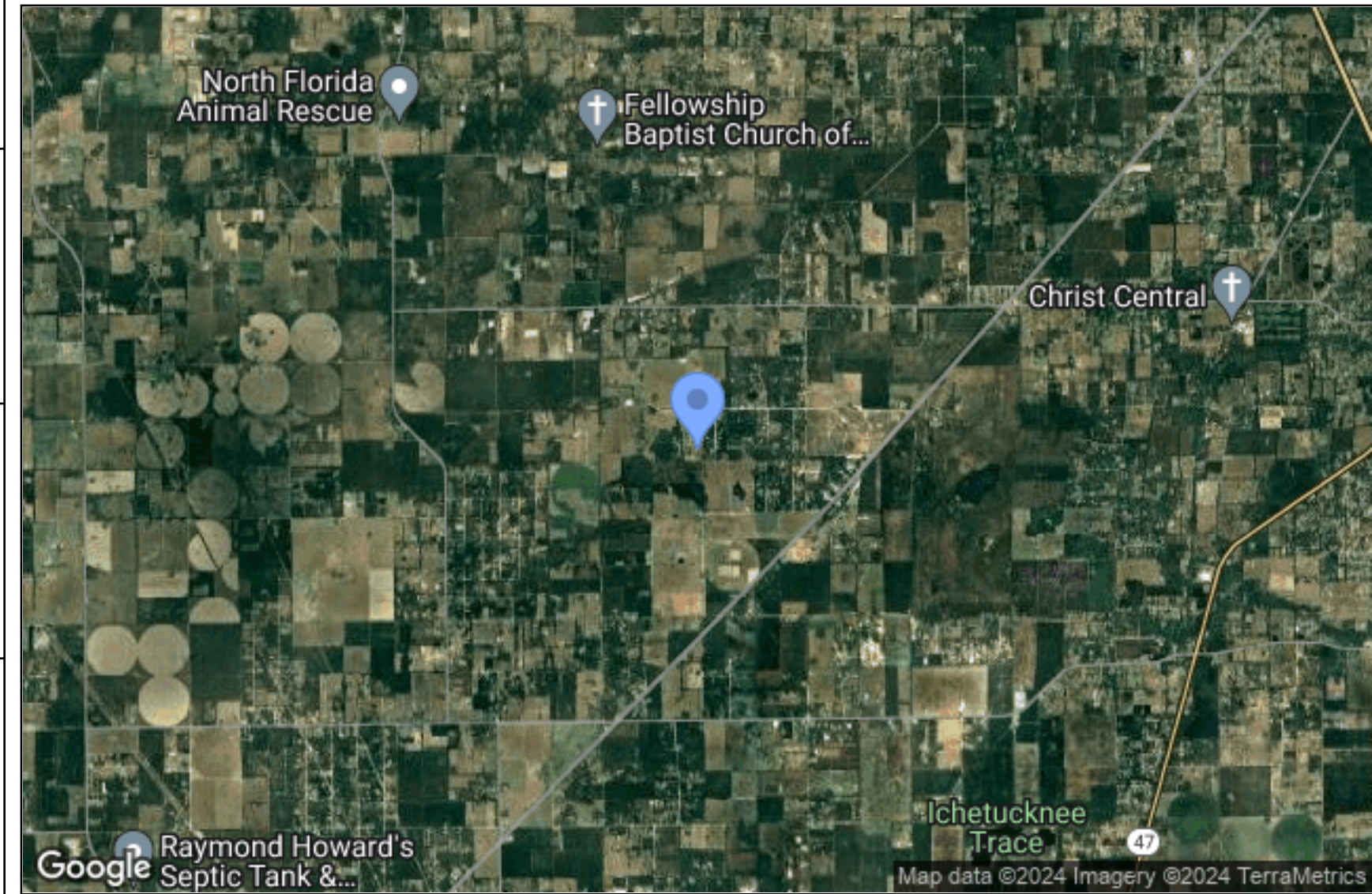


MARSHALL GARNER

481 SOUTHWEST HORSE WAY LAKE CITY FLORIDA 32024 UNITED STATES

30.0979467,-82.7792620

SYSTEM TIER (UTILITY): TIER 1 (11.6 KWDC*0.85 = 9.86 KWAC)
SCOPE OF WORK: INSTALLATION OF SOLAR PANELS AND ASSOCIATED ELECTRICAL EQUIPMENT.



02 AERIAL

PROJECT INFORMATION

DISTRICTS
COUNTY: COLUMBIA COUNTY
JURISDICTION: UN-INCORPORATED COLUMBIA

DESIGN SPECS
WIND EXPOSURE: B
RISK CATEGORY: II
WIND SPEED (MPH): 130
SNOW LOAD (PSF): 0

GOVERNING CODES
BUILDING: FBC 2023/ASCE 7-22
ELECTRICAL: NEC 2020
FIRE: FFPC, 8th ed. (2023)/NFPA 1 2021 ed.

SYSTEM
SIZE (KWDC): 11.6
EST KWH/YR: 16650
PANELS: 29
PANEL: TX110-400
INVERTER(S): IQ8PLUS-72-2-US
VOLTAGE (V): 240

SHEET INDEX

COVER	T1
GENERAL	G1
LAYOUT	S1
LOCATIONS PLAN	SL1
ATTACHMENT PLAN	SP1-SP2
ATTACHMENT DETAIL	SA1
ELECTRICAL DIAGRAM	E1
LABELS	EL1
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01 VICINITY

MARSHALL GARNER	CONTRACTOR: -	ENGINEER: CA33343	Ryan S Gittens 2024.08.21 19:41:24 -04'00' RYAN GITTENS PE90605	DATE	BY	VER	DESCRIPTION	T1
	FLORIDA STATE ENERGY	6901 TPC DRIVE STE 650, ORLANDO, FL 32822		08.21.24	BF	1	INITIAL DESIGN	
481 SOUTHWEST HORSE WAY LAKE CITY FLORIDA 32024 UNITED STATES	(407) 718-9980	1646 W SNOW AVE 9 TAMPA, FL 33606						PAPER: ARCHB
PROJECT ID: 8212024-481								SCALE:

A

B

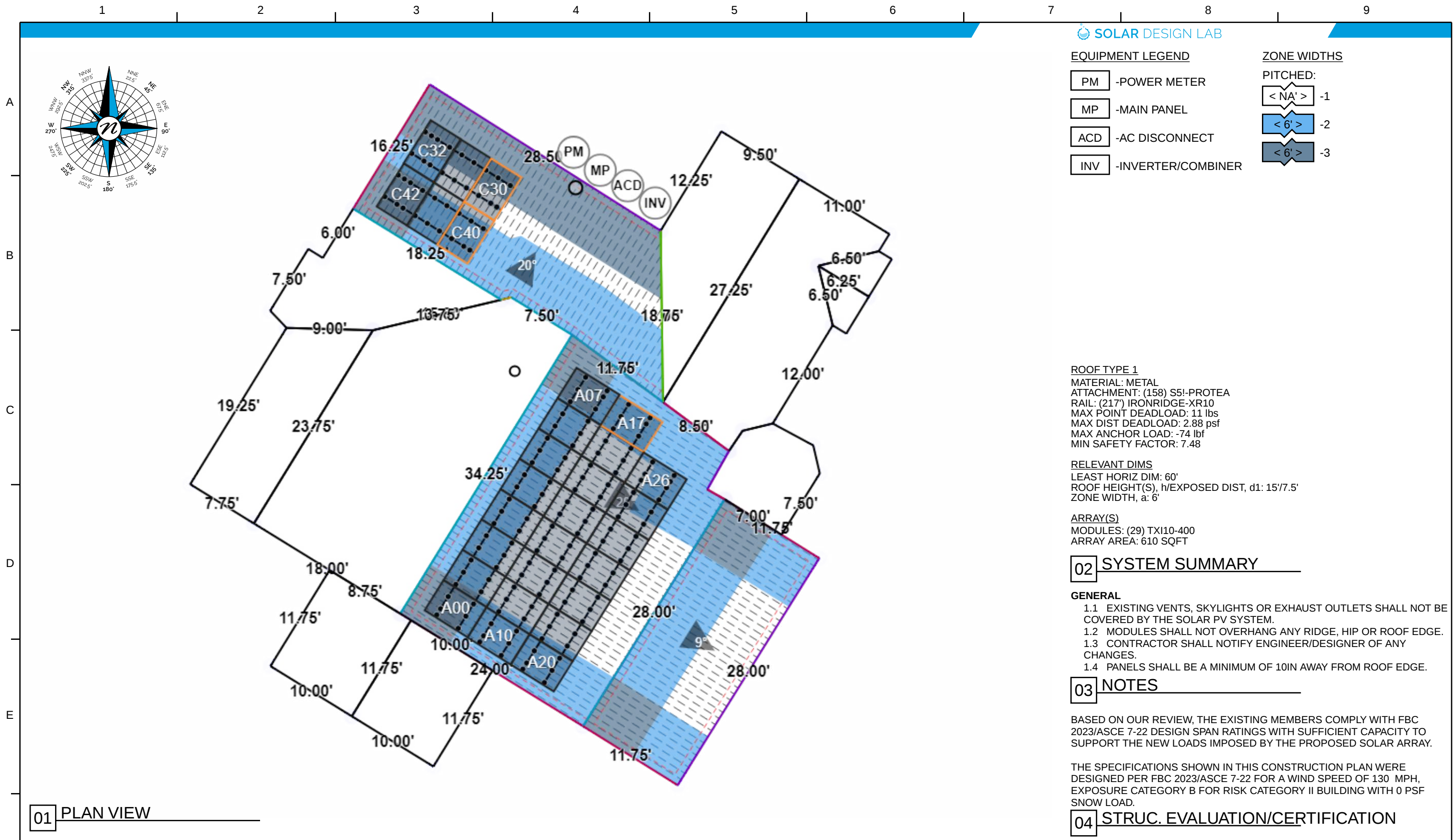
C

D

E

F

MARSHALL GARNER	CONTRACTOR: -	ENGINEER: CA33343	Ryan S Gittens 2024.08.21 19:41:24 -04'00' RYAN GITTENS PE90605	DATE	BY	VER	DESCRIPTION	G1
	FLORIDA STATE ENERGY			08.21.24	BF	1	INITIAL DESIGN	
481 SOUTHWEST HORSE WAY LAKE CITY FLORIDA 32024 UNITED STATES	6901 TPC DRIVE STE 650, ORLANDO, FL 32822							PAPER: ARCHB
	(407) 718-9980	1646 W SNOW AVE 9 TAMPA, FL 33606						SCALE:
PROJECT ID: 8212024-481								



EQUIPMENT LEGEND		ZONE WIDTHS	
PM	-POWER METER	PITCHED:	
MP	-MAIN PANEL	< NA' >	
ACD	-AC DISCONNECT	< 6' >	
INV	-INVERTER/COMBINER	< 6' >	

ROOF TYPE 1
MATERIAL: METAL
ATTACHMENT: (158) S5I-PROTEA
RAIL: (217) IRONRIDGE-XR10
MAX POINT DEADLOAD: 11 lbs
MAX DIST DEADLOAD: 2.88 psf
MAX ANCHOR LOAD: -74 lbf
MIN SAFETY FACTOR: 7.48

RELEVANT DIMS
LEAST HORIZ DIM: 60'
ROOF HEIGHT(S), h/EXPOSED DIST, d1: 15'/7.5'
ZONE WIDTH, a: 6'

ARRAY(S)
MODULES: (29) TX110-400
ARRAY AREA: 610 SQFT

02 SYSTEM SUMMARY

- GENERAL
- 1.1 EXISTING VENTS, SKYLIGHTS OR EXHAUST OUTLETS SHALL NOT BE COVERED BY THE SOLAR PV SYSTEM.
 - 1.2 MODULES SHALL NOT OVERHANG ANY RIDGE, HIP OR ROOF EDGE.
 - 1.3 CONTRACTOR SHALL NOTIFY ENGINEER/DESIGNER OF ANY CHANGES.
 - 1.4 PANELS SHALL BE A MINIMUM OF 10IN AWAY FROM ROOF EDGE.

03 NOTES

BASED ON OUR REVIEW, THE EXISTING MEMBERS COMPLY WITH FBC 2023/ASCE 7-22 DESIGN SPAN RATINGS WITH SUFFICIENT CAPACITY TO SUPPORT THE NEW LOADS IMPOSED BY THE PROPOSED SOLAR ARRAY.

THE SPECIFICATIONS SHOWN IN THIS CONSTRUCTION PLAN WERE DESIGNED PER FBC 2023/ASCE 7-22 FOR A WIND SPEED OF 130 MPH, EXPOSURE CATEGORY B FOR RISK CATEGORY II BUILDING WITH 0 PSF SNOW LOAD.

04 STRUC. EVALUATION/CERTIFICATION

01 PLAN VIEW

MARSHALL GARNER	CONTRACTOR: -	ENGINEER: CA33343	 Ryan S Gittens 2024.08.21 19:41:24 -04'00' RYAN GITTENS PE90605	DATE	BY	VER	DESCRIPTION	S1
481 SOUTHWEST HORSE WAY LAKE CITY FLORIDA 32024 UNITED STATES	FLORIDA STATE ENERGY	 1646 W SNOW AVE 9 TAMPA, FL 33606		08.21.24	BF	1	INITIAL DESIGN	
PROJECT ID: 8212024-481	6901 TPC DRIVE STE 650, ORLANDO, FL 32822							PAPER: ARCHB
	(407) 718-9980							SCALE: 1"=9.62'

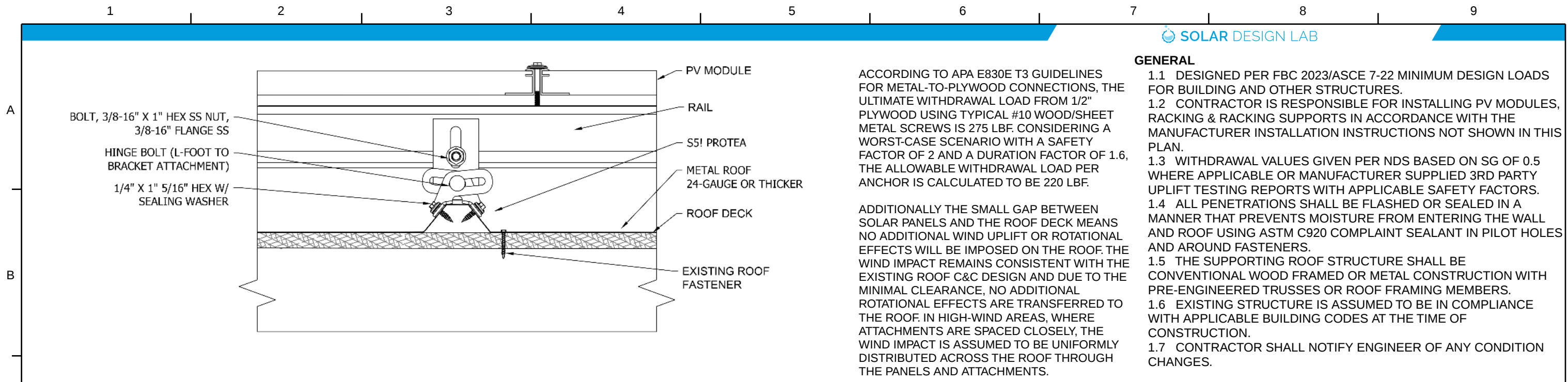
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THE INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE

SUPPORT ATTACHMENT/ANCHOR RAIL ZONE PRESSURE (PSF) PRESSURE COEFFICIENT 12 PANEL ID CANTILEVER (IN) EXPOSED NONEXPOSED -ZONE 1/1' -ZONE 2 -ZONE 3		ARRAY MODULE: (6) TX110-400 TOTAL AREA: 126.14 SQFT HARDWARE RAIL: 45' IRONRIDGE-XR10 ATTACHMENT: (36) SSI-PROTEA ANCHORAGE: RIB/SEAM FRAMING SIZE: MIN. 2X4 SPACING: 24" OC ROOF MEAN HEIGHT: 15' MATERIAL: METAL (9" OC RIBS/SEAMS) SHAPE: MIXED GEOGRAPHY EXPOSURE CAT: B WIND SPEED: 130 MPH GND SNOW LOAD: 0 PSF	DEAD LOAD CALC LOADS: Panel = 46.3lbs Anchors = 1.2lbs Rail = 0.72lbs/ft Misc = 1.6lbs/panel DEADLOAD PER ROW, Fdr: $Fdr = (lbs/panel * \#panels/row) + (lbs/ft-rail * rail/row) * 2 + (lbs/anchor * \#anchors/row) + (misc-lbs/panel * \#panels/row)$ (lbf) DIST DEADLOAD, Fdd: $Fdd = Fdr / (area/panel * \#panels/row)$ (psf) DEADLOAD PER ANCHOR, Fda: $Fda = Fdr / (\#anchors/row)$ (lbs)	PANELS PARALLEL TO SURFACE, 29.4.4 CRITERIA: - Panels parallel to roof surface (within 2 deg) - Max height of panel above roof, h1 & h2 OF 10" - Min panel gap of 0.25" - Min edge distance 2*h2 - Max panel chord length of 6.7' UPLIFT ON ONE PANEL, Fup = P*A (lbf) Per ASCE 2.4, 26.10.2 & 29.4.4 $P = pasd = 0.6 * p = 0.6 * qh * (GCp) * (YE) * (Ya)$, A = load area UPLIFT PER ROW, Fur = SUM(Fup(0):Fup(n)) (lbf) Where Fup(0):Fup(n) = loads from first to last panel in row UPLIFT PER ANCHOR, Fua = Fur/(#ANCHORS/ROW) (lbf) LOAD PER ANCHOR, Fa = 0.6*Fda + Fua (lbf) SAFETY FACTOR, SF = Ftest/Fa	VELOCITY PRESSURE $qh = 0.00256 * Kz * Kzt * Kd * Ke * V^2 = 21$ (lb/sqft) Where Kz = 0.57, Kzt = 1, Kd = 0.85, Ke = 1, V = 130 EXT PRESSURE COEFFICIENT, GCp: GCp varies per roof & zone, 30.3-2A-1 to 30.3.7: Aeff = 21.02 sqft (1 panel) EXPOSURE FACTOR, YE: YE = 1.5 for uplift loads on panels that are exposed and within a distance 2*h2 from the end of a row at an exposed edge of the array; YE = 1.0 elsewhere for uplift loads and for all downward loads, as illustrated in Fig. 29.4-7. A panel is defined as exposed if d1 to the roof edge > 0.5h and one of the following applies: 1. d1 to the adjacent array > 2*h2 or 2. d2 to the next adjacent panel > 2*h2. PRESSURE EQUALIZATION FACTOR, Ya: Ya is given as 0.59 per 29.4.4, 29.4-8 with h2 = 5'+ & panel gap = 0.37"	ZONES f0: 1' (Flat) f1: 1 (Flat) f2: 2 (Flat) f3: 3 (Flat) g1: 1 (Gable) g2: 2 (Gable) g3: 3 (Gable) h1: 1 (Hip) h2: 2 (Hip) h3: 3 (Hip)	0 TOF 100 PLANE C AZ: 32° P: 20° TOF: 76%	
LEGEND		PARAMETERS		LOAD CALCS PER FBC 2023/ASCE 7-22				
ROW: 3 (3 MODS) NOM SPAN: 18" MAX SPAN: 18" MAX CANTILEVER: 26" UPLIFT/ROW, Fur: -1243 lbf #ANCHORS: 18 LOAD/ANCHOR, Fa: -63 lbf TEST LOAD/ANCHOR: -550 lbf SF: 8.73 DIST LOAD, Fdd: 2.88 psf POINT LOAD, Fda: 10.08 lbs ROOF PITCH: 07-20 deg PANEL TILT: 0 deg AZIMUTH: 32 deg		Z: h3 P: -25 psf GCp: -2.13 C30 Z: g2 P: -17 psf GCp: -2.128 C31 Z: g2 P: -17 psf GCp: -2.128 C32 2"	ROW: 4 (3 MODS) NOM SPAN: 18" MAX SPAN: 18" MAX CANTILEVER: 26" UPLIFT/ROW, Fur: -1432 lbf #ANCHORS: 18 LOAD/ANCHOR, Fa: -74 lbf TEST LOAD/ANCHOR: -550 lbf SF: 7.48 DIST LOAD, Fdd: 2.88 psf POINT LOAD, Fda: 10.08 lbs ROOF PITCH: 07-20 deg PANEL TILT: 0 deg AZIMUTH: 32 deg	Z: h2 P: -24 psf GCp: -2.13 C40 Z: g3 P: -22 psf GCp: -3.02 C41 Z: g3 P: -22 psf GCp: -3.02 C42 1"				

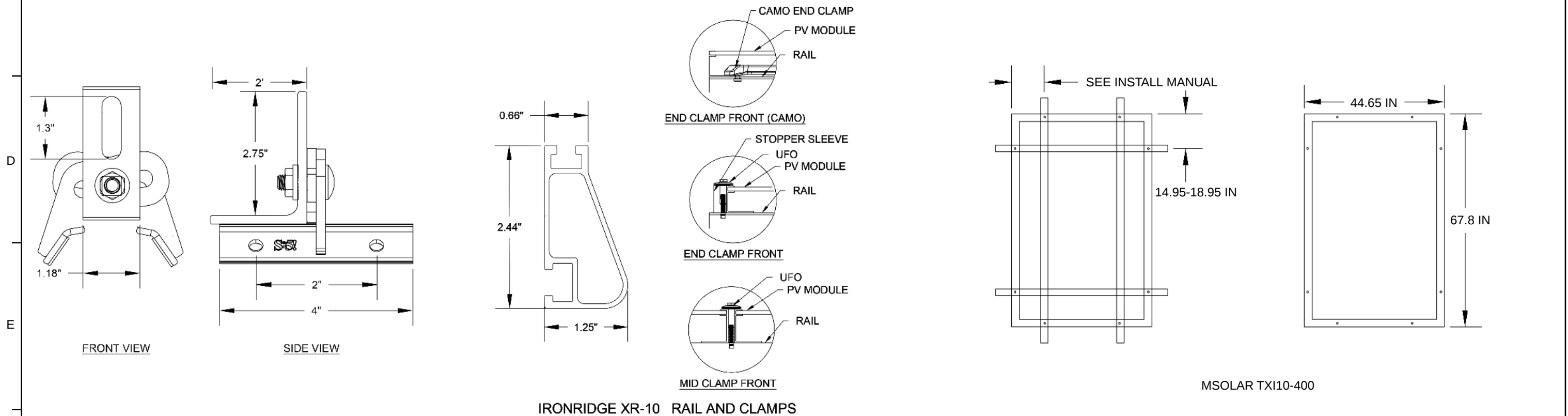
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01 ANCHORAGE DETAIL

02 DECK CONNECTION NOTE

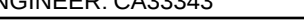
03 NOTES



04 ANCHOR DETAIL

05 RACK & CLAMPS DETAIL

06 MODULE DETAILS

F	MARSHALL GARNER	CONTRACTOR: -	ENGINEER: CA33343	 Ryan S Gittens 2024.08.21 19:41:24 -04'00' RYAN GITTENS PE90605	DATE	BY	VER	DESCRIPTION	SA1
		FLORIDA STATE ENERGY			08.21.24	BF	1	INITIAL DESIGN	
	481 SOUTHWEST HORSE WAY LAKE CITY FLORIDA 32024 UNITED STATES	6901 TPC DRIVE STE 650, ORLANDO, FL 32822	1646 W SNOW AVE 9 TAMPA, FL 33606						PAPER: ARCHB
	PROJECT ID: 8212024-481	(407) 718-9980							SCALE:

UNAUTHORIZED USE OF THIS DRAWING SET WITHOUT WRITTEN PERMISSION FROM CONTRACTOR IS IN VIOLATION OF U.S. COPYRIGHT LAWS AND WILL BE SUBJECT TO CIVIL DAMAGES AND PROSECUTIONS

GENERAL

- 1.1 CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH FBC 2023/ASCE 7-22 AND NEC 2020 REQUIREMENTS AND EQUIPMENT INSTALLATION INSTRUCTIONS NOT SHOWN IN THIS PLAN.
- 1.2 ALL EQUIPMENT SHALL BE LISTED PER NEC 690.4(B).
- 1.3 PV SOURCE CONDUCTORS ARE SIZED BE EXPOSED TO DIRECT SUNLIGHT WHEN INSTALLED IN RACEWAYS 7/8" OR LESS ABOVE ROOF. ADJUSTMENTS ARE BASED ON MAX CURRENT OF 16A, 35C AMBIENT TEMP, NEC 310.15(B)(2) AND T310.15(B)(1).
- 1.4 ALL EQUIPMENT SHALL BE RATED FOR INSTALL LOCATION. ROOF & OUTDOOR JUNCTION BOXES SHALL BE OUTDOOR RATED
- 1.5 INTERCONNECTION EQUIPMENT SHALL BE RATED FOR AVAILABLE FAULT CURRENT.

SYSTEM

- 2.1 THE ENPHASE SYSTEM IS NON-ISOLATED AND UNGROUNDED. NEITHER THE NEGATIVE NOR POSITIVE CONDUCTOR IS GROUNDED AND HAS A COMMON AC AND DC EQUIPMENT GROUNDING TERMINAL THEREFORE NO DC GEC IS REQUIRED.
- 2.2 ENPHASE IQ SERIES MICROINVERTERS REQUIRE NO GROUND OR GROUNDED CONDUCTOR BECAUSE THE DC CIRCUIT IS ISOLATED AND INSULATED FROM GROUND.
- 2.3 THE INVERTER IS EQUIPPED WITH A RAPID SHUTDOWN FEATURE WHICH CONFORMS TO NEC 690.12.
- 2.4 INTERCONNECTION SHALL BE MADE BY LINE-SIDE-TAP PER ARTICLE 705.11 USING CONNECTORS UL LISTED FOR THIS PURPOSE. TAP CONDUCTORS SHALL BE NO MORE THAN 10FT IF INSIDE BUILDING PER 705.11(C). TAP & ENCLOSURE SHALL COMPLY WITH NEC 312.8(A) (CROSS SECTIONAL AREA FILL).
- 2.5 NO MORE THAN 4 BRANCHES (OR 8 CONDUCTORS) SHALL BE RUN IN A SINGLE CONDUIT USING #10 WIRE. USE MULTIPLE CONDUITS/JBOX AS REQUIRED TO SATISFY THIS LIMIT.

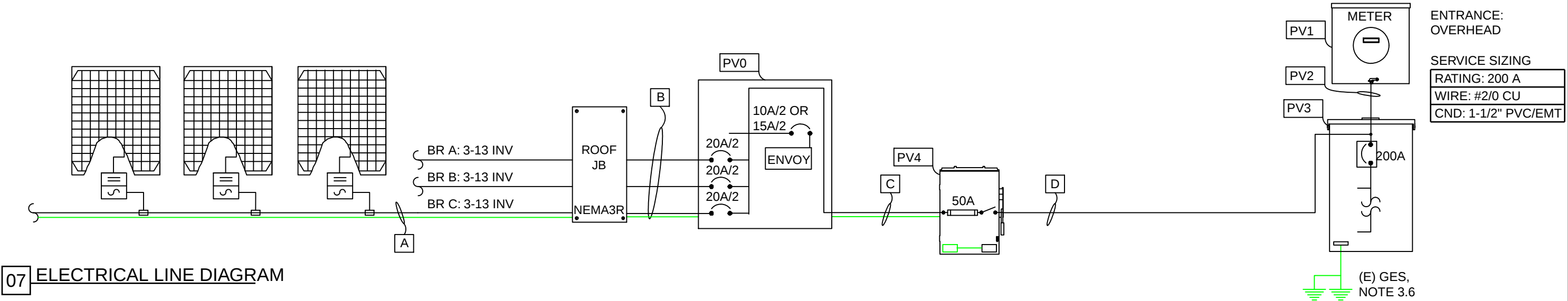
GROUNDING

- 3.1 ALL EQUIPMENT SHALL BE PROPERLY GROUNDED PER THE REQUIREMENTS OF NEC ARTICLES 250 & 690.
- 3.2 FRAMED PV MODULES SHALL BE BONDED TOGETHER USING LUGS OR RACKING INTEGRATED GROUNDING CLAMPS.
- 3.3 EQUIPMENT GROUNDING SHALL BE INSTALLED PER NEC 250.120(C), SIZED PER 690.45 & BE A MINIMUM OF #6 WHEN EXPOSED TO DAMAGE.
- 3.4 INTERSYSTEM BONDING DEVICE REQUIRED AT SERVICE WHEN COMMUNICATION DEVICES ARE PRESENT PER 250.94.
- 3.5 EXISTING GROUNDING ELECTRODE SYSTEM (GES) SHALL COMPLY WITH 250.64, 250.53 & 250.62 & BE OF THE TYPES & SIZE LISTED IN 250.52.
- 3.6 EXISTING GROUNDING ELECTRODE SYSTEM (GES) SHALL BE SIZED PER 250.66 & T250.66: TYP. #4 GEC (FIELD VERIFY).
- 3.7 METAL WATER PIPES SHALL BE GROUNDED PER 250.104(A)

01 NOTES

ID	RUN	VOLTS(V)	CURRENT(A)	VD(%)	LEN(FT)	CONDUCTOR	SIZE	SETS	OHM/KFT	CONDUIT	MIN SIZE	#CCC	EGC	OCPD(A)	TERM(C)	TEMP FAC	FILL FAC	BASE AMP	ADJ AMP
A	BR-JBOX	240	15.73	1	38.53	Q-CABLE	#12	1	1.98	FREE AIR	3/4"	2	#6	20	75	1	1	25	25
B	JBOX-COMB	240	15.73	1	61.52	THHN/THWN-2	#10	1	1.24	PVC/EMT	3/4"	6	#10	20	75	1	0.8	35	32
C	COMB-DISC	240	35.09	1	43.96	THHN/THWN-2	#8	1	0.778	PVC/EMT/FMC/NMLT	3/4"	3	#10	50	75	1	1	50	50
D	DISC-PCC	240	35.09	1	69.65	THHN/THWN-2	#6	1	0.491	PVC/EMT/FMC/NMLT	3/4"	3	NA	NA	75	1	1	65	65

05 CONDUCTOR SCHEDULE



07 ELECTRICAL LINE DIAGRAM

MAKE	ENPHASE
MODEL	IQ8PLUS-72-2-US
MAX INPUT VOLTAGE (V)	60
MAX INPUT SC CURRENT (A)	15
NOM AC VOLTAGE (V)	240
MAX AC CURRENT (A)	1.21
NOM AC POWER (W)	290

03 INVERTER RATINGS

# PV MODULES	29
# BRANCH CIRCUITS	3
# INVERTERS	29
MIN-MAX BR SIZE (INV)	3-13
STC DC RATING (KW)	11.6
AC OUTPUT RATING (KW)	8.41
DC/AC RATIO	1.38

04 SYSTEM

PV0	(N) ENPHASE IQ COMBINER
PV1	(E) MIN 200A METER OR CT CABINET
PV2	(E) 200A SERVICE CONDUCTORS
PV3	(E) 200A MAIN PNL W/ (E) 200A MAIN
PV4	(N) 60A, SERV RATED AC DISC, 50A FUSES

06 EQUIPMENT SCHEDULE

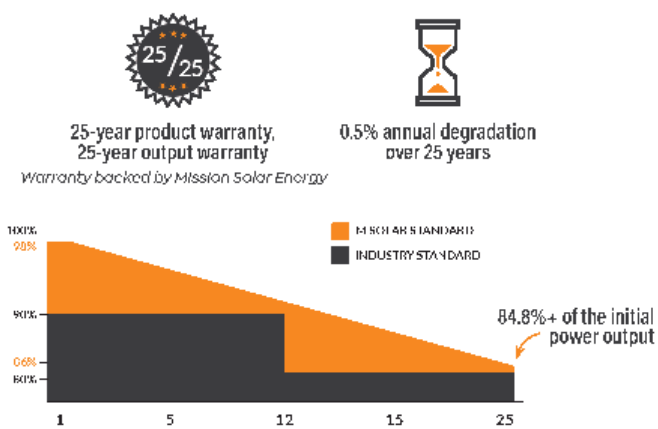
MARSHALL GARNER	CONTRACTOR: -	ENGINEER: CA33343		DATE	BY	VER	DESCRIPTION	E1
481 SOUTHWEST HORSE WAY LAKE CITY FLORIDA 32024 UNITED STATES	FLORIDA STATE ENERGY	6901 TPC DRIVE STE 650, ORLANDO, FL 32822		08.21.24	BF	1	INITIAL DESIGN	
PROJECT ID: 8212024-481	(407) 718-9980	1646 W SNOW AVE 9 TAMPA, FL 33606						



mSolar 108BB 400W HC Series

mSolar 10BB Half-Cell Black Monocrystalline PERC PV Module

- Excellent efficiency**
10 busbar technology increases power by decreasing the distance between busbars and the finger grid line
- Improved weak illumination response**
More power output even in lower light conditions such as overcast days or off-peak sunlight hours
- Anti PID**
Panels rigorously tested to limit power degradation caused by 'stray' currents
- High wind and snow resistance**
5,400Pa Snow Load
2,400Pa Wind Load
- 25-year warranty**
M Solar modules are guaranteed to retain at least 84.3% of the initial power output
- Appealing Aesthetics**
Fully black module creates a sleek, uniform array



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888-852-4783

108BB 400W HC Series | mSolar 10BB Half-Cell, All-Black Monocrystalline PERC PV Module

Electrical Characteristics STC*			
Module Type	TX110-395108BB	TX110-400108BB	TX110-405108BB
Nominal Power Watt Pmax (W)*	395	400	405
Power Output Tolerance Pmax (W)	0~+5	0~+5	0~+5
Maximum Power Voltage Vmp (V)	30.04	31.01	31.71
Maximum Power Current Imp (A)	12.81	12.90	12.98
Open Circuit Voltage Voc (V)	36.98	37.07	37.26
Short Circuit Current Isc (A)	13.70	13.97	13.87
Module Efficiency (%)	20.23	20.45	20.71

*STC: Standard Test Condition (1000W/m², Module Temperature 25°C, Air Mass 1.5)
*Measuring tolerance: ±1%

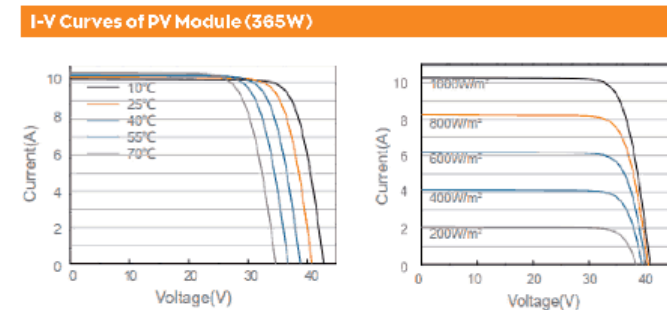
Electrical Characteristics NMOT*			
Maximum Power Watt Pmax (Wp)	298	270	274
Maximum Power Voltage Vmp (V)	29.08	29.28	29.47
Maximum Power Current Imp (A)	10.25	10.32	10.35
Open Circuit Voltage Voc (V)	34.75	34.88	35.12
Short Circuit Current Isc (A)	10.96	11.03	11.10

*NMOT: Nominal module operating temperature (Module Temperature 45°C, Ambient Temperature 25°C, Air Mass 1.5, Wind Speed 1m/s)

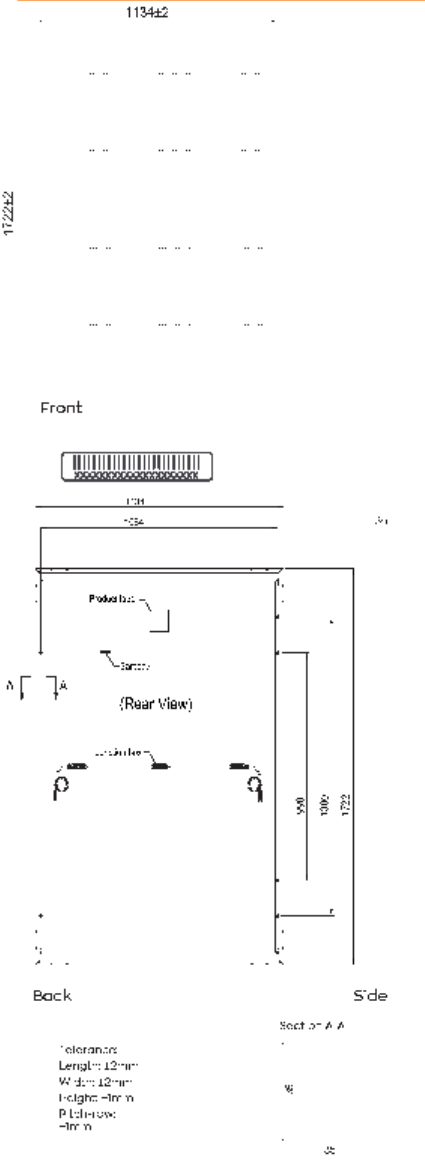
Mechanical Data	
Solar Cells	Mono PERC, 182mm half cells
Cells orientation	108 (6x9 · 6x9)
Module dimension	67.80x44.65x1.38 in. (1,722x1,134x35 mm)
Weight	45.60 lb (21.00 kg)
Glass	3.2mm, High Transmission, Low Iron & Semi-Tempered Glass
Junction Box	IP 68, 3 Diodes
Cables	1,200mm
Connectors	MC4 EVO2

Temperature Ratings		Working Conditions	
NOCT	42°C±2°C	Maximum System Voltage	1500VDC
Temperature coefficient of Pmax	-0.350%/°C	Operating Temperature	-40°C ~+85°C
Temperature coefficient of Voc	-0.275%/°C	Maximum Series Fuse	25A
Temperature coefficient of Isc	+0.045%/°C	Maximum Load (Snow/Wind)	5,400Pa / 2,400Pa
Fire Rating		UL Type I**	

*Do not connect in series in a box with more than 10 modules in parallel connection.
**Do not connect in series in a box with more than 10 modules in parallel connection. They are not for use in series. They are only for comparison among different module types.
***Please note the IP68 rating is based on the module's design. It is not a guarantee of performance in all environments. The module's performance is based on the module's design and the manufacturer's specifications.



Dimensions (MM)



Packaging Details		
31 Panels per pallet	Pallet Stack Weight	Truck Weight
26 Pallets per truck	2,934 lbs. (1341.98 kg)	38,461.2 lbs. (17,445.7 kg)

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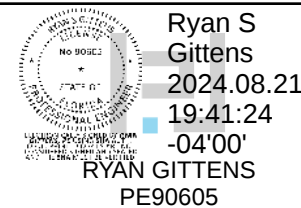
MARSHALL GARNER

481 SOUTHWEST HORSE WAY LAKE CITY FLORIDA 32024
UNITED STATES

PROJECT ID: 8212024-481

CONTRACTOR: -
FLORIDA STATE ENERGY
6901 TPC DRIVE STE 650,
ORLANDO, FL 32822
(407) 718-9980

ENGINEER: CA33343
Ryan S Gittens
2024.08.21
19:41:24
-04'00'
RYAN GITTENS
PE90605



DATE	BY	VER	DESCRIPTION	D1 PAPER: ARCHB SCALE:
08.21.24	BF	1	INITIAL DESIGN	

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)				IOB-60-2-US	IOBPLUS-72-2-US
Commonly used module pairings ¹	W			235 – 350	235 – 440
Module compatibility				60-cell/120 half-cell	60-cell/120 half-cell and 72-cell/144 half-cell
MPPT voltage range	V			27 – 37	29 – 45
Operating range	V			25 – 48	25 – 58
Min/max start voltage	V			30 / 48	30 / 58
Max input DC voltage	V			50	60
Max DC current ² [module Isc]	A				15
Overvoltage class DC port					II
DC port backfeed current	mA				0
PV array configuration				1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)				IOB-60-2-US	IOBPLUS-72-2-US
Peak output power	VA			245	300
Max continuous output power	VA			240	290
Nominal (L-L) voltage/range ³	V			240 / 211 – 264	
Max continuous output current	A			1.0	1.21
Nominal frequency	Hz				60
Extended frequency range	Hz				50 – 68
Max units per 20 A (L-L) branch circuit ⁴				16	13
Total harmonic distortion					<5%
Overvoltage class AC port					III
AC port backfeed current	mA				30
Power factor setting					1.0
Grid-tied power factor (adjustable)				0.85 leading – 0.85 lagging	
Peak efficiency	%			97.5	97.6
CEC weighted efficiency	%			97	97
Night-time power consumption	mW				60
MECHANICAL DATA					
Ambient temperature range				-40°C to +60°C (-40°F to +140°F)	
Relative humidity range				4% to 100% (condensing)	
DC Connector type				MC4	
Dimensions (HxWxD)				212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight				1.08 kg (2.38 lbs)	
Cooling				Natural convection – no fans	
Approved for wet locations				Yes	
Acoustic noise at 1 m				<60 dBA	
Pollution degree				PD3	
Enclosure				Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating				NEMA Type 6 / outdoor	
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	
Certifications				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 C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility> (2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2021-10-19

MARSHALL GARNER	CONTRACTOR: -	ENGINEER: CA33343	 Ryan S Gittens 2024.08.21 19:41:24 -04'00' RYAN GITTENS PE90605	DATE	BY	VER	DESCRIPTION	D2
	FLORIDA STATE ENERGY	 1646 W SNOW AVE 9 TAMPA, FL 33606		08.21.24	BF	1	INITIAL DESIGN	
481 SOUTHWEST HORSE WAY LAKE CITY FLORIDA 32024 UNITED STATES	6901 TPC DRIVE STE 650, ORLANDO, FL 32822						PAPER: ARCHB	
	(407) 718-9980						SCALE:	
PROJECT ID: 8212024-481								

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nVent.com/ILSCO

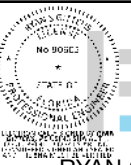
nVent ILSCO Insulation Piercing Connector: First in the Industry to Meet New NEC Requirement for Service Entrance Connections

nVent is excited to announce that nVent ILSCO Insulation Piercing Copper Connector, IPC-250-4/0 is now UL Listed as suitable for use on the line side of service equipment. It meets the 2020 NEC 230.46 requirement that went into effect on January 1, 2023, requiring pressure connectors installed on service entrance splices and taps be listed and marked "suitable for use on the line side of service equipment." nVent ILSCO connectors were tested to UL 486A-486B Annex H which is the test standard required to meet 2020 NEC 230.46.

nVent ILSCO is the first manufacturer to meet the NEC 230.46 requirement. This is the second announcement by nVent ILSCO regarding its product performance and ability to meet this important standard. nVent ILSCO now offers its customers 293 SKUs of pressure connectors, parallel tap connectors and insulation piercing connector for the 2020 NEC 230.46 requirement:

NIMBUS DOUBLE SIDE ENTRY		NIMBUS SINGLE SIDE ENTRY		CLEARTAP DOUBLE SIDE		CLEARTAP SINGLE SIDE ENTRY	
PBTD-3-1/0-SR	PBTD-3-600-SR	PBTS-3-1/0-SR	PBTS-3-600-SR	ECTD-3-1/0-SR	ECTD-3-600-SR	ECTS-3-1/0-SR	ECTS-3-600-SR
PBTD-4-1/0-SR	PBTD-4-600-SR	PBTS-4-1/0-SR	PBTS-4-600-SR	ECTD-4-1/0-SR	ECTD-4-600-SR	ECTS-4-1/0-SR	ECTS-4-600-SR
PBTD-5-1/0-SR	PBTD-5-600-SR	PBTS-5-1/0-SR	PBTS-5-600-SR	ECTD-5-1/0-SR	ECTD-5-600-SR	ECTS-5-1/0-SR	ECTS-5-600-SR
PBTD-6-1/0-SR	PBTD-6-600-SR	PBTS-6-1/0-SR	PBTS-6-600-SR	ECTD-6-1/0-SR	ECTD-6-600-SR	ECTS-6-1/0-SR	ECTS-6-600-SR
PBTD-7-1/0-SR	PBTD-7-600-SR	PBTS-7-1/0-SR	PBTS-7-600-SR	ECTD-7-1/0-SR	ECTD-7-600-SR	ECTS-7-1/0-SR	ECTS-7-600-SR
PBTD-8-1/0-SR	PBTD-8-600-SR	PBTS-8-1/0-SR	PBTS-8-600-SR	ECTD-8-1/0-SR	ECTD-8-600-SR	ECTS-8-1/0-SR	ECTS-8-600-SR
PBTD-9-1/0-SR	PBTD-9-600-SR	PBTS-9-1/0-SR	PBTS-9-600-SR	ECTD-9-1/0-SR	ECTD-9-600-SR	ECTS-9-1/0-SR	ECTS-9-600-SR
PBTD-10-1/0-SR	PBTD-10-600-SR	PBTS-10-1/0-SR	PBTS-10-600-SR	ECTD-10-1/0-SR	ECTD-10-600-SR	ECTS-10-1/0-SR	ECTS-10-600-SR
PBTD-11-1/0-SR	PBTD-11-600-SR	PBTS-11-1/0-SR	PBTS-11-600-SR	ECTD-11-1/0-SR	ECTD-11-600-SR	ECTS-11-1/0-SR	ECTS-11-600-SR
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PBTD-3-3/0-SR	PBTD-3-750-SR	PBTS-3-3/0-SR	PBTS-3-750-SR	ECTD-3-3/0-SR	ECTD-3-750-SR	ECTS-3-3/0-SR	ECTS-3-750-SR
PBTD-4-3/0-SR	PBTD-4-750-SR	PBTS-4-3/0-SR	PBTS-4-750-SR	ECTD-4-3/0-SR	ECTD-4-750-SR	ECTS-4-3/0-SR	ECTS-4-750-SR
PBTD-5-3/0-SR	PBTD-5-750-SR	PBTS-5-3/0-SR	PBTS-5-750-SR	ECTD-5-3/0-SR	ECTD-5-750-SR	ECTS-5-3/0-SR	ECTS-5-750-SR
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PBTD-4-250-SR	PBTD-4-350-SR	PBTS-4-250-SR	PBTS-4-350-SR	ECTD-4-250-SR	ECTD-4-350-SR	ECTS-4-250-SR	ECTS-4-350-SR
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PBTD-11-250-SR	PBTD-11-350-SR	PBTS-11-250-SR	PBTS-11-350-SR	ECTD-11-250-SR	ECTD-11-350-SR	ECTS-11-250-SR	ECTS-11-350-SR
PBTD-12-250-SR	PBTD-12-350-SR	PBTS-12-250-SR	PBTS-12-350-SR	ECTD-12-250-SR	ECTD-12-350-SR	ECTS-12-250-SR	ECTS-12-350-SR
PBTD-13-250-SR	PBTD-13-350-SR	PBTS-13-250-SR	PBTS-13-350-SR	ECTD-13-250-SR	ECTD-13-350-SR	ECTS-13-250-SR	ECTS-13-350-SR
PBTD-14-250-SR	PBTD-14-350-SR	PBTS-14-250-SR	PBTS-14-350-SR	ECTD-14-250-SR	ECTD-14-350-SR	ECTS-14-250-SR	ECTS-14-350-SR
RUN TAP CONNECTORS		GTA-250-250 GTA-250-250-W/C GTA-250-0 GTA-250-0-W/C					
INSULATION PIERCING		IPC-250-4/0					

Please contact nVent ILSCO for your next power connections project's need. To learn more, visit www.nVent.com/ILSCO.

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S-5!®

The Right Way!™

NEW

NOW AVAILABLE
IN ALUMINUM

ProteaBracket™

ProteaBracket™

A versatile bracket for mounting solar PV to trapezoidal roof profiles

ProteaBracket™ is now made in aluminum. Still the most versatile trapezoidal metal roof attachment solution on the market, the S-5! ProteaBracket just got better!

The bracket features an adjustable attachment base and module attachment options to accommodate different roof profile dimensions and mounting options.

Our pre-applied EPDM gasket with peel and stick adhesive makes installation a snap, ensuring accurate and secure placement the first time.

With no messy sealants, faster installation, and a weather-proof fit, ProteaBracket offers you the most versatile solar attachment solution available.

ProteaBracket* can be used for rail mounting or "direct-attach" with S-5! PVKIT™

Features and Benefits

- 34% lighter - saves on shipping
- Stronger L-Foot™
- Load-tested for engineered application
- Corrosion-resistant materials
- Adjustable - Fits rib profiles up to 3"
- Peel-and-Stick prevents accidental shifting during installation
- Fully pre-assembled
- 25-year warranty*

*When ProteaBracket is used in conjunction with the S-5! PVKIT, an additional nut is required during installation.

*See www.S-5.com for details.



888-825-3432 | www.S-5.com

S-5!®

The Right Way!™

ProteaBracket™ is the perfect solar attachment solution for most trapezoidal rib, exposed-fastened metal roof profiles!

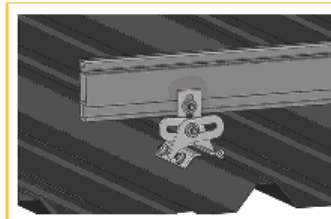
ProteaBracket™ is compatible with common metal roofing materials and comes with a pre-applied EPDM gasket on the base.

Note: All four pre-punched holes must be used to achieve tested strength. Fasteners are provided.

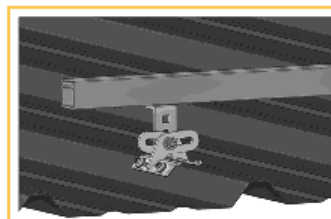
For design assistance, ask your distributor, or visit www.S-5.com for the independent lab test data that can be used for load-critical designs and applications. Also, please visit our website for more information including metallurgical compatibilities and specifications.

S-5!® holding strength is unmatched in the industry.

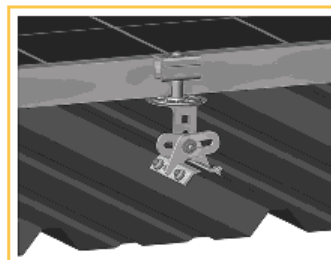
Multiple Attachment Options:



Side
Mount Rail



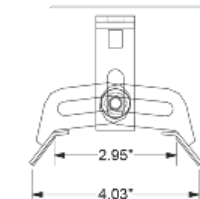
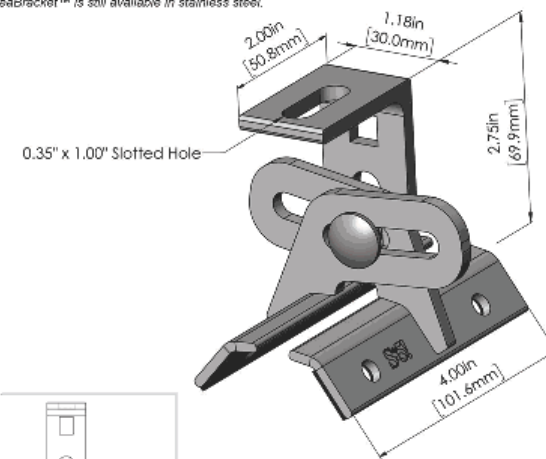
Bottom
Mount Rail



w/ S-5!
PVKIT™
(rail-less)

ProteaBracket™

ProteaBracket™ is still available in stainless steel.



ProteaBracket fits profiles
up to 3 inches

INSTALLATION:

- No surface preparation needed. (1) Wipe away excess oil and debris. (2) Peel off adhesive release paper. (3) Align and mount bracket directly onto crown of panel. (4) Secure ProteaBracket through pre-punched holes, using piercing-point S-5! screws.



ProteaBracket™ and the S-5! PVKIT™ 2.0 mounted on a trapezoidal roof profile

S-5!® Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, bolt torque, patents, and trademarks, visit the S-5! website at www.S-5.com.

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481 SOUTHWEST HORSE WAY LAKE CITY FLORIDA 32024
UNITED STATES

PROJECT ID: 8212024-481

CONTRACTOR: -

FLORIDA STATE ENERGY

6901 TPC DRIVE STE 650,
ORLANDO, FL 32822

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ENGINEER: CA33343

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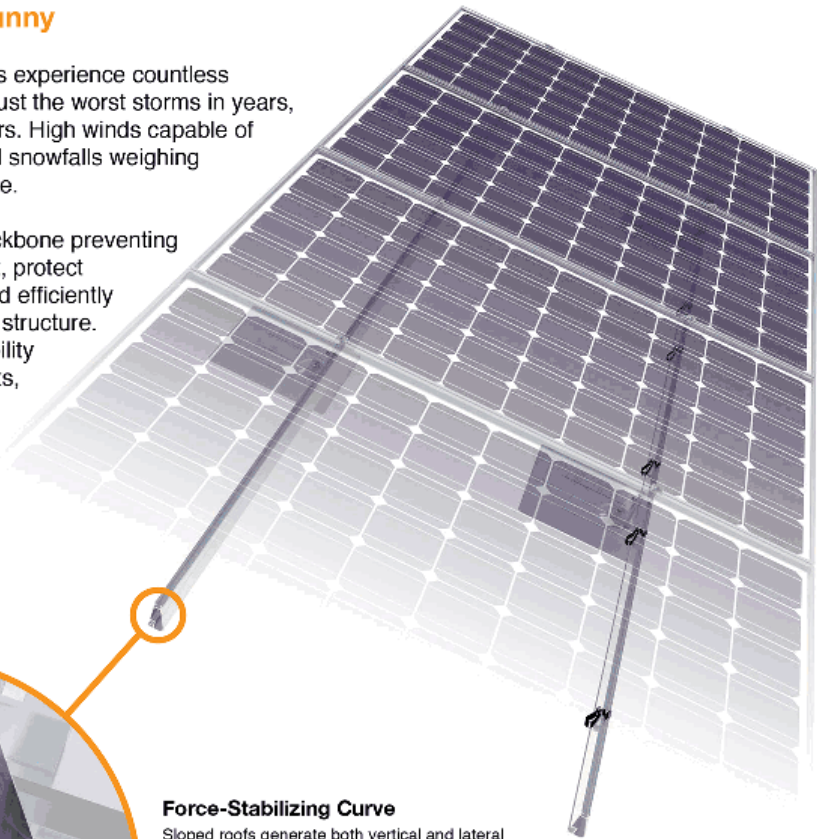


Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.

XR Rail Family



Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs



XR Rails are compatible with FlashFoot and other pitched roof attachments.



IronRidge offers a range of tilt leg options for flat roof mounting applications.

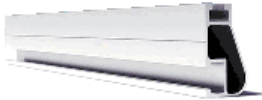
Corrosion-Resistant Materials

All XR Rails are made of marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



XR Rail Family

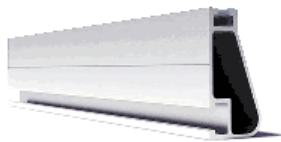
The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.



XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves 6 foot spans, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear anodized finish
- Internal splices available



XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 8 feet.

- 8' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available



XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans 12 feet or more for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	100	XR10		XR100		XR1000	
	120						
	140						
	160						
10-20	100						
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
80-90	160						

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MARSHALL GARNER

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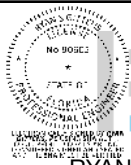
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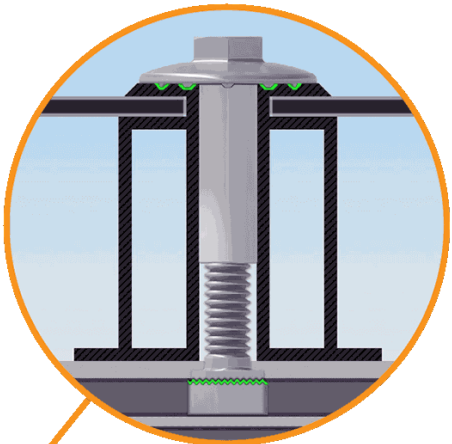


UFO Family of Components

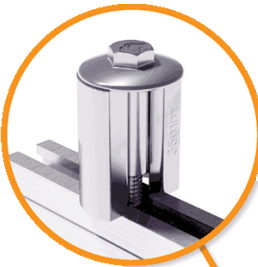
Simplified Grounding for Every Application

The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



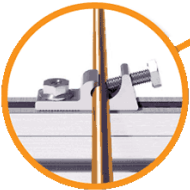
Universal Fastening Object (UFO)
The UFO securely bonds solar modules to XR Rails. It comes assembled and lubricated, and can fit a wide range of module heights.



Stopper Sleeve
The Stopper Sleeve snaps onto the UFO, converting it into a bonded end clamp.



BOSS™ Splice
Bonded Structural Splice connects rails with built-in bonding teeth. No tools or hardware needed.

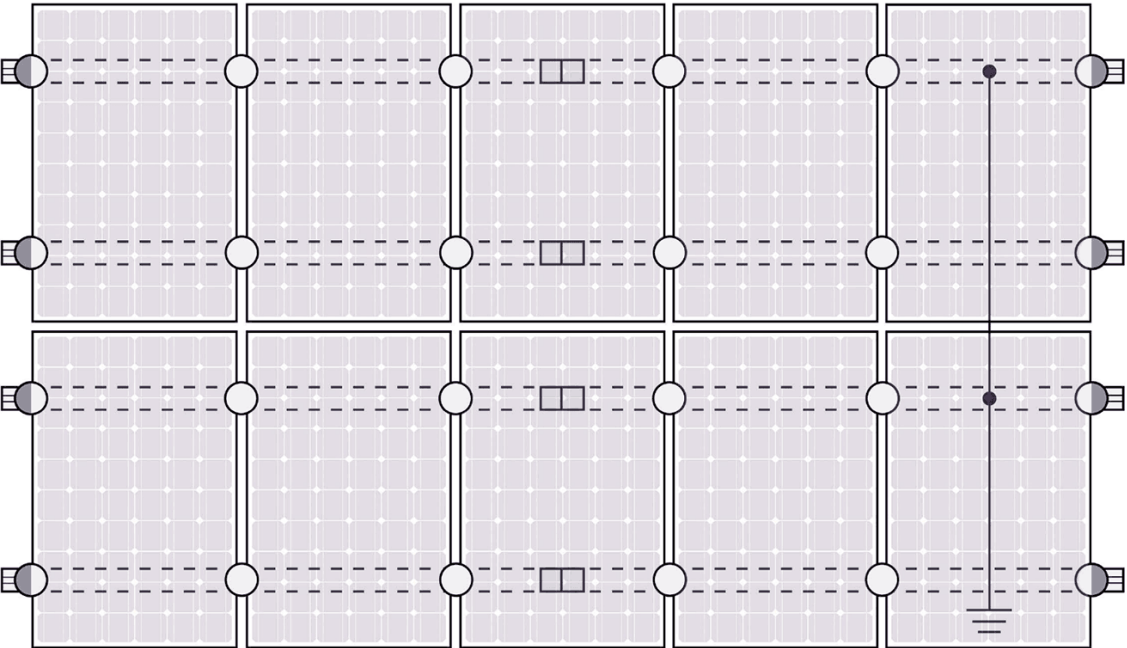


Grounding Lug
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.



Bonded Attachments
The bonding bolt attaches and bonds the L-foot to the rail. It is installed with the same socket as the rest of the system.

System Diagram



○ UFO ◐ Stopper Sleeve ● Grounding Lug □ BOSS™ Splice — Ground Wire

Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to [IronRidge.com/UFO](https://www.ironridge.com/UFO)

Cross-System Compatibility			
Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✓	✓	XR1000 Only
UFO/Stopper	✓	✓	✓
BOSS™ Splice	✓	✓	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Enphase - M250-72, M250-60, M215-60, C250-72 Darfon - MIG240, MIG300, G320, G640 SolarEdge - P300, P320, P400, P405, P600, P700, P730		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		

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Rail: XR10		Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation										Rail: XR10		Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation										
		Max Module Length: 67.5", Max Module SF: 21 SF												Max Module Length: 67.5", Max Module SF: 21 SF										
		Exposure B												Exposure B										
Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			Exposed Mod.			Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			Exposed Mod.			Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			Exposed Mod.			
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3			Group 1	Group 2	Group 3	Group 1	Group 2	Group 3			Group 1	Group 2	Group 3				
90 mph	8-20	89	89	86	86	78	72	90 mph	8-20	89	89	89	89	84	81	90 mph	8-20	89	84	81	89	84	81	
	21-27	89	89	89	89	84	79		21-27	89	89	89	89	89	89		89	89	89	89	89	89		
	28-45	90	90	90	90	90	81		28-45	90	90	90	90	90	90		90	90	90	90	87	90	90	
	8-20	89	88	82	83	73	65		21-27	89	89	89	89	86	80		78	21-27	89	89	89	89	87	87
95 mph	21-27	89	89	89	89	80	74	95 mph	21-27	89	89	89	89	89	87	87	95 mph	21-27	89	89	89	89	87	87
	28-45	90	90	90	90	90	86		28-45	90	90	90	90	90	82	82		28-45	90	90	90	90	90	82
	8-20	89	84	79	80	69	61		21-27	89	89	89	89	89	89	89		89	89	89	89	89	89	
	21-27	89	89	86	89	75	69		21-27	89	89	89	89	89	89	89		89	89	89	89	89	89	
100 mph	28-45	90	90	90	90	90	81	100 mph	28-45	90	90	90	90	90	77	77	100 mph	28-45	90	90	90	90	90	77
	8-20	89	81	74	77	64	57		21-27	89	89	89	89	89	89	89		89	89	89	89	89	89	
	21-27	89	87	83	86	72	65		21-27	89	89	89	89	89	89	89		89	89	89	89	89	89	
	28-45	90	90	85	90	77	68		28-45	90	90	90	90	90	90	90		90	90	90	90	90	90	
105 mph	8-20	87	78	69	73	60	53	105 mph	8-20	89	84	82	77	69	65	105 mph	8-20	89	84	82	77	69	65	
	21-27	89	84	78	83	67	61		21-27	89	89	89	89	89	89		89	89	89	89	89	89	89	
	28-45	90	90	81	79	73	64		28-45	90	90	87	86	82	69		69	28-45	90	90	87	86	82	69
	8-20	84	73	65	69	57	50		21-27	89	87	87	86	72	72		72	21-27	89	87	87	86	72	72
110 mph	21-27	89	81	74	80	64	57	110 mph	21-27	89	87	87	86	72	72	110 mph	21-27	89	87	87	86	72	72	
	28-45	90	87	76	75	69	61		28-45	90	90	83	81	78	64		28-45	90	90	83	81	78	64	
	8-20	81	72	64	66	54	48		21-27	89	84	84	83	67	67		21-27	89	84	84	83	67	67	
	21-27	89	77	72	77	60	54		28-45	90	90	79	78	73	61		28-45	90	90	79	78	73	61	
120 mph	28-45	90	83	73	72	66	58	120 mph	28-45	90	90	79	78	73	61	120 mph	28-45	90	90	79	78	73	61	
	8-20	75	64	56	60	48	43		21-27	89	79	79	78	61	61		21-27	89	79	79	78	61	61	
	21-27	85	69	64	65	60	53		28-45	88	86	72	72	66	54		28-45	88	86	72	72	66	54	
	28-45	82	76	67	55	44	40		21-27	87	73	73	72	56	56		21-27	87	73	73	72	56	56	
130 mph	21-27	79	64	57	60	55	48	130 mph	21-27	87	73	73	72	56	56	130 mph	21-27	87	73	73	72	56	56	
	28-45	76	69	61	60	55	48		28-45	82	78	65	65	60	49		28-45	82	78	65	65	60	49	
	8-20	64	51	48	51	41	38		21-27	82	66	66	65	52	52		21-27	82	66	66	65	52	52	
	21-27	74	58	51	60	45	41		28-45	75	72	58	60	54	44		28-45	75	72	58	60	54	44	
140 mph	28-45	69	64	56	54	50	44	140 mph	28-45	75	72	58	60	54	44	140 mph	28-45	75	72	58	60	54	44	
	8-20	59	48	43	48	39	34		21-27	77	61	61	60	48	48		21-27	77	61	61	60	48	48	
	21-27	69	53	48	56	42	38		28-45	72	65	53	55	49	41		28-45	72	65	53	55	49	41	
	28-45	64	60	51	50	48	41		21-27	72	57	57	55	44	44		21-27	72	57	57	55	44	44	
150 mph	21-27	64	49	44	48	44	39	150 mph	21-27	72	57	57	55	44	44	150 mph	21-27	72	57	57	55	44	44	
	28-45	60	55	48	48	44	39		28-45	65	60	49	51	45	39		28-45	65	60	49	51	45	39	
	8-20	53	43	39	43	34	28		21-27	69	54	54	53	43	43		21-27	69	54	54	53	43	43	
	21-27	64	48	43	50	38	32		28-45	64	58	48	49	44	37		28-45	64	58	48	49	44	37	
160 mph	28-45	58	54	48	45	42	38	160 mph	28-45	64	58	48	49	44	37	160 mph	28-45	64	58	48	49	44	37	
	8-20	52	42	38	42	32	26		21-27	66	53	53	52	42	42		21-27	66	53	53	52	42	42	
	21-27	60	48	41	49	37	30		28-45	61	56	45	48	43	35		28-45	61	56	45	48	43	35	
	28-45	56	51	45	43	41	37		21-27	66	53	53	52	42	42		21-27	66	53	53	52	42	42	
170 mph	21-27	60	48	41	49	37	30	170 mph	21-27	66	53	53	52	42	42	170 mph	21-27	66	53	53	52	42	42	
	28-45	56	51	45	43	41	37		28-45	61	56	45	48	43	35		28-45	61	56	45	48	43	35	
	8-20	55	44	40	44	36	30		21-27	69	54	54	53	43	43		21-27	69	54	54	53	43	43	
	21-27	64	49	44	52	40	33		28-45	65	60	49	51	45	39		28-45	65	60	49	51	45	39	
175 mph	28-45	60	55	48	48	44	39	175 mph	28-45	65	60	49	51	45	39	175 mph	28-45	65	60	49	51	45	39	
	8-20	53	43	39	43	34	28		21-27	69	54	54	53	43	43		21-27	69	54	54	53	43	43	
	21-27	64	48	43	50	38	32		28-45	64	58	48	49	44	37		28-45	64	58	48	49	44	37	
	28-45	58	54	48	45	42	38		21-27	69	54	54	53	43	43		21-27	69	54	54	53	43	43	
180 mph	21-27	64	48	43	50	38	32	180 mph	21-27	69	54	54	53	43	43	180 mph	21-27	69	54	54	53	43	43	
	28-45	58	54	48	45	42	38		28-45	64	58	48	49	44	37		28-45	64	58	48	49	44	37	
	8-20	52	42	38	42	32	26		21-27	66	53	53	52	42	42		21-27	66	53	53	52	42	42	
	21-27	60	48	41	49	37	30		28-45	61	56	45	48	43	35		28-45	61	56	45	48	43	35	
180 mph	28-45	56	51	45	43	41	37	180 mph	28-45	61	56	45	48	43	35	180 mph	28-45	61	56	45	48	43	35	
	8-20	55	44	40	44	36	30		21-27	69	54	54	53	43	43		21-27	69	54	54	53	43	43	
	21-27	64	49	44	52	40	33		28-45	65	60	49	51	45	39		28-45	65	60	49	51	45	39	
	28-45	60	55	48	48	44	39		21-27	69	54	54	53	43	43		21-27	69	54	54	53	43	43	

 = min 72" span = min 64" span = min 48" span
= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded.

REV 12/12/2019

 = min 72" span = min 64" span = min 48" span
= Shaded cel's indicate conditions in which UFO Mid Clamp connection capacity is exceeded.

REV 12/12/2019

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 45°		
	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 45°		
	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

MARSHALL GARNER

481 SOUTHWEST HORSE WAY LAKE CITY FLORIDA 32024
UNITED STATES

PROJECT ID: 8212024-481

CONTRACTOR: -

FLORIDA STATE ENERGY
6901 TPC DRIVE STE 650,
ORLANDO, FL 32822

(407) 718-9980

ENGINEER: CA33343


1646 W SNOW AVE 9 TAMPA,
FL 33606


Ryan S
Gittens
2024.08.21
19:41:24
-04'00'
RYAN GITTENS
PE90605

DATE	BY	VER	DESCRIPTION	D8 PAPER: ARCHB SCALE:
08.21.24	BF	1	INITIAL DESIGN	