City of Belle Isle Job Site Card Electrical PERMIT 2019-08-064

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 -

Permit Number: 2019- 08-064
Site Address: 6622 Conway Lakes Dr 32812
Class: □ Residential **Subdivision:**
Description of Work: **Electrical** – INSTALL 16.065 KW PHOTO VOLTAIC SOLAR SYSTEM ON ROOF.

Issue Date: 08/26/2019
Parcel #: 20-23-30-1678-00-430

Issued: PROFESSIONAL ELECTRICAL SERVICES INC
Name: MILLER, BRIAN KEITH
Payment Date & Method: 8 /29/ 2019 □ Picked up or sent by _____ ■ Emailed
□ Visa □ Master Card ■ Amex □ Discover □ Check / Money Order # 6 3 005

Business Phone: 386 668-4222
Contractor License: EC13001686

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

ELECTRICAL	INSPECTOR	DATE	COMMENTS
300 Temp Pole			
310 TUG			
320 Underground			
325 Electrical Above – Ceiling			
330 Rough			
340 Footer Steel Bonding			
350 Pool Light			
360 Pre Power			
370 Meter Re Set			
380 Final			

LOW VOLTAGE	INSPECTOR	DATE	COMMENTS
335 Rough			
375 Final			

Inspection requests are to be emailed to BIDscheduling@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

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

City of Belle Isle

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

RECEIVED AUG 21 2019

I/O Person

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: 7/22/19 **PERMIT NUMBER** 2019-08-064

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

Project Address 6622 Conway Lakes Dr, Belle Isle FL ___32809 ✓32812

Property Owner Kevin Chamberlain Phone 206-799-3318

Property Owner's Mailing Address 6622 Conway Lakes Dr City Belle Isle

State Fl Zip Code 32812 **Parcel Id Number:** 20-23-30-1678-00-430

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

PAID 8-22-19 Amex 63005

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

Relocate Existing Meter Service (No Service Size Change) ____

Other: Install 16.065 KW photovoltaic Solar System on Roof

☐ **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 $ 42,162.50

✓ NOC

Building Official: [signature] Date 8/23/19

✓ Verified Contractor's Licenses & Insurance are on file [initials] Date 8-21-19

Permit Fee = $ 247.–
Review Fee = $ 123.50
1% BCAIB Fee = $ 3.71
1.5% DCA Fee = $ 5.56
TOTAL Permit = $ 379.77

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.

1st 1K 37
5x42 210
247.–
123.50
370.50

LICENSE HOLDER SIGNATURE [signature] LICENSE # EC13001686

LICENSE HOLDER NAME Brian Miller COMPANY NAME Professional Electrical Service

Street Address 185 S. Charles Richard Beall Blvd

City DeBary State Fl Zip Code 32713 Phone Number 386-668-4222

Email Address proeoffice@gmail.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 ____

155933

DOC# 20190520973
08/21/2019 12:42:07 PM Page 1 of 1
Rec Fee: $10.00
Phil Diamond, Comptroller
Orange County, FL
IP - Ret To: PROFESSIONAL ELECTRICAL S

NOTICE OF COMMENCEMENT
FS 713.13

THIS DOCUMENT MUST BE COMPLETED WHEN CONSTRUCTION VALUE EXCEEDS $2,500.00.

This instrument prepared by:

PERMIT #:_____ TAX PARCEL #: 2023-30-1678-00-430

STATE OF FLORIDA COUNTY OF Orange County

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. Legal description of property: Conway Lakes 8/3 Lot 43
(and street address if available) 10622 Conway Lakes Dr. Orlando, FL 32812
2. General description of improvement(s): Install 16.0165 KW photovoltaic solar system on roof.
3. Owner: Name: Kevin Chamberlain
Address: 10622 Conway Lakes Dr. Orlando, FL 32812
Phone: 206-799-3318 Fax:
   a. Interest in property:
   b. Name and address of fee simple titleholder (if other than owner) Phone:
4. Contractor: Name: Professional Electrical Services Inc.
Address: 185 S Charles Richard Beall Blvd. Debary, FL 32713
Phone: 386.668.4222 Fax: 386.668.8222
5. Surety: Name and Address:
Phone: Fax:
Bond amount:
6. Lender: Name and Address:
Phone: Fax:
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:
(Name, address, phone number, and fax number).
8. In addition to himself, Owner designates the following person(s) to receive a copy of the Lienor's Notice as provided in Section 713.13(1)(b), Florida Statutes: (Name, address, phone number, and fax number).
9. Expiration date of Notice of Commencement (the expiration date is one (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.

Verification pursuant to Section 92.525, Florida Statutes. Under penalties of perjury, I declare that I have read the foregoing and that the facts stated in it are true to the best of my knowledge and belief.

Kevin Chamberlain
(Signature of Owner)(Note: per Section 713.13(1)g, Florida Statutes *Signature of Owner or Owner's Authorized Officer/Director/Partner/Manager

Kevin Chamberlain
(PRINT OWNER'S NAME)

State of FLORIDA County of ORANGE
The foregoing instrument was acknowledged before me this 2 day of August by Kevin Chamberlain
Who _____ is personally known to me or _____ has produced F.D.L. as identification, and _____
did take an oath ___ did not take an oath.

Janet N Roeder
Print name:

Janet N Roeder
Notary signature:
(seal)

JANET N. ROEDER
MY COMMISSION # FF 243821
EXPIRES: September 18, 2019
Bonded Thru Budget Notary Services

State of FLORIDA, County of ORANGE
I hereby certify that this is a true copy of the document as filed in the Official Records
DATED: AUG 21 2019

Professional Electrical Services, Inc.
Installation Agreement
License #EC13001686

Customer Billing Information		Project Installation Information	
Name: Kevin Chamberlain		Contact Name	
Additional Name		Additional Contact Name	
Address: 6622 Conway Lakes Dr.		Address	
City ST Zip: Belle Isle FL 32812		City ST Zip	County
Phone - HM	Phone - Cell: 206-799-3318	Phone - HM	Phone - Cell
Homeowners Association: (YES) NO	HOA Contact Info: Phone or Email Address: ACC form not needed	Phone - Cell	Phone - Fax
Email: ChamberlainKevin@hotmail.com		Email	

TOTAL CONTRACT AMOUNT: $ 43,662.50

AMOUNT PAID BY OWNER: $ 0

AMOUNT FINANCED: $ 43,662.50

KC **Initial - Customer Agrees to acknowledge LOANPAL's requests for draw approval within 48 hours of receiving email notification.**

Utility Provider: Duke Energy **Utility Account #** 80847 09195

Utility Account Holder Name: Kevin Chamberlain

KC **Initial - Customer acknowledges Tier II systems require additional liability insurance to satisfy Utility Company policies.**

THE PRODUCT. SYSTEM SIZE 16.065 **KW MODULE TYPE:** QCells Q. Peak Duo BLK-G5 315 (51 panels)

INVERTER TYPE: Enphase IQ7 (51 inverters) **OTHER:** Service change out

Additional Comments Price includes engineering, permitting, labor and materials.

GENERAL CONDITIONS: This proposal may be withdrawn if not accepted within 10 days. Signing this proposal, or the making of a deposit, initiates this contract and indicates the acceptance of terms and conditions by the owner. This Contract will not become final until approved by an Authorized Company Executive Terms and Conditions of Sale. The sale is contingent upon site approval by Seller's authorized installer. If at any time Buyer is delinquent in the payment or is otherwise in breach of the agreement. Seller may, at its discretion, stop performance of services or withhold shipment including partial shipments) of any order and may require Buyer to pre-pay for further performance or shipments. This contract constitutes all the terms and conditions of this agreement; any alternations or deviations requested from the above specifications must be in writing, and will be executed at additional cost; no oral agreements or statements shall be binding.

PRICE AND TERMS OF PAYMENT. The purchase price for the Product, including technical materials, is a total of $ 43,662.50 (USD) Inclusive of the cost of installation. Buyer shall make the milestone payment to Seller in accordance with the terms described herein AT the time of execution of the agreement, Buyer shall make a down payment of 50% (for cash accounts only) of the purchase price pursuant to the instructions in the invoice issued by Seller, unless otherwise agreed. All payback calculations presented by Seller are estimate 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 and net metering fee.

RIGHT OF RESCISSION. Notwithstanding other provisions of the Agreement, Buyer has the right to terminate the Agreement without penalty no later than midnight of the third (3rd) business day from the date of execution of the Agreement by written notice to Seller by United States Certified Mail. Return Receipt Requested. This 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 the Agreement. For the purposes of this provision, a "business day" shall include Monday through Saturday, but shall not include Sundays or any legal holiday on which the U.S. Postal Service does not deliver mail.

REBATES AND INCENTIVES: Professional Electrical Services, Inc. agrees to submit documentation required to obtain the state and/or utility rebate; Owners must file for federal incentives directly and should seek the advice of a qualified tax professional. Professional Electrical Services, Inc. is not liable for any rebate or incentive eligibility, amounts, or payments, utility, state and federal rebate qualifications. Additional rebates, credits or incentives may be available; Customers should consult with a qualified tax professional to ensure the proper realization of such benefits if & when applicable.

LICENSING: The installation of the above equipment is contracted by Professional Electrical Services, Inc. a Factory Certified, Bonded, Insured, Licensed Certified Contractor (License #EC13001686). Parts of this contract that do not pertain to the PV System, but are listed for financing, will be installed and contracted with an appropriate license holder. Warranties and workmanship will be responsibility of the assigned company.

MATERIALS & WORKMANSHIP: All work is to be completed in a professional manner according to standard practices and codes. All material is new (unless otherwise stated) and guaranteed to be as specified. Professional Electrical Services, Inc. reserves the right to substitute brands and models of like kind and quality.

INSURANCE: Professional Electrical Services, Inc. will maintain the following coverage during the execution of this project: Workman's Compensation Insurance $1,000,000, Commercial Automotive Insurance $1,000,000; Commercial General Liability Insurance $1,000,000 per occurrence, $2,000,000 aggregate, $2,000,000 Products and Completed Operations [Completed Operations coverage extends beyond the completion date and expires at the statute of limitations as set by state law; it covers liabilities for accidents and/or damage arising out of work or operations completed by Professional Electrical Services, Inc. as defined in the policy]. A Certificate of Insurance is available upon request.

WARRANTIES: Professional Electrical Services, Inc. warranties workmanship, including roof penetrations, for a period of twenty-five years from date of installation. Unless otherwise specifically stated, Professional Electrical Services, Inc. does not manufacture products represented for sale for installation. Products are warranted by the manufacturer of the product and not Professional Electrical Services, Inc. except as allowed by law (see manufacture component warranty for specific details). PES follows Manufacturer's warranty coverage on labor and materials. The warranty covers defects in workmanship but does not include defects or damages attributable to normal weathering or defects or damages caused by accidents including acts of God, unless specifically defined.

PERFORMANCE: Professional Electrical Services, Inc. makes no claim as to the performance or usability of any product. Performance timelines due to acts of God, accidents or delays beyond our control, shall not be the responsibility of Professional Electrical Services, Inc.

DISPUTE RESOLUTION: Any disputes arising out of this agreement shall entitle the prevailing party to all court costs and attorney fees. Venue shall be Orange County, Florida. The owner agrees to Mediation or Arbitration in the case of disputes.

DELINQUENCY: All accounts are C.O.D. unless payment terms have been extended. Accounts past thirty days will be subject to a finance charge of 1 ½% per month plus a service charge of $50 for each past due incident. Pursuant to FS 713.03 Liens for professional services -- Anyone failing to pay in full upon job completion (unless other arrangements have been made in writing) may result in a lien being placed on the property.

INDEMNITY: Each party agrees to be liable for its actions - Professional Electrical Services, Inc. agrees to save, defend, indemnify, and hold harmless the Client for liabilities including death, bodily injury, or property damage resulting from, connected with, or as a direct result of the performance of this Contract by Professional Electrical Services, Inc.. Client agrees to save, defend, indemnify, and hold harmless Professional Electrical Services, Inc. from liabilities including death, bodily injury, or property damage resulting from, connected with, or as a direct result of the actions of the client, guests and/or his employees and/or adverse conditions of the property, building and/or mechanical systems during the performance of Professional Electrical Services, Inc.'s contract.

SHADING CONDITIONS: Shading from trees and/or other obstructions limit the direct sunshine on the solar system reducing its ability to absorb and transmit energy – solar panels require direct solar radiation from 9am until 5pm for south facing or flat roofs (10am to 6pm for west roofs, 8am to 4pm for east roofs) in order to function properly. The owner will at their expense pay for any costs associated with removing shading obstructions and/or adding additional solar panels to increase energy gain.

LANDSCAPE: Trenching, trimming, replacement and/or relocation of sod, plants or trees required to complete the project will be done with care; however, it is understood that living materials my become and/or expire due to this activity -- no liability for any damage, future deterioration or loss of sod, plants or trees due to installing the system assumed.

PHOTOVOLTAIC SAFETY: The Solar Electric PV System to be installed produces high electrical currents and should only be serviced by qualified personnel. Electrical shock can occur if equipment is tampered with, and can result in injury or death. Customer agrees that Professional Electrical Services, Inc. solely handles and maintains equipment, performs the work, and supervised the site.

PHOTOVOLTAIC PERFORMANCE: Solar Electric PV System performance is dependent upon weather conditions and cannot be guaranteed; the PTC (Photovoltaic's for Utility Scale Applications Test Conditions) Power will vary based on local conditions and losses from inverter, wiring, etc.

Contract Amount is based on Site, Structure and System parameters outlined in the PV System Calculator; the owner agrees to these parameters; any changes to these parameters may result in a Change Order and possible additional charges or credits.

Sales Representative _____ **Date:** 7/18/19

Owner Acceptance – The prices, specifications and conditions within this agreement are satisfactory and are hereby accepted. Payment will be made as outlined above.

Owner _____ **Date:** 7-18-19

Authorized P.E.S. Executive Approval: BM **Date:** 7-18-19

Professional Electrical Services, Inc * 185 S. Charles Richard Beall Blvd. * Debary FL 32713 * P 386-668-4222 * F 386-668-4222 * License #EC13001686

Professional Electrical Services, Inc.
Installation Agreement
License #EC13001686

ADDENDUM #1

The following is included in Installation Agreement signed,

Date: 7-18-19, at no additional cost to customer.

Customer:

Name: Kevin Chamberlain

Address: 622 Conway Lakes Drive Belle Isle FL. 32812

1. Service Change out
Up to Code / Make. Safe.
2. $1,500.00

Addendum Acceptance – The prices, specifications and conditions within this Addendum are satisfactory and are hereby accepted.

Owner: [signature] Date: 7-18-19

Authorized P.E.S. Executive Approval: [signature] Date: 7-18-19

PROJECT DESCRIPTION:

51x315 HANWHA Q.PEAK DUO-G5 (315W) MODULES
ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES

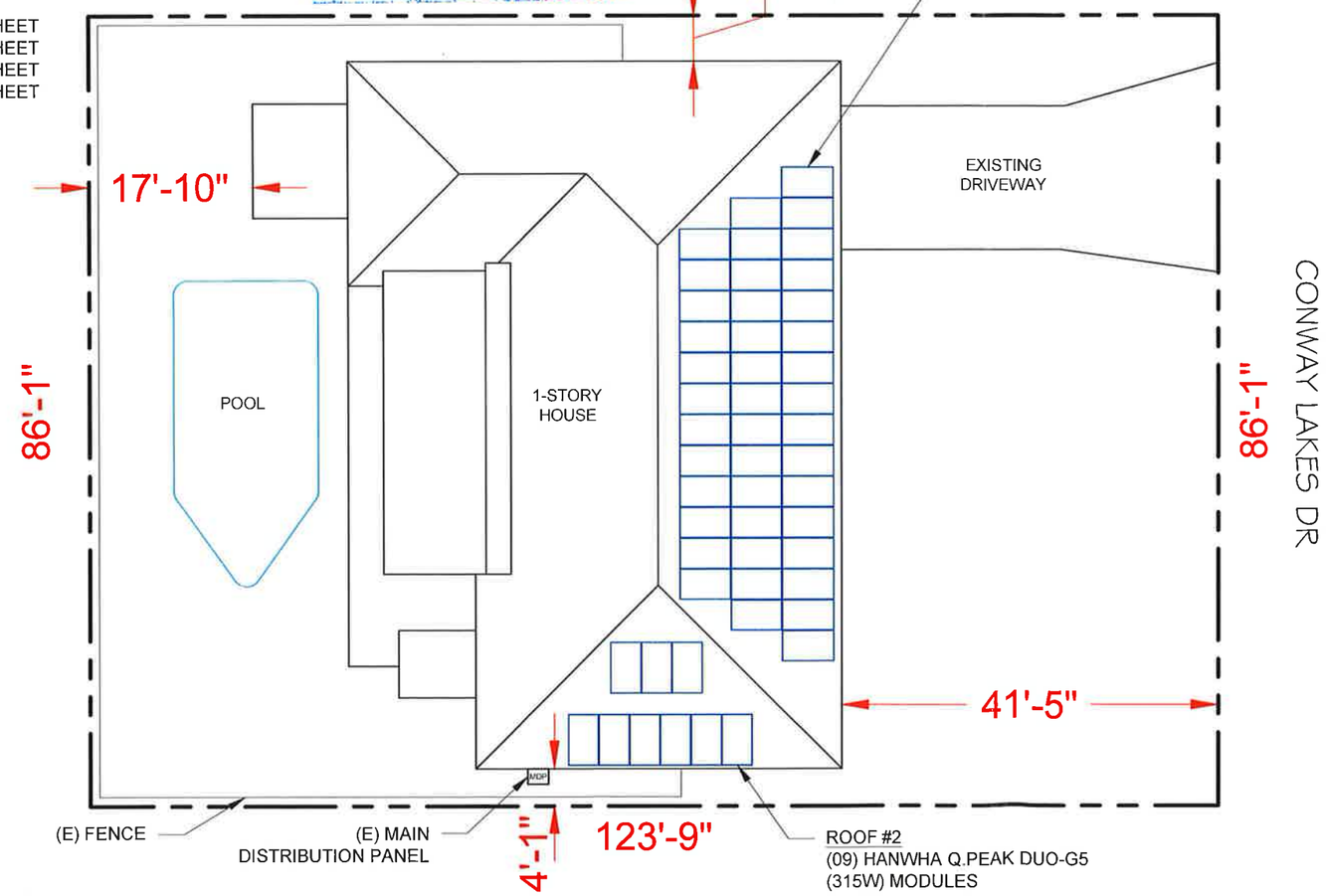
SYSTEM SIZE: 16.07 kW DC STC
ARRAY AREA #1: 761.88 SQ FT.
ARRAY AREA #2: 163.26 SQ FT.

EQUIPMENT SUMMARY
51 HANWHA Q.PEAK DUO-G5 (315W) MODULES
51 ENPHASE IQ7-60-2-US MICROINVERTERS

SHEET INDEX

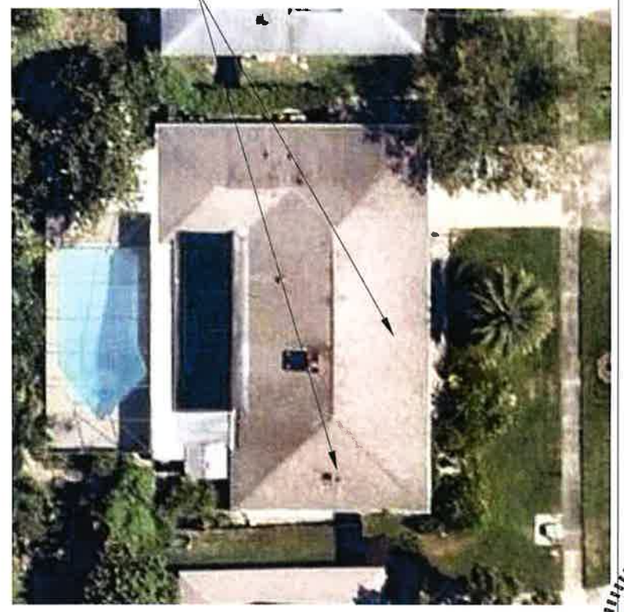
GOVERNING CODES :
FLORIDA RESIDENTIAL CODE, 6TH EDITION 2017 (FRC)
FLORIDA PLUMBING CODE, 6TH EDITION 2017 (FPC)
FLORIDA BUILDING CODE, 6TH EDITION 2017 EDITION (FBC)
FLORIDA MECHANICAL CODE, 6TH EDITION 2017 (FMC)
NEC 2014 CODE BOOK

UNIVERSAL ENGINEERING SCIENCES
PLAN REVIEW
These plans have been reviewed for conformance to the Florida Building Code. Our review of these plans is pursuant to Section 106 of the Florida Building Code and does not include any items outside of the stated codes nor shall it relieve the permit holder from compliance with provisions of these or any other state or local regulation.
Name Rajendrasinh
Lic. No. AR91838 Date 8/23/19

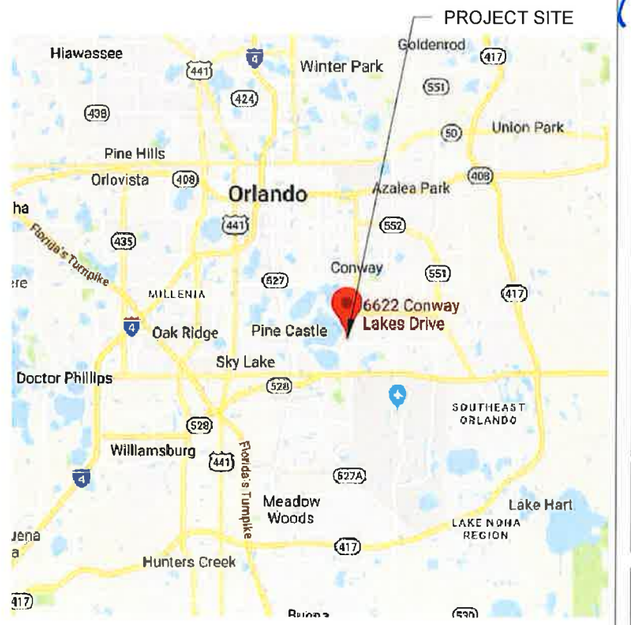


1 PLOT PLAN WITH ROOF PLAN
A-00 SCALE: 1/16" = 1'-0"

PROJECT SITES



2 HOUSE PHOTO
A-00 SCALE: NTS



3 VICINITY MAP
A-00 SCALE: NTS

Castillo Engineering
DESIGNED TO PERMIT®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
2925 W. STATE ROAD 434,
SUITE 111
LONGWOOD, FL 32779
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

Professional Electrical Services

E. E. CASTILLO
Signature with Seal
LICENSE
No. 52590
STATE OF FLORIDA
PROFESSIONAL ENGINEER
PROJECT NAME

JUL 31 2019

CHAMBERLAIN RESIDENCE
6622 CONWAY LAKES DR
BELLE ISLE, FL 32812

SHEET NAME
PLOT PLAN & VICINITY MAP

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
A-00

Symbols:

Section..... X / X-XX — Sheet where section is located

Elevation ..... X / X-XX — Detail ID Letter; Sheet where section is located

Detail ..... X / X-XX — Detail ID Letter; Sheet where section is located

Detail ..... (Enlarged Plan) X / X-XX — Detail ID Letter; Area to be enlarged; Sheet where section is located

Keyed Notes ..... 1 — Keyed note designation on applicable sheet

Ground Terminal .....

Grounding Point/rod....

Solar Panel ..... or 00 — Module with Source Circuit number

Combiner Box ..... CB

DC Disconnect ..... DCD

Main Distribution Panel ..... MDP

Fuse .....

Overcurrent Breaker ..

Inverter .....

Transformer .....

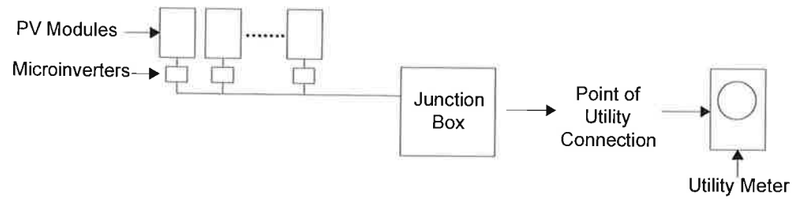
Automatic ..... Transfer Switch ATS

Abbreviations:

AC	Alternating Current
APPROX	Approximate
AWG	American Wire Gauge
CB	Combiner Box
DC	Direct Current
DCD	Direct Current Disconnect
DISC	Disconnect
(E)	Existing
EL	Elevation
EQ	Equal
JB	Junction Box
MCB	Main Combiner Box
MFR	Manufacturer
MIN	Minimum
MISC	Miscellaneous
(N)	New
OCPD	OverCurrent Protection Device
POCC	Point Of Common Coupling
PV	Photovoltaic
SF	Squarefoot/feet
STC	Standard Test Conditions
TBD	To Be Determined
TYP	Typical
VIF	Verify In Field
WP	Weather Proof

System Description

This system is a grid-tied, PV system, with PV generation consisting of 51 HANWHA Q.PEAK DUO-G5 (315W) MODULES with a combined STC rated AC output power of 16,065 W. The modules are connected into 51 ENPHASE IQ7-60-2-US MICROINVERTERS. The inverter has electronic maximum power point tracking to maximize energy captured by the PV modules. The inverter also has an internal ground fault detection and interruption device that is set to disconnect the array in the event that a ground fault that exceeds one ampere should occur. The inverter has DC and AC disconnect integrated system and labels are provided as required by the *National Electric Code*



When the sun is shining, power from the PV array is fed into the inverter, where it is converted from DC to AC. The inverter output is then used to contribute to the power requirements of the occupancy. If PV power meets the requirements of the loads of the occupancy, any remaining PV power is sold back to the utility. When utility power is available, but PV power is not available, building loads are supplied by the utility.

The inverter meets the requirements of IEEE 1547 and UL 1741. This means that if it detects a loss of utility power, it will automatically disconnect from the utility. When utility voltage is restored, the inverter automatically reconnects to the utility grid after verifying utility voltage and frequency stability.

On a day with average Florida sunshine, this system outputs 66.22 kWh per day on site.

Reviewed for Code Compliance Universal Engineering Sciences

Castillo Engineering
DESIGNED TO PERMIT
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
2925 W. STATE ROAD 434, SUITE 111
LONGWOOD, FL 32779
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

Professional Electrical Services

ERMOCRATES CASTILLO LICENSE No 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

JUL 31 2019

PROJECT NAME
CHAMBERLAIN RESIDENCE
6622 CONWAY LAKES DR
BELLE ISLE, FL 32812

SHEET NAME
SYMBOLS & SYSTEM DESCRIPTION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
A-01

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 51 MODULES
MODULE TYPE = HANWHA Q.PEAK DUO-G5 (315W)
MODULE WEIGHT = 41.23 LBS / 18.7 KG.
MODULE DIMENSIONS = 66.34"x 39.37" = 18.14 SF
UNIT WEIGHT OF ARRAY = 2.27 PSF

ARRAY & ROOF AREA CALC'S (ROOF #1)

ARRAY AREA = 761.88 SQ. FT.
ROOF FACE AREA = 1140.0 SQ. FT.
761.88 / 1140.0 = 66.83% OF ROOF
FACE AREA COVERED BY ARRAY

DESCRIPTION (ROOF #1)

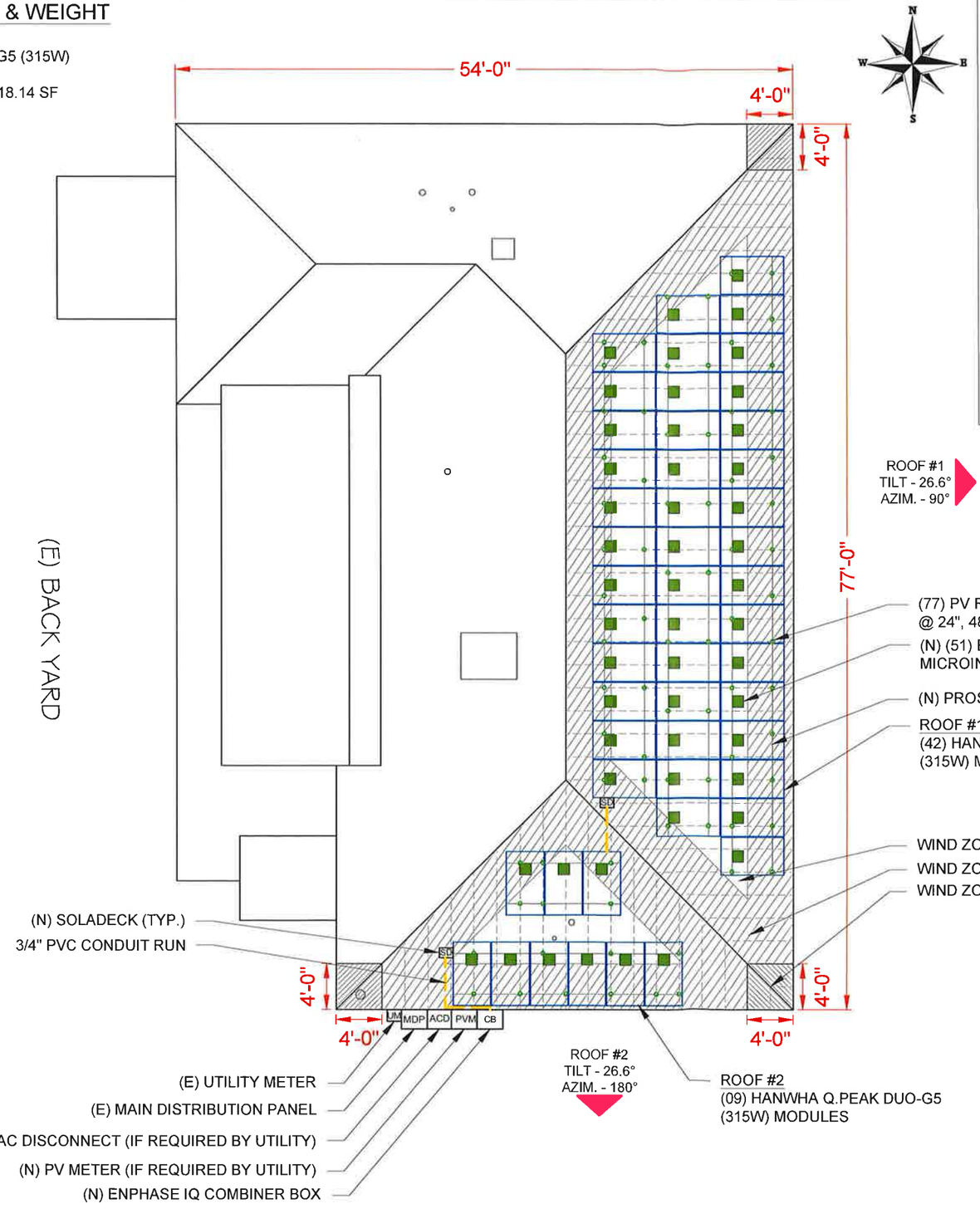
ROOF TYPE - ASPHALT SHINGLE ROOF
ROOF TILT - 26.6°
ROOF AZIMUTH - 90°
RAFTER SIZE - 2"X4" @ 24" O.C.

ARRAY & ROOF AREA CALC'S (ROOF #2)

ARRAY AREA = 163.26 SQ. FT.
ROOF FACE AREA = 400.0 SQ. FT.
163.26 / 400.0 = 40.82% OF ROOF
FACE AREA COVERED BY ARRAY

DESCRIPTION (ROOF #2)

ROOF TYPE - ASPHALT SHINGLE ROOF
ROOF TILT - 26.6°
ROOF AZIMUTH - 180°
RAFTER SIZE - 2"X4" @ 24" O.C.



GENERAL INSTALLATION PLAN NOTES:

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

WIND ZONE 1: 6'-0" O.C.
WIND ZONE 2: 4'-0" O.C.
WIND ZONE 3: 2'-0" O.C.
SEE SHEET S-02 FOR SUPPORTING CALCULATIONS.

2) EXISTING RESIDENTIAL BUILDING IS AN ASPHALT SHINGLE ROOF WITH MEAN ROOF HEIGHT IS 25 FT AND SYP 2X4 ROOF RAFTERS SPACED 24" O.C. EXISTING ROOF SLOPE FOR SOLAR SYSTEM RETROFIT IS 26.6 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 2017, CHAPTER 3. BUILDING STRUCTURE WILL SAFELY ACCOMMODATE CALCULATION WIND LATERAL AND UPLIFT FORCES, AND EQUIPMENT DEAD LOADS. *

HANWHA Q.PEAK DUO-G5 (315W) MODULES

Reviewed for Code Compliance
Universal Engineering Sciences

LEGEND

- UM - UTILITY METER
- SD - SOLADECK
- INV - INVERTER
- ACD - AC DISCONNECT
- PM - PRODUCTION METER
- MDP - MAIN DISTRIBUTION PANEL
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- PV ROOF ATTACHMENT
- RAFTERS
- CONDUIT
- CB - COMBINER BOX

Castillo Engineering
DESIGNED TO PERMIT®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
2925 W. STATE ROAD 434,
SUITE 111
LONGWOOD, FL 32779
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

Professional Electrical Services

E. E. CASTILLO LICENSE No 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER
Signature Date
JUL 31 2018

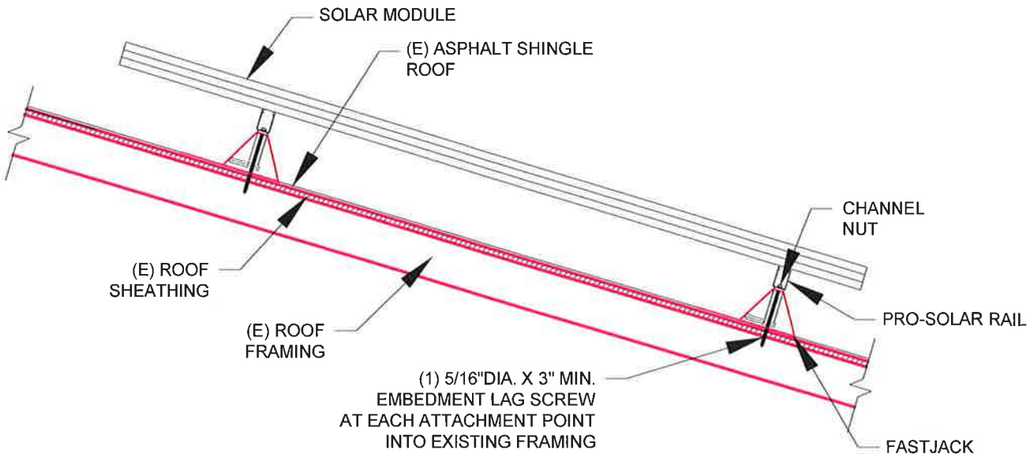
CHAMBERLAIN RESIDENCE
6622 CONWAY LAKES DR
BELLE ISLE, FL 32812

SHEET NAME
ROOF PLAN & MODULES

SHEET SIZE
ANSI B
11" X 17"

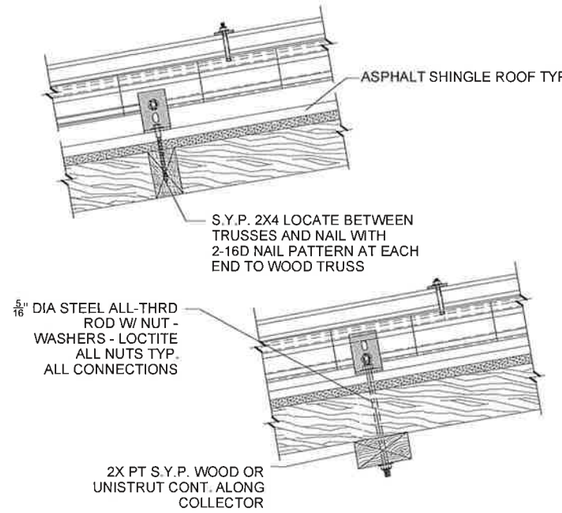
SHEET NUMBER
S-01

1 ROOF PLAN & MODULES
S-01 SCALE: 3/32" = 1'-0"



PRO SOLAR - FASTJACK CONNECTION DETAIL

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

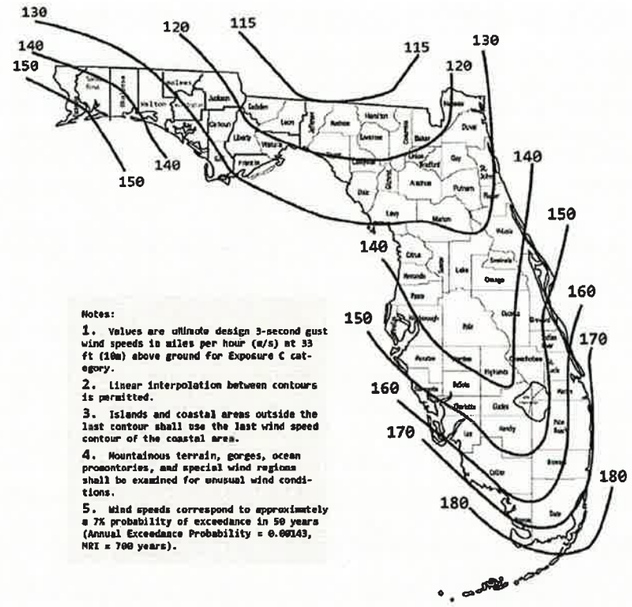


TYP. SPANNER CONNECTION DETAIL (IF REQUIRED)

SCALE: NTS

1 ATTACHMENT DETAIL

S-02 SCALE: 1' = 1'-0"



Notes:

1. Values are ultimate design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 years).

FIGURE 1609.3(1)
ULTIMATE DESIGN WIND SPEEDS, V_{ULT}, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES

Wind Speed Ult (mph)	140
Risk Category	II
Wind Speed ASD (mph)	110
Exposure Category	C
Mean Roof Height (ft)	25
Roof Slope (degrees)	25
Module Area (sq ft)	20
Kzt	1
Height Adjustment Factor, λ	1.35

Roof Slope Calculator		
Rise	Run	Slope (°)
6	12	26.6

Roof Zone	Pnet (30)	
1	11.4	-19.4
2	11.4	-31.9
3	11.4	-47.9

$P\_net=[\lambda K]\_zt\, P\_(net(30))$

Roof Zone	Pnet	
1	15.39	-26.19
2	15.39	-43.065
3	15.39	-64.665

Maximum Uplift per *fastener **Wind Zone 1**	432.1
Per American Wood Council - NDS Max Withdraw Load for 5/16" LAG with 2.5" Embedment	476

*Roof attachements w 2 rails at: 6 ft O/C

Maximum Uplift per *fastener **Wind Zone 2**	473.7
Per American Wood Council - NDS Max Withdraw Load for 5/16" LAG with 2.5" Embedment	476

*Roof attachements w 2 rails at: 4 ft O/C

Maximum Uplift per *fastener **Wind Zone 3**	355.7
Per American Wood Council - NDS Max Withdraw Load for 5/16" LAG with 2.5" Embedment	476

*Roof attachements w 2 rails at: 2 ft O/C

Reviewed for Code Compliance Universal Engineering Sciences

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ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

Professional Electrical Services

E. E. CASTILLO LICENSE No 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

JUL 31 2019

PROJECT NAME

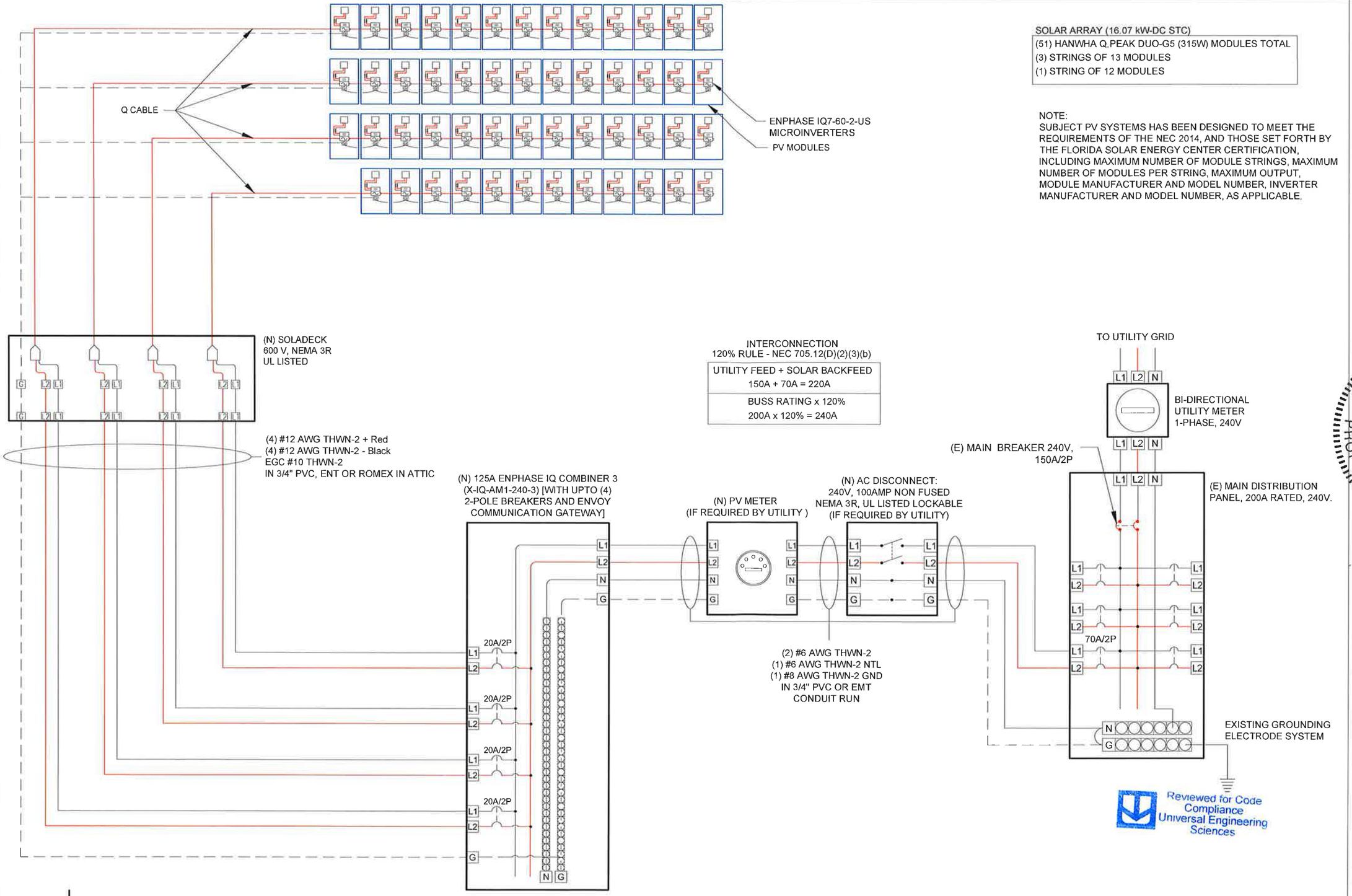
CHAMBERLAIN RESIDENCE

6622 CONWAY LAKES DR, BELLE ISLE, FL 32812

SHEET NAME
STRUCTURAL ATTACHMENT DETAILS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
S-02



SOLAR ARRAY (16.07 kW-DC STC)

(51) HANWHA Q.PEAK DUO-G5 (315W) MODULES TOTAL
(3) STRINGS OF 13 MODULES
(1) STRING OF 12 MODULES

NOTE:
SUBJECT PV SYSTEMS HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE NEC 2014, 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.

INTERCONNECTION
120% RULE - NEC 705.12(D)(2)(3)(b)

UTILITY FEED + SOLAR BACKFEED 150A + 70A = 220A
BUSS RATING x 120% 200A x 120% = 240A

1 ELECTRICAL LINE DIAGRAM
E-01 SCALE: NTS

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Universal Engineering Sciences

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PROJECT INSTALLER

Professional Electrical Services

ERMOCRATES E. CASTILLO
LICENSE
No 52590
STATE OF FLORIDA
PROFESSIONAL ENGINEER

JUL 31 2018

CHAMBERLAIN RESIDENCE
6622 CONWAY LAKES DR
BELLE ISLE, FL 32812

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-01

AC CONDUCTOR AMPACITY CALCULATIONS: FROM ROOF TOP SOLADECK TO LOAD CENTER

Module Manufacturer	Hanwha
Module Model	Q.Peak DUO-G5 315
Inverter Manufacturer	Enphase
Inverter Model	Enphase IQ 7
Modules/Branch Circuit 1	13
Modules/Branch Circuit 2	13
Modules/Branch Circuit 3	13
Modules/Branch Circuit 4	12
Total Array Power (kW)	16.07
System ac Voltage	240V 1-Phase

Design Temperature	
Min. Ambient Temp. °F	32
Max. Ambient Temp. °F	117
Calculated Max. Voc	43
Calculated Min Vmp	26

AC CONDUCTOR AMPACITY CALCULATIONS: FROM AC COMBINER BOX TO MSP

Module Properties			
Voc	39.87	Isc	10.04
Vmpp	32.98	Imp	9.55
TC Voc	-0.28%/°C	TC Vmp	-0.37%/°K
Pmp	315.0	NOCT	45 °C

Inverter Properties	
Output Voltage	240 L-L 1-PH
Max Input dc Voltage	48 Vdc
Operating Range	16 - 48 Vdc
MPPT Voltage Range	27 - 37 Vdc
Start Voltage	22 Vdc
Max Input Power	350 Wdc
Continuous AC Power	240 VA

Ampacity Calculations

Circuit	Max Amps	1.25 x Max Amps	AWG	90 °C Ampacity	Ambient Temp °F	Temp Derate	Conduit Fill	Fill Derate	Derated Ampacity	Maximum Circuit Breaker
Circuit 1	13.0	16.3	#12	30	130	0.76	2	1	22.8	20 A
Circuit 2	13.0	16.3	#12	30	130	0.76	2	1	22.8	20 A
Circuit 3	13.0	16.3	#12	30	130	0.76	2	1	22.8	20 A
Circuit 4	12.0	15.0	#12	30	130	0.76	2	1	22.8	20 A
AC Combiner Panel Output	51.0	63.8	#6	75	95	0.96	2	1	72	70 A

Maximum Circuit Voltage Drop	2%

Voltage Drop Calculations

Circuit	AWG	Circular Mills	I	V	Max Length
Circuit 1	#12	6530	13.0	240	93 Feet
Circuit 2	#12	6530	13.0	240	93 Feet
Circuit 3	#12	6530	13.0	240	93 Feet
Circuit 4	#12	6530	12.0	240	101 Feet
Combiner Panel Output	#6	26240	51.0	240	96 Feet

Notes

- Temp derate based on NEC Table 310.15(B)(2)(a)
- Conduit fill derate based on NEC Table 310.15(B)(3)(a)
- Maximum Voc calculated using module manufacture temperature coefficients per NEC 690.7(A)
- Unless otherwise specified, all wiring must be THHN or THWN-2 Copper
- All wire sizes listed are the minimum allowable
- In any cell indicates that the system is safe and complies with NEC requirements
- In any cell indicates a potentially unsafe condition
- Information input by system designer
- Informaton obtained from manufacturer datasheets

ELECTRICAL NOTES

1. ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
2. ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
3. WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
4. WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
5. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
6. WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
7. ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
8. MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
9. MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
10. THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE .
11. UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
12. MODULES CONFORM TO AND ARE LISTED UNDER UL 1703.
13. RACKING CONFORMS TO AND IS LISTED UNDER UL 2703.
14. CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC ARTICLE 300.6 (C) (1) AND ARTICLE 310.10 (D).
15. CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC ARTICLE 310.10 (C).

Reviewed for Code Compliance
Universal Engineering Sciences

ENPHASE IQ7-60-2-US MICROINVERTER		
Input Data (DC)		
	Recommended Input Power (STC)	235-350W +
	Maximum Input DC Voltage	48V
	Peak Power Tracking Voltage	27V-37V
	Operating Range	16V-48V
	Min. / Max. Start Voltage	22V / 48V
	Max DC Short Circuit Current	15A
Output Data (AC)		
	Maximum Output Power	240W
	Nominal Output Current	1.0A
	Nominal Voltage / Range	240V/211-264V
	Nominal Frequency / Range	60 Hz
	Extended Frequency / Range	47-68 Hz
	Power Factor at rated power	1.0
	Maximum unit per 20A Branch Circuit	16 (240 VAC)

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2925 W. STATE ROAD 434, SUITE 111
LONGWOOD, FL 32779
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

Professional Electrical Services

E.E. CASTILLO
LICENSED
No 52590
STATE OF FLORIDA
PROFESSIONAL ENGINEER

PROJECT NAME
CHAMBERLAIN RESIDENCE
6622 CONWAY LAKES DR
BELLE ISLE, FL 32812

JUL 31 2019

SHEET NAME
WIRING CALCULATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-02

⚠ WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.17(E))

⚠ WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: NEC 690.17(E), CB

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 51.0 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(D)(7))
[Not required if panelboard is rated not less than sum of ampere ratings of all overcurrent devices supplying it]

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: CEC 705.12(D)(4))

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: CEC690.15, 690.13(B))

DATA PER PANEL

NOMINAL OPERATING AC VOLTAGE -	240	V
NOMINAL OPERATING AC FREQUENCY-	60	Hz
MAXIMUM AC POWER-	240	VA
MAXIMUM AC CURRENT-	1.0	A
MAXIMUM OVERCURRENT DEVICE RATING FOR AC MODULE PROTECTION PER CIRCUIT-	20	A

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

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

LABEL LOCATION:
AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC690.56(C))

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Universal Engineering Sciences

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TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

Professional Electrical Services

E.E. CASTILLO
Signature with Seal
LICENSE
No 52590
STATE OF FLORIDA
PROFESSIONAL ENGINEER

PROJECT NAME
CHAMBERLAIN RESIDENCE
6622 CONWAY LAKES DR,
BELLE ISLE, FL 32812

JUL 31 2019

SHEET NAME
SYSTEM LABELING

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-03

The new Q.PEAK DUO-G5 solar module from Q CELLS impresses thanks to innovative Q.ANTUM DUO Technology, which enables particularly high performance on a small surface. Q.ANTUM's world-record-holding cell concept has now been combined with state-of-the-art circuitry half cells and a six-busbar design, thus achieving outstanding performance under real conditions — both with low-intensity solar radiation as well as on hot, clear summer days.

Q.ANTUM TECHNOLOGY: LOW LEVELISED COST OF ELECTRICITY
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.9%.

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 12-year product warranty and 25-year linear performance warranty[2].

STATE OF THE ART MODULE TECHNOLOGY
Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2017

Q CELLS — ANTI PID TECHNOLOGY (APT) · HOT-SPOT PROTECT (HSP) · TRACEABLE QUALITY (TRA.Q™) · ANTI LID TECHNOLOGY (ALT)

VDE Quality Tested
www.VDEinfo.com
ID: 40032587

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

THE IDEAL SOLUTION FOR:

Rooftop arrays on residential buildings

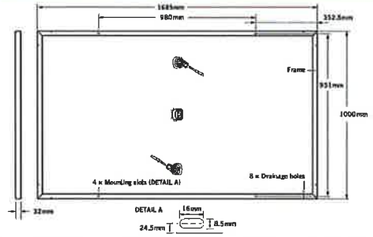
Rooftop arrays on commercial/industrial buildings

Engineered in **Germany**

Q CELLS

MECHANICAL SPECIFICATION

Format	1685 mm × 1000 mm × 32 mm (including frame)
Weight	18.7 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	70-85 mm × 50-70 mm × 13-21 mm Protection class IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) 1100 mm, (−) 1100 mm
Connector	Multi-Contact, MC4, IP65 and IP68

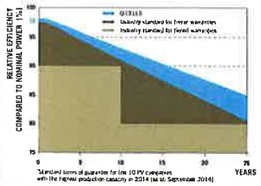


ELECTRICAL CHARACTERISTICS

POWER CLASS			315	320	325	330
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / −0 W)						
Minimum	Power at MPP[2]	P_{MPP} [W]	315	320	325	330
	Short Circuit Current*	I_{SC} [A]	10.04	10.09	10.14	10.20
	Open Circuit Voltage*	V_{OC} [V]	39.87	40.13	40.40	40.66
	Current at MPP*	I_{MPP} [A]	9.55	9.60	9.66	9.71
	Voltage at MPP*	V_{MPP} [V]	32.98	33.32	33.65	33.98
	Efficiency[2]	η [%]	≥18.7	≥19.0	≥19.3	≥19.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOC[3]						
Minimum	Power at MPP[2]	P_{MPP} [W]	233.4	237.2	240.9	244.6
	Short Circuit Current*	I_{SC} [A]	8.09	8.14	8.18	8.22
	Open Circuit Voltage*	V_{OC} [V]	37.30	37.54	37.79	38.04
	Current at MPP*	I_{MPP} [A]	7.51	7.56	7.60	7.64
	Voltage at MPP*	V_{MPP} [V]	31.07	31.39	31.70	32.01

[1] 1000 W/m², 25 °C, spectrum AM 1.5G [2] Measurement tolerances STC ±3%; NOC ±5% [3] 800 W/m², NOCT, spectrum AM 1.5G * typical values, actual values may differ

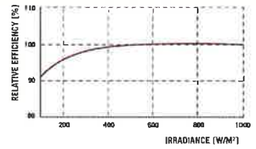
Q CELLS PERFORMANCE WARRANTY



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

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales 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]	−0.28
Temperature Coefficient of P_{MPP}	γ	[%/K]	−0.37	Normal Operating Cell Temperature	NOCT	[°C]	45

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	V_{SYS}	[V]	1000	Safety Class	II
Maximum Reverse Current	I_R	[A]	20	Fire Rating	C
Push/Pull Load (Test-load in accordance with IEC 61215)		[Pa]	5400/4000	Permitted Module Temperature On Continuous Duty	-40 °C up to +85 °C

QUALIFICATIONS AND CERTIFICATES

VDE Quality Tested, IEC 61215 (Ed. 2); IEC 61730 (Ed. 1), Application class A
This data sheet complies with DIN EN 50380.

PARTNER

Reviewed for Code Compliance Universal Engineering Sciences

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**

Q CELLS

Castillo Engineering
DESIGNED TO PERMIT®
CASTILLO ENGINEERING SERVICES, LLC
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LONGWOOD, FL 32779
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

Professional Electrical Services

E. E. CASTILLO — LICENSE — No 52590 — STATE OF FLORIDA — PROFESSIONAL ENGINEER — JUL 0 1 2021

PROJECT NAME

CHAMBERLAIN RESIDENCE
6622 CONWAY LAKES DR,
BELLE ISLE, FL 32812

SHEET NAME
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-01

Data Sheet
Enphase Microinverters
Region: US

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**

ENPHASE.

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US	IQ7PLUS-72-2-US
Commonly used module pairings[1]	235 W - 350 W +	235 W - 440 W +
Module compatibility	60-cell PV modules only	60-cell and 72-cell PV modules
Maximum input DC voltage	48 V	60 V
Peak power tracking voltage	27 V - 37 V	27 V - 45 V
Operating range	16 V - 48 V	16 V - 60 V
Min/Max start voltage	22 V / 48 V	22 V / 60 V
Max DC short circuit current (module Isc)	15 A	15 A
Overvoltage class DC port	II	II
DC port backfeed current	0 A	0 A
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	

OUTPUT DATA (AC)	IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range[2]	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A	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[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	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**

2018-02-08

ENPHASE.

Reviewed for Code Compliance
Universal Engineering Sciences

Castillo Engineering
DESIGNED TO PERMIT™
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
2925 W. STATE ROAD 434,
SUITE 111
LONGWOOD, FL 32779
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

Professional Electrical Services

Signature with Seal

ERMOCRATES E. CASTILLO
LICENSE
No 52590
STATE OF FLORIDA
PROFESSIONAL ENGINEER

JUL 31 2018

PROJECT NAME
CHAMBERLAIN RESIDENCE
6622 CONWAY LAKES DR
BELLE ISLE, FL 32812

SHEET NAME
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

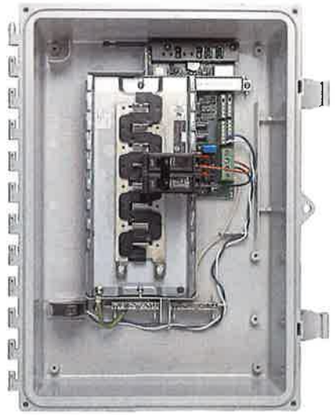
SHEET NUMBER
DS-02

Data Sheet
Enphase Networking

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

Reviewed for Code Compliance
Universal Engineering Sciences

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2925 W. STATE ROAD 434,
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TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

Professional Electrical Services

E. E. CASTILLO
LICENSE
No 52590
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
Esignature with Date
PROJECT NAME
JUL 31 2019

CHAMBERLAIN RESIDENCE
6622 CONWAY LAKES DR,
BELLE ISLE, FL 32812

SHEET NAME
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-03

Third Party Lab Tested
3,600 lbs Uplift load
1,380 lbs. Side Axial load
Waterproof Tested

FastJack®

MADE IN U.S.A. PRODUCT

UL2703*

Intertek 4007217

FastJack® Structural Roof Attachment with New Aluminum Flashing and Collar

"See 90 second real-time complete install video at www.prosolar.com"

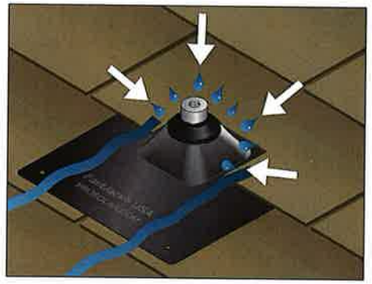
Available in:

2" tall FastJack® E-Series	Part #FJE-200
3" tall FastJack® E-Series	Part #FJE-300
4-1/2" tall FastJack® E-Series	Part #FJE-450
FastJack® E-Series Flashing & Collar	Part #FJE-Flash

Benefits of FastJack® and FastJack® Flashing

- Lowest cost, highest quality
- 90 second install time
- Includes Lag screw and ProSolar rail attachment hardware
- Black powder-coated flashing and collar
- Solid aluminum post prevents water flow through post into roof
- Heavy-duty 0.032" aluminum flashing thickness

The FastJack® Design



- Patented, single lag bolt design makes it the easiest to install attachment
- 2 piece design allows flashing to easily slip over base, prior to post
- Flashing design prevents water ingress from any direction
- Made in U.S.A., American Recovery and Reinvestment Act (ARRA) compliant

*As load tested with ProSolar® RoofTrac® System

professional SOLAR products inc.

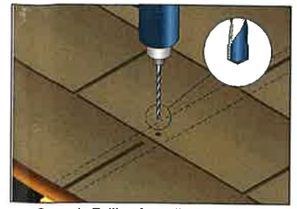
(805) 486-4700
(805) 486-4799–fax
1551 S. Rose Ave.
Oxnard, CA 93033

View more info on our website at:

www.prosolar.com

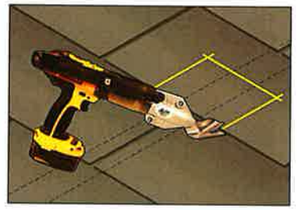
Installation steps for FastJack® and FastJack® Flashing

per UL2703 reference installation

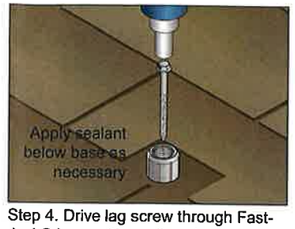


Step 1: Drill rafter pilot hole with 3/16" carbide bit

Step 2: Mark trim lines using template and lumber crayon



Step 3: Trim and remove shingle.
For high volume use Malco TurboShear Asphalt shingle cutter



Step 4. Drive lag screw through Fast-Jack® base with cordless impact gun until seated.

Step 5: Slide FastJack® flashing under shingle

Step 6: Tighten FastJack® post into base

Step 7: Apply 1/4" bead of sealant (Geocel 4500) and compress with Aluminum collar.

Step 8: Done

Step 9: Attach ProSolar RoofTrac® rail and clamps

Shingle cutting template.
Part #TEMP-FJE

Malco TurboShear drill accessory.
Part #A-Malco *drill shown*

For use with 1 inch post diameter ProSolar FastJack® E-Series

FastJack® E-Series and parts packaged separately

See online installation guide for further details

FastJack® patent #6,360,491

www.prosolar.com

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BELLE ISLE, FL 32812

SHEET NAME

DATA SHEET

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-04

RICK SCOTT, GOVERNOR

JONATHAN ZACHEM, 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

MILLER, BRIAN KEITH

PROFESSIONAL ELECTRICAL SERVICES INC
185 CHARLES R. BEALL BLVD.
DEBARY FL 32713

LICENSE NUMBER: EC13001686

EXPIRATION DATE: AUGUST 31, 2020

Always verify licenses online at MyFloridaLicense.com

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 11/05/2018

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 FEDERATED MUTUAL INSURANCE COMPANY HOME OFFICE: P.O. BOX 328 OWATONNA, MN 55060	CONTACT NAME: CLIENT CONTACT CENTER PHONE (A/C, No, Ext): 888-333-4949 FAX (A/C, No): 507-446-4664 E-MAIL ADDRESS: CLIENTCONTACTCENTER@FEDINS.COM
INSURED 236-209-3 PROFESSIONAL ELECTRICAL SERVICES INC 185 S CHARLES RICHARD BEALL BLVD DEBARY, FL 32713-3260	INSURER(S) AFFORDING COVERAGE / NAIC # INSURER A: FEDERATED MUTUAL INSURANCE COMPANY 13935 INSURER B: INSURER C: INSURER D: INSURER E: INSURER F:

COVERAGES **CERTIFICATE NUMBER: 127** **REVISION NUMBER: 0**

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 INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY PRO-JECT LOC OTHER:	N	N	9157714	01/01/2019	01/01/2020	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$1,000,000 $100,000 $5,000 $1,000,000 $2,000,000 $2,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY SCHEDULED AUTOS HIRED AUTOS ONLY NON-OWNED AUTOS ONLY	N	N	9157714	01/01/2019	01/01/2020	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000
A	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DED RETENTION	N	N	6039057	01/01/2019	01/01/2020	EACH OCCURRENCE AGGREGATE	$1,000,000 $1,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N N / A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	N	9318274	01/01/2019	01/01/2020	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $1,000,000 $1,000,000 $1,000,000

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

CERTIFICATE HOLDER

236-209-3 127 0
CITY OF BELLE ISLE
1600 NELA AVE
BELLE ISLE, FL 32809-6184

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

Michael G Kerr

2018/ 2019

Volusia County Business Tax Receipt

Issued pursuant to F.S. 205 and Volusia County Code of Ordinances Chapter 114-1 by:
Volusia County Revenue Division - 123 W Indiana Ave, Room 103, DeLand, FL 32720 – (386) 736-5938

Volusia County
FLORIDA

Account # 199610040019 Expires: September 30, 2019
Business Location: 185 S CHARLES BEALL BLVD

Business Name: PROFESSIONAL ELECTRICAL SERVICES IN
Owner Name: PROFESSIONAL ELECTRICAL SERVICES IN
Mailing Address: 185 S CHARLES BEALL BLVD
DEBARY, FL 32713

BUSINESS TYPE	CODE	COUNT	TAX
Electrical Contractor	301E	1	$18.00

- This receipt Indicates payment of a tax, which is levied for the privilege of doing the type(s) of business listed above within Volusia County. This receipt is non-regulatory in nature and is not meant to be a certification of the holder's ability to perform the service for which he is registered. This receipt also does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.
- The business must meet all County and/or Municipality planning and zoning requirements or this Business Tax Receipt may be revoked and all taxes paid would be forfeited.
- The information contained on this Business Tax Receipt must be kept up to date. Contact the Volusia County Revenue Division for instructions on making changes to your account.

THIS PORTION OF THE BUSINESS TAX RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

Volusia County Business Tax Receipt

Revenue Division - 123 W Indiana Ave, Room 103, DeLand, FL 32720 – (386) 736-5938

DATE PAID:	07/19/2018
RECEIPT #:	WWW-17-00029280
TOTAL TAX:	18.00
PENALTY:	0.00
TOTAL PAID:	18.00

199610040019

Business Name: PROFESSIONAL ELECTRICAL SERVICES IN
Owner Name: PROFESSIONAL ELECTRICAL SERVICES IN
Mailing Address: 185 S CHARLES BEALL BLVD
DEBARY, FL 32713

Account # 199610040019 Expires: September 30, 2019
Business Location: 185 S CHARLES BEALL BLVD

PLEASE DETACH THIS PORTION OF THE BUSINESS TAX RECEIPT FOR YOUR RECORDS