



**City of Belle Isle Job Site Card Electrical PERMIT 2018-04-007**

**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: 2018- 04-007  
Site Address: 3903 Isle Vista Ave 32812  
Class:  Residential      Subdivision:  
Description of Work: Photovaltaic system – roof mounted

Issue Date: 4/03/2018  
Parcel #: 20-23-30-0668-00-880

Issued To: TESLA ENERGY OPERATIONS, INC.  
Name: ARMSTRONG, NICHOLAS EDWIN

Business Phone: 702 716-0084  
Contractor License #: EC13006226

Payment Date & Method: 4 / 6 / 2018

Visa    Master Card    Amex    Discover    Check / Money Order # 2875

**Inspection requests are to be emailed to [BD scheduling@UniversalEngineering.com](mailto:BD scheduling@UniversalEngineering.com); a confirmation email will be sent back to you upon scheduling. Next-Day Inspection requests must be made by 4pm. 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](http://www.universalengineering.com)

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

**"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."**



RECEIVED  
 APR 03 2018

**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: \_\_\_\_\_ PERMIT NUMBER 2018-04007  
 The undersigned hereby applies for a permit to make electrical installations as indicated below. PLEASE PRINT

Project Address 3903 Isle Vista Ave, Belle Isle FL  32809  32812

Property Owner Sheldon Sampson Phone 904 449 8345

Property Owner's Mailing Address 3909 Isle Vista Dr. same City Orlando

State FL Zip Code 32812 Parcel Id Number: 20-23-30-0668-00-880 20-23-30-0668-00-880  
 To obtain this information, please visit <http://www.ocpafil.org/Searches/ParcelSearch.aspx>

Class of Building: Old  New  Type of Building: Residential  Commercial  Other   
 Type of Work: New  Alteration  Addition  Repair  Low Voltage New  Existing

INDICATE THE QUANTITY OF ALL EQUIPMENT TO BE INSTALLED

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

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

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

Relocate Existing Meter Service (No Service Size Change) \_\_\_\_\_

Other: Installation of roof-mounted photovoltaic system. Photo voltaic System - roof mounted

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) \$ 15,470

Building Official: [Signature] Date 4-4-18  
 Verified Contractor's Licenses & Insurance are on file \_\_\_\_\_ Date \_\_\_\_\_

Permit Fee = \$ 17.00  
 Review Fee = \$ 58.50  
 3% FL Surcharge = \$ 4.63  
 TOTAL Permit = \$ 180.13

I hereby certify that the above is true and correct to the best of my knowledge. 196 = 2.1 MW 1.596 = 2.63

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

LICENSE HOLDER SIGNATURE \_\_\_\_\_ LICENSE # EC13006226  
 LICENSE HOLDER NAME Nick Armstrong COMPANY NAME SolarCity DBA Tesla Energy  
 Street Address 8500 Parkline Blvd, Ste. #100 8500 Parkline Blvd Ste #100 Solar City DBA Tesla Energy  
 City Orlando State FL Zip Code 32809 Phone Number 702 716 0084  
 Email Address emccurdy@tesla.com 33809 702-716-0084

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.

1571K  
 5x16  
 37  
 50  
 117  
 58.50  
 175.50

**PAID**  
4-6-2018  
 Building Permit Number VISA 2875



City of Belle Isle

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

APPLICATION FOR ELECTRICAL PERMIT

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DATE OF APPLICATION: PERMIT NUMBER
The undersigned hereby applies for a permit to make electrical installations as indicated below. PLEASE PRINT

Project Address 3903 Isle Vista Belle Isle FL 32809 32812
Property Owner Sheldon Sampson Phone (904) 448-8346
Property Owner's Mailing Address 3903 Isle Vista City Orlando
State FL Zip Code 32812 Parcel Id Number: 20-23-30-0669-00-880
To obtain this information, please visit http://www.ocpafl.org/Searches/ParcelSearch.aspx

Class of Building: Old New
Type of Building: Residential Commercial Other
Type of Work: New Alteration Addition Repair Low Voltage New Existing

INDICATE THE QUANTITY OF ALL EQUIPMENT TO BE INSTALLED

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

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

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

Relocate Existing Meter Service (No Service Size Change)

Other: Installation of roof-mounted photovoltaic system

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Verified Contractor's Licenses & Insurance are on file Date
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Review Fee = \$
3% FL Surcharge = \$
TOTAL Permit = \$

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

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

LICENSE HOLDER SIGNATURE Nick Armstrong License # EC13006226
LICENSE HOLDER NAME Nick Armstrong COMPANY NAME Teata Energy Operations
Street Address 8500 Parkline Blvd Ste 100
City Orlando State FL Zip Code 32809 Phone Number 702-716-0084
Email Address armccurdy@teata.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.

Signature Application Building Permit Number

# SolarCity

Date: 1 / 22 / 18

## RE: PERMIT AUTHORIZATION

Dear Sir or Madam:

This letter is to verify that Kaseil Taylor is an authorized representative of SolarCity Corporation and is authorized to pull any and all permits, business licenses, and other project related documents as needed. Please don't hesitate to call if you have any questions.

Sincerely,



Nicholas Armstrong  
Responsible Managing Employee, License #EC13006226  
Regional Vice President

## ALL-PURPOSE CERTIFICATE OF ACKNOWLEDGEMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document, to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of Oregon

County of Multnomah

On 01 / 22 / 18 before me, A. Bentley-Farias, personally appeared **Nicholas Armstrong**, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or entity upon behalf of which the person acted, executed the instrument.

I certify under penalty of perjury under the law of the State of California that the foregoing paragraph is true and correct.

Witness my hand and official seal.

  
\_\_\_\_\_  
Signature of Notary Public



(Notary Seal)

3055 Clearview Way San Mateo, CA 94402 T (650) 638 - 1028 (888) SOL - CITY F (650) 638 - 1029 solarcity.com

AL 05500, AR M-8937, AZ ROC 24371/ROC 245450, CA CSLB 888104, CO EC8041, CT HIC 0432778/ELC 0125305, DC 410514/00080/ECC 902585, DE 201120384/11-4032, FLEC13004226, HI CT-28770, IL 15-0052 NA HIC 168672/EL-1136MR, MD HIC 128948/1805, NC 30801-4J, NH 0347C/12523M, NJ NJHIC#13VHC6160600/34EB01732700, NM EE 98-379590, NV NV20121735172/C2-0078448/B2-0078719, OH EL 47707, OR CB80498/C342, PA HICP07343, RI AC00474/R09 38315, TX TECL27006, UT 8728950-8501, VA ELE2705153278, VT EM-06829, WA SOLARC\*91901/SOLARC\*906P7, Albany 439, Greene A-486, Nassau H2409710000, Putnam PC6041, Rockland H-11864-40-00-00, Suffolk 52057-H, Westchester WC-26088-H13, N.Y.C. #2003584-DCA SCENYC: N.Y.C. Licensed Electrician, #12410, #004485, 155 Water St. 6th Fl., Unit 10, Brooklyn, NY 11201, #2013966-DCA All loans provided by SolarCity Finance Company, LLC  
CA Finance Lender License 6034796 SolarCity Finance Company, LLC is licensed by the Delaware State Bank Commissioner to engage in business in Delaware under license number 09422. MD Consumer Loan License 2241, NV  
Instatement Loan License IL1023 / IL1024, RI Licensed Lender #2015303LL, TX Registered Creditor 1400050963-202404, VT Lender License #6766

Permit Number: 2018-04-007  
Folio/Parcel Identification Number: 20-23-30-0668-00-880  
Prepared by: Tesla Energy

DOCH 20180195705  
04/03/2018 09:13:19 AM Page 1 of 1  
Rec Fee: \$10.00  
Phil Diamond, Comptroller  
Orange County, FL  
IP - Ret To: TESLA ENERGY

Return to: Tesla Energy  
8500 Parkline Blvd. Ste 100  
Orlando, FL 32809



**NOTICE OF COMMENCEMENT**

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

- Description of property** (legal description of the property, and street address if available)  
3903 Isle Vista Ave, Orlando, FL 32812 / Belle Vista on Lake Conway 69/12 Lot 88
- General description of improvement**  
Installation of roof-mounted photo-voltaic system.
- Owner information or Lessee information if the Lessee contracted for the improvement**  
Name Sheldon Sampson  
Address 3903 Isle Vista Ave, Orlando, FL 32812  
Interest in Property Homeowner  
Name and address of fee simple titleholder (if different from Owner listed above)  
Name \_\_\_\_\_  
Address \_\_\_\_\_
- Contractor**  
Name Tesla Energy Operations, Inc. Telephone Number (702) 716-0084  
Address 5012 Joanne Kearney Blvd Tampa, FL 33619
- Surety** (if applicable, a copy of the payment bond is attached)  
Name \_\_\_\_\_ Telephone Number \_\_\_\_\_  
Address \_\_\_\_\_ Amount of Bond \$ \_\_\_\_\_
- Lender**  
Name \_\_\_\_\_ Telephone Number \_\_\_\_\_  
Address \_\_\_\_\_
- Persons within the State of Florida designated by Owner upon whom notices or other documents may be served as provided by §713.13(1)(a)7, Florida Statutes.**  
Name \_\_\_\_\_ Telephone Number \_\_\_\_\_  
Address \_\_\_\_\_
- In addition to himself or herself, Owner designates the following to receive a copy of the Lienor's Notice as provided in §713.13(1)(b), Florida Statutes.**  
Name \_\_\_\_\_ Telephone Number \_\_\_\_\_  
Address \_\_\_\_\_
- Expiration date of notice of commencement** (the expiration date may not be before the completion of construction and final payment to the contractor, but will be 1 year from the date of recording unless a different date is specified) \_\_\_\_\_

SEAL  
COUNTY CLERK  
COUNTY OF ORANGE  
FLORIDA  
I hereby certify that this is a true copy of the document as reflected in the Official Records  
PHIL DIAMOND, COUNTY COMPTROLLER  
BY: [Signature] D.C.  
DATED: 4/3/18

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

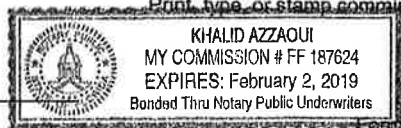
Under penalty of perjury, I declare that I have read the foregoing notice of commencement and that the facts stated in it are true to the best of my knowledge and belief.

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

The foregoing instrument was acknowledged before me this 24 day of March by SHeldon A. Sampson  
as \_\_\_\_\_ for \_\_\_\_\_  
Type of authority, e.g., officer, trustee, attorney in fact Name of party on behalf of whom instrument was executed

[Signature] Khalid Azzaoui  
Signature of Notary Public - State of Florida Print, type, or stamp commissioned name of Notary Public

Personally Known \_\_\_\_\_ OR Produced ID X  
Type of ID Produced Driver License





# UNIVERSAL ENGINEERING SCIENCES

Consultants In: Geotechnical Engineering • Environmental Sciences  
Geophysical Services • Materials Testing • Threshold Inspection  
Building Code Administration, Compliance Inspection & Plan Review

3532 Maggie Blvd, Orlando, FL 32811 - P: 407.423.0504 - F: 407.423.3106

Work Order No. 105279

## Inspection Report

Project Name: 3903 Isle Vista Avenue ~ COBI  
Address: 3903 Isle Vista Avenue ~ COBI, Belle Isle, Orange County, FL  
Client: City of Belle Isle  
ProjectNo.: 0115.1800130.0000-0115-01  
Scope of Inspection: REVIEW- Electrical Permit photovoltaic system on roof

Date: 04/03/2018 Any any  
Permit No: 2018-04-007  
Lot No.:  
Contact: Frank Matos at 407 5818161

### Inspection Type:

### Disposition of Inspection:

*Approved*

### Comments:

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

Inspector: Dale Baker, BN 3927

*Dale Baker*

*NOC ✓*

*need all and lic holder sig.*



**STATE OF FLORIDA  
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION**

**ELECTRICAL CONTRACTORS LICENSING BOARD  
2601 BLAIR STONE ROAD  
TALLAHASSEE FL 32399-0783**

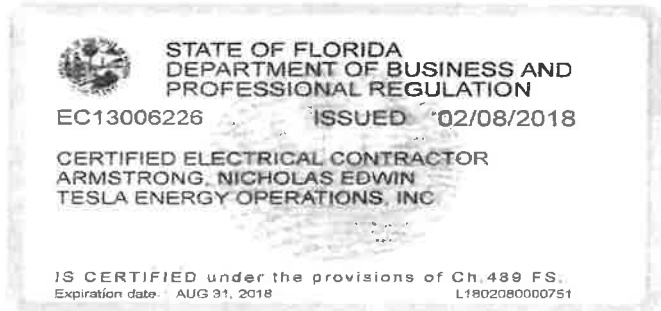
**(850) 487-1395**

**ARMSTRONG, NICHOLAS EDWIN  
TESLA ENERGY OPERATIONS, INC.  
3055 CLEARVIEW WAY  
SAN MATEO CA 94402**

Congratulations! With this license you become one of the nearly one million Floridians licensed by the Department of Business and Professional Regulation. Our professionals and businesses range from architects to yacht brokers, from boxers to barbeque restaurants, and they keep Florida's economy strong.

Every day we work to improve the way we do business in order to serve you better. For information about our services, please log onto [www.myfloridalicense.com](http://www.myfloridalicense.com). There you can find more information about our divisions and the regulations that impact you, subscribe to department newsletters and learn more about the Department's initiatives.

Our mission at the Department is: License Efficiently, Regulate Fairly. We constantly strive to serve you better so that you can serve your customers. Thank you for doing business in Florida, and congratulations on your new license!



DETACH HERE

RICK SCOTT, GOVERNOR

JONATHAN ZACHEM, SECRETARY

**STATE OF FLORIDA  
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION  
ELECTRICAL CONTRACTORS LICENSING BOARD**

<b>LICENSE NUMBER</b>	
EC13006226	

The **ELECTRICAL CONTRACTOR**  
Named below IS **CERTIFIED**  
Under the provisions of Chapter 489 FS.  
Expiration date: AUG 31, 2018

**ARMSTRONG, NICHOLAS EDWIN  
TESLA ENERGY OPERATIONS, INC.  
3055 CLEARVIEW WAY  
SAN MATEO CA 94402**



ISSUED: 02/08/2018

DISPLAY AS REQUIRED BY LAW

SEQ # L1802080000751





**Scott Randolph, Tax Collector**

**Local Business Tax Receipt**

**Orange County, Florida**

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

5000 BUSINESS OFFICE      2017      \$50.00      30 EMPLOYEES | T802      ELECTRICAL CONTR      \$30.00      5000-1186363  
1 EMPLOYEE

TOTAL TAX      \$80.00  
TRANSFER FEES      \$8.00  
PREVIOUSLY PAID      \$88.00  
TOTAL DUE      \$0.00

8500 PARKLINE BLVD #100  
U - ORLANDO, 32809  
ARMSTRONG NICHOLAS EDWIN  
PAID: \$88.00 (Multiple) 2504-03846125 4/5/2018



MARON TODD- PRESIDENT  
ARMSTRONG NICHOLAS EDWIN-QUALIFIER  
TESLA ENERGY OPERATIONS INC  
MARON TODD- PRESIDENT  
3055 CLEARVIEW WAY  
SAN MATEO CA 94402

This receipt is official when validated by the Tax Collector.



February 7, 2018

RE: CERTIFICATION LETTER

Project/Job # 328680  
Project Address:

Carr Residence  
4210 Kezar Ct  
Orlando, FL 32812

AHJ  
SC Office

Belle Isle  
Orlando



Digitally signed by Henry Zhu  
DN: cn=Henry Zhu,  
email=hzh@solarcity.com,  
ou=ADOBE(AATI), c=US,  
o=SolarCity Corporation  
Date: 2018.02.07 11:17:29 -0800'

Henry Zhu

**Design Criteria:**

- Applicable Codes = 2017 Florida Building Code (6th Edition) / IEBC, ASCE 7-10, and 2012 NDS
- Risk Category = II
- Wind Speed = 140 mph, Exposure Category C, Partially/Fully Enclosed Method
- Ground/Roof Snow Load = 0 psf
- MP1A: 2x4 @ 24" OC, Roof DL = 6.5 psf, Roof LL = 18 psf
- MP2: 2x4 @ 24" OC, Roof DL = 6.5 psf, Roof LL = 18 psf
- MP3: 2x4 @ 24" OC, Roof DL = 6.5 psf, Roof LL = 18 psf

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY HENRY ZHU ON THE DATE SHOWN USING A DIGITAL SIGNATURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

Note: Per IBC 1613.1; Seismic check is not required because  $S_s = 0.09561 < 0.4g$  and Seismic Design Category (SDC) = A < D

To Whom It May Concern,

A jobsite survey of the existing framing system of the address indicated above was performed by a site survey team from Tesla. Structural evaluation was based on site observations and the design criteria listed above.

Based on this evaluation, I certify that the alteration to the existing structure by installation of the PV system, with upgrades specified in the plans, meets the requirements of the applicable existing building and/or new building provisions adopted/referenced above.

Additionally, I certify that the PV module assembly including all standoffs supporting it have been reviewed to be in accordance with the manufacturer's specifications and to meet and/or exceed all requirements set forth by the referenced codes for loading.

The PV assembly hardware specifications are contained in the plans/docs submitted for approval.





**HARDWARE DESIGN AND STRUCTURAL ANALYSIS RESULTS SUMMARY TABLES**

Landscape Hardware	Hardware - Landscape Modules' Standoff Specifications					
	X-X Spacing	X-X Cantilever	Y-Y Spacing	Y-Y Cantilever	Configuration	Uplift DCR
MP1A	72"	24"	39"	NA	Staggered	62.0%
MP2	72"	24"	39"	NA	Staggered	62.0%
MP3	72"	24"	39"	NA	Staggered	62.0%

Portrait Hardware	Hardware - Portrait Modules' Standoff Specifications					
	X-X Spacing	X-X Cantilever	Y-Y Spacing	Y-Y Cantilever	Configuration	Uplift DCR
MP1A	48"	20"	65"	NA	Staggered	68.8%
MP2	48"	20"	65"	NA	Staggered	68.8%
MP3	48"	20"	65"	NA	Staggered	68.8%

Mounting Plane	Structure Information			Qualification Results
	Type	Pitch	Spacing	Member Evaluation Results
MP1A	Pre-Fab Truss	27°	24" O.C.	Member Impact Check OK
MP2	Pre-Fab Truss	27°	24" O.C.	Member Impact Check OK
MP3	Pre-Fab Truss	27°	24" O.C.	Member Impact Check OK

Refer to the submitted drawings for details of information collected during a site survey. All member analysis and/or evaluation is based on framing information gathered on site. The existing gravity and lateral load carrying members were evaluated in accordance with the IEBC and the IBC.



## STRUCTURE ANALYSIS - LOADING SUMMARY AND MEMBER CHECK - MP1A

Member Properties Summary					
MP1A		Horizontal Member Spans		Rafter Properties	
Roof System Properties		Overhang	1.16 ft	Actual W	1.50"
		Span 1	10.69 ft	Actual D	3.50"
		Span 2	5.79 ft	Nominal	Yes
Number of Spans (w/o Overhang)	3	Span 3	5.40 ft	A (in <sup>2</sup> )	5.25
Roofing Material	Comp Roof	Span 4		Sx (in. <sup>3</sup> )	3.06
Re-Roof	No	Span 5		Ix (in <sup>4</sup> )	5.36
Plywood Sheathing	Yes	Total Rake Span	25.86 ft	TL Defl'n Limit	120
Board Sheathing	None	PV 1 Start	1.17 ft	Wood Species	SPF
Vaulted Ceiling	No	PV 1 End	18.00 ft	Wood Grade	#2
Ceiling Finish	1/2" Gypsum Board	PV 2 Start		Fb (psi)	875
Rafter Slope	27°	PV 2 End		Fv (psi)	135
Rafter Spacing	24" O.C.	PV 3 Start		E (psi)	1,400,000
Top Lat Bracing	Full	PV 3 End		E-min (psi)	510,000
Bot Lat Bracing	At Supports				

Member Loading Summary					
Roof Pitch	6/12	Initial	Pitch Adjust	Non-PV Areas	PV Areas
Roof Dead Load	DL	6.5 psf	x 1.12	7.3 psf	7.3 psf
PV Dead Load	PV-DL	3.0 psf	x 1.12		3.4 psf
Roof Live Load	RLL	20.0 psf	x 0.90	18.0 psf	
Live/Snow Load	LL/SL <sup>1,2</sup>				
<b>Total Load (Governing LC)</b>	<b>TL</b>			<b>25.3 psf</b>	<b>10.7 psf</b>

Notes: 1. ps = Cs\*pf; Cs -roof, Cs -pv per ASCE 7 [Figure 7-2] 2. pf = 0.7 (C<sub>e</sub>) (C<sub>t</sub>) (I<sub>s</sub>) p<sub>g</sub>; C<sub>e</sub>=0.9, C<sub>t</sub>=1.1, I<sub>s</sub>=1.0

Member Analysis Results Summary					
Governing Analysis	Pre-PV	Load (psf)	Post-PV	Net Impact	Result
Gravity Loading Check	25.3		10.7	-58%	Pass

## ZEP HARDWARE DESIGN CALCULATIONS - MP1A

Mounting Plane Information			
Roofing Material		Comp Roof	
Roof Slope		27°	
Framing Type / Direction		Y-Y Rafters	
PV System Type		SolarCity SleekMount™	
Zep System Type		ZS Comp	
Standoff (Attachment Hardware)		Comp Mount SRV	
Spanning Vents		No	

Wind Design Criteria			
Design Code	IBC 2015	ASCE 7-10	
Wind Design Method		Partially/Fully Enclosed Method	
Ultimate Wind Speed	V-Ult	140 mph	Fig. 1609A
Exposure Category		C	Section 26.7
Roof Style		Gable Roof	Fig. 30.4-2A/B/C-5A/B
Mean Roof Height	h	15 ft	Section 26.2

Wind Pressure Calculation Coefficients			
Wind Pressure Exposure	$K_z$	0.85	Table 30.3-1
Topographic Factor	$K_{zt}$	1.00	Section 26.8
Wind Directionality Factor	$K_d$	0.85	Section 26.6-1
Importance Factor	I	NA	
Velocity Pressure	$q_h$	$q_h = 0.00256 (K_z) (K_{zt}) (K_d) (V^2)$ 36.2 psf	Equation 30.3-1

Wind Pressure			
Ext. Pressure Coefficient (Up)	$G C_p$ (Up)	-0.88	Fig. 30.4-2A/B/C-5A/B
Ext. Pressure Coefficient (Down)	$G C_p$ (Down)	0.45	Fig. 30.4-2A/B/C-5A/B
Design Wind Pressure	p	$p = q_h (G C_p)$	Equation 30.4-1
Wind Pressure Up	$P_{(up)}$	-31.7 psf	
Wind Pressure Down	$P_{(down)}$	16.3 psf	

## ALLOWABLE STANDOFF SPACINGS

		X-Direction	Y-Direction
Max Allowable Standoff Spacing	Landscape	72"	39"
Max Allowable Cantilever	Landscape	24"	NA
Standoff Configuration	Landscape	Staggered	
Max Standoff Tributary Area	Trib	20 sf	
PV Assembly Dead Load	W-PV	3.0 psf	
Net Wind Uplift at Standoff	T-actual	-340 lbs	
Uplift Capacity of Standoff	T-allow	548 lbs	
Standoff Demand/Capacity	DCR	62.0%	

		X-Direction	Y-Direction
Max Allowable Standoff Spacing	Portrait	48"	65"
Max Allowable Cantilever	Portrait	20"	NA
Standoff Configuration	Portrait	Staggered	
Max Standoff Tributary Area	Trib	22 sf	
PV Assembly Dead Load	W-PV	3.0 psf	
Net Wind Uplift at Standoff	T-actual	-377 lbs	
Uplift Capacity of Standoff	T-allow	548 lbs	
Standoff Demand/Capacity	DCR	68.8%	

## STRUCTURE ANALYSIS - LOADING SUMMARY AND MEMBER CHECK - MP2

Member Properties Summary					
MP2		Horizontal Member Spans		Rafter Properties	
Roof System Properties		Overhang	1.16 ft	Actual W	1.50"
Number of Spans (w/o Overhang)	4	Span 1	9.80 ft	Actual D	3.50"
Roofing Material	Comp Roof	Span 2	5.71 ft	Nominal	Yes
Re-Roof	No	Span 3	5.71 ft	A (in <sup>2</sup> )	5.25
Plywood Sheathing	Yes	Span 4	5.74 ft	Sx (in. <sup>3</sup> )	3.06
Board Sheathing	None	Span 5		Ix (in <sup>4</sup> )	5.36
Vaulted Ceiling	No	Total Rake Span	31.56 ft	TL Defl'n Limit	120
Ceiling Finish	1/2" Gypsum Board	PV 1 Start	0.75 ft	Wood Species	SPF
Rafter Slope	27°	PV 1 End	21.58 ft	Wood Grade	#2
Rafter Spacing	24" O.C.	PV 2 Start		Fb (psi)	875
Top Lat Bracing	Full	PV 2 End		Fv (psi)	135
Bot Lat Bracing	At Supports	PV 3 Start		E (psi)	1,400,000
		PV 3 End		E-min (psi)	510,000

Member Loading Summary					
Roof Pitch	6/12	Initial	Pitch Adjust	Non-PV Areas	PV Areas
Roof Dead Load	DL	6.5 psf	x 1.12	7.3 psf	7.3 psf
PV Dead Load	PV-DL	3.0 psf	x 1.12		3.4 psf
Roof Live Load	RLL	20.0 psf	x 0.90	18.0 psf	
Live/Snow Load	LL/SL <sup>1,2</sup>				
<b>Total Load (Governing LC)</b>	<b>TL</b>			<b>25.3 psf</b>	<b>10.7 psf</b>

Notes: 1. ps = Cs\*pf; Cs -roof, Cs -pv per ASCE 7 [Figure 7-2] 2. pf = 0.7 (C<sub>e</sub>) (C<sub>t</sub>) (I<sub>s</sub>) p<sub>g</sub>; C<sub>e</sub>=0.9, C<sub>t</sub>=1.1, I<sub>s</sub>=1.0

Member Analysis Results Summary					
Governing Analysis	Pre-PV	Load (psf)	Post-PV	Net Impact	Result
Gravity Loading Check	25.3		10.7	-58%	Pass

## ZEP HARDWARE DESIGN CALCULATIONS - MP2

Mounting Plane Information			
Roofing Material		Comp Roof	
Roof Slope		27°	
Framing Type / Direction		Y-Y Rafters	
PV System Type		SolarCity SleekMount™	
Zep System Type		ZS Comp	
Standoff (Attachment Hardware)		Comp Mount SRV	
Spanning Vents		No	

Wind Design Criteria			
Design Code	IBC 2015	ASCE 7-10	
Wind Design Method		Partially/Fully Enclosed Method	
Ultimate Wind Speed	V-Ult	140 mph	Fig. 1609A
Exposure Category		C	Section 26.7
Roof Style		Gable Roof	Fig. 30.4-2A/B/C-5A/B
Mean Roof Height	h	15 ft	Section 26.2

Wind Pressure Calculation Coefficients			
Wind Pressure Exposure	$K_z$	0.85	Table 30.3-1
Topographic Factor	$K_{zt}$	1.00	Section 26.8
Wind Directionality Factor	$K_d$	0.85	Section 26.6-1
Importance Factor	I	NA	
Velocity Pressure	$q_h$	$q_h = 0.00256 (K_z) (K_{zt}) (K_d) (V^2)$ 36.2 psf	Equation 30.3-1

Wind Pressure			
Ext. Pressure Coefficient (Up)	$G_{Cp} (Up)$	-0.88	Fig. 30.4-2A/B/C-5A/B
Ext. Pressure Coefficient (Down)	$G_{Cp} (Down)$	0.45	Fig. 30.4-2A/B/C-5A/B
Design Wind Pressure	p	$p = q_h (G_{Cp})$	Equation 30.4-1
Wind Pressure Up	$P_{(up)}$	-31.7 psf	
Wind Pressure Down	$P_{(down)}$	16.3 psf	

## ALLOWABLE STANDOFF SPACINGS

		X-Direction	Y-Direction
Max Allowable Standoff Spacing	Landscape	72"	39"
Max Allowable Cantilever	Landscape	24"	NA
Standoff Configuration	Landscape	Staggered	
Max Standoff Tributary Area	Trib	20 sf	
PV Assembly Dead Load	W-PV	3.0 psf	
Net Wind Uplift at Standoff	T-actual	-340 lbs	
Uplift Capacity of Standoff	T-allow	548 lbs	
Standoff Demand/Capacity	DCR	62.0%	

		X-Direction	Y-Direction
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Standoff Configuration	Portrait	Staggered	
Max Standoff Tributary Area	Trib	22 sf	
PV Assembly Dead Load	W-PV	3.0 psf	
Net Wind Uplift at Standoff	T-actual	-377 lbs	
Uplift Capacity of Standoff	T-allow	548 lbs	
Standoff Demand/Capacity	DCR	68.8%	

**STRUCTURE ANALYSIS - LOADING SUMMARY AND MEMBER CHECK - MP3**

Member Properties Summary					
MP3		Horizontal Member Spans		Upgraded Rafter Properties	
Roof System Properties		Overhang	1.16 ft	Net W	1.50"
Number of Spans (w/o Overhang)		Span 1	7.09 ft	Equiv D	3.50"
Roofing Material		Span 2		Nominal	Yes
Re-Roof		Span 3		A (in <sup>2</sup> )	5.25
Plywood Sheathing		Span 4		Sx (in. <sup>3</sup> )	3.06
Board Sheathing		Span 5		Ix (in <sup>4</sup> )	5.36
Vaulted Ceiling		Total Rake Span	9.26 ft	TL Defl'n Limit	120
Ceiling Finish		PV 1 Start	8.58 ft	Wood Species	SPF
Rafter Slope		PV 1 End	19.50 ft	Wood Grade	#2
Rafter Spacing		PV 2 Start		Fb (psi)	875
Top Lat Bracing		PV 2 End		Fv (psi)	135
Bot Lat Bracing		PV 3 Start		E (psi)	1,400,000
		PV 3 End		E-min (psi)	510,000

Member Loading Summary					
Roof Pitch	6/12	Initial	Pitch Adjust	Non-PV Areas	PV Areas
Roof Dead Load	DL	6.5 psf	x 1.12	7.3 psf	7.3 psf
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Roof Live Load	RLL	20.0 psf	x 0.90	18.0 psf	
Live/Snow Load	LL/SL <sup>1,2</sup>				
<b>Total Load (Governing LC)</b>	<b>TL</b>			<b>25.3 psf</b>	<b>10.7 psf</b>

Notes: 1. ps = Cs\*pf; Cs -roof, Cs -pv per ASCE 7 [Figure 7-2] 2. pf = 0.7 (C<sub>e</sub>) (C<sub>i</sub>) (I<sub>s</sub>) p<sub>g</sub>; C<sub>e</sub>=0.9, C<sub>i</sub>=1.1, I<sub>s</sub>=1.0

Member Analysis Results Summary					
Governing Analysis	Pre-PV	Load (psf)	Post-PV	Net Impact	Result
Gravity Loading Check	25.3		10.7	-58%	Pass



## ZEP HARDWARE DESIGN CALCULATIONS - MP3

Mounting Plane Information			
Roofing Material		Comp Roof	
Roof Slope		27°	
Framing Type / Direction		Y-Y Rafters	
PV System Type		SolarCity SleekMount™	
Zep System Type		ZS Comp	
Standoff (Attachment Hardware)		Comp Mount SRV	
Spanning Vents		No	

Wind Design Criteria			
Design Code	IBC 2015	ASCE 7-10	
Wind Design Method		Partially/Fully Enclosed Method	
Ultimate Wind Speed	V-Ult	140 mph	Fig. 1609A
Exposure Category		C	Section 26.7
Roof Style		Gable Roof	Fig. 30.4-2A/B/C-5A/B
Mean Roof Height	h	15 ft	Section 26.2

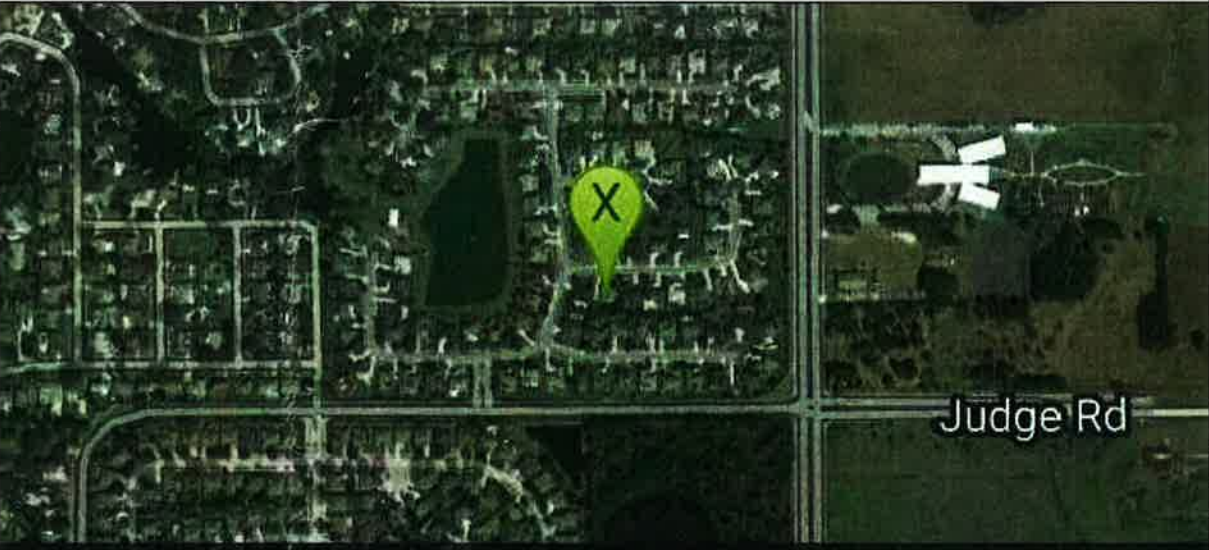

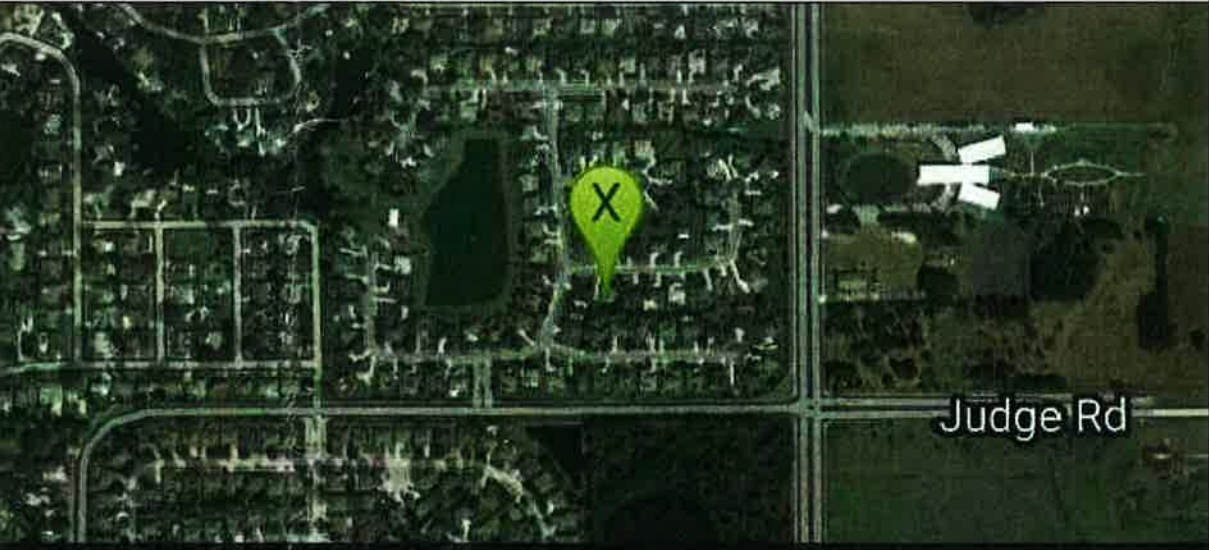
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Velocity Pressure	$q_h$	$q_h = 0.00256 (K_z) (K_{zt}) (K_d) (V^2)$ 36.2 psf	Equation 30.3-1

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## ALLOWABLE STANDOFF SPACINGS

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		X-Direction	Y-Direction
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ABBREVIATIONS	ELECTRICAL NOTES	JURISDICTION NOTES		
<p>A AMPERE  AC ALTERNATING CURRENT  BLDG BUILDING  CONC CONCRETE  DC DIRECT CURRENT  EGC EQUIPMENT GROUNDING CONDUCTOR  (E) EXISTING  EMT ELECTRICAL METALLIC TUBING  FSB FIRE SET-BACK  GALV GALVANIZED  GEC GROUNDING ELECTRODE CONDUCTOR  GND GROUND  HDG HOT DIPPED GALVANIZED  I CURRENT  Imp CURRENT AT MAX POWER  Isc SHORT CIRCUIT CURRENT  kVA KILOVOLT AMPERE  kW KILOWATT  LBW LOAD BEARING WALL  MIN MINIMUM  (N) NEW  NEUT NEUTRAL  NTS NOT TO SCALE  OC ON CENTER  PL PROPERTY LINE  POI POINT OF INTERCONNECTION  PV PHOTOVOLTAIC  SCH SCHEDULE  S STAINLESS STEEL  STC STANDARD TESTING CONDITIONS  TYP TYPICAL  UPS UNINTERRUPTIBLE POWER SUPPLY  V VOLT  Vmp VOLTAGE AT MAX POWER  Voc VOLTAGE AT OPEN CIRCUIT  W WATT  3R NEMA 3R, RAIN TIGHT</p>	<p>1. THIS SYSTEM IS GRID-INTERTIED VIA A UL-LISTED POWER-CONDITIONING INVERTER.  2. THIS SYSTEM HAS NO BATTERIES, NO UPS.  3. A NATIONALLY-RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH ART. 110.3.  4. WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A SIGN WILL BE PROVIDED WARNING OF THE HAZARDS PER ART. 690.17.  5. EACH UNGROUNDED CONDUCTOR OF THE MULTIWIRE BRANCH CIRCUIT WILL BE IDENTIFIED BY PHASE AND SYSTEM PER ART. 210.5.  6. CIRCUITS OVER 250V TO GROUND SHALL COMPLY WITH ART. 250.97, 250.92(B).  7. DC CONDUCTORS EITHER DO NOT ENTER BUILDING OR ARE RUN IN METALLIC RACEWAYS OR ENCLOSURES TO THE FIRST ACCESSIBLE DC DISCONNECTING MEANS PER ART. 690.31(E).  8. ALL WIRES SHALL BE PROVIDED WITH STRAIN RELIEF AT ALL ENTRY INTO BOXES AS REQUIRED BY UL LISTING.  9. MODULE FRAMES SHALL BE GROUNDED AT THE UL-LISTED LOCATION PROVIDED BY THE MANUFACTURER USING UL LISTED GROUNDING HARDWARE.  10. MODULE FRAMES, RAIL, AND POSTS SHALL BE BONDED WITH EQUIPMENT GROUND CONDUCTORS.</p>	<h3 style="margin:0;">VICINITY MAP</h3> 		<h3 style="margin:0;">INDEX</h3> <p>Sheet 1 COVER SHEET  Sheet 2 SITE PLAN  Sheet 3 STRUCTURAL VIEWS  Sheet 4 STRUCTURAL VIEWS  Sheet 5 UPLIFT CALCULATIONS  Sheet 6 THREE LINE DIAGRAM  Cut sheets Attached</p> <div style="text-align:right; margin-top:10px;">   4-4-18 <i>CalB</i> </div>
<h3>LICENSE</h3>	<h3>GENERAL NOTES</h3>			
	<p>1. ALL WORK SHALL COMPLY WITH THE 2017 FLORIDA BUILDING CODE (6TH EDITION).  2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2014 NATIONAL ELECTRIC CODE.</p>			
<p>MODULE GROUNDING METHOD: ZEP SOLAR</p> <p>AHJ: Belle Isle</p> <p>UTILITY: Duke Energy (FL)</p>				
<p>CONFIDENTIAL - THE INFORMATION HEREIN CONTAINED SHALL NOT BE USED FOR THE BENEFIT OF ANYONE EXCEPT TESLA INC., NOR SHALL IT BE DISCLOSED IN WHOLE OR IN PART TO OTHERS OUTSIDE THE RECIPIENT'S ORGANIZATION, EXCEPT IN CONNECTION WITH THE SALE AND USE OF THE RESPECTIVE TESLA EQUIPMENT, WITHOUT THE WRITTEN PERMISSION OF TESLA INC.</p>	<p>JOB NUMBER: JB-328680 00</p> <p>MOUNTING SYSTEM: ZS Comp V4 w Flashing-Insert</p> <p>MODULES: (72) Hanwha Q-Cells # Q.Peak-G4.1/SC305</p> <p>INVERTER: Multiple Inverters</p>	<p>CUSTOMER: JOHN CARR  4210 KEZAR CT  ORLANDO, FL 32812</p> <p>DESCRIPTION: 21.96 KW PV ARRAY</p> <p>PAGE NAME: COVER SHEET</p>	<p>DESIGN: Diego Ignacio Trapala</p> <p>SHEET: 1 REV: a DATE: 2/8/2018</p>	TESLA



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Henry Zhu  
Digitally signed by Henry Zhu  
 DN: cn=Henry Zhu, email=hzh@solarcity.com, ou=ADOBEI-AATL, c=US, o=SolarCity Corporation  
 Date: 2018.02.08 23:30:58 -0800

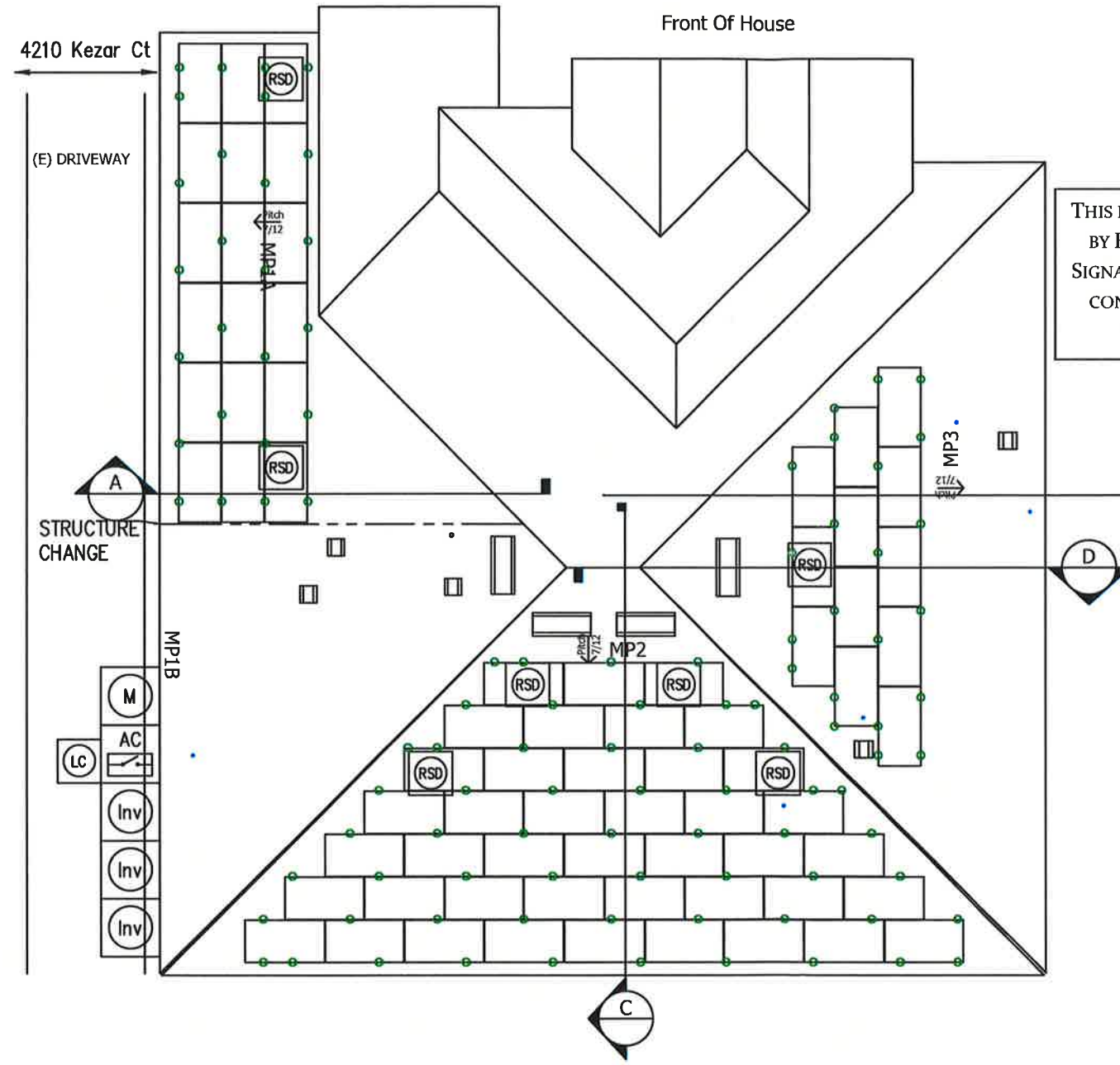
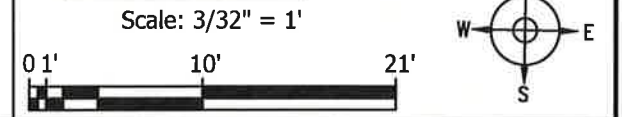
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MP2	PITCH: 27 AZIMUTH: 179 MATERIAL: Comp Shingle	ARRAY PITCH: 27 ARRAY AZIMUTH: 179 STORY: 1 Story
MP3	PITCH: 27 AZIMUTH: 89 MATERIAL: Comp Shingle	ARRAY PITCH: 27 ARRAY AZIMUTH: 89 STORY: 1 Story

### LEGEND

- (E) UTILITY METER & WARNING LABEL
- INVERTER W/ INTEGRATED DC DISCO & WARNING LABELS
- DC DISCONNECT & WARNING LABELS
- AC DISCONNECT & WARNING LABELS
- DC JUNCTION/COMBINER BOX & LABELS
- DISTRIBUTION PANEL & LABELS
- LOAD CENTER & WARNING LABELS
- DEDICATED PV SYSTEM METER
- RAPID SHUTDOWN
- STANDOFF LOCATIONS
- CONDUIT RUN ON EXTERIOR
- CONDUIT RUN ON INTERIOR
- GATE/FENCE
- HEAT PRODUCING VENTS ARE RED
- INTERIOR EQUIPMENT IS DASHED



### SITE PLAN



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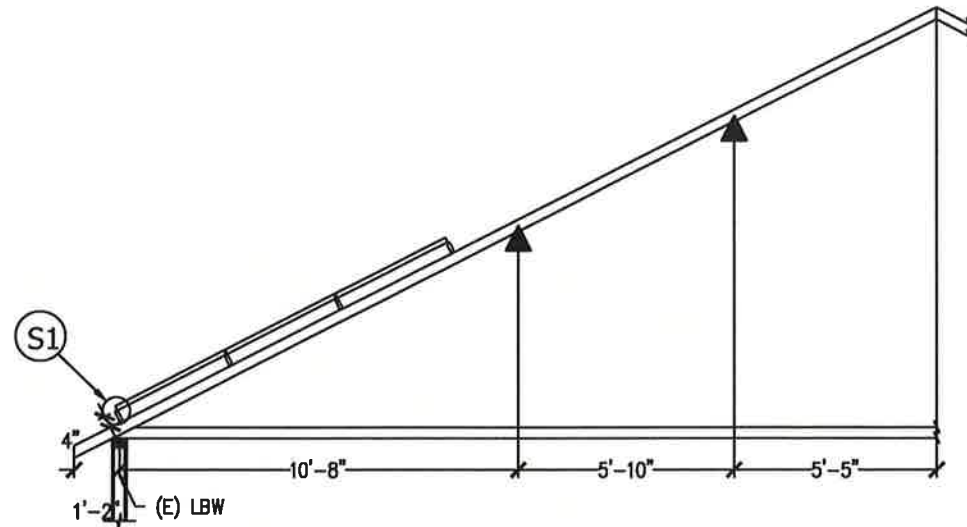
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 MOUNTING SYSTEM: ZS Comp V4 w Flashing-Insert  
 MODULES: (72) Hanwha Q-Cells # Q.Peak-G4.1/SC305  
 INVERTER: Multiple Inverters

CUSTOMER: JOHN CARR  
 4210 KEZAR CT  
 ORLANDO, FL 32812

DESCRIPTION: 21.96 KW PV ARRAY  
 PAGE NAME: SITE PLAN

DESIGN: Diego Ignacio Trapala  
 SHEET: 2 REV: a DATE: 2/8/2018



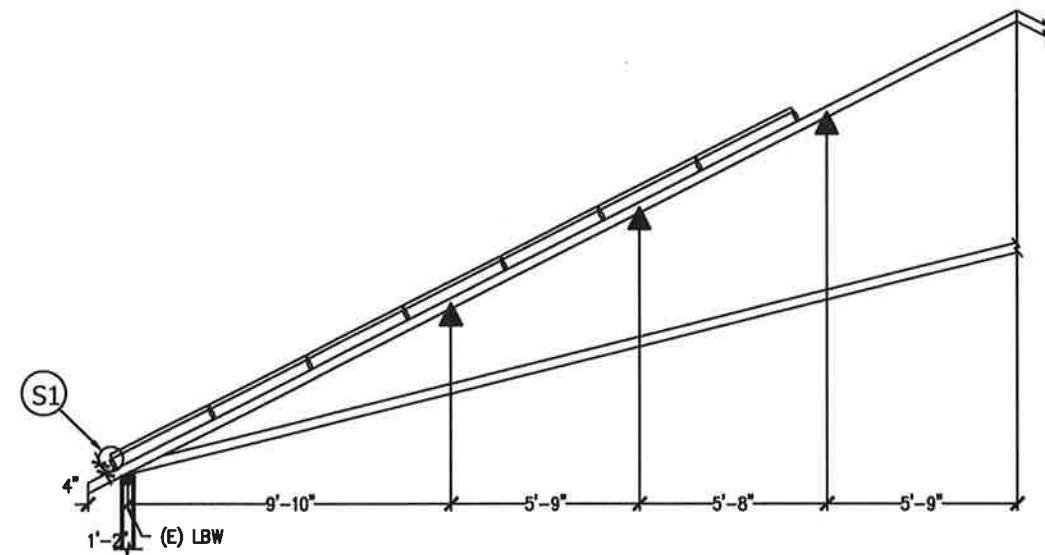


**A** SIDE VIEW OF MP1A NTS

MP1A	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	72"	24"	39"	0"	STAGGERED
PORTRAIT	48"	20"	65"	0"	
TOP CHORD 2x4 @ 24" OC		ROOF AZI 269 PITCH 27		STORIES: 1	
BOT CHORD 2x4 @ 24" OC		ARRAY AZI 269 PITCH 27		Comp Shingle	
X AND Y ARE ALWAYS RELATIVE TO THE STRUCTURE FRAMING THAT SUPPORTS THE PV. X IS ACROSS RAFTERS AND Y IS ALONG RAFTERS.					

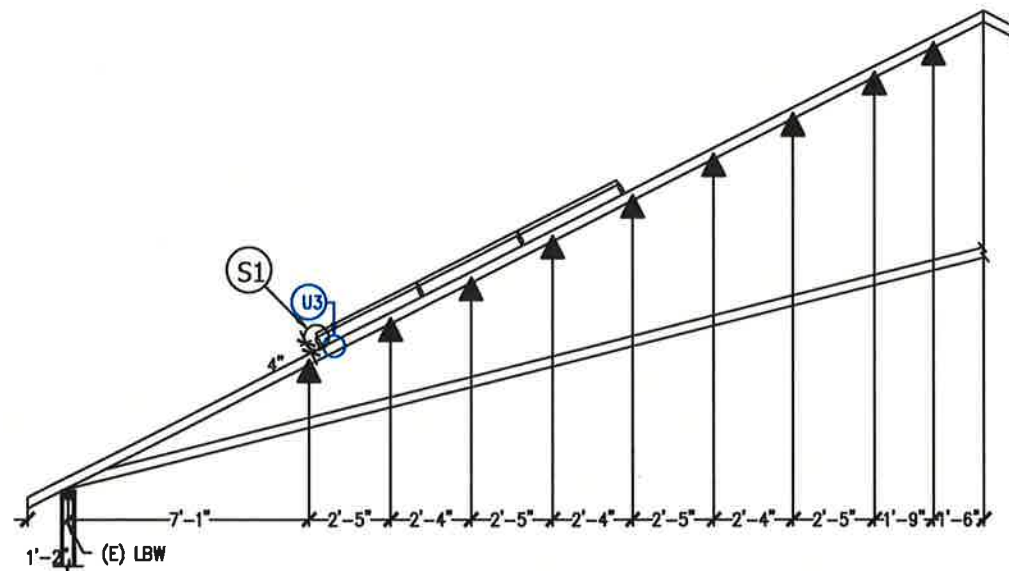


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**C** SIDE VIEW OF MP2 NTS

MP2	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	72"	24"	39"	0"	STAGGERED
PORTRAIT	48"	20"	65"	0"	
TOP CHORD 2x4 @ 24" OC		ROOF AZI 179 PITCH 27		STORIES: 1	
BOT CHORD 2x4 @ 24" OC		ARRAY AZI 179 PITCH 27		Comp Shingle	
X AND Y ARE ALWAYS RELATIVE TO THE STRUCTURE FRAMING THAT SUPPORTS THE PV. X IS ACROSS RAFTERS AND Y IS ALONG RAFTERS.					

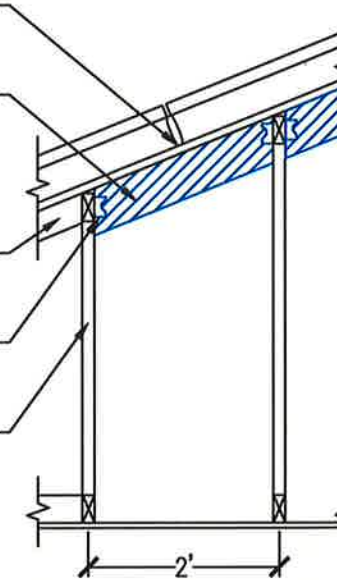


**D** SIDE VIEW OF MP3 NTS

MP3	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	72"	24"	39"	0"	STAGGERED
PORTRAIT	48"	20"	65"	0"	
TOP CHORD 2x4 @ 24" OC		ROOF AZI 89 PITCH 27		STORIES: 1	
BOT CHORD 2x4 @ 24" OC		ARRAY AZI 89 PITCH 27		Comp Shingle	
X AND Y ARE ALWAYS RELATIVE TO THE STRUCTURE FRAMING THAT SUPPORTS THE PV. X IS ACROSS RAFTERS AND Y IS ALONG RAFTERS.					

THIS STRUCTURE WILL RECEIVE A BLOCKING UPGRADE.

- (N) STANDOFF SHALL LAG DIRECTLY INTO (N) BLOCKING
- (N) 2x6 DF#2 OR SPF#2 BLOCKING.
- (E) JACK TRUSS OR RAFTER (BLOCKING NOT REQUIRED DOWN HERE)
- (N) SIMPSON A34 CLIPS (2 PER BLOCK) W/ (8) 8d (0.131") X 1-1/2" NAILS PER CLIP
- (E) SHORTEST BOX TRUSS (BLOCKING FROM HERE UP TO RIDGE AS NEEDED)



**INSTALLATION NOTES:**

- CUT (N) BLOCKING TO FIT TIGHT BETWEEN (E) TRUSSES AND KEEP FLUSH TO ROOF SHEATHING. ENSURE THERE ARE NO GAPS BETWEEN MEMBERS.
- INSTALL (N) BLOCKING WITH TWO A34 CLIPS, ONE AT EACH END OF BLOCKING.
- NAIL A34 CLIPS TO EXISTING RAFTERS WITH (8) 8D (0.131") X 1.5" NAILS, FILLING ALL HOLES. ENSURE ALL NAILS ARE LOCATED AWAY FROM EDGE OF MEMBERS TO AVOID SPLITTING WOOD.

\* INSTALL BLOCKING ONLY BELOW STANDOFF LOCATIONS.

**U3** NEW BLOCKING SIDE VIEW Scale: 1/2" = 1'



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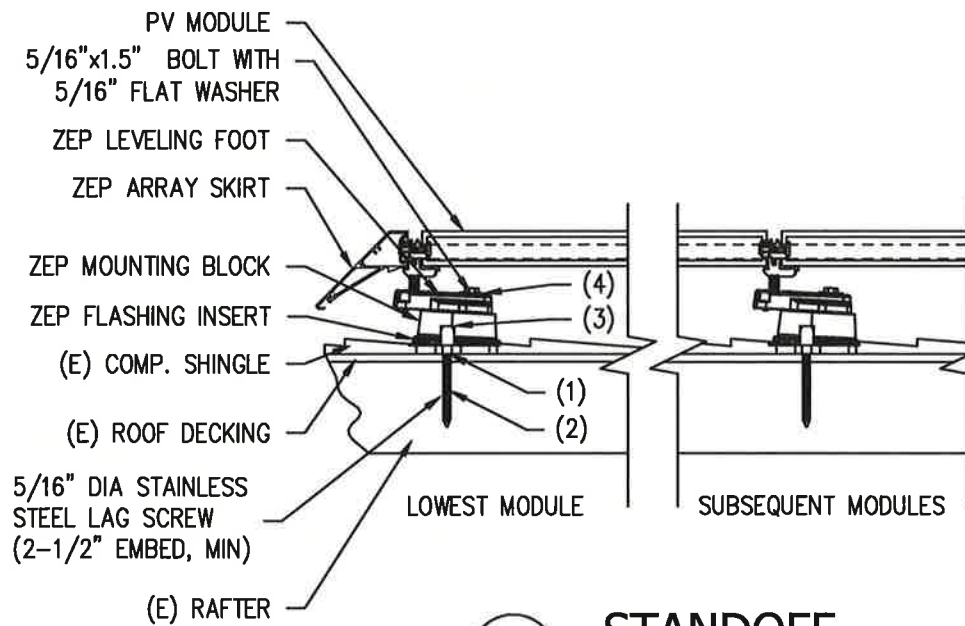
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 INVERTER: Multiple Inverters

CUSTOMER: JOHN CARR  
 4210 KEZAR CT  
 ORLANDO, FL 32812

DESCRIPTION: 21.96 KW PV ARRAY  
 PAGE NAME: STRUCTURAL VIEWS

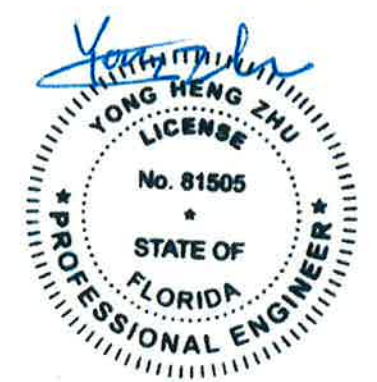
DESIGN: Diego Ignacio Trapala  
 SHEET: 3 REV: a DATE: 2/8/2018





- INSTALLATION ORDER**
- (1) LOCATE RAFTER, MARK HOLE LOCATION, AND DRILL PILOT HOLE.
  - (2) ATTACH FLASHING INSERT TO MOUNTING BLOCK AND ATTACH TO RAFTER USING LAG SCREW.
  - (3) INJECT SEALANT INTO FLASHING INSERT PORT, WHICH SPREADS SEALANT EVENLY OVER THE ROOF PENETRATION.
  - (4) INSTALL LEVELING FOOT ON TOP OF MOUNTING BLOCK & SECURELY FASTEN WITH BOLT.

**S1** **STANDOFF**  
Scale: 1 1/2" = 1'



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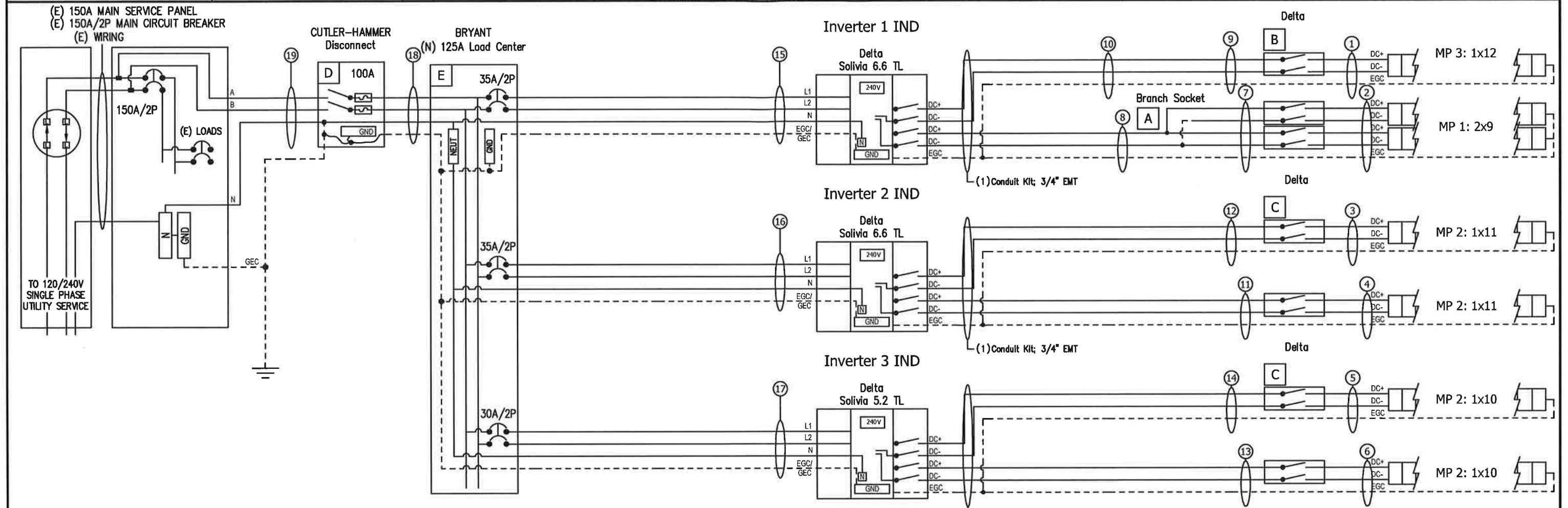
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	INVERTER: Multiple Inverters		PAGE NAME: STRUCTURAL VIEWS	SHEET: 4 REV: a DATE: 2/8/2018	

SEE SEPARATE PACKET FOR STRUCTURAL CALCULATIONS.



<small>CONFIDENTIAL - THE INFORMATION HEREIN CONTAINED SHALL NOT BE USED FOR THE BENEFIT OF ANYONE EXCEPT TESLA INC., NOR SHALL IT BE DISCLOSED IN WHOLE OR IN PART TO OTHERS OUTSIDE THE RECIPIENT'S ORGANIZATION, EXCEPT IN CONNECTION WITH THE SALE AND USE OF THE RESPECTIVE TESLA EQUIPMENT, WITHOUT THE WRITTEN PERMISSION OF TESLA INC.</small>	JOB NUMBER: JB-328680 00	CUSTOMER: JOHN CARR 4210 KEZAR CT ORLANDO, FL 32812	DESCRIPTION: 21.96 KW PV ARRAY	DESIGN: Diego Ignacio Trapala	<b>TESLA</b>
	MOUNTING SYSTEM: ZS Comp V4 w Flashing-Insert		PAGE NAME: UPLIFT CALCULATIONS	SHEET: 5	
	MODULES: (72) Hanwha Q-Cells # Q.Peak-G4.1/SC305			REV: a	
	INVERTER: Multiple Inverters			DATE: 2/8/2018	

GROUND SPECS	MAIN PANEL SPECS	GENERAL NOTES	INVERTER SPECS	MODULE SPECS	LICENSE
BOND (N) #8 GEC TO (N) GROUND ROD AT PANEL WITH IRREVERSIBLE CRIMP	Panel Number: NoMatch Meter Number: 5560874 Underground Service Entrance	Inv 1: DC Ungrounded Inv 2: DC Ungrounded Inv 3: DC Ungrounded Tie-In: Supply Side Connection	INV 1 - (1) Delta # Solivia 6.6 TL Inverter; 6600W, 240V, 97.5%, Ziqbee, PLC LABEL: A INV 2 - (1) Delta # Solivia 6.6 TL Inverter; 6600W, 240V, 97.5%, Ziqbee, PLC LABEL: B INV 3 - (1) Delta # Solivia 5.2 TL Inverter; 5200W, 240V, 97.5%, Ziqbee, PLC LABEL: C	(72) Hanwha Q-Cells # Q.PEAK-G4.1/SC305 PV Module; 305W, 279.2PTC, 40MM, Black Frame, MC4, ZEP, 1000V Voc: 40.05 Vpmax: 32.62 Isc AND Imp ARE SHOWN IN THE DC STRINGS IDENTIFIER	



Voc\* = MAX VOC AT MIN TEMP

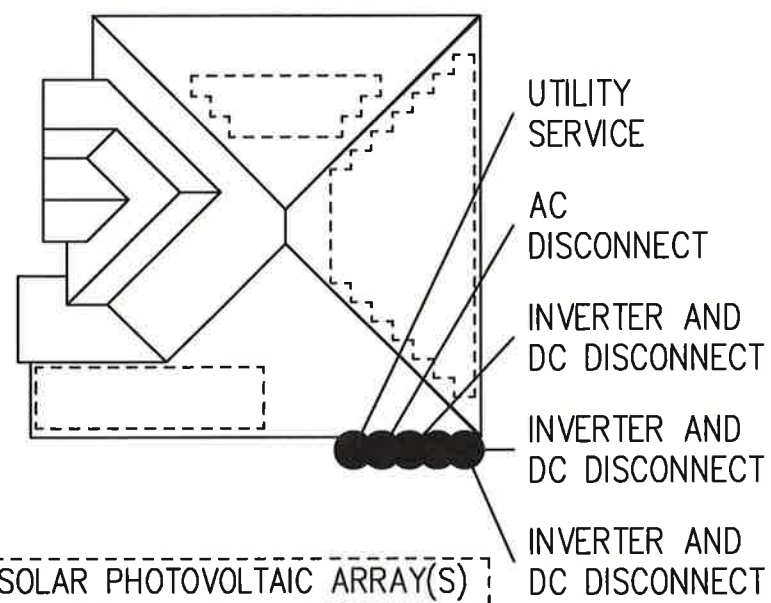
AC	DC
<b>POI</b> (1) Ground Rod 5/8" x 8", Copper (2) ILSCO # IPC 4/0-2/0 Insulation Piercing Connector; Main 4/0-2, Tap 2/0-6 <b>SSC</b> SUPPLY SIDE CONNECTION. DISCONNECTING MEANS SHALL BE SUITABLE AS SERVICE EQUIPMENT AND SHALL BE RATED PER NEC. <b>16</b> (1) AWG #8, THWN-2, Black (1) AWG #8, THWN-2, Red (1) AWG #10, THWN-2, White (1) AWG #3, THWN-2, Green (1) AWG #10, THWN-2, Black <b>17</b> (1) AWG #10, THWN-2, Red (1) AWG #10, THWN-2, White (1) AWG #8, THWN-2, Green (1) AWG #3, THWN-2, Black <b>18</b> (1) AWG #3, THWN-2, Red (1) AWG #3, THWN-2, White (1) AWG #8, THWN-2, Green (1) AWG #3, THWN-2, Black <b>19</b> (1) AWG #3, THWN-2, Red (1) AWG #3, THWN-2, White (1) AWG #6, Solid Bare Copper NEUTRAL Vmp = 240 VAC Imp = 27.5 AAC EGC/GEC - (1) Conduit Kit; 3/4" EMT NEUTRAL Vmp = 240 VAC Imp = 21.6 AAC EGC/GEC - (1) Conduit Kit; 3/4" EMT NEUTRAL Vmp = 240 VAC Imp = 76.6 AAC EGC/GEC - (1) CONDUIT KIT 1" x 10" EMT Conduit NEUTRAL Vmp = 240 VAC Imp = 76.6 AAC GEC - (1) CONDUIT KIT 1" x 10" EMT Conduit	<b>D</b> (1) CUTLER-HAMMER # DG223NRB Disconnect; 100A, 240VAC, Fusible, NEMA 3R (1) CUTLER-HAMMER # DG100NB Ground/Neutral Kit; 60-100A, General Duty (DG) (1) CUTLER-HAMMER # JDS16FK Class R Fuse Kit (2) FERRAZ SHAWMUT # TR100R Fuse; 100A, 250V, Class RK5 <b>E</b> (1) BRYANT # BR816L125RP Load Center; 125A, 120/240V, NEMA 3R (2) CUTLER-HAMMER # BR235 Breaker; 35A/2P, 2 Spaces (1) CUTLER-HAMMER # BR230 Breaker; 30A/2P, 2 Spaces <b>13</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 429.66 VDC Isc = 9.84 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 326.2 VDC Imp = 9.35 ADC (1) Conduit Kit; 3/4" EMT <b>14</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 429.66 VDC Isc = 9.84 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 326.2 VDC Imp = 9.35 ADC (1) Conduit Kit; 3/4" EMT <b>15</b> (1) AWG #8, THWN-2, Black (1) AWG #8, THWN-2, Red (1) AWG #10, THWN-2, White (1) AWG #8, THWN-2, Green NEUTRAL Vmp = 240 VAC Imp = 27.5 AAC EGC/GEC - (1) Conduit Kit; 3/4" EMT
<b>A</b> (4) Delta # Solivia Smart RSS Rapid Shutdown, 600V, 20A, NEMA 4X, MC4 <b>B</b> (4) Delta # Solivia Smart RSS Rapid Shutdown, 600V, 20A, NEMA 4X, MC4 <b>C</b> (4) Delta # Solivia Smart RSS Rapid Shutdown, 600V, 20A, NEMA 4X, MC4 <b>7</b> (4) AWG #10, PV Wire, 600V, Black Voc* = 386.69 VDC Isc = 19.68 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 293.58 VDC Imp = 18.7 ADC (1) Conduit Kit; 3/4" EMT <b>8</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 386.69 VDC Isc = 19.68 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 293.58 VDC Imp = 18.7 ADC (1) Conduit Kit; 3/4" EMT <b>9</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 257.79 VDC Isc = 19.68 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 195.72 VDC Imp = 18.7 ADC (1) Conduit Kit; 3/4" EMT <b>10</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 257.79 VDC Isc = 19.68 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 195.72 VDC Imp = 18.7 ADC (1) Conduit Kit; 3/4" EMT <b>11</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 472.62 VDC Isc = 9.84 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 358.82 VDC Imp = 9.35 ADC (1) Conduit Kit; 3/4" EMT <b>12</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 472.62 VDC Isc = 9.84 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 358.82 VDC Imp = 9.35 ADC (1) Conduit Kit; 3/4" EMT	<b>A</b> (2) #32.0019 MULTI-CONTACT # PV-AZB4 Branch Socket; MC4 U-Joint Connector, Female Female Male (2) #32.0018 MULTI-CONTACT # PV-AZS4 Branch Plug; MC4 U-Joint Connector, Male Male Female <b>1</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 257.79 VDC Isc = 9.84 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 195.72 VDC Imp = 9.35 ADC (1) Conduit Kit; 3/4" EMT <b>2</b> (4) AWG #10, PV Wire, 600V, Black Voc* = 386.69 VDC Isc = 9.84 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 293.58 VDC Imp = 9.35 ADC (1) Conduit Kit; 3/4" EMT <b>3</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 472.62 VDC Isc = 9.84 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 358.82 VDC Imp = 9.35 ADC (1) Conduit Kit; 3/4" EMT <b>4</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 472.62 VDC Isc = 9.84 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 358.82 VDC Imp = 9.35 ADC (1) Conduit Kit; 3/4" EMT <b>5</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 429.66 VDC Isc = 9.84 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 326.2 VDC Imp = 9.35 ADC (1) Conduit Kit; 3/4" EMT <b>6</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 429.66 VDC Isc = 9.84 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 326.2 VDC Imp = 9.35 ADC (1) Conduit Kit; 3/4" EMT

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-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------	--------------------------------------------------------------------------------------------------	-------------------------------------------------------------------	--

# CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN:

- Address: 4210 Kezar Ct



**PHOTOVOLTAIC BACK-FED CIRCUIT BREAKER IN MAIN ELECTRICAL PANEL IS AN A/C DISCONNECT PER NEC 690.17**

OPERATING VOLTAGE = 240V

JB-328680-00

Reviewed for Code Compliance  
Universal Engineering Sciences

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JOB NUMBER: JB-328680 00

MOUNTING SYSTEM:  
ZS Comp V4 w Flashing-Insert

MODULES:  
(72) Hanwha Q-Cells # Q.Peak-G4.1/SC305

INVERTER:  
Multiple Inverters

CUSTOMER:  
JOHN CARR  
4210 KEZAR CT  
ORLANDO, FL 32812

DESCRIPTION:  
21.96 KW PV ARRAY

PAGE NAME:  
SITE PLAN PLACARD

DESIGN:  
Diego Ignacio Trapala

SHEET: 7 REV: a DATE: 2/8/2018

**TESLA**



WARNING: PHOTOVOLTAIC POWER SOURCE

Label Location:  
(C)(CB)(JB)  
Per Code:  
NEC 690.31.G.3

PHOTOVOLTAIC DC  
DISCONNECT

Label Location:  
(DC) (INV)  
Per Code:  
NEC 690.14.C.2

**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)(POI)  
Per Code:  
NEC 690.17.E

**WARNING**  
ELECTRIC SHOCK HAZARD  
THE DC CONDUCTORS OF THIS  
PHOTOVOLTAIC SYSTEM ARE  
UNGROUND AND  
MAY BE ENERGIZED

Label Location:  
(DC) (INV)  
Per Code:  
NEC 690.35(F)  
TO BE USED WHEN  
INVERTER IS  
UNGROUND

MAXIMUM POWER POINT CURRENT (Imp)  A  
MAXIMUM POWER POINT VOLTAGE (Vmp)  V  
MAXIMUM SYSTEM VOLTAGE (Voc)  V  
SHORT-CIRCUIT CURRENT (Isc)  A

Label Location:  
(DC) (INV)  
Per Code:  
NEC 690.53

PHOTOVOLTAIC POINT OF INTERCONNECTION  
**WARNING: ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION. FOR SERVICE DE-ENERGIZE BOTH SOURCE AND MAIN BREAKER PV POWER SOURCE**  
MAXIMUM AC OPERATING CURRENT  A  
MAXIMUM AC OPERATING VOLTAGE  V

Label Location:  
(POI)  
Per Code:  
NEC 690.17.4; NEC 690.54

**WARNING**  
ELECTRIC SHOCK HAZARD  
IF A GROUND FAULT IS INDICATED  
NORMALLY GROUNDED  
CONDUCTORS MAY BE  
UNGROUND AND ENERGIZED

Label Location:  
(DC) (INV)  
Per Code:  
NEC 690.5(C)

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

Label Location:  
(POI)  
Per Code:  
NEC 690.64.B.4

**WARNING**  
ELECTRICAL 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:  
(DC) (CB)  
Per Code:  
NEC 690.17(4)

**CAUTION**  
PHOTOVOLTAIC SYSTEM  
CIRCUIT IS BACKFED

Label Location:  
(D) (POI)  
Per Code:  
NEC 690.64.B.4

PHOTOVOLTAIC AC  
DISCONNECT

Label Location:  
(AC) (POI)  
Per Code:  
NEC 690.14.C.2


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

Label Location:  
(POI)  
Per Code:  
NEC 690.64.B.7

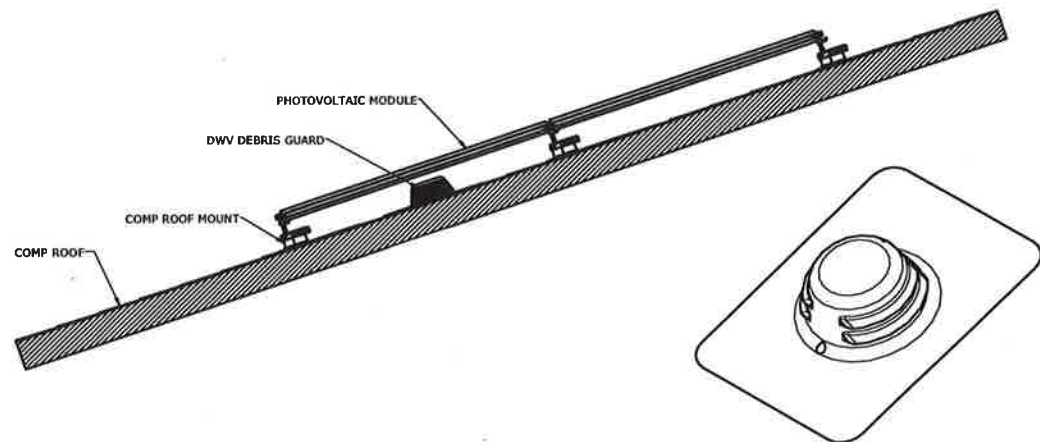
MAXIMUM AC OPERATING CURRENT  A  
MAXIMUM AC OPERATING VOLTAGE  V

Label Location:  
(AC) (POI)  
Per Code:  
NEC 690.54

(AC): AC Disconnect  
(C): Conduit  
(CB): Combiner Box  
(D): Distribution Panel  
(DC): DC Disconnect  
(IC): Interior Run Conduit  
(INV): Inverter With Integrated DC Disconnect  
(LC): Load Center  
(M): Utility Meter  
(POI): Point of Interconnection

 Reviewed for Code Compliance  
Universal Engineering Sciences

**DWV Debris Guard**  
for composition shingle roofs



DWV Debris Guard Construction Detail

Debris Guard, close up



Prevent blockages and keep vents open with the **DWV Debris Guard**.

Protects against:

- Leaves
- Pine needles
- Snow
- Rain
- Insects
- Birds

**DWV Debris Guard** is made of rugged 26 gauge galvanized steel.

Listed by IAPMO to IGC-323

zepsolar.com

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Document # 800-1677-001 Rev C

Date last exported: June 30, 2016 9:41 AM



## Rapid Shutdown Device for Delta 3.0~7.6 TL Inverters

Delta's Rapid Shutdown Devices provide an automatic disconnect of 600VDC residential or small commercial PV array system, fully compliant with the Rapid Shutdown requirements of NEC 2014 article 690.12. It is compatible with Delta's single-phase residential inverters.

### KEY FEATURES

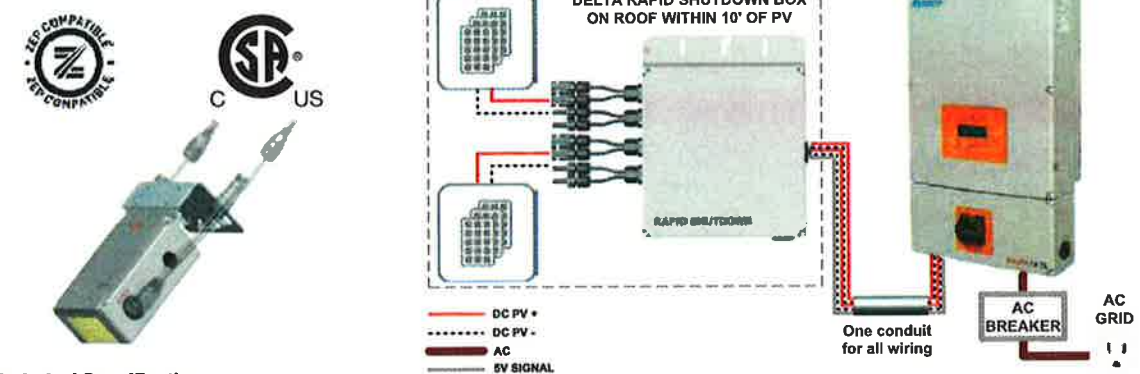
- NEMA 4X Protection
- Compact and Lightweight
- Rack Mount Installation
- Fast Connect with PV Connectors
- Compliant with NEC 2014 article 690.12
- PLC Communication (Model RSS-600 1-1 only)



[www.delta-americas.com](http://www.delta-americas.com)



### Model RSS-600 4-2 Connection Diagram:



### Technical Specifications

	RSS-600 1-1	RSS-600 4-2
<b>Input Ratings</b>		
Max. System Voltage	600V DC	600V DC
Max. Number of Input Circuit	1	4
Rated Input Current Per String	20A	10A
Fuse Rating	N/A	15A
<b>Output Ratings</b>		
Max. Number of Output Circuit	1	2
Rated Output Current Per Circuit	20A	20A
Maximum Current Controlled Conductor	25A	25A
Output Terminal Wire Size	10 AWG	12-6 AWG
Output Conduit Size	N/A	3/4" (two holes)
Control Signal Method	PLC Signal	5V Signal Wire
5V Signal Wire Voltage Rating	N/A	600V
5V Signal Wire Size Range	N/A	24-14 AWG
<b>General Data</b>		
Enclosure Size (inches L x W x D mm)	7.87 x 5.91 x 2.09 (200 x 150 x 53)	12.44 x 10.04 x 2.18 (316 x 255 x 65)
Weight	2.86lbs (1.3kg)	6.6lbs (3.0kg)
Input Connectors	MC-4 PV Connector or Amphenol H4 PV Connector	MC-4 PV Connector or Amphenol H4 PV Connector
Output Connectors	MC-4 PV Connector or Amphenol H4 PV Connector	Screw Terminal Blocks
Operating Temperature	-40 ~ 158°F (-40 ~ 70°C)	-40 ~ 158°F (-40 ~ 70°C)
Storage Temperature	-40 ~ 185°F (-40 ~ 85°C)	-40 ~ 185°F (-40 ~ 85°C)
Humidity	0 ~ 100%	0 ~ 100%
Max. Operating Altitude	2000m above sea level	2000m above sea level
Warranty	10 Years	10 Years
<b>Standard Compliance</b>		
Enclosure Protection Rating	NEMA 4X	NEMA 4X
Safety	UL 1741, CSA 22.2 107-1	UL 1741, CSA 22.2 107-1
NEC Code	NEC 2014 Article 690.12	NEC 2014 Article 690.12

### Delta Products Corporation, Inc.

46101 Fremont Blvd.  
Fremont, CA 94538  
Sales Email: [Inverter.Sales@delta-corp.com](mailto:Inverter.Sales@delta-corp.com)  
Support Email: [Inverter.Support@delta-corp.com](mailto:Inverter.Support@delta-corp.com)  
Sales Hotline: +1-877-440-5851 or +1-626-369-8021  
Support Hotline: +1-877-442-4832  
Support (Int.): +1-626-369-8019  
Monday to Friday from 7am to 5pm PST (apart from Holidays)

[www.delta-americas.com/solarinverters](http://www.delta-americas.com/solarinverters)

Rev. 01/2017 - All information and specifications are subject to change without notice.



Delta Solar Inverters Datasheet for SolarCity



Solar Inverters

Transformerless (TL): 3.8 kW, 5.2 kW, 6.6 kW, 7.6 kW

- Wide Operating Voltage Range: 85 ~ 550V
- Wide Operating Temperature Range: -13 ~ 158°F (-25 ~ 70°C)
- High CEC Efficiency: 97.5%
- Integrated AFCI (Arc Fault Circuit Interruption)
- NEMA 4X plus Salt Mist Corrosion Protection
- Natural Convection Cooling
- Dual MPPT (5.2kW / 6.6kW / 7.6kW)
- Compact and Lightweight
- UL 1741 / IEEE 1547 / IEEE 1547.1 / CEC Listed /UL 1699B(Type 1) / NEC 690.11

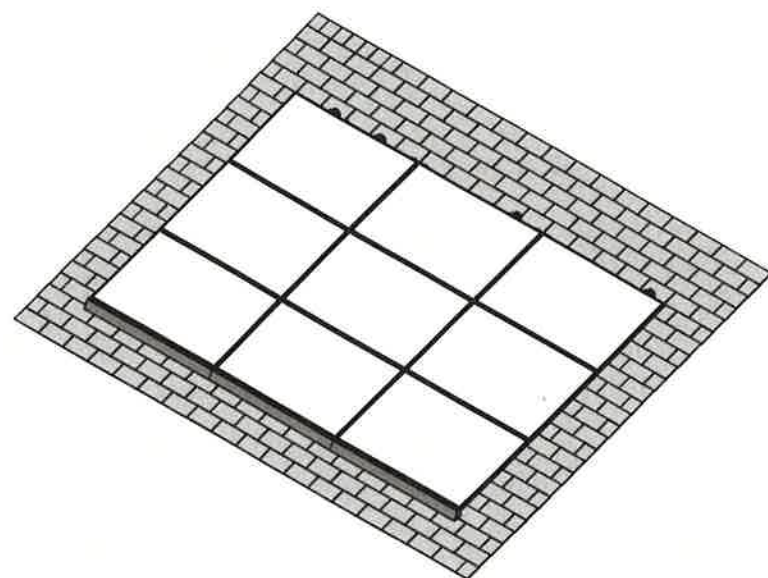


	SOLIVIA 3.0 TL	SOLIVIA 3.8 TL	SOLIVIA 5.2 TL	SOLIVIA 6.6 TL	SOLIVIA 7.6 TL
<b>INPUT (DC)</b>					
Max. System Voltage	600 V				
Nominal Voltage	380 V				
Operating Voltage Range	85 ~ 550 V				
Full Power MPPT Range	200 ~ 500 V				
Max. Usable Current	18.0 A	20.0 A	20.0 A per MPP tracker		
Max. Short Circuit Current @ STC	25.0 A per MPP tracker				
Max. Allowable Imbalance Power	-	-	4200 W	5000 W	5600 W
Allowed DC Loading Ratio	1.5				
DC Disconnect	Internal				
MPP Tracker	1	-	-	2	-
Total Input Strings Available	2	-	-	4	-
<b>OUTPUT (AC)</b>					
Nominal Power	3000 W	3800 W	5200 W	6600 W	7600 W
Max. Continuous Power	3000 W @ 208 V / 3000 W @ 240 V	3300 W @ 208 V / 3800 W @ 240 V	5200 W @ 208 V / 5200 W @ 240 V	6600 W @ 208 V / 6600 W @ 240 V	6600 W @ 208 V / 7600 W @ 240 V
Voltage Range	183 ~ 228 V @ 208 V / 211 ~ 264 V @ 240 V				
Nominal Current	14.4 A @ 208 V / 12.5 A @ 240 V	15.8 A @ 208 V / 15.8 A @ 240 V	24.0 A @ 208 V / 21.6 A @ 240 V	31.7 A @ 208 V / 27.5 A @ 240 V	31.7 A @ 208 V / 31.7 A @ 240 V
Nominal Frequency	60 Hz				
Frequency Range	59.3 ~ 60.5 Hz				
Adjustable Frequency Range	57.0 ~ 63.0 Hz				
Night Consumption	< 1.5 W				
Total Harmonic Distortion @ Nominal Power	< 3%				
Power Factor @ Nominal Power	> 0.99				
Adjustable Power Factor Range	0.85i ~ 0.85c				
Acoustic Noise Emission	< 50 db(A) @ 1m				
<b>GENERAL SPECIFICATION</b>					
Max. Efficiency	98%				
CEC Efficiency	97.5% @ 208V / 97.5% @ 240V				
Operating Temperature Range	-13 ~ 158°F (-25~70°C)   derating above 122°F (50°C)				
Storage Temperature Range	-40 ~ 185°F (-40 ~ 85°C)				
Humidity	0 ~ 100%				
Max. Operating Altitude	2000m above sea level				
<b>MECHANICAL DESIGN</b>					
Size L x W x D inches (L x W x D mm)	19.5 x 15.8 x 8.5 in (495 x 401 x 216 mm)		26.8 x 15.8 x 8.5 in (680 x 401 x 216 mm)		
Weight	43.0 lbs (19.5 kg)		65.0 lbs (29.5 kg)		
Cooling	Natural Convection				
AC Connectors	Spring terminals in connection box				
Compatible Wiring Gauge in AC	AWG 12 ~ AWG 6 Copper ( According to NEC 310.15 )				
DC Connectors	2 pairs of spring terminals in connection box		4 pairs of spring terminals in connection box		
Compatible Wiring Gauge in DC	AWG 12 ~ AWG 6 Copper (According to NEC 690.8 )				
Communication Interface	ZigBee				
Display	3 LEDs, 4-Line LCD				
Enclosure Material	Diecast Aluminum				
<b>STANDARDS / DIRECTIVES</b>					
Enclosure Protection Rating	NEMA 4X, IEC 60068-2-11 Salt mist				
Safety	UL 1741 Second Edition, CSA C22.2 No.107.1-01				
SW Approval	UL 1998				
Ground-Fault Protection	NEC 690.35, UL 1741 CRD				
Arc-Islanding Protection	IEEE 1547, IEEE 1547.1				
EMC	FCC part 15 Class B				
AFCI	UL 1699B (Type 1), NEC 690.11				
PV Rapid Shutdown	UL 1741 CRD PVRSS, NEC 690.12 (with SMART RSS)				
Integrated Meter	ANSI C12.1 (meet 1% Accuracy)				
Regulation of Grid Support	California Rule 21, HECO Compliant, IEEE1547				
<b>WARRANTY</b>					
Standard Warranty	10 years				

Delta Products Corporation, Inc.  
 46101 Fremont Blvd,  
 Fremont, CA 94538  
 Sales Email: inverter.sales@deltaww.com  
 Support Email: inverter.support@deltaww.com  
 Sales Hotline: +1-877-440-5851 or +1-626-369-8021  
 Support Hotline: +1-877-442-4832  
 Support (Intl.): +1-626-369-8019  
 Monday to Friday from 7 am to 5 pm PST (apart from Holidays)



**ZS Comp**  
for composition shingle roofs



**Description**

- PV mounting solution for composition shingle roofs
- Works with all Zep Compatible Modules
- Auto bonding UL-listed hardware creates structural and electrical bond
- ZS Comp has a UL 1703 Class "A" Fire Rating when installed using modules from any manufacturer certified as "Type 1" or "Type 2"

**Specifications**

- Designed for pitched roofs
- Installs in portrait and landscape orientations
- ZS Comp supports module wind uplift and snow load pressures to 50 psf per UL 2703
- Wind tunnel report to ASCE 7-05 and 7-10 standards
- ZS Comp grounding products are UL listed to UL 2703 and UL 467
- ZS Comp bonding products are UL listed to UL 2703
- Engineered for spans up to 72" and cantilevers up to 24"
- Zep wire management products listed to UL 1565 for wire positioning devices

zepsolar.com

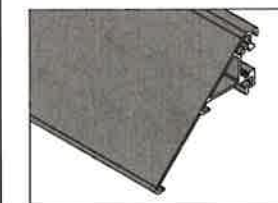
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**Components**



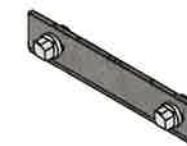
**Mounting Block**

Part No. 850-1633  
Listed to UL 2703



**Array Skirt**

Part No. 850-1608 or 850-0113  
Listed to UL 2703



**Interlock**

Part No. 850-1388 or 850-1613  
Listed to UL 2703



**Flashing Insert**

Part No. 850-1628  
Listed to UL 2703



**Grip**

Part No. 850-1606 or 850-1421  
Listed to UL 2703



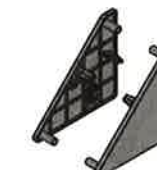
**Ground Zep V2**

Part No. 850-1511  
Listed to UL 467 and UL 2703



**Captured Washer Lag**

Part No. 850-1631-001  
850-1631-002  
850-1631-003  
850-1631-004



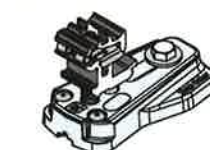
**End Cap**

Part No.  
(L) 850-1586 or 850-1460  
(R) 850-1588 or 850-1467



**DC Wire Clip**

Part No. 850-1509  
Listed to UL 1565



**Leveling Foot**

Part No. 850-1397  
Listed to UL 2703

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The new high-performance module Q.PEAK-G4.1/SC is the ideal solution for all applications thanks to its innovative cell technology Q.ANTUM ULTRA and a black Zep Compatible™ frame design for improved aesthetics, easy installation and increased safety. The world-record cell design was developed to achieve the best performance under real conditions – even with low radiation intensity and on clear, hot summer days.



**LOW ELECTRICITY GENERATION COSTS**

Higher yield per surface area and lower BOS costs thanks to higher power classes and an efficiency rate of up to 18.6%.



**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-PID Technology<sup>1</sup>, Hot-Spot-Protect and Traceable Quality Tra.Q™.



**A RELIABLE INVESTMENT**

Inclusive 12-year product warranty and 25-year linear performance guarantee<sup>2</sup>.

**THE IDEAL SOLUTION FOR:**



Engineered in Germany

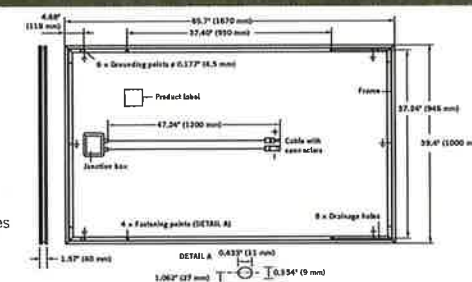


<sup>1</sup> APT test conditions: Cells at -1500V against grounded, with conductive metal foil covered module surface, 25°C, 168h  
<sup>2</sup> See data sheet on rear for further information.



**MECHANICAL SPECIFICATION**

- Format** 65.7 in x 39.4 in x 1.57 in (including frame)  
(1670 mm x 1000 mm x 40 mm)
- Weight** 44.09 lbs (20.0 kg)
- Front Cover** 0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
- Back Cover** Composite film
- Frame** Black anodized aluminum
- Cell** 6 x 10 monocrystalline Q.ANTUM ULTRA solar cells
- Junction box** 2.60-3.03 in x 4.37-3.54 in x 0.59-0.75 in  
(66-77 mm x 111-90 mm x 15-19 mm), Protection class IP67, with bypass diodes
- Cable** 4 mm<sup>2</sup> Solar cable; (+) 47.24 in (1200 mm), (-) 47.24 in (1200 mm)
- Connector** Multi-Contact MC4, IP68

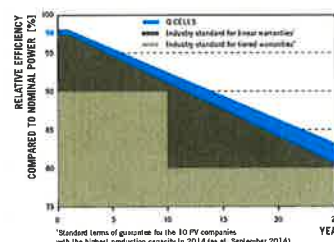


**ELECTRICAL CHARACTERISTICS**

POWER CLASS		295	300	305	
<b>MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC<sup>1</sup> (POWER TOLERANCE +5 W / -0 W)</b>					
<b>Minimum</b>	<b>Power at MPP<sup>2</sup></b>	P <sub>MPP</sub> [W]	295	300	305
	<b>Short Circuit Current<sup>3</sup></b>	I <sub>SC</sub> [A]	9.70	9.77	9.84
	<b>Open Circuit Voltage<sup>4</sup></b>	V <sub>OC</sub> [V]	39.48	39.76	40.05
	<b>Current at MPP<sup>5</sup></b>	I <sub>MPP</sub> [A]	9.17	9.26	9.35
	<b>Voltage at MPP<sup>6</sup></b>	V <sub>MPP</sub> [V]	32.19	32.41	32.62
	<b>Efficiency<sup>7</sup></b>	η [%]	≥ 17.7	≥ 18.0	≥ 18.3
<b>MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOC<sup>3</sup></b>					
<b>Minimum</b>	<b>Power at MPP<sup>2</sup></b>	P <sub>MPP</sub> [W]	218.1	221.8	225.5
	<b>Short Circuit Current<sup>3</sup></b>	I <sub>SC</sub> [A]	7.82	7.88	7.94
	<b>Open Circuit Voltage<sup>4</sup></b>	V <sub>OC</sub> [V]	36.92	37.19	37.46
	<b>Current at MPP<sup>5</sup></b>	I <sub>MPP</sub> [A]	7.20	7.27	7.35
	<b>Voltage at MPP<sup>6</sup></b>	V <sub>MPP</sub> [V]	30.30	30.49	30.67

<sup>1</sup>1000 W/m<sup>2</sup>, 25 °C, spectrum AM 1.5G <sup>2</sup>Measurement tolerances STC ± 3 %; NOC ± 5 % <sup>3</sup>800 W/m<sup>2</sup>, NOCT, spectrum AM 1.5G <sup>4</sup>typical values, actual values may differ

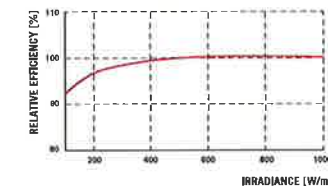
**Q CELLS PERFORMANCE WARRANTY**



At least 98% of nominal power during first year. Thereafter max. 0.6% degradation per year. At least 92.6% of nominal power up to 10 years. At least 83.6% 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 organization 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**

<b>Temperature Coefficient of I<sub>SC</sub></b>	α	[%/K]	+0.04	<b>Temperature Coefficient of V<sub>OC</sub></b>	β	[%/K]	-0.28
<b>Temperature Coefficient of P<sub>MPP</sub></b>	γ	[%/K]	-0.39	<b>Normal Operating Cell Temperature</b>	NOCT	[°F]	113 ± 5.4 (45 ± 3 °C)

**PROPERTIES FOR SYSTEM DESIGN**

<b>Maximum System Voltage V<sub>sys</sub></b>	[V]	1000 (IEC) / 1000 (UL)	<b>Safety Class</b>	II
<b>Maximum Series Fuse Rating</b>	[A DC]	20	<b>Fire Rating</b>	C (IEC) / TYPE 1 (UL)
<b>Design load, push (UL)<sup>2</sup></b>	[lbs/ft <sup>2</sup> ]	75 (3600 Pa)	<b>Permitted module temperature on continuous duty</b>	-40 °F up to +185 °F (-40 °C up to +85 °C)
<b>Design load, pull (UL)<sup>2</sup></b>	[lbs/ft <sup>2</sup> ]	55.6 (2666 Pa)	<sup>2</sup> see installation manual	

**QUALIFICATIONS AND CERTIFICATES**

UL 1703; CE-compliant; IEC 61215 (Ed.2); IEC 61730 (Ed.1) application class A



**PACKAGING INFORMATION**

<b>Number of Modules per Pallet</b>	26
<b>Number of Pallets per 53' Container</b>	32
<b>Number of Pallets per 40' Container</b>	26
<b>Pallet Dimensions (L x W x H)</b>	68.7 in x 45.3 in x 46.1 in (1745 mm x 1150 mm x 1170 mm)
<b>Pallet Weight</b>	1254 lbs (569 kg)

**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.

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