

PHOTOVOLTAIC ROOF MOUNT SYSTEM

19 MODULES-ROOF MOUNTED - 7.410 kWDC, 6.000 kWAC
36 ATHENS CT, CAMERON, NC 28326, USA

SYSTEM SUMMARY

- (N) 19 - JINKO SOLAR JKM390M-72HBL-V (390W) MODULES
- (N) 01 - SOLAREEDGE SE6000H-US STRING-INVERTER
- (N) JUNCTION BOX
- (N) 19- SOLAREEDGE S440 POWER OPTIMIZERS
- (E) 200A MAIN SERVICE PANEL WITH (E) 200A MAIN BREAKER
- (N) 60A NON-FUSED AC DISCONNECT

INTERCONNECTION METHOD : BACKFEED BREAKER

DESIGN CRITERIA

ROOF TYPE:- ASPHALT SHINGLE
NUMBER OF LAYERS:- 01
ROOF FRAME:- 2"X2" TRUSSES @ 24" O.C
STORY:- ONE STORY
SNOW LOAD:- 10 PSF
WIND SPEED:- 117 MPH
WIND EXPOSURE:- C
RISK CATEGORY:- II
COORDINATE:- 35.284699, -79.116709



STAMPED_04/12/2024

NOTE: INSTALLER TO DETERMINE OPTIMAL CONDUIT RUN ON SITE. ATTIC RUN IS OPTIONAL UNLESS REQUIRED BELOW.

ATTIC RUN: OPTIONAL

GOVERNING CODES:

- 2018 NORTH CAROLINA RESIDENTIAL CODE
- 2018 NORTH CAROLINA ENERGY CONSERVATION CODE
- 2018 NORTH CAROLINA ADMINISTRATIVE CODE
- 2018 NORTH CAROLINA BUILDING CODE
- 2009 ICC ANSI A117.1, ACCESSIBLE AND USABLE BUILDINGS
- 2018 NORTH CAROLINA PLUMBING CODE
- 2018 NORTH CAROLINA MECHANICAL CODE
- 2018 NORTH CAROLINA FUEL GAS CODE
- 2018 NORTH CAROLINA FIRE PREVENTION CODE
- 2018 NORTH CAROLINA EXISTING BUILDING CODE
- 2020 NATIONAL ELECTRICAL CODE (NEC)

CONSTRUCTION NOTE:

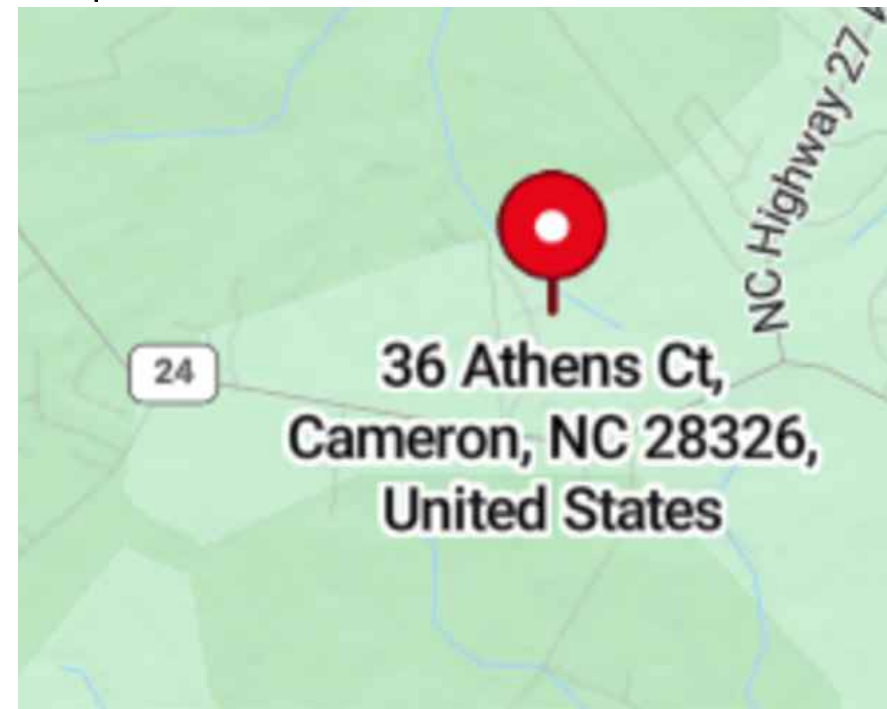
A LADDER SHALL BE IN PLACE FOR INSPECTION
THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY GRID INTERACTIVE SYSTEM
A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 690-47 AND 250-50 THROUGH 60 250-166 SHALL BE PROVIDED PER NEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #8 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE OR A COMPLETE GROUND. EACH MODULE WILL BE GROUNDED USING THE SUPPLIED GROUNDING POINTS IDENTIFIED BY THE MANUFACTURER.
EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.138(A) REGARDLESS OF VOLTAGE. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED
ALL SIGNAGE WILL BE INSTALLED AS REQUIRED BY AND 2020 NEC.
HEIGHT OF INTEGRATED AC/DC DISCONNECT SHALL NOT EXCEED 6' 7" PER NEC 240.24
THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER NEC 250-64B. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT PER NEC 250.64C. ALL EXTERIOR CONDUIT SHALL BE PAINTED TO MATCH ADJACENT SURFACES. THE PV CONNECTION IN THE PANEL BOARD SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION. NEC 690.64(B)(7)
SITE CONDITIONS SHALL PREVAIL IF NO SCALE IS GIVEN. DRAWINGS ARE NOT NECESSARILY TO SCALE. ALL DIMENSIONS SHALL BE VERIFIED BY SUBCONTRACTOR UPON COMMENCEMENT OF CONSTRUCTION.

ELECTRICAL NOTES

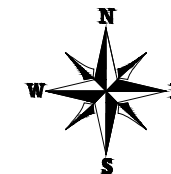
- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER E.G.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE



1 | AERIAL PHOTO
PV-0 | SCALE: NTS



2 | VICINITY MAP
PV-0 | SCALE: NTS



DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
CHAT.POWUR.COM

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	03-06-2024	UR
REVISION	04-12-2024	A

PROJECT NAME

KARLA YESENIA CLAVEL
36 ATHENS CT,
CAMERON, NC 28326, USA
UTILITY: CENTRAL ELECTRIC
MEMBERSHIP CORP
APN: 099556006451
AHJ: HARNETT COUNTY

SHEET NAME

COVER SHEET

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-0

SHEET INDEX

PV-0	COVER SHEET
PV-1	SITE PLAN WITH ROOF PLAN
PV-2	ROOF PLAN WITH MODULES
PV-3	ATTACHMENT DETAILS
PV-4	ELECTRICAL LINE DIAGRAM WITH WIRE CALCULATION
PV-5	WARNING LABELS & PLACARD
PV-6+	EQUIPMENT SPEC SHEETS

● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.



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NOTE:

A. ALL ELECTRICAL EQUIPMENT, INVERTERS/COMBINER, DISCONNECTS, MAIN SERVICE PANELS, ETC. SHALL NOT BE INSTALLED WITHIN 3' OF THE GAS METERS' SUPPLY OR DEMAND PIPING.

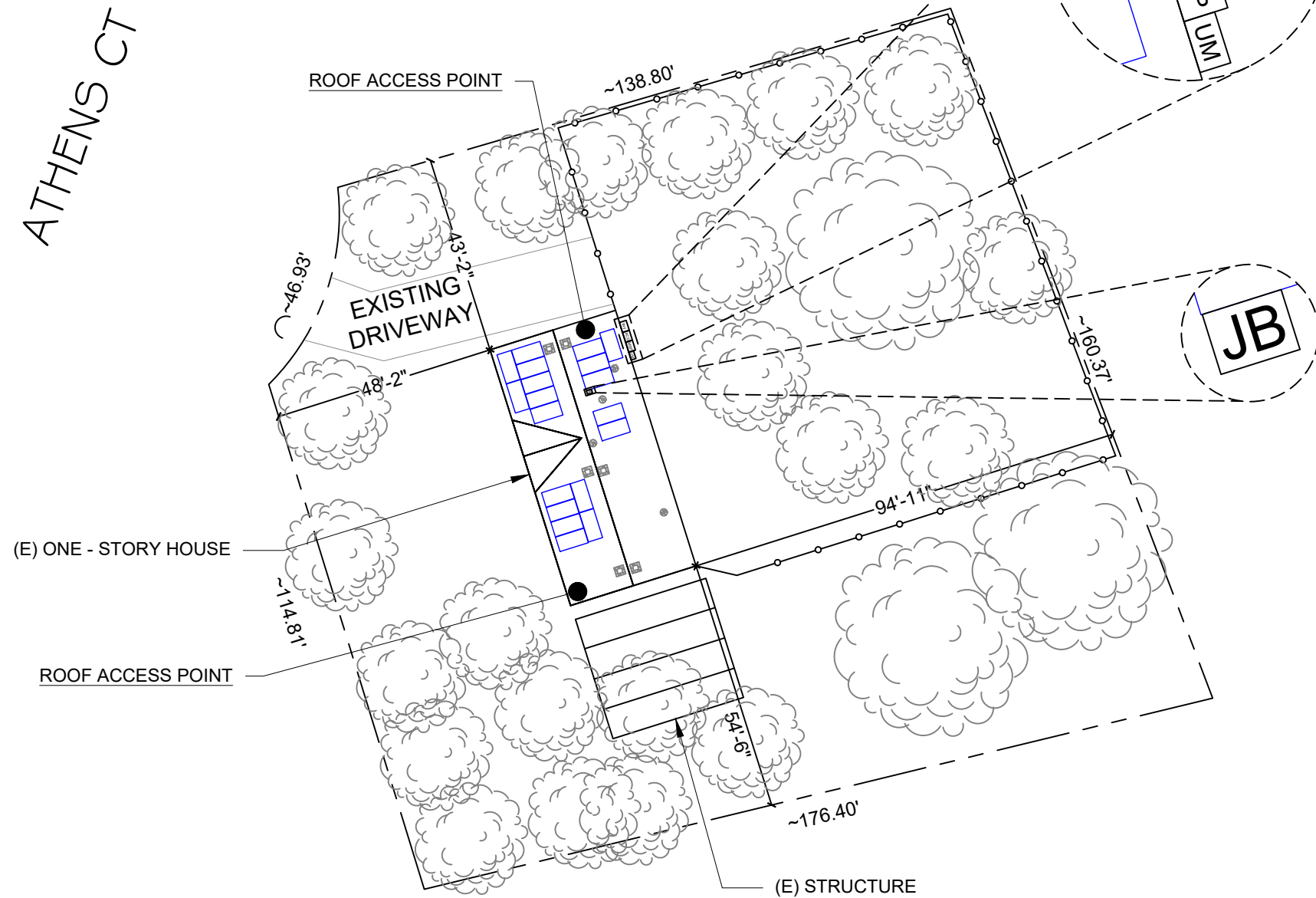
NOTE:

3/4" OR GREATER EMT CONDUIT RUN (7/8" ABOVE ROOF)

STRUCTURAL NOTES :

1. THESE PLANS ARE STAMPED FOR STRUCTURAL CODE COMPLIANCE OF THE ROOF FRAMING SUPPORTING THE PROPOSED PV INSTALLATION ONLY.
2. THESE PLANS ARE NOT STAMPED FOR WATER LEAKAGE.
3. PV MODULES, RACKING, AND ATTACHMENT COMPONENTS MUST FOLLOW MANUFACTURER GUIDELINES AND REQUIREMENTS.
4. PLEASE SEE THE ACCOMPANYING STRUCTURAL CALCULATIONS REPORT FOR ADDITIONAL INFORMATION.
5. PRIOR TO COMMENCEMENT OF WORK, THE SOLAR INSTALLER SHALL VERIFY THE ROOF FRAMING INFO BEFORE INSTALLATION AND NOTIFY THE E.O.R. IF THERE IS ANY INCONSISTENCY BETWEEN SITE VERIFICATION AND FOLLOWING: **2x2 TRUSSES @ 24" OC SPACING WITH MAX UNSUPPORTED SPAN EQUAL OR LESS THAN 4 FT.**

ATHENS CT



LEGEND

UM	UTILITY METER
MSP	MAIN SERVICE PANEL
ACD	AC DISCONNECT
INV	SOLAREEDGE SE6000H-US INVERTER
JB	JUNCTION BOX
○ □	VENT, ATTIC FAN (ROOF OBSTRUCTION)
⊗	6" OBSTRUCTION CLEARANCE
---	PROPERTY LINE
---	FENCE
⊙	TREES



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SHEET NAME

SITE PLAN WITH
ROOF PLAN

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-1

1 SITE PLAN WITH ROOF PLAN

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



MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 19 MODULES
 MODULE TYPE = JINKO SOLAR JKM390M-72HBL-V (390W) MODULES
 MODULE WEIGHT = 49.6 LBS / 22.5 KG
 MODULE DIMENSIONS = 79.06" X 39.45" = 21.66 SF
 UNIT WEIGHT OF ARRAY = 2.29 PSF

DISTRIBUTED DEAD LOAD = 2.84 PSF
 AVERAGE ROOF POINT DEAD LOAD = 20.49 LBS
 TOTAL SYSTEM WEIGHT: 1167.90 LBS

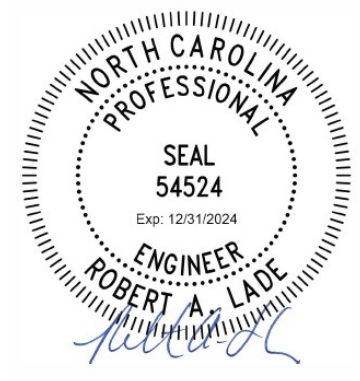
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 RUN (7/8" ABOVE ROOF)

ARRAY AREA & ROOF AREA CALC'S				
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	6	129.95	852	15.25
#2	13	281.57	741	38.00

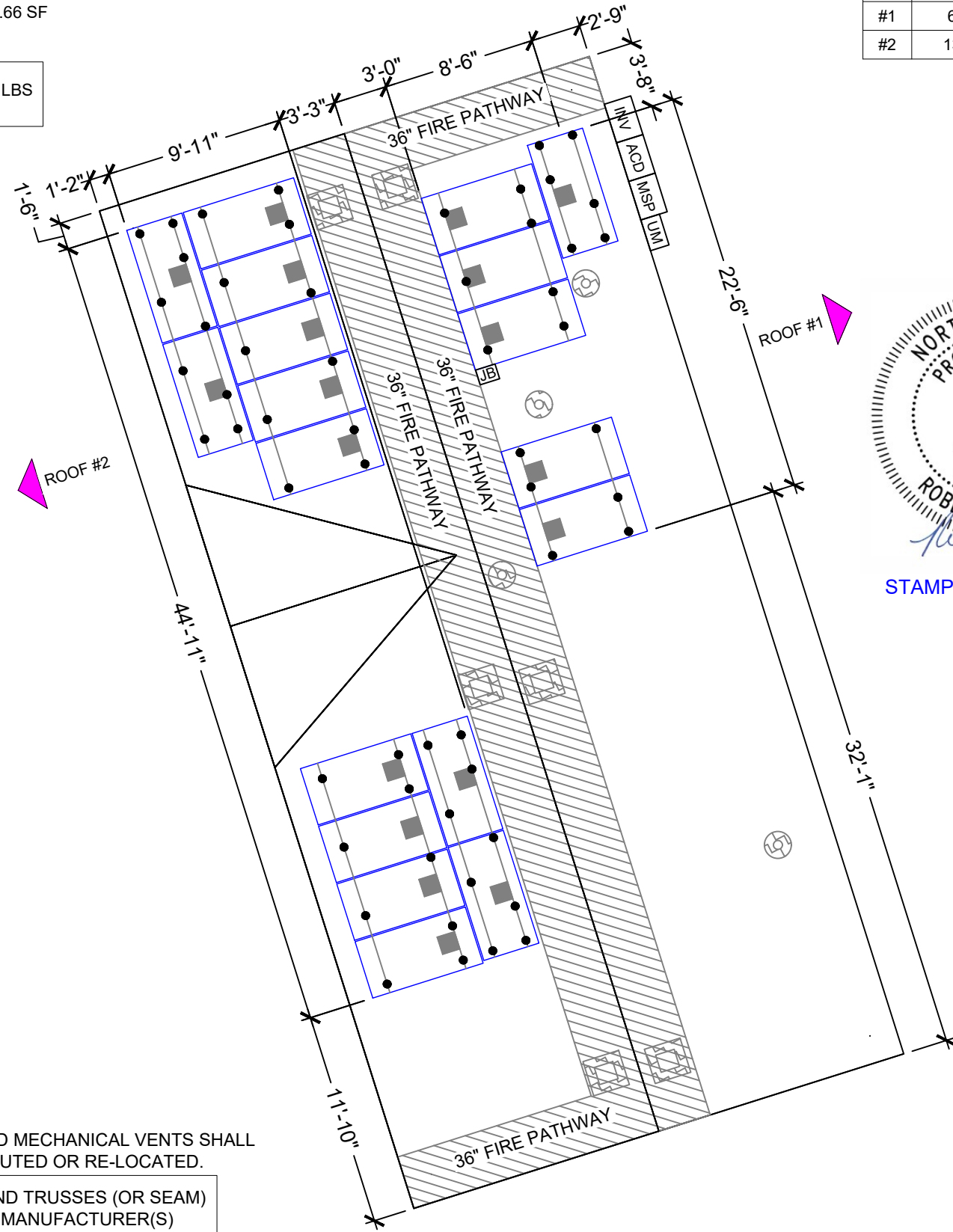
ROOF DESCRIPTION				
ROOF TYPE		ASPHALT SHINGLE		
ROOF	ROOF TILT	AZIMUTH	TRUSSES SIZE	TRUSSES SPACING
#1	14°	73°	2" X 2"	24" O.C
#2	14°	253°	2" X 2"	24" O.C

ARRAY AREA & ROOF AREA CALC'S		
AREA OF NEW ARRAY (Sq. Ft.)	AREA OF ROOF (PLAN VIEW) (Sq. Ft.)	TOTAL ROOF AREA COVERED BY ARRAY %
411.52	1707.3	24.10
24.10%	ROOF AREA (ARRAY <33% of ROOF AREA)	

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
RAIL	12	UNIRAC NXT UMount RAIL 168" MILL
RAIL SPLICE	02	NXT UMount RAIL SPLICE DRK
UNIVERSAL CLAMP	52	NXT UMount COMBO CLAMP DRK
DECKING SCREWS	342	#14 3IN SELF-DRILL SCREW
ROOF ATTACHMENTS	57	UNIRAC STRONGHOLD BUTYL ATT KIT (DECK MOUNT)
ACCESSORIES	28	NXT UMount RL & CLMP CAP KIT
MLPE & GROUNDING	26	NXT UMount MLPE & LUG CLAMP
WIRE MANAGEMENT	20	NXT UMount NS WIRE MGMT CLIP



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ATHENS CT
 FRONT YARD

REAR YARD

- PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

NOTE: ACTUAL ROOF CONDITIONS AND TRUSSES (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

1 ROOF PLAN WITH MODULES
 SCALE: 1/8" = 1'-0"



LEGEND	
UM	UTILITY METER
MSP	MAIN SERVICE PANEL
ACD	AC DISCONNECT
INV	SOLAREEDGE SE6000H-US INVERTER
JB	JUNCTION BOX
■	SOLAREEDGE S440 POWER OPTIMIZERS
—	UNIRAC NXT UMount RAIL
●	ROOF ATTACHMENT UNIRAC STRONGHOLD BUTYL ATT KIT (DECK MOUNT) @ 48" O.C.
○	VENT, ATTIC FAN (ROOF OBSTRUCTION)
⊗	6" OBSTRUCTION CLEARANCE
▨	FIRE PATHWAY



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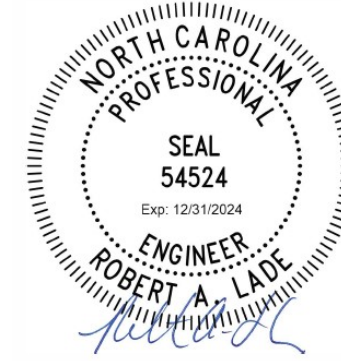
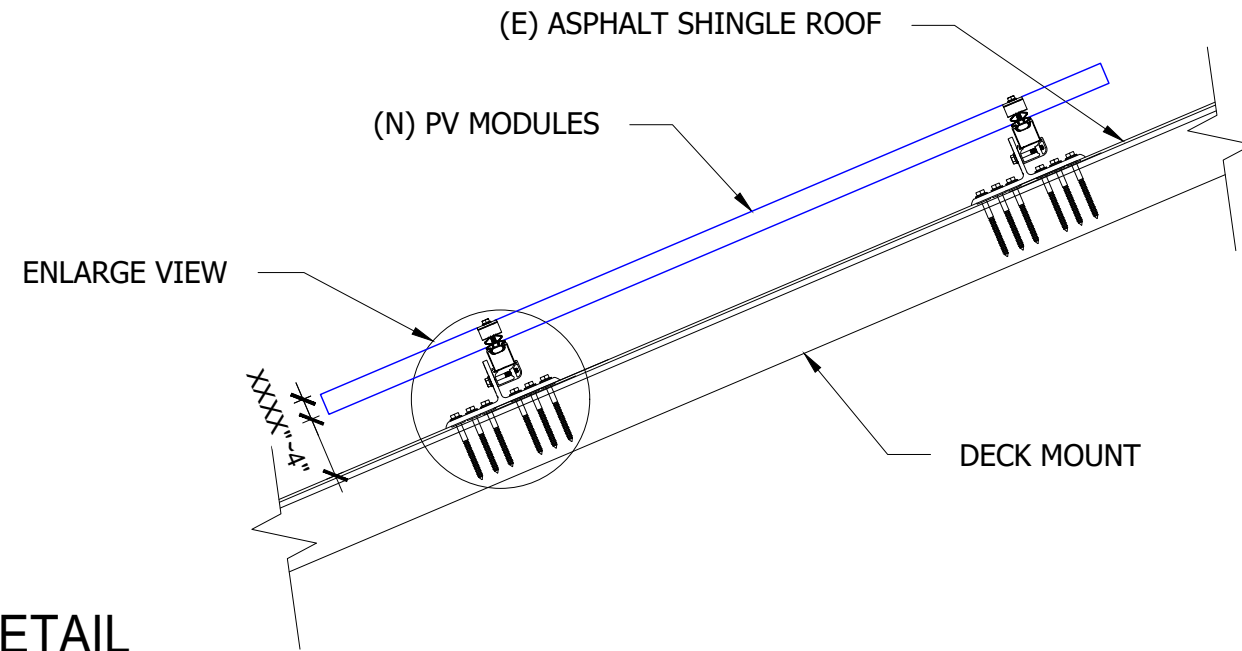
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 AHJ: HARNETT COUNTY

SHEET NAME
 ROOF PLAN WITH
 MODULES

SHEET SIZE
 ANSI B
 11" X 17"

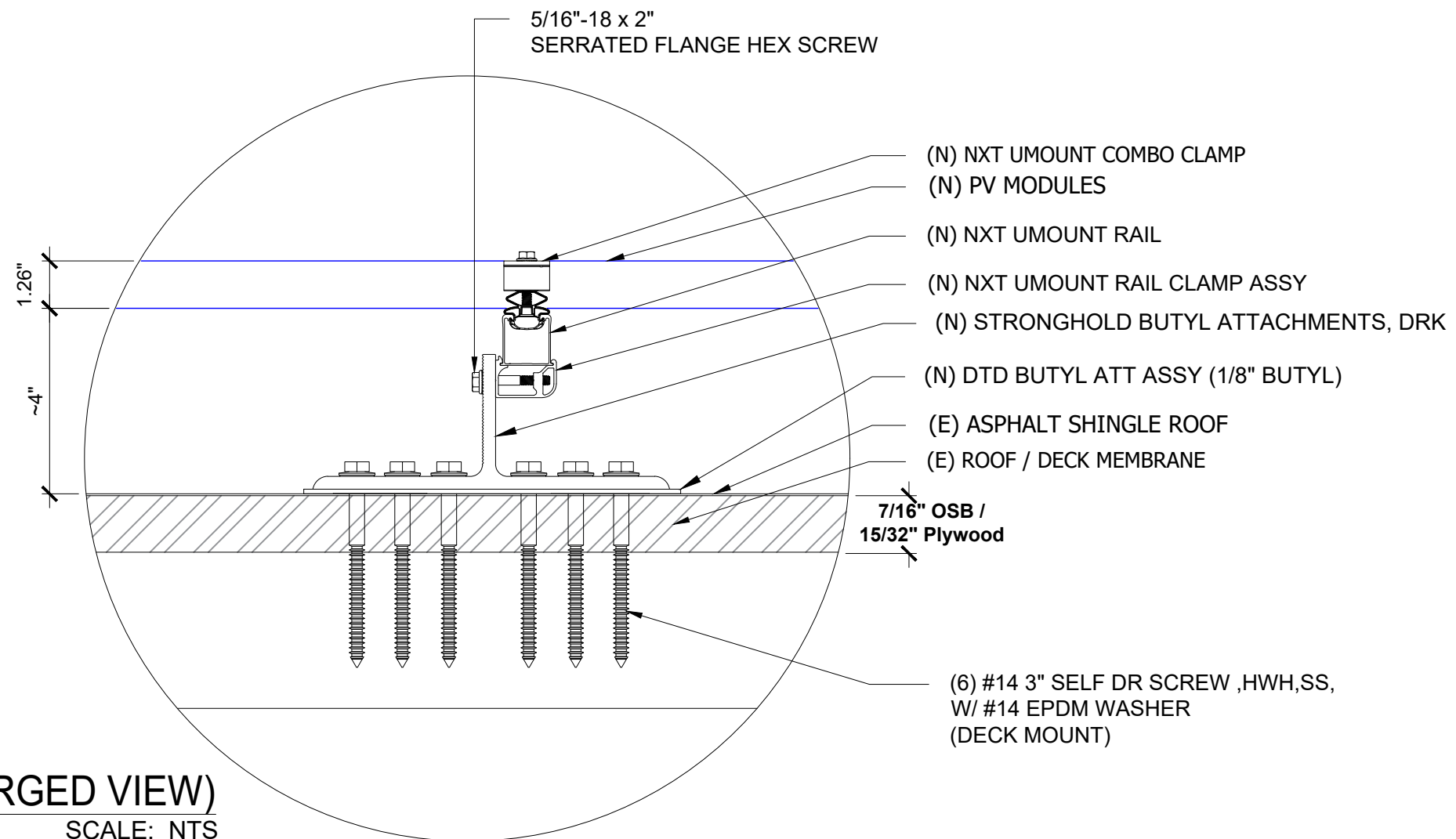
SHEET NUMBER
 PV-2

NOTE: ACTUAL ROOF CONDITIONS AND TRUSSES (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS



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1 ATTACHMENT DETAIL
SCALE: NTS



2 ATTACHMENT DETAIL (ENLARGED VIEW)
SCALE: NTS



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 APN: 099556006451
 AHJ: HARNETT COUNTY

SHEET NAME
**ATTACHMENT
DETAIL**

SHEET SIZE
**ANSI B
11" X 17"**

SHEET NUMBER
PV-3

AMBIENT TEMPERATURE SPECIFICATIONS				
RECORD LOW TEMPERATURE	AMBIENT TEMP (HIGH TEMP 2%)	CONDUIT HEIGHT	CONDUCTOR TEMPERATURE RATE (ON ROOF)	CONDUCTOR TEMPERATURE RATE (OFF ROOF)
-11°	35°	7/8"	90°	75°

SYSTEM SIZE:- 19 x 390W = 7.410 kWDC
 SYSTEM SIZE:- 1 x 6000W = 6.000 kWAC

NOTE:
 3/4" OR GREATER EMT CONDUIT
 RUN (7/8" ABOVE ROOF)

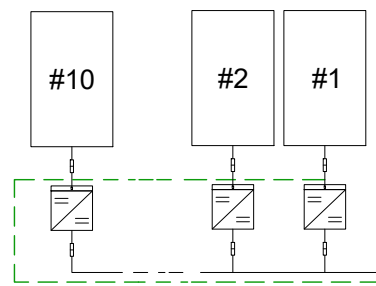
SOLAR MODULE SPECIFICATIONS						
MANUFACTURER / MODEL #	VMP (V)	IMP (A)	VOC (V)	ISC (A)	TEMPERATURE COEFFICIENT OF Voc	QUANTITY OF MODULES
JINKO SOLAR JKM390M-72HBL-V (390W)	39.64	9.84	48.60	10.46	-0.29%/°C	19
MODULE DIMENSIONS	79.06"L x 39.45"W x 1.57"D					

NOTE: PV BREAKER CALCULATION: (01 X 25 X 1.25 = 31.25) ~40A

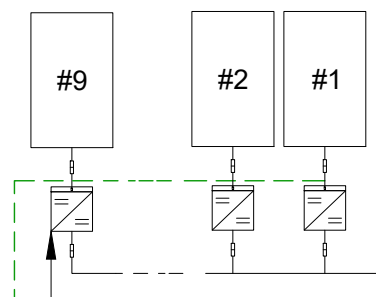
INVERTER SPECIFICATIONS			
MANUFACTURER / MODEL #	QUANTITY	NOMINAL OUTPUT VOLTAGE	NOMINAL OUTPUT CURRENT
SOLAREEDGE HD SE6000H-US	1	240VAC	25A

SERVICE INFO.
 UTILITY PROVIDER: CENTRAL ELECTRIC MEMBERSHIP CORP
 MAIN SERVICE VOLTAGE: 240V
 MAIN PANEL BRAND: SIEMENS
 MAIN SERVICE PANEL: (E) 200A
 MAIN CIRCUIT BREAKER RATING: (E) 200A
 MAIN SERVICE LOCATION: NOTRTH EAST
 SERVICE FEED SOURCE: UNDERGROUND

10 MODULES CONNECTED IN STRING #1

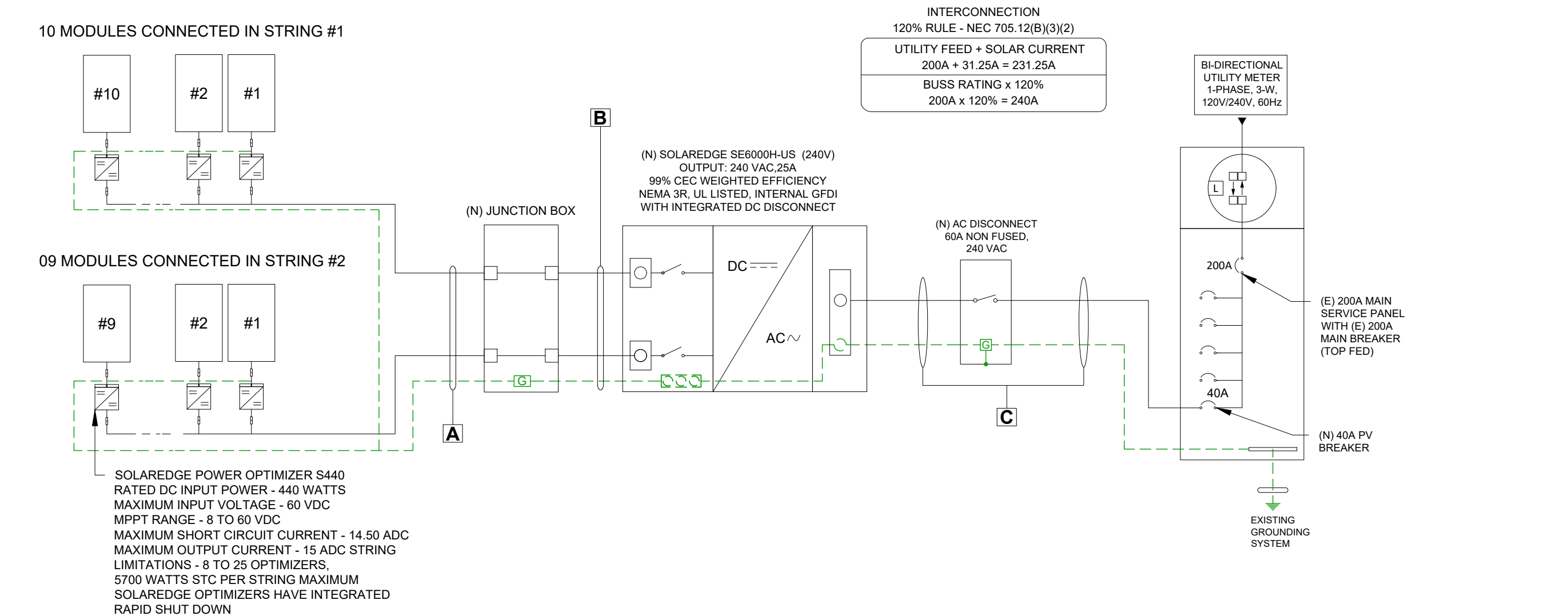


09 MODULES CONNECTED IN STRING #2



SOLAREEDGE POWER OPTIMIZER S440
 RATED DC INPUT POWER - 440 WATTS
 MAXIMUM INPUT VOLTAGE - 60 VDC
 MPPT RANGE - 8 TO 60 VDC
 MAXIMUM SHORT CIRCUIT CURRENT - 14.50 ADC
 MAXIMUM OUTPUT CURRENT - 15 ADC STRING
 LIMITATIONS - 8 TO 25 OPTIMIZERS,
 5700 WATTS STC PER STRING MAXIMUM
 SOLAREEDGE OPTIMIZERS HAVE INTEGRATED
 RAPID SHUT DOWN

INTERCONNECTION
 120% RULE - NEC 705.12(B)(3)(2)
 UTILITY FEED + SOLAR CURRENT
 200A + 31.25A = 231.25A
 BUSS RATING x 120%
 200A x 120% = 240A



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WIRE TAG	CONDUIT	WIRE QTY	WIRE GAUGE	WIRE TYPE	TEMP. RATING	WIRE AMPACITY (A)	TEMP. DERATE	CONDUIT FILL DERATE	DERATED AMPACITY (A)	DESIGN CURRENT (A)	GROUND SIZE	GROUND WIRE TYPE
A	OPEN AIR	4	10 AWG	THWN-2	90°C	40	0.96	N/A	38.40	15	06 AWG	BARE CU GND
B	3/4" EMT	4	10 AWG	THWN-2	90°C	40	0.96	0.8	30.72	15	10 AWG	THWN-2
C	3/4" EMT	3	8 AWG	THWN-2	75°C	50	0.94	1.0	47.00	25	10 AWG	THWN-2

1 ELECTRICAL LINE DIAGRAM WITH WIRE CALCULATION
 SCALE: NTS

SHEET NAME
**ELECTRICAL LINE
 DIAGRAM WITH
 WIRE CALCULATION**
 SHEET SIZE
**ANSI B
 11" X 17"**
 SHEET NUMBER
PV-4

⚠ WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
MAIN SERVICE PANEL (IF APPLICABLE).
PER CODE(S): NEC 2020: NEC 706.15 (C)(4) & NEC 690.13(B)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
UTILITY SERVICE ENTRANCE/METER, INVERTER/DC DISCONNECT IF REQUIRED BY LOCAL AHJ, OR OTHER LOCATIONS AS REQUIRED BY LOCAL AHJ.
PER CODE(S): NEC 2020: 690.56(C)(2)

⚠ WARNING
POWER SOURCE OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
SERVICE PANEL IF SUM OF BREAKERS EXCEEDS PANEL RATING
NEC 705.12 (B)(3)(2)

PHOTOVOLTAIC AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT/BREAKER/ POINT OF CONNECTION
(PER CODE: NEC 690.13(B))

NOTES AND SPECIFICATIONS:

- SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF THE 2020 ARTICLE 110.21(B), UNLESS SPECIFIC INSTRUCTIONS ARE REQUIRED BY SECTION 690, OR IF REQUESTED BY THE LOCAL AHJ.
- SIGNS AND LABELS SHALL ADEQUATELY WARN OF HAZARDS USING EFFECTIVE WORDS, COLORS AND SYMBOLS.
- LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
- LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
- SIGNS AND LABELS SHALL COMPLY WITH ANSI Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.
- DO NOT COVER EXISTING MANUFACTURER LABELS.

PHOTOVOLTAIC AC DISCONNECT
MAXIMUM AC OPERATING CURRENT: 25 AMPS
NOMINAL OPERATING AC VOLTAGE: 240 VAC

LABEL LOCATION:
AC DISCONNECT(S), PHOTOVOLTAIC SYSTEM POINT OF INTERCONNECTION.
PER CODE(S): NEC 2020: 690.54

PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
CONDUIT, INVERTER
(PER CODE: NEC690.31(D)(2))

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT / UTILITY METER
(PER CODE: NEC 690.13(B))

⚠ CAUTION
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION:
MSP (PER CODE: NEC 705.12(D) & NEC 690.59)

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

LABEL LOCATION:
POINTS OF CONNECTION/BREAKER
CODE: NEC 705.12(B)(3)(2)

⚠ WARNING DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
POINT OF INTERCONNECTION
PRODUCTION METER
NEC 705.12(B)(3)(3) & NEC 690.59)

RATED MAXIMUM POWER- POINT CURRENT (I_{mp}) 16.5 A
MAXIMUM SYSTEM VOLTAGE (VOC) 480 V
MAXIMUM CIRCUIT CURRENT (I_{sc}) 30 A

LABEL LOCATION:
DC DISCONNECT, INVERTER#
(PER CODE: NEC 690.53)

⚠ WARNING
ELECTRIC SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

LABEL LOCATION:
DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.13(B))

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

LABEL LOCATION:
INVERTER
PER CODE: NEC 690.31(E)

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.

LABEL LOCATION:
MAIN SERVICE PANEL
PER CODE(S): NEC 2020:690.56(C) IFC 2021: 1205.4.1

CAUTION ! MULTIPLE SOURCES OF POWER
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN

36 ATHENS CT



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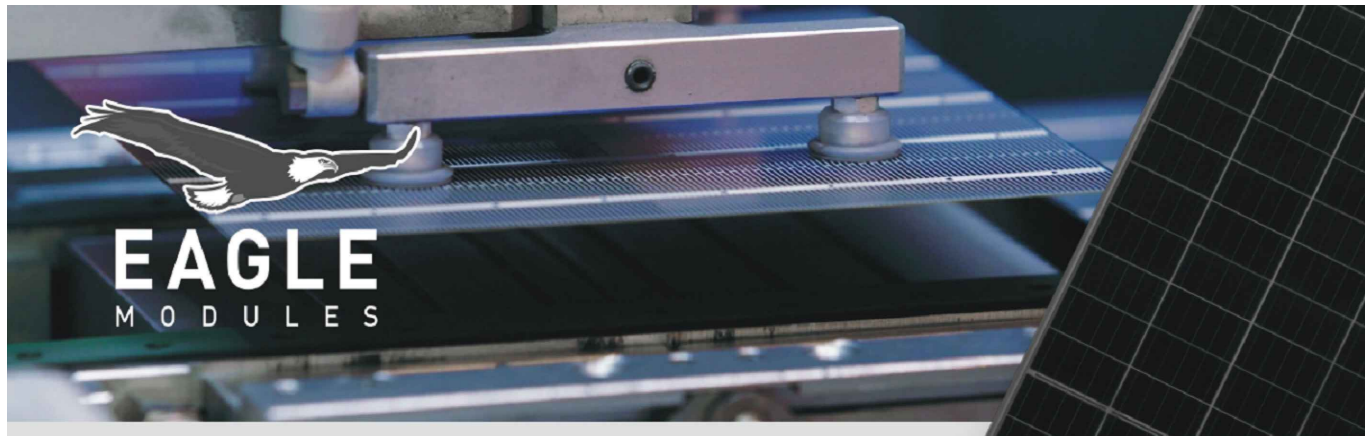
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MEMBERSHIP CORP
APN: 099556006451
AHJ: HARNETT COUNTY

SHEET NAME
WARNING LABELS & PLACARD

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5



EAGLE CONTINENTAL

380-400 WATT • MONO PERC HALF-CELL MODULE

Positive power tolerance of 0~+3%



- NYSE-listed since 2010, Bloomberg Tier 1 manufacturer
- Top performance in the strictest 3rd party labs
- Automated manufacturing utilizing artificial intelligence
- Vertically integrated, tight controls on quality
- Premium solar module factory in Jacksonville, Florida

KEY FEATURES

- Superior Aesthetics**
Black backsheet and black frame create ideal look for residential applications.
- Diamond Half-Cell Technology**
World-record breaking efficient mono PERC half-cells deliver high power in a small footprint.
- Thick and Tough**
Fire Type 1 rated module engineered with a thick frame, 3.2mm front side glass, and thick backsheet for added durability.

- Shade Tolerant**
Twin array design allows continued performance even with shading by trees or debris.
- Protected Against All Environments**
Certified to withstand humidity, heat, rain, marine environments, wind, hailstorms, and packed snow.
- Warranty**
12-year product and 25-year linear power warranty.



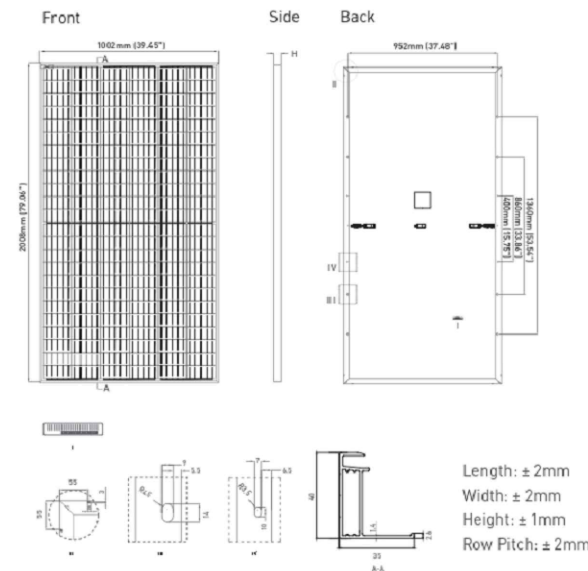
- ISO9001:2008 Quality Standards
- ISO14001:2004 Environmental Standards
- IEC61215, IEC61730 certified

- ISO 45001 2018 Occupational Health & Safety Standards
- UL1703/61730 certified

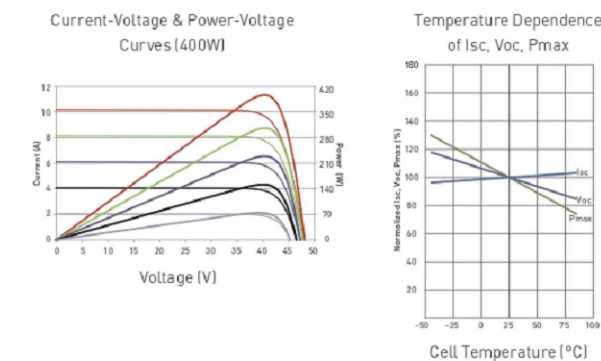
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ENGINEERING DRAWINGS



ELECTRICAL PERFORMANCE & TEMPERATURE DEPENDENCE



ELECTRICAL CHARACTERISTICS

Module Type	JKM380M-72HBL-V		JKM385M-72HBL-V		JKM390M-72HBL-V		JKM395M-72HBL-V		JKM400M-72HBL-V	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	380Wp	280Wp	385Wp	283Wp	390Wp	287Wp	395Wp	291Wp	400Wp	294Wp
Maximum Power Voltage (Vmp)	39.10V	36.5V	39.37V	36.8V	39.64V	37.0V	39.90V	37.4V	40.16V	37.6V
Maximum Power Current (Imp)	9.72A	7.67A	9.78A	7.71A	9.84A	7.75A	9.90A	7.77A	9.96A	7.82A
Open-circuit Voltage (Voc)	48.2V	45.4V	48.4V	45.6V	48.6V	45.8V	48.8V	46.0V	49.1V	46.2V
Short-circuit Current (Isc)	10.30A	8.32A	10.38A	8.38A	10.46A	8.45A	10.54A	8.51A	10.61A	8.57A
Module Efficiency STC (%)	18.89%		19.13%		19.38%		19.63%		19.88%	

*STC: ☀ Irradiance 1000W/m² ☁ Cell Temperature 25°C AM = 1.5
 NOCT: ☀ Irradiance 800W/m² ☁ Ambient Temperature 20°C AM = 1.5 🌬 Wind Speed 1m/s

*Power measurement tolerance: ±3%

The company reserves the final right for explanation on any of the information presented hereby. JKM380-400M-72HBL-V-F1-US

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MECHANICAL CHARACTERISTICS

Cells	Mono PERC Diamond Cell (158.75 x 158.75mm)
No. of Half Cells	144 (6 x 24)
Dimensions	2008 x 1002 x 40mm (79.06 x 39.45 x 1.57in)
Weight	22.5kg (49.6lbs)
Front Glass	3.2mm, Anti-Reflection Coating High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminum Alloy
Junction Box	IP68 Rated
Output Cables	12 AWG, 1400mm (55.12in)
Connector	Staubli MC4 Series
Fire Type	Type 1
Pressure Rating	5400Pa (Snow) & 2400 Pa (Wind)
Hailstone Test	50mm Hailstones at 35m/s

TEMPERATURE CHARACTERISTICS

Temperature Coefficients of Pmax	-0.35%/°C
Temperature Coefficients of Voc	-0.29%/°C
Temperature Coefficients of Isc	0.048%/°C
Nominal Operating Cell Temperature (NOCT)	45±2°C

MAXIMUM RATINGS

Operating Temperature (°C)	-40°C~+85°C
Maximum System Voltage	1500VDC (UL and IEC)
Maximum Series Fuse Rating	20A

PACKAGING CONFIGURATION

(Two pallets = One stack)
 27pcs/pallet, 54pcs/stack, 594pcs/40'HQ Container

WARRANTY

12-year product and 25-year linear power warranty
 1st year degradation not to exceed 2.5%, each subsequent year not to exceed 0.6%, minimum power at year 25 is 83.1% or greater.



DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
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VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	03-06-2024	UR
REVISION	04-12-2024	A

PROJECT NAME

KARLA YESENIA CLAVEL
 36 ATHENS CT,
 CAMERON, NC 28326, USA
 UTILITY: CENTRAL ELECTRIC
 MEMBERSHIP CORP
 APN: 099556006451
 AHJ: HARNETT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
 11" X 17"

SHEET NUMBER

PV-6

SolarEdge Home Wave Inverter For North America

SE3000H-US / SE3800H-US / SE5000H-US / SE5700H-US /
SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US



INVERTERS

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014-2023 per articles 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

SolarEdge Home Wave Inverter For North America

SE3000H-US / SE3800H-US / SE5000H-US / SE5700H-US / **SE6000H-US** / SE7600H-US

Applicable to inverters with part number	SEXXXXH-XXXXXBXX4						Units	
	SE3000H-US	SE3800H-US	SE5000H-US	SE5700H-US	SE6000H-US	SE7600H-US		
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	5760 @ 240V 5000 @ 208V	6000 @ 240V 5000 @ 208V	7600	VA	
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	5760 @ 240V 5000 @ 208V	6000 @ 240V 5000 @ 208V	7600	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	24	25	32	A	
Maximum Continuous Output Current @208V	-	16	-	24	24	-	A	
Power Factor	1, Adjustable – 0.85 to 0.85							
GFDI Threshold	1						A	
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	8900	9300	11800	W	
Maximum DC Power @208V	-	5100	-	7750	7750	-	W	
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480						Vdc	
Nominal DC Input Voltage	380						Vdc	
Maximum Input Current @240V ⁽²⁾	8.5	10.5	13.5	16	16.5	20	Adc	
Maximum Input Current @208V ⁽²⁾	-	9	-	13.5	13.5	-	Adc	
Max. Input Short Circuit Current	45						Adc	
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600k Sensitivity							
Maximum Inverter Efficiency	99	99.2					%	
CEC Weighted Efficiency	99						%	
Nighttime Power Consumption	< 2.5						W	
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, wireless SolarEdge Home Network (optional) ⁽³⁾ , Wi-Fi (optional), Cellular (optional)							
Revenue Grade Metering, ANSI C12.20	Optional ⁽⁴⁾							
Consumption Metering	Optional ⁽⁴⁾							
Inverter Commissioning	With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection							
Rapid Shutdown - NEC 2014-2023 per articles 690.11 and 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
STANDARD COMPLIANCE								
Safety	Conforms to UL 1741, UL 1741SA, UL 1741SB, UL 1699B Certified by CSA 22.2#107.1, C22.2#330, C22.3#9, ANSI/CAN/UL 9540							
Grid Connection Standards	IEEE1547 and IEEE-1547.1, Rule 21, Rule 14H							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	1" Maximum / 14 – 6 AWG							
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1 – 2 strings / 14 – 6 AWG							
Dimensions with Safety Switch (H x W x D)	17.7 x 14.6 x 6.8 / 450 x 370 x 174						in / mm	
Weight with Safety Switch	22 / 10	25.1 / 11.4	27.5 / 12.5	26.2 / 11.9			lb / kg	
Noise	< 25						< 50	dBA
Cooling	Natural Convection							
Operating Temperature Range	-40 to +140 / -40 to +60 ⁽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) For more information, refer to the [SolarEdge Home Network](#) datasheet.
 (4) Inverter with Revenue Grade Production and Consumption Meter P/N: SExxxxH-US000BEI4. For consumption metering, current transformers should be ordered separately.
 SEACT0750-200NA-20 or SEACT0750-400NA-20, 20 units per box.
 (5) Full power up to at least 50°C / 122°F; for power de-rating information refer to the [Temperature Derating](#) technical note for North America.



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36 ATHENS CT,
CAMERON, NC 28326, USA
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MEMBERSHIP CORP
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AHJ: HARNETT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-7

Power Optimizer For Residential Installations

S440 / S500 / S500B / S650B



POWER OPTIMIZER

Enabling PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Detects abnormal PV connector behavior, preventing potential safety issues*
- Faster installations with simplified cable management and easy assembly using a single bolt
- Module-level voltage shutdown for installer and firefighter safety
- Flexible system design for maximum space utilization
- Superior efficiency (99.5%)
- Compatible with bifacial PV modules

* Functionality subject to inverter model and firmware version

solaredge.com



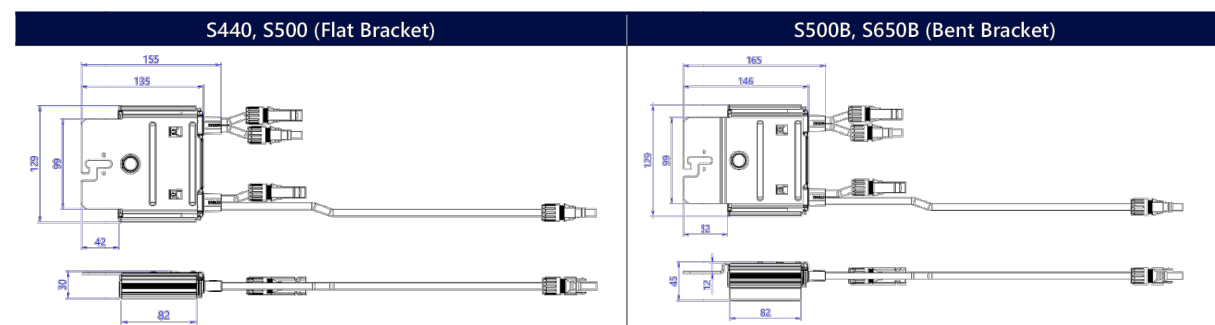
Power Optimizer For Residential Installations S440 / S500 / S500B / S650B

	S440	S500	S500B	S650B	UNIT
INPUT					
Rated Input DC Power ⁽¹⁾	440	500		650	W
Absolute Maximum Input Voltage (Voc)	60		125	85	Vdc
MPPT Operating Range	8 – 60		12.5 – 105	12.5 - 85	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5		15		Adc
Maximum Efficiency		99.5			%
Weighted Efficiency		98.6			%
Overtolerance Category		II			
OUTPUT DURING OPERATION					
Maximum Output Current		15			Adc
Maximum Output Voltage		60		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)					
Safety Output Voltage per Power Optimizer		1 ± 0.1			Vdc
STANDARD COMPLIANCE⁽²⁾					
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3, CISPR11, EN-55011				
Safety	IEC62109-1 (class II safety), UL1741				
Material	UL94 V-0, UV Resistant				
RoHS	Yes				
Fire Safety	VDE-AR-E 2100-712:2018-12				
INSTALLATION SPECIFICATIONS					
Maximum Allowed System Voltage	1000				Vdc
Dimensions (W x L x H)	129 x 155 x 30		129 x 165 x 45		mm
Weight	720		790		gr
Input Connector	MC4 ⁽³⁾				
Input Wire Length	0.1				
Output Connector	MC4				
Output Wire Length	(+) 2.3, (-) 0.10				
Operating Temperature Range ⁽⁴⁾	-40 to +85				
Protection Rating	IP68				
Relative Humidity	0 – 100				

(1) Rated power of the module at STC will not exceed the Power Optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed.
 (2) For details about CE compliance, see [Declaration of Conformity – CE](#).
 (3) For other connector types please contact SolarEdge.
 (4) Power de-rating is applied for ambient temperatures above +85°C for S440 and S500, and for ambient temperatures above +75°C for S500B. Refer to the [Power Optimizers Temperature De-Rating Technical Note](#) for details.

PV System Design Using a SolarEdge Inverter ⁽⁵⁾	SolarEdge Home Wave Inverter Single Phase	SolarEdge Home Short String Inverter Three Phase	Three Phase for 230/400V Grid	Three Phase for 277/480V Grid	
Minimum String Length (Power Optimizers)	S440, S500: 8 S500B, S650B: 6	9	16	18	
Maximum String Length (Power Optimizers)	25	20	50	14	
Maximum Continuous Power per String	5700	5625	11,250	12,750	W
Maximum Allowed Connected Power per String ⁽⁶⁾ (In multiple string designs, the maximum is permitted only when the difference in connected power between strings is 2,000W or less)	6800 ⁽⁷⁾	See ⁽⁶⁾	13,500	15,000	W
Parallel Strings of Different Lengths or Orientations	Yes				

(5) It is not allowed to mix S-series and P-series Power Optimizers in new installations in the same string.
 (6) If the inverter's rated AC power ≤ maximum continuous power per string, then the maximum connected power per string will be able to reach up to the inverters maximum input DC power. Refer to the [Single String Design Guidelines](#) application note.
 (7) For inverters with a rated AC power ≥ 8000W that are connected to at least two strings.



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DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
CHAT.POWUR.COM

VERSION

DESCRIPTION	DATE	REV
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REVISION	04-12-2024	A

PROJECT NAME

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36 ATHENS CT,
CAMERON, NC 28326, USA
UTILITY: CENTRAL ELECTRIC
MEMBERSHIP CORP
APN: 099556006451
AHJ: HARNETT COUNTY

SHEET NAME

SPEC SHEETS

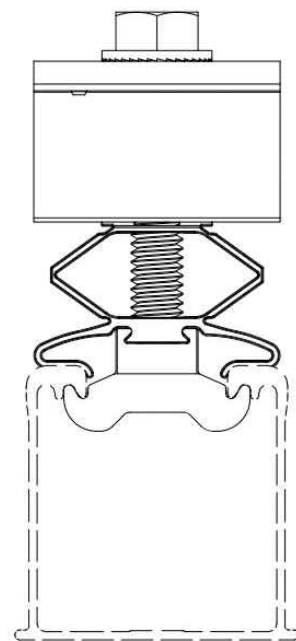
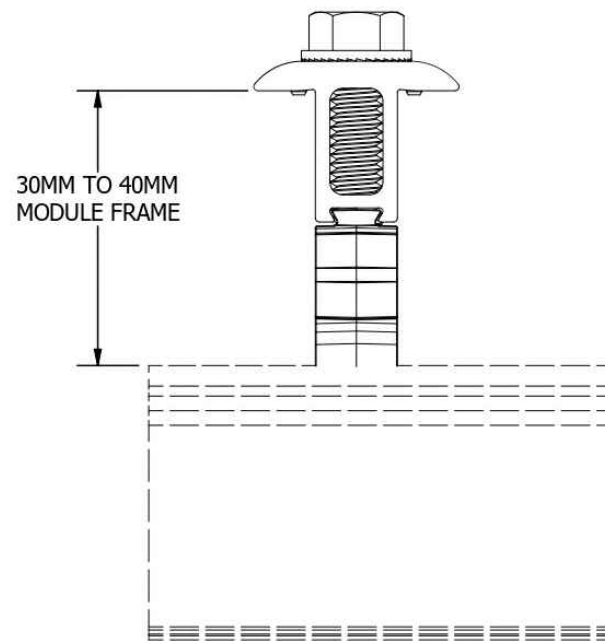
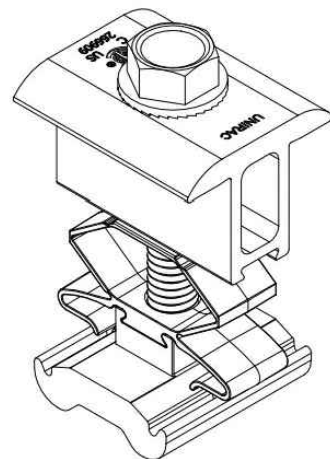
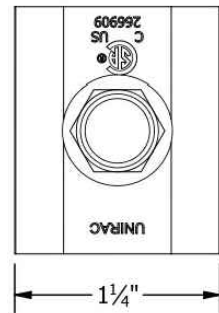
SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-8

PART # TABLE	
P/N	DESCRIPTION
CCLAMP1	NXT COMBO CLAMP - MILL
CCLAMPD1	NXT COMBO CLAMP - DARK



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

PRODUCT LINE:	NXT UMount
DRAWING TYPE:	PART & ASSEMBLY
DESCRIPTION:	COMBO CLAMP
REVISION DATE:	2/29/2024

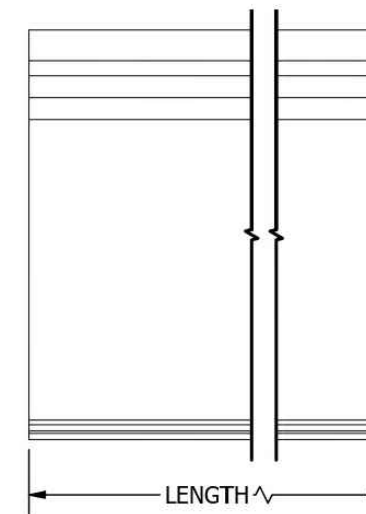
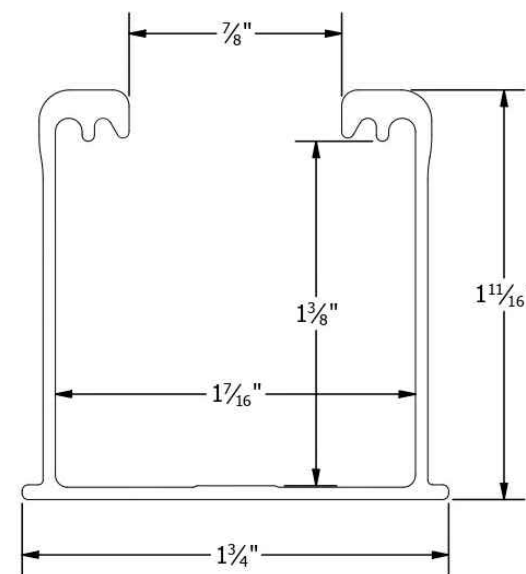
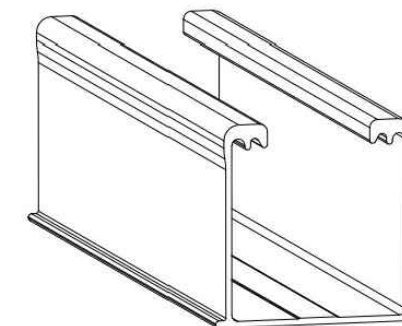
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PRODUCT PROTECTED BY
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LEGAL NOTICE

NU-A03
 SHEET

PART # TABLE		
P/N	DESCRIPTION	LENGTH
084RLM1	NXT UMount RAIL 84" MILL	84"
084RLD1	NXT UMount RAIL 84" DARK	84"
168RLM1	NXT UMount RAIL 168" MILL	168"
168RLD1	NXT UMount RAIL 168" DARK	168"
208RLM1	NXT UMount RAIL 208" MILL	208"
208RLD1	NXT UMount RAIL 208" DARK	208"
246RLM1	NXT UMount RAIL 246" MILL	246"
246RLD1	NXT UMount RAIL 246" DARK	246"
171RLM1	NXT UMount RAIL 171" MILL	171.50"
171RLD1	NXT UMount RAIL 171" DARK	171.50"
096RLM1	NXT UMount RAIL 96" MILL	96"
096RLD1	NXT UMount RAIL 96" DARK	96"
185RLM1	NXT UMount RAIL 185" MILL	185"
185RLD1	NXT UMount RAIL 185" DARK	185"



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

PRODUCT LINE:	NXT UMount
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	RAIL
REVISION DATE:	2/29/2024

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NU-P01
 SHEET



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 AHJ: HARNETT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
 11" X 17"

SHEET NUMBER

PV-9

STRONGHOLD™ | BUTYL



Unirac's **STRONGHOLD™ Butyl** is efficient, dependable, and optimized for UNIRAC's **NXT UMOUNT™** system.

The pre-applied butyl pad removes the need for additional flashing. Just peel the liner, place the attachment, and fasten it to the roof. In addition, the butyl, used throughout the roofing and solar industries for its reliability, conforms to the screws and roof for a robust, dependable seal with no extra work! Couple this with the **NXT UMOUNT™** system, and you have a highly reliable, easy-to-install system with integrated wire management.



UNIRAC
25
YEAR
FULL-SYSTEM
WARRANTY

KITTED WITH

- ONE (1) STRONGHOLD™ Butyl direct-to-deck attachment with pre-applied butyl patch (Extra patches for shimming available.)
- TWO (2) screws for rafter installation (Additional screws for direct-to-deck applications available.)
- ONE (1) NXT Rail Clamp

STRONGHOLD™ | BUTYL



SIMPLIFIED FLASHLESS SOLUTION

- One-step Butyl application
- Reliable waterproofing without messy sealant
- Eliminate roof disturbance
- Minimize labor

OPTIMIZED FOR NXT UMOUNT, UNIRAC'S OPEN CHANNEL RAIL SYSTEM

- Open slot design for ease of rail connectivity with included STRONGHOLD™ NXT rail clamp
- STRONGHOLD™ Butyl combined with the NXT UMOUNT system make installation and wire management a breeze
- UL Certified with NXT UMOUNT

DUAL MOUNTING OPTIONS

- Pre-attached butyl pad: Simply peel, stick, and fasten with the two (2) included screws for rafter mount
- For direct-to-deck applications, additional decking screws are available

ADDITIONAL BENEFITS

- Mill and Dark Finishes
- Option for extra cross-course butyl patches
- Competitively priced with standard rafter attachments

UNIRAC CUSTOMER SERVICE MEANS THE HIGHEST LEVEL OF PRODUCT SUPPORT



UNMATCHED EXPERIENCE



CERTIFIED QUALITY



ENGINEERING EXCELLENCE



BANKABLE WARRANTY



DESIGN TOOLS



PERMIT DOCUMENTATION

TECHNICAL SUPPORT

UNIRAC's technical support team is dedicated to answering questions & addressing issues in real time. An online library of documents including engineering reports, stamped letters and technical data sheets greatly simplifies your permitting and project planning process.

CERTIFIED QUALITY PROVIDER

UNIRAC is the only PV mounting vendor with ISO certifications for 9001:2015, 14001:2015 and OHSAS 18001:2007, which means we deliver the highest standards for fit, form, and function. These certifications demonstrate our excellence and commitment to first class business practices.

BANKABLE WARRANTY

Don't leave your project to chance, UNIRAC has the financial strength to back our products and reduce your risk. Have peace of mind knowing you are receiving products of exceptional quality. STRONGHOLD™ products are covered by a twenty five (25) year limited product warranty.



UNIRAC
25
YEAR
FULL-SYSTEM
WARRANTY



DEL MAR, CA 92014, USA

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AHJ: HARNETT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-10

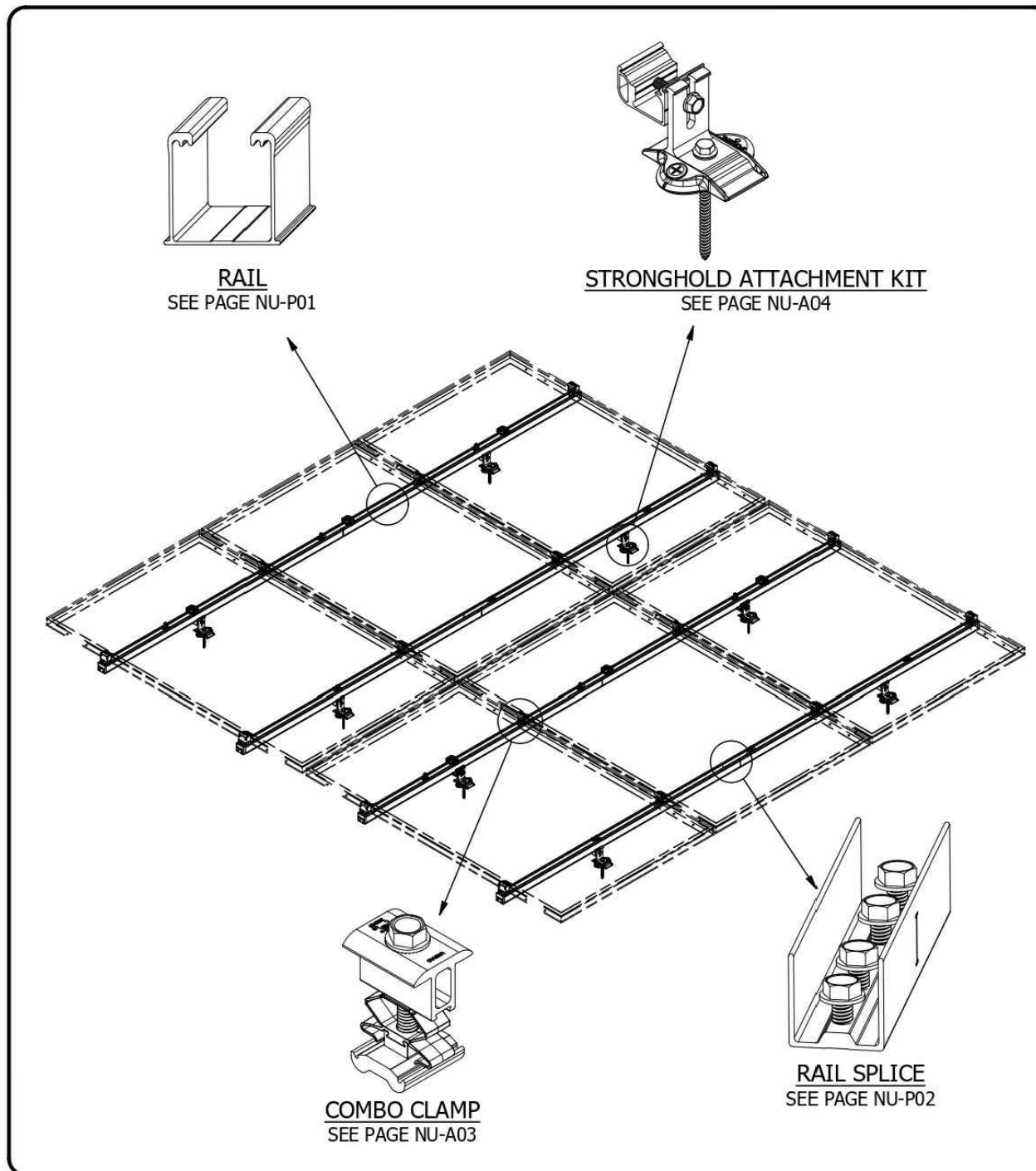
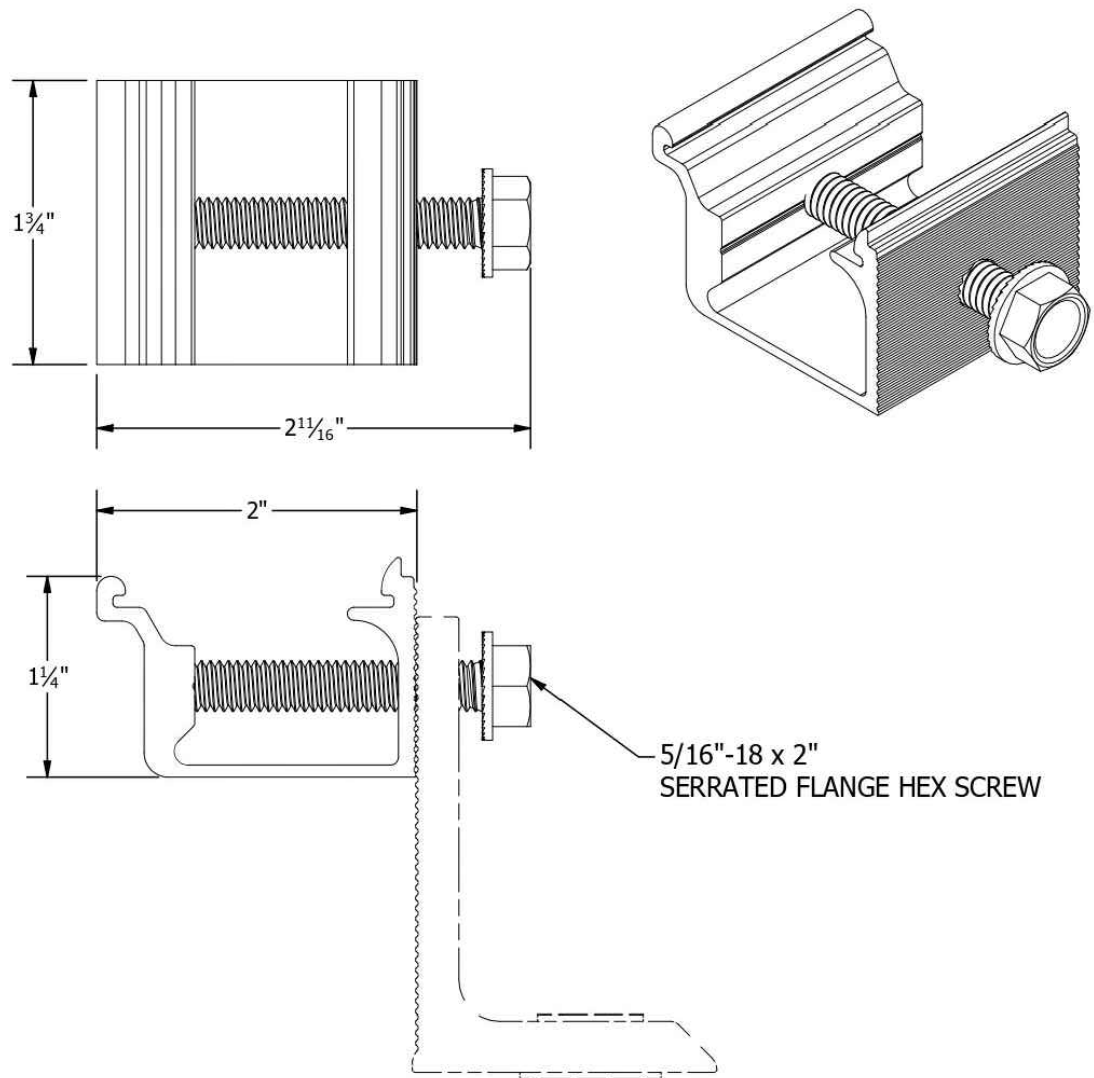
FOR QUESTIONS OR CUSTOMER SERVICE CONTACT: 505-242-6411 | SALES@UNIRAC.COM | WWW.UNIRAC.COM

PROTECT YOUR REPUTATION WITH QUALITY RACKING SOLUTIONS BACKED BY ENGINEERING EXCELLENCE AND A SUPERIOR SUPPLY CHAIN

PUB:2023JAN26-V2



PART # TABLE	
P/N	DESCRIPTION
SHCLMPM2	STRONGHOLD RAIL CLAMP, MILL
SHCLMPD2	STRONGHOLD RAIL CLAMP, DARK



DEL MAR, CA 92014, USA

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

PRODUCT LINE:	NXT UMount
DRAWING TYPE:	PARTS ASSEMBLY
DESCRIPTION:	STRONGHOLD RAIL CLAMP
REVISION DATE:	2/29/2024

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE
NOMINAL

PRODUCT PROTECTED BY
ONE OR MORE US PATENTS

LEGAL NOTICE

NU-A05
SHEET

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

PRODUCT LINE:	NXT UMount
DRAWING TYPE:	PART & ASSEMBLY
DESCRIPTION:	MODULE ASSEMBLY
REVISION DATE:	2/29/2024

DRAWING NOT TO SCALE
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NU-A01
SHEET

SHEET NAME

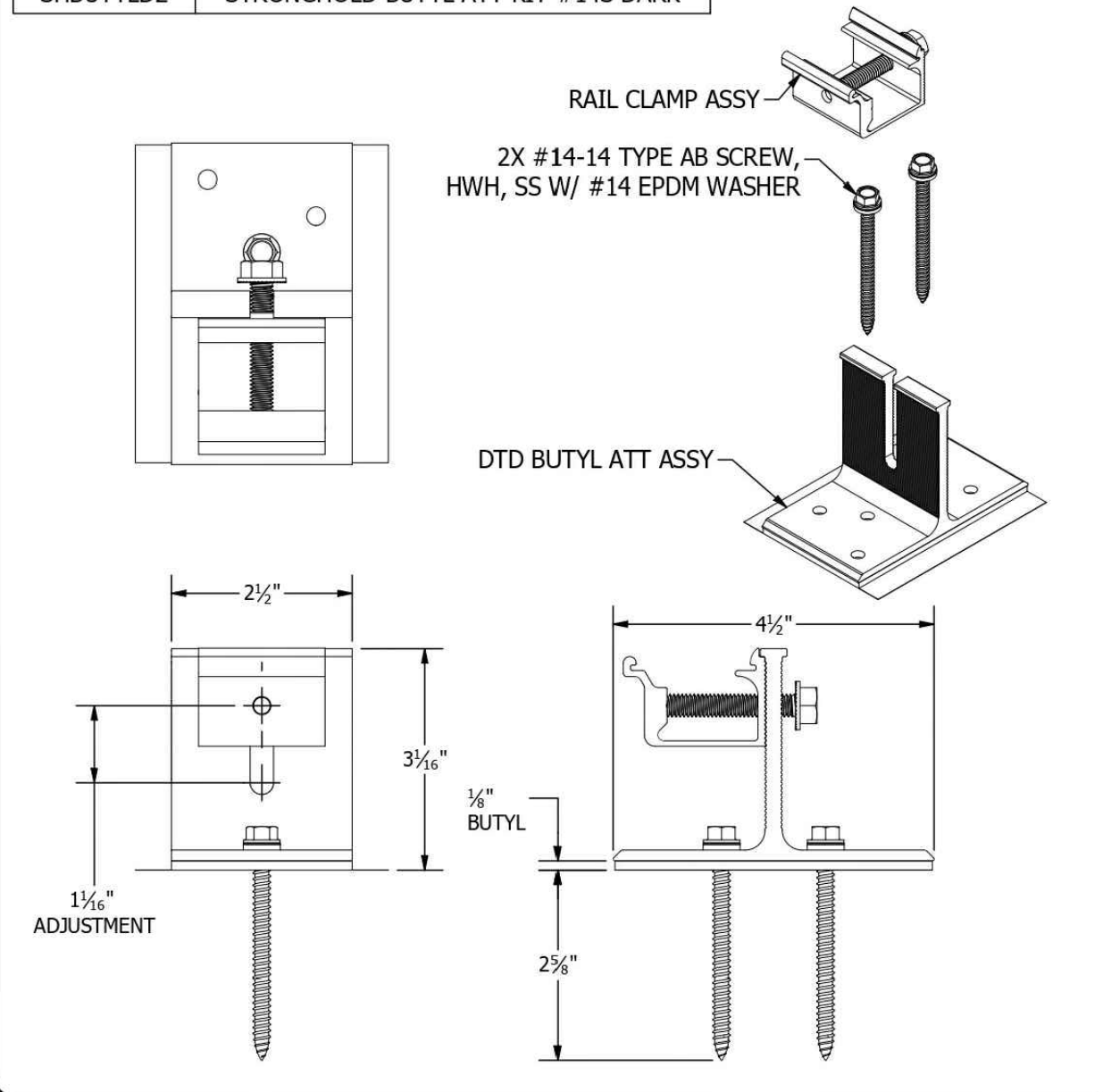
SPEC SHEETS

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ANSI B
11" X 17"

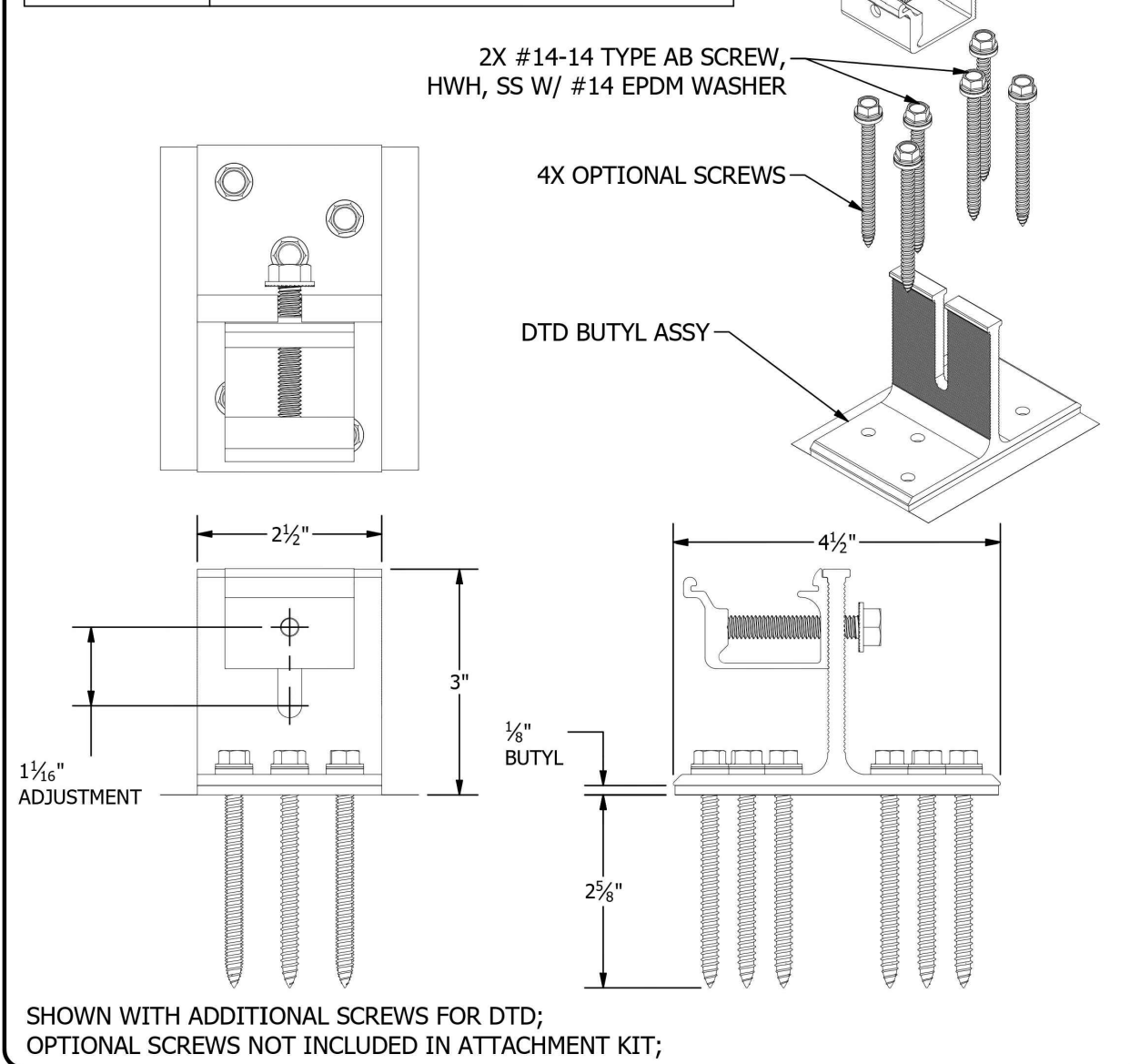
SHEET NUMBER
PV-11



PART # TABLE	
P/N	DESCRIPTION
SHBUTYLM2	STRONGHOLD BUTYL ATT KIT #14S MILL
SHBUTYLD2	STRONGHOLD BUTYL ATT KIT #14S DARK



PART # TABLE	
P/N	DESCRIPTION
SHBUTYLM2	STRONGHOLD BUTYL ATT KIT #14S MILL
SHBUTYLD2	STRONGHOLD BUTYL ATT KIT #14S DARK
003251W	DTD #14-14 X 3.0 TYPE AB



SHOWN WITH ADDITIONAL SCREWS FOR DTD;
OPTIONAL SCREWS NOT INCLUDED IN ATTACHMENT KIT;

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

PRODUCT LINE:	NXT UMount
DRAWING TYPE:	PARTS
DESCRIPTION:	SH BUTYL ATTACHMENT
REVISION DATE:	7/14/2023

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE
NOMINAL

PRODUCT PROTECTED BY
ONE OR MORE US PATENTS

LEGAL NOTICE

NU-A10-1
SHEET

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

PRODUCT LINE:	NXT UMount
DRAWING TYPE:	PARTS
DESCRIPTION:	SH BUTYL ATTACHMENT
REVISION DATE:	2/29/2024

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE
NOMINAL

PRODUCT PROTECTED BY
ONE OR MORE US PATENTS

LEGAL NOTICE

NU-A10-2
SHEET



DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
CHAT.POWUR.COM

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	03-06-2024	UR
REVISION	04-12-2024	A

PROJECT NAME

KARLA YESENIA CLAVEL
36 ATHENS CT,
CAMERON, NC 28326, USA
UTILITY: CENTRAL ELECTRIC
MEMBERSHIP CORP
APN: 099556006451
AHJ: HARNETT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-12



PLANNING YOUR NXT UMOUNT INSTALLATIONS

The installation can be laid out with rails parallel to the rafters or perpendicular to the rafters. Note that NXT UMOUNT rails make excellent straight edges for doing layouts.

Center the installation area over the structural members as much as possible. Leave enough room to safely move around the array during installation. Some building codes and fire codes require minimum clearances around such installations, and the installer should check local building code requirements for compliance.

The length of the installation area is equal to:

- the total width of the modules,
- plus 1/2" for each space between modules (for mid-clamp),
- plus 2" minimum (1" minimum for each MODULE END) (This will not be included when we use the hidden end clamp).

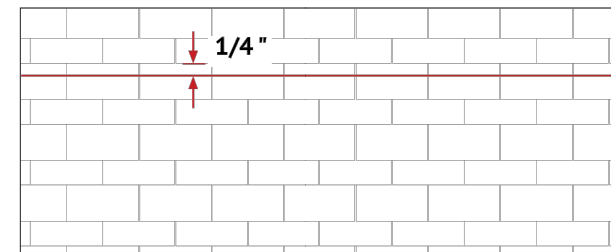
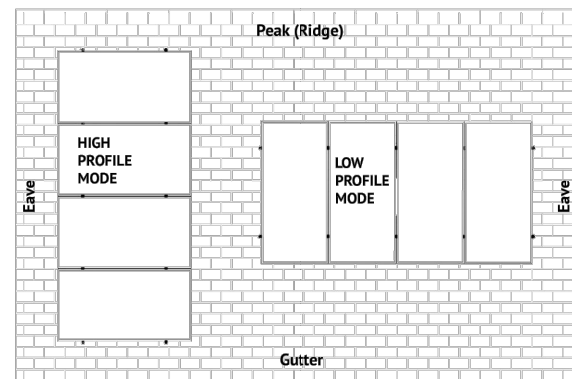
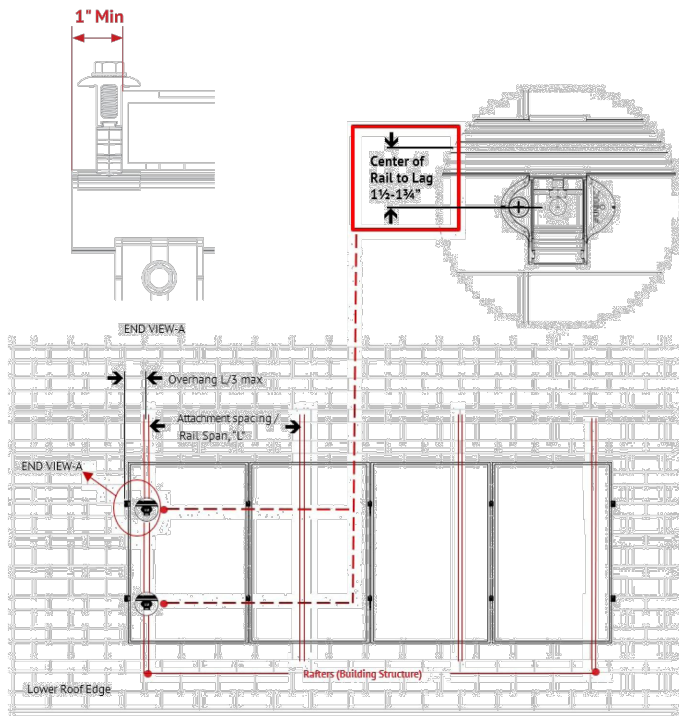
LAYING OUT ROOF ATTACHMENTS

Locate and mark the position of the roof attachment within the installation area. Refer to Unirac NXT UMOUNT D&E Guide & U-Builder for rail spans and cantilevers. Follow module manufacturer installation requirements allowable spacing based on appropriate mounting locations. Modules should be placed such that they overhang the rails symmetrically.

NXT Rail Splices are fully structural and do not interfere with roof attachments or Combo Clamps. There is no need to determine splice locations at this stage.

CAUTION

Rail lengths and locations of L-feet for expansion joints will need to be determined at this stage in planning the array layout. For expansion joint requirements, See Page 5.



MARK ARRAY LOCATION:

Clean roof surface of dirt, debris, snow, and ice. Mark array location and determine roof attachment locations based on array layout. Snap chalk lines to mark each row of roof attachment points. On shingle roofs, snap lines 1/4" below upslope edge of shingle course. Locate rafters and mark at intersection of attachment lines. Attachment spacing determined per Design and Engineering Guide or project specific U-Builder Engineering Report.

PRO TIP

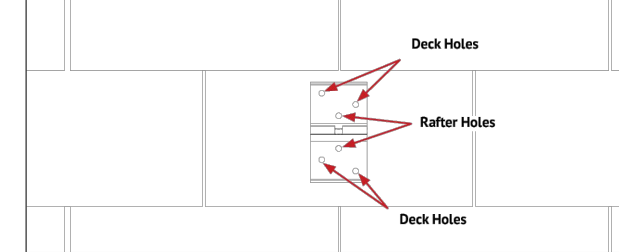
Install the attachment within 1/4" of the chalkline to allow the rail to slide freely in the rail clamp.

WARNING

- To maintain butyl flashing performance, Unirac does not recommend installing when ambient and/or roof temperatures are below 5°F or above 180°F.
- Stronghold Butyl must be installed on a clean, dry surface to ensure flashing integrity.

NOTE:

- Stronghold Butyl is designed for use on Asphalt Shingle, Rolled Comp, EPDM, TPO, Polyethylene, Polypropylene, ABS, and Metal Roofs (including Galvalume, painted steel, and galvanized).
- Pilot holes are not necessary to be drilled for self-drilling screws. If holes are drilled to identify the rafter, they should be backfilled with sealant before installing the attachment.
- Stronghold Butyl attachments are designed for slopes ranging from 0 to 90-degrees. For installations over 45-degrees, contact Unirac engineering for design guidance.



PLACING STRONGHOLD ATTACHMENT WITH BUTYL BASE:

Identify the position of the attachment to install before peeling the release paper. Ensure that the attachment lands on a flat surface. If the surface at the location of the attachment is uneven, add butyl patches to flatten the surface.

Note:

- Use rafter holes to install attachment on the rafter.
- Use all six holes to install attachment on the deck.

CAUTION

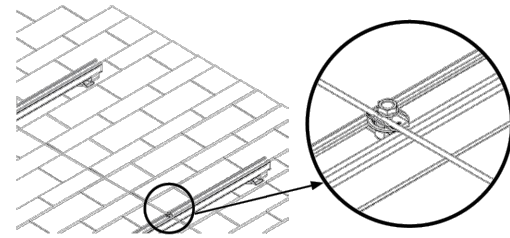
Do not peel the release paper from the butyl on attachment before identifying the position of attachment to install.

WARNING

Installing attachment on uneven surfaces, shingle gaps or overlaps, creates a risk for water leakage due to gap created between the adhesive and roof surface.

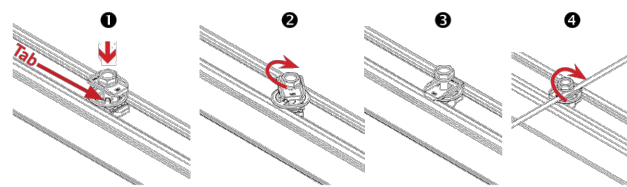
Note:

See Page 9 for instructions on placing extra butyl pads or contact Unirac team for further information.



SYSTEM GROUNDING: Rails can be bonded using a MLPE & GROUNDING LUG (NULGMLP1), GROUND WEEBLUG #1 or ILSCO LAY IN LUG (GBL4DBT). At least one rail per row of modules in an array must be bonded to electrical ground. Each additional row of modules must be grounded with at least one rail lug per row or with a row-to-row bonding device listed here.

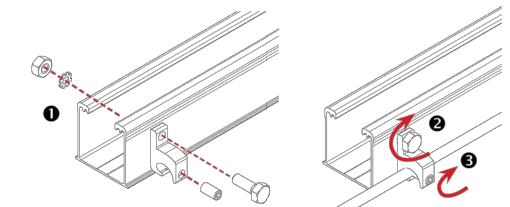
Note: See Page 5 for additional lugs required for expansion joints.



SYSTEM GROUNDING WITH MLPE & GROUNDING LUG: Insert the T-nut in the rail by holding the plastic cone's tabs with thumb and middle finger. Rotate the clamp 90 deg in clockwise direction in the rail and release when aligned with rail. Ensure that the T-nut is engaged in the rail profile. Place the grounding wire on the grounding plate on one of the sides of the rail, parallel to the grounding plate flanges. Tighten bolt.

TORQUE VALUE: 6-12 AWG SOLID COPPER: 10 ft. lbs.

NOTE: MLPE & GROUNDING LUG is single use only

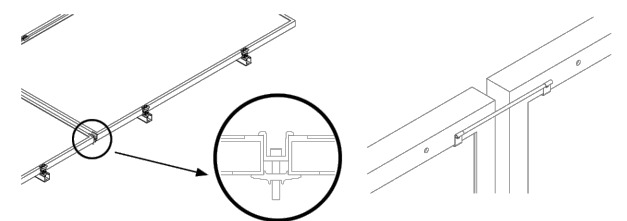


ALTERNATE SYSTEM GROUNDING WITH ILSCO LAY-IN LUG - UNIRAC P/N 008009P: Alternate Grounding Lug. Drill hole in rail 7/32" in diameter, deburr hole and bolt through one wall of rail.

BOLT TORQUE VALUE: 5 ft. lbs.
TERMINAL TORQUE: 4-6 AWG: 35in-lbs, 8 AWG: 25 in-lbs.

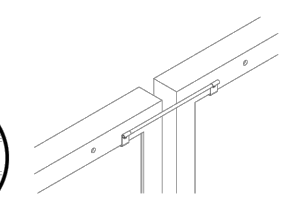
WARNING

Ensure Copper does contact Aluminum to avoid corrosion.

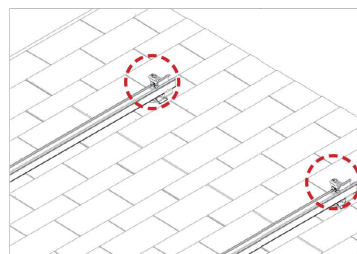


ALTERNATE ROW GROUNDING WITH N/S BONDING CLAMP: Insert clamp between module rows and tighten bolt.

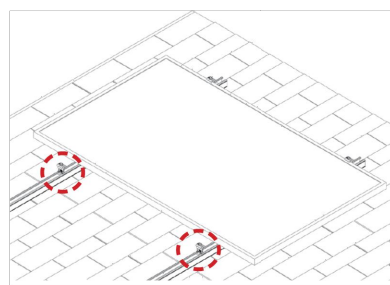
TORQUE VALUE: 20 ft.-lbs.



ALTERNATE ROW GROUNDING WITH N/S BONDING CLIP: Fully seat bonding clip on each module flange to provide bond across N/S module gap.



INSTALL COMBO (END) CLAMPS: Install Combo Clamps starting at the aligned end of rails.

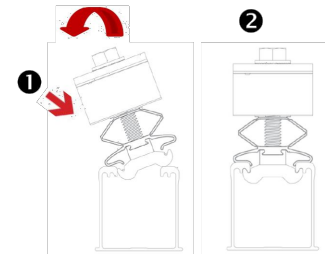


INSTALL COMBO (MID) CLAMPS: Clamp assemblies may be positioned in rail near point of use prior to module placement.

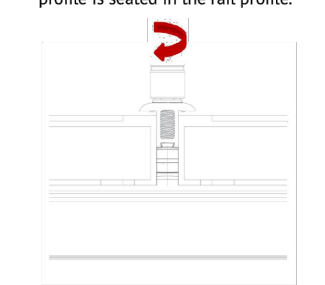
Note: The clamps may be installed above splice locations.

PRO TIP

Press the clamp assembly slightly into the rail to allow for easy sliding of clamp in the rail.

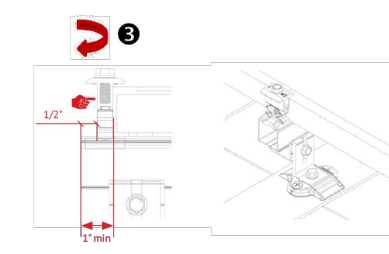


INSERT COMBO CLAMP: Insert Combo Clamp from one side of the rail nut into the rail and click in the other side. Ensure that the rail nut profile is seated in the rail profile.



PLACE ADJACENT MODULE AGAINST CLAMPS: Modules must be tight against clamps with no gaps. Tighten bolt to required torque.

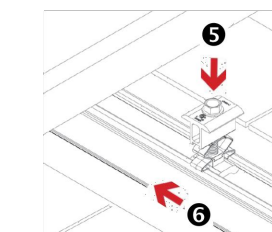
TORQUE VALUE: 15 ft.-lbs.



INSTALL END MODULE: Position first module onto rails and engage module frame with end clamps. Hold clamp in place against module while tightening bolt.

TORQUE VALUE: 15 ft.-lbs.

Note: Ensure a minimum distance of 1" from the end of the module to end of rail.



INSTALL REMAINING MODULES: Proceed with module installation. Engage each clamp with previously positioned module.

Note: Combo clamps are capable of securing module frames whose thickness varies from 30mm to 40mm.



DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
CHAT.POWUR.COM

VERSION		
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INITIAL RELEASE	03-06-2024	UR
REVISION	04-12-2024	A

PROJECT NAME

KARLA YESENIA CLAVEL
36 ATHENS CT,
CAMERON, NC 28326, USA
UTILITY: CENTRAL ELECTRIC
MEMBERSHIP CORP
APN: 099556006451
AHJ: HARNETT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-13



Descriptive Report

MASTER CONTRACT: 266909
REPORT: 70131735
PROJECT: 80182385

Edition 1: September 20, 2017; Project 70131735 - Irvine
Prepared By: Michael Hoffnagle
Authorized By: Michael Hoffnagle

Edition 27: October 20, 2023; Project 80180934 - Irvine
Prepared By: Michael Hoffnagle
Authorized By: Michael Hoffnagle

Edition 28: November 29, 2023; Project 80182385 - Irvine
Prepared By: Michael Hoffnagle
Authorized By: Michael Hoffnagle

Report pages reissued

Contents: Certificate of Compliance - Pages 1 to 12
Supplement to Certificate of Compliance - Pages 1 to 4
Description and Tests - Pages 1 to 39
Att1 Installation Manual SM- Pages 1 to 47
Att2 Schematics SM/ULA- Pages 1 to 81
Att3 Installation Manual ULA- Pages 1 to 28
Att4 RM5 Installation Guide - 1 to 23
Att5 RMDT Installation Guide - 1 to 24
Att6 RM series schematics - 1 to 33
Att7 Installation Manual, GFT Shared Rail - Pages 1 to 43
Att8 Installation Manual, GFT 4-Rail - Pages 1 to 43
Att9 GFT Schematics - Pages 1 to 45
Att10 NXT UMOUNT Installation Manual - Pages 1 to 38
Att11 Schematics NXT UMOUNT - Pages 1 to 82
Att12 SM Ascender 2P Elevated Installation Manual - Pages 1 to 37
Att13 SM Ascender 2P NON Elevated Installation Manual - Pages 1 to 36
Att14 SM Ascender 1P Non Elevated Installation Manual - Pages 1 to 33
Att15 SM Ascender 1P Elevated Installation Manual - Pages 1 to 36
Att16 Schematics SM Ascender - Pages 1 to 35
Att17 SM Ascender Flush Mount Installation Manual - Pages 1 to 28
Att18 S-5 schematics and installation - Pages 1 to 19

PRODUCTS

CLASS - C531302 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems
CLASS - C531382 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems -
Certified to US Standards

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34 Bunsen, Irvine, CA, U.S.A. 92618
Telephone: 949.733.4300 1.800.463.6727 Fax: 949.733.4320 www.csagroup.org



Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the NXT UMOUNT system.

Manufacture	Module Model / Series	Manufacture	Module Model / Series	Manufacture	Module Model / Series					
JA Solar	JAM54530 xxx/MR	LG Electronics (Cont.)	LGxxx(N1C/N1K/N2T/N2W)-E6	NE Solar	NESE xxx-72MHB-M10					
	JAM54531 xxx/MR		LGxxx(N1C/N1K/N2W/S1C/S2W)-G4		NESE xxx-60MH-M6					
	JAM72D30MB, JAM78D10MB		LGxxxN2T-J5		Panasonic	VBHNxxxSA06/SA06B/SA11/SA11B				
	JAM72S30 /MR		LGxxx(N1K/N1W/N2T/N2W)-L5			VBHNxxxSA15/SA15B/SA16/SA16B,				
	JAP6 60-xxx		LGxxx(M1C/N1C/Q1C/Q1K)-N5			VBHNxxxKA, VBHNxxxKA03/Q4,				
	JAM6(K)-60/xxx, JAP6(K)-72-xxx/4BB		LGxxx(N1C/N1K/N2W/Q1C/Q1K)-V5			VBHNxxxSA17/SA17G/SA17E/SA18/SA18E,				
	JAP72S##-xxx/**		LGxxxN3K-V6			VBHNxxxZA01/ZA02/ZA03/VBHNxxxZA04				
	JAP6(K)-60-xxx/4BB, JAP60S##-xxx/**		LONGi			LR4-60(HPB/HPH)	EVPVxxx			
	JAM6(K)-72-xxx/**, JAM72S##-xxx/**					LR4-72(HPH)	EVPVxxx(H/K/PK/HK)			
	JAM6(K)-60-xxx/**, JAM60S##-xxx/**					LR6-60	Peimar	SGxxxM (FB/BF)		
i. #: 01, 02, 03, 09, 10	LR6-60(BK/HPB/HPH/HV/PB/PE/PH)	SMxxxM								
ii. **: SC, PR, BP, HIT, IB, MW, MR	LR6-72	Philadelphia Solar		PS-M108(HCBF)-400W (30 & 35mm frames)						
** = Backsheet, ## Cell technology	LR6-72(BK/HV/PB/PE/PH)			Phono Solar	PSxxxM1-20/U					
Jinko	JKM & JKMS Series				RealBlack LR4-60HPB	PSxxxM1H-20/U				
	JKMxxxM-72HL-V, JKMxxxM-72HLM-TV				RealBlack LR6-60HPB	PSxxxM1-20UH				
	JKMxxxM-72HL4-(T)V, JKMxxxM-7RL3-V				LR5-54-HPB-xxxM	PSxxxM1H-20UH				
	JKMxxxM-72HBL, JKMxxxM-72HL4-TV				Maxeon	SPR-MAX3-xxx-COM		PSxxxM4(H)-24/TH		
	JKMxxxM-6RL3-B, JKMxxxM-72HL4-BDV		SPR-MAX3-XXX-R			PSxxxM1-20/UH				
	JKMxxxM-54HL4-B, JKMxxxM-72HL4-TV		Meyer Burger			PSxxxM1H-20/UH		PSxxxM-24/T		
	JKMxxxM-7RL3-TV					Meyer Burger Black, Meyer Burger White	PSxxxMH-24/T			
	Kyocera					KD-F & KU Series	Meyer Burger Glass	PSxxxM-24/TH		
		LSxxxHC(166), LSxxxBF, LSxxxBL, LSxxxHC,				Mission Solar Energy	PSxxxMH-24/TH			
		BLA Model		MSExxxSX9R			PSxxxM-24/TH			
LA Solar		LGxxx(E1C/E1K/N1C/N1K/N2T/N2W/S1C/S2W/Q1C/Q1K)-A5		MSE Mono, MSE Perc			Prism Solar	P72 Series, P72X-xxx		
		LGxxx(A1C/M1C/M1K/N1C/N1K/Q1C/Q1K/QAC/QAK)-A6, LGxxxN2W-B3		MSExxx(SR8T/SR8K/SR9S/SX5T)						
		LGxxxN2T-B5, LGxxxN1K-B6		MSExxx(SX5K/SX6W)						
		LG Electronics		Mxxx-L3H, Mxxx-L3H	Mitrex			Mitsubishi	Neo Solar Power Co.	D6M Series
				MJE & MLE Series						

- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Unless otherwise noted, all modules listed above include all wattages and specific models within that series. Variable wattages are represented as "xxx"
- Items in parenthesis are those that may or may not be present in a compatible module's model ID
- Slashes "/" between one or more items indicates that either of those items may be the one that is present in a module's model ID
- **Listed models can be used to achieve a Class A fire system rating, for steep slope or low slope applications, only when modules of fire typed mentioned in Appendix A, Page 27 are used.**



DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
CHAT.POWUR.COM

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	03-06-2024	UR
REVISION	04-12-2024	A

PROJECT NAME

KARLA YESENIA CLAVEL
36 ATHENS CT,
CAMERON, NC 28326, USA
UTILITY: CENTRAL ELECTRIC
MEMBERSHIP CORP
APN: 099556006451
AHJ: HARNETT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-14



Certificate of Compliance

Certificate: 70131735 **Master Contract:** 266909
Project: 80182385 **Date Issued:** 2023-11-29
Issued To: Unirac
1411 Broadway NE
Albuquerque, New Mexico, 87102
United States
Attention: Rob D'Anastasio

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.



Issued by: Michael Hoffnagle
Michael Hoffnagle

PRODUCTS

CLASS - C531302 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems
CLASS - C531382 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems -
Certified to US Standards

Models:			
SM	-	SOLARMOUNT Flush-to-Roof is an extruded aluminum rail PV racking system that is installed parallel to the roof in landscape or portrait orientations.	
ULA	-	Unirac Large Array is a ground mount system using the SolarMount (SM) platform for the bonding and grounding of PV modules.	



Certificate: 70131735
Project: 80182385

Master Contract: 266909
Date Issued: 2023-11-29

Downward Design Load (lb/ft ²)	33.9
Upward Design Load (lb/ft ²)	33.9
Down-Slope Load (lb/ft ²)	16.5

Model	NXT UMount	-	Flush-to-Roof is an extruded aluminum rail PV racking system that is installed parallel to the roof in landscape or portrait orientations.
-------	------------	---	--

NXT UMount

The system listed is designed to provide bonding/grounding, and mechanical stability for photovoltaic modules. The system is secured to the roof with the L-Foot components through the roofing material to building structure. Modules are secured to the racking system with aluminum mid clamps and aluminum end clamps. The modules are bonded to the racking system with bonding mid and end clamps with piercing points. Fire ratings of Class A with Type 1, 2, 3 (with metallic frame), 10(with metallic frame), 19, 22, 25, 29, or 30 for steep and low slope. Tested at 5" interstitial gap which allows installation at any stand-off height.

The grounding of the system is intended to comply with the latest edition of the National Electrical Code, to include NEC 250 & 690. Local codes compliance is required, in addition to national codes. All grounding/bonding connections are to be torqued in accordance with the Installation Manual and the settings used during the certification testing for the current edition of the project report.

Latest Install Manual revision: PUB2023NOV10

UL 2703 Mechanical Load ratings for tested module area 21.86 sq ft:

NXT Systems without DTD Butyl Attachment P30817211, Rail Splice P30808218, or Rail Clamp P30817214	
Downward Design Load (lb/ft²)	113.7
Upward Design Load (lb/ft²)	51.1
Down-Slope Load (lb/ft²)	16.8

NXT Systems with DTD Butyl Attachment P30817211, Rail Splice P30808218, or Rail Clamp P30817214	
Downward Design Load (lb/ft²)	51.1
Upward Design Load (lb/ft²)	51.1



DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
CHAT.POWUR.COM

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	03-06-2024	UR
REVISION	04-12-2024	A

PROJECT NAME

KARLA YESENIA CLAVEL
36 ATHENS CT,
CAMERON, NC 28326, USA
UTILITY: CENTRAL ELECTRIC
MEMBERSHIP CORP
APN: 099556006451
AHJ: HARNETT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-15



December 12th, 2023

Unirac, Inc.
1411 Broadway Boulevard NE
Albuquerque, New Mexico 87102
TEL: (505) 242-6411
FAX: (505)242-6512

Re.: Innova Technologies No.: 123-099-1000
Unirac NXT U-Mount Design Tool – North Carolina

Attn: Engineering Services

Innova Technologies Inc. has reviewed Unirac’s NXT U-Mount design tool and analysis, including the U-Builder online tool. NXT U-mount is a proprietary system to support Photovoltaic (PV) panels on a rooftop structure.

All analysis and information in the NXT design tool’s formulas and tables comply with the following:

- 2009-2021 International Building Code, by International Code Council Inc. With SEAOC PV2 provisions.
- ASCE/SEI 7-05 through 7-16 Minimum Design Loads and Other Structures, by American Society of Civil Engineers.
- 2018 North Carolina Building Code.
- 2018 North Carolina Residential Code.
- 2005 Aluminum Design Manual, 2010 Aluminum Design Manual, 2015 Aluminum Design Manual (ADM), 2017 Aluminum Design Manual & 2020 Aluminum Design Manual, by the Aluminum Association.

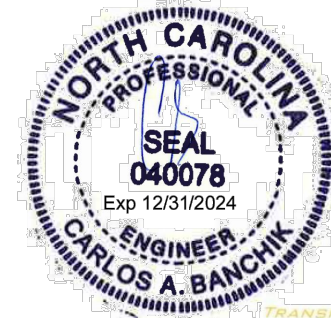
This letter certifies that the structural analysis of the racking members and their direct components comply with the above codes and methodologies. This Design tool does not review the existing roof structure, or the PV panels themselves.

The U-Builder tool should be used under review of a registered design professional where required by the authority having jurisdiction.

For more information, see the construction drawings, and manufacturer installation instructions.

Best Regards,

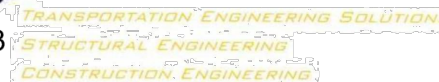
Carlos Banchik
President & Principal
Innova Technologies, Inc.



12/14/2023

1432 South Jones Blvd.
Las Vegas, NV 89146
www.innovanv.com

Tel: 702.220.6640
Fax: 702.220.7740



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SHEET NUMBER

PV-16