

# GENERAL NOTES

- 1.1.1 PROJECT NOTES:**
- 1.1.2 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
- 1.1.3 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION
- 1.1.4 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC 690.4: PV MODULES: UL1703, IEC61730, AND IEC61215, AND NFPA 70 CLASS C FIRE INVERTERS: UL 1741 CERTIFIED, IEEE 1547, 929, 519 COMBINER BOX(ES): UL 1703 OR UL 1741 ACCESSORY
- 1.1.5 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.
- 1.1.6 ALL INVERTERS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D). SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3].
- 1.1.7 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH 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.

- 1.2.1 SCOPE OF WORK:**
- 1.2.2 PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE EXTERIOR ROOF-MOUNTED PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT.

- 1.3.1 WORK INCLUDES:**
- 1.3.2 GROUND MOUNT RACKING - IRONRIDGE GROUND MOUNT SYSTEM
- 1.3.4 PV MODULE AND INVERTER INSTALLATION - REC SOLAR REC 365 NP2 BLK / SOLAR EDGE SE7600H-US (240V)
- 1.3.4 PV EQUIPMENT GROUNDING
- 1.3.5 PV LOAD CENTERS (IF INCLUDED)
- 1.3.6 PV METERING/MONITORING (IF INCLUDED)
- 1.3.7 PV DICONNECTIONS
- 1.3.8 PV GROUNDING ELECTRODE & BONDING TO (E) GEC
- 1.3.9 PV FINAL COMMISSIONING
- 1.3.10 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV
- 1.3.11 SIGNAGE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE
- 1.3.12 TRENCHING (IF NECESSARY)

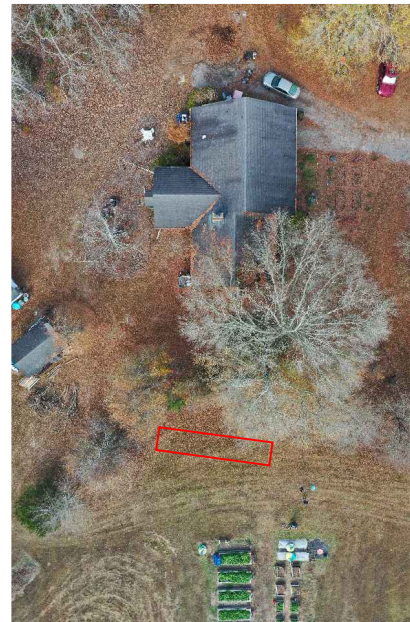
**SCOPE OF WORK**

SYSTEM SIZE: STC 24 X 365 = 8.76 kW  
 PTC: 24 X 343.7 = 8.25 kW DC  
 (24) REC SOLAR REC365NP2 BLACK  
 (1) SOLAR EDGE SE7600H-US (240V)

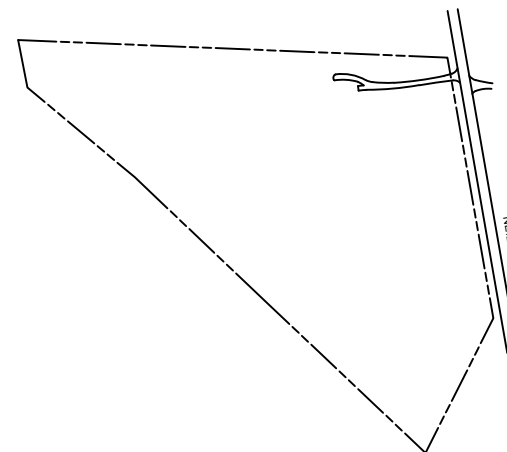
ATTACHMENT TYPE: IRONRIDGE GROUND MOUNT SYSTEM  
 MSP UPGRADE: NO

# NEW PV SYSTEM: 8.76 kWp POTENZANO RESIDENCE

321 NEILLS CREEK RD  
 LILLINGTON, NC 27546  
 ASSESSOR'S #: 0660-84-7959.000



**01 AERIAL PHOTO**  
 NOT TO SCALE



**02 PLAT MAP**  
 NOT TO SCALE

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
T-001	COVER PAGE
G-001	NOTES
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E-603	PLACARDS
S-501	ASSEMBLY DETAILS
R-001	RESOURCE DOCUMENT
R-002	RESOURCE DOCUMENT
R-003	RESOURCE DOCUMENT
R-004	RESOURCE DOCUMENT
R-005	RESOURCE DOCUMENT



## PROJECT INFORMATION

**OWNER**  
 NAME: JENNIFER POTENZANO

**PROJECT MANAGER**  
 NAME: ANDREW O'DONNELL  
 PHONE: 704-525-6767

**CONTRACTOR**  
 NAME: RENU ENERGY SOLUTIONS, LLC  
 PHONE: 704-525-6767

**AUTHORITIES HAVING JURISDICTION**  
 BUILDING: HARNETT COUNTY  
 ZONING: HARNETT COUNTY  
 UTILITY: DUKE ENERGY CAROLINAS

**DESIGN SPECIFICATIONS**  
 OCCUPANCY: II  
 CONSTRUCTION: SINGLE-FAMILY  
 ZONING: RESIDENTIAL  
 GROUND SNOW LOAD: 15 PSF  
 WIND EXPOSURE: B  
 WIND SPEED: 115 MPH

**APPLICABLE CODES & STANDARDS**  
 BUILDING: IBC 2015, IRC 2015  
 ELECTRICAL: NEC 2017  
 FIRE: IFC 2015



### CONTRACTOR

RENU ENERGY SOLUTIONS, LLC

PHONE: 704-525-6767  
 ADDRESS: 801 PRESSLEY ROAD SUITE 100  
 CHARLOTTE, NC 28217

LIC. NO.: 76615  
 HIC. NO.:  
 ELE. NO.: 20334U

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NEW PV SYSTEM: 8.76 kWp

## POTENZANO RESIDENCE

321 NEILLS CREEK RD  
 LILLINGTON, NC 27546  
 APN: 0660-84-7959.000

### ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

### COVER PAGE

DATE: 12/21/2022

DRAFTED BY: L.J.

CHECKED BY: H.E. & D.B.

REVISIONS:

**T-001.00**  
 (SHEET 1)

2.1.1 **SITE NOTES:**  
 2.1.2 A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.  
 2.1.3 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.  
 2.1.4 THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.  
 2.1.5 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION NEC 110.26.  
 2.1.6 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE BUILDING OR STRUCTURE.

2.2.1 **EQUIPMENT LOCATIONS:**  
 2.2.2 ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26.  
 2.2.3 WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A),(C) AND NEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C).  
 2.2.3 JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34.  
 2.2.4 ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.  
 2.2.5 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.  
 2.2.6 ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

2.3.1 **STRUCTURAL NOTES:**  
 2.3.2 RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAIL MANUFACTURER'S INSTRUCTIONS.  
 2.3.3 JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.  
 2.3.4 ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.  
 2.3.5 ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.  
 2.3.6 WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

2.4.1 **GROUNDING NOTES:**  
 2.4.2 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.  
 2.4.3 PV SYSTEMS REQUIRE AN EQUIPMENT GROUNDING CONDUCTOR. ALL METAL ELECTRICAL EQUIPMENT AND STRUCTURAL COMPONENTS BONDED TO GROUND, IN ACCORDANCE WITH 250.134 OR 250.136(A). ONLY THE DC CONDUCTORS ARE UNGROUNDED.  
 2.4.4 PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122.  
 2.4.5 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURE CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A).  
 2.4.6 EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. IF WEEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.  
 2.4.7 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.  
 2.4.8 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119]

2.4.9 THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO NEC 250, NEC 690.47 AND AHJ.

2.4.10 DC PV ARRAYS SHALL BE PROVIDED WITH DC GROUND-FAULT PROTECTION MEETING THE REQUIREMENTS OF 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS

2.5.1 **INTERCONNECTION NOTES:**  
 2.5.2 LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12 (B)]  
 2.5.3 THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC 705.12(B)(2)(3)].  
 2.5.4 THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD [NEC 705.12(B)(2)(3)].  
 2.5.5 AT MULTIPLE ELECTRIC POWER SOURCES OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVERCURRENT DEVICE MAY BE EXCLUDED ACCORDING TO NEC 705.12 (B)(2)(3)(C).  
 2.5.6 FEEDER TAP INTERCONNECTION (LOAD SIDE) ACCORDING TO NEC 705.12 (B)(2)(1)  
 2.5.7 SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42  
 2.5.8 BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)].

2.6.1 **DISCONNECTION AND OVER-CURRENT PROTECTION NOTES:**  
 2.6.2 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS). DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH.  
 2.6.3 BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED. THEREFORE BOTH MUST OPEN WHERE A DISCONNECT IS REQUIRED, ACCORDING TO NEC 690.13.  
 2.6.4 ISOLATING DEVICES OR EQUIPMENT DISCONNECTING MEANS SHALL BE INSTALLED IN CIRCUITS CONNECTED TO EQUIPMENT AT A LOCATION WITHIN THE EQUIPMENT, OR WITHIN SIGHT AND WITHIN 10 FT OF THE EQUIPMENT. AN EQUIPMENT DISCONNECTING MEANS SHALL BE PERMITTED TO BE REMOTE FROM THE EQUIPMENT WHERE THE EQUIPMENT DISCONNECTING MEANS CAN BE REMOTELY OPERATED FROM WITHIN 10 FT OF THE EQUIPMENT, ACCORDING TO NEC 690.15 (A).  
 2.6.5 PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.12(A) THROUGH (D)  
 2.6.6 ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.  
 2.6.7 BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED, THEREFORE BOTH REQUIRE OVER-CURRENT PROTECTION, ACCORDING TO NEC 240.21. (SEE EXCEPTION IN NEC 690.9)  
 2.6.8 IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.

2.7.1 **WIRING & CONDUIT NOTES:**  
 2.7.2 ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.  
 2.7.3 ALL CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.  
 2.7.4 EXPOSED PV SOURCE CIRCUITS AND OUTPUT CIRCUITS SHALL USE WIRE LISTED AND IDENTIFIED AS PHOTOVOLTAIC (PV) WIRE [690.31 (C)]. PV MODULES WIRE LEADS SHALL BE LISTED FOR USE ON PV ARRAYS, ACCORDING TO NEC 690.31 (A).

2.7.5 PV WIRE BLACK WIRE MAY BE FIELD-MARKED WHITE [NEC 200.6 (A)(6)].  
 2.7.6 MODULE WIRING SHALL BE LOCATED AND SECURED UNDER THE ARRAY.  
 2.7.7 ACCORDING TO NEC 200.7, UNGROUNDED SYSTEMS DC CONDUCTORS COLORED OR MARKED AS FOLLOWS:  
 DC POSITIVE- RED, OR OTHER COLOR EXCLUDING WHITE, GREY AND GREEN  
 DC NEGATIVE- BLACK, OR OTHER COLOR EXCLUDING WHITE, GREY AND GREEN  
 2.7.8 AC CONDUCTORS COLORED OR MARKED AS FOLLOWS:  
 PHASE A OR L1- BLACK  
 PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE  
 PHASE C OR L3- BLUE, YELLOW, ORANGE\*, OR OTHER CONVENTION  
 NEUTRAL- WHITE OR GREY

\* IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [NEC 110.15].



**CONTRACTOR**

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 ELE. NO.: 20334U

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NEW PV SYSTEM: 8.76 kWp

**POTENZANO RESIDENCE**

321 NEILLS CREEK RD LILLINGTON, NC 27546  
 APN: 0660-84-7959.000

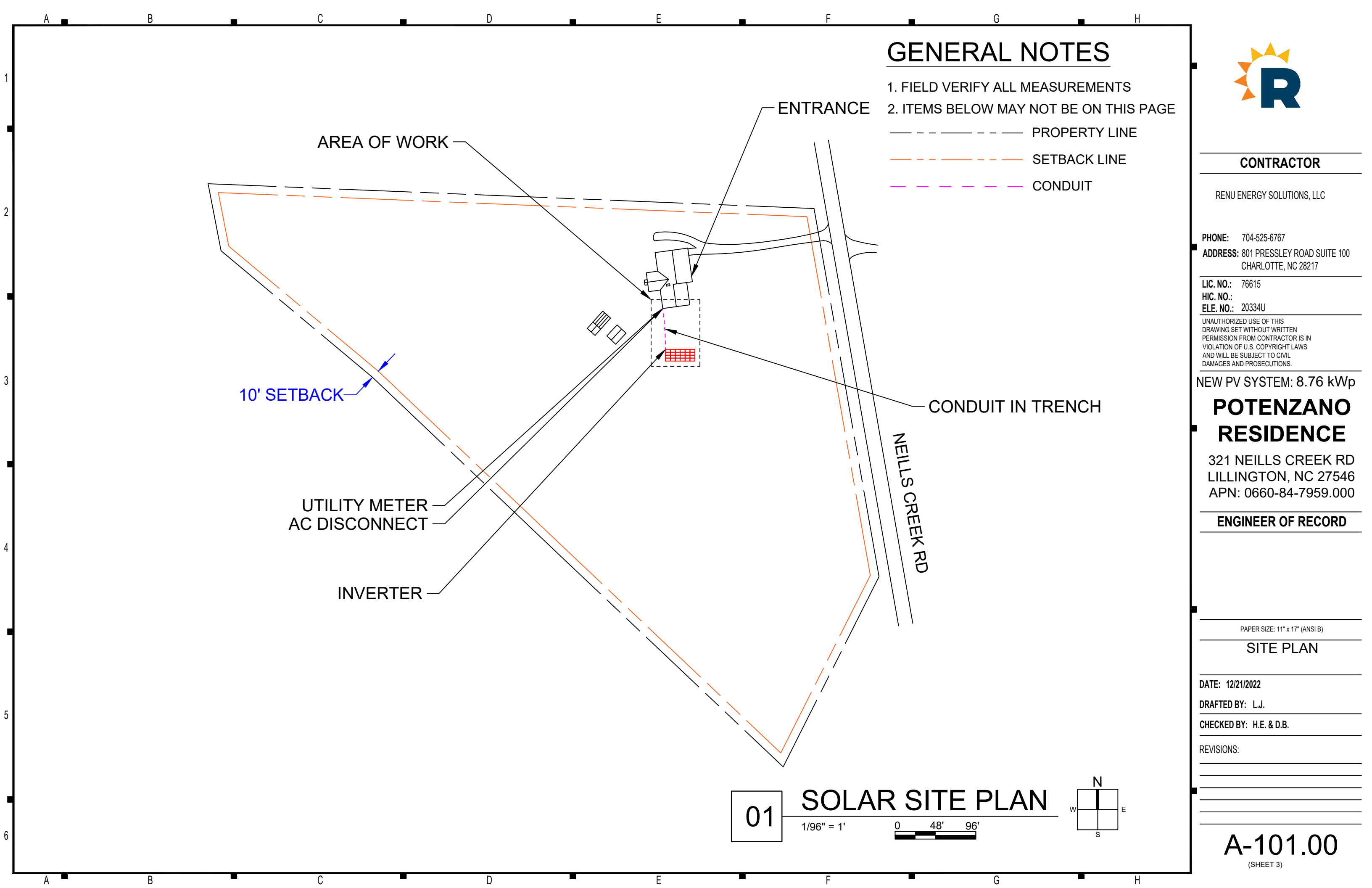
**ENGINEER OF RECORD**

PAPER SIZE: 11" x 17" (ANSI B)

**NOTES**

DATE: 12/21/2022  
 DRAFTED BY: L.J.  
 CHECKED BY: H.E. & D.B.

REVISIONS:  
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 \_\_\_\_\_  
 \_\_\_\_\_



# GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS
2. ITEMS BELOW MAY NOT BE ON THIS PAGE

- PROPERTY LINE
- - - - - SETBACK LINE
- - - - - CONDUIT



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## SITE PLAN

DATE: 12/21/2022

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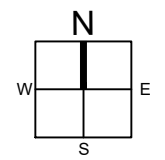
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01

# SOLAR SITE PLAN

1/96" = 1'



# A-101.00

(SHEET 3)



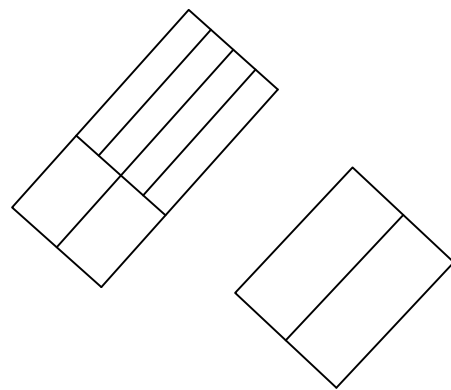
# GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS
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- (A) MODULE STRINGING
- (B) MODULE STRINGING
- CONDUIT

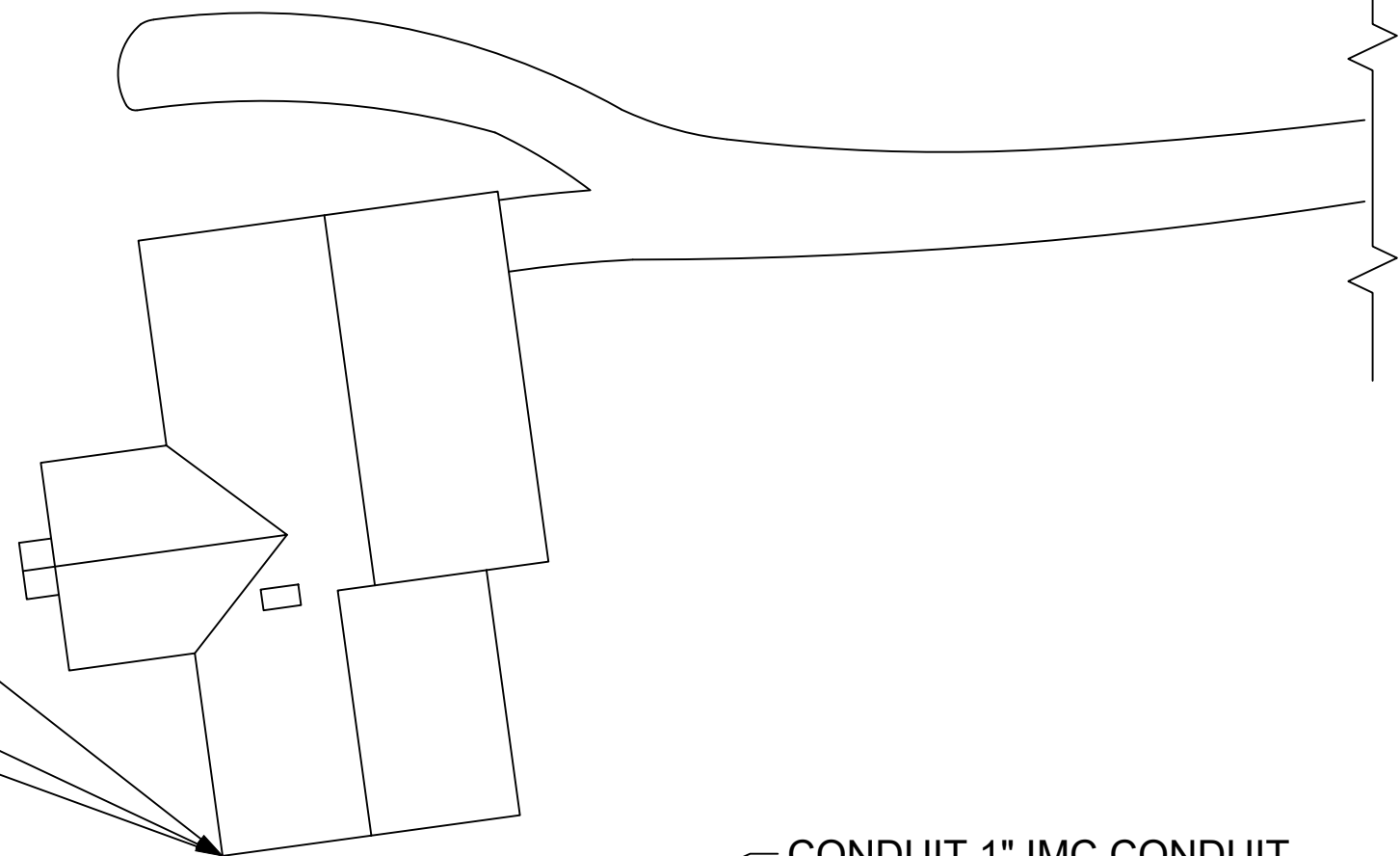
INTERIOR PV EQUIPMENT  
(E)(1) MAIN ELECTRICAL PANEL

EXTERIOR PV EQUIPMENT  
(E)(1) UTILITY METER  
(N)(1) AC DISCONNECT



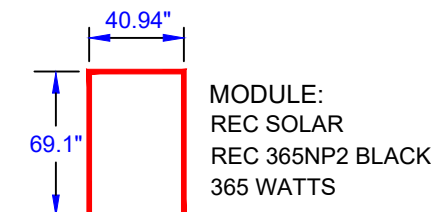
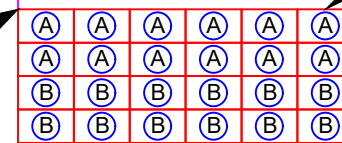
EXTERIOR PV EQUIPMENT  
(E)(1) INVERTER

(N)(1) JUNCTION BOX



CONDUIT 1" IMC CONDUIT  
MIN. 6" DEEP  
85' LENGTH

ARRAY 1 - 8.76 kW  
[x24] (N) MODULES  
TILT: 30 DEGREES  
AZIMUTH: 180 DEGREES



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## ELECTRICAL PLAN

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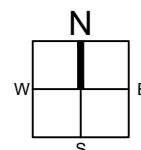
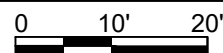
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(SHEET 4)

01

# SOLAR ELECTRICAL PLAN

1/20" = 1'





# GENERAL NOTES

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## SOLAR ATTACHMENT PLAN

DATE: 12/21/2022

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(SHEET 5)

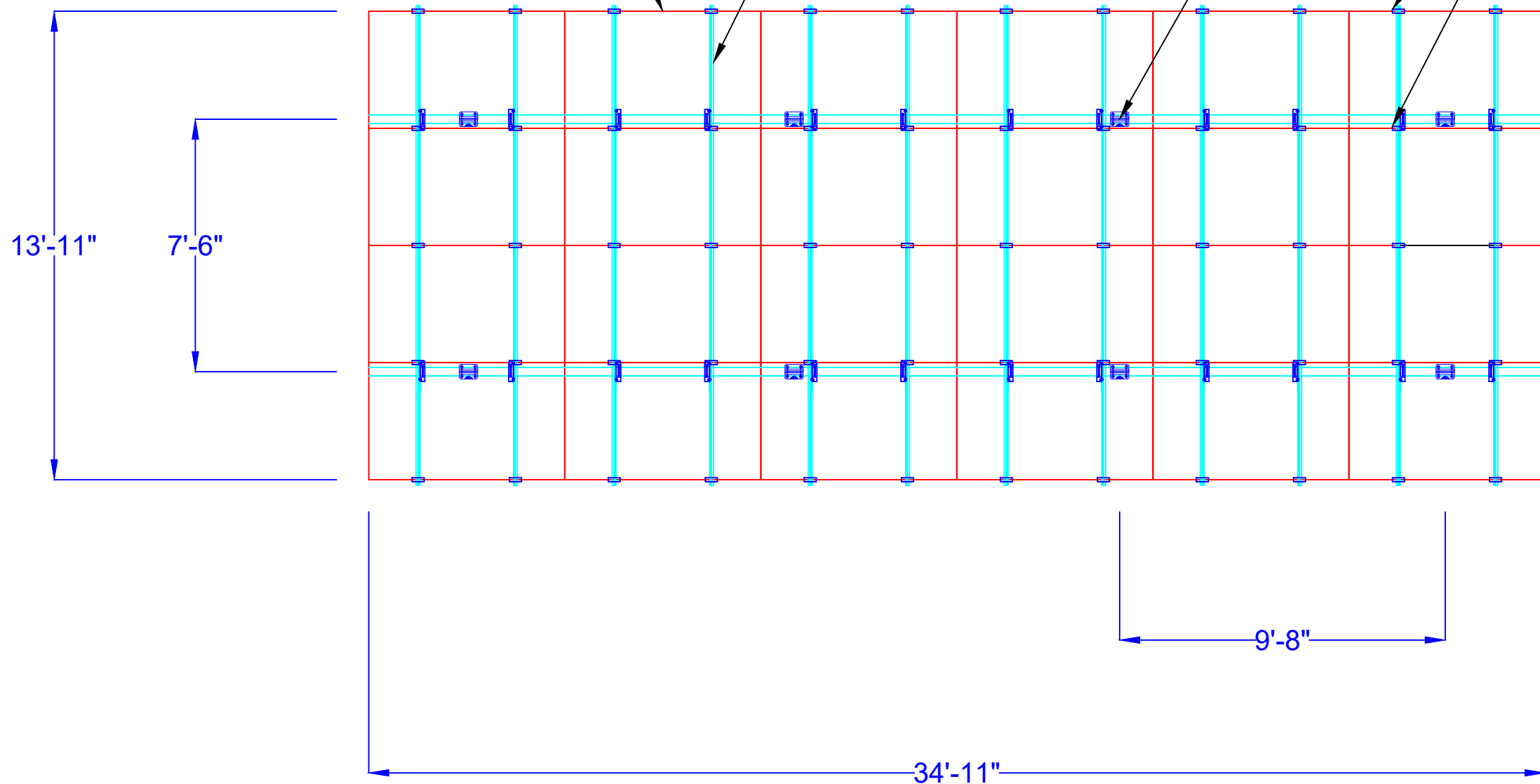
GROUND MOUNT SOLAR MODULES (SEE  
SHEET S-501 FOR MOUNTING DETAILS)

IRONRIDGE RAIL XR1000

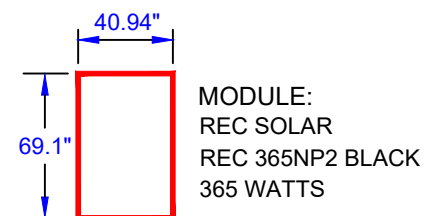
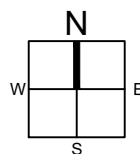
PIERS

END CLAMP

MID CLAMP



**01** SOLAR ELECTRICAL PLAN  
1/4" = 1'



CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS



CONTRACTOR

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PAPER SIZE: 11" x 17" (ANSI B)

LINE DIAGRAM

DATE: 12/21/2022

DRAFTED BY: L.J.

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REVISIONS:

E-601.00

(SHEET 6)

ID	TYPICAL	CONDUCTOR	CONDUIT	CURRENT-CARRYING CONDUCTORS IN CONDUIT	OCPD	EGC	TEMP. CORR. FACTOR	CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT (125%)	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	AMP. @ TERMINAL
1	2	10 AWG PV WIRE, COPPER	FREE AIR	2	N/A	6 AWG BARE, COPPER	0.91 (35.1 °C)	1	15A	18.75A	55A	50.05A	75°C	50A
2	1	10 AWG THWN-2, COPPER	0.75" DIA	4	N/A	10 AWG THWN-2, COPPER	0.91 (35.1 °C)	0.8	15A	18.75A	40A	29.12A	75°C	35A
3	1	8 AWG THWN-2, COPPER	0.75" DIA	2	N/A	8 AWG THWN-2, COPPER	0.91 (35.1 °C)	1	31.66A	39.58A	55A	50.05A	75°C	50A
4	1	8 AWG THWN-2, COPPER	0.75" DIA	2	40A	8 AWG THWN-2, COPPER	0.91 (35.1 °C)	1	31.66A	39.58A	55A	50.05A	75°C	50A
5	1	4/0 AWG SER, ALUMINUM	2.00" DIA	2	200A	4/0 AWG THWN-2, COPPER	0.91 (35.1 °C)	1	-	200A	205A	186.55A	75°C	180A
6	1	4/0 AWG SER, ALUMINUM	2.00" DIA	2	200A	4/0 AWG THWN-2, COPPER	0.91 (35.1 °C)	1	-	200A	205A	186.55A	75°C	180A
7	1	10 AWG THWN-2, COPPER	0.75" DIA	2	30A	10 AWG THWN-2, COPPER	0.91 (35.1 °C)	1	20.83A	26.04A	40A	36.4A	75°C	35A

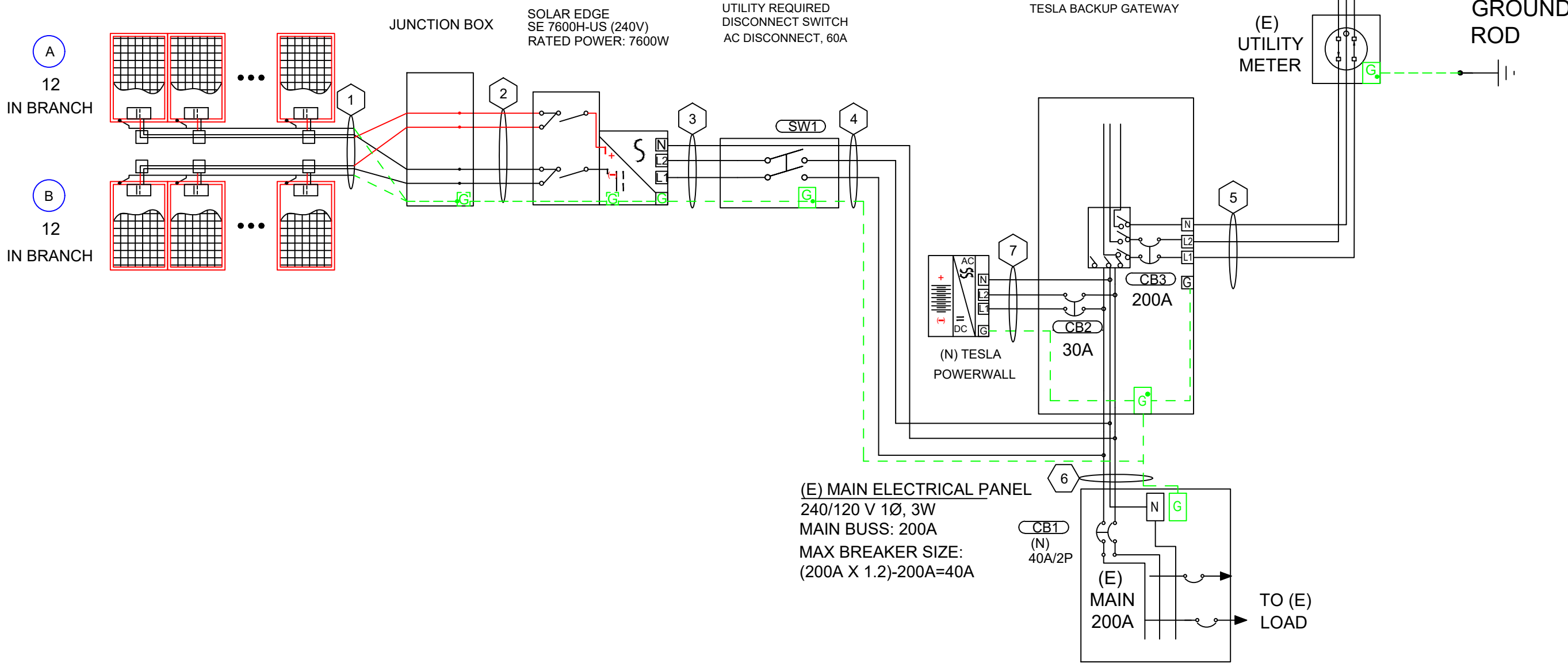
- (A) MODULE STRINGING
- (B) MODULE STRINGING

DC PV SOURCE CIRCUITS AND PV OUTPUT  
 CIRCUITS TO BE INSTALLED IN METAL RACEWAY  
 OR METAL ENCLOSURES PER NEC 690.31 (G)

1. SYSTEM EQUIPPED WITH RAPID SHUTDOWN DISCONNECT PER NEC 690.12
2. SYSTEM COMPLIANT WITH NEC 690.13

[X24] SOLAR MODULES  
 MAKE: REC SOLAR  
 MODEL: REC365NP2 BLACK  
 RATED POWER: 365W

[X24] POWER OPTIMIZER  
 MAKE: SOLAR EDGE  
 MODEL: S440  
 RATED POWER: 440W



(E) MAIN ELECTRICAL PANEL  
 240/120 V 1Ø, 3W  
 MAIN BUSS: 200A  
 MAX BREAKER SIZE:  
 (200A X 1.2)-200A=40A

TO UTILITY  
 GRID (UG)

GROUND  
 ROD

(E)  
 UTILITY  
 METER

TESLA BACKUP GATEWAY

SOLAR EDGE  
 SE 7600H-US (240V)  
 RATED POWER: 7600W

UTILITY REQUIRED  
 DISCONNECT SWITCH  
 AC DISCONNECT, 60A

JUNCTION BOX

(A)  
 12  
 IN BRANCH

(B)  
 12  
 IN BRANCH

TO (E)  
 LOAD

**SYSTEM SUMMARY**

	INVERTER #1	
	STRING #1	STRING #2
POWERBOX MAX OUTPUT CURRENT	15A	15A
OPTIMIZERS IN SERIES	12	12
NOMINAL STRING VOLTAGE	380V	380V
ARRAY OPERATING CURRENT	15A	15A
ARRAY STC POWER	8,760W	
ARRAY PTC POWER	8,248.8W	
MAX AC CURRENT	31.66A	
MAX AC POWER	7,600W	
DERATED (CEC) AC POWER	7,600W	

**DESIGN TEMPERATURES**

ASHRAE EXTREME LOW	-11.1°C (12.0°F), SOURCE: HARNETT COUNTY (35.38°;-78.73°)
ASHRAE 2% HIGH	37.1°C (98.8°F), SOURCE: HARNETT COUNTY (35.38°;-78.73°)

**MODULES**

REF.	QTY.	MAKE AND MODEL	PMAX	PTC	ISC	IMP	VOC	VMP	TEMP. COEFF. OF VOC	FUSE RATING
PM1-24	24	REC SOLAR REC365NP2 BLACK	365W	343.7W	11.36A	10.65A	40.9V	34.3V	-0.106V/°C (-0.26%/°C)	25A

**POWER OPTIMIZERS**

REF.	QTY.	MODEL	RATED INPUT POWER	MAX OUTPUT CURRENT	MAX INPUT ISC	MAX DC VOLTAGE	WEIGHTED EFFICIENCY
PO1-24	24	SOLAR EDGE S440	440W	15A	14.5A	60V	98.6%

**INVERTERS**

REF.	QTY.	MAKE AND MODEL	AC VOLTAGE	GROUND	OCPD RATING	RATED POWER	MAX OUTPUT CURRENT	MAX INPUT CURRENT	MAX INPUT VOLTAGE	CEC WEIGHTED EFFICIENCY
I1	1	SOLAR EDGE SE7600H-US (240V)	240V	FLOATING	40A	7600W	32A	20A	480V	99.0%

**DISCONNECTS**

REF.	QTY.	MAKE AND MODEL	RATED CURRENT	MAX RATED VOLTAGE
SW1	1	EATON DG22XXRB OR EQUIV.	60A	240VAC

**OCPDS**

REF.	QTY.	RATED CURRENT	MAX VOLTAGE
CB1	1	40A	240VAC
CB2	1	30A	240VAC
CB3	1	200A	240VAC



**CONTRACTOR**

RENU ENERGY SOLUTIONS, LLC

PHONE: 704-525-6767

ADDRESS: 801 PRESSLEY ROAD SUITE 100  
CHARLOTTE, NC 28217

LIC. NO.: 76615

HIC. NO.:

ELE. NO.: 20334U

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

NEW PV SYSTEM: 8.76 kWp

**POTENZANO  
RESIDENCE**

321 NEILLS CREEK RD  
LILLINGTON, NC 27546  
APN: 0660-84-7959.000

**ENGINEER OF RECORD**

PAPER SIZE: 11" x 17" (ANSI B)

**DESIGN TABLES**

DATE: 12/21/2022

DRAFTED BY: L.J.

CHECKED BY: H.E. & D.B.

REVISIONS:

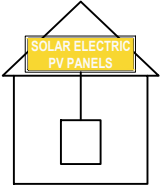
**E-602.00**

(SHEET 7)



**SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN**

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



**LABEL 1**  
AT RAPID SHUTDOWN SYSTEM [NEC 690.56(C)(1)(A)].

**WARNING**  
**ELECTRIC SHOCK HAZARD**

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

**LABEL 2**  
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT [NEC 690.15]

ALL SIGNAGE MUST BE PERMANENTLY ATTACHED AND BE WEATHER RESISTANT/SUNLIGHT RESISTANT AND CANNOT BE HAND-WRITTEN PER NEC 110.21(B)

**WARNING**  
**ELECTRIC SHOCK HAZARD**

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

**LABEL 3**  
AT POINT OF INTERCONNECTION; LABEL, SUCH AS LABEL 4 OR LABEL 5 MUST IDENTIFY PHOTOVOLTAIC SYSTEM [NEC 705.12(B)(4)]

**PHOTOVOLTAIC SYSTEM**  
**DC DISCONNECT**

OPERATING VOLTAGE: 240 VDC  
OPERATING CURRENT: 31.66 A  
MAX SYSTEM VOLTAGE: 480 VDC  
SHORT CIRCUIT CURRENT: 45 A  
CHARGE CONTROLLER MAX: N/A

**LABEL 4**  
AT EACH DC DISCONNECTING MEANS [NEC 690.53]

**PHOTOVOLTAIC SYSTEM**  
**AC DISCONNECT**

RATED AC OUTPUT CURRENT: 31.66A AC  
NOMINAL OPERATING VOLTAGE: 240/480 V AC

**LABEL 5**  
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT [NEC 690.15]

**WARNING**  
**DUAL POWER SUPPLY**

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

**LABEL 6**  
AT POINT OF INTERCONNECTION; LABEL, SUCH AS LABEL 4 OR LABEL 5 MUST IDENTIFY PHOTOVOLTAIC SYSTEM [NEC 705.12(B)(4)]

**WARNING**  
**INVERTER OUTPUT CONNECTION**

DO NOT RELOCATE THIS OVERCURRENT DEVICE

**LABEL 7**  
AT POINT OF INTERCONNECTION; LABEL, SUCH AS LABEL 4 OR LABEL 5 MUST IDENTIFY PHOTOVOLTAIC SYSTEM [NEC 705.12(B)(4)]

**WARNING: PHOTOVOLTAIC POWER SOURCE**

**LABEL 8**  
AT EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS; SPACED AT MAXIMUM 10 FT SECTION OR WHERE SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.  
[NEC 690.31(G)]  
LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE  
[IFC 605.11.1.1]

**LABELING NOTES**

1.1 LABELING REQUIREMENTS BASED ON THE 2017 NATIONAL ELECTRICAL CODE, INTERNATIONAL FIRE CODE 605.11, OSHA STANDARD 1910.145, ANSI Z535

1.2 MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

1.3 LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.

1.4 LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.

1.5 ALERTING WORDS TO BE COLOR CODED. "DANGER" WILL HAVE RED BACKGROUND; "WARNING" WILL HAVE ORANGE BACKGROUND; "CAUTION" WILL HAVE YELLOW BACKGROUND. [ANSI Z535]

**RAPID SHUTDOWN PV ARRAY**

**LABEL 8**  
AT RAPID SHUTDOWN SWITCH [NEC 690.56(C)].  
LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE  
[IFC 605.11.1.1]

**DIRECTORY**

PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF NOT IN THE SAME LOCATION [NEC 690.56(B)] WHERE THE PV SYSTEMS ARE REMOTELY LOCATED FROM EACH OTHER, A DIRECTORY IN ACCORDANCE WITH 705.10 SHALL BE PROVIDED AT EACH PV SYSTEM DISCONNECTING MEANS. PV SYSTEM EQUIPMENT AND DISCONNECTING MEANS SHALL NOT BE INSTALLED IN BATHROOMS [NEC 690.4(D),(E)]



**CONTRACTOR**

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HIC. NO.:

ELE. NO.: 20334U

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NEW PV SYSTEM: 8.76 kWp

**POTENZANO RESIDENCE**

321 NEILLS CREEK RD  
LILLINGTON, NC 27546  
APN: 0660-84-7959.000

**ENGINEER OF RECORD**

PAPER SIZE: 11" x 17" (ANSI B)

**PLACARDS**

DATE: 12/21/2022

DRAFTED BY: L.J.

CHECKED BY: H.E. & D.B.

REVISIONS:

**E-603.00**

(SHEET 8)



**CONTRACTOR**

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LILLINGTON, NC 27546  
APN: 0660-84-7959.000

**ENGINEER OF RECORD**

PAPER SIZE: 11" x 17" (ANSI B)

**ASSEMBLY DETAILS**

DATE: 12/21/2022

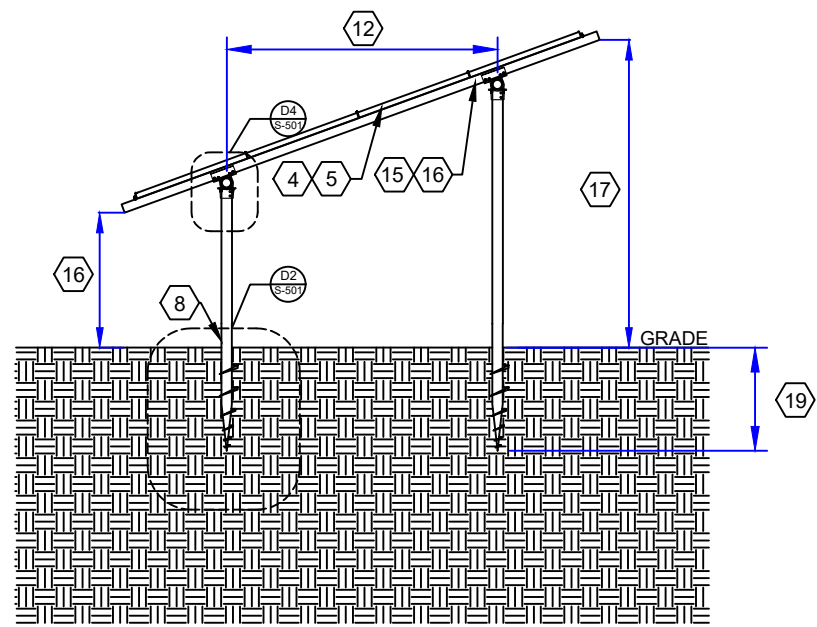
DRAFTED BY: L.J.

CHECKED BY: H.E. & D.B.

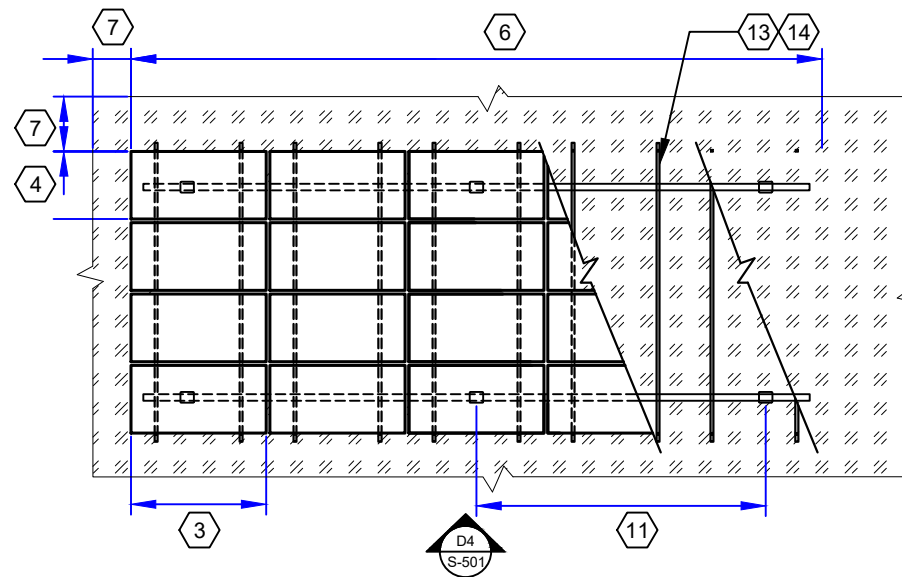
REVISIONS:

**S-501.00**

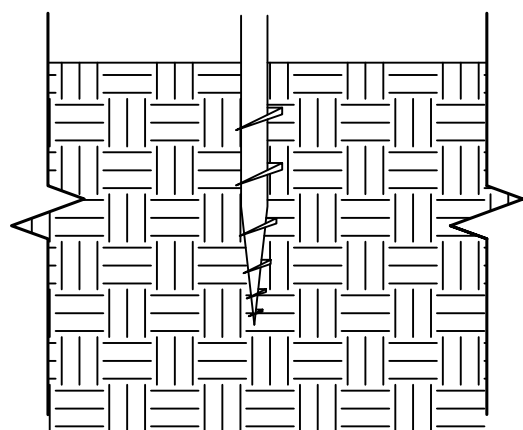
(SHEET 9)



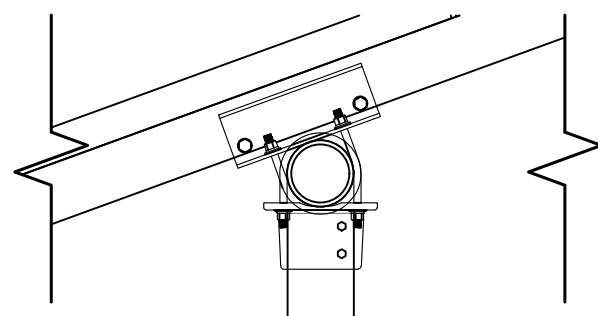
**D1** RACKING DETAIL (TRANSVERSE)  
NOT TO SCALE



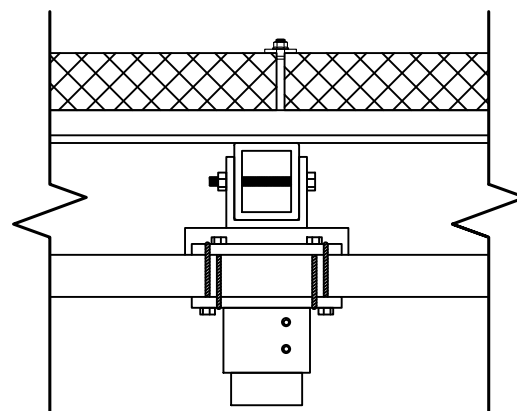
**D3** RACKING DETAIL (TRANSVERSE)  
NOT TO SCALE



**D2** DETAIL (TRANSVERSE)  
NOT TO SCALE



**D4** DETAIL (TRANSVERSE)  
NOT TO SCALE



**D5** DETAIL (LONGITUDINAL)  
NOT TO SCALE

**SHEET KEYNOTES**

1. MODULE MANUFACTURER: REC SOLAR
2. MODULE MODEL: REC365NP2 BLACK
3. MODULE LENGTH: 69.1"
4. MODULE WIDTH: 40.94"
5. MODULE WEIGHT: 44 LBS.
6. SEE SHEET A-103 FOR DIMENSION(S)
7. MIN. SETBACK REQUIREMENT: 10 FT.
8. FOUNDATION/ANCHOR TYPE: EARTH SCREWS
9. TOTAL # OF FOUNDATION / CONCRETE PIER: 8
10. TOTAL AREA: 471.49 SQ. FT.
11. EAST/WEST SPACING: 9'-8"
12. NORTH/SOUTH SPACING: 7'-6"
13. RACKING MANUFACTURER (OR EQUIV): IRONRIDGE
14. RACKING MODEL (OR EQUIV): GROUND MOUNT SYSTEM
15. PIPE DIAMETER: 3"
16. FRONT CLEARANCE: 1'-4"
17. REAR CLEARANCE: 7'-4"
18. DIAGONAL BRACING: NO
19. POLE EMBEDMENT DEPTH: 5FT
20. WIND EXPOSURE: C
21. WIND SPEED: 110 MPH
22. ARRAY TILT: 25 DEGREES

# REC N-PEAK 2 BLACK SERIES

PREMIUM FULL BLACK MONO N-TYPE SOLAR PANELS



MONO N-TYPE: THE MOST EFFICIENT C-SI TECHNOLOGY



NO LIGHT INDUCED DEGRADATION



SUPER-STRONG FRAME UP TO 7000 PA SNOW LOAD



FLEXIBLE INSTALLATION OPTIONS



FEATURING REC'S PIONEERING TWIN DESIGN



HIGH POWER FOR 25 YEARS

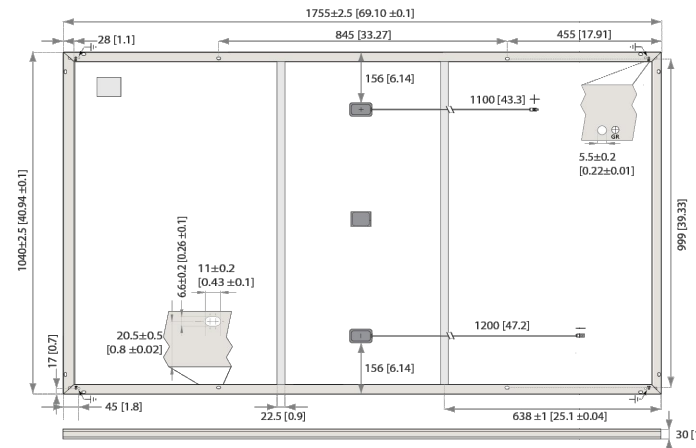
370 WP POWER



SOLAR'S MOST TRUSTED



## REC N-PEAK 2 BLACK SERIES



Measurements in mm [in]

ELECTRICAL DATA @ STC	Product code*: RECxxxNP2 Black			
Nominal Power - P <sub>MAX</sub> (Wp)	355	360	365	370
Watt Class Sorting - (W)	0/+5	0/+5	0/+5	0/+5
Nominal Power Voltage - V <sub>MPP</sub> (V)	33.5	33.9	34.3	34.7
Nominal Power Current - I <sub>MPP</sub> (A)	10.60	10.62	10.65	10.68
Open Circuit Voltage - V <sub>OC</sub> (V)	40.7	40.8	40.9	41.1
Short Circuit Current - I <sub>SC</sub> (A)	11.27	11.31	11.36	11.41
Panel Efficiency (%)	19.4	19.7	20.0	20.3

Values at standard test conditions (STC: air mass AM1.5, irradiance 1000 W/m<sup>2</sup>, temperature 25°C), based on a production spread with a tolerance of P<sub>MAX</sub>, V<sub>OC</sub> & I<sub>SC</sub> ±3% within one watt class.\* Where xxx indicates the nominal power class (P<sub>MAX</sub>) at STC above.

ELECTRICAL DATA @ NOCT	Product code*: RECxxxNP2 Black			
Nominal Power - P <sub>MAX</sub> (Wp)	268	272	276	280
Nominal Power Voltage - V <sub>MPP</sub> (V)	31.3	31.7	32.1	32.5
Nominal Power Current - I <sub>MPP</sub> (A)	8.56	8.58	8.60	8.63
Open Circuit Voltage - V <sub>OC</sub> (V)	38.1	38.2	38.2	38.4
Short Circuit Current - I <sub>SC</sub> (A)	9.10	9.13	9.18	9.22

Nominal operating cell temperature (NOCT: air mass AM1.5, irradiance 800 W/m<sup>2</sup>, temperature 20°C, windspeed 1 m/s). \*Where xxx indicates the nominal power class (P<sub>MAX</sub>) at STC above.

### CERTIFICATIONS

IEC 61215:2016, IEC 61730:2016, UL 61730 (Pending)  
ISO 14001:2004, ISO 9001:2015, OHSAS 18001:2007, IEC 62941



### WARRANTY

	Standard	REC ProTrust	
Installed by an REC Certified Solar Professional	No	Yes	Yes
System size	any	<25kW	25-500kW
Product Warranty (yrs)	20	25	25
Power Warranty (yrs)	25	25	25
Labor Warranty (yrs)	0	25	10
Power in Year 1	98%	98%	98%
Annual Degradation	0.25%	0.25%	0.25%
Power in Year 25	92%	92%	92%

See warranty documents for details. Some conditions apply.

### GENERAL DATA

Cell type:	120 half-cut mono c-Si n-type cells 6 strings of 20 cells in series
Glass:	0.13" (3.2 mm) solar glass with anti-reflection surface treatment
Backsheet:	Highly resistant polymeric construction (black)
Frame:	Anodized aluminum (black)
Junction box:	3-part, 3 bypass diodes, IP68 rated in accordance with IEC 62790
Cable:	12 AWG (4 mm <sup>2</sup> ) PV wire, 43+47" (1.1 m +1.2 m) in accordance with EN 50618
Connectors:	Stäubli MC4 PV-KBT4/KST4, 12 AWG (4 mm <sup>2</sup> ) in accordance with IEC 62852 IP68 only when connected
Origin:	Made in Singapore

### MECHANICAL DATA

Dimensions:	69.1 x 40.94 x 1.2 in (1755 x 1040 x 30 mm)
Area:	19.70 sq ft (1.83 m <sup>2</sup> )
Weight:	44.0 lbs (20.0 kg)

### MAXIMUM RATINGS

Operational temperature:	-40 ... +85°C
Maximum system voltage:	1000 V
Maximum test load (front):	+7000 Pa (146 psf)*
Maximum test load (rear):	-4000 Pa (83.5 psf)*
Max series fuse rating:	25 A
Max reverse current:	25 A

\*See installation manual for mounting instructions. Design load = Test load / 1.5 (safety factor)

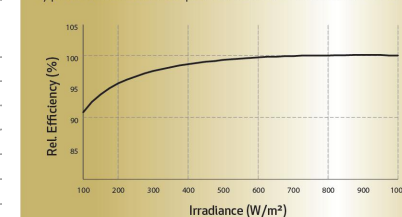
### TEMPERATURE RATINGS\*

Nominal Operating Cell Temperature:	44.3°C (+2°C)
Temperature coefficient of P <sub>MAX</sub> :	-0.34 %/°C
Temperature coefficient of V <sub>OC</sub> :	-0.26 %/°C
Temperature coefficient of I <sub>SC</sub> :	0.04 %/°C

\*The temperature coefficients stated are linear values

### LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC.



Specifications subject to change without notice.

Ref. PM-05-11-05-Rev-A\_07.21



### CONTRACTOR

RENU ENERGY SOLUTIONS, LLC

PHONE: 704-525-6767

ADDRESS: 801 PRESSLEY ROAD SUITE 100  
CHARLOTTE, NC 28217

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HIC. NO.:

ELE. NO.: 20334U

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NEW PV SYSTEM: 8.76 kWp

## POTENZANO RESIDENCE

321 NEILLS CREEK RD  
LILLINGTON, NC 27546  
APN: 0660-84-7959.000

### ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

## RESOURCE DOCUMENT

DATE: 12/21/2022

DRAFTED BY: L.J.

CHECKED BY: H.E. & D.B.

REVISIONS:

R-001.00

(SHEET 10)

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 it manufactures. Headquartered in Norway with operational headquarters in Singapore, REC also has regional hubs in North America, Europe, and Asia-Pacific.



www.recgroup.com





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DATE: 12/21/2022

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CHECKED BY: H.E. & D.B.

REVISIONS:

**R-002.00**

(SHEET 11)

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

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

12-25 YEAR WARRANTY



INVERTERS

**Optimized installation with HD-Wave technology**

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014, NEC 2017 and NEC 2020 per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

solaredge.com



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

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

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXH-XXXXX3XX4							
<b>OUTPUT</b>								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5 <sup>(1)</sup>							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
Power Factor	1, Adjustable - 0.85 to 0.85							
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
<b>INPUT</b>								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							Vdc
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380							Vdc
Maximum Input Current @240V <sup>(2)</sup>	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V <sup>(2)</sup>	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600ka Sensitivity							
Maximum Inverter Efficiency	99.2							%
CEC Weighted Efficiency	99							%
Nighttime Power Consumption	< 2.5							W

(1) For other regional settings please contact SolarEdge support.  
(2) A higher current source may be used; the inverter will limit its input current to the values stated.

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

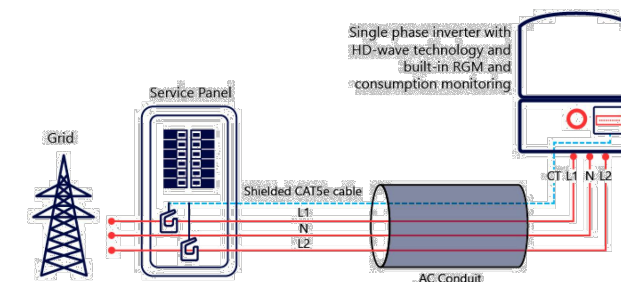
SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US
<b>ADDITIONAL FEATURES</b>							
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)						
Revenue Grade Metering, ANSI C12.20	Optional <sup>(1)</sup>						
Consumption metering	Optional <sup>(1)</sup>						
Inverter Commissioning	With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection						
Rapid Shutdown - NEC 2014, NEC 2017 and NEC 2020, 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect						
<b>STANDARD COMPLIANCE</b>							
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to TLL M-07						
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (H)						
Emissions	FCC Part 15 Class B						
<b>INSTALLATION SPECIFICATIONS</b>							
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG			1" Maximum / 14-4 AWG			
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG			1" Maximum / 1-3 strings / 14-6 AWG			
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174		25.1 / 11.4		26.2 / 11.9		21.3 x 14.6 x 7.3 / 540 x 370 x 185
Weight with Safety Switch	22 / 10		25.1 / 11.4		26.2 / 11.9		38.8 / 17.6
Noise	< 25						
Cooling	Natural Convection						
Operating Temperature Range	-40 to +140 / -40 to +60 <sup>(4)</sup>						
Protection Rating	NEMA 4X (Inverter with Safety Switch)						

(1) Inverter with Revenue Grade Meter P/N: SE5000H-US000BNC4; Inverter with Revenue Grade Production and Consumption Meter P/N: SE5000H-US000BN4. For consumption metering, current transformers should be ordered separately: SEACT0750-200NA-20 or SEACT0750-400NA-20, 20 units per box.  
(4) Full power up to at least 50°C / 122°F; for power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-de-rating-note-na.pdf

**How to Enable Consumption Monitoring**

By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills



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RoHS

# Power Optimizer For Residential Installations

S440, S500, S500B



POWER OPTIMIZER

## Enabling PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Detects abnormal PV connector behavior, preventing potential safety issues\*
- Faster installations with simplified cable management and easy assembly using a single bolt
- Module-level voltage shutdown for installer and firefighter safety
- Flexible system design for maximum space utilization
- Superior efficiency (99.5%)
- Compatible with bifacial PV modules

\* Functionality subject to inverter model and firmware version

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



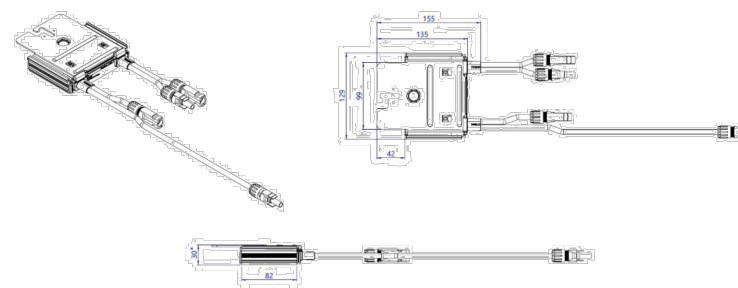
## Power Optimizer For Residential Installations S440, S500, S500B

	S440	S500	S500B	UNIT
Rated Input DC Power <sup>(1)</sup>	440		500	W
Absolute Maximum Input Voltage (Voc)	60		125	Vdc
MPPT Operating Range	8 - 60		12.5 - 105	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5		15	Adc
Maximum Efficiency		99.5		%
Weighted Efficiency		98.6		%
Overvoltage Category		II		
<b>OUTPUT DURING OPERATION</b>				
Maximum Output Current		15		Adc
Maximum Output Voltage	60		80	Vdc
<b>OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)</b>				
Safety Output Voltage per Power Optimizer		1 +/- 0.1		Vdc
<b>STANDARD COMPLIANCE</b>				
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3, CISPR11, EN-55011			
Safety	IEC62109-1 (class II safety), UL1741			
Material	UL94 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	129 x 155 x 45	mm
Weight (including cables)		655		gr
Input Connector		MC4 <sup>(2)</sup>		
Input Wire Length		0.1		m
Output Connector		MC4		
Output Wire Length		(+) 2.3, (-) 0.10		m
Operating Temperature Range <sup>(3)</sup>		-40 to +85		°C
Protection Rating		IP68		
Relative Humidity		0 - 100		%

(1) Rated power of the module at STC will not exceed the Power Optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed.  
 (2) For other connector types please contact SolarEdge.  
 (3) For ambient temperature above +70°C power de-rating is applied. Refer to [Power Optimizers Temperature De-Rating Technical Note](#) for details.

PV System Design Using a SolarEdge Inverter <sup>(4)</sup>	S440, S500 S500B	Single Phase HD-Wave	Three Phase SExxK-RWB	Three Phase for 230/400V Grid	Three Phase for 277/480V Grid	
Minimum String Length (Power Optimizers)	5440, 5500	8	9	16	18	
Maximum String Length (Power Optimizers)		6	8		14	
Maximum Continuous Power per String		25	20		50	
Maximum Allowed Connected Power per String (Permitted only when the power difference between strings is less than 2,000W)		5700	5625	11250	12750	W
Parallel Strings of Different Lengths or Orientations		See <sup>(5)</sup>	See <sup>(5)</sup>	13500	15000	W

(4) It is not allowed to mix S-series and P-series Power Optimizers in new installations.  
 (5) If the inverter's rated AC power < maximum nominal power per string, then the maximum power per string will be able to reach up to the inverters maximum input DC power. Refer to <https://www.solaredge.com/sites/default/files/se-power-optimizer-single-string-design-application-note.pdf>.



\*45mm for S500B

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NEW PV SYSTEM: 8.76 kWp

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LILLINGTON, NC 27546  
APN: 0660-84-7959.000

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### RESOURCE DOCUMENT

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DRAFTED BY: L.J.

CHECKED BY: H.E. & D.B.

REVISIONS:

R-003.00

(SHEET 12)





# Ground Mount System

Datasheet



### Mount on all terrains, in no time.

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

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



#### Rugged Construction

Engineered steel and aluminum components ensure durability.



#### PE Certified

Pre-stamped engineering letters available in most states.



#### Simple Assembly

Just a few simple components and no heavy equipment.



#### Design Software

Online tool generates engineering values and bill of materials.



#### Flexible Architecture

Multiple foundation and array configuration options.



#### 20 Year Warranty

Twice the protection offered by competitors.



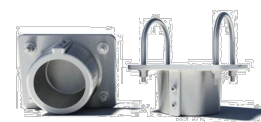
Datasheet



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

### Substructure

#### Top Caps



Connect vertical and cross pipes.

#### Rail Connectors



Attach Rail Assembly to horizontal pipes.

#### Diagonal Braces



Optional Brace provides additional support.

#### Cross Pipe & Piers



Steel pipes or mechanical tubing for substructure.

### Rail Assembly

#### XR1000 Rails



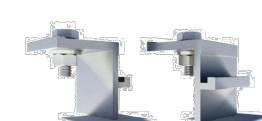
Curved rails increase spanning capabilities.

#### Top-Down Clamps



Secure modules to rails and substructure.

#### Under Clamps



Alternative clamps for pre-attaching modules to rails.

#### Accessories



Wire Clips and End Caps provide a finished look.

### Resources



#### Design Assistant

Go from rough layout to fully engineered system. For free.

Go to [ironridge.com/gm](http://ironridge.com/gm)



#### NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems.

Go to [ironridge.com/training](http://ironridge.com/training)

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**R-005.00**  
 (SHEET 14)

Jennifer Potenzano (#1081081)  
 ground based

**IRONRIDGE**  
 28357 INDUSTRIAL BLVD., HAYWARD, CA 94545

Project Details			
Name	Jennifer Potenzano	Date	12/12/2022
Location	321 Neills Creek Road, Lillington, NC 27546	ASCE code	7.16
Total modules	24	Wind speed	110 mph
Module	REC Solar: REC365NP2 Black (30mm)	Snow load	10 psf
Dimensions	Dimensions: 69.09" x 40.94" x 1.18" (1755.0mm x 1040.0mm x 30.0mm)	Wind exposure	C
Total watts	8,760 kW	Piers	8

Substructure & Foundation			
Tilt	25°	South facing grade	0°
Pipe/tubing diameter	3"	Soil class	2 - 5
Foundation type	Ground screws	Screw length	63"
Freeze thaw depth		Hex head set screws / Screw	4

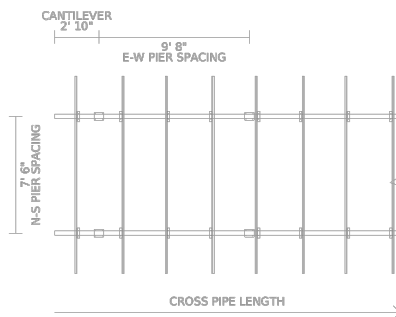
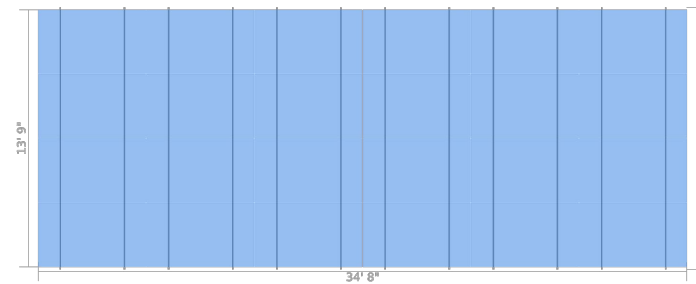
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Page 1 of 5

Jennifer Potenzano (#1081081)  
 ground based

**IRONRIDGE**  
 28357 INDUSTRIAL BLVD., HAYWARD, CA 94545

Sub array #1					
Rows	4	Columns	6	# Arrays	1
Area	34' 8" (EW) x 13' 11" (NS)	Rail type	XR1000	Diagonal bracing	no
E/W spacing	9' 8"	Rail cantilever	2' 10"	Pipe cantilever	2' 10"
Piers/array	8	Total south piers	4 (3' 11")	Total north piers	4 (7' 5")
Total cross pipes	2 (34' 8")	Total pipe length	114' 11"		
Shear	1,138 lbs	Moment	2,845 ft-lbs	Uplift	-1,472 lbs

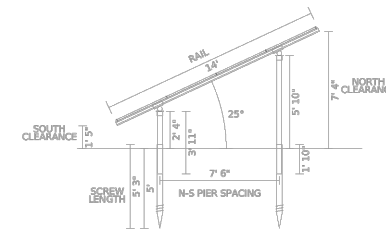


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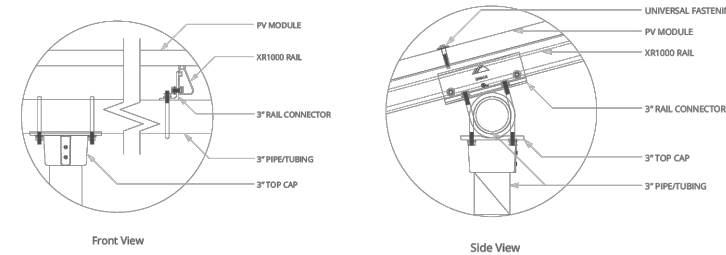
Jennifer Potenzano (#1081081)  
 ground based

**IRONRIDGE**  
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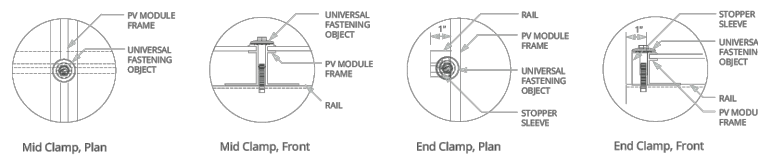


**Pipe Fitting Detail**

XR1000 Rail



**Clamp Detail**



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Page 3 of 5

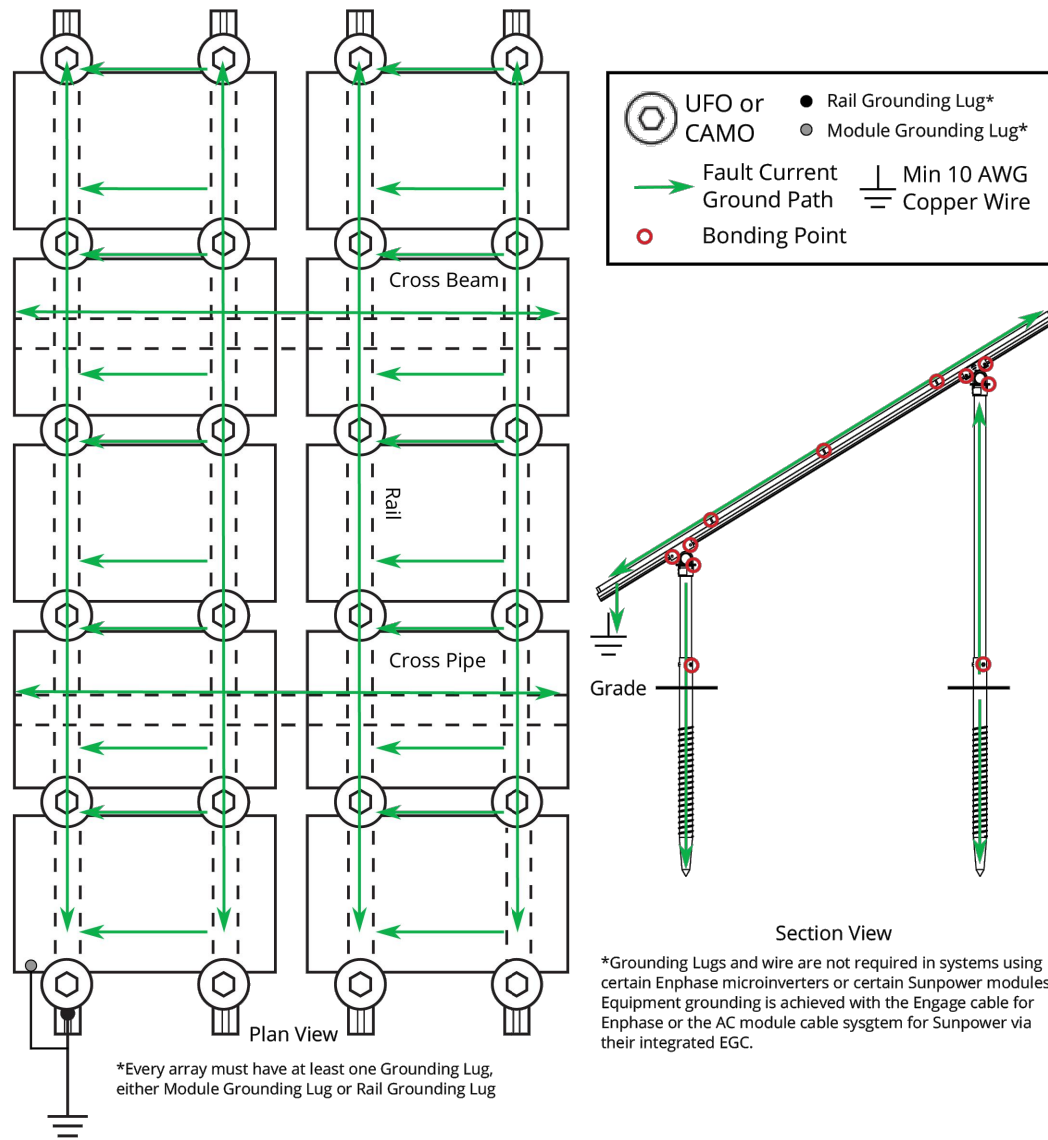
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**IRONRIDGE**  
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Jennifer Potenzano (#1081081)  
ground based

**IRONRIDGE**  
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**Grounding Diagram**



**Bill of Materials**

Part	Spares	Total Qty
<b>Rails</b>		
XR-1000-168A XR1000, Rail 168" (14 Feet) Clear	0	12
<b>Clamps &amp; Grounding</b>		
UFO-CL-01-B1 Universal Module Clamp, Black	0	60
UFO-STP-30MM-B1 Stopper Sleeve, 30MM, Black	0	24
XR-LUG-03-A1 Grounding Lug, Low Profile	0	1
<b>Substructure</b>		
70-0300-SGA SGA Top Cap at 3"	0	8
GM-BRC-003 Ground Mount Bonded Rail Connector - 3"	0	24
GM-HSHW-01-M1 Hex Head Set Screw	0	32
<b>Accessories</b>		
XR-1000-CAP Kit, End Cap XR1000 (10 sets per bag)	0	2
BHW-MI-01-A1 Microinverter/MLPE Bonding Hardware, T-Bolt	0	24



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