

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 GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE MICROINVERTER IN ACCORDANCE WITH NEC 690.41(B)
- 1.1.5 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
- 1.1.6 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.
- 1.1.7 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].
- 1.1.8 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 PV ROOF ATTACHMENTS - QUICK MOUNT PV QMLM: L-MOUNT
- 1.3.3 PV RACKING SYSTEM INSTALLATION - QUICK MOUNT PV QMR-RL: QRAIL LIGHT
- 1.3.4 PV MODULE AND INVERTER INSTALLATION - REC SOLAR REC360TP4 BLACK / ENPHASE IQ8PLUS-72-2-US
- 1.3.5 PV EQUIPMENT GROUNDING
- 1.3.6 PV SYSTEM WIRING TO A ROOF-MOUNTED JUNCTION BOX
- 1.3.7 PV LOAD CENTERS (IF INCLUDED)
- 1.3.8 PV METERING/MONITORING (IF INCLUDED)
- 1.3.9 PV DISCONNECTS
- 1.3.10 PV GROUNDING ELECTRODE & BONDING TO (E) GEC
- 1.3.11 PV FINAL COMMISSIONING
- 1.3.12 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV
- 1.3.13 SIGNAGE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE

SCOPE OF WORK

SYSTEM SIZE: STC: 31 x 360 = 11.160kW
 PTC: 31 x 336 = 10.416 kW DC
 (31) REC SOLAR REC360TP4 BLACK
 (31) ENPHASE IQ8PLUS-72-2-US

ATTACHMENT TYPE: QUICK MOUNT PV QMLM: L-MOUNT
 MSP UPGRADE: NO

NEW PV SYSTEM: 11.160 kWp

OLSEN RESIDENCE

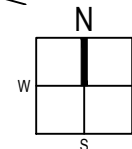
292 REMINGTON HILL DR
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 ASSESSOR'S #: 0526-10-8445.000



01 AERIAL PHOTO
 NOT TO SCALE



02 PLAT MAP
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| R-005 | RESOURCE DOCUMENT |

PROJECT INFORMATION

OWNER
 NAME: MATTHEW OLSEN

PROJECT MANAGER
 NAME: ANDREW O'DONNELL
 PHONE: 7045256767

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

AUTHORITIES HAVING JURISDICTION
 BUILDING: HARNETT COUNTY
 ZONING: HARNETT COUNTY
 UTILITY: SOUTH RIVER EMC

DESIGN SPECIFICATIONS
 OCCUPANCY: II
 CONSTRUCTION: SINGLE-FAMILY
 ZONING: RESIDENTIAL
 GROUND SNOW LOAD: 10 PSF
 WIND EXPOSURE: C
 WIND SPEED: 118 MPH

APPLICABLE CODES & STANDARDS
 BUILDING: IBC 2018, IRC 2018
 ELECTRICAL: NEC 2017
 FIRE: IFC 2018



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: 11.160 kWp

OLSEN RESIDENCE

292 REMINGTON HILL DR
 LILLINGTON, NC 27546
 APN: 0526-10-8445.000

ENGINEER OF RECORD

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

COVER PAGE

DATE: 08.26.2022

DESIGN BY: A.O.

CHECKED BY: M.M.

REVISIONS

T-001.00

(SHEET 1)

| | A | B | C | D | E | F | G | H |
|---|-------|---|---|-------|--|---|---|---|
| 1 | 2.1.1 | SITE NOTES: | | 4.5.1 | GROUNDING NOTES: | | | |
| | 2.1.2 | A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS. | | 2.5.2 | GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE. | | | |
| | 2.1.3 | THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES. | | 2.5.3 | PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122. | | | |
| | 2.1.4 | THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS. | | 2.5.4 | METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A). | | | |
| | 2.1.5 | PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION NEC 110.26. | | 2.5.5 | EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45 AND MICROINVERTER MANUFACTURERS' INSTRUCTIONS. | | | |
| 2 | 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. | | 2.5.6 | 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. | | | |
| | 2.2.1 | EQUIPMENT LOCATIONS: | | 2.5.7 | 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. | | | |
| | 2.2.2 | ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26. | | 2.5.8 | GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119] | | | |
| | 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). | | 2.5.9 | GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS | | | |
| | 2.2.4 | JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34. | | 2.6.1 | DISCONNECTION AND OVER-CURRENT PROTECTION NOTES: | | | |
| | 2.2.5 | ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT. | | 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). | | | |
| 3 | 2.2.6 | ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES. | | 2.6.3 | DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH | | | |
| | 2.2.7 | ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE. | | 2.6.4 | 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). | | | |
| | 2.3.1 | STRUCTURAL NOTES: | | 2.6.5 | ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240. | | | |
| | 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 RAI MANUFACTURER'S INSTRUCTIONS. | | 2.6.6 | MICROINVERTER BRANCHES CONNECTED TO A SINGLE BREAKER OR GROUPED FUSES IN ACCORDANCE WITH NEC 110.3(B). | | | |
| | 2.3.3 | JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS. | | 2.6.7 | IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B. | | | |
| 4 | 2.3.4 | ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR. | | 2.7.1 | INTERCONNECTION NOTES: | | | |
| | 2.3.5 | ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER. | | 2.7.2 | LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12 (B)] | | | |
| | 2.3.6 | WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS. | | 2.7.3 | THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC 705.12(D)(2)(3)]. | | | |
| | 2.4.1 | WIRING & CONDUIT NOTES: | | 2.7.4 | 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)]. | | | |
| | 2.4.2 | 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. | | 2.7.5 | 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). | | | |
| 5 | 2.4.3 | CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7. | | 2.7.6 | FEEDER TAP INTERCONNECTION (LOAD SIDE) ACCORDING TO NEC 705.12 (B)(2)(1) | | | |
| | 2.4.4 | VOLTAGE DROP LIMITED TO 1.5%. | | 2.7.7 | SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42 | | | |
| | 2.4.5 | DC WIRING LIMITED TO MODULE FOOTPRINT. MICROINVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS. | | 2.7.8 | BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)]. | | | |
| | 2.4.6 | 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 GRAY | | | | | | |
| 6 | | IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [NEC 110.15]. | | | | | | |



CONTRACTOR

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NEW PV SYSTEM: 11.160 kWp

**OLSEN
RESIDENCE**

292 REMINGTON HILL DR
LILLINGTON, NC 27546
APN: 0526-10-8445.000

ENGINEER OF RECORD

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

NOTES

DATE: 08.26.2022

DESIGN BY: A.O.

CHECKED BY: M.M.

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(SHEET 2)

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS
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----- PROPERTY LINE



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SITE PLAN

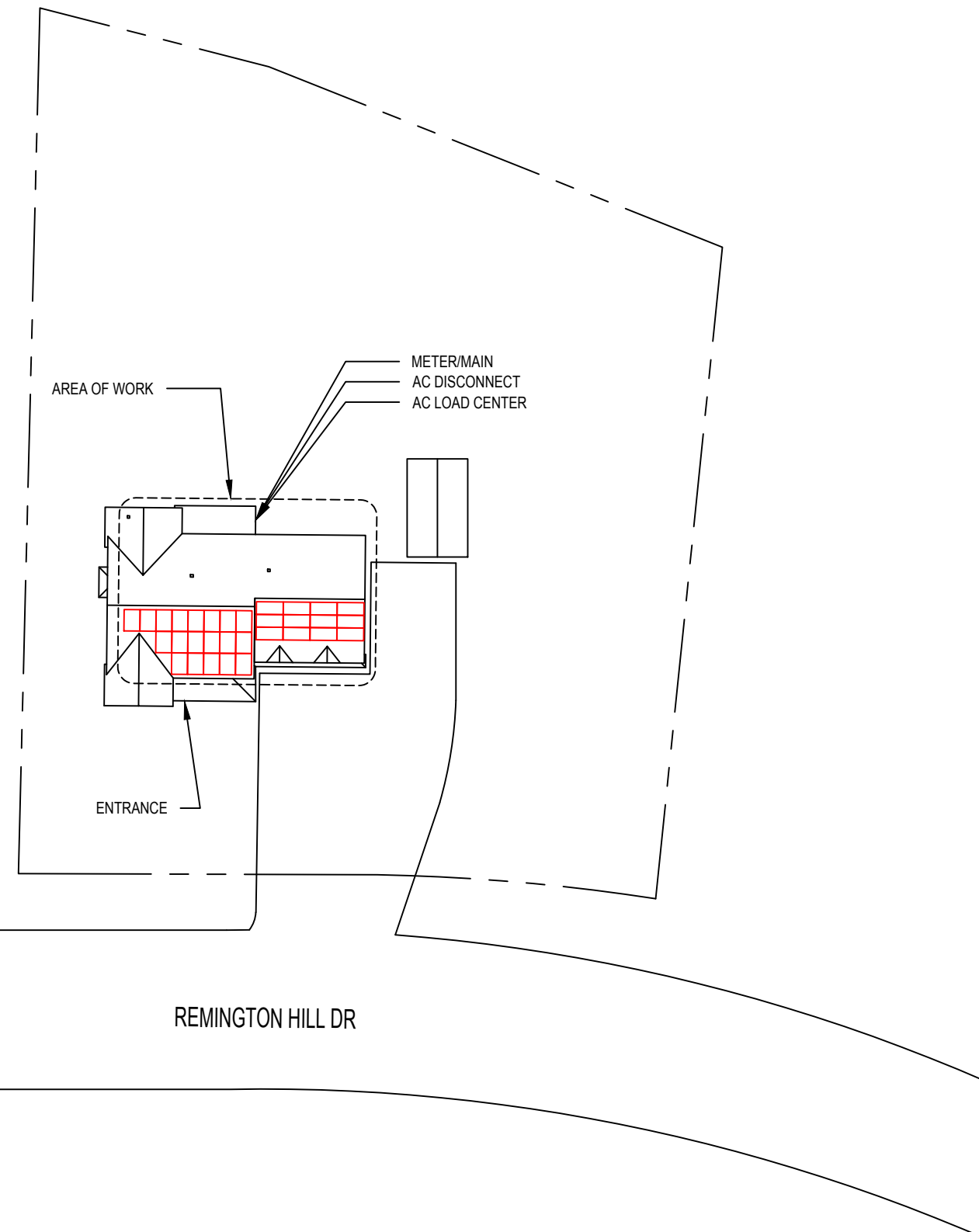
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DESIGN BY: A.O.

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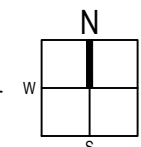
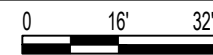
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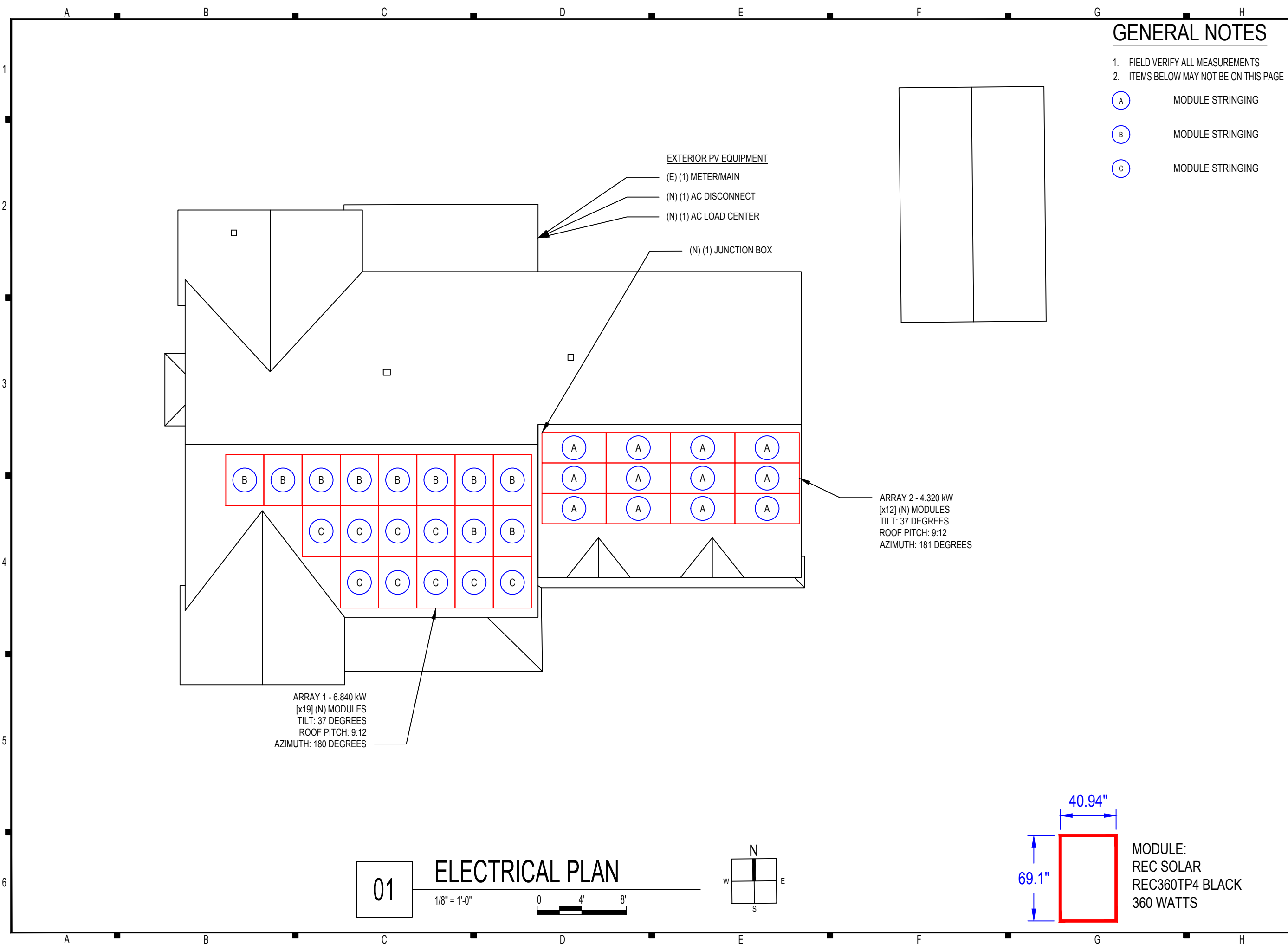


01

SITE PLAN

1/32" = 1'-0"





GENERAL NOTES

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



CONTRACTOR

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ELECTRICAL PLAN

DATE: 08.26.2022

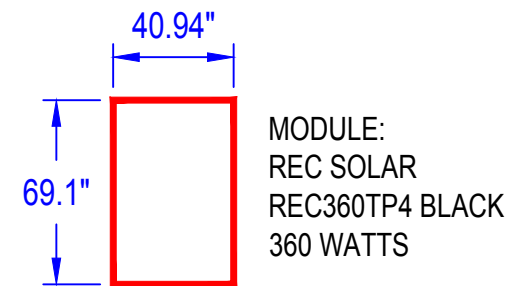
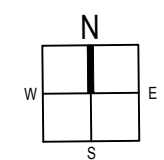
DESIGN BY: A.O.

CHECKED BY: M.M.

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 (SHEET 4)

01 ELECTRICAL PLAN
 1/8" = 1'-0"
 0 4' 8'



GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS
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--- ROOF TRUSSES



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SOLAR ATTACHMENT PLAN

DATE: 08.26.2022

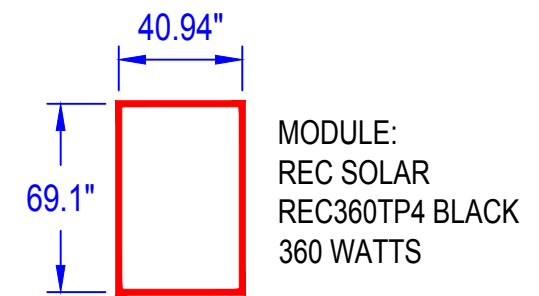
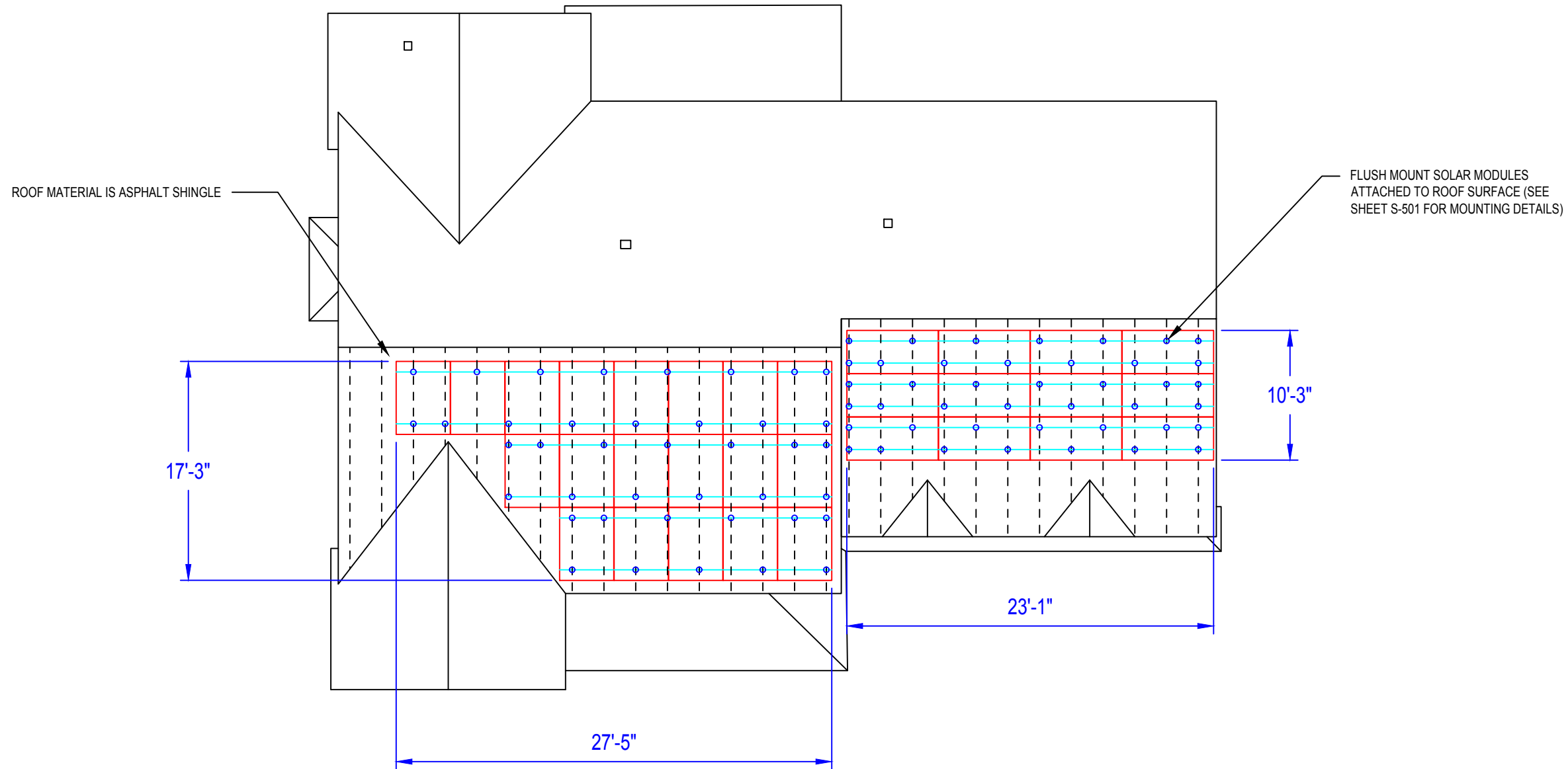
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(SHEET 5)



01

1/8" = 1'-0"

SOLAR ATTACHMENT PLAN

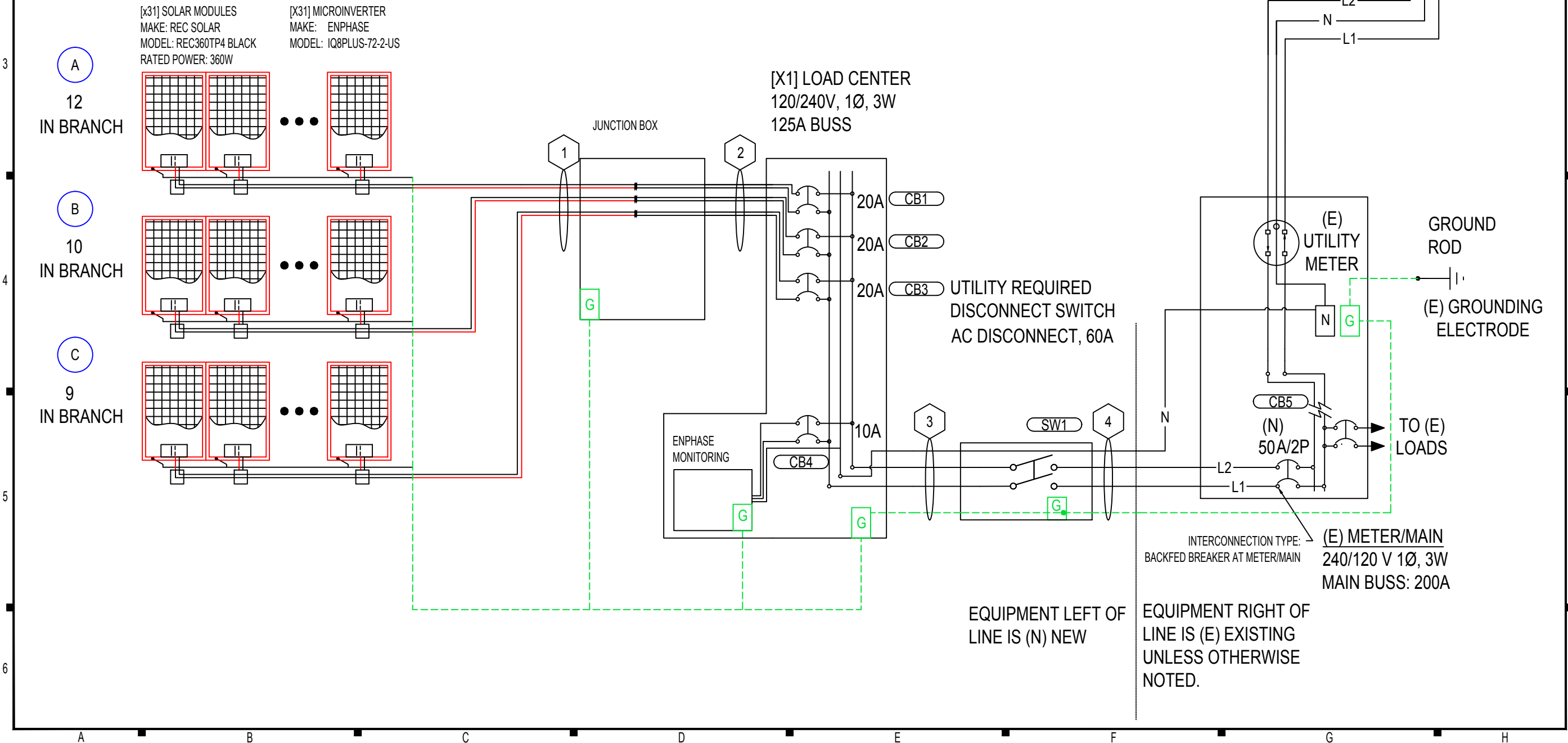
CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS

| ID | TYPICAL | CONDUCTOR | CONDUIT | CURRENT-CARRYING CONDUCTORS IN CONDUIT | OCPD | NEUTRAL | EGC | TEMP. CORR. FACTOR | CONDUIT FILL FACTOR | CONT. CURRENT | MAX. CURRENT (125%) | BASE AMP. | DERATED AMP. | TERM. TEMP. RATING | AMP. @ TERMINAL |
|----|---------|-----------------------|-----------|--|------|----------------------|-----------------------|--------------------|---------------------|---------------|---------------------|-----------|--------------|--------------------|-----------------|
| 1 | 3 | 12 AWG THWN-2, COPPER | FREE AIR | N/A | N/A | - | - | 0.91 (37.1 °C) | 1 | 14.52A | 18.15A | 30A | 27.3A | 75°C | 25A |
| 2 | 1 | 10 AWG THWN-2, COPPER | 0.75" DIA | 6 | 20A | - | 10 AWG THWN-2, COPPER | 0.91 (37.1 °C) | 0.8 | 14.52A | 18.15A | 40A | 29.12A | 75°C | 35A |
| 3 | 1 | 8 AWG THWN-2, COPPER | 0.75" DIA | 2 | N/A | 8 AWG THWN-2, COPPER | 8 AWG THWN-2, COPPER | 0.91 (37.1 °C) | 1 | 37.51A | 46.89A | 55A | 50.05A | 75°C | 50A |
| 4 | 1 | 8 AWG THWN-2, COPPER | 0.75" DIA | 2 | 50A | 8 AWG THWN-2, COPPER | 8 AWG THWN-2, COPPER | 0.91 (37.1 °C) | 1 | 37.51A | 46.89A | 55A | 50.05A | 75°C | 50A |

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

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

- PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN DISCONNECT PER NEC 690.12
- SYSTEM COMPLIANT WITH NEC 690.13



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

LINE DIAGRAM

DATE: 08.26.2022

DESIGN BY: A.O.

CHECKED BY: M.M.

REVISIONS

E-601.00
 (SHEET 6)

EQUIPMENT LEFT OF LINE IS (N) NEW
 EQUIPMENT RIGHT OF LINE IS (E) EXISTING UNLESS OTHERWISE NOTED.

INTERCONNECTION TYPE: (E) METER/MAIN
 BACKFED BREAKER AT METER/MAIN
 240/120 V 1Ø, 3W
 MAIN BUSS: 200A



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DESIGN TABLES

DATE: 08.26.2022

DESIGN BY: A.O.

CHECKED BY: M.M.

REVISIONS

E-602.00

(SHEET 7)

SYSTEM SUMMARY

| | BRANCH #1 | BRANCH #2 | BRANCH #3 |
|------------------------|-----------|-----------|-----------|
| INVERTERS PER BRANCH | 12 | 10 | 9 |
| MAX AC CURRENT | 14.52A | 12.1A | 10.89A |
| MAX AC OUTPUT POWER | 3,600W | 3,000W | 2,700W |
| ARRAY STC POWER | 11,160W | | |
| ARRAY PTC POWER | 10,416W | | |
| MAX AC CURRENT | 37.51A | | |
| MAX AC POWER | 9,300W | | |
| DERATED (CEC) AC POWER | 9,300W | | |

MODULES

| REF. | QTY. | MAKE AND MODEL | P _{MAX} | PTC | ISC | IMP | VOC | VMP | TEMP. COEFF. OF VOC | FUSE RATING |
|--------|------|---------------------------|------------------|------|--------|--------|-------|-------|------------------------|-------------|
| PM1-31 | 31 | REC SOLAR REC360TP4 BLACK | 360W | 336W | 11.26A | 10.62A | 40.6V | 33.9V | -0.106V/°C (-0.26%/°C) | 25A |

INVERTERS

| REF. | QTY. | MAKE AND MODEL | AC VOLTAGE | GROUND | OC _{PD} RATING | RATED POWER | MAX OUTPUT CURRENT | MAX INPUT CURRENT | MAX INPUT VOLTAGE | CEC WEIGHTED EFFICIENCY |
|-------|------|-------------------------|------------|----------|-------------------------|-------------|--------------------|-------------------|-------------------|-------------------------|
| I1-31 | 31 | ENPHASE IQ8PLUS-72-2-US | 240V | FLOATING | 20A | 290W | 1.21A | 15A | 60V | 97.0% |

DISCONNECTS

| REF. | QTY. | MAKE AND MODEL | RATED CURRENT | MAX RATED VOLTAGE |
|------|------|--------------------------|---------------|-------------------|
| SW1 | 1 | EATON DG222URB OR EQUIV. | 60A | 240VAC |

OCPDS

| REF. | QTY. | RATED CURRENT | MAX VOLTAGE |
|-------|------|---------------|-------------|
| CB1-3 | 3 | 20A | 240VAC |
| CB4 | 1 | 10A | 240VAC |
| CB5 | 1 | 50A | 240VAC |

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

BILL OF MATERIALS

| CATEGORY | MAKE | MODEL NUMBER | REF | QTY | UNIT | QTY/UNIT | DESCRIPTION |
|---------------------------|----------------------|--------------------------|------------|-----|--------|----------|--|
| MODULE | REC SOLAR | REC360TP4 BLACK | PM1-31 | 31 | PIECES | 1 | REC SOLAR REC360TP4 BLACK 360W 60 CELLS, MONOCRYSTALLINE SILICON |
| INVERTER | ENPHASE | IQ8PLUS-72-2-US | I1-31 | 31 | PIECES | 1 | ENPHASE IQ8PLUS-72-2-US 290W INVERTER |
| DISCONNECT | EATON | DG222URB | SW1 | 1 | PIECE | 1 | EATON DG222URB, NON FUSED, 2-POLE, 60A, 240VAC OR EQUIVALENT |
| MISC ELECTRICAL EQUIPMENT | | GEN-CABLE-CLIP | HDWR34-189 | 155 | PIECES | 1 | GENERIC CABLE CLIP |
| AC COMBINER PANEL | | ENPHASE-IQ4C-PANEL | EP1 | 1 | PIECE | 1 | ENPHASE IQ COMBINER 4C (X-IQ-AM1-240-4C) |
| MONITORING | | ENPHASE-ENVOY | ENV1 | 1 | PIECE | 1 | ENPHASE ENVOY |
| WIRING | ENPHASE | Q-12-10-240 | WR1 | 31 | PIECES | 1 | ENPHASE ENGAGE (TM) TRUNK CABLE |
| WIRING | ENPHASE | Q-TERM-10 | EN32 | 1 | BUNDLE | 10 | ENPHASE ENGAGE (TM) BRANCH TERMINATOR |
| WIRING | ENPHASE | Q-SEAL-10 | EN33 | 1 | BUNDLE | 10 | ENPHASE ENGAGE (TM) WATERTIGHT SEALING CAP |
| WIRING | | GEN-10-AWG-THWN-2-CU-RD | WR2 | 135 | FEET | 1 | 10 AWG THWN-2, COPPER, RED (LINE 1) |
| WIRING | | GEN-10-AWG-THWN-2-CU-BLK | WR2 | 135 | FEET | 1 | 10 AWG THWN-2, COPPER, BLACK (LINE 2) |
| WIRING | | GEN-10-AWG-THWN-2-CU-GR | WR2 | 45 | FEET | 1 | 10 AWG THWN-2, COPPER, GREEN (GROUND) |
| WIRING | | GEN-8-AWG-THWN-2-CU-RD | WR3-4 | 20 | FEET | 1 | 8 AWG THWN-2, COPPER, RED (LINE 1) |
| WIRING | | GEN-8-AWG-THWN-2-CU-BLK | WR3-4 | 20 | FEET | 1 | 8 AWG THWN-2, COPPER, BLACK (LINE 2) |
| WIRING | | GEN-8-AWG-THWN-2-CU-WH | WR3-4 | 20 | FEET | 1 | 8 AWG THWN-2, COPPER, WHITE (NEUTRAL) |
| WIRING | | GEN-8-AWG-THWN-2-CU-GR | WR3-4 | 20 | FEET | 1 | 8 AWG THWN-2, COPPER, GREEN (GROUND) |
| WIREWAY | ENPHASE | ET-SPLK-05 | EN6 | 1 | BUNDLE | 5 | ENPHASE ENGAGE (TM) ENGAGE COUPLER |
| WIREWAY | | GEN-0.75" DIA | WW2-4 | 65 | FEET | 1 | CONDUIT, 0.75" DIA |
| OCPD | GENERIC MANUFACTURER | GEN-CB-20A-240VAC | CB1-3 | 3 | PIECES | 1 | CIRCUIT BREAKER, 20A, 240VAC |
| OCPD | GENERIC MANUFACTURER | GEN-CB-10A-240VAC | CB4 | 1 | PIECE | 1 | CIRCUIT BREAKER, 10A, 240VAC |
| OCPD | GENERIC MANUFACTURER | GEN-CB-50A-240VAC | CB5 | 1 | PIECE | 1 | CIRCUIT BREAKER, 50A, 240VAC |
| TRANSITION BOX | GENERIC MANUFACTURER | GEN-AWB-TB-4-4X | JB1 | 1 | PIECE | 1 | TRANSITION/PASS-THROUGH BOX, WITH 4 TERMINAL BLOCKS |



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: 11.160 kWp

**OLSEN
RESIDENCE**

292 REMINGTON HILL DR
LILLINGTON, NC 27546
APN: 0526-10-8445.000

ENGINEER OF RECORD

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

PLACARDS

DATE: 08.26.2022

DESIGN BY: A.O.

CHECKED BY: M.M.

REVISIONS

E-603.00

(SHEET 8)

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]

WARNING

ELECTRICAL SHOCK HAZARD

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

LABEL 1
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT (2" X 4"). [NEC 690.13].

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL 5
AT RAPID SHUTDOWN DISCONNECT SWITCH (5 1/4" X 2"). [NEC 690.56(C)(3)].

INTERACTIVE PHOTOVOLTAIC SYSTEM CONNECTED
PHOTOVOLTAIC SYSTEM DISCONNECT LOCATED
EAST SIDE OF THE HOUSE

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 (5 3/4" X 1 1/8"). [NEC 690.56(B)]

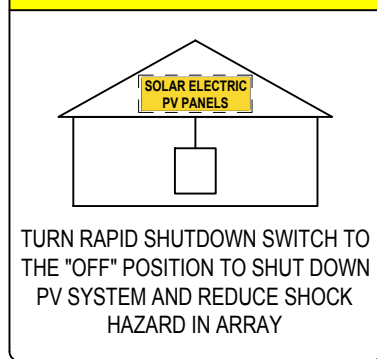
WHERE THE PV SYSTEMS ARE REMOTELY LOCATED FROM EACH OTHER, A DIRECTORY IN ACCORDANCE WITH 705.10 SHALL BE PROVIDED AT EACH PV SYSTEM DISCONNECTING MEANS. PV SYSTEM EQUIPMENT AND DISCONNECTING MEANS SHALL NOT BE INSTALLED IN BATHROOMS [NEC 690.4(D),(E)]

WARNING

POWER SOURCE OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL 2
AT POINT OF INTERCONNECTION OVERCURRENT DEVICE (2" X 4"). [NEC 705.12(B)(2)(3)(B)].

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN



LABEL 6
AT RAPID SHUTDOWN SYSTEM (3 3/4" X 5 1/4"). [NEC 690.56(C)(1)(A)].

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL 9
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 (5 3/4" X 1 1/8"). [NEC 690.31(G)]
LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE [IFC 605.11.1.1]

PHOTOVOLTAIC SYSTEM AC DISCONNECT

RATED AC OUTPUT CURRENT $\frac{37.51}{240}$ A
NOMINAL OPERATING AC VOLTAGE $\frac{240}{240}$ V

LABEL 3
AT POINT OF INTERCONNECTION, MARKED AT DISCONNECTING MEANS (4" X 2"). [NEC 690.54]

CAUTION

SOLAR ELECTRIC SYSTEM CONNECTED

LABEL 10
AT UTILITY METER (5 3/4" X 1 1/8") [NEC 690.56(B)]

PHOTOVOLTAIC SOLAR AC DISCONNECT

LABEL 4
AT EACH AC DISCONNECTING MEANS (4" X 1"). [NEC 690.13(B)].

WARNING

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

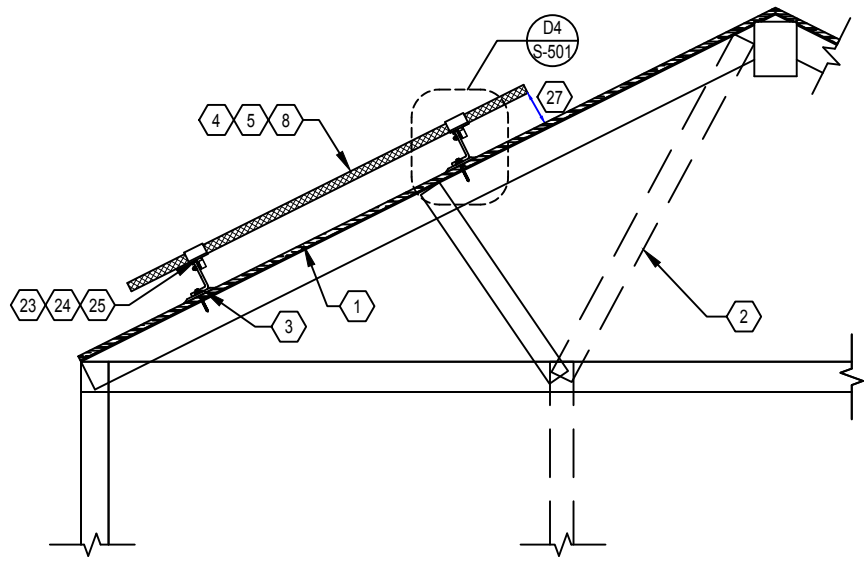
LABEL 7
AT POINT OF INTERCONNECTION (2 3/4" X 1 5/8"). [NEC 705.12(B)(3)]

WARNING

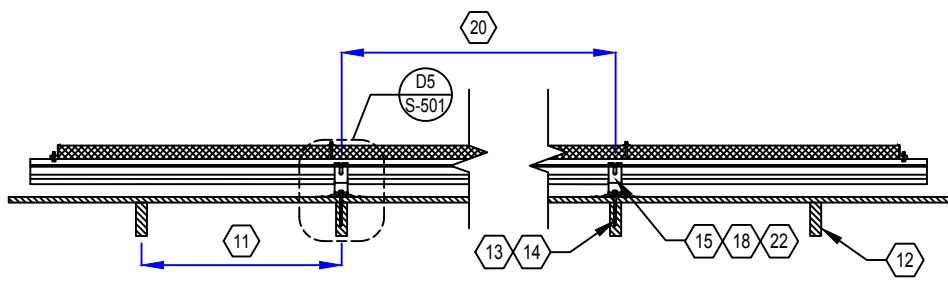
SOLAR ELECTRIC CIRCUIT BREAKER IS BACKFED

LABEL 8
AT POINT OF INTERCONNECTION (2" X 1"). [NEC 705.12(B)(3)]

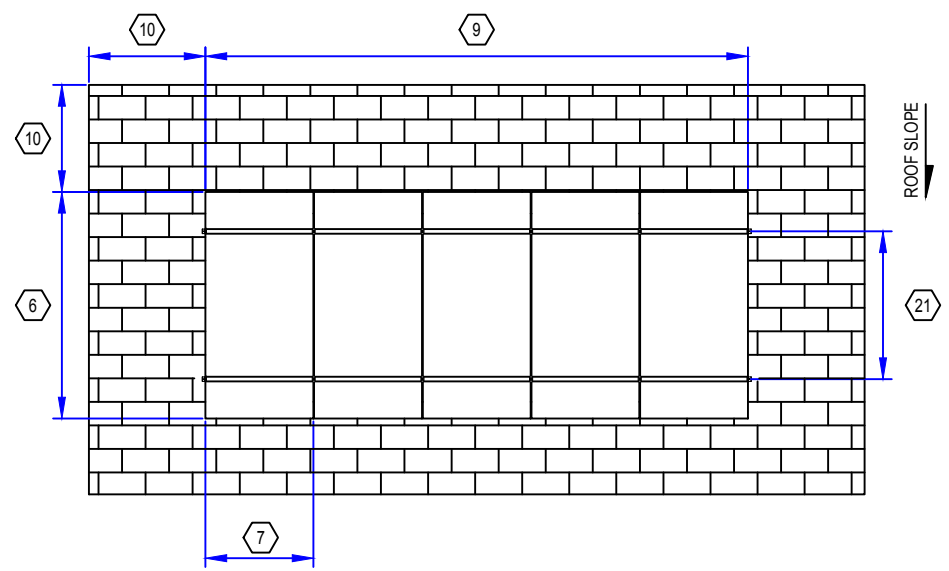
A B C D E F G H



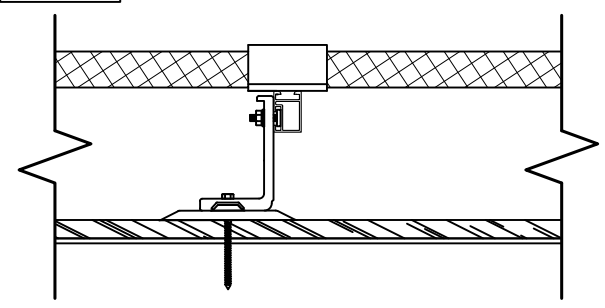
D1 RACKING DETAIL (TRANSVERSE)
NOT TO SCALE



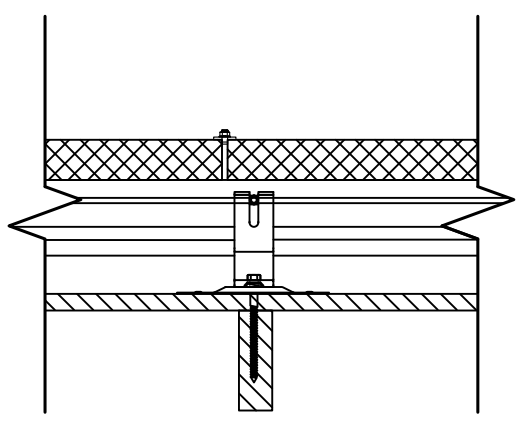
D2 RACKING DETAIL (LONGITUDINAL)
NOT TO SCALE



D3 RACKING DETAIL (TOP)
NOT TO SCALE



D4 DETAIL (TRANSVERSE)
NOT TO SCALE



D5 DETAIL (LONGITUDINAL)
NOT TO SCALE

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS

SHEET KEYNOTES

1. ROOF MATERIAL: ASPHALT SHINGLE
2. ROOF STRUCTURE: TRUSS
3. ATTACHMENT TYPE: QUICK MOUNT PV QMLM: L-MOUNT
4. MODULE MANUFACTURER: REC SOLAR
5. MODULE MODEL: REC360TP4 BLACK
6. MODULE LENGTH: 69.1 IN.
7. MODULE WIDTH: 40.94 IN.
8. MODULE WEIGHT: 44 LBS.
9. SEE SHEET A-103 FOR DIMENSION(S)
10. MIN. FIRE OFFSET: NO FIRE CODE ENFORCED
11. TRUSS SPACING: 24 IN. O.C.
12. TRUSS SIZE: 2X4 IN. NOM.
13. LAG BOLT DIAMETER: 5/16 IN.
14. LAG BOLT EMBEDMENT: 2-3/4 IN.
15. TOTAL # OF ATTACHMENTS: 82
16. TOTAL AREA: 609.01 SQ. FT.
17. TOTAL WEIGHT: 1571.7 LBS.
18. WEIGHT PER ATTACHMENT: 19.17 LBS.
19. DISTRIBUTED LOAD: 2.58 PSF.
20. MAX. HORIZONTAL STANDOFF: 48 IN.
21. MAX. VERTICAL STANDOFF: IN ACCORDANCE WITH MODULE MANUFACTURER'S INSTRUCTIONS.
22. STANDOFF STAGGERING: YES
23. RAIL MANUFACTURER (OR EQUIV.): QUICK MOUNT PV
24. RAIL MODEL (OR EQUIVALENT): QMR-RL: QRAIL LIGHT
25. RAIL WEIGHT: 0.5 PLF.
26. MAX. TRUSS SPAN: 9 FT.
27. MODULE CLEARANCE: 3 IN. MIN., 6 IN. MAX.



CONTRACTOR

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NEW PV SYSTEM: 11.160 kWp

**OLSEN
RESIDENCE**

292 REMINGTON HILL DR
LILLINGTON, NC 27546
APN: 0526-10-8445.000

ENGINEER OF RECORD

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

ASSEMBLY DETAILS

DATE: 08.26.2022

DESIGN BY: A.O.

CHECKED BY: M.M.

REVISIONS

S-501.00

(SHEET 9)

A B C D E F G H



CONTRACTOR

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NEW PV SYSTEM: 11.160 kWp

**OLSEN
RESIDENCE**

292 REMINGTON HILL DR
LILLINGTON, NC 27546
APN: 0526-10-8445.000

ENGINEER OF RECORD

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

RESOURCE DOCUMENT

DATE: 08.26.2022

DESIGN BY: A.O.

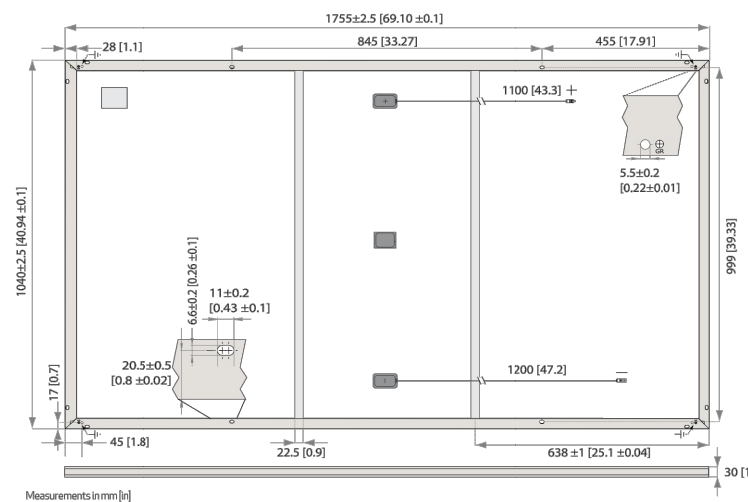
CHECKED BY: M.M.

REVISIONS

R-001.00

(SHEET 10)

REC TWINPEAK 4 BLACK SERIES



ELECTRICAL DATA @ STC Product code*: RECxxxTP4 Black

| | | | | |
|--|-------|-------|-------|-------|
| Power Output - P _{MAX} (Wp) | 355 | 360 | 365 | 370 |
| Watt Class Sorting - (W) | 0/+5 | 0/+5 | 0/+5 | 0/+5 |
| Nominal Power Voltage - V _{MPP} (V) | 33.5 | 33.9 | 34.3 | 34.7 |
| Nominal Power Current - I _{MPP} (A) | 10.60 | 10.62 | 10.65 | 10.68 |
| Open Circuit Voltage - V _{OC} (V) | 40.5 | 40.6 | 40.8 | 41.0 |
| Short Circuit Current - I _{SC} (A) | 11.19 | 11.26 | 11.32 | 11.38 |
| Panel Efficiency (%) | 19.4 | 19.7 | 20.0 | 20.3 |

Values at standard test conditions (STC: air mass AM1.5, irradiance 1000 W/m², temperature 25°C), based on a production spread with a tolerance of P_{MAX}, V_{OC} & I_{SC} ±3% within one watt class. *Where xxx indicates the nominal power class (P_{MAX}) at STC above.

ELECTRICAL DATA @ NMOT Product code*: RECxxxTP4 Black

| | | | | |
|--|------|------|------|------|
| Power Output - P _{MAX} (Wp) | 269 | 272 | 276 | 280 |
| Nominal Power Voltage - V _{MPP} (V) | 31.4 | 31.7 | 32.1 | 32.5 |
| Nominal Power Current - I _{MPP} (A) | 8.56 | 8.58 | 8.60 | 8.63 |
| Open Circuit Voltage - V _{OC} (V) | 37.9 | 38.0 | 38.2 | 38.4 |
| Short Circuit Current - I _{SC} (A) | 9.04 | 9.10 | 9.15 | 9.19 |

Nominal module operating temperature (NMOT: air mass AM1.5, irradiance 800 W/m², temperature 20°C, windspeed 1 m/s). *Where xxx indicates the nominal power class (P_{MAX}) at STC indicated 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 |
| System Size | Any | <25 kW 25-500 kW |
| Product Warranty (yrs) | 20 | 25 |
| Power Warranty (yrs) | 25 | 25 |
| Labor Warranty (yrs) | 0 | 25 |
| Power in Year 1 | 98% | 98% |
| Annual Degradation | 0.5% | 0.5% |
| Power in Year 25 | 86% | 86% |

See warranty documents for details. Conditions apply.

GENERAL DATA

Cell type: 120 half-cut mono c-Si p-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 mm²) PV wire, 43 + 47" (1.1 m + 1.2 m) in accordance with EN 50618
Connectors: Stäubli MC4 PV-KBT4/KST4, 12 AWG (4 mm²) 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 m²)
Weight: 44.0 lbs (20.0 kg)

MAXIMUM RATINGS

Operational temperature: -40 ... +185°F (-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)

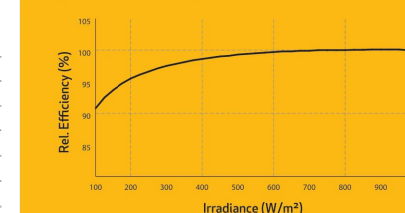
TEMPERATURE RATINGS*

Nominal Module Operating Temperature: 44.6°C (±2°C)
Temperature coefficient of P_{MAX}: -0.34%/°C
Temperature coefficient of V_{OC}: -0.26%/°C
Temperature coefficient of I_{SC}: 0.04%/°C

The temperature coefficients stated are linear values

TEMPERATURE RATINGS

Typical low irradiance performance of module at STC.



Specifications subject to change without notice.

Ref: PH-05-07-29 Rev-A-05.21

SOLAR'S MOST TRUSTED REC

**REC TWINPEAK 4
BLACK SERIES**

**PREMIUM SOLAR PANELS
WITH SUPERIOR PERFORMANCE**

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

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



**MORE POWER
OUTPUT PER FT²**



**FEATURING REC'S PIONEERING
TWIN DESIGN**



**100%
PID FREE**



**SUPER-STRONG
FRAME**



ELIGIBLE

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





DATA SHEET



IQ8 Series Microinverters

Our newest IQ8 Microinverters are the industry's first grid-forming microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

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IQ8SE-DS-0001-01-EN-US-2021-10-19

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Grid-forming

- Complies with the latest advanced grid support
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

IQ8 Series Microinverters

| INPUT DATA [DC] | IQ8-60-2-US | IQ8PLUS-72-2-US | IQ8M-72-2-US | IQ8A-72-2-US | IQ8H-240-72-2-US | IQ8H-208-72-2-US ⁽¹⁾ |
|--|---|-----------------|--------------|--------------|------------------|---------------------------------|
| Commonly used module pairings ² | W 235 – 350 | 235 – 440 | 260 – 460 | 295 – 500 | 320 – 540+ | 295 – 500+ |
| Module compatibility | 60-cell/120 half-cell | | | | | |
| MPPT voltage range | V 27 – 37 | 29 – 45 | 33 – 45 | 36 – 45 | 38 – 45 | 38 – 45 |
| Operating range | V 25 – 48 | | | 25 – 58 | | |
| Min/max start voltage | V 30 / 48 | | | 30 / 58 | | |
| Max input DC voltage | V 50 | | | 60 | | |
| Max DC current ³ [module Isc] | A 15 | | | 15 | | |
| Overvoltage class DC port | II | | | II | | |
| DC port backfeed current | mA 0 | | | 0 | | |
| PV array configuration | 1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit | | | | | |
| OUTPUT DATA [AC] | IQ8-60-2-US | IQ8PLUS-72-2-US | IQ8M-72-2-US | IQ8A-72-2-US | IQ8H-240-72-2-US | IQ8H-208-72-2-US |
| Peak output power | VA 245 | 300 | 330 | 366 | 384 | 366 |
| Max continuous output power | VA 240 | 290 | 325 | 349 | 380 | 360 |
| Nominal (L-L) voltage/range ⁴ | V 240 / 211 – 264 | | | | | 208 / 183 – 250 |
| Max continuous output current | A 1.0 | 1.21 | 1.35 | 1.45 | 1.58 | 1.73 |
| Nominal frequency | Hz 60 | | | | | |
| Extended frequency range | Hz 50 – 68 | | | | | |
| Max units per 20 A (L-L) branch circuit ⁵ | 16 | 13 | 11 | 11 | 10 | 9 |
| Total harmonic distortion | <5% | | | | | |
| Overvoltage class AC port | III | | | | | |
| AC port backfeed current | mA 30 | | | | | |
| Power factor setting | 1.0 | | | | | |
| Grid-tied power factor (adjustable) | 0.85 leading – 0.85 lagging | | | | | |
| Peak efficiency | % 97.5 | 97.6 | 97.6 | 97.6 | 97.6 | 97.4 |
| CEC weighted efficiency | % 97 | 97 | 97 | 97.5 | 97 | 97 |
| Night-time power consumption | mW 60 | | | | | |
| MECHANICAL DATA | | | | | | |
| Ambient temperature range | -40°C to +60°C (-40°F to +140°F) | | | | | |
| Relative humidity range | 4% to 100% (condensing) | | | | | |
| DC Connector type | MC4 | | | | | |
| Dimensions (HxWxD) | 212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2") | | | | | |
| Weight | 1.08 kg (2.38 lbs) | | | | | |
| Cooling | Natural convection – no fans | | | | | |
| Approved for wet locations | Yes | | | | | |
| Acoustic noise at 1 m | <60 dBA | | | | | |
| Pollution degree | PD3 | | | | | |
| Enclosure | Class II double-insulated, corrosion resistant polymeric enclosure | | | | | |
| Environ. category / UV exposure rating | NEMA Type 6 / outdoor | | | | | |
| COMPLIANCE | | | | | | |
| Certifications | CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 1071-01 | | | | | |

(1) The IQ8H-208 variant will be operating in grid-tied mode only at 208V AC. (2) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility> (3) Maximum continuous input DC current is 10.6A (4) Nominal voltage range can be extended beyond nominal if required by the utility. (5) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SE-DS-0001-01-EN-US-2021-10-19



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: 11.160 kWp

OLSEN RESIDENCE

292 REMINGTON HILL DR
LILLINGTON, NC 27546
APN: 0526-10-8445.000

ENGINEER OF RECORD

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

RESOURCE DOCUMENT

DATE: 08.26.2022

DESIGN BY: A.O.

CHECKED BY: M.M.

REVISIONS

R-002.00

(SHEET 11)

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C



X-IQ-AM1-240-4C

X-IQ-AM1-240-4



To learn more about Enphase offerings, visit enphase.com

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed



Enphase IQ Combiner 4/4C

MODEL NUMBER

IQ Combiner 4 (X-IQ-AM1-240-4) IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.

IQ Combiner 4C (X-IQ-AM1-240-4C) IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.

ACCESSORIES AND REPLACEMENT PARTS (not included, order separately)

| | |
|---|---|
| Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05 | - Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan |
| Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B | Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support |
| EPLC-01 | Power line carrier (communication bridge pair), quantity - one pair |
| XA-SOLARSHIELD-ES | Replacement solar shield for IQ Combiner 4/4C |
| XA-PLUG-120-3 | Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01) |
| XA-ENV-PCBA-3 | Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C |
| X-IQ-NA-HD-125A | Hold down kit for Eaton circuit breaker with screws. |

ELECTRICAL SPECIFICATIONS

| | |
|--|--|
| Rating | Continuous duty |
| System voltage | 120/240 VAC, 60 Hz |
| Eaton BR series busbar rating | 125 A |
| Max. continuous current rating | 65 A |
| Max. continuous current rating (input from PV/storage) | 64 A |
| Max. fuse/circuit rating (output) | 90 A |
| Branch circuits (solar and/or storage) | Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included) |
| Max. total branch circuit breaker rating (input) | 80A of distributed generation / 95A with IQ Gateway breaker included |
| Production metering CT | 200 A solid core pre-installed and wired to IQ Gateway |
| Consumption monitoring CT (CT-200-SPLIT) | A pair of 200 A split core current transformers |

MECHANICAL DATA

| | |
|--------------------------------|--|
| Dimensions (WxHxD) | 37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets. |
| Weight | 7.5 kg (16.5 lbs) |
| Ambient temperature range | -40° C to +46° C (-40° to 115° F) |
| Cooling | Natural convection, plus heat shield |
| Enclosure environmental rating | Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction |
| Wire sizes | • 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing. |
| Altitude | To 2000 meters (6,560 feet) |

INTERNET CONNECTION OPTIONS

| | |
|------------------|---|
| Integrated Wi-Fi | 802.11b/g/n |
| Cellular | CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations. |
| Ethernet | Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included) |

COMPLIANCE

| | |
|-------------------------|---|
| Compliance, IQ Combiner | UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5 |
| Compliance, IQ Gateway | UL 60601-1/CANCSA 22.2 No. 61010-1 |

To learn more about Enphase offerings, visit enphase.com

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CONTRACTOR

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NEW PV SYSTEM: 11.160 kWp

OLSEN RESIDENCE

292 REMINGTON HILL DR
LILLINGTON, NC 27546
APN: 0526-10-8445.000

ENGINEER OF RECORD

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

RESOURCE DOCUMENT

DATE: 08.26.2022

DESIGN BY: A.O.

CHECKED BY: M.M.

REVISIONS

R-003.00

(SHEET 12)



CONTRACTOR

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ENGINEER OF RECORD

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

RESOURCE DOCUMENT

DATE: 08.26.2022

DESIGN BY: A.O.

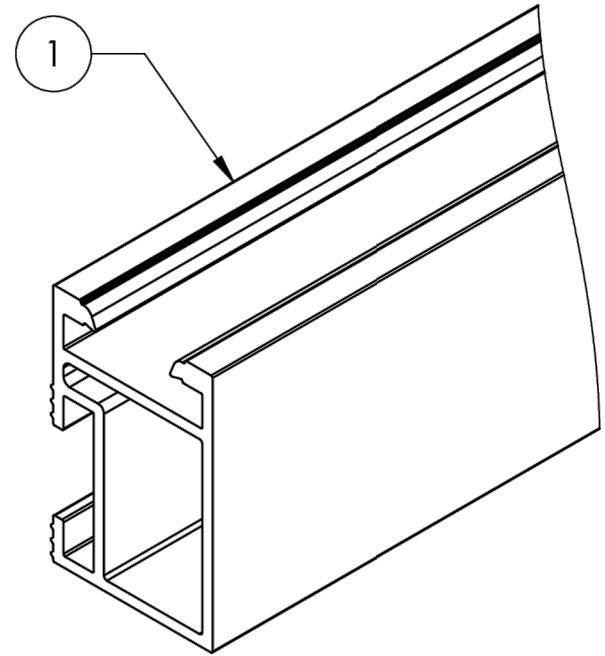
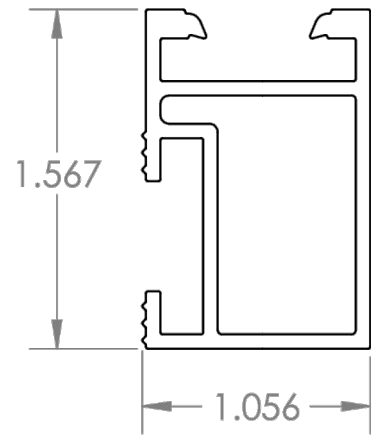
CHECKED BY: M.M.

REVISIONS

R-004.00

(SHEET 13)

| ITEM NO. | DESCRIPTION | QTY. |
|----------|------------------------|------|
| 1 | QRAIL, LIGHT, AL, MILL | 1 |



NOTES:
1. AVAILABLE IN MILL FINISH AND BLACK FINISH
2. WEIGHT = 0.50 POUNDS PER FOOT

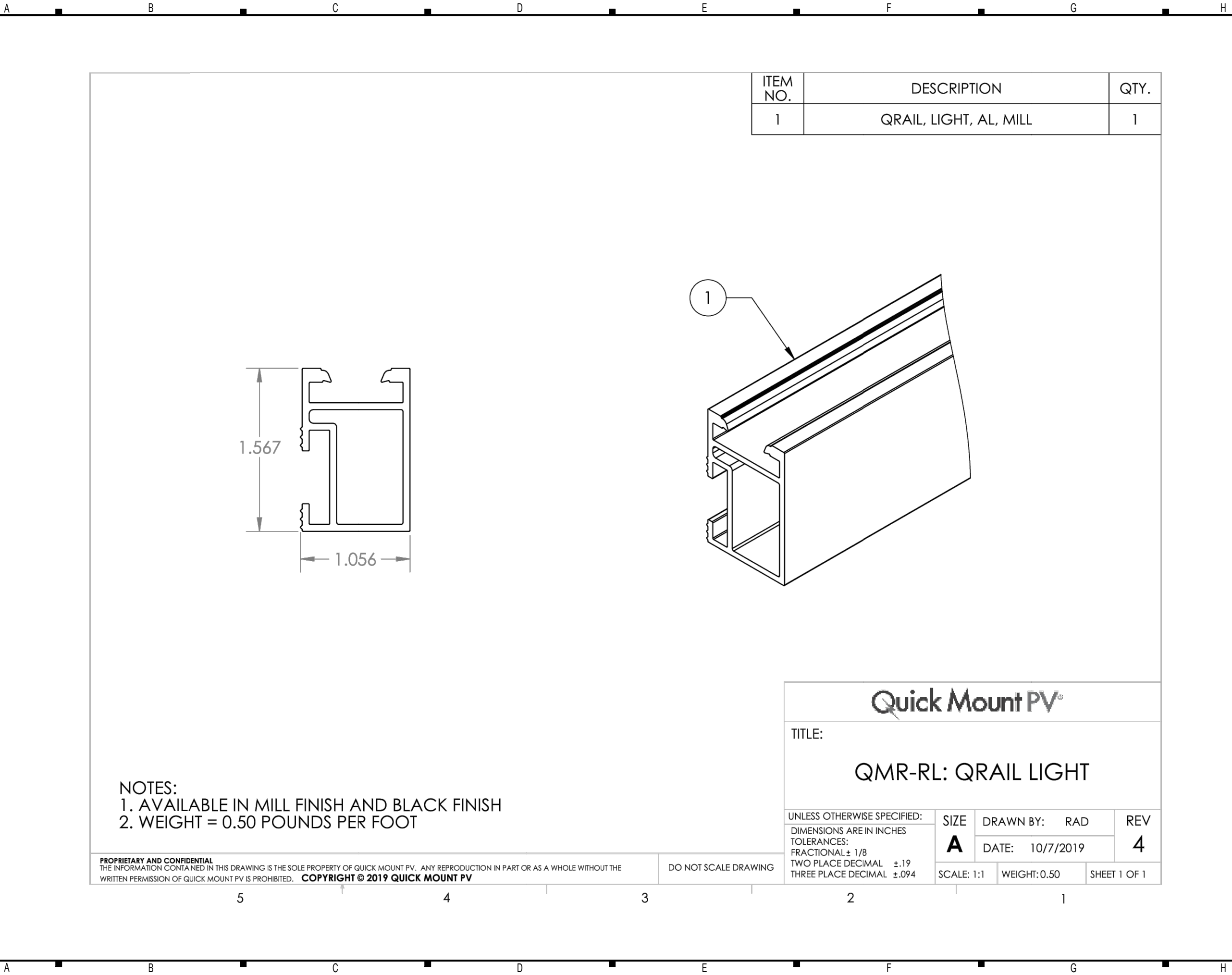
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DO NOT SCALE DRAWING

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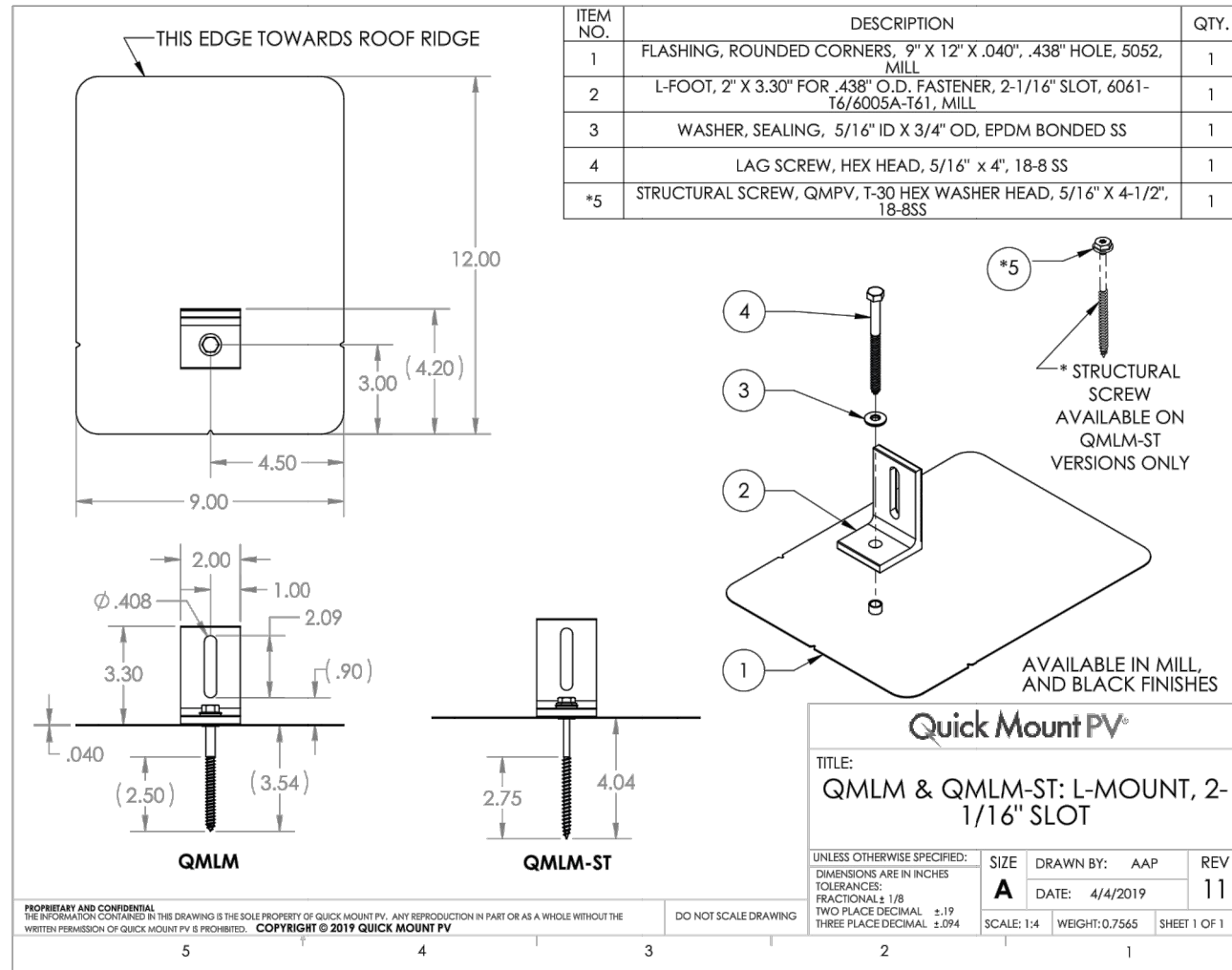
TITLE:
QMR-RL: QRAIL LIGHT

| | | | |
|---|------------------|-----------------|-----------------|
| UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/8 TWO PLACE DECIMAL ±.19 THREE PLACE DECIMAL ±.094 | SIZE A | DRAWN BY: RAD | REV 4 |
| | SCALE: 1:1 | DATE: 10/7/2019 | WEIGHT: 0.50 |
| | | SHEET 1 OF 1 | |



L-Mount | QMLM / QMLM-ST

Elevated Water Seal Technology®



BI 7.2.3-44

Apr-2019 Rev 6



CONTRACTOR

RENU ENERGY SOLUTIONS, LLC

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REVISIONS

R-005.00
 (SHEET 14)