

**PV SYSYEM
STRUCTURAL PLAN**

Contractor is responsible to verify the fit of this array prior to installation. The solar module array shown is based on the field data provided by the contractor. Contractor shall contact the engineer if the array may not fit as projected. Satellite imagery shown may not correctly indicate potential current shading of property. Contractor is responsible to verify sun exposure and shading of installation prior to installation.

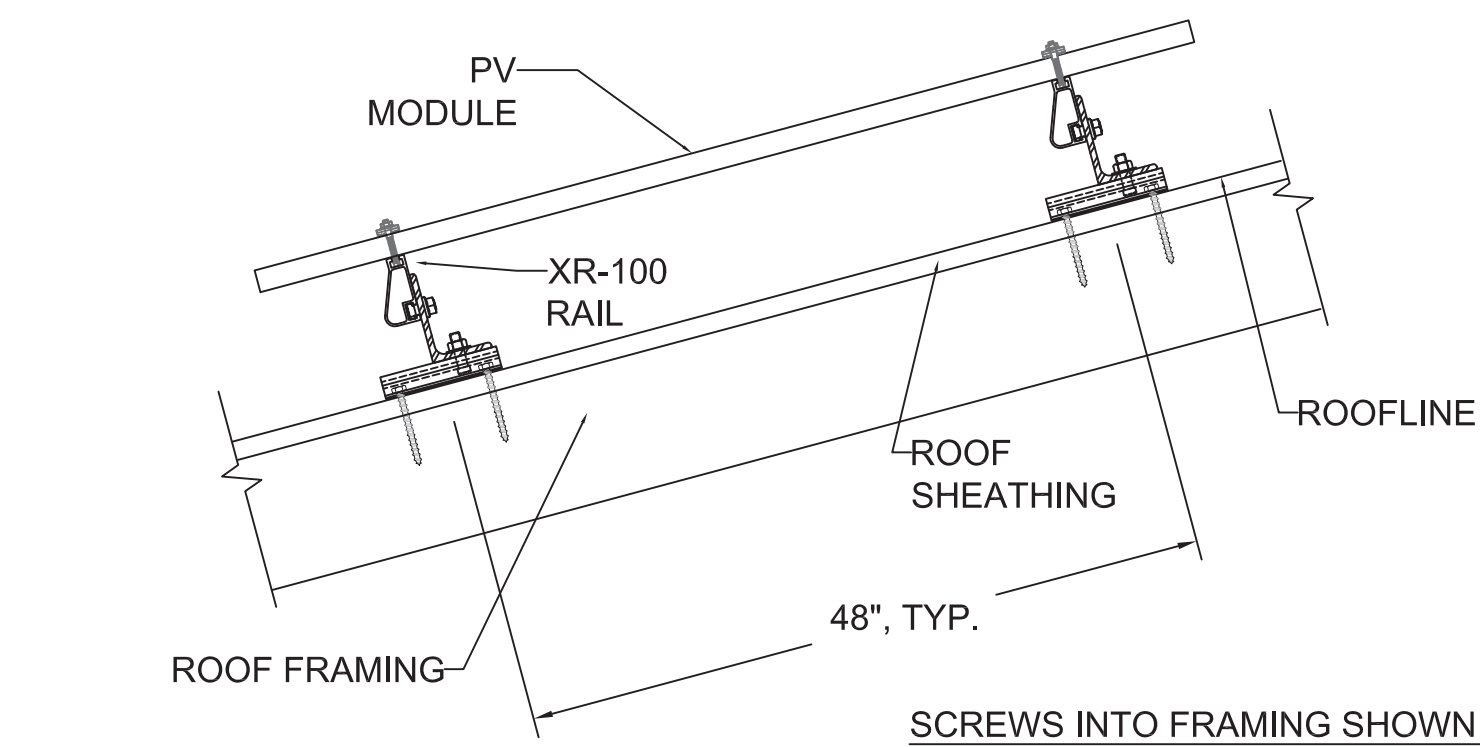
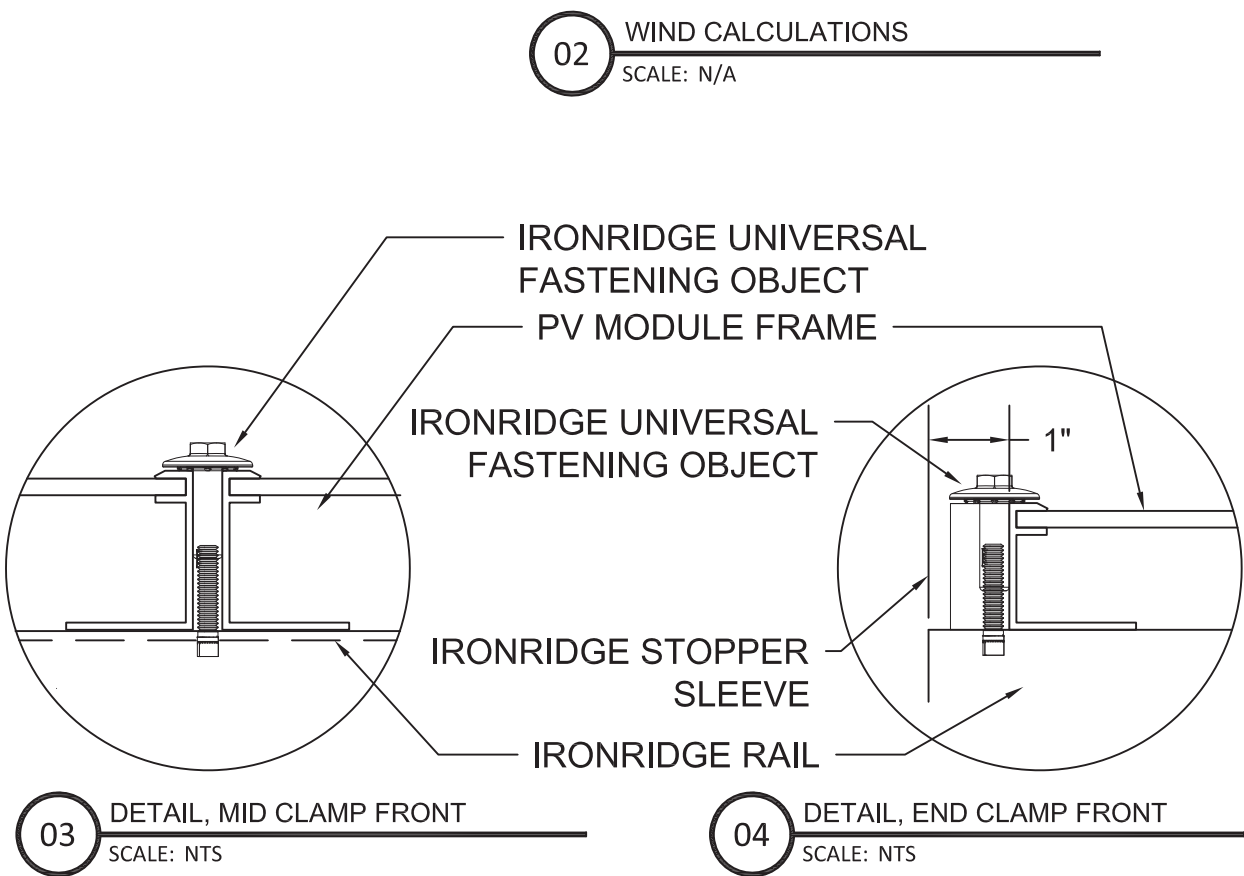
INSTALLATION NOTES

- THIS PAPER PLAN IS INTENDED TO PROVIDE THE ESSENTIAL INFORMATION NEEDED BY AHJ (AUTHORITY HAVING JURISDICTION) AND INSTALLERS.
- THIS IS A COMBINED SET OF STRUCTURAL AND ELECTRICAL PLANS.
- SOLAR EQUIPMENT ADDS LESS THAN 4-PSF (UNFACTORED) GRAVITY LOAD TO STRUCTURE.
- SEE DRAWINGS & PHOTOS FOR MEANS & METHODS INFORMATION IN ADDITION TO THESE NOTES.
- THERE SHALL BE A PV MODULE TO RAIL MOUNTING CLAMP AT EVERY MODULE/RAIL CROSSING POINT WITH MINIMUM 4 CLAMPS PER MODULE.
- ADJOINING MODULES ON SAME RAIL SHALL SHARE CLAMPS.
- MODULES SHALL BE PORTRAIT OR LANDSCAPE AS SHOWN IN FIGURE 08.
- ROOF IS ASSUMED TO BE COMPLIANT WITH FBC (FLORIDA BUILDING CODE) AS OF TIME OF CONSTRUCTION.
- PV MOUNTING RAILS SHALL BE INSTALLED PERPENDICULAR TO ROOF FRAMING.
- THERE SHALL BE A MINIMUM OF TWO RAILS UNDER EACH PV MODULE.
- ROOF ATTACHMENT SPACING SHALL BE AS SHOWN IN FIGURE 08.
- CONTRACTOR SHALL NOT INSTALL ROOF ATTACHMENTS ON ROOF AREAS ABOVE OVERHANGS.
- RAILS SHALL NOT CANTILEVER BEYOND OUTSIDE END OF ROOF ATTACHMENT BY MORE THAN 1-FOOT.
- CONTRACTOR SHALL CHOOSE FROM THE TWO ATTACHMENT METHODS BELOW. RAILS SHALL ATTACH TO ROOF THRU L-FEET BY:
 - (2) STAINLESS STEEL 304 5.0 mm. x 60 mm WOOD SCREWS INTO RAFTER OR TRUSS MEMBER
 - (5) STAINLESS STEEL 304 5.0 mm. x 60 mm WOOD SCREWS INTO ROOF SHEATHING
- ROOF ATTACHMENTS SHALL BE FLASHED AS SHOWN HEREON.
- ALL FLASHINGS SHALL BE INSTALLED IN A BED OF PLENTIFUL FLORIDA PRODUCT CONTROL APPROVED (PCA) POLYURETHANE ROOF SEALANT.
- CONTRACTOR/INSTALLER SHALL COMPLY WITH OEM INSTALLATION INSTRUCTIONS.
- CONTRACTOR SHALL PROVIDE AHJ WITH ADDITIONAL INFORMATION AS REQUIRED.
- ENGINEER OF RECORD (EOR) PREFERS EMAIL COMMUNICATION: alper@iceli-pe.com

ASCE 7-16, 29.4.4

RISK II, EXPOSURE B, a= 4 FT., HIP ROOF, 27°<ROOF SLOP <45°, H _{MEAN} =15 FT., SLOPE = 30°		
V _{ULT} (MPH)	117	γ _e =1.0
Q _h	17.0	γ _a =0.67
ROOF PRESSURES (PSF) (WORST CASE WIND FORCE IS UPLIFT)		
ALL	5.7	0.50
1	-13.9	-1.22
2r	-16.6	-1.46
2e	-20.6	-1.81
3	-22.6	-1.99

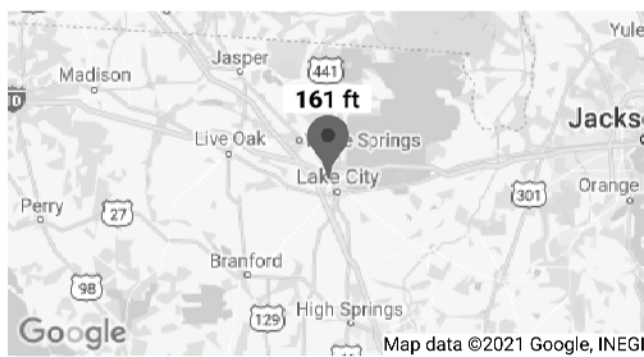
- 20.46 kW DC SYSTEM.
- 66-65." X 40." PV MODULES.
- 1155 SF PV ARRAY INSTALLATION
- PV MODULE UPLIFT LOAD CAPACITY: 113 PSF (AS REPORTED BY MANUFACTURER)
- UNFACTORED AVERAGE ADDITIONAL GRAVITY LOAD: 2.5 PSF
- TOTAL NUMBER OF ROOF ATTACHMENTS: 130**



ATC Hazards by Location

Search Information

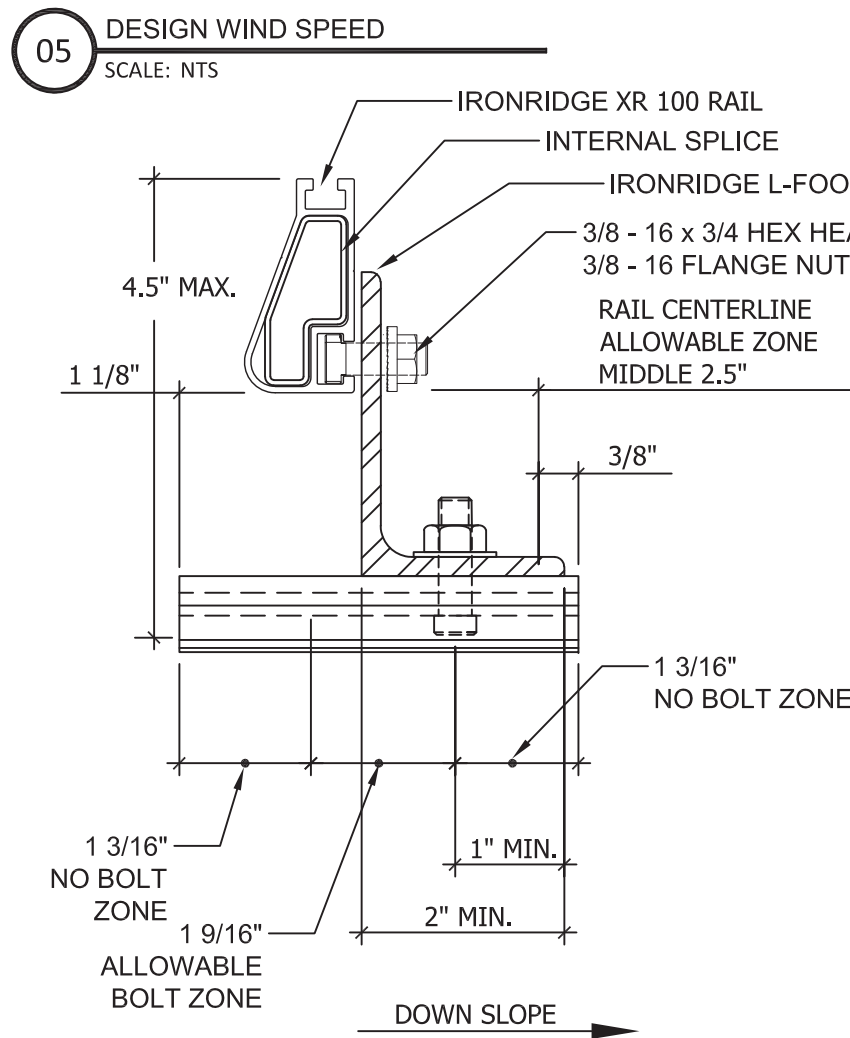
Address: 339 NW Ambleside Dr, Lake City, FL 32055, USA
Coordinates: 30.2128871, -82.674735
Elevation: 161 ft
Timestamp: 2021-07-14T20:04:29.490Z
Hazard Type: Wind



ASCE 7-16	ASCE 7-10	ASCE 7-05
MRI 10-Year 73 mph	MRI 10-Year 76 mph	ASCE 7-05 Wind Speed 100 mph
MRI 25-Year 82 mph	MRI 25-Year 84 mph	
MRI 50-Year 89 mph	MRI 50-Year 91 mph	
MRI 100-Year 96 mph	MRI 100-Year 97 mph	
Risk Category I 108 mph	Risk Category I 109 mph	
Risk Category II 117 mph	Risk Category II 118 mph	
Risk Category III 128 mph	Risk Category III-IV 128 mph	
Risk Category IV 132 mph		

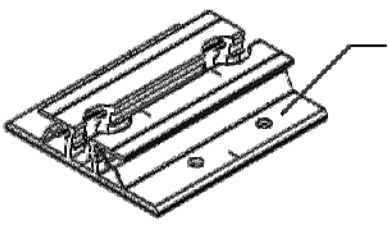
You are in a wind-borne debris region if you are also within 1 mile of the coastal mean high water line.

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.



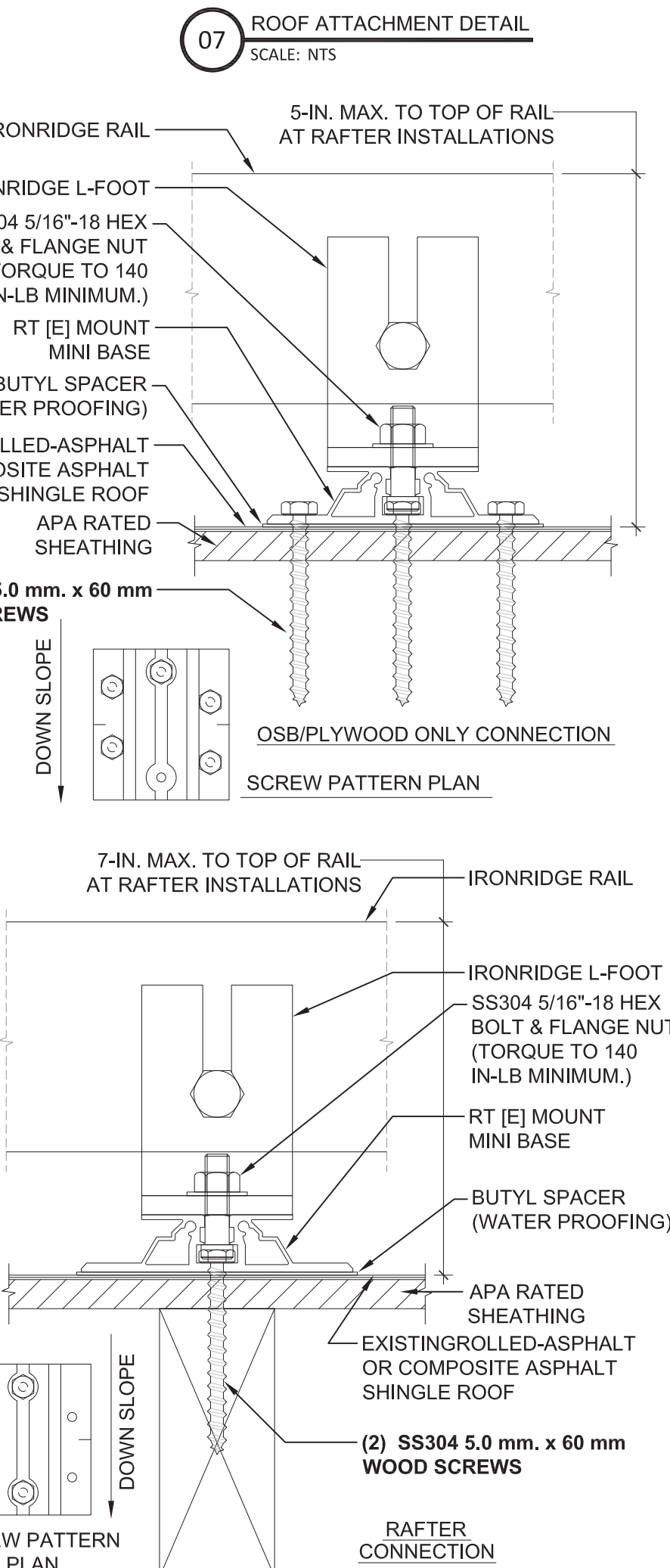
1. Items with RT-MINI

Item
1A RT-MINI
1B Screw 5.0x60
1C RT Butyl Flashing



Item
2A Roof sealant

*Recommended Product
• Henry : 208R, 209, 925 (Black)
• Geocel: S2, S4 (Black)
• Salsco : Through the Roof
• Bona : 125 (Black)
• Top Industrial: Rain Buster 850, 90
• Chem Link: M1



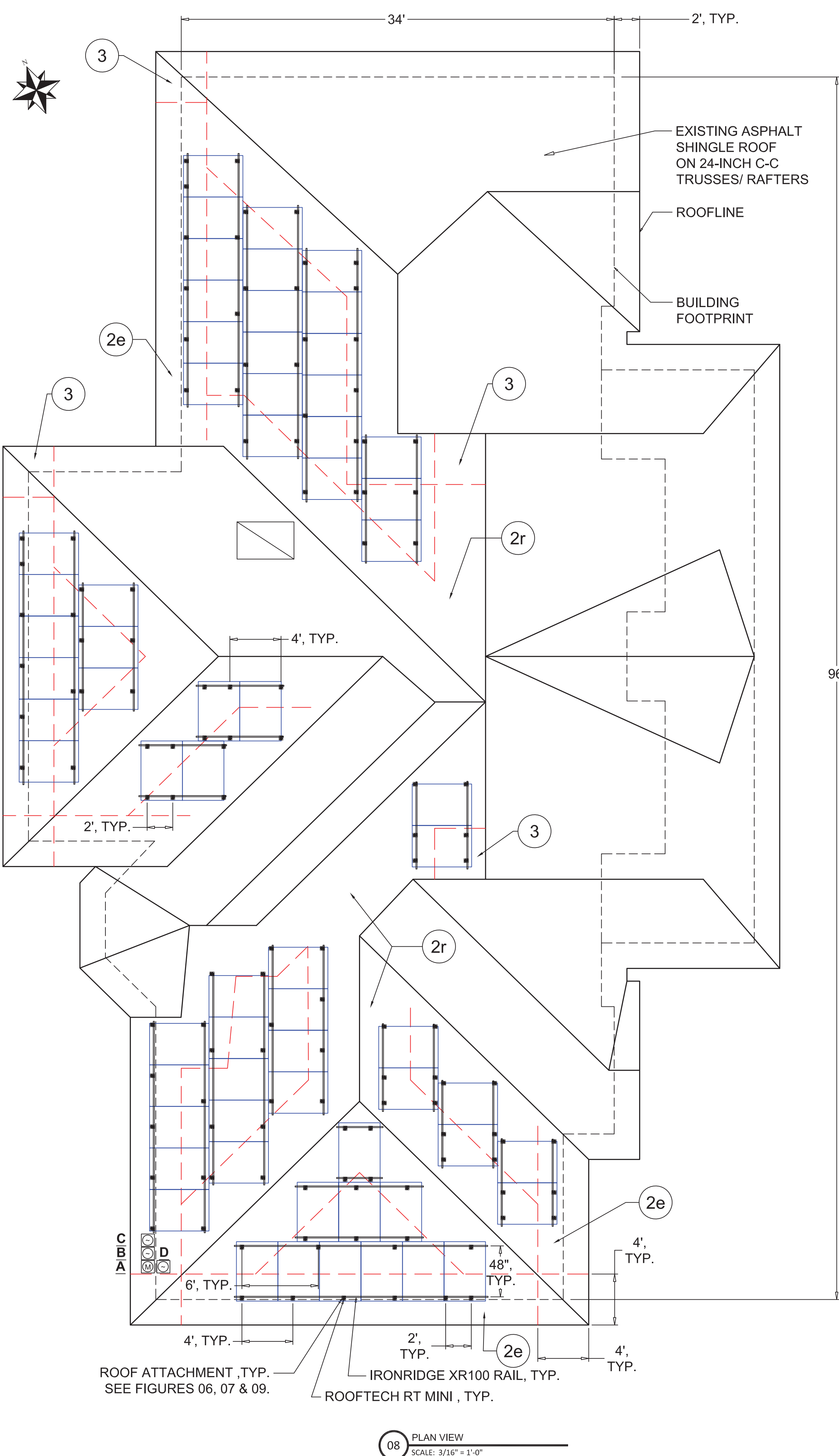
A: ELECT. SVC. ENTRANCE
B: AC DISCONNECT
C: SUB-PANEL
D: MAIN SVC. PANEL

*PV MODULE DIMENSIONS ARE ADJUSTED IN LINE WITH THE ROOF PITCH

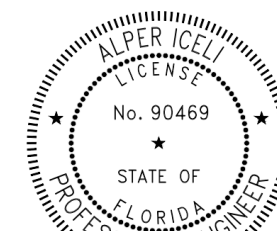
CODE

FBC 2020 (7TH EDITION) FLORIDA BUILDING CODE

I CERTIFY THAT THE SHEATHING & FRAMING OF THIS STRUCTURE WILL SAFELY ACCOMMODATE PV SYSTEM MOUNTING, RACKING, AND MODULES AND WITHSTAND WIND UPLIFT / LATERAL FORCES AND EQUIPMENT DEAD LOADS WITH THE CONDITION THAT CONTRACTOR'S INSTALLATION OF THE PV SYSTEM IS IN ACCORDANCE WITH THE INSTRUCTIONS ON THIS PLAN. THIS IS ATTESTED TO BY MY SIGNATURE AND SEAL ON THIS PLAN AT THE UPPER RIGHT.



ENGINEER
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FL 90469
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Alper Iceli
2021.07.14 21:15:
31-04'00"

NAME OF OWNER: SIGRIST BRYAN S
SIGRIST EMILY S
ADDRESS: 339 NW AMBLESIDE DR
LAKE CITY, FL 32055
PROPERTY ID#: 24-35-16-02275-138 (8136)

CONTRACTOR:
Sky Solar Energy Inc.
40415 Chancey Rd.
Unit #104 Zephyrhills, FL 33542
813-783-4464
EC 13010029

SKYSOLAR-SIGRIST

**STRUCTURAL
JULY.14-21**

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PV SYSEYM
ELECTRICAL PLAN

THIS PLAN IS CERTIFIED BY ENGINEER OF RECORD AS CODE COMPLIANT & APPROVED
FOR FLORIDA USE IN ACCORDANCE WITH HB 1021 ON ELECTRICAL PLANS.
<http://www.floridabuilding.org/fbc/thecode/2017-6edition/HB1021-Construction.pdf>

SYSTEM: 66-PEIMAR SG310M (BF) PV MODULES
66-ENPHASE IQ7-60-2-US MICRO INVERTERS

CONTRACTOR SHALL COMPLY WITH SOLAR PROVISIONS 2018 NFPA 1.

VOLTAGE DROP CALCULATIONS (66 PV MODULES)										
VD=2*L*R*I / 1000										
BRANCH	MODULES	WIRE RUN	Vmp	Imp (AMPS)	R (ohms)	L (ft)	VD	%VD	AWG WIRE SIZE	OCPD(AMPS)
#1 TO #6	11	BRANCH TO J-BOX	240	11.00	2.01	50	2.21	0.92	ENPHASE Q CABLE	N/A
#1 TO #6	11	J-BOX TO SUB-PANEL	240	11.00	1.260	30	0.83	0.35	#10	6x15
	66	SUB-PANEL TO AC DISCONNECT	240	66.00	0.321	10	0.42	0.18	#4	100
	66	AC DISCONNECT TO INTERCONNECTION	240	66.00	0.321	5	0.21	0.09	#4	N/A

PV MODULE RATINGS		
MODULE MAKE	PEIMAR	
MODULE MODEL	SG310M BF	
MAX. POWER	310	W
OPEN CIRCUIT VOLTAGE	40.7	V
VOLTAGE AT MPP	32.6	V
CURRENT AT MPP	9.51	A
SHORT CURCUIT CURRENT	9.8	A

INVERTER RATINGS		
INVERTER MAKE	ENPHASE	
INVERTER MODEL	IQ7-60-2-US	
MAX. OUTPUT POWER	240	VA
MAX. DC VOLTAGE	48	V
NOMINAL AC VOLTAGE	240	V
MAX. AC CURRENT	1.0	A
CEC INVERTER EFFICIENCY	97	%

SUB-PANEL PV BREAKER SIZE	
NUMBER OF MODULES	COMBINER BREAKER PER BRANCH
ALL STRINGS	15 A

PHOTOVOLTAIC DC PER INVERTER		
RATED MPP CURRENT	9.5	A
RATED MPP VOLTAGE	32.6	V
MAX. DC VOLTAGE (INVERTER)	48	V
MAX INPUT SHORT CURCUIT CURRENT	9.8	A

PHOTOVOLTAIC AC OUTPUT		
NOMINAL AC VOLTAGE	240	V
66 MOD. AC OUTPUT CURRENT	66	A

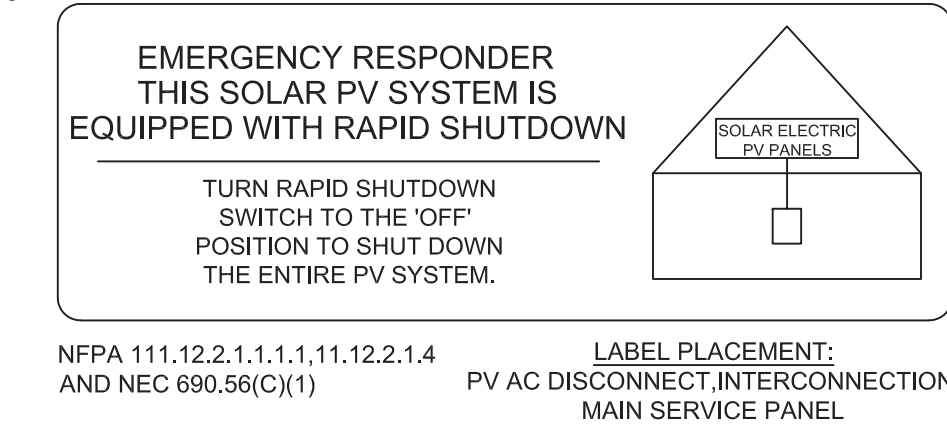
IN CASE OF EMERGENCY
CALL
SKYSOLAR, INC.
(813) 783-4464

**PV AC
DISCONNECT**

V_{OPT} : 240 V
I_{OPT} : 66 A

WARNING: PHOTOVOLTAIC POWER SOURCE

MARKING AND LABELING REQUIREMENTS:
Markings shall comply with NEC (2017) 690.51 through 690.72 and shall be placed on ALL interior and exterior DC conduit, raceways, enclosures, and cable assemblies at least every 10 feet; at turns and above/below penetrations and all junction boxes.



WARNING
ELECTRICAL SHOCK HAZARD.
IF A GROUND FAULT IS INDICATED, NORMALLY GROUNDING CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED.

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

WARNING
DUAL POWER SOURCES.
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM.

WARNING
V_{MAX} : 264 V
V_{MPP} : 240 V
I_{MPP1} TO MPP6 : 11 A

WARNING
ELECTRICAL SHOCK HAZARD.
NO USER-SERVICEABLE PARTS INSIDE.
CONTACT AUTHORIZED SERVICER FOR ASSISTANCE.

**PHOVOLTAIC POWER
SOURCE**

NEC 2017, TABLE C.3 MAXIMUM NUMBER OF CONDUCTORS OR FUTURE WIRES IN FLEXIBLE METAL CONDUIT(FMC)

NEC 2017, TABLE C.5 MAXIMUM NUMBER OF CONDUCTORS OR FUTURE WIRES IN LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT (TYPE LFNC-B*)

NEC 2017, TABLE C.11 MAXIMUM NUMBER OF CONDUCTORS OR FUTURE WIRES IN RIGID PVC CONDUIT, SCHEDULE 40 AND HDPE CONDUIT (TYPE PVC SCH. 40)

BRANCH CIRCUIT #1
PEIMAR SG310M (BF)
AND
ENPHASE IQ7-60-2-US
MICRO INVERTERS @ 240 VAC

BRANCH TERMINATOR
(ET-TERM), TYP.

BRANCH CIRCUIT #2
PEIMAR SG310M (BF)
AND
ENPHASE IQ7-60-2-US
MICRO INVERTERS @ 240 VAC

BRANCH CIRCUIT #3
PEIMAR SG310M (BF)
AND
ENPHASE IQ7-60-2-US
MICRO INVERTERS @ 240 VAC

BRANCH CIRCUIT #4
PEIMAR SG310M (BF)
AND
ENPHASE IQ7-60-2-US
MICRO INVERTERS @ 240 VAC

BRANCH CIRCUIT #5
PEIMAR SG310M (BF)
AND
ENPHASE IQ7-60-2-US
MICRO INVERTERS @ 240 VAC

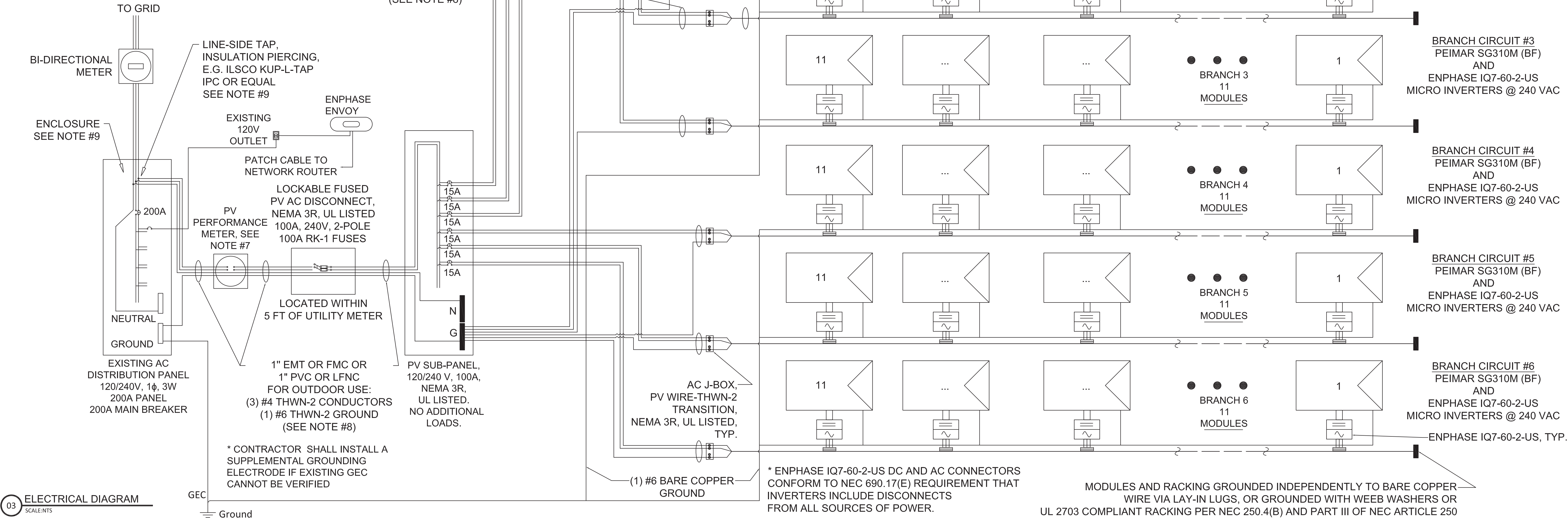
BRANCH CIRCUIT #6
PEIMAR SG310M (BF)
AND
ENPHASE IQ7-60-2-US
MICRO INVERTERS @ 240 VAC

ENPHASE IQ7-60-2-US, TYP.

01 ELECTRICAL NOTES.

SCALE:NTS

3/4" NMLT OR PVC CONDUIT:
(2) #10 THWN-2 CONDUCTORS
(1) #10 THWN-2 GROUND, TYP.
(SEE NOTE #8)



03 ELECTRICAL DIAGRAM

SCALE:NTS

NATIONAL ELECTRICAL
CODE, NEC (2017)
ENGINEER

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SIGRIST EMILY S
ADDRESS: 339 NW AMBLESIDE DR
LAKE CITY, FL 32055
PROPERTY ID#: 24-3S-16-02275-138 (8136)

CONTRACTOR:

Sky Solar Energy Inc.
40415 Chancey Rd.
Unit #104 Zephyrhills, FL
33542
813-783-4464
EC 13010029

SKYSOLAR-
SIGRIST

ELECTRICAL
JULY.14-21

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A

B

C

D

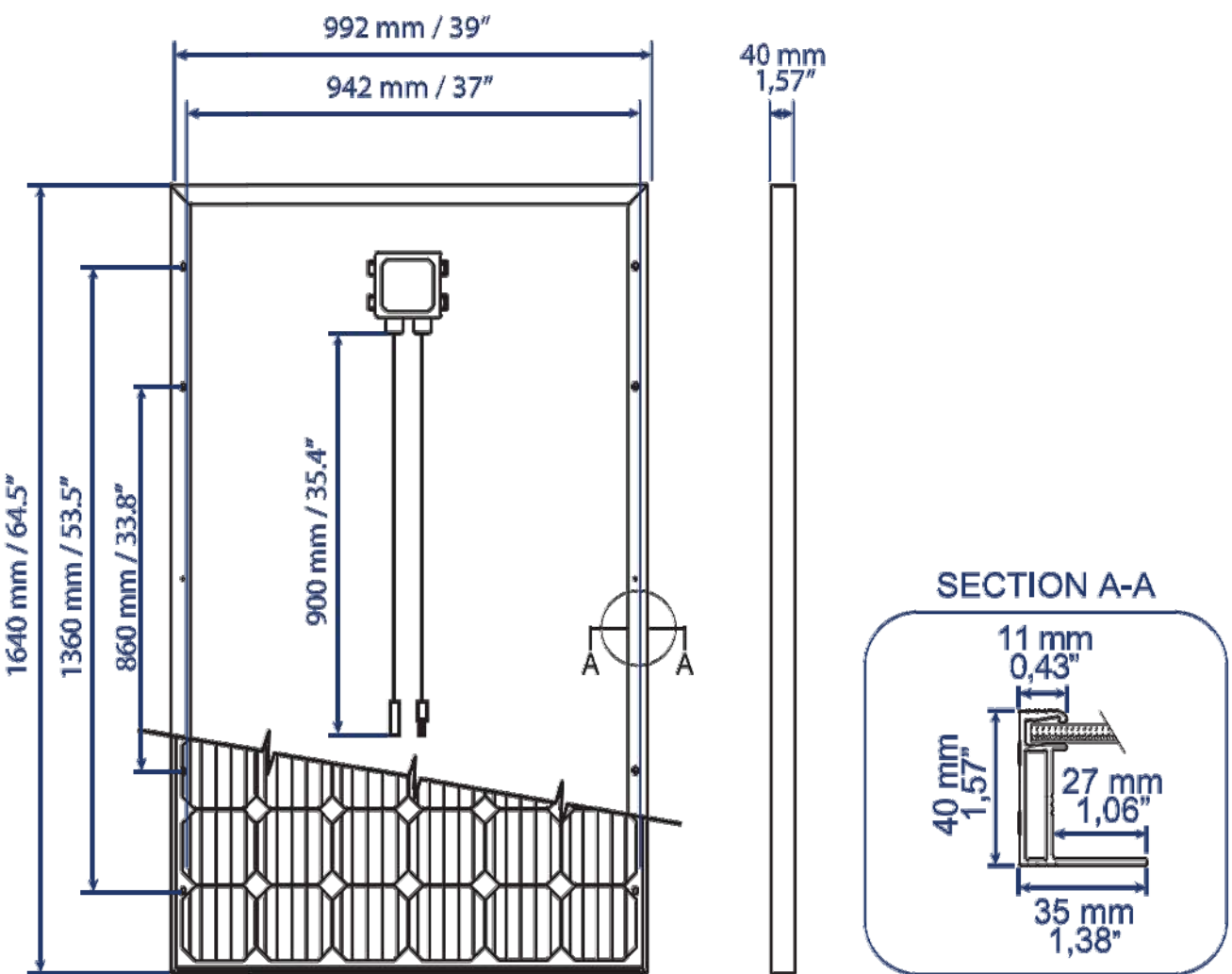
E

F

ELECTRICAL CHARACTERISTICS (STC)*		SG310M (BF)
Nominal Output (Pmax)		310 W
Flash Test Power Tolerance		0/+5 W
Voltage at Pmax (Vmp)		32.6 V
Current at Pmax (Imp)		9.51 A
Open Circuit Voltage (Voc)		40.7 V
Short Circuit Current (Isc)		9.8 A
Maximum System Voltage		1500 V
Maximum Series Fuse Rating		15 A
Module Efficiency		19.05%

MECHANICAL CHARACTERISTICS	
Solar Cells	60 (6x10) monocrystalline <i>PERC</i>
Solar Cells Size	156x156 mm / 6x6"
Front Cover	3.2 mm / 0.12" thick, low iron tempered glass
Back Cover	TPT (Tedlar-PET-Tedlar)
Encapsulant	EVA (Ethylene vinyl acetate)
Frame	Anodized aluminium alloy, double wall
Frame finishing	Black
Backsheet finishing	White
Diodes	3 Bypass diodes serviceable
Junction Box	IP67 rated
Connector	MC4 or compatible connector
Cables Length	900 mm / 35.4"
Cables Section	4.0 mm ² / 0.006 in ²
Dimensions	1640x992x40 mm / 64.5x39x1.57"
Weight	18 Kg / 39.7 lbs
Max. Load	Certified to 5400 Pa

DIMENSIONS



*STC: (Standard Test Condition) Irradiance 1000W/m²; Module Temperature 25°C; Air Mass 1.5

**NOCT: (Nominal Operation Cell Temperature) Sun 800W/m²; Air 20°C; Wind speed 1m/s

***Pallets can be stacked up to two

It is important to point out, that all technical specifications, information and figures contained in this datasheet are estimated values. Peimar reserves the right to change the technical specifications, information and figures contained in this document at any time without notice.

HIGH-EFFICIENCY LINE

TEMPERATURE CHARACTERISTICS

NOCT**	45±2 °C
Temperature Coefficient of Pmax	-0.40 %/°C
Temperature Coefficient of Voc	-0.32 %/°C
Temperature Coefficient of Isc	0.047 %/°C
Operating Temperature	-40 °C ~ +85°C

PACKAGING***

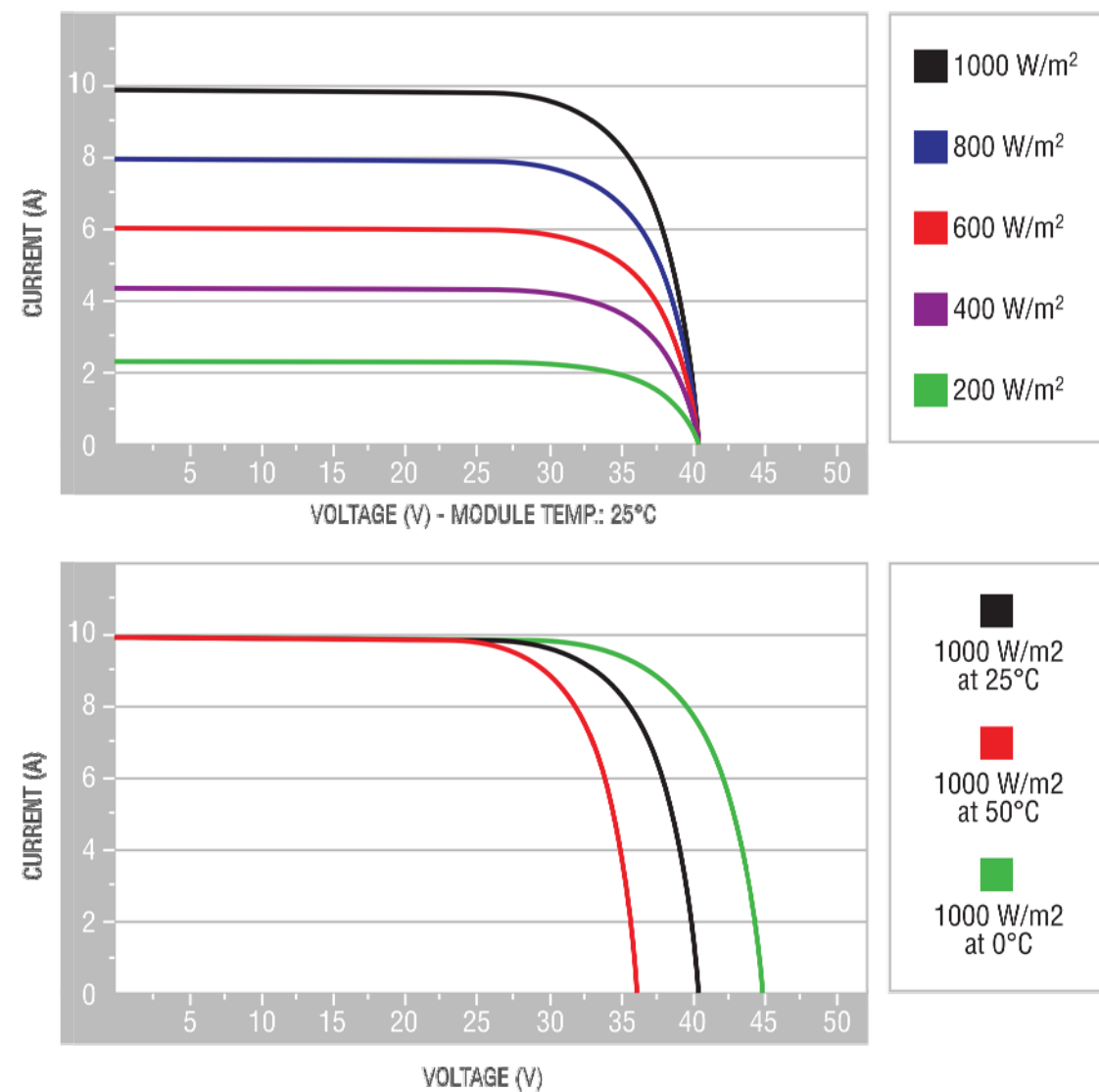
Pallet dimensions	1700x1200x1200 mm / 67x47x47"
Pieces per pallet	27
Weight	516 Kg / 1138 lbs

CERTIFICATIONS

Fire Resistance Rating	Class C (for ULC/ORD-C1703-01)
Module fire performance	Type 1 (for UL 1703)

CURRENT/VOLTAGE CHARACTERISTICS

Values apply to modules: SG310M (BF)



PEIMAR
italian PHOTOVOLTAIC MODULES

Via Creta 72, 25124 Brescia, ITALY • www.peimar.com • info@peimar.com

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US	IQ7PLUS-72-2-US
Commonly used module pairings ¹	235 W - 350 W +	235 W - 440 W +
Module compatibility	60-cell/120 half-cell PV modules only	60-cell/120 half-cell and 72-cell/144 half-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	18 mA		18 mA	
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	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)
Dimensions (HxWxD)	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, NEC 2017, and NEC 2020 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

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NATIONAL ELECTRICAL
CODE, NEC (2017)

ENGINEER

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SKYSOLAR-
SIGRIST

DATA
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