PRINCIPAL Engineering

1011 N Causeway Blvd, Suite 19 ♦ Mandeville, Louisiana 70471 ♦ Phone: 985.624.5001 ♦ Fax: 985.624.5303

January 2022

Property Owner: Kim Quetel

Property Address: 209 Lapaz, Lake City, FL 32024

**RE: Photovoltaic System Roof Installations**

I have reviewed the existing structure referenced above to determine the adequacy of the existing structure support the proposed installation of an array of solar panels on the roof.

Based on my review, the existing structure is adequate to support the proposed solar panel installation. This assessment is based on recent on-site inspection by SunPro Solar inspectors and photographs of the existing structure. The photovoltaic system is designed to withstand uplift and downward forces; our assessment is regarding the structure's support of the array. Stresses induced by the introduction of individual mount loads on the rafters or truss top chord are within acceptable limits as shown on the attached calculations. The structural considerations used in our review and assessment include the following:

**Evaluation Criteria:**

Applied Codes: ASCE 7-16 FBC 2020 NEC 2017
Risk Category: II
Design Wind Speed (3-second gust): 165 MPH
Wind Exposure Category: C
Ground Snow Load: 0 PSF
Seismic Design Category: D

**Existing Structure:**

Roof Material: Shingle
Roofing Structure: 2x Truss Top Chord @ 24" O.C.
Roof Slope: 3/12

**Connection of Array to Structure:**

Manufacturer: UNIRAC
Mount: Flashloc Comp Kit
Mounting Connection: Flashloc Comp Kit 5/16" lag screw w/min 2.5" embedment into framing
Zone 1: 2 rails 2'-0" o.c. mounts
Zone 2: 3 rails 4'-0" o.c. mounts
Zone 3: 3 rails 4'-0" o.c. mounts

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**Effect of the Solar Array on Structure Loading:**

Gravity Loads:

Per IBC Section 1607.12.5.1, the areas of the roof where solar panels are located are considered inaccessible, and therefore not subject to roof live loading. Live load in these areas is replaced by the dead load of the solar array, 3 psf. The total gravity load on the structure is therefore reduced and the structure may remain unaltered. Connections of the mounts to the underlying structure are to be installed in a staggered pattern, except at the array ends, to distribute the loading evenly to the roof structure. The stresses within the rafters or truss top chord due to the introduction of discrete mount loads are within acceptable l imits, as shown on the attached calculations.

Wind Load:

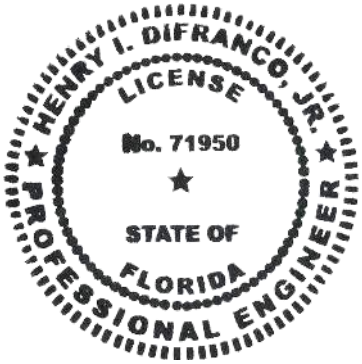
The solar panel array will be flush mounted (no more than 6" above the surrounding roof surface, and parallel to the roof surface. Any additional wind loading on the structure due to the presence of the array is negligible. The array structure is designed by the manufacturer to withstand uplift and downward forces resulting from wind and snow loads. The attached calculations verify the capacity of the connection of the solar array to the roof to resist uplift due to wind loads, the governing load case.

Snow Load:

The reduced friction of the glass surface of the solar panels allows for the lower slope factor ($C_s$) per Section 7.4 of ASCE 7-16 resulting in a reduced design snow load for the structure. This analysis conservatively considered the snow load to be unchanged.

Seismic Load:

Analysis shows that additional seismic loads due to the array installation will be small. Even conservatively neglecting the wall materials, the solar panel installation represents an increase in the total weight of the roof and corresponding seismic load of less than 10%. This magnitude of additional forces meets the requirements of the exception in Section 11B.4 of ASCE 7-16 . The existing lateral force resisting system of the structure is therefore allowed to remain unaltered.

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Conclusion:

To the best of my professional knowledge and belief, the subject construction and photovoltaic system installation will be in compliance with all state and local building codes and guidelines in effect at the time of our review.

Limitations:

Engineer's assessment of the existing structure is based on recent field reports and current photographs of the elements of the structure that were readily accessible at the time of inspection. The design of the solar panel racking (mounts, rails, connectors, etc.), connections between the racking and panels, and electrical engineering related to the installation are the responsibility of others. The photovoltaic system installation must be by competent personnel in accordance with manufacturer recommendations and specifications and should meet or exceed industry standards for quality. The contractor is responsible for ensuring that the solar array is installed according to the approved plans and must notify the engineer of any undocumented damage or deterioration of the structure, or of discrepancies between the conditions depicted in the approved plans and those discovered on site so that the project may be reevaluated and altered as required. Engineer does not assume any responsibility for improper installation of the proposed photovoltaic system.

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**Uplift and Wind Downforce Calculation Summary (ASCE 7-16)**
**Mount, Rack, & Panel Proportioning**
**Point Load Check and Rafter Stress Analysis**

| | | | | |
|---|---|---|---|---|
| Property Owner: | Kim Quetel | Max. Individual Panel Dimensions | | |
| Project Address: | 209 Lapaz | Length (in) | Width (in) | Area (sf) |
| City, State: | Lake City, FL 32024 | 77 | 39 | 20.85 |

| Building Characteristics, Design Input, and Adjustment Factors | | | | |
|---|---|---|---|---|
| Roof Dimensions: | Length: | 84 | Greater Dimension | 84 |
| | Width: | 47 | Least Dimension: | 47 |
| Roof Height (h): | | 15 | Fig 30.4-1, valid under 60° | ✓ |
| Pitch: 3 on 12 = | | 14.0° | Must be less than 45° | ✓ |
| Roof Configuration | | Gable | | |
| Roof Structure | | 2x Truss Top Chord | | |
| Roof Material | | Plywood | | |
| Risk Category: | | II | | |
| Basic Wind Speed: | | 165 | From 26.5-1 | |
| Exposure Category: | | C | Fig. 26.7 | |
| Topographic Factor ($K_{zt}$) | | 1.0 | Fig. 26.8-1 | |
| Wind Pressure @ h=30, $p_{net30}$ | | See Table Below | Fig. 30.4-1 | |
| Ht. & Exposure Adjustment (λ) | | 0.82 | Fig. 30.4-1 | |
| Adjusted Wind Pressures, $p_{net}$ | | See Table Below | Eq. 30.4-1 | |
| Effective Wind Area (sf): | | 10.43 | (Area per individual mount) | |

| Roof Zone Strip (a), in ft, Fig. 30.4-1, Note 5 | | |
|---|---|---|
| 1 - Least Roof Horizontal Dimension (L or W) x 0.10 | | 4.7 |
| 2 - Roof Height x 0.4 | | 6 |
| 3 - Least Roof Horizontal Dimension (L or W) x 0.04 | | 1.88 |
| 4 - Least of (1) and (2) | | 4.7 |
| 5 - Greater of (3) and (4) | | 4.7 |
| 6 - Greater of (5) and 3 feet | **a=** | 4.7 |

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| Net Design Pressures, $p_{net}$ (Fig 30.4-1), Components & Cladding | | | | | |
|---|---|---|---|---|---|
| | Uplift (-psf) | | | Factored Pressure (0.6W, ASCE 7-16) | θ |
| | | $P_{30net}$ | $\|K_{zt}P_{30net}$ | | |
| gable /hip /flat | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Gable | Zone 1 & 2e | 85.4 | 70.1 | 42.0 | 7° < θ ≤ 20° |
| | Zone 2n,2r,3e | 124.7 | 102.2 | 61.3 | |
| | Zone 3r | 148.2 | 121.5 | 72.9 | |
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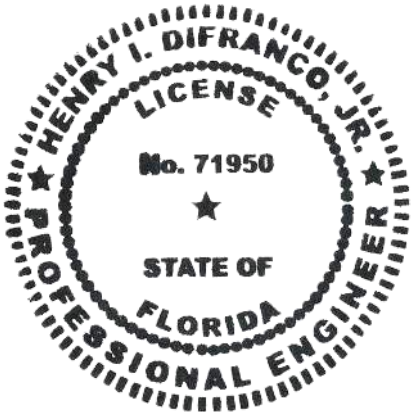
| Snow Load | | |
|---|---|---|
| Ground Snow Load, $p_g$ | 0.0 | From ASCE 7 or AHJ |
| Terrain Category: | C | Para 6.5.6.3 |
| Exposure | Partial | |
| Exposure FactorCe | 1.0 | Table 7-2 |
| Thermal Factor, Ct | 1.0 | Table 7-3 |
| Importance Factor, $I_s$ | 1.0 | Table 1.5.2 |
| Roof Configuration | Gable | |
| Roof Slope | 14.0° | |
| Distance from Eave to Ridge | 23.5 | |
| $p_m$, Minimum required Snow Load | 0.00 psf | Para. 7.3.4 |
| pf, Calculated Snow Load | 0.00 | Eq. 7.3-1 |
| pf, Design Snow Load | 0.00 psf | |

| Rail & Mount Selection (FS=3.0) | | |
|---|---|---|
| Manufacturer: | Unirac | Allowable Mount Spacing by Uplift Pressure |
| Model: | Flashloc Comp Kit | < 37 psf : 2 rails, mounts @ 4 ft. o.c. |
| Substrate | Wood Rafters/Truss Top Chord | 37 to 56 psf : 2 rails, mounts @ 2 ft. o.c. |
| Connector: | 5/16" x 4" Lag Screw | 56 to 75 psf : 3 rails, mounts @ 4 ft. o.c. |
| | | 75 to 112 psf : 3 rails, mounts @ 2 ft. o.c. |
| Allowable Uplift: | 480 lb., max. | 112 to 150 psf : 4 rails, mounts @ 2 ft. o.c. |
| | | > 150 psf : Mount capacity exceeded |

| **Rail & Mount Layout by Zone** | | | |
|---|---|---|---|
| Zone 1: | 2 rails, mounts @ 2 ft. o.c. | Zone 2r: | 3 rails, mounts @ 4 ft. o.c. |
| Zone 1': | N/A | Zone 3: | N/A |
| Zone 2: | N/A | Zone 3e: | 3 rails, mounts @ 4 ft. o.c. |
| Zone 2e: | 2 rails, mounts @ 2 ft. o.c. | Zone 3r: | 3 rails, mounts @ 4 ft. o.c. |
| Zone 2n: | 3 rails, mounts @ 4 ft. o.c. | | |
| *(From rail analysis, allowable spacing and number of rails are controlled by individual mount pullout before rail bending)* | | | |

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# NEW PHOTOVOLTAIC SYSTEM 11.63 KW DC
# 209 LAPAZ, LAKE CITY, FL 32024

## 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 MICRO-INVERTER 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. 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 RACKING SYSTEM INSTALLATION - UNIRAC SOLAR
1.3.3 PV MODULE AND INVERTER INSTALLATION - LG ELECTRONICS LG375N1C-A6 / ENPHASE IQ7PLUS-72-2-US INVERTER
1.3.4 PV EQUIPMENT ROOF MOUNT
1.3.5 PV SYSTEM WIRING TO A ROOF-MOUNTED JUNCTION BOX
1.3.6 PV LOAD CENTERS (IF INCLUDED)
1.3.7 PV METERING/MONITORING (IF INCLUDED)
1.3.8 PV DISCONNECTS
1.3.9 PV GROUNDING ELECTRODE & BONDING TO (E) GEC
1.3.10 PV FINAL COMMISSIONING
1.3.11 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV
1.3.12 SIGNAGE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE

PROJECT INFORMATION

OWNER
NAME: KIM QUETEL

PROJECT MANAGER
NAME: SHAHIN HAYNES
PHONE: 8665071461

CONTRACTOR NAME
MARC JONES CONSTRUCTION, LLC DBA SUNPRO SOLAR
PHONE: 5052180838

SCOPE OF WORK
SYSTEM SIZE: STC:31 X 375W= 11.63 kW DC
PTC: 31 x 347.3W = 10.77 kW DC
(31) LG ELECTRONICS LG375N1C-A6
(31) ENPHASE IQ7PLUS-72-2-US

ATTACHMENT TYPE: ROOF MOUNT
MSP UPGRADE: YES
UTILITY METER UPGRADE: YES

AUTHORITIES HAVING JURISDICTION
BUILDING: COLUMBIA COUNTY
ZONING: COLUMBIA COUNTY
UTILITY: CLAY ELECTRIC CO-OP

DESIGN SPECIFICATION
OCCUPANCY: II
CONSTRUCTION: SINGLE-FAMILY
ZONING: RESIDENTIAL
GROUND SNOW LOAD: REFER STRUCTURAL LETTER
WIND EXPOSURE: REFER STRUCTURAL LETTER
WIND SPEED: 165MPH

APPLICABLE CODES & STANDARDS
BUILDING: IBC 2018, IRC 2018, FBC 2020 (7TH EDITION)
ELECTRICAL: NEC 2017
FIRE: IFC 2020

## VICINITY MAP

## SATELLITE VIEW

## SHEET INDEX


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| R-004 | RESOURCE DOCUMENT |
| R-005 | RESOURCE DOCUMENT |
| R-006 | RESOURCE DOCUMENT |
| R-007 | RESOURCE DOCUMENT |
| R-008 | RESOURCE DOCUMENT |



CONTRACTOR
SUNPRO
22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490


PROJECT NAME & ADDRESS
KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**
DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

HENRY I. DIFRANCO, JR. LICENSE No. 71950 STATE OF FLORIDA PROFESSIONAL ENGINEER

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SHEET NUMBER
G-001

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 PROPERACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PERSECTION 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).
2.2.4 JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34.
2.2.5 ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
2.2.6 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
2.2.7 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 MUSTALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAI 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 WILLBE 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 WIRING & CONDUIT NOTES:

2.4.2 ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS AREBASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
2.4.3 CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
2.4.4 VOLTAGE DROP LIMITED TO 1.5%.
2.4.5 DC WIRING LIMITED TO MODULE FOOTPRINT. MICROINVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS.
2.4.6 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 GREY IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [NEC 110.15].

2.5.1 GROUNDING NOTES:

2.5.2 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVISES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
2.5.3 PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122.
2.5.4 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A).
2.5.5 EQUIPMENT GROUNDING CONDUCTORS SHALLBE SIZED ACCORDING TO NEC 690.45 AND MICROINVERTER MANUFACTORERS' INSTRUCTIONS.
2.5.6 EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURERDOCUMENTATION 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.
2.5.7 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OFA MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
2.5.8 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119]
2.5.9 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.
2.5.10 GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS

2.6.1 DISCONNECTION AND OVER-CURRENT PROTECTION NOTES:
2.6.2 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHENTHE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARECONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
2.6.3 DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
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).
2.6.5 ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.
2.6.6 MICROINVERTER BRANCHES CONNECTED TO A SINGLE BREAKER OR GROUPED FUSES IN ACCORDANCE WITH NEC 110.3(B).
2.6.7 IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.

2.7.1 INTERCONNECTION NOTES:

2.7.2 LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12 (B)]
2.7.3 THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC 705.12(B)(2)(3)(b)].
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)].
2.7.5 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).
2.7.6 FEEDER TAP INTERCONECTION (LOADSIDE) ACCORDING TO NEC 705.12 (B)(2)(1)
2.7.7 SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42
2.7.8BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)].

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**
DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

HENRY I. DIFRANCO, JR. LICENSE No. 71950 STATE OF FLORIDA PROFESSIONAL ENGINEER

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PRINCIPAL ENGINEERING, INC.
1011 N. CAUSEWAY BLVD. STE 19
MANDEVILLE, LA 70471
985.624.5001
INFO@PI-AEC.COM
FLORIDA FIRM NO. 30649

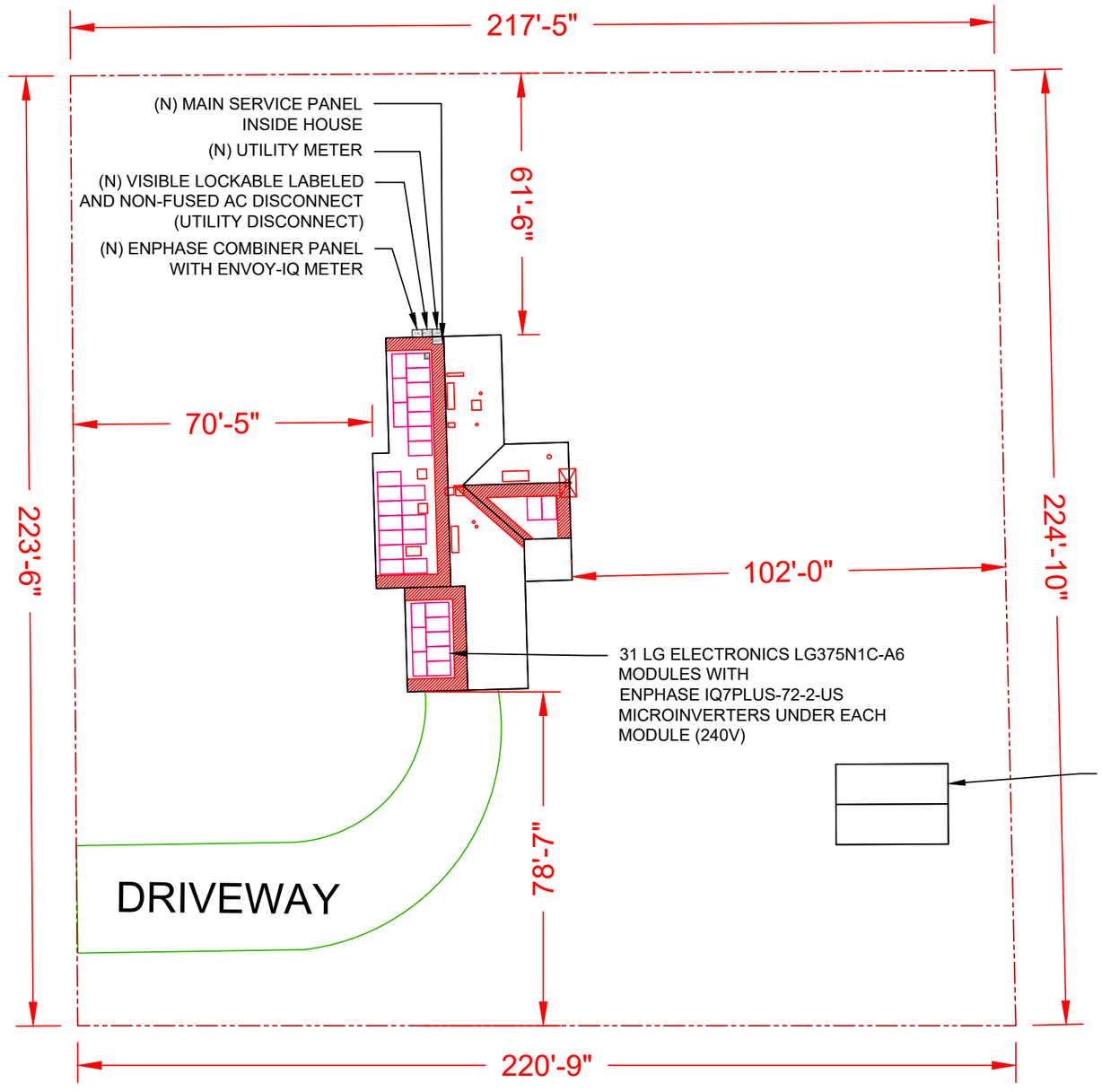
SHEET TITLE

**NOTES**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

G-002




N
W E
S

1 | SITE PLAN

**SCALE:** 1/32" = 1'-0"

(31) LG ELECTRONICS LG375N1C-A6
(31) ENPHASE IQ7PLUS-72-2-US

ADDRESS : 209 LAPAZ
CITY ZIP : LAKE CITY, FL 32024

DC SIZE 31 X 375W = 11.625 kW DC-STC
AC SIZE 31X 290W = 8.990 kW AC

TOTAL HOME SQUARE FOOTAGE IS: 2909.42 FT²
TOTAL ARRAY SQUARE FOOTAGE IS: 604.8720 FT²
% COVERED BY SOLAR IS: 20.79%

## LEGEND

- FIRE SETBACK
- PROPERTY LINE
- JB - JUNCTION BOX
- SKYLIGHT (ROOF OBSTRUCTION)
- CHIMNEY (ROOF OBSTRUCTION)
- VENT, ATTIC FAN (ROOF OBSTRUCTION)

**CONTRACTOR**

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**
DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

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INFO@PI-AEC.COM
FLORIDA FIRM NO. 30649

SHEET TITLE

**SITE PLAN**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

A-101

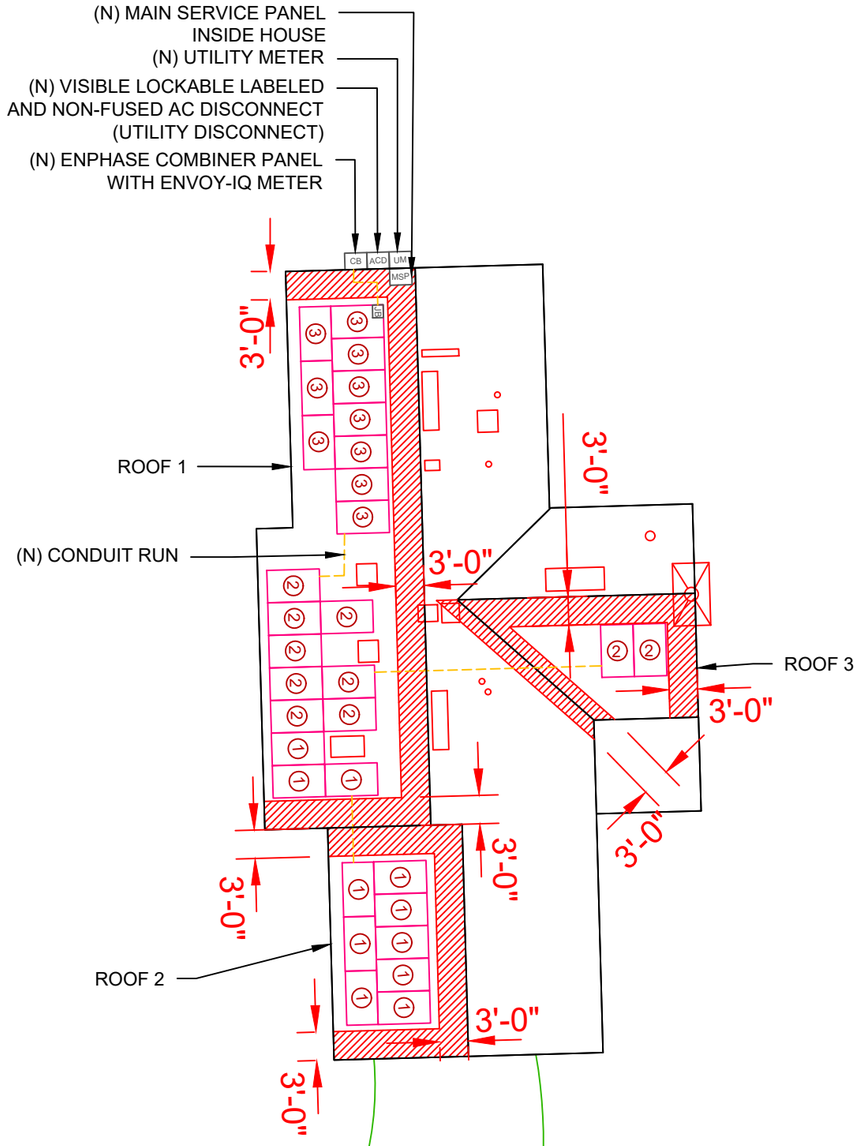
## ROOF SECTION(S)

| | |
|---|---|
| ROOF 1 | TILT - 14°<br>AZIMUTH - 268°<br>MODULE - 21<br>SYSTEM SIZE (KW)- 7.88 |
| ROOF 2 | TILT - 14°<br>AZIMUTH - 268°<br>MODULE - 8<br>SYSTEM SIZE (KW)- 3.00 |
| ROOF 3 | TILT - 15°<br>AZIMUTH - 178°<br>MODULE - 2<br>SYSTEM SIZE (KW)- 0.75 |

① - MODULE STRING

② - MODULE STRING

③ - MODULE STRING




## LEGEND

- FIRE SETBACK
- PROPERTY LINE
- JB - JUNCTION BOX
- SKYLIGHT (ROOF OBSTRUCTION)
- CHIMNEY (ROOF OBSTRUCTION)
- VENT, ATTIC FAN (ROOF OBSTRUCTION)

NON HABITABLE GROUP U
STRUCTURE

N
W E
S

1 ELECTRICAL PLAN

**SCALE:**1/16" = 1'-0"

**CONTRACTOR**

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**
DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

NESTOR J. HOUGHTON LICENSE No. 64501 STATE OF FLORIDA PROFESSIONAL ENGINEER

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985.624.5001
INFO@PI-AEC.COM
FLORIDA FIRM NO. 30649


SHEET TITLE

**ELECTRICAL PLAN**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

A-102

Note 1: Windspeed value is design 3-sec gust in accordance with ASCE 7-16

Note 2: a)Lag bolt shall be mounted into rafters
b)Notify Engineer immediately if conditions differ or prevent installation per plan.

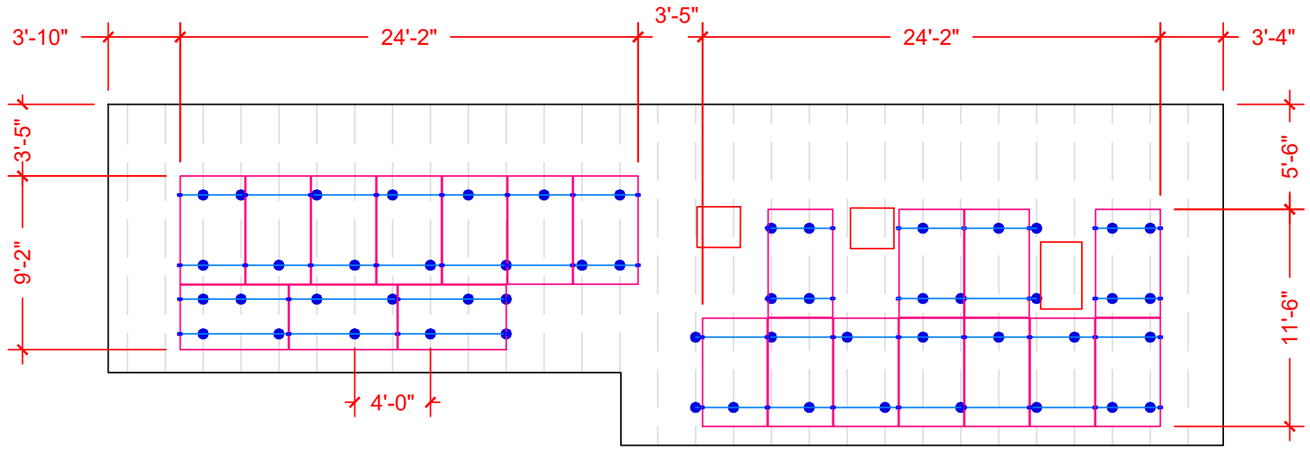
Note 3: These drawings were prepared under my supervison. I have researched the code and to the best of my knowledge And belief, these drawings comply with the 2020 Florida Building Code.

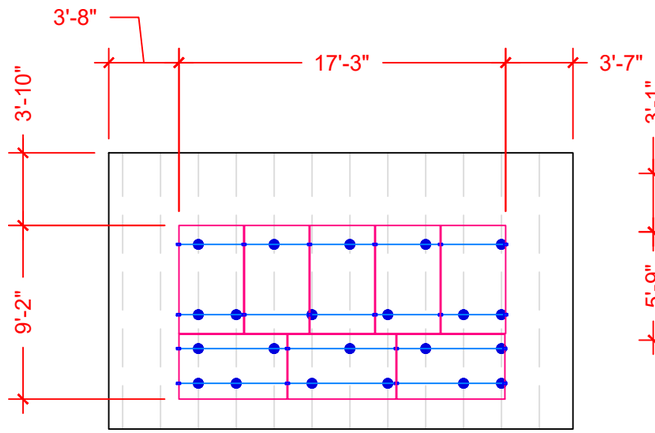
Note 4: Installer shall adjust mount spacing by zone to match prescribed values on engineer's calculation letter

- CLAMP
- UNIRAC FLASHLOC
- RAIL
- RAFTER

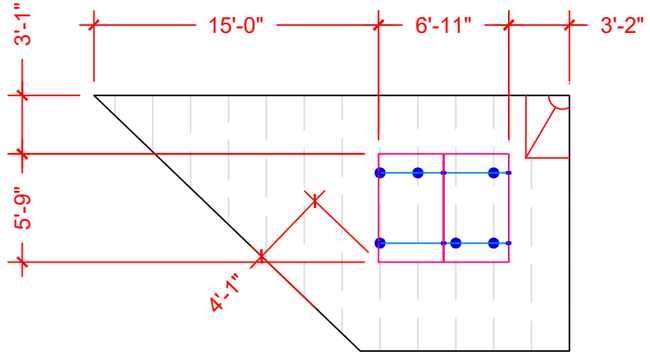
82 - TOTAL MOUNT

ARRAY 1
TILT- 14 DEG
AZIMUTH - 268 DEG




ARRAY 2
TILT- 14 DEG
AZIMUTH - 268 DEG




ARRAY 3
TILT- 15 DEG
AZIMUTH - 178 DEG

1 ATTACHMENT PLAN

**SCALE:**1/8"=1'-0"


CONTRACTOR
SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490


PROJECT NAME & ADDRESS
KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**
DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

HENRY I. DIFRANCO, JR. LICENSE No. 71950 STATE OF FLORIDA PROFESSIONAL ENGINEER

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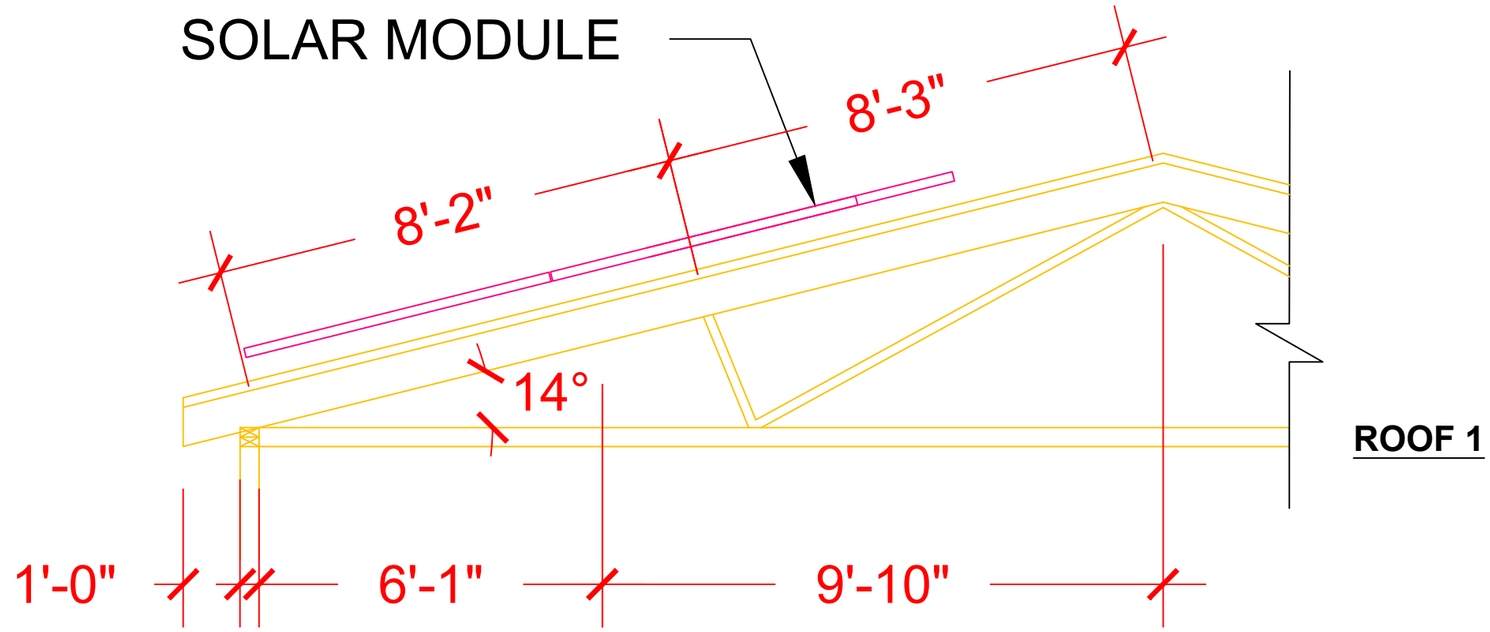
MANDEVILLE, LA 70471
985.624.5001
INFO@PI-AEC.COM
FLORIDA FIRM NO. 30649


SHEET TITLE
**ATTACHMENT PLAN**

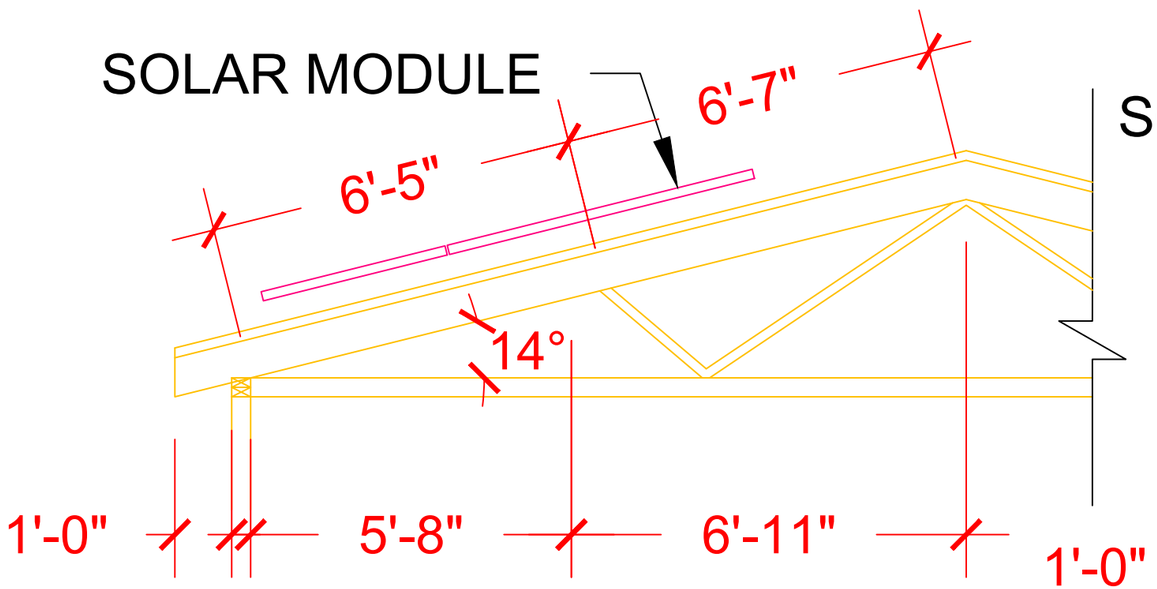
| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER
A-103

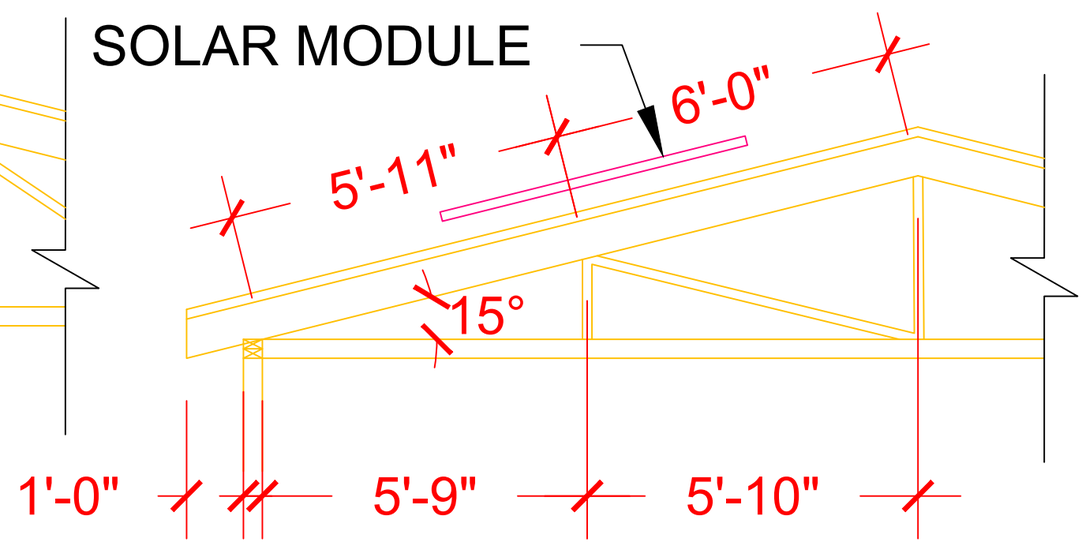
All dimensions and information provided by Sunpro inspection.




**ROOF 1**




**ROOF 2**




**ROOF 3**

## ROOF SECTION(S)

| | |
|---|---|
| ROOF 1 | ROOF MATERIAL - COMPOSITE SHINGLE<br>TRUSS SIZE - 2"X4"<br>O.C. SPACING - 24" |
| ROOF 2 | ROOF MATERIAL - COMPOSITE SHINGLE<br>TRUSS SIZE - 2"X4"<br>O.C. SPACING - 24" |
| ROOF 3 | ROOF MATERIAL - COMPOSITE SHINGLE<br>TRUSS SIZE - 2"X4"<br>O.C. SPACING - 24" |

1 STRUCTURAL PLAN

**SCALE:**3/8"=1'-0"

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**

DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

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985.624.5001
INFO@PI-AEC.COM
FLORIDA FIRM NO. 30649

SHEET TITLE

**STRUCTURAL PLAN**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

A-104

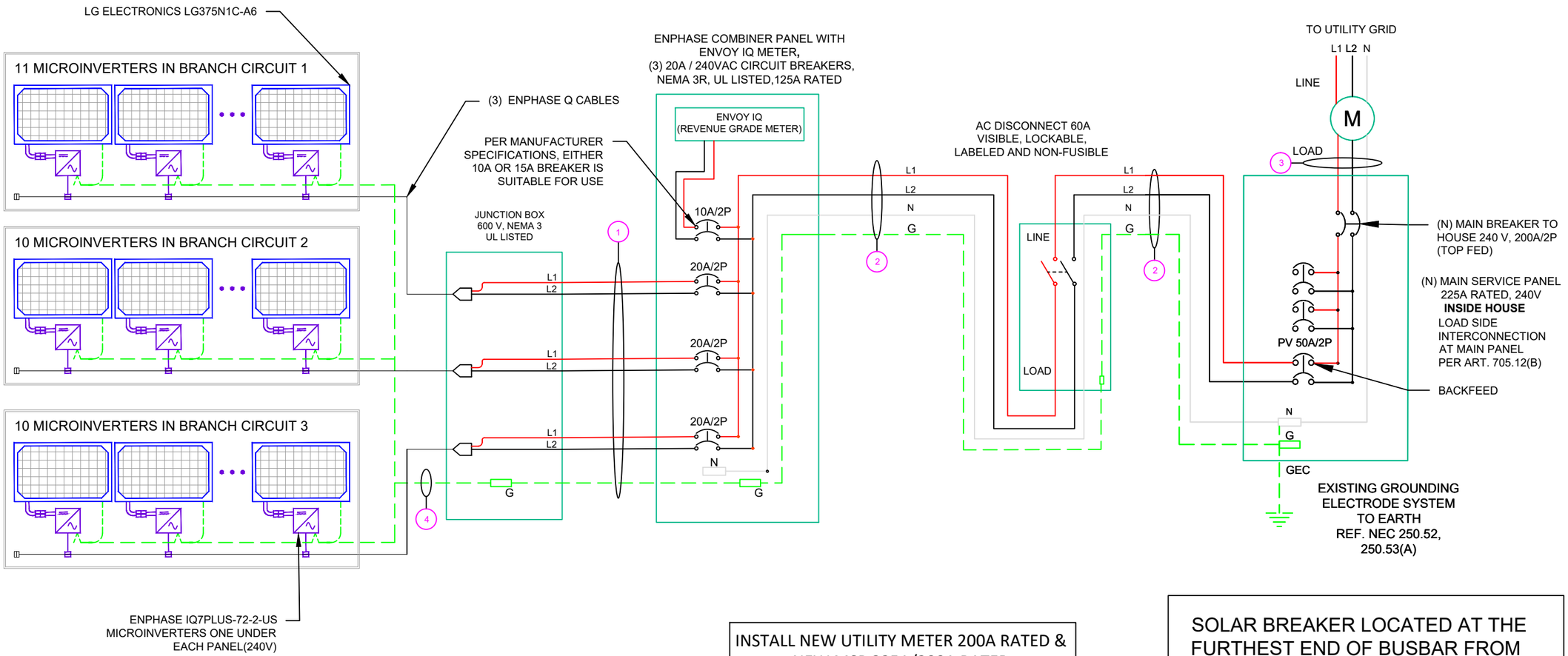
| SOLAR MODULE SPECIFICATIONS | |
|---|---|
| MANUFACTURER / MODEL # | LG ELECTRONICS LG375N1C-A6 |
| VMP | 35.3V |
| IMP | 10.63A |
| VOC | 41.8V |
| ISC | 11.35A |
| TEMP. COEFF. VOC | -0.26%/°C |
| MODULE DIMENSION | 68.50"L x 41.00"W x 1.57"D (In Inch) |

| INVERTER SPECIFICATIONS | |
|---|---|
| MANUFACTURER / MODEL # | ENPHASE IQ7PLUS-72-2-US MICROINVERTER |
| MIN/MAX DC VOLT RATING | 22V MIN/ 60V MAX |
| MAX INPUT POWER | 235W-440W |
| NOMINAL AC VOLTAGE RATING | 240V/ 211-264V |
| MAX AC CURRENT | 1.21A |
| MAX MODULES PER STRING | 13 (SINGLE PHASE) |
| MAX OUTPUT POWER | 290 VA |

DC SIZE 31 X 375W = 11.625 kW DC-STC
AC SIZE 31X 290W = 8.990 kW AC

| WIRE /CONDUIT SCHEDULE | |
|---|---|
| TAG | DESCRIPTION |
| 1 | (3)#12/2 ROMEX IN ATTIC/(6)#12 THWN-2 ON EXTERIOR & (1)#6 THWN -2 / (GN) |
| 2 | (3)#6 THWN-2 & (1)#6 THWN-2 GROUND / (GN) |
| 3 | (3)#2/0 THWN-2 / (GN) |
| 4 | (1)#6 BARE GROUND |

(GN) GENERAL CONDUIT NOTE :
CONDUIT TO BE UL LISTED FOR WET LOCATIONS AND UV PROTECTED (EX. -EMT,SCH 80 PVC OR RMC)*FMC MAYBE USED IN INDOOR APPLICATIONS WHERE PERMITTED BY NEC ART .348




INSTALL NEW UTILITY METER 200A RATED & NEW MSP 225A/200A RATED

SOLAR BREAKER LOCATED AT THE FURTHEST END OF BUSBAR FROM THE MAIN BREAKER OR FEEDER UNIT

**CONTRACTOR**

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**
DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

NESTOR J. HOUGHTON LICENSE No. 64501 STATE OF FLORIDA PROFESSIONAL ENGINEER

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MANDEVILLE, LA 70471
985.624.5001
INFO@PI-AEC.COM
FLORIDA FIRM NO. 30649


SHEET TITLE

**LINE DIAGRAM**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

E-601

| AMBIENT TEMPERATURE SPECS | |
|---|---|
| RECORD LOW TEMP | -5° |
| AMBIENT TEMP (HIGH TEMP 2%) | 34° |
| CONDUIT HEIGHT | 0.5" |
| CONDUCTOR TEMPERATURE RATE | 90° |

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

## CALCULATIONS:

### 1. CURRENT CARRYING CONDUCTOR

**(A) BEFORE IQ COMBINER PANEL**

**AMBIENT TEMPERATURE - (34)°C ...NEC 310.15(B)(3)(c)**
**TEMPERATURE DERATE FACTOR - 0.96 ...NEC 310.15(B)(2)(a)**
**GROUPING FACTOR - 0.8...NEC 310.15(B)(3)(a)**

**CONDUCTOR AMPACITY**
**= (INV O/P CURRENT ) x 1.25 / A.T.F / G.F ...NEC 690.8(B)**
**= [(11 x 1.21) x 1.25] / [0.96 x 0.8]**
**= 21.66A**
**SELECTED CONDUCTOR - #12 THWN-2 ...NEC 310.15(B)(16)**

**(B) AFTER IQ COMBINER PANEL**
**TEMPERATURE DERATE FACTOR - 0.96**
**GROUPING FACTOR - 1**

**CONDUCTOR AMPACITY**
**= (TOTAL INV O/P CURRENT) x 1.25 / 0.96/ 1 ...NEC 690.8(B)**
**= [(31 x 1.21) x 1.25] / [0.96 x 1]**
**= 48.84 A**
**SELECTED CONDUCTOR - #6 THWN-2 ...NEC 310.15(B)(16)**

### 2. PV & BATTERY OVER CURRENT PROTECTION

**...NEC 690.9(B)**

**= TOTAL INVERTER O/P CURRENT x 1.25 + BATTERY O/P**
**= (31 x 1.21) x 1.25 = 46.89 A**
**SELECTED OCPD = 50 A ...NEC 240.6**

### 3. 120% RULE FOR BACKFEED BREAKER

**...NEC 705.12(B)(2)(3)(b)**

| MCB RATING | + PV BREAKER RATING | <= (1.2 x BUS BAR RATING) |
|---|---|---|
| | (200 + 50) | <= 1.2 x 225A |
| | 250.00 | <= 270.00 HENCE OK |

CONTRACTOR

SUNPRO

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**COUNTY:-COLUMBIA COUNTY**

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AC SIZE: 8.990 KW AC

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985.624.5001
INFO@PI-AEC.COM
FLORIDA FIRM NO. 30649

SHEET TITLE
**ELECTRICAL CALCULATIONS**

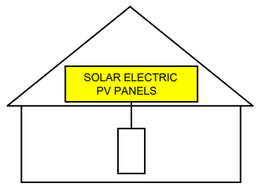
| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER
E-602

WARNING: PHOTOVOLTAIC POWER SOURCE

**SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN**

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




**AC DISCONNECT**

**AC COMBINER BOX**

PHOTOVOLTAIC MICROINVERTERS LOCATED UNDER EACH PV MODULE IN ROOFTOP ARRAY

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

RATED AC OUTPUT CURRENT:____
NOM. OPERATING VOLTAGE:____

⚠ WARNING ⚠
**INVERTER OUTPUT CONNECTION**

DO NOT RELOCATE THIS OVERCURRENT DEVICE

⚠ WARNING ⚠
**ELECTRIC SHOCK HAZARD**

DO NOT TOUCH TERMINALS.
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

⚠ WARNING ⚠
**DUAL POWER SOURCES**

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

**PHOTOVOLTAIC SYSTEM AC DISCONNECT**

OPERATING VOLTAGE:____VOLTS
OPERATING CURRENT:____AMPS

_____KW SOLAR DISCONNECT LOCATED

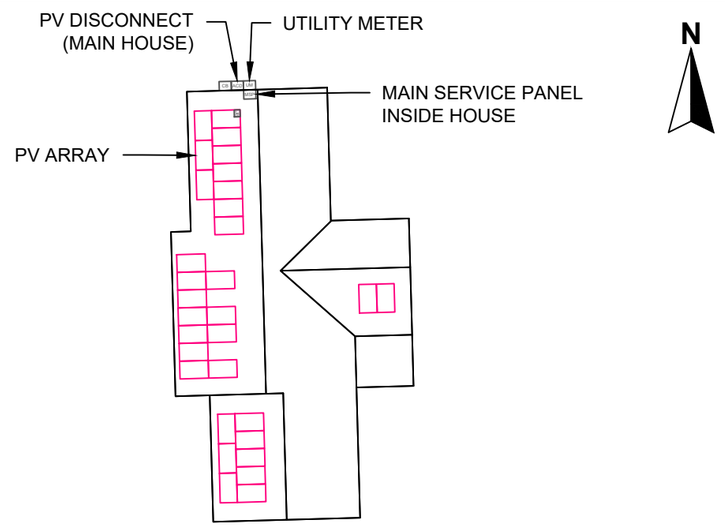
**SOLAR BREAKER**

**___ FT ←**

**→ FT ___**

# CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN:




**CONTRACTOR**

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**
DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

NESTOR J. HOUGHTON ★ LICENSE ★ No. 64501 ★ STATE OF FLORIDA ★ PROFESSIONAL ENGINEER

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MANDEVILLE, LA 70471
985.624.5001
INFO@PI-AEC.COM
FLORIDA FIRM NO. 30649

SHEET TITLE

**PLACARD**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

E-603

# Residential Optional Calculation

by: John Sokolik — Version 2011 L — 9/25/1997

**Job Name**

**Marc Jones Construction, LLC Sunpro Solar**

0
0
0

1/21/2022 6:59

**STEP 1 Article 220.82 (B) (1),(2)**

| | | | |
|---|---|---|---|
| sq. ft | 1600 | General Lighting load | 4,800 VA |
| | 4 | Small Appliance | 6,000 VA |
| | 1 | Laundry circuit | 1,500 VA |
| | | Gen.Lgt, Sm App.& Laun. Load | 12,300 VA |

**STEP 2 Article 220.82 (C)** ☑

**A/C Condenser & Fixed Electric Space Heating**

| | | | | | QTY |
|---|---|---|---|---|---|
| 5 ton | 7,130 VA | AHU 1 | 9.6kW | 10,800 VA | 1 |
| A/C #2 | VA | AHU 2 | Select | VA | Qty |
| A/C #3 | VA | AHU 3 | Select | VA | Qty |
| A/C #4 | VA | AHU 4 | Select | VA | Qty |
| A/C #5 | VA | AHU 5 | Select | VA | Qty |

**STEP 3 Article 220.82 (B) (3)**

| | | | | |
|---|---|---|---|---|
| 4,500 VA | 1 | Water Heater | 4,500 VA | |
| 1,400 VA | 1 | Refrigerator | 1,400 VA | |
| 600 VA | | Freezer | VA | |
| 1,030 VA | 1 | Dishwasher | 1,030 VA | |
| 690 VA | | Disposal | VA | |
| 400 VA | 1 | R / Hood | 400 VA | |
| 1,630 VA | 1 | Microwave | 1,630 VA | |
| ☐ 4,000 VA | | Microwave | VA | |
| 170 VA | | Mini Refrig | VA | |
| ☐ 400 VA | | Wine Clr | VA | |
| ☐ 5,000 VA | | Insta Hot | VA | |
| 1,500 VA | | Ironing Center | VA | |
| ☐ select | | Jacuzzi Tub | VA | |
| ☐ select | | Sprinkler Pump | VA | |
| ☐ 1/2 hp | | Well Pump | 1,127 VA | |
| select | | Fountain Pump | VA | |
| select | | Elevator | VA | |
| | | Pool Equip. Panel | 1,409 VA | Apply Demand |
| ☐ | | GATES | VA | No Demand |
| ☐ | | Other load | VA | No Demand |

**STEP 4 Article 220.82 (B) (3)**

Electric Clothes Dryers **5,000 VA**

**STEP 5 Article 220.82 (B) (3)**

Electric Ranges **10,000 W** Col C demand **8000**

**or** Number of appliances

☐ Check Box for Gas Range

Cooktop — Col B demand
Cooktop — Col B demand
Oven(s) — Col B demand
Oven(s) — Col B demand

Number of appliances **0** Dem. Factor

Cooktop & Oven Demand Load

| | |
|---|---|
| Total 1 | |
| Heating Load | 7,440 VA |
| CU Load | 8,330 VA |

| | |
|---|---|
| **General lighting, Sm. Appl. & Laundry** | **12,300 VA** |
| **Electric Space Heat @ 65% <4, 40% >3, vs. A/C @ 100%** | **8,330 VA** |
| **Appliance Demand Load** | **11,496 VA** |
| **Dryer Demand Load** | **5,000 VA** |
| **Range Demand Load** | **10,000 VA** |
| **Service Demand** | **29,848 VA** |
| **Demand Load** | **124 A** |
| **Neutral Demand** | **78 A** |
| **Min.Service Req.** | **125 A** |
| **Min. Feeder size** | **2** |
| **Min. Neutral size** | **4** |
| **Eq. Grding Cond.** | **6** |
| ☐ | **Copper** |

Total Appliance Load **11,496 VA**

jmp1jds@comcast.net

>>>>>>>>>><<<<<<<<<<

| Pool Panel Feeder Calculation | | (See Note) | A | B | N |
|---|---|---|---|---|---|
| Continuous Motors | 1,409 | ..... | 704 | 704 | 0 |
| Non-continuous | 0 | ..... | 0 | 0 | 0 |
| Spa heater 11 kVA | | ..... | 0 | 0 | |
| Pool heater 3.5 ton | | ..... | 0 | 0 | |
| Pool heater 5 ton | | ..... | 0 | 0 | |
| Pool Light select | 0 | ..... | 0 | 0 | 0 |
| Blower select | 0 | ☐ 240v | 0 | 0 | 0 |
| other load | 0 | ☐ 240v | 0 | 0 | 0 |
| other load | 0 | ☐ 240v | 0 | 0 | 0 |
| ☐ Min.Copper Pool Feeder | | AWG | 6 A | 6 A | A |
| Minimum Panel Rating | | 30A | Phase Amperes | | Neut. load |

| Continuous Motors | | | Non-continuous Motors | |
|---|---|---|---|---|
| 1/2 hp | ☐ 240v | | select | ☐ 240v |
| select | ☐ 240v | | select | ☐ 240v |
| select | ☐ 240v | | select | ☐ 240v |
| select | ☐ 240v | | select | ☐ 240v |
| select | ☐ 240v | | select | ☐ 240v |

0.0 Motor Neutral Load

Max.Unbalanced Neutral Load

**CONTRACTOR**

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**

DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

SHEET TITLE

**LOAD CALCULATIONS**

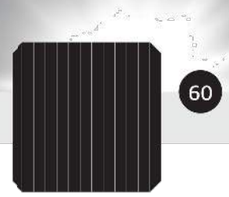
| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

E-604

# LG NeON®2

LG370N1C-A6 | LG375N1C-A6 | LG380N1C-A6 Preliminary




## 370W | 375W | 380W

The LG NeON® 2 is LG's best selling solar module and one of the most powerful and versatile modules on the market today. The cells are designed to appear all-black at a distance, and the performance warranty guarantees 90.6% of labeled power output at 25 years.

25 YEAR PRODUCT • PERFORMANCE • LABOR WARRANTY

c UL us

Made in USA Using Imported Parts

## Features

**Enhanced Performance Warranty**

LG NeON® 2 has an enhanced performance warranty. After 25 years, LG NeON® 2 is guaranteed at least 90.6% of initial performance.

**25-Year Limited Product Warranty**

The NeON® 2 is covered by a 25-year limited product warranty. In addition, up to $450 of labor costs will be covered in the rare case that a module needs to be repaired or replaced.

**Solid Performance on Hot Days**

LG NeON® 2 performs well on hot days due to its low temperature coefficient.

**Roof Aesthetics**

LG NeON® 2 has been designed with aesthetics in mind using thinner wires that appear all black at a distance.

**When you go solar, ask for the brand you can trust: LG Solar**

### About LG Electronics USA, Inc.

LG Electronics is a global leader in electronic products in the clean energy markets by offering solar PV panels and energy storage systems. The company first embarked on a solar energy source research program in 1985, supported by LG Group's vast experience in the semi-conductor, LCD, chemistry and materials industries. In 2010, LG Solar successfully released its first MonoX® series to the market, which is now available in 32 countries. The NeON® (previous MonoX® NeON), NeON®2, NeON®2 BiFacial won the "Intersolar AWARD" in 2013, 2015 and 2016, which demonstrates LG's leadership and innovation in the solar industry.

LG Life's Good


# LG NeON®2

LG370N1C-A6 | LG375N1C-A6 | LG380N1C-A6


Made in USA Using Imported Parts

Preliminary

### General Data

| | |
|---|---|
| Cell Properties (Material/Type) | Monocrystalline/N-type |
| Cell Maker | LG |
| Cell Configuration | 60 Cells (6 x 10) |
| Module Dimensions (L x W x H) | 1,740mm x 1,042mm x 40mm |
| Weight | 18.6 kg |
| Glass (Material) | Tempered Glass with AR Coating |
| Backsheet (Color) | White |
| Frame (Material) | Anodized Aluminium |
| Junction Box (Protection Degree) | IP 68 with 3 Bypass Diodes |
| Cables (Length) | 1,100mm x 2EA |
| Connector (Type/Maker) | MC 4/MC |

### Certifications and Warranty

| | |
|---|---|
| Certifications** | IEC 61215-1/-1-1/2 : 2016, IEC 61730-1/2 : 2016, UL 61730-1 : 2017, UL 61730-2 : 2017 |
| | ISO 9001, ISO 14001, ISO 50001 |
| | OHSAS 18001 |
| Salt Mist Corrosion Test | IEC 61701:2012 Severity 6 |
| Ammonia Corrosion Test | IEC 62716 : 2013 |
| Module Fire Performance | Type 1 (UL 61730) |
| Fire Rating | Class C (UL 790, ULC/ORD C 1703) |
| Solar Module Product Warranty | 25 Year Limited |
| Solar Module Output Warranty | Linear Warranty* |

*Improved: 1st year 98.5%, from 2-24th year: 0.33%/year down, 90.6% at year 25
**In Progress

### Temperature Characteristics

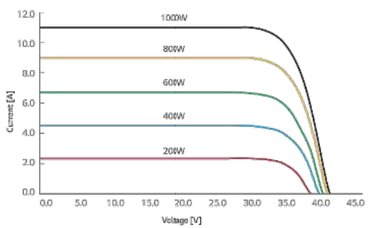
| | | |
|---|---|---|
| NMOT* | [°C] | 42 ± 3 |
| Pmax | [%/°C] | -0.34 |
| Voc | [%/°C] | -0.26 |
| Isc | [%/°C] | 0.03 |

*NMOT (Nominal Module Operating Temperature): Irradiance 800 W/m², Ambient temperature 20°C, Wind speed 1 m/s, Spectrum AM 1.5

### Electrical Properties (NMOT)

| Model | | LG370N1C-A6 | LG375N1C-A6 | LG380N1C-A6 |
|---|---|---|---|---|
| Maximum Power (Pmax) | [W] | 277 | 281 | 285 |
| MPP Voltage (Vmpp) | [V] | 32.8 | 33.2 | 33.5 |
| MPP Current (Impp) | [A] | 8.46 | 8.48 | 8.49 |
| Open Circuit Voltage (Voc) | [V] | 39.3 | 39.4 | 39.4 |
| Short Circuit Current (Isc) | [A] | 9.09 | 9.13 | 9.16 |

### I-V Curves




### Electrical Properties (STC*)

| Model | | LG370N1C-A6 | LG375N1C-A6 | LG380N1C-A6 |
|---|---|---|---|---|
| Maximum Power (Pmax) | [W] | 370 | 375 | 380 |
| MPP Voltage (Vmpp) | [V] | 34.9 | 35.3 | 35.7 |
| MPP Current (Impp) | [A] | 10.61 | 10.63 | 10.65 |
| Open Circuit Voltage (Voc, ± 5%) | [V] | 41.7 | 41.8 | 41.9 |
| Short Circuit Current (Isc, ± 5%) | [A] | 11.31 | 11.35 | 11.39 |
| Module Efficiency | [%] | 20.4 | 20.7 | 21.0 |
| Bifaciality Coefficient of Power | [%] | | 10 | |
| Power Tolerance | [%] | | 0 ~ +3 | |

*STC (Standard Test Condition): Irradiance 1000 W/m², cell temperature 25°C, AM 1.5

### Operating Conditions

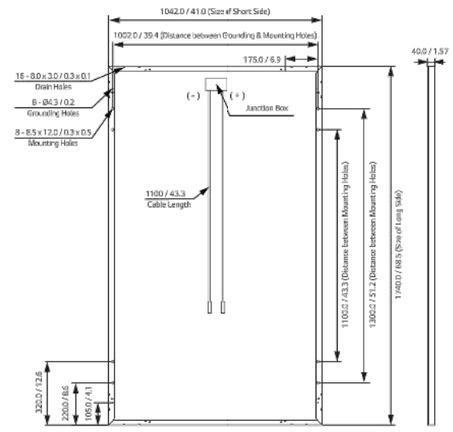
| | | |
|---|---|---|
| Operating Temperature | [°C] | -40 ~ +85 |
| Maximum System Voltage | [V] | 1,000 |
| Maximum Series Fuse Rating | [A] | 20 |
| Mechanical Test Load* (Front) | [Pa/psf] | 5,400 |
| Mechanical Test Load* (Rear) | [Pa/psf] | 4,000 |

*Based on IEC 61215-2 : 2016 (Test Load = Design Load x Safety Factor (1.5))
Mechanical Test Loads 6,000Pa / 5,400Pa based on IEC61215 : 2005

### Packaging Configuration

| | | |
|---|---|---|
| Number of Modules per Pallet | [EA] | 25 |
| Number of Modules per 40' Container | [EA] | 650 |
| Number of Modules per 53' Container | [EA] | 850 |
| Packaging Box Dimensions (L x W x H) | [mm] | 1,790 x 1,120 x 1,213 |
| Packaging Box Dimensions (L x W x H) | [in] | 70.5 x 44.1 x 47.8 |
| Packaging Box Gross Weight | [kg] | 500 |
| Packaging Box Gross Weight | [lb] | 1,102 |

### Dimensions (mm/inch)





LG Life's Good

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Product specifications are subject to change without notice.
LG370-380N1C-A6_AUS.pdf
121520

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PHONE: 9152011490

PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**

DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

SHEET TITLE

**RESOURCE DOCUMENT**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

R-001

Data Sheet
Enphase Microinverters
Region: AMERICAS

# Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready Enphase IQ 7 Micro™ and Enphase IQ 7+ Micro™ dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.

### Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

### Productive and Reliable

- Optimized for high powered 60-cell and 72-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

### Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ 7+ Micro is required to support 72-cell modules.

To learn more about Enphase offerings, visit **enphase.com**

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## Enphase IQ 7 and IQ 7+ Microinverters

| INPUT DATA (DC) | IQ7-60-2-US | | IQ7PLUS-72-2-US | |
|---|---|---|---|---|
| Commonly used module pairings[1] | 235 W - 350 W + | | 235 W - 440 W + | |
| Module compatibility | 60-cell PV modules only | | 60-cell and 72-cell PV modules | |
| Maximum input DC voltage | 48 V | | 60 V | |
| Peak power tracking voltage | 27 V - 37 V | | 27 V - 45 V | |
| Operating range | 16 V - 48 V | | 16 V - 60 V | |
| Min/Max start voltage | 22 V / 48 V | | 22 V / 60 V | |
| Max DC short circuit current (module Isc) | 15 A | | 15 A | |
| Overvoltage class DC port | II | | II | |
| DC port backfeed current | 0 A | | 0 A | |
| PV array configuration | 1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit | | | |
| **OUTPUT DATA (AC)** | **IQ 7 Microinverter** | | **IQ 7+ Microinverter** | |
| Peak output power | 250 VA | | 295 VA | |
| Maximum continuous output power | 240 VA | | 290 VA | |
| Nominal (L-L) voltage/range[2] | 240 V / 211-264 V | 208 V / 183-229 V | 240 V / 211-264 V | 208 V / 183-229 V |
| Maximum continuous output current | 1.0 A (240 V) | 1.15 A (208 V) | 1.21 A (240 V) | 1.39 A (208 V) |
| Nominal frequency | 60 Hz | | 60 Hz | |
| Extended frequency range | 47 - 68 Hz | | 47 - 68 Hz | |
| AC short circuit fault current over 3 cycles | 5.8 Arms | | 5.8 Arms | |
| Maximum units per 20 A (L-L) branch circuit[3] | 16 (240 VAC) | 13 (208 VAC) | 13 (240 VAC) | 11 (208 VAC) |
| Overvoltage class AC port | III | | III | |
| AC port backfeed current | 0 A | | 0 A | |
| Power factor setting | 1.0 | | 1.0 | |
| Power factor (adjustable) | 0.85 leading ... 0.85 lagging | | 0.85 leading ... 0.85 lagging | |
| **EFFICIENCY** | **@240 V** | **@208 V** | **@240 V** | **@208 V** |
| Peak efficiency | 97.6 % | 97.6 % | 97.5 % | 97.3 % |
| CEC weighted efficiency | 97.0 % | 97.0 % | 97.0 % | 97.0 % |
| **MECHANICAL DATA** | | | | |
| Ambient temperature range | -40°C to +65°C | | | |
| Relative humidity range | 4% to 100% (condensing) | | | |
| Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US) | MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter) | | | |
| Dimensions (WxHxD) | 212 mm x 175 mm x 30.2 mm (without bracket) | | | |
| Weight | 1.08 kg (2.38 lbs) | | | |
| Cooling | Natural convection - No fans | | | |
| Approved for wet locations | Yes | | | |
| Pollution degree | PD3 | | | |
| Enclosure | Class II double-insulated, corrosion resistant polymeric enclosure | | | |
| Environmental category / UV exposure rating | NEMA Type 6 / outdoor | | | |
| **FEATURES** | | | | |
| Communication | Power Line Communication (PLC) | | | |
| Monitoring | Enlighten Manager and MyEnlighten monitoring options.<br>Both options require installation of an Enphase IQ Envoy. | | | |
| Disconnecting means | The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690. | | | |
| Compliance | CA Rule 21 (UL 1741-SA)<br>UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01<br>This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions. | | | |

1. No enforced DC/AC ratio. See the compatibility calculator at https://enphase.com/en-us/support/module-compatibility.
2. Nominal voltage range can be extended beyond nominal if required by the utility.
3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit **enphase.com**

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2019-3-26

**CONTRACTOR**

SUNPRO

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PHONE: 9152011490

PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**
DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

SHEET TITLE
**RESOURCE DOCUMENT**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

R-002

Data Sheet
Enphase Networking

# Enphase IQ Combiner 3

(X-IQ-AM1-240-3)

The **Enphase IQ Combiner 3**™ with Enphase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV 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 Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring
- Supports Ensemble Communications Kit for communication with Enphase Encharge™ storage and Enphase Enpower™ smart switch

### Simple

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

### Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- UL listed

UL LISTED

To learn more about Enphase offerings, visit **enphase.com**

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## Enphase IQ Combiner 3

| | |
|---|---|
| **MODEL NUMBER** | |
| IQ Combiner 3<br>X-IQ-AM1-240-3 | IQ Combiner 3 with Enphase IQ Envoy™ printed circuit board for integrated revenue grade PV **production** metering (ANSI C12.20 +/- 0.5%) and optional* **consumption** monitoring (+/- 2.5%). |
| **ACCESSORIES** and **REPLACEMENT PARTS** (not included, order separately) | |
| Enphase Mobile Connect™<br>CELLMODEM-03 (4G/12-year data plan)<br>CELLMODEM-01 (3G/5-year data plan)<br>CELLMODEM-M1 (4G based LTE-M/5-year data plan) | Plug and play industrial grade cellular modem with data plan 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.) |
| Consumption Monitoring* CT<br>CT-200-SPLIT<br>* Consumption monitoring is required for Enphase Storage Systems | Split core current transformers enable whole home **consumption** metering (+/- 2.5%). |
| Ensemble Communications Kit<br>COMMS-KIT-01 | Installed at the IQ Envoy. For communications with Enphase Encharge™ storage and Enphase Enpower™ smart switch. Includes USB cable for connection to IQ Envoy or Enphase IQ Combiner™ and allows wireless communication with Encharge and Enpower. |
| Circuit Breakers<br>BRK-10A-2-240<br>BRK-15A-2-240<br>BRK-20A-2P-240 | Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers.<br>Circuit breaker, 2 pole, 10A, Eaton BR210<br>Circuit breaker, 2 pole, 15A, Eaton BR215<br>Circuit breaker, 2 pole, 20A, Eaton BR220 |
| EPLC-01 | Power line carrier (communication bridge pair), quantity - one pair |
| XA-SOLARSHIELD-ES | Replace the default solar shield with this Ensemble Combiner Solar Shield to match the look and feel of the Enphase Enpower™ smart switch and the Enphase Encharge™ storage system |
| XA-PLUG-120-3 | Accessory receptacle for Power Line Carrier in IQ Combiner 3 (required for EPLC-01) |
| XA-ENV-PCBA-3 | Replacement IQ Envoy printed circuit board (PCB) for Combiner 3 |
| **ELECTRICAL SPECIFICATIONS** | |
| Rating | Continuous duty |
| System voltage | 120/240 VAC, 60 Hz |
| Eaton BR series busbar rating | 125 A |
| Max. continuous current rating (output to grid) | 65 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. continuous current rating (input from PV) | 64 A |
| Max. total branch circuit breaker rating (input) | 80 A of distributed generation / 95 A with IQ Envoy breaker included |
| Envoy breaker | 10A or 15A rating GE Q-line/Siemens Type QP /Eaton BR series included |
| Production Metering CT | 200 A solid core pre-installed and wired to IQ Envoy |
| **MECHANICAL DATA** | |
| Dimensions (WxHxD) | 49.5 x 37.5 x 16.8 cm (19.5" x 14.75" 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<br>• 60 A breaker branch input: 4 to 1/0 AWG copper conductors<br>• Main lug combined output: 10 to 2/0 AWG copper conductors<br>• Neutral and ground: 14 to 1/0 copper conductors<br>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 |
| Ethernet | Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included) |
| Cellular | CELLMODEM-M1 4G based LTE-M cellular modem (not included). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations. |
| **COMPLIANCE** | |
| Compliance, Combiner | UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003<br>Production metering: ANSI C12.20 accuracy class 0.5 (PV production) |
| Compliance, IQ Envoy | UL 60601-1/CANCSA 22.2 No. 61010-1 |

To learn more about Enphase offerings, visit **enphase.com**

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PROJECT NAME & ADDRESS

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**SYSTEM SIZE**

DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

SHEET TITLE

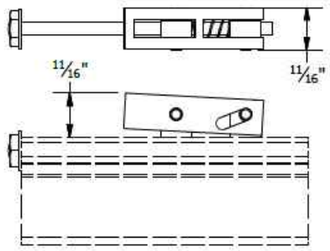
**RESOURCE DOCUMENT**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

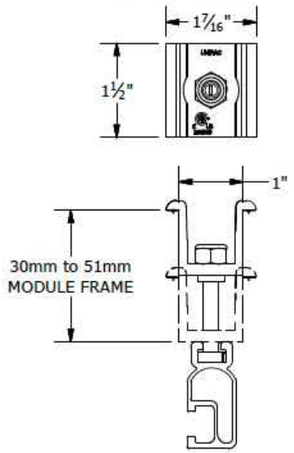
SHEET NUMBER

R-003

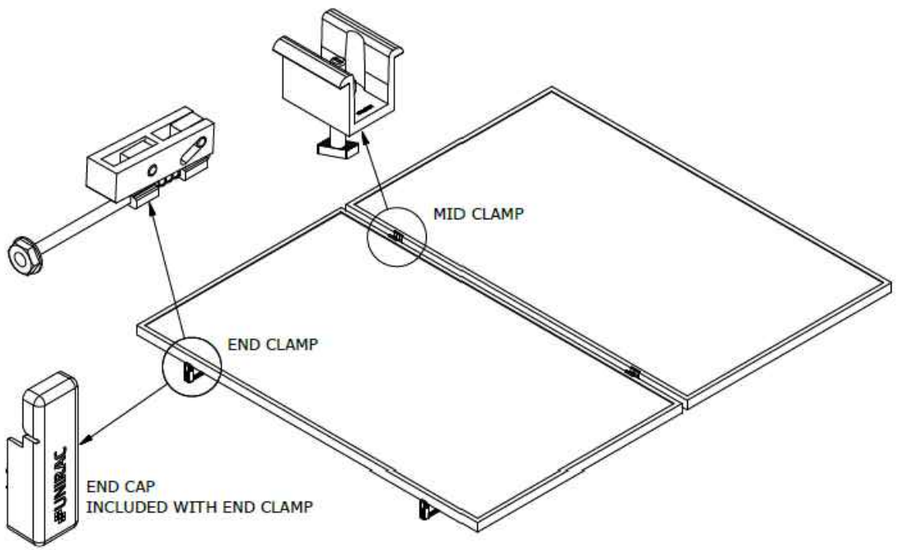
## PRO SERIES END CLAMP




## PRO SERIES MID CLAMP




| PART # TABLE | |
|---|---|
| P/N | DESCRIPTION |
| 302035M | ENDCLAMP PRO |
| 302030M | MIDCLAMP PRO - MILL |
| 302030D | MIDCLAMP PRO - DRK |



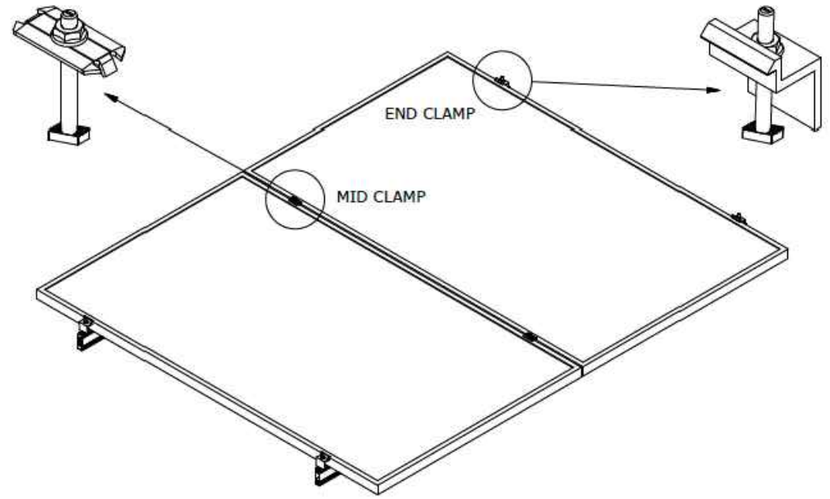

UNIRAC
1411 BROADWAY BLVD. NE
ALBUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
WWW.UNIRAC.COM

| | |
|---|---|
| PRODUCT LINE: | SOLARMOUNT |
| DRAWING TYPE: | PART & ASSEMBLY |
| DESCRIPTION: | PRO SERIES BONDING CLAMPS |
| REVISION DATE: | 10/26/2017 |

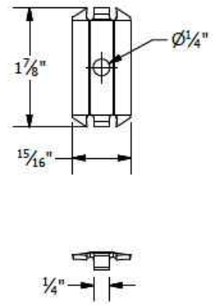
DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

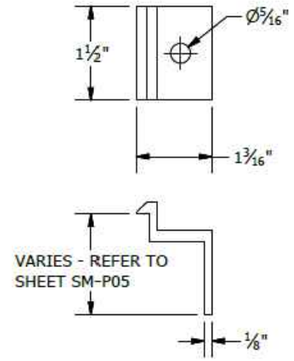
SM-A01
SHEET




| PART # TABLE | |
|---|---|
| P/N | DESCRIPTION |
| 302027C | SM BND MIDCLAMP BC SS |
| 302027D | SM BND MIDCLAMP BC DRK SS |
| 302028C | SM BND MIDCLAMP EF SS |
| 302028D | SM BND MIDCLAMP EF DRK SS |
| 302029C | SM BND MIDCLAMP DK SS |
| 302029D | SM BND MIDCLAMP DK DRK SS |
| | FOR BONDING END CLAMP REFER TO SHEET SM-P05 |




BONDING SM MID CLAMP




BONDING SM END CLAMP

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

| | |
|---|---|
| PRODUCT LINE: | SOLARMOUNT |
| DRAWING TYPE: | PART & ASSEMBLY |
| DESCRIPTION: | BONDING TOP CLAMPS |
| REVISION DATE: | 10/26/2017 |

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

SM-A01A
SHEET

**CONTRACTOR**

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**

DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

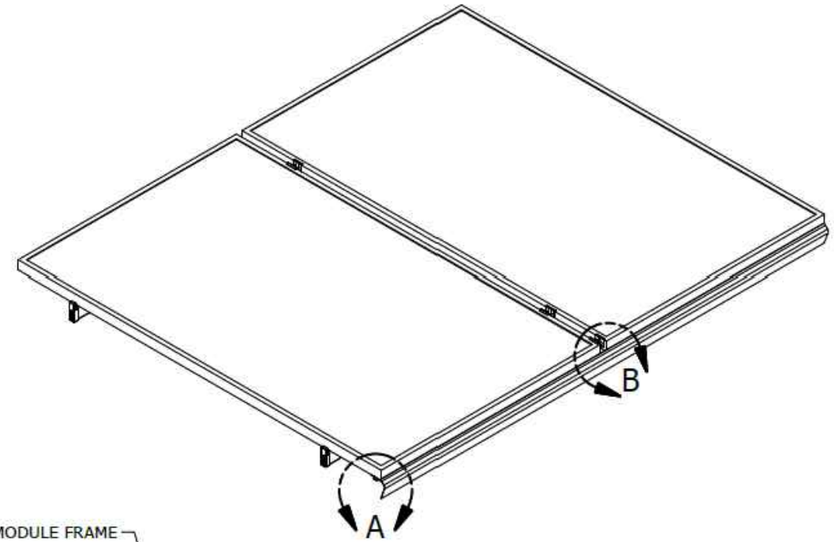
SHEET TITLE

**RESOURCE DOCUMENT**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

R-004




DETAIL A
TRIM END CLIP

TRIM

DETAIL B
MID CLAMP TRIM CONNECTION

| PART # TABLE | | |
|---|---|---|
| P/N | DESCRIPTION | LENGTH |
| 206072D-B | SM TRIM DRK | 168" |
| 008025S | SM TRIM END CLIP | - |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PHONE: 505.242.6411
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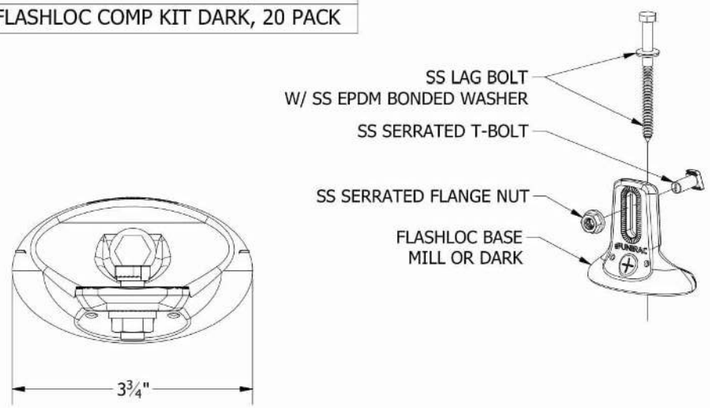
| | |
|---|---|
| PRODUCT LINE: | SOLARMOUNT |
| DRAWING TYPE: | PART & ASSEMBLY |
| DESCRIPTION: | SM TRIM END CLIP |
| REVISION DATE: | 9/27/2017 |

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

SM-A02
SHEET

| PART TABLE | |
|---|---|
| P/N | DESCRIPTION |
| 004085M | FLASHLOC COMP KIT MILL, 20 PACK |
| 004085D | FLASHLOC COMP KIT DARK, 20 PACK |





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


| | |
|---|---|
| PRODUCT LINE: | SOLARMOUNT |
| DRAWING TYPE: | PART DRAWING |
| DESCRIPTION: | FLASHLOC COMP KIT |
| REVISION DATE: | 10/3/2019 |

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

FL-A01
SHEET

**CONTRACTOR**

SUNPRO


22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490


PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**

DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

SHEET TITLE

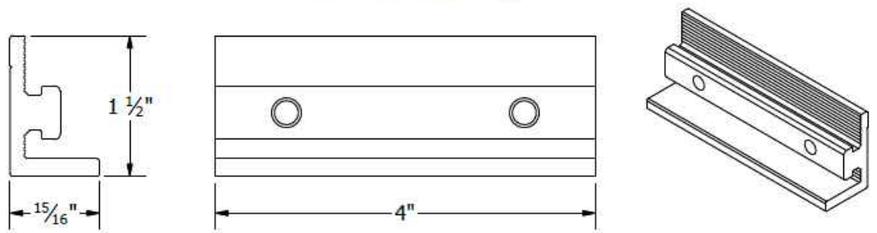
**RESOURCE DOCUMENT**

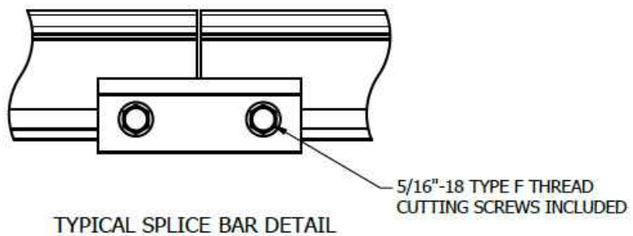
| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

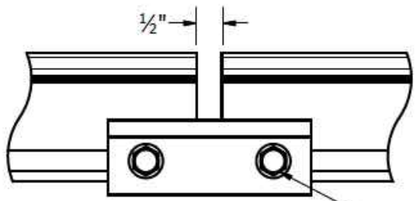
R-005

BONDING SPLICE BAR




TYPICAL SPLICE BAR DETAIL




TYPICAL EXPANSION JOINT DETAIL

| PART # TABLE | |
|---|---|
| P/N | DESCRIPTION |
| 303019M | BND SPLICE BAR PRO SERIES MILL |
| 303019D | BND SPLICE BAR PRO SERIES DRK |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ALBUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
WWW.UNIRAC.COM

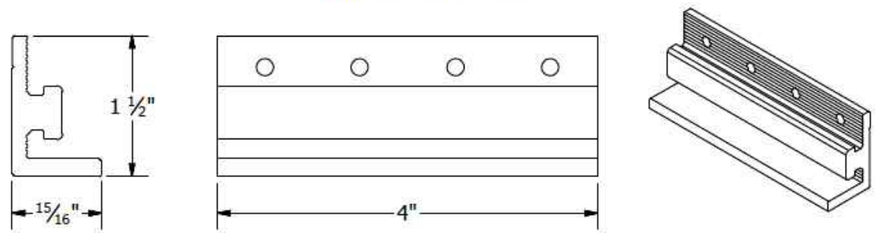

| | |
|---|---|
| PRODUCT LINE: | SOLARMOUNT |
| DRAWING TYPE: | PART & ASSEMBLY |
| DESCRIPTION: | BONDING SPLICE BAR PRO SERIES |
| REVISION DATE: | 8/23/2018 |

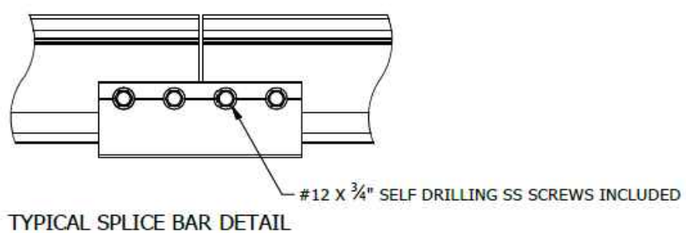
DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

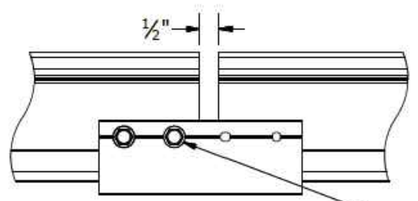
SM-A05
SHEET

BONDING SPLICE BAR




TYPICAL SPLICE BAR DETAIL




TYPICAL EXPANSION JOINT DETAIL

| PART # TABLE | |
|---|---|
| P/N | DESCRIPTION |
| 303018C | BND SPLICE BAR SERRATED CLR |
| 303018D | BND SPLICE BAR SERRATED DRK |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ALBUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
WWW.UNIRAC.COM


| | |
|---|---|
| PRODUCT LINE: | SOLARMOUNT |
| DRAWING TYPE: | PART & ASSEMBLY |
| DESCRIPTION: | BONDING SPLICE BAR |
| REVISION DATE: | 9/27/2017 |

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

SM-A05
SHEET

CONTRACTOR

SUNPRO


22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490


PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**

DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

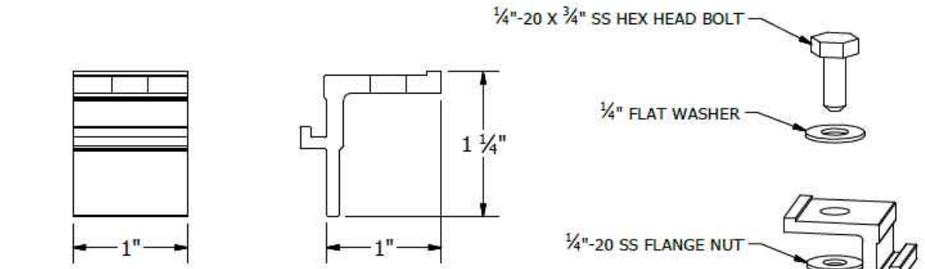
SHEET TITLE

**RESOURCE DOCUMENT**

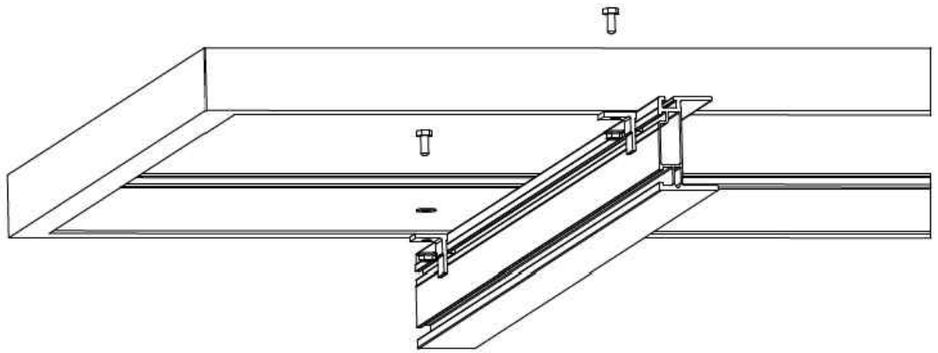
| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

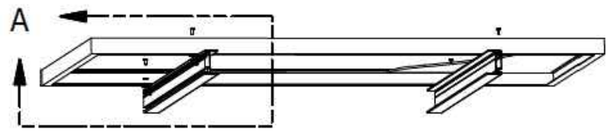
R-006




BOTTOM CLIP



DETAIL A




| PART # TABLE | |
|---|---|
| P/N | DESCRIPTION |
| 302000C | SMHD BOTTOM CLIPS W/HDW CLR |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PHONE: 505.242.6411
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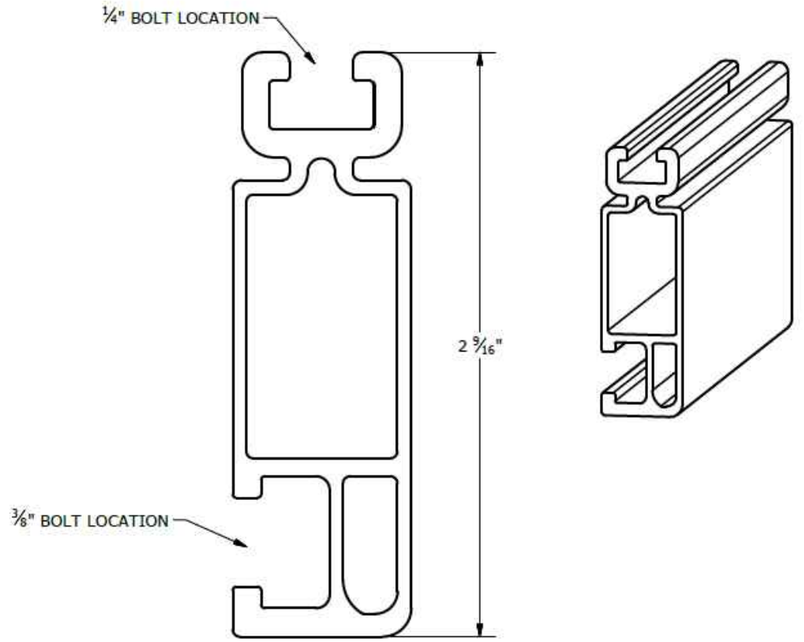
| | |
|---|---|
| PRODUCT LINE: | SOLARMOUNT HD |
| DRAWING TYPE: | PART & ASSEMBLY |
| DESCRIPTION: | BOTTOM CLIP |
| REVISION DATE: | 9/27/2017 |

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

SM-A10
SHEET




| PART # TABLE | | |
|---|---|---|
| P/N | DESCRIPTION | LENGTH |
| 320132M | SM RAIL 132" MILL | 132" |
| 310132C | SM RAIL 132" CLR | 132" |
| 320168M | SM RAIL 168" MILL | 168" |
| 310168C | SM RAIL 168" CLR | 168" |
| 320168D | SM RAIL 168" DRK | 168" |
| 320208M | SM RAIL 208" MILL | 208" |
| 310208C | SM RAIL 208" CLR | 208" |
| 320240M | SM RAIL 240" MILL | 240" |
| 310240C | SM RAIL 240" CLR | 240" |
| 310240D | SM RAIL 240" DRK | 240" |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| | |
|---|---|
| PRODUCT LINE: | SOLARMOUNT |
| DRAWING TYPE: | PART DETAIL |
| DESCRIPTION: | STANDARD RAIL |
| REVISION DATE: | 9/11/2017 |

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

SM-P01
SHEET

CONTRACTOR

SUNPRO


22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490


PROJECT NAME & ADDRESS

KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**

DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

SHEET TITLE

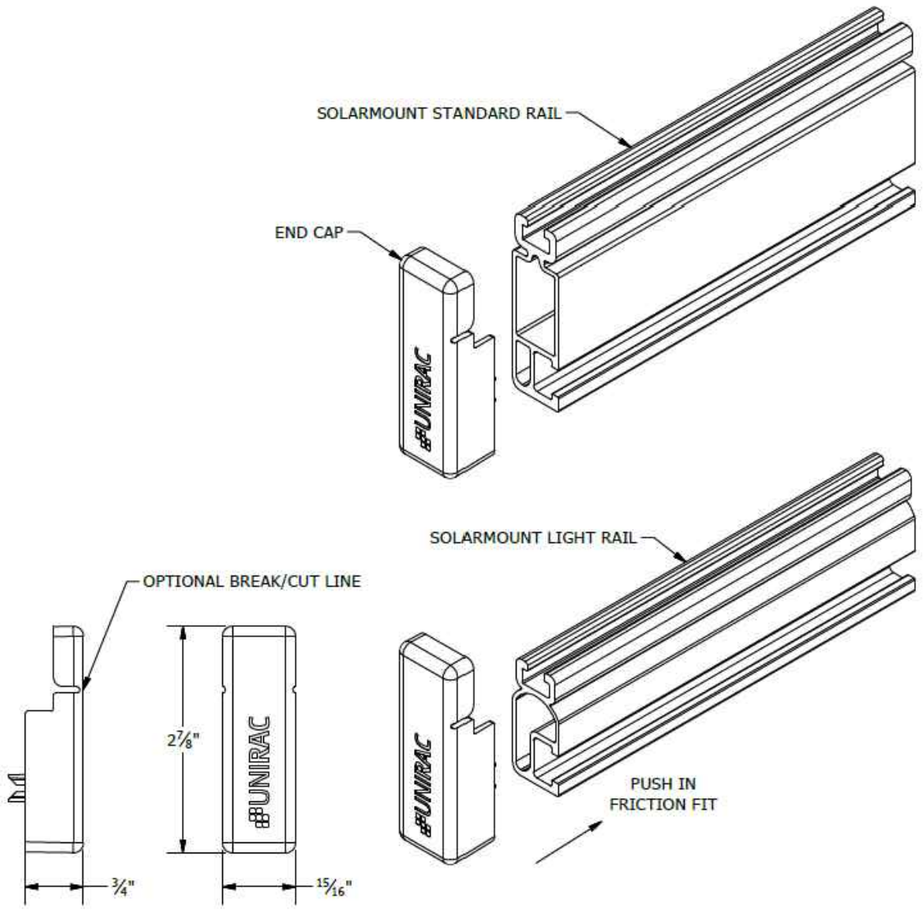
**RESOURCE DOCUMENT**

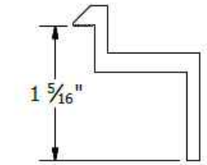
| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER

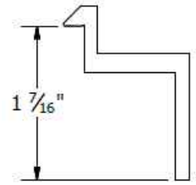
R-007

NOTES:
1. END CAP INCLUDED WITH EVERY END CLAMP.
2. END CAP FITS SOLARMOUNT LIGHT AND STANDARD RAIL PROFILES.

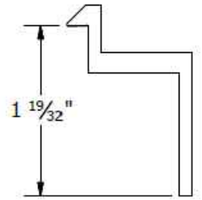


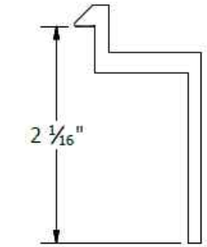

B CLAMP
30mm to 32mm Module Thickness
(1.18" to 1.26")



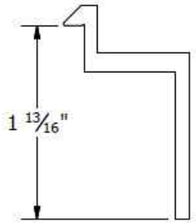

C CLAMP
33mm to 36mm Module Thickness
(1.30" to 1.42")



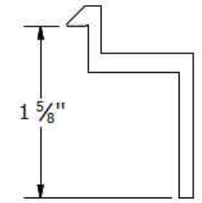

D CLAMP
38mm to 40mm Module Thickness
(1.50" to 1.57")




E CLAMP
50mm to 51mm Module Thickness
(1.97" to 2.00")

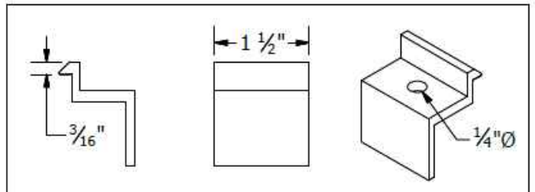



F CLAMP
45mm to 47mm Module Thickness
(1.77" to 1.85")




K CLAMP
39mm to 41mm Module Thickness
(1.54" to 1.61")

| PART # TABLE | |
|---|---|
| P/N | DESCRIPTION |
| 302021C | SM ENDCLAMP B CLR AL |
| 302021D | SM ENDCLAMP B DRK AL |
| 302022C | SM ENDCLAMP C CLR AL |
| 302022D | SM ENDCLAMP C DRK AL |
| 302023C | SM ENDCLAMP D CLR AL |
| 302023D | SM ENDCLAMP D DRK AL |
| 303024C | SM ENDCLAMP E CLR AL |
| 302024D | SM ENDCLAMP E DRK AL |
| 302025C | SM ENDCLAMP F CLR AL |
| 302025D | SM ENDCLAMP F DRK AL |
| 302026C | SM ENDCLAMP K CLR AL |
| 302026D | SM ENDCLAMP K DRK AL |




TYPICAL END CLAMP DETAILS

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

| | |
|---|---|
| PRODUCT LINE: | SOLARMOUNT |
| DRAWING TYPE: | PART DETAIL |
| DESCRIPTION: | END CAPS |
| REVISION DATE: | 9/27/2017 |

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

SM-P04
SHEET

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

| | |
|---|---|
| PRODUCT LINE: | SOLARMOUNT |
| DRAWING TYPE: | PART DETAIL |
| DESCRIPTION: | END CLAMPS - TOP MOUNTING |
| REVISION DATE: | 9/27/2017 |

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

SM-P05
SHEET

CONTRACTOR
SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS
KIM QUETEL

**209 LAPAZ,LAKE CITY, FL 32024**

**COUNTY:-COLUMBIA COUNTY**

**SYSTEM SIZE**
DC SIZE: 11.625 KW DC-(STC)
AC SIZE: 8.990 KW AC

SHEET TITLE
**RESOURCE DOCUMENT**

| | |
|---|---|
| DRAWN DATE | 1/21/2022 |
| DRAWN BY | VI |

SHEET NUMBER
R-008