

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 MULTI-WIRE 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>	<p>PV ARRAY IN COMPLIANCE WITH OPEN SPACE CRITERIA.</p> <p>1. EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE NEC AND ALL APPLICABLE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.</p> <p>2. GROUND WIRE MUST BE CONTINUOUS AND INSTALLED TO ALLOW FOR PANEL REMOVAL WITHOUT DISRUPTING CONTINUITY. ALL MODULE GROUND CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC 690.4(C)</p> <p>3. FOLLOW MANUFACTURERS SUGGESTED INSTALLATION PRACTICES AND WIRING SPECIFICATIONS.</p> <p>4. WIRES SHALL BE RATED AND LABELED "SUNLIGHT RESISTANT" WHERE EXPOSED TO AMBIENT CONDITIONS.</p>																								
<p><b>LICENSE</b></p> <p>BLDG CL KB-01: ROC243771  ELEC CL K-11: ROC 245450</p> <p>MODULE GROUNDING METHOD: ZEP SOLAR</p> <p>AHJ: Paradise Valley</p> <p>UTILITY: Arizona Public Service Company</p>	<p><b>GENERAL NOTES</b></p> <p>1. ALL WORK SHALL COMPLY WITH THE 2015 IBC AND 2006 IRC.  2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2014 NATIONAL ELECTRIC CODE.</p>	<p><b>VICINITY MAP</b></p>  <p><b>INDEX</b></p> <p>PV1 COVER SHEET  PV2 COVER SHEET  PV3 PROPERTY PLAN  PV4 SITE PLAN  PV5 STRUCTURAL DETAILS &amp; UPLIFT CALCS  PV6 ELEVATION  PV7 THREE LINE DIAGRAM  Cutsheets Attached</p> <table border="1"> <thead> <tr> <th>REV</th> <th>BY</th> <th>DATE</th> <th>COMMENTS</th> </tr> </thead> <tbody> <tr> <td>REV A</td> <td>NAME</td> <td>DATE</td> <td>COMMENTS</td> </tr> <tr> <td>*</td> <td>*</td> <td>*</td> <td>*</td> </tr> </tbody> </table>	REV	BY	DATE	COMMENTS	REV A	NAME	DATE	COMMENTS	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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JOB NUMBER: JB-8528152 00

MOUNTING SYSTEM:  
ZS Ramp Foot

MODULES:  
(66) Hanwha Q-Cells # Q.Peak-G4.1/SC300

INVERTER:  
SOLAREDGE # SE7600A-US002SNU2

PREMISE OWNER:  
SURENDER GUNNALA  
6161 N 44TH PLACE  
PARADISE VALLEY, AZ 85253

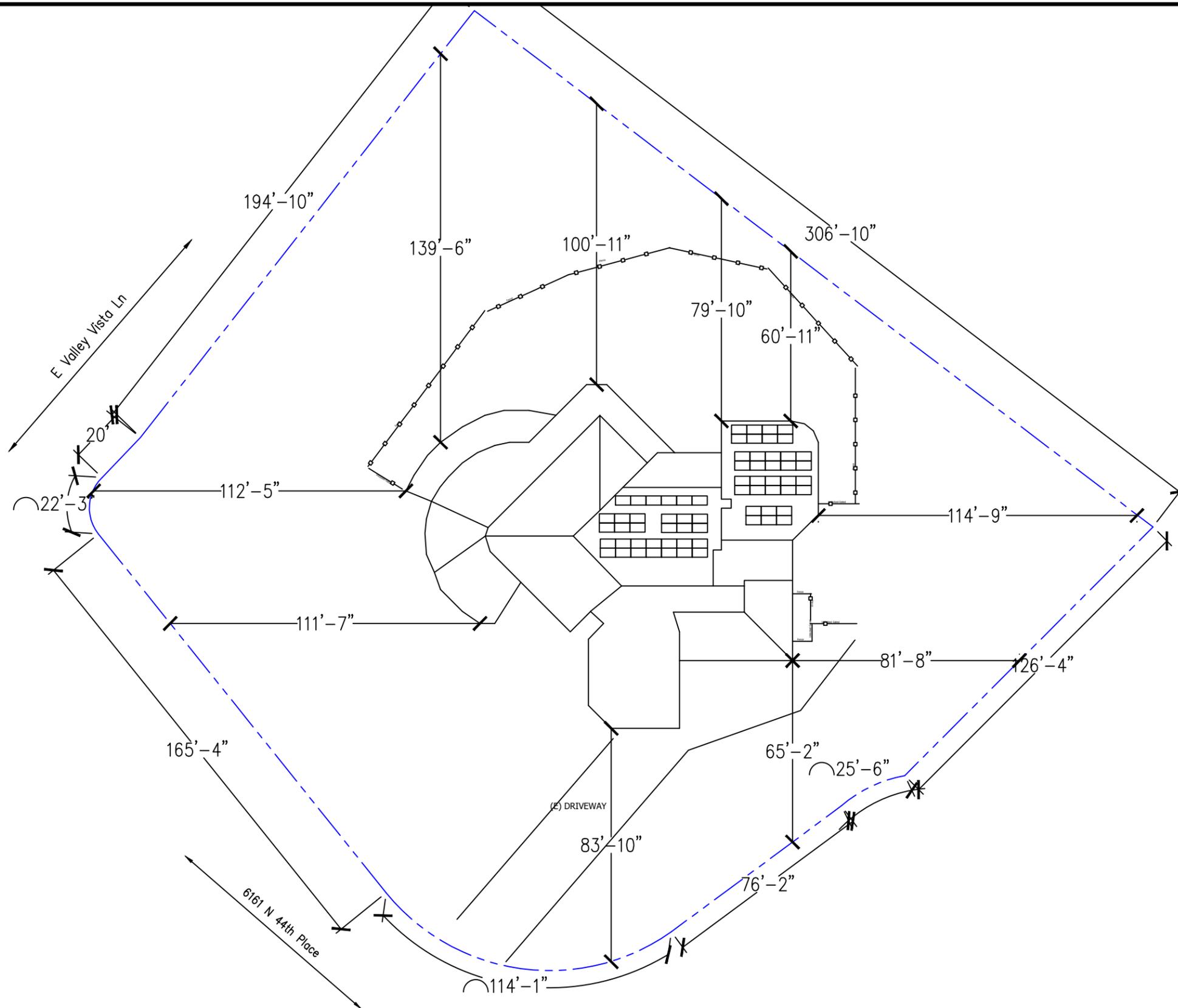
DESCRIPTION:  
Surender Gunnala RESIDENCE  
19.8 KW PV ARRAY  
15.2 KW (AC NAMEPLATE) PV ARRAY

PAGE NAME:  
COVER SHEET

DESIGN:  
Thremainne Johnson

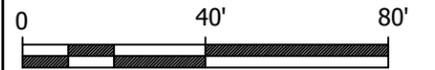
SHEET: PV 1  
REV: 1  
DATE: 8/6/2017





**PROPERTY PLAN**

Scale: 1" = 40'-0"



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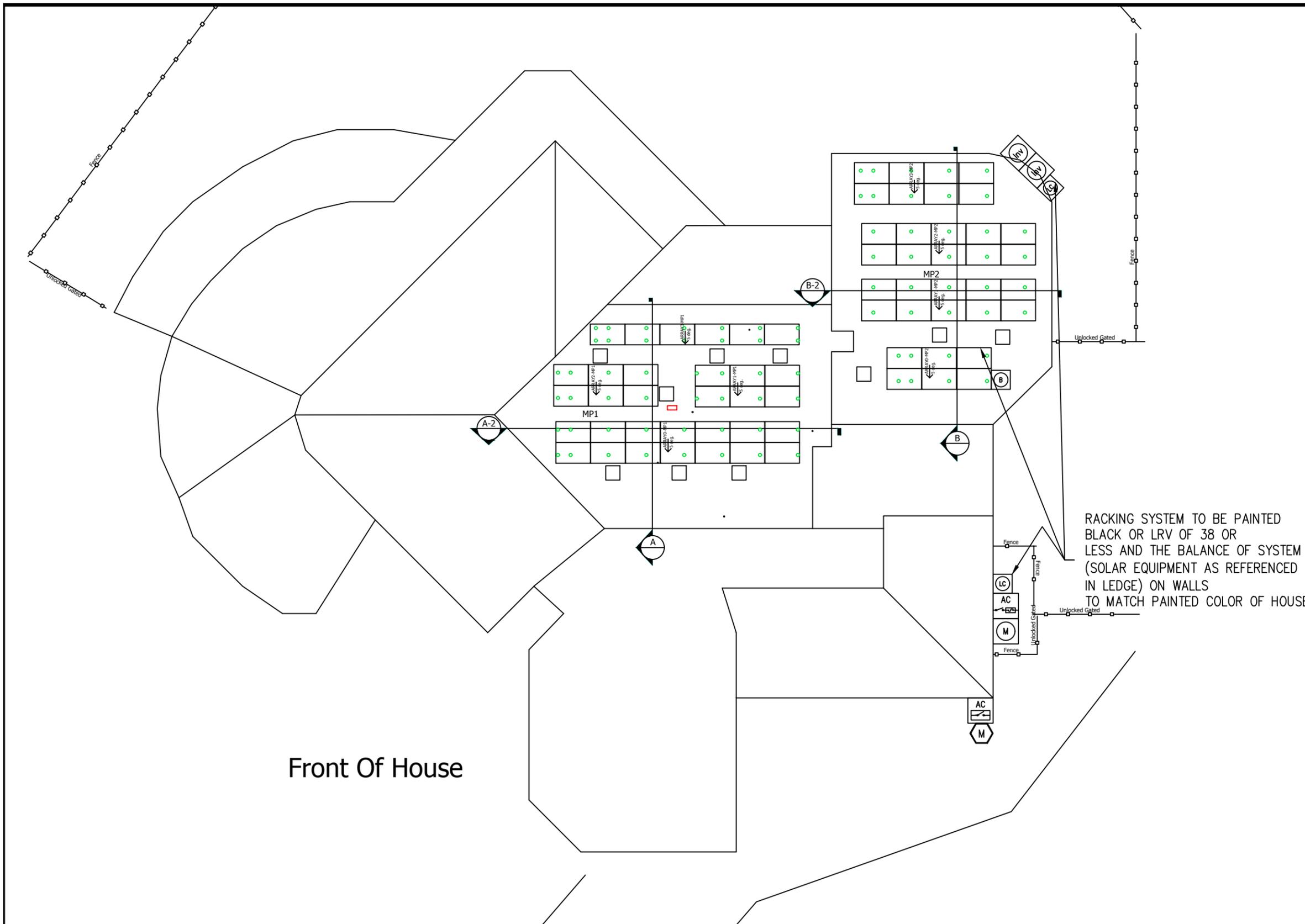
JOB NUMBER: JB-8528152 00  
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 PROPERTY PLAN

DESIGN:  
 Thremainne Johnson  
 SHEET: PV 3  
 REV: 3  
 DATE: 8/6/2017



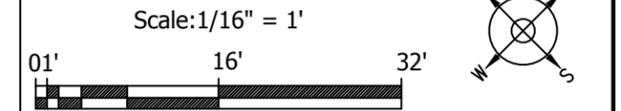


MP1	PITCH: 3 AZIMUTH: 225 MATERIAL: Foam	ARRAY PITCH: 5 ARRAY AZIMUTH: 225 STORY: 2 Stories
MP2	PITCH: 3 AZIMUTH: 225 MATERIAL: Foam	ARRAY PITCH: 5 ARRAY AZIMUTH: 225 STORY: 2 Stories

### 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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JOB NUMBER: JB-8528152 00  
 MOUNTING SYSTEM: ZS Ramp Foot  
 MODULES: (66) Hanwha Q-Cells # Q.Peak-G4.1/SC300  
 INVERTER: SOLAREEDGE # SE7600A-US002SNU2

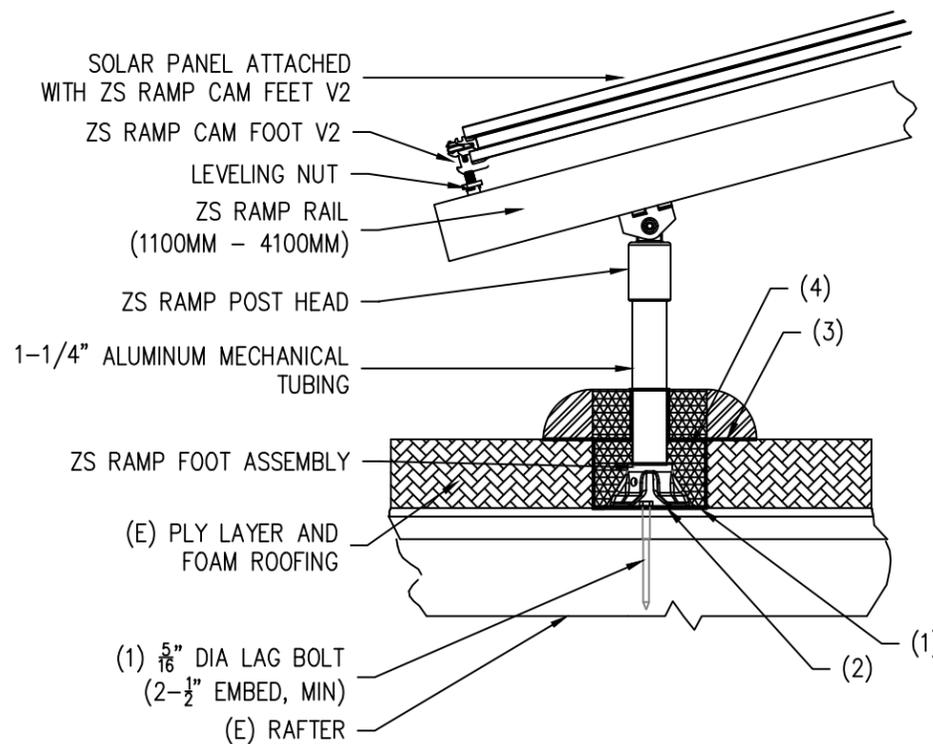
PREMISE OWNER: SURENDER GUNNALA  
 6161 N 44TH PLACE  
 PARADISE VALLEY, AZ 85253

DESCRIPTION: Surender Gunnala RESIDENCE  
 19.8 KW PV ARRAY  
 15.2 KW (AC NAMEPLATE) PV ARRAY  
 PAGE NAME: SITE PLAN

DESIGN: Thremainne Johnson  
 SHEET: PV 4  
 REV: 4  
 DATE: 8/6/2017



# UPLIFT CALCULATIONS



- INSTALLATION ORDER**
- (1) CLEAN ROOF DECK.
  - (2) APPLY M1 SEALANT BENEATH FOOT ASSEMBLY AND ON PIPE CONNECTION TO FOOT ASSEMBLY. MOUNT FOOT WITH LAG, INSTALL VERTICAL PIPE, AND POST HEAD.
  - (3) M-1 STRUCTURAL SEALANT AT BASE OF CHEMCURB AND AROUND PENETRATION.
  - (4) 1 PART POURABLE SEALANT.

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

08.06.2017  
 Version #69.4

## DESIGN SUMMARY

Jobsite Specific Design Criteria				
Design Code		ASCE 7-10		
Importance Factor	I	1.0		
Ultimate Wind Speed	V-Ult	115 mph		Fig. 1609A
Exposure Category		C		Section 26.7
Ground Snow Load	pg			ASCE Table 7-1
MP Specific Design Information				
<b>MP Name</b>	<b>MP1</b>	<b>MP2</b>		
<b>Roofing</b>	<i>Built Up / Modified Roofing</i>	<i>Built Up / Modified Roofing</i>		
<b>Standoff</b>	<b>ZS Ramp Foot</b>	<b>ZS Ramp Foot</b>		
<b>Pitch</b>	3°	3°		
<b>SL/RLL: PV</b>				
<b>SL/RLL: Non-PV</b>	20.0 psf	20.0 psf		
Standoff Spacing and Layout				
<b>MP Name</b>	<b>MP1</b>	<b>MP2</b>		
<b>X-Spacing</b>	72"	72"		
<b>X-Cantilever</b>	24"	24"		
<b>Y-Spacing</b>	72"	72"		
<b>Y-Cantilever</b>	24"	24"		
<b>X-Spacing</b>	48"	48"		
<b>X-Cantilever</b>	21"	21"		
<b>Y-Spacing</b>	72"	72"		
<b>Y-Cantilever</b>	24"	24"		
<b>Layout</b>	Not-Staggered	Not-Staggered		
X and Y are maximums that are always relative to the structure framing that supports the PV. X is across rafters and Y is along rafters.				

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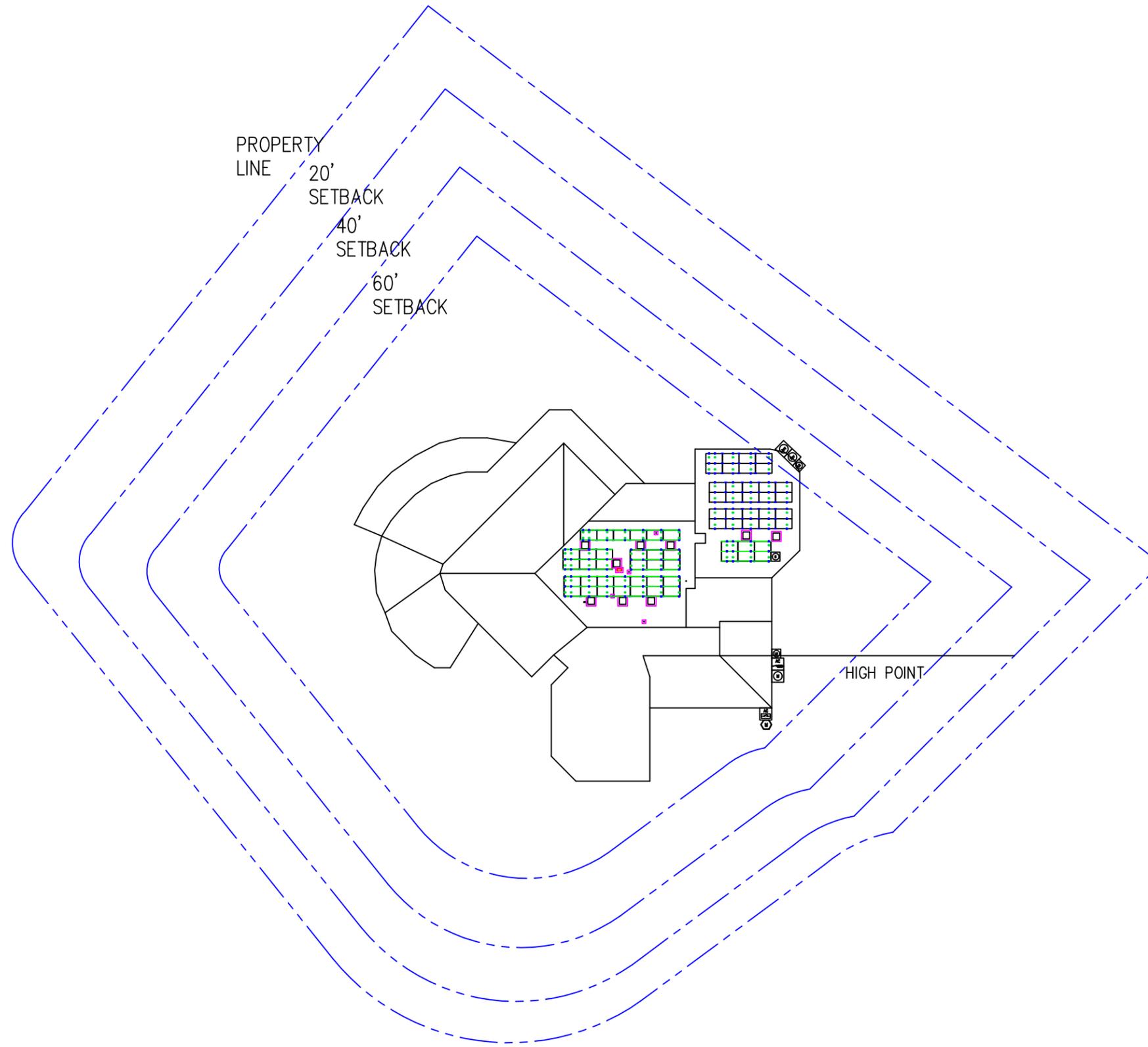
JOB NUMBER: JB-8528152 00  
 MOUNTING SYSTEM: ZS Ramp Foot  
 MODULES: (66) Hanwha Q-Cells # Q.Peak-G4.1/SC300  
 INVERTER: SOLAREEDGE # SE7600A-US002SNU2

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 PAGE NAME:  
 STRUCTURAL DETAILS & UPLIFT CALCS

DESIGN:  
 Thremainne Johnson  
 SHEET: PV 5    REV:    DATE: 8/6/2017





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MOUNTING SYSTEM:  
ZS Ramp Foot

MODULES:  
(66) Hanwha Q-Cells # Q.Peak-G4.1/SC300

INVERTER:  
SOLAREEDGE # SE7600A-US002SNU2

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PARADISE VALLEY, AZ 85253

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DESIGN:  
Thremainne Johnson

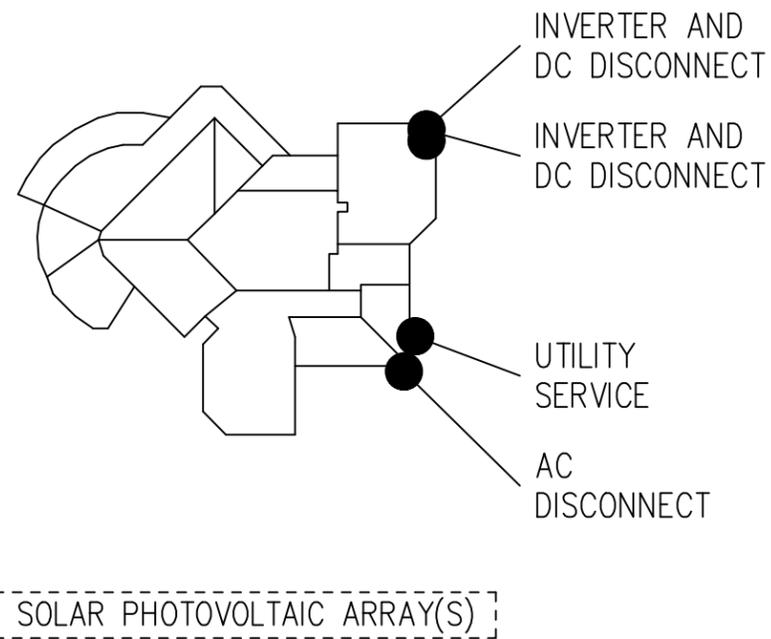
SHEET: PV 6    REV:    DATE: 8/6/2017



# CAUTION

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

- Address: 6161 N 44th Place



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

OPERATING VOLTAGE = 240V

JB-8528152-00

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INVERTER:  
SOLAREEDGE # SE7600A-US002SNU2

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15.2 KW (AC NAMEPLATE) PV ARRAY

PAGE NAME:  
SITE PLAN PLACARD

DESIGN:  
Thremainne Johnson

SHEET: PV 8 REV: 8 DATE: 8/6/2017

**TESLA**

WARNING: PHOTOVOLTAIC POWER SOURCE

Label Location:  
(C)  
Per Code:  
2012 IFC

### WARNING

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

Label Location:  
(AC) (POI)

### NOTICE

INVERTER AND DISCONNECT  
LOCATED IN GARAGE

Label Location:  
(D)

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

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

### WARNING

ELECTRIC SHOCK HAZARD  
NO USER SERVICABLE  
PARTS INSIDE  
CONTACT AUTHORIZED  
SERVICER FOR ASSISTANCE

Label Location:  
(CB)

PHOTOVOLTAIC  
SYSTEM DEDICATED  
KWH METER

Label Location:  
(AC)

### WARNING

INVERTER OUTPUT  
CONNECTION  
DO NOT RELOCATE  
THIS OVERCURRENT  
DEVICE

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

PV COMBINER BOX  
WARNING: ELECTRIC SHOCK  
HAZARD

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

PHOTOVOLTAIC SYSTEM  
UTILITY  
DISCONNECT SWITCH

Label Location:  
(AC)

**NOTICE**  
PV SYSTEM COMBINER PANEL  
DO NOT ADD LOADS  
TO THIS PANEL

Label Location:  
(D) (POI)

### DC PHOTOVOLTAIC DISCONNECT

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

PHOTOVOLTAIC POWER  
SOURCE BREAKERS  
ARE BACKFEEDING

Label Location:  
(POI)

### CAUTION

SOLAR PV SYSTEM INSTALLED  
WHEN POWER IS DISCONNECTED  
SOLAR PANELS AND WIRING IN  
CONDUIT TO INVERTER MAY  
REMAIN ENERGIZED DURING  
DAYLIGHT HOURS

Label Location:  
(D)

MAXIMUM POWER-  
POINT CURRENT (I<sub>mp</sub>)  A  
MAXIMUM POWER-  
POINT VOLTAGE (V<sub>mp</sub>)  V  
MAXIMUM SYSTEM  
VOLTAGE (V<sub>oc</sub>)  V  
SHORT-CIRCUIT  
CURRENT (I<sub>sc</sub>)  A

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

BREAKER HAS  
BEEN DE-RATED  
PER NEC 690.64(B)(2)

Label Location:  
(D)

### AC PHOTOVOLTAIC DISCONNECT

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

### WARNING

A GENERATION SOURCE IS  
CONNECTED TO THE SUPPLY  
(UTILITY) SIDE OF THE MAIN  
SERVICE DISCONNECT. FOLLOW  
PROPER LOCK-OUT/TAG-OUT  
PROCEDURES TO ENSURE  
THE PHOTOVOLTAIC SYSTEM  
UTILITY DISCONNECT SWITCH IS  
OPENED PRIOR TO PERFORMING  
WORK ON THIS DEVICE

Label Location:  
(D)

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  A  
OPERATING CURRENT  
MAXIMUM AC  V  
OPERATING VOLTAGE

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

MAXIMUM AC  A  
OPERATING CURRENT  
MAXIMUM AC  V  
OPERATING VOLTAGE

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



## 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



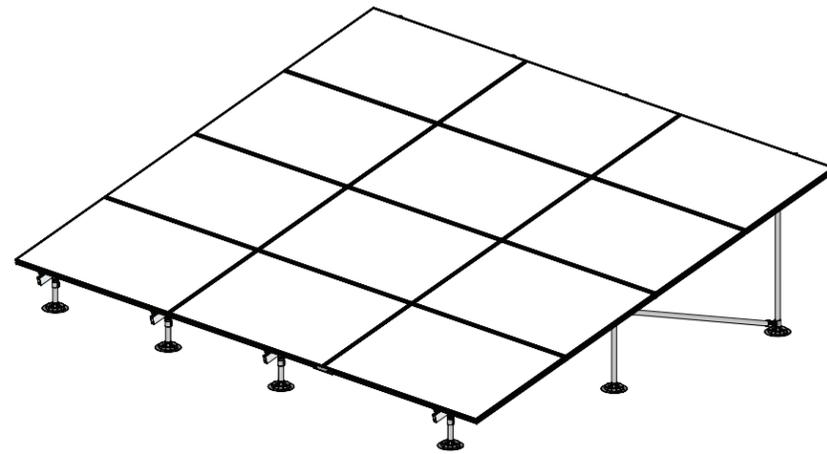
## Delta Solar Inverters Datasheet for SolarCity

	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				
Anti-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 Ramp**  
for residential low-slope roofs



ZS Ramp Array



**Description**

- PV Mounting Solution for Residential Low-Slope Roofs

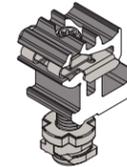
**Specifications**

- Tilt Angle: 0-15 degrees
- Designed for low slope roofs
- Corrosion resistant materials (Aluminum, Stainless Steel)
- ZS Ramp has a UL 1703 Class "A" system level fire rating when installed with modules from any manufacturer with a Type 1 or Type 2 fire classification.
- UL listed to UL 2703

This document does not create any express warranty by Zep Solar or about its products or services. Zep Solar's sole warranty is contained in the written product warranty for each product. The end-user documentation shipped with Zep Solar's products constitutes the sole specifications referred to in the product warranty. The customer is solely responsible for verifying the suitability of Zep Solar's products for each use. Specifications are subject to change without notice. Patents and Apps: zspats.com.

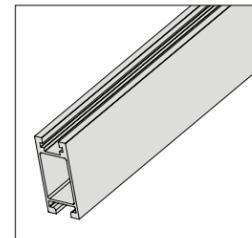
**Components**

**Cam Foot V2**



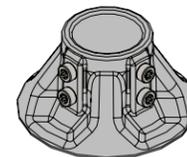
Part No. 850-1564  
UL listed to UL 2703

**Rail**



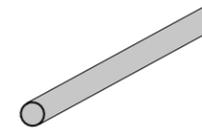
Part No. 850-1568  
850-1567  
850-1566  
and 850-1565  
UL listed to UL 2703

**Base Foot**



Part No. 850-1563  
UL listed to UL 2703

**Mechanical Tubing (MT)**



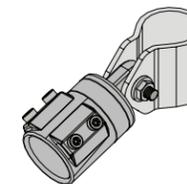
Part No. 850-1583  
UL listed to UL 2703  
1.51" Outer Diameter

**Post Mount**



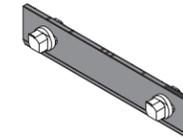
Part No. 850-1561  
UL listed to UL 2703

**Cross Brace Assembly**



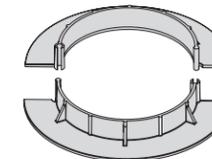
Part No. 850-1636  
UL listed to UL 2703

**Interlock**



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

**Sealant Ring**



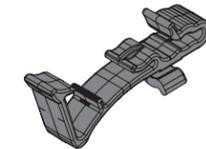
Part No. 850-1638

**Splice Assembly, Ramp**



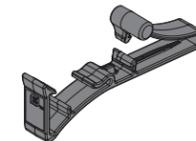
Part No. 850-1635  
UL listed to UL 2703

**DC Wire Clip**



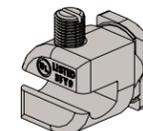
Part No. 850-1509  
UL listed to UL 1565

**Home Run Wire Clip**



Part No. 850-1510  
UL listed to UL 1565

**Ground Zep**



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

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powered by  
**Q.ANTUM**

# Q.PEAK-G4.1/SC 295-305

## Q.ANTUM ULTRA SOLAR MODULE

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**



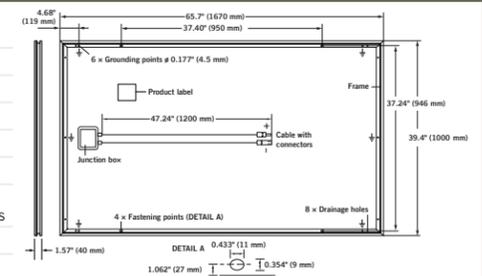
<sup>1</sup> APT test conditions: Cells at -1500V against grounded, with conductive metal foil covered module surface, 25 °C, 168h

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



### MECHANICAL SPECIFICATION

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

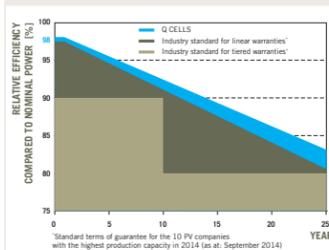


### ELECTRICAL CHARACTERISTICS

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

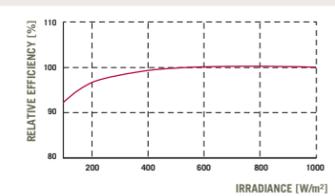
<sup>1</sup>1000 W/m<sup>2</sup>, 25 °C, spectrum AM 1.5 G <sup>2</sup> Measurement tolerances STC ± 3 %; NOC ± 5 % <sup>3</sup> 800 W/m<sup>2</sup>, NOCT, spectrum AM 1.5 G \* typical values, actual values may differ

### 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>	<b>α</b> [%/K]	+0.04	<b>Temperature Coefficient of V<sub>OC</sub></b>	<b>β</b> [%/K]	-0.28
<b>Temperature Coefficient of P<sub>MPP</sub></b>	<b>γ</b> [%/K]	-0.39	<b>Normal Operating Cell Temperature</b>	<b>NOCT</b> [°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 × W × H)</b>	68.7 in × 45.3 in × 46.1 in (1745 mm × 1150 mm × 1170 mm)
<b>Pallet Weight</b>	1254 lbs (569 kg)

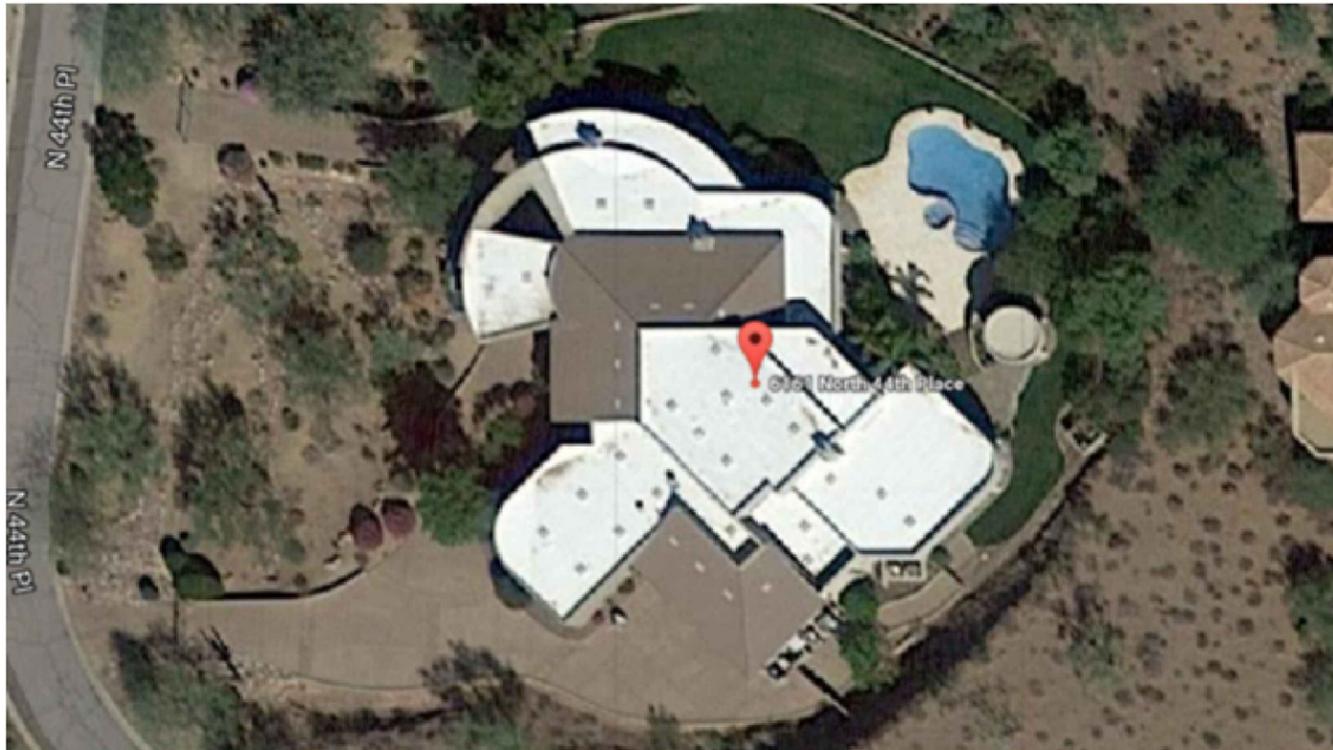
**NOTE:** Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.  
300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

Specifications subject to technical changes © Hanwha Q CELLS Q.PEAK-G4.1-SC-295-305-2016-08-Rev01\_NA

## PROJECT NARRATIVE

The project includes install of Rooftop solar on 6161 N 44TH PLACE. The project consists of 66 modules on two mounting planes facing south west WITH 8 ARRAYS, at an Azimuth of 225 degreeS. Panels are not visible over parapets. All parapets are existing, and modules are at or below the level of the parapets.



### SITE PLAN

Scale: 1/16" = 1'



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JOB NUMBER: JB-8528152 00

MOUNTING SYSTEM:  
ZS Ramp Foot

MODULES:  
(66) Hanwha Q-Cells # Q.Peak-G4.1/SC300

INVERTER:  
SOLAREDGE # SE7600A-US002SNU2

PREMISE OWNER:  
SURENDER GUNNALA  
6161 N 44TH PLACE  
PARADISE VALLEY, AZ 85253

DESCRIPTION:  
Surender Gunnala RESIDENCE  
19.8 KW PV ARRAY  
15.2 KW (AC NAMEPLATE) PV ARRAY

PAGE NAME:  
HBC 1

DESIGN:  
Thremaine Johnson

SHEET: HBC 1      REV:      DATE: 8/6/2017

# TESLA

Identify color and LRV value of rack system

Rack is bare metal, framing is black on modules

Identify color and LRV value

Rack System is bare metal, framing is black on modules.

photovoltaic meter will be painted to match house. Paint color will be match to home and determined at install



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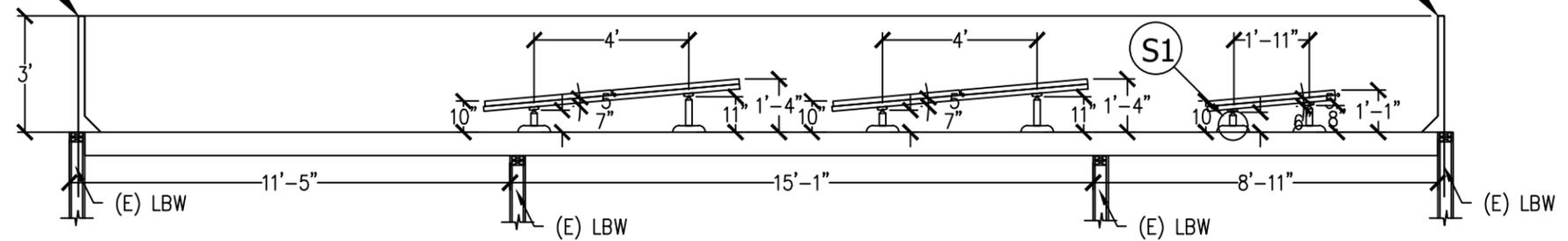
DESIGN:  
Thremaine Johnson

SHEET: HBC 2    REV:    DATE: 8/6/2017

**TESLA**

EXISTING PARAPET

EXISTING PARAPET

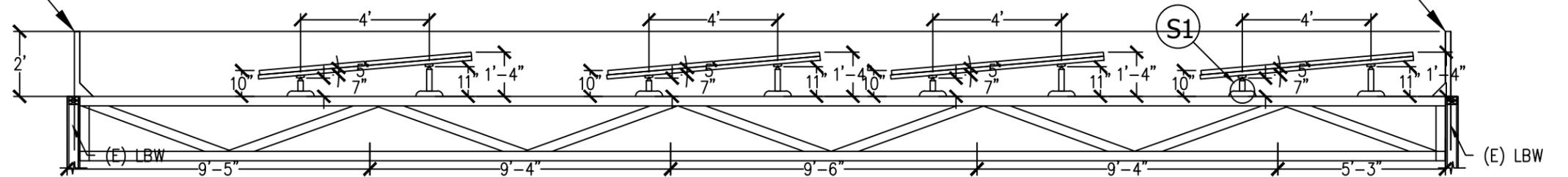


**A** SIDE VIEW OF MP1 NTS

MP1	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	72"	24"	72"	24"	
PORTRAIT	48"	21"	72"	24"	
RAFTER	2x8 @ 24" OC		ROOF AZI 225 ARRAY AZI 225	PITCH 3 PITCH 5	STORIES: 2 Foam
X AND Y ARE ALWAYS RELATIVE TO THE STRUCTURE FRAMING THAT SUPPORTS THE PV. X IS ACROSS RAFTERS AND Y IS ALONG RAFTERS.					

EXISTING PARAPET

EXISTING PARAPET



**B** SIDE VIEW OF MP2 NTS

MP2	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	72"	24"	72"	24"	
PORTRAIT	48"	21"	72"	24"	
TOP CHORD	2x4 @ 24" OC		ROOF AZI 225 ARRAY AZI 225	PITCH 3 PITCH 5	STORIES: 2 Foam
BOT CHORD	2x4 @ 24" OC				
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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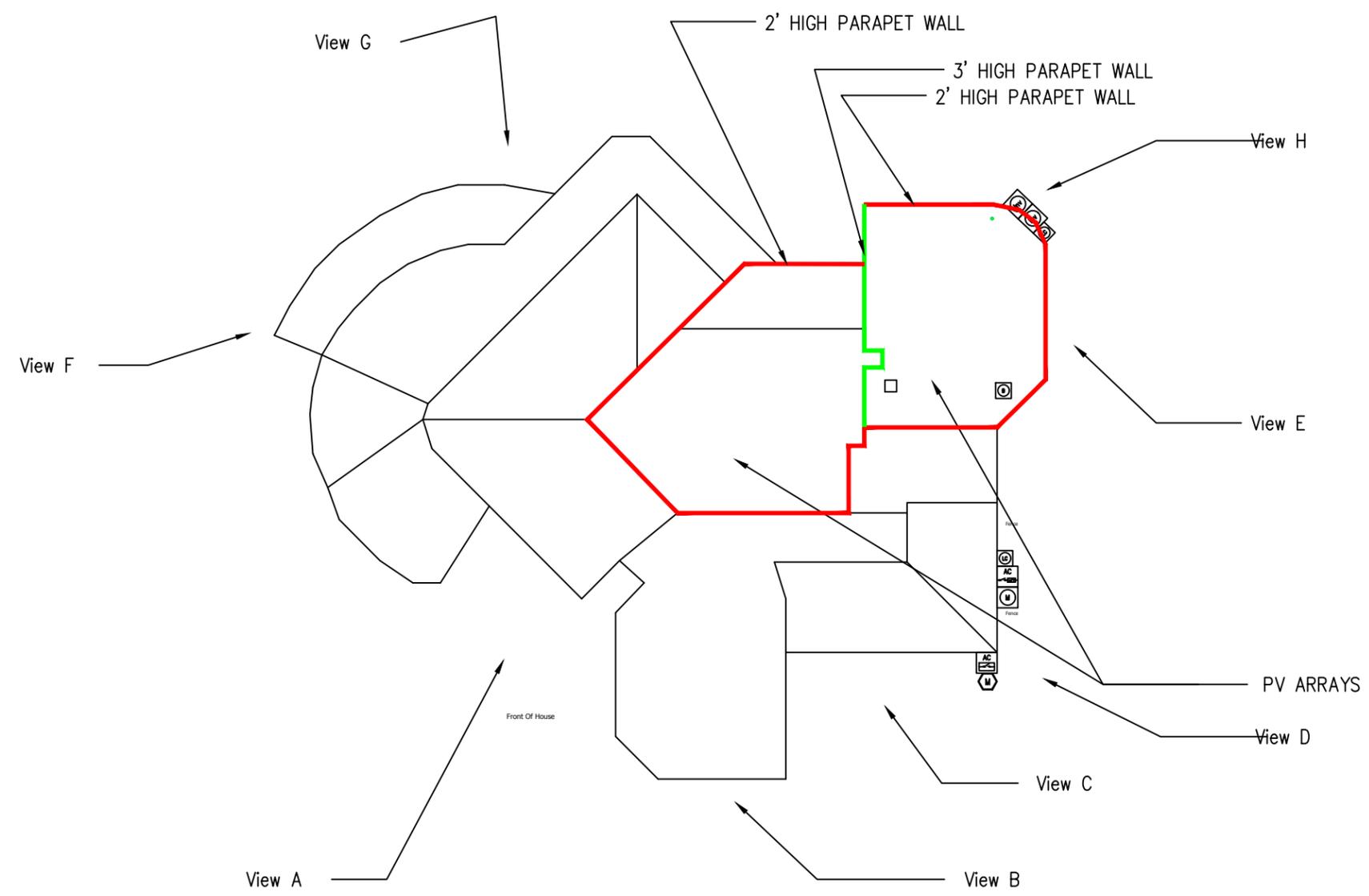
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Thremainne Johnson

SHEET: HBC 3  
REV: 8/6/2017  
DATE:

TESLA

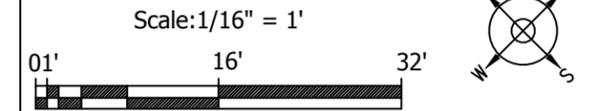
MP1	PITCH: 3 AZIMUTH: 225 MATERIAL: Foam	ARRAY PITCH: 5 ARRAY AZIMUTH: 225 STORY: 2 Stories
MP2	PITCH: 3 AZIMUTH: 225 MATERIAL: Foam	ARRAY PITCH: 5 ARRAY AZIMUTH: 225 STORY: 2 Stories



### 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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HBC 4

DESIGN:  
Thremainne Johnson

SHEET: HBC 4    REV:    DATE: 8/6/2017



VIEW A



VIEW C



VIEW E



VIEW G



VIEW B



VIEW D



VIEW F



VIEW H



PV METER AND AC DISCO  
AC DISCO AND NEW LC

INVERTER AND LOAD CENTER LOCATION

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