

# GROUND MOUNT SYSTEM

## CODES:

THIS PROJECT COMPLIES WITH THE FOLLOWING:  
 2018 INTERNATIONAL BUILDING CODE (IBC)  
 2018 INTERNATIONAL RESIDENTIAL CODE (IRC)  
 2018 INTERNATIONAL MECHANICAL CODE (IMC)  
 2018 INTERNATIONAL PLUMBING CODE (IPC)  
 2018 INTERNATIONAL FUEL GAS CODE (IFGC)  
 2018 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)  
 2018 INTERNATIONAL EXISTING BUILDING CODE (IEBC)  
 2018 INTERNATIONAL SWIMMING POOL AND SPA CODE (ISPSA)  
 2017 NATIONAL ELECTRICAL CODE (NEC)  
 AS ADOPTED BY TOWN OF EASTON (CT)

## CONSTRUCTION NOTES:

CONDUIT AND CONDUCTOR SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.

ALL SOLAR ENERGY SYSTEM EQUIPMENT SHALL BE SCREENED TO THE MAXIMUM EXTENT POSSIBLE AND SHALL BE PAINTED A COLOR SIMILAR TO THE SURFACE UPON WHICH THEY ARE MOUNTED.

MODULES SHALL BE TESTED, LISTED AND IDENTIFIED WITH FIRE CLASSIFICATION IN ACCORDANCE WITH UL 2703. SMOKE AND CARBON MONOXIDE ALARMS ARE REQUIRED PER SECTION R314 AND 315 TO BE VERIFIED AND INSPECTED BY INSPECTOR IN THE FIELD.

DIG ALERT (811) TO BE CONTACTED AND COMPLIANCE WITH EXCAVATION SAFETY PRIOR TO ANY EXCAVATION TAKING PLACE

PHOTOVOLTAIC SYSTEM GROUND WILL BE TIED INTO EXISTING GROUND AT MAIN SERVICE FROM DC DISCONNECT/INVERTER AS PER 2017 NEC SEC 250.166(A).

SOLAR PHOTOVOLTAIC SYSTEM EQUIPMENT WILL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF ART. 690 OF THE 2017 NEC

UTILITY COMPANY WILL BE NOTIFIED PRIOR TO ACTIVATION OF THE SOLAR PV SYSTEM  
 TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION

## VICINITY MAP:



SITE LOCATION

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**CLIENT:**  
 JAMES WRIGHT  
 467 JUDD RD, EASTON, CT 06612  
 AHJ: TOWN OF EASTON (CT)  
 UTILITY: UI - UNITED ILLUMINATING COMPANY  
 METER: 11166545  
 APN: 010-0000148-1620  
 PHONE: (203) 395-1289

**SYSTEM:**  
 SYSTEM SIZE (DC): 38 X 420 = 15.960 kW  
 SYSTEM SIZE (AC): 11.400 kW @ 240V  
 MODULES: 38 X TESLA: T420S  
 OPTIMIZERS: 38 X SOLAREEDGE P505  
 INVERTER: SOLAREEDGE SE11400H-US [S11]

REVISIONS		
NO.	REVISED BY	DATE
-		-
-		-
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**FREEDOM FOREVER LLC**  
 "100 PEARL ST. 17TH FLOOR, MC-CSC1",  
 HARTFORD, CT 06103  
 Tel: (800) 385-1075

**GREG ALBRIGHT**

**CONTRACTOR LICENSE:**  
 HOME IMPROVEMENT CONTRACTOR  
 HIC.0658962; ELECTRICAL CONTRACTOR  
 ELC.0205093-E1

## SITE LOCATION

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F098327	11/10/2021	G.M.F.	PV-1





SITE PLAN  
SCALE: 1"=20'

1

ROCK WALL

ROCK WALL

(N) 38 TESLA: T420S

LEACH FIELD

(E) 22KW GENERAC GENERATOR

SEPTIC

(E) 2" PVC UNDER GROUND CONDUIT @  
18" BELOW GRADE ~125' (TRENCHED)

(N) VLD AC DISCONNECT EATON DG22NRB

(E) UTILITY METER

(E) MAIN SERVICE PANEL

DRIVEWAY

DRIVEWAY

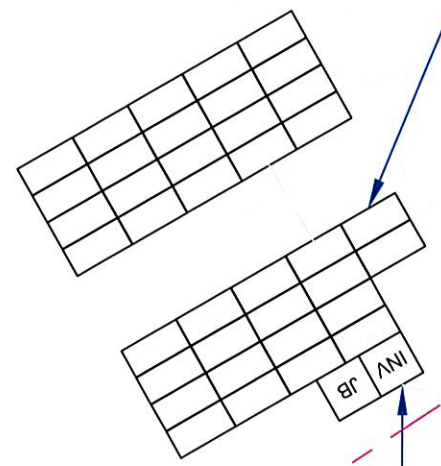
DRIVEWAY

JUDD RD

LEGEND:

INV	INVERTER
JB	JUNCTION BOX
MSP	MSP
AC	AC DISCONNECT
[Hatched Box]	SETBACK
---	CONDUIT
[Rectangle]	MODULES
○	PIPE VENT
[Square]	OBSTRUCTION

(N) SOLAREGE SE11400H-US [S11]  
INVERTER WITH RAPID SHUTDOWN



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ARRAY AREA: 980 SQ FT

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GREG ALBRIGHT

JOB NO: F098327  
DATE: 11/10/2021  
DESIGNED BY: G.M.F.  
SHEET: PV-2



**LEGEND:**

	OBSTRUCTION
	PIPE VENT
	MODULES
	CONDUIT
	SETBACK
	AC DISCONNECT
	MSP
	JUNCTION BOX
	INVERTER



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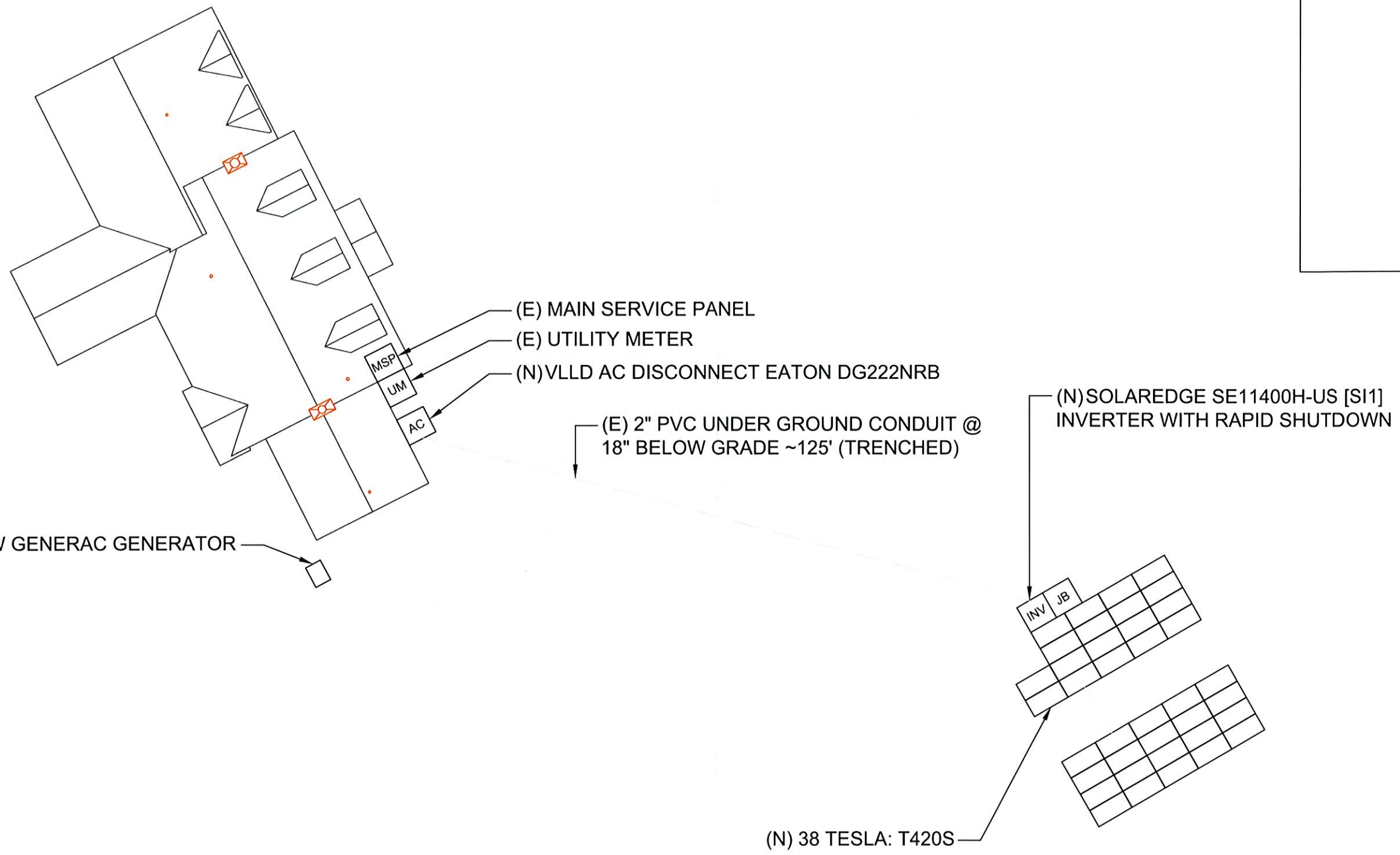
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ARRAY PLAN WITH MODULES LAYOUT

JOB NO: F098327	DATE: 11/10/2021	DESIGNED BY: G.M.F.	SHEET: PV-2AG
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**FLOOR PLAN**  
 SCALE: 1"=20'

1

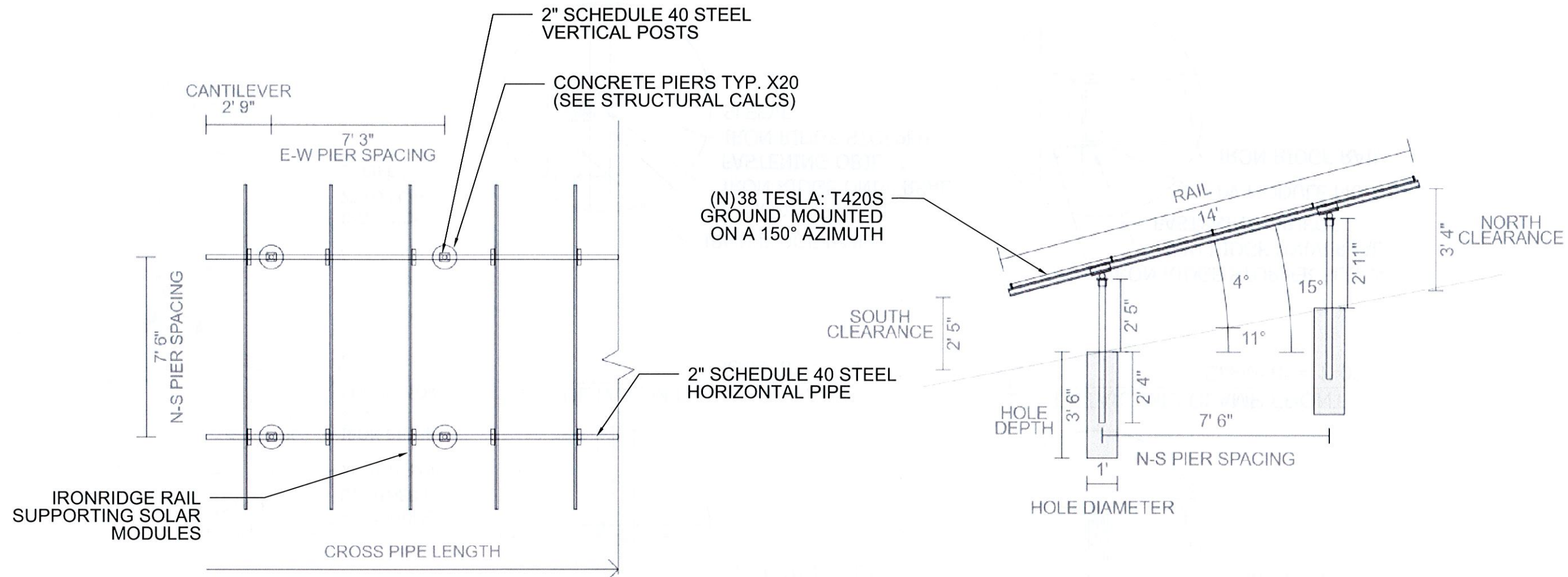
- NOTES:**
- EMT CONDUIT ATTACHED TO THE FRAME USING CONDUIT MOUNTS
  - ATTACHED CLAMPS AT 25% FROM THE EDGE AND 50% FROM THE CENTER OF THE MODULES
  - JUNCTION BOX IS MOUNTED TO THE RAIL.







GROUND MOUNT AREA STATEMENT				
ARRAY	MODULES	PITCH	AZIMUTH	ARRAY AREA
1	18	15°	150°	490.0000 SQ. FT.
2	20	15°	150°	490 SQ. FT.



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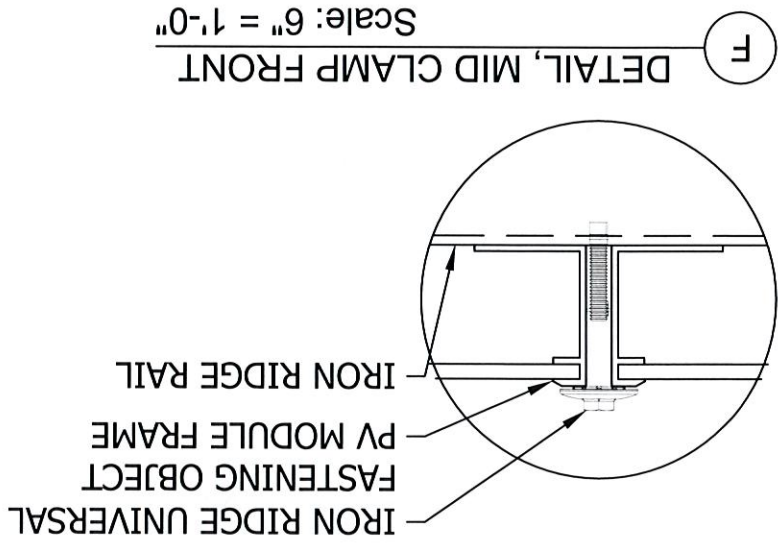
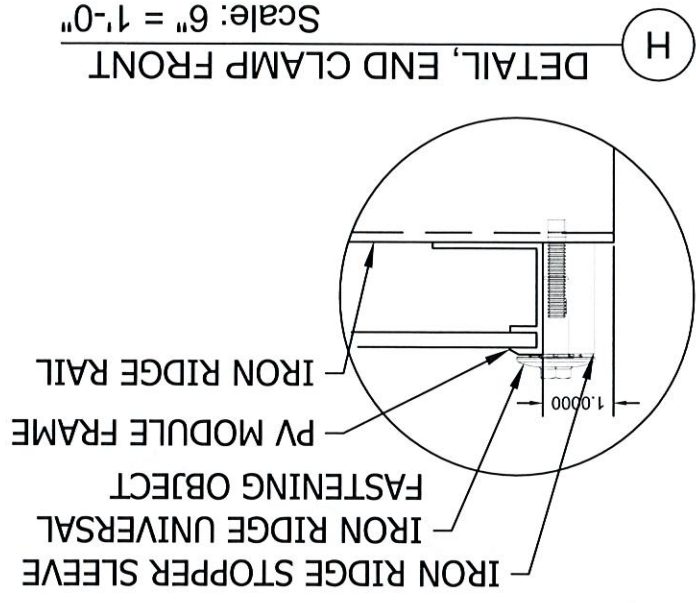
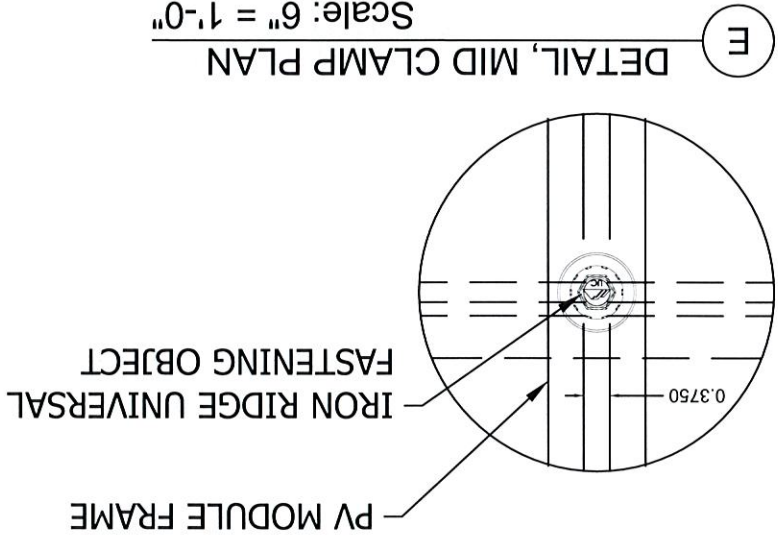
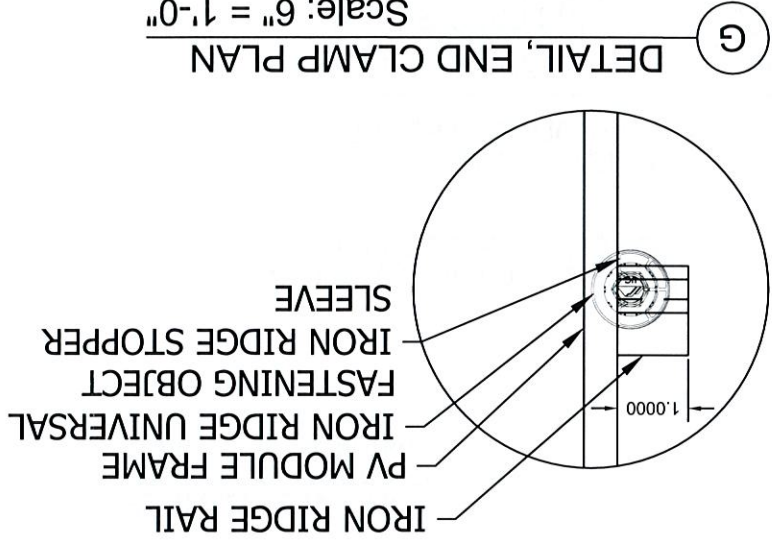
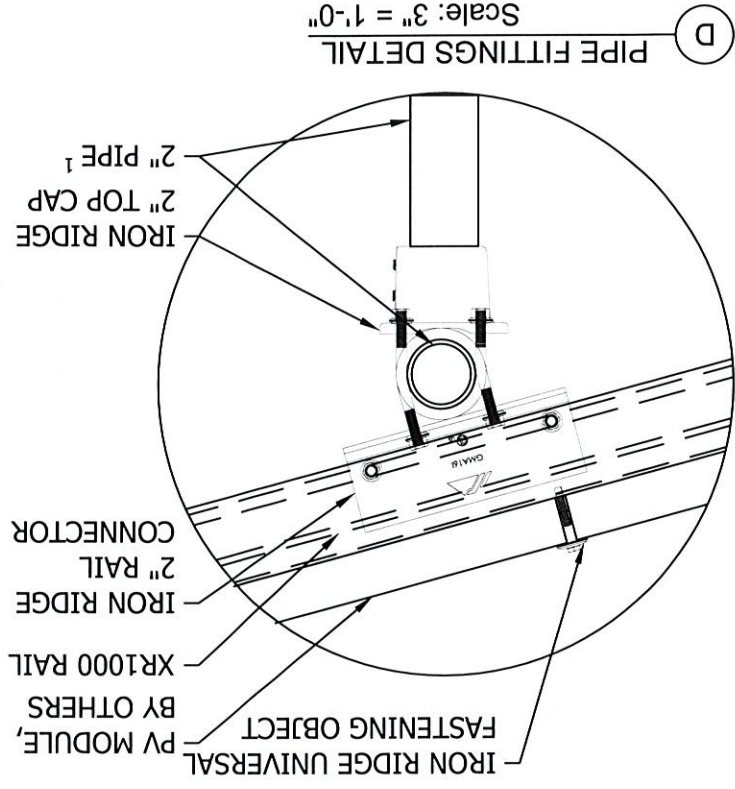
Rail type	Diagonal bracing	E/W spacing	Rail cantilever	Size	Edge clearances	Shear ①	Moment ①	Uplift ①
XR1000	no	7' 3"	3' 1"	34' 6" (EW) × 13' 11" (NS)	2' 5" (S); 3' 4" (N)	248 lbs	620 ft-lbs	-584 lbs
Rows	Columns	Repeats	Piers/repeat	Total South piers	Total North piers	Total cross pipes	Pipe cantilever	Total pipe length
4	5	1	10	5 (4' 9")	5 (5' 3")	2 (34' 6")	2' 9"	119' 1"

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 ELC.0205093-E1

**ARRAY #1 & ARRAY #2 HAVE THE SAME GROUND MOUNT CONFIGURATION**

GROUND MOUNT ATTACHMENT DETAILS			
JOB NO:	DATE:	DESIGNED BY:	SHEET:
F098327	11/10/2021	G.M.F.	PV-3G





JOB NO: F098327 11/10/2021 G.M.F. SHEET: PV-3AG  
DESIGNED BY: DATE: SHEET: PV-3AG

GROUND MOUNT ATTACHMENT DETAILS

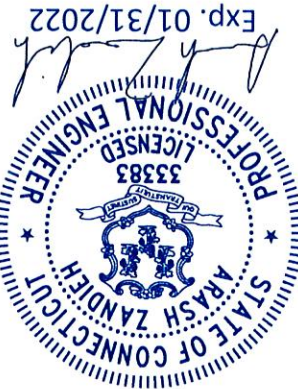
CONTRACTOR LICENSE:  
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ELC:0205093-E1

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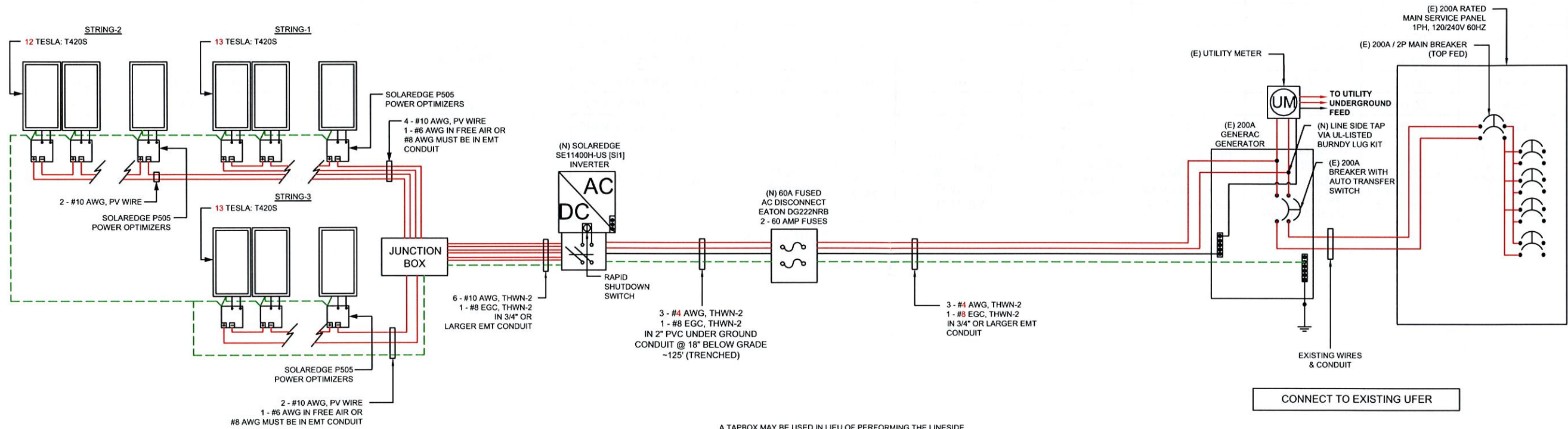
CLIENT: JAMES WRIGHT  
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INVERTER: SOLAREX SE11400H-US (S11)





**BACKFEED FUSE SIZING**  
 MAX. CONTINUOUS OUTPUT 47.50A @ 240V  
 47.50 X 1.25 = 59AMPS      60A FUSES - OK



A TAPBOX MAY BE USED IN LIEU OF PERFORMING THE LINESIDE TAP IN THE MAIN SERVICE PANEL. THIS IS DEPENDENT UPON SITE CONDITIONS.

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CONDUCTOR AMPACITY CALCULATIONS IN ACCORDANCE WITH NEC 690.8.

RACEWAY #	EQUIPMENT	WIRE LOCATION	CONDUCTOR QTY.	AVG WIRE SIZE	STARTING ALLOWABLE AMPACITY @ 90°C	TEMPERATURE CORRECTION FACTOR	ADJUSTMENT FACTOR FOR MORE THAN 3 CONDUCTORS	ADJUSTED CONDUCTOR AMPACITY @ 90°C	MAXIMUM CURRENT APPLIED TO CONDUCTORS IN RACEWAY
1	MODULE	GROUND MOUNT ARRAY	2	10	40	1	1	40.00	17.44
2	OPTIMIZER	JUNCTION BOX	2	10	40	1	1	40.00	18.75
3	JUNCTION BOX	GROUND MOUNT ARRAY	6	10	40	1	0.8	32.00	18.75
4	INVERTER	EXTERIOR WALL	3	4	75	1	1	75.00	59.38
5	AC DISCONNECT	EXTERIOR WALL	3	4	75	1	1	75.00	59.38

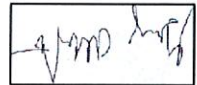
WIRE SCHEDULE

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REVISIONS

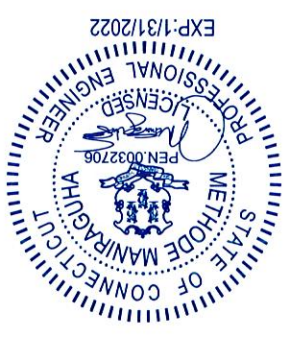
NO.	DATE	REVISED BY
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CONTRACTOR LICENSE:  
  
 GREG ALBRIGHI  
 Tel: (800) 385-1075  
 HARTFORD, CT 06103  
 100 PEARL ST, 17TH FLOOR, MC-CSC1,  
 FREEDOM FOREVER LLC  
 HARTFORD, CT 06103

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 ELC:0205093-E1

CONDUCTOR CALCULATIONS

JOB NO: 11/10/2021  
 DATE: 11/10/2021  
 DESIGNED BY: G.M.F.  
 SHEET: PV-5









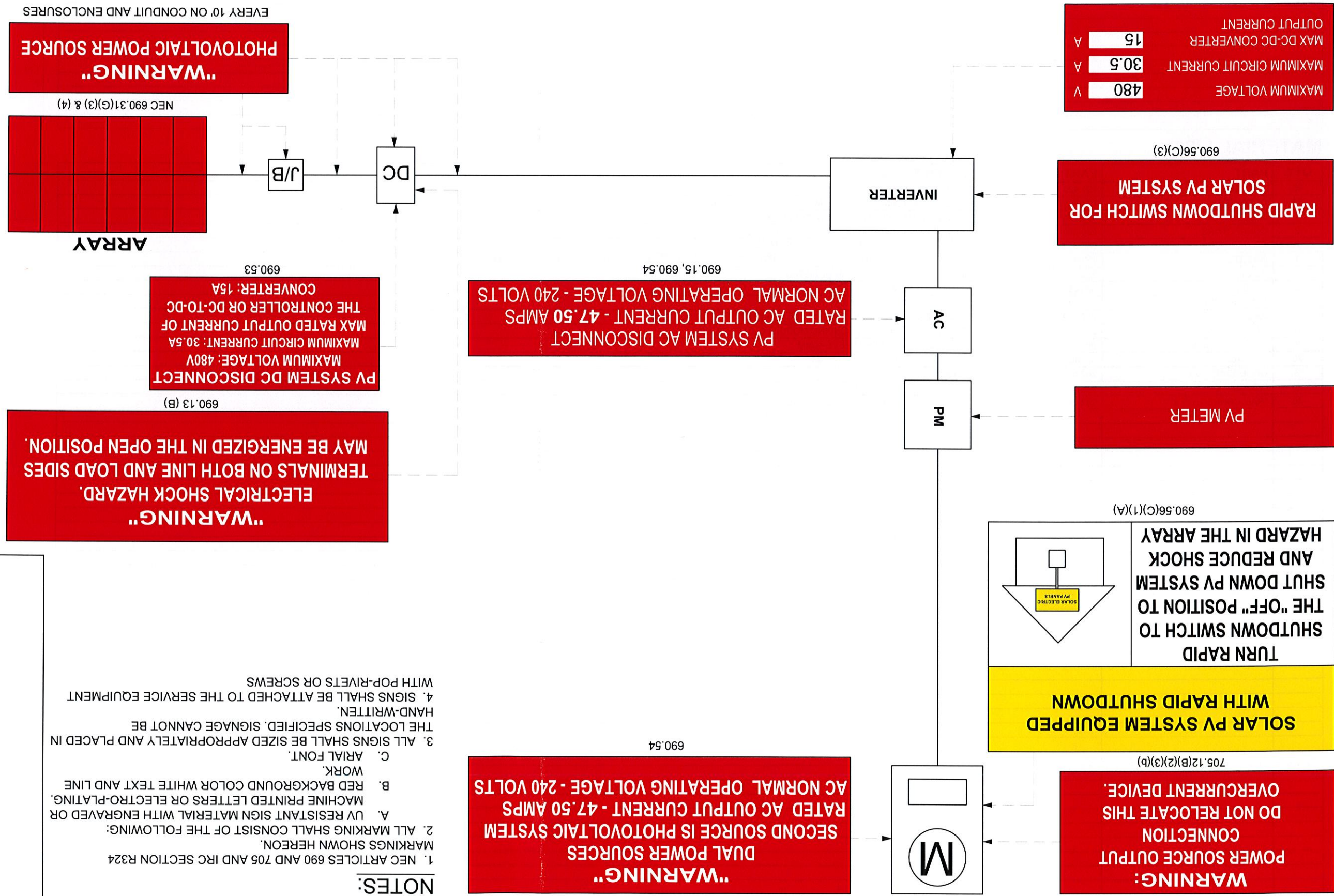
JOB NO: F098327 DATE: 11/10/2021 DESIGNED BY: G.M.F. SHEET: PV-7

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NO.	DATE	REVISIONS

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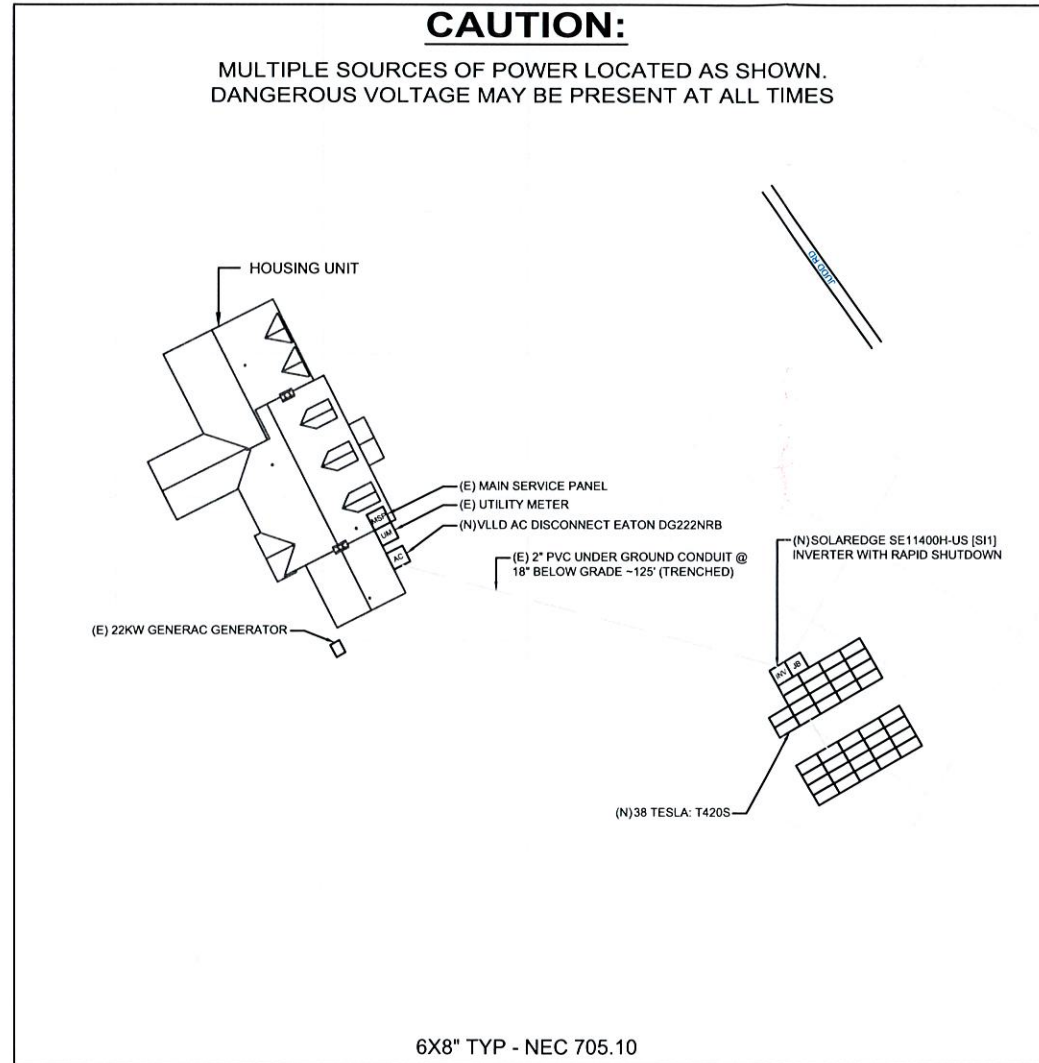
- NOTES:**
1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324 MARKINGS SHOWN HEREON.
  2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
    - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
    - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
    - C. SERIAL FONT.
  3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
  4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS





**CAUTION:**

MULTIPLE SOURCES OF POWER LOCATED AS SHOWN.  
DANGEROUS VOLTAGE MAY BE PRESENT AT ALL TIMES



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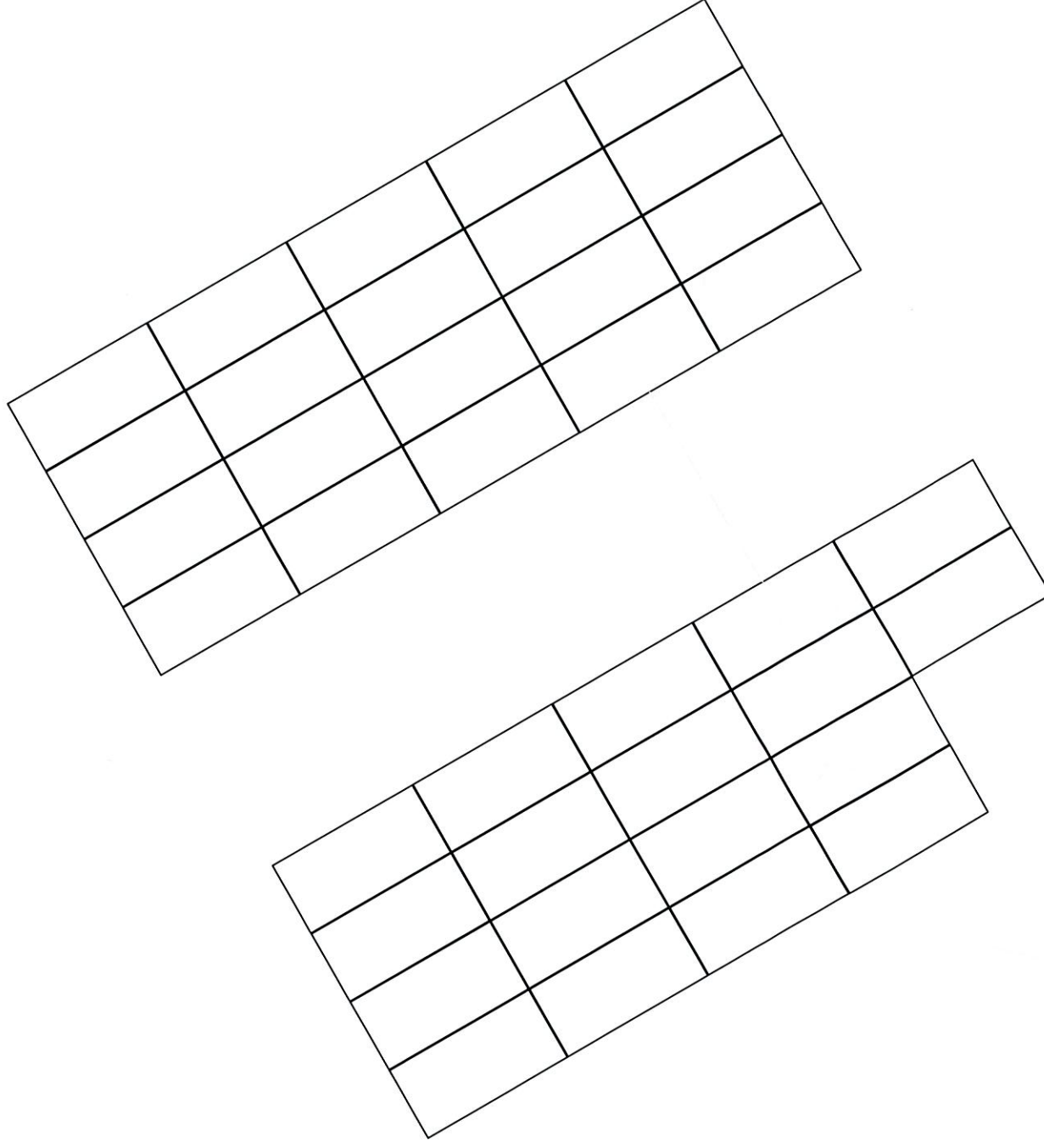
**SITE PLACARD**

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F098327	11/10/2021	G.M.F.	PV-7A

# SOLAREEDGE OPTIMIZER CHART

1-10										
11-20										
21-30										
31-40										
41-50										
51-60										

10  
9  
8  
7  
6  
5  
4  
3  
2  
1



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 ELC:0205093-E1

**OPTIMIZER CHART**

JOB NO: DATE: DESIGNED BY: SHEET: PV-8  
 F098327 11/10/2021



# SAFETY PLAN

## INSTRUCTIONS:

1. USE SYMBOLS IN KEY TO MARK UP THIS SHEET.
2. SAFETY PLAN MUST BE MARKED BEFORE JOB STARTS AS PART OF THE PRE-PLAN
3. DOCUMENT ALL ADDITIONAL HAZARDS ON THIS PAGE & MAKE NOTES ON THE JHA SHEET

## IN CASE OF EMERGENCY

NEAREST HOSPITAL OR OCCUPATIONAL/INDUSTRIAL CLINIC

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

### SAFETY COACH CONTACT INFORMATION

NAME: \_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_

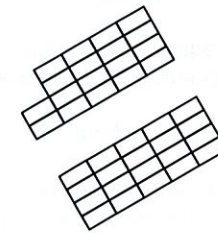
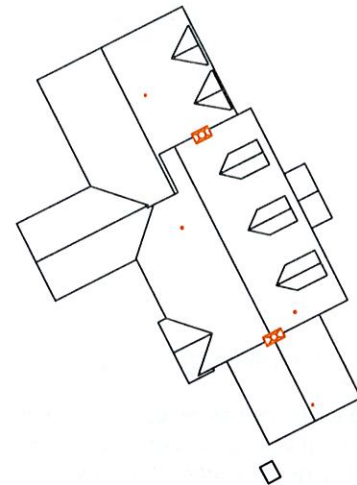
ALL EMPLOYEES ON SITE SHALL BE MADE AWARE OF THE SAFETY PLAN AND SIGN INDICATING THAT THEY ARE AWARE OF THE HAZARDS ON-SITE AND THE PLAN FOR WORKING SAFELY.

NAME














SIGNATURE

_____	_____
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_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_



# MARK UP KEY

-  PERMANENT ANCHOR
-  TEMPORARY ANCHOR
-  INSTALLER LADDER
-  JUNCTION / COMBINER BOX
-  STUB-OUT
-  SKYLIGHT
-  NO LADDER ACCESS (STEEP GRADE OR GROUND LEVEL OBSTRUCTIONS)
-  RESTRICTED ACCESS
-  CONDUIT
-  GAS SHUT OFF
-  WATER SHUT OFF
-  SERVICE DROP
-  POWER LINES

**CLIENT:**  
 JAMES WRIGHT  
 467 JUDD RD, EASTON, CT 06612  
 AHJ: TOWN OF EASTON (CT)  
 UTILITY: UI - UNITED ILLUMINATING COMPANY  
 METER: 11166545  
 APN: 010-0000148-1620  
 PHONE: (203) 395-1289

**SYSTEM:**  
 SYSTEM SIZE (DC): 38 X 420 = 15.960 kW  
 SYSTEM SIZE (AC): 11.400 kW @ 240V  
 MODULES: 38 X TESLA: T420S  
 OPTIMIZERS: 38 X SOLAREEDGE P505  
 INVERTER: SOLAREEDGE SE11400H-US [S11]

REVISIONS		
NO.	REVISED BY	DATE
-	-	-
-	-	-
-	-	-



FREEDOM FOREVER LLC  
 "100 PEARL ST. 17TH FLOOR, MC-CSC1",  
 HARTFORD, CT 06103  
 Tel: (800) 385-1075

GREG ALBRIGHT

**CONTRACTOR LICENSE:**  
 HOME IMPROVEMENT CONTRACTOR  
 HIC.0658962; ELECTRICAL CONTRACTOR  
 ELC.0205093-E1

SAFETY PLAN			
JOB NO:	DATE:	DESIGNED BY:	SHEET:
F098327	11/10/2021	G.M.F.	PV-9



# JOB HAZARD ANALYSIS

Crew leader to fill out all sections below, hold a pre-job safety meeting with all personnel, and upload this completed document and the Safety Plan to Site Capture

**NOTE ADDITIONAL HAZARDS NOT ADDRESSED ABOVE**  
(add as many as necessary by using additional sheets)

Define the Hazard:	Method/steps to prevent incident:
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- Employees shall have access to potable drinking water that is fresh, pure, and suitably cool. The water shall be located as close as practicable to the areas where employees are working. Water shall be supplied in sufficient quantity at the beginning of the work shift to provide at least one quart per employee per hour for drinking for the entire shift. Employees may begin the shift with smaller quantities of water if they identify the location and have effective means for replenishment during the shift to allow employees to drink on quart or more per hour. The shade shall be present when temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work exceeds 80 degrees Fahrenheit, employees shall have and maintain one or more areas with shade at all times. New employees must be acclimatized. New employees will be monitored by their Crew Leader (site supervisor) for the first two (2) weeks of employment or longer when necessary. Employees will be allowed and encouraged to implement scheduled breaks during each shift. Employees must take cool-down breaks in the shade any time they feel the need to do so to protect them from overheating. Supervisors are REQUIRED to allow employees any break period they need during high heat conditions. Cool Vests are encouraged for all employees at all times during periods of high heat. Identify the location of the closet Occupational/Industrial Clinic or Hospital in case a crew member becomes ill.

What is the specific plan to provide and replenish sufficient water for all employees on site?  
 • If offsite replenish is necessary, where will you go to replenish water (location/address):  
 • Who will replenish the drinking water (name):

Restroom facilities  
 • Employees shall have access to restroom facilities with hand-washing stations. Use of onsite restroom is at the client's discretion (location is annotated below). If client does not give permission, location of suitable restroom facilities with hand-washing stations offsite will be provided. The onsite supervisor will identify location and make arrangements to ensure all employees have access at any point.  
 • Restroom facilities will be (circle one): Onsite - Offsite  
 • If Offsite, add location name and address:

Weather and Environment  
 • The site supervisor shall forecast the weather conditions at the job site, prior to crew arrival, in order to mitigate any hazards associated with inclement weather (heat, cold, wind, rain, etc.)  
 • The site supervisor will utilize a portable wind meter (anemometer) to verify actual onsite wind conditions, by checking at the ground and on any elevated work surface (ex, rooftop) prior to work start, at midday and prior to solar panel staging on a roof.  
 • Elevated work involving the moving or maneuvering of solar panels shall cease at 25mph (sustained wind) until wind subsides.  
 • Forecasted weather maximum temp (degrees f):

Incident Reporting Procedure  
 • Contact your Site Supervisor  
 Name:  
 Phone:  
 • Contact your Manager  
 Name:  
 Phone:  
 • Contact your Site Supervisor  
 Name:  
 Phone:

With: Your full name, phone number, office location, brief description of what happen and when.  
 Phone:  
 Name:  
 • Contact your Site Supervisor  
 Name:  
 Phone:  
 • Contact your Manager  
 Name:  
 Phone:  
 • Contact your Site Supervisor  
 Name:  
 Phone:

- Crew leader responsible for communication with the client:
- Client and public is excluded from work area by barricades (N/A, Yes, No):

Training and Pre-Job Safety Briefing  
 • All employees onsite shall be made aware of the specific hazards of this project and review this HJA during a pre-job briefing, and their signature indicates awareness of site conditions and the plan to eliminate any hazards identified prior to and during the project.

- Crew leader (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):

Airborne Contaminants:  
 • Asbestos-containing (Transite) piping (ACP) - Do not disturb (move, drill, cut fracture, etc.)  
 • Asbestos-containing thermal insulation (ACI) and Asbestos-containing duct wrapping (ACV) - do not disturb, no attic or crawlspace access is allowed if work to be performed could cause exposure to personnel, client or public.

If yes, list specific tasks and protection in place:  
 • The Electrical Qualified Person (EQP) is required onsite to perform electrical work.  
 • All electrical work will be performed with equipment in an electrically safe condition (de-energized) unless approval has been granted prior to work.  
 • Service drops and overhead electrical hazards will be identified and protected from contact, as necessary.  
 • EQP (name and title):

Public Protection  
 • The safety of the Client and Public must be maintained at all times.  
 • The Client and the Public shall be prevented from entering the work zone through the use of barriers and/or signage, as required.  
 • Company, Client and Public property shall be protected from falling objects.  
 • Pets (including dogs) shall be secured by their owners prior to work start.  
 • The Client should not leave pets, family members, or others in charge or care of Employees, Contractors, or Temporary Workers.

- Ladders must be inspected before each use.
- Extension ladders must be set up on a firm and level surface at a 4-to-1 rise to run angle (or 75 degrees) and the top must be secured to the structure. Extension style ladders placed on uneven, loose or slippery surfaces must additionally have the base firmly anchored or lashed so the base will not slip out.
- Extension ladders must be used with walk-through devices or the ladder must extend 36" above the stepping off point.
- A-frame ladders must only be climbed with the ladder spreader bars locked in the open position; A-frame ladders shall not be climbed while in the closed position (ex, closed and used while leaned against a structure).

Mobile Equipment  
 • Only Qualified operators will operate equipment; operators must maintain a certification on their person for the equipment being operated.  
 • Type(s) of mobile equipment (Type/Make/Model):  
 • Qualified operator(s):

Material Handling and Storage  
 • Materials will be staged/stored in a way that does not present a hazard to client, personnel or public. Materials stored on the roof will be physically protect from falling or sliding off.  
 • A site-specific plan for fall prevention and protection is required prior to starting work and must remain onsite at all times until work is complete; a fall rescue plan must be outlined and discussed among the crew prior to work start.  
 • First-person-Up (FPU) must install their anchor and connect before any other task, including installing other anchors. The Last-Person-Down (LPD) must be the only person on a roof uninstalling fall protection.  
 • FPCP (name and title):  
 • FPU and LPD (name and title):

Electrical Safety  
 • The Electrical Qualified Person (EQP) is required onsite to perform electrical work.  
 • All electrical work will be performed with equipment in an electrically safe condition (de-energized) unless approval has been granted prior to work.  
 • Service drops and overhead electrical hazards will be identified and protected from contact, as necessary.  
 • EQP (name and title):

Fall Protection  
 • A site-specific plan for fall prevention and protection is required prior to starting work and must remain onsite at all times until work is complete; a fall rescue plan must be outlined and discussed among the crew prior to work start.  
 • First-person-Up (FPU) must install their anchor and connect before any other task, including installing other anchors. The Last-Person-Down (LPD) must be the only person on a roof uninstalling fall protection.  
 • FPCP (name and title):  
 • FPU and LPD (name and title):

Electrical Safety  
 • The Electrical Qualified Person (EQP) is required onsite to perform electrical work.  
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 HARTFORD, CT 06103

HOME IMPROVEMENT CONTRACTOR  
 HIC.0658962; ELECTRICAL CONTRACTOR  
 ELC.0205093-E1

SAFETY PLAN

JOB NO: F098327  
 DATE: 11/10/2021  
 DESIGNED BY: G.M.F.  
 SHEET: PV-10





# Tesla Photovoltaic Module

T420S, T425S, and T430S

## Maximum Power

The Tesla module is one of the most powerful residential photovoltaic modules available. Our system requires up to 20 percent fewer modules to achieve the same power as a standard system. The module boasts a high conversion efficiency and a half-cell architecture that improves shade tolerance.

## Beautiful Solar

Featuring our proprietary Zep Groove design, the all-black module connects easily with Tesla ZS components to keep panels close to your roof and close to each other for a blended aesthetic with simple drop-in and precision quarter-turn connections.

## Reliability

Tesla modules are subject to automotive-grade engineering scrutiny and quality assurance, far exceeding industry standards. Modules are certified to IEC / UL 61730 - 1, IEC / UL 61730 - 2 and IEC / UL 61215.



## Module Specifications

### Electrical Characteristics

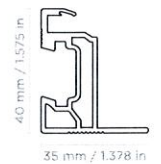
Power Class	T420S		T425S		T430S	
	STC	NOCT	STC	NOCT	STC	NOCT
Test Method	STC	NOCT	STC	NOCT	STC	NOCT
Max Power, $P_{max}$ (W)	420	313.7	425	317.4	430	321.1
Open Circuit Voltage, $V_{oc}$ (V)	48.5	45.47	48.65	45.61	48.8	45.75
Short Circuit Current, $I_{sc}$ (A)	11.16	9.02	11.24	9.09	11.32	9.15
Max Power Voltage, $V_{mp}$ (V)	40.90	38.08	41.05	38.22	41.20	38.36
Max Power Current, $I_{mp}$ (A)	10.27	8.24	10.36	8.3	10.44	8.37
Module Efficiency (%)	19.3		19.6		19.8	
STC	1000 W/m <sup>2</sup> , 25°C, AM1.5					
NOCT	800 W/m <sup>2</sup> , 20°C, AM1.5, wind speed 1m/s					

### Temperature Rating (STC)

Temperature Coefficient of $I_{sc}$	+0.040% / °C
Temperature Coefficient of $V_{oc}$	-0.260% / °C
Temperature Coefficient of $P_{max}$ (W)	-0.331% / °C

### Mechanical Loading

Front Side Design Load	3600 Pa   75 lb/ft <sup>2</sup>
Rear Side Design Load	1600 Pa   33 lb/ft <sup>2</sup>
Hailstone Test	25 mm Hailstone at 23 m/s



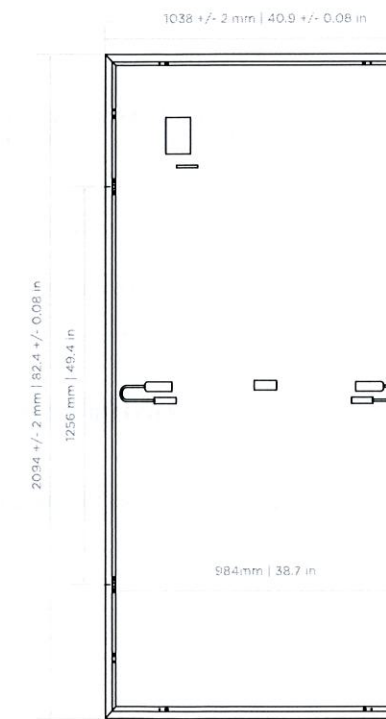
### Mechanical Parameters

Cell Orientation	144 (6 x 24)
Junction Box	IP68, 3 diodes
Cable	4 mm <sup>2</sup>   12 AWG, 1400 mm   55.1 in. Length
Connector	Staubli MC4 or EVO2
Glass	3.2 mm ARC Glass
Frame	Black Anodized Aluminum Alloy
Weight	25.3 kg   55.8 lb
Dimension	2094 mm x 1038 mm x 40 mm 82.4 in x 40.9 in x 1.57 in

### Operation Parameters

Operational Temperature	-40°C - +85°C
Power Output Tolerance	-0 / +5 W
$V_{oc}$ & $I_{sc}$ Tolerance	+/- 3%
Max System Voltage	DC 1000 V (IEC/UL)
Max Series Fuse Rating	20 A
NOCT	45.7 +/- 2°C
Safety Class	Class II
Fire Rating	UL Type 1 or 2

40 +/- 0.5 mm  
1.57 +/- 0.020 in

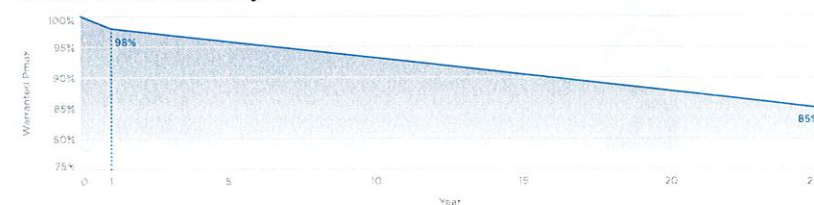


## Limited Warranty

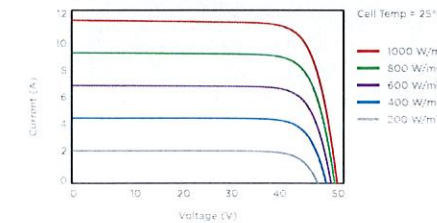
Materials and Processing	25 years
Extra Linear Power Output	25 years

The maximum  $P_{max}$  degradation is 2% in the 1st year and 0.54% annually from the 2nd to 25th year.

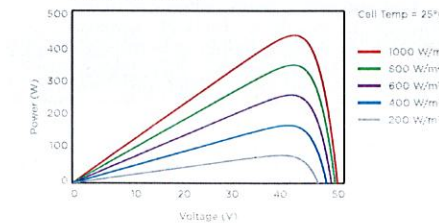
## Linear Power Warranty



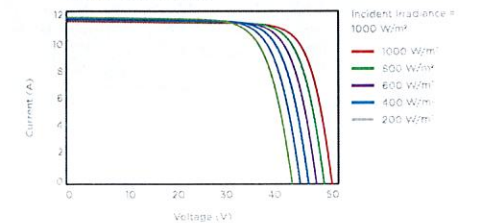
### Current vs. Voltage



### Power vs. Voltage



### Current vs. Voltage





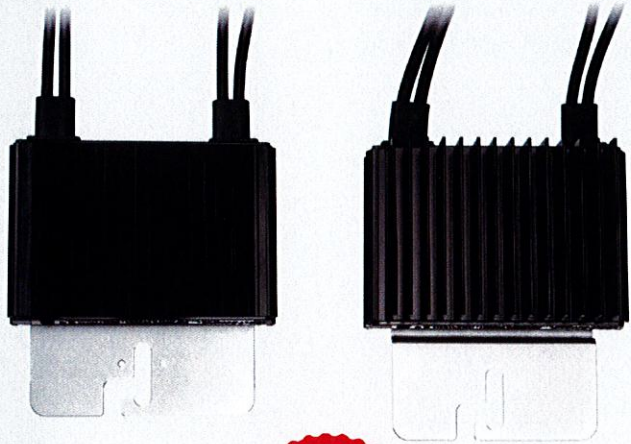
# / Power Optimizer

P370 / P401 / P404 / P485 / P500 / P505 / P601

OPTIMIZER MODEL	(typical module compatibility)	INPUT
P370	Cell (60&70)	(modules) (modules)
P401	Cell (60&70 and 72 cell)	(modules) (modules) (short strings)
P404	(for 60-cell)	(modules)
P485	(for high voltage)	(modules)
P500	(for 96-cell)	(modules)
P505	(for higher current)	(modules)
P601	(for 1 x high power PV module)	(module)

# Power Optimizer

P370 / P401 / P404 / P485 / P500 / P505 / P601



# POWER OPTIMIZER

## PV power optimization at the module level

- Specifically designed to work with SolarEdge inverters / Superior efficiency (99.5%)
- Up to 25% more energy
- Flexible system design for maximum space utilization
- Module-level voltage shutdown for installer and firefighter safety
- Mitigates all types of modules mismatch-loss, from manufacturing tolerance to partial shading

Fast installation with a single bolt

Rated Input DC Power <sup>(1)</sup>		370	400	405	485	500	505	600	W	
Absolute Maximum Input Voltage (Voc at lowest temperature)		60	80	125	80	80	83	65	Vdc	
MPPT Operating Range		8 - 60	12.5 - 80	12.5 - 105	8 - 80	12.5-83	12.5-83	12.5 - 65	Vdc	
Maximum Short Circuit Current (Isc)		11	12.5	11	10.1	14			Adc	
Maximum Efficiency		99.5								%
Weighted efficiency		98.8								%
Overvoltage Category		II								
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREGE INVERTER)										
Maximum Output Current		15								Adc
Maximum Output Voltage		60	80	80	60	80	80		Vdc	
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREGE INVERTER OR SOLAREGE INVERTER OFF)										
Safety Output Voltage per Power Optimizer		1 ± 0.1								Vdc
<b>STANDARD COMPLIANCE</b>										
EMC		FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3								
Safety		IEC62109-1 (class II safety), UL1741								
RoHS		Yes								
Fire Safety		VDE-AR-E 2100-712:2013-05								
<b>INSTALLATION SPECIFICATIONS</b>										
Maximum Allowed System Voltage		1000								
Dimensions (W x L x H)		129 x 153 x 27.5	129 x 153 x 29.5	129 x 153 x 42.5	129 x 159 x 49.5	129 x 153 x 33.5	129 x 162 x 59	129 x 153 x 52	Vdc	
Weight (including cables)		655 / 1.5	775 / 1.7	845 / 1.9	750 / 1.7	1064 / 2.3			gr / lb	
Input Connector		MC4 <sup>(2)</sup>		Single or Dual MC4 <sup>(2)(3)</sup>		MC4 <sup>(2)</sup>				
Input Wire Length		0.16 / 0.52, 0.9 / 2.95								m / ft
Output Connector		MC4								
Output Wire Length		1.2 / 3.9								m / ft
Operating Temperature Range <sup>(4)</sup>		-40 to +85 / -40 to +185								C / F
Protection Rating		IP68								
Relative Humidity		0 - 100								%

## PV System Design Using a SolarEdge Inverter<sup>(5)</sup>

Minimum String Length (Power Optimizers)	370, P401, P500 <sup>(6)</sup>	P404, P485, P505, P601
Single Phase	8	6
Single Phase HD-WAVE	16	14 (13 with SE3K <sup>(7)</sup> )
Three Phase	18	14
Three Phase for 277/480V Grid	18	14
Maximum Nominal Power per String <sup>(8)</sup>	5700	5250
Parallel Strings of Different Lengths or Orientations	Yes	

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.  
 (2) For other connector types please contact SolarEdge.  
 (3) For dual version for parallel connection of two modules use the P485. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module is supported. When connection a single module, seal the unused input connectors using the supplied pair of seals.  
 (4) For ambient temperature above +70°C / +158°F power derating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details.  
 (5) PV System Design Using a SolarEdge Inverter<sup>(5)</sup> is not allowed to mix P404/P485/P505/P601 with P370/P401/P500 in one string.  
 (6) The P370/P401/P500 cannot be used with the SE3K three phase inverter (available in some countries; refer to the three phase inverter SE3K-SEC10K datasheet).  
 (7) Exactly 10 when using SE3K-RW0108NNA.  
 (8) If the inverters rated AC power ≤ maximum nominal power per string, then the maximum power per string will be able to reach up to the inverters maximum input DC power. Refer to: <https://www.solaredge.com/sites/default/files/se-power-optimizer-single-string-design-application-note.pdf>  
 (9) For the 230/400V grid: it is allowed to install up to 13,500W per string when the maximum power difference between each string is 2,000W.  
 (10) For the 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W.



# Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US



12-25  
YEAR  
WARRANTY

INVERTERS

## Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Extremely small
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

[solaredge.com](http://solaredge.com)



## Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US		
<b>OUTPUT</b>									
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA	
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA	
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac	
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac	
AC Frequency (Nominal)	59.3 - 60 - 60.5 <sup>(1)</sup>							Hz	
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A	
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A	
GFDI Threshold	1							A	
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes								
<b>INPUT</b>									
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W	
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W	
Transformer-less, Ungrounded	Yes								
Maximum Input Voltage	480							Vdc	
Nominal DC Input Voltage	380					400		Vdc	
Maximum Input Current @240V <sup>(2)</sup>	8.5	10.5	13.5	16.5	20	27	30.5	Adc	
Maximum Input Current @208V <sup>(2)</sup>	-	9	-	13.5	-	-	27	Adc	
Max. Input Short Circuit Current	45							Adc	
Reverse-Polarity Protection	Yes								
Ground-Fault Isolation Detection	600k $\Omega$ Sensitivity								
Maximum Inverter Efficiency	99	99.2						%	
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%	
Nighttime Power Consumption	< 2.5							W	
<b>ADDITIONAL FEATURES</b>									
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)								
Revenue Grade Data, ANSI C12.20	Optional <sup>(3)</sup>								
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect								
<b>STANDARD COMPLIANCE</b>									
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCEI according to T.I.L. M-07								
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (H)								
Emissions	FCC Part 15 Class B								
<b>INSTALLATION SPECIFICATIONS</b>									
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG				1" Maximum / 14-4 AWG				
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG				1" Maximum / 1-3 strings / 14-6 AWG				
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174				21.3 x 14.6 x 7.3 / 540 x 370 x 185				in / mm
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9	38.8 / 17.6				lb / kg	
Noise	< 25							<50	dBA
Cooling	Natural Convection								
Operating Temperature Range	-13 to +140 / -25 to +60 <sup>(4)</sup> (-40°F / -40°C option) <sup>(5)</sup>							°F / °C	
Protection Rating	NEMA 4X (Inverter with Safety Switch)								

<sup>(1)</sup> For other regional settings please contact SolarEdge support

<sup>(2)</sup> A higher current source may be used, the inverter will limit its input current to the values stated

<sup>(3)</sup> Revenue grade inverter P/N: SExxxxH-US000NNC2

<sup>(4)</sup> For power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>

<sup>(5)</sup> -40 version P/N: SExxxxH-US000NNU4



## Eaton general duty cartridge fuse safety switch

DG222NRB

UPC:782113144221

### Dimensions:

- Height: 14.37 IN
- Length: 7.35 IN
- Width: 8.4 IN

Weight:10 LB

**Notes:**Maximum hp ratings apply only when dual element fuses are used. 3-Phase hp rating shown is a grounded B phase rating, UL listed.

### Warranties:

- Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

### Specifications:

- Type: General duty, cartridge fused
- Amperage Rating: 60A
- Enclosure: NEMA 3R
- Enclosure Material: Painted galvanized steel
- Fuse Class Provision: Class H fuses
- Fuse Configuration: Fusible with neutral
- Number Of Poles: Two-pole
- Number Of Wires: Three-wire
- Product Category: General duty safety switch
- Voltage Rating: 240V

### Supporting documents:

- Eatons Volume 2-Commercial Distribution
- Eaton Specification Sheet - DG222NRB

### Certifications:

- UL Listed

Product compliance: No Data



[pe.eaton.com](http://pe.eaton.com)



# Ground Mount System



## Mount on all terrains, in no time.

The IronRidge Ground Mount System combines our XR1000 rails with locally-sourced steel pipes or mechanical tubing, to create a cost-effective structure capable of handling any site or terrain challenge.

Installation is simple with only a few structural components and no drilling, welding, or heavy machinery required. In addition, the system works with a variety of foundation options, including concrete piers and driven piles.



### Rugged Construction

Engineered steel and aluminum components ensure durability.



### PE Certified

Pre-stamped engineering letters available in most states.



### UL 2703 Listed System

Meets newest effective UL 2703 standard.



### Design Software

Online tool generates engineering values and bill of materials.



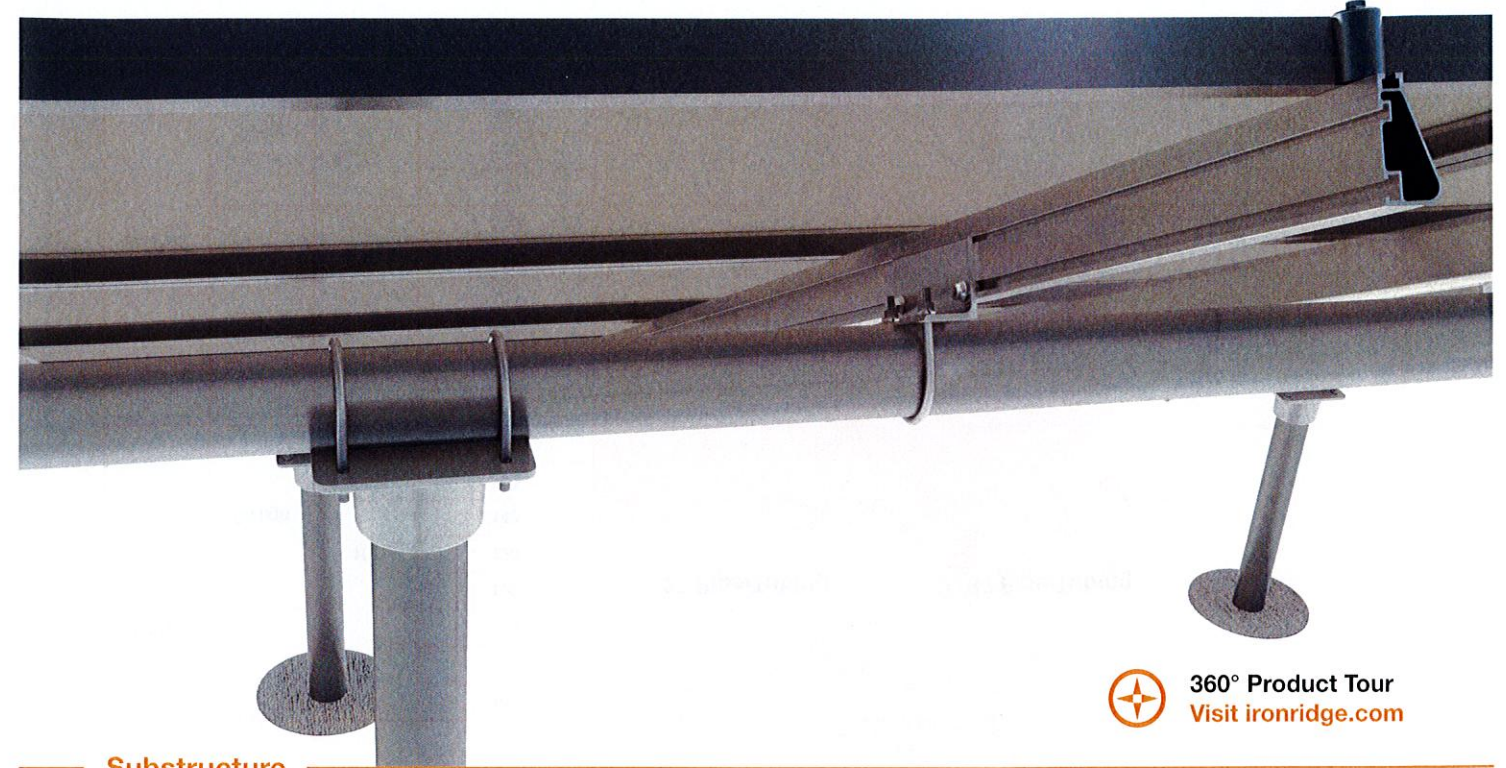
### Flexible Architecture

Multiple foundation and array configuration options.



### 25-Year Warranty

Products guaranteed to be free of impairing defects.



360° Product Tour  
Visit [ironridge.com](http://ironridge.com)

## Substructure

### Top Caps



Connect vertical and cross pipes.

### Bonded Rail Connectors



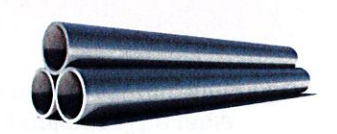
Attach and bond Rail Assembly to cross pipes.

### Diagonal Braces



Optional Brace provides additional support.

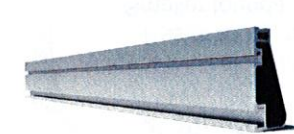
### Cross Pipe & Piers



Steel pipes or mechanical tubing for substructure.

## Rail Assembly

### XR1000 Rails



Curved rails increase spanning capabilities.

### UFOs



Universal Fastening Objects bond modules to rails.

### Stopper Sleeves



Snap onto the UFO to turn into a bonded end clamp.

### CAMO



Bond modules to rails while staying completely hidden.

## Resources



### Design Assistant

Go from rough layout to fully engineered system. For free.  
Go to [ironridge.com/design](http://ironridge.com/design)



### NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems.  
Go to [ironridge.com/training](http://ironridge.com/training)

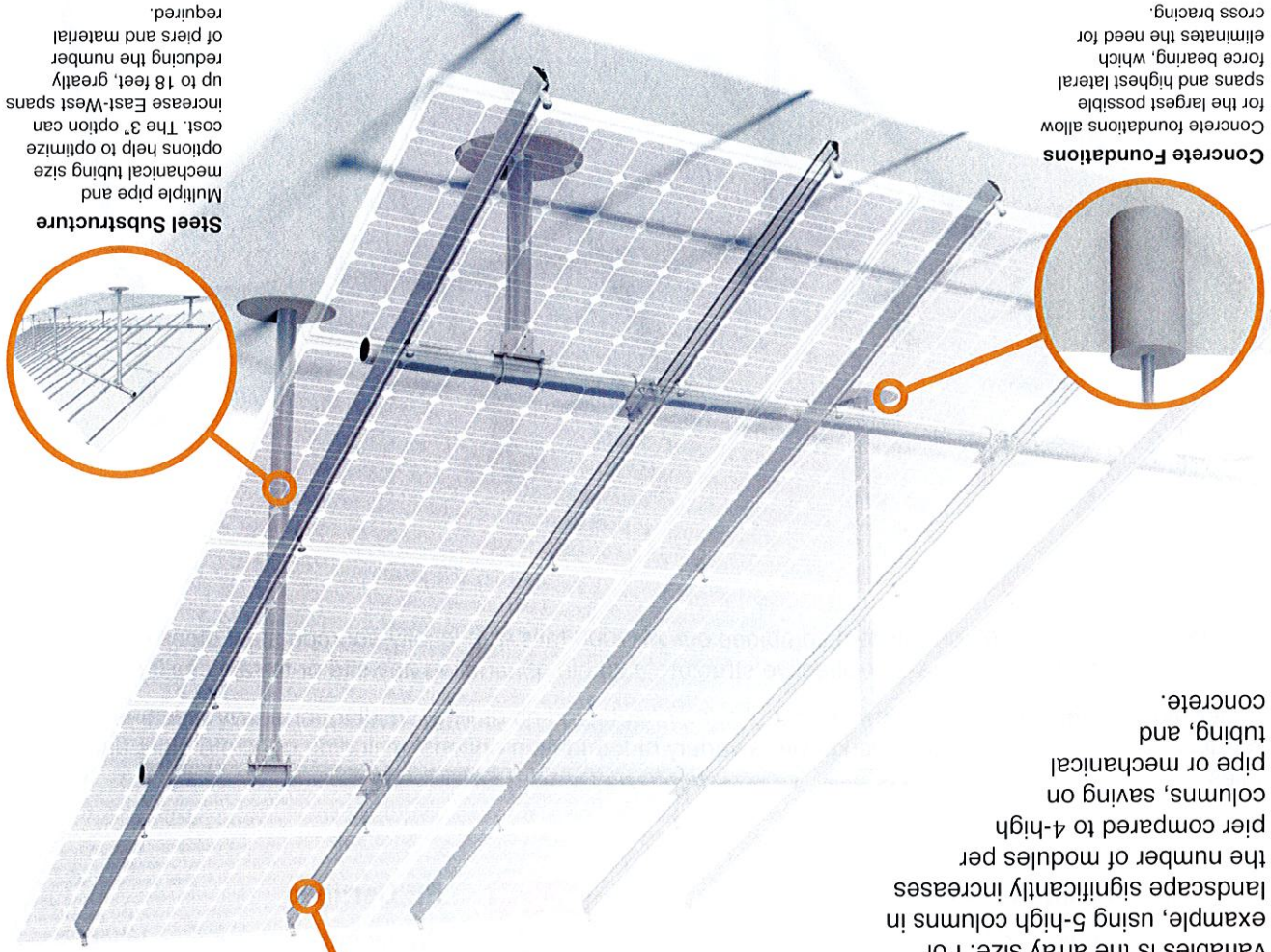


## Strength Meets Flexibility

The IronRidge Ground Mount System supports a wide adjustment of tilt angle, foundation size and depth, and module size. These variables can be quickly optimized for cost and performance using the online Design Assistant tool.

One of the most critical engineering variables is the array size. For example, using 5-high columns in landscape significantly increases the number of modules per pier compared to 4-high columns, saving on pipe or mechanical tubing, and concrete.

**XR1000 Rail**  
The curved shape of XR1000 increases vertical and lateral strength, while also resisting bending and twisting. Modules are attached using familiar top-down clamps or under clamps.



**Concrete Foundations**  
Concrete foundations allow for the largest possible spans and highest lateral force bearing, which eliminates the need for cross bracing.

**Steel Substructure**  
Multiple pipe and mechanical tubing size options help to optimize cost. The 3" option can increase East-West spans up to 18 feet, greatly reducing the number of piers and material required.

## Compatible with Soil Classes 2-4

The size of Ground Mount foundations depends on a number of factors, including column height and site loading conditions. Stronger and sturdier soil classes (Class 2 and Class 3) allow for reduced foundation depth, saving on materials and labor.



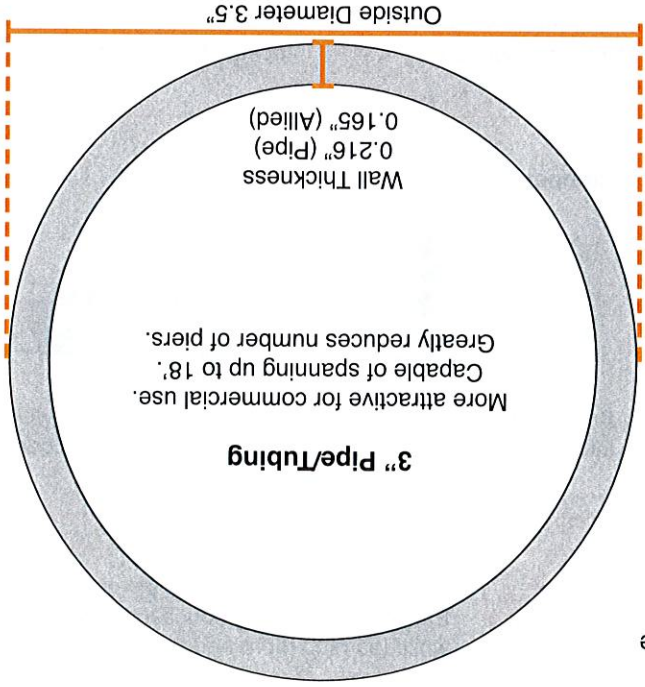
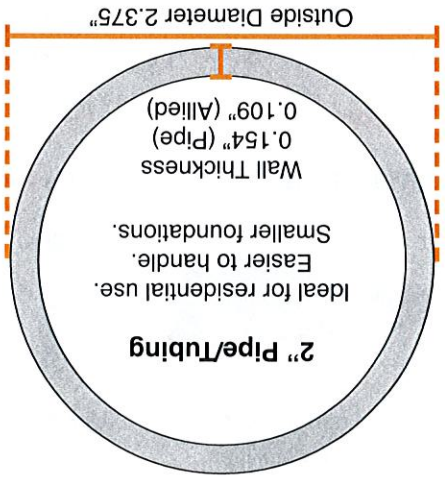
## Wide Tilt Angle Range (0-45 Degrees)

Lower tilt angles are an effective way of reducing wind loads on ground mount structures, resulting in increased East-West pipe spans and reduced number of foundations. Refer to table on backside to see how tilt angle affects spans.



## Substructure Selection

Ground Mount uses locally-sourced galvanized schedule 40 steel pipe (ASTM A53 Grade B, 35 ksi) or Allied mechanical tubing (2" – 50 ksi, 3" – 45 ksi) to reduce shipping costs. Mechanical tubing is lighter and can be easier to couple when building the substructure.



Refer to the following table to see how size impacts the East-West span between foundations. The table complies with ASCE 7-10 structural code. Values are based on 72-cell modules in Wind Exposure Category B.

Conditions		E-W Span													
Snow	Height	Tilt	Wind (MPH)	100	120	140	16'	14'	12'	10'	8'	6'	4'	18'	
0 PSF	4-High	10°	100	140	120	100	140	120	100	140	120	100	140	120	100
		30°	100	140	120	100	140	120	100	140	120	100	140	120	100
		10°	100	140	120	100	140	120	100	140	120	100	140	120	100
	5-High	10°	100	140	120	100	140	120	100	140	120	100	140	120	100
		30°	100	140	120	100	140	120	100	140	120	100	140	120	100
		10°	100	140	120	100	140	120	100	140	120	100	140	120	100
30 PSF	4-High	10°	100	140	120	100	140	120	100	140	120	100	140	120	100
		30°	100	140	120	100	140	120	100	140	120	100	140	120	100
		10°	100	140	120	100	140	120	100	140	120	100	140	120	100
	5-High	10°	100	140	120	100	140	120	100	140	120	100	140	120	100
		30°	100	140	120	100	140	120	100	140	120	100	140	120	100
		10°	100	140	120	100	140	120	100	140	120	100	140	120	100

\*Requires Diagonal Bracing



## RATINGS

### UL 2703 LISTED



- Conforms to STD UL 2703 (2015) Standard for Safety First Edition: Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.
- Certified to CSA STD LTR AE-001-2012 Photovoltaic Module Racking Systems.
- Max Overcurrent Protective Device (OCPD) Rating: 25A
- Max Module Size: 24ft<sup>2</sup>
- Max Frameless Module Size for Canadian LTR-AE: 19.5 ft<sup>2</sup>
- CAMO Specific Allowable Design Load Rating: 50 PSF downward, 50 PSF upward, 15 PSF lateral
- LTR AE Canadian Load Rating: 2400 Pa
- System Level Allowable Design Load Rating: meets minimum requirements of the standard (10 PSF downward, 5 PSF upward, 5 PSF lateral). Actual system structural capacity is defined by PE stamped [certification letters](#).

### CLASS A SYSTEM FIRE RATING PER UL 2703

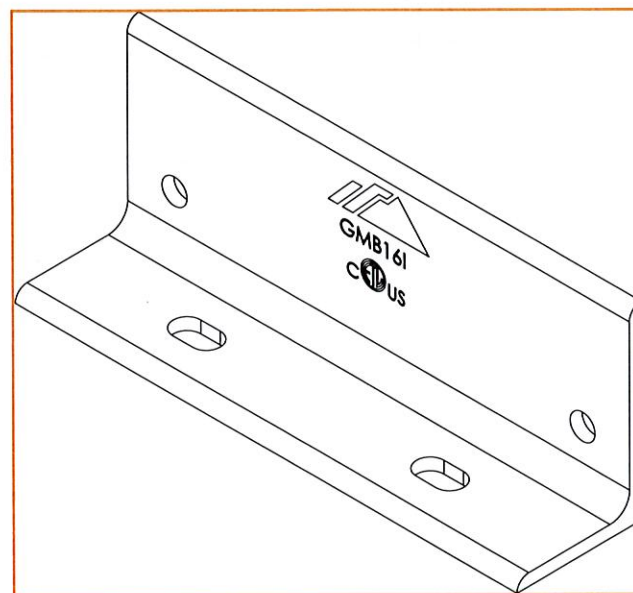
- Not Fire Rated

### STRUCTURAL CERTIFICATION

- Designed and Certified for Compliance with the International Building Code & ASCE/SEI-7

## MARKINGS

Product markings are located on the system's Rail Connectors.



## CHECKLIST

### PRE-INSTALLATION

- Verify module compatibility. See [Page 12](#) for info.
- Purchase 2" or 3" ASTM A53 **Grade B** Schedule 40 Pipe, galvanized to a min of ASTM A653 G90 or ASTM A123 G35, or 2.375" or 3.500" Allied Mechanical Tubing with Gatorshield or FlowCoat Zinc coating (ASTM A1057).

### TOOLS REQUIRED

- Post Hole Digger or Powered Auger
- Socket Drive (7/16", 9/16", and 1/2" Sockets)
- Torque Wrenches (0-240 in-lbs and 10-40 ft-lbs)
- Transit, String Line, or Laser Level
- 3/16" Allen Head

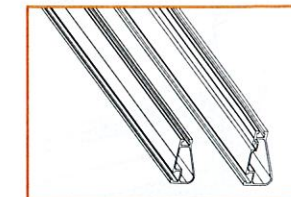
### TORQUE VALUES

- Top Cap Set Screws (3/16" Allen Head)
- Schedule 40 Grade B Pipe: 20 ft-lbs
- 2." Allied Mechanical Tubing: 11 ft-lbs
- 3" Allied Mechanical Tubing: 16 ft-lbs
- Top Cap U-Bolt Nuts (9/16" Socket): 15 ft-lbs
- Rail Connector Bracket Nuts (9/16" Socket): 21 ft-lbs
- Rail Connector U-Bolt Nuts (9/16" Socket): 60 in-lbs
- Grounding Lug Nuts (7/16" Socket): 80 in-lbs
- Grounding Lug Terminal Screws (7/16 Socket): 20 in-lbs
- Universal Fastening Objects (7/16" Socket): 80 in-lbs
- Diagonal Brace Set Screws (1/2" Socket): 15 ft-lbs
- Diagonal Brace Bolts (1/2" Socket): 40 ft-lbs
- Microinverter Kit Nuts (7/16" Socket): 80 in-lbs
- Frameless Module Kit Nuts (7/16" Socket): 80 in-lbs

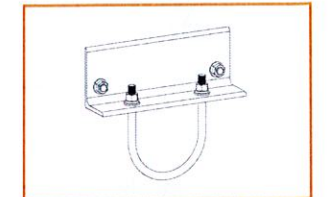
⚠ If using previous version of: Integrated Grounding Mid Clamps, Grounding Lug, End Clamps, and Expansion Joints please refer to Alternate Components Addendum (Version 1.30).

⚠ If installing on a low slope roof please refer to Ground Mount for Flat Roof Applications Addendum (Version 2.0).

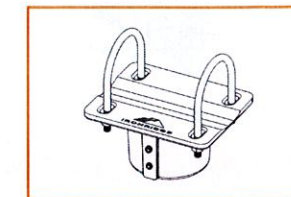
### IRONRIDGE COMPONENTS



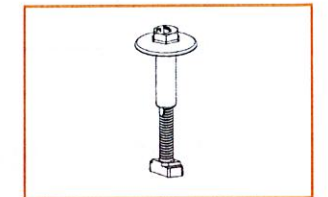
XR100 & XR1000 Rail



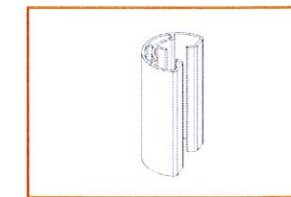
Rail Connector



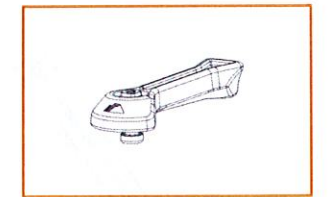
Top Cap



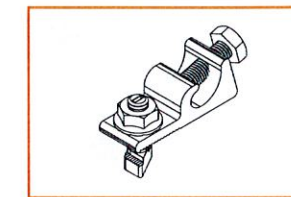
UFO



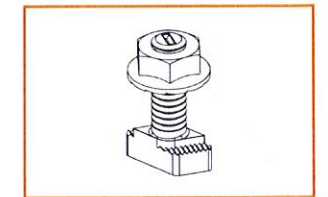
Stopper Sleeve



CAMO



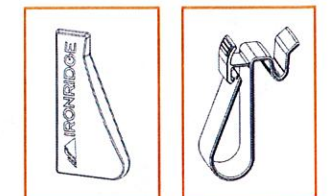
Grounding Lug



Microinverter Kit

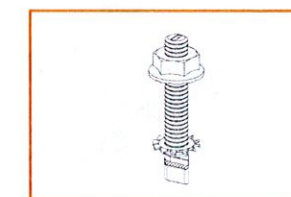


Diagonal Brace

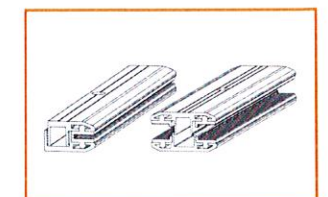


End Cap

Wire Clip



Frameless Module Kit



Frameless End/Mid Clamp

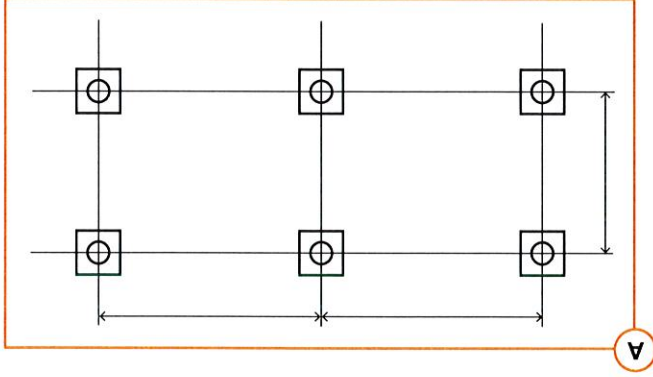


## 1. BUILD BASE

### A. MARK LOCATIONS

Establish pier locations. Once grid of pier locations has been set, verify all angles are square.

Spacing varies with load conditions. Consult engineering specs.

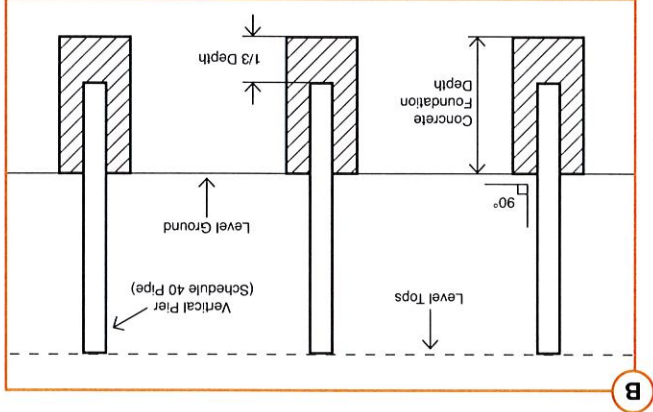


### B. POSITION PIERS

Excavate the foundation holes. Insert vertical piers into foundation holes, and pour in concrete mixture. Ensure vertical piers are plumb, level, square, and placed in parallel rows. Level the tops so they are even.

Brace piers until concrete foundation has cured.

In some cases, cross bracing is required to provide extra support for piers. If required, install [Diagonal Braces](#) at this time.

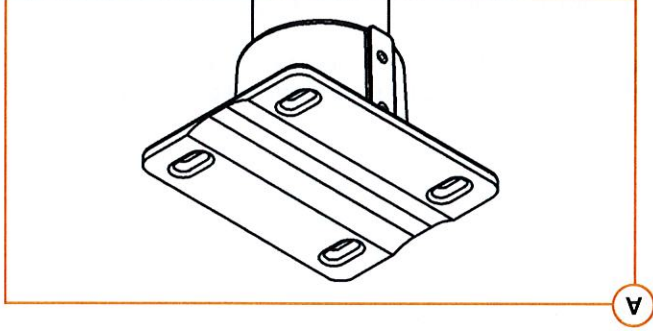


## 2. CONNECT SUBSTRUCTURE

### A. MOUNT TOP CAPS

Mount a Top Cap on each pier. Wait to tighten set screws.

If using [Diagonal Braces](#), install them prior to Top Caps.

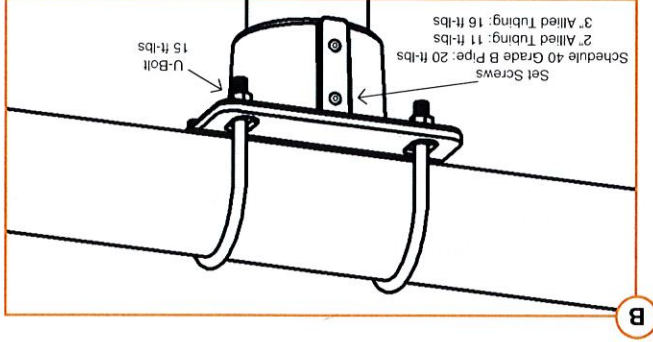


### B. LAY CROSS PIPE

Set cross pipes or tubing in Top Cap grooves. Attach with 3/8" U-bolts, flange nuts, flat washers, and lock washers. Torque U-bolts to 15 ft-lbs and align assembly.

Torque Top Cap set screws to 20 ft-lbs for Schedule 40 Grade B Pipe, 11 ft-lbs for 2" Allied Mechanical Tubing, and 16 ft-lbs for 3" Allied Mechanical Tubing.

To join more than one section of cross pipe, see [Page 10](#).

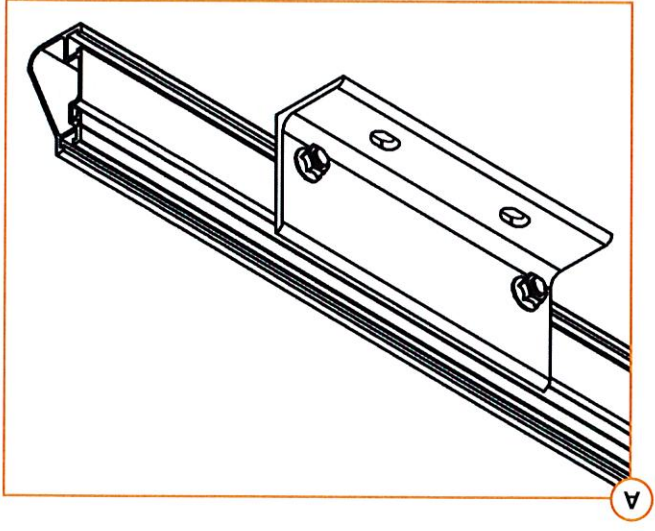


## 3. PLACE RAILS

### A. ATTACH HARDWARE

On the ground, attach Rail Connector brackets to rail by sliding 3/8"-16 bonding bolts into side slot. Space out to match pier spacing. With brackets in place, finger tighten flange nuts onto bolts.

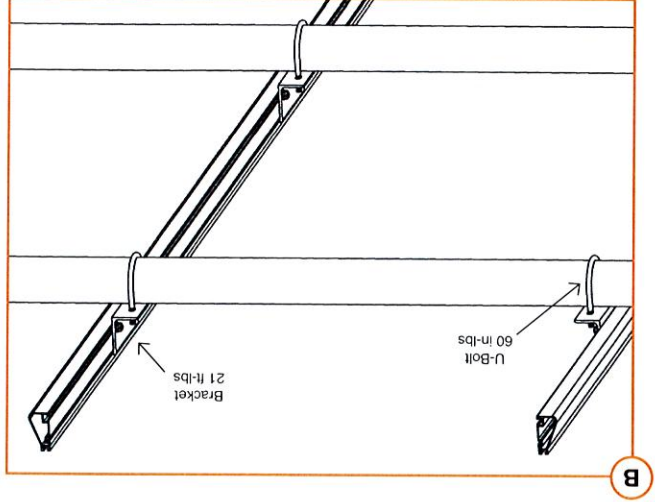
Tape ends of rail, to keep bolts from sliding out while moving.



### B. FASTEN CONNECTORS

Center rails on cross pipes, leaving equal distance on ends. Secure with Rail Connector hardware: 3/8"-16 U-bolts, flange nuts, flat washers, and lock washers. Torque U-bolt nuts to 60 in-lbs and bracket to 21 ft-lbs.

Spacing between rails should align with module manufacturer recommended clamping locations.



## 4. SECURE LUGS

### GROUNDING LUGS

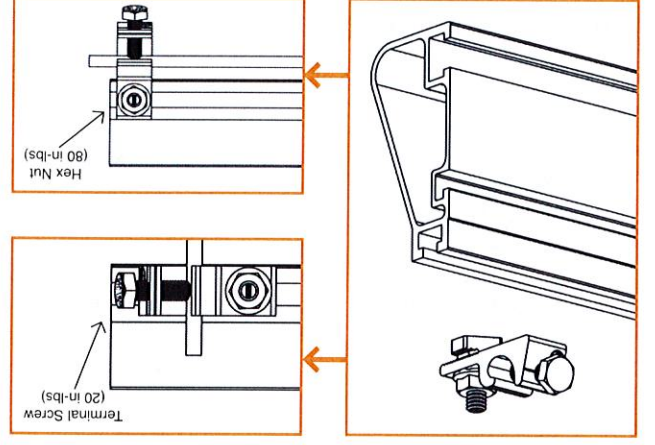
Insert T-bolt in top rail slot and torque hex nut to 80 in-lbs. Install a minimum 10 AWG solid copper or stranded grounding wire. Torque terminal screw to 20 in-lbs.

Only one Grounding Lug required per continuous subarray, regardless of subarray size (Unless frameless modules are used, see Page 10).

If using [Emphase microinverters](#) or [Sunpower AC modules](#), Grounding Lugs may not be needed. See [Page 11](#) for more info.

Grounding Lugs can be installed anywhere along the rail and in either orientation shown.

Grounding Lugs are intended for use with one solid or stranded copper wire, conductor size 10-4AWG.



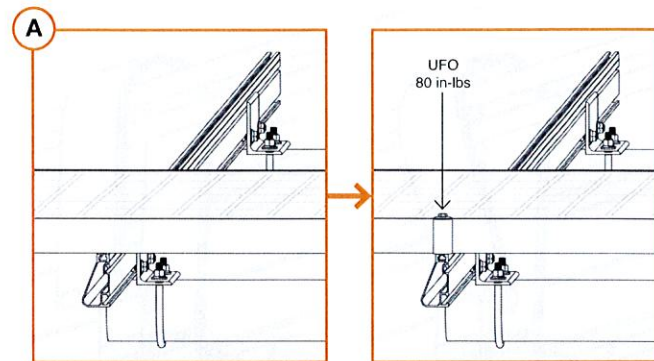


## 5. SECURE MODULES

### A. SECURE FIRST END

Place first module in position on rails, a minimum of 1" from rail ends. Snap Stopper Sleeves onto UFO. Fasten module to rail using the UFO, ensuring that the UFO is hooked over the top of the module. Torque to **80 in-lbs.**

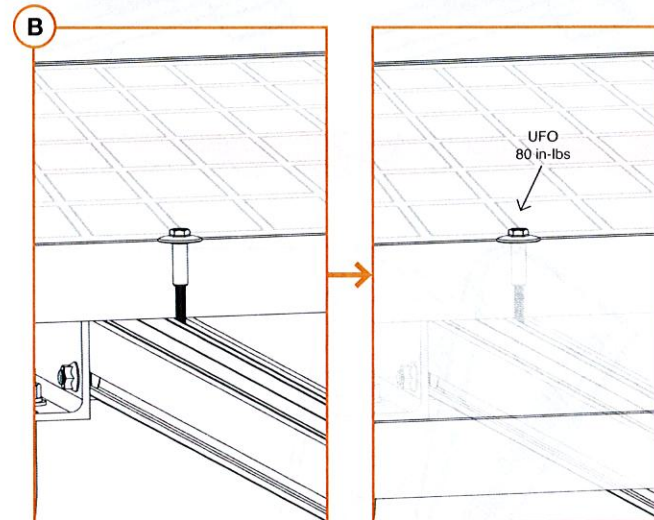
- ☞ Ensure rails are square before placing modules.
- ☞ Hold Stopper Sleeves on end while torquing to prevent rotation.
- ☞ If using CAMO instead of UFO + Stopper Sleeve, refer to [Page 7](#) for CAMO installation procedure.



### B. SECURE NEXT MODULES

Place UFO into each rail, placing them flush against first module. Slide second module against UFO. Torque to **80 in-lbs.** Repeat for each following module.

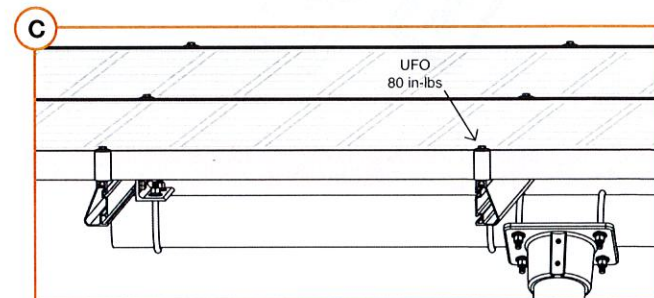
- ☞ When reinstalling UFO, move modules a minimum of 1/16" so UFOs are in contact with a new section of module frame.
- ☞ When UFOs are loosened and re-tightened, ensure UFO T-bolt bottoms out in rail channel before re-torquing UFO to achieve full engagement between T-bolt and rail.
- ☞ If using Wire Clips, refer to [Page 9](#).



### C. SECURE LAST END

Place last module in position on rails, a minimum of 1" from rail ends. Snap Stopper Sleeves onto UFO. Secure UFO Clamps on rails, ensuring they are hooked over top of module. Torque to **80 in-lbs.**

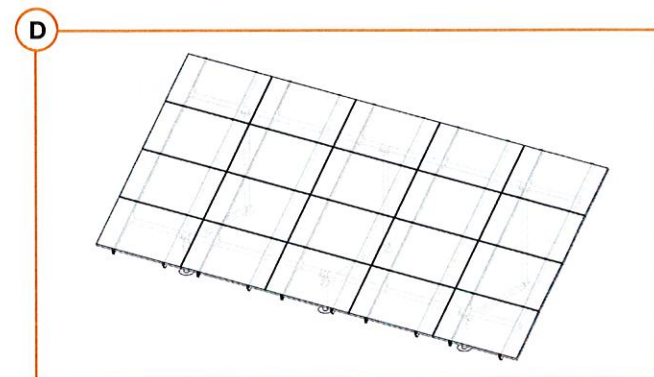
- ☞ Hold Stopper Sleeves on end while torquing to prevent rotation.
- ☞ If using CAMO instead of UFO + Stopper Sleeve, refer to [Page 7](#) for CAMO installation procedure.



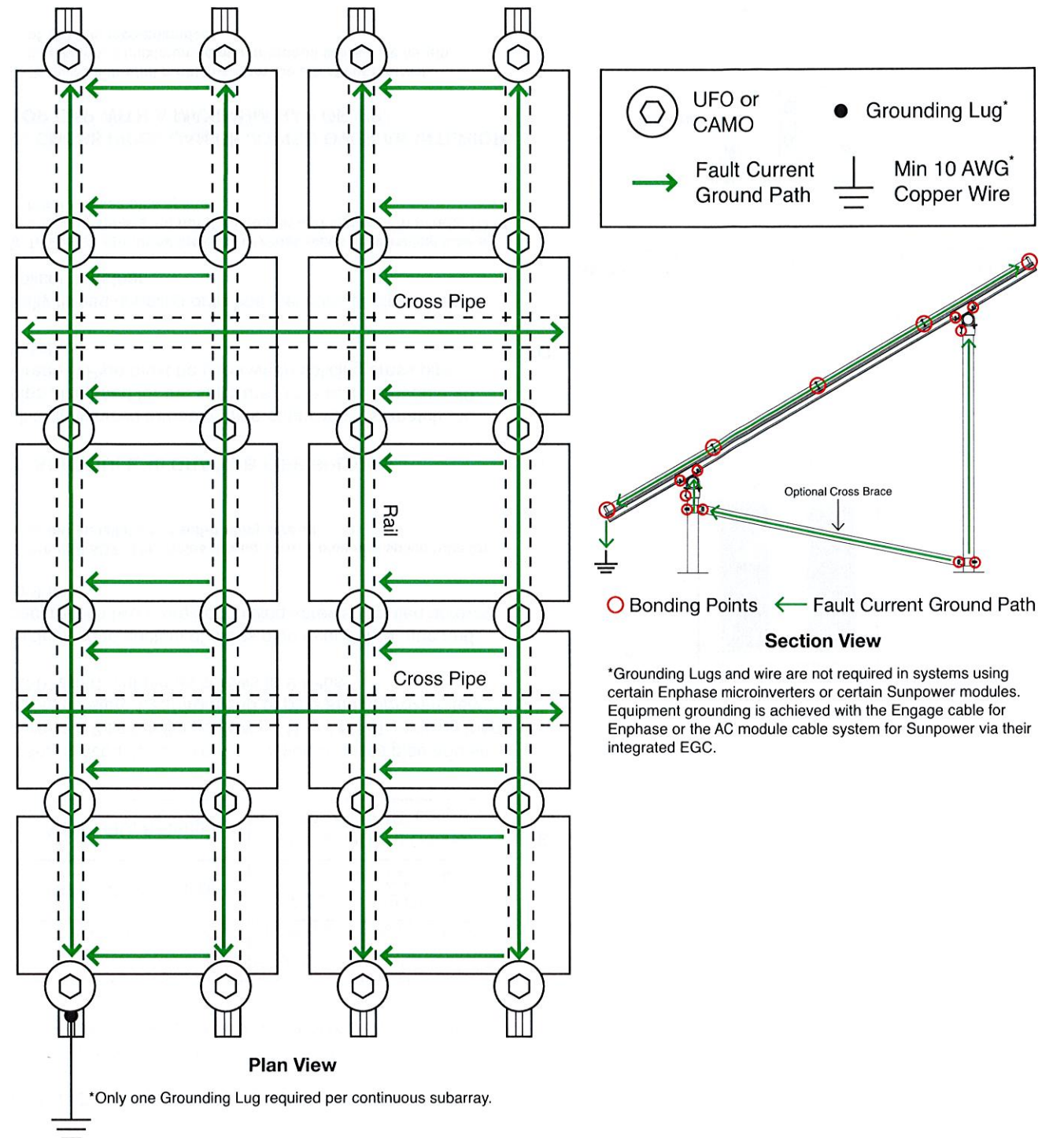
### D. REPEAT STEPS

Secure remaining module rows, leaving a minimum 3/8" gap between rows.

- ☞ If using End Caps, refer to [Page 9](#).

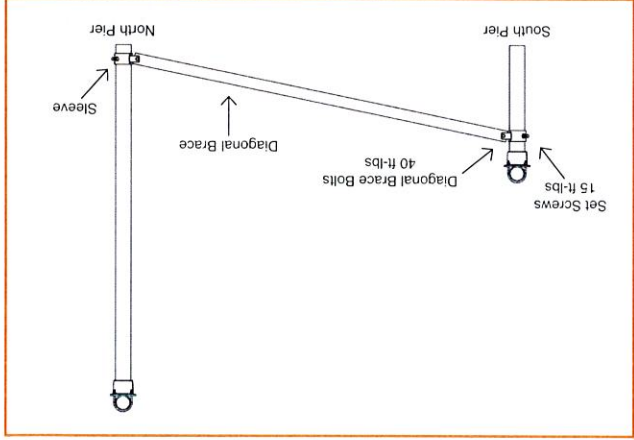


## ELECTRICAL DIAGRAM



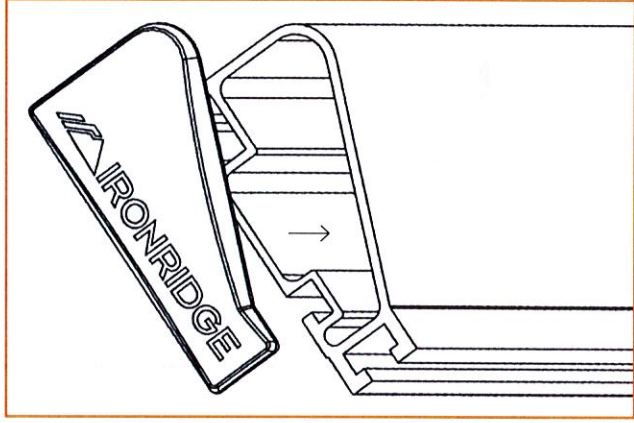


## DIAGONAL BRACES (OPTIONAL)



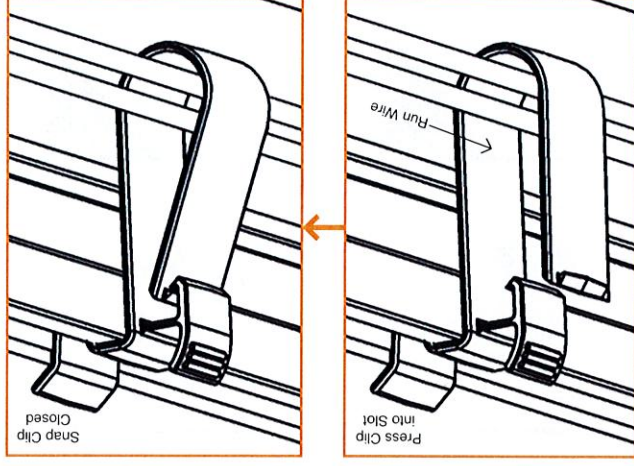
Slide sleeve on north pier 2'-3" above the ground (6" max). Attach Diagonal Brace to sleeve with 1/2" hardware. Slide second sleeve up on south pier 2'-3" below top cap (6" max). Raise Diagonal Brace to align holes in sleeve and brace. Attach hardware and raise sleeve to full extent. Torque Diagonal Brace bolts to 40 ft-lbs. Torque set screws to 15 ft-lbs.

## END CAPS



End Caps add a completed look and keep debris and pests from collecting inside rail. Firmly press End Cap onto rail end. End Caps come in sets of left and right. Check that the proper amount of each has been provided. For open-structure installations, you can use adhesive to secure the End Caps.

## WIRE CLIPS



Wire Clips offer a simple wire management solution. Firmly press Wire Clip into top rail slot. Open clip and insert electrical wire accordingly. Close clip once complete.

## SPlicing CROSS PIPE

The following instructions should be followed, when required, to join more than one section of cross pipe together to ensure bonding is maintained throughout the system.

### A. ALLIED MECHANICAL TUBING SPLICES

Mechanical tube splices shown in the table below shall be of equivalent Allied Flowcoat or Gatorshield zinc coating.

Mechanical Tube Size of the Structure	Splice Tube Size
2.375" OD, 12 Gauge, Minimum 12" Long	3.500" OD, 8 Gauge
2.000" OD, 9 Gauge, Minimum 12" Long	3.000" OD, 12 Gauge, Minimum 12" Long

Insert splice tube 6" into first section of cross pipe and secure with 2 self-drilling screws (1/4" - 14 x 3/4"), spacing them approximately 1.25" from end of pipe and approximately 3.50" apart, tightening screws to 9 ft-lbs.

Slide second section of cross pipe over splice tube and secure with two more self-drilling screws. Tighten screws to 9 ft-lbs.

Pre-drill 5/32" pilot holes through cross pipe and splice tube for easier installation of self-drilling screws.

### B. SCHEDULE 40 GRADE B PIPE SPLICES

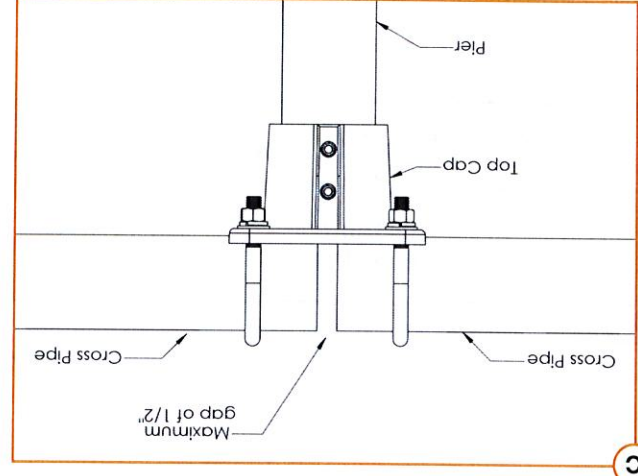
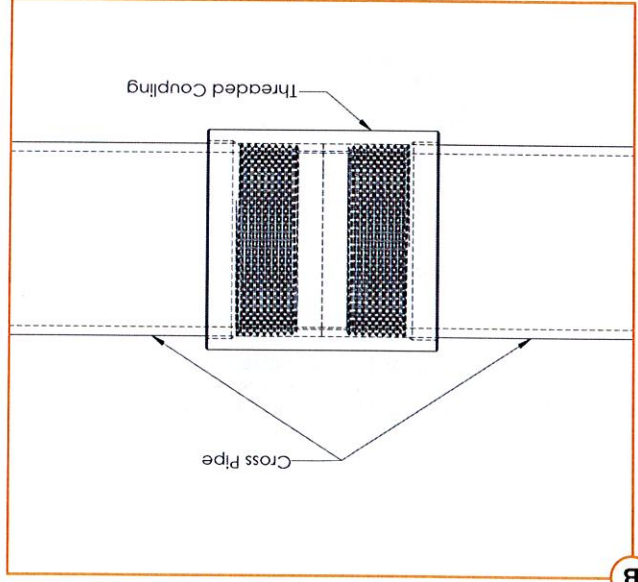
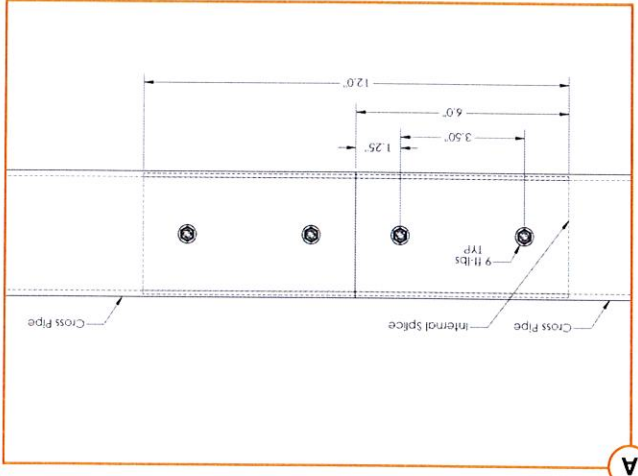
Use galvanized threaded pipe couplings that match the pipe size used for the structure. Threaded Schedule 40 Grade B Pipe must be used when splicing cross pipe together.

Fully thread coupling onto both sections of pipe being spliced together.

To ensure structural integrity of cross pipes, mechanical tube or coupling splices are not permitted in end spans or in middle 1/3 of interior cross pipe spans.

### C. CROSS PIPES CAN BE JOINED OVER AN INTERIOR TOP CAP WITH A MAXIMUM GAP OF 1/2"

To avoid potential problems from the effects of thermal expansion, a maximum total continuous cross pipe length of 100 ft is recommended.





## MODULE COMPATIBILITY

The Ground Mount System may be used to ground and/or mount a PV module complying with UL 2703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions. Unless otherwise noted, "xxx" refers to the module power rating and both black and silver frames are included in the certification.

MAKE	MODELS
Amerisolar	Amerisolar modules with 35, 40 and 50 mm frames AS-bYxxxZ Where "b" can be 5 or 6; "Y" can be M, P, M27, P27, M30, or P30; "xxx" is the module power rating; and "Z" can be blank, W or WB
Aptos	Aptos modules with 35 and 40 mm frames DNA-yy-zz23-xxx Where "yy" can be 120 or 144; "zz" can be MF or BF; and "xxx" is the module power rating
Astronergy Solar	Astronergy modules with 30, 35, 40 and 45 mm frames aaSMbbyC/zz-xxx Where "aa" can be CH or A; "bb" can be 60, 66, or 72; "yy" can be blank, 10 or 12; "C" can M, P, M(BL), M-HC, M(BL)-HC, P-HC, M(DG), or M(DGT); "zz" can be blank, HV, F-B, or F-BH ; and "xxx" is the module power rating Astronergy frameless modules CHSM6610P(DG)-xxx Where "xxx" is the module power rating
ASUN	ASUN modules with 35 and 40 mm frames ASUN-xxx-YYZZ-aa Where "xxx" is the module power rating; "Y" can be 60 or 72; "ZZ" can be M, or MH5; and "aa" can be blank or BB
Auxin	Auxin modules with 40 mm frames AXN6y6zAxxx Where "y" can be M or P; "z" can be 08, 09, 10, 11, or 12; "A" can be F or T; and "xxx" is the module power rating
Axitec	Axitec Modules with 35 and 40 mm frames AC-xxxY/aaZZb Where "xxx" is the module power rating; "Y" can be M, P or MH; "aa" can be blank, 125- or 156-; "ZZ" can be 54, 60, 72, 120, or 144; "b" can be S or SB
Boviet	Boviet modules with 35 and 40mm frames BVM66aaYY-xxxBB Where "aa" can be 9, 10 or 12; "YY" is M or P; "xxx" is the module power rating; and "BB" can be blank or L
BYD	BYD modules with 35 mm frames BYDxxxAY-ZZ Where "xxx" is the module power rating; "A" can be M6, P6, MH or PH; "Y" can be C or K; and "ZZ" can be 30 or 36
Canadian Solar	Canadian Solar modules with 30, 35 and 40 mm frames CSbY-xxxZ Where "b" can be 1, 3 or 6; "Y" can be H, K, P, U, V, W, or X; "xxx" refers to the module power rating; and "Z" can be M, P, MS, PX , M-SD, P-AG, P-SD, MB-AG, PB-AG, MS-AG, or MS-SD Canadian Solar frameless modules CSbY-xxx-Z Where "b" can be 3 or 6; "Y" is K, P, U, or X; "xxx" is the module power rating, and "Z" can be M-FG, MS-FG, P-FG, MB-FG, or PB-FG
CertainTeed	CertainTeed modules with 35 and 40 frames CTxxxYZZ-AA Where "xxx" is the module power rating; "Y" can be M, P or HC; "ZZ" can be 00,01, 10, or 11; and "AA" can be 01, 02, 03 or 04
CSUN	Csun modules with 35 and 40 mm frames YYxxx-zzAbb Where "YY" is CSUN or SST; xxx is the module power rating; "zz" is blank, 60, or 72; and "A" is blank, P or M; "bb" is blank, BB, BW, or ROOF
Ecosolargy	Ecosolargy modules with 35, 40 and 50 mm frames ECOxxxYzzA-bbD Where "xxx" is the module power rating; "Y" can be A, H, S, or T; "zz" can be 125 or 156; "A" can be M or P; "bb" can be 60 or 72; and "D" can be blank or B

## MODULE COMPATIBILITY

ET Solar	ET Solar modules with 35, 40 and 50 mm frames ET-Y6ZZxxxAA Where "Y" can be P, L, or M; "ZZ" can be 60 or 72; "xxx" refers to the module power rating; and "AA" can be WB, WW, BB, WBG, WWG, WBAC, WBCO, WWCO, WWBCO or BBAC
Flex	Flex modules with 35, 40 and 50 mm frames and model identifier FXS-xxxYY-ZZ; where "xxx" is the module power rating; "YY" can be BB or BC; and "ZZ" can be MAA1B, MAA1W, MAB1W, SAA1B, SAA1W, SAC1B, SAC1W, SAD1W, SBA1B, SBA1W, SBC1B, or SBC1W
GCL	GCL modules with 35 mm and 40 mm frames GCL-ab/YY xxx Where "a" can be M or P; "b" can be 3 or 6; "YY" can be 60, 72, 72H, or 72DH; and xxx is the module power rating
GigaWatt Solar	Gigawatt modules with 40 mm frames GWxxxYY Where "xxx" refers to the module power rating; and "YY" can be either PB or MB
Hansol	Hansol modules with 35 and 40 frames HSxxxYY-zz Where "xxx" is the module power rating; "YY" can be PB, PD, PE, TB, TD, UB, UD, or UE; and "zz" can be AH2, AN1, AN3, AN4, HV1, or JH2
Hanwha Solar	Hanwha Solar modules with 40, 45, and 50 mm frames HSLaaP6-YY-1-xxxZ Where "aa" can be either 60 or 72; "YY" can be PA or PB; "xxx" refers to the module power rating; and "Z" can be blank or B
Hanwha Q CELLS	Hanwha Q CELLS Modules with 32, 35, 40, and 42mm frames and model identifier aaYY-ZZ-xxx where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, PLUS DUO or PEAK DUO; and "ZZ" can be G3, G3.1, G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC, G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, EC-G4.4, G5, BLK-G5, L-G5, L-G5.1, L-G5.2, L-G5.2/H, L-G5.3, G6, G6+, BLK-G6, L-G6, L-G6.1, L-G6.2, L-G6.3, G7, BLK-G6+, BLK-G7, G7.2, G8, BLK-G8, G8+, BLK-G8+ L-G7, L-G7.1, L-G7.2, L-G7.3, L-G8, L-G8.1, L-G8.2, or L-G8.3; and "xxx" is the module power rating
Heliene	Heliene modules with 40 mm frames YYZZxxxA Where "YY" can be 36, 60, 72, or 96; "ZZ" can be M, P, or MBLK; "xxx" is the module power rating; and "A" can be blank, HomePV, or Bifacial
HT-SAAE	HT-SAAE modules with 40 mm frames HT72-156Z-xxx Where "Z" can be M, P, M-C, P-C, M(S), M(VS), M(V), P(V), M(V)-C, P(V)-C; and "xxx" is the module power rating
Hyundai	Hyundai modules with 33, 35, 40 and 50 mm frames HiY-SxxxZZ Where "Y" can be A, D, M or S; "xxx" refers to the module power rating; and "ZZ" can be HG, HI, KI, MI, MF, MG, RI, RG, RG(BF), RG(BK), SG, TI, or TG
Itek	Itek Modules with 40 and 50 mm frames IT-xxx-YY Where "xxx" is the module power rating; and "YY" can be blank, HE, or SE, or SE72
JA Solar	JA Solar modules with 30, 35, 40 and 45 mm frames JAyyzz-bbww-xxx/aa Where "yy" can be M, P, M6 or P6; "zz" can be blank, (K), (L), (R), (V), (BK), (FA), (TG), (FA)(R), (L)(BK), (L)(TG), (R)(BK), (R)(TG), (V)(BK), (BK)(TG), or (L)(BK)(TG); "bb" can be 48, 60, or 72; "ww" can be D09, S01, S02, S03, S06, S09, or S10; "xxx" is the module power rating; and "aa" can be BP, MP, SI, SC, PR, 3BB, 4BB, 4BB/RE, 5BB
Jinko	Jinko modules with 35 and 40 mm frames JKMYxxxZZ-aa Where "Y" can either be blank or S; "xxx" is the module power rating; "ZZ" can be M, P, or PP; and "aa" can be blank, 60, 60B, 60H, 60L, 60BL, 60HL, 60HBL, 60-J4, 60B-J4, 60B-EP, 60(Plus), 60-V, 60-MX, 72, 72-V, 72H-V, 72L-V, 72HL-V, 72-MX, 72H-BDVP, or 72HL-TV Jinko frameless modules JKMxxxPP-DV Where "xxx" is the module power rating
Kyocera	Kyocera Modules with 46mm frames KYxxxZZ-AA Where "Y" can be D or U; "xxx" is the module power rating; "ZZ" can be blank, GX, or SX; and "AA" can be LPU, LFU, UPU, LPS, LPB, LFB, LFBS, LFB2, LPB2, 3AC, 3BC, 3FC, 4AC, 4BC, 4FC, 4UC, 5AC, 5BC, 5FC, 5UC, 6BC, 6FC, 8BC, 6MCA, or 6MPA
LG	LG modules with 35, 40, and 46 mm frames LGxxxYaZ-bb Where "xxx" is the module power rating; "Y" can be A, E, N, Q, S; "a" can be 1 or 2; "Z" can be C, K, T, or W; and "bb" can be A3, A5, B3, G3, G4, J5, K4, or V5
Longi	Longi modules with 30, 35 and 40 mm frames LRA-YYZZ-xxxM Where "a" can be 4 or 6; "YY" can be blank, 60 or 72; "ZZ" can be blank, BK, BP, HV, PB, PE, PH, HBD, HPB, or HPH; "xxx" is the module power rating



**MODULE COMPATIBILITY**

SolarWorld AG / Industries GmbH	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 31, 33 or 46 mm frames SW-xxx Where "xxx" is the module power rating
SolarWorld Americas Inc.	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 33 mm frames SWA-xxx Where "xxx" is the module power rating
Stion	Stion Thin film modules with 35 mm frames STO-xxx or STO-xxxxA Thin film frameless modules STL-xxx or STL-xxxxA Where "xxx" is the module power rating
SunEdison	SunEdison Modules with 35, 40 and 50 mm frames SE-YxxxxABCDE Where "Y" can be B, F, H, P, R, or Z; "xxx" refers to the module power rating; "Z" can be 0 or 4; "A" can be B,C,D,E,H,I,J,K,L,M, or N; "B" can be B or W; "C" can be A or G; "D" can be 3, 7, 8, or 9; and "E" can be 0, 1 or 2
Suniva	Suniva modules with 35, 38, 40, 46 and 50 mm frames OPTxxx-AA-B-YYY-Z-MVXXXX-AA-B-YYY-Z Where "xxx" is the module power rating; "AA" is either 60 or 72; "B" is either 4 or 5; "YYY" is either 100,101,700,1B0, or 1B1; and "Z" is blank or B
Sunpower	Sunpower standard (G3 or G4) or InvisiMount (G5) 40 and 46 mm frames SPR-Zb-xxx-YY Where "Z" is either A, E, P or X; "b" can be blank, 17, 18, 19, 20, 21, or 22; "xxx" is the module power rating and "YY" can be blank, BLK, COM, C-AC, D-AC, E-AC, G-AC, BLK-C-AC, or BLK-D-AC
Sunpreme	Sunpreme frameless modules GXB-xxxxYY Where "xxx" is the module power rating; and "YY" can be blank or SL
Sunspark	Sunspark modules with 40 mm frames SY-xxxZ Where "Y" can be MX or ST; "xxx" is the module power rating; and "Z" can be M, P or W
Suntech	Vd, Vem, Wdb, Wde, and Wd series modules with 35, 40 and 50 mm frames
Talesun	Talesun modules with 35 and 40 frames TPFyZZaaxx-b Where "yy" can be blank, F or H; "ZZ" can be 60 or 72; "aa" can be M or P; and "b" can be blank, B, T, or (H)
Trina	Trina Modules with 30, 35, 40 and 46mm frames TSM-xxxxYYZZ Where "xxx" is the module power rating; "YY" can be DD05, DD06, DD14, DE14, DE15, DEG15, PA05, PC05, PD05, PD06, PA14, PC14, PD14, PE14, or PE15; and "ZZ" can be blank, .05, .08, .10, .18, .08D, .18D, 0.82, .002, .005, .05S, .08S, A, A.05, A.08, A.10, A.18, A(11), A.05(11), A.08(11), A.10(11), A.18(11), H, H(11), H.05(11), H.08(11), HC.20(11), HC.20(11), or M
URE	URE modules with 35 mm frames DyzxxxxHaa Where "y" can be 6 or 7; "Z" can be K or M; "xxx" is the module power rating; and "aa" can be H3A, H4A, or H8A
Vikram	Vikram solar modules with 40 mm frames VSY:ZZ.AAA.bb Where "yy" can be M, P, MBB, MH, MS, MHHB, or PBB; "ZZ" can be 60 or 72; "AAA" is the module power rating; and "bb" can be 03.04 or 05
VSUN	VSUN modules with 35 and 40 mm frames, VSUNxxx-YYZ-aa, Where "YY" can be 60, 72, 120, or 144; "z" can be M, P, MH, PH, or BMH; and "aa" can be blank, BB, or DG
Winaco	Winaco modules with 35 and 40 mm frames Wsy-xxxxZa Where "y" can be either P or T; "xxx" is the module power rating; "Z" can be either M, P, or MX; and "a" can be blank or 6
Yingli	Panda, YGE, YGE-U, and YLM series modules with 35, 40, and 50 mm frames

**MODULE COMPATIBILITY**

Mission Solar	Mission Solar modules with 33 and 40 mm frames MSEbxxxxZaa Where "bb" can be blank or 60A; "xxx" is the module power rating; "ZZ" can be blank, MM, SE, SO, SQ, SR, or TS; and "aa" can be blank, 1J, 4J, 4S, 5K, 5T, 60, 6J, 6S, 6W, 8K, 8T, or 9S
Mitsubishi	Mitsubishi modules with 46 mm frames PV-MYYxxxxZZ Where "YY" can be LE or JE; xxx is the module power rating; and "ZZ" can be either HD, HD2, or FB
Motech	IM and XS series modules with 40, 45 and 50 mm frames
Neo Solar Power	Neo Solar Power modules with 35 mm frames D6YxxxxZaa Where "Y" can be M or P; xxx is the module power rating; "ZZ" can be B3A, B4A, E3A, E4A, H3A, H4A; and "aa" can be blank, (TF), ME or ME (TF)
Panasonic	Panasonic modules with 35 and 40 mm frames VBHNxxxxYYZZA Where "xxx" refers to the module power rating; "YY" can be either KA, RA, SA or ZA; "zz" can be either 01, 02, 03, 04, 06, 06B, 11, 11B, 15, 15B, 16, 16B, 17, or 18; and "A" can be blank, E, G, or N
Peimar	Peimar modules with 40 mm frames Sbxxyzz Where "b" can be G or P; "xxx" is the module power rating; "Y" can be M or P; and "zz" can be blank, (BF), or (FB)
Phono Solar	Phono Solar modules with 35, 40, and 45 mm frames PSxxxY-ZZ/A Where xxx refers to the module power rating; "Y" can be M, M1, MH, or M1H or P; "ZZ" can be 20 or 24; and "A" can be F, T, U, or TH
Prism Solar	Prism Solar frameless modules BiYY-xxxxBStC Where "YY" can be 48, 60, 60S, 72 or 72S; and "xxx" is the module power rating
REC Solar	REC modules with 30, 38 and 45 mm frames RECxxxxYYZZ Where "xxx" is the module power rating; "YY" can be AA, M, NP, PE, PE72, TP, TP2, TP2M, TP2SM, or TP2S; and "ZZ" can be blank, Black, BLK, BLK2, SLV, or 72
ReneSola	ReneSola modules with 35, 40 and 50 mm frames AxxxxY-ZZ Where "AA" can be SPM(SLP) or JC; "xxx" refers to the module power rating; "Y" can be blank, F, M or S; and "ZZ" can be blank, Ab, Ab-b, Abh, Abv, Abv-b, Bbh, Bbv, Bbv-b, Db, Db-b, or 24/Bb
Renogy	Renogy Modules with 40 and 50 mm frames RNG-xxxxY Where "xxx" is the module power rating; and "Y" can be D or P
Risen	Risen Modules with 35 and 40 mm frames RSMyy-6-xxxxZZ Where "yy" can be 60, 72, 120 or 144; "xxx" is the module power rating; and "ZZ" can be M or P
S-Energy	S-Energy modules with 40 frames SNxxxx-ZZ Where "xxx" is the module power rating; "Y" can be M or P; and "ZZ" can be 10, or 15
Seraphim Energy Group	Seraphim modules with 35 and 40 mm frames SEG-aYY-xxxxZZ Where "a" can be blank, 6 or B; "YY" can be blank, MA, MB, PA, or PB; "xxx" is the module power rating; and "ZZ" can be blank, BB, BG, BW, HV, WB, BMB, BMB-HV
Seraphim USA	Seraphim modules with 40 and 50 mm frames SRF-xxx-6YY Where "xxx" is the module power rating; and "YY" can be MA, MB, PA, PB, QA-XX-XX, and QB-XX-XX
Sharp	Sharp modules with 35 and 40 mm frames NUYxxxx Where "YY" can be SA or SC; and "xxx" is the module power rating
Siflab	Siflab Modules with 38 mm frames SY-xxAb Where "YY" can be IL, SA, LA, SG or LG; "Z" can be blank, M, P, or X; "A" can be blank, B, H, M, or N; and "b" can be A, L, G, or T
Solaria	Solaria modules with 40 mm frames PowerXT xxxY-ZZ Where "xxx" is the module power rating; "Y" can be R or C; and "ZZ" can be AC, BD, BX, BY, PD, PX, PZ, WX or WZ
Solarcity (Tesla)	Solarcity modules with 40 mm frames SCxxxxYY Where "xxx" is the module power rating; and "YY" can be blank, B1 or B2
SolarTech	SolarTech modules with 42 mm frames STU-xxxxYY Where "xxx" is the module power rating; and "YY" can be PERC or HJT



Subject: ETL Evaluation of SolarEdge Products to NEC 2017 Rapid Shutdown Requirements

To, whom it may concern

This letter represents the testing results of the below listed products to the requirements contained in the following standards:

- National Electric Code, 2017, Section 690.12 requirement for rapid shutdown.
- UL 1741, UL 1741 CRD for rapid shutdown

The evaluation was done on the PV Rapid Shutdown System (PVRSS), and covers installations consisting of optimizers and inverters with part numbers listed below.

The testing done has verified that controlled conductors are limited to:

- Not more than 30 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation outside the array.
- Not more than 80 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation inside the array.

The rapid shutdown initiation is performed by either disconnecting the AC feed to the inverter, or – if the inverter DC Safety switch is readily accessible – by turning off the DC Safety switch.

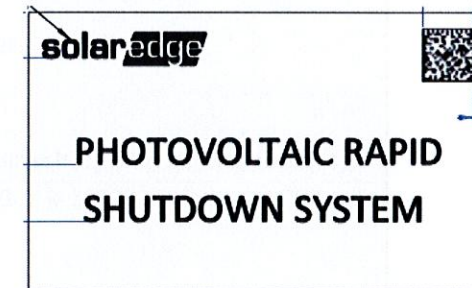
Applicable products:

- Power optimizers:
    - PB followed by 001 to 350; followed by -AOB or -TFI.
    - OP followed by 001 to 500; followed by -LV, -MV, -IV or -EV.
    - P followed by 001 to 850.
    - SP followed by 001 to 350.
- \*When optimizers are connected to 2 or more modules in series, the max input voltage may exceed 80V. Following the implementation of the NEC 2017 rapid shutdown value of 80V max inside of the array at the beginning of 2019, modules exceeding this combined input max voltage will be required to use optimizers with parallel inputs.

- 1-ph Inverters:

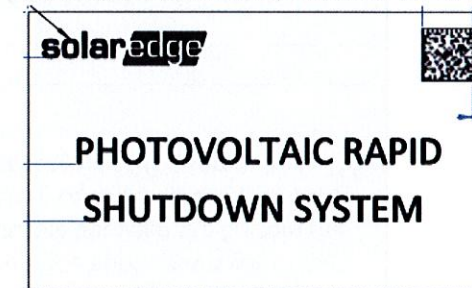
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- SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US / SE7600A-US / SE10000A-US / SE11400A-US / SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US when the following label is labeled on the side of the inverter:



Inverter part number may be followed by a suffix

- 3-ph Inverters:
  - SE9KUS / SE10KUS / SE14.4KUS / SE20KUS / SE30KUS / SE33.3KUS / SE43.2KUS / SE66.6KUS / SE100KUS ; when the following label is labeled on the side of the inverter:



Inverter part number may be followed by a suffix

If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact the undersigned.

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## Test Verification of Conformity

In the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced specifications at the time the tests were carried out.

<b>Applicant Name &amp; Address:</b> IronRidge, Inc. 1495 Zephyr Ave. Hayward, CA 94544 USA	
<b>Product Description:</b> Flush Mount System with XR Rails.	<b>Ratings &amp; Principle Characteristics:</b> Flush Mount (Symmetrical). Class A Fire Rated for Low Slope applications when using Type 1, 2 and 3, listed photovoltaic modules. Class A Fire Rated for Steep Slope applications with Type 1, 2 and 3, listed photovoltaic modules. Tested with a 5" gap (distance between the bottom the module frame and the roof covering), per the standard this system can be installed at any gap allowed by the manufacturers installation instructions. No perimeter guarding is required. This rating is applicable with any IronRidge or 3'rd party roof anchor.
<b>Models:</b> IronRidge Flush Mount with XR Rails	<b>Brand Name:</b> IronRidge Flush Mount
<b>Relevant Standards:</b> UL 2703 (Section 15.2 and 15.3) Standard for Safety Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels, First Edition dated Jan. 28, 2015 Referencing UL1703 Third Edition dated Nov. 18, 2014, (Section 31.2) Standard for Safety for Flat-Plate Photovoltaic Modules and Panels. Intertek Testing Services NA, Inc. 8431 Murphy Drive Middleton, WI 53562 08/27/2014 to 03/17/2015	<b>Verification Issuing Office:</b> 101769343MID-001r1, 101769343MID-001a, 101915978MID-001 & 101999492MID-001a1-cr1.
<b>This verification is part of the full test report(s) and should be read in conjunction with them. This report does not automatically imply product certification.</b>	
<b>Completed by:</b> Chris Zimbrich	<b>Reviewed by:</b> Chad Naggs
<b>Title:</b> Technician II, Fire Resistance	<b>Title:</b> Technician I, Fire Resistance
<b>Signature:</b> 	<b>Signature:</b> 
<b>Date:</b> 05/25/2016	<b>Date:</b> 05/25/2016

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