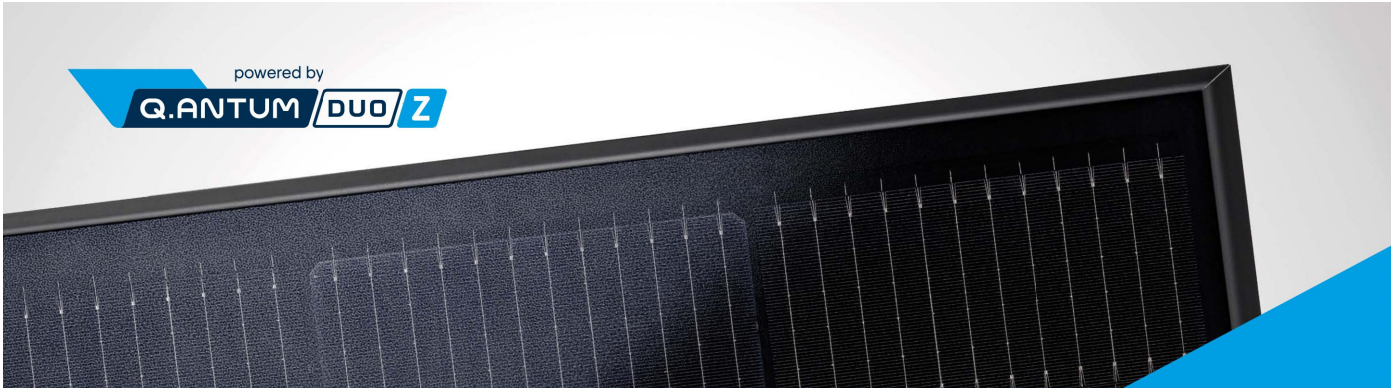
430 E INTENDENCIA ST,  
PENSACOLA, FL 32502

SHEET NAME  
SYSTEM  
LABELING

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
E-03





# Q.PEAK DUO BLK ML-G9+

365-385

ENDURING HIGH PERFORMANCE



### BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.6%.



### INNOVATIVE ALL-WEATHER TECHNOLOGY

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



### ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology<sup>1</sup>, Hot-Spot Protect and Traceable Quality Tra.Q™.



### EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (6000 Pa) and wind loads (4000 Pa).



### A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty<sup>2</sup>.



### STATE OF THE ART MODULE TECHNOLOGY

Q.ANTUM DUO combines cutting edge cell separation and innovative 12-busbar design with Q.ANTUM Technology.

<sup>1</sup> APT test conditions according to IEC/TS 62804-1:2015, method B (-1500 V, 168 h)

<sup>2</sup> See data sheet on rear for further information.

### THE IDEAL SOLUTION FOR:



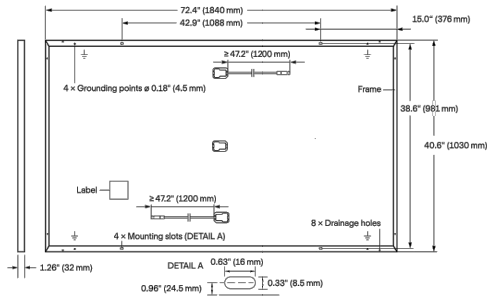
Rooftop arrays on residential buildings

Engineered in Germany



### MECHANICAL SPECIFICATION

Format	72.4 in × 40.6 in × 1.26 in (including frame) (1840 mm × 1030 mm × 32 mm)
Weight	43.0 lbs (19.5 kg)
Front Cover	0.11 in (2.8 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm <sup>2</sup> Solar cable; (+) ≥ 47.2 in (1200 mm), (-) ≥ 47.2 in (1200 mm)
Connector	Stäubli MC4; IP68

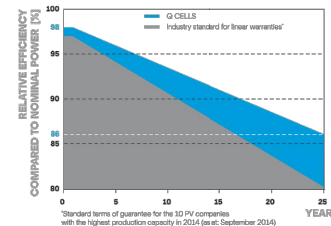


### ELECTRICAL CHARACTERISTICS

POWER CLASS		365	370	375	380	385
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5W / -0W)						
Minimum	Power at MPP <sup>1</sup>	P <sub>MPP</sub> [W]	365	370	375	380
	Short Circuit Current <sup>1</sup>	I <sub>SC</sub> [A]	10.40	10.44	10.47	10.50
	Open Circuit Voltage <sup>1</sup>	V <sub>OC</sub> [V]	44.93	44.97	45.01	45.04
	Current at MPP	I <sub>MPP</sub> [A]	9.87	9.92	9.98	10.04
	Voltage at MPP	V <sub>MPP</sub> [V]	36.99	37.28	37.57	37.85
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT <sup>2</sup>						
Minimum	Power at MPP	P <sub>MPP</sub> [W]	273.3	277.1	280.8	284.6
	Short Circuit Current	I <sub>SC</sub> [A]	8.38	8.41	8.43	8.46
	Open Circuit Voltage	V <sub>OC</sub> [V]	42.37	42.41	42.44	42.48
	Current at MPP	I <sub>MPP</sub> [A]	7.76	7.81	7.86	7.91
	Voltage at MPP	V <sub>MPP</sub> [V]	35.23	35.48	35.72	35.96

<sup>1</sup> Measurement tolerances P<sub>MPP</sub> ± 3%; I<sub>SC</sub>, V<sub>OC</sub> ± 5% at STC; 1000 W/m<sup>2</sup>, 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • \*800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5

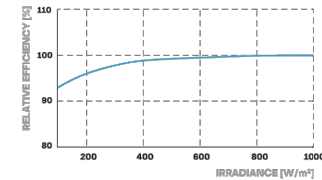
### Q CELLS PERFORMANCE WARRANTY



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/m<sup>2</sup>)

### TEMPERATURE COEFFICIENTS

Temperature Coefficient of I <sub>SC</sub>	α	[%/K]	+0.04	Temperature Coefficient of V <sub>OC</sub>	β	[%/K]	-0.27
Temperature Coefficient of P <sub>MPP</sub>	γ	[%/K]	-0.35	Nominal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3 °C)

### PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V <sub>sys</sub>	[V]	1000 (IEC) / 1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull <sup>3</sup>	[lbs / ft <sup>2</sup> ]	84 (4000 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull <sup>3</sup>	[lbs / ft <sup>2</sup> ]	125 (6000 Pa) / 84 (4000 Pa)		

<sup>3</sup> See Installation Manual

### QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells)



Horizontal packaging



74.4 in  
1890 mm



42.5 in  
1080 mm



47.6 in  
1208 mm



1458 lbs  
661 kg



28  
pallets



24  
pallets



32  
modules

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

Hanwha Q CELLS America Inc.

400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

Specifications subject to technical changes © Q CELLS Q.PEAK DUO BLK ML-G9+\_365-385\_2020-08\_Rev03\_MX



DESIGNED TO PERMIT®

CASTILLO ENGINEERING SERVICES, LLC

COA # 28345  
620 N. WYMORE ROAD,  
SUITE 250,  
MAITLAND, FL 32751  
TEL: (407) 289-2575  
ERMOCRATES E. CASTILLO - FL PE 52590

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CASTILLO ENGINEERING  
SERVICES, LLC

### REVISIONS

DESCRIPTION	DATE	REV

### PROJECT INSTALLER



Digitally  
Signed by:  
Ermocrates  
E Castillo  
Date:  
2021.04.09  
10:10:07

### PROJECT NAME

LOPEZ RESIDENCE

430 E INTENDENCIA ST,  
PENSACOLA, FL 32502

### SHEET NAME

MODULE  
DATA SHEET

### SHEET SIZE

ANSI B  
11" X 17"

### SHEET NUMBER

DS-01



# 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 seamlessly with the Enphase IQ Envoy™, Enphase Q Aggregator™, 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](https://enphase.com)



## Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US		IQ7PLUS-72-2-US	
Commonly used module pairings <sup>1</sup>	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 <sup>2</sup>	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A	1.15 A	1.21 A	1.39 A
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 <sup>3</sup>	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	IQ 7 Microinverter			
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)			
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)			
Weight	1.08 kg (2.38 lbs)			
Cooling	Natural convection - No fans			
Approved for wet locations	Yes			
Pollution degree	PD3			
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure			
Environmental category / UV exposure rating	NEMA Type 6 / outdoor			
FEATURES				
Communication	Power Line Communication (PLC)			
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.			
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.			
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.			

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

To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)

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2018-02-08



## REVISIONS

DESCRIPTION	DATE	REV

## PROJECT INSTALLER



Digitally  
Signed by:  
Ermocrates  
E Castillo  
Date:  
2021.04.09  
10:10:07

## PROJECT NAME

LOPEZ RESIDENCE  
430 E INTENDENCIA ST,  
PENSACOLA, FL 32502

## SHEET NAME

INVERTER  
DATA SHEET

## SHEET SIZE

ANSI B  
11" X 17"

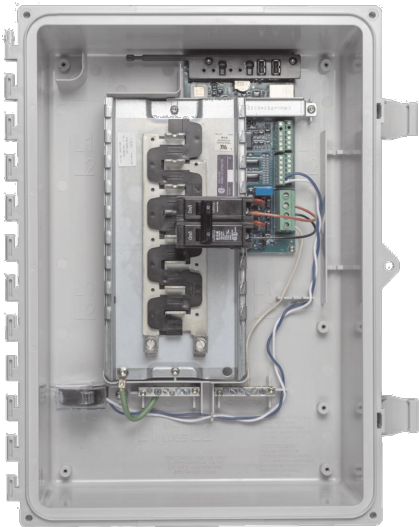
## SHEET NUMBER

DS-02



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



To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)



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](https://enphase.com)

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2018-09-13



REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER



Digitally  
Signed by:  
Ermocrates  
E Castillo  
Date:  
2021.04.09  
10:10:08

PROJECT NAME

LOPEZ RESIDENCE

430 E INTENDENCIA ST,  
PENSACOLA, FL 32502

SHEET NAME

COMBINER BOX  
DATA SHEET

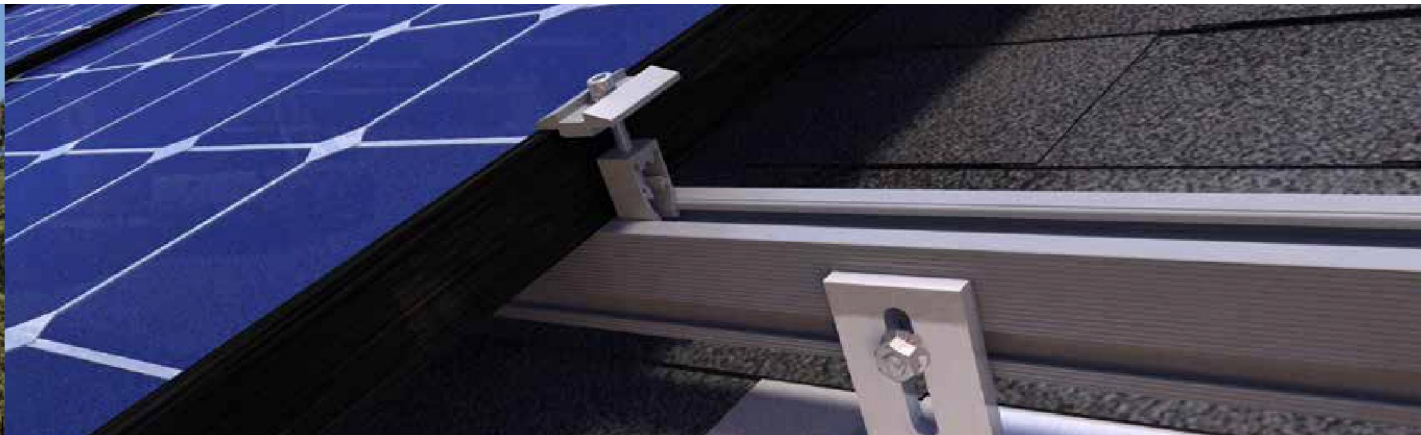
SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

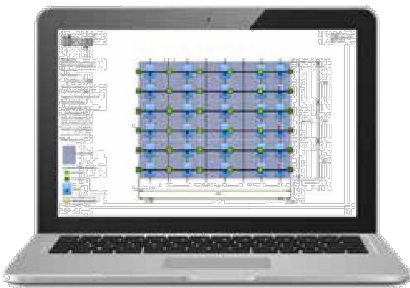
DS-03





# QRail™ — Fully Integrated Mounting and Racking System

The QRail Series is a strong and versatile solar array mounting system that provides unrivaled benefits to solar designers and installers. Combined with Quick Mount PV's industry-leading waterproof mounts, QRail offers a complete racking solution for mounting solar modules on any roof.



Easily design array configurations with the QDesign software application. Generate complete engineering reports and calculate a precise bill of materials for all the mounting, racking and accessories needed for a complete solar array.

## Comprehensive, One-Source Solution

QRail, together with Quick Mount PV's waterproof mounting products, provides the benefit of a single-sourced, seamlessly integrated rooftop installation that works with all roof types — composition/asphalt shingles, flat or curved tile, metal shingle, shake, slate and low slope roofs. The QRail system also works with any roof attachment system for maximum flexibility.

## Superior Strength and Versatility

QRail is engineered for optimal structural performance. The system is certified to UL 2703, fully code compliant and backed by a 25-year warranty. QRail is available in Light, Standard and Heavy versions to match all geographic locations. QRail is compatible with virtually all modules and works on a wide range of pitched roof surfaces. Modules can be mounted in portrait or landscape orientation in standard or shared-rail configurations.

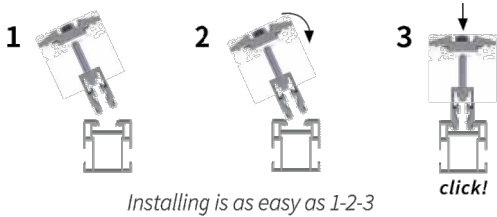


QRails come in two lengths —  
168 inches (14 ft) and 208 inches (17.3 ft)  
Mill and Black Finish

# Fast, Simple Installation: It Just Clicks

## QClick Technology™

The universal mid and end clamps use patented QClick technology to simply “click” into the rail channel and remain upright, ready to accept the module. The pre-assembled clamps fit virtually all module frames and require no extra hardware, eliminating pre-loading and reducing installation time.



Installing is as easy as 1-2-3



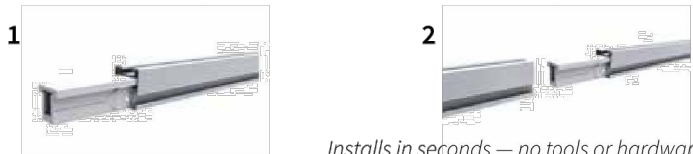
UNIVERSAL END CLAMP  
2 clamps for modules from  
30-45mm or 38-50mm thick



UNIVERSAL BONDED MID CLAMP  
2 clamps for modules from  
30-45mm or 38-50mm thick

## QSplice™ Technology

QRail's innovative internal QSplice installs in seconds, requiring no tools or screws. Simply insert QSplice into the rail and slide the other rail on to create a fully structural, bonded splice. An external splice is also available.



Installs in seconds — no tools or hardware required



# Fully Integrated Electrical Bonding

The QRail system provides an integrated electrical bonding path, ensuring that all exposed metal parts and the solar module frames are electrically connected. All electrical bonds are created when the components are installed and tightened down.

### REVISIONS

DESCRIPTION	DATE	REV

### PROJECT INSTALLER



Digitally signed by:  
Ermocrates E. Castillo  
Date: 2021.04.09 10:10:08

### PROJECT NAME

LOPEZ RESIDENCE  
430 E INTENDENCIA ST,  
PENSACOLA, FL 32502

### SHEET NAME

RAIL  
DATA SHEET

### SHEET SIZE

ANSI B  
11" X 17"

### SHEET NUMBER

DS-04



ACORD

Client#: 2215973

131PROFEELE

## CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
12/26/2020

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 any rights to the certificate holder in lieu of such endorsement(s).

PRODUCER  
McGriff Insurance Services  
PO Box 4927  
333 S Garland Ave 10th Fl  
Orlando, FL 32802-4927

CONTACT NAME:  
PHONE (A/C, No, Ext): 407 691-9600 FAX (A/C, No): 888-635-4183  
E-MAIL:  
ADDRESS:

INSURED  
Professional Electrical Services Inc  
290 Springview Commerce Drive  
Unit #3  
Debarry, FL 32713

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: Gotham Insurance Company	25569
INSURER B: Burlington Insurance Company	23620
INSURER C: Bridgefield Casualty Insurance Company	10335
INSURER D: Auto Owners Insurance	18988
INSURER E:	
INSURER F:	

## COVERAGES

CERTIFICATE NUMBER:

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.

LINE	TYPE OF INSURANCE	ADDITIONAL INSURED	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> BI/PL Ded: 5,000 GENL AGGREGATE LIMIT APPLIED PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	* *	16962072	01/01/2021	01/01/2022	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Per occurrence) \$100,000 MED EXP (Any one person) \$5,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COM/OP AGG \$2,000,000
D	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input checked="" type="checkbox"/> Hired AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS NON-OWNED AUTOS ONLY	* *	5318046400	01/01/2021	01/01/2022	COMBINED SINGLE LIMIT (Per accident) \$1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
B	UMBRELLA LIAB <input checked="" type="checkbox"/> EXCESS LIAB DED RETENTIONS		852BE00395	01/01/2021	01/01/2022	EACH OCCURRENCE \$1,000,000 AGGREGATE \$1,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE/OFFICER/ MEMBER EXCLUDED? (Mandatory in HI) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N Y N/A	19652126	01/01/2021	01/01/2022	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE - EA EMPLOYEE \$1,000,000 E.L. DISEASE - POLICY LIMIT \$1,000,000

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

"Blanket Additional Insured is granted with respect to General Liability per Endorsement "Commercial General Liability Broadened Energy Extension" form #GL0202 02/18

"Blanket Waiver of Subrogation with respects to General Liability per Endorsement "Commercial General Liability Broadened Energy Extension" form #GL0202 02/18  
(See Attached Descriptions)

## CERTIFICATE HOLDER

## 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

Todd William Bishop

ACORD 25 (2018/03) 1 of 2  
#S27035207/M27034555

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JEDU



## DESCRIPTIONS (Continued from Page 1)

\*Additional Insured Status and Waiver of Subrogation is granted with respect to Automobile Liability if required by written contract per Endorsement "Designated Insured for Covered Autos Liability Coverage - Blanket Coverage form #58504 01/15 and Waiver of our Right to Recover Payments form #58583 01/15.

Waiver of Our Right to Recover from Others Endorsement included with respects to Worker's Compensation per Endorsement "Waiver of our Rights to Recover from Others Endorsement" form #WC000313 04 84.



Ron DeSantis, Governor



Halsey Beshears, Secretary



**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

**MILLER, BRIAN KEITH**

PROFESSIONAL ELECTRICAL SERVICES INC  
185 S CHARLES RICHARD BEALL BLVD  
DEBARY FL 32713

**LICENSE NUMBER: EC13001686**

**EXPIRATION DATE: AUGUST 31, 2022**

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