

October 2021

Property Owner: Jorge Prieto

Property Address: 597 Southwest Fry Avenue, Fort White, FL 32038

**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 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: 2x6 rafters @ 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 due to the introduction of discrete mount loads are within acceptable limits, 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.



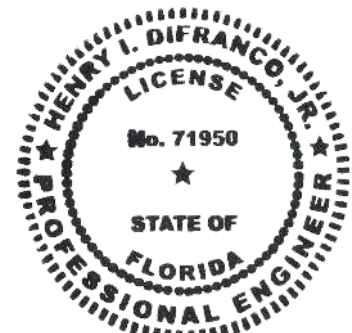
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**Uplift and Wind Downforce Calculation Summary (ASCE 7-16)**  
**Mount, Rack, & Panel Proportioning**  
**Point Load Check and Rafter Stress Analysis**

|                  |                          |                                  |            |           |
|------------------|--------------------------|----------------------------------|------------|-----------|
| Property Owner:  | Jorge Prieto             | Max. Individual Panel Dimensions |            |           |
| Project Address: | 597 Southwest Fry Avenue | Length (in)                      | Width (in) | Area (sf) |
| City, State:     | Fort White, FL 32038     | 77                               | 39         | 20.85     |

| Building Characteristics, Design Input, and Adjustment Factors |           |                 |                             |    |
|----------------------------------------------------------------|-----------|-----------------|-----------------------------|----|
| Roof Dimensions:                                               | Length:   | 53              | Greater Dimension           | 53 |
|                                                                | Width:    | 23              | Least Dimension:            | 23 |
| 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 Rafters      |                             |    |
| 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 ( $\lambda$ )                        |           | 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            |           | 2.3             |                             |    |
| 2 - Roof Height x 0.4                                          |           | 6               |                             |    |
| 3 - Least Roof Horizontal Dimension (L or W) x 0.04            |           | 0.92            |                             |    |
| 4 - Least of (1) and (2)                                       |           | 2.3             |                             |    |
| 5 - Greater of (3) and (4)                                     |           | 2.3             |                             |    |
| 6 - Greater of (5) and 3 feet                                  | <b>a=</b> | 3               |                             |    |



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| Net Design Pressures, $p_{net}$ (Fig 30.4-1), Components & Cladding |               |             |                           |                                        |                                  |
|---------------------------------------------------------------------|---------------|-------------|---------------------------|----------------------------------------|----------------------------------|
|                                                                     | Uplift (-psf) |             |                           | Factored Pressure<br>(0.6W, ASCE 7-16) | $\theta$                         |
|                                                                     |               | $P_{30net}$ | $\lambda K_{zt}P_{30net}$ |                                        |                                  |
| gable /hip<br>/flat                                                 |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
| Gable                                                               | Zone 1 & 2e   | 85.4        | 70.1                      | 42.0                                   | $7^\circ < \theta \leq 20^\circ$ |
|                                                                     | Zone 2n,2r,3e | 124.7       | 102.2                     | 61.3                                   |                                  |
|                                                                     | Zone 3r       | 148.2       | 121.5                     | 72.9                                   |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
| Hip                                                                 |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |
|                                                                     |               |             |                           |                                        |                                  |



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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                           | Fully    |                    |
| Exposure Factor $C_e$              | 0.9      | Table 7-2          |
| Thermal Factor, $C_t$              | 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        | 11.5     |                    |
| $p_m$ , Minimum required Snow Load | 0.00 psf | Para. 7.3.4        |
| $p_f$ , Calculated Snow Load       | 0.00     | Eq. 7.3-1          |
| $p_f$ , 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.<br>37 to 56 psf : 2 rails, mounts @ 2 ft. o.c.<br>56 to 75 psf : 3 rails, mounts @ 4 ft. o.c.<br>75 to 112 psf : 3 rails, mounts @ 2 ft. o.c.<br>112 to 150 psf : 4 rails, mounts @ 2 ft. o.c.<br>> 150 psf : Mount capacity exceeded |
| Substrate                       | Wood Rafters         |                                                                                                                                                                                                                                                                               |
| Connector:                      | 5/16" x 4" Lag Screw |                                                                                                                                                                                                                                                                               |
| Allowable Uplift:               | 480 lb., max.        |                                                                                                                                                                                                                                                                               |
|                                 |                      |                                                                                                                                                                                                                                                                               |

| 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 10.50 KW DC  
597 SOUTHWEST FRY AVENUE, FORT WHITE, FL 32038



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS  
  
JORGE PRIETO  
  
**597 SOUTHWEST FRY AVENUE, FORT WHITE, FL 32038**  
  
COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE  
DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:



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SHEET TITLE  
**COVER PAGE**

|            |            |
|------------|------------|
| DRAWN DATE | 10/18/2021 |
| DRAWN BY   | VVP        |

SHEET NUMBER  
**G-001**

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: JORGE PRIETO

PROJECT MANAGER

NAME: SHAHIN HAYNES  
PHONE: 8665071461

CONTRACTOR NAME

MARC JONES CONSTRUCTION,  
LLC DBA SUNPRO SOLAR  
PHONE: 5052180838

SCOPE OF WORK

SYSTEM SIZE: STC:28 X 375W= 10.50 kW DC  
PTC: 28 x 347.3W = 9.72 kW DC  
(28) LG ELECTRONICS LG375N1C-A6  
(28) ENPHASE IQ7PLUS-72-2-US

ATTACHMENT TYPE: ROOF MOUNT  
MSP UPGRADE: NO  
UTILITY METER UPGRADE: NO

AUTHORITIES HAVING JURISDICTION

BUILDING: COLUMBIA COUNTY  
ZONING: COLUMBIA COUNTY  
UTILITY: CLAY ELECTRIC CO-OP

METER NO: 156219722

DESIGN SPECIFICATION

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

APPLICABLE CODES & STANDARDS

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

VICINITY MAP



SATELLITE VIEW



SHEET INDEX

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|       |                         |
|       |                         |
|       |                         |

2.1.1 SITE NOTES:

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

2.2.2 ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26.  
2.2.3 WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A),(C) AND NEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C).  
2.2.4 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 MUST ALSO 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 WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.  
2.3.5 ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.  
2.3.6 WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

2.4.1 WIRING & CONDUIT NOTES:

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.  
2.4.3 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 DEVICES 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 SHALL BE SIZED ACCORDING TO NEC 690.45 AND MICROINVERTER MANUFACTURERS' INSTRUCTIONS.  
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.  
2.5.7 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.  
2.5.8 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 WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE RECONNECTED 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 UL 1699B.

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 INTERCONNECTION (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  
2.7.8 BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)].

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| CONTRACTOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |
| 22171 MCH RD<br>MANDEVILLE, LA 70471<br>PHONE: 9152011490                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |
| PROJECT NAME & ADDRESS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |
| JORGE PRIETO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| 597 SOUTHWEST FRY AVENUE, FORT WHITE, FL 32038<br>COUNTY:-COLUMBIA COUNTY                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |
| SYSTEM SIZE<br>DC SIZE: 10.500 KW DC-(STC)<br>AC SIZE: 8.120 KW AC                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| ENGINEER:<br> <div>This item has been digitally signed and sealed by Henry I. DiFranco, Jr., P.E. on October 19, 2021 Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.</div> <div>PRINCIPAL ENGINEERING, INC.<br/>1011 N. CAUSEWAY BLVD. STE 19<br/>MANDEVILLE, LA 70471<br/>985.624.5001<br/>INFO@PI-AEC.COM<br/>FLORIDA FIRM NO. 30649</div> |            |
| SHEET TITLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |
| NOTES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |
| DRAWN DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 10/18/2021 |
| DRAWN BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | VVP        |
| SHEET NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| G-002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |



28 LG ELECTRONICS LG375N1C-A6 MODULES WITH  
ENPHASE IQ7PLUS-72-2-US MICROINVERTERS  
UNDER EACH MODULE (240V)

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

ADDRESS : 597 SOUTHWEST FRY AVENUE  
CITY ZIP : FORT WHITE, FL 32038  
METER NO: 156219722

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

PROJECT NAME & ADDRESS  
JORGE PRIETO  
**597 SOUTHWEST FRY AVENUE, FORT WHITE, FL 32038**  
COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE  
DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:  


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

SHEET TITLE  
**SITE PLAN**

|            |            |
|------------|------------|
| DRAWN DATE | 10/18/2021 |
| DRAWN BY   | VVP        |

SHEET NUMBER  
**A-101**

DC SIZE 28 X 375W = 10.500 kW DC-STC  
AC SIZE 28X 290W = 8.120 kW AC

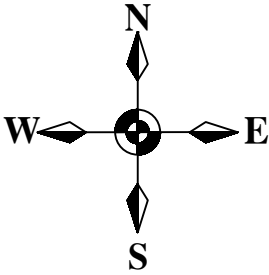
LEGEND

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

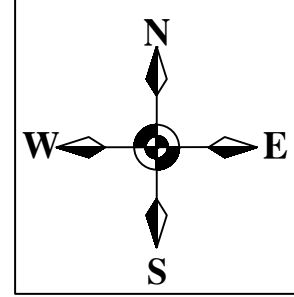
- (E) MAIN SERVICE PANEL (ON POLE)
- (E) UTILITY METER (ON POLE)
- (N) VISIBLE LOCKABLE LABELED AND NON FUSED AC DISCONNECT (UTILITY DISCONNECT) (ON RACK)
- (N) ENPHASE COMBINER PANEL WITH ENVOY-IQ METER (ON RACK)
- (N) SUB PANEL

SOUTHWEST FRY AVENUE

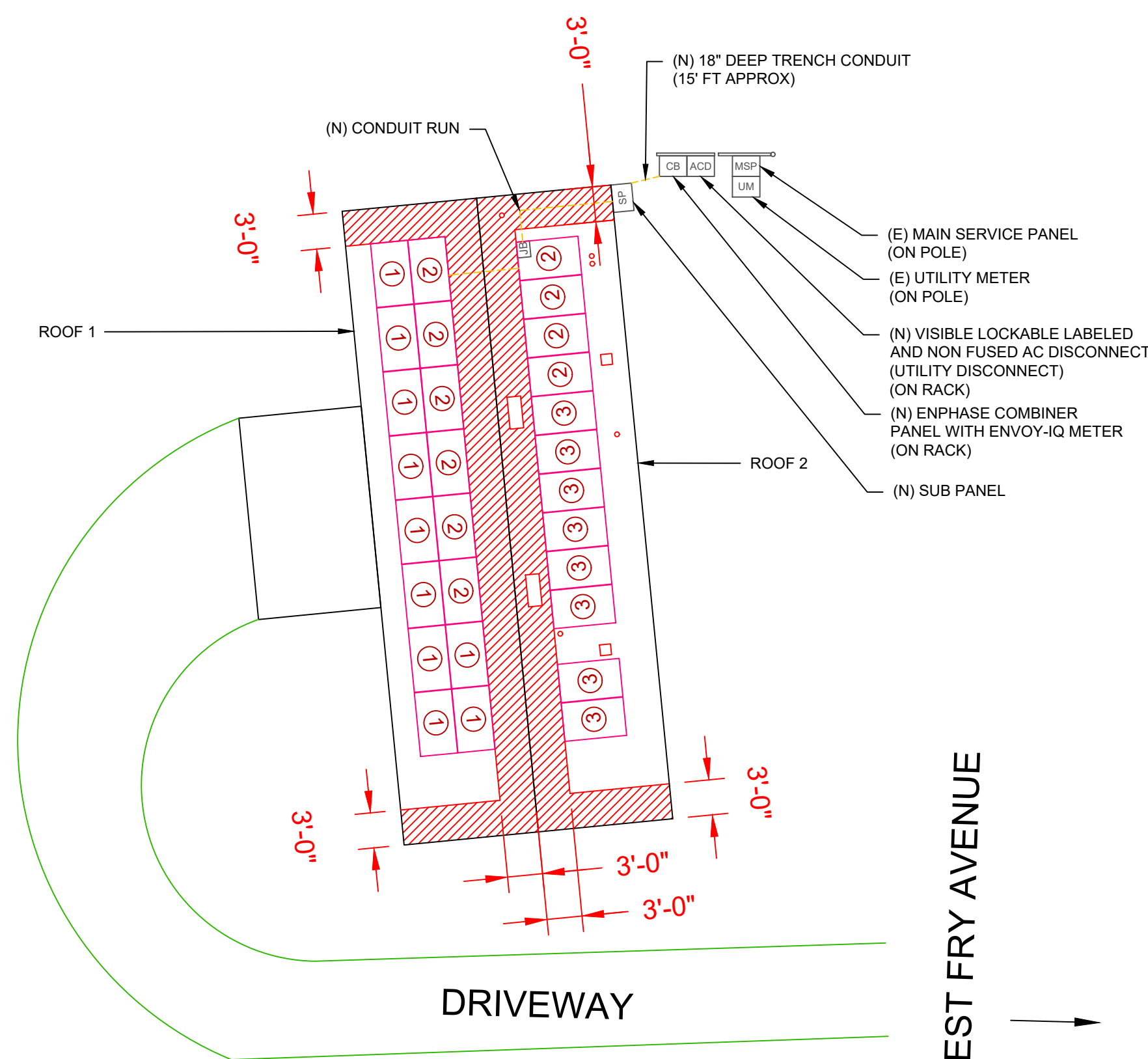
DRIVEWAY



1 | SITE PLAN  
SCALE:3/32" = 1'-0"



1 | ELECTRICAL PLAN  
SCALE: 3/32" = 1'-0"



ROOF SECTION(S)

|        |                                                                       |
|--------|-----------------------------------------------------------------------|
| ROOF 1 | TILT - 14°<br>AZIMUTH - 264°<br>MODULE - 16<br>SYSTEM SIZE (KW)- 6.00 |
| ROOF 2 | TILT - 14°<br>AZIMUTH - 84°<br>MODULE - 12<br>SYSTEM SIZE (KW)- 4.50  |

- ① - MODULE STRING
- ② - MODULE STRING
- ③ - MODULE STRING

| LEGEND |                                      |
|--------|--------------------------------------|
|        | - FIRE SETBACK                       |
|        | - PROPERTY LINE                      |
|        | - 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

JORGE PRIETO

**597 SOUTHWEST FRY AVENUE, FORT WHITE, FL 32038**

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

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

SHEET TITLE

**ELECTRICAL PLAN**

|            |            |
|------------|------------|
| DRAWN DATE | 10/18/2021 |
| DRAWN BY   | VVP        |

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.

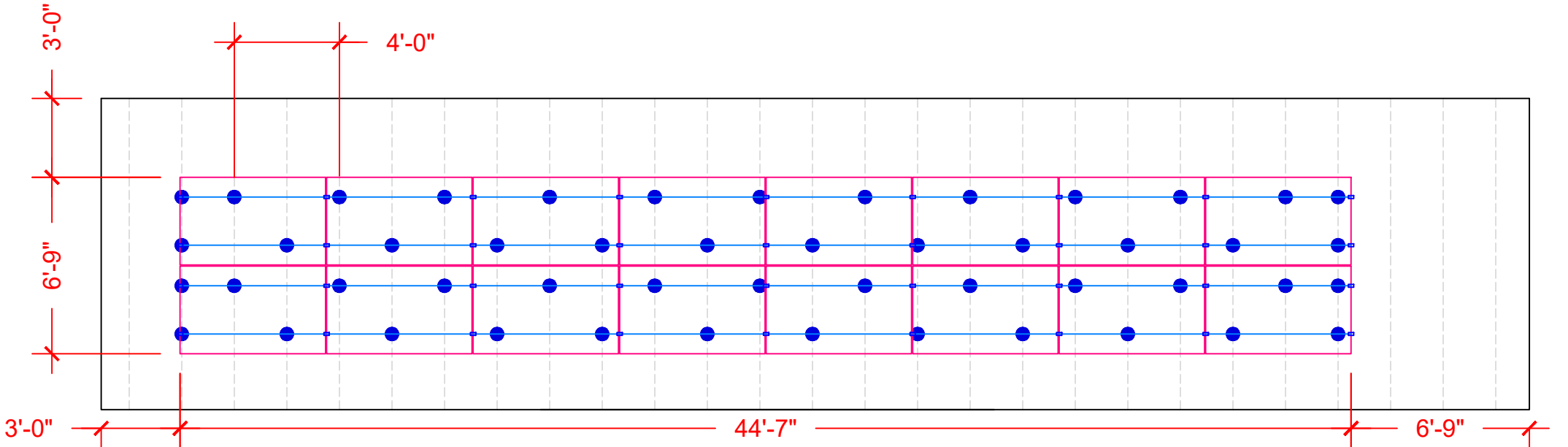
Note 3: These drawings were prepared under my supervision. I have researched the code and to the best of my knowledge And belief, these drawings comply with the 2020 Florida Building Code.

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

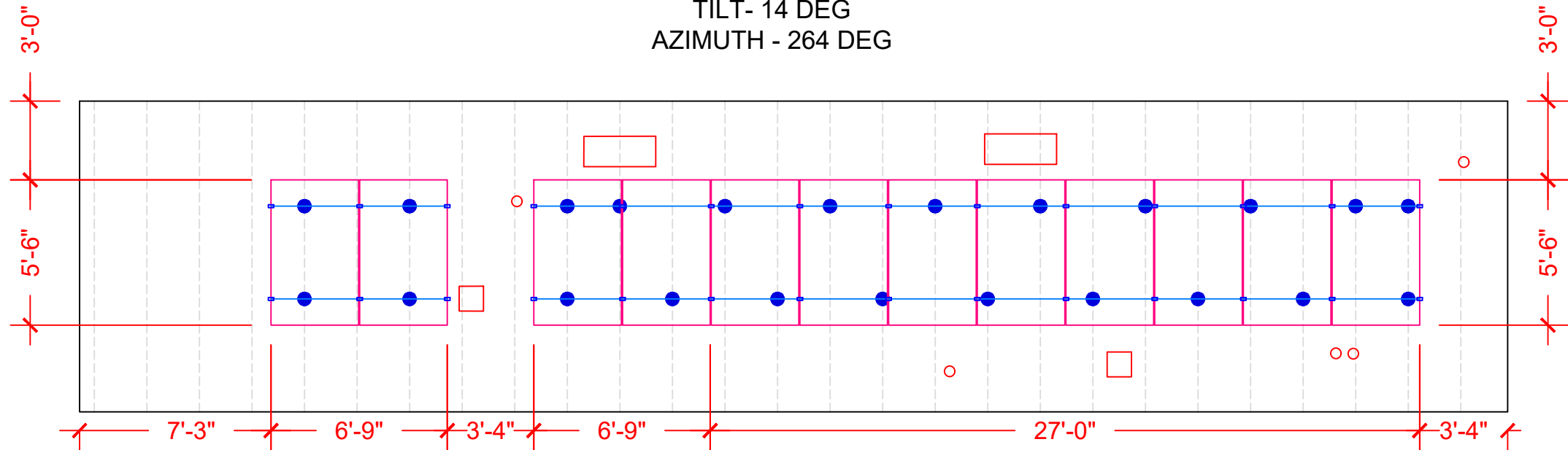
- CLAMP
- URINAC FLASHLOC
- RAIL

73

- TOTAL MOUNT



ARRAY 1  
TILT- 14 DEG  
AZIMUTH - 264 DEG



ARRAY 2  
TILT- 14 DEG  
AZIMUTH - 84 DEG

1 | ATTACHMENT PLAN

SCALE:3/16"=1'-0"

CONTRACTOR

22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

JORGE PRIETO

597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

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985.624.5001  
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FLORIDA FIRM NO. 30649

SHEET TITLE

ATTACHMENT PLAN

DRAWN DATE

10/18/2021

DRAWN BY

VVP

SHEET NUMBER

A-103

| 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 41.02"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                                |

| WIRE /CONDUIT SCHEDULE |                                                                          |
|------------------------|--------------------------------------------------------------------------|
| TAG                    | DESCRIPTION                                                              |
| 1                      | #12/2 ROMEX IN ATTIC/#12 THWN-2 ON EXTERIOR & (1)#6 THWN -2 / (GN)       |
| 2                      | #6 THWN-2 & (1)#6 THWN-2 GROUND / (GN) (IN TRENCH 18" DEEP, 15' APPROX.) |
| 3                      | #6 THWN-2 & (1)#6 THWN-2 GROUND / (GN)                                   |
| 4                      | (1)#6 BARE GROUND                                                        |

DC SIZE 28 X 375W = 10.500 kW DC-STC  
AC SIZE 28X 290W = 8.120 kW AC

(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

SUNPRO

22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

JORGE PRIETO

597 SOUTHWEST FRY AVENUE, FORT WHITE, FL 32038

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE  
DC SIZE: 10.500 kW DC-(STC)  
AC SIZE: 8.120 kW AC

ENGINEER:

NESTOR J. HOUGHTON

LICENSE

No. 64501

STATE OF FLORIDA

PROFESSIONAL ENGINEER

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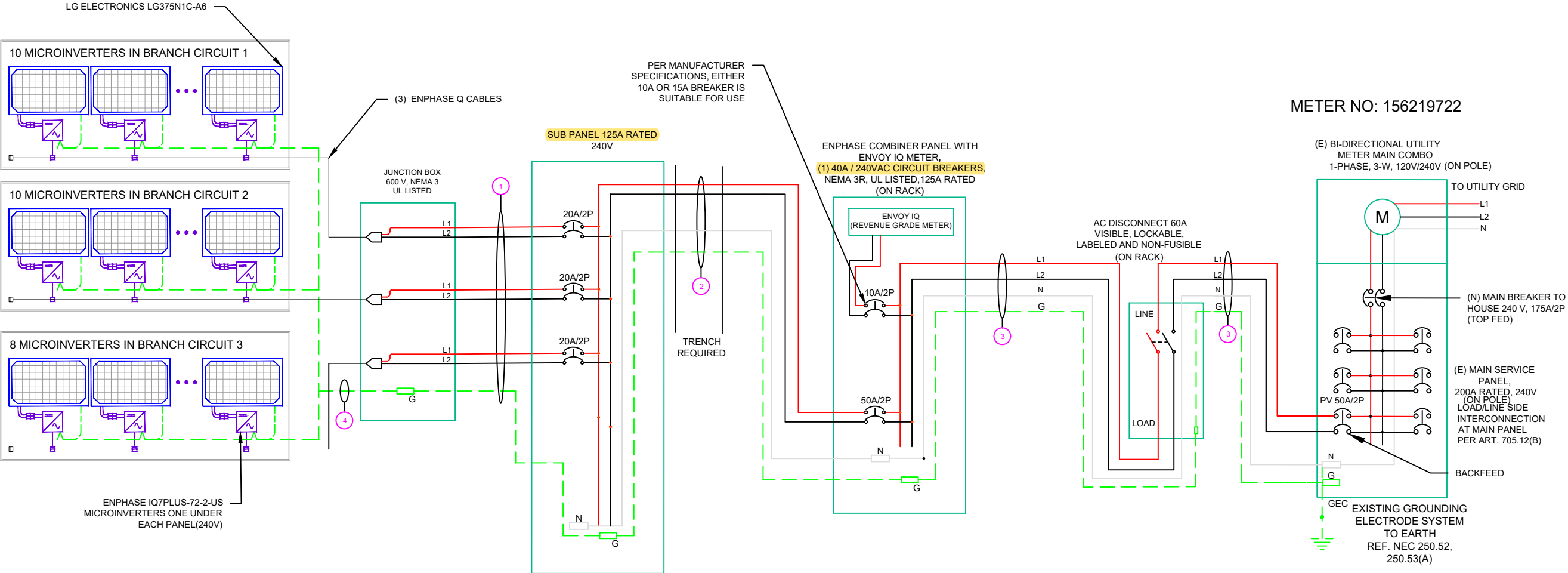
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FLORIDA FIRM NO. 30649

SHEET TITLE  
LINE DIAGRAM

|            |            |
|------------|------------|
| DRAWN DATE | 10/18/2021 |
| DRAWN BY   | VVP        |

SHEET NUMBER  
E-601



DOWNSIZE THE MAIN BREAKER TO A 175A MAIN BREAKER

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



| 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)  
= [(10 x 1.21) x 1.25] / [0.96 x 0.8]  
= 19.69A  
SELECTED CONDUCTOR - #12 THWN-2 ...NEC 310.15(B)(16)

(B) AFTER PV DEDICATED SUB 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)  
= [(28 x 1.21) x 1.25] / [0.96 x 1]  
= 44.11 A  
SELECTED CONDUCTOR - #6 THWN-2 ...NEC 310.15(B)(16)

2. PV OVER CURRENT PROTECTION

...NEC 690.9(D)  
= TOTAL INVERTER O/P CURRENT x 1.25  
= (28 x 1.21) x 1.25 = 42.35 A  
SELECTED OCPD = 50 A ...NEC 240.6

3. 120% RULE FOR BACKFEED BREAKER

...NEC 705.12(B)(2)(3)(b)  
MCB + PV BREAKER <= (1.2 x BUS BAR  
RATING RATING RATING)  
(175 + 50) <= 1.2 x 200A  
225.00 <= 240.00 HENCE OK

4. VOLTAGE DROP CALCULATION

VOLTAGE DROP= (0.2 x LENGTH OF CONDUCTOR x  
CURRENT x RESISTANCE IN CONDUCTOR) / 240  
= (0.2 x 15 x 33.88 x 0.69 ( FOR #6 AWG WIRE) ) / 240  
= 0.29%

VOLTAGE DROP IS WITHIN PERMISSIBLE LIMIT OF  
3%.HENCE OK

CONTRACTOR

SUNPRO

22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

JORGE PRIETO  
  
597 SOUTHWEST FRY AVENUE, FORT WHITE, FL 32038  
COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:



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FLORIDA FIRM NO. 30649

SHEET TITLE

ELECTRICAL CALCULATIONS

DRAWN DATE

10/18/2021

DRAWN BY

VVP

SHEET NUMBER

E-602

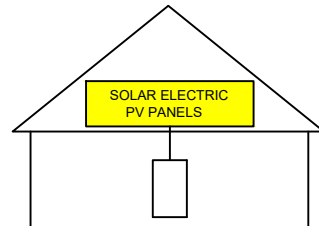
**WARNING: PHOTOVOLTAIC  
POWER SOURCE**

**AC COMBINER BOX**

**WARNING**  
**INVERTER OUTPUT CONNECTION**  
DO NOT RELOCATE THIS  
OVERCURRENT DEVICE

**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



**PHOTOVOLTAIC  
MICROINVERTERS  
LOCATED UNDER  
EACH PV MODULE IN  
ROOFTOP ARRAY**

**PHOTOVOLTAIC SYSTEM  
EQUIPPED WITH  
RAPID SHUTDOWN**

RATED AC OUTPUT CURRENT: \_\_\_\_  
NOM. OPERATING VOLTAGE: \_\_\_\_

**AC DISCONNECT**

**WARNING**  
**ELECTRIC SHOCK HAZARD**  
DO NOT TOUCH TERMINALS.  
TERMINALS ON BOTH LINE AND  
LOAD SIDES  
MAY BE ENERGIZED IN THE  
OPEN POSITION

**PHOTOVOLTAIC SYSTEM  
AC DISCONNECT**  
OPERATING VOLTAGE: \_\_\_\_ VOLTS  
OPERATING CURRENT: \_\_\_\_ AMPS

**SOLAR  
BREAKER**

**FT ←**

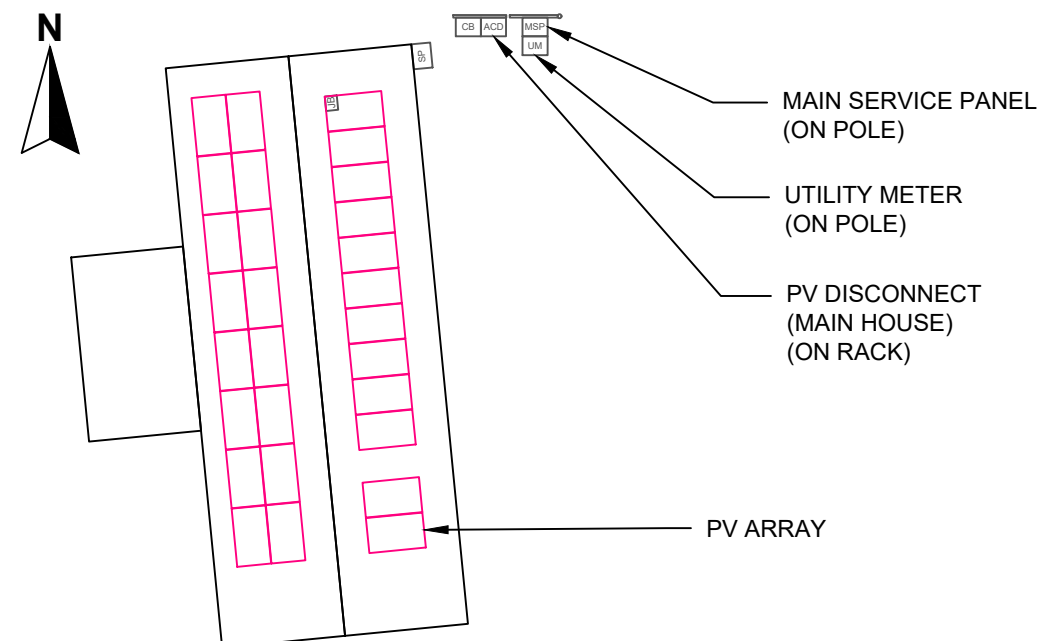
**→ FT**

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

\_\_\_\_ KW SOLAR  
DISCONNECT LOCATED

**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

JORGE PRIETO

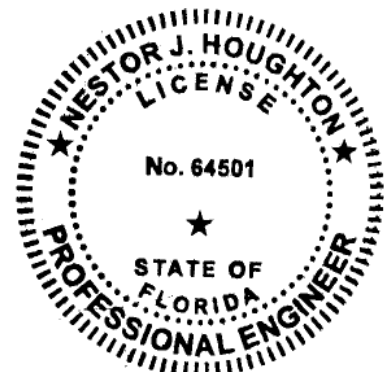
**597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038**

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:



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

SHEET TITLE

**PLACARD**

DRAWN DATE 10/18/2021

DRAWN BY VVP

SHEET NUMBER

**E-603**

Residential Optional Calculation

9/25/1997

Job Name

by: John Bakalik

Version 2011 L

Marc Jones Construction, LLC Sunpro Solar

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

10/18/2021 8:29

STEP 2 Article 220.82 (C)

A/C Condenser & Fixed Electric Space Heating

General lighting, Sm. Appl. & Laundry 12,300 VA

Total 1

Heating Load 7,440 VA

CU Load 8,330 VA

Electric Space Heat @ 65% <4, 40% >3, vs. A/C @ 100% 8,330 VA

Appliance Demand Load 7,740 VA

Dryer Demand Load 5,000 VA

Range Demand Load 10,000 VA

Service Demand 28,346 VA

Demand Load 118 A

Neutral Demand 70 A

Min.Service Req. 125 A

Min. Feeder size 2

Min. Neutral size 4

Eq. Grding Cond. 6

Copper

Total Appliance Load 7,740 VA

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 Dishwasher VA

690 VA Disposal VA

400 VA R / Hood VA

1,630 VA Microwave 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 hp Well Pump 1,840 VA

select Fountain Pump VA

select Elevator VA

Pool Equip. Panel 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

jmp1ids@comcast.net

Pool Panel Feeder Calculation (See Note)

Continuous Motors 0

Non-continuous 0

Spa heater 11 kVA

Pool heater 3.5 ton

Pool heater 5 ton

Pool Light select

Blower select

other load

other load

Min.Copper Pool Feeder

Minimum Panel Rating

AWG

Phase Amperes

Neut. load

Continuous Motors

Non-continuous Motors

0.0 Motor Neutral Load

Max.Unbalanced Neutral Load



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

JORGE PRIETO

597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

SHEET TITLE

LOAD CALCULATION

DRAWN DATE 10/18/2021

DRAWN BY VVP

SHEET NUMBER

E-604



# LG NeON<sup>®</sup>2

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

370W | 375W | 380W

The LG NeON<sup>®</sup> 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.



## Features



### Enhanced Performance Warranty

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



### 25-Year Limited Product Warranty

The NeON<sup>®</sup> 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<sup>®</sup> 2 performs well on hot days due to its low temperature coefficient.



### Roof Aesthetics

LG NeON<sup>®</sup> 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 Mono<sup>®</sup> series to the market, which is now available in 32 countries. The NeON<sup>®</sup> (previous Mono<sup>®</sup> NeON), NeON<sup>®</sup>2, NeON<sup>®</sup>2 Bifacial won the "Intersolar AWARD" in 2013, 2015 and 2016, which demonstrates LG's leadership and innovation in the solar industry.



# LG NeON<sup>®</sup>2

LG370N1C-A6 | LG375N1C-A6 | LG380N1C-A6

## 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<br>ISO 9001, ISO 14001, ISO 50001<br>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: 1<sup>st</sup> year 98.5%, from 2<sup>nd</sup> 24th year: 0.33%/year down, 90.6% at year 25

\*\*In Progress

## Temperature Characteristics

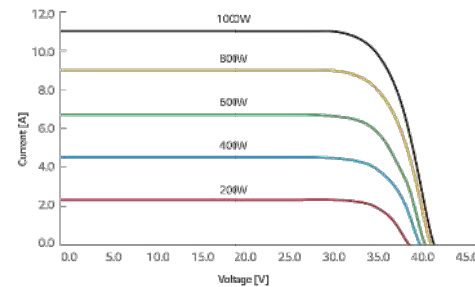
|                  |        |        |
|------------------|--------|--------|
| NMOT*            | [°C]   | 42 ± 3 |
| P <sub>max</sub> | [%/°C] | -0.34  |
| V <sub>oc</sub>  | [%/°C] | -0.26  |
| I <sub>sc</sub>  | [%/°C] | 0.03   |

\*NMOT (Nominal Module Operating Temperature): Irradiance 800 W/m<sup>2</sup>, 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



LG Electronics USA, Inc.  
Solar Business Division  
2080 Millbrook Drive  
Lincolnshire, IL 60069  
www.lg-solar.com

Product specifications are subject to change without notice.  
LG370-380N1C-A6\_AUS.pdf  
121520

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Preliminary

## Electrical Properties (STC\*)

|                                                |     |             |             |             |
|------------------------------------------------|-----|-------------|-------------|-------------|
| Model                                          |     | LG370N1C-A6 | LG375N1C-A6 | LG380N1C-A6 |
| Maximum Power (P <sub>max</sub> )              | [W] | 370         | 375         | 380         |
| MPP Voltage (V <sub>mpp</sub> )                | [V] | 34.9        | 35.3        | 35.7        |
| MPP Current (I <sub>mpp</sub> )                | [A] | 10.61       | 10.63       | 10.65       |
| Open Circuit Voltage (V <sub>oc</sub> , ± 5%)  | [V] | 41.7        | 41.8        | 41.9        |
| Short Circuit Current (I <sub>sc</sub> , ± 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/m<sup>2</sup>, 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     |

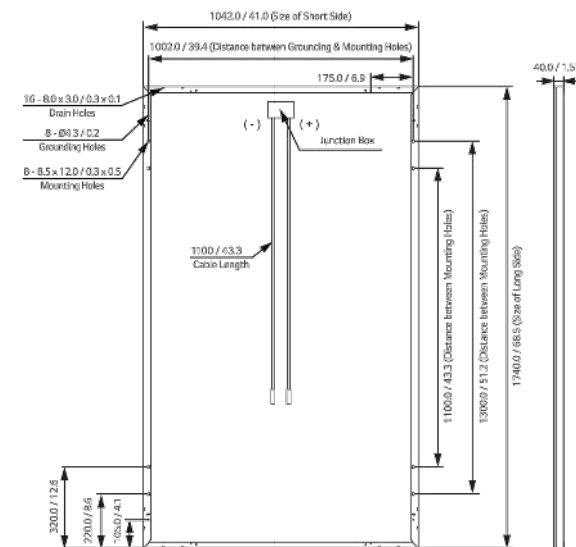
\*Based on IEC 61215-2:2016 (Test Load = Design Load x Safety Factor (1.5))

Mechanical Test Loads 6,000Pa / 5,400PsF based on IEC 61215-2:2005

## Packaging Configuration

|                                      |      |                       |
|--------------------------------------|------|-----------------------|
| Number of Modules per Pallet         | [EA] | 25                    |
| Number of Modules per 40' Container  | [LA] | 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)



## CONTRACTOR

# SUNPRO

22171 MCH RD  
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

JORGE PRIETO

**597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038**

COUNTY:-COLUMBIA COUNTY

## SYSTEM SIZE

DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

SHEET TITLE  
**RESOURCE  
DOCUMENT**

DRAWN DATE 10/18/2021

DRAWN BY VVP

SHEET NUMBER

**R-001**



## 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](https://enphase.com)



## Enphase IQ 7 and IQ 7+ Microinverters

| INPUT DATA (DC)                              | IQ7-60-2-US                                                                                                               |                      | IQ7PLUS-72-2-US                |                      |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------|----------------------|
| Commonly used module pairings <sup>1</sup>   | 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 <sup>2</sup>     | 240 V /<br>211-264 V                                                                                                      | 208 V /<br>183-229 V | 240 V /<br>211-264 V           | 208 V /<br>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* | 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. 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](https://enphase.com)

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2019-3-26



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PHONE: 9152011490

PROJECT NAME & ADDRESS

JORGE PRIETO

**597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038**

COUNTY:-COLUMBIA COUNTY

### SYSTEM SIZE

DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

## SHEET TITLE RESOURCE DOCUMENT

|            |            |
|------------|------------|
| DRAWN DATE | 10/18/2021 |
| DRAWN BY   | VVP        |

SHEET NUMBER

**R-002**



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



To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)



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                                                                                                             | Split core current transformers enable whole home consumption metering (+/- 2.5%).                                                                                                                                                                                                                             |
| * Consumption monitoring is required for Enphase Storage Systems                                                                                       |                                                                                                                                                                                                                                                                                                                |
| 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](https://enphase.com)

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CONTRACTOR  
**SUNPRO**

22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

JORGE PRIETO  
  
**597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038**  
  
COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE  
DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

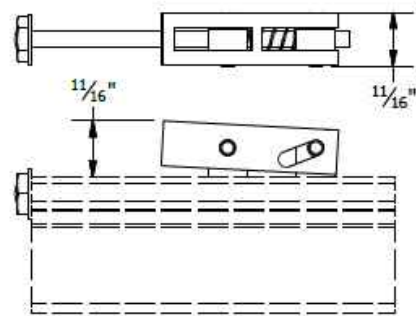
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**RESOURCE  
DOCUMENT**

|            |            |
|------------|------------|
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| DRAWN BY   | VVP        |

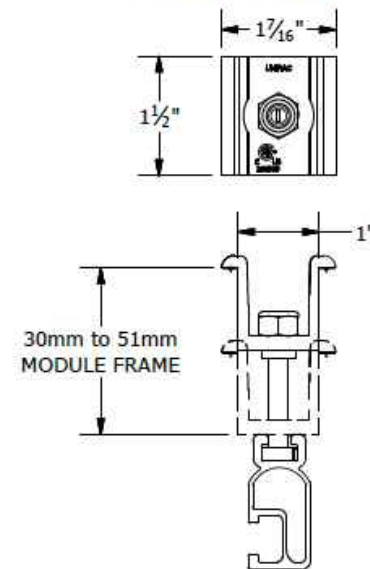
SHEET NUMBER  
**R-003**



PRO SERIES END CLAMP

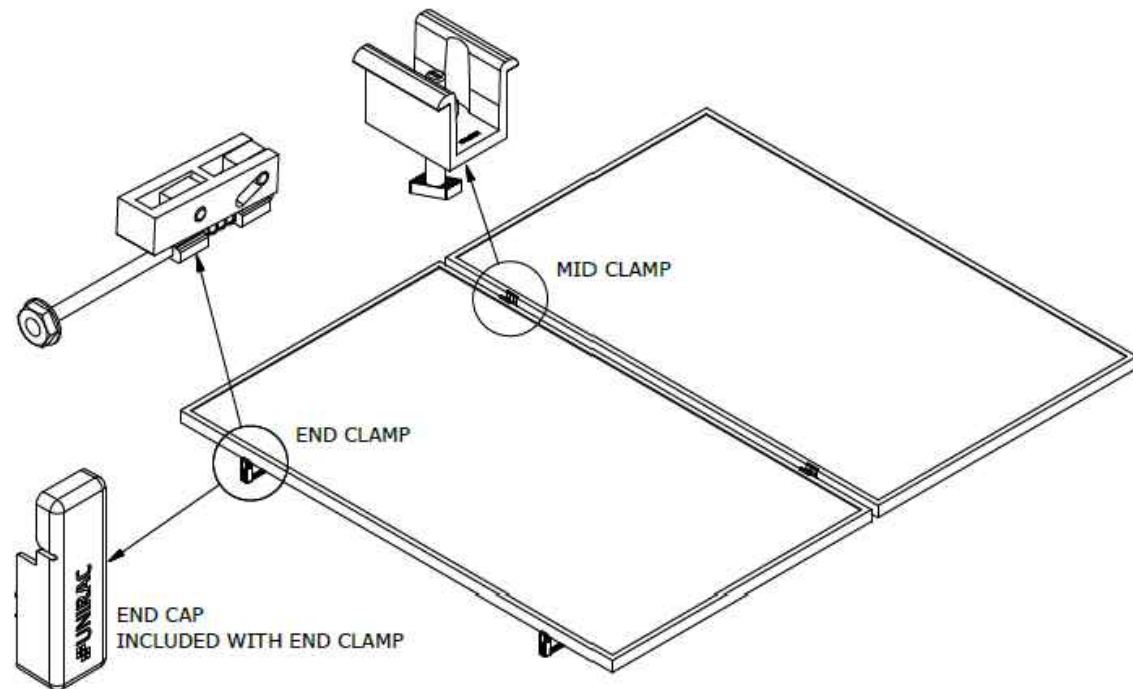


PRO SERIES MID CLAMP



PART # TABLE

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



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

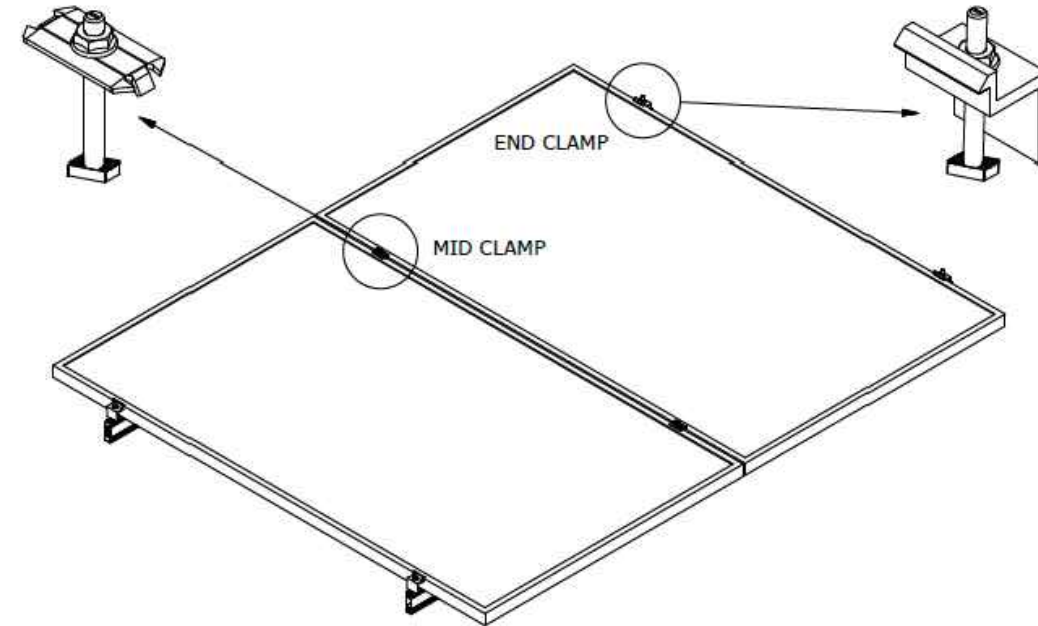
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ONE OR MORE US PATENTS  
LEGAL NOTICE

SM-A01

SHEET

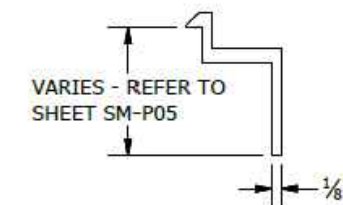
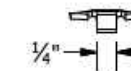
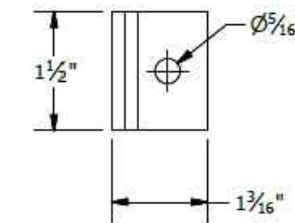
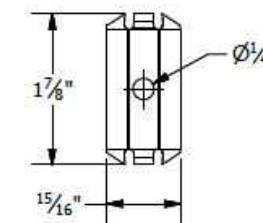
END CLAMP

MID CLAMP



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<br>REFER TO SHEET SM-P05 |



BONDING SM MID CLAMP

BONDING SM END CLAMP



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PHONE: 505.242.6411  
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|                |                    |
|----------------|--------------------|
| 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

JORGE PRIETO

**597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038**

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

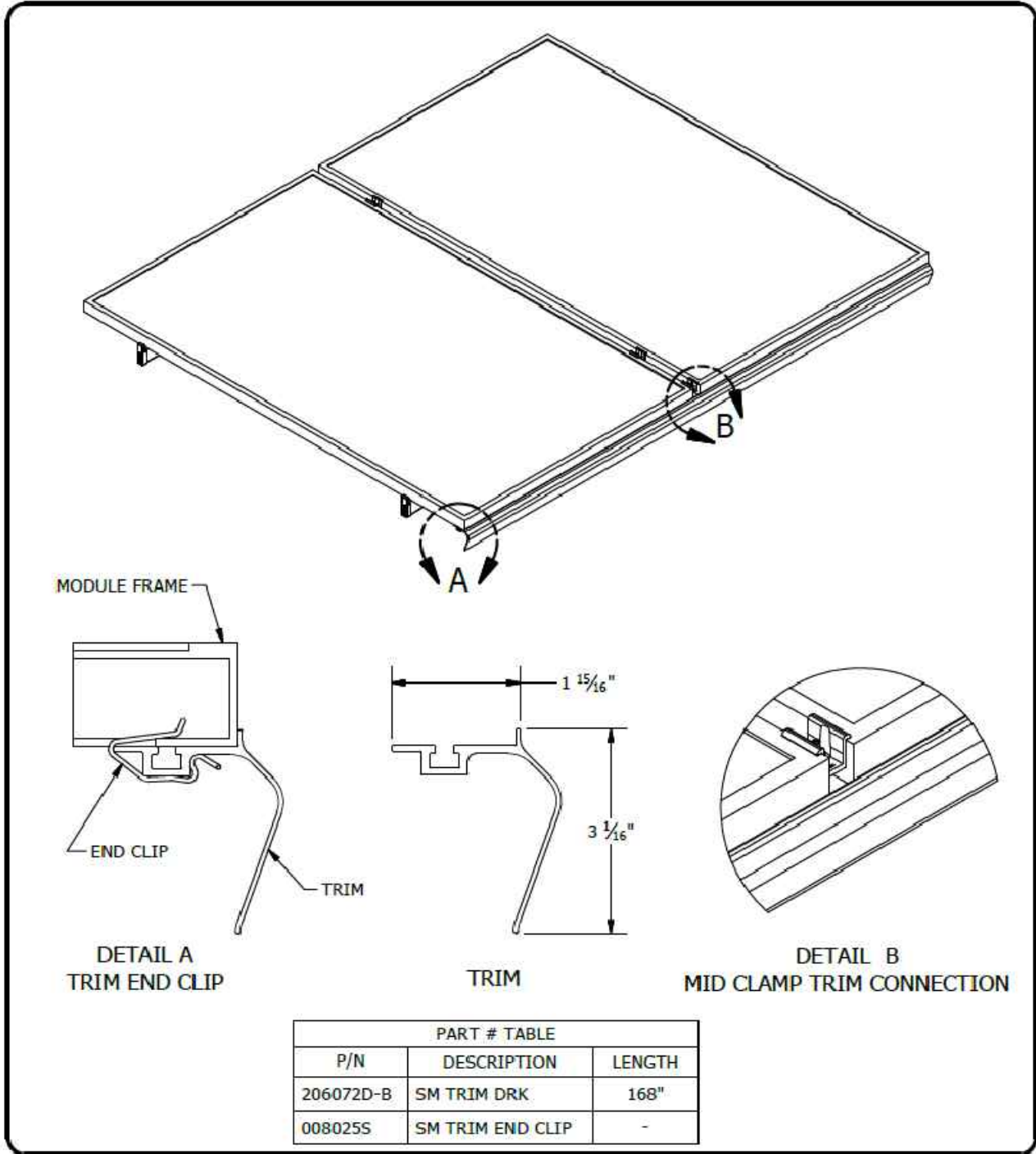
SHEET TITLE  
**RESOURCE  
DOCUMENT**

DRAWN DATE 10/18/2021

DRAWN BY VVP

SHEET NUMBER

**R-004**



1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
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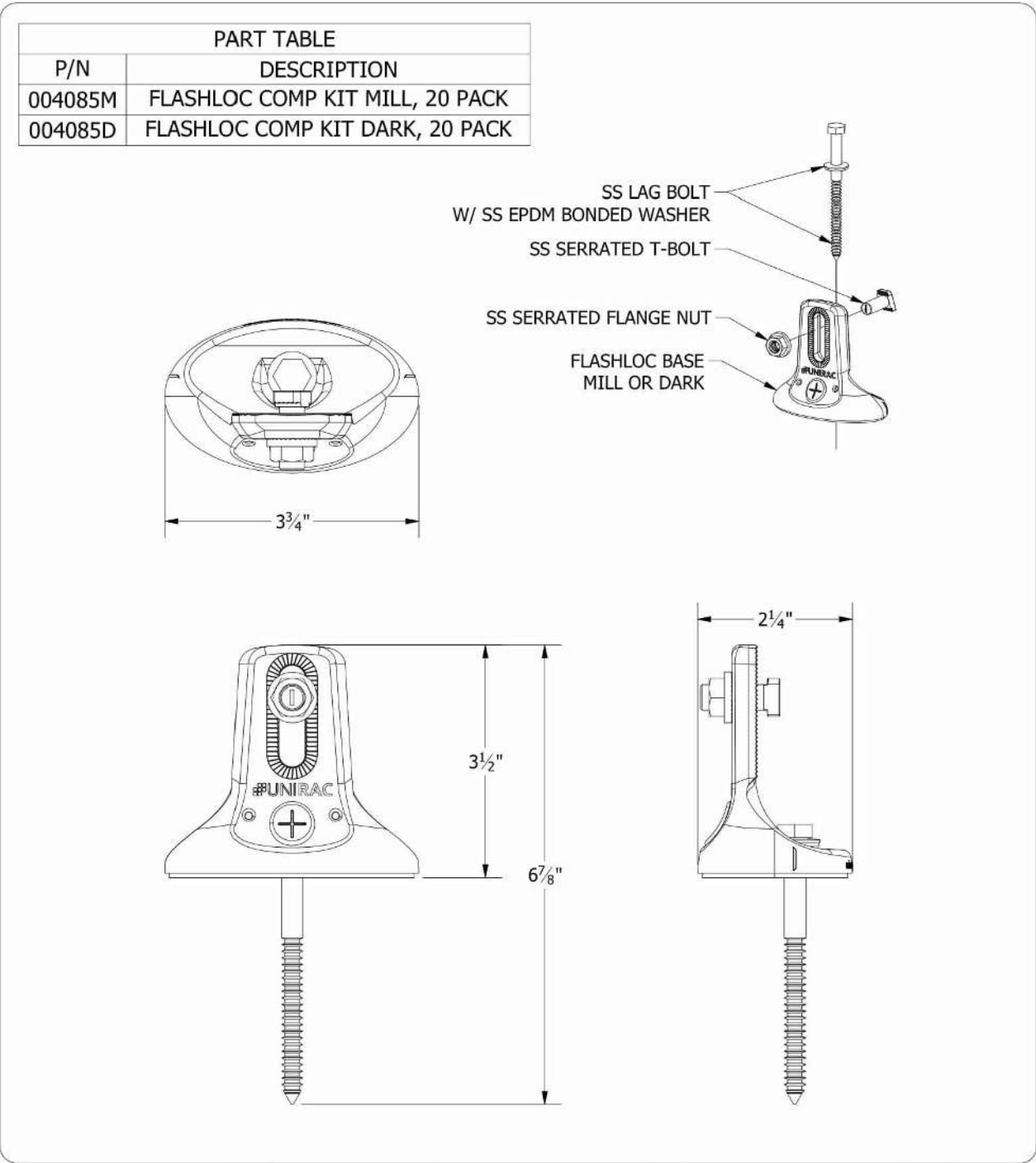
|                |                  |
|----------------|------------------|
| PRODUCT LINE:  | SOLARMOUNT       |
| DRAWING TYPE:  | PART & ASSEMBLY  |
| DESCRIPTION:   | SM TRIM END CLIP |
| REVISION DATE: | 9/27/2017        |

DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE  
NOMINAL

PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS

LEGAL NOTICE

SM-A02  
SHEET



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PHONE: 505.242.6411  
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|                |                   |
|----------------|-------------------|
| 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

22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

JORGE PRIETO

597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

SHEET TITLE

RESOURCE  
DOCUMENT

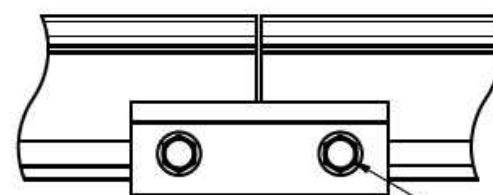
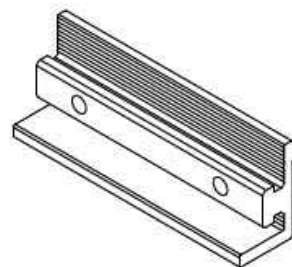
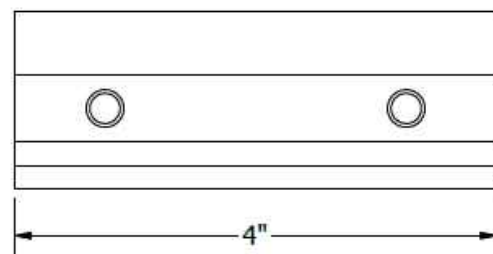
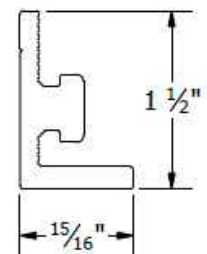
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|------------|------------|
| DRAWN DATE | 10/18/2021 |
| DRAWN BY   | VVP        |

SHEET NUMBER

R-005

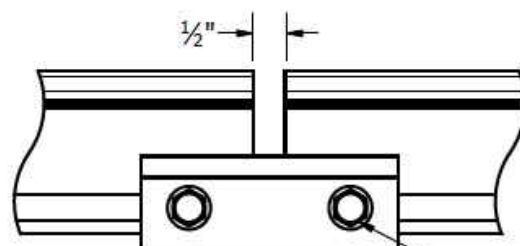


# BONDING SPLICE BAR



TYPICAL SPLICE BAR DETAIL

5/16"-18 TYPE F THREAD CUTTING SCREWS INCLUDED



TYPICAL EXPANSION JOINT DETAIL

NOTE THAT ONLY 2 SCREWS ARE USED AT AN EXPANSION JOINT. THE SPLICE BAR DOES NOT BOND ACROSS AN EXPANSION JOINT. SEE INSTALLATION GUIDE FOR INSTRUCTION.

PART # TABLE

| P/N     | DESCRIPTION                    |
|---------|--------------------------------|
| 303019M | BND SPLICE BAR PRO SERIES MILL |
| 303019D | BND SPLICE BAR PRO SERIES DRK  |



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

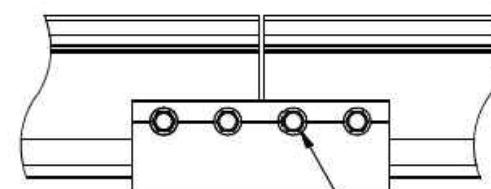
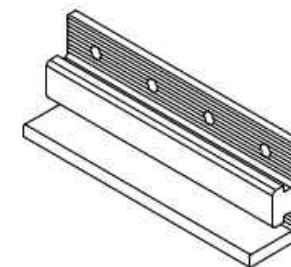
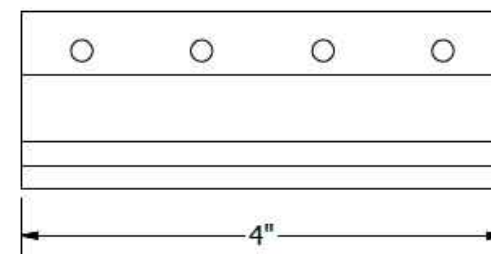
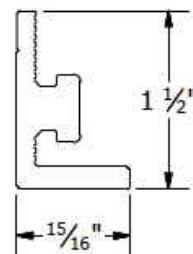
DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE  
NOMINAL

PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS  
LEGAL NOTICE

SM-A05

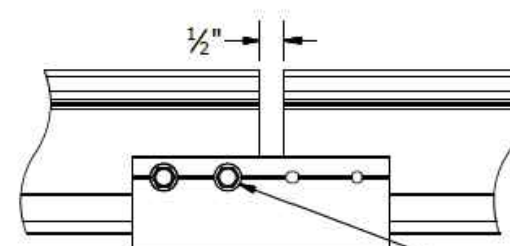
SHEET

# BONDING SPLICE BAR



TYPICAL SPLICE BAR DETAIL

#12 X 3/4" SELF DRILLING SS SCREWS INCLUDED



TYPICAL EXPANSION JOINT DETAIL

NOTE THAT ONLY 2 SCREWS ARE USED AT AN EXPANSION JOINT. THE SPLICE BAR DOES NOT BOND ACROSS AN EXPANSION JOINT. SEE INSTALLATION GUIDE FOR INSTRUCTION.

PART # TABLE

| P/N     | DESCRIPTION                 |
|---------|-----------------------------|
| 303018C | BND SPLICE BAR SERRATED CLR |
| 303018D | BND SPLICE BAR SERRATED DRK |



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|                |                    |
|----------------|--------------------|
| 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

JORGE PRIETO

**597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038**

COUNTY:-COLUMBIA COUNTY

## SYSTEM SIZE

DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

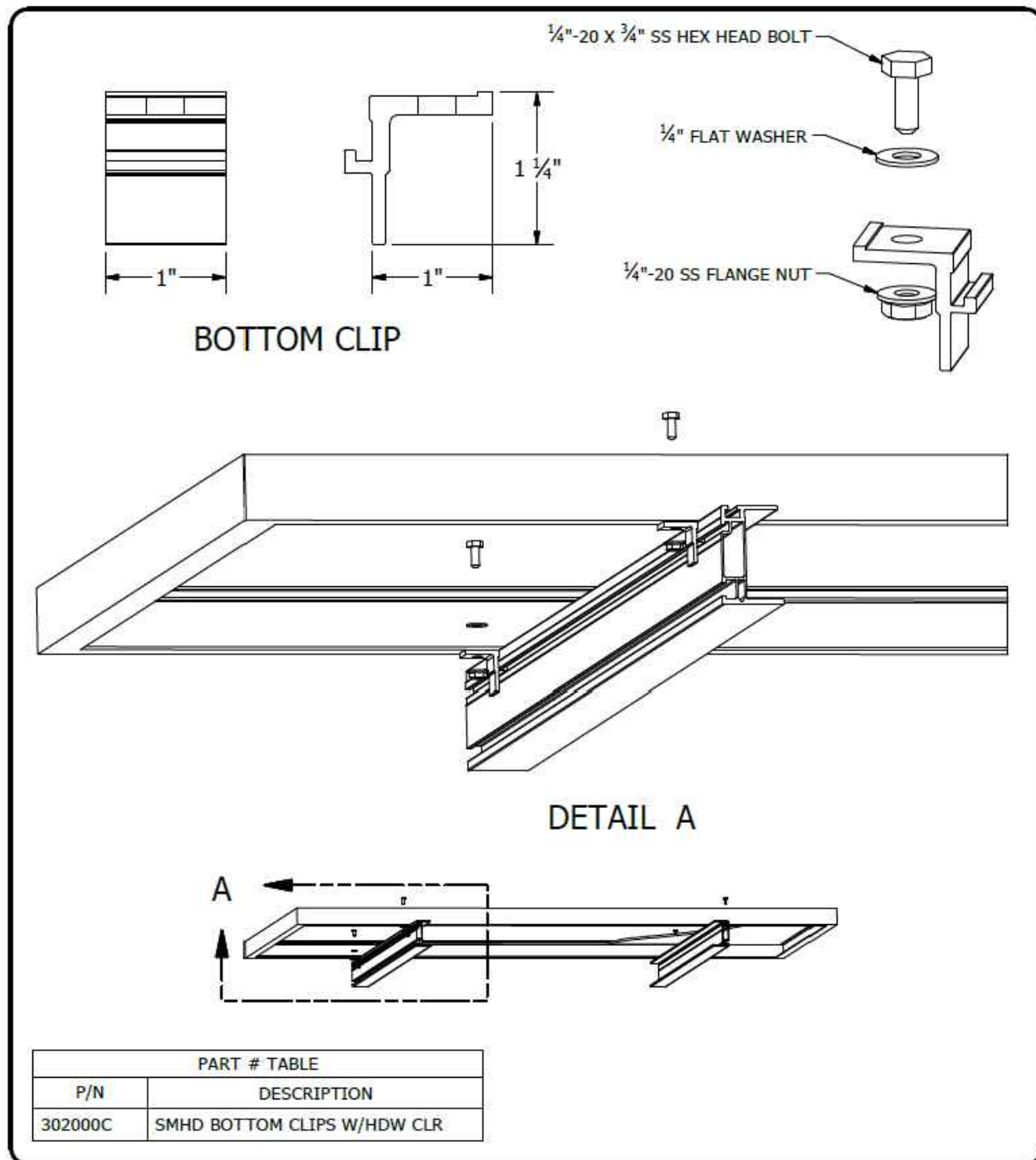
SHEET TITLE  
**RESOURCE  
DOCUMENT**

DRAWN DATE 10/18/2021

DRAWN BY VVP

SHEET NUMBER

**R-006**



1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
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|                |                 |
|----------------|-----------------|
| PRODUCT LINE:  | SOLARMOUNT HD   |
| DRAWING TYPE:  | PART & ASSEMBLY |
| DESCRIPTION:   | BOTTOM CLIP     |
| REVISION DATE: | 9/27/2017       |

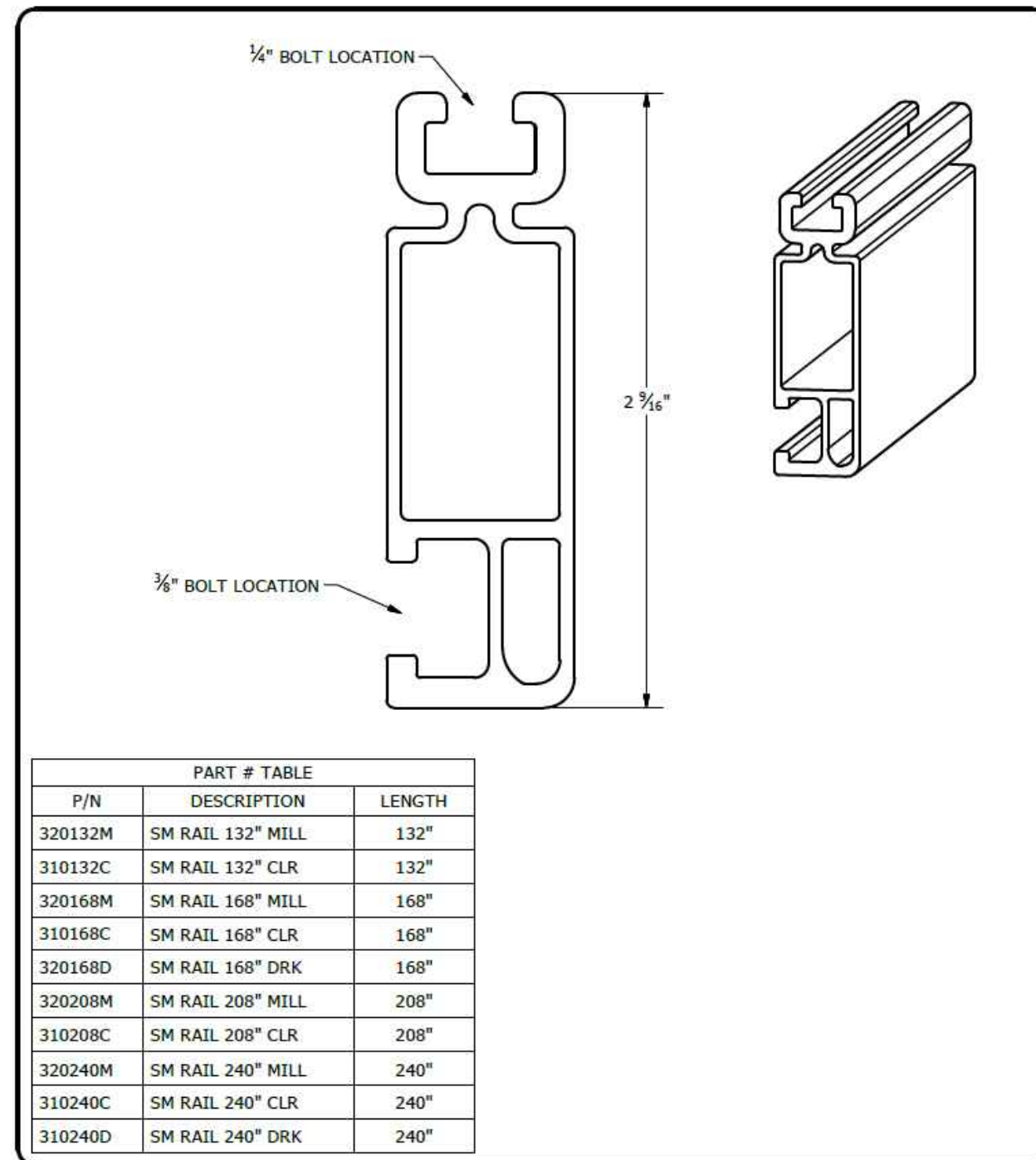
DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE  
NOMINAL

PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS

LEGAL NOTICE

**SM-A10**

SHEET



1411 BROADWAY BLVD. NE  
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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

22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

JORGE PRIETO

**597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038**

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE  
DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

SHEET TITLE

**RESOURCE  
DOCUMENT**

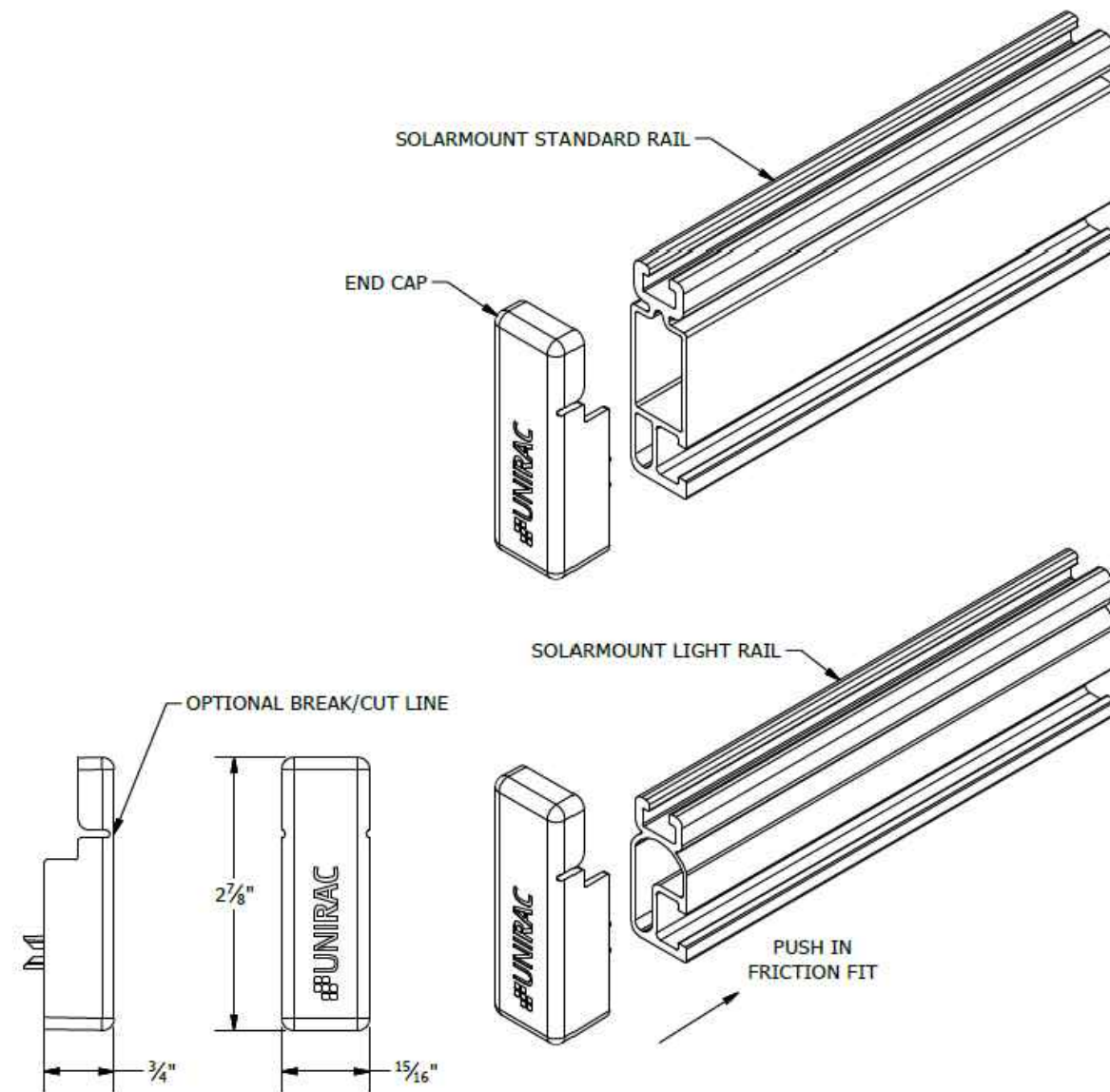
|            |            |
|------------|------------|
| DRAWN DATE | 10/18/2021 |
| DRAWN BY   | VVP        |

SHEET NUMBER

**R-007**



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

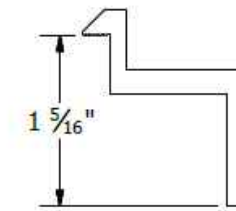


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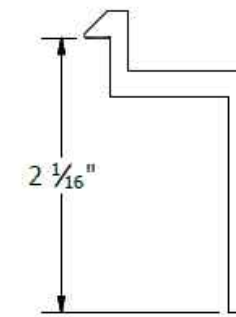
PRODUCT LINE: SOLARMOUNT  
DRAWING TYPE: PART DETAIL  
DESCRIPTION: END CAPS  
REVISION DATE: 9/27/2017

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

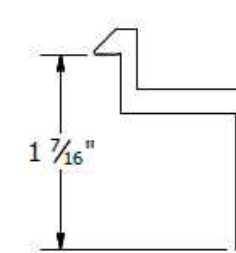
**SM-P04**  
SHEET



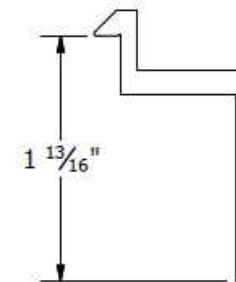
**B CLAMP**  
30mm to 32mm Module Thickness  
(1.18" to 1.26")



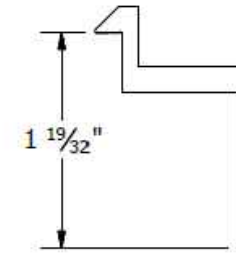
**E CLAMP**  
50mm to 51mm Module Thickness  
(1.97" to 2.00")



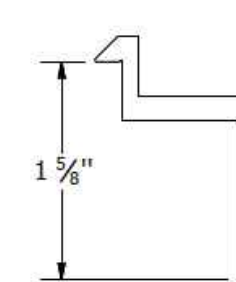
**C CLAMP**  
33mm to 36mm Module Thickness  
(1.30" to 1.42")



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

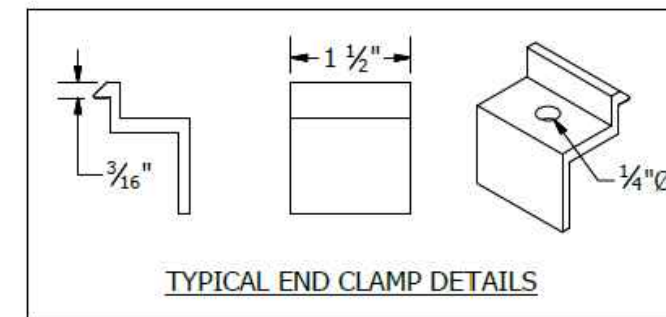


**D CLAMP**  
38mm to 40mm Module Thickness  
(1.50" to 1.57")



**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 |



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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

JORGE PRIETO

**597 SOUTHWEST FRY  
AVENUE, FORT WHITE,  
FL 32038**

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE  
DC SIZE: 10.500 KW DC-(STC)  
AC SIZE: 8.120 KW AC

ENGINEER:

SHEET TITLE  
**RESOURCE  
DOCUMENT**

DRAWN DATE 10/18/2021  
DRAWN BY VVP

SHEET NUMBER  
**R-008**