

# PHOTOVOLTAIC ROOF MOUNT SYSTEM

36 MODULES-ROOF MOUNTED - 15.480 kW DC, 15.200 kW AC

151 NW CHADLEY LN, LAKE CITY, FL 32055

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LUNEX POWER INC.  
4721 N GRADY AVE  
TAMPA FL 33614  
LIC #: CVC57085  
PHONE: 813-540-8807

## PROJECT DATA

## GENERAL NOTES

## VICINITY MAP

PROJECT ADDRESS: 151 NW CHADLEY LN, LAKE CITY, FL 32055

OWNER: RUSTY BERRY

CONTRACTOR: LUNEX POWER INC.  
4721 N GRADY AVE  
TAMPA FL 33614  
PHONE: 813-540-8807

DESIGNER: ESR

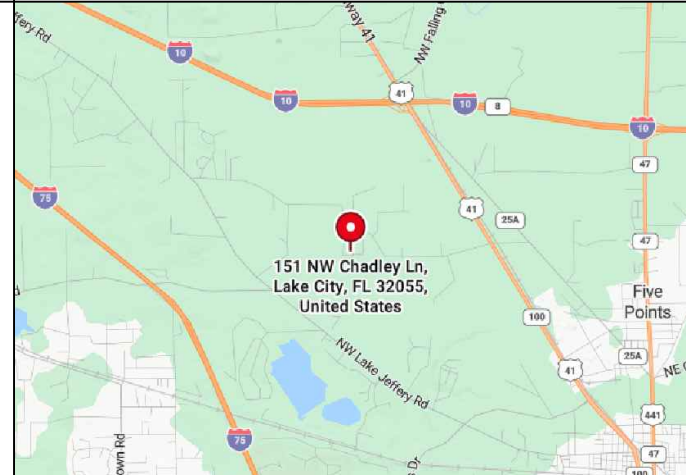
SCOPE: 15.480 KW DC ROOF MOUNT SOLAR PV SYSTEM WITH 36 QCELLS:Q.TRON BLK M-G2.C+ 430W PV MODULES WITH 36 SOLAREEDGE: U650 POWER OPTIMIZERS  
02 SOLAREEDGE: USE11400H-USSKBEZ8 (240V/7600W) INVERTERS

AUTHORITIES HAVING JURISDICTION:  
BUILDING: COLUMBIA COUNTY  
ZONING: COLUMBIA COUNTY  
UTILITY: FPL

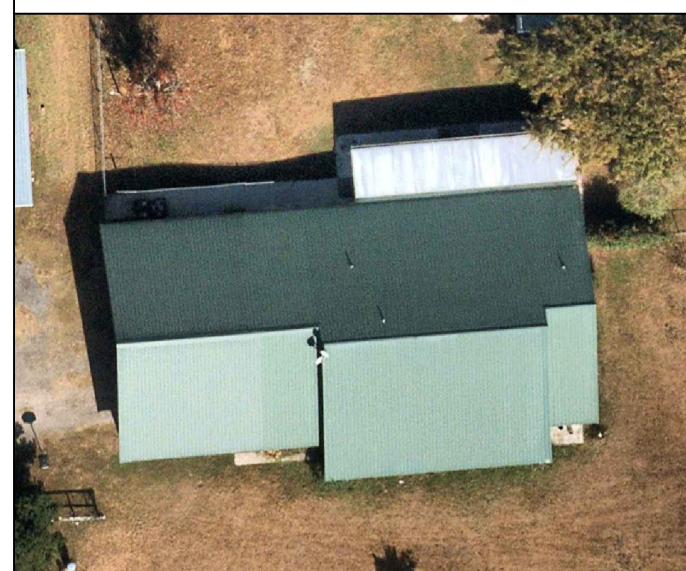
### SHEET INDEX

PV-1	COVER SHEET
PV-2	SITE PLAN
PV-3	ROOF PLAN & MODULES
PV-4	ELECTRICAL PLAN
PV-5	STRUCTURAL DETAIL
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PV-7	WIRING CALCULATIONS
PV-7A	FAULT CURRENT CALCULATIONS
PV-8	LABELS
PV-9	PLACARD
PV-10	OPTIMIZER CHART
PV-11+	EQUIPMENT SPECIFICATIONS

- ALL COMPONENTS ARE UL LISTED AND NEC CERTIFIED, WHERE WARRANTED.
- THE SOLAR PV SYSTEM WILL BE INSTALLED IN ACCORDANCE WITH ARTICLE 690 OF THE NEC 2020.
- THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION.
- ALL CONDUCTORS OF A CIRCUIT, INCLUDING THE EGC, MUST BE INSTALLED IN THE SAME RACEWAY, OR CABLE, OR OTHERWISE RUN WITH THE PV ARRAY CIRCUIT CONDUCTORS WHEN THEY LEAVE THE VICINITY OF THE PV ARRAY.
- WHERE METALLIC CONDUIT CONTAINING DC CONDUCTORS IS USED INSIDE THE BUILDING, IT SHALL BE IDENTIFIED AS "CAUTION: SOLAR CIRCUIT" EVERY 10FT.
- HEIGHT OF THE AC DISCONNECT SHALL NOT EXCEED 6'-7" PER NEC CODE 240.24.
- A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 2020 690.47 AND 250.50 THROUGH 60 AND 250-166 SHALL BE PROVIDED. PER NEC GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE OR INADEQUATE 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 LARGER THAN #6 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM.
- PHOTOVOLTAIC MODULES ARE TO BE CONSIDERED NON-COMBUSTIBLE.
- PHOTOVOLTAIC INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
- ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE. WIRING MUST BE PERMANENTLY AND COMPLETELY HELD OFF THE ROOF SURFACE.
- ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH THE LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.
- INVERTER(S) USED IN UNGROUNDED SYSTEM SHALL BE UL 1741 LISTED.
- THE INSTALLATION OF EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE PERFORMED ONLY BY QUALIFIED PERSONS [NEC 690.4(C)]
- ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED (OR BETTER), INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES.
- ALL EQUIPMENT SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH NEC ARTICLE 250.
- SYSTEM GROUNDING SHALL BE IN ACCORDANCE WITH NEC 690.41.
- PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION IN ACCORDANCE WITH NEC 690.12
- DISCONNECTING MEANS SHALL BE LOCATED IN A VISIBLE, READILY ACCESSIBLE LOCATION WITHIN THE PV SYSTEM EQUIPMENT OR A MAXIMUM OF 10 FEET AWAY FROM THE SYSTEM [NEC 690.13(A)]
- ALL WIRING METHODS SHALL BE IN ACCORDANCE WITH NEC 690.31
- WORK CLEARANCES AROUND ELECTRICAL EQUIPMENT WILL BE MAINTAINED PER NEC 110.26(A)(1), 110.26(A)(2) AND 110.26(A)(3).
- ROOFTOP MOUNTED PHOTOVOLTAIC PANELS AND MODULES SHALL BE TESTED, LISTED & IDENTIFIED IN ACCORDANCE WITH UL1703
- ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.



## HOUSE PHOTO



## CODE REFERENCES

PROJECT TO COMPLY WITH THE FOLLOWING:

FLORIDA RESIDENTIAL CODE, 8TH EDITION 2023 (FRC)  
FLORIDA PLUMBING CODE, 8TH EDITION 2023 (FPC)  
FLORIDA BUILDING CODE, 8TH EDITION 2023 (FBC)  
FLORIDA MECHANICAL CODE, 8TH EDITION 2023 (FMC)  
2020 NATIONAL ELECTRICAL CODE  
FLORIDA FIRE PREVENTION CODE, 8TH EDITION 2023 (FFPC)

REVISIONS		
DESCRIPTION	DATE	REV

Reviewed and approved  
Richard Pantel, P.E.  
FL Lic. No. 73222  
04/01/2026

DATE: 04/01/2026

PROJECT NAME & ADDRESS

**RUSTY BERRY  
RESIDENCE**

151 NW CHADLEY LN,  
LAKE CITY, FL 32055

DRAWN BY  
**ESR**

SHEET NAME  
**COVER SHEET**

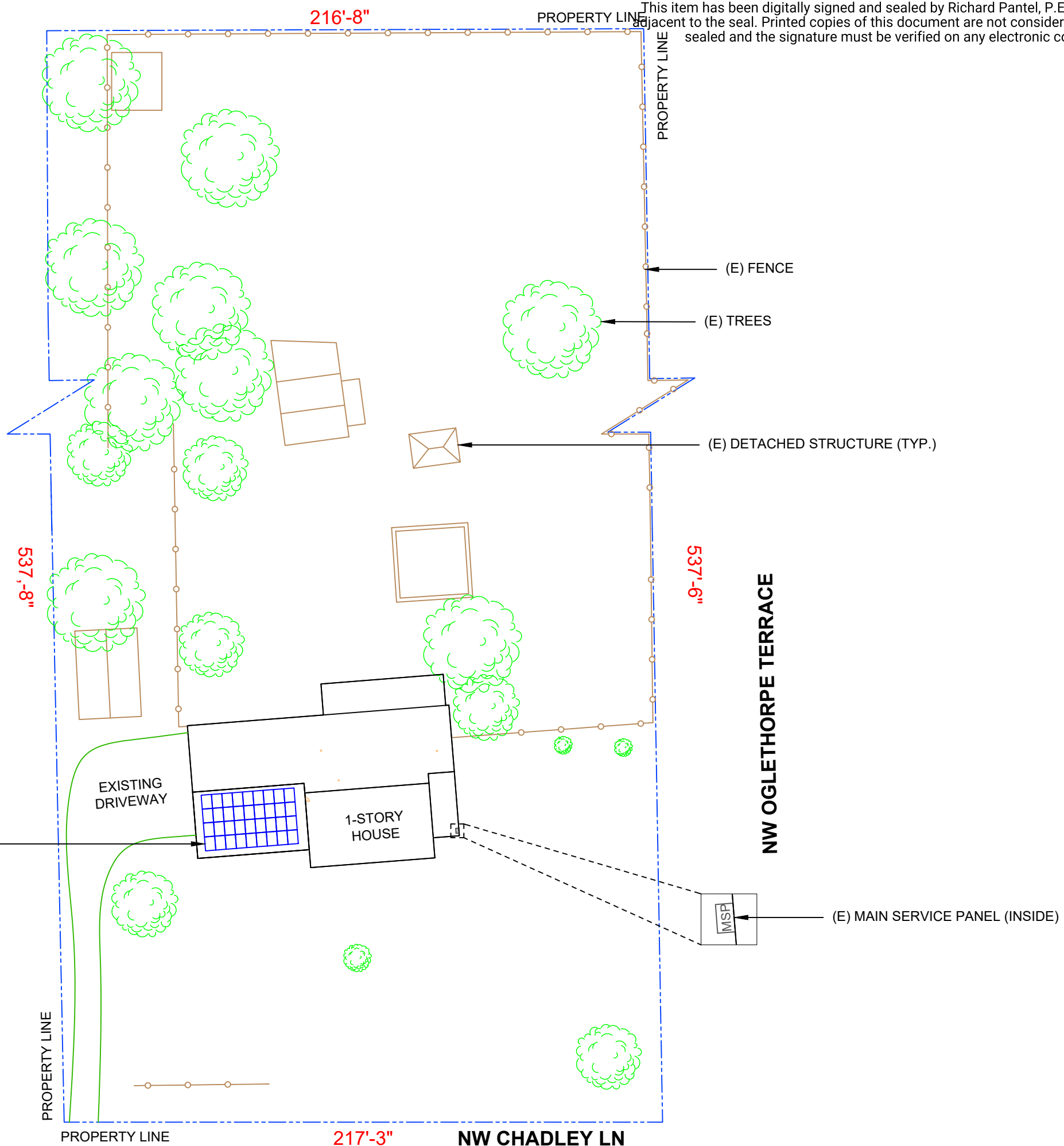
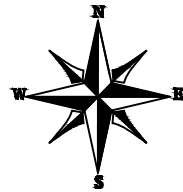
SHEET SIZE  
**ANSI B  
11" X 17"**

SHEET NUMBER  
**PV-1**

## PROFESSIONAL ENGINEER SEAL

# PROJECT DESCRIPTION:

36 X QCELLS: Q.TRON BLK M-G2.C+ 430W PV MODULES  
 ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES  
 DC SYSTEM SIZE: 36 x 430 = 15.480 kW DC  
 AC SYSTEM SIZE: 02 x 7600 = 15.200 kW AC  
 EQUIPMENT SUMMARY  
 36 QCELLS: Q.TRON BLK M-G2.C+ 430W MONO MODULES  
 36 SOLAREDGE: U650 POWER OPTIMIZERS  
 02 SOLAREDGE: USE11400H-USSKBEZ8 (240V/7600W) INVERTERS  
 NOTE: VISIBLE, LOCKABLE, LABELED AC DISCONNECT LOCATED WITHIN 10' OF UTILITY METER  
 ROOF ARRAY AREA #1:- 755.64 SQ FT.



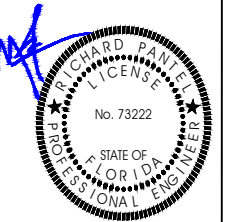
**ROOF #1**  
 (36) QCELLS: Q.TRON BLK M-G2.C+ 430W MONO MODULES WITH SOLAREDGE: U650 POWER OPTIMIZERS

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DATE: 04/01/2026

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 151 NW CHADLEY LN,  
 LAKE CITY, FL 32055

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**ESR**

SHEET NAME  
**SITE PLAN**

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

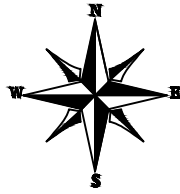
SHEET NUMBER  
**PV-2**

**1 | SITE PLAN**

PV-2 SCALE: 1"=40'-0"

**MODULE TYPE, DIMENSIONS & WEIGHT**

NUMBER OF MODULES = 36 MODULES  
 MODULE TYPE = QCELLS: Q.TRON BLK M-G2.C+ 430W MONO MODULES  
 MODULE WEIGHT = 46.7 LBS / 21.2 KG.  
 MODULE DIMENSIONS = 67.8" x 44.6" = 20.99 SF



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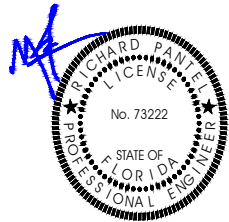
ROOF	# OF MODULES	AREA (Sq. Ft.)	AREA (Sq. Ft.)	AREA COVERED BY ARRAY (%)
#1	36	755.64	979.24	77
TOTAL	36	755.64	5395.08	14

ROOF DESCRIPTION					
ROOF TYPE			METAL		
ROOF	ROOF PITCH	AZIMUTH	SEAM SPACING	TRUSS SIZE	TRUSS SPACING
#1	27°	176°	9"	2"X4"	24"



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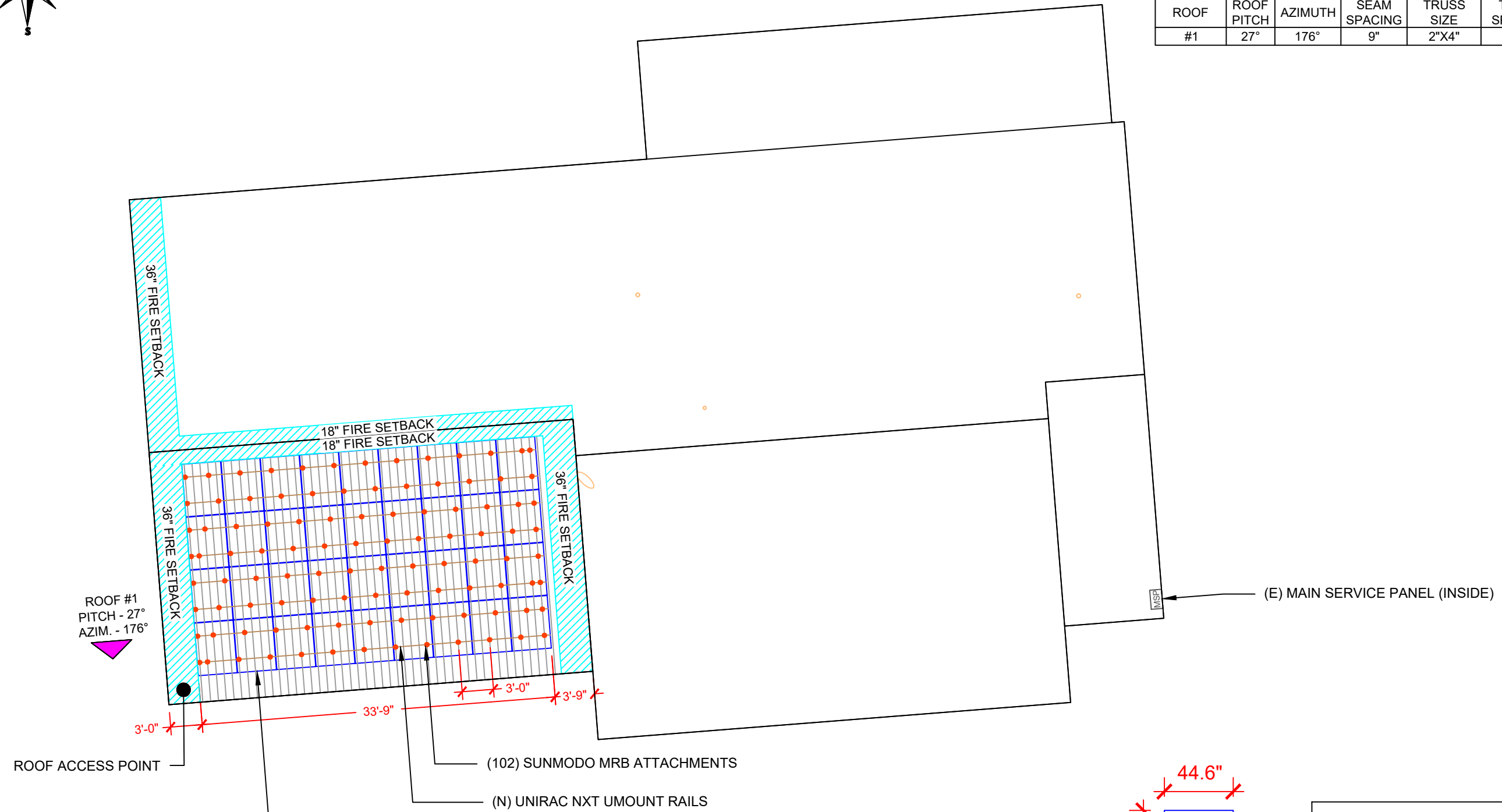
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 ESR

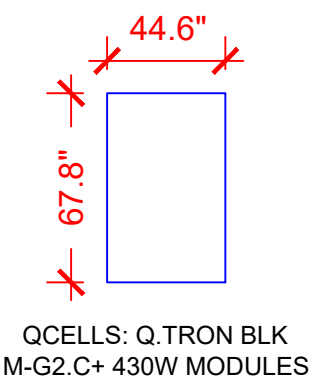
SHEET NAME  
 ROOF PLAN &  
 MODULES

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-3



ROOF #1  
 (36) QCELLS: Q.TRON BLK M-G2.C+ 430W  
 MONO MODULES WITH  
 SOLAREEDGE: U650 POWER OPTIMIZERS



LEGEND	
<span style="border: 1px solid black; padding: 2px;">MSP</span>	- MAIN SERVICE PANEL
<span style="border: 1px solid black; border-radius: 50%; width: 10px; height: 10px; display: inline-block;"></span>	- VENT, ATTIC FAN (ROOF OBSTRUCTION)
<span style="color: red;">●</span>	- ROOF ATTACHMENT
<span style="border-bottom: 1px solid black; width: 20px; display: inline-block;"></span>	- SEAM

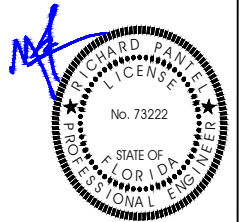
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EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULES	36	QCELLS: Q.TRON BLK M-G2.C+ 430W MODULE
POWER OPTIMIZERS	36	SOLAREEDGE: U650 POWER OPTIMIZERS
INVERTER	02	SOLAREEDGE: USE11400H-USSKBEZ8 (240V/7600W) INVERTERS
JUNCTION BOXES	2	JUNCTION BOXES - (JB-3)
RAILS	20	UNIRAC NXT UMount RAILS
SPLICES	16	SPLICE KIT
MID MODULE CLAMPS	64	MID MODULE CLAMPS
END CLAMPS	16	END CLAMPS / STOPPER SLEEVE
ATTACHMENTS	102	SUNMODO MRB ATTACHMENTS (K50563-002)
ATTACHMENTS	102	OPEN SLOT L-FOOT



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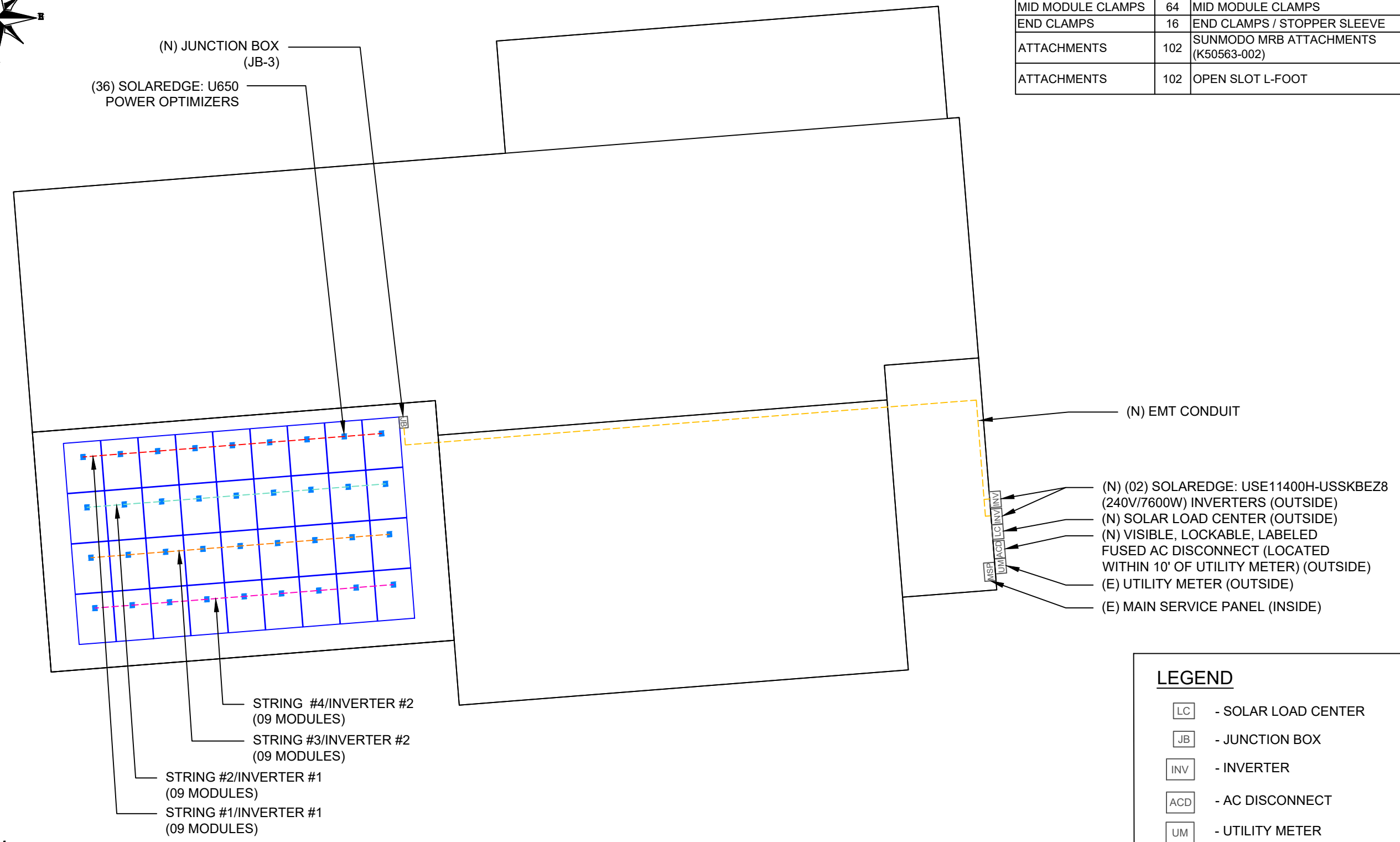
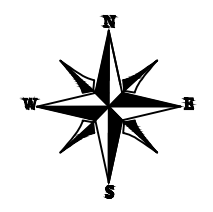
DRAWN BY  
ESR

SHEET NAME  
ELECTRICAL PLAN

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-4

STRING LEGENDS	
	STRING #1/INVERTER #1
	STRING #2/INVERTER #1
	STRING #3/INVERTER #2
	STRING #4/INVERTER #2



STRING #4/INVERTER #2  
(09 MODULES)  
STRING #3/INVERTER #2  
(09 MODULES)  
STRING #2/INVERTER #1  
(09 MODULES)  
STRING #1/INVERTER #1  
(09 MODULES)

LEGEND	
	- SOLAR LOAD CENTER
	- JUNCTION BOX
	- INVERTER
	- AC DISCONNECT
	- UTILITY METER
	- MAIN SERVICE PANEL
	- CONDUIT

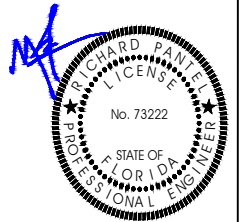
**DESCRIPTION:** CANTILEVER  
 CANTILEVER CONSIDER 1/3<sup>RD</sup> OF ROOF ATTACHMENT SPACING.  
 ATTACHMENT SPACING= 36" O/C  
 CANTILEVER = 12"

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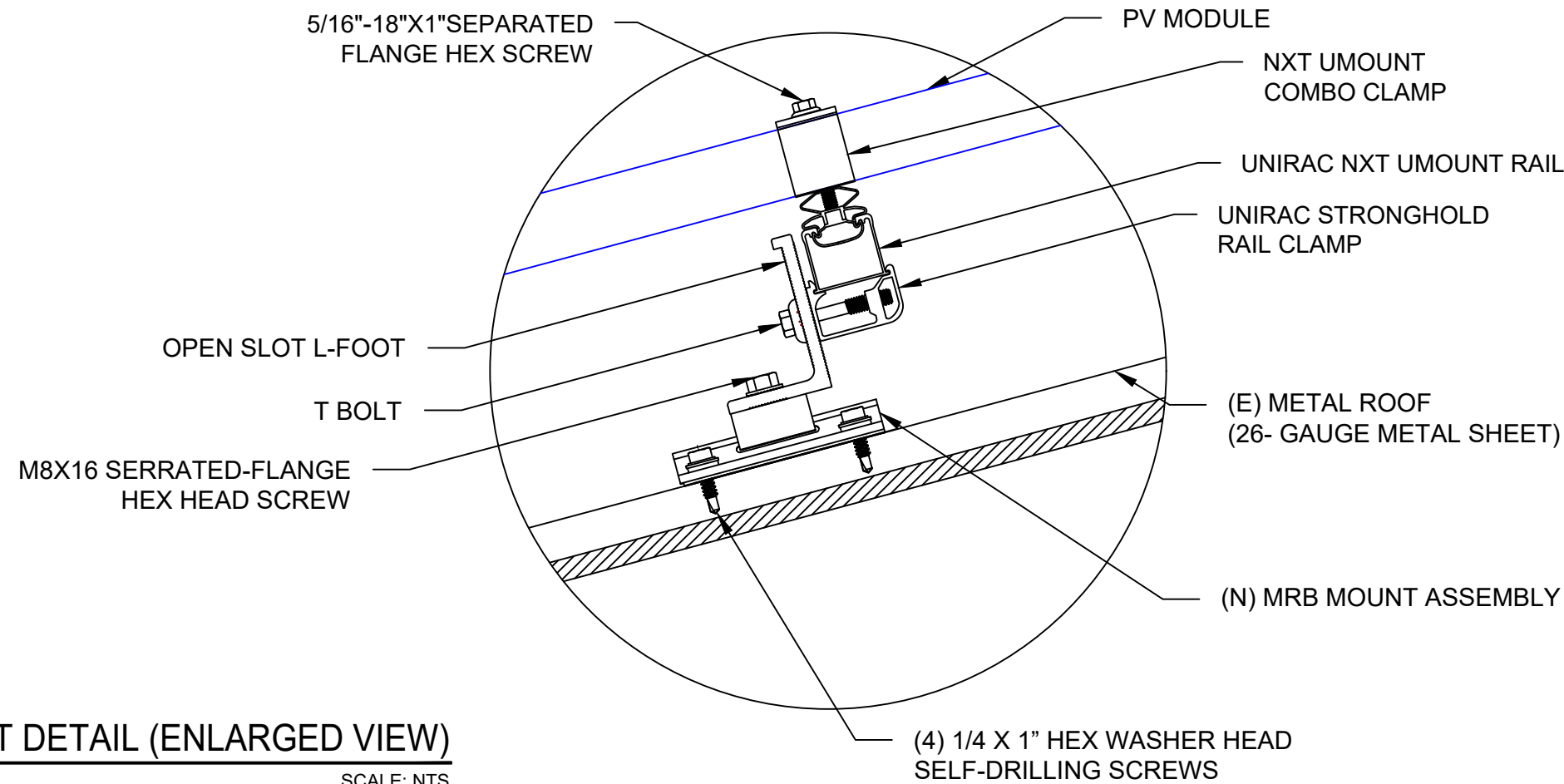
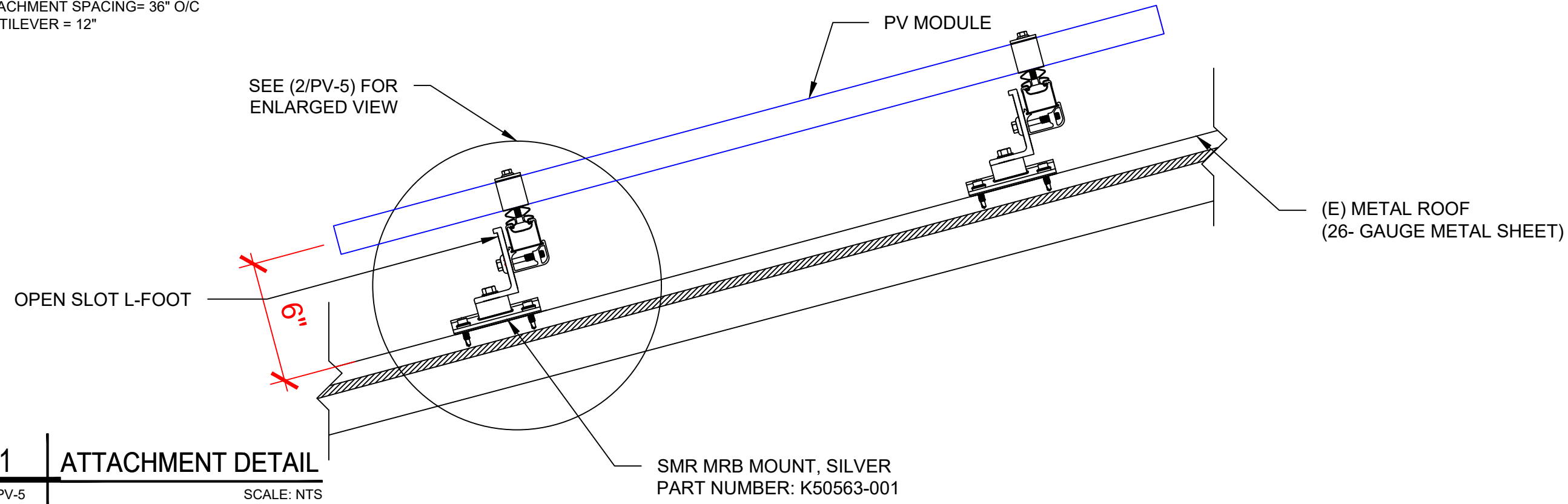
RUSTY BERRY  
 RESIDENCE  
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 LAKE CITY, FL 32055

DRAWN BY  
 ESR

SHEET NAME  
 STRUCTURAL DETAIL

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-5



DC SYSTEM SIZE: 36 x 430 = 15.480KW DC  
 AC SYSTEM SIZE: 02 x 7600 = 15.200KW AC

- (36) QCELLS: Q.TRON BLK M-G2.C+ 430W MONO MODULES WITH
- (36) SOLAREEDGE: U650 POWER OPTIMIZERS
- (02) SOLAREEDGE: USE11400H-USSKBZ8 (240V/7600W) INVERTERS
- (04) STRINGS OF 09 MODULES ARE CONNECTED IN SERIES

**INTERCONNECTION NOTES:**

1. INTERCONNECTION SIZING, LIMITATIONS AND COMPLIANCE DETERMINED IN ACCORDANCE WITH [NEC 705.12], AND [NEC 690.59].
2. GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9], [NEC 230.95].
3. ALL EQUIPMENT TO BE RATED FOR BACKFEEDING.
4. PV BREAKER TO BE POSITIONED AT THE OPPOSITE END OF THE BUSBAR RELATIVE TO THE MAIN BREAKER.

**DISCONNECT NOTES:**

1. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS)
2. AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
3. DISCONNECT MEANS AND THEIR LOCATION SHALL BE IN ACCORDANCE WITH [NEC 225.31] AND [NEC 225.32].

**RACKING NOTE:**

1. BOND EVERY OTHER RAIL WITH #6 BARE COPPER

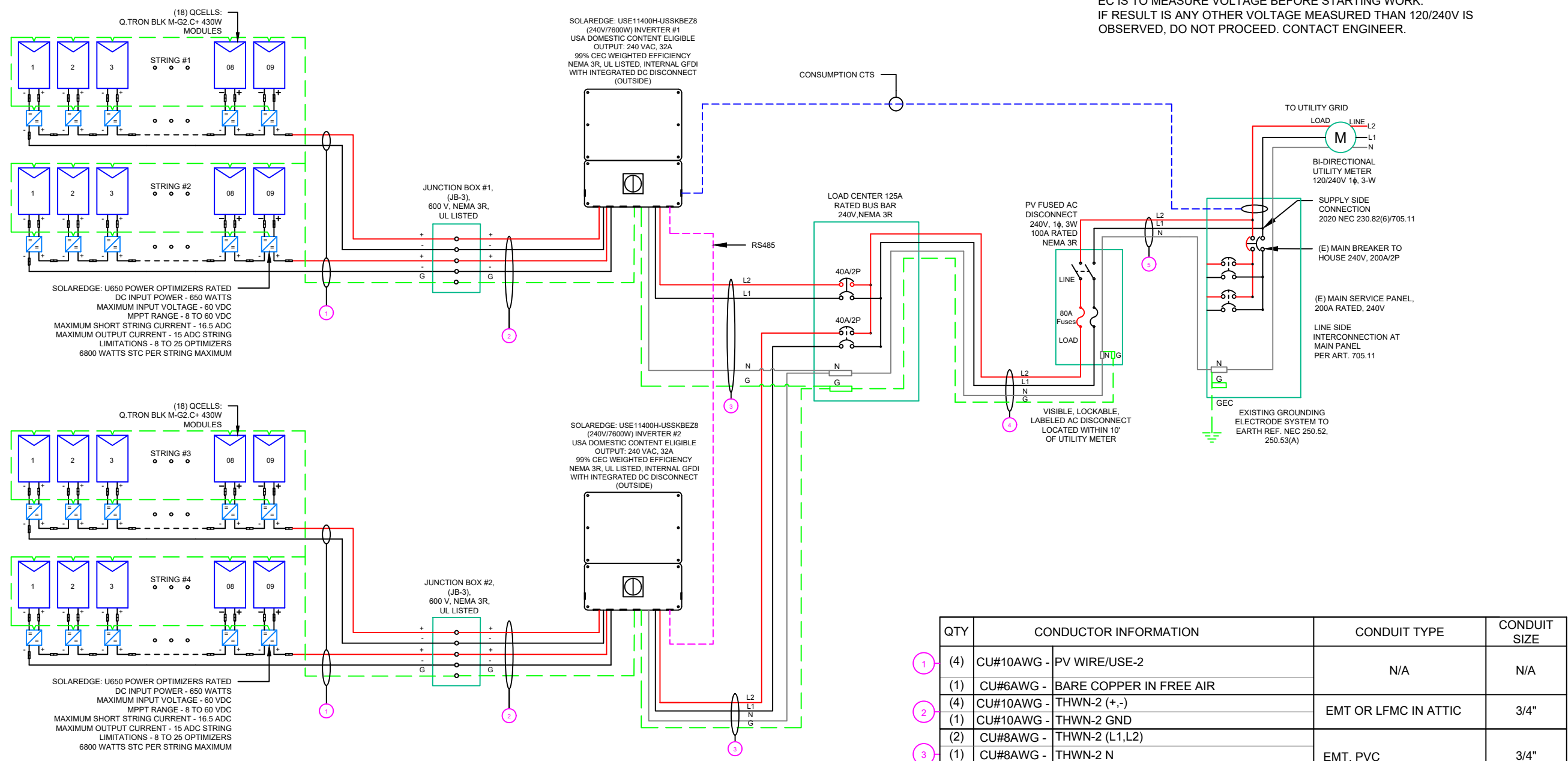
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**GROUNDING & GENERAL NOTES:**

1. GROUNDING ELECTRODES AND GROUNDING ELECTRODE CONDUCTORS SHALL BE PERMITTED TO BE INSTALLED IN ACCORDANCE WITH 250.52 AND 250.54. GROUNDING ELECTRODES SHALL BE PERMITTED TO BE CONNECTED DIRECTLY TO THE PV MODULE FRAME(S) OR SUPPORT STRUCTURE PER [NEC 690.47(B)]
2. PV INVERTER IS UNGROUNDED, TRANSFORMER-LESS TYPE.
3. DC GEC AND AC EGC TO REMAIN UNSPLICED, OR SPLICED TO EXISTING ELECTRODE
4. ANY EXISTING WIRING INVOLVED WITH PV SYSTEM CONNECTION THAT IS FOUND TO BE INADEQUATE PER CODE SHALL BE CORRECTED PRIOR TO FINAL INSPECTION.
5. JUNCTION BOX QUANTITIES, AND PLACEMENT SUBJECT TO CHANGE IN THE FIELD - JUNCTION BOX DEPICTED ON ELECTRICAL DIAGRAM REPRESENT WIRE TYPE TRANSITIONS.
6. AC DISCONNECT NOTED IN EQUIPMENT SCHEDULE OPTIONAL IF OTHER AC DISCONNECTING MEANS IS LOCATED WITHIN 10' OF SERVICE DISCONNECT.
7. RACEWAYS AND CABLES EXPOSED TO SUNLIGHT ON ROOFTOPS SHOULD BE INSTALLED MORE THAN 7/8" ABOVE THE ROOF USING CONDUIT SUPPORTS.

**INSTALLER / ELECTRICIAN NOTE:**

EC IS TO MEASURE VOLTAGE BEFORE STARTING WORK. IF RESULT IS ANY OTHER VOLTAGE MEASURED THAN 120/240V IS OBSERVED, DO NOT PROCEED. CONTACT ENGINEER.

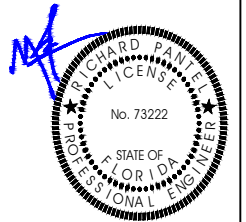


QTY	CONDUCTOR INFORMATION	CONDUIT TYPE	CONDUIT SIZE
(4)	CU#10AWG - PV WIRE/USE-2	N/A	N/A
(1)	CU#6AWG - BARE COPPER IN FREE AIR		
(4)	CU#10AWG - THWN-2 (+,-)	EMT OR LFMC IN ATTIC	3/4"
(1)	CU#10AWG - THWN-2 GND		
(2)	CU#8AWG - THWN-2 (L1,L2)		
(1)	CU#8AWG - THWN-2 N	EMT, PVC	3/4"
(1)	CU#10AWG - THWN-2 GND		
(3)	CU#4AWG - THWN-2 (L1,L2,N)		
(1)	CU#6AWG - THWN-2 GND	EMT, PVC	1"
(2)	CU#4AWG - THWN-2 (L1,L2)		
(1)	CU#4AWG - THWN-2 N	EMT, PVC	1"



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RUSTY BERRY  
 RESIDENCE  
 151 NW CHADLEY LN,  
 LAKE CITY, FL 32055

DRAWN BY  
 ESR

SHEET NAME  
 ELECTRICAL LINE DIAGRAM

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-6

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	SOLAREEDGE: USE11400H-USSKBEZ8 (240V/7600W) INVERTER
NOMINAL AC POWER	7.600 KW
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	32A

(N) SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	QCELLS:Q.TRON BLK M-G2.C+ 430 W MODULE
VMP (V)	32.94
IMP (A)	13.05
VOC (V)	39.32
ISC (A)	13.74
TEMP. COEFF. VOC %/K	-0.24
TEMP. COEFF. PMAX %/K	-0.30
MODULE DIMENSION	67.8"L x 44.6"W x 1.18"D (In Inch)

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TEMPERATURES	
AMBIENT TEMP (HIGH TEMP 2%)	71°
RECORD LOW TEMP	-6°
TEMP ADJUSTMENT FOR INSTALLATION METHOD (°C)	35°

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

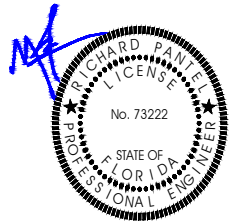


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DESCRIPTION	DATE	REV

DC FEEDER CALCULATIONS																						
CIRCUIT ORIGIN	CIRCUIT DESTINATION	VOLTAGE (V)	FULL LOAD AMPS "FLA" (A)	FLA*1.25 (A)	OCPD SIZE (A)	GROUND SIZE	CONDUCTOR SIZE	75°C AMPACITY (A)	AMPACITY CHECK #1	AMBIENT TEMP. (°C)	TOTAL CC CONDUCTORS IN RACEWAY	90°C AMPACITY (A)	DERATION FACTOR FOR AMBIENT TEMPERATURE NEC 310.15(B)(1)	DERATION FACTOR FOR CONDUCTORS PER RACEWAY NEC 310.15(C)(1)	90°C AMPACITY DERATED (A)	AMPACITY CHECK #2	FEEDER LENGTH (FEET)	CONDUCTOR RESISTANCE (OHM/KFT)	VOLTAGE DROP AT FLA (%)	CONDUIT SIZE	CONDUIT FILL (%)	
STRING 1	JUNCTION BOX #1	480	15.00	18.75	20	BARE COPPER #6 AWG	CU #10 AWG	35	PASS	37	2	40	0.91	1	36.4	PASS	30	1.24	0.233	N/A	#N/A	
STRING 2	JUNCTION BOX #1	480	15.00	18.75	20	BARE COPPER #6 AWG	CU #10 AWG	35	PASS	37	2	40	0.91	1	36.4	PASS	30	1.24	0.233	N/A	#N/A	
STRING 3	JUNCTION BOX #2	480	15.00	18.75	20	BARE COPPER #6 AWG	CU #10 AWG	35	PASS	37	2	40	0.91	1	36.4	PASS	30	1.24	0.233	N/A	#N/A	
STRING 4	JUNCTION BOX #2	480	15.00	18.75	20	BARE COPPER #6 AWG	CU #10 AWG	35	PASS	37	2	40	0.91	1	36.4	PASS	30	1.24	0.233	N/A	#N/A	
JUNCTION BOX #1	INVERTER #1	480	15.00	18.75	20	CU #10 AWG	CU #10 AWG	35	PASS	37	4	40	0.91	0.8	29.12	PASS	92	1.24	0.713	3/4" EMT	19.79362	
JUNCTION BOX #2	INVERTER #2	480	15.00	18.75	20	CU #10 AWG	CU #10 AWG	35	PASS	37	4	40	0.91	0.8	29.12	PASS	92	1.24	0.713	3/4" EMT	19.79362	
																			String 1 Voltage Drop	0.946		
																			String 2 Voltage Drop	0.946		
																			String 3 Voltage Drop	0.946		
																			String 4 Voltage Drop	0.946		

AC FEEDER CALCULATIONS																							
CIRCUIT ORIGIN	CIRCUIT DESTINATION	VOLTAGE (V)	FULL LOAD AMPS "FLA" (A)	FLA*1.25 (A)	OCPD SIZE (A)	NEUTRAL SIZE	GROUND SIZE	CONDUCTOR SIZE	75°C AMPACITY (A)	AMPACITY CHECK #1	AMBIENT TEMP. (°C)	TOTAL CC CONDUCTORS IN RACEWAY	90°C AMPACITY (A)	DERATION FACTOR FOR AMBIENT TEMPERATURE NEC 310.15(B)(1)	DERATION FACTOR FOR CONDUCTORS PER RACEWAY NEC 310.15(C)(1)	90°C AMPACITY DERATED (A)	AMPACITY CHECK #2	FEEDER LENGTH (FEET)	CONDUCTOR RESISTANCE (OHM/KFT)	VOLTAGE DROP AT FLA (%)	CONDUIT SIZE	CONDUIT FILL (%)	
INVERTER #1	LOAD CENTER	240	32	40	40	CU #8 AWG	CU #10 AWG	CU #8 AWG	50	PASS	37	2	55	0.91	1	50.05	PASS	5	0.778	0.104	3/4" EMT	24.5591	
INVERTER #2	LOAD CENTER	240	32	40	40	CU #8 AWG	CU #10 AWG	CU #8 AWG	50	PASS	37	2	55	0.91	1	50.05	PASS	5	0.778	0.104	3/4" EMT	24.5591	
LOAD CENTER	FUSED AC DISCONNECT	240	64	80	80	CU #4 AWG	CU #6 AWG	CU #4 AWG	85	PASS	37	2	95	0.91	1	86.45	PASS	5	0.308	0.082	1" EMT	34.4792	
FUSED AC DISCONNECT	POI	240	64	80	80	CU #4 AWG	N/A	CU #4 AWG	85	PASS	37	2	95	0.91	1	86.45	PASS	5	0.308	0.082	1" EMT	28.6111	
																				CUMULATIVE VOLTAGE DROP INV #1	0.268		
																				CUMULATIVE VOLTAGE DROP INV #2	0.268		



Reviewed and approved  
Richard Pantel, P.E.  
FL Lic. No. 73222  
04/01/2026

DATE: 04/01/2026

PROJECT NAME & ADDRESS

RUSTY BERRY  
RESIDENCE  
151 NW CHADLEY LN,  
LAKE CITY, FL 32055

**ELECTRICAL NOTES**

- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE RATED UPTO 600V FOR RESIDENTIAL AND 1000V FOR COMMERCIAL 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 BOX, 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.
- TEMPERATURE RATINGS OF ALL CONDUCTORS, TERMINATIONS, BREAKERS, OR OTHER DEVICES ASSOCIATED WITH THE SOLAR PV SYSTEM SHALL BE RATED FOR AT LEAST 75 DEGREE C.

DRAWN BY

ESR

SHEET NAME

WIRING CALCULATIONS

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

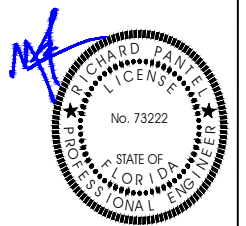
PV-7

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LUNEX POWER INC.  
4721 N GRADY AVE  
TAMPA FL 33614  
LIC #: CVC57085  
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV



Reviewed and approved  
Richard Pantel, P.E.  
FL Lic. No. 73222  
04/01/2026

DATE: 04/01/2026

PROJECT NAME & ADDRESS

RUSTY BERRY  
RESIDENCE  
151 NW CHADLEY LN,  
LAKE CITY, FL 32055

DRAWN BY  
ESR

SHEET NAME  
FAULT CURRENT  
CALCULATIONS

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-7A



**FAULT - MSP**  
**I<sub>total s.c. (L-L)</sub>** 22,000 AMPS  
**I<sub>total s.c. (L-N)</sub>** 33,000 AMPS  
**Voltage (L-L)** 240 V

CONDUCTOR



**CONDUCTOR RUN - C1**  
**LENGTH** 10 FT  
**SIZE** 4  
**QTY** 1  
(per phase)  
**TYPE** Three Single Conductors  
**CONDUIT** Steel  
**WIRE** Cu, 600 V

CONDUCTOR



**FAULT - AC DISCONNECT**  
**I<sub>total s.c. (L-L)</sub>** 14,848 AMPS  
**I<sub>total s.c. (L-N)</sub>** 13,497 AMPS  
**Voltage (L-L)** 240 V

CONDUCTOR



**CONDUCTOR RUN - C2**  
**LENGTH** 5 FT  
**SIZE** 4  
**QTY** 1  
(per phase)  
**TYPE** Three Single Conductors  
**CONDUIT** Steel  
**WIRE** Cu, 600 V

**FAULT - LOAD CENTER**  
**I<sub>total s.c. (L-L)</sub>** 12,771 AMPS  
**I<sub>total s.c. (L-N)</sub>** 10,418 AMPS  
**Voltage (L-L)** 240 V

**CONDUCTOR RUN - C3**  
**LENGTH** 5 FT  
**SIZE** 8  
**QTY** 1  
(per phase)  
**TYPE** Three Single Conductors  
**CONDUIT** Steel  
**WIRE** Cu, 600 V

**FAULT - INVERTER**  
**I<sub>total s.c. (L-L)</sub>** 9,518 AMPS  
**I<sub>total s.c. (L-N)</sub>** 6,688 AMPS  
**Voltage (L-L)** 240 V

**CAUTION:  
AUTHORIZED SOLAR  
PERSONNEL ONLY!**

LABEL LOCATION:  
AC DISCONNECT

**WARNING**  
ELECTRICAL SHOCK HAZARD  
TERMINALS ON LINE AND LOAD  
SIDES MAY BE ENERGIZED IN  
THE OPEN POSITION

LABEL LOCATION:  
INVERTER(S), AC/DC DISCONNECT(S),  
AC COMBINER PANEL (IF APPLICABLE).  
PER CODE(S): NEC 2020: 690.13(B)

**WARNING**  
DUAL POWER SUPPLY  
SOURCES: UTILITY GRID  
AND PV SOLAR ELECTRIC  
SYSTEM

LABEL LOCATION:  
UTILITY SERVICE METER AND MAIN  
SERVICE PANEL.  
PER CODE(S): NEC 2020: 705.12(C)

**WARNING**  
POWER SOURCE OUTPUT CONNECTION  
DO NOT RELOCATE THIS  
OVERCURRENT DEVICE

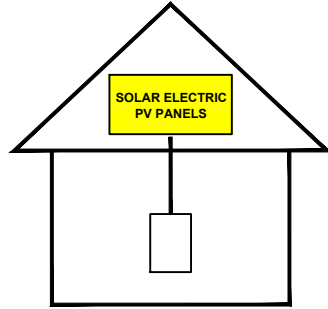
LABEL LOCATION:  
ADJACENT TO PV BREAKER AND ESS  
OCPD (IF APPLICABLE).  
PER CODE(S): NEC 2020: 705.12(B)(3)(2),

**WARNING**  
TURN OFF PHOTOVOLTAIC AC  
DISCONNECT PRIOR TO  
WORKING INSIDE PANEL

LABEL LOCATION:  
MAIN SERVICE PANEL  
SUBPANEL  
MAIN SERVICE DISCONNECT  
COMBINER  
CODE REF: NEC 110.27(C) & OSHA 1910.145 (f) (7)

**SOLAR PV SYSTEM EQUIPPED  
WITH RAPID SHUTDOWN**

TURN RAPID SHUTDOWN  
SWITCH TO THE "OFF"  
POSITION TO SHUT DOWN  
PV SYSTEM AND REDUCE  
SHOCK HAZARD IN THE  
ARRAY.



LABEL LOCATION:  
ON OR NO MORE THAN 1 M (3 FT) FROM THE SERVICE  
DISCONNECTING MEANS TO WHICH THE PV SYSTEMS  
ARE CONNECTED.  
PER CODE(S): NEC 2020: 690.56(C)

**RAPID SHUTDOWN SWITCH  
FOR SOLAR PV SYSTEM**

LABEL LOCATION:  
INSTALLED WITHIN 3' OF RAPID SHUT DOWN  
SWITCH PER CODE(S): NEC 2020: 690.56(C)(2)

**PHOTOVOLTAIC  
AC DISCONNECT**

LABEL LOCATION:  
AC DISCONNECT  
CODE REF: NEC 690.13(B)

**PV SYSTEM DISCONNECT**  
MAXIMUM AC OPERATING CURRENT: 64.00 AMPS  
NOMINAL OPERATING AC VOLTAGE: 240 VAC

LABEL LOCATION:  
AC DISCONNECT(S), PHOTOVOLTAIC SYSTEM POINT OF  
INTERCONNECTION.  
PER CODE(S): NEC 2020: 690.54

**PHOTOVOLTAIC DC DISCONNECT**  
MAXIMUM SYSTEM VOLTAGE: 480 VDC

LABEL LOCATION:  
INVERTER(S), DC DISCONNECT(S).  
PER CODE(S): NEC 2020: 690.53

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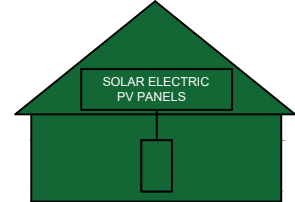
**CAUTION: PHOTOVOLTAIC SYSTEM  
FOR SERVICE : LUNEX POWER  
813-540-8807**

**WARNING: PHOTOVOLTAIC  
POWER SOURCE**

LABEL LOCATION:  
INTERIOR AND EXTERIOR PV CONDUIT EVERY 10 FT,  
AT EACH TURN, ABOVE AND BELOW PENETRATIONS,  
ON EVERY JB/PULL BOX CONTAINING PV CIRCUITS.  
PER CODE(S): NEC 2020: 690.31(D)(2)

**EMERGENCY RESPONDER  
THIS SOLAR PV SYSTEM EQUIPPED  
WITH RAPID SHUTDOWN**

TURN RAPID SHUTDOWN  
SWITCH TO THE "OFF"  
POSITION TO SHUTDOWN  
ENTIRE PV SYSTEM.



THE LABEL SHALL BE REFLECTIVE, WITH ALL LETTERS CAPITALIZED AND HAVING  
A MINIMUM HEIGHT OF 3/8 IN. (9.5 MM), IN WHITE ON A RED BACKGROUND.

LABEL LOCATION:  
AC DISCONNECT  
CODE REF: NFPA 1 (11.12.2.1.1.1.1)  
1. THE RAPID SHUTDOWN LABEL SHALL BE LOCATED ON OR NO MORE  
THAN 3 FT (1 M) FROM THE SERVICE DISCONNECTING MEANS  
2. (HEIGHT OF LABEL IS 3/8 IN. (9.5 MM), IN WHITE ON A RED BACKGROUND)

MAXIMUM VOLTAGE: 480 V  
MAXIMUM CIRCUIT CURRENT: 40 A  
MAXIMUM RATED OUTPUT  
CURRENT OF THE CHARGE  
CONTROLLER OR DC-TO-DC  
CONVERTER (IF INSTALLED): 15.00 A

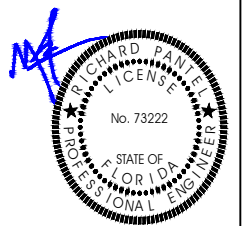
LABEL LOCATION:  
INVERTER  
CODE REF: NEC 690.53

NOTES AND SPECIFICATIONS:  
• SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF THE NEC 2020 ARTICLE 110.21(B), 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 Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.  
• DO NOT COVER EXISTING MANUFACTURER LABELS.



LUNEX POWER INC.  
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LIC #: CVC57085  
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REVISIONS		
DESCRIPTION	DATE	REV



Reviewed and approved  
Richard Pantel, P.E.  
FL Lic. No. 73222  
04/01/2026

DATE: 04/01/2026

PROJECT NAME & ADDRESS  
**RUSTY BERRY  
RESIDENCE**  
151 NW CHADLEY LN,  
LAKE CITY, FL 32055

DRAWN BY  
**ESR**

SHEET NAME  
**LABELS**

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

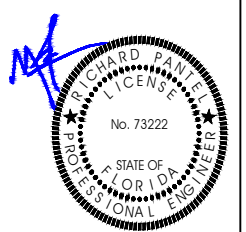
SHEET NUMBER  
**PV-8**

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LUNEX POWER INC.  
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TAMPA FL 33614  
LIC #: CVC57085  
PHONE: 813-540-8807

REVISIONS		
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Reviewed and approved  
Richard Pantel, P.E.  
FL Lic. No. 73222  
04/01/2026

DATE: 04/01/2026

PROJECT NAME & ADDRESS

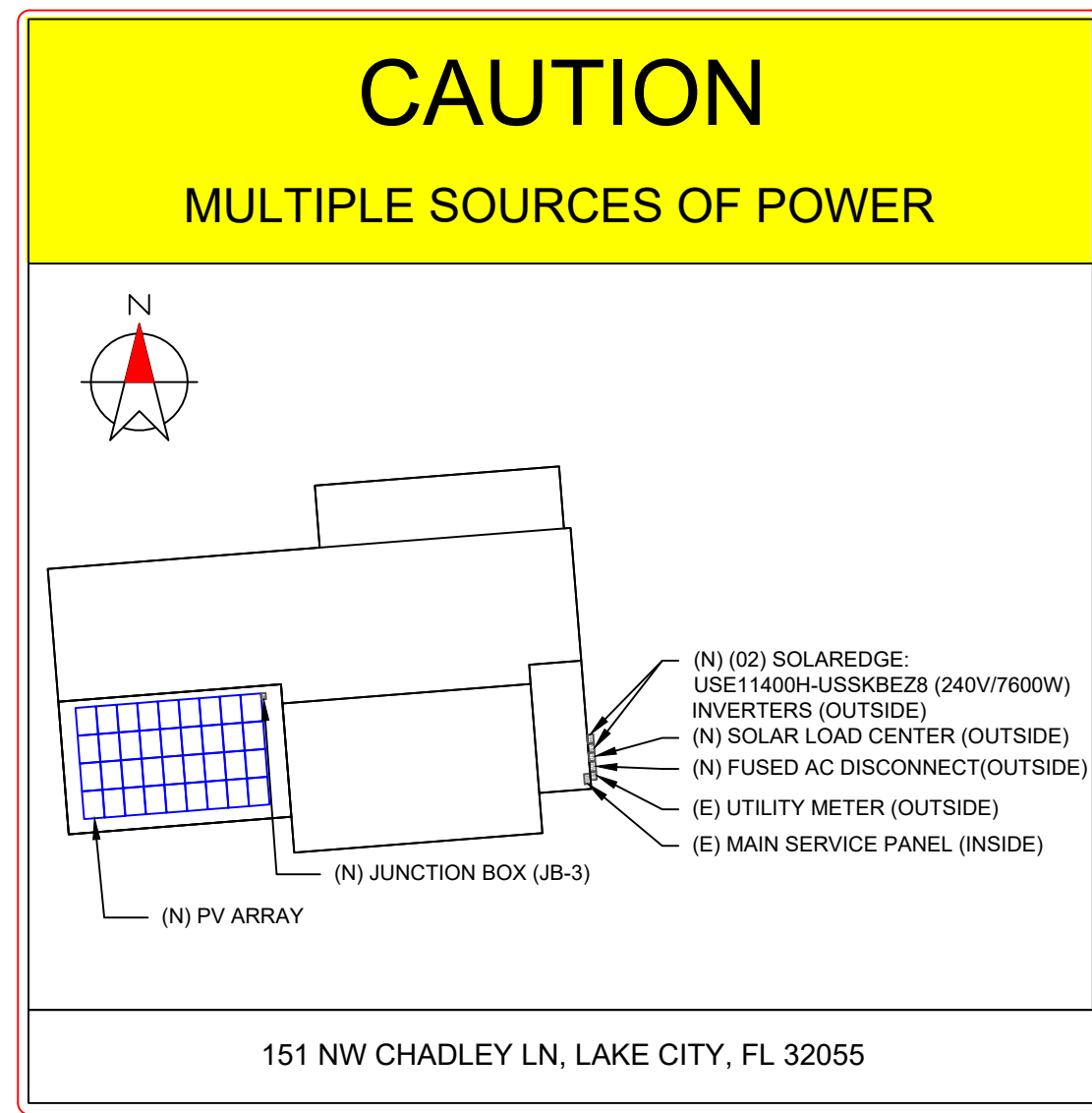
RUSTY BERRY  
RESIDENCE  
151 NW CHADLEY LN,  
LAKE CITY, FL 32055

DRAWN BY  
ESR

SHEET NAME  
PLACARD

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-9



**DIRECTORY**  
PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM.

(ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS OUTLINED WITHIN: NEC 690.56(A)(B), [NEC 705.10])

**LABELING NOTES:**

1. LABELS CALLED OUT ACCORDING TO ALL COMMON CONFIGURATIONS. ELECTRICIAN TO DETERMINE EXACT REQUIREMENTS IN THE FIELD PER CURRENT NEC AND LOCAL CODES AND MAKE APPROPRIATE ADJUSTMENTS.
2. LABELING REQUIREMENTS BASED ON THE 2020 NEC, OSHA STANDARD 1910.145, ANSI Z535.
3. MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
4. LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED [NEC 110.21]
5. LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8", WHITE ON RED BACKGROUND; REFLECTIVE, AND PERMANENTLY AFFIXED [NEC 690.56(C)(1)(A)].

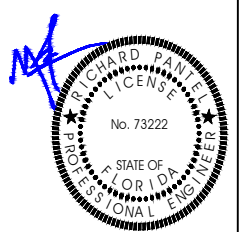
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# OPTIMIZER CHART



LUNEX POWER INC.  
4721 N GRADY AVE  
TAMPA FL 33614  
LIC #: CVC57085  
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV



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FL Lic. No. 73222  
04/01/2026

DATE: 04/01/2026

PROJECT NAME & ADDRESS

**RUSTY BERRY  
RESIDENCE**  
151 NW CHADLEY LN,  
LAKE CITY, FL 32055

DRAWN BY  
**ESR**

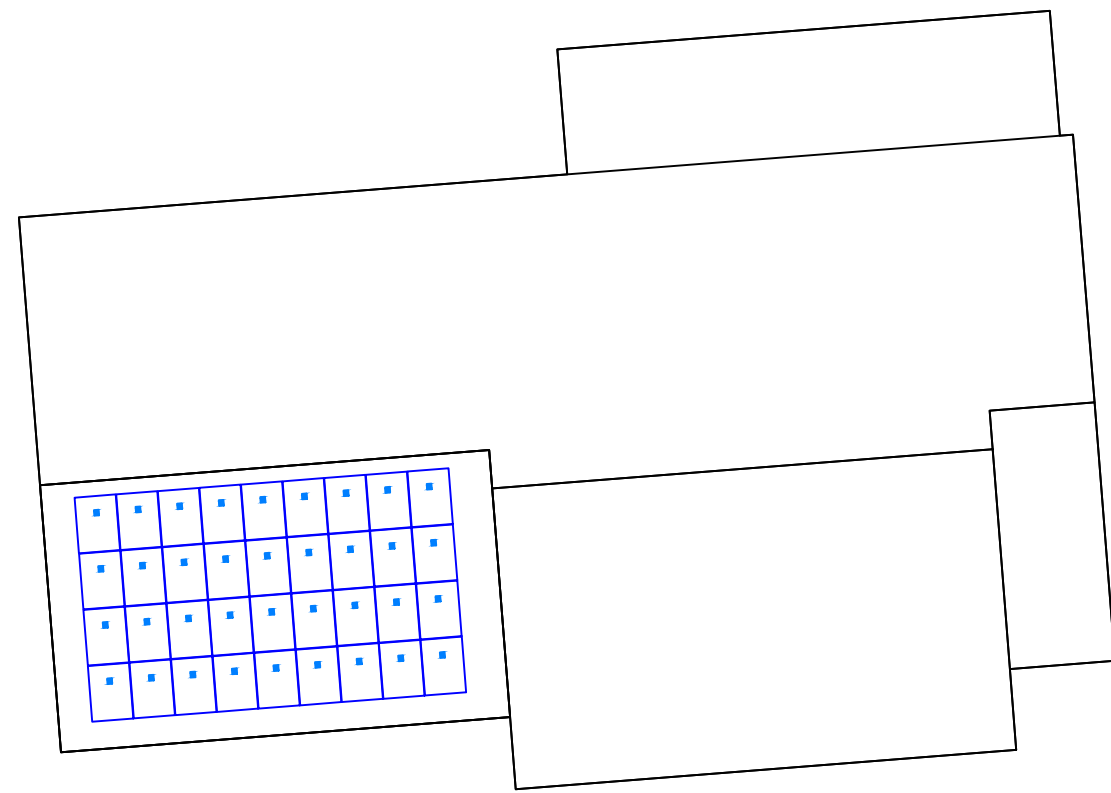
SHEET NAME  
**OPTIMIZER CHART**

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

SHEET NUMBER  
**PV-10**

1-10    11-20    21-30    31-40    41-50    51-60    61-70

1						
2						
3						
4						
5						
6						
7						
8						
9						
10						



# Q.TRON BLK M-G2+ SERIES

410-450 Wp | 108 Cells  
22.5% Maximum Module Efficiency  
Domestic Content Option Available



MODEL Q.TRON BLK M-G2+ Q.TRON BLK M-G2.C+,  
Q.TRON BLK M-G2.C+, Q.TRON BLK M-G2.H+



### Includes Domestic Content

Q.TRON BLK M-G2.X+ solar modules ("X" can be "C, F, H") contain U.S. manufactured components which can contribute to qualifying for the 10% domestic content bonus to applicable tax credits under the Inflation Reduction Act of 2022.<sup>1</sup>



### High performance Qcells N-type solar cells

Q.ANTUM NEO Technology with optimized module layout boosts module efficiency up to 22.5%.



### A reliable investment

Inclusive 25-year product warranty and 25-year linear performance warranty.<sup>2</sup>



### Enduring high performance

Long-term yield security with Anti LeTID Technology, Anti PID Technology<sup>3</sup>, Hot-Spot Protect.



### Extreme weather rating

High-tech aluminum alloy frame, certified for high snow (8100 Pa) and wind loads (3600 Pa).



### Innovative all-weather technology

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



### Far beyond the standard

Qcells' comprehensive quality program ensures high long-term yields and the reliability of your solar system.

<sup>1</sup> This statement should not be relied on as tax advice and is subject to change based on changes made to the Inflation Reduction Act and its implementing rules and regulations. Please consult a qualified tax professional for specific guidance.

<sup>2</sup> See data sheet on rear for further information.

<sup>3</sup> APT test conditions according to IEC/TS 62804-1:2015, method A (-1500 V, 96h)

The ideal solution for:



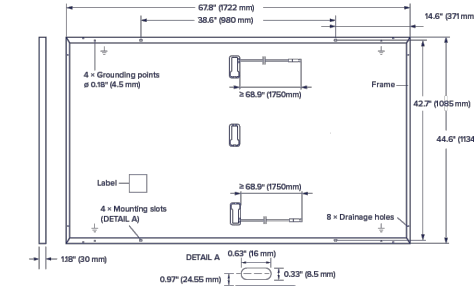
Rooftop arrays on residential buildings



## Q.TRON BLK M-G2+ SERIES

### Mechanical Specification

Format	67.8 in × 44.6 in × 1.18 in (including frame) (1722 mm × 1134 mm × 30 mm)
Weight	46.7 lbs (21.2 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 18 monocrystalline Q.ANTUM NEO solar half cells
Junction box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm <sup>2</sup> Solar cable; (+) ≥ 68.9 in (1750 mm), (-) ≥ 68.9 in (1750 mm)
Connector	Stäubli MC4; IP68



### Electrical Characteristics

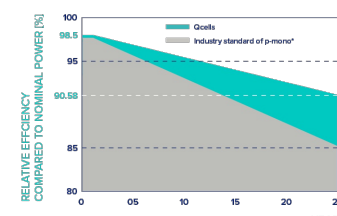
Power Class		410	415	420	425	430	435	440	445	450
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5 W/-0 W)										
Power at MPP <sup>1</sup>	P <sub>MPP</sub> [W]	410	415	420	425	430	435	440	445	450
Short Circuit Current <sup>1</sup>	I <sub>SC</sub> [A]	13.41	13.49	13.58	13.66	13.74	13.82	13.90	13.98	14.07
Open Circuit Voltage <sup>1</sup>	V <sub>OC</sub> [V]	38.19	38.47	38.75	39.03	39.32	39.60	39.88	40.16	40.44
Current at MPP	I <sub>MPP</sub> [A]	12.76	12.83	12.91	12.98	13.05	13.13	13.20	13.27	13.35
Voltage at MPP	V <sub>MPP</sub> [V]	32.13	32.34	32.54	32.74	32.94	33.14	33.33	33.52	33.71
Efficiency <sup>1</sup>	η [%]	≥ 21.0	≥ 21.3	≥ 21.5	≥ 21.8	≥ 22.0	≥ 22.3	≥ 22.5	≥ 22.8	≥ 23.0

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT<sup>2</sup>

Power at MPP	P <sub>MPP</sub> [W]	309.9	313.7	317.5	321.2	325.0	328.8	332.6	336.4	340.1
Short Circuit Current	I <sub>SC</sub> [A]	10.81	10.87	10.94	11.00	11.07	11.14	11.20	11.27	11.33
Open Circuit Voltage	V <sub>OC</sub> [V]	36.23	36.50	36.77	37.04	37.31	37.58	37.84	38.11	38.38
Current at MPP	I <sub>MPP</sub> [A]	10.04	10.10	10.15	10.21	10.27	10.33	10.38	10.44	10.50
Voltage at MPP	V <sub>MPP</sub> [V]	30.87	31.07	31.26	31.46	31.65	31.84	32.03	32.22	32.41

<sup>1</sup> Measurement tolerances P<sub>MPP</sub> ± 3%; I<sub>SC</sub>; V<sub>OC</sub> ± 5% at STC: 1000 W/m<sup>2</sup>, 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • 800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5

### Qcells Performance Warranty

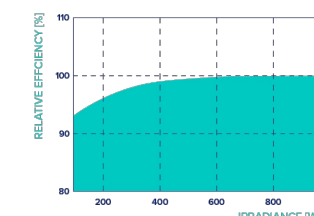


At least 98.5% of nominal power during first year. Thereafter max. 0.33% degradation per year. At least 95.53% of nominal power up to 10 years. At least 90.58% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Qcells sales organization of your respective country.

<sup>\*</sup> Standard terms of guarantee for the 5 PV companies with the highest production capacity in 2021 (February 2021)

### Performance at low Irradiance



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m<sup>2</sup>).

### Temperature Coefficients

Temperature Coefficient of I <sub>SC</sub>	α [%/K]	+0.04	Temperature Coefficient of V <sub>OC</sub>	β [%/K]	-0.24
Temperature Coefficient of P <sub>MPP</sub>	γ [%/K]	-0.30	Nominal Module Operating Temperature	NMOT [°F]	109 ± 5.4 (43 ± 3 °C)

### Properties for System Design

Maximum System Voltage	V <sub>sys</sub> [V]	1000 (IEC)/1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	25	Fire Rating based on ANSI/UL 61730	C / TYPE 2
Max. Design Load, Push/Pull <sup>3</sup>	[lbs./ft <sup>2</sup> ]	113 (5400 Pa)/50 (2400 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +158 °F (-40 °C up to +70 °C)
Max. Test Load, Push/Pull <sup>3</sup>	[lbs./ft <sup>2</sup> ]	169 (8100 Pa)/75 (3600 Pa)		

<sup>3</sup> See Installation Manual

### Qualifications and Certificates

UL61730-1 & UL61730-2, CE-compliant, IEC 61215:2021, IEC 61730:2023,



\*Contact your Qcells Sales Representative for details regarding the module's eligibility to be Buy American Act (BAA) compliant.

Qcells pursues minimizing paper output in consideration of the global environment.

Note: Installation instructions must be followed. Contact our technical service for further information on approved installation of this product. Hanwha Q CELLS America Inc. 300 Spectrum Center Drive, Suite 500, Irvine, CA 92618, USA | TEL: +1 (949) 748-5996 | EMAIL: na.support@qcells.com | WEB: www.qcells.com/us



LUNEX POWER INC.  
4721 N GRADY AVE  
TAMPA FL 33614  
LIC #: CVC57085  
PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 04/01/2026

### PROJECT NAME & ADDRESS

RUSTY BERRY  
RESIDENCE  
151 NW CHADLEY LN,  
LAKE CITY, FL 32055

DRAWN BY  
ESR

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-11

Specifications subject to technical changes © Qcells Q.TRON\_BLK\_MG2+\_series\_DCA\_410-450\_2025-10\_Rev09\_NA



Real product recycling details at QR code above



# Power Optimizer

## USA Domestic Content Eligible\*

For North America

U650 / U650B



POWER OPTIMIZER



### SolarEdge's USA-manufactured offering for PV power optimization at the module level

- Eligible for domestic content: SolarEdge USA-manufactured Power Optimizers\*, when paired with certain SolarEdge inverters, are intended to be eligible for the enhanced federal income tax credit for domestic content
- Specifically designed to work with SolarEdge inverters
- Supports high open circuit voltage (Voc) modules with U650B
- U650B provides improved design flexibility of multifaceted, complex roofs, with extended output voltage that reduces yield factor losses
- Superior efficiency (99.5%)
- Mitigates diverse types of module mismatch loss, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Faster installations with simplified wire management and easy assembly using a single bolt
- Compatible with a wide range of modules, including high-powered and bifacial PV modules
- Advanced safety:
  - Patented Sense Connect technology, designed to automatically detect and prevent potential electric arcs at the connector level before an arc is created
  - Patented SafeDC™ – module-level voltage shutdown, for installer and firefighter safety
  - Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

\* Manufactured by SolarEdge with the intent to be eligible for inclusion under the elective safe harbor in calculating the Domestic Content Percentage under the "Rooftop (MLPE)" category (under IRS Notice 2024-41). The PCBA, Electrical Parts, and Enclosure are domestically manufactured to meet the requirements of eligibility to be considered for the ITC domestic content bonus adder. SolarEdge does not provide tax and/or legal advice. You should consult with your own legal and/or tax advisor(s) regarding the eligibility of your project for the ITC or PTC, including the 10% domestic content bonus, to determine how the applicable rules apply to your particular project. The forward-looking statements in this datasheet are accurate as of the date herein and are subject to change. For more information, please contact your local SolarEdge sales representative.

solaredge.com



## Power Optimizer

### USA Domestic Content Eligible, for North America

U650 / U650B

	U650	U650B	Units
<b>INPUT</b>			
Rated Input DC Power <sup>(1)</sup>	650		W
Absolute Maximum Input Voltage (Voc)	60	100	Vdc
MPPT Operating Range	8 – 60	12.5 – 100	Vdc
Maximum Continuous Input Current	15		Adc
Maximum Short-Circuit Current (Isc) of Connected PV Module for SolarEdge Home Hub Single Phase Inverters	16.5		Adc
Maximum Short-Circuit Current (Isc) of Connected PV Module for SolarEdge Home Wave Single Phase Inverters	15		Adc
Maximum Short-Circuit Current (Isc) with Safety Factor <sup>(2)</sup>	25		Adc
Maximum Efficiency	99.5		%
Weighted Efficiency	98.6		%
Overtolerance Category	II		
<b>OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)</b>			
Maximum Output Current	15		Adc
Maximum Output Voltage	60	80	Vdc
<b>OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR INVERTER OFF)</b>			
Safety Output Voltage per Power Optimizer	1 ± 0.1		Vdc
<b>STANDARD COMPLIANCE</b>			
Photovoltaic Rapid Shutdown System	CSA C22.2#330, NEC 2014 – 2023		
EMC	FCC Part 15 Class B, IEC 61000-6-2, IEC 61000-6-3		
Safety	CSA C22.2#107.1, IEC 62109-1 (Class II safety), UL 1741		
Material	UL 94 V-0, UV Resistant		
RoHS	Yes		
Fire Safety	VDE-AR-E 2100-712:2013-05		
<b>INSTALLATION SPECIFICATIONS</b>			
Maximum Allowed System Voltage	1000		Vdc
Dimensions (W x L x H)	129 x 155 x 30 / 5.07 x 6.10 x 1.18	129 x 165 x 45 / 5.07 x 6.49 x 1.77	mm / in
Weight	720 / 16	790 / 1.74	gr / lb
Input Connector	MC4		
Input Wire Length	0.1 / 0.32		m / ft
Output Connector	MC4		
Output Wire Length	(+/-) 2.3, (-) 0.10 / (+) 7.54, (-) 0.32		m / ft
Operating Temperature Range <sup>(3)</sup>	-40 to +85		°C
Protection Rating	IP68 / NEMA6P		
Relative Humidity	0 – 100		%

(1) The Rated Power of the module at STC will not exceed the power optimizer's Rated Input DC Power. Modules with up to +5% power tolerance are allowed.  
 (2) The Maximum Isc with Safety Factor is ≥ 1.25 x the Maximum Isc of Connected PV Module. Adjusted for worst case conditions of ambient temperature, irradiance, bifacial gain, and so on, in accordance with NEC and CSA.  
 (3) Power derating is applied for ambient temperatures above +85°C / +185°F for U650 and for ambient temperatures above +75°C / 167°F for U650B. Refer to the Power Optimizers Temperature Derating technical note for details.

PV System Design Using a SolarEdge Inverter	SolarEdge Home Hub Single Phase	Three Phase for 208V Grid	Three Phase for 277/480V Grid	Units
Minimum String Length (Power Optimizers)	U650: 8 U650B: 6	10 <sup>(4)</sup> 8	18 14	
Maximum String Length (Power Optimizers)	25		50 <sup>(5)</sup>	
Maximum Usable Power Delivered per String	5700	6000	12,750	W
Maximum Allowed Connected Power per String <sup>(6)(7)</sup>	Inverters with Rated AC Power ≤ 5760W Inverters with Rated AC Power ≥ 7600W	Per the inverter's maximum input DC power <sup>(8)</sup> One string: 5700 Two strings or more: 6800	One string: 7200 Two strings or more: 7800	15,000 W
Parallel Strings of Different Lengths or Orientations	Yes			

(4) For the SE17.3KUS Three Phase Inverter and the SE50KUS Three Phase Inverter with Synergy Technology, the minimum string length is 11 Power Optimizers.  
 (5) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement.  
 (6) For the 208V grid, the maximum is permitted only when the difference in connected power between strings is 1000W or less.  
 (7) For the 240V or 277/480V grids, the maximum is permitted only when the difference in connected power between strings is 2000W or less.  
 (8) Refer to the Single String Design Guidelines application note for more details.

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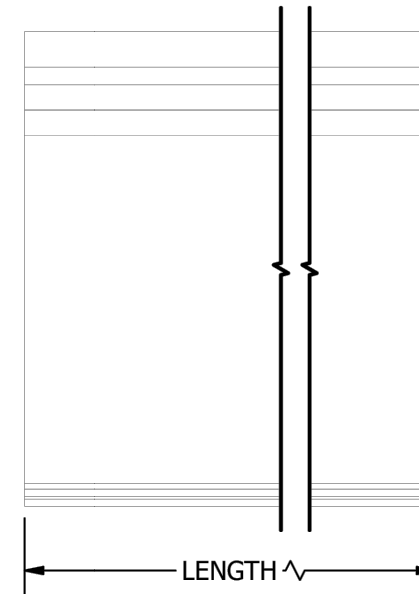
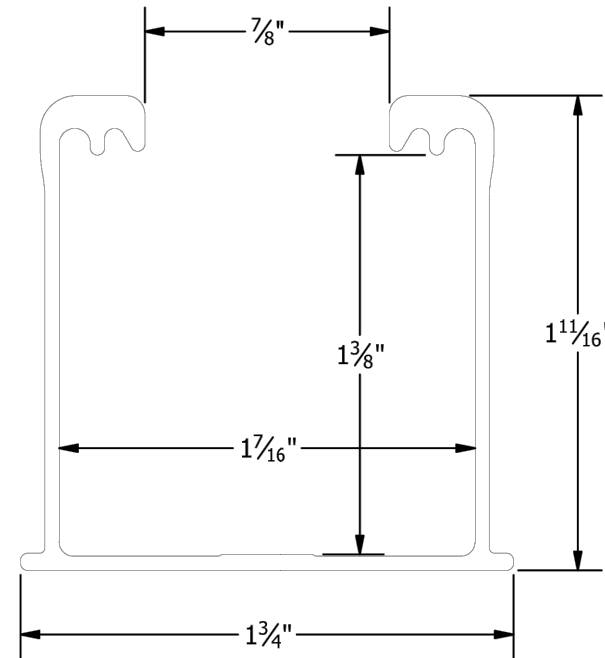
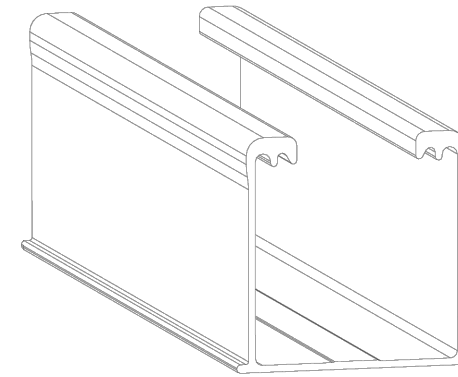
LUNEX POWER INC.  
 4721 N GRADY AVE  
 TAMPA FL 33614  
 LIC #: CVC57085  
 PHONE: 813-540-8807

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 04/01/2026		
PROJECT NAME & ADDRESS		
RUSTY BERRY RESIDENCE 151 NW CHADLEY LN, LAKE CITY, FL 32055		

DRAWN BY	
ESR	
SHEET NAME	
EQUIPMENT SPECIFICATION	
SHEET SIZE	
ANSI B 11" X 17"	
SHEET NUMBER	
PV-13	

PART # TABLE		
P/N	DESCRIPTION	LENGTH
084RLM1	NXT UMOUNT RAIL 84" MILL	84"
084RLD1	NXT UMOUNT RAIL 84" DARK	84"
168RLM1	NXT UMOUNT RAIL 168" MILL	168"
168RLD1	NXT UMOUNT RAIL 168" DARK	168"
208RLM1	NXT UMOUNT RAIL 208" MILL	208"
208RLD1	NXT UMOUNT RAIL 208" DARK	208"
246RLM1	NXT UMOUNT RAIL 246" MILL	246"
246RLD1	NXT UMOUNT RAIL 246" DARK	246"
171RLM1	NXT UMOUNT RAIL 171" MILL	171.50"
171RLD1	NXT UMOUNT RAIL 171" DARK	171.50"
096RLM1	NXT UMOUNT RAIL 96" MILL	96"
096RLD1	NXT UMOUNT RAIL 96" DARK	96"
185RLM1	NXT UMOUNT RAIL 185" MILL	185"
185RLD1	NXT UMOUNT RAIL 185" DARK	185"



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

PRODUCT LINE:	NXT UMOUNT
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	RAIL
REVISION DATE:	2/29/2024

DRAWING NOT TO SCALE  
 ALL DIMENSIONS ARE  
 NOMINAL

PRODUCT PROTECTED BY  
 ONE OR MORE US PATENTS  
 LEGAL NOTICE

NU-P01  
 SHEET



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 LIC #: CVC57085  
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REVISIONS		
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DATE: 04/01/2026

PROJECT NAME & ADDRESS

RUSTY BERRY  
 RESIDENCE  
 151 NW CHADLEY LN,  
 LAKE CITY, FL 32055

DRAWN BY  
 ESR

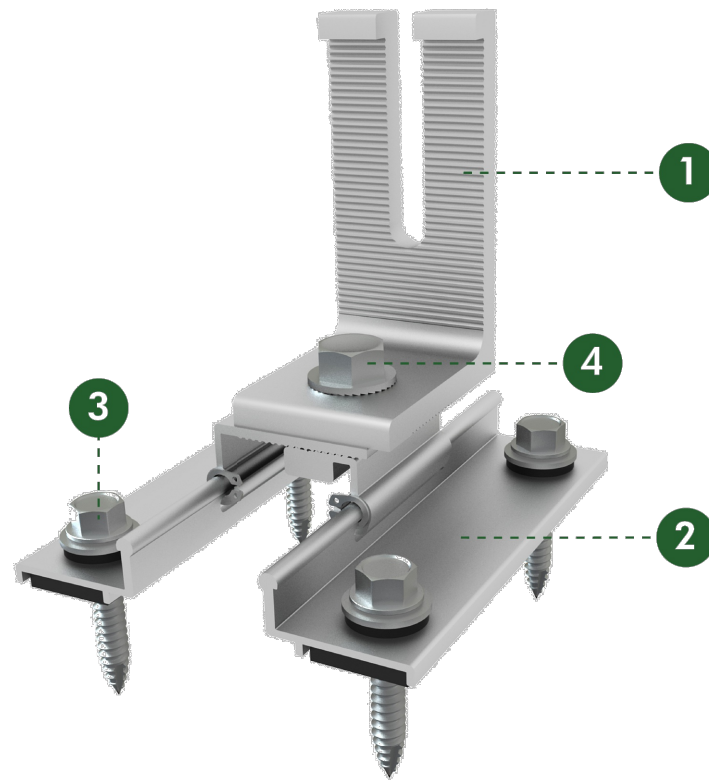
SHEET NAME  
 EQUIPMENT  
 SPECIFICATION

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-14



## MRB Mount



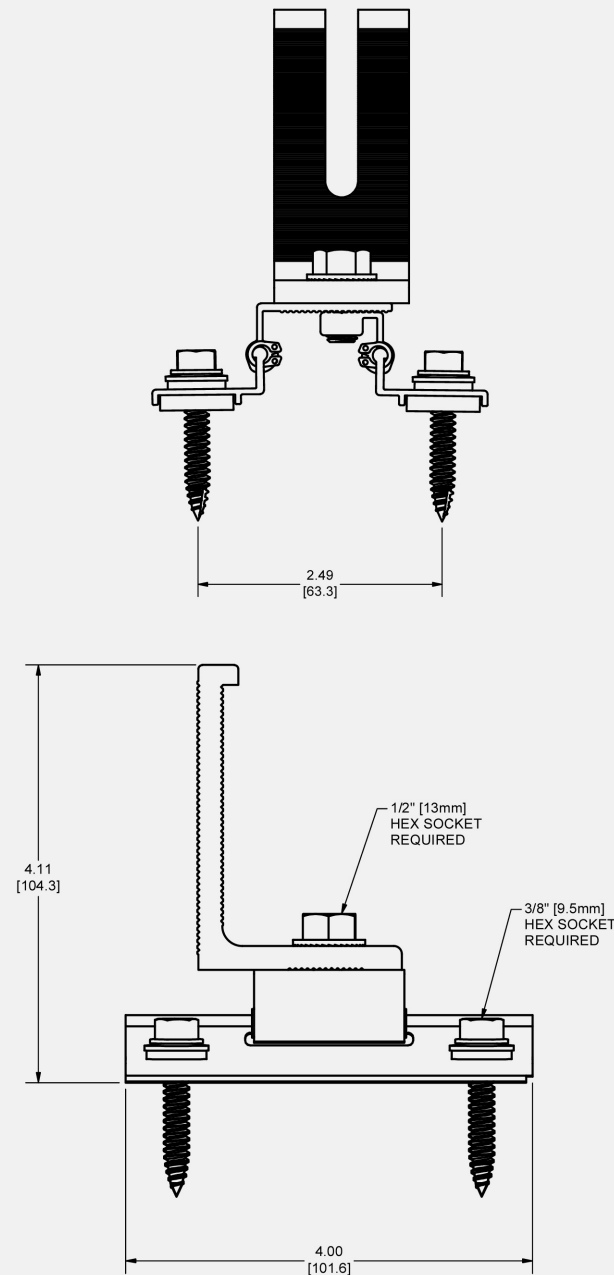
Part Description: MRB Mount  
Part No: K50563-002

Item No.	Description	Qty in Kit
1	Open Slot L-Foot	1
2	MRB Mount Assembly	1
3	Self-Drilling Metal Screw w/Washer	4
4	M8X16 Serrated-Flange Hex Head Screw	1

See Published data for allowable loads. Care should be taken to avoid concentrated loads during installation.

## Cut Sheet

### MRB Mount



Material: Aluminum and Stainless Steel hardware

Dimensions shown are inches (and millimeters)

Details are subject to change without notice



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151 NW CHADLEY LN,  
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DRAWN BY  
ESR

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-15



REVISIONS		
DESCRIPTION	DATE	REV

DATE: 04/01/2026

PROJECT NAME & ADDRESS

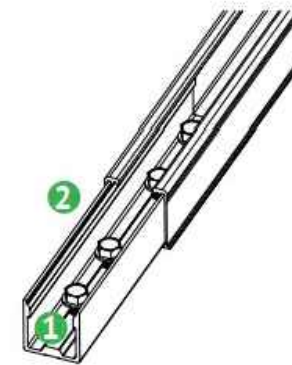
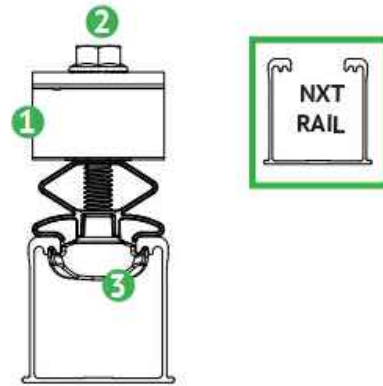
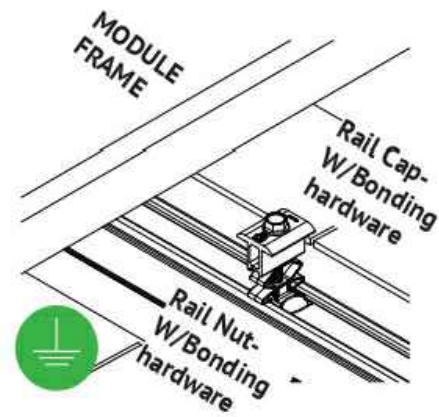
RUSTY BERRY  
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151 NW CHADLEY LN,  
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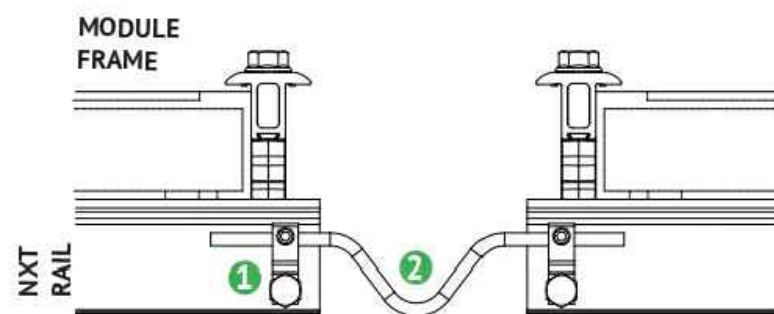
SHEET NUMBER  
PV-16



### BONDING COMBO MID-END CLAMP ASSEMBLY

- 1 Aluminum combo mid-end clamp cap with stainless steel bonding pins that pierce module frame anodization to bond module to module through clamp
- 2 Stainless steel bolt bonds aluminum clamp to stainless steel Hex bolt
- 3 Aluminum combo mid-end clamp rail nut with stainless steel bonding pins that pierce rail anodization to bond module to module through clamp

**NOTE:** See Page 19 for installation details.



### BONDING BETWEEN THERMAL BREAKS

- 1 Lug is connected at the end of each thermal break to the rail.
- 2 Solid copper wire is connected across the gap to bond the two ends.

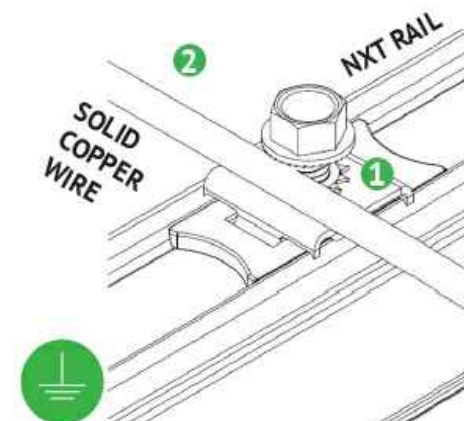
**NOTE:** See Page 5 for installation details.

### BONDING RAIL SPLICE

- 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.

**NOTE:**

- See Page 15 for installation details
- Splice certified for single-use only



### RACK SYSTEM GROUNDING

- 1 Tabs on the stainless-steel washer pierce anodization on the rail to bond rail to ground wire.
- 2 Solid copper wire connected to lug is routed to provide final system ground connection.

**NOTE:** See Page 16 for installation details and alternate racking system grounding methods.



REVISIONS		
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RESIDENCE

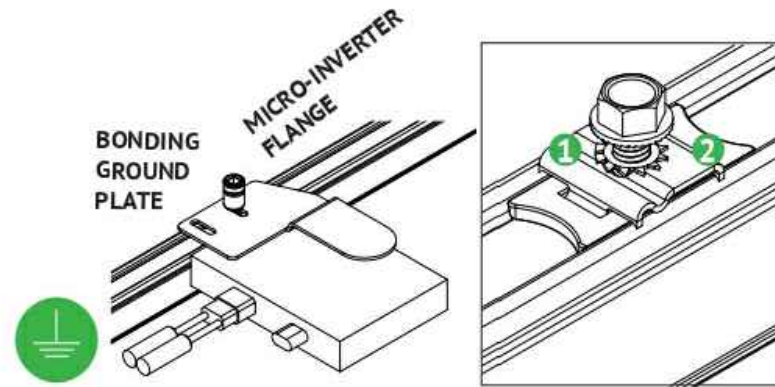
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SHEET SIZE  
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11" X 17"

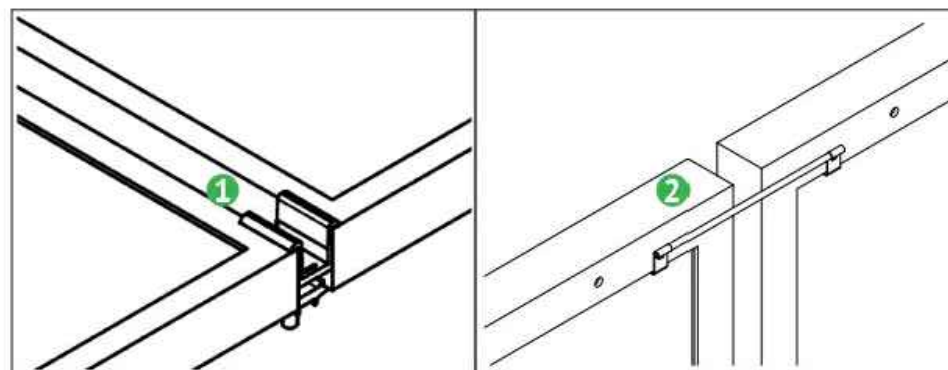
SHEET NUMBER  
PV-17



### BONDING MICROINVERTER MOUNT

- 1 Stainless steel Tooth lock washer beneath the MLPE flange remove anodization on the MLPE and bonds.
- 2 Tabs on the stainless steel washer remove anodization on the rail and bonds.

**NOTE:** See Page 17 for installation details



### ALTERNATE ROW-TO-ROW BONDING PATHS

- 1 Row-to-row module bonding is accomplished with bonding clamp with 2 integral bonding pins.
- 2 Alternate method by connecting clips on either module to complete the bonding path.

**NOTE:**

- See Page 16 for installation details
- Row-to-row module bonding certified for single-use only

## A. System Specifications and Ratings

- Maximum Voltage: 1,000 Volts
- Maximum Current: 80 Amps
- Allowable Wire: 14 AWG – 6 AWG
- Maximum Number of Input Circuits: 4
- Spacing: Please maintain a spacing of at least ½” between uninsulated live parts and fittings for conduit, armored cable, and uninsulated live parts of opposite polarity.
- Enclosure Rating: Type 3R
- Roof Slope Range: 2.5 – 12:12
- Max Side Wall Fitting Size: 1”
- Max Floor Pass-Through Fitting Size: 1”
- Ambient Operating Conditions: (-35°C) - (+75°C)
- Compliance:
  - JB-3: UL1741, CSA C22.2 No. 290
  - Approved wire connectors: must conform to UL1741
- System Marking: **Intertek Symbol and File #5025824**
- Periodic Re-inspections: If re-inspections yield loose components, loose fasteners, or any corrosion between components, components that are found to be affected are to be replaced immediately.

**Table 1: Typical Wire Size, Torque Loads and Ratings**

	1 Conductor	2 Conductor	Torque				
			Type	NM	Inch Lbs	Voltage	Current
ABB ZS6 terminal block	10-24 awg	16-24 awg	Sol/Str	0.5-0.7	6.2-8.85	600V	30 amp
ABB ZS10 terminal block	6-24 awg	12-20 awg	Sol/Str	1.0-1.6	8.85-14.16	600V	40 amp
ABB ZS16 terminal block	4-24 awg	10-20 awg	Sol/Str	1.6-2.4	14.6-21.24	600V	60 amp
ABB M6/8 terminal block	8-22 awg		Sol/Str	.08-1	8.85	600V	50 amp
Ideal 452 Red <small>WING-NUT Wire Connector</small>	8-18 awg		Sol/Str	Self-Torque	Self-Torque	600V	
Ideal 451 Yellow <small>WING-NUT Wire Connector</small>	10-18 awg		Sol/Str	Self-Torque	Self-Torque	600V	
Ideal, In-Sure <small>Push-In Connector Part #59</small>	10-14 awg		Sol/Str	Self-Torque	Self-Torque	600V	
WAGO, 2204-1201	10-20 awg	16-24 awg	Sol/Str	Self-Torque	Self-Torque	600V	30 amp
WAGO, 221-612	10-20 awg	10-24 awg	Sol/Str	Self-Torque	Self-Torque	600V	30 amp
Dottie DRC75	6-12 awg		Sol/Str	Snap-In	Snap-In		
ESP NG-53	4-6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		
ESP NG-717	4-6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		
Brumall 4-5,3	4-6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		

**Table 2: Minimum wire-bending space for conductors through a wall opposite terminals in mm (inches)**

Wire size, AWG or kcmil (mm2)	Wires per terminal (pole)			
	1 mm (inch)	2 mm (inch)	3 mm (inch)	4 or More mm (inch)
14-10 (2.1-5.3)	Not Specified	-	-	-
8 (8.4)	38.1 (1-1/2)	-	-	-
6 (13.3)	50.8 (2)	-	-	-



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SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-18