

HISTORIC AND DESIGN REVIEW COMMISSION

January 02, 2019

HDRC CASE NO: 2018-635
ADDRESS: 1120 IOWA ST
LEGAL DESCRIPTION: NCB 3885 BLK 1 LOT 6
ZONING: RM-4,H
CITY COUNCIL DIST.: 2
DISTRICT: Knob Hill Historic District
APPLICANT: Cameron LaBonte/Erus Energy
OWNER: Michael Elizondo
TYPE OF WORK: Installation of solar panels
APPLICATION RECEIVED: December 18, 2018
60-DAY REVIEW: February 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 1120 Iowa St.

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 1120 Iowa St is a 1-story single family structure constructed in approximately 1930 in the Craftsman style. The home features two front gables, a standing seam metal roof, ganged one over one wood windows, and decorative gable detailing. The structure is contributing to the Knob Hill Historic District.
- b. LOCATION – The applicant is requesting approval to install 50 solar panels on the primary structure. According to the submitted roof plan, 23 will be located on the east side of the gable and 27 will be located on the west side of the gable. 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 gable are appropriate. Some of the panels positioned closest to the street result in greater visibility and positioning around existing plumbing vents which also contributes to visibility. Staff does not find the 20 panels closest to the front façade consistent with the Guidelines due to their high visibility from the public right-of-way. The property also features a rear side addition that would be more appropriate for a solar array installation.
- 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 20 panels closest to the public right-of-way to minimize the impact from the

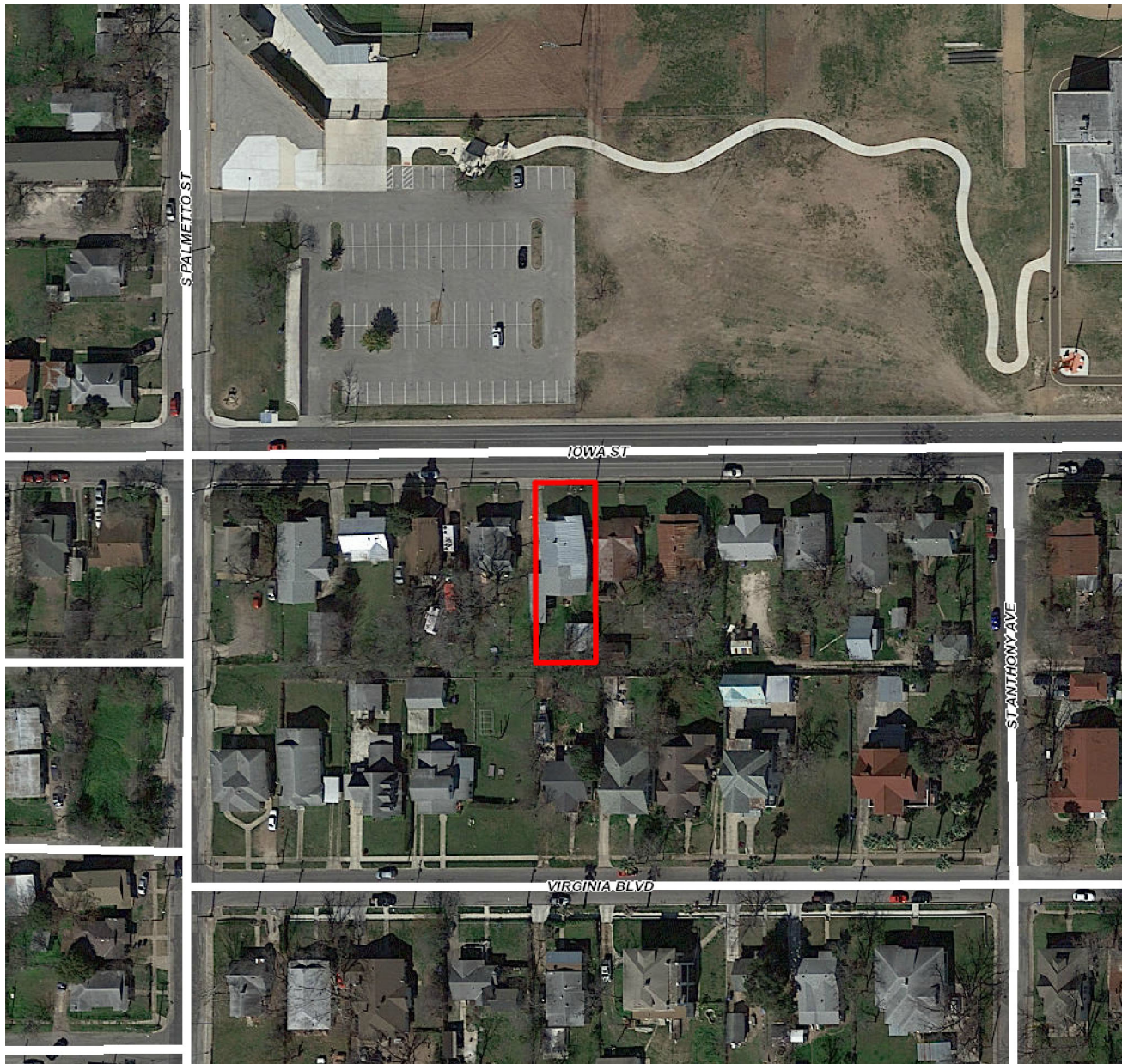
streetscape and relocates them behind existing plumbing vents and to the rear of the primary structure or rear side addition or on a ground-mount system as noted in finding b. The applicant is required to submit updated drawings and documents to staff that reflect this change for review and approval prior to receiving a Certificate of Appropriateness.

CASE MANAGER:

Stephanie Phillips

CASE MANAGER:

The work was done prior to the issuance of a Certificate of Appropriateness.



Flex Viewer

Powered by ArcGIS Server

Printed: Dec 19, 2018

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Iowa St

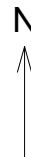
3' FIRE SETBACK TYP

50 JINKO SOLAR JKM305M-60-V
MODULES AND 50 ENPHASE ENERGY
IQ7-60-2-US INVERTERS ON EXISTING
29° PITCH, 90° AND 270° AZIMUTH
METAL STANDING SEAM ROOF
STRUCTURE

EXISTING ELECTRICAL
SERVICE ENTRANCE AND
UTILITY NET METER (TO BE
RELOCATED)

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

NEW ELECTRICAL
SERVICE ENTRANCE
AND UTILITY NET METER



NOT TO SCALE

1

SITE PLAN
15.250 kW DC / 12.000 kW AC PV SYSTEM
1120 IOWA ST.
SAN ANTONIO, TX 78203
CUSTOMER: MICHAEL ELIZONDO

PROJECT INFORMATION
AHJ SAN ANTONIO
UTILITY CPS
PROJ # 1850

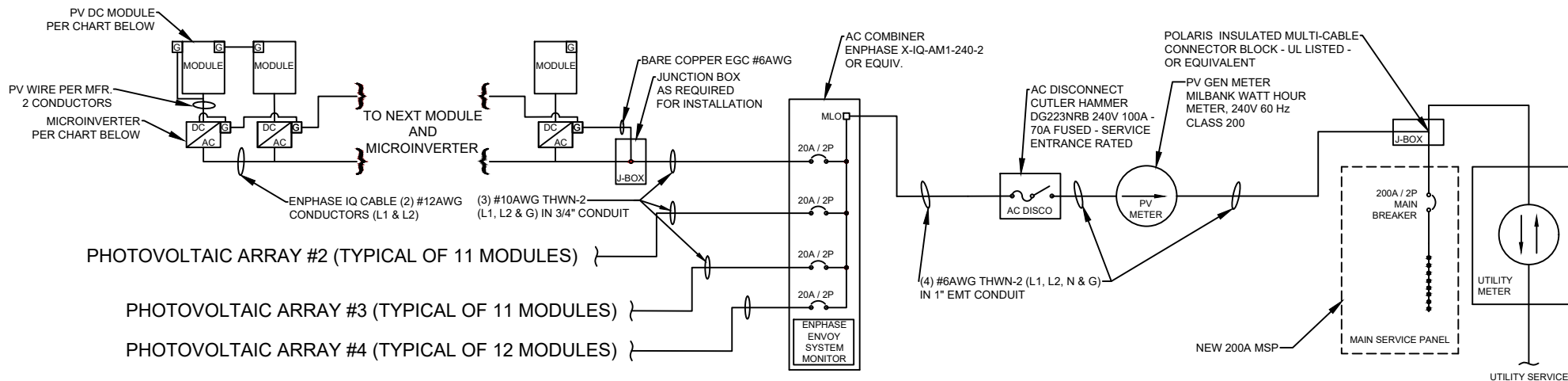
DRAWN BPA
DATE 10/09/18
REVIEWED BY
BRIAN AUTENRIETH
NABCEP CERTIFIED PV
INSTALLATION PROFESSIONAL™
#PV-0411115-010986

21402 N. 7th AVE.
PHOENIX, AZ 85027
602-507-6525

ERUS ENERGY™

NM:GB02 #382417 / TX:TECL #30936 /
SC:G120073 / FL:EC13007730

PHOTOVOLTAIC ARRAY #1 (TYPICAL OF 16 MODULES)



PHOTOVOLTAIC ARRAY #2 (TYPICAL OF 11 MODULES)

PHOTOVOLTAIC ARRAY #3 (TYPICAL OF 11 MODULES)

PHOTOVOLTAIC ARRAY #4 (TYPICAL OF 12 MODULES)

PV MODULE RATINGS @STC	
MAKE AND MODEL: JINKO SOLAR JKM305M-60-V	
MAX POWER-POINT CURRENT I_{MP}	9.30 A
MAX POWER-POINT VOLTAGE V_{MP}	32.8 V
OPEN-CIRCUIT VOLTAGE V_{OC}	40.3 V
SHORT-CIRCUIT CURRENT I_{SC}	9.83 A
MAX SERIES FUSE (OCPD)	20 A
MAXIMUM POWER P_{MAX}	305 W
MAX VOLTAGE	1000 VDC
V_{OC} TEMPERATURE COEFFICIENT	-0.29 %/°C

INVERTER RATINGS	
MAKE AND MODEL: ENPHASE ENERGY IQ7-60-2-US	
MAX DC VOLTAGE RATING	48 V
MAX CONTINUOUS POWER	240 W
NOMINAL AC VOLTAGE	240 V
MAX AC CURRENT	1.0 A
MAX OCPD RATING	20 A

2

SINGLE-LINE DIAGRAM
 15.250 kW DC / 12.000 kW AC PV SYSTEM
 1120 IOWA ST.
 SAN ANTONIO, TX 78203
 CUSTOMER: MICHAEL ELIZONDO

PROJECT INFORMATION		DRAWN	BPA
AHJ	SAN ANTONIO	DATE	10/09/18
UTILITY	CPS	REVIEWED BY BRIAN AUTENRIETH NABCEP CERTIFIED PV INSTALLATION PROFESSIONAL™ #PV-041115-010986	
PROJ #	1850		

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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

RATED AC OUTPUT CURRENT: 50.0 AMPS
NOMINAL OPERATING AC 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
KWH METER

PV METER

UTILITY METER

REVENUE METER

MAIN SERVICE PANEL

PHOTOVOLTAIC POWER SOURCE
SYSTEM AC VOLTAGE: 240 VAC
MAXIMUM AC CURRENT: 50.0 AMPS

WARNING

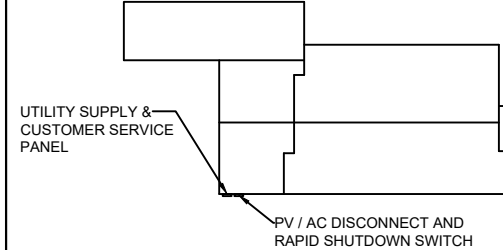
ELECTRIC SHOCK HAZARD
-DO NOT TOUCH TERMINALS-
TERMINALS ON BOTH LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

PANELBOARD IS ENERGIZED FROM TWO
SOURCES OF AC POWER
SOLAR - 50.0 A
UTILITY - 200 A AT 240V

PHOTOVOLTAIC SYSTEM
EQUIPPED WITH
RAPID SHUTDOWN

CAUTION

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



WARNING

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

3

PLACARDS
15.250 kW DC / 12.000 kW AC PV SYSTEM
1120 IOWA ST.
SAN ANTONIO, TX 78203

CUSTOMER: MICHAEL ELIZONDO

PROJECT INFORMATION	
AHJ	SAN ANTONIO
UTILITY	CPS
PROJ #	1850

DRAWN

DATE

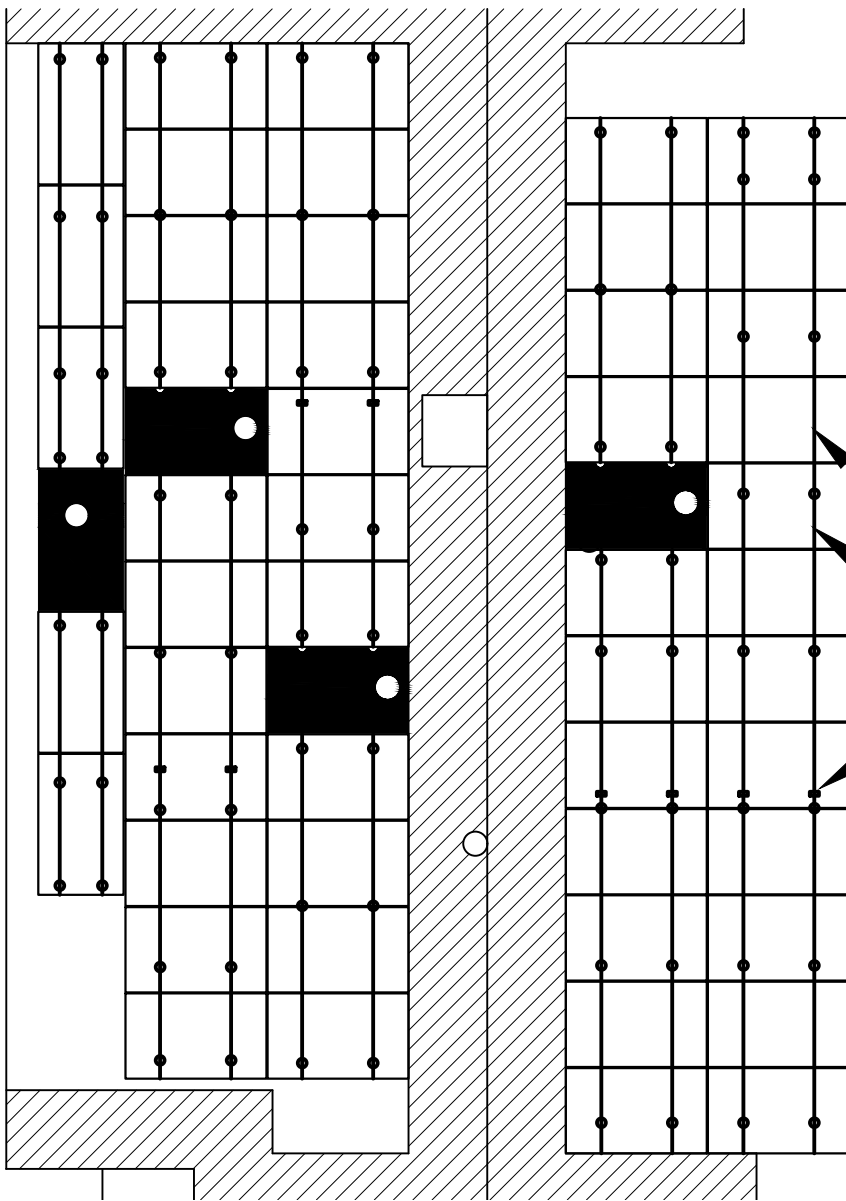
BPA

10/09/18

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ARRAY STRUCTURAL CALCULATIONS

27 MODULE ARRAY - WIND UPLIFT
 ARRAY AREA 17.6 FT²/MODULE X 27 X
 30 PSF WIND = 14256 LBS.
 MIN. EXTRACTION STRENGTH:
 420 LB. X 46 CONNECTIONS = 19320 LB.

DEAD LOAD: 50 LB./MODULE
 50 LB. X 27 MODULES / 46 CONNECTIONS =
 29.35 LB. PER ATTACHMENT POINT

ROOF MOUNTING POINT

MOUNTING RAIL

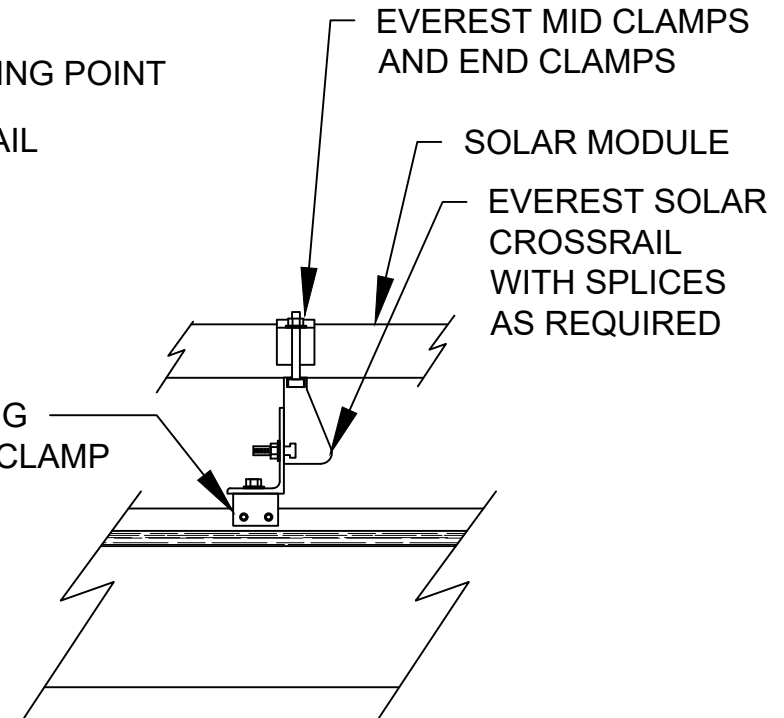
RAIL SPLICE

S-5! STANDING
SEAM ROOF CLAMP

EVEREST MID CLAMPS
AND END CLAMPS

SOLAR MODULE

EVEREST SOLAR
CROSSRAIL
WITH SPLICES
AS REQUIRED



MOUNTING DETAIL

4

MODULE MOUNTING
 15.250 kW DC / 12.000 kW AC PV SYSTEM
 1120 IOWA ST.
 SAN ANTONIO, TX 78203

CUSTOMER: MICHAEL ELIZONDO

PROJECT INFORMATION	
AHJ	SAN ANTONIO
UTILITY	CPS
PROJ #	1850

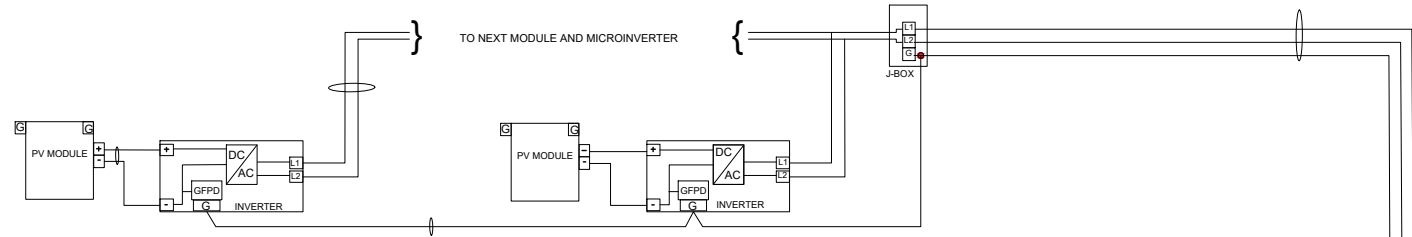
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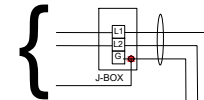
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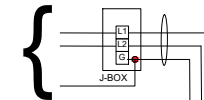
PHOTOVOLTAIC ARRAY #1 (TYPICAL OF 16 MODULES)



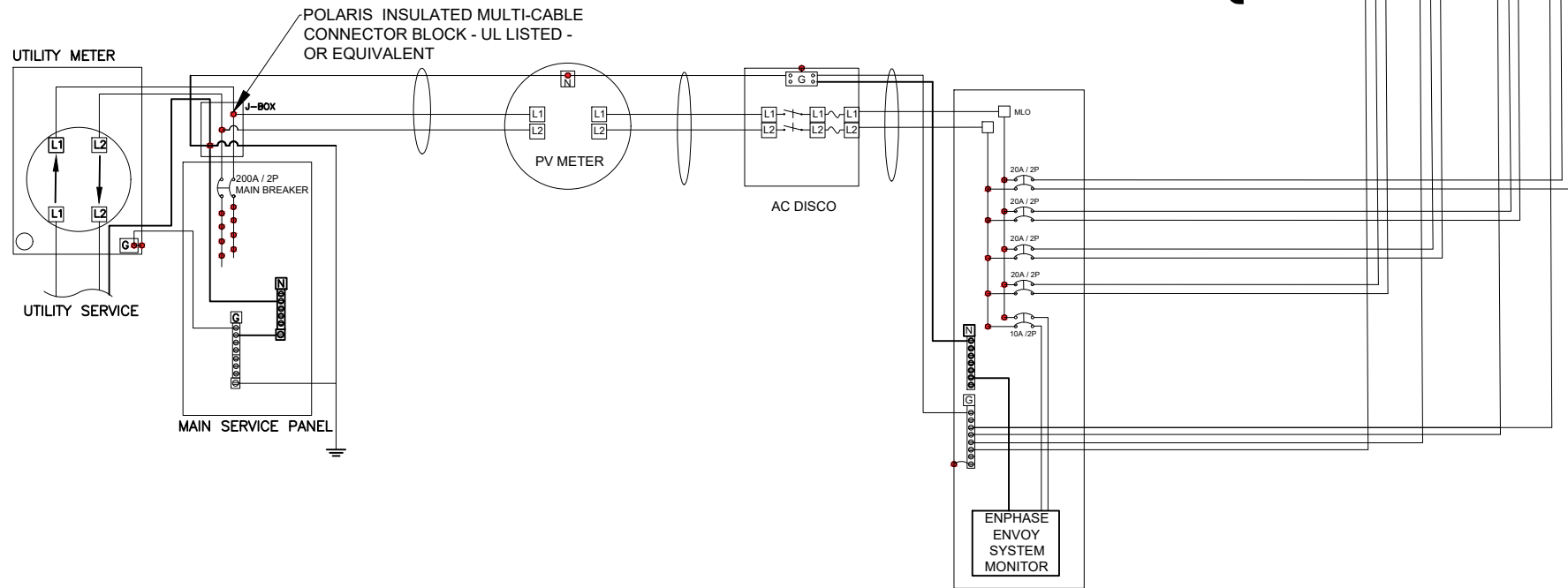
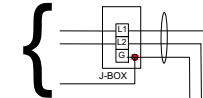
PHOTOVOLTAIC ARRAY #2 (TYPICAL OF 11 MODULES)



PHOTOVOLTAIC ARRAY #3 (TYPICAL OF 11 MODULES)



PHOTOVOLTAIC ARRAY #4 (TYPICAL OF 12 MODULES)



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

5

3-LINE DIAGRAM
15.250 kW DC / 12.000 kW AC PV SYSTEM
1120 IOWA ST.
SAN ANTONIO, TX 78203
CUSTOMER: MICHAEL ELIZONDO

PROJECT INFORMATION	
AHJ	SAN ANTONIO
UTILITY	CPS
PROJ #	1850

DRAWN	BPA
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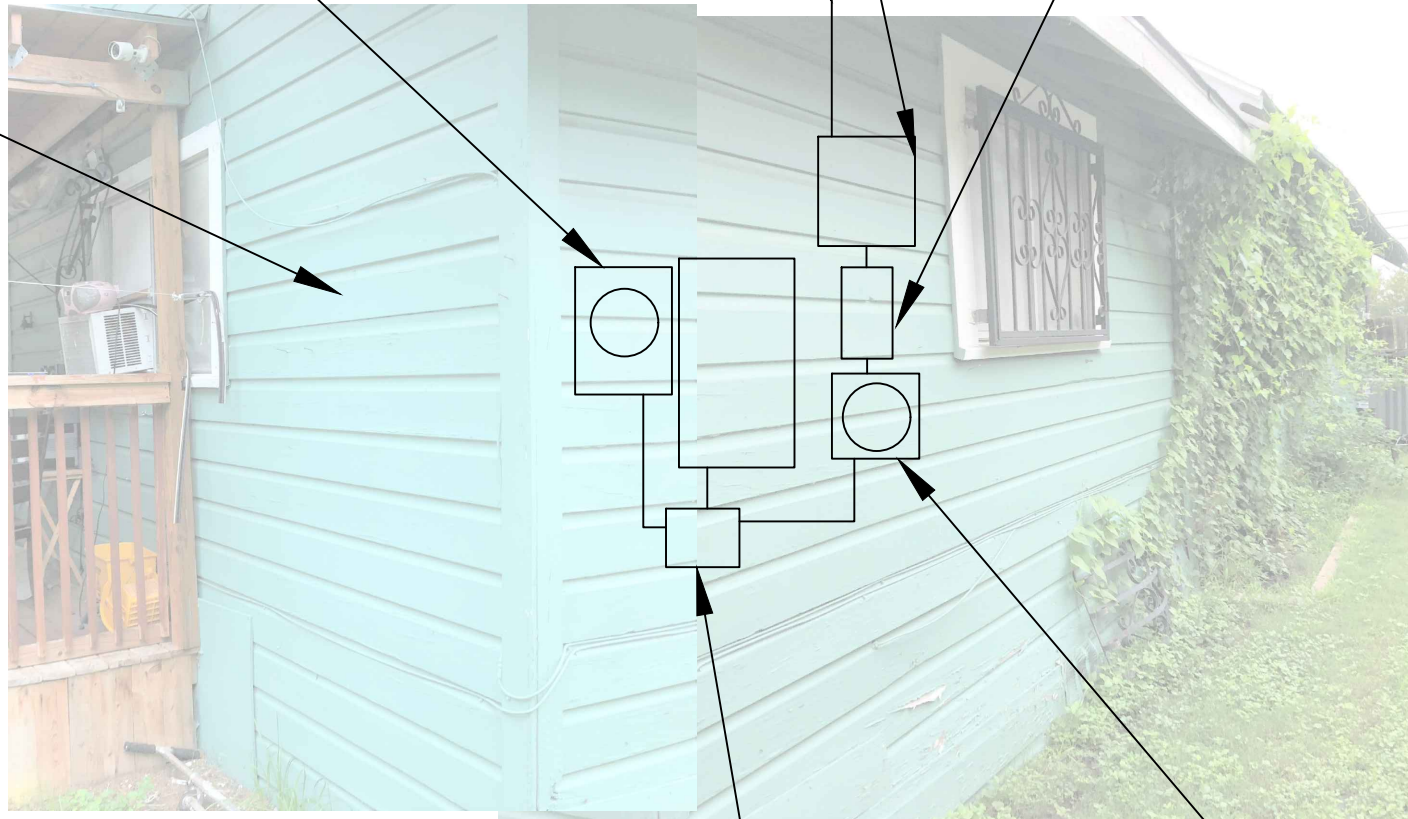
MICHAEL ELIZONDO
1120 IOWA ST.
SAN ANTONIO, TX 78203

AC PV COMBINER
AC FROM PV
MODULES AND
INVERTERS ON ROOF

AC DISCONNECT
CUTLER HAMMER
DG223NRB 240V 100A
- 70A FUSED -
SERVICE ENTRANCE
RATED

NEW, RELOCATED SERVICE
DISCONNECT AND
UTILITY METER

BACK WALL
MAY ALSO BE
USED IF
ADDITIONAL
SPACE IS
REQUIRED



J-BOX FOR SUPPLY-
SIDE TAP

PV METER

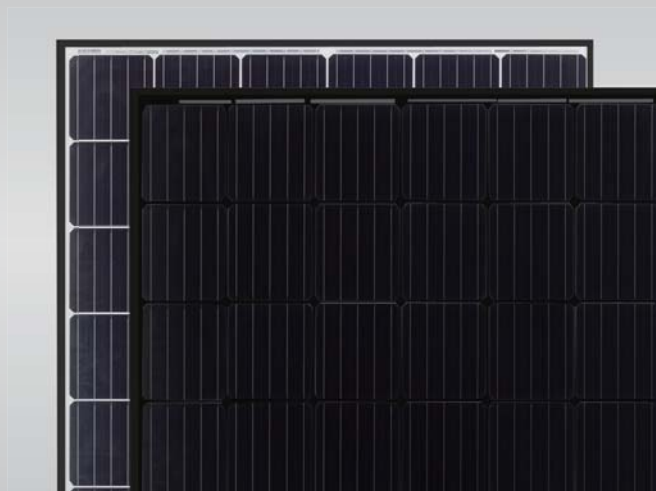


EXISTING SERVICE LOCATION
FOR REFERENCE

Eagle 60 290-310 Watt

MONO PERC MODULE

Positive power tolerance of 0~+3%



KEY FEATURES



Innovative Solar Cells

Five busbar monocrystalline PERC cell technology improves module efficiency



High Efficiency

Higher module conversion efficiency (up to 18.94%) due to Passivated Emmitter Rear Contact (PERC) technology



PID Free

World's 1st PID-Free module



Low-Light Performance

Advanced glass technology improves light absorption and retention



Strength and Durability

Certified for high snow (5400Pa) and wind (2400Pa) loads



Weather Resistance

Certified for salt mist and ammonia resistance

LINEAR PERFORMANCE WARRANTY

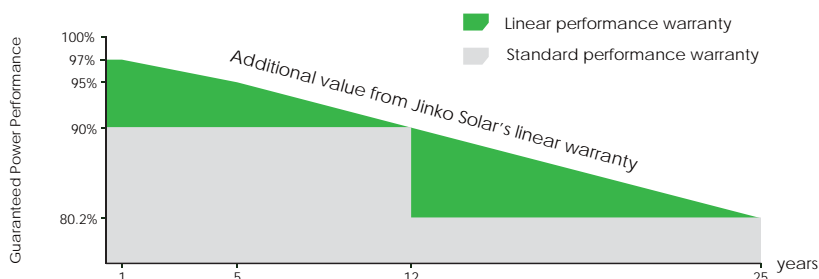
10 Year Product Warranty • 25 Year Linear Power Warranty

- ISO9001:2008 Quality Standards
- ISO14001:2004 Environmental Standards
- OHSAS18001 Occupational Health & Safety Standards

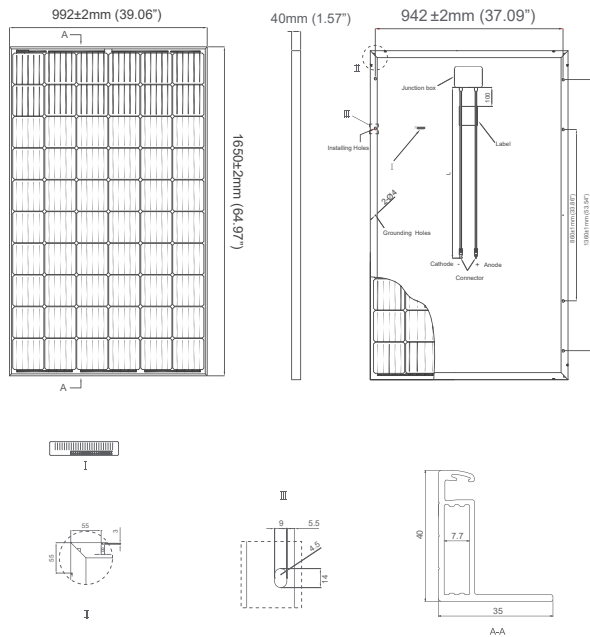
Nomenclature:

JKM310M - 60B

Code	Backsheet
null	White
B	Black



Engineering Drawings

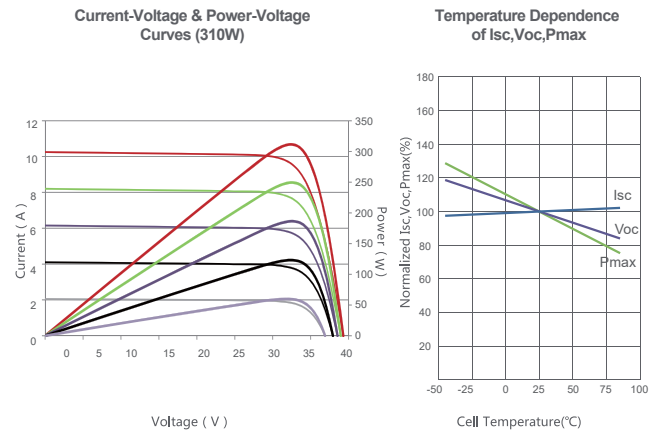


Packaging Configurations

(Two boxes=One Pallet)

26 pcs/box , 52 pcs/pallet, 728 pcs/40'HQ Container

Electrical Performance & Temperature Dependence



Mechanical Characteristics

Cell Type	Monocrystalline PERC 156×156mm (6 inch)
No. of Cells	60 (6×10)
Dimensions	1650×992×40mm (64.97×39.06×1.57 inch)
Weight	18.5 kg (40.8 lbs.)
Front Glass	3.2mm, Anti-reflection Coating, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy (Black)
Junction Box	IP67 Rated
Output Cables	12 AWG, Length: 900mm (35.43 inch)
Fire Type	Type 1

SPECIFICATIONS

Module Type	JKM290M-60-V		JKM295M-60-V		JKM300M-60-V		JKM305M-60-V		JKM310M-60-V	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	290Wp	216Wp	295Wp	220Wp	300Wp	224Wp	305Wp	227Wp	310Wp	231Wp
Maximum Power Voltage (Vmp)	32.2V	30.2V	32.4V	30.4V	32.6V	30.6V	32.8V	30.8V	33.0V	31.0V
Maximum Power Current (Imp)	9.02A	7.15A	9.10A	7.24A	9.21A	7.32A	9.30A	7.40A	9.40A	7.49A
Open-circuit Voltage (Voc)	39.5V	36.6V	39.7V	36.8V	40.1V	37.0V	40.3V	37.2V	40.5V	37.4V
Short-circuit Current (Isc)	9.55A	7.81A	9.61A	7.89A	9.72A	8.01A	9.83A	8.12A	9.92A	8.20A
Module Efficiency STC (%)	17.72%		18.02%		18.33%		18.63%		18.94%	
Operating Temperature (°C)	-40°C~+85°C									
Maximum System Voltage	1000VDC (UL and IEC)									
Maximum Series Fuse Rating	20A									
Power Tolerance	0~+3%									
Temperature Coefficients of Pmax	-0.39%/°C									
Temperature Coefficients of Voc	-0.29%/°C									
Temperature Coefficients of Isc	0.048%/°C									
Nominal Operating Cell Temperature (NOCT)	45±2°C									

* STC: Irradiance 1000W/m² Cell Temperature 25°C

AM=1.5

NOCT: Irradiance 800W/m² Ambient Temperature 20°C

AM=1.5

Wind Speed 1m/s

* Power measurement tolerance: ± 3%

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

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US-MKT-310M-60_1.0_rev2017

Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready **Enphase IQ 7 Micro™** and **Enphase IQ 7+ Micro™** dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.



Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable

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

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ 7+ Micro is required to support 72-cell modules.



To learn more about Enphase offerings, visit enphase.com



Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US / IQ7-60-B-US		IQ7PLUS-72-2-US / IQ7PLUS-72-B-US	
Commonly used module pairings ¹	235 W - 350 W +		235 W - 440 W +	
Module compatibility	60-cell PV modules only		60-cell and 72-cell PV modules	
Maximum input DC voltage	48 V		60 V	
Peak power tracking voltage	27 V - 37 V		27 V - 45 V	
Operating range	16 V - 48 V		16 V - 60 V	
Min/Max start voltage	22 V / 48 V		22 V / 60 V	
Max DC short circuit current (module Isc)	15 A		15 A	
Overvoltage class DC port	II		II	
DC port backfeed current	0 A		0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)	IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range ²	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit ³	16 (240 VAC)	13 (208 VAC)	13 (240 VAC)	11 (208 VAC)
Overvoltage class AC port	III		III	
AC port backfeed current	0 A		0 A	
Power factor setting	1.0		1.0	
Power factor (adjustable)	0.7 leading ... 0.7 lagging		0.7 leading ... 0.7 lagging	
EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak CEC efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)			
Connector type (IQ7-60-B-US & IQ7PLUS-72-B-US)	Friends PV2 (MC4 intermateable). Adaptors for modules with MC4 or UTX connectors: - PV2 to MC4: order ECA-S20-S22 - PV2 to UTX: order ECA-S20-S25			
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)			
Weight	1.08 kg (2.38 lbs)			
Cooling	Natural convection - No fans			
Approved for wet locations	Yes			
Pollution degree	PD3			
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure			
Environmental category / UV exposure rating	NEMA Type 6 / outdoor			
FEATURES				
Communication	Power Line Communication (PLC)			
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.			
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.			
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.			

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

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

3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit enphase.com

