

HISTORIC AND DESIGN REVIEW COMMISSION

March 17, 2021

HDRC CASE NO: 2021-096
ADDRESS: 624 DAWSON ST
LEGAL DESCRIPTION: NCB 569 BLK 17 LOT 6
ZONING: RM-4, H
CITY COUNCIL DIST.: 2
DISTRICT: Dignowity Hill Historic District
APPLICANT: Christopher Westrom/WESTROM CHRISTOPHER A
OWNER: Christopher Westrom/WESTROM CHRISTOPHER A
TYPE OF WORK: Solar panels
APPLICATION RECEIVED: February 16, 2021
60-DAY REVIEW: Not applicable due to City Council Emergency Orders
CASE MANAGER: Edward Hall

REQUEST:

The applicant is requesting a Certificate of Appropriateness for approval to install thirty-five (35) solar panels on the primary historic structure at 624 Dawson, located within the Dignowity Hill Historic District.

APPLICABLE CITATIONS:

Historic Design Guidelines, Chapter 3, Guidelines for Additions

6. Designing for Energy Efficiency

A. BUILDING DESIGN

- i. *Energy efficiency*—Design additions and new construction to maximize energy efficiency.
- ii. *Materials*—Utilize green building materials, such as recycled, locally-sourced, and low maintenance materials whenever possible.
- iii. *Building elements*—Incorporate building features that allow for natural environmental control – such as operable windows for cross ventilation.
- iv. *Roof slopes*—Orient roof slopes to maximize solar access for the installation of future solar collectors where compatible with typical roof slopes and orientations found in the surrounding historic district.

B. SITE DESIGN

- i. *Building orientation*—Orient new buildings and additions with consideration for solar and wind exposure in all seasons to the extent possible within the context of the surrounding district.
- ii. *Solar access*—Avoid or minimize the impact of new construction on solar access for adjoining properties.

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 applicant is requesting a Certificate of Appropriateness for approval to install thirty-five (35) solar panels on the primary historic structure at 624 Dawson, located within the Dignowity Hill Historic District. The applicant has proposed to install solar panels on the west, south and east facing roof slopes. At this time, no panels are proposed for the primary, street facing roof slope.

- b. LOCATION – The applicant has proposed to install solar panels on the west, south and east facing roof slopes. At this time, no panels are proposed for the primary, street facing roof slope. The west roof slope will feature fifteen (15) solar panels, the southern roof slopes will feature seventeen (17) solar panels, and the east roof slope will feature three (3) solar panels. 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 to minimize the visibility from the public right-of-way. Staff finds that due to the structure’s roof forms, only the panels located on the west roof slope will be visible from the public right of way on Dawson. Per the submitted roof plan, staff does not find that there is currently an available location for the panels currently positioned on the west roof slope, where visible from the public right of way on Dawson.
- c. INSTALLATION – The applicant has noted that panels will be installed with a matching pitch as the existing roof. Staff finds this to be appropriate. Additionally, staff finds that the proposed panels should maintain a separation of eighteen (18) inches from roof eaves and should be installed in a manner that does not damage the historic structure’s roof form.

RECOMMENDATION:

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

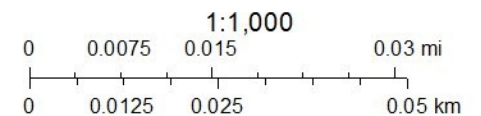
- i. that the proposed panels should maintain a separation of eighteen (18) inches from roof eaves
- ii. That panels be installed in a manner that does not damage the historic structure’s roof form.

City of San Antonio One Stop



March 11, 2021

- CoSA Addresses
- Community Service Centers
- Pre-K Sites
- CoSA Parcels
- BCAD Parcels

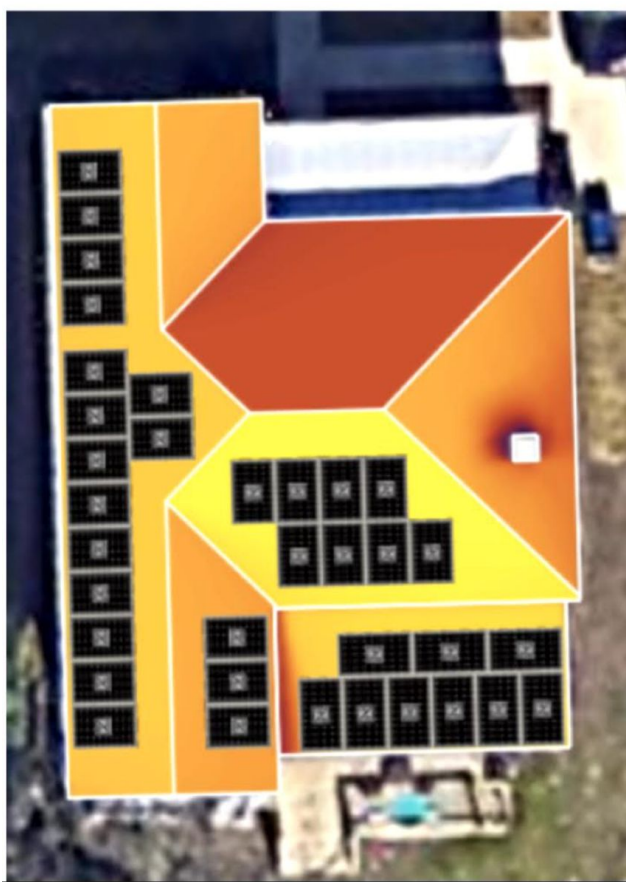


CoSA

Current pictures of roof:



Solar Plan. Note: very few panels are visible from the street in front of the house, they can only be seen on one side from the street



ESTIMATED YEAR 1 PRODUCTION

16,767 kWh

YOUR ESTIMATED ANNUAL SOLAR SYSTEM OFFSET

Impact of Energy Efficiency:

9%

UTILITY POWER

18%

SOLAR POWER

82%



624 Dawson St



Front



Left Side



Right Side



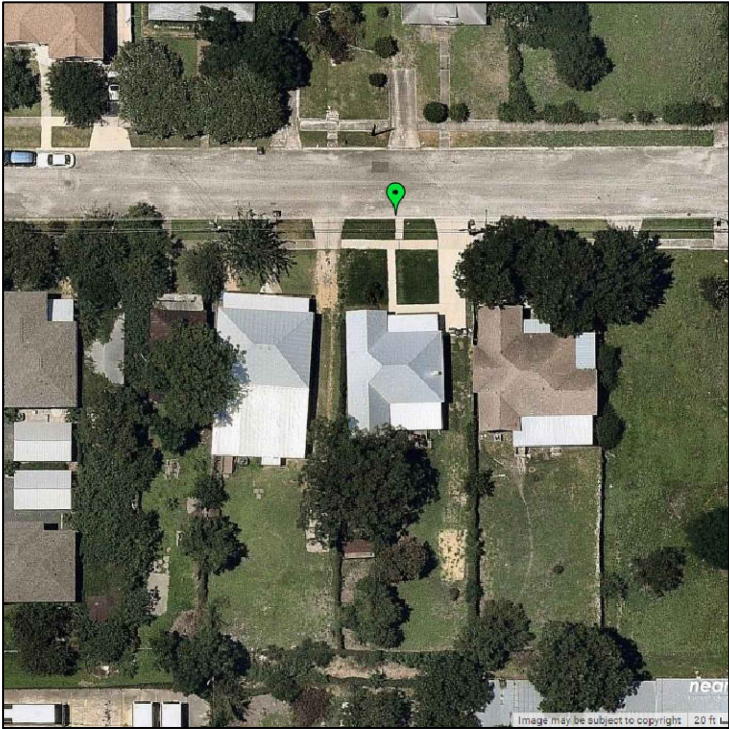
Right Side



Right Side



Back (From Hackberry)

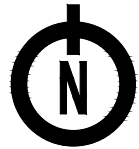
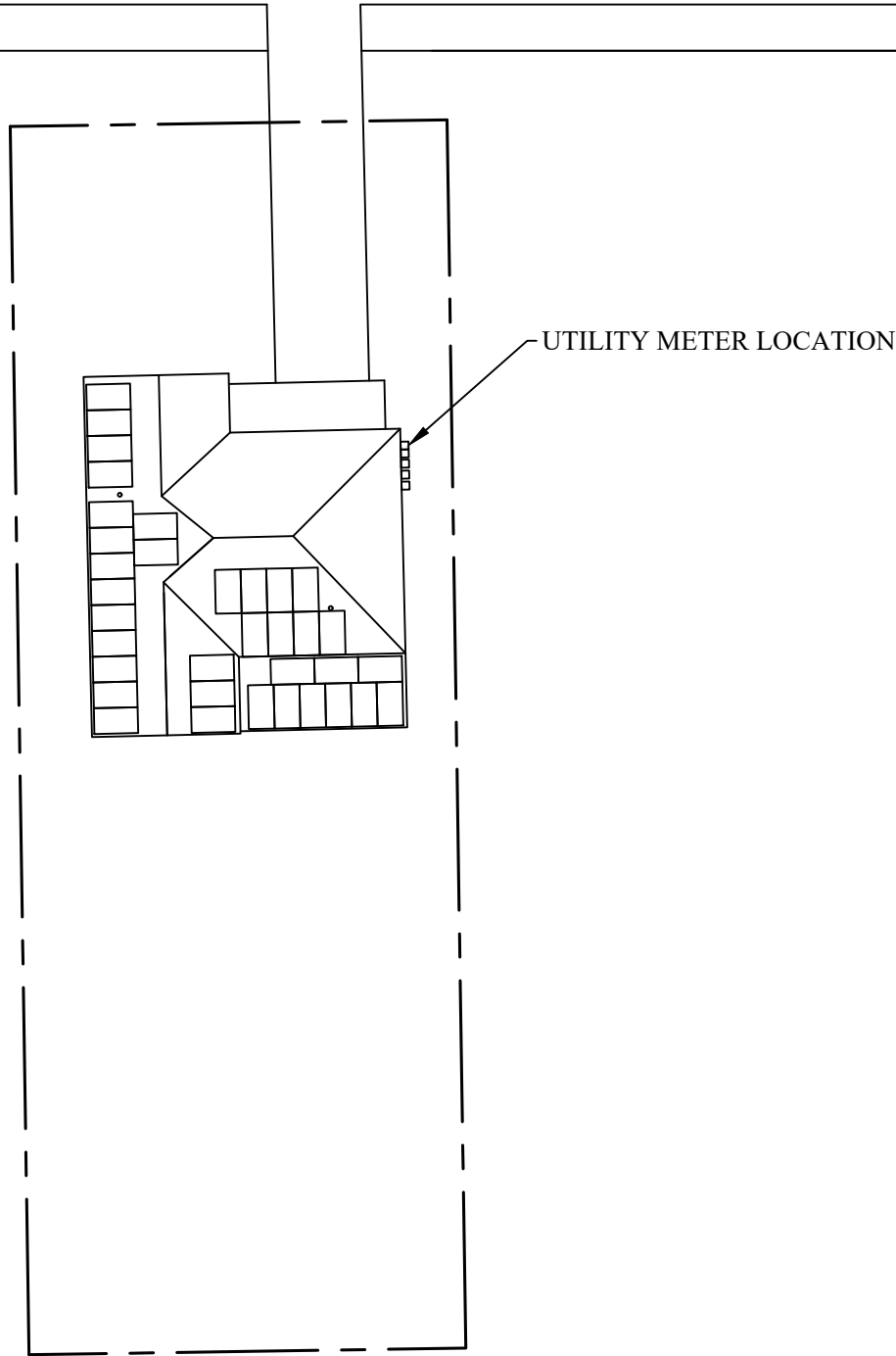


MAP OF LOCATION

<p>SCOPE OF WORK:</p> <p>THE SYSTEM CONSISTS OF A 11.90 KW DC (8.40 KW AC) ROOF-MOUNTED PHOTOVOLTAIC POWER SYSTEM OPERATING IN PARALLEL WITH THE UTILITY GRID. THERE ARE (35) SILFAB SOLAR SIL-340NL MODULES AND (35) ENPHASE IQ7-60-E-US MICRO-INVERTERS, MOUNTED ON THE BACK OF EACH PV MODULE, CONNECTING TO THE UTILITY GRID THROUGH THE EXISTING MAIN LOAD CENTER.</p>	
INTERCONNECTION METHOD:	LOAD-SIDE BREAKER
ROOF MATERIAL:	STANDING SEAM METAL
<p>PROJECT WILL COMPLY WITH THE 2015 IBC, 2015 IEBC, 2015 IECC, 2015 IFC, 2015 IRC, AND 2017 NEC.</p>	

SCALE: 1" = 24'

624 DAWSON STREET



ION

4801 N UNIVERSITY AVE, #900
PROVO, UT 84604
(888) 781-7074

CHRIS WESTROM
624 DAWSON STREET
SAN ANTONIO, TX 78202

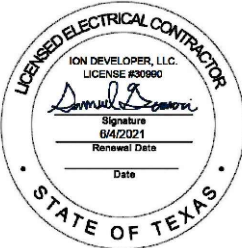


PV Installation
Professional

Douglas Daniels

Douglas Daniels

NABCEP Certified Professional
#PV-102216-012216



SYSTEM SIZE: 11.90 kW DC
8.40 kW AC
35 MODULES

DATE: 2/16/2021

DRAWN BY: DTG

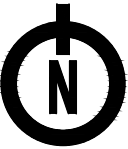
ADDITIONAL NOTES:

SHEET:
**COVER
PV 1.0**

PV CIRCUIT 1

PV CIRCUIT 2

PV CIRCUIT 3



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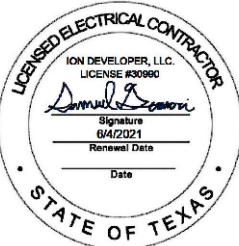
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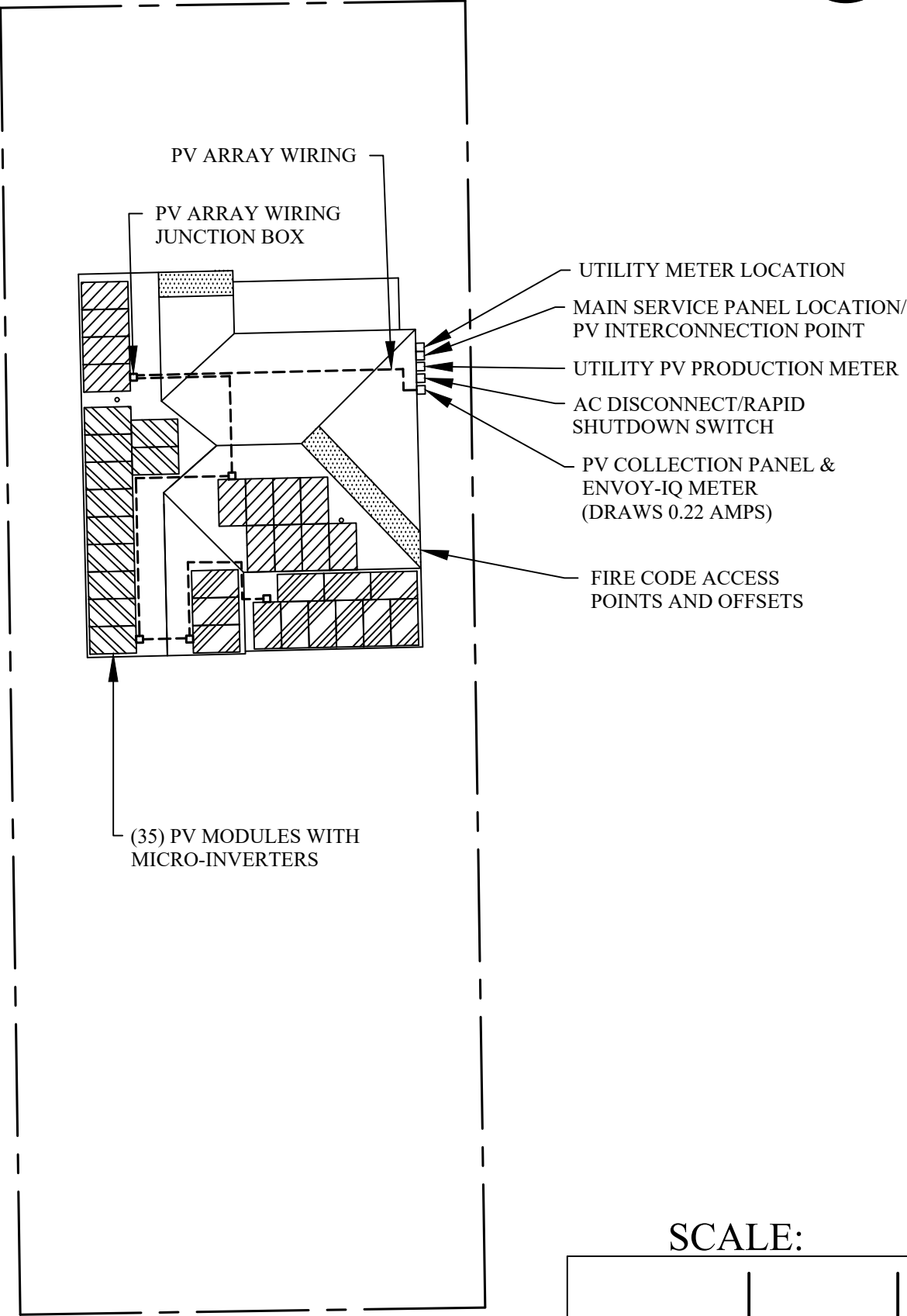
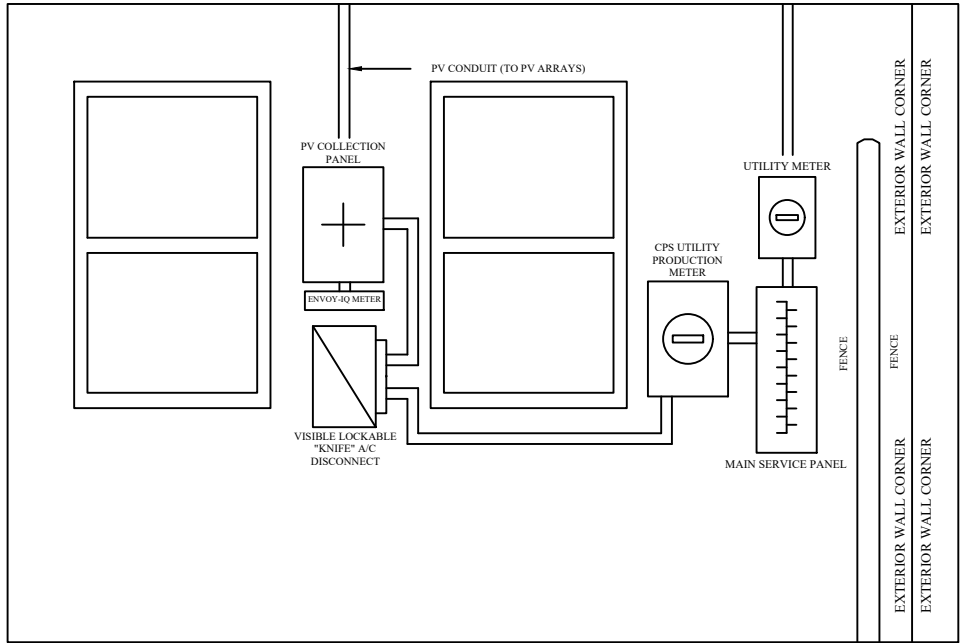
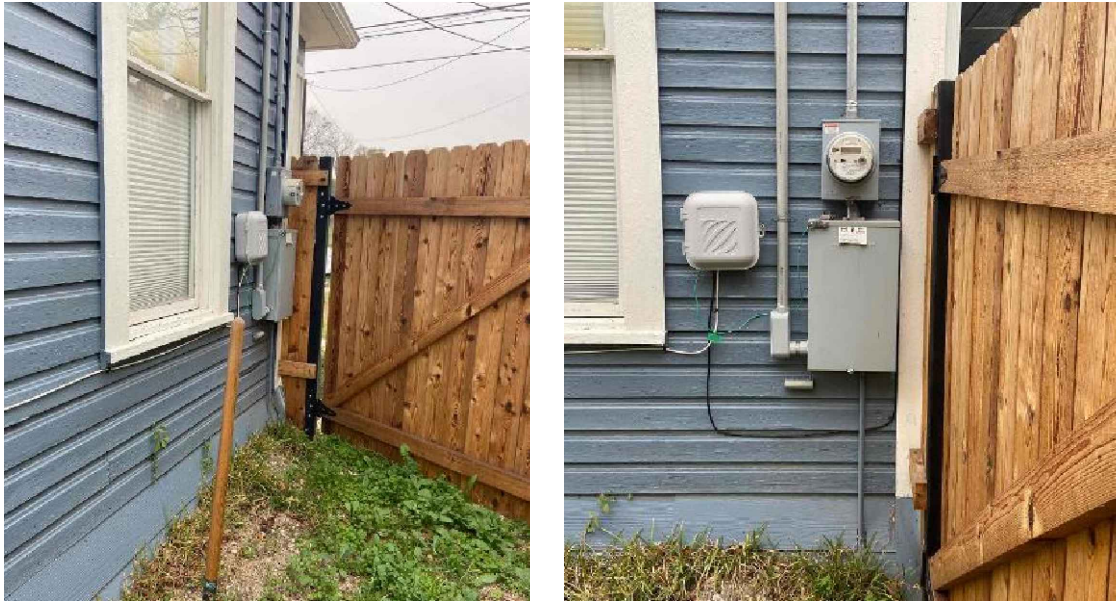
SYSTEM SIZE: 11.90 kW DC
8.40 kW AC
35 MODULES

DATE: 2/16/2021

DRAWN BY: DTG

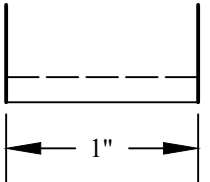
ADDITIONAL NOTES:

SHEET:
SITE PLAN
PV 2.0



SCALE:

1" = 18'



ION

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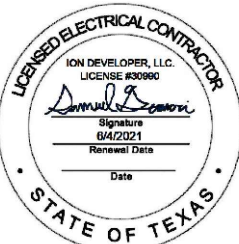
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8.40 kW AC
35 MODULES

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ADDITIONAL NOTES:

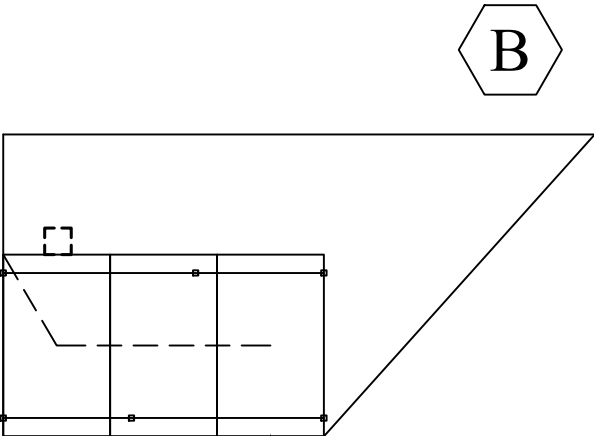
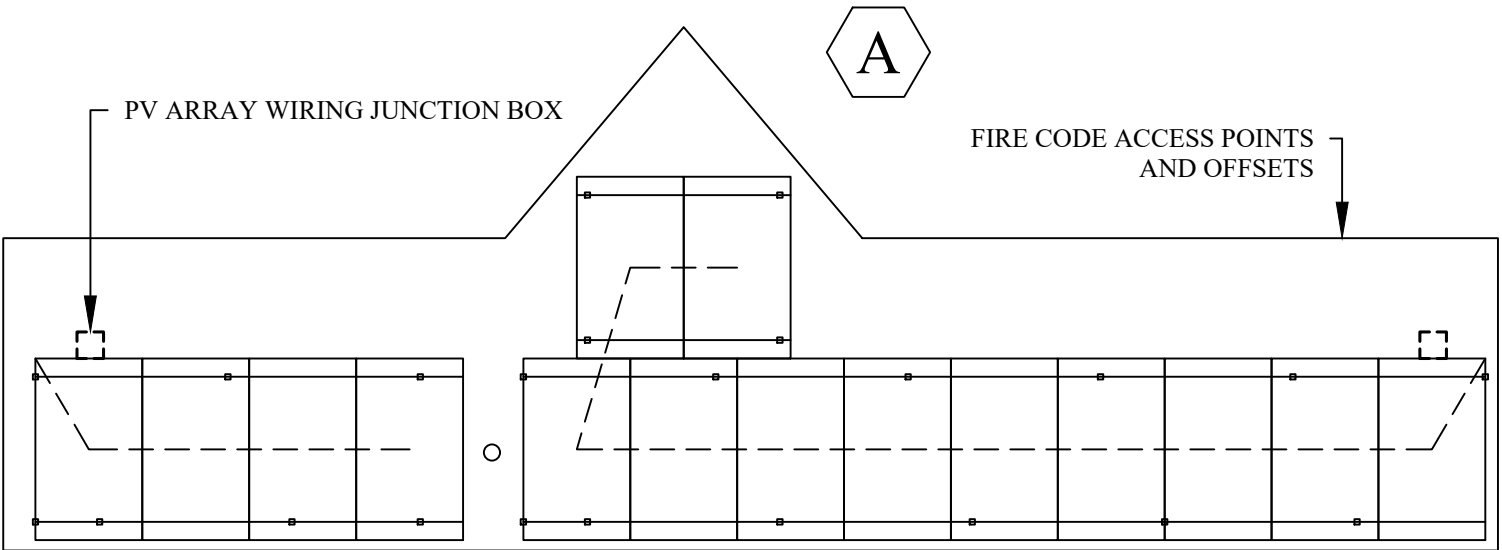
2" X 6" TRUSS SYSTEM 24"
ON CENTER

CANTILEVERS WILL BE NO
MORE THAN 24"

ATTACHMENT POINTS
WILL BE NO MORE THAN 6'
APART, STAGGERED

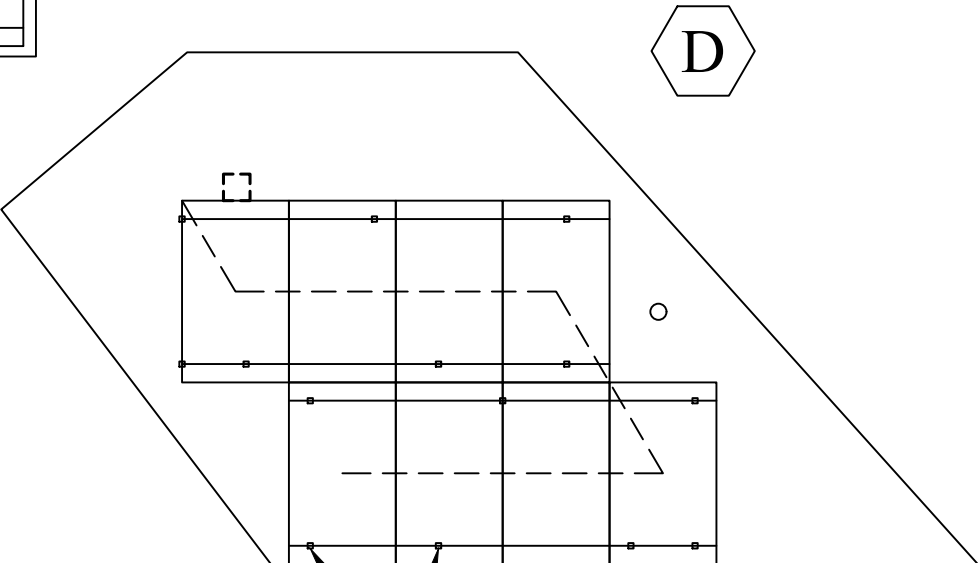
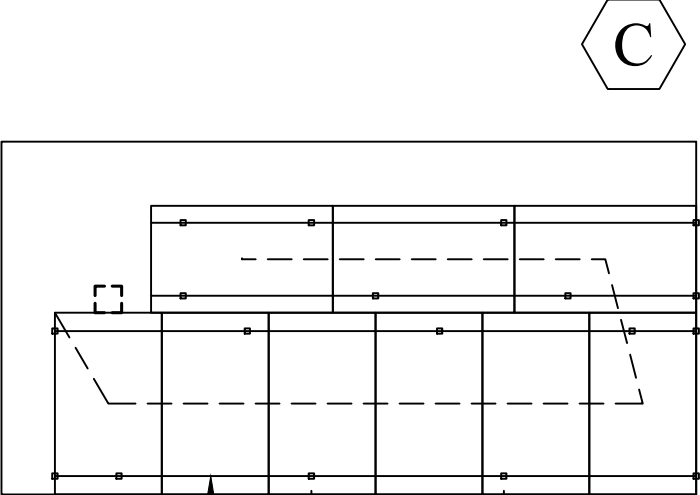
SHEET:

ROOF PLAN
PV 3.0



PV MODULES AND
MICRO-INVERTERS.

ECOFASTEN CLICK FIT RACKING,
TRADITIONAL RAILS



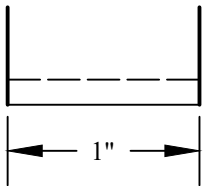
MECHANICAL FASTENING/MOUNTING.
REFER TO PAGE 5 FOR SECTION
DETAIL & ATTACHMENT INFO.

ROOF SECTION DATA

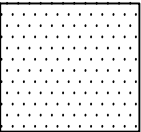
ROOF SECTION	A	B	C	D	E	F	G	H
MODULES	15	3	8	9				
TILT	31	31	31	9				
AZIMUTH	268	88	178	178				
SOLAR ACCESS AVG.	98.00%	96.00%	98.00%	94.00%				

SCALE:

1" = 6'



FIRE CODE OFFSET



WEATHER DATA	
HIGH TEMP, 2% AVG.	37 °C
MIN DESIGN TEMP	-4 °C
GROUND SNOW LOAD	5 psf
WIND SPEED	115 mph

1. HIGH TEMPERATURE 2% AVERAGE BASED ON ASHRAE HIGHEST MONTH 2% DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION
2. MINIMUM DESIGN TEMPERATURE BASED ON ASHRAE MINIMUM MEAN EXTREME DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION
3. ALTERNATE POWER SOURCE PLACARD SHALL BE PERMANENTLY ATTACHED TO A/C DISCONNECT
4. ELECTRICAL INSTALL SHALL COMPLY WITH 2017 NATIONAL ELECTRICAL CODE
5. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS SHALL BE BONDED
6. IF THE EXISTING MAIN SERVICE DOES NOT HAVE VERIFIABLE GROUNDING ELECTRODE, IT IS THE PV CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE
7. EACH MODULE SHALL BE GROUNDED PER MANUFACTURER INSTRUCTIONS AND APPROVED METHODS

8. PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL OR BUILDING ROOF VENTS
9. CONNECTORS THAT ARE NOT READILY ACCESSIBLE AND THAT ARE USED IN THE CIRCUITS OPERATING AT OR OVER 30V AC OR DC SHALL REQUIRE A TOOL FOR OPERATING AND ARE REQUIRED TO BE MARKED "DO NOT DISCONNECT UNDER LOAD" OR "NOT FOR CURRENT INTERRUPTING"
10. THIS SYSTEM IS IN FULL COMPLIANCE WITH THE TEXAS FIRE CODE FOR PHOTOVOLTAIC INSTALLATION AND ARTICLE 690 OF THE NATIONAL ELECTRIC CODE (NEC NFPA 70)
11. BUILDING CONSTRUCTION TYPE: TYPE V
12. BUILDING OCCUPANCY TYPE: R3

ION

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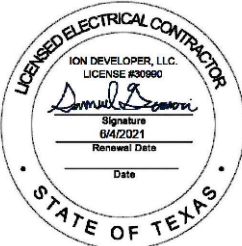


PV Installation
Professional

Douglas Daniels

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NABCEP Certified Professional
#PV-102216-012316



SYSTEM SIZE: 11.90 kW DC
8.40 kW AC
35 MODULES

DATE: 2/16/2021

DRAWN BY: DTG

ADDITIONAL NOTES:

SHEET:
LOCATION NOTES
PV 4.0

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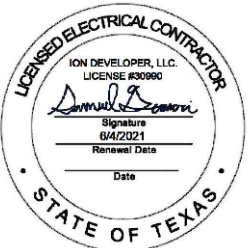


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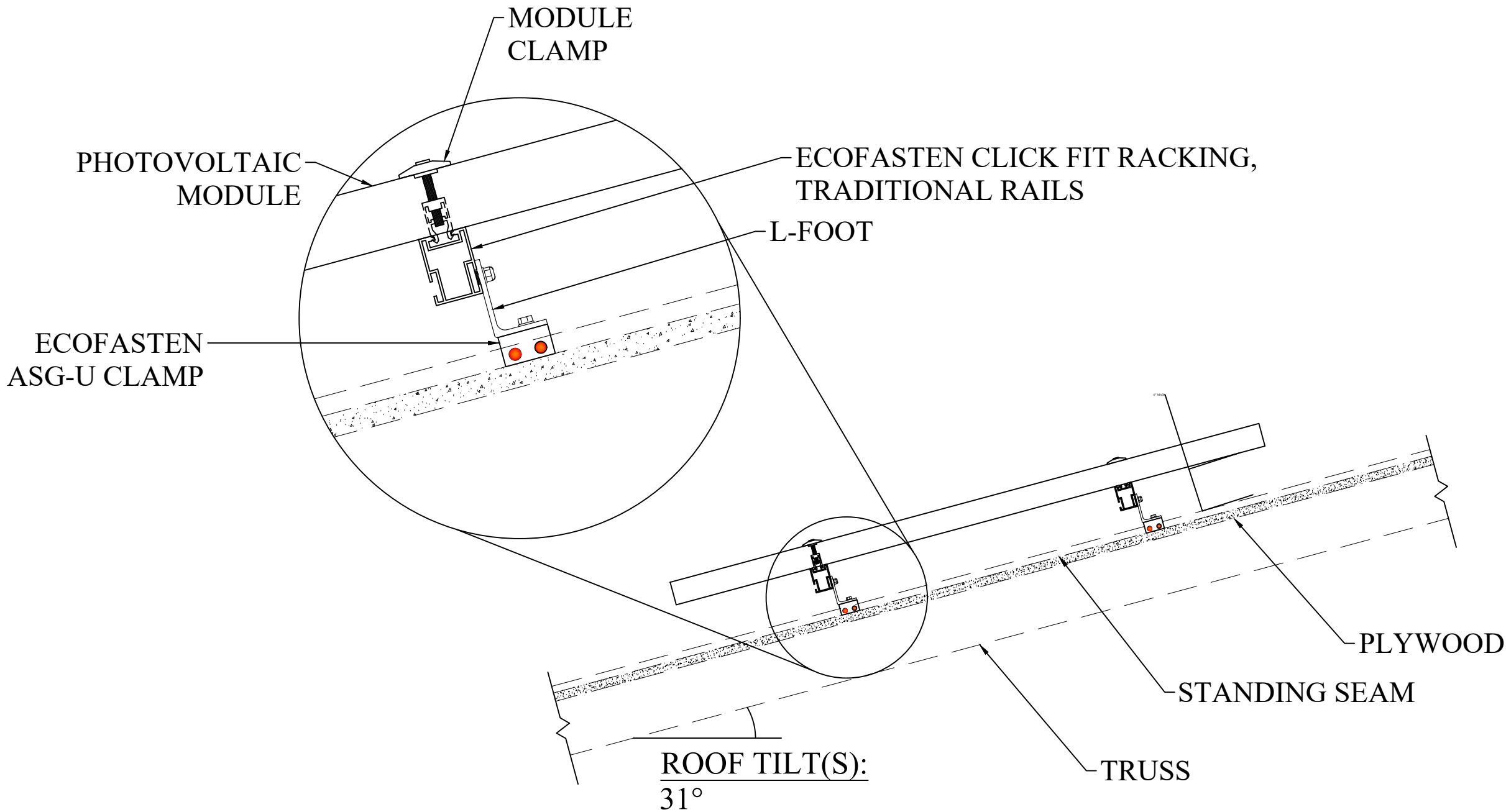
SYSTEM SIZE: 11.90 kW DC
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35 MODULES

DATE: 2/16/2021

DRAWN BY: DTG

ADDITIONAL NOTES:

SHEET:
**MOUNTING
PV 5.0**



ION

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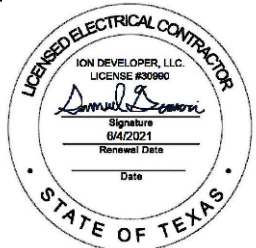
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SAN ANTONIO, TX 78202



PV Installation
Professional

Douglas Daniels
Douglas Daniels

NABCEP Certified Professional
#PV-102216-012315



SYSTEM SIZE: 11.90 kW DC
8.40 kW AC
35 MODULES

DATE: 2/16/2021

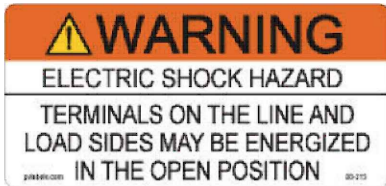
DRAWN BY: DTG

ADDITIONAL NOTES:

SHEET:
CPS LABELING
PV 6.0

JUNCTION BOX LABELS:

2017 NEC 690.13 & NEC 690.15
(PLACED ON ALL JUNCTION BOXES)



PV COMBINER PANEL LABEL:

2017 NEC 705.12 (D)(7)
(PLACED ON THE SOLAR COMBINER PANEL)



INVERTER OUTPUT CONNECTION:

2017 NEC 705.12 (B)(2)(3)(B)
(PLACED NEXT TO SOLAR BREAKER)



RAPID SHUTDOWN SWITCH:

2017 NEC 690.12 (C)
(PLACED ON AC DISCONNECT)

RAPID SHUTDOWN
SWITCH FOR
SOLAR PV SYSTEM

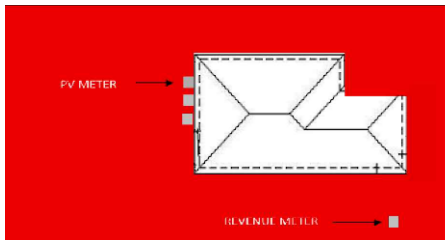
PV METER SOCKET:

PV METER

CPS ENERGY REVENUE METER SOCKET:

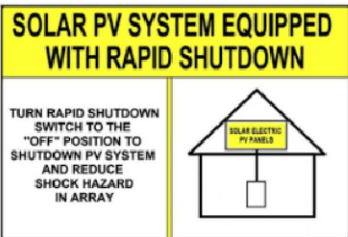
REVENUE METER

NOTE:
PLACARD REQUIRED ON BOTH REVENUE AND PV
METER SOCKETS WHERE METERS HAVE BEEN
APPROVED TO BE REMOTE FROM ONE ANOTHER

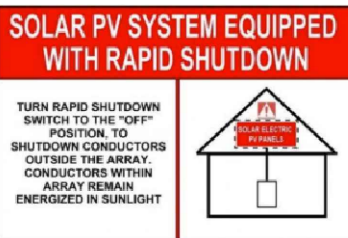


RAPID SHUTDOWN TYPE PLACARD:

2017 NEC 690.15 & NEC 690.56 (B), (C)
(LOCATED ON SERVICE PANEL & AC DISCONNECT)



FOR SYSTEMS THAT SHUTDOWN THE ARRAY AND
CONDUCTORS LEAVING THE ARRAY



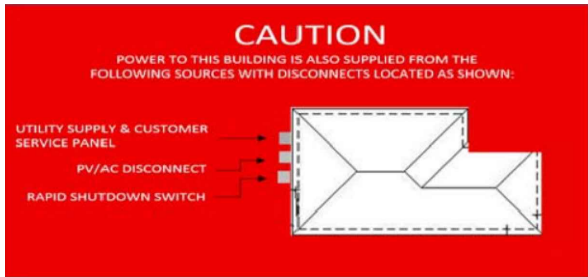
FOR SYSTEMS THAT SHUTDOWN THE CONDUCTORS
LEAVING THE ARRAY

RACEWAYS/ENCLOSURES CONTAINING DC CONDUCTORS:

WARNING: PHOTOVOLTAIC
POWER SOURCE

UTILITY DIRECTORY PLACARD:

2017 NEC 705.10
(LOCATED ON SERVICE PANEL)



SHOWS LOCATIONS OF CUSTOMER SERVICE PANEL,
PV/AC DISCONNECT AND RAPID SHUTDOWN SWITCH

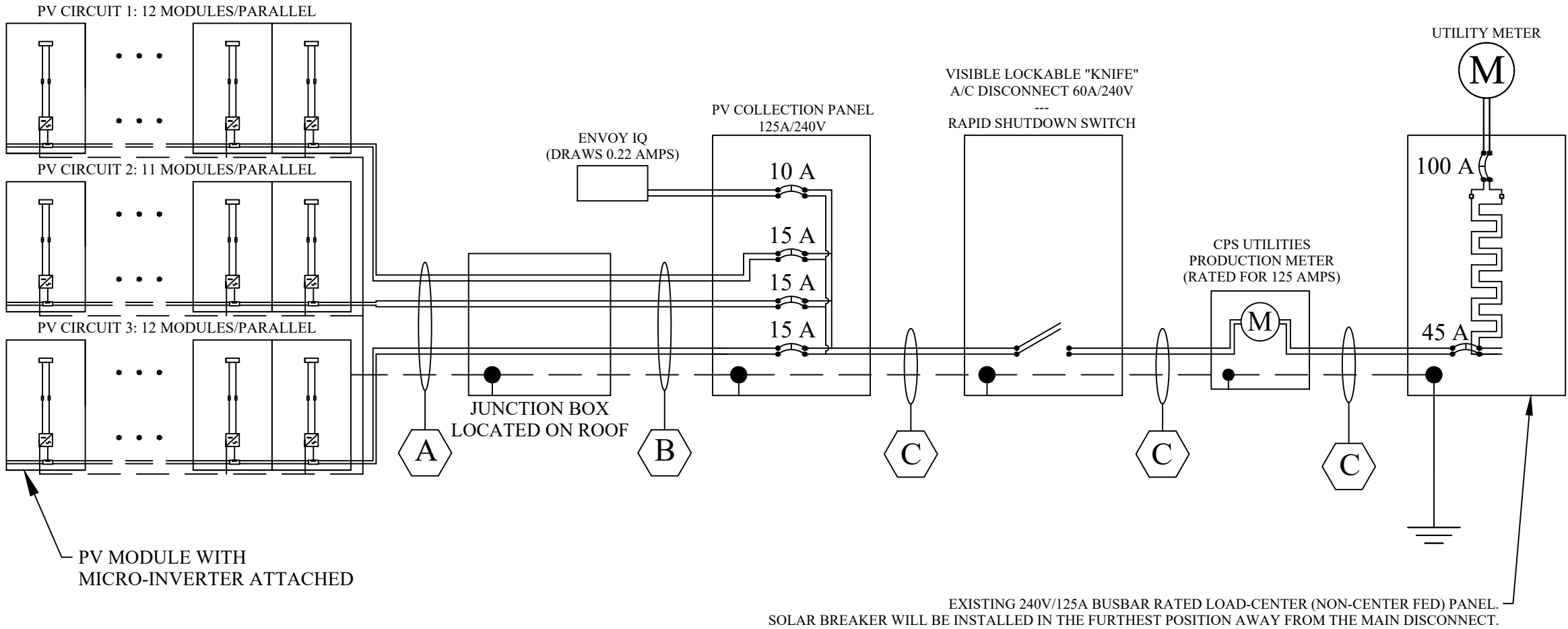
NOTES:

1 - LABELING SHALL BE PERMANENTLY AFFIXED AND SUITABLE FOR THE ENVIRONMENT AND IN ACCORDANCE WITH 2017 NEC 110.21 (B)

2 - PV METER SHALL BE LOCATED ADJACENT TO THE REVENUE METER UNLESS PRE-APPROVED BY CPS ENERGY TO BE LOCATED REMOTELY DUE TO SPECIAL CIRCUMSTANCES

PV MODULE SPECIFICATIONS		
MODULE MAKE AND MODEL	SILFAB SIL 340NL	
MAXIMUM POWER (DC)	340	WATTS
MAX POWER-POINT VOLTAGE (VMPP)	33.7	VOLTS
MAX POWER-POINT CURRENT (IMPP)	10.10	AMPS
OPEN CIRCUIT VOLTAGE (VOC)	40.9	VOLTS
SHORT CIRCUIT CURRENT (ISC)	10.5	AMPS
TEMPERATURE COEFFICIENT VOC	-0.28	%/°C
MAXIMUM SYSTEM VOLTAGE	1000V DC (UL)	

MICRO-INVERTER SPECIFICATIONS		
INVERTER MAKE AND MODEL	ENPHASE IQ7-60-E-US	
RATED OUTPUT POWER (AC)	240	WATTS
NOMINAL OUTPUT VOLTAGE (AC)	240	VOLTS
MAX OUTPUT CURRENT (AC)	1	AMPS
MAX INPUT VOLTAGE (DC)	48	VOLTS
MAX INPUT CURRENT (DC)	15	AMPS
MAX OCPD RATING (AC)	20	AMPS
MAX NUMBER OF PANELS PER CIRCUIT	16	



AC PHOTOVOLTAIC SYSTEM RATINGS		
MAX AC OPERATING CURRENT	35	AMPS
MAX AC OPERATING VOLTAGE	240	VOLTS

*TYPE NM-B CABLE WILL BE RAN THROUGH THE ATTIC SPACE/INTERIOR WHERE POSSIBLE.

RACEWAY AND CONDUCTOR SCHEDULE					
TAG	CONDUCTOR TYPE	MINIMUM WIRE SIZE	# OF CONDUCTORS	RACEWAY / CABLE TYPE	MINIMUM CONDUIT SIZE
A	ENPHASE Q-CABLE (USE-2)	12	2	USE-2 / FREE AIR	FREE AIR
	BARE COPPER (EGC)	6	1	BARE / FREE AIR	
B	CU THHN OR NM-B CABLE *	10	6	EMT OR NM-B CABLE	3/4" / INTERIOR USE
	CU THHN OR NM-B CABLE (EGC) *	10	1		
C	CU THHN/THWN-2	8	3	EMT	3/4"
	CU THHN/THWN-2 (EGC)	8	1		

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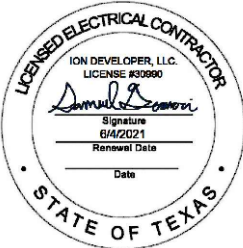


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SYSTEM SIZE: 11.90 kW DC
8.40 kW AC
35 MODULES

DATE: 2/16/2021

DRAWN BY: DTG

ADDITIONAL NOTES:

SHEET:

1-LINE
EL 1.0

NEC ARTICLE 690.43 EQUIPMENT
GROUNDING SPECIFIES THAT ALL
EXPOSED NON-CURRENT-CARRYING
METAL PARTS OF PV MODULE FRAMES,
ELECTRICAL EQUIPMENT, AND
CONDUCTOR ENCLOSURES SHALL BE
PROVIDED WITH EQUIPMENT GROUNDING.
690.43(B) STRUCTURE AS EQUIPMENT
GROUNDING CONDUCTOR ALLOWS FOR
EQUIPMENT TO BE USED AS THE
EQUIPMENT GROUNDING CONDUCTOR IN
A PHOTOVOLTAIC SYSTEM. SPECIFICALLY,
“DEVICES LISTED, LABELED, AND
IDENTIFIED FOR BONDING AND
GROUNDING THE METAL PARTS OF PV
SYSTEMS SHALL BE PERMITTED TO BOND
THE EQUIPMENT TO GROUNDED METAL
SUPPORTS.” THE DEVICES LISTED AND

IDENTIFIED FOR GROUNDING THE
EQUIPMENT MAY BE STAND-ALONE
GROUNDING COMPONENTS OR UL-2703
LISTED MOUNTING HARDWARE. IN AN
ENPHASE MICROINVERTER SYSTEM, IF
THE MICROINVERTERS AND MODULES
ARE BONDED TO THE RACKING
ASSEMBLIES WITH THE USE OF LISTED
AND APPROVED GROUNDING CLIPS OR
GROUNDING COMPONENTS, THE
EQUIPMENT GROUNDING CONDUCTOR
PROVIDED TO THE MICROINVERTERS
THROUGH THE ENPHASE ENGAGE CABLE
MAY ALSO BE USED TO GROUND THE
OTHER PHOTOVOLTAIC SYSTEM
COMPONENTS.

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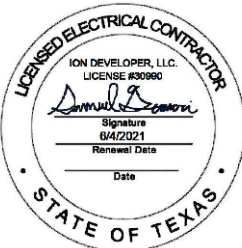


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DRAWN BY: DTG

ADDITIONAL NOTES:

SHEET:
ELECTRICAL NOTES
EL 2.0



SIL-340 NL



Proud
Partner of

ION

HIGH EFFICIENCY PREMIUM MONO-PERC PV MODULE



IEC

Fraunhofer
ISE

CHUBB[®]

* Chubb provides error and omission insurance to Silfab Solar Inc.

INDUSTRY LEADING WARRANTY

All our products include an industry leading 25-year product workmanship and 30-year performance warranty.

35+ YEARS OF SOLAR INNOVATION

Leveraging over 35+ years of worldwide experience in the solar industry, Silfab is dedicated to superior manufacturing processes and innovations such as Bifacial and Back Contact technologies, to ensure our partners have the latest in solar innovation.

NORTH AMERICAN QUALITY

Silfab is the leading automated solar module manufacturer in North America. Utilizing premium quality materials and strict quality control management to deliver the highest efficiency, premium quality PV modules.



■ BAA / ARRA COMPLIANT

Silfab panels are designed and manufactured to meet Buy American Act Compliance. The US State Department, US Military and FAA have all utilized Silfab panels in their solar installations.

■ LIGHT AND DURABLE

Engineered to accommodate high wind load conditions for test loads validated up to 4000Pa uplift. The light-weight frame is exclusively designed for wide-ranging racking compatibility and durability.

■ QUALITY MATTERS

Total automation ensures strict quality controls during the entire manufacturing process at our ISO certified facilities.

■ DOMESTIC PRODUCTION

Silfab Solar manufactures PV modules in two automated locations within North America. Our 500+ North American team is ready to help our partners win the hearts and minds of customers, providing customer service and product delivery that is direct, efficient and local.

■ AESTHETICALLY PLEASING

All black sleek design, ideal for high-profile residential or commercial applications.

■ PID RESISTANT

PID Resistant due to advanced cell technology and material selection. In accordance to IEC 62804-1.

Electrical Specifications		SIL-340 NL mono PERC	
Test Conditions		STC	NOCT
Module Power (Pmax)	Wp	340	241
Maximum power voltage (Vpmax)	V	33.7	30.4
Maximum power current (Ipmax)	A	10.1	7.9
Open circuit voltage (Voc)	V	40.9	37.1
Short circuit current (Isc)	A	10.5	8.3
Module efficiency	%	20.0	17.7
Maximum system voltage (VDC)	V	1000	
Max series fuse rating	A	20	
Power Tolerance	Wp	+/-3%	

Measurement conditions: STC 1000 W/m² • AM 1.5 • Temperature 25 °C • NOCT 800 W/m² • AM 1.5 • Measurement uncertainty ≤ 3%
 • Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by +/-3%.

Temperature Ratings		SIL-340 NL mono PERC	
Temperature Coefficient Isc		0.064 %/°C	
Temperature Coefficient Voc		-0.28 %/°C	
Temperature Coefficient Pmax		-0.36 %/°C	
NOCT (± 2°C)		46 °C	
Operating temperature		-40/+85 °C	

Mechanical Properties and Components		SIL-340 NL mono PERC	
	Metric	Imperial	
Module weight	18.6 kg ±0.2 kg	41 ±0.4 lbs	
Dimensions (H x L x D)	1700 mm x 1000 mm x 38 mm	66.9 in x 39.4 in x 1.5 in	
Maximum surface load (wind/snow)*	4000 Pa rear load / 5400 Pa front load N/m ²	83.5/112.8 lb/ft ²	
Hail impact resistance	Ø 25 mm at 83 km/h	Ø 1 in at 51.6 mph	
Cells	60 - Si mono PERC - 5 busbar 158.75 x 158.75 mm	60 - Si mono PERC - 5 busbar 6.25 x 6.25 Inch	
Glass	3.2 mm high transmittance, tempered, DSM anti-reflective coating	0.126 in high transmittance, tempered, DSM anti-reflective coating	
Cables and connectors (refer to installation manual)	1200 mm, Ø 5.7 mm, MC4 from Staubli	47.2 in, Ø 0.22 in (12AWG), MC4 from Staubli	

Backsheet	High durability, superior hydrolysis and UV resistance, multi-layer dielectric film, fluorine-free PV backsheet		
Frame	Anodized Aluminum (Black)		
Bypass diodes	3 diodes-30SQ045T (45V max DC blocking voltage, 30A max forward rectified current)		
Junction Box	UL 3730 Certified, IEC 62790 Certified, IP67 rated		

Warranties		SIL-340 NL mono PERC	
Module product workmanship warranty		25 years**	
Linear power performance guarantee		30 years	
		≥ 97.1% end 1 st year ≥ 91.6% end 12 th year ≥ 85.1% end 25 th year ≥ 82.6% end 30 th year	

Certifications		SIL-340 NL mono PERC	
Product		ULC ORD C1703, UL1703, CEC listed, UL 61215-1/-1-1/-2, UL 61730-1/-2, IEC 61215-1/-1-1/-2***, IEC 61730-1/-2***, CSA C22.2#61730-1/-2***, IEC 62716 Ammonia Corrosion; IEC61701:2011 Salt Mist Corrosion Certified, UL Fire Rating: Type 2	
Factory		ISO9001:2015	

- Modules Per Pallet: 26
- Pallets Per Truck: 36
- Modules Per Truck: 936

*⚠ Warning. Read the Safety and Installation Manual for mounting specifications and before handling, installing and operating modules.

**12 year extendable to 25 years subject to registration and conditions outlined under "Warranty" at www.silfabsolar.com.

***September 2020 expected completion date.

PAN files generated from 3rd party performance data are available for download at: www.silfabsolar.com/downloads

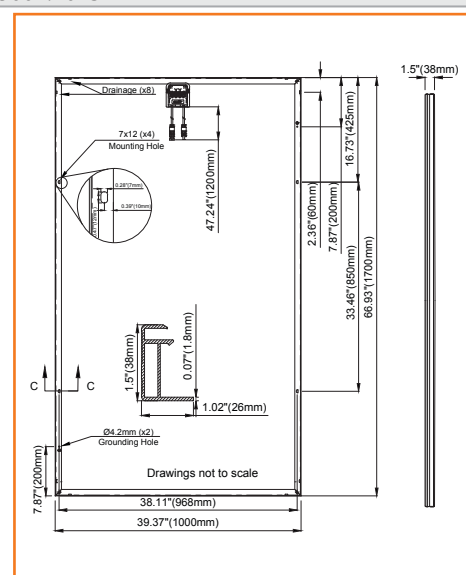


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Enphase IQ 7 and IQ 7+ Microinverters

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.



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)	0.85 leading ... 0.85 lagging		0.85 leading ... 0.85 lagging	
EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak 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



ASGU Standing Seam Attachment Bracket Specification Sheet **(All Clamp Configurations)**

PART 1 – GENERAL

1.1 SUMMARY

A. WORK INCLUDES

1. ASGU standing seam attachment bracket that does not penetrate the roof using stainless steel set screws to clamp to the seam.
2. Coordinate with the installation of the roof to assure proper placement of the snow guards.
3. Provide appropriate snow guard and fasteners for the roof system

B. RELATED SECTIONS

1. Section 07600: Flashing and Sheet Metal. MasterFormat™ 2004 07 60 00
2. Section 07310: Shingles MasterFormat™ 2004 07 31 00
3. Section 07320: Roofing Tiles MasterFormat™ 2004 07 32 00
4. Division 7: Thermal and Moisture Protection.

1.2 SYSTEM DESCRIPTION

A. COMPONENTS:

1. ASGU standing seam attachment bracket consists of aluminum block
2. 2 stainless steel socket set screws
3. 1 stainless steel serrated flange bolt

B. DESIGN REQUIREMENTS:

1. Spacing to be recommended by manufacturer or building engineer.
2. Install a minimum of 2 set screws per bracket.
3. It is important to design new structures or assess existing structures to make sure that they can withstand retained loads.





1.3 SUBMITTAL

- A. Submit manufacturer's specifications, standard detail drawings, installation instructions, and recommended layout.

1.4 QUALITY ASSURANCE

- A. Installer to be experienced in the installation of specified roofing material and hardware for not less than 5 years in the area of the project.

1.5 DELIVERY / STORAGE / HANDLING

- A. Inspect material upon delivery and order replacements for any missing or defective items. Keep material dry, covered and off the ground until installed.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. Alpine SnowGuards. A division of Vermont Slate & Copper Services Inc.
289 Harrel St. Morrisville, VT 05661, (888) 766-4273
www.alpinesnowguards.com.

2.2 MATERIALS

- A. ASGU standing seam attachment bracket - 6000 Series Aluminum
- B. Set Screws- 304 stainless steel 18.8 alloy
- C. Stainless Steel Serrated Flange Bolt – 304 stainless steel 18.8 alloy

2.3 FINISH (choose one):

- A. Mill Finish – standard





PART 3 – EXECUTION

3.1 EXAMINATION

A. Substrate

1. Inspect structure on which the brackets are to be installed and verify that it will withstand any additional loading that it may incur. Notify general contractor of any deficiencies before installing ASG- universal standing seam attachment bracket.
2. Verify that roofing material has been installed correctly prior to ASG- universal standing seam attachment bracket

3.2 INSTALLATION

- #### **A. Comply with architectural drawings and / or manufacturer's recommendations for location of system. Comply with manufacturer's written installation instructions for installation and layout.**

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07 72 53 Snow Guards

