PRINCIPAL Engineering

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

December 2021

Property Owner: William Bradley

Property Address: 635 Southwest Grape Street, Lake City, FL 32024

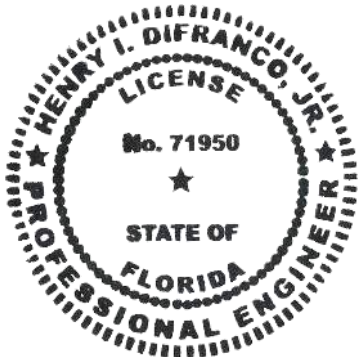
RE: Goundmount Installation

I have reviewed the address referenced above to determine the adequacy of the existing area supports the proposed installation of an array of solar panels in the ground.

The photovoltaic ground mount structure offered by Unirac is found to be of sufficient capacity for the design loads when installed in accordance with the drawings and calculations attached, and manufacturer's instructions. The foundation shall be installed as marked on the drawings to the depth specified in the drawing table. To the best of my professional knowledge and belief, the product and system installation will be in compliance with all state and local building codes and guidelines at the time of our review.

Evaluation Criteria:

Windspeed: 115
Applied Codes: ASCE 7-10 FBC 2020 NEC 2017
Risk Category: II
Wind Exposure Category: C
Ground Snow Load: PSF
Footing Depth: 36"
Row Spacing: 10'-6"



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Connection of Array to Ground:

Manufacturer: UNIRAC
Model: ULA (Unirac Large Array)
Foundation Type: Drilled Cast-In-Hole Concrete Pile

Limitations

Unirac's ground mount system is to be installed per manufacturer's specifications and in accordance with accepted industry-wide safety standards. Electrical engineering is beyond our scope of the installation.

PRINCIPAL ENGINEERING, INC.
1011 N. CAUSEWAY BLVD. STE 19
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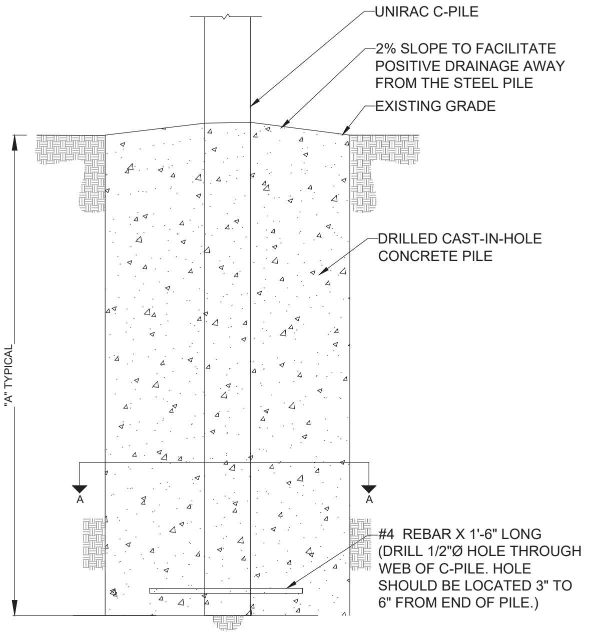
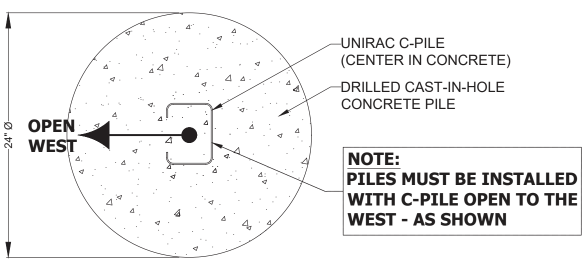
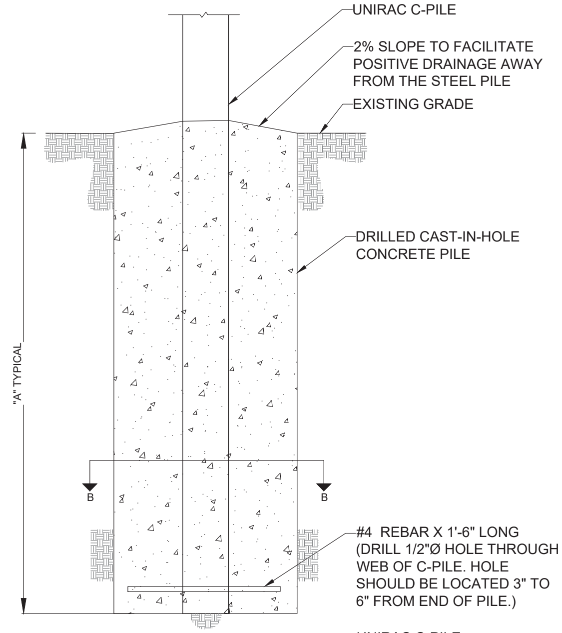
FLORIDA FIRM NO. 30649

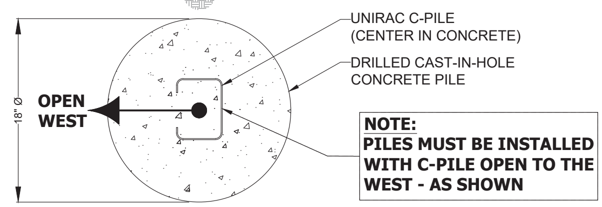




SECTION A-A
TOP VIEW

20 OR 30 DEGREE UNIRAC STEEL C-PILE FOUNDATION DEPTHS (REFER TO SHEET SR-200 OR SR-300 FOR PILE STICK-UP HEIGHT) (c)				
FOUNDATION TYPE	DETAIL NUMBER	NO FROST DEPTH	FROST DEPTH = 3.5 FT OR LESS	FROST DEPTH = 5.0 FT
		DIMENSION "A"	DIMENSION "A"	DIMENSION "A"
24" FULL CAST IN-PLACE CONCRETE	400	6'-0" (a)	6'-0" (a)	8'-0"
18" FULL CAST IN-PLACE CONCRETE	400	7'-0"	7'-0"	8'-0"
(a) FOR 20 DEGREE DESIGNS THE 6'-0" EMBEDMENT REQUIRES CUTTING 24" OFF OF THE BOTTOM OF A 12'-6" LONG C-PILE. (DO NOT CUT THE END OF PILE WITH PRE-PUNCHED HOLES.) IF CUTTING IS NOT PREFERRED, AN 8'-0" CONCRETE FOUNDATION IS ACCEPTABLE.				
(b) SHALLOWER EMBEDMENT DEPTHS ARE POSSIBLE, HOWEVER, PILE TESTING AND/OR APPROVAL FROM A GEOTECHNICAL OR PROFESSIONAL ENGINEER ARE REQUIRED.				
(c) BASED ON THE PILE STICK-UP HEIGHT FOR A STANDARD 20 DEGREE GFT TABLE, ALL PILE EMBEDMENT DEPTHS THAT ARE 8'-1" OR GREATER, REQUIRE A 15 FT LONG PILE.				
(d) BASED ON THE PILE STICK-UP HEIGHT FOR A STANDARD 30 DEGREE GFT TABLE, ALL PILE EMBEDMENT DEPTHS THAT ARE 6'-4" OR GREATER, REQUIRE A 15 FT LONG PILE.				





SECTION B-B
TOP VIEW

400 DRILLED CAST-IN-HOLE CONCRETE PILE FOUNDATION

(ALTERNATE OPTION)

NOT TO SCALE

FOUNDATION 400: DRILLED CAST-IN-HOLE CONCRETE PILE FOUNDATION

1. THE FOUNDATION MUST BE EXCAVATED WITH LITTLE TO NO LOOSE MATERIAL IN THE BOTTOM.
2. THE FOUNDATION CANNOT BE BELOW THE GROUND WATER UNLESS WRITTEN APPROVAL FROM UNIRAC.
3. IN SOFT OR UNSTABLE SOILS, A TEMPORARY CASING TO STABILIZE THE EXCAVATION IS PERMITTED.
4. THE PILE SHALL HAVE A #4 REBAR PLACED THROUGH THE BOTTOM OF THE PILE.
5. THE PILE MUST BE CENTERED IN THE HOLE WITH EQUAL AMOUNTS OF CONCRETE AROUND THE CASING.
6. CONCRETE SHALL CONFORM TO THE CONCRETE SPECIFICATIONS LISTED ON SR-100.
7. CONCRETE DEPTH SHALL CONFORM TO THE DEPTHS LISTED IN THE TABLE ON THIS SHEET.
8. THE TOP OF THE CONCRETE MUST BE ABOVE GRADE.
9. THE CORE OF THE CONCRETE CAST-IN-DRILLED HOLE PILE WILL CONSIST OF THE UNIRAC C-PILES AS DEPICTED IN THE FIGURE.
10. FOUNDATIONS MUST NOT BE INSTALLED IN ORGANIC SOILS .
11. DEPTH OF CONCRETE CAN BE +6/-2 INCHES.
12. UNIRAC C-PILE CAN EXTEND TO BOTTOM OF CONCRETE OR EXTEND DEEPER THAN THE CONCRETE.

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REVISION BLOCK		
MARK	DATE	DESCRIPTION
0	08/14/2019	Original Release
1	08/22/2019	Rev-1
2	03/30/2020	Rev-2
3	07/30/2020	Rev-3

OWNER/CLIENT:

ENGINEERING CONSULTANT:

PROFESSIONAL SEAL

SEE STATE SPECIFIC STAMPED & SIGNED GFT CERTIFICATION LETTER

UNIRAC®

1411 Broadway Boulevard NE
Albuquerque, New Mexico 87102
Phone: (505) 242-6411
Fax: (505) 242-6412
www.unirac.com

PROJECT NUMBER:	GFT
ENGINEERED BY:	JRS
DRAFTED BY:	JRS
REVIEWED BY:	EP
ORIGINAL RELEASE DATE:	08/14/2019
DRAWING SHEET SIZE:	'D' - 24x36

SHEET TITLE
FOUNDATION EMBEDMENT AND FOUNDATION DETAILS

SHEET NUMBER
SR-400

The engineer's seal and signature on this manufacturer's drawing certifies the product for use in this project only.

PRINCIPAL ENGINEERING, INC.
1011 N. CAUSEWAY BLVD. STE 19
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FLORIDA FIRM NO. 30649

NEW PHOTOVOLTAIC SYSTEM 15.00 KW DC
635 SW GRAPE ST, LAKE CITY, FL 32024

GENERAL NOTES

1.1.1 PROJECT NOTES:
1.1.2 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
1.1.3 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION
1.1.4 GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE MICRO-INVERTER IN ACCORDANCE WITH NEC 690.41(B)
1.1.5 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC 690.4: PV MODULES: UL1703, IEC61730, AND IEC61215, AND NFPA 70 CLASS C FIRE INVERTERS: UL 1741 CERTIFIED, IEEE 1547, 929, 519 COMBINER BOX(ES): UL 1703 OR UL 1741 ACCESSORY
1.1.6 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.
1.1.7 ALL INVERTERS, PHOTOVOLTAIC MODULES,PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4. SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3].
1.1.8 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.

1.2.1 SCOPE OF WORK:
1.2.2 PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE EXTERIOR ULA GROUND -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 ULA GROUND 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: WILLIAM BRADLEY

PROJECT MANAGER
NAME: SHAHIN HAYNES
PHONE: 8665071461

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

Columbia County Building Department
Plans Reviewed for Code Compliance
State of Florida

SCOPE OF WORK
SYSTEM SIZE: STC:40 X 375W= 15.00 kW DC
PTC: 40 x 347.3W = 13.89 kW DC
(40) LG ELECTRONICS LG375N1C-A6
(40) ENPHASE IQ7PLUS-72-2-US

ATTACHMENT TYPE: ULA GROUND MOUNT
MSP UPGRADE: NO
UTILITY METER UPGRADE: NO

AUTHORITIES HAVING JURISDICTION
BUILDING: COLUMBIA COUNTY
ZONING: COLUMBIA COUNTY
UTILITY: CLAY ELECTRIC CO-OP
METER NO: 156 218 936

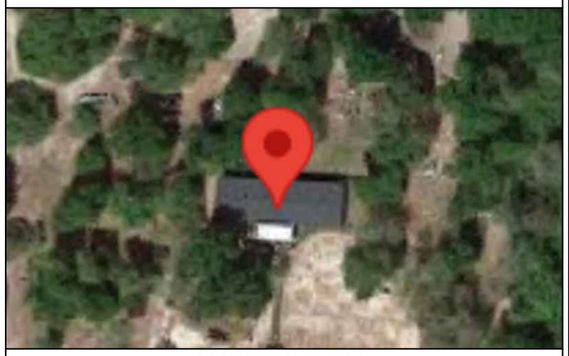
DESIGN SPECIFICATION

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

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

VICINITY MAP

SATELLITE VIEW



SHEET INDEX

CONTRACTOR
SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS
WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE
DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

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

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SHEET TITLE
COVER PAGE

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER
G-001

2.1.1 SITE NOTES:

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

2.2.1 EQUIPMENT LOCATIONS:

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

2.3.1 STRUCTURAL NOTES:

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

2.4.1 WIRING & CONDUIT NOTES:

2.4.2 ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS AREBASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
2.4.3 CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
2.4.4 VOLTAGE DROP LIMITED TO 1.5%.
2.4.5 DC WIRING LIMITED TO MODULE FOOTPRINT. MICROINVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS.
2.4.6 AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE PHASE C OR L3- BLUE, YELLOW, ORANGE**, OR OTHER CONVENTION NEUTRAL- WHITE OR GREY IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [NEC 110.15].

2.5.1 GROUNDING NOTES:

2.5.2 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVISES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
2.5.3 PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122.
2.5.4 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A).
2.5.5 EQUIPMENT GROUNDING CONDUCTORS SHALLBE SIZED ACCORDING TO NEC 690.45 AND MICROINVERTER MANUFACTORERS' INSTRUCTIONS.
2.5.6 EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURERDOCUMENTATION AND APPROVED BY THE AHJ. IF WEEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.
2.5.7 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OFA MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
2.5.8 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119]
2.5.9 THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO NEC 250, NEC 690.47 AND AHJ.
2.5.10 GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS

2.6.1 DISCONNECTION AND OVER-CURRENT PROTECTION NOTES:
2.6.2 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHENTHE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARECONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
2.6.3 DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
2.6.4 PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.12(A) THROUGH (D).
2.6.5 ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.
2.6.6 MICROINVERTER BRANCHES CONNECTED TO A SINGLE BREAKER OR GROUPED FUSES IN ACCORDANCE WITH NEC 110.3(B).
2.6.7 IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.

2.7.1 INTERCONNECTION NOTES:

2.7.2 LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12 (B)]
2.7.3 THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC 705.12(B)(2)(3)(b)].
2.7.4 THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD [NEC 705.12(B)(2)(3)].
2.7.5 AT MULTIPLE ELECTRIC POWER SOURCES OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVERCURRENT DEVICE MAY BE EXCLUDED ACCORDING TO NEC 705.12 (B)(2)(3)(C).
2.7.6 FEEDER TAP INTERCONECTION (LOADSIDE) ACCORDING TO NEC 705.12 (B)(2)(1)
2.7.7 SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42
2.7.8BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)].

CONTRACTOR

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DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

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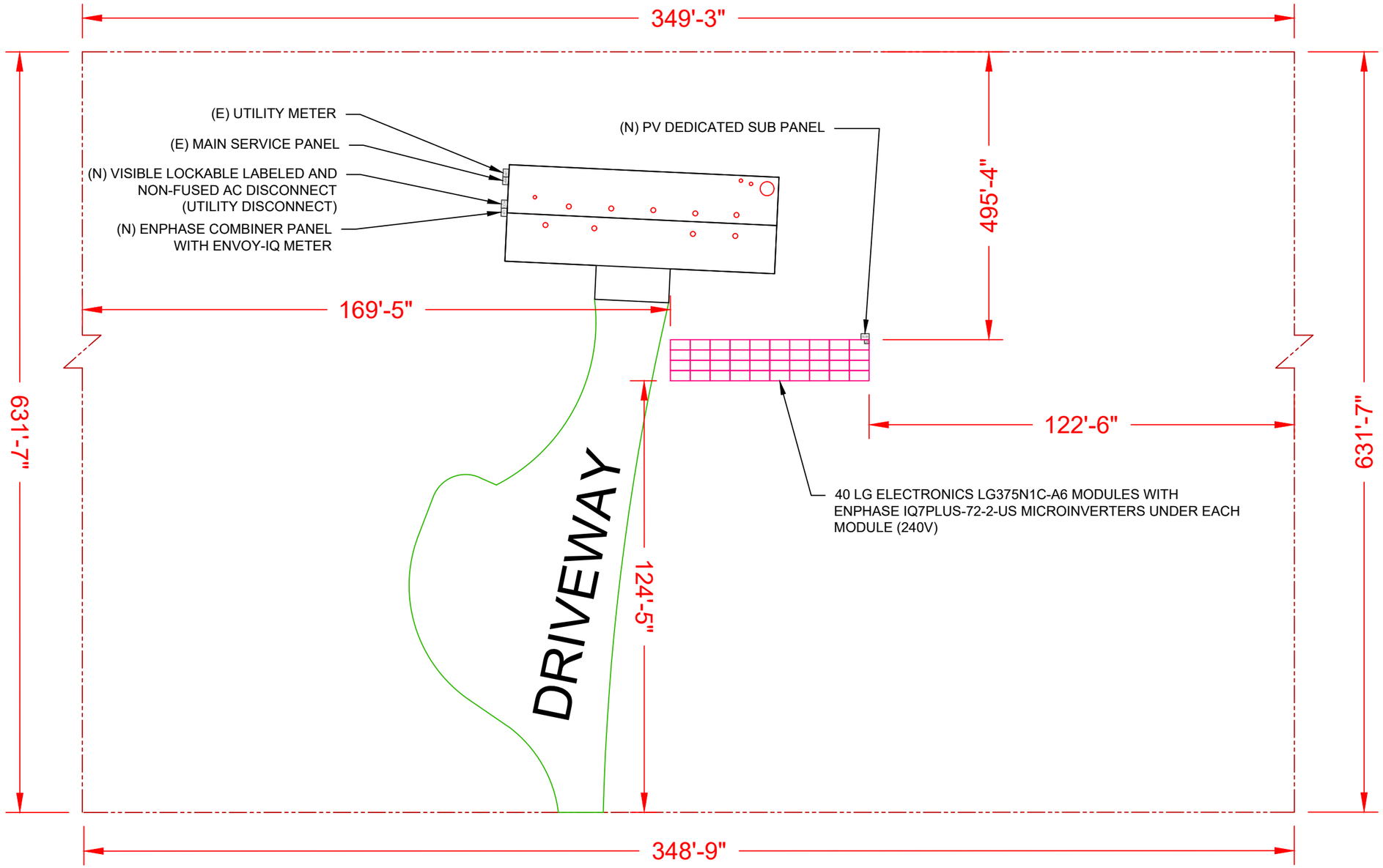
SHEET TITLE

NOTES

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

G-002



TOTAL ARRAY SQUARE FOOTAGE IS: 780.48 FT²

DC SIZE 40 X 375W = 15.000 kW DC-STC
AC SIZE 40X 290W = 11.600 kW AC

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

ADDRESS : 635 SW GRAPE ST
CITY ZIP : LAKE CITY, FL 32024

METER NO: 156 218 936

LEGEND

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

N W E S

1 | SITE PLAN

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

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SITE PLAN

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

A-101

ARRAY(S)

ARRAY 1	TILT - 30° AZIMUTH - 180° MODULE - 40 SYSTEM SIZE (KW)- 15.00

① - MODULE STRING

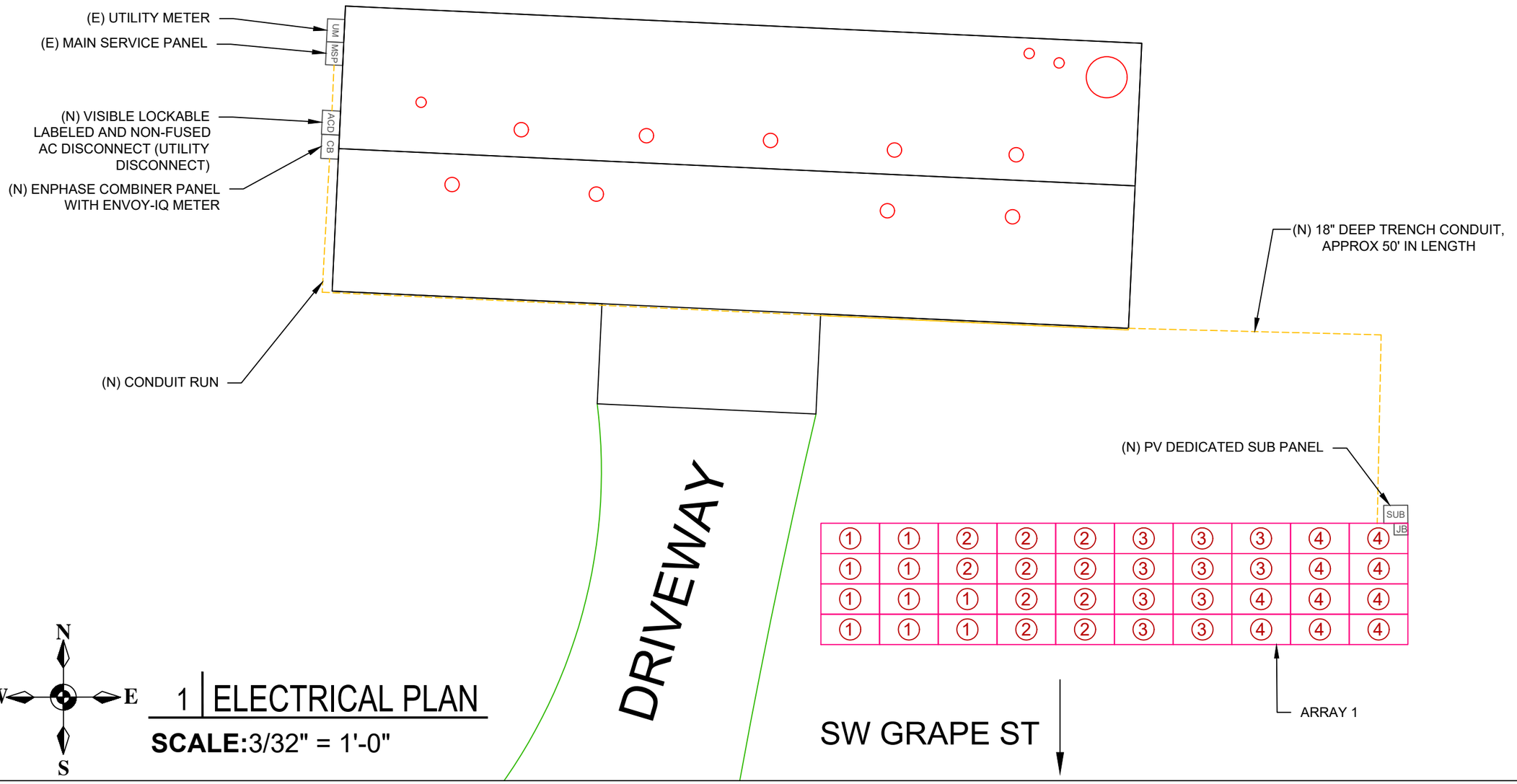
② - MODULE STRING

③ - MODULE STRING

④ - MODULE STRING

LEGEND

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



1 | ELECTRICAL PLAN

SCALE:3/32" = 1'-0"

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PHONE: 9152011490

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WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

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

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

SHEET TITLE

ELECTRICAL PLAN

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

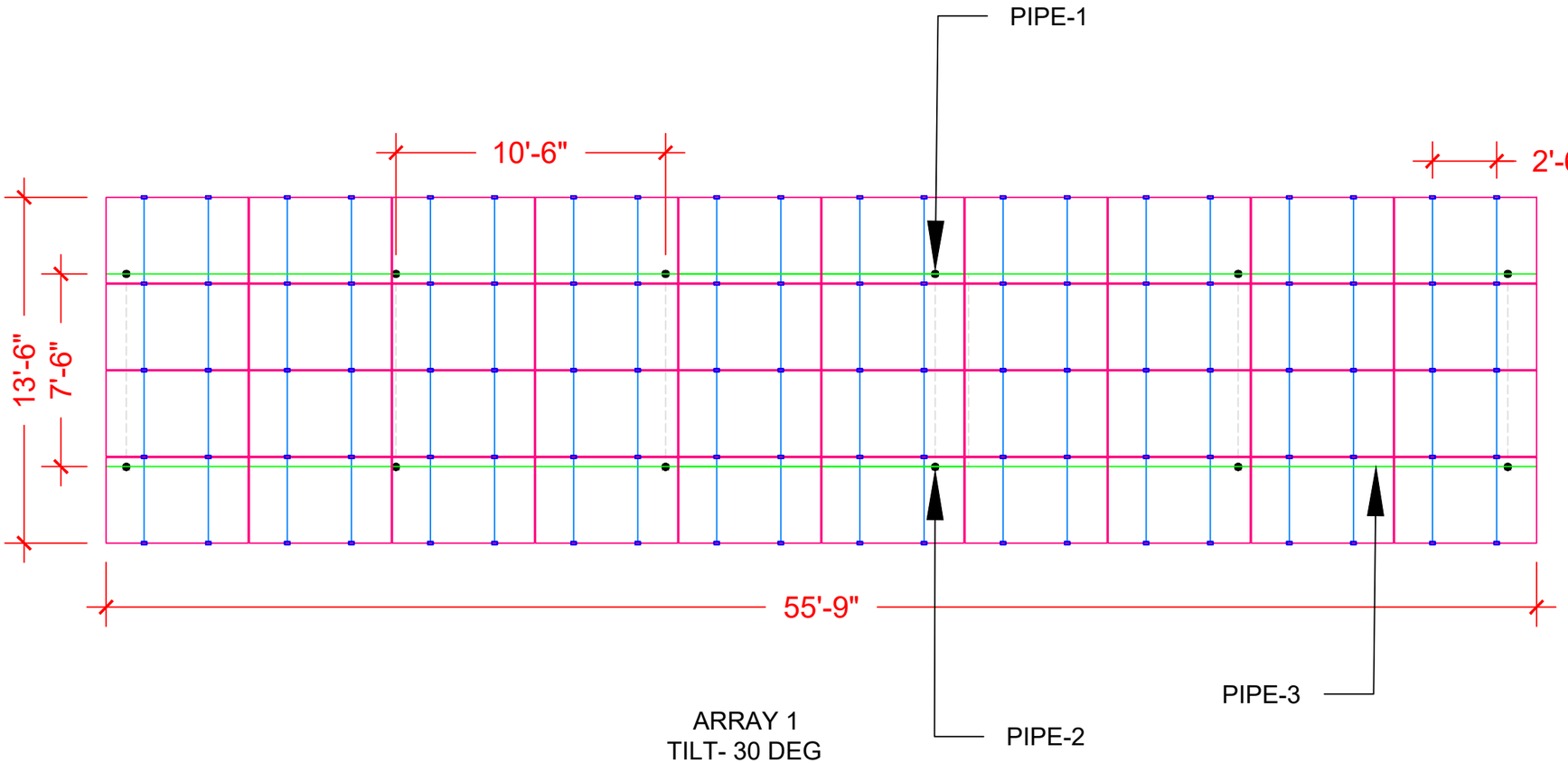
A-102

FOOTING DEPTH - 36"

FOOTING DIAMETER - 24"

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

- CLAMP
- SM HD RAIL
- SQUARE BRACE
- PIPE-1,2 (2" SCH 40 GAL PIPE)
- PIPE 3 (2" SCH 40 GAL PIPE)



ARRAY 1
TILT- 30 DEG
AZIMUTH - 180 DEG

1 | ATTACHMENT PLAN

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

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

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

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SHEET TITLE

ATTACHMENT PLAN

DRAWN DATE	12/29/2021
DRAWN BY	VI

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 41.00"W x 1.57"D (In Inch)

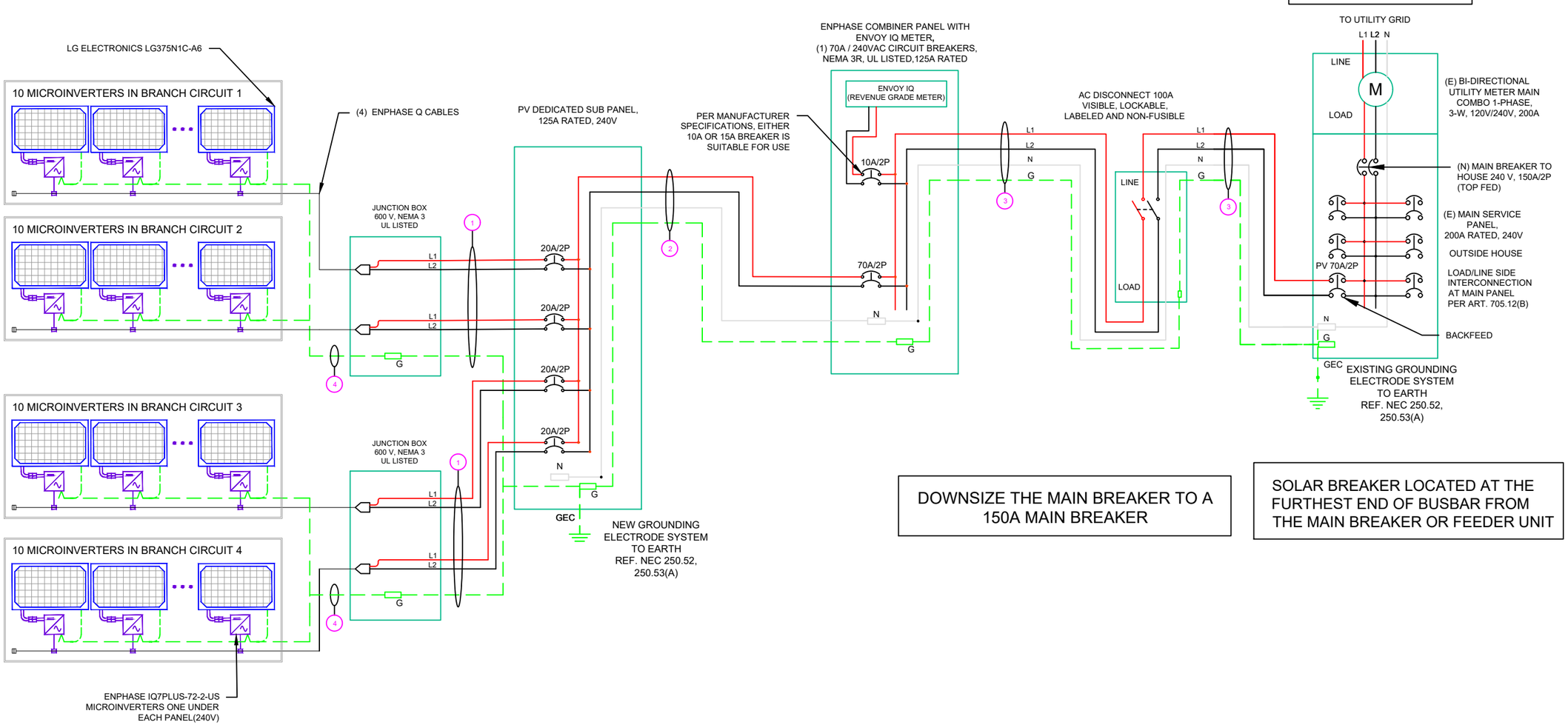
INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE IQ7PLUS-72-2-US MICROINVERTER
MIN/MAX DC VOLT RATING	22V MIN/ 60V MAX
MAX INPUT POWER	235W-440W
NOMINAL AC VOLTAGE RATING	240V/ 211-264V
MAX AC CURRENT	1.21A
MAX MODULES PER STRING	13 (SINGLE PHASE)
MAX OUTPUT POWER	290 VA

WIRE /CONDUIT SCHEDULE	
TAG	DESCRIPTION
1	#12 THWN-2 ON EXTERIOR & (1)#6 THWN -2 / (GN)
2	#4 THWN-2 & (1)#6 THWN-2 GROUND / (GN) (18" DEEP TRENCH CONDUIT, APPROX 50')
3	#4 THWN-2 & (1)#6 THWN-2 GROUND / (GN)
4	(1)#6 BARE GROUND

DC SIZE 40 X 375W = 15.000 kW DC-STC
AC SIZE 40X 290W = 11.600 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

METER NO: 156 218 936



DOWNSIZE THE MAIN BREAKER TO A 150A MAIN BREAKER

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

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE
DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

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

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SHEET TITLE

LINE DIAGRAM

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

E-601

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

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

CALCULATIONS:

1. CURRENT CARRYING CONDUCTOR

(A) BEFORE PV DEDICATED SUB 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)
= [(40 x 1.21) x 1.25] / [0.96 x 1]
= 63.02 A
SELECTED CONDUCTOR - #4 THWN-2 ...NEC 310.15(B)(16)

2. PV OVER CURRENT PROTECTION ...NEC 690.9(B)

= TOTAL INVERTER O/P CURRENT x 1.25
= (40 x 1.21) x 1.25 = 60.50 A
SELECTED OCPD = 70 A ...NEC 240.6

3. 120% RULE FOR BACKFEED BREAKER

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

MCB RATING + PV BREAKER RATING <= (1.2 x BUS BAR RATING)
(150 + 70) <= 1.2 x 200A
220.00 <= 240.00 HENCE OK

4. VOLTAGE DROP CALCULATION (BETWEEN PV DEDICATED SUBPANEL AND COMBINER BOX)

VOLTAGE DROP= (0.2 x LENGTH OF CONDUCTOR x CURRENT x RESISTANCE IN CONDUCTOR) / 240
= (0.2 x 50 x 48.40 x 0.31 (FOR #4 AWG WIRE)) / 240
= 0.63%

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

CONTRACTOR

SUNPRO

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MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

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COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE
DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

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

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FLORIDA FIRM NO. 30649

SHEET TITLE
ELECTRICAL CALCULATIONS

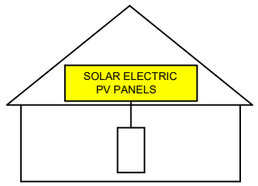
DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER
E-602

WARNING: PHOTOVOLTAIC POWER SOURCE

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



AC DISCONNECT

⚠ 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

AC COMBINER BOX

PHOTOVOLTAIC MICROINVERTERS LOCATED UNDER EACH PV MODULE IN ROOFTOP ARRAY

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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

⚠ WARNING ⚠

DUAL POWER SOURCES

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

_____KW SOLAR DISCONNECT LOCATED

___ FT ←

→ FT ___

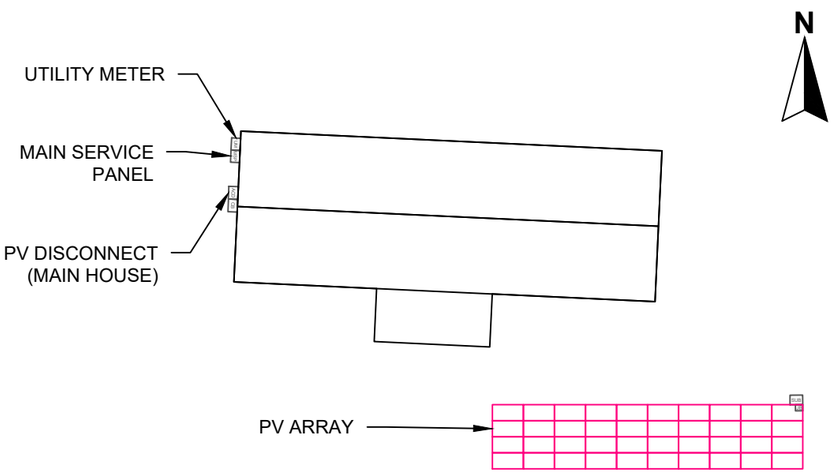
⚠ WARNING ⚠

INVERTER OUTPUT CONNECTION

DO NOT RELOCATE THIS OVERCURRENT DEVICE

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

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE
DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

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

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FLORIDA FIRM NO. 30649

SHEET TITLE

PLACARD

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

E-603

Residential Optional Calculation

by: John Sokolik

9/25/1997

Version 2011 L

Job Name

Marc Jones Construction, LLC Sunpro Solar

0
0
0

12/29/2021 9:07

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

sq. ft	2500	General Lighting load	7,500 VA
	6	Small Appliance	9,000 VA
	1	Laundry circuit	1,500 VA
		Gen.Lgt, Sm App.& Laun. Load	18,000 VA

STEP 2 Article 220.82 (C) ☑

A/C Condenser & Fixed Electric Space Heating

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

General lighting, Sm. Appl. & Laundry **18,000 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**

STEP 3 Article 220.82 (B) (3)

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

Appliance Demand Load	**9,160 VA**
Dryer Demand Load	**5,000 VA**
Range Demand Load	**10,000 VA**
Service Demand	**31,194 VA**
Demand Load	**130 A**
Neutral Demand	**87 A**
Min.Service Req.	**150 A**
Min. Feeder size	**1**
Min. Neutral size	**3**
Eq. Grding Cond.	**6**
☐	**Copper**

Total Appliance Load **9,160 VA**

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

jmp1jds@comcast.net

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

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

Continuous Motors		Non-continuous Motors	
select	☐ 240v	select	☐ 240v
select	☐ 240v	select	☐ 240v
select	☐ 240v	select	☐ 240v
select	☐ 240v	select	☐ 240v
select	☐ 240v	select	☐ 240v

0.0 Motor Neutral Load

Max.Unbalanced Neutral Load

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

SHEET TITLE

LOAD CALCULATIONS

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

E-604

LG NeON®2

LG375N1C-A6

60

375W

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

25 YEAR PRODUCT • PERFORMANCE • LABOR WARRANTY

c UL us

Made in USA From Imported Parts

Features

Enhanced Performance Warranty

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

25-Year Limited Product Warranty

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

Solid Performance on Hot Days

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

Roof Aesthetics

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

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

About LG Electronics USA, Inc.

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

LG Life's Good

LG NeON®2

LG375N1C-A6

Made in USA

General Data

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

Certifications and Warranty

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

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

Temperature Characteristics

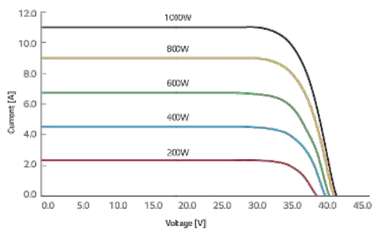
NMOT*	[°C]		42 ± 3
Pmax	[%/°C]		-0.34
Voc	[%/°C]		-0.26
Isc	[%/°C]		0.03

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

Electrical Properties (NMOT)

Model			LG375N1C-A6
Maximum Power (Pmax)	[W]		281
MPP Voltage (Vmpp)	[V]		33.2
MPP Current (Impp)	[A]		8.48
Open Circuit Voltage (Voc)	[V]		39.4
Short Circuit Current (Isc)	[A]		9.13

I-V Curves



Electrical Properties (STC*)

Model			LG375N1C-A6
Maximum Power (Pmax)	[W]		375
MPP Voltage (Vmpp)	[V]		35.3
MPP Current (Impp)	[A]		10.63
Open Circuit Voltage (Voc, ± 5%)	[V]		41.8
Short Circuit Current (Isc, ± 5%)	[A]		11.35
Module Efficiency	[%]		20.7
Bifaciality Coefficient of Power	[%]		10
Power Tolerance	[%]		0 ~ +3

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

Operating Conditions

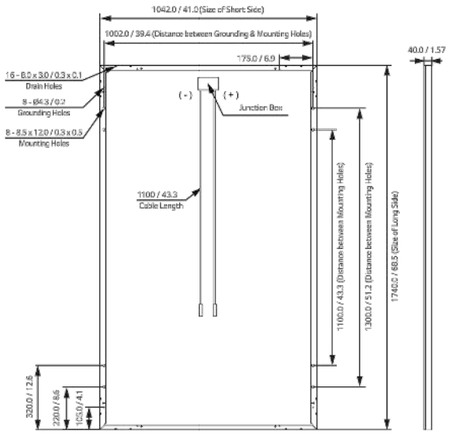
Operating Temperature	[°C]	-40 ~+85
Maximum System Voltage	[V]	1,000
Maximum Series Fuse Rating	[A]	20
Mechanical Test Load* (Front)	[Pa/psf]	5,400
Mechanical Test Load* (Rear)	[Pa/psf]	4,000

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

Packaging Configuration

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

Dimensions (mm/inch)



LG Life's Good

LG Electronics USA, Inc.
Solar Business Division
2000 Millbrook Drive
Lincolnshire, IL 60069
www.lg-solar.com

Product specifications are subject to change without notice.
LG375N1C-A6_AUS.pdf
012221

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

SHEET TITLE
RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-001

Data Sheet
Enphase Microinverters
Region: AMERICAS

Enphase IQ 7 and IQ 7+ Microinverters

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

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

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

Easy to Install

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

Productive and Reliable

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

Smart Grid Ready

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

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

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

ENPHASE.

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US		IQ7PLUS-72-2-US	
Commonly used module pairings[1]	235 W - 350 W +		235 W - 440 W +	
Module compatibility	60-cell PV modules only		60-cell and 72-cell PV modules	
Maximum input DC voltage	48 V		60 V	
Peak power tracking voltage	27 V - 37 V		27 V - 45 V	
Operating range	16 V - 48 V		16 V - 60 V	
Min/Max start voltage	22 V / 48 V		22 V / 60 V	
Max DC short circuit current (module Isc)	15 A		15 A	
Overvoltage class DC port	II		II	
DC port backfeed current	0 A		0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)	**IQ 7 Microinverter**		**IQ 7+ Microinverter**	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range[2]	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit[3]	16 (240 VAC)	13 (208 VAC)	13 (240 VAC)	11 (208 VAC)
Overvoltage class AC port	III		III	
AC port backfeed current	0 A		0 A	
Power factor setting	1.0		1.0	
Power factor (adjustable)	0.85 leading ... 0.85 lagging		0.85 leading ... 0.85 lagging	
EFFICIENCY	**@240 V**	**@208 V**	**@240 V**	**@208 V**
Peak efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)			
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)			
Weight	1.08 kg (2.38 lbs)			
Cooling	Natural convection - No fans			
Approved for wet locations	Yes			
Pollution degree	PD3			
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure			
Environmental category / UV exposure rating	NEMA Type 6 / outdoor			
FEATURES				
Communication	Power Line Communication (PLC)			
Monitoring	Enlighten Manager and MyEnlighten monitoring options. 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) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 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**

ENPHASE.

2019-3-26

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE
DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

SHEET TITLE
RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-002

Data Sheet
Enphase Networking

Enphase IQ Combiner 3

(X-IQ-AM1-240-3)

The **Enphase IQ Combiner 3**™ with Enphase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring
- Supports Ensemble Communications Kit for communication with Enphase Encharge™ storage and Enphase Enpower™ smart switch

Simple

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

Reliable

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

UL LISTED

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

ENPHASE.

Enphase IQ Combiner 3

MODEL NUMBER	
IQ Combiner 3 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™ CELLMODEM-03 (4G/12-year data plan) CELLMODEM-01 (3G/5-year data plan) 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 CT-200-SPLIT * Consumption monitoring is required for Enphase Storage Systems	Split core current transformers enable whole home **consumption** metering (+/- 2.5%).
Ensemble Communications Kit 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 BRK-10A-2-240 BRK-15A-2-240 BRK-20A-2P-240	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220
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 • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
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 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**

ENPHASE.

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

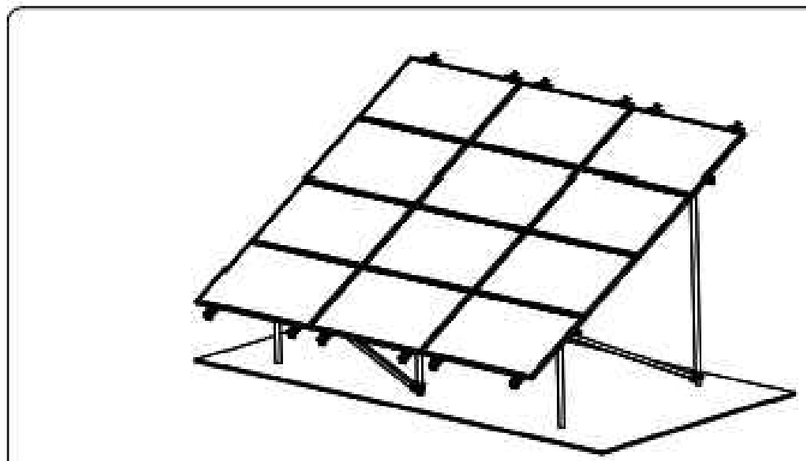
SYSTEM SIZE
DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

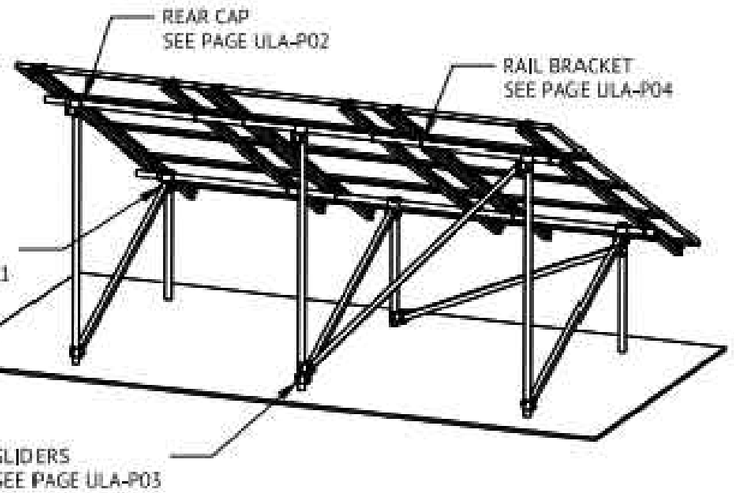
SHEET TITLE
RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-003





UNIRAC

1411 BROADWAY BLVD NE
ALBUQUERQUE, NM 87102 USA

WWW.UNIRAC.COM

PRODUCT LINE:	ULA
DRAWING TYPE:	ASSEMBLY
DESCRIPTION:	ASSEMBLY EXAMPLE
REVISION DATE:	APRIL 2016

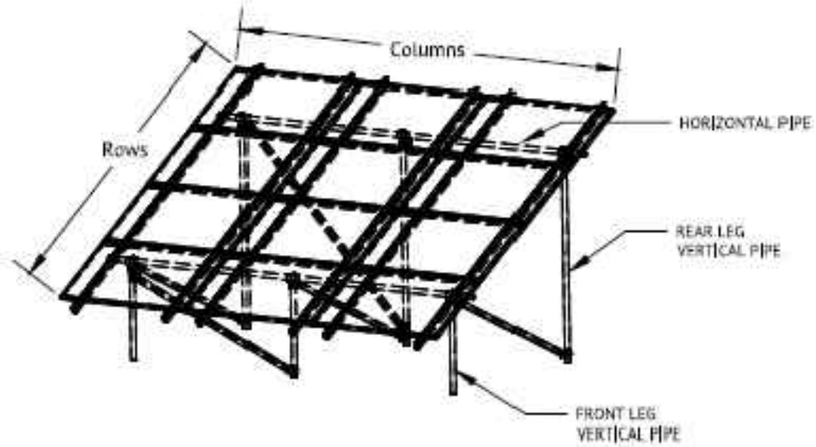
DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

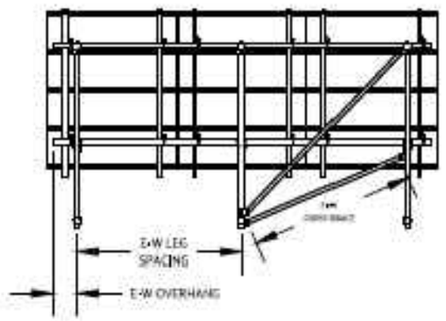
PRODUCT PROTECTED BY ONE OR MORE US PATENTS

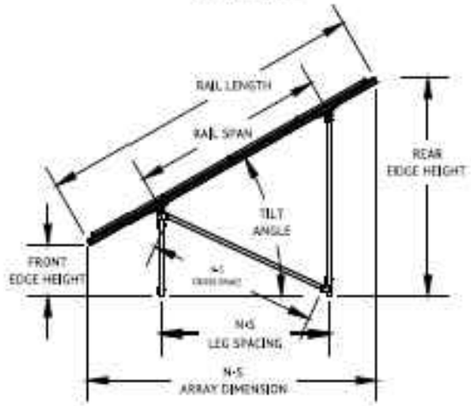
LEGAL NOTICE

ULA-A01

SHEET







UNIRAC

1411 BROADWAY BLVD NE
ALBUQUERQUE, NM 87102 USA

WWW.UNIRAC.COM

PRODUCT LINE:	ULA
DRAWING TYPE:	ASSEMBLY
DESCRIPTION:	ASSEMBLY EXAMPLE
REVISION DATE:	APRIL 2016

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS

LEGAL NOTICE

ULA-A02

SHEET

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

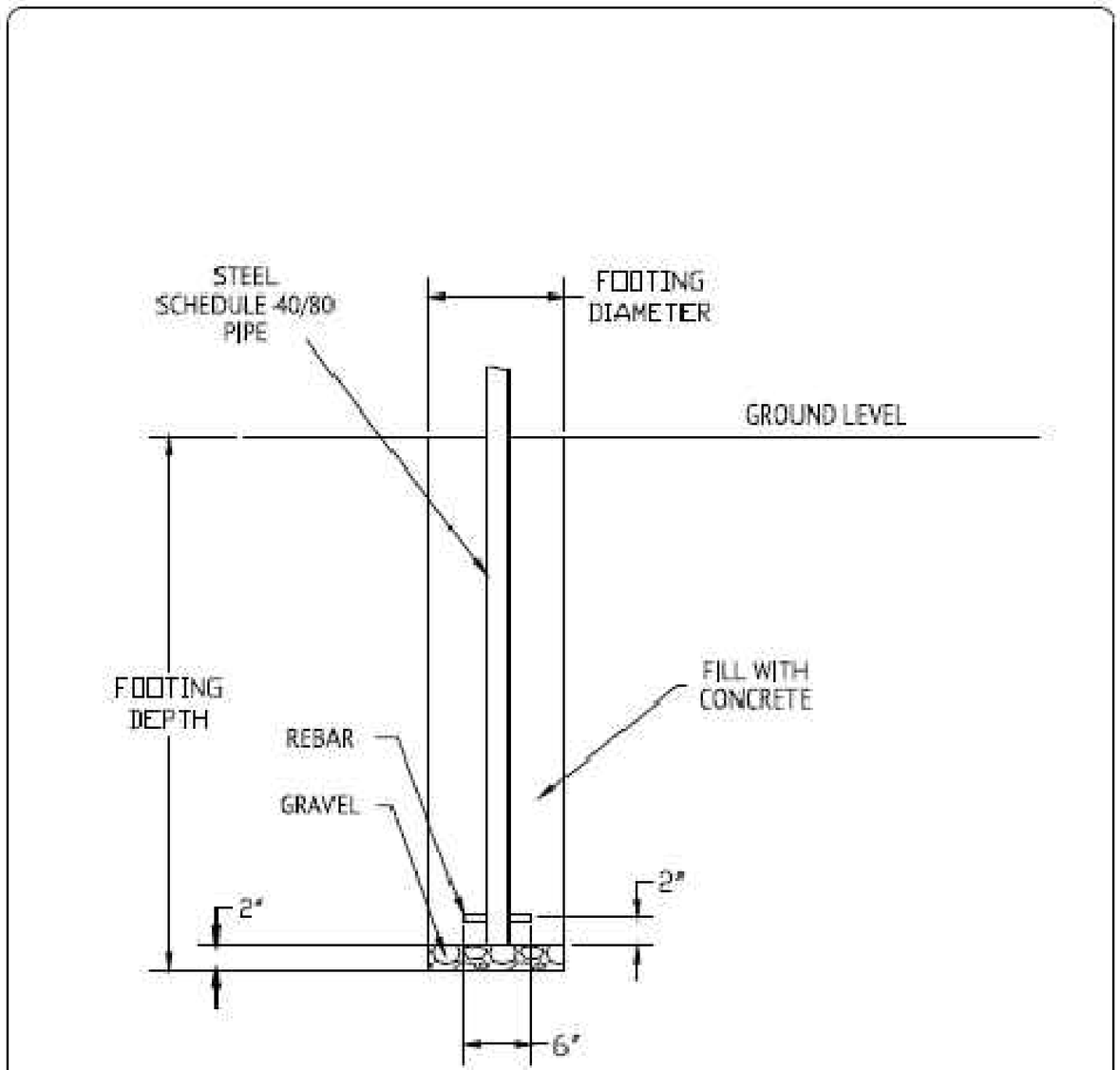
SHEET TITLE

RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-004



UNIRAC

1411 BROADWAY BLVD NE
ALBUQUERQUE, NM 87102 USA

WWW.UNIRAC.COM

PRODUCT LINE:	ULA
DRAWING TYPE:	ASSEMBLY
DESCRIPTION:	ULA FOUNDATION
REVISION DATE:	APRIL 2016

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS

LEGAL NOTICE

ULA-A03

SHEET

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

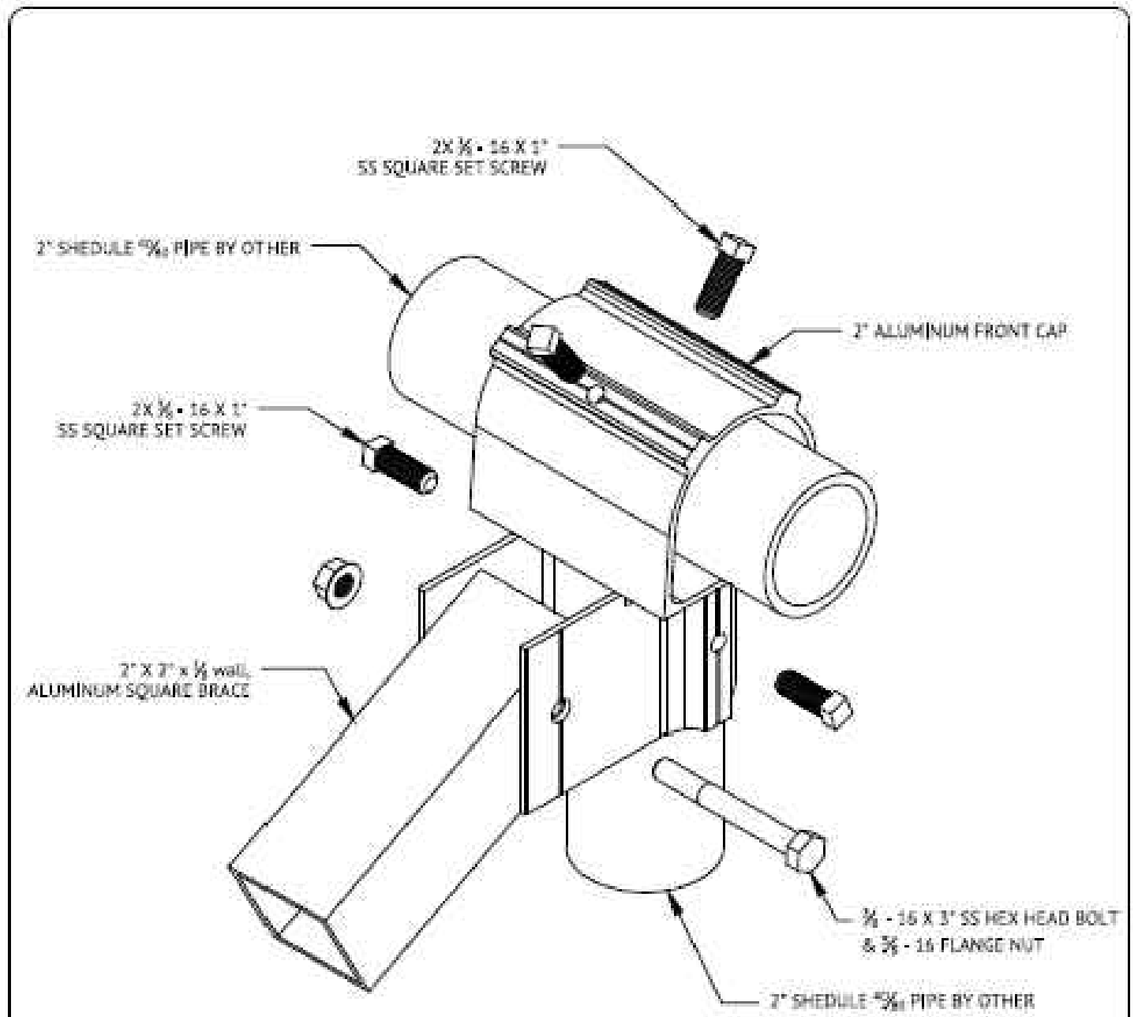
SHEET TITLE

RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-005



UNIRAC

1411 BROADWAY BLVD NE
ALBUQUERQUE, NM 87102 USA

WWW.UNIRAC.COM

PRODUCT LINE:	ULA
DRAWING TYPE:	PART
DESCRIPTION:	ALUM FRONT CAP
REVISION DATE:	APRIL 2016

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS

LEGAL NOTICE

ULA-A04

SHEET

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

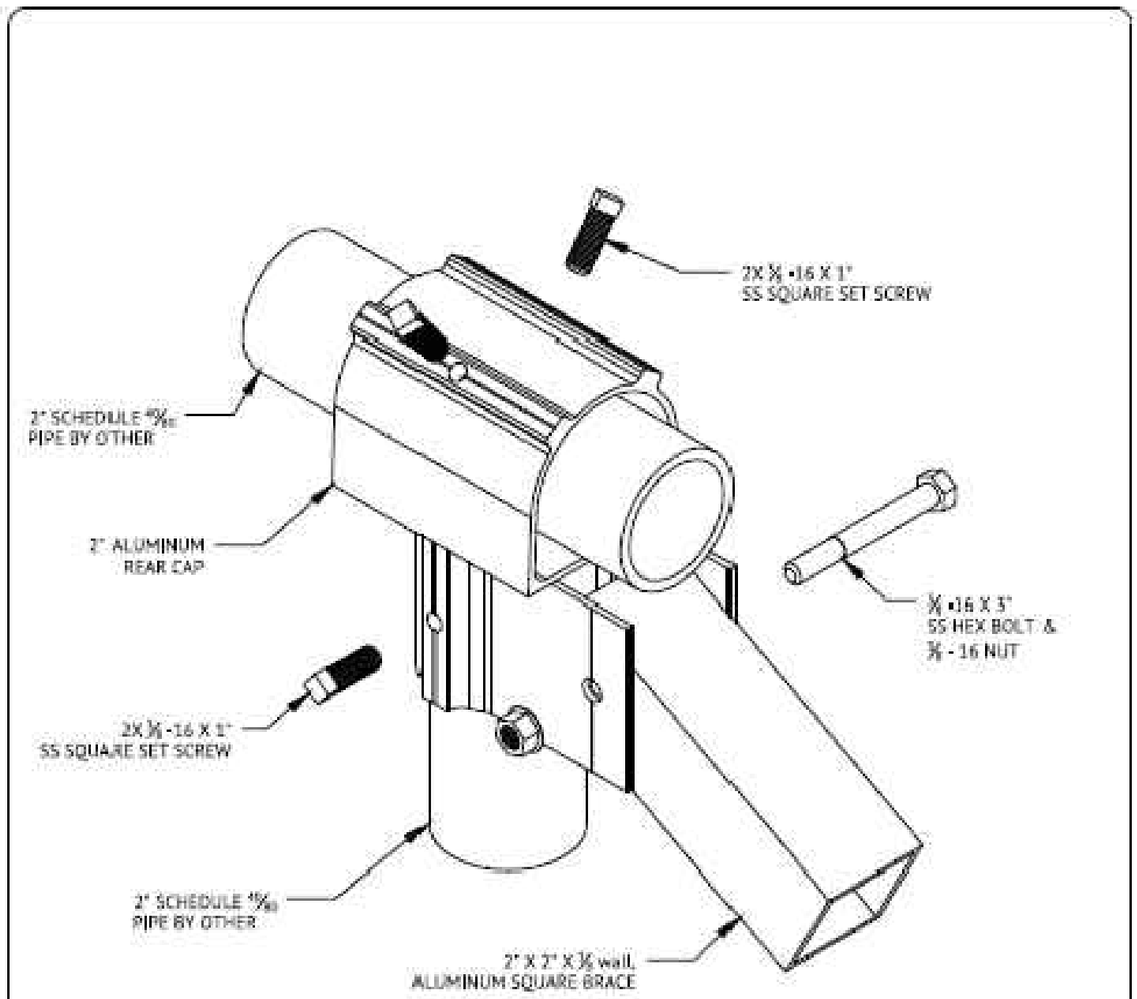
SHEET TITLE

RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-006



UNIRAC

1411 BROADWAY BLVD NE
ALBUQUERQUE, NM 87102 USA

WWW.UNIRAC.COM

PRODUCT LINE:	ULA
DRAWING TYPE:	PART
DESCRIPTION:	ALUMINUM REAR CAP
REVISION DATE:	APRIL 2016

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS

LEGAL NOTICE

ULA-A05

SHEET

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

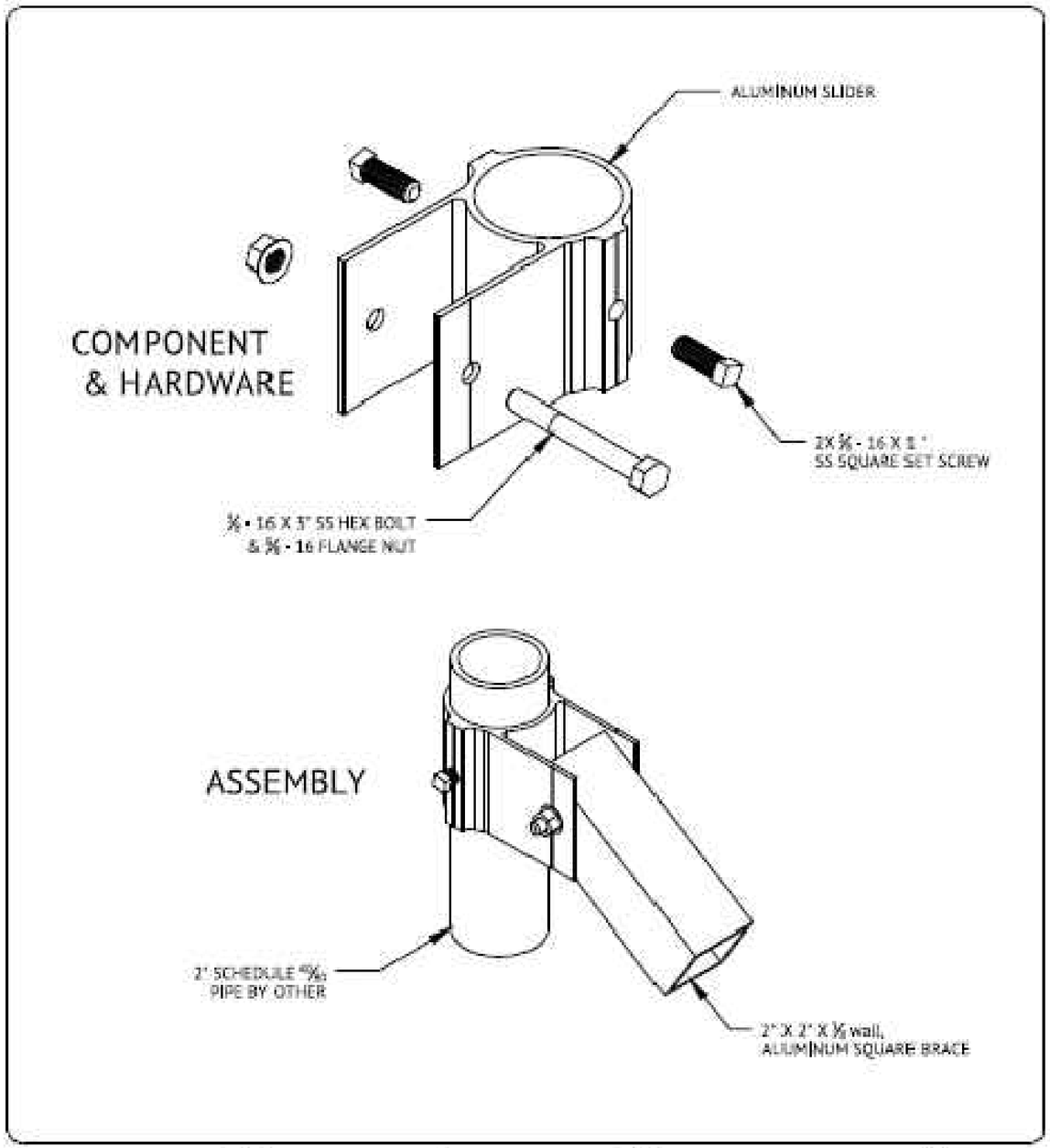
SHEET TITLE

RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-007



UNIRAC

5411 BROADWAY BLVD NE
ALBUQUERQUE, NM 87103 USA

WWW.UNIRAC.COM

PRODUCT LINE:	ULA
DRAWING TYPE:	PART
DESCRIPTION:	ALUM SLIDER
REVISION DATE:	APRIL 2016

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS

LEGAL NOTICE

ULA-A06

SHEET

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

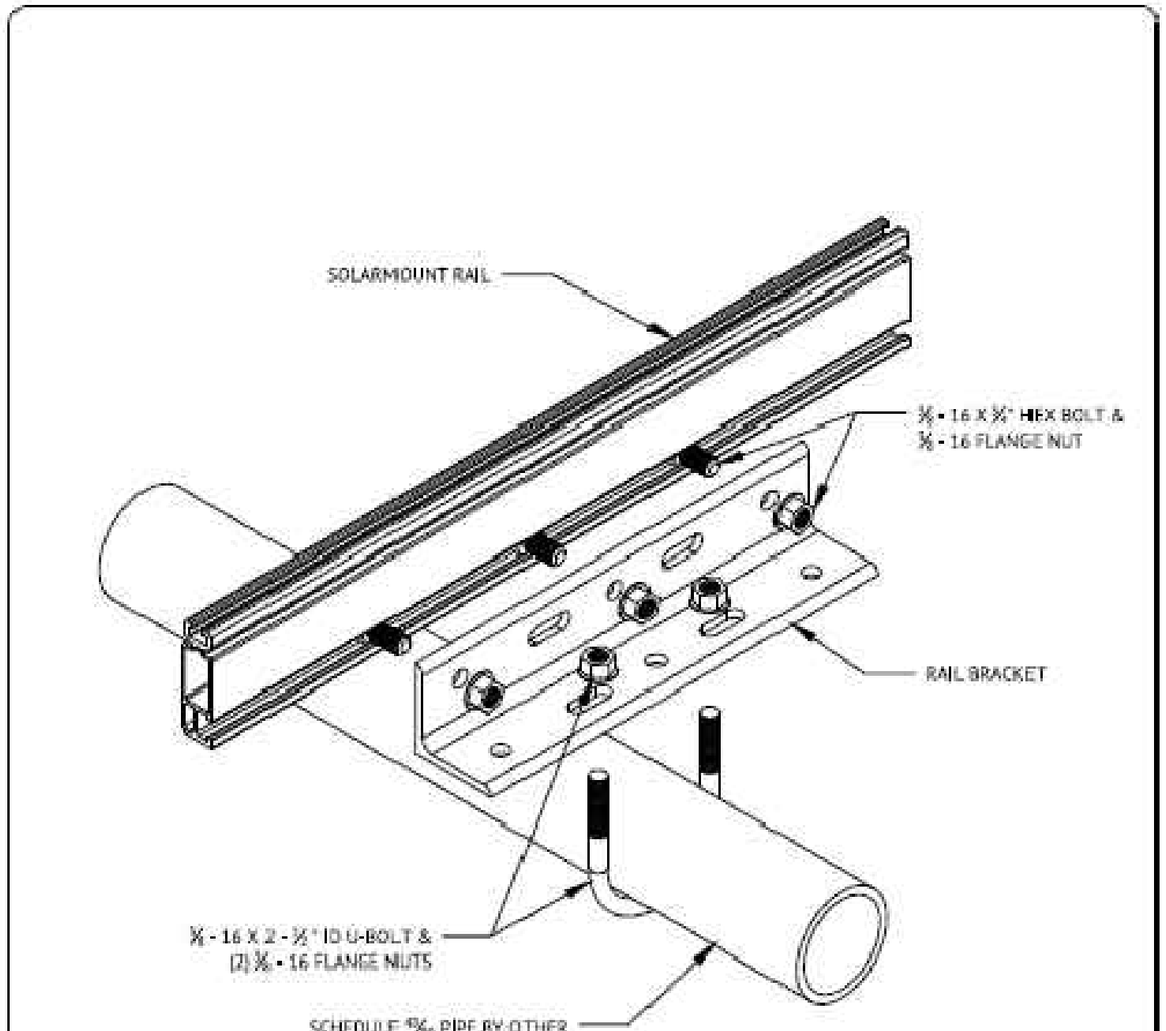
SHEET TITLE

RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-008



UNIRAC

1411 BROADWAY BLVD NE
ALBUQUERQUE, NM 87102 USA

WWW.UNIRAC.COM

PRODUCT LINE:	ULA
DRAWING TYPE:	PART
DESCRIPTION:	UNIVERSAL RAIL BRACKET
REVISION DATE:	APRIL 2016

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS

LEGAL NOTICE

ULA-A07

SHEET

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

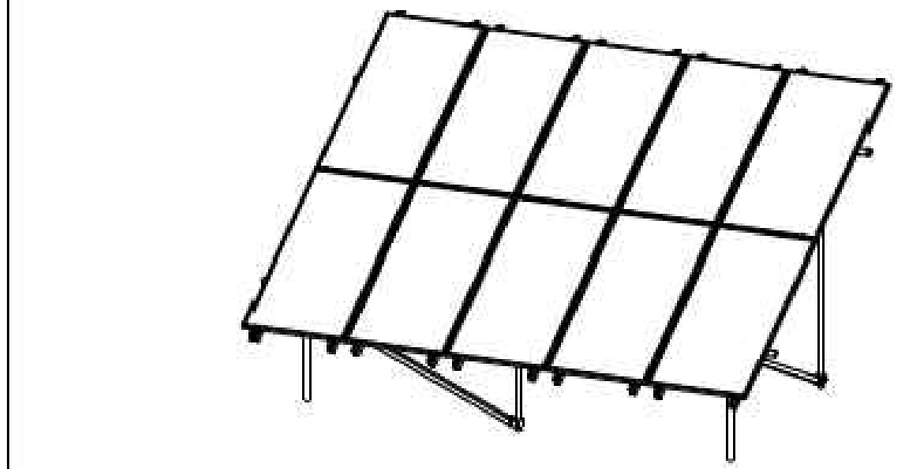
SHEET TITLE

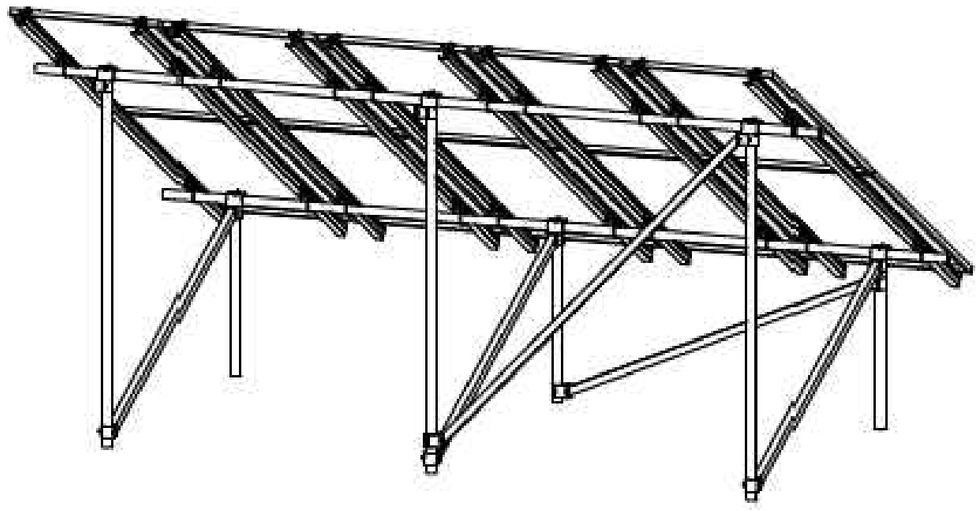
RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-009





UNIRAC

1411 BROADWAY BLVD NE
ALBUQUERQUE, NM 87102 USA

WWW.UNIRAC.COM

PRODUCT LINE:	ULA
DRAWING TYPE:	ASSEMBLY
DESCRIPTION:	PORTRAIT ORIENTATION
REVISION DATE:	APRIL 2016

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS

LEGAL NOTICE

ULA-A08

SHEET

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

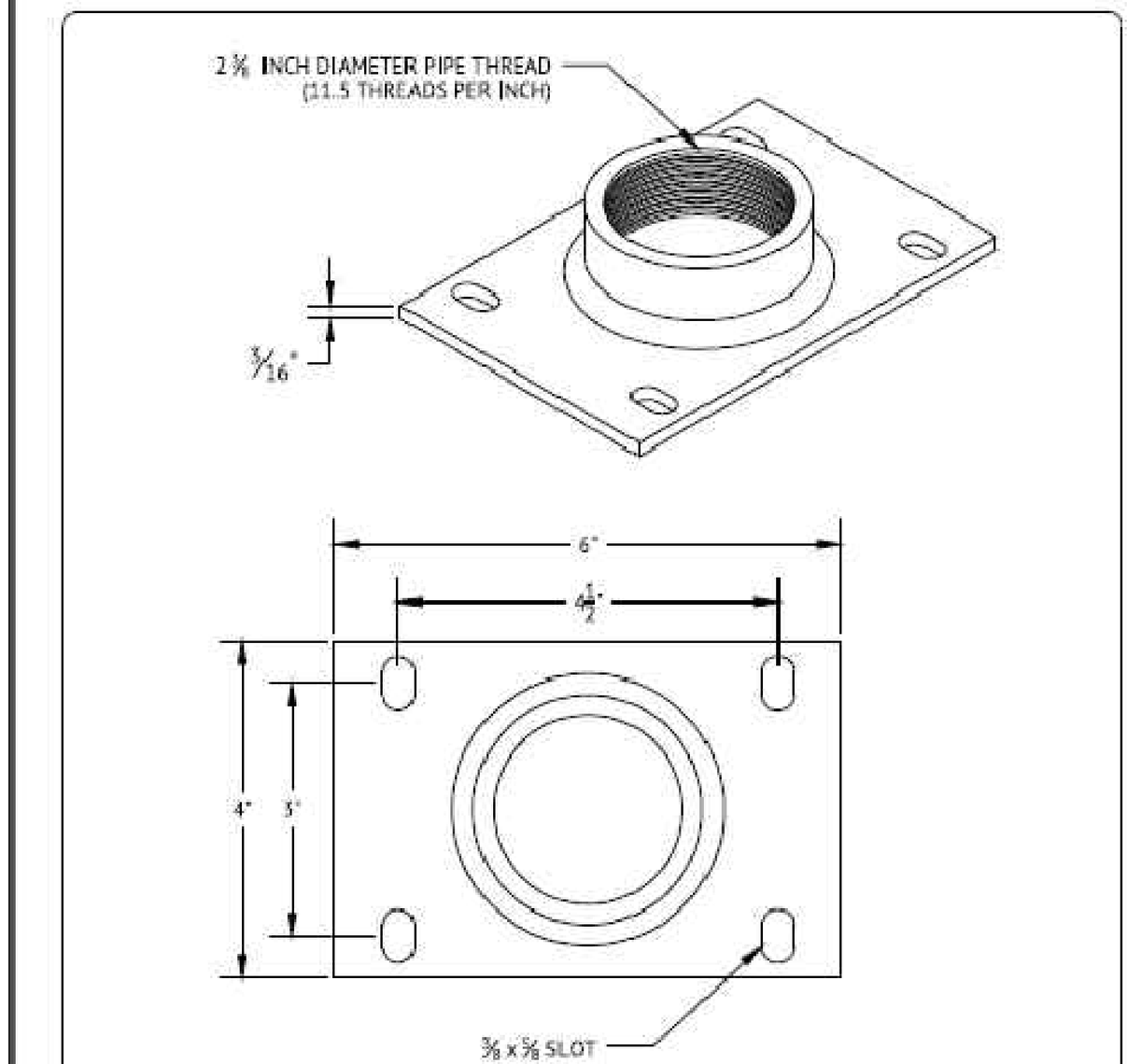
SHEET TITLE

RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-010



UNIRAC

1411 BROADWAY BLVD NE
ALBUQUERQUE, NM 87102 USA

WWW.UNIRAC.COM

PRODUCT LINE:	ULA
DRAWING TYPE:	PART
DESCRIPTION:	STEEL THREADED FOOT
REVISION DATE:	APRIL 2016

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

PRODUCT PROTECTED BY ONE OR MORE US PATENTS

LEGAL NOTICE

ULA-P01

SHEET

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

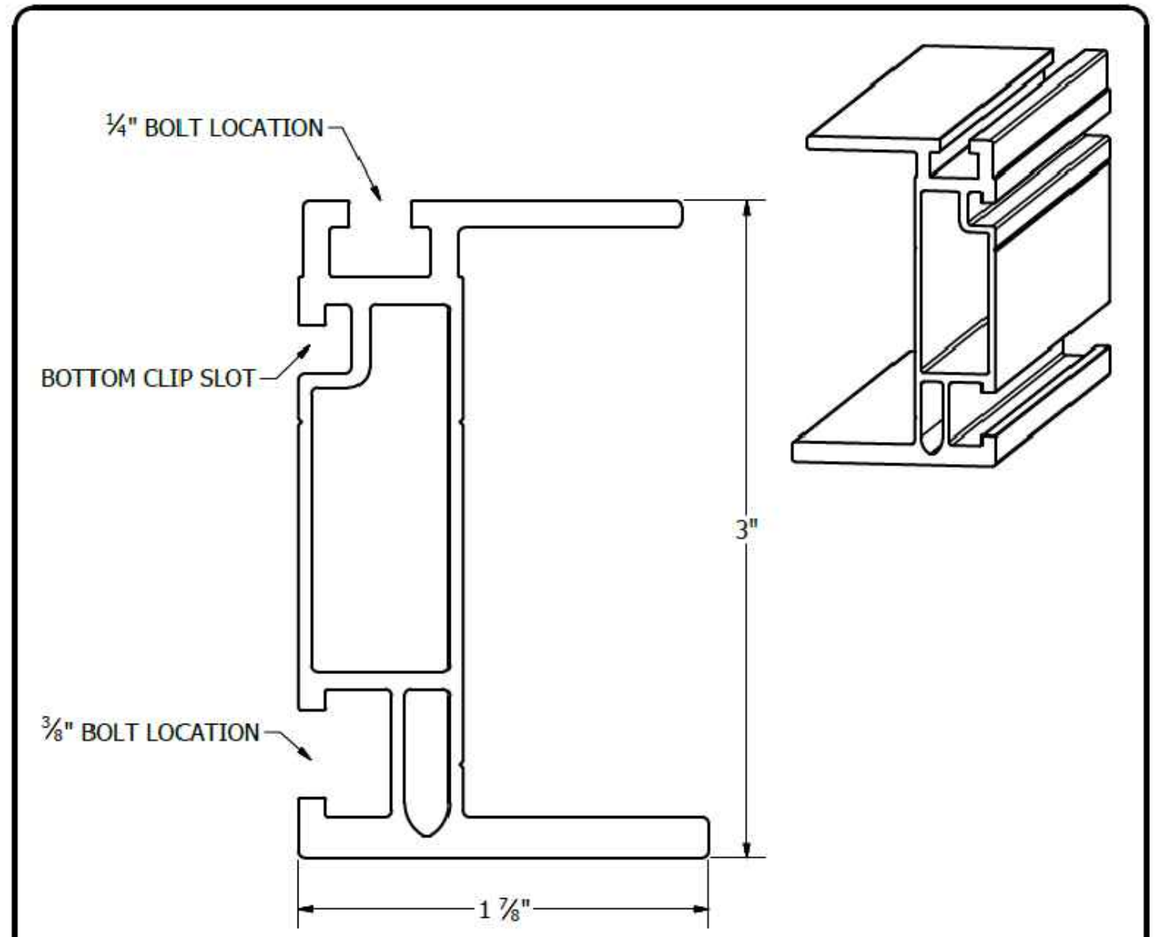
SHEET TITLE

RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-011



PART # TABLE		
P/N	DESCRIPTION	LENGTH
410144M	SMHD, RAIL 144" MILL	144"
410168M	SMHD, RAIL 168" MILL	168"
410204M	SMHD, RAIL 204" MILL	204"
410240M	SMHD, RAIL 240" MILL	240"

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

PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	HD 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-P03
SHEET

CONTRACTOR
SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS
WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE
DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

SHEET TITLE
RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER
R-012

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

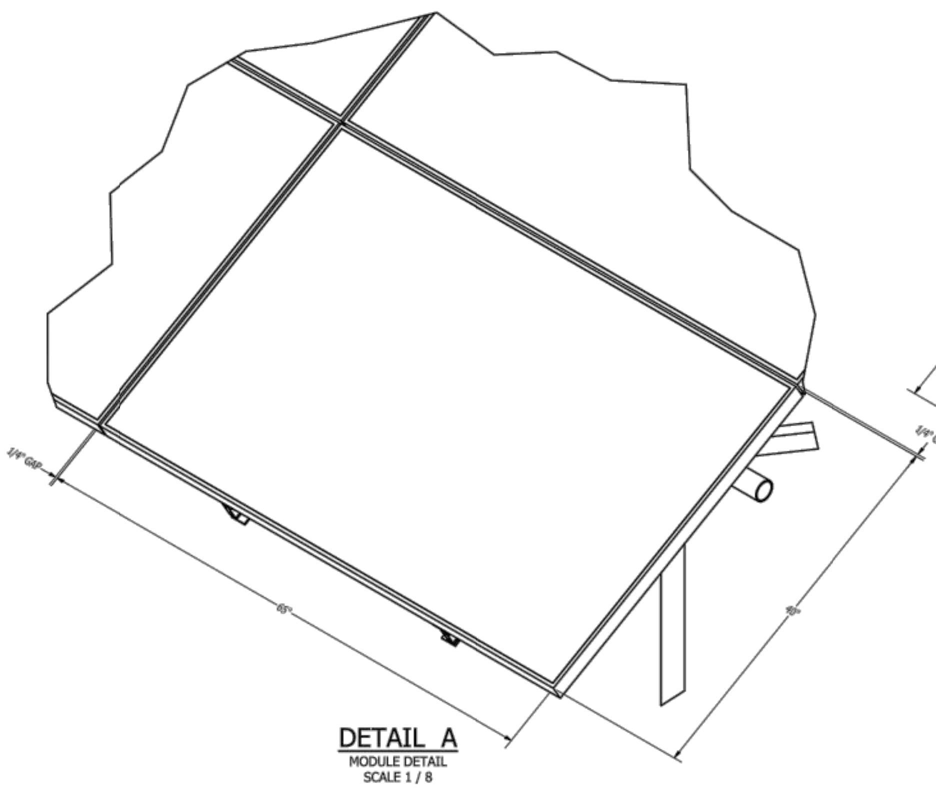
COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

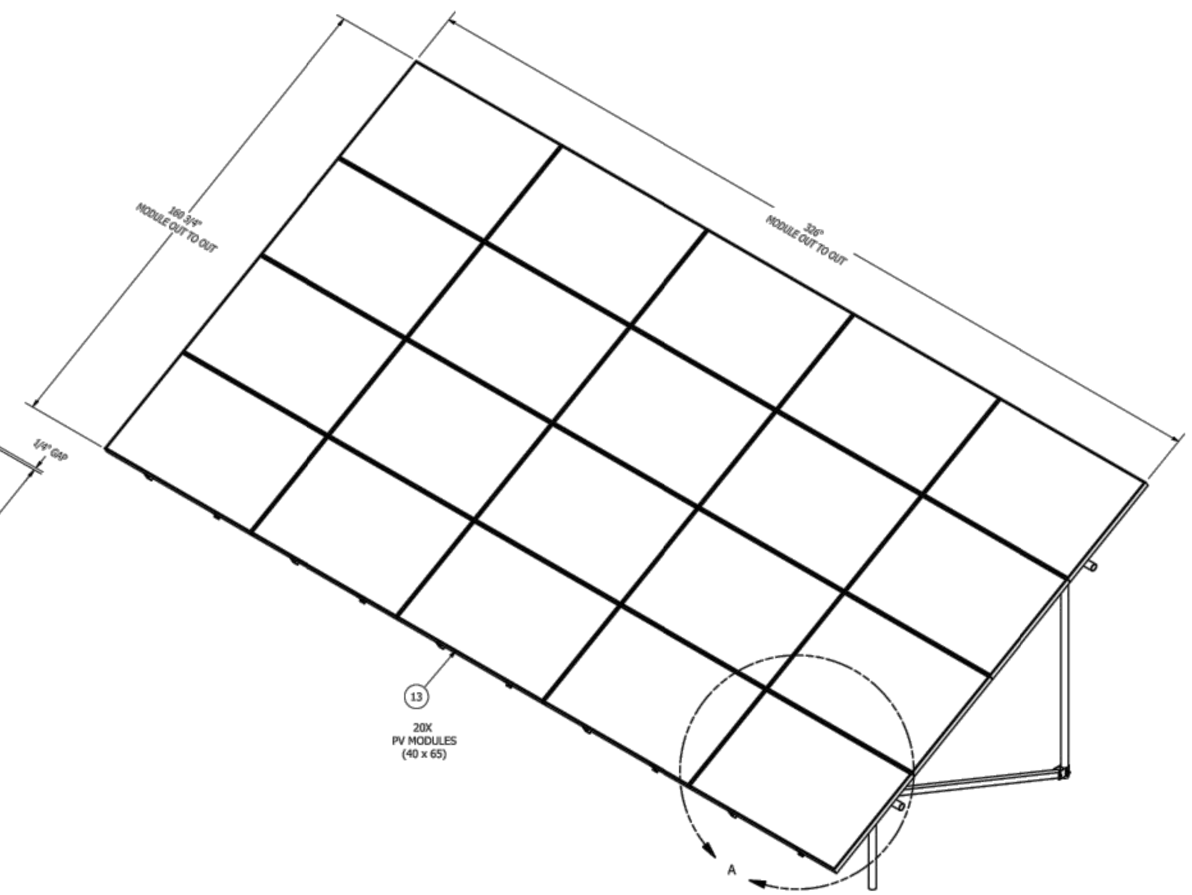
DC SIZE: 15.000 KW DC-(STC)

AC SIZE: 11.600 KW AC

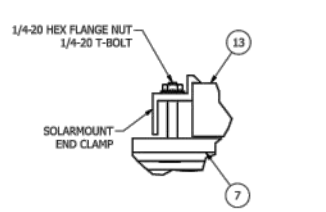
REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	ORIGINAL RELEASE	12/19/2011	AS



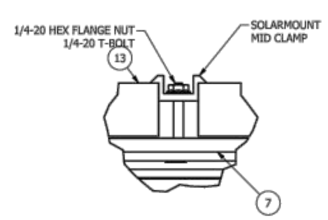
DETAIL A
MODULE DETAIL
SCALE 1 / 8



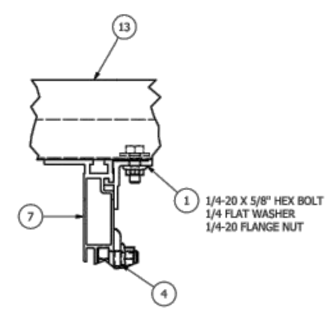
ISOMETRIC VIEW



TOP MOUNT END CLAMP
TYPICAL MODULE MOUNTING

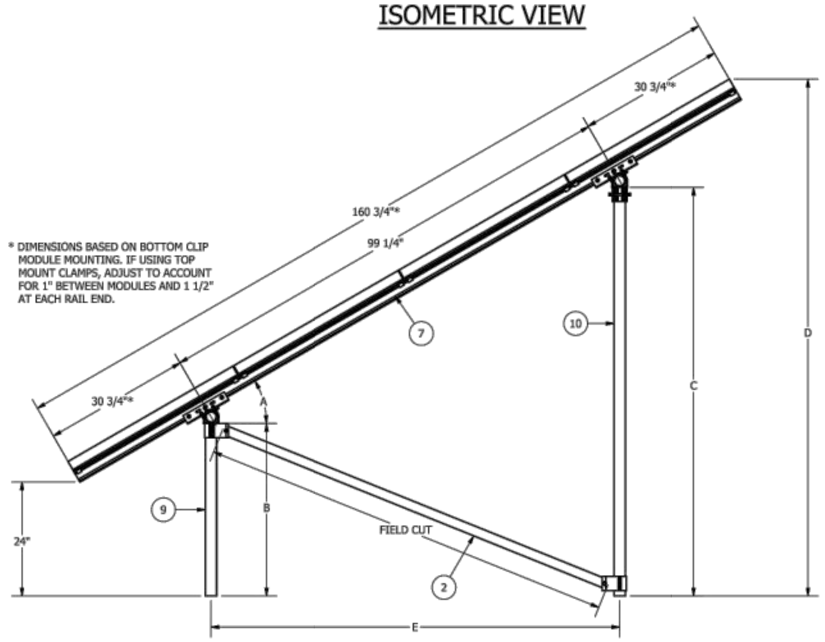


TOP MOUNT MID CLAMP
TYPICAL MODULE MOUNTING



BOTTOM UP CLIP
TYPICAL MODULE MOUNTING

* DIMENSIONS BASED ON BOTTOM CLIP MODULE MOUNTING. IF USING TOP MOUNT CLAMPS, ADJUST TO ACCOUNT FOR 1" BETWEEN MODULES AND 1 1/2" AT EACH RAIL END.



Tilt Angle A - (degrees)	Front Leg Length B - (inches)	Rear Leg Length C - (inches)	Rear Edge Height D - (inches)	North-South Leg Span E - (inches)
30	34	76 1/4	96 1/2	73
29	33 3/4	74 1/2	94 1/2	73 3/4
28	33 1/4	72 3/4	92 1/4	74 1/2
27	32 3/4	71	90 1/4	75
26	32 1/2	69 1/2	88	75 3/4
25	32	67 3/4	86	76 1/4
24	31 1/2	66	83 3/4	77
23	31 1/4	64	81 1/2	77 1/2
22	30 3/4	62 1/4	79 1/2	78
21	30 1/4	60 1/2	77 1/4	78 3/4
20	30	58 3/4	75	79 1/4
19	29 1/2	57	72 3/4	79 3/4
18	29	55	70 1/2	80 1/4
17	28 1/2	53 1/4	68 1/4	80 1/2
16	28 1/4	51 1/2	65 3/4	81
15	27 3/4	49 1/2	63 1/2	81 1/2
14	27 1/4	47 3/4	61 1/4	81 3/4
13	26 3/4	45 3/4	59	82
12	26 1/2	44	56 1/2	82 1/2
11	26	42	54 1/4	82 3/4
10	25 1/2	40 1/4	52	83
9	25	38 1/4	49 1/2	83 1/4
8	24 1/2	36 1/4	47 1/4	83 1/2
7	24 1/4	34 1/2	44 3/4	83 1/2
6	23 3/4	32 1/2	42 1/2	83 3/4
5	23 1/4	30 1/2	40	84
4	22 3/4	28 3/4	37 3/4	84
3	22 1/4	26 3/4	35 1/4	84 1/4
2	21 3/4	24 3/4	33	84 1/4
1	21 1/2	22 3/4	30 1/2	84 1/4
0	21	21	28 1/4	84 1/4

QUOTE #LA-JDM-080422-1452, REV. 1

NOTE: PARTS LIST BELOW IS FOR A 30° MODULE TILT. REFER TO CHART ON SHEET 1 FOR PIPE LENGTHS ASSOCIATED WITH OTHER TILT ANGLES.

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	80	302000C	SM BOTTOM UP CLIP
2	7	403201C	ULA 2" SQUARE BRACE (CUT TO 87 3/8")
3	7	403211C	ULA 2" ALUMINUM FRONT CAP
4	20	403213C	SM 2" RAIL MOUNTING BRACKET
5	7	403214C	ULA 2" ALUMINUM REAR CAP
6	7	403215C	ULA 2" ALUMINUM SLIDER
7	10	410168M	SM HD RAIL 168" (CUT TO 160 3/4")
8	2	PIPE COUPLER 2IN	
9	7	PIPE-1	2" SCH 40 GAL PIPE (CUT TO 36 1/4")
10	7	PIPE-2	2" SCH 40 GAL PIPE (CUT TO 85 7/8")
13	20	PV MODULE	40 x 65 MODULE
11	2	PIPE-3	2" SCH 40 GAL PIPE (CUT TO 17'-0")
12	2	PIPE-4	2" SCH 40 GAL PIPE CUT TO 10'-2")

DRAWN: Nick Quintana

UNIRAC
A HILTI GROUP COMPANY

1411 Broadway Blvd. NE
Albuquerque NM 87102 USA
Phone: 505.242.6411
WWW.UNIRAC.COM

TITLE: UNIRAC PCULA
4x5 2" ALUMINUM HD ULA ASSEMBLY

DRAWING NUMBER: 40X65-120D-SNOW-20-SEIS-0

DATE: 12/19/2011 | SHEET SIZE: D | REV: A | SHEET: 1 OF 3

SHEET TITLE
RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER
R-013

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471
PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

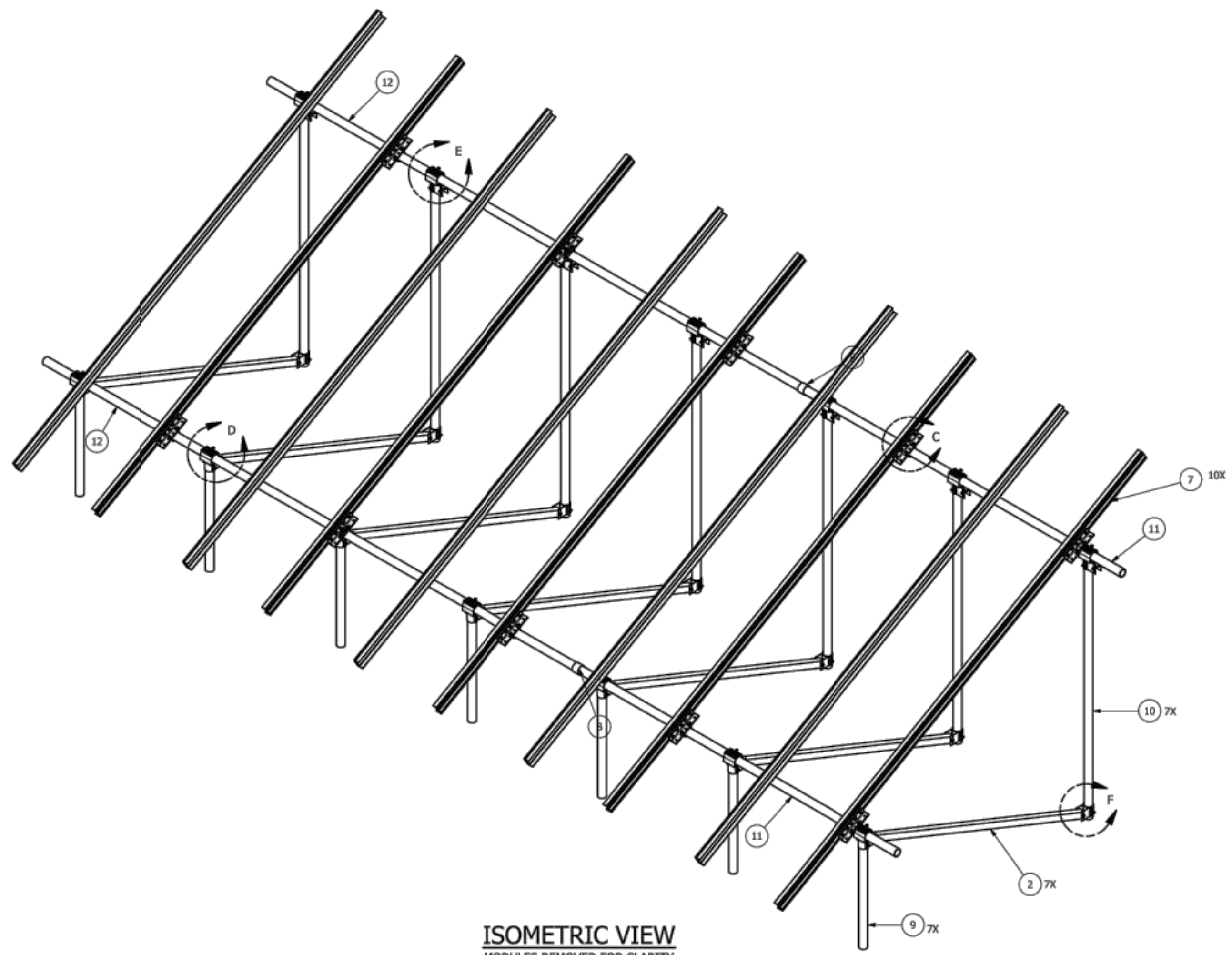
635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

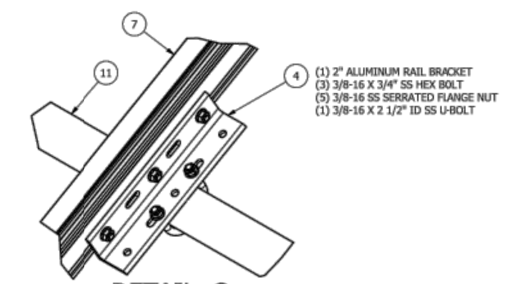
SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

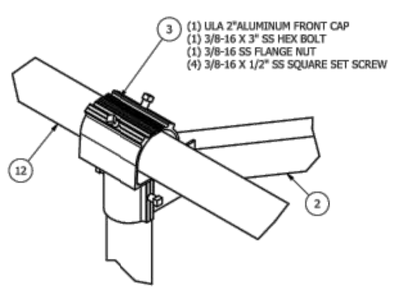
REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	ORIGINAL RELEASE	12/19/2011	AS



ISOMETRIC VIEW
MODULES REMOVED FOR CLARITY



DETAIL C
SCALE 1 / 4



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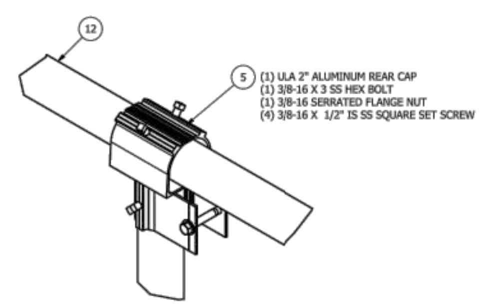
SCALE 1 / 4



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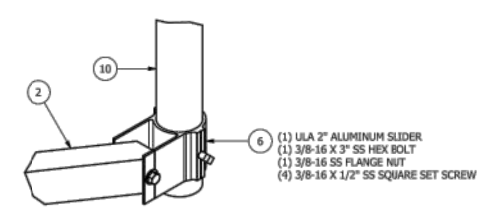

DETAIL F
SCALE 1 / 4

QUOTE #LA-JDM-080422-1452, REV. 1

NOTE: PARTS LIST BELOW IS FOR A 30° MODULE TILT. REFER TO CHART ON SHEET 1 FOR PIPE LENGTHS ASSOCIATED WITH OTHER TILT ANGLES.

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13	20	PV MODULE	40 x 65 MODULE

DESIGNER: Nick Quintana

UNIRAC — A HILTI GROUP COMPANY — 1411 Broadway Blvd. NE, Albuquerque NM 87102 USA, Phone: 505.242.6411, WWW.UNIRAC.COM

TITLE: UNIRAC PCULA 4x5 2" ALUMINUM HD ULA ASSEMBLY

DRAWING NUMBER: 40X65-120D-SNOW-20-SEIS-0

DATE: 12/19/2011 | SIZE: D | REV: A | SHEET: 2 OF 3

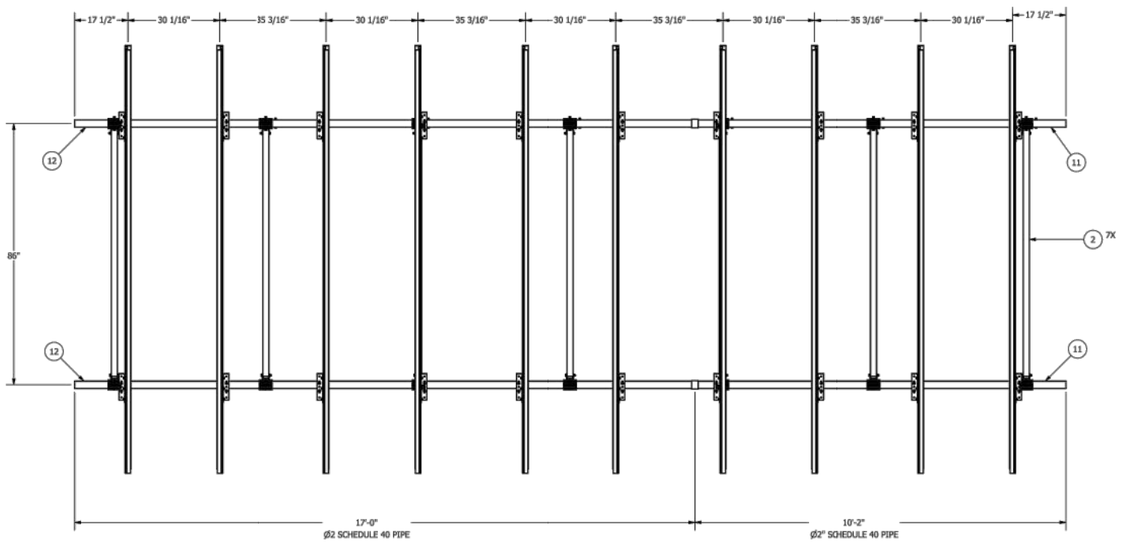
SHEET TITLE
RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

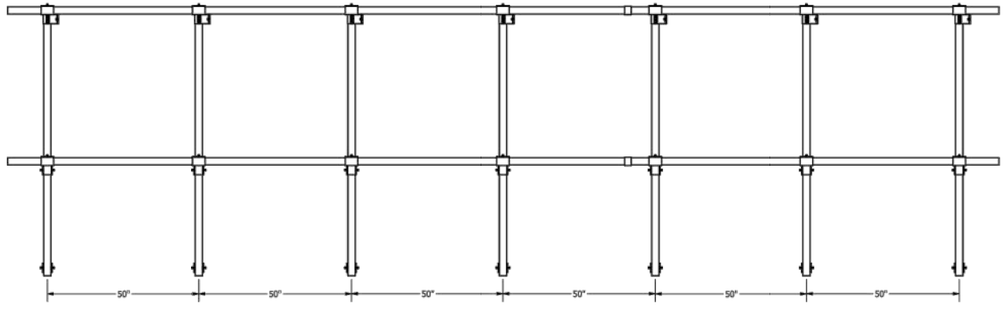
SHEET NUMBER

R-014

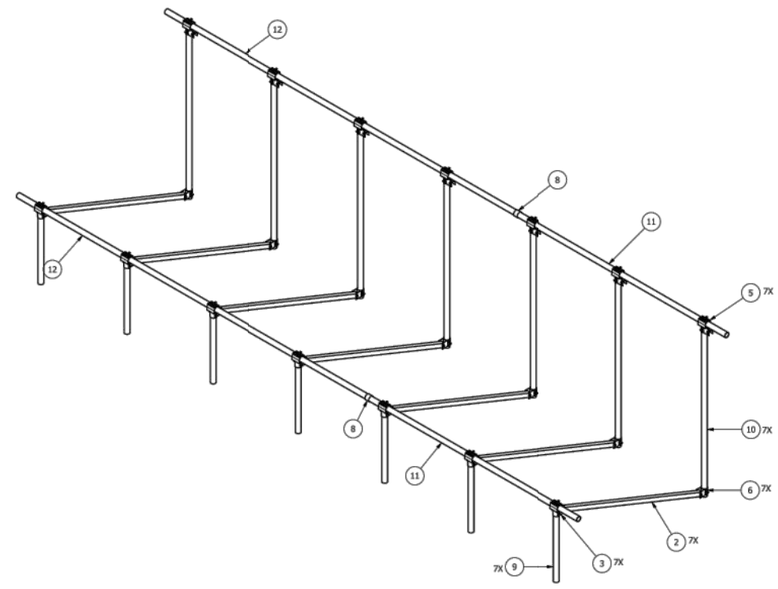
REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	ORIGINAL RELEASE	12/19/2011	AS



TOP VIEW
MODULES REMOVED FOR CLARITY



FRONT VIEW
MODULES AND RAILS REMOVED FOR CLARITY



ISOMETRIC VIEW
MODULES AND RAILS REMOVED FOR CLARITY

QUOTE #LA-JDM-080422-1452, REV. 1

NOTE: PARTS LIST BELOW IS FOR A 30° MODULE TILT. REFER TO CHART ON SHEET 1 FOR PIPE LENGTHS ASSOCIATED WITH OTHER TILT ANGLES.

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
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DRAWN BY: Nick Quintana	UNIRAC	1411 Broadway Blvd. NE Albuquerque, NM 87102 USA Phone: 505.242.6411 WWW.UNIRAC.COM	
	UNIRAC PCULA 4x5 2" ALUMINUM SM ULA ASSEMBLY		
	40X65-120D-SNOW-20-SEIS-0		
	12/19/2011	D	A	3 OF 3

C:_Vault_Working_Folder\Designs\PROJECT MTO\PCULA\40X65-120D-SNOW-20-SEIS-0.idw

CONTRACTOR

SUNPRO

22171 MCH RD
MANDEVILLE, LA 70471

PHONE: 9152011490

PROJECT NAME & ADDRESS

WILLIAM BRADLEY

635 SW GRAPE ST,LAKE CITY, FL 32024

COUNTY:-COLUMBIA COUNTY

SYSTEM SIZE

DC SIZE: 15.000 KW DC-(STC)
AC SIZE: 11.600 KW AC

SHEET TITLE

RESOURCE DOCUMENT

DRAWN DATE	12/29/2021
DRAWN BY	VI

SHEET NUMBER

R-015