PHOTOVOLTAIC SYSTEM

CODES:

THIS PROJECT COMPLIES WITH THE FOLLOWING:
2018 INTERNATIONAL BUILDING CODE (IBC)
2018 INTERNATIONAL RESIDENTIAL CODE (IRC)
2018 INTERNATIONAL MECHANICAL CODE (IMC)
2018 INTERNATIONAL PLUMBING CODE (IPC)
2018 INTERNATIONAL FUEL GAS CODE (IFGC)
2018 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2018 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
2018 INTERNATIONAL SWIMMING POOL AND SPA CODE (ISPSC)
2020 NATIONAL ELECTRICAL CODE (NEC)
AS ADOPTED BY HARNETT COUNTY (NC)

VICINITY MAP:

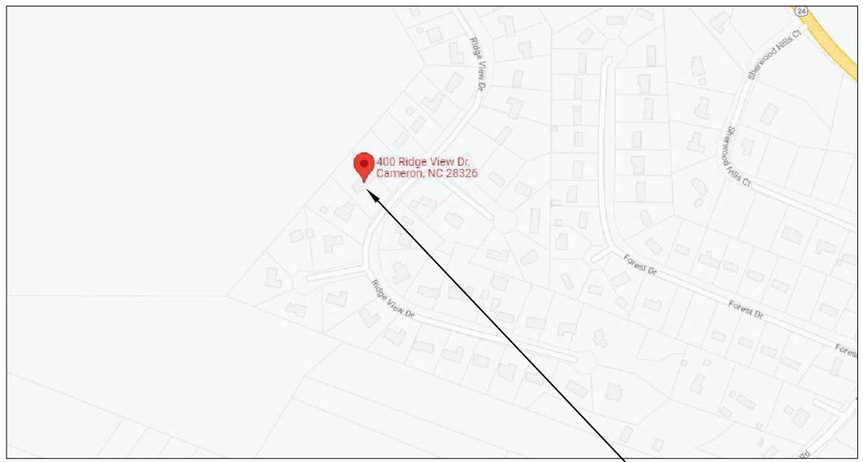


TABLE OF CONTENTS:

CONSTRUCTION NOTES:

CONDUIT AND CONDUCTOR SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.

ALL SOLAR ENERGY SYSTEM EQUIPMENT SHALL BE SCREENED TO THE MAXIMUM EXTENT POSSIBLE AND SHALL BE PAINTED A COLOR SIMILAR TO THE SURFACE UPON WHICH THEY ARE MOUNTED.

MODULES SHALL BE TESTED , LISTED AND INDENTIFIED WITH FIRE CLASSIFICATION IN ACCORDANCE WITH UL 2703. SMOKE AND CARBON MONOXIDE ALARMS ARE REQUIRED PER SECTION R314 AND 315 TO BE VERIFIED AND INSPECTED BY INSPECTOR IN THE FIELD.

DIG ALERT (811) TO BE CONTACTED AND COMPLIANCE WITH EXCAVATION SAFETY PRIOR TO ANY EXCAVATION TAKING PLACE

PHOTOVOLTAIC SYSTEM GROUND WILL BE TIED INTO EXISTING GROUND AT MAIN SERVICE FROM DC DISCONNECT/INVERTER AS PER 2020 NEC SEC 250.166(A).

SOLAR PHOTOVOLTAIC SYSTEM EQUIPMENT WILL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF ART. 690 OF THE 2020 NEC

THE EXISTING MAIN SERVICE PANEL WILL BE EQUIPPED WITH A GROUND ROD OR UFER

UTILITY COMPANY WILL BE NOTIFIED PRIOR TO ACTIVATION OF THE SOLAR PV SYSTEM

SOLAREDGE OPTIMIZERS ARE LISTED TO IEC 62109-1 (CLASS II SAFETY) AND UL 1741 STANDARDS

INSTALL CREW TO VERIFY ROOF STRUCTURE PRIOR TO COMMENCING WORK. EMT CONDUIT ATTACHED TO THE ROOF USING CONDUIT MOUNT.

CLIENT:
JESSICA & CHRISTOPHER BENOIT
400 RIDGE VIEW DR, CAMERON, NC 28326
AHJ: HARNETT COUNTY (NC)
UTILITY: CENTRAL ELECTRIC EMC
PHONE: 9046545944

SYSTEM:
SYSTEM SIZE (DC): 29 X 425 = 12.325 kW
SYSTEM SIZE (AC): 10.000 kW @ 240V
MODULES: 29 X TESLA: T425S
OPTIMIZERS: 29 X SOLAREDGE P505
INVERTER: SOLAREDGE SE10000H-US [SI1]

REVISIONS

NO.	DESCRIPTION	DATE

FREEDOM FOREVER LLC
415 INDUSTRIAL CT., GREER, SC 29651
Tel: (800) 385-1075

GREG ALBRIGHT

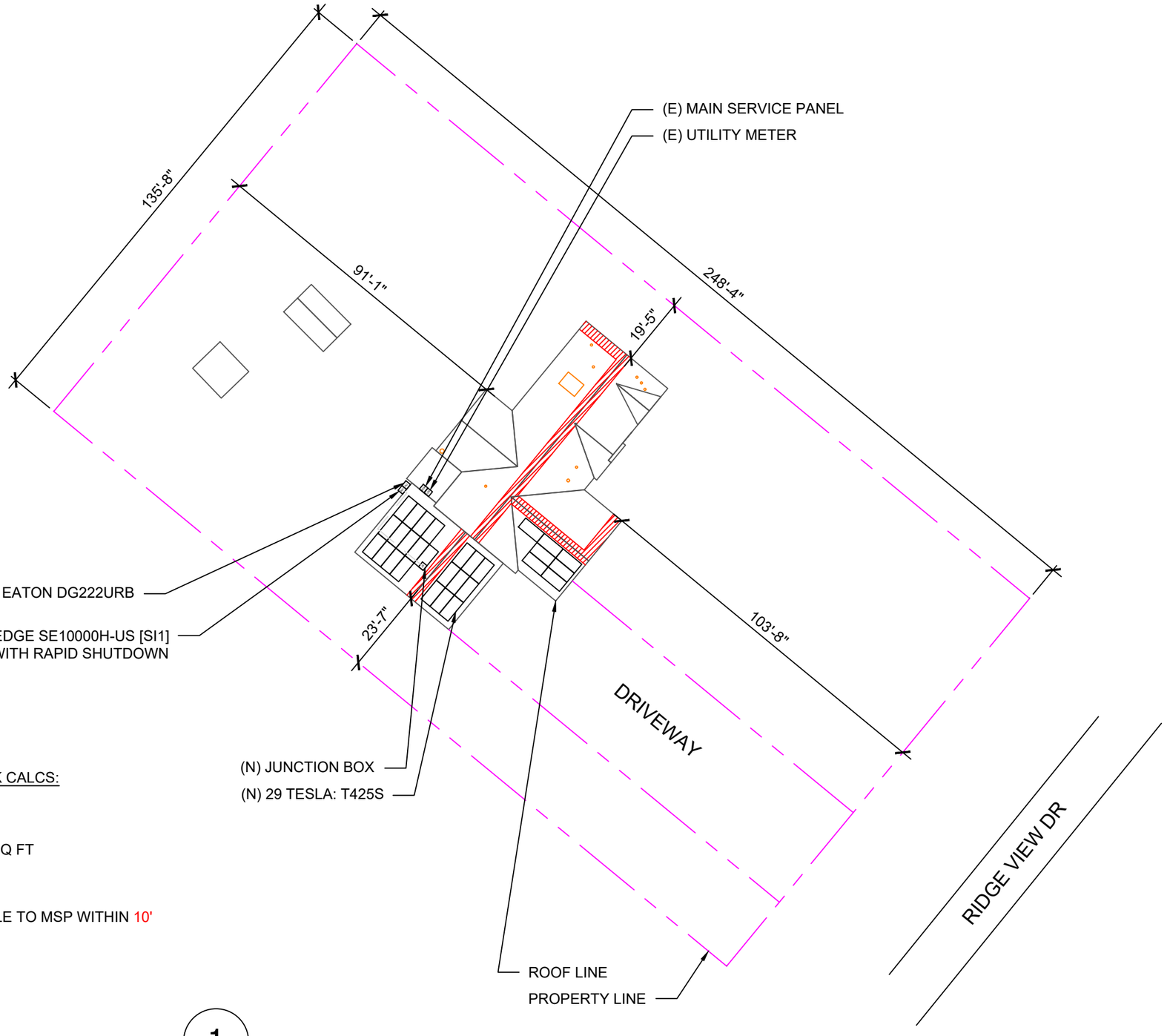
CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR U.34043

SITE LOCATION

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-1

LEGEND:

- OBSTRUCTION
- PIPE VENT
- MODULES
- CONDUIT
- SETBACK
- AC — AC DISCONNECT
- MSP — MSP
- JB — JUNCTION BOX
- INV — INVERTER
- PM — PRODUCTION METER



TOTAL ROOF AREA RIDGE SETBACK CALCS:
TOTAL ROOF AREA: 3795 SQ FT
SINGLE MODULE AREA: 23.4 SQ FT
TOTAL NUMBER OF MODULES: 29
TOTAL AREA OF MODULES: 678.60 SQ FT
ROOF COVERAGE: 17.88%
FIRE SPRINKLERS : NO

BOS WILL BE AS CLOSE AS POSSIBLE TO MSP WITHIN 10'

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

1

ROOF AREA: 3795 SQ FT

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SITE PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-2

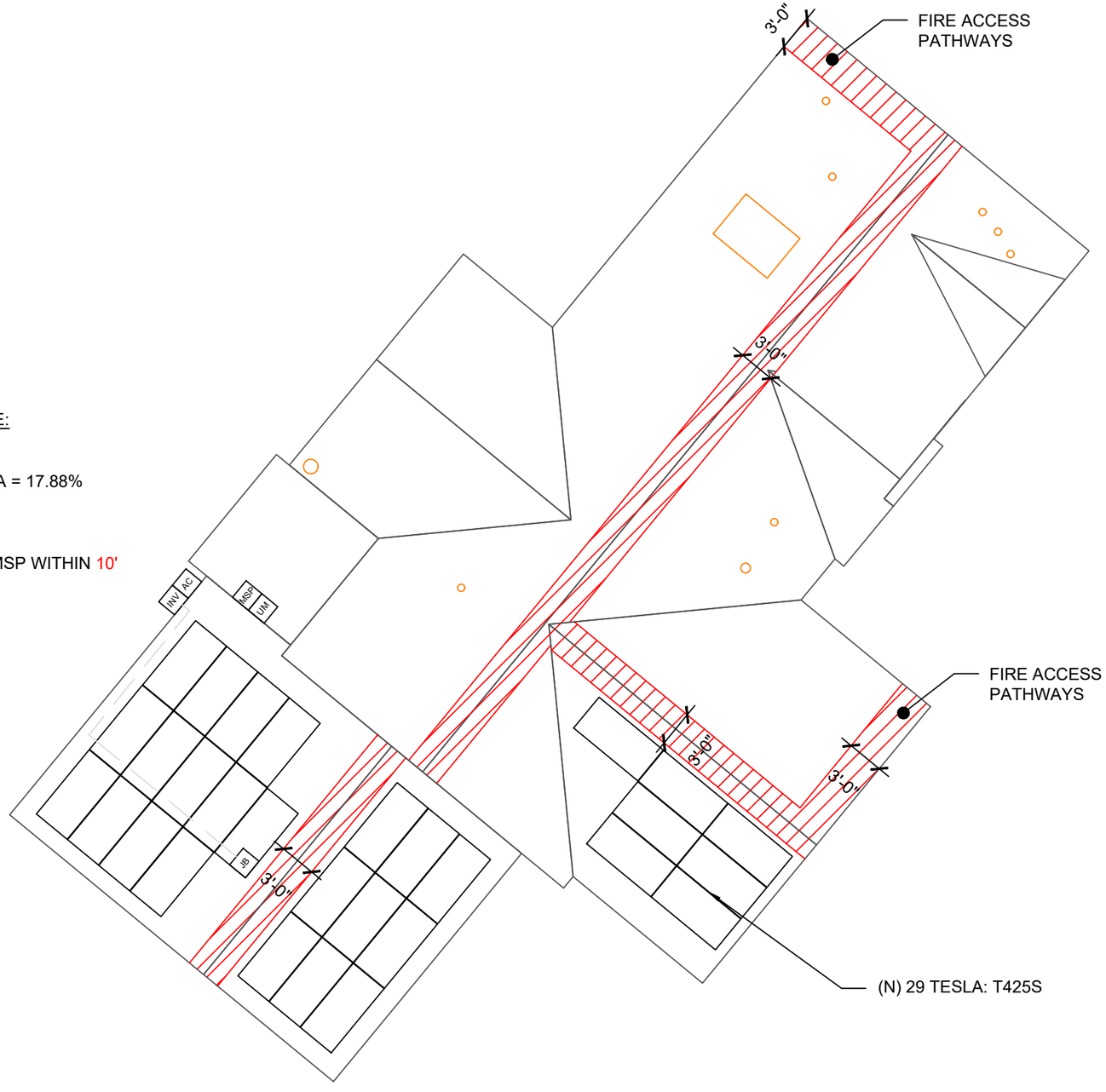
LEGEND:

- OBSTRUCTION
- PIPE VENT
- MODULES
- CONDUIT
- SETBACK
- AC — AC DISCONNECT
- MSP — MSP
- JB — JUNCTION BOX
- INV — INVERTER
- PM — PRODUCTION METER

MODIFIED SETBACKS PROPOSED AT RIDGE:
TOTAL ARRAY AREA = 678.6 SF
TOTAL ROOF AREA = 3795 SF
TOTAL ARRAY AREA AS A % TO ROOF AREA = 17.88%
17.88% < 33%

BOS WILL BE AS CLOSE AS POSSIBLE TO MSP WITHIN 10'

NOTE TO INSTALL: VERIFY THE ROOF FRAMING INFO BEFORE INSTALLATION AND NOTIFY THE EOR IF THERE IS ANY INCONSISTENCY BETWEEN SITE VERIFICATION AND FOLLOWINGS: 2x4 RAFTERS @ 24" OC SPACING WITH MAX UNSUPPORTED SPAN EQUAL OR LESS THAN 10 FT



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

NOTES:
1. EMT CONDUIT ATTACHED TO THE ROOF USING CONDUIT MOUNTS
2. ATTACHED CLAMPS AT 25% FROM THE EDGE AND 50% FROM THE CENTER OF THE MODULES
3. JUNCTION BOX IS MOUNTED TO THE RAIL.

NORTH CAROLINA PROFESSIONAL SEAL 050296 ENGINEER ARASH ZANDIEH
Exp. 12/31/2021

ROOF AREA: 3795 SQ FT

CLIENT:
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GREG ALBRIGHT

CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR U.34043

ROOF PLAN WITH MODULES LAYOUT

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-2A

ROOF DETAILS:

TOTAL ROOF AREA: 3795 SQ FT
ARRAY COVERAGE: 17.88%
SYSTEM DISTRIBUTED WEIGHT: 2.38 LBS
UNIRAC: SFM INFINITY MICRORAIL POINT-LOAD: 30.54 LBS

ROOF AREA STATEMENT						
ROOF	MODULE QUANTITY	ROOF PITCH	ARRAY PITCH	AZIMUTH	ROOF AREA	ARRAY AREA
1	7	14°	14°	219°	324 SQ FT	163.8 SQ FT
2	9	14°	14°	129°	350 SQ FT	210.6 SQ FT
3	13	14°	14°	309°	533 SQ FT	304.2 SQ FT

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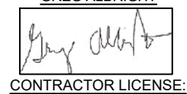


CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR U.34043

ROOF DETAILS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-2B

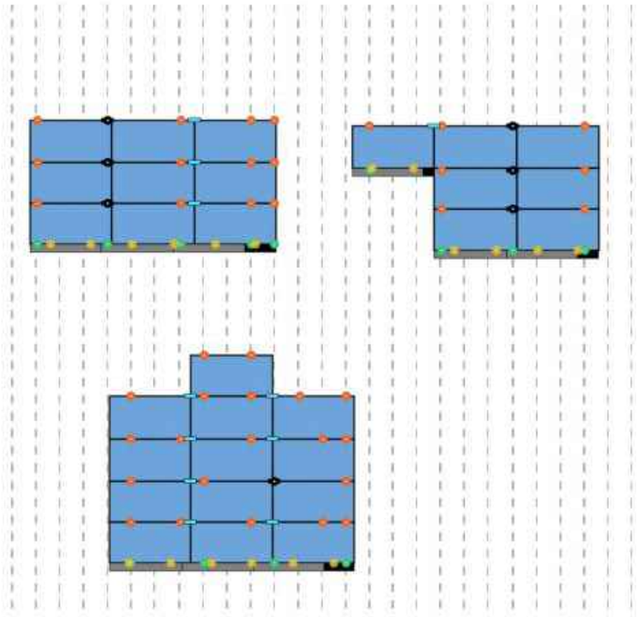
LEGEND

Module (Roof Zones)

- Zone 1
- Zone 2
- Zone 3

SFM Components

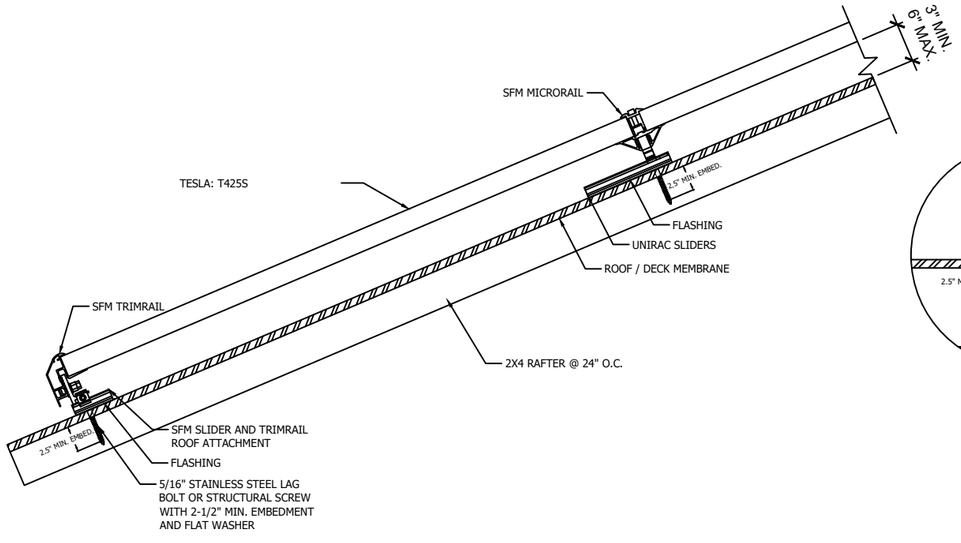
- SFM Microrail 2"
- SFM Splice 6.5"
- SFM Attached Splice 8"
- SFM Trim Attachment
- SFM Trim Univ Clip
- Full Trim Section
- Cut Trim Section



MAX ATTACHMENT SPAN - 4'

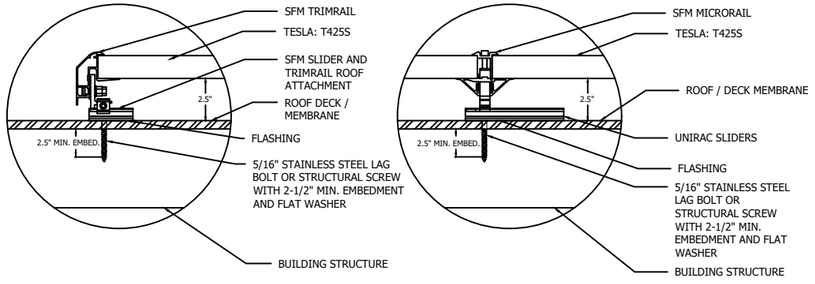
PARTIAL ROOF FRAMING PLAN

Scale: NTS



SOLAR PV ARRAY SECTION VIEW

Scale: NTS



ATTACHMENT DETAIL

Scale: NTS

NORTH CAROLINA PROFESSIONAL SEAL 050296 ENGINEER ARASH ZANDIEH

Exp. 12/31/2021

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freedom FOREVER

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Tel: (800) 385-1075

GREG ALBRIGHT

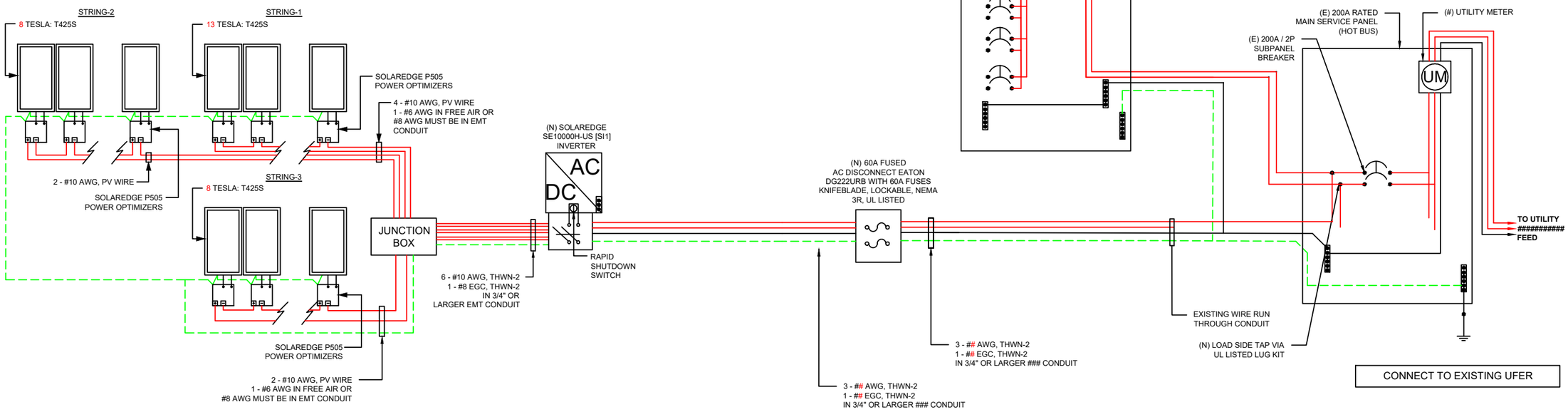
CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR U.34043

MOUNTING DETAILS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-3

BACKFEED FUSE SIZING				
MAX. CONTINUOUS OUTPUT 42.00A @ 240V				
42.00	X	1.25	=	52.50AMPS 60A FUSES - OK
SEE 705.12 OF 2020 NEC				
200	X	1.20	=	240
240	-	200	=	40A ALLOWABLE BACKFEED

PV SYSTEM
12.325 kW-DC
10.000 kW-AC



NOTE:
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THREE LINE DIAGRAM

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-4

WIRE SCHEDULE

RACEWAY #	EQUIPMENT				WIRE LOCATION	CONDUCTOR QTY.	AWG WIRE SIZE	STARTING ALLOWABLE AMPACITY @ 90°C 310.15(B)(16)	STARTING CURRENT APPLIED TO CONDUCTORS IN RACEWAY	TEMPERATURE CORRECTION FACTOR 310.15(B)(2)(a)	ADJUSTMENT FACTOR FOR MORE THAN 3 CONDUCTORS 310.15(B)(3)(a)	ADJUSTED CONDUCTOR AMPACITY @ 90°C	MAXIMUM CURRENT APPLIED TO CONDUCTORS IN RACEWAY
1	DC	MODULE	TO	OPTIMIZER	ROOF / FREE-AIR	2	10	40	14.05	1	1	40.00	17.56
2	DC	OPTIMIZER	TO	JUNCTION BOX	ROOF / FREE-AIR	2	10	40	15.00	1	1	40.00	18.75
3	DC	JUNCTION BOX	TO	INVERTER	EXTERIOR WALL	6	10	40	15.00	1	0.8	32.00	18.75
4	AC	INVERTER	TO	AC DISCONNECT	EXTERIOR WALL	3	6	75	42.00	1	1	75.00	52.50
5	AC	AC DISCONNECT	TO	POI	EXTERIOR WALL	3	6	75	42.00	1	1	75.00	52.50

CONDUCTOR AMPACITY CALCULATIONS IN ACCORDANCE WITH NEC 690.8.

CLIENT:
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REVISIONS

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FREEDOM FOREVER LLC
415 INDUSTRIAL CT., GREER, SC 29651
Tel: (800) 385-1075

GREG ALBRIGHT

CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR U.34043

CONDUCTOR CALCULATIONS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-5

BREAKER SIZES:

SERVICE LIST:

NONE

MATERIAL LIST:

QTY.	PART	PART #	DESCRIPTION
29	MODULES	120-425	TESLA: T425S
29	OPTIMIZERS	130-505	SOLAREDGE P505 POWER OPTIMIZER - FRAME MOUNTED MODULE ADD-ON
1	JUNCTION BOX	480-276	600VDC NEMA 3R UL LISTED JUNCTION BOX
2	CONNECTORS	240-300	STAUBLI / MULTI-CONTACT MC4 CONNECTORS (FEMALE)
2	CONNECTORS	240-301	STAUBLI / MULTI-CONTACT MC4 CONNECTORS (MALE)
1	INVERTER	120-101	SOLAREDGE SE10000H-US [SI1] 240V INVERTER UL1741 SA CERTIFIED INTEGRATED ARC FAULT PROTECTION AND RAPID SHUTDOWN
1	AC DISCONNECT	321-060	60A RATED 240VAC NEMA 3R UL LISTED
53	ROOF ATTACHMENT 1	261-602	UNIRAC: SFM INFINITY MICRORAIL
21	SFM TRIM 1	241-253	FLASHKIT SFM TRIM COMP DARK
55	SFM SLIDER 1	261-603	FLASHKIT SFM SLIDER COMP DARK
16	BONDING CLAMP 1	221-100	SFM N/S BONDING CLAMP
7	BONDING CLAMP 1	241-404	SFM TRIM BONDING CLAMP
31	MOUNT ASSEMBLY 1	241-405	MLPE MOUNT ASSY
18	SFM SPLICE 1	261-604	SFM SPLICE
4	SFM ATTACHED SPLICE 1	211-101	SFM ATTACHED SPLICE 8 INCH
24	TRIMRAIL 1	261-606	SFM TRIMRAIL UNIV CLIP W/ HDW
8	TRIM SPLICE 1	261-605	SFM TRIM SPLICE DRK
13	TRIMRAIL 1	211-115	SFM TRIMRAIL UNIV DRK
29	GROUND LUG 1	260-585	ILSCO GROUND LUG
29	TRIM END CAPS 1	221-200	UNIRAC SFM TRIM END CAPS

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EQUIPMENT & SERVICE LIST

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-6

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

690.13(B)

DO NOT DISCONNECT UNDER LOAD

NEC 690.15 (B) & NEC 690.33(D)(2)

⚠ WARNING

SINGLE 120-VOLT SUPPLY
DO NOT CONNECT
MULTIWIRE BRANCH CIRCUITS

NEC 710.15(C) & 692.9 (C)

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D) & NEC 690.59

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(F)(7)

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

706.15(C)(4) & 690.13(B)

⚠ WARNING

THIS EQUIPMENT FED BY MULTIPLE SOURCES:
TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN POWER SUPPLY SHALL NOT EXCEED AMPACITY OF BUSBAR

NEC 705.12(B)(3)(3)

⚠ WARNING

THE DISCONNECTION OF THE GROUNDED CONDUCTOR(S) MAY RESULT IN OVERVOLTAGE ON THE EQUIPMENT

NEC 690.31(E)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

690.56(C)(3)

M

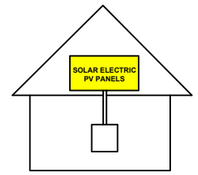
AC

PM

INVERTER

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



IFC 605.11.3.1(1) & 690.56(C)

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

NEC 705.12(D) & NEC 690.59

⚠ WARNING

POWER SOURCE OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.

NEC 705.12(C) & NEC 690.59

⚠ WARNING

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

24 INCH FLASH HAZARD BOUNDARY
3 CAL/CM^2 FLASH HAZARD AT 18 INCHES
480 VAC SHOCK HAZARD WHEN COVER IS REMOVED
42 INCH LIMITED APPROACH
12 INCH RESTRICTED APPROACH - 500 V CLASS 00 GLOVES
1 INCH PROHIBITED APPROACH - 500 V CLASS 00 GLOVES

LOCATION: 400 RIDGE VIEW DR CAMERON, NC 28326

NEC 706.15(C) AND NEC 110.16

PHOTOVOLTAIC AC DISCONNECT

NEC 690.13(B)

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT: 42.00A
NOMINAL OPERATING AC VOLTAGE: 240V

NEC 690.54

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D) & NEC 690.59

SOLAR PV DC CIRCUIT

EVERY 10' ON CONDUIT AND ENCLOSURES
NEC 690.31(O)(2)

PHOTOVOLTAIC POWER SOURCE

EVERY 10' ON CONDUIT AND ENCLOSURES
NEC 690.31(D)(2)

MAXIMUM VOLTAGE	480	V
MAXIMUM CIRCUIT CURRENT	27	A
MAX DC-DC CONVERTER OUTPUT CURRENT	15	A

DC

J/B

PHOTOVOLTAIC DC DISCONNECT

NEC 690.13(B)

MAXIMUM DC VOLTAGE OF PV SYSTEM

NEC 690.53

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

706.15(C)(4) & 690.13(B)

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

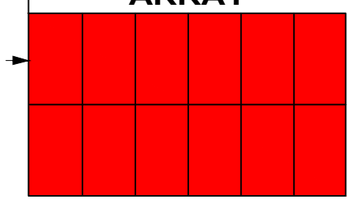
706.15(C)(4) & 690.13(B)

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(F)(7)

ARRAY



NEC 690.31(G)(3) & (4)

NOTES:

1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324 MARKINGS SHOWN HEREON.
2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
   - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
   - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
   - C. ARIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS

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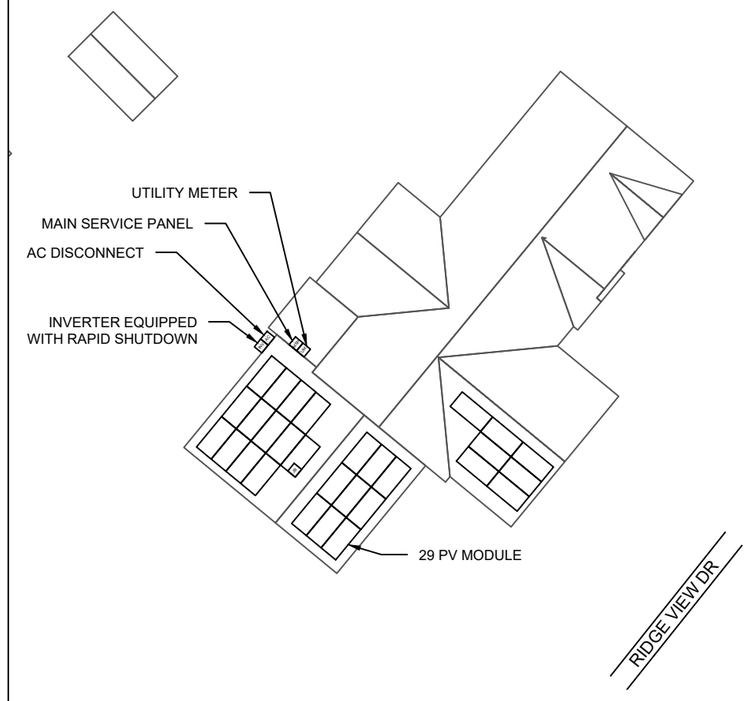
LABELS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-7

CAUTION:

MULTIPLE SOURCES OF POWER LOCATED AS SHOWN.
DANGEROUS VOLTAGE MAY BE PRESENT AT ALL TIMES



6X8" TYP - NEC 705.10

NOTES:

1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324 MARKINGS SHOWN HEREON.
2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
   A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
   B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
   C. AERIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS.

CLIENT:
JESSICA & CHRISTOPHER BENOIT
400 RIDGE VIEW DR, CAMERON, NC 28326
AHJ: HARNETT COUNTY (NC)
UTILITY: CENTRAL ELECTRIC EMC
PHONE: 9046545944

SYSTEM:
SYSTEM SIZE (DC): 29 X 425 = 12.325 kW
SYSTEM SIZE (AC): 10.000 kW @ 240V
MODULES: 29 X TESLA: T425S
OPTIMIZERS: 29 X SOLAREDGE P505
INVERTER: SOLAREDGE SE10000H-US [SI1]

REVISIONS

NO.	DESCRIPTION	DATE

FREEDOM FOREVER LLC
415 INDUSTRIAL CT., GREER, SC 29651
Tel: (800) 385-1075

GREG ALBRIGHT

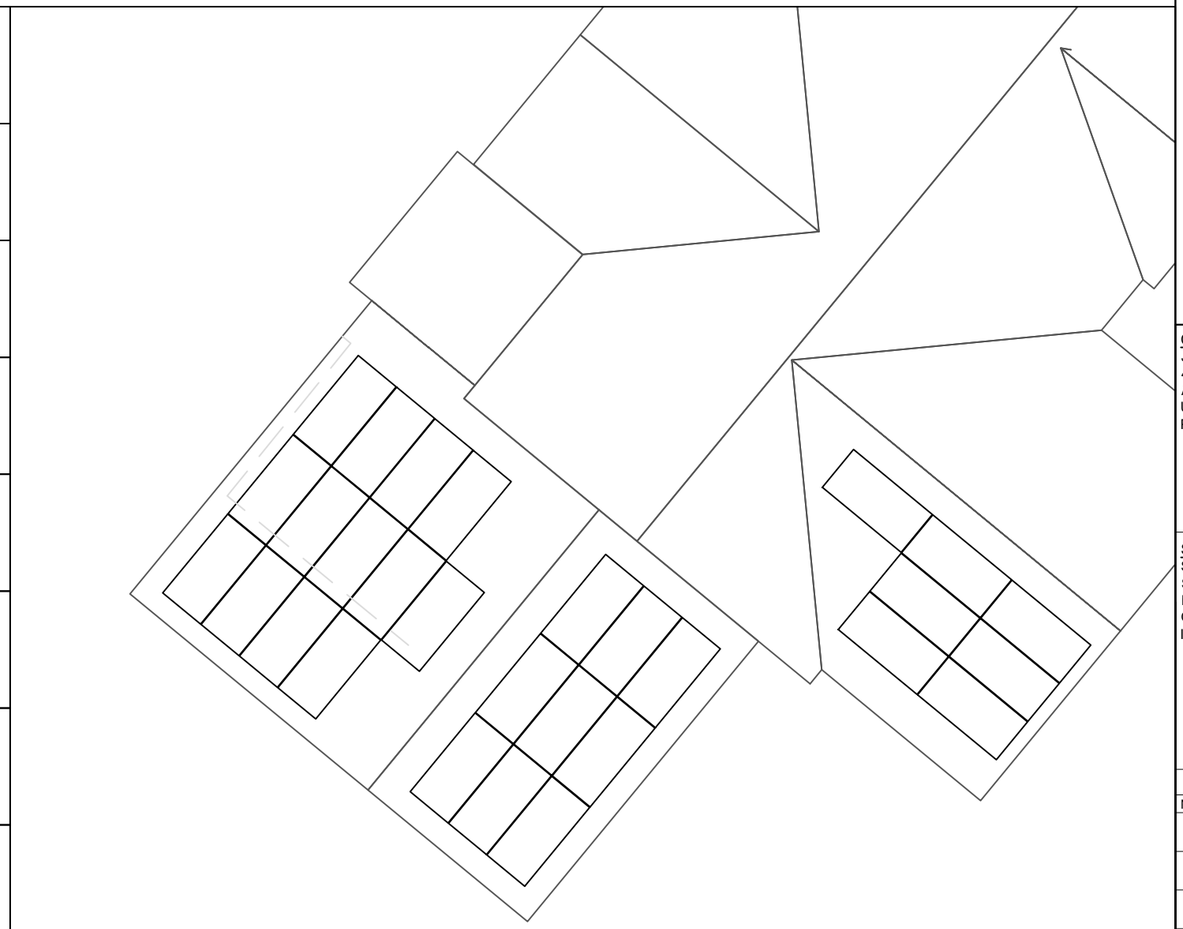
CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR U.34043

SITE PLACARD

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-7A

SOLAREDGE OPTIMIZER CHART

	1-10	11-20	21-30	31-40	41-50	51-60
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						



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GREG ALBRIGHT

CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR U.34043

OPTIMIZER CHART

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-8

SAFETY PLAN

INSTRUCTIONS:

1. USE SYMBOLS IN KEY TO MARK UP THIS SHEET.
2. SAFETY PLAN MUST BE MARKED BEFORE JOB STARTS AS PART OF THE PRE-PLAN
3. DOCUMENT ALL ADDITIONAL HAZARDS ON THIS PAGE & MAKE NOTES ON THE JHA SHEET

IN CASE OF EMERGENCY

NEAREST HOSPITAL OR OCCUPATIONAL/INDUSTRIAL CLINIC

NAME: _____

ADDRESS: _____

SAFETY COACH CONTACT INFORMATION

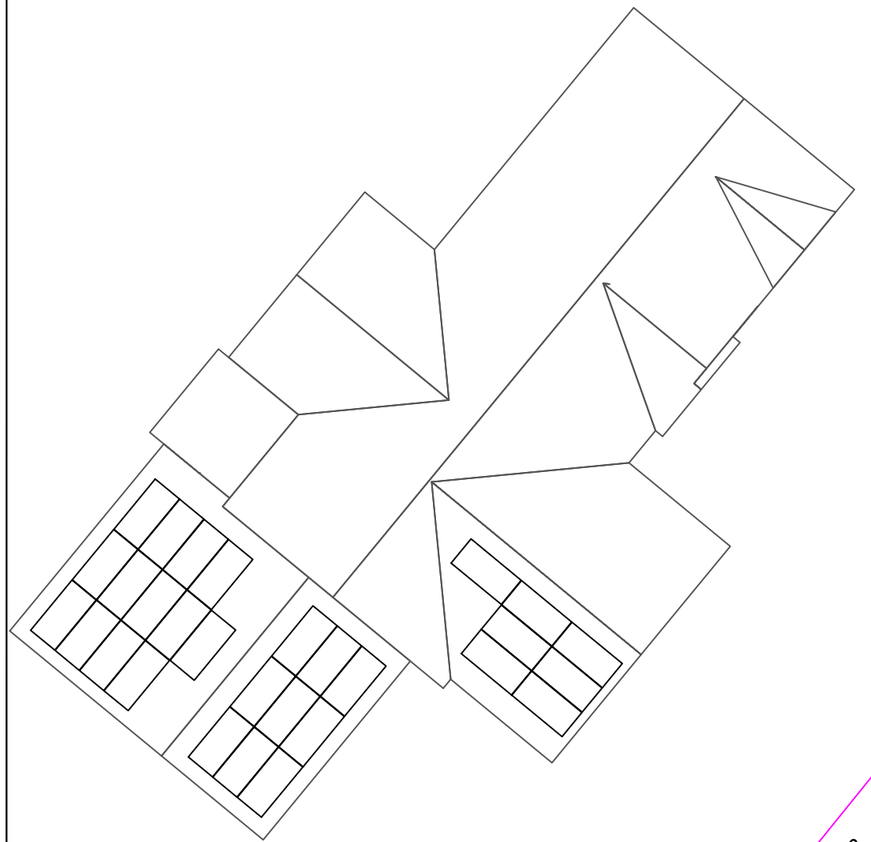
NAME: _____

ADDRESS: _____

ALL EMPLOYEES ON SITE SHALL BE MADE AWARE OF THE SAFETY PLAN AND SIGN INDICATING THAT THEY ARE AWARE OF THE HAZARDS ON-SITE AND THE PLAN FOR WORKING SAFELY.

NAME	SIGNATURE

DATE: _____ TIME:_____



RIDGE VIEW DR

MARK UP KEY

- (P) PERMANENT ANCHOR
- (T) TEMPORARY ANCHOR
- [IL] INSTALLER LADDER
- [B] JUNCTION / COMBINER BOX
- [S] STUB-OUT
- [X] SKYLIGHT
- NO LADDER ACCESS (STEEP GRADE OR GROUND LEVEL OBSTRUCTIONS)
- [ ] RESTRICTED ACCESS
- CONDUIT
- (GAS) GAS SHUT OFF
- (H_2O) WATER SHUT OFF
- (7) SERVICE DROP
- (Z) POWER LINES

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SAFETY PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-9

JOB HAZARD ANALYSIS

Crew leader to fill out all sections below, hold a pre-job safety meeting with all personnel, and upload this completed document and the Safety Plan to Site Capture

Ladder Access
- Ladders must be inspected before each use.
- Extension ladders must be set up on a firm and level surface at a 4-to-1 rise to run angle (or 75 degrees) and the top must be secured to the structure. Extension style ladders placed on uneven, loose or slippery surfaces must additionally have the base firmly anchored or lashed so the base will not slip out.
- Extension ladders must be used with walk-through devices or the ladder must extend 36" above the stepping off point.
- A-frame ladders must only be climbed with the ladder spreader bars locked in the open position; A-frame ladders shall not be climbed while in the closed position (ex, closed and used while leaned against a structure).
- Additional notes:

Mobile Equipment
- Only Qualified operators will operate equipment; operators must maintain a certification on their person for the equipment being operated.
- Type(s) of mobile equipment (Type/Make/Model):
- Qualified operator(s):

Material Handling and Storage
- Materials will be staged/stored in a way that does not present a hazard to client, personnel or public. Materials stored on the roof will be physically protect from failing or sliding off.

Fall Protection
- A site-specific plan for fall prevention and protection is required prior to starting work and must remain onsite at all times until work is complete; a fall rescue plan must be outlined and discussed among the crew prior to work start.
- First-person-Up (FPU) must install their anchor and connect before any other task, including installing other anchors. The Last-Person-Down (LPD) must be the only person on a roof uninstalling fall protection.
- FPCP (name and title):
- FPU and LPD (name and title):

Electrical Safety
- The Electrical Qualified Person (EQP) is required onsite to perform electrical work.
- All electrical work will be performed with equipment in an electrically safe condition (de-energized) unless approval has been granted prior to work.
- Service drops and overhead electrical hazards will be indentified and protected from contact, as neccessary.
- EQP (name and tile):

Public Protection
- The safety of the Client and Public must be maintained at all times.
- The Client and the Public shall be prevented from entering the work zone through the use of barriers and/or signage, as required.
- Company, Client and Public property shall be protected from falling objects.
- Pets (including dogs) shall be secured by their owners prior to work start.
- The Client should not leave pets, family members, or others in charge or care of Employees, Contractors, or Temporary Workers.
- Crew leader responsible for communication with the client:
- Client and public is excluded from work area by barricades (N/A, Yes, No):

Training and Pre-Job Safety Briefing
- All employees onsite shall be made aware of the specific hazards of this project and review this HJA during a pre-job briefing, and their signature indicates awareness of site conditions and the plan to eliminate any hazards identified prior to and during the project.

- Crew leader (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):

Airborne Contaminants:
- Asbestos-containing (Transite) piping (ACP) - Do not disturb (move, drill, cut fracture, etc.)
- Asbestos-containing thermal insulation (ACI) and Asbestos-containing duct wrapping (ACW) - do not disturb, no attic or crawlspace access is allowed if work to be performed could cause exposure to personnel, client or public.

- If yes, list specific tasks and protection in place:

Weather and Environment
- The site supervisor shall forecast the weather conditions at the job site, prior to crew arrival, in order to mitigate any hazards associated with inclement weather (heat, cold, wind, rain, etc.)
- The site supervisor will utilized a portable wind meter (anemometer) to verify actual onsite wind conditions, by checking at the ground and on any elevated work surface (ex, rooftop) prior to work start, at midday and prior to solar panel staging on a roof.
- Elevated work involving the moving or maneuvering of solar panels shall cease at 25mph (sustained wind) until wind subsides.
- Forecasted weather maximum temp (degrees f):

Heat Related Illness Prevention
- Employees shall have access to potable drinking water that is fresh, pure, and suitably cool. The water shall be located as close as practicable to the areas where employees are working. Water shall be supplied in sufficient quantity at the beginning of the work shift to provide at least one quart per employee per hour for drinking for the entire shift. Employees may begin the shift with smaller quantities of water if they identify the location and have effective means for replenishment during the shift to allow employees to drink on quart or more per hour. The frequent drinking of water shall be encouraged.
- Shade shall be present when temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work exceeds 80 degrees Fahrenheit, employees shall have and maintain one or more areas with shade at all times.
- New employees must be acclimatized. New employees will be monitored by their Crew Leader (site supervisor) for the first two (2) weeks of employment or longer when necessary.
- Employees will be allowed and encouraged to implement scheduled breaks during each shift. Employees must take cool-down breaks in the shade any time they feel the need to do so to protect them from overheating. Supervisors are REQUIRED to allow employees any break period they need during high heat conditions.
- Cool Vests are encouraged for all employees at all times during periods of high heat.
- Identify the location of the closet Occupational/Industrial Clinic or Hospital in case a crew member becomes ill.

What is the specific plan to provide and replenish sufficient water for all employees on site?
- If offsite replenish is necessary, where will you go to replenish water (location/address):
- Who will replenish the drinking water (name):

Restroom facilities
- Employees shall have access to restroom facilities with hand-washing stations. Use of onsite restroom is at the client's discretion (location is annotated below). If client does not give permission, location of suitable restroom facilities with hand-washing stations offsite will be provided. The onsite supervisor will identify location and make arrangements to ensure all employees have access at any point.
- Restroom facilities will be (circle one): Onsite - Offsite
- If Offsite, add location name and address:

Incident Reporting Procedure
- Contact your Site Supervisor
  - Name:
  - Phone:
- Contact your Manager
  - Name:
  - Phone:
- Contact your Site Supervisor
  - Name:
  - Phone:

With: Your full name, phone number, office location, brief description of what happen and when.

NOTE ADDITIONAL HAZARDS NOT ADDRESSED ABOVE
(add as many as necessary by using additional sheets)

Define the Hazard:	Method/steps to prevent incident:
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NO.	DESCRIPTION	DATE

freedom FOREVER
FREEDOM FOREVER LLC
415 INDUSTRIAL CT., GREER, SC 29651
Tel: (800) 385-1075
GREG ALBRIGHT
CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR U.34043

SAFETY PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
F105523	9/24/2021	H.D.	PV-10

Tesla
Photovoltaic Module

T420S, T425S, and T430S

Maximum Power
The Tesla module is one of the most powerful residential photovoltaic modules available. Our system requires up to 20 percent fewer modules to achieve the same power as a standard system. The module boasts a high conversion efficiency and a half-cell architecture that improves shade tolerance.

Beautiful Solar
Featuring our proprietary Zep Groove design, the all-black module connects easily with Tesla ZS components to keep panels close to your roof and close to each other for a blended aesthetic with simple drop-in and precision quarter-turn connections.

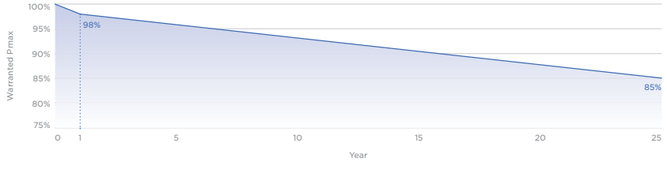
Reliability
Tesla modules are subject to automotive-grade engineering scrutiny and quality assurance, far exceeding industry standards.
Modules are certified to IEC / UL 61730 - 1, IEC / UL 61730 - 2 and IEC / UL 61215.

Limited Warranty

Materials and Processing	25 years
Extra Linear Power Output	25 years

The maximum Pmax degradation is 2% in the 1st year and 0.54% annually from the 2nd to 25th year.

Linear Power Warranty



Module Specifications

Electrical Characteristics

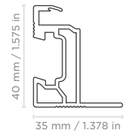
Power Class	T420S		T425S		T430S	
Test Method	STC	NOCT	STC	NOCT	STC	NOCT
Max Power, P_{MAX} (W)	420	313.7	425	317.4	430	321.1
Open Circuit Voltage, V_{OC} (V)	48.5	45.47	48.65	45.61	48.8	45.75
Short Circuit Current, I_{SC} (A)	11.16	9.02	11.24	9.09	11.32	9.15
Max Power Voltage, V_{MP} (V)	40.90	38.08	41.05	38.22	41.20	38.36
Max Power Current, I_{MP} (A)	10.27	8.24	10.36	8.3	10.44	8.37
Module Efficiency (%)	19.3		19.6		19.8	
STC	1000 W/m², 25°C, AM1.5					
NOCT	800 W/m², 20°C, AM1.5, wind speed 1m/s					

Temperature Rating (STC)

Temperature Coefficient of Isc	+0.040% / °C
Temperature Coefficient of V_{OC}	-0.260% / °C
Temperature Coefficient of P_{MAX} (W)	-0.331% / °C

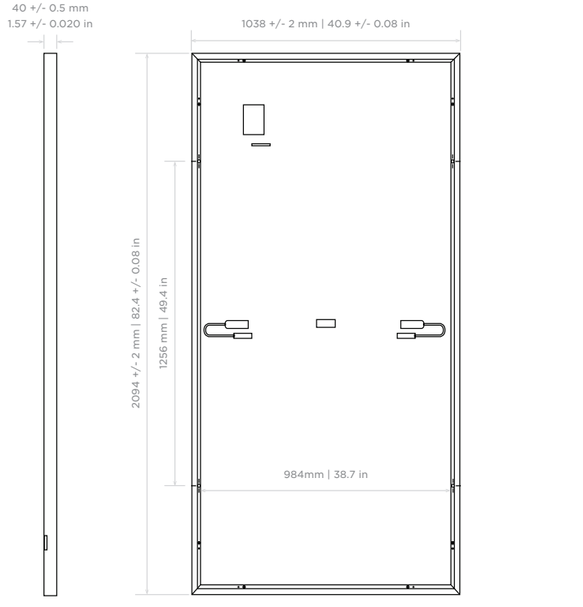
Mechanical Loading

Front Side Design Load	3600 Pa | 75 lb/ft²
Rear Side Design Load	1600 Pa | 33 lb/ft²
Hailstone Test	25 mm Hailstone at 23 m/s



Mechanical Parameters

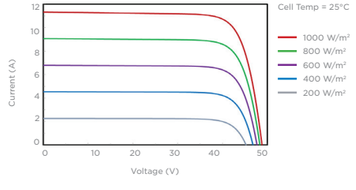
Cell Orientation	144 (6 x 24)
Junction Box	IP68, 3 diodes
Cable	4 mm² | 12 AWG, 1400 mm | 55.1 in. Length
Connector	Staubli MC4 or EVO2
Glass	3.2 mm ARC Glass
Frame	Black Anodized Aluminum Alloy
Weight	25.3 kg | 55.8 lb
Dimension	2094 mm x 1038 mm x 40 mm 82.4 in x 40.9 in x 1.57 in



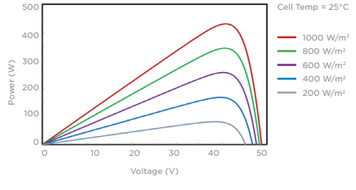
Operation Parameters

Operational Temperature	-40°C - +85°C
Power Output Tolerance	-0 /+5 W
V_{OC} & I_{SC} Tolerance	+/- 3%
Max System Voltage	DC 1000 V (IEC/UL)
Max Series Fuse Rating	20 A
NOCT	45.7 +/- 2°C
Safety Class	Class II
Fire Rating	UL Type 1 or 2

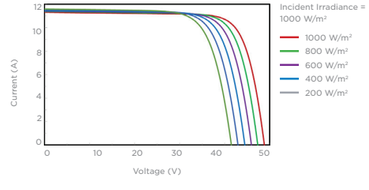
Current vs. Voltage



Power vs. Voltage



Current vs. Voltage



Power Optimizer

P370 / P401 / P404 / P485 / P500 / P505 / P601

POWER OPTIMIZER

PV power optimization at the module level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Next generation maintenance with module-level monitoring
- Mitigates all types of modules mismatch-loss, from manufacturing tolerance to partial shading
- Superior efficiency (99.5%)
- Flexible system design for maximum space utilization
- Module-level voltage shutdown for installer and firefighter safety
- Fast installation with a single bolt

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/ Power Optimizer

P370 / P401 / P404 / P485 / P500 / P505 / P601

OPTIMIZER MODEL (typical module compatibilty)	P370 (60&70 Cell modules)	P401 (60&70 Cell modules)	P404 (for 60-cell and 72 cell, short strings)	P485 (for high voltage modules)	P500 (for 96-cell modules)	P505 (for higher current modules)	P601 (for 1 x high power PV module)	UNIT
INPUT								
Rated Input DC Power(1)	370	400	405	485	500	505	600	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	60		80	125	80	83	65	Vdc
MPPT Operating Range	8 - 60		12.5 - 80	12.5 - 105	8 - 80	12.5-83	12.5 - 65	Vdc
Maximum Short Circuit Current (Isc)	11	12.5	11		10.1	14		Adc
Maximum Efficiency	99.5							%
Weighted Efficiency	98.8						98.6	%
Overvoltage Category	II							
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)								
Maximum Output Current	15							Adc
Maximum Output Voltage	60		80		60	80		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)								
Safety Output Voltage per Power Optimizer	1 ± 0.1							Vdc
STANDARD COMPLIANCE								
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3							
Safety	IEC62109-1 (class II safety), UL1741							
RoHS	Yes							
Fire Safety	VDE-AR-E 2100-712:2013-05							
INSTALLATION SPECIFICATIONS								
Maximum Allowed System Voltage	1000							Vdc
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1	129 x 153 x 29.5 / 5.1 x 6 x 1.16	129 x 153 x 42.5 / 5.1 x 6 x 1.7	129 x 159 x 49.5 / 5.1 x 6.2 x 1.9	129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 162 x 59 / 5.1 x 6.4 x 2.3	129 x 153 x 52 / 5.1 x 6 x 2	mm / in
Weight (including cables)	655 / 1.5		775 / 1.7	845 / 1.9	750 / 1.7	1064 / 2.3		gr / lb
Input Connector	MC4(2)			Single or Dual MC4(2)(3)	MC4(2)			
Input Wire Length	0.16 / 0.52, 0.9 / 2.95		0.16 / 0.52					m / ft
Output Connector	MC4							
Output Wire Length	1.2 / 3.9						1.4 / 4.5	m / ft
Operating Temperature Range(4)	-40 to +85 / -40 to +185							˚C / ˚F
Protection Rating	IP68							
Relative Humidity	0 - 100							%

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed
(2) For other connector types please contact SolarEdge
(3) For dual version for parallel connection of two modules use the P485. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module is supported. When connecting a single module, seal the unused input connectors using the supplied pair of seals
(4) For ambient temperature above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details

PV System Design Using a Solaredge Inverter(5)		Single Phase HD-WAVE	Single Phase	Three Phase	Three Phase for 277/480V Grid	
Minimum String Length (Power Optimizers)	P370, P401, P500(6)	8		16	18	
	P404, P485, P505, P601	6		14 (13 with SE3K(7))	14	
Maximum String Length (Power Optimizers)		25		50	50	
Maximum Nominal Power per String(8)		5700	5250	11250(9)	12750(10)	W
Parallel Strings of Different Lengths or Orientations		Yes				

(5) It is not allowed to mix P404/P485/P505/P601 with P370/P401/P500 in one string
(6) The P370/P401/P500 cannot be used with the SE3K three phase inverter (available in some countries; refer to the three phase inverter SE3K-SE10K datasheet)
(7) Exactly 10 when using SE3K-RW010BNN4
(8) If the inverters rated AC power ≤ maximum nominal power per string, then the maximum power per string will be able to reach up to the inverters maximum input DC power Refer to: https://www.solaredge.com/sites/default/files/se-power-optimizer-single-string-design-application-note.pdf
(9) For the 230/400V grid: it is allowed to install up to 13,500W per string when the maximum power difference between each string is 2,000W
(10) For the 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W

CE

Single Phase Inverter with HD-Wave Technology

for North America

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

INVERTERS

12-25 YEAR WARRANTY

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Extremely small
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

solaredge.com

Single Phase Inverter with HD-Wave Technology for North America

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

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5[1]							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V[2]	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V[2]	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600kΩ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Data, ANSI C12.20	Optional[3]							
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
STANDARD COMPLIANCE								
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07							
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG					1" Maximum /14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG					1" Maximum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174					21.3 x 14.6 x 7.3 / 540 x 370 x 185		in / mm
Weight with Safety Switch	22 / 10		25.1 / 11.4	26.2 / 11.9		38.8 / 17.6		lb / kg
Noise	< 25				<50			dBA
Cooling	Natural Convection							
Operating Temperature Range	-13 to +140 / -25 to +60[4] (-40°F / -40°C option)[5]							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

[1] For other regional settings please contact SolarEdge support
[2] A higher current source may be used; the inverter will limit its input current to the values stated
[3] Revenue grade inverter P/N: SExxxxH-US000NNC2
[4] For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf
[5] -40 version P/N: SExxxxH-US000NNU4

RoHS

pe.eaton.com

Eaton general duty non-fusible safety switch

DG222URB

UPC:782113144238

Dimensions:

- **Height:** 14.38 IN
- **Length:** 7.38 IN
- **Width:** 8.69 IN

Weight:9 LB

Notes:WARNING! Switch is not approved for service entrance unless a neutral kit is installed.

Warranties:

- Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

Specifications:

- **Type:** Non-fusible, single-throw
- **Amperage Rating:** 60A
- **Enclosure:** NEMA 3R, Rainproof
- **Enclosure Material:** Painted galvanized steel
- **Fuse Configuration:** Non-fusible
- **Number Of Poles:** Two-pole
- **Number Of Wires:** Two-wire
- **Product Category:** General duty safety switch
- **Voltage Rating:** 240V

Supporting documents:

- Eatons Volume 2-Commercial Distribution
- Eaton Specification Sheet - DG222URB

Certifications:

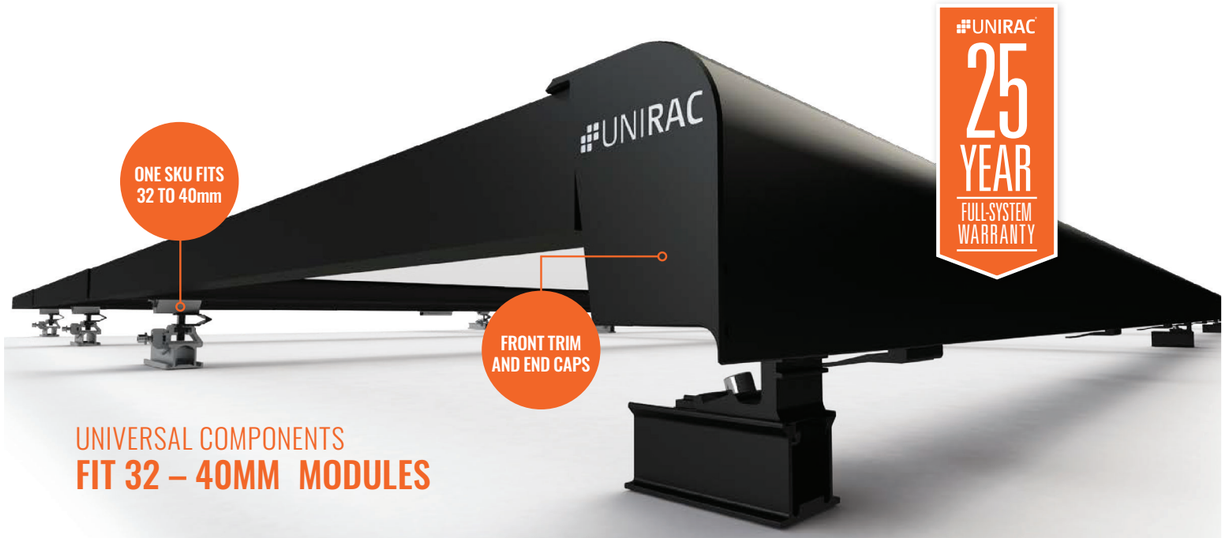
- UL Listed

Product compliance: No Data

SFM INFINITY

UNIRAC®
BETTER SOLAR STARTS HERE

Take your business to the next level with **SFM** INFINITY, UNIRAC's rail-less PV mounting system for flush mount installations on comp shingle and tile roofs. An advanced 3rd generation product platform in use by top solar contractors nationwide, **SFM** INFINITY optimizes your operations on and off the roof, with approximately 40% less labor, 30% logistics savings, and 20% fewer roof attachments than traditional solar racking. Plus, 87% of homeowners prefer **SFM** INFINITY's aesthetics.



SUPERIOR PERFORMANCE
Enhance your business with two installs per day and 30% less cost.

EASY INSTALLATION
Pre-assembled components, 20% fewer roof attachments, and level array in seconds with post height adjustment.

HOMEOWNER PREFERRED
More than 4 out of 5 homeowners prefer **SFM** INFINITY'S aesthetics over a leading rail brand.

REVOLUTIONIZING ROOFTOP SOLAR

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

SFM INFINITY

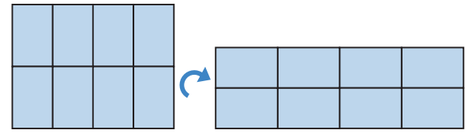
DESIGN GUIDELINES

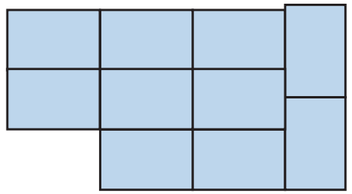
UNIRAC®
BETTER SOLAR STARTS HERE

While you will see advantages simply from switching to **SFM** INFINITY, the following guidelines will help you to maximize its benefits.

DEFAULT TO LANDSCAPE

When possible, design in landscape orientation in order to fit more modules on the roof and minimize roof attachments.





MIX MODULE ORIENTATIONS

SFM INFINITY is easily configured in mixed array shapes and module orientations to maximize array density and to avoid vent pipes and other obstacles. Because mounting locations are not constrained by rails, **SFM** INFINITY has unmatched flexibility to enhance your projects.

CONSULT THE QUICK TIPS VIDEOS

Visit UNIRAC's mobile-friendly library of short, topic-specific videos which answer common questions and demonstrate how simple it is to install **SFM** INFINITY.

Quick Tips Videos: **https://unirac.com/SFM-Infinity/**

DESIGN IN U-BUILDER

Layout your arrays in **U-Builder**, UNIRAC's free solar design software, to optimize **SFM** INFINITY'S capabilities, including mixing module orientations and minimizing roof attachments. Quickly create layouts on Google or Bing Maps and generate project documents.

U-Builder: **https://design.unirac.com/**

REVOLUTIONIZING ROOFTOP SOLAR

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

2.0 Product Description	
Product	Photovoltaic Mounting System, Sun Frame Microrail - Installed Using Unirac Installation Guide, Rev PUB2019MAR01 with Annex North Row Extension Installation Guide Rev PUB2019FEB20
Brand name	Unirac
Description	The product covered by this report is the Sun Frame Micro Rail roof mounted Photovoltaic Rack Mounting System. This system is designed to provide bonding and grounding to photovoltaic modules. The mounting system employs anodized or mill finish aluminum brackets that are roof mounted using the slider, outlined in section 4 of this report. There are no rails within this product, whereas the 3" Micro Rail, Floating Splice, and 9" Attached Splice electrically bond the modules together forming the path to ground. The Micro Rails are installed onto the module frame by using a stainless steel bolt anodized with black oxide with a stainless type 300 bonding pin, torqued to 20 ft-lbs, retaining the modules to the bracket. The bonding pin of the Micro Rail when bolted and torqued, penetrate the anodized coating of the photovoltaic module frame to contact the metal, creating a bonded connection from module to module. The grounding of the entire system is intended to be in accordance with the latest edition of the National Electrical Code, including NEC 250: Grounding and Bonding, and NEC 690: Solar Photovoltaic Systems. Any local electrical codes must be adhered in addition to the national electrical codes. The Grounding Lug is secured to the photovoltaic module, torqued in accordance with the installation manual provided in this document. Other optional grounding includes the use of the Enphase UL2703 certified grounding system, which requires a minimum of 2 micro-inverters mounted to the same rail, and using the same engage cable.
Models	Unirac SFM

2.0 Product Description	
Model Similarity	NA
Ratings	**Fuse Rating:** 30A **Module Orientation:** Portrait or Landscape **Maximum Module Size:** 17.98 ft² **UL2703 Design Load Rating:** 33 PSF Downward, 33 PSF Upward, 10 PSF Down-Slope Tested Loads - 50 psf/2400Pa Downward, 50psf/2400Pa Uplift, 15psf/720Pa Down Slope Trina TSM-255PD05.08 and Sunpower SPR-E20-327 used for Mechanical Loading Increased size ML test: **Maximum Module Size:** 22.3 ft² **UL2703 Design Load Rating:** 113 PSF Downward, 50 PSF Upward, 30 PSF Down-Slope LG355S2W-A5 used for Mechanical Loading test. **Mounting configuration:** Four mountings on each long side of panel with the longest span of 24" **UL2703 Design Load Rating:** 46.9 PSF Downward, 40 PSF Upward, 10 PSF Down-Slope LG395N2W-A5, LG360S2W-A5 and LG355S2W-A5 used for used for Mechanical Loading test. **Mounting configuration:** Six mountings for two modules used with the maximum span of 74.5" Fire Class Resistance Rating: - Class A for Steep Slope Applications when using Type 1 Modules. Can be installed at any interstitial gap. Installations must include Trim Rail. - Class A for Steep Slope Applications when using Type 2 Modules. Can be installed at any interstitial gap. Installations must include Trim Rail. - Class A Fire Rated for Low Slope applications with Type 1 or 2 listed photovoltaic modules. This system was evaluated with a 5” gap between the bottom of the module and the roof’s surface *See section 7.0 illustraction # 1 and 1a for a complete list of PV modules evaluated with these racking systems*
Other Ratings	NA

AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant:	Unirac, Inc	**Manufacturer:**	Cixi Emeka Aluminum Co. Ltd
Address:	1411 Broadway Blvd NE Albuquerque, NM 87102	**Address:**	No. 688 ChaoSheng Road Cixi City Zhejiang Province 315311
Country:	USA	**Country:**	China
Contact:	Klaus Nicolaedis Tom Young	**Contact:**	Jia Liu Robin Luo
Phone:	505-462-2190 505-843-1418	**Phone:**	+86-15267030962 +86-13621785753
FAX:	NA	**FAX:**	NA
Email:	klaus.nicolaedis@unirac.com toddg@unirac.com	**Email:**	jia.liu@cxymj.com buwan.luo@cxymj.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Lake Forest, CA U.S.A.

Control Number: 5003705 **Authorized by:** Natalie Tohmey
for Dean Davidson, Certification Manager

This document supersedes all previous Authorizations to Mark for the noted Report Number.

Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672

Standard(s):	Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels [UL 2703: 2015 Ed.1]
Product:	Photovoltaic Mounting System, Sun Frame Microrail - Installed Using Unirac Installation Guide, Rev PUB2019MAR01 with Annex North Row Extension Installation Guide Rev PUB2019FEB20
Brand Name:	Unirac
Models:	Unirac SFM

January 14, 2021

Unirac
1411 Broadway Blvd. NE
Albuquerque, NM 87102

Attn.: Unirac - Engineering Department

Re: Engineering Certification for the Unirac Sunframe Microrail, SFM Infinity U-builder Software Version 1.0

PZSE, Inc. - Structural Engineers has reviewed the Unirac's Sunframe Microrail, proprietary mounting system constructed from modular parts which is intended for rooftop installation of solar photovoltaic (PV) panels; and has reviewed the U-builder Online tool. This U-Builder software includes analysis for the 2" Microrail, 8" Attached Splice, 6" splice, and front trimrail. All information, data and analysis contained within are based on, and comply with the following codes and typical specifications:

1. Minimum Design Loads for Buildings and other Structures, ASCE/SEI 7-05, ASCE/SEI 7-10, ASCE/SEI 7-16
2. 2006-2018 International Building Code, by International Code Council, Inc. w/ Provisions from SEAOC PV-2 2017.
3. 2006-2018 International Residential Code, by International Code Council, Inc. w/ Provisions from SEAOC PV-2 2017.
4. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES.

Following are typical specifications to meet the above code requirements:

Design Criteria: Ground Snow Load = 0 - 100 (psf)
Basic Wind Speed = 90 - 180 (mph)
Roof Mean Height = 0 - 60 (ft)
Roof Pitch = 0 - 45 (degrees)
Exposure Category = B, C & D

Attachment Spacing: Per U-builder Engineering report.

Cantilever: Maximum cantilever length is L/3, where "L" is the span noted in the U-Builder online tool.

Clearance: 2" to 10" clear from top of roof to top of PV panel.

Tolerance(s): 1.0" tolerance for any specified dimension in this report is allowed for installation.

Installation Orientation: See SFM Installation Guide.
Landscape - PV Panel long dimension is parallel to ridge/eave line of roof and the PV panel is mounted on the long side.
Portrait - PV Panel short dimension is parallel to ridge/eave line of roof and the PV panel is mounted on the short side.
Attachment shall be staggered where ground snow load exceeds 10 PSF.

1478 Stone Point Drive, Suite 190, Roseville, CA 95661
T 916.961.3960 F 916.961.3965 W www.pzse.com
Experience | Integrity | Empowerment

Testing: Values were based on UTR-299 testing provided by Unirac.

Components and Cladding Roof Zones:
The Components and Cladding Roof Zones shall be determined based on ASCE 7-05, ASCE 7-10 & 7-16 Component and Cladding design.

Notes:
1) U-builder Online tool analysis is only for Unirac SFM Sunframe Microrail system only and do not include roof capacity check.
2) Risk Category II per ASCE 7-16.
3) Topographic factor, kzt is 1.0.
4) Array Edge Factor Y_E = 1.5
5) Average parapet height is 0.0 ft.
6) Wind speeds are LRFD values.
7) Attachment spacing(s) apply to a seismic design category E or less.

Design Responsibility:
The U-Builder design software is intended to be used under the responsible charge of a registered design professional where required by the authority having jurisdiction. In all cases, this U-builder software should be used under the direction of a design professional with sufficient structural engineering knowledge and experience to be able to:

- Evaluate whether the U-Builder Software is applicable to the project, and
- Understand and determine the appropriate values for all input parameters of the U-Builder software.

This letter certifies that the Unirac SFM Sunframe Microrail, when installed according to the U-Builder engineering report and the manufacture specifications, is in compliance with the above codes and loading criteria.

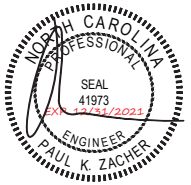
This certification excludes evaluation of the following components:
1) The structure to support the loads imposed on the building by the array; including, but not limited to: strength and deflection of structural framing members, fastening and/or strength of roofing materials, and/or the effects of snow accumulation on the structure.
2) The attachment of the SFM 2" Microrail or 8" Attached Splice to the existing structure.
3) The capacity of the solar module frame to resist the loads.

This requires additional knowledge of the building and is outside the scope of the certification of this racking system.

If you have any questions on the above, do not hesitate to call.

Prepared by:
PZSE, Inc. – Structural Engineers
Roseville, CA

DIGITAL SIGNATURE



1478 Stone Point Drive, Suite 190, Roseville, CA 95661
T 916.961.3960 F 916.961.3965 W www.pzse.com
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MIAMI-DADE COUNTY
DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES
BOARD AND CODE ADMINISTRATION DIVISION

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786) 315-2590 F (786) 315-2599
www.miamidade.gov/economy

NOTICE OF ACCEPTANCE (NOA)

Unirac, Inc.
1411 Broadway Blvd. NE
Albuquerque, New Mexico 87102

SCOPE:
This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER- Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein and has been designed to comply with the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: Unirac Solarmount Solar Mounting System

APPROVAL DOCUMENT: Drawing No. M-D NOA, titled "Solar PV Racking System" sheets 1 through 12 of 12, dated Nov. 19, 2019, last revision #2 dated April 21, 2020, prepared by CBuck Engineering, signed and sealed by James L. Buckner, P.E., on April 08, 2021 bearing the Miami-Dade County Product Control Revision stamp with the Notice of Acceptance number and the expiration date by the Miami-Dade County Product Control Section.

MISSILE IMPACT RATING: NONE

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city and state and the following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA **revises NOA #19-0429.02** and consists of this page 1, evidence submitted page E-1 as well as approval document mentioned above.

The submitted documentation was reviewed by **Helmy A. Makar, P.E., M.S.**

MIAMI-DADE COUNTY APPROVED

Helmy A. Makar
08/05/2021

NOA No. 21-0510.06
Expiration Date: 05/21/2025
Approval Date: 08/05/2021

Unirac, Inc.

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

1. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL #19-0429.02

A. DRAWINGS

1. *Drawing No. M-D NOA, titled "Solar PV Racking System" sheets 1 through 12 of 12, dated Nov. 19, 2019, last revision #2 dated April 21, 2020, prepared by CBuck Engineering, signed and sealed by James L. Buckner, P.E.*

B. TESTS

1. *Test report on ASTM D1761 – Withdrawal, Perpendicular and parallel shear Test, prepared by Intertek, Report No. J9904.01-106-18 R0, dated 09/17/19, signed and sealed by Gary T. Hartman, P.E.*
2. *Test report on TAS 100(A)-95 Wind and wind Driven Rain Resistance Test, prepared by Intertek, Report No. J0950.01-109-18, dated 12/19/18, signed and sealed by Joseph A. Reed, P.E.*

C. CALCULATIONS

1. *Calculation, 36 pages, dated 01/29/18, signed and sealed by Paul K. Zacher, P.E.*

D. QUALITY ASSURANCE

1. *By Miami-Dade County Department of regulatory and Economic Resources.*

E. MATERIAL CERTIFICATIONS

1. *None.*

F. STATEMENTS

1. *Florida Building Code, 2017 Edition, compliance letter dated April 29, 2020, prepared by CBuck Engineering, signed and sealed by James L. Buckner, P.E.*

2. NEW EVIDENCE SUBMITTED

A. DRAWINGS

1. *Drawing No. M-D NOA, titled "Solar PV Racking System" 12 sheets, dated 11/19/2019, revision #2 dated 04/21/20, prepared by CBuck Engineering, signed and sealed by James L. Buckner, P.E., on April 08, 2021.*

B. TESTS

1. *None.*

C. CALCULATIONS

1. *None.*

D. QUALITY ASSURANCE

1. *By Miami-Dade County Department of regulatory and Economic Resources.*

E. MATERIAL CERTIFICATIONS

1. *None.*

F. STATEMENTS

1. *FBC, 2020 Edition, compliance letter dated April 08, 2021, prepared by CBuck Engineering, signed and sealed by James L. Buckner, P.E.*

Helmy A. Makar, P.E., M.S.
Product Control Section Supervisor
NOA No. 21-0510.06
Expiration Date: 05/21/2025
Approval Date: 08/05/2021

SYSTEM IS SECURED TO ROOF STRUCTURE
(BY OTHERS) AS SOLAR PANEL RACK.

PC RACKING SYSTEM IS NOT RATED FOR IMPACT.

SOLAR PV RACKING SYSTEM

DESIGN LOAD RATING FOR SOLAR PANEL RACK TO BE AS PER CHARTS SHOWN ON SHEET 2 AND 3.

THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE 2020 (7TH EDITION) FLORIDA BUILDING CODE INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ)

ANCHORS SHALL BE CORROSION RESISTANT, SPACED AS SHOWN ON DETAILS AND INSTALLED PER LOAD RATING CHARTS. SPECIFIED EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND ROOF SHEATHING.

MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS, THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF THE 2020 FLORIDA BLDG. CODE & ADOPTED STANDARDS.

THIS PRODUCT APPROVAL IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT, i.e. LIFE SAFETY OF THIS PRODUCT, ADEQUACY OF STRUCTURE RECEIVING THIS PRODUCT AND WEATHER SEALING FOR WATER INFILTRATION RESISTANCE ETC.
CONDITIONS NOT SHOWN N THIS DRAWING ARE TO BE ANALYZED SEPARATELY AND TO BE REVIEWED BY BUILDING OFFICIAL.

MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION IN ACCORDANCE WITH SECTION 1703.5 OF FLORIDA BUILDING CODE. LABELING TO COMPLY WITH SECTION 1703.5.

MAX. ROOF SLOPE PER FLORIDA BUILDING CODE, 2020 EDITION.

PART TABLE

ITEM #	PART NUMBER	DESCRIPTION
1	315168M, 315168D, 315246M, 315246D	SOLARMOUNT LIGHT RAIL
2	320132M, 310132C, 320168M, 310168C, 310168D, 320208M, 310208C, 320246M, 310246C, 310246D	SOLARMOUNT STANDARD RAIL
3	410144M, 410168M, 410204M, 410246M	SOLARMOUNT HD RAIL
4	302035M	SOLARMOUNT ENDCLAMP PRO SERIES ASSEMBLY
5	302030M, 302030D	SOLARMOUNT MIDCLAMP PRO SERIES ASSEMBLY
6	004055M, 004055D	SOLARMOUNT FLASHKIT PRO ASSEMBLY
7	303019M, 303019D	BONDING SPLICE BAR PRO SERIES ASSEMBLY
8	302027, 302028, 302029, 302030	SOLARMOUNT ENDCLAMP STANDARD ASSEMBLY
9	302023, 302024, 302025, 302026	SOLARMOUNT MIDCLAMP STANDARD ASSEMBLY

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No 21-0510.06
Expiration Date 05/21/2025
By
Miami Dade Product Control

JAMES L. BUCKNER
LICENSE
No. 31242
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
4/8/21

CBUCK Engineering
www.cbuck@cbuckinc.net.
(561) 491-9927 COA # 8064
1374 Community Dr
Jupiter, FL 33458

UNIRAC
1411 BROADWAY BOULEVARD NE
ALBUQUERQUE, NM, USA, 87102
WWW.UNIRAC.COM

ENGINEER'S STAMP

REVISIONS

REV	DATE	DESCRIPTION	CHK
1	11/19/19	INITIAL RELEASE	-
2	04/21/20	REVISED PER COMMENTS	-

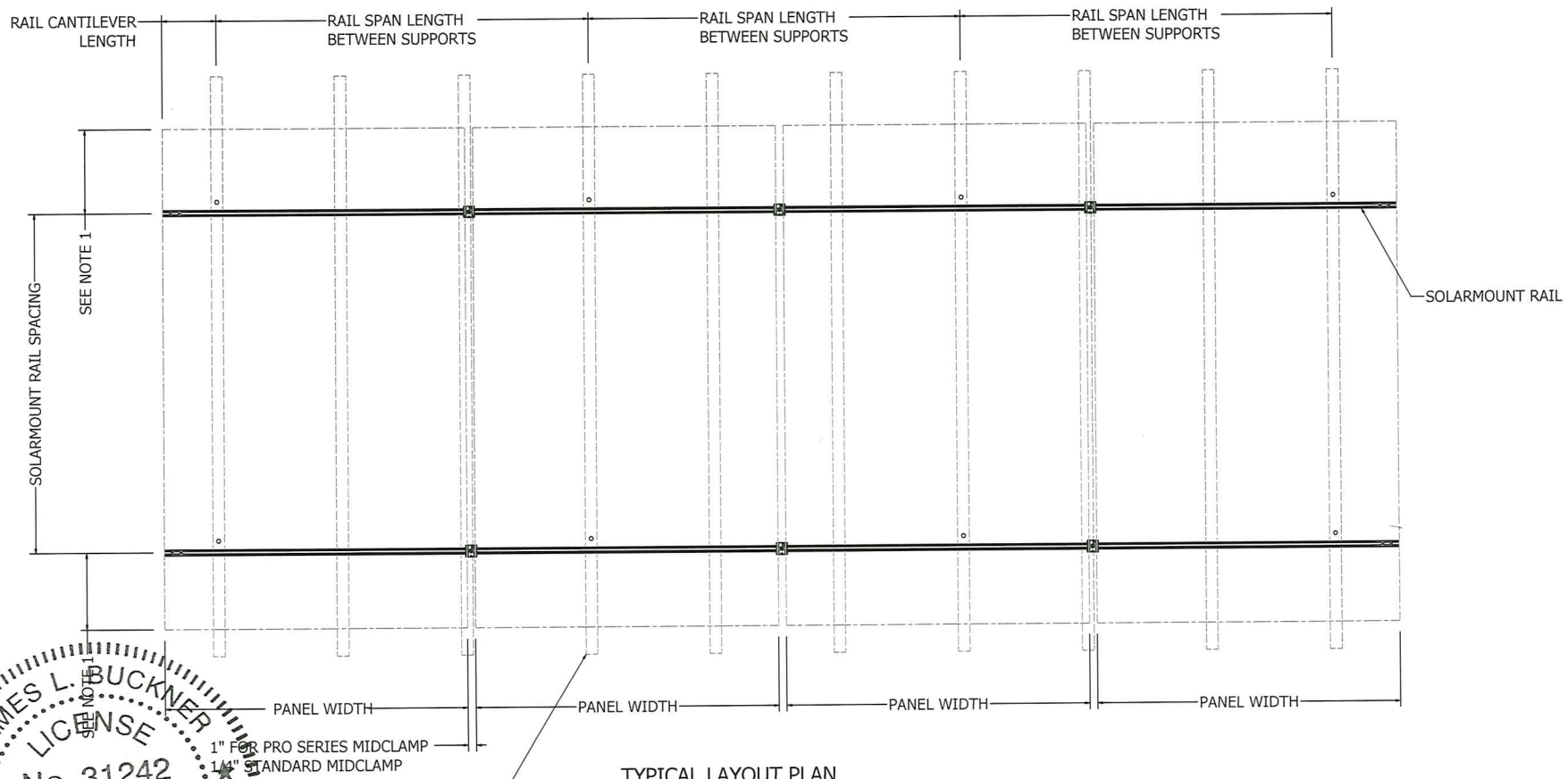
FOR
MIAMI-DADE COUNTY

PROJECT
MIAMI-DADE CO. NOA

PROJECT ADDRESS

TITLE
SOLARMOUNT COVER SHEET

DWG NO.
M-D NOA



TYPICAL LAYOUT PLAN
NOT TO SCALE

NOTES:
1. PER PANEL MANUFACTURER'S APPROVED MOUNTING INSTRUCTIONS.
2. STANDARD ROOF CONSTRUCTION (PER MIAMI-DADE BUILDING CODE REQUIREMENTS)

JAMES L. BUCKNER LICENSE No. 31242 STATE OF FLORIDA PROFESSIONAL ENGINEER
4/8/21

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 21-0510.06
Expiration Date MAY 21 2025
By Miami Dade Product Control

CBUCK Engineering
www.cbuck@cbuckinc.net.
(561) 491-9927 COA # 8064
1374 Community Dr
Jupiter, FL 33458

2 RAIL DESIGN RULES

	Pressure Limit (psf) (Up and Down)	Max Attachment Span (in)	Max Cantilever (in)
SOLARMOUNT STANDARD	59.9 / 98.7	48	16
	79.9 / 131.6	36	12
	89.9 / 148.0	32	10
	90.9 / 197.3	24	8
	90.9 / 296.0	16	6
SOLARMOUNT LIGHT	43.9 / 54.3	48	16
	58.5 / 99.6	36	12
	65.8 / 127.1	32	10
	65.9 / 188.7	24	8
	65.9 / 282.9	16	6

UNIRAC
1411 BROADWAY BOULEVARD NE
ALBUQUERQUE, NM, USA, 87102
WWW.UNIRAC.COM

ENGINEER'S STAMP

REVISIONS

REV	DATE	DESCRIPTION	CHK
1	11/19/19	INITIAL RELEASE	-
2	04/21/20	REVISED PER COMMENTS	-

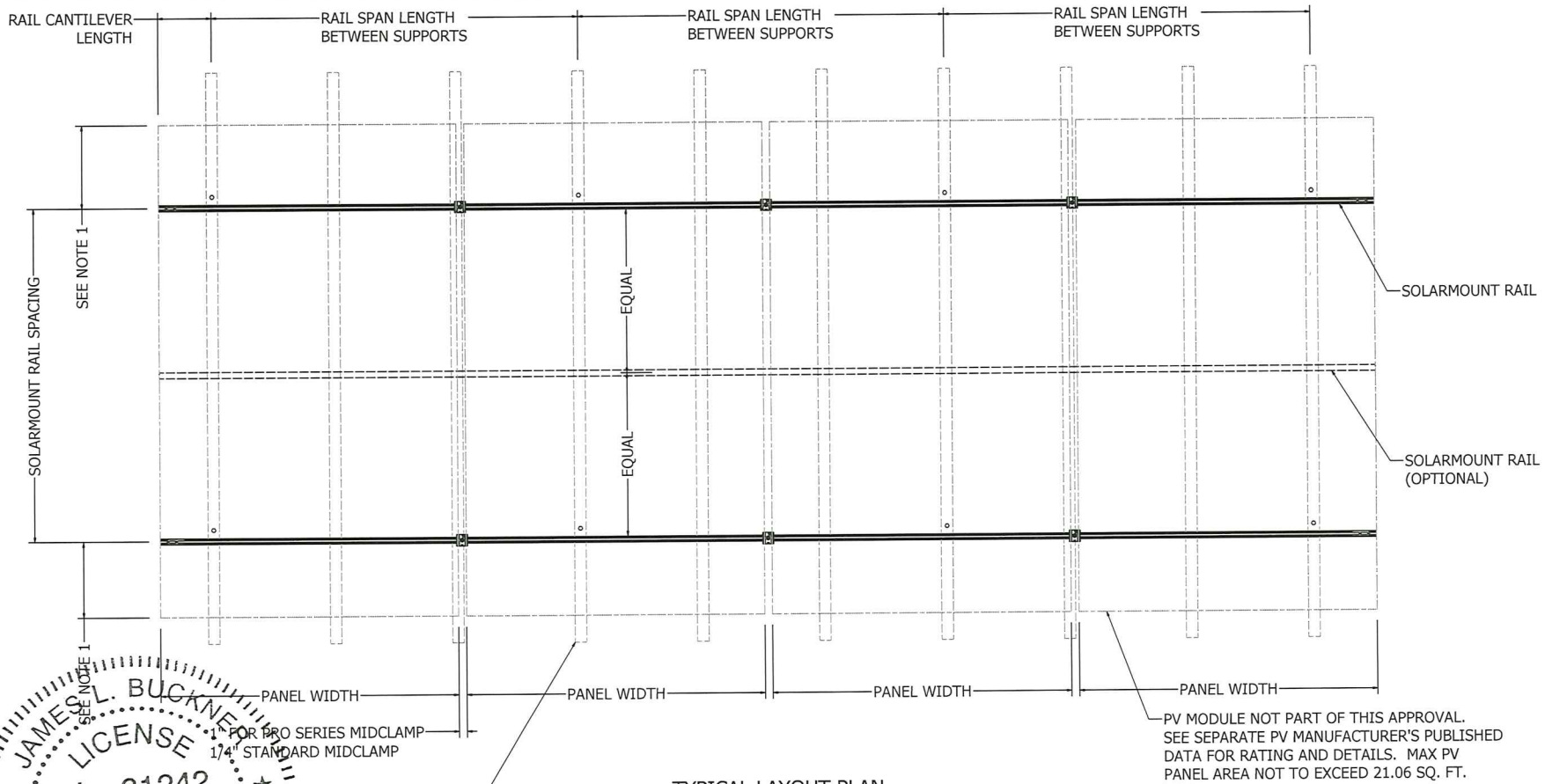
FOR
MIAMI-DADE COUNTY

PROJECT
MIAMI-DADE CO. NOA
PROJECT ADDRESS

TITLE
SOLARMOUNT DESIGN LOAD PLAN (2 RAIL)

DWG NO.
M-D NOA

SHEET 2 OF 12



TYPICAL LAYOUT PLAN
NOT TO SCALE

3 RAIL DESIGN RULES

	Pressure Limit (psf) (Up and Down)	Max Attachment Span (in)	Max Cantilever (in)
SOLARMOUNT STANDARD	89.9 / 148.0	48	16
	119.8 / 197.3	36	12
	134.8 / 222.0	32	10
	136.3 / 296.0	24	8
	136.3 / 444.0	16	6
SOLARMOUNT LIGHT	65.8 / 81.5	48	16
	87.7 / 149.4	36	12
	98.7 / 190.7	32	10
	98.8 / 283.0	24	8
	98.8 / 424.4	16	6

JAMES L. BUCKNER
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PROFESSIONAL ENGINEER
5/8/21

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NOTES:
1. PER PANEL MANUFACTURER'S APPROVED MOUNTING INSTRUCTIONS.
2. STANDARD ROOF CONSTRUCTION (PER MIAMI-DADE BUILDING CODE REQUIREMENTS)

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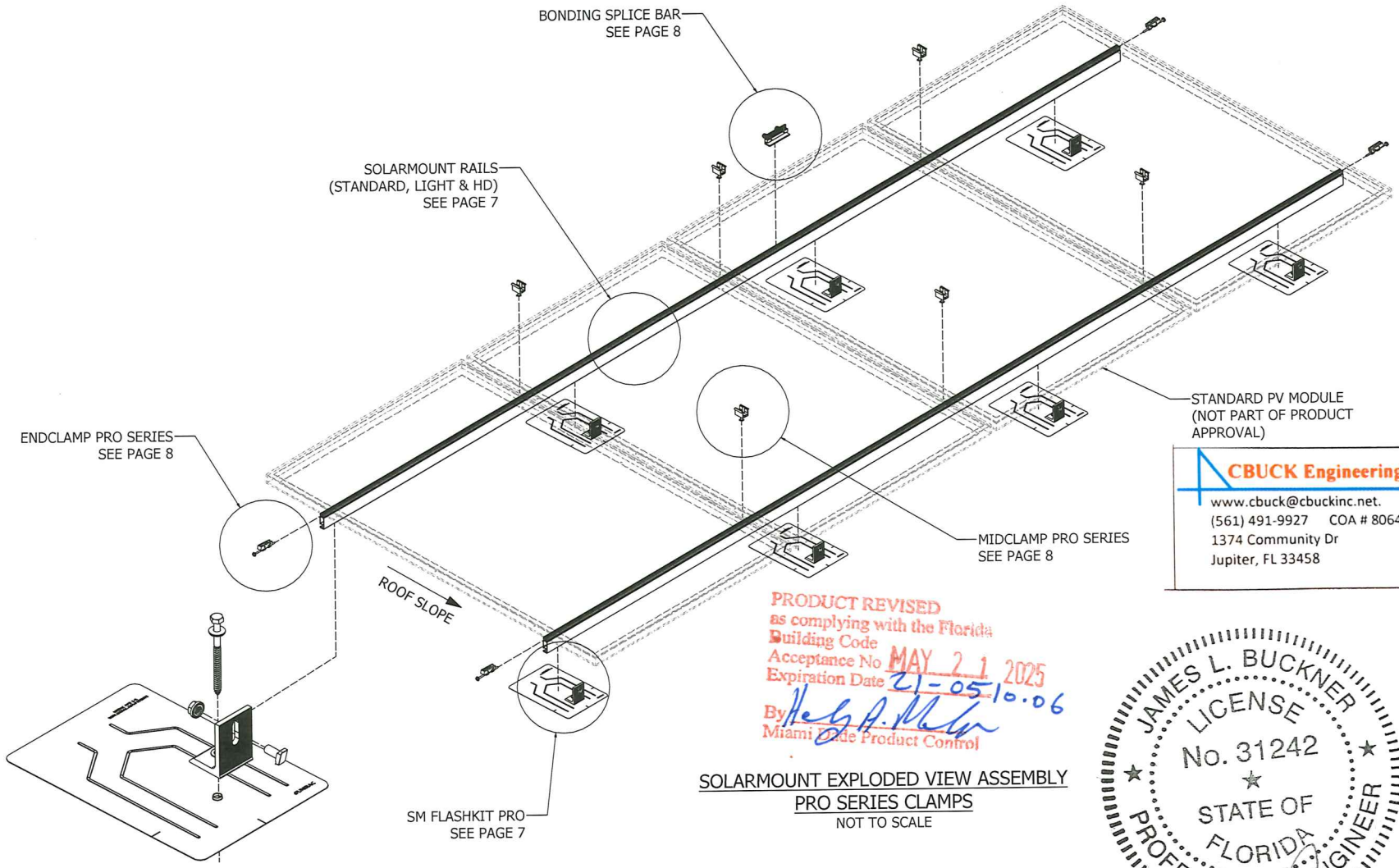
FOR
MIAMI-DADE COUNTY

PROJECT
MIAMI-DADE CO. NOA
PROJECT ADDRESS

TITLE
SOLARMOUNT DESIGN LOAD PLAN (3 RAIL)

DWG NO.
M-D NOA

SHEET 3 OF 12



SOLARMOUNT EXPLODED VIEW ASSEMBLY
PRO SERIES CLAMPS
NOT TO SCALE

EXPLODED ALTERNATE
SM FLASHKIT PRO
NOT TO SCALE

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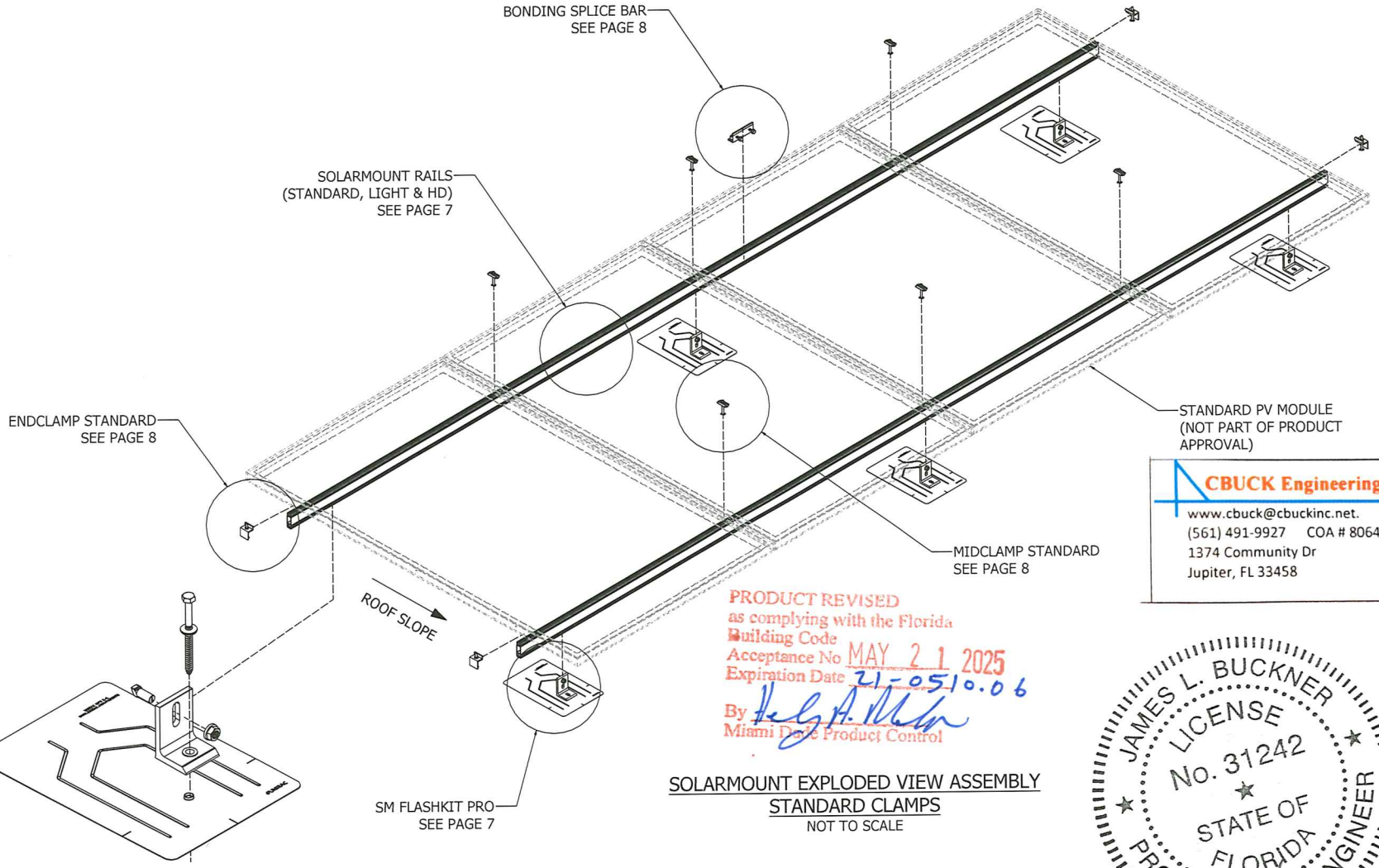
FOR
MIAMI-DADE
COUNTY

PROJECT
MIAMI-DADE CO.
NOA
PROJECT ADDRESS

TITLE
SOLARMOUNT
EXPLODED VIEW
ASSEMBLY
PRO SERIES CLAMPS

DWG NO.
M-D NOA

SHEET 4 OF 12



SOLARMOUNT EXPLODED VIEW ASSEMBLY
STANDARD CLAMPS
NOT TO SCALE

EXPLODED SM FLASHKIT PRO
NOT TO SCALE

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FOR
MIAMI-DADE COUNTY

PROJECT
MIAMI-DADE CO. NOA
PROJECT ADDRESS

TITLE
SOLARMOUNT EXPLODED VIEW ASSEMBLY STANDARD CLAMPS

DWG NO.
M-D NOA

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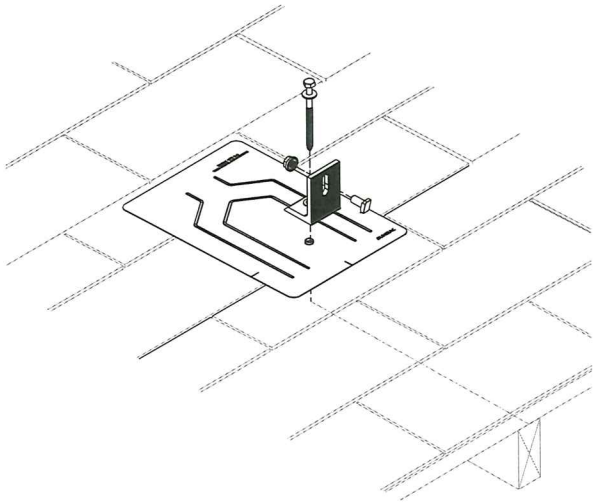

SM FLASHKIT PRO L-FOOT INSTALLATION
NOT TO SCALE

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By
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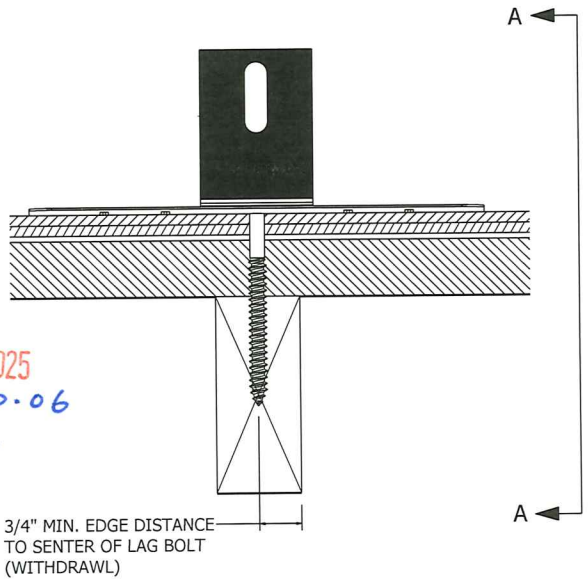

SECTION L-FOOT FLASHING DETAIL-L-FOOT FLASHING DETAIL
NOT TO SCALE

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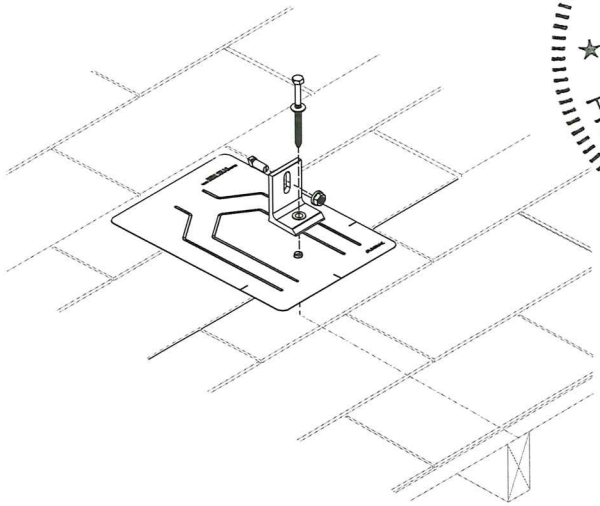
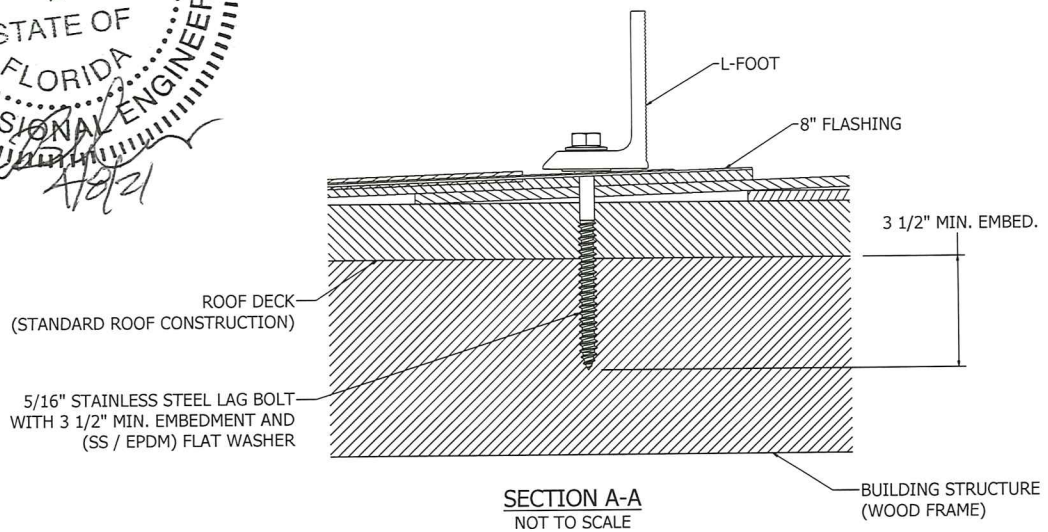


ALTERNATE L-FOOT CONFIGURATION
NOT TO SCALE



SECTION A-A
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FOR
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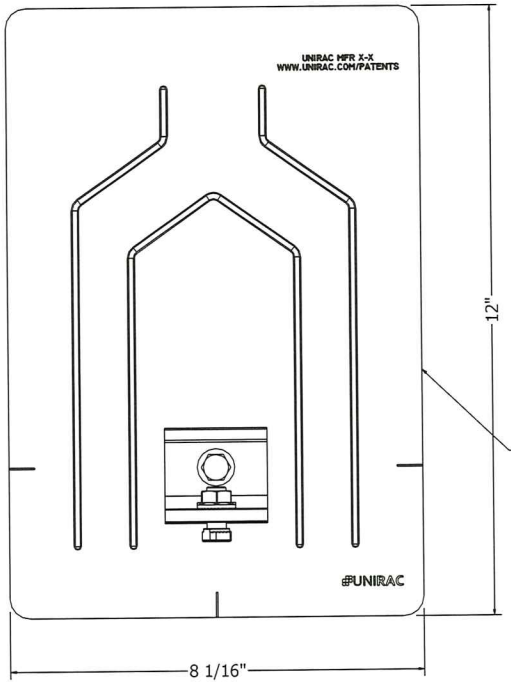
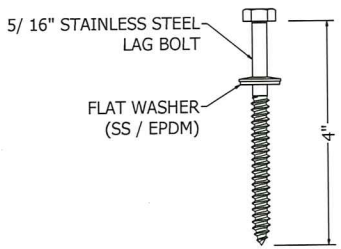
PROJECT
MIAMI-DADE CO. NOA
PROJECT ADDRESS

TITLE
SOLARMOUNT SYSTEM DETAILS

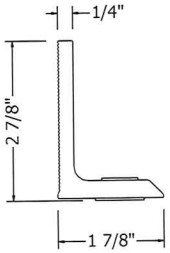
DWG NO.
M-D NOA

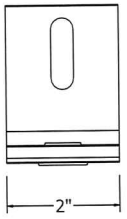


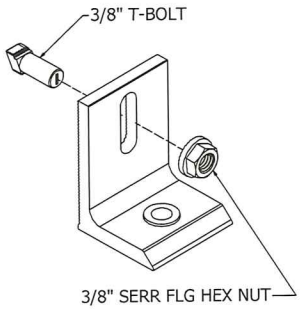
FLASHKIT PRO SM L-FOOT ASSEMBLY
NOT TO SCALE



LAG SCREW W/ WASHER ASSEMBLY







L-FOOT SERR W/T-BOLT
NOT TO SCALE

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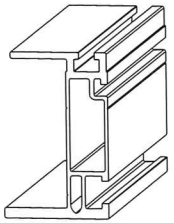
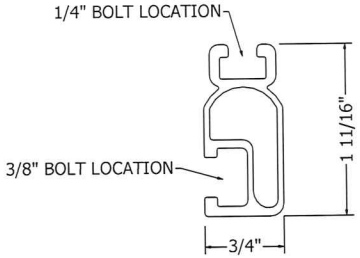
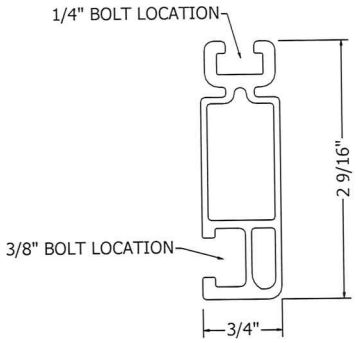
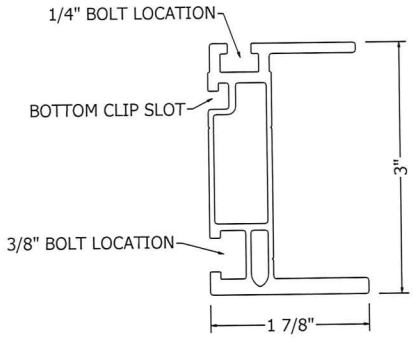




SOLARMOUNT LIGHT RAIL
NOT TO SCALE



SOLARMOUNT STANDARD RAIL
NOT TO SCALE



SOLARMOUNT HD RAIL
NOT TO SCALE

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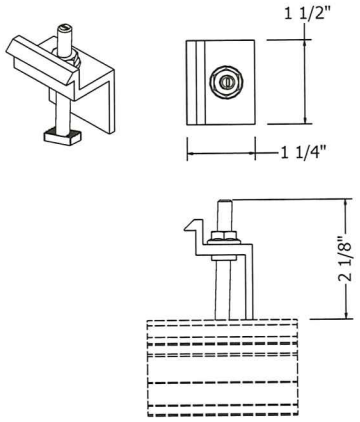
FOR
MIAMI-DADE COUNTY

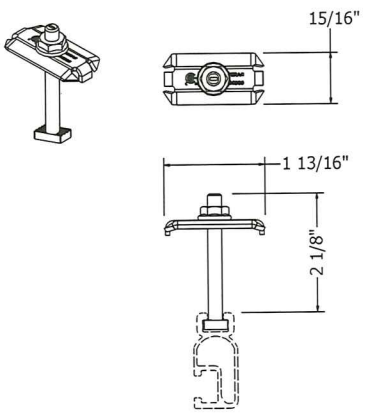
PROJECT
MIAMI-DADE CO. NOA
PROJECT ADDRESS

TITLE
SOLARMOUNT SYSTEM DETAILS

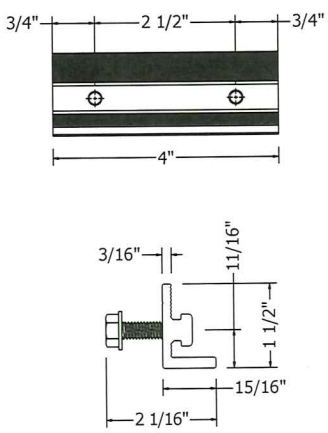
DWG NO.
M-D NOA



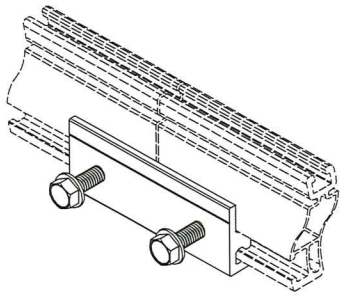
STANDARD ENDCLAMP
NOT TO SCALE
(SEE SHEET 11 OF 12)

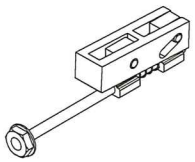


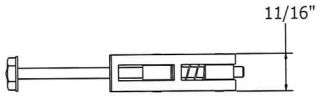
STANDARD MIDCLAMP
NOT TO SCALE
(SEE SHEET 11 OF 12)

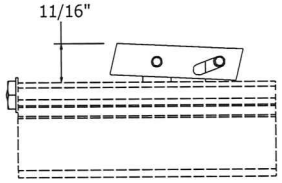


BONDING SPLICE BAR
PRO SERIES
NOT TO SCALE

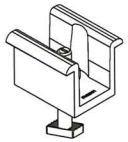


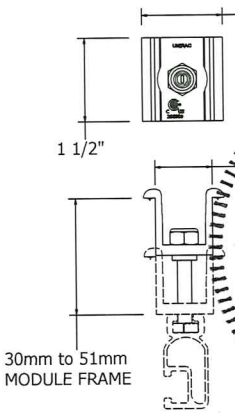






PRO SERIES ENDCLAMP
NOT TO SCALE





PRO SERIES MIDCLAMP
NOT TO SCALE
(SEE SHEET 10 OF 12)

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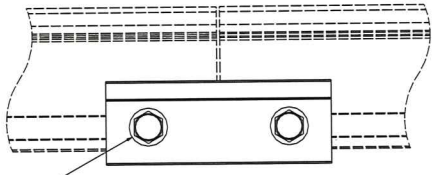

TYPICAL SPLICE BAR DETAIL
NOT TO SCALE
(SEE SHEET 12 OF 12)

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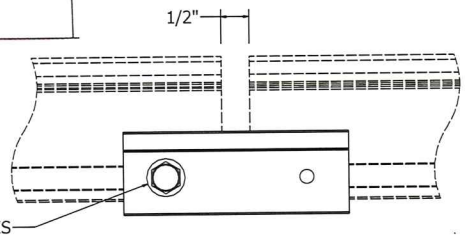

NOTE THAT ONLY 1 SCREW IS USED AT AN EXPANSION JOINT. THE SPLICE BAR DOES NOT BOND ACROSS AN EXPANSION JOINT. SEE INSTALLATION GUIDE FOR INSTRUCTION.

TYPICAL EXPANSION JOINT DETAIL
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FOR
MIAMI-DADE COUNTY

PROJECT
MIAMI-DADE CO. NOA
PROJECT ADDRESS

TITLE
SOLARMOUNT SYSTEM DETAILS

DWG NO.
M-D NOA

SHEET 8 OF 12

1. OVER THE RAFTER, DRILL A PILOT HOLE(S) FOR THE LAG BOLT(S).

2. INSERT THE FLASHING SO THE TOP PART IS UNDER THE NEXT ROW OF SHINGLES AND THE HOLE LINES UP WITH THE PILOT HOLE.

3. INSERT THE LAG BOLT THROUGH THE L-FOOT IN THE ORDER SHOWN IN THE IMAGE. VERIFY PROPER ORIENTATION BEFORE TIGHTENING LAG BOLTS.

4. INSERT THE LAG BOLT THROUGH THE L-FOOT IN THE ORDER SHOWN IN THE IMAGE. VERIFY PROPER ORIENTATION BEFORE TIGHTENING LAG BOLTS.

5. INSERT 3/8" T-BOLT INTO RAIL AT L-FOOT LOCATIONS. ROTATE T-BOLT INTO POSITION.

6. HAND TIGHTEN NUT UNTIL RAIL ALIGNMENT IS COMPLETE. VERIFY THAT POSITION INDICATOR ON BOLT IS VERTICAL (PERPENDICULAR TO RAIL)

7. USE DRILL TO TIGHTEN NUT ONTO T-BOLT.

8. SEE RAIL ATTACHED TO L-FOOT.

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FOR
MIAMI-DADE COUNTY

PROJECT
MIAMI-DADE CO. NOA

PROJECT ADDRESS

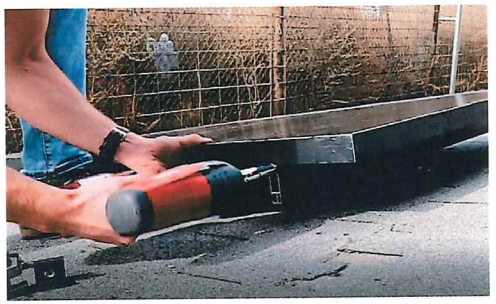
TITLE
SOLARMOUNT FLASHKIT PRO INSTALLATION

DWG NO.
M-D NOA

SHEET 9 OF 12

1. SLIDE END CLAMP ON TO RAIL BY ENGAGING THE TWO T-GUIDE BRACKETS WITH THE TOP SLOT OF THE RAILS. SLIDE END CLAMP ASSEMBLY ON TO RAIL UNTIL BOLT HEAD ENGAGES WITH END OF RAIL.

2. INSTALL THE FIRST END MODULE ONTO RAILS WITH THE FLANGE OF THE MODULE FRAME POSITIONED BETWEEN END CLAMPS AN ENDS OF RAILS.

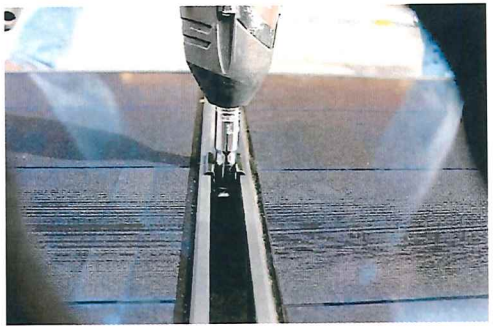


3. WHILE HOLDING MODULE IN POSITION AND WITH FLANGE IN FULL CONTACT WITH RAIL, USE DRILL TO ROTATE END CLAMP BOLT UNTIL CLAMP ENGAGES WITH FLANGE TO PROVIDE CLAMP FORCE.

4. SEE MODULE ENGAGED BY ENDCLAMP.

5. INSERT SECOND MODULE INTO PLACE.

6. INSERT 1/4" T-BOLT INTO TOP SLOT OF RAIL. ENSURE BOLT IS PERPENDICULAR TO RAIL.



7. MODULES MUST BE TIGHT AGAINST CLAMPS WITH NO GAPS. TIGHTEN NUT.

① THROUGH ④ → ENDCLAMP PRO SERIES

⑤ THROUGH ⑦ → MIDCLAMP PRO SERIES

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MIAMI-DADE CO. NOA

PROJECT ADDRESS

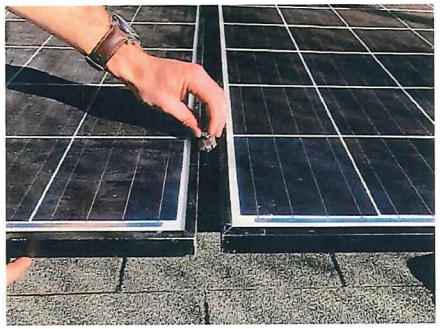
TITLE
SOLARMOUNT PRO SERIES INSTALLATION

DWG NO.
M-D NOA

1. INSERT 1/4" T-BOLT INTO RAIL.

2. ENGAGE MODULE FRAME WITH ENDCLAMPS. TIGHTEN T-BOLT WITH DRILL.

3. SEE MODULE ENGAGED BY ENDCLAMP.



4. INSERT 1/4" T-BOLT INTO RAIL.

5. TIGHTEN T-BOLT SO THAT MIDCLAMP IS PERPENDICULAR TO RAIL SPLICE.

6. TIGHTEN NUT TO SECURE MODULES IN PLACE WITH MIDCLAMP.

① THROUGH ③ ⟶ STANDARD ENDCLAMP

④ THROUGH ⑥ ⟶ STANDARD MIDCLAMP

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PROJECT ADDRESS

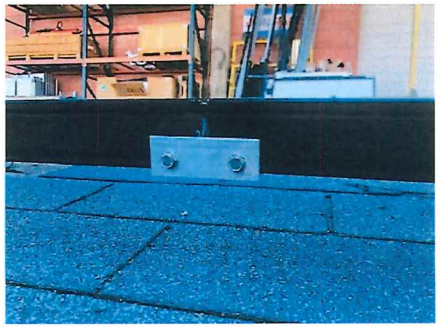
TITLE
SOLARMOUNT STANDARD INSTALLATION

DWG NO.
M-D NOA

1. SLIDE T-FEATURE ON SPLICE INTO THE T-SLOT ON EACH RAIL, CENTERING THE SPLICE BETWEEN THE TWO RAILS.

2. SLIDE T-FEATURE ON SPLICE INTO THE T-SLOT ON EACH RAIL, CENTERING THE SPLICE BETWEEN THE TWO RAILS.

3. TIGHTEN EACH BOLT UNTIL THE BOLT-HEAD IS FLUSH AGAINST THE SPLICE.



4. INSTALLATION IS COMPLETE WHEN THE BONDING HARDWARE PENETRATES THE OPPOSITE SIDE OF THE RAIL.

TYPICAL SPLICE DETAIL

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No MAY 21 2025
Expiration Date 21-0510.06
By
Miami Dade Product Control

JAMES L. BUCKNER
LICENSE
No. 31242
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

CBUCK Engineering
www.cbuck@cbuckinc.net.
(561) 491-9927 COA # 8064
1374 Community Dr
Jupiter, FL 33458

UNIRAC
1411 BROADWAY BOULEVARD NE
ALBUQUERQUE, NM, USA, 87102
WWW.UNIRAC.COM

ENGINEER'S STAMP

REVISIONS

REV	DATE	DESCRIPTION	CHK
1	11/19/19	INITIAL RELEASE	-
2	04/21/20	REVISED PER COMMENTS	-

FOR
MIAMI-DADE COUNTY

PROJECT
MIAMI-DADE CO. NOA
PROJECT ADDRESS

TITLE
SOLARMOUNT BONDING SPLICE INSTALLATION

DWG NO.
M-D NOA

SHEET 12 OF 12