

HISTORIC AND DESIGN REVIEW COMMISSION

March 07, 2018

HDRC CASE NO: 2018-094
ADDRESS: 315 LAMAR ST
LEGAL DESCRIPTION: NCB 519 BLK 24 LOT 14
ZONING: R-5 H
CITY COUNCIL DIST.: 2
DISTRICT: Dignowity Hill Historic District
APPLICANT: Seth Glessner/Erus Energy
OWNER: Aaron Gonzales
TYPE OF WORK: Installation of solar panels
APPLICATION RECEIVED: February 15, 2018
60-DAY REVIEW: April 16, 2018
REQUEST:

The applicant is requesting a Certificate of Appropriateness for approval to install a roof-mounted solar array on the primary structure located at 315 Lamar.

APPLICABLE CITATIONS:

Historic Design Guidelines, Chapter 3, Guidelines for Additions

C. SOLAR COLLECTORS

- i. *Location*—Locate solar collectors on side or rear roof pitch of the primary historic structure to the maximum extent feasible to minimize visibility from the public right-of-way while maximizing solar access. Alternatively, locate solar collectors on a garage or outbuilding or consider a ground-mount system where solar access to the primary structure is limited.
- ii. *Mounting (sloped roof surfaces)*—Mount solar collectors flush with the surface of a sloped roof. Select collectors that are similar in color to the roof surface to reduce visibility.
- iii. *Mounting (flat roof surfaces)*—Mount solar collectors flush with the surface of a flat roof to the maximum extent feasible. Where solar access limitations preclude a flush mount, locate panels towards the rear of the roof where visibility from the public right-of-way will be minimized.

FINDINGS:

- a. The primary structure located at 315 Lamar is a 2-story single family home constructed circa 2015. The structure is non-contributing to the Dignowity Hill Historic District.
- b. LOCATION – The applicant is requesting approval to install 50 solar panels on both sides of the primary 2-story gable and on both of the 1-story rear gables. According to the Historic Design Guidelines for Additions 6.C.i, solar collectors should be located on a side or rear roof pitch to the maximum extent possible. Staff finds that the panels located towards the rear of the 2-story gable are appropriate, as well as the panels located on the rear 1-story gables. Staff does not find the 10 panels closest to the front façade consistent with the Guidelines due to their proximity to the roof eaves and their high visibility from the public right-of-way.
- c. PITCH – The panels will be installed flush with the roof pitch. Staff finds the proposal consistent with the Guidelines.

RECOMMENDATION:

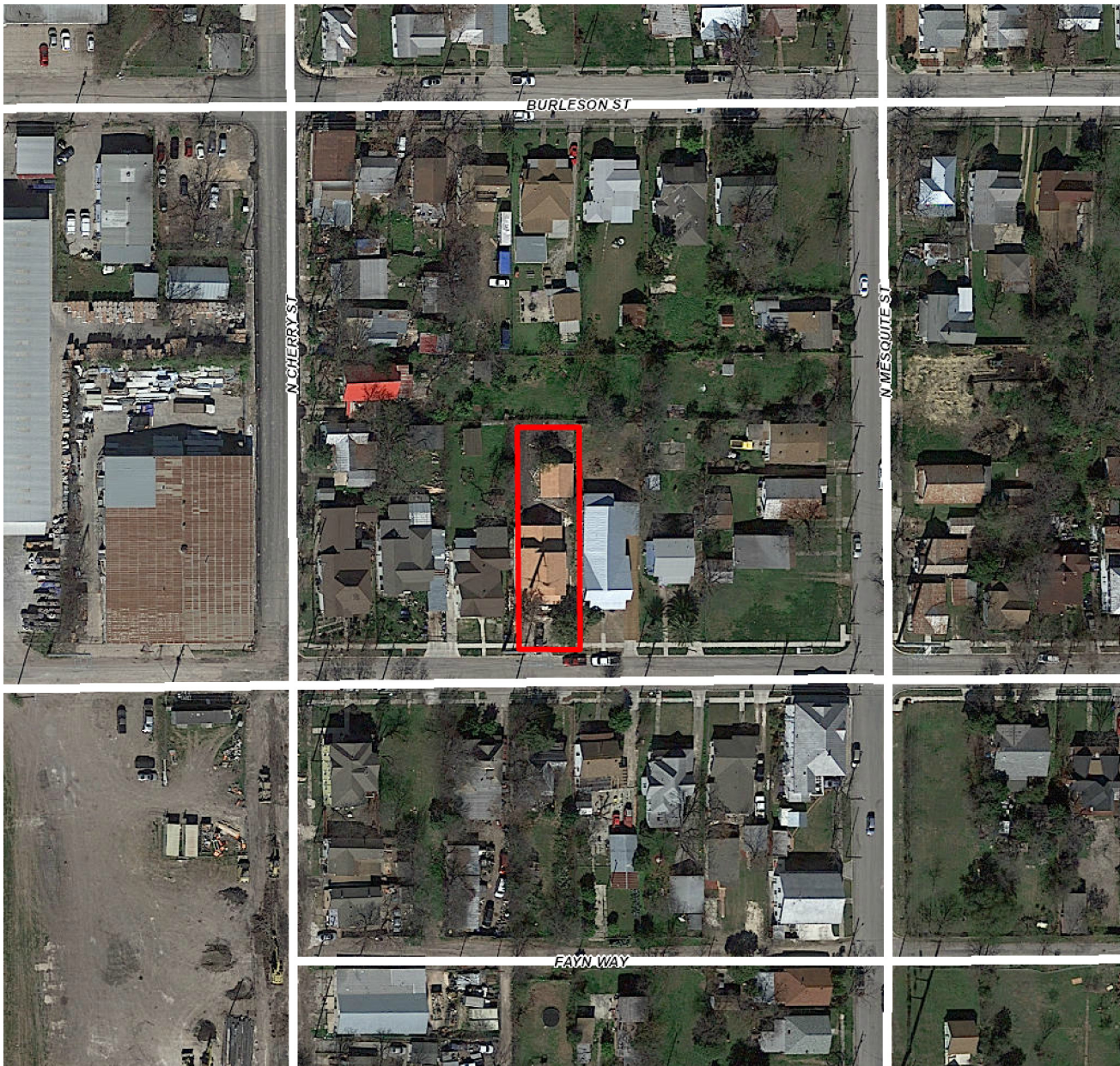
Staff recommends approval based on findings a through c with the following stipulations:

- i. That the applicant removes the 10 panels closest to the public right-of-way to minimize the impact from the streetscape and relocates them to the rear 1-story gables, on the rear accessory structure, or on a ground-mount system as noted in finding b. The applicant is required to submit updated drawings and documents to staff that reflect this change for review and approval prior to receiving a Certificate of Appropriateness.

- ii. That the solar panels maintain at least 18” of separation from the roof eaves.

CASE MANAGER:

Stephanie Phillips



Flex Viewer

Powered by ArcGIS Server

Printed: Feb 22, 2018

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315



GUARDIAN
1-800-213-1900





FIRE SET-BACKS = 36" FROM
RIDGE AND RAKE. 18" FROM
HIPS AND VALLEYS.

PHOTOVOLTAIC SYSTEM AC
COMBINER, UTILITY AC
DISCONNECT SWITCH,
DEDICATED REC KWH
METER

(50) SOLARWORLD SW 295
MONO AND (50) ENPHASE
ENERGY IQ6-60-2-US
INVERTERS ON EXISTING 25°
PITCH, 90°, 270° AZIMUTH ON
PITCHED METAL STANDING
SEAM ROOF

EXISTING ELECTRICAL
SERVICE ENTRANCE
AND CPS UTILITY NET
METER

DRIVEWAY

Lamar



NOT TO SCALE

1

SITE PLAN
14.75 kW DC/11.50 kW AC PV SYSTEM
315 Lamar
San Antonio, TX 78202

CUSTOMER: AARON GONZALEZ

PROJECT INFORMATION

AHJ	San Antonio
UTILITY	CPS

DRAWN

PHILIP W.

DATE

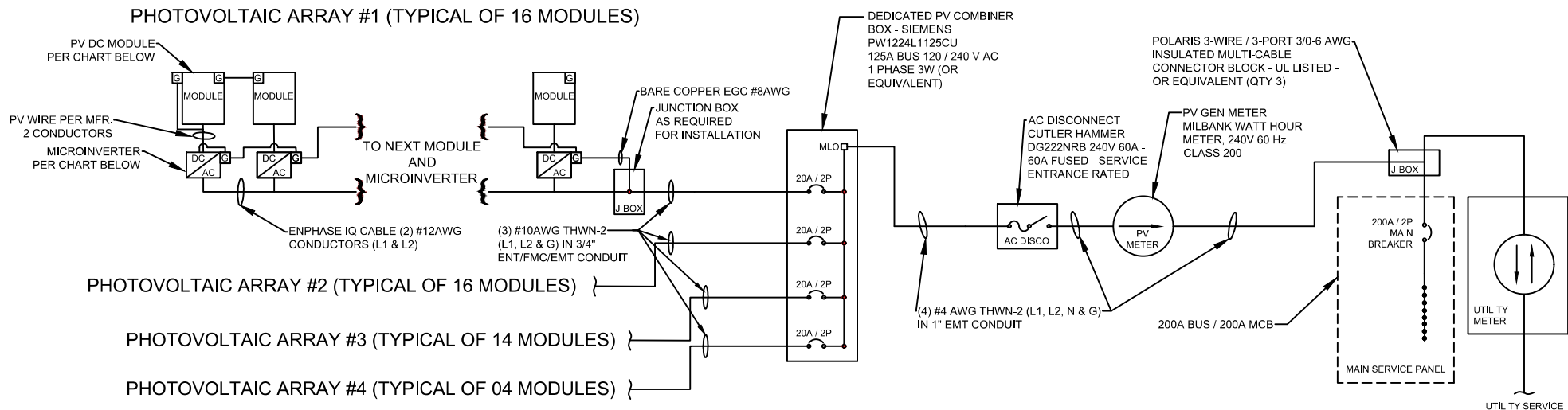
02/13/2018

REVIEWED BY
BRIAN AUTENRIETH
NABCEP CERTIFIED PV
INSTALLATION PROFESSIONAL™
#PV-0411115-010986

3816 N. 7th ST.
PHOENIX, AZ 85014
602-507-6525

ERUS ENERGY™

AZ ROC CR-11 305508 / TX ROC#210079



PV MODULE RATINGS @STC

MAKE AND MODEL: SOLARWORLD SUNMODULE PLUS SW 295

MAX POWER-POINT CURRENT I_{MP}	9.25 A
MAX POWER-POINT VOLTAGE V_{MP}	32.3 V
OPEN-CIRCUIT VOLTAGE V_{OC}	39.8 V
SHORT-CIRCUIT CURRENT I_{SC}	9.78 A
MAX SERIES FUSE (OCPD)	20 A
MAXIMUM POWER P_{MAX}	295 W
MAX VOLTAGE	1000 VDC
V_{OC} TEMPERATURE COEFFICIENT	-0.29 %/°C

INVERTER RATINGS

MAKE AND MODEL: ENPHASE ENERGY IQ6-60-2-US

MAX DC VOLTAGE RATING	48 V
MAX CONTINUOUS POWER	230 W
NOMINAL AC VOLTAGE	240 V
MAX AC CURRENT	0.96 A
MAX OCPD RATING	15 A

2

SINGLE-LINE DIAGRAM
14.75 kW DC/11.50 kW AC PV SYSTEM
315 Lamar
San Antonio, TX 78202

CUSTOMER: AARON GONZALEZ

PROJECT INFORMATION

AHJ San Antonio
UTILITY CPS

DRAWN PHILIP W.

DATE 02/13/2018

REVIEWED BY
BRIAN AUTENRIETH
NABCEP CERTIFIED PV
INSTALLATION PROFESSIONAL™
#PV-041115-010986

3816 N. 7th ST.
PHOENIX, AZ 85014
602-507-6525

ERUS ENERGY™

AZ ROC CR-11 305508 / TX ROC#210079

AC COMBINER

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

NOTICE
DEDICATED PHOTOVOLTAIC
SYSTEM COMBINER PANEL
DO NOT ADD LOADS TO
THIS PANEL

WARNING
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

CONDUIT

**WARNING: PHOTOVOLTAIC
POWER SOURCE**

LABEL SHALL BE ALL CAPITAL LETTERS MIN. $\frac{3}{8}$ " HIGH.
WHITE LETTERS ON RED BACKGROUND.
MUST BE REFLECTIVE AND WEATHER RESISTANT.
TO BE PLACED ON INTERIOR AND EXTERIOR
CONDUIT, RACEWAYS, ENCLOSURES AND CABLE
ASSEMBLIES EVERY 10 FEET, WITHIN 1 FOOT OF
TURNS OR BENDS AND WITHIN 1 FOOT ABOVE AND
BELOW PENETRATIONS OF ROOF/CEILING
ASSEMBLIES, WALLS OR BARRIERS.

AC DISCONNECT

PHOTOVOLTAIC SYSTEM
AC DISCONNECT
OPERATING CURRENT 48.0 AMPS
OPERATING VOLTAGE 240 VOLTS

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

DEDICATED PV SYSTEM
KHW METER

PV METER

UTILITY METER

REVENUE METER

MAIN SERVICE PANEL

PHOTOVOLTAIC POWER SOURCE
SYSTEM AC VOLTAGE: 240 VAC
MAXIMUM AC CURRENT: 48.0 AMPS

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

PANELBOARD IS ENERGIZED FROM TWO
SOURCES OF AC POWER
SOLAR - 48.0 A
UTILITY - 200 A AT 240V

WARNING
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

**PHOTOVOLTAIC SYSTEM
EQUIPPED WITH
RAPID SHUTDOWN**

3

PLACARDS
14.75 kW DC/11.50 kW AC PV SYSTEM
315 Lamar
San Antonio, TX 78202

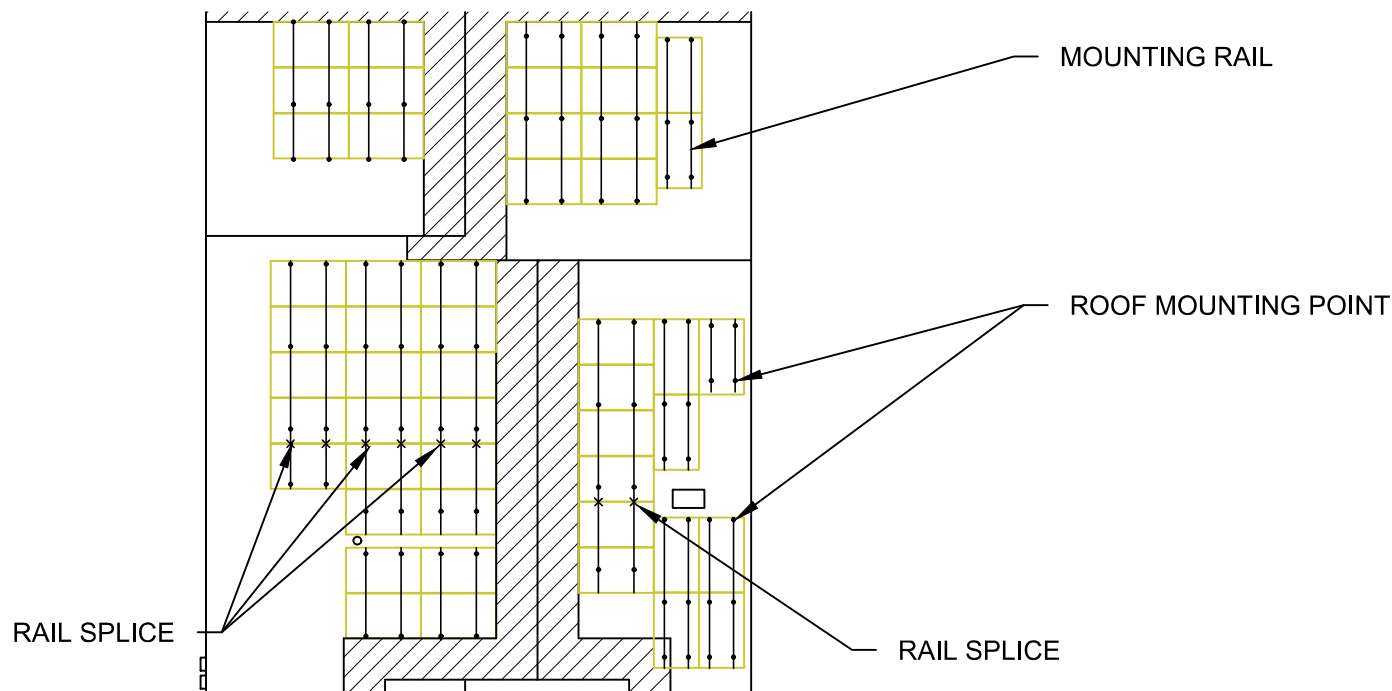
CUSTOMER: AARON GONZALEZ

PROJECT INFORMATION		DRAWN	PHILIP W.	
AHJ	San Antonio	DATE	02/13/2018	
UTILITY	CPS			

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PHOENIX, AZ 85014
602-507-6525

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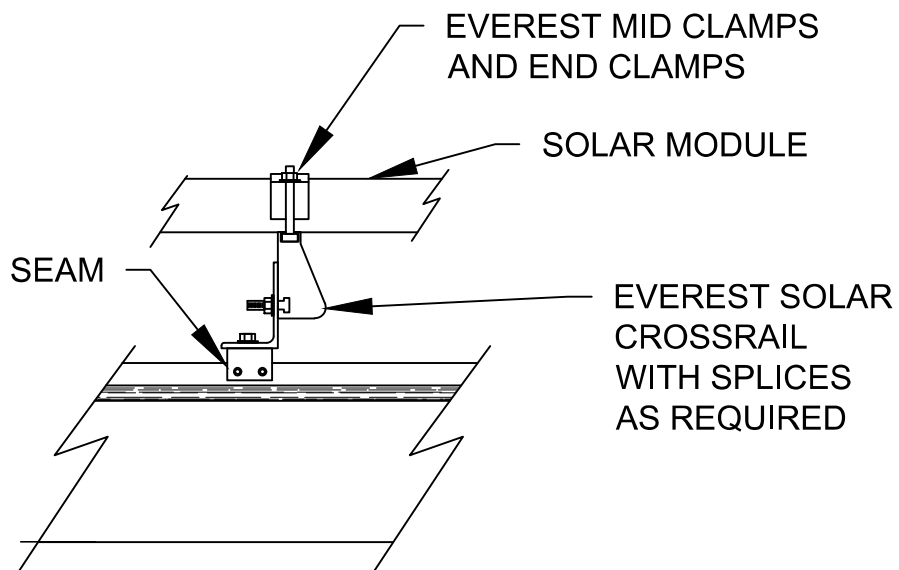
ARRAY STRUCTURAL CALCULATIONS

17 MODULE ARRAY - WIND UPLIFT
 ARRAY AREA 17 FT²/MODULE X 17 X
 30 PSF WIND = 8670 LBS.

$\frac{5}{16}$ " X 2" MIN. EMBED EXTRACTION STRENGTH:
 210 LB./IN. X 2 X 24 PENETRATIONS = 10080 LB.

DEAD LOAD: 50 LB./MODULE
 50 LB. X 17 MODULES / 24 PENETRATIONS =
 35.42 LB. PER ATTACHMENT POINT

S-5! STANDING SEAM
 ROOF CLAMP



MOUNTING DETAIL

4

MODULE MOUNTING
 14.75 kW DC/11.50 kW AC PV SYSTEM
 315 Lamar
 San Antonio, TX 78202

CUSTOMER: AARON GONZALEZ

PROJECT INFORMATION

AHJ San Antonio
 UTILITY CPS

DRAWN

PHILIP W.

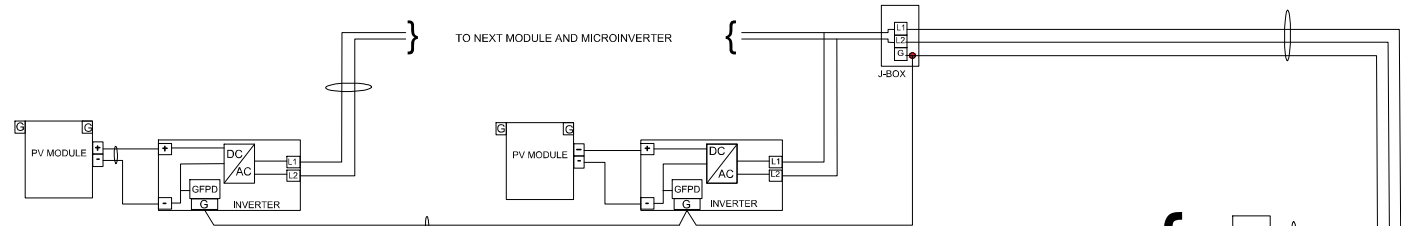
DATE 02/13/2018

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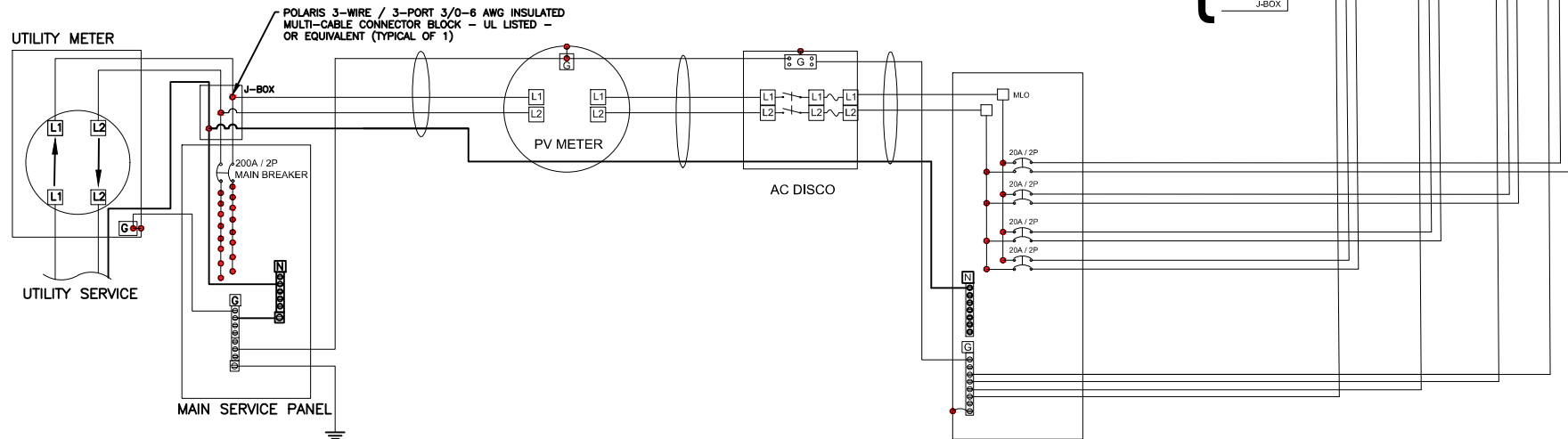
PHOTOVOLTAIC ARRAY #1 (TYPICAL OF 16 MODULES)



PHOTOVOLTAIC ARRAY #2 (TYPICAL OF 16 MODULES)

PHOTOVOLTAIC ARRAY #3 (TYPICAL OF 14 MODULES)

PHOTOVOLTAIC ARRAY #4 (TYPICAL OF 04 MODULES)



FOR EQUIPMENT AND CONDUCTOR DETAILS, SEE SINGLE-LINE DIAGRAM, SHEET 2

5

3-LINE DIAGRAM
14.75 kW DC/11.50 kW AC PV SYSTEM
315 Lamar
San Antonio, TX 78202

CUSTOMER: AARON GONZALEZ

PROJECT INFORMATION

AHJ	San Antonio
UTILITY	CPS

DRAWN

PHILIP W.

DATE

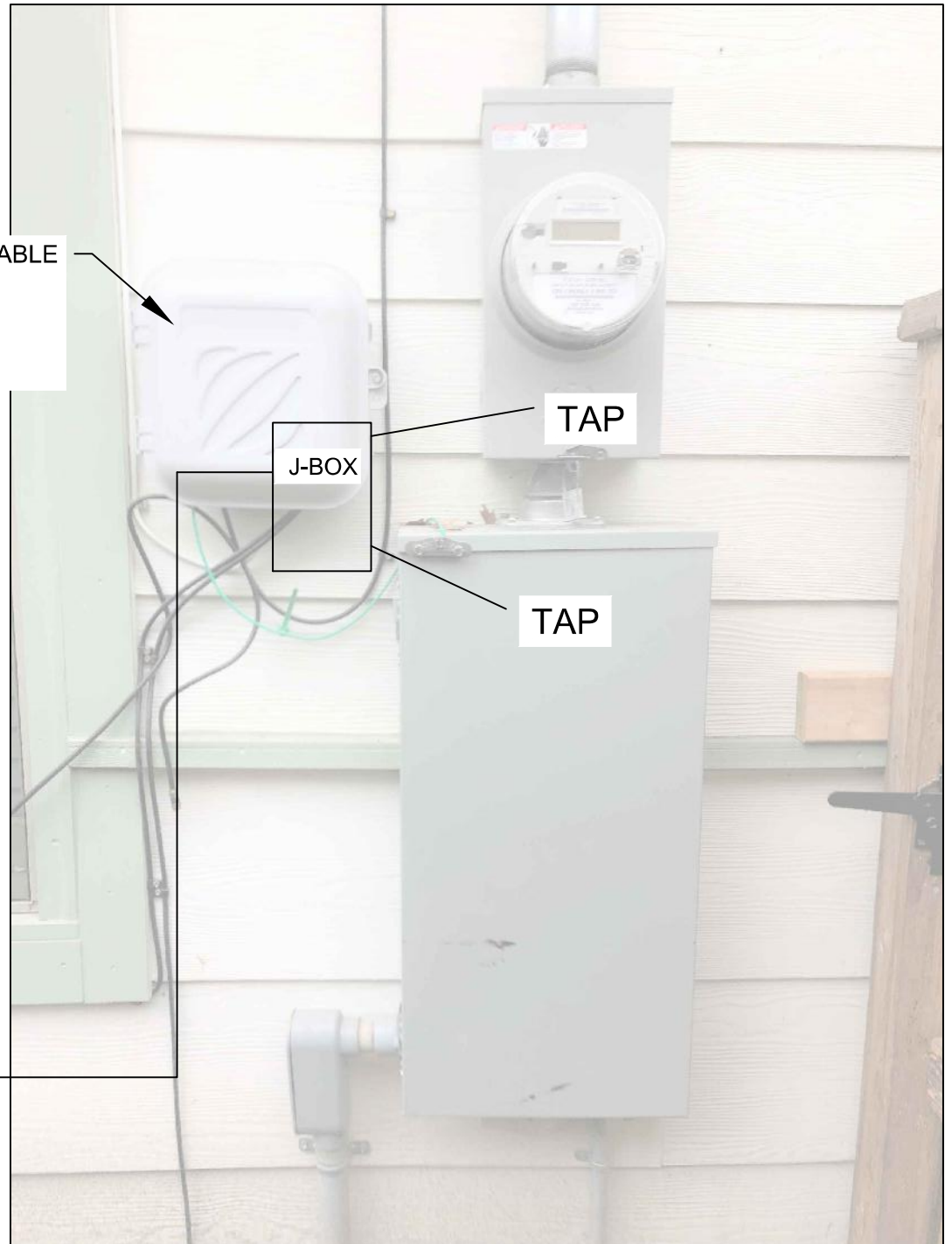
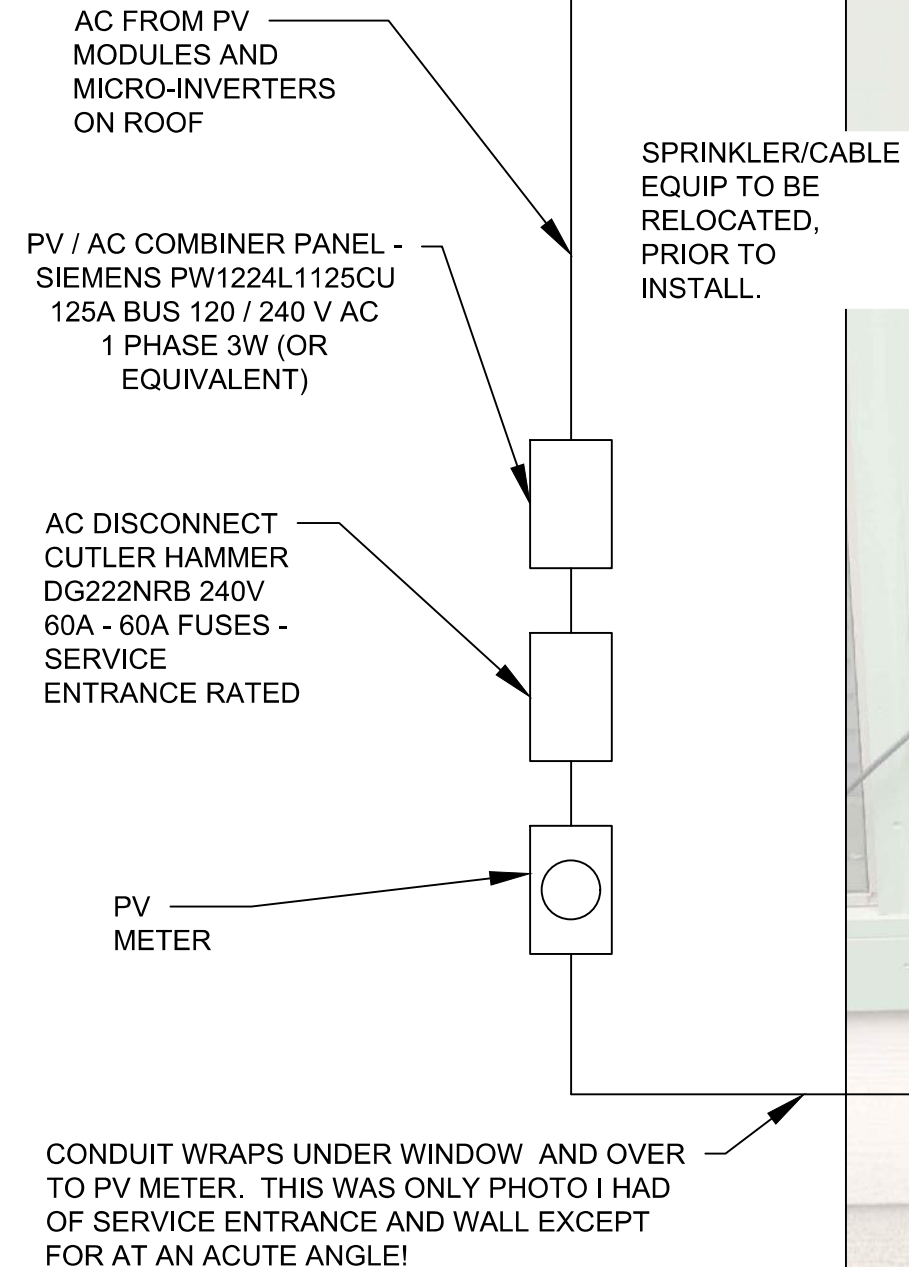
02/13/2018

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AZ ROC CR-11 305508 / TX ROC#210079

AARON GONZALEZ
315 Lamar
San Antonio, TX 78202



AC FROM PV
MODULES AND
MICRO-INVERTERS
ON ROOF

PV / AC COMBINER PANEL -
SIEMENS PW1224L1125CU
125A BUS 120 / 240 V AC
1 PHASE 3W (OR
EQUIVALENT)

AC DISCONNECT
CUTLER HAMMER
DG222NRB 240V
60A - 60A FUSES -
SERVICE
ENTRANCE RATED

PV
METER

A photograph of an outdoor electrical meter and associated components mounted on a light-colored wooden wall. The meter is a grey, rectangular unit with a circular dial and a digital display. Below the meter is a larger, grey, rectangular service panel. To the left of the meter is a white, square junction box (J-BOX) with a vented cover. Several black and green wires are bundled together and run vertically along the wall. A label 'CABLE' with an arrow points to this bundle. Another label 'J-BOX' with an arrow points to the white junction box. Two labels 'TAP' with arrows point to the meter assembly and the service panel below it. The wall is made of horizontal wooden planks. A green door frame is visible on the left side of the image.

A photograph of an outdoor electrical meter and associated components mounted on a light-colored wooden wall. The meter is a grey, rectangular unit with a circular dial and a digital display. Below the meter is a larger, grey, rectangular service panel. To the left of the meter is a white, square junction box (J-BOX) with a vented cover. Several black and green wires are bundled together and run vertically along the wall. A label 'CABLE' with an arrow points to this bundle. Another label 'J-BOX' with an arrow points to the white junction box. Two labels 'TAP' with arrows point to the meter assembly and the service panel below it. The wall is made of horizontal wooden planks. A green door frame is visible on the left side of the image.

Sunmodule® Plus

SW 290 - 300 MONO



Data sheet



QUALITY BY SOLARWORLD

SolarWorld's foundation is built on more than 40 years of ongoing innovation, continuous optimization and technology expertise. All production steps from silicon to module are established at our production sites ensuring the highest possible quality for our customers. Our modules come in a variety of different sizes and power, making them suitable for all global applications – from residential solar systems to large-scale power plants.

- » Extremely tough and stable, despite its light weight – able to handle loads up to 178 psf (8.5 kN/m²)
- » Tested in extreme weather conditions – hail-impact tested and resistant to salt spray, frost, ammonia, dust and sand
- » Proven guarantee against hotspots and PID-free to IEC 62804-1
- » SolarWorld Efficells™ for the highest possible energy yields
- » Patented corner design with integrated drainage for optimized self-cleaning
- » High-transmissive glass with anti-reflective coating
- » Long-term safety and guaranteed top performance – 25-year linear performance warranty; 20-year product warranty



Sunmodule® Plus

SW 290 - 300 MONO



PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)*

		SW 290	SW 295	SW 300
Maximum power	P_{max}	290 Wp	295 Wp	300 Wp
Open circuit voltage	V_{oc}	39.6 V	39.8 V	40.0 V
Maximum power point voltage	V_{mpp}	31.9 V	32.3 V	32.6 V
Short circuit current	I_{sc}	9.75 A	9.78 A	9.83 A
Maximum power point current	I_{mpp}	9.20 A	9.25 A	9.31 A
Module efficiency	η_m	17.3 %	17.59 %	17.89 %

Measuring tolerance (P_{max}) traceable to TUV Rheinland: +/- 2% (TUV Power controlled, ID 0000039351)

*STC: 1000W/m², 25°C, AM 1.5

PERFORMANCE AT 800 W/m², NOCT, AM 1.5

		SW 290	SW 295	SW 300
Maximum power	P_{max}	219.6 Wp	223.6 Wp	226.7 Wp
Open circuit voltage	V_{oc}	36.7 V	36.9 V	37.0 V
Maximum power point voltage	V_{mpp}	29.5 V	29.9 V	30.2 V
Short circuit current	I_{sc}	7.99 A	8.01 A	8.06 A
Maximum power point current	I_{mpp}	7.43 A	7.47 A	7.52 A

Minor reduction in efficiency under partial load conditions at 25 °C: at 200 W/m², 97% (+/-3%) of the STC efficiency (1000 W/m²) is achieved.

PARAMETERS FOR OPTIMAL SYSTEM INTEGRATION

Power sorting	-0 Wp / +5 Wp
Maximum system voltage SC II / NEC	1000 V
Maximum reverse current	25 A
Number of bypass diodes	3
Operating temperature	-40 to +85 °C
Maximum design loads (Two rail system)*	113 psf downward, 64 psf upward
Maximum design loads (Three rail system)*	178 psf downward, 64 psf upward

*Please refer to the Sunmodule installation instructions for the details associated with these load cases.

COMPONENT MATERIALS

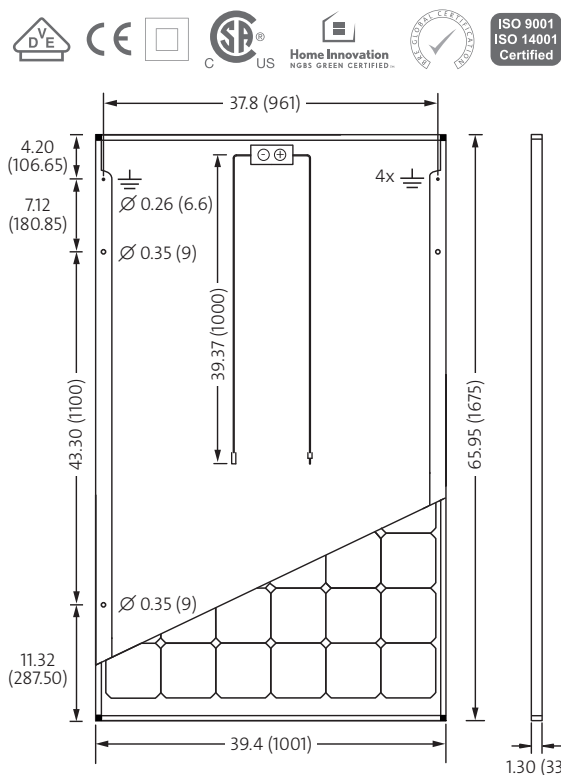
Cells per module	60
Cell type	Monocrystalline PERC
Cell dimensions	6 in x 6 in (156 mm x 156 mm)
Front	Tempered safety glass with ARC (EN 12150)
Back	Multi-layer polymer backsheets, white
Frame	Black anodized aluminum
J-Box	IP65
Connector	PV wire (UL4703) with Amphenol UTX connectors
Module fire performance	(UL 1703) Type 1

DIMENSIONS / WEIGHT

Length	65.95 in (1675 mm)
Width	39.40 in (1001 mm)
Height	1.30 in (33 mm)
Weight	39.7 lb (18.0 kg)

THERMAL CHARACTERISTICS

NOCT	46 °C
TC I_{sc}	0.07 % / °C
TC V_{oc}	-0.29 % / °C
TC P_{mpp}	-0.39 % / °C



All units provided are imperial. SI units provided in parentheses.

ORDERING INFORMATION

Order number	Description
82000482	Sunmodule Plus SW 290 mono (black frame)
82000430	Sunmodule Plus SW 295 mono (black frame)
82000432	Sunmodule Plus SW 300 mono (black frame)

CERTIFICATES AND WARRANTIES

Certificates	IEC 61730	IEC 61215	UL 1703
	IEC 62716	IEC 60068-2-68	IEC 61701
Warranties	Product Warranty	20 years	
	Linear Performance Guarantee	25 years	

Enphase IQ 6 and IQ 6+ Microinverters

The high-powered smart grid-ready **Enphase IQ 6 Micro™** and **Enphase IQ 6+ Micro™** dramatically simplify the installation process while achieving the highest efficiency for module-level power electronics.

Part of the Enphase IQ System, the IQ 6 and IQ 6+ Micro integrate seamlessly with the Enphase IQ Envoy™, Enphase Q Aggregator™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

The IQ 6 and IQ 6+ Micro extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing. Enabling Enphase to provide an industry-leading warranty of up to 25 years.



Easy to Install

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

Productive and Reliable

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

Smart Grid Ready

- Complies with fixed power factor, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles

* The IQ 6+ Micro is required to support 72-cell modules



To learn more about Enphase offerings, visit enphase.com



Enphase IQ 6 and IQ 6+ Microinverters

INPUT DATA (DC)	IQ6-60-2-US AND IQ6-60-5-US		IQ6PLUS-72-2-US AND IQ6PLUS-72-5-US	
Commonly used module pairings¹	195 W - 330 W +		235 W - 400 W +	
Module compatibility	60-cell PV modules only		60-cell and 72-cell PV modules	
Maximum input DC voltage	48 V		62 V	
Peak power tracking voltage	27 V - 37 V		27 V - 45 V	
Operating range	16 V - 48 V		16 V - 62 V	
Min/Max start voltage	22 V / 48 V		22 V / 62 V	
Max DC short circuit current (module Isc)	15 A		15 A	
Overvoltage class DC port	II		II	
DC port backfeed under single fault	0 A		0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)	IQ6-60-2-US AND IQ6-60-5-US		IQ6PLUS-72-2-US AND IQ6PLUS-72-5-US	
Peak output power	240 VA		290 VA	
Maximum continuous output power	230 VA		280 VA	
Nominal voltage/range²	240 V / 211-264 V	208 V (1Φ) / 183-229 V	240 V / 211-264 V	208 V (1Φ) / 183-229 V
Nominal output current	0.96 A	1.11 A	1.17 A	1.35 A
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
Power factor at rated power	1.0		1.0	
Maximum units per 20 A branch circuit	16 (240 VAC)		13 (240 VAC)	
	14 (single-phase 208 VAC)		11 (single-phase 208 VAC)	
Overvoltage class AC port	III		III	
AC port backfeed under single fault	0 A		0 A	
Power factor (adjustable)	0.7 leading ... 0.7 lagging		0.7 leading ... 0.7 lagging	
EFFICIENCY	@240 V	@208 V (1Φ)	@240 V	@208 V (1Φ)
CEC weighted efficiency	97.0 %	96.5 %	97.0 %	96.5 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type	MC4 or Amphenol H4 UTX			
Dimensions (WxHxD)	219 mm x 191 mm x 37.9 mm (without bracket)			
Weight	1.5 kg (3.3 lbs)			
Cooling	Natural convection - No fans			
Approved for wet locations	Yes			
Pollution degree	PD3			
Environmental category / UV exposure rating	Outdoor - NEMA 250, type 6 (IP67)			
FEATURES				
Communication	Power line			
Monitoring	Enlighten Manager and MyEnlighten monitoring options Compatible with Enphase IQ Envoy			
Compliance	UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer’s instructions.			

1. No enforced DC/AC ratio. See the compatibility calculator at enphase.com/en-us/support/module-compatibility.

2. Nominal voltage range can be extended beyond nominal if required by the utility.

To learn more about Enphase offerings, visit enphase.com