

PHOTOVOLTAIC ROOF MOUNT SYSTEM

02 MODULES-ROOF MOUNTED - 0.73 kWDC, 7.60 kWAC
128 DE PASQUALE AVE, PROVIDENCE, RI 02903 USA

SYSTEM SUMMARY:

- (N) 02 - REC SOLAR REC365TP4 BLACK (365W) MODULES
- (E) 02 - GENERAC SNAPRS801 RAPID SHUTDOWN UNITS
- (E) 125A MAIN SERVICE PANEL WITH (E) 100A MAIN BREAKER
- (N) 01 - GENERAC PV-LINK S2502 STRING OPTIMIZER

EXISTING SYSTEM SUMMARY:

- (E) 15 - REC SOLAR REC365TP4 BLACK (365W) MODULES
- (E) 01 - GENERAC PWRCELL APKE00014 INVERTER
- (E) JUNCTION BOX
- (E) 60A FUSED AC DISCONNECT WITH 40A FUSES
- (E) 15 - GENERAC SNAPRS801 RAPID SHUTDOWN UNITS
- (E) 02 - GENERAC PV-LINK S2502 STRING OPTIMIZERS
- (E) 1 - GENERAC PWRCELL 17 (17.1KWH) BATTERY
- (E) 1 - 125A PROTECTED LOADS PANEL (BRP12L125)

DESIGN CRITERIA:

ROOF TYPE: - ASPHALT SHINGLE
NUMBER OF LAYERS: - 01
STORY: - TWO STORY
GROUND SNOW LOAD > 35 PSF
WIND SPEED > 125 MPH
WIND EXPOSURE: - B
EXPOSURE CATEGORY: - II
COORDINATE: 41.822099, -71.425785

GOVERNING CODES:

2020 NATIONAL ELECTRICAL CODE (NEC)
2018 INTERNATIONAL BUILDING CODE (IBC)
2018 INTERNATIONAL MECHANICAL CODE (IMC)
2018 INTERNATIONAL RESIDENTIAL CODE (IRC)
2018 INTERNATIONAL PLUMBING CODE (IPC)

SHEET INDEX

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PV-1	SITE PLAN WITH ROOF PLAN
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PV-4	ELECTRICAL LINE DIAGRAM WITH WIRE CALCULATION
PV-5	WARNING LABEL
PV-6+	EQUIPMENT SPEC SHEETS

CONSTRUCTION NOTE:

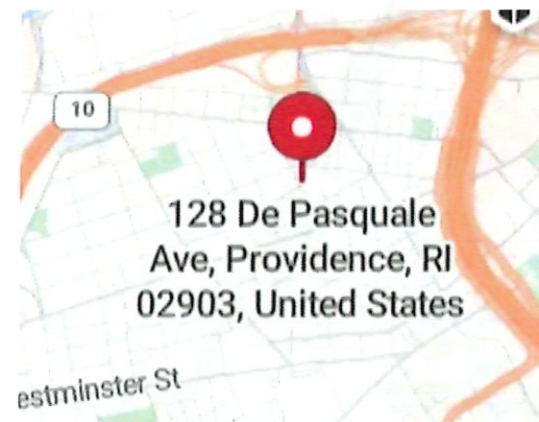
- A LADDER SHALL BE IN PLACE FOR INSPECTION THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY GRID INTERACTIVE SYSTEM
- A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 690-47 AND 250-50 THROUGH 60 250-166 SHALL BE PROVIDED PER NEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #8 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE OR A COMPLETE GROUND.
- EACH MODULE WILL BE GROUNDED USING THE SUPPLIED GROUNDING POINTS IDENTIFIED BY THE MANUFACTURER.
- EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED, REGARDLESS OF VOLTAGE.
- PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED
- ALL SIGNAGE WILL BE INSTALLED AS REQUIRED BY AND 2020 NEC.
- HEIGHT OF INTEGRATED AC/DC DISCONNECT SHALL NOT EXCEED 6' 7" THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT.
- ALL EXTERIOR CONDUIT SHALL BE PAINTED TO MATCH ADJACENT SURFACES.
- THE PV CONNECTION IN THE PANEL BOARD SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION.
- SITE CONDITIONS SHALL PREVAIL IF NO SCALE IS GIVEN. DRAWINGS ARE NOT NECESSARILY TO SCALE. ALL DIMENSIONS SHALL BE VERIFIED BY SUBCONTRACTOR UPON COMMENCEMENT OF CONSTRUCTION.

ELECTRICAL NOTES

- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE



1 | AERIAL PHOTO
PV-0 | SCALE: NTS



2 | VICINITY MAP
PV-0 | SCALE: NTS

41.822099, -71.425785



ROOF TOP POWER
2980 WEST SHORE ROAD
WARRICK, RI 02885
TEL: (401) 781-7637
CSL#F: A-04027
EMAIL: design@rooftoppowerco.com



Reviewed and approved
Richard Pantel, P.E.
RI Lic. No. 11237

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	03/16/2024	UR

PROJECT NAME

JAMES E BROCK
128 DE PASQUALE AVE,
PROVIDENCE, RI 02903 USA
APN# PROV28L1006
UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-0



SITE PLAN WITH ROOF PLAN
SCALE: 1/8" = 1'-0"

41822099, -71426785



	FENCE
	GATE
	TREES
	VENT. ATTIC FAN (ROOF OBSTRUCTION)
	PROTECTED LOADS PANEL
	BATTERY
	CONDUIT
	PROPERTY
	JUNCTION BOX
	INVERTER
	AC DISCONNECT
	MAIN SERVICE PANEL
	UTILITY METER
LEGEND	

PV-1
SHEET NUMBER
11" X 17"
ANSI B
SHEET SIZE
SITE PLAN WITH
ROOF PLAN
SHEET NAME

JAMES E BROCK
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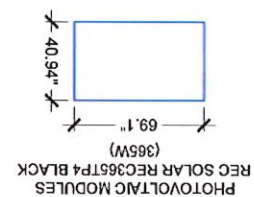
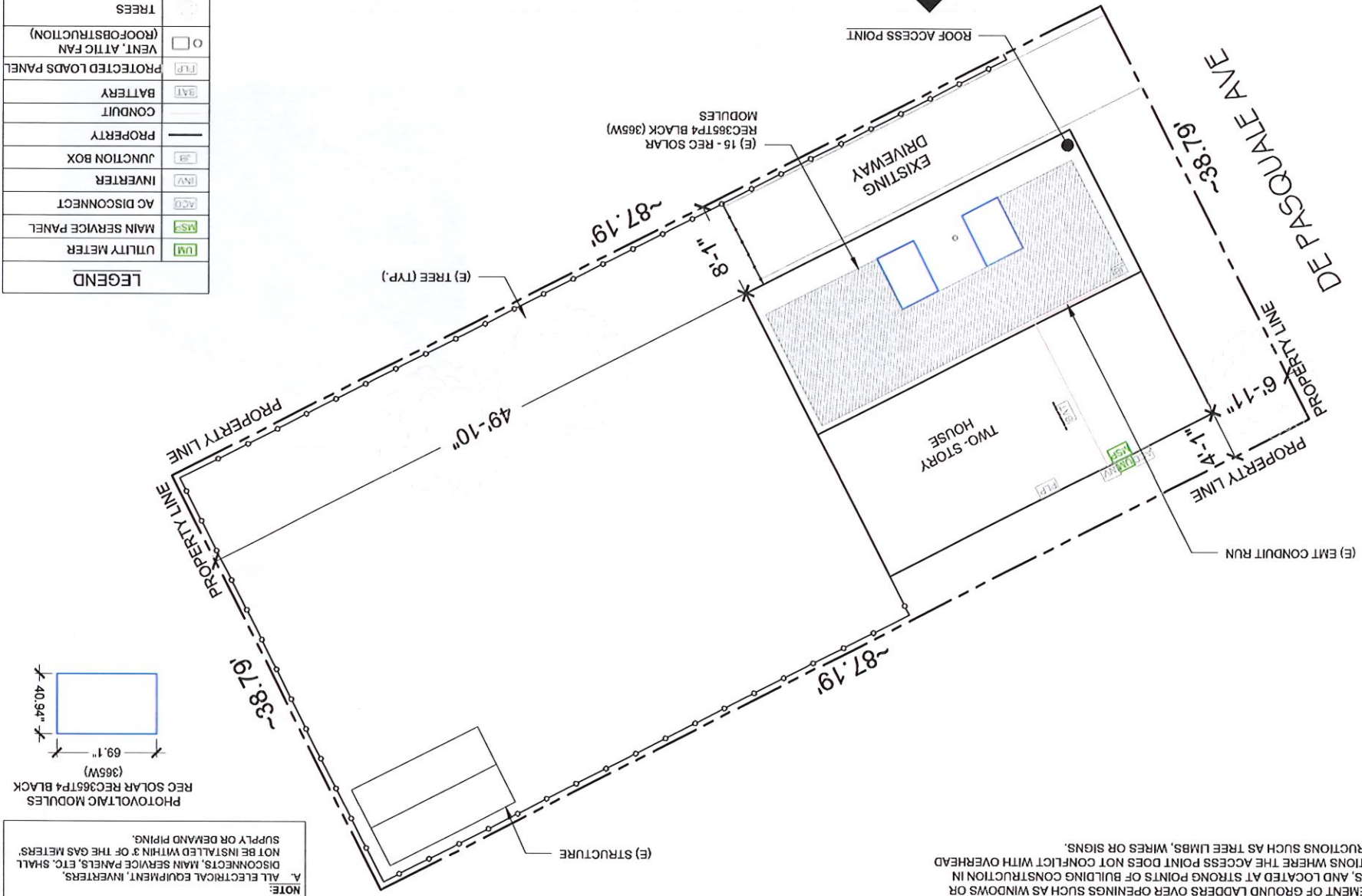
PROJECT NAME

VERSION	DESCRIPTION	DATE	REV	UR
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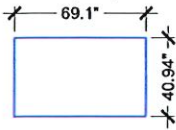
NOTE:
A. ALL ELECTRICAL EQUIPMENT, INVERTERS, DISCONNECTS, MAIN SERVICE PANELS, ETC. SHALL NOT BE INSTALLED WITHIN 3' OF THE GAS METERS' SUPPLY OR DEMAND PIPING.
PHOTOVOLTAIC MODULES
REC SOLAR REC365TP4 BLACK (365W)

ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE LACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN OCCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD STRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 02 MODULES
 MODULE TYPE = REC SOLAR REC365TP4 BLACK (365W) MODULES
 MODULE WEIGHT = 44 LBS / 20.0 KG.
 MODULE DIMENSIONS = 69.1" X 40.94" = 19.65 SF
 UNIT WEIGHT OF ARRAY = 2.24 PSF
 AVERAGE ROOF HEIGHT (GROUND TO EAVE) = ~45 FT.

PHOTOVOLTAIC MODULES
 REC SOLAR REC365TP4 BLACK
 (365W)

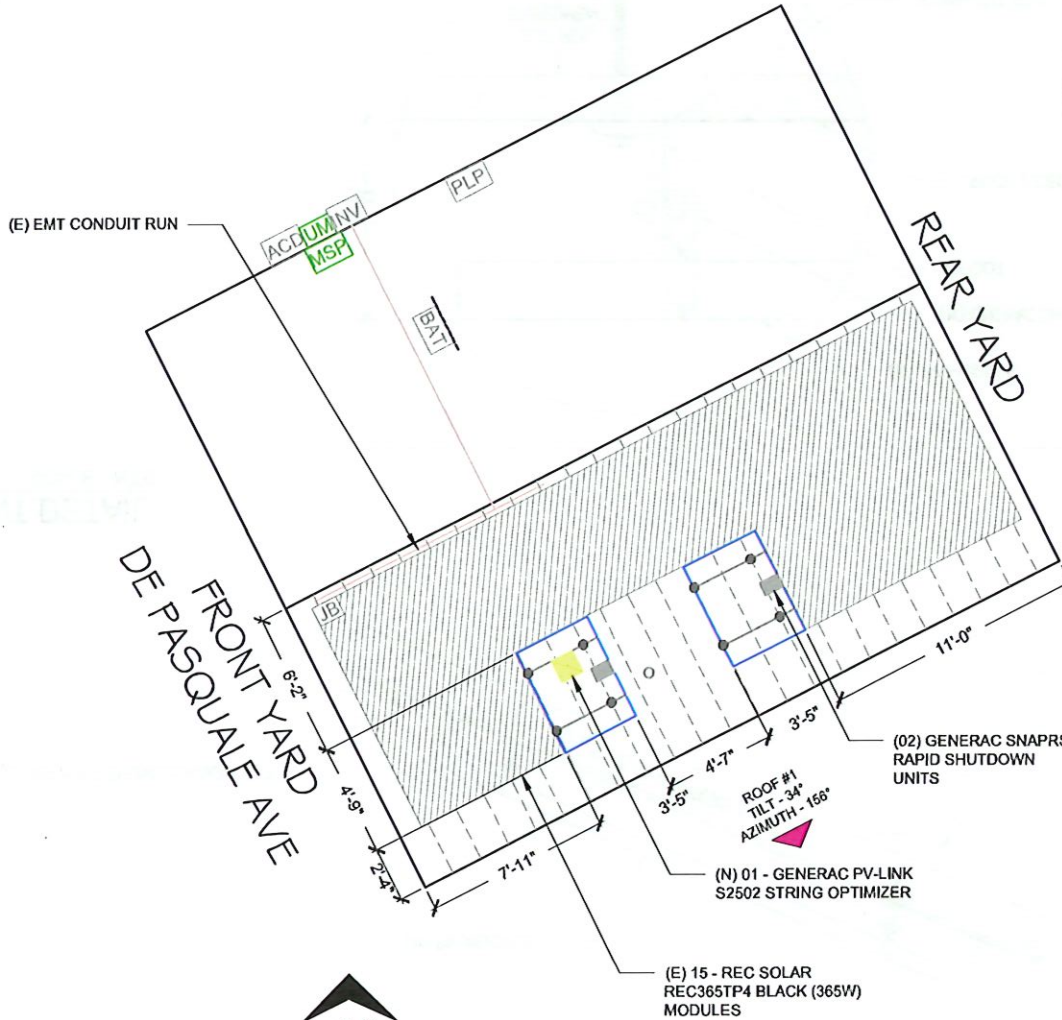


ARRAY AREA & ROOF AREA CALC'S				
AREA OF NEW ARRAY (Sq. Ft.)	AREA OF EXISTING ARRAY (Sq. Ft.)	TOTAL AREA OF ARRAY (Sq. Ft.)	AREA OF ROOF PLAN VIEW (Sq. Ft.)	TOTAL ROOF AREA COVERED BY ARRAY %
39.29	244.39	283.68	939.28	30%
30%		ROOF AREA (ARRAY <33% OF ROOF AREA)		

ARRAY DESCRIPTION			
ROOF TYPE : ASPHALT SHINGLE ROOF			
ARRAY	# OF MODULES	ARRAY TILT	AZIMUTH
#1	02	34°	156°

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
RAIL	01	UNIRAC SM LIGHT RAIL 168" DARK
END CLAMP	08	UNIVERSAL AF SERIES END CLAMP DARK
FLASHING	08	UNIRAC FLASHKIT PRO_DRK 10PK
GROUNDING LUG	02	ILSCO LAY IN LUG (GBL4DBT)

NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS



LEGEND	
[UM]	UTILITY METER
[MSP]	MAIN SERVICE PANEL
[ACD]	AC DISCONNECT
[INV]	INVERTER
[JB]	JUNCTION BOX
[BAT]	BATTERY
[PLP]	PROTECTED LOADS PANEL
—	RAIL
—	CONDUIT
[Yellow Box]	GENERAC PV LINK STRING OPTIMIZER
●	ROOF ATTACHMENT @ 64" O.C.
○	VENT, ATTIC FAN (ROOF OBSTRUCTION)

1 ROOF PLAN WITH MODULES

SCALE: 3/16" = 1'-0" 41.822099, -71.425785

- PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

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 Roof Top Power
 2903 WEST SHORE ROAD
 WARWICK, RI, 02885
 TEL: (833) 787-7697
 CSLB#: A-004027
 EMAIL: design@rooftoppower.com

RICHARD PANTEL
 11237
 REGISTERED PROFESSIONAL ENGINEER (EVAL)

Reviewed and approved
 Richard Pantel, P.E.
 RI Lic. No. 11237

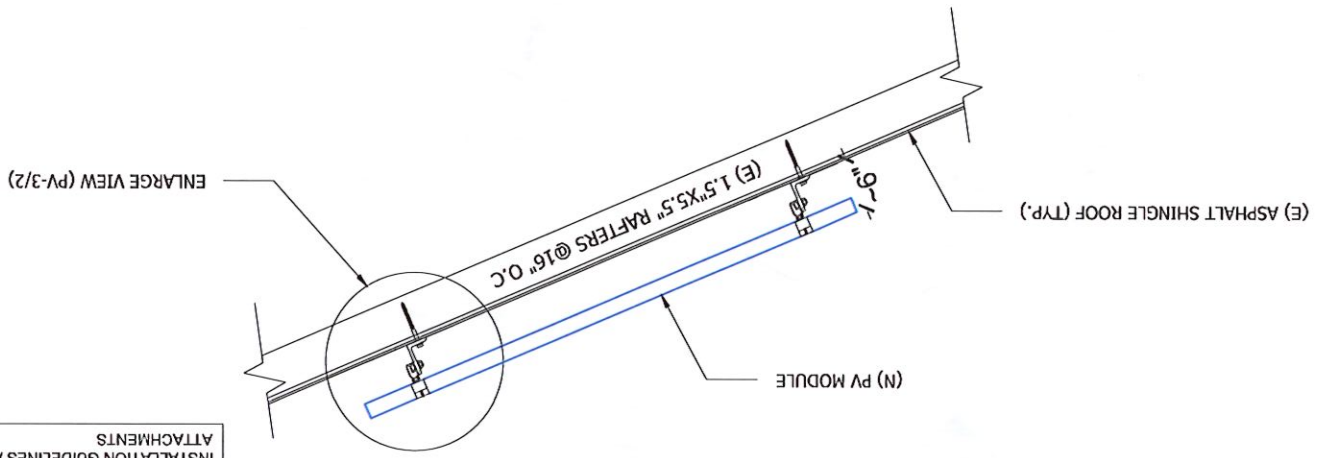
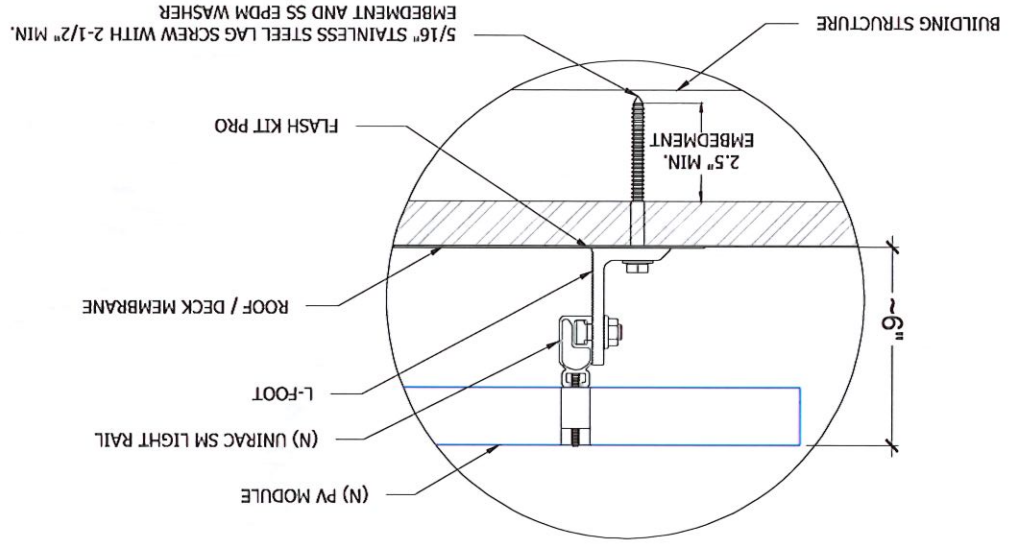
VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	03/16/2024	LR

PROJECT NAME
JAMES E BROCK
 128 DE PASQUALE AVE,
 PROVIDENCE, RI 02903 USA
 APN# PROV28L1006
 UTILITY: NATIONAL GRID
 AHJ: CITY OF PROVIDENCE

SHEET NAME
ROOF PLAN WITH MODULES

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-2



NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

SHEET NAME
ATTACHMENT
DETAIL
SHEET SIZE
ANSI B
11" X 17"
SHEET NUMBER
PV-3

PROJECT NAME
JAMES E BROCK
128 DE PASQUALE AVE,
PROVIDENCE, RI 02903 USA
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UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

PROJECT NAME

VERSION	DESCRIPTION	DATE	REV
	INITIAL RELEASE	02/16/2024	UR

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SOLAR MODULE SPECIFICATIONS

MANUFACTURER / MODEL #	VMP (V)	IMP (A)	VOC (V)	ISC (A)	TEMPERATURE COEFFICIENT OF Voc	# OF MODULES
REC SOLAR REC365TP4 BLACK (365W)	34.3	10.65	40.8	11.32	-0.27%/°C	02
MODULE DIMENSION	69.1" L x 40.94" W x 1.2" D					

SYSTEM SIZE:- 02 x 365W = 0.73 kWDC
 SYSTEM SIZE:- 01 x 7600W = 7.60 kWAC

AMBIENT TEMPERATURE SPECIFICATIONS

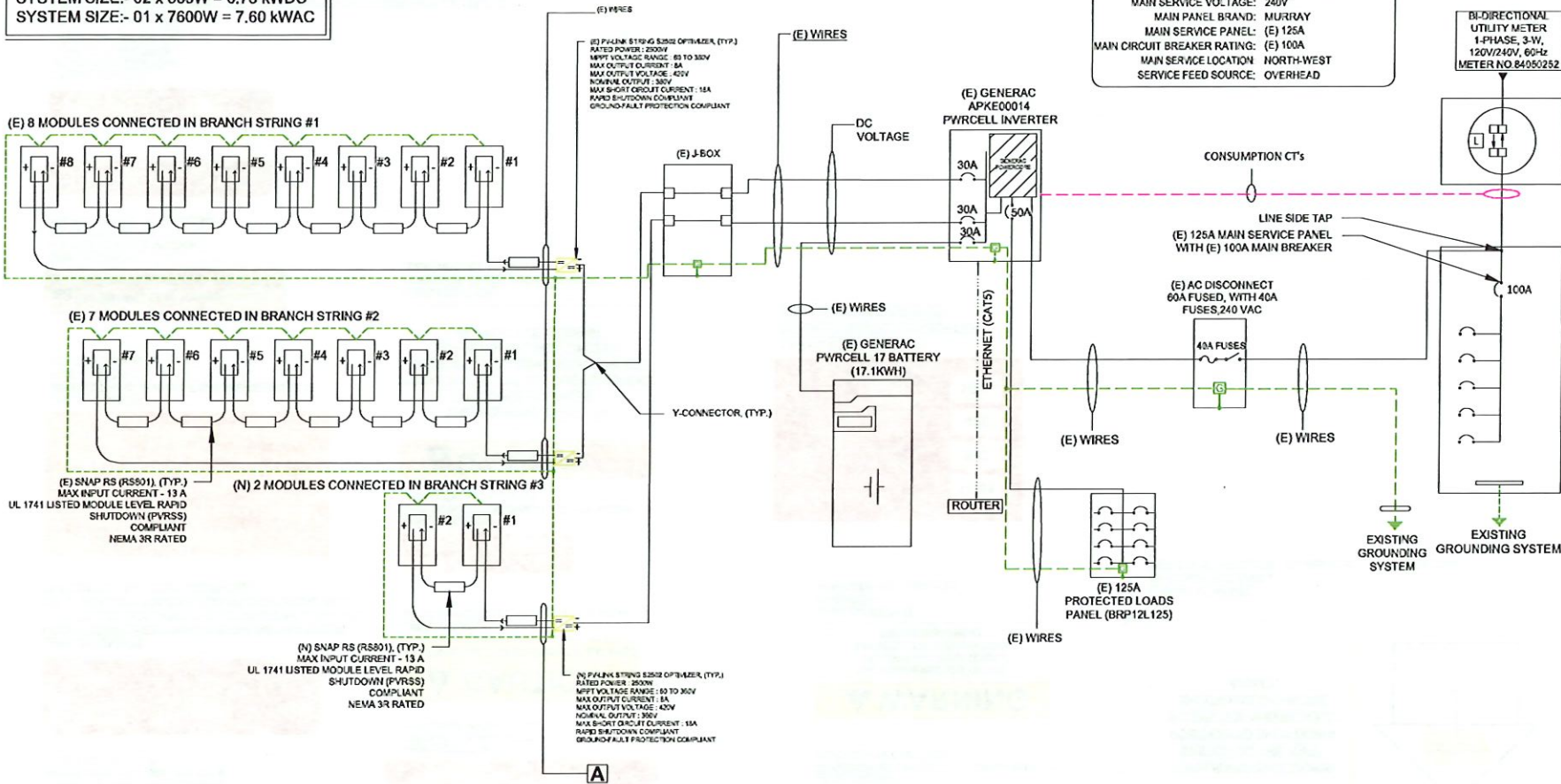
RECORD LOW TEMP	AMBIENT TEMP (HIGH TEMP 2%)	CONDUIT HEIGHT	CONDUCTOR TEMPERATURE RATE (ON ROOF)	CONDUCTOR TEMPERATURE RATE (OFF ROOF)
-17°	32°	7/8"	90°	75°

INVERTER SPECIFICATIONS

MANUFACTURER / MODEL #	QUANTITY	NOMINAL OUTPUT VOLTAGE	NOMINAL OUTPUT CURRENT
GENERAC PWRCELL APKE00014	01	240 VAC	32A

SERVICE INFO.

UTILITY PROVIDER: NATIONAL GRID
 MAIN SERVICE VOLTAGE: 240V
 MAIN PANEL BRAND: MURRAY
 MAIN SERVICE PANEL: (E) 125A
 MAIN CIRCUIT BREAKER RATING: (E) 100A
 MAIN SERVICE LOCATION: NORTH-WEST
 SERVICE FEED SOURCE: OVERHEAD



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WIRE TAG	CONDUIT	WIRE QTY	WIRE GAUGE	WIRE TYPE	TEMP. RATING	WIRE AMPACITY (A)	TEMP. DERATE	CONDUIT FILL DERATE	DERATED AMPACITY (A)	NOC (A)	NEC CORRECTI ON	DESIGN CURRENT (A)	GROUND SIZE	GROUND WIRE TYPE
A	OPEN AIR	1	10 AWG	PV-WIRE	90°C	40	0.96	N/A	38.40	8	1.25	10.00	06 AWG	BARE CU GND

1 ELECTRICAL LINE DIAGRAM WITH WIRE CALCULATION
 SCALE: NTS

SHEET NAME
 ELECTRICAL LINE DIAGRAM WITH WIRE CALCULATION

SHEET SIZE
 ANSI B
 11" X 17"

SHEET NUMBER
 PV-4

WARNING
ELECTRICAL SHOCK HAZARD

TERMINALS ON LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
INVERTER(S), AC DISCONNECT(S), AC COMBINER PANEL (IF APPLICABLE)
PER CODE(S): NEC 2020: NEC 708.15 (C)(4) & NEC 690.13(B)

WARNING
RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

LABEL LOCATION:
UTILITY SERVICE ENTRANCE METER (WITHIN 3 FEET) OR OTHER LOCATIONS AS REQUIRED BY LOCAL AHJ. INVERTER/DC DISCONNECT IF REQUIRED BY LOCAL AHJ.
PER CODE(S): NEC 2020: 690.56(C)(2)

WARNING
POWER SOURCE OUTPUT
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

LABEL LOCATION:
SERVICE PANEL IF SUM OF BREAKERS EXCEEDS PANEL RATING
NEC 705.12 (B)(3)(2)

WARNING
SECOND SOURCE IS PHOTOVOLTAC SYSTEM

LABEL LOCATION:
POINT OF INTERCONNECTION
PRODUCTION METER
AC DISCONNECT/BREAKER
(PER CODE: NEC 690.13(B))

PHOTOVOLTAC
AC DISCONNECT

NEC 705.12(B)(3)(3) & NEC 690.59

- SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF THE 2020 ARTICLE 110.21(G) UNLESS SPECIFIC INSTRUCTIONS ARE REQUIRED BY SECTION 690. OR IF REQUESTED BY THE LOCAL AHJ.
- SIGNS AND LABELS SHALL ADEQUATELY WARN OF HAZARDS USING EFFECTIVE WORDS, COLORS AND SYMBOLS.
- LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
- LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED. SIGNS AND LABELS SHALL COMPLY WITH ANSI Z39.4-2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.
- DO NOT COVER EXISTING MANUFACTURER LABELS.

PHOTOVOLTAC AC DISCONNECT

MAXIMUM AC OPERATING CURRENT: 32 AMPs
NOMINAL OPERATING AC VOLTAGE: 240 VAC

LABEL LOCATION:
AC DISCONNECT(S), PHOTOVOLTAC SYSTEM POINT OF INTERCONNECTION

PER CODE(S): NEC 2020: 690.54

PHOTOVOLTAC POWER SOURCE

LABEL LOCATION:
CONDUIT COMBINER BOX

(PER CODE: NEC 690.31(P)(2))

CAUTION

PHOTOVOLTAC SYSTEM CIRCUIT IS BACKFEED

LABEL LOCATION:
MSP (PER CODE: NEC 705.12(D) & NEC 690.59

MAIN PHOTOVOLTAC SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT / UTILITY METER
(PER CODE: NEC 690.13(B))

WARNING

THIS EQUIPMENT FED BY MULTIPLE SOURCES:
TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN POWER SUPPLY SHALL NOT EXCEED CAPACITY OF BUSBAR

LABEL LOCATION:
POINTS OF CONNECTION/BREAKER
CODE: NEC 705.12(B)(3)(3)

WARNING
ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

LABEL LOCATION:
DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.13(B))

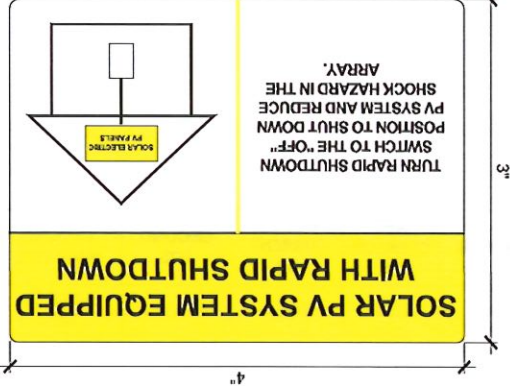
WARNING

THE DISCONNECTION OF THE GROUNDING CONDUCTOR(S) MAY RESULT IN OVERVOLTAGE ON THE EQUIPMENT

LABEL LOCATION:
INVERTER
PER CODE: NEC 690.31(E)

✓	14.41	RATED MAXIMUM POWER- POINT CURRENT (Imp)
✓	380	POINT MAXIMUM POWER- POINT VOLTAGE (Vmp)
✓	420	MAXIMUM SYSTEM VOLTAGE (Voc)
✓	16.0	MAXIMUM CIRCUIT CURRENT (Isc)

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: NEC 690.53)



LABEL LOCATION:
MAIN SERVICE PANEL
PER CODE : NEC 2020 : IFC 605.11.3.1(1) & IFC 690.56(C)

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VERSION	DESCRIPTION	DATE	REV
	INITIAL RELEASE	09/16/2024	UR

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UTILITY: NATIONAL GRID
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SHEET NAME
WARNING LABELS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

SOLAR'S MOST TRUSTED

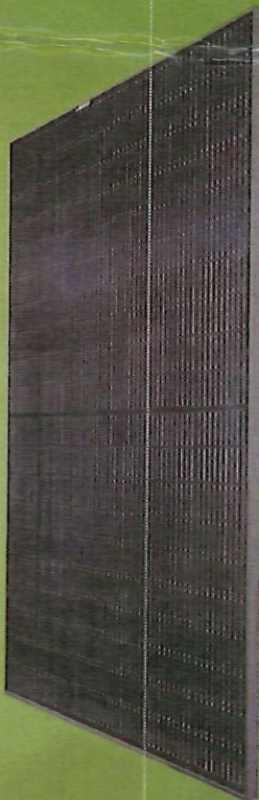


REC TWINPEAK 4 BLACK SERIES

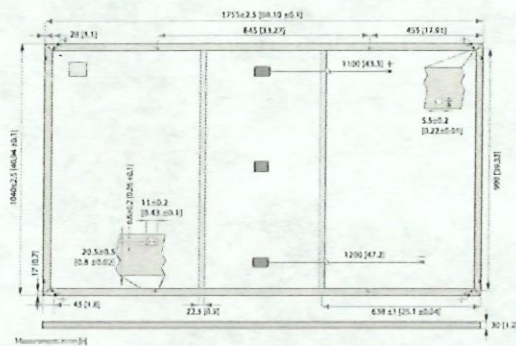
PREMIUM SOLAR PANELS WITH SUPERIOR PERFORMANCE

REC TwinPeak 4 Black Series solar panels feature an aesthetically-pleasing full-black design with high panel efficiency and power output, enabling customers to get the most out of the space used for the installation.

Combined with industry-leading product quality and the reliability of a strong and established European brand, REC TwinPeak 4 Black Series panels are ideal for residential and commercial rooftops worldwide.



REC TWINPEAK 4 BLACK SERIES



ELECTRICAL DATA @ STC		Product code's RECxxTP4 Black	
Power Output - P_{max} (Wp)	355	350	355
Watt Class Sorting (W)	0/+5	0/+5	0/+5
Nominal Power Voltage - V_{mp} (V)	33.5	33.9	34.3
Nominal Power Current - I_{mp} (A)	10.60	10.62	10.65
Open Circuit Voltage - V_{oc} (V)	40.5	40.6	40.6
Short Circuit Current - I_{sc} (A)	11.19	11.26	11.32
Panel Efficiency (%)	19.4	19.7	20.0

Values at standard test conditions (STC) at max AM1.5 irradiance (1000 W/m², temperature 25°C) based on production spread with a tolerance of P_{max} , V_{mp} , I_{mp} , V_{oc} , I_{sc} within one class. Where xxx indicates the nominal power class @ 101% STC, where xxx

ELECTRICAL DATA @ NMOT		Product code's RECxxTP4 Black	
Power Output - P_{max} (Wp)	269	272	276
Nominal Power Voltage - V_{mp} (V)	31.4	31.7	32.1
Nominal Power Current - I_{mp} (A)	8.56	8.58	8.60
Open Circuit Voltage - V_{oc} (V)	37.9	38.0	38.2
Short Circuit Current - I_{sc} (A)	9.04	9.10	9.15

Nominal module operating temperature (NMOT) at max AM1.5 irradiance (800 W/m², temperature 20°C, wind speed 1 m/s). Where xxx indicates the nominal power class @ 101% STC, calculated above.

CERTIFICATIONS	WARRANTY		
	Standard	REC Pro	Trust
IEC 61215:2016, IEC 61730:2016, UL 61730 (pending), ISO 14001:2004, ISO 50001:2015, OHSAS 18001:2007, IEC 62941	No	Yes	Yes
Installed by an REC Certified Solar Professional	Any	<25 kW	25-500 kW
Product Warranty (yrs)	20	25	25
Power Warranty (yrs)	25	25	25
Labor Warranty (yrs)	0	25	10
Power in Year 1	96%	98%	98%
Annual Degradation	0.5%	0.5%	0.5%
Power in Year 25	86%	86%	86%

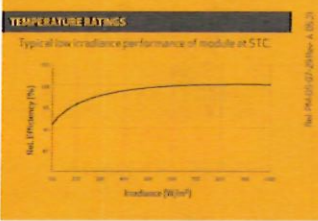
See warranty documents for details. Conditions apply.

GENERAL DATA	
Cell Type:	1/2 half-cut mono c-Si p-type cells 6 strings of 20 cells in series
Glass:	0.33" (3.2 mm) solar glass with anti-reflection surface treatment
Backsheet:	Highly resistant polymeric construction (black)
Frame:	Anodized aluminum (black)
Junction box:	3 port, 3 bypass diodes, IP67-rated enclosure with IP67 rating
Cable:	12 AWG (4 mm ²) PV wire, 43" + 47" (1.1m + 1.2m) in enclosure over 6000 hrs
Connectors:	Standard MC4 PV-KST4/KST4 12 AWG (4 mm ²) wire, resistance < 0.02 Ω, 100% UV resistant
Origin:	Made in Singapore

MECHANICAL DATA	
Dimensions:	68.91 x 40.94 x 1.2 in (1755 x 1040 x 30 mm)
Area:	18.70 sq ft (1.83 m ²)
Weight:	44.0 lbs (20.0 kg)

MAXIMUM RATINGS	
Operational temperature:	-40 ~ +85°C (-40 ~ +193°F)
Maximum system voltage:	1000 V
Maximum test load (front):	+7000 Pa (146 psf)
Maximum test load (rear):	-4000 Pa (83.3 psf)
Max series fuse rating:	25 A
Max reverse current:	25 A

TEMPERATURE RATINGS*	
Nominal Module Operating Temperature:	44.6°C (112°F)
Temperature coefficient of P_{max} :	-0.34%/°C
Temperature coefficient of V_{oc} :	-0.26%/°C
Temperature coefficient of I_{sc} :	0.04%/°C



MORE POWER OUTPUT PER FT²



FEATURING REC'S PIONEERING TWIN DESIGN



100% PID FREE



SUPER-STRONG FRAME



ELIGIBLE

Founded in 1996, REC Group is an international pioneering solar energy company dedicated to empowering consumers with clean, affordable solar power. As Solar's Most Trusted, REC is committed to high quality, innovation, and a low carbon footprint in the solar materials and solar panels manufacturer. Headquarters in Norway with optional headquarters in Singapore. REC also has regional hubs in North America, Europe, and Asia-Pacific.

www.recgroup.com

IRTP
RoofTop Power
2980 WEST SHORE ROAD
WARWICK, RI 02886
TEL: (633) 787-7697
CS, BE: A-044927
EMAIL: design@rooftoppowerco.com



Reviewed and approved
Richard Pantel, P.E.
RI Lic. No. 11237

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	03/16/2024	UR

PROJECT NAME

JAMES E BROCK
128 DE PASQUALE AVE,
PROVIDENCE, RI 02903 USA
APN# PROV28L1006
UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

GENERAC



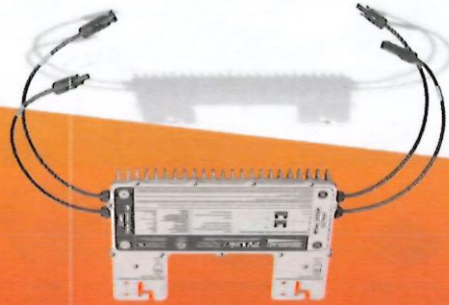
- Quick connections with MC4 connectors
- 2500W capacity
- Compatible with high-voltage smart batteries
- Cost-effective solution for high-performance PV
- Ground-fault protection

ADDITIONAL FEATURES

PV Link is the simple solar optimizer for quick installation and long-lasting performance. Connect as few as two or as many as three PV modules to each PV Link to overcome shading and challenging roof lines.

Model: APKE0010

PV Link™
2500W MPPT Substring Optimizer



FEATURES:

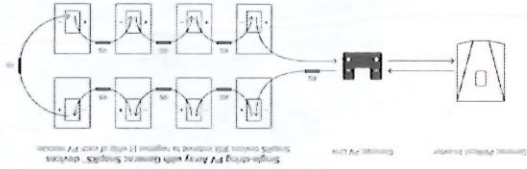
Fast, simple installation

Lower failure rate than module-level optimizers

NEC 2017 rapid shutdown (compliant with String5)

GENERAC

Generac Power Systems, Inc.
545 W2920 Hwy, 59, Waukesha, WI 53189
www.generac.com 1-888-GENERAC (1-888-436-3722)



Specifications subject to change without notice.

Specifications

RATED POWER:	2500 W
PEAK EFFICIENCY:	99%
MPPT VOLTAGE RANGE:	60-350 VMP
MAX INPUT VOLTAGE:	420 VDC max when cold
MAX OUTPUT:	420 VDC
NOMINAL OUTPUT (REBUS™):	380 VDC
MAX OUTPUT CURRENT:	8 A
MAX SHORT CIRCUIT CURRENT (ISC):	18 A
STANDBY POWER:	<1 W
PROTECTIONS:	Ground Fault, Arc-fault (Arc-fault Type 1 AFCT, Integrated)
MAX OPERATING TEMP:	158 °F (70 °C)
SYSTEM MONITORING:	PowerView Web Portal and Mobile App
ENCLOSURE:	Type 38
WEIGHT:	7.3 lb (3.3 kg)
DIMENSIONS:	L x W x H in (mm) 7" x 15.4" x 9.6" (50.8 x 391.2 x 243.8)
COMPLIANCE:	UL 1741, CSA 22.2
WARRANTY:	25 Years



PWRCELL PV LINK (APKE0010)

GENERAC

Generac Power Systems, Inc.
545 W2920 Hwy, 59, Waukesha, WI 53189
www.generac.com 1-888-GENERAC (1-888-436-3722)
APKE0010 REV B

JAMES E BROCK
128 DE PASQUALE AVE,
PROVIDENCE, RI 02903 USA
APN# PROV28L1006
UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

PROJECT NAME

Reviewed and approved
Richard Patel, P.E.
RI Lic. No. 11237



ROOF TOP POWER
2930 WEST SHORE ROAD
WARREN, RI 02885
TEL: (401) 787-7937
CAL: 800-400-2277
EMAIL: rtop@rooftopgenerac.com



VERSION	DESCRIPTION	DATE	REV
		03/16/2024	UR

INTIAL RELEASE

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PROJECT NAME

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B

11" X 17"

SHEET NUMBER

PV-7



FEATURES:

Easy installation

Low cost, high efficiency solution

NEC 2017 and 2020 PVRSS compliant

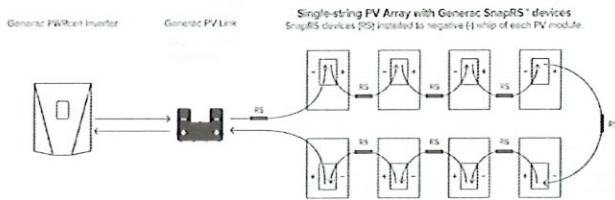
SnapRS™

Inline Disconnect Switch
Model: APKE00011 Certification Model Reference: RS801

The Generac SnapRS is NEC 2017 compliant, and doesn't require any extra hardware to mount, no pairing and no fussy digital communications. Just snap a Generac SnapRS disconnect device to each PV module for total rapid shutdown performance. When signaled by the inverter, SnapRS units break the PV circuit, reducing array voltage to <80V in seconds.

SYSTEM DESIGN

Snap a Generac SnapRS disconnect device to the negative whip (⊖) of each module in the solar array for simple NEC-2017 module-level rapid shutdown compliance. SnapRS devices isolate array voltage when a rapid shutdown command is given by a connected Islanding Inverter



ADDITIONAL FEATURES

- Fast, easy and simple to install
- One SnapRS device per PV module
- Achieves PVRSS Compliance
- Low cost, high efficiency solution

Generac Power Systems, Inc.
545 W29290 Hwy. 59, Waukesha, WI 53189
www.Generac.com 1-888-GENERAC (1-888-436-3722)

Specifications



SNAPRS (APKE00011)

PV MODULE MAX VOC	75 V	OPERATING TEMPERATURE	-40 to 70 °C
EFFICIENCY	99.9 %	CERTIFICATIONS	UL1741
MAX INPUT CURRENT	13 A	WEIGHT	100 g
SHUTDOWN TIME	< 10 Seconds	DIMENSIONS (L,W,H)	1" x 1" x 7"
ENCLOSURE RATING	NEMA 6P	WARRANTY	25 Years

Generac Power Systems, Inc.
545 W29290 Hwy. 59, Waukesha, WI 53189
www.Generac.com 1-888-GENERAC (1-888-436-3722)
Part No. A0000528183 REV A

Specifications subject to change without notice.

ROOF TOP POWER
2990 WEST SHORE ROAD
WARWICK, RI 02886
TEL: (833) 787-7697
CS-DE-A-004327
EMAIL: design@rooftoppowerco.com

RICHARD PANTEL
11237
REGISTERED PROFESSIONAL ENGINEER (PAE)

Reviewed and approved
Richard Pantel, P.E.
RI Lic. No. 11237

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	03/16/2024	UR

PROJECT NAME
JAMES E BROCK
128 DE PASQUALE AVE,
PROVIDENCE, RI 02903 USA
APN# PROV128L1006
UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-8



ROOT TOP POWER
2850 WEST SHORE ROAD
WARWICK, RI 02890
TEL: (833) 787-7971
CELL: (401) 800-0077
EMAIL: rtp@roottoppower.com



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Richard Pantel, P.E.
RI Lic. No. 11237

VERSION		
REV	DATE	DESCRIPTION
UR	03/16/2024	INITIAL RELEASE

PROJECT NAME

JAMES E BROCK
128 DE PASQUALE AVE,
PROVIDENCE, RI 02903 USA
APN# PROV28L1006
UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

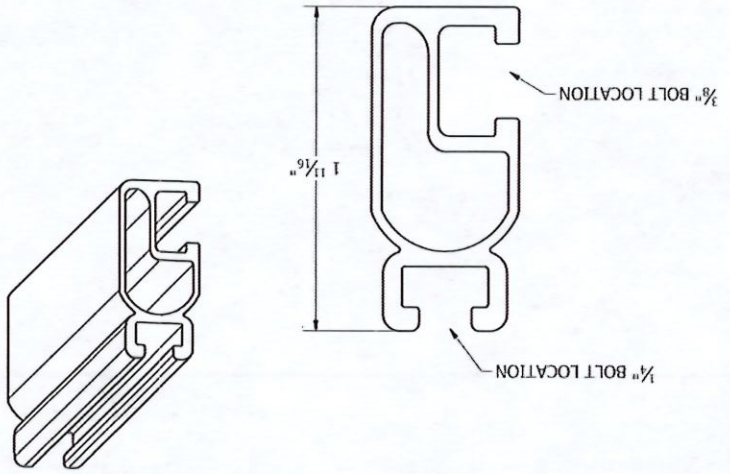
SHEET NUMBER
PV-9

SHEET SM-P02	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL	LEGAL NOTICE PRODUCT PROTECTED BY ONE OR MORE US PATENTS
	PRODUCT LINE: SOLARMOUNT	DRAWING TYPE: PART DETAIL
	DESCRIPTION: LIGHT RAIL	REVISION DATE: 9/11/2017

UNIRAC
1411 BROADWAY BLVD, NE
ALBUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
WWW.UNIRAC.COM

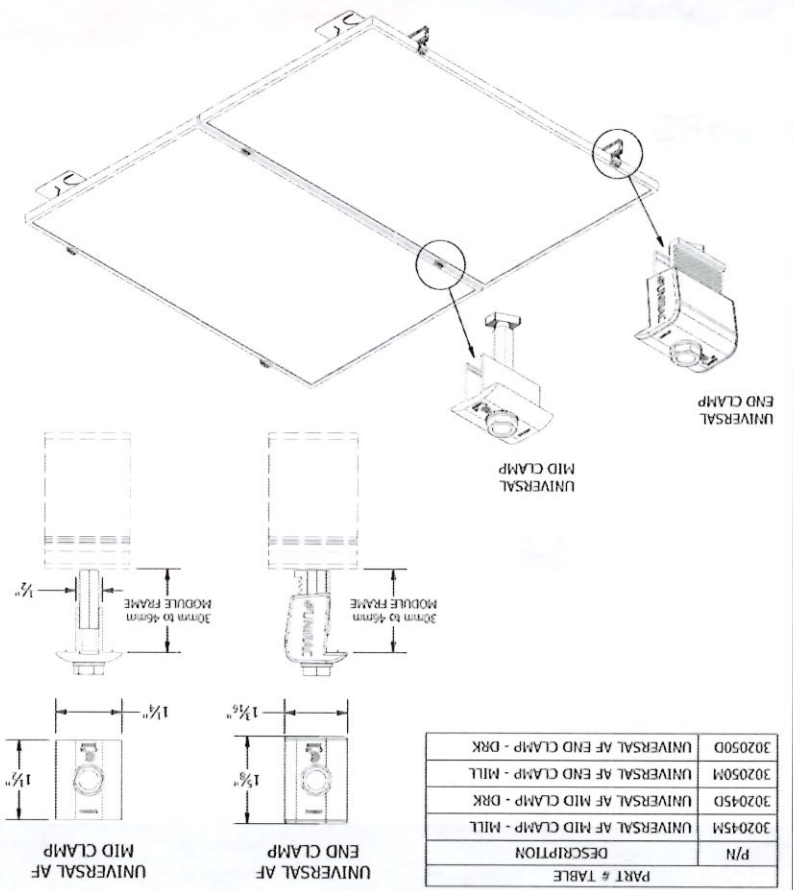
P/N	DESCRIPTION	LENGTH
315168M	SM LIGHT RAIL 168" MILL	168"
315168D	SM LIGHT RAIL 168" DRK	168"
315240M	SM LIGHT RAIL 240" MILL	240"
315240D	SM LIGHT RAIL 240" DRK	240"

PART # TABLE



SHEET SM-A01B	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL	LEGAL NOTICE PRODUCT PROTECTED BY ONE OR MORE US PATENTS
	PRODUCT LINE: SOLARMOUNT	DRAWING TYPE: PART & ASSEMBLY
	DESCRIPTION: UNIVERSAL AF CLAMPS	REVISION DATE: 9/28/2020

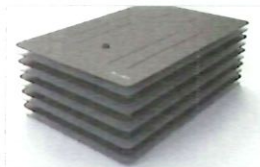
UNIRAC
1411 BROADWAY BLVD, NE
ALBUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
WWW.UNIRAC.COM



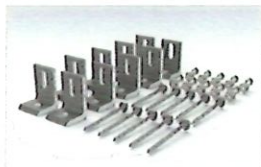
FLASHKIT PRO



FLASHKIT PRO is the complete attachment solution for composition shingle roofs. Featuring Unirac's patented SHED & SEAL technology, a weather proof system which provides the ultimate protection against roof leaks. Kitted in 10 packs for maximum convenience, flashings and hardware are available in Mill or Dark finishes. With FLASHKIT pro, you have everything you need for a quick, professional installation.



TRUSTED WATER SEAL FLASHINGS
FEATURING SHED & SEAL TECHNOLOGY



YOUR COMPLETE SOLUTION
Flashings, lags, continuous slot L-Feet and hardware



CONVENIENT 10 PACKS
Packaged for speed and ease of handling

THE COMPLETE ROOF ATTACHMENT SOLUTION

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

FLASHKIT PRO

INSTALLATION GUIDE



FLASHKIT PRO IS THE COMPLETE FLASHING AND ATTACHMENT SOLUTION FOR COMPOSITION ROOFS.



INSTALL FLASHKIT PRO FLASHING



INSTALL L-FOOT



ATTACH L-FOOT TO RAIL

PRE-INSTALL

- Locate roof rafters and snap chalk lines to mark the installation point for each roof attachment.
- Drill a 7/32" pilot hole at each roof attachment. Fill each pilot hole with sealant.

STEP 1 INSTALL FLASHKIT PRO FLASHING

- Add a U-shaped bead of roof sealant to the underside of the flashing with the open side of the U pointing down the roof slope. Slide the aluminum flashing underneath the row of shingles directly up slope from the pilot hole as shown. Align the indicator marks on the lower end of the flashing with the chalk lines on the roof to center the raised hole in the flashing over the pilot hole in the roof. When installed correctly, the flashing will extend under the two courses of shingles above the pilot hole.

STEP 2 INSTALL L-FOOT

- Fasten L-foot and flashing into place by passing the included lag bolt and pre-installed stainless steel backed EPDM washer through the L-foot EPDM grommet, and the raised hole in the flashing, into the pilot hole in the roof rafter.

- Drive the lag bolt down until the L-foot is held firmly in place. It is normal for the EPDM on the underside of the stainless steel backed EPDM washer to compress and expand beyond the outside edge of the steel washer when the proper torque is applied.

TIP:

- Use caution to avoid over-torquing the lag bolt if using an impact driver.
- Repeat Steps 1 and 2 at each roof attachment point.

STEP 3 ATTACH L-FOOT TO RAIL

- Insert the included 3/8"-16 T-bolts into the lower slot on the Rail (sold separately), spacing the bolts to match the spacing between the roof attachments.
- Position the Rail against the L-Foot and insert the threaded end of the T-Bolt through the continuous slot in the L-Foot. Apply anti-seize to bolt threads to prevent galling of the T-bolt and included 3/8" serrated flange nut. Place the 3/8" flange nut on the T-bolt and finger tighten. Repeat STEP 3 until all L-Feet are secured to the Rail with a T-bolt. Adjust the level and height of the Rail and torque each bolt to 30ft-lbs.

FASTER INSTALLATION. 25-YEAR WARRANTY.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702



ROOF TOP POWER
2990 WEST SHORE ROAD
WARWICK, RI 02886
TEL: (833) 787-7697
CS, B# A-004027
EMAIL: design@rooftoppowerco.com



Reviewed and approved
Richard Pantel, P.E.
RI Lic. No. 11237

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	03/16/2024	UR

PROJECT NAME

JAMES E BROCK
128 DE PASQUALE AVE,
PROVIDENCE, RI 02903 USA
APN# PROV28L1006
UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-10

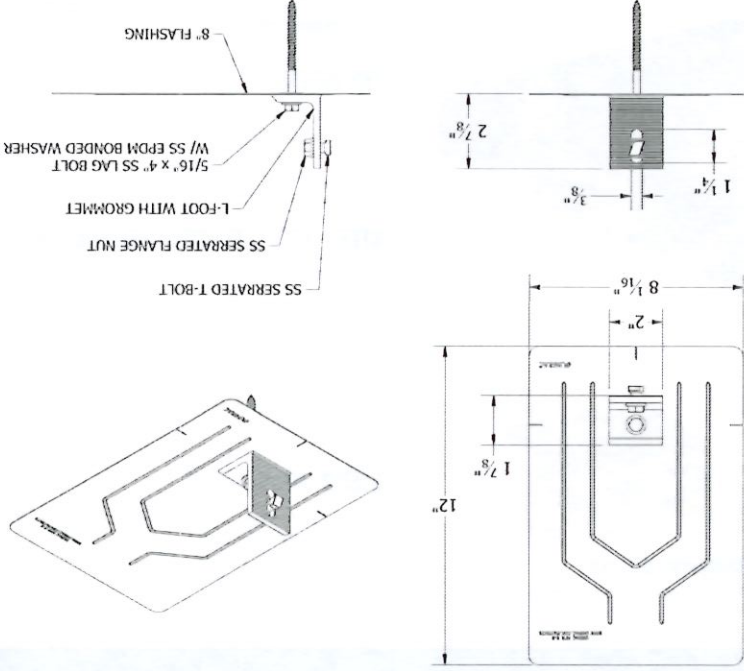
UNIRAC
 1411 BROADWAY BLVD, NE
 ALBUQUERQUE, NM 87102 USA
 PHONE: 505.242.6411
 WWW.UNIRAC.COM

PRODUCT LINE:	SOLAR MOUNT
DRAWING TYPE:	KIT DETAIL
DESCRIPTION:	FLASHKIT PRO
REVISION DATE:	4/28/2020

ALL DIMENSIONS ARE NOMINAL
 DRAWING NOT TO SCALE
 PRODUCT PROTECTED BY ONE OR MORE US PATENTS
 LEGAL NOTICE

SM-A03
 SHEET

PART # TABLE	
P/N	DESCRIPTION
004055M	FLASHKIT PRO MILL
004055D	FLASHKIT PRO DRK



NOTES:
 1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS, AND INSTALLATION INSTRUCTIONS.
 2. PACKAGING: KITS OF 10

SHEET NAME
 SPEC SHEETS
 SHEET SIZE
 ANSI B
 11" X 17"
 SHEET NUMBER
 PV-11

PROJECT NAME
JAMES E BROCK
 128 DE PASQUALE AVE,
 PROVIDENCE, RI 02903 USA
 APN# PROV/M28L1006
 UTILITY: NATIONAL GRID
 AHJ: CITY OF PROVIDENCE

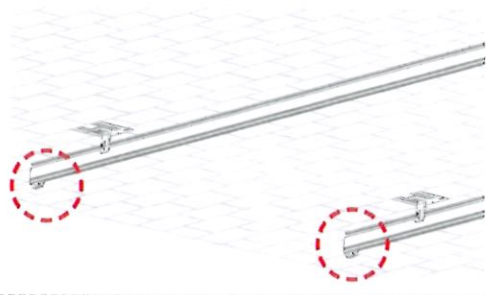
VERSION		
REV	DESCRIPTION	DATE
UR		09/16/2024

Reviewed and approved
 Richard Pantel, P.E.
 RI Lic. No. 11237

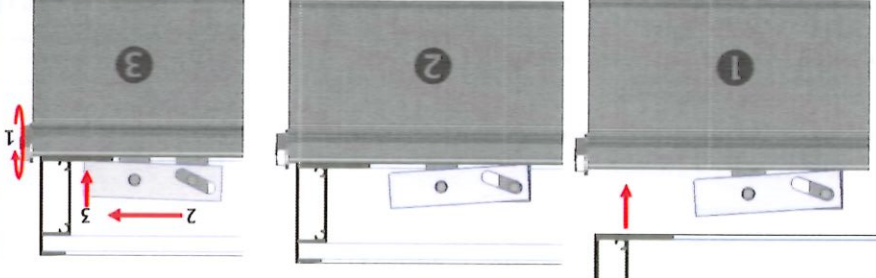


ROOF TOP POWER
 2990 WEST SHORE ROAD
 WARWICK, RI 02895
 TEL: (833) 787-7937
 FAX: (401) 866-0027
 EMAIL: design@rooftoppower.com





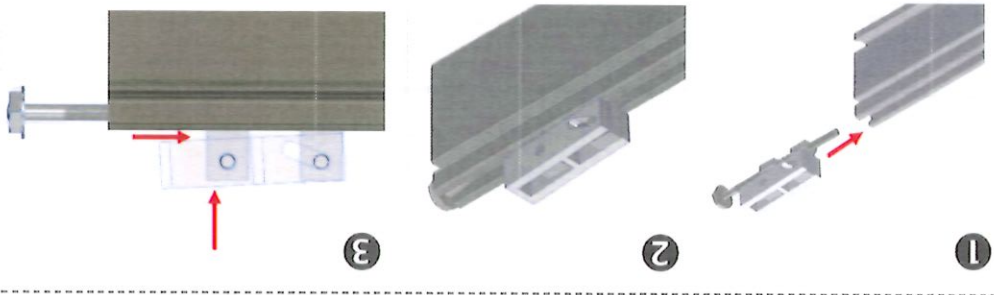
INSTALL MODULE END CLAMPS: The End clamp is supplied as an assembly at the ends of rails. The clamp should be installed on the rails prior to installing end modules.



INSTALL FIRST MODULE: Install the first end module onto rails with the range of the module frame positioned between end clamps an ends of rails.

ENGAGE CLAMP: While holding module in position and with flange in full contact with rail, rotate end clamp bolt until **To ensure bolt is not over-torqued, use low torque setting as on drill or if using an impact driver, stop rotation as soon as impact action of driver begins.**

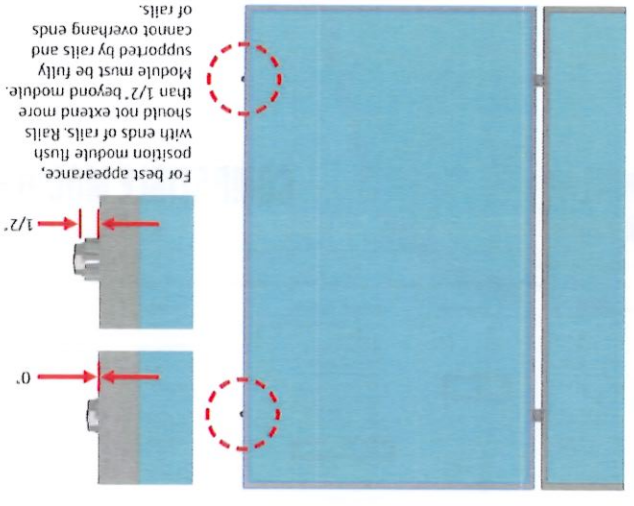
TORQUE VALUE (See table and notes on PG. A)
End clamp bolt to 3 Ft-lbs, No anti-seize



INSTALL END CLAMPS ON RAIL: Slide end clamp on to rail by engaging the two T-guide brackets with the top slot of the rails. **Ensure bolt is extended as far as possible so that clamp is positioned at max. distance from end of rail.**

POSITION END CLAMPS: Slide end clamp assembly on to rail until bolt head engages with end of rail. **End clamps are positioned on rails prior to the first end module and prior to the last end module.**

NOTE: To assist insertion of clamp into rail slot, pressure may be applied to top or side of bracket as shown. Do not force clamp into rail by pushing on bolt with excessive force.



For best appearance, position module flush with ends of rails. Rails should not extend more than 1/2" beyond module. Module must be fully supported by rails and cannot overhang ends of rails.

ROOF TOP POWER
2900 WEST SHORE ROAD
WAWMUCK, RI 02886
TEL: (833) 787-7037
CSL#B: A0040277
EVAL: dsg@rooftoppower.com

Richard Pantel, P.E.
Richard Pantel, P.E.
RI Lic. No. 11237

Reviewed and approved

VERSION	
REV	DESCRIPTION
UR	03/16/2024

PROJECT NAME

JAMES E BROCK
128 DE PASQUALE AVE.
PROVIDENCE, RI 02903 USA
APN# PROV28L1006
UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B

11" X 17"

SHEET NUMBER

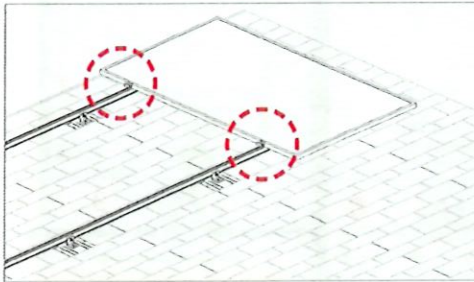
PV-13



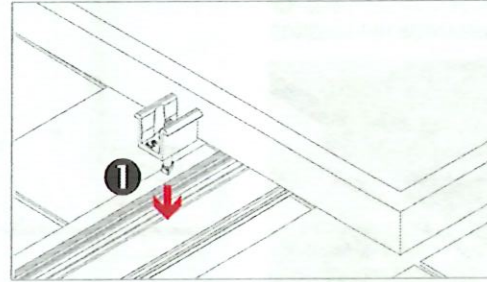
BONDING MIDCLAMP

INSTALLATION GUIDE

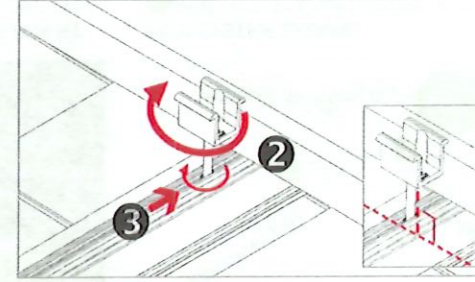
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PAGE



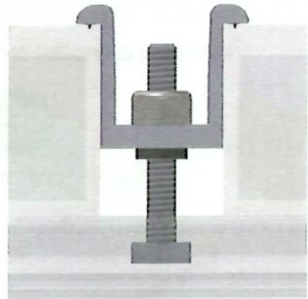
INSTALL MIDCLAMPS: Midclamp is supplied as an assembly with a T-bolt for module installation. Clamp assemblies may be positioned in rail near point of use prior to module placement.



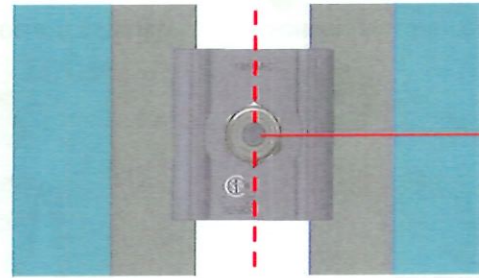
INSERT MIDCLAMP ASSEMBLY: Insert 1/4" T-Bolt into top slot of rail



MIDCLAMP: Rotate midclamp assembly and slide until clamp is against module frame. Do not tighten nut until next module is in position. Ensure bolt is perpendicular to rail.



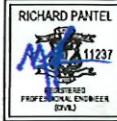
PLACE ADJACENT MODULE AGAINST CLAMPS: Modules must be tight against clamps with no gaps. Tighten nut to required torque.



POSITION INDICATOR - SERRATED T-BOLT: Verify the T-bolt position indicator is perpendicular to the rail.

TORQUE VALUE (See table and notes on PG. A)
11 ft-lbs. No anti-seize.

IRTP
RoofTop Power
ROOF TOP POWER
2990 WEST SHORE ROAD
WARWICK, RI, 02886
TEL: (833) 787-7697
CSL#R: A-004927
EMAIL: design@rooftoppowerco.com



Reviewed and approved
Richard Pantel, P.E.
RI Lic. No. 11237

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PROJECT NAME

JAMES E BROCK
128 DE PASQUALE AVE,
PROVIDENCE, RI 02903 USA
APN# PROV028L1006
UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

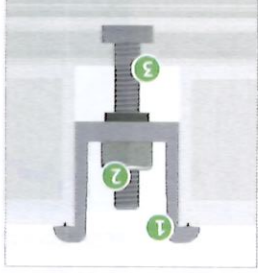
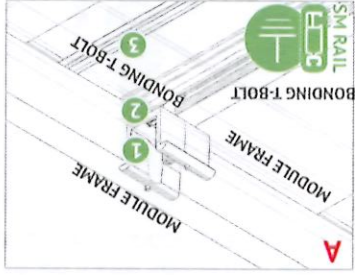
SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-14

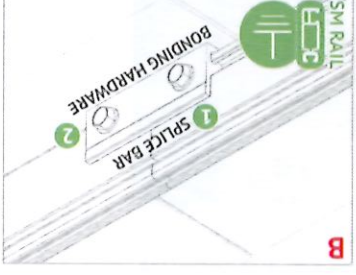
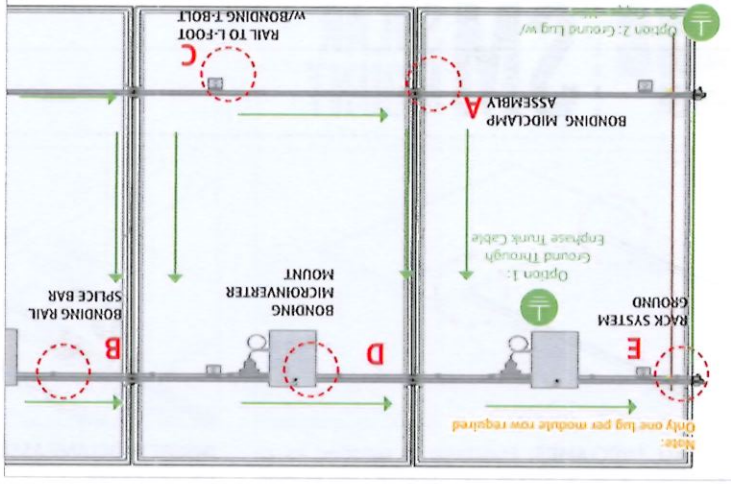
SM SOLAR MOUNT BONDING CONNECTION GROUND PATHS

INSTALLATION GUIDE | PAGE 0



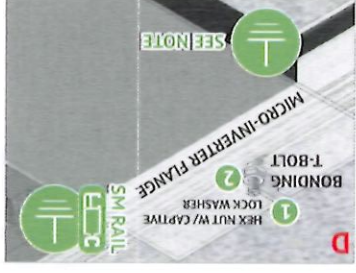
BONDING MIDCLAMP ASSEMBLY

- 1 Aluminum mid clamp with stainless steel bonding pins that pierce module frame anodization to bond module to module through clamp
- 2 Stainless steel nut bonds aluminum clamp to stainless steel T-bolt
- 3 Serrated T-bolt head penetrates rail anodization to bond T-bolt, nut, clamp, and modules to SM rail



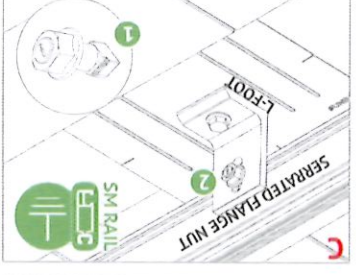
BONDING RAIL SPLICE BAR

- 1 Bonding Hardware creates bond between splice bar and each rail section
- 2 Aluminum splice bar spans across rail gap to create rail to rail bond rail on at least one side of splice will be grounded.
- 3 Note: Splice bar and bonded connection are non-structural. The splice bar function is rail alignment and bonding.



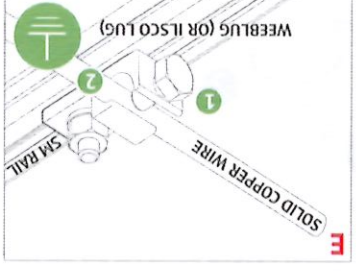
BONDING MICROINVERTER MOUNT

- 1 Hex nut with captive lock washer bonds metal microinverter flange to stainless steel T-bolt
- 2 Serrated T-bolt head penetrates rail anodization to bond T-bolt, nut, and L-foot to grounded SM rail. System ground including racking and modules may be achieved through the truck cable details of approved microinverter systems. See page 1 for details.



RAIL TO L-FOOT W/BONDING T-BOLT

- 1 Serrated flange nut removes L-foot anodization to bond L-foot to stainless steel T-bolt
- 2 Serrated T-bolt head penetrates rail anodization to bond T-bolt, nut, and L-foot to grounded SM rail



RACK SYSTEM GROUND

- 1 WEERLUG washer dimples pierce anodized rail to create bond between rail and lug
- 2 Solid copper wire connected to lug is routed to provide final system ground connection. HOTE: Race lug can also be used when secured to the side of the rail. See page 1-3 for details.

Option 1: Ground Through
Option 2: Ground Lug w/ WEERLUG

ROOF TOP POWER
2980 NESH TROBE ROAD
WARWICK, RI 02886
TEL: (401) 787-7977
CSL: 800-400-2277
EMAIL: design@rooftoppower.com

Richard Pantel, P.E.
Reviewed and approved
RI Lic. No. 11237

VERSION

REV	DESCRIPTION	DATE	UR
01	INITIAL RELEASE	03/16/2024	UR

PROJECT NAME

JAMES E BROCK
128 DE PASQUALE AVE,
PROVIDENCE, RI 02903 USA
APN#: PROV28L1006
UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-15



CODE COMPLIANCE NOTES

INSTALLATION GUIDE

C PAGE

SYSTEM LEVEL FIRE CLASSIFICATION

The system fire class rating requires installation in the manner specified in the SOLARMOUNT Installation Guide. SOLARMOUNT has been classified to the system level fire portion of UL 1703. This UL 1703 classification has been incorporated into our UL 2703 product certification. SOLARMOUNT has achieved system level performance for steep sloped roofs. System level fire performance is inherent in the SOLARMOUNT design, and no additional mitigation measures are required. The fire classification rating is only valid on roof pitches greater than 2:12 (slopes \geq 2 inches per foot, or 9.5 degrees). The system is to be mounted over fire resistant roof covering rated for the application. There is no required minimum or maximum height limitation above the roof deck to maintain the system fire rating for SOLARMOUNT. Module Types & System Level Fire Ratings are listed below:

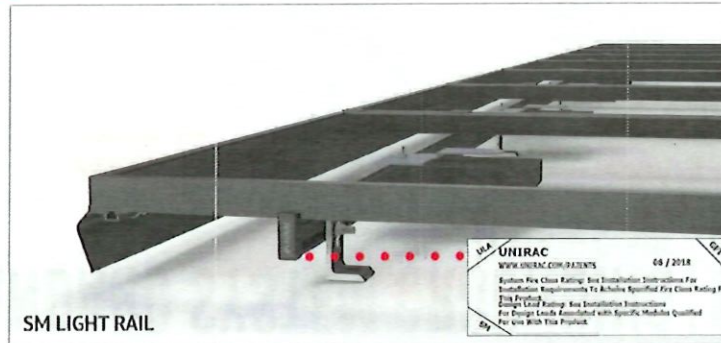
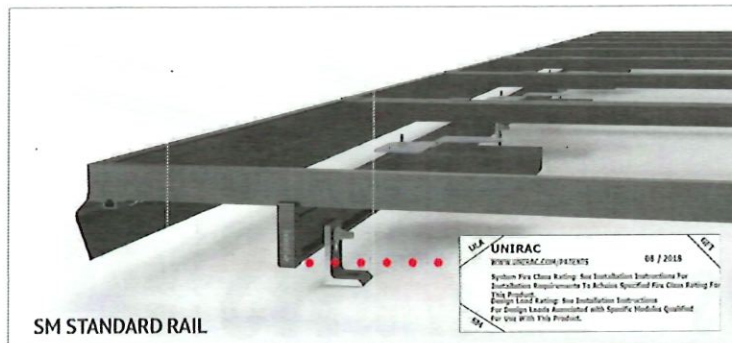
Rail Type	Module Type	System Level Fire Rating	Rail Direction	Module Orientation	Mitigation Required
Standard Rail	Type 1, Type 2, Type 3 & Type 10	Class A, Class B & Class C	East-West	Landscape OR Portrait	None Required
			North-South	Landscape OR Portrait	None Required
Light Rail	Type 1 & Type 2	Class A, Class B & Class C	East-West	Landscape OR Portrait	None Required
			North-South	Landscape OR Portrait	None Required

This racking system may be used to ground and/or mount a PV module complying with UL1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

UL2703 CERTIFICATION MARKING LABEL

Unirac SOLARMOUNT is listed to UL 2703. Certification marking is embossed on all mid clamps as shown. Labels with additional information will be provided. After the racking system is fully assembled, a single label should be applied to the SOLARMOUNT rail at the edge of the array. Before applying the label, the corners of the label that do not pertain to the system being installed must be removed so that only the installed system type is showing.

Note: The sticker label should be placed such that it is visible, but not outward facing.



IRTP
 RoofTop Power
 2990 WEST SHORE ROAD
 WARWICK, RI, 02886
 TEL: (833) 787-7697
 CSL#R: A-054327
 EMAIL: design@rooftoppowerco.com



Reviewed and approved
 Richard Pantel, P.E.
 RI Lic. No. 11237

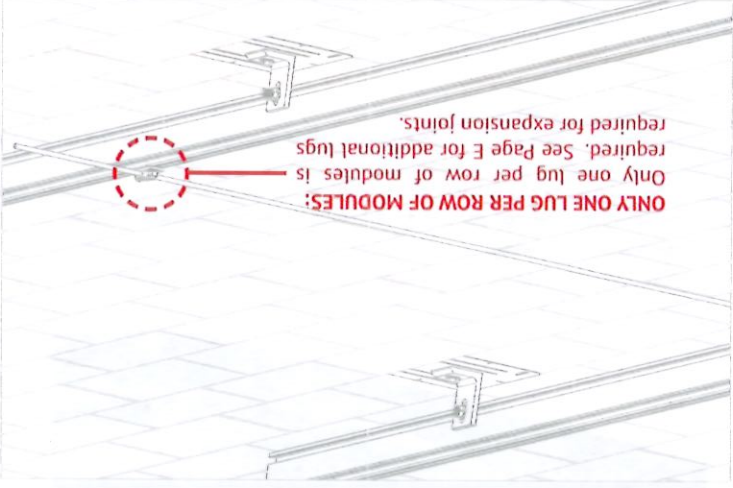
VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	03/16/2024	UR

PROJECT NAME
JAMES E BROCK
128 DE PASQUALE AVE.
PROVIDENCE, RI 02903 USA
APN# PROV28L1006
UTILITY: NATIONAL GRID
AHJ: CITY OF PROVIDENCE

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

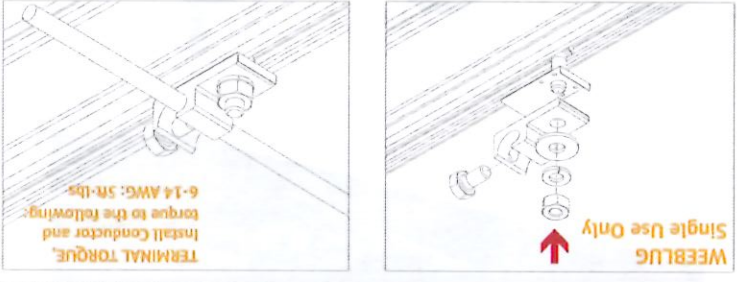
SHEET NUMBER
PV-16



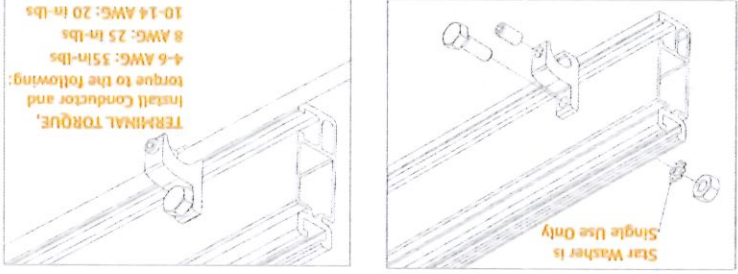
GROUNDING LUG MOUNTING DETAILS:
 Details are provided for both the WEB and Isco products. The WEERlug has a grounding symbol located on the lug assembly. The Isco lug has a green colored set screw for grounding purposes. Installation must be in accordance with NFPA NEC 70, however the electrical designer of record should refer to the latest revision of NEC for actual grounding conductor cable size.
Required if not using approved integrated grounding microinverters

GROUNDING LUG - BOLT SIZE & DRILL SIZE		
GROUND LUG	BOLT SIZE	DRILL SIZE
WEERlug	1/4"	N/A - Place in Top SM Rail Slot
ISCO Lug	#10-32	7/32"

- Torque value depends on conductor size.
- See product data sheet for torque value.



WEERLUG CONDUCTOR - UNIRAC P/N 0080025:
 Apply Anti Seize and insert a bolt in the aluminum rail and through the clearance hole in the stainless steel flat washer. Place the stainless steel flat washer on the bolt, oriented so the dimples will contact the aluminum rail. Place the lug portion on the bolt and stainless steel flat washer. Install stainless steel flat washer, lock washer and nut. Tighten the nut until the dimples are completely embedded into the rail and lug.
TORQUE VALUE 10 ft lbs. (See Note on Pg. A)
 See product data sheet for more details, Model No. WEER-LUG-6.7



ISCO LAY-IN LUG CONDUCTOR - UNIRAC P/N 008009P: Alternate Grounding Lug
 - Drill, deburr hole and bolt thru both rail walls per table.
TORQUE VALUE 5 ft lbs. (See Note on Pg. A)
 See ISCO product data sheet for more details, Model No. GBL-4DBT.
NOTE: ISOLATE COPPER FROM ALUMINUM CONTACT TO PREVENT CORROSION

ROOF TOP POWER
 2990 WES17 SHORE ROAD
 WARWICK, RI 02896
 TEL: (401) 787-7671
 CS, BSR #004027
 EMAIL: design@rooftoppower.com

Richard Pantel, P.E.
 RI Lic. No. 11237

Reviewed and approved

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SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B

11" X 17"

SHEET NUMBER

PV-17



Certificate of Compliance

Certificate: 70131735 Master Contract: 266909
 Project: 80196316 Date Issued: 2024-03-01
 Issued to: Unirac
 1411 Broadway NE
 Albuquerque, New Mexico 87102
 United States
 Attention: Rob D'Anastasio

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.



Issued by: Michael Hoffmugle
 Michael Hoffmugle

PRODUCTS

C531302 POWER SUPPLIES- PHOTOVOLTAICS - PV Racking
 C531382 POWER SUPPLIES- PHOTOVOLTAICS - PV Racking and clamping systems-Certified to US Standards

Ground Fixed Tilt is a Roll-Formed Steel and extruded aluminum rail PV racking system that is ground mounted in portrait orientation

Model(s)
GFT

Ground Fixed Tilt

The racking system listed is designed to provide bonding/grounding, and mechanical stability for photovoltaic modules. Racking system is secured to the ground with roll-formed steel piles. Modules are secured to the racking system with stainless steel or aluminum rail clamps and Aluminum end clamps. The modules are bonded to the racking system with bonding rail clamps with piercing points. The system is grounded with 10 AWG copper wire to bonding/grounding legs.



Certificate: 70131735
 Project: 80196316

Master Contract: 266909
 Date Issued: 2024-03-01

Model(s)
ULA

Solarmount

The system listed is designed to provide bonding/grounding, and mechanical stability for photovoltaic modules. The system is secured to the roof with the L-Foot components through the roofing material to building structure. Modules are secured to the racking system with stainless steel or aluminum rail clamps and Aluminum end clamps. The modules are bonded to the racking system with the stainless-steel bonding rail clamps with piercing points. The system is grounded with 10 AWG copper wire to bonding/grounding legs. Fire ratings of Class A with Type 1, 2, 3 (with metallic frame), 4 (with trim), 5 (with trim), 10 (with metallic frame), 19, 22, 25, 29, or 30 for steep slope. Tested at 5" interstitial gap which allows installation at any stand-off height.

The grounding of the system is intended to comply with the latest edition of the National Electrical Code, to include NEC 250 & 690. Local codes compliance is required, in addition to national codes. All grounding bonding connections are to be torqued in accordance with the Installation Manual and the settings used during the certification testing for the current edition of the project report.

SolarMount Tilt Legs is a variation of the SolarMount system that utilizes structural standoff attachments to achieve a range of module tilt angles. The SolarMount Tilt Legs installation instructions are captured in an Installation Addendum that covers both the SolarMount Tilt Legs system and the NXT Tilt Legs system. SolarMount Tilt Legs has mechanical load ratings independent of the SolarMount and NXT UMOUNT mechanical load ratings.

The system may employ optimizers/micro-inverters and used for grounding when installed per installation instructions.

Latest SolarMount Install Manual revision: PUB2023NOV10

Latest SolarMount NXT Tilt Legs Installation Addendum revision: PUB2024JAN18

SolarMount UL 2703 Mechanical Load ratings:

Module Area up to 22.2 sq ft	
Downward Design Load (lb/ft²)	113.5
Upward Design Load (lb/ft²)	50.7
Down-Slope Load (lb/ft²)	16.13

Module Area up to 27.12 sq ft	
Downward Design Load (lb/ft²)	33.9
Upward Design Load (lb/ft²)	33.9
Down-Slope Load (lb/ft²)	16.5

Module Area up to 29.49 sq ft	
Downward Design Load (lb/ft²)	31.18
Upward Design Load (lb/ft²)	31.18



ROOF TOP POWER
 2950 WEST SHORE ROAD
 WARWICK, RI 02886
 TEL: (633) 787-7697
 CSL BR: A-004027
 EMAIL: info@rooftoppowerco.com



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 RI Lic. No. 11237

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PROJECT NAME

JAMES E BROCK
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 PROVIDENCE, RI 02903 USA
 APN# PROV028L1006
 UTILITY: NATIONAL GRID
 AHJ: CITY OF PROVIDENCE

SHEET NAME
 SPEC SHEETS

SHEET SIZE
 ANSI B
 11" X 17"

SHEET NUMBER
 PV-18



ROOF TOP POWER
2990 WEST SHORE ROAD
WARREN, RI 02896
TEL: (401) 787-7878
C.S.B.# A-004227
EMAIL: design@rooftoppower.com



Reviewed and approved
Richard Patel, P.E.
RI Lic. No. 11237

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01	INITIAL RELEASE	03/16/2024	UR

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SPEC SHEETS

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ANSI B
11" X 17"

SHEET NUMBER
PV-19



<https://www.eng-alliance.com>

Installation Orientation:

See SOLAR MOUNT RAIL Flush Installation Guide.
Landscape - PV Panel long dimension is parallel to ridge/leave line of the roof and the PV panel is mounted on the long side.
Portrait - PV Panel short dimension is parallel to ridge/leave line of the roof and the PV panel is mounted on the short side.

Components and Cladding Roof Zones:

The Components and Cladding Roof Zones shall be determined based on ASCE 7-10 & 7-16 Component and Cladding design.

Notes:

1. U-Builder 2.0 Online tool analysis is only for Unirac SM SOLAR MOUNT RAIL Flush systems and do not include roof capacity check.
2. Risk Category II per ASCE 7-16.
3. Topographic factor, K_{zt} is 1.0.
4. Array Edge Factor $V_e = 1.5$
5. Average parapet height is 0 ft.
6. Wind speeds are LRFD values.
7. Attachment spacing(s) apply to a seismic design category E or less.

Design Responsibility:

The U-Builder 2.0 design software is intended to be used under the responsible charge of a registered design professional where required by the authority having jurisdiction. In all cases, this U-Builder 2.0 software should be used under the direction of a design professional with sufficient structural engineering knowledge and experience to be able to:

- Evaluate whether the U-Builder 2.0 Software is applicable to the project, and
- Understand and determine the appropriate values for all input parameters of the U-Builder 2.0 software.

This letter certifies that the Unirac SM SOLAR MOUNT Rails Flush, when installed according to the U-Builder 2.0 engineering report and the manufacturer specifications are in compliance with the above codes and loading criteria.

This certification excludes evaluation of the following components:

- 1) The structure to support the loads imposed on the building by the array, including, but not limited to: strength and deflection of structural framing members, fastening and/or strength of roofing materials, and/or the effects of snow accumulation on the structure.
- 2) The attachment of the SM SOLAR MOUNT Rails to the existing structure.
- 3) The capacity of the solar module frame to resist the loads.

This requires additional knowledge of the building and is outside the scope of the certification of this racking system.

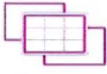
Please feel free to call for any questions or clarifications.

Prepared By:
Engineering Alliance, Inc
Sugar Land, TX



4603 April Meadow Way, Sugar Land, TX 77479. Ph: 832 865 4757

18-JAN-2024



Engineering Alliance, Inc

<https://www.eng-alliance.com>

18 January 2024

Unirac
1411 Broadway Blvd. NE
Albuquerque, NM 87101
TEL: 505 242 6411

Attn: Engineering Department

Subject: Engineering Certification for the Unirac SOLAR MOUNT Flush Rail System to Support Photovoltaic Panels.

The Unirac SOLAR MOUNT Flush-to-roof is an extruded aluminum rail system that is engineered to hold most framed solar modules to a roof structure and installed parallel to the roof.

We have reviewed the SOLAR MOUNT system, a proprietary mounting system constructed from modular parts which are intended for rooftop installation of solar photovoltaic (PV) panels; and have reviewed the U-Builder 2.0 Online tool. This U-Builder 2.0 software includes analysis for the SOLAR MOUNT rails (SM LIGHT rail, SM STANDARD rail, and SM HEAVY DUTY rail) with Standard, Universal AS, and Pro Series hardware. All information, data, and analysis are in compliance with the following codes, city ordinances, and typical specifications:

Codes:

1. ASCE/SEI 7-10, 7-16 Minimum Design Loads for Buildings and Other Structures.
2. International Building Code, 2012-2018 Edition w/Provisions from SEAOC PV-2 2017.
3. International Residential Code, 2012-2018 Edition w/Provisions from SEAOC PV-2 2017.
4. AC408, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES.
5. Aluminum Design Manual, 2015 & 2020 Edition.

Following are typical specifications to meet the above code requirements:

Design Criteria:

- Ground Snow Load = 0 - 100 (psf)
- Basic Wind Speed = 85 - 150 (mph)
- Roof Mean Height = 0 - 60 (ft)
- Roof Pitch = 0 - 45 (degrees)
- Exposure Category = B, C & D

Attachment:

- Shingle Roof: L-Foot, Flashit Pro, Flashoc Comp, Flashoc Duo, Flashit Pro SB
- Metal Roof: Standing Seam attachments, PM-9000S, PM Adjust Slotted
- Tile Roofs: Solar Hooks, Tie Replacement

Attachment Spacing:

Per U-Builder 2.0 Engineering report.

Canfliver:

The maximum canfliver length is L/3, where "L" is the span noted in the U-Builder 2.0 online tool.

Clearance:

2" to 10" clear from top of roof to top of PV panel

Tolerance(s):

1.0" tolerance for any specified dimension in this report is allowed for installation