



Scott E. Wyssling, PE, PP, CME

Wyssling Consulting
76 North Meadowbrook Drive
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May 27, 2021

Ken Trappen
Advanced Solar Solutions
39650 Mallard
Bass Lake, CA 93604



**Scott E
Wyssling**

Digitally signed by Scott E Wyssling
DN: C=US, S=Utah, L=Alpine,
O=Wyssling Consulting, CN=Scott E
Wyssling +
E=swyssling@wysslingconsulting.com
Reason: I am the author of this
document
Location: your signing location here
Date: 2021.05.27 13:27:10-06'00'
Foxit PhantomPDF Version: 10.1.3

Engineering Services
Manchester Residence
1524 Little Road, Lake City FL
7.245 kW System

Dear Mr. Trappen:

Pursuant to your request, we have reviewed the following information regarding solar panel installation on the roof of the above referenced home:

1. Site Visit/Verification Form prepared by Advanced Solar Solutions representative identifying specific site information including size and spacing of rafters for the existing roof structure.
2. Design drawings of the proposed system including a site plan, roof plan and connection details for the solar panels. This information was prepared by Advanced Solar Solutions and will be utilized for approval and construction of the proposed system.
3. Photographs of the interior and exterior of the roof system identifying existing structural members and their conditions.

Based on the above information we have evaluated the structural capacity of the existing roof system to support the additional loads imposed by the solar panels and have the following comments related to our review and evaluation:

Description of Residence:

The existing residence is typical wood framing construction with the roof system consisting of truss system with all chords constructed of 2 x 3 dimensional lumber at 24" on center. The attic space is unfinished and photos indicate that there was free access to visually inspect the size and condition of the roof rafters. All wood material utilized for the roof system is assumed to be Doug-Fir #2 or better with standard construction components. The existing roofing material consists of metal roofing. Photos of the dwelling also indicate that there is a permanent foundation.

A. Loading Criteria Used

- 119 MPH wind loading based on ASCE 7-16 Exposure Category "C" at a slope of 20 degrees
- 7 PSF = Dead Load roofing/framing Live Load = 20 PSF/ 0 PSF (where panels are installed)
- 3 PSF = Dead Load solar panels/mounting hardware

Total Dead Load = 10 PSF

The above values are within acceptable limits of recognized industry standards for similar structures in accordance with the (FBC 2020, 7th Edition). Analysis performed of the existing roof structure utilizing the above loading criteria indicates that the existing rafters will support the additional panel loading without damage, if installed correctly.

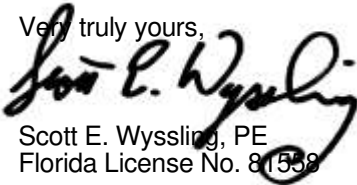
B. Solar Panel Anchorage

1. The solar panels shall be mounted in accordance with the most recent "*S-5 Installation Manual*", which can be found on the S-5 website (<http://s-5.com/>). If during solar panel installation, the roof framing members appear unstable or deflect non-uniformly, our office should be notified before proceeding with the installation.
2. System will be attached to the metal roofing material utilizing the patented S-5 connection. Installation of the connections shall be in accordance with the manufacturer's recommendations.
3. Considering the roof slopes, the size, spacing, condition of roof, the panel supports shall be placed no greater than 72" o/c.

Based on the above evaluation, it is the opinion of this office that with appropriate panel anchors being utilized the roof system will adequately support the additional loading imposed by the solar panels. This evaluation is in conformance with the FBC 2020, 7th Edition, current industry and standards, and based on information supplied to us at the time of this report.

Should you have any questions regarding the above or if you require further information do not hesitate to contact me.

Very truly yours,

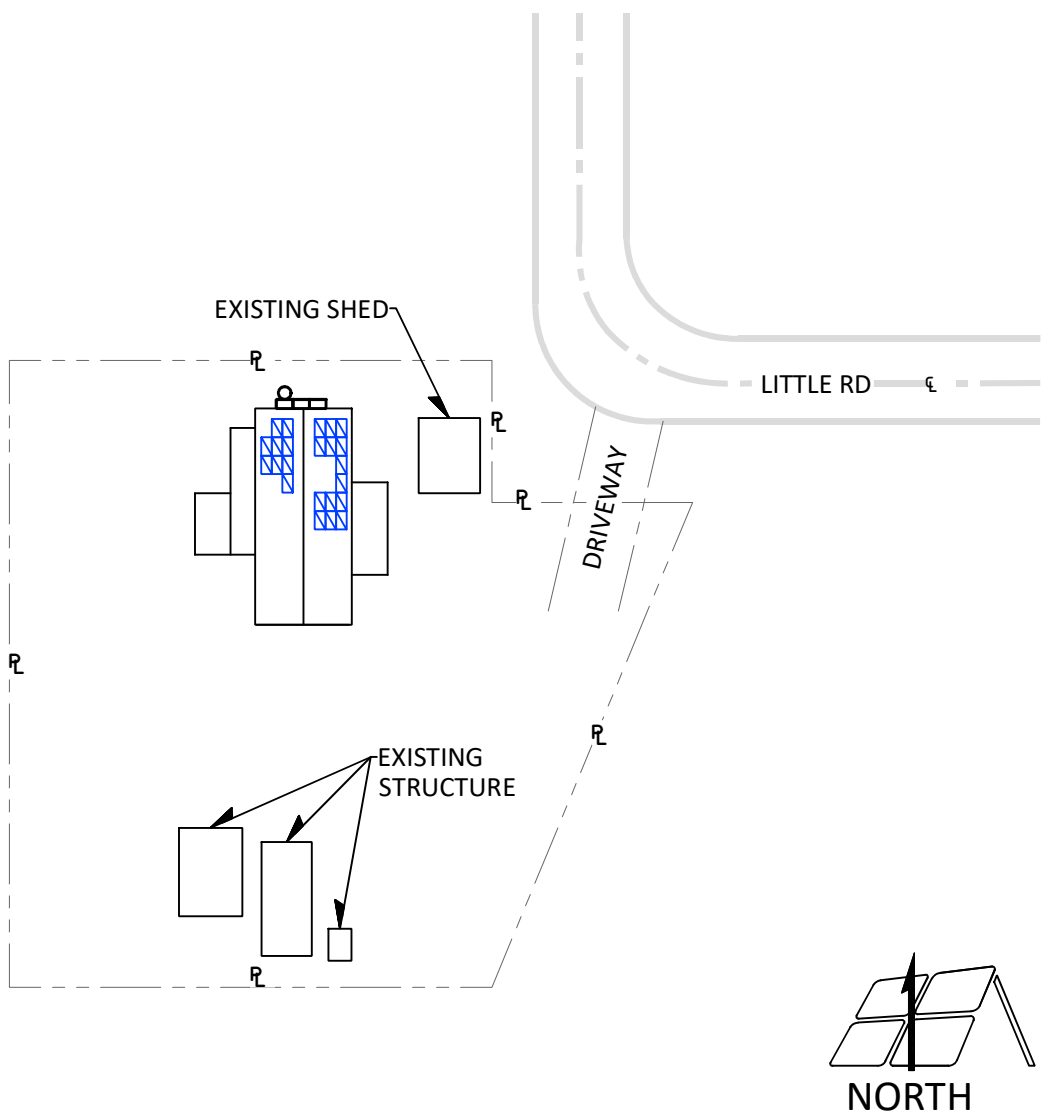


Scott E. Wyssling, PE
Florida License No. 81558



PARCEL MAP

GPS COORDINATE: 30.0826069, -82.66920870000001



PROJECT APN:

GENERAL PROJECT & JURISDICTIONAL NOTES

INSPECTION REQUIREMENTS

JURISDICTIONAL & LISTING REQUIREMENTS

COPYRIGHT NOTICE

GOVERNING CODES

DESIGN CRITERIA

SCOPE OF WORK

PROPOSED SOLAR EQUIPMENT

PROJECT TEAM LIST

CONTRACTOR:

DESIGN BY:

PROJECT DRAFTER:

ADVANCED SOLAR SOLUTIONS

PHONE: 559-321-7000

EMAIL: info@advpermits.com

HOME OWNER PROJECT LOCATION:

CONTACT NAME: Manchester, Lawrence

PHONE:

EMAIL:

ELECTRICAL UTILITY:

SCOTT E. WYSSLING

76 North Meadowbrook Dr

Alpine, UT 84004

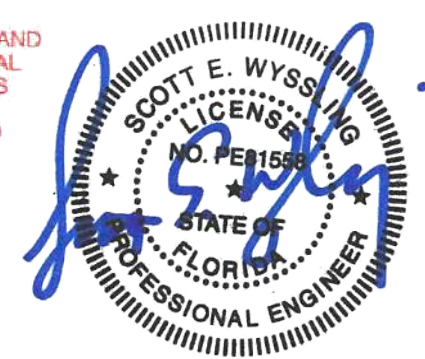
LICENSE #: 81558

LICENSE TYPE: Civil

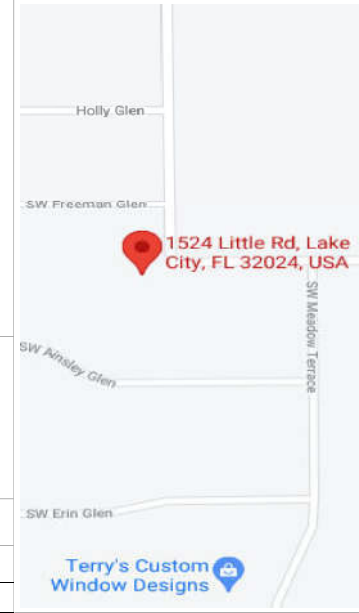
PHONE: (202) 874-3483

EMAIL: swyssling@wysslingconsulting.com

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PROJECT LOCATION



SHEET INDEX

7.245 kW PHOTOVOLTAIC PLANS

NAME

ADDRESS

ADDRESS

APN

COVER SHEET

PV-001



GENERAL NOTES:*

PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION *NEC 110.26*.

PV SYSTEM COMPONENTS; INCLUDING BUT NOT LIMITED TO, MODULES, INVERTERS AND SOURCE CIRCUIT COMBINERS ARE IDENTIFIED AND LISTED FOR USE IN PV SYSTEMS IN COMPLIANCE WITH *NEC 690.4 AND 690.6* AND *ALL UL, IEC, IEEE* CLASSIFICATIONS AS REQUIREMENTS.

RAPID SHUTDOWN NOTES:*

PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDING SHALL INCLUDE A **RAPID SHUTDOWN FUNCTION** THAT CONTROLS SPECIFIC PV CONDUCTORS IN ACCORDANCE WITH *2017 NEC 690.12(A)-(D)*

EQUIPMENT LOCATIONS & ELECTRICAL NOTES:*

JUNCTION AND PULL BOXES ARE PERMITTED TO BE INSTALLED UNDER PV MODULES IN COMPLIANCE WITH *NEC 690.34*.

ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT. *2017 NEC 690.15(A)*

ALL EQUIPMENT SHALL BE INSTALLED **ACCESSIBLE TO QUALIFIED PERSONNEL** IN COMPLIANCE WITH *NEC* APPLICABLE CODES.

ALL COMPONENTS ARE **LISTED FOR THEIR INTENDED PURPOSE AND RATED FOR OUTDOOR USAGE** WHEN APPLICABLE.

STRUCTURAL AND INSTALLATION NOTES:*

RACKING SYSTEM & PV PANELS MOUNTED ON A ROOFTOP SHALL BE LISTED AND LABELED IN ACCORDANCE WITH *UL 1703* AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER INSTALLATION INSTRUCTIONS.

ALL PV RACKING ATTACHMENT POINTS SHALL NOT EXCEED THE PRE-ENGINEERED **MAX SPANS** OUTLINED BY THE RACKING MANUFACTURES ENGINEER OF RECORD.

GROUNDING NOTES:*

IN **UNGROUNDED SYSTEMS** ONLY THE DC CONDUCTORS ARE UNGROUNDED AND REQUIRE AN EQUIPMENT GROUNDING CONDUCTOR. ALL METAL ELECTRICAL EQUIPMENT AND STRUCTURAL COMPONENTS BONDED TO

GROUND, IN COMPLIANCE WITH *NEC 250.134* AND *NEC 250.136(A)*.

PV EQUIPMENT INCLUDING **MODULE FRAMES AND OTHER METAL PARTS SHALL BE GROUNDED** IN COMPLIANCE WITH *NEC 690.43* AND MINIMUM GROUND CONDUCTORS SIZED IN ACCORDANCE WITH *NEC TABLE 250.122*.

CONDUCTIVE PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES SHALL BE GROUNDED IN COMPLIANCE WITH *NEC 250.134 AND NEC 250.136(A)*.

UL2703 APPROVED **MODULE AND RACK GROUNDING** SHALL BE USED AND INSTALLED PER MANUFACTURER'S INSTALLATION MANUAL. IF *UL2703* APPROVED GROUNDING IS NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS.

THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.

THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH *NEC 690.47* AND *NEC 250.50* THROUGH *NEC 250.106*. IF EXISTING SYSTEM IS INACCESSIBLE OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM WILL BE PROVIDED IN COMPLIANCE WITH *NEC 250, NEC 690.47* AND *AHJ*.

PV SYSTEMS SHALL BE PROVIDED WITH **DC GROUND-FAULT PROTECTION** *2017 NEC 690.41(B)*

INTERCONNECTION / POC NOTES:*

ALL **LOAD-SIDE INTERCONNECTIONS** ARE IN COMPLIANCE WITH *2017 NEC 705.12(B)*

THE TOTAL RATING OF ALL OCPD IN SOLAR LOAD CENTERS SHALL NOT EXCEED THE RATED AMPACITY OF THE BUSBAR EXCLUDING THE OCPD PROTECTING THE BUSBAR IN COMPLIANCE WITH *NEC 705.12(B)(2)(3)(c)*

ALL FEEDER TAP (LOAD SIDE) INTERCONNECTIONS ARE IN COMPLIANCE WITH *2017 NEC 705.12(B)(2)(1)*

THE PV SYSTEM BACK-FEED BREAKER SHALL BE INSTALLED ON THE OPPOSITE END OF THE BUS BAR AND IT SHALL ALSO BE SIZED APPROPRIATELY AS PER *2017 NEC 705.12(B)(2)(3)(b)*

SUPPLY SIDE TAP INTERCONNECTIONS ARE IN COMPLIANCE WITH *NEC 705.12(A)* WITH SERVICE ENTRANCE CONDUCTORS IN COMPLIANCE WITH *NEC 230.42*

BACKFEEDING BREAKER FOR INVERTER OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING *2017 NEC 705.12(B)(5)*

MICROINVERTER BRANCH CIRCUITS SHALL BE CONNECTED TO A SINGLE OCPD IN ACCORDANCE WITH THEIR INSTALLATION INSTRUCTIONS AND *NEC 690.9*

DISCONNECTS AND OCPD NOTES:*

ALL DISCONNECTING SWITCHES WILL BE CONFIGURED SO THAT ALL ENERGIZED CONDUCTORS WHEN DISCONNECT IS OPEN SHALL BE ON THE TERMINALS MARKED, “LINE SIDE” (TYPICALLY THE UPPER TERMINALS)

ALL AC DISCONNECTS SHALL BE LABELED, LOCKABLE, OF VISIBLE BREAK TYPE SWITCH WITH EXTERNAL HANDLE AND ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL.

AC DISCONNECTS SHALL BE A “KNIFE BLADE” TYPE DISCONNECT. IF EXTERIOR, RATED TO NEMA 3R OR BETTER PER *NEC 110.28*

ADDITIONAL AC DISCONNECTS SHALL BE PROVIDED WHERE THE INVERTER IS NOT ADJACENT TO THE UTILITY AC DISCONNECT, OR NOT WITHIN SIGHT OF THE UTILITY AC DISCONNECT. *2017 NEC 690.15(A)*

BOTH POSITIVE AND NEGATIVE PV CONDUCTORS REMAIN UNGROUNDED. THEREFORE, BOTH SHALL REMAIN OPEN WHERE A DISCONNECT IS REQUIRED IN COMPLIANCE WITH *2017 NEC 690.15(D)*

ALL OCPD RATINGS AND TYPES SPECIFIED SHALL BE IN COMPLIANCE WITH *NEC 690.8, 690.9, 705.12* AND *240*.

BOTH POSITIVE AND NEGATIVE DC PV CONDUCTORS ARE UNGROUNDED; BOTH REQUIRE OVERCURRENT PROTECTION IN COMPLIANCE WITH *NEC 690.9*

ARC FAULT (AFCI) DC CIRCUIT PROTECTION IS REQUIRED FOR ALL PV SYSTEMS ON OR PENETRATING A BUILDING WITH A MAXIMUM SYSTEM VOLTAGE OF 80 VOLTS OR GREATER. ALL DC PV CIRCUITS INSTALLED IN OR ON BUILDINGS WILL BE ARC-FAULT CIRCUIT PROTECTED IN COMPLIANCE WITH *NEC 690.11, UL1699B* AND SHALL BE LISTED AND LABELED IN ACCORDANCE WITH *UL 1699 (B)*.

WIRING & CONDUIT NOTES:*

ALL CONDUIT AND CONDUCTORS SHALL BE APPROVED FOR THEIR INTENDED PURPOSE INCLUDING WET LOCATIONS AND EXPOSED TO SUNLIGHT. CONDUIT AND CONDUCTOR SIZE SPECIFICATIONS ARE BASED ON THE MINIMUM CODE REQUIREMENTS AND ARE NOT LIMITED TO UP SIZING.

ALL CONDUCTORS SHALL BE SIZED IN COMPLIANCE WITH *NEC 690.8, NEC 690.7*.

ALL CONDUCTORS SHALL BE DERATED AS APPLICABLE TO THEIR RESPECTIVE ENVIRONMENT INCLUDING DIRECT

SUNLIGHT IN ACCORDANCE WITH *2017 NEC 310.15(B)(3)(4)(c)*

EXPOSED UNGROUNDED DC PV SOURCE AND OUTPUT CIRCUITS SHALL USE CONDUCTORS LISTED AND IDENTIFIED AS PHOTOVOLTAIC (PV) WIRE IN COMPLIANCE *2017 NEC 690.31(C)(1)*. PV MODULES WIRE LEADS SHALL BE LISTED FOR USE WITH UNGROUNDED SYSTEMS IN COMPLIANCE WITH *2017 NEC 690.4(B)*

PV WIRE BLACK WIRE MAY BE FIELD-MARKED WHITE IN COMPLIANCE WITH *NEC 200.6 (A)(6)*.

PV MODULE CONDUCTORS LOCATED UNDER ARRAYS WILL BE SECURED IN A WORKMANLIKE MANNER IN COMPLIANCE WITH *NEC 110.12*.

WATERPROOFING:*

ALL NEW **ROOFTOP PENETRATIONS** SHALL BE SEALED AND MADE WEATHER TIGHT WITH APPROVED CHEMICAL SEALANT AND FLASHINGS WHERE REQUIRED PER CODE AND GENERAL BUILDING AND ROOFING WORKMANSHIP STANDARDS BY A LICENSED CONTRACTOR.

ALL **EXTERIOR ELECTRICAL EQUIPMENT, SHALL BE NEMA 3R** OR BETTER RATED. ALL EXTERIOR CONDUIT AND CONNECTORS SHALL BE RATED FOR WET LOCATIONS.

*ALL NOTES ARE AS APPLICABLE TO THIS PROJECT. DISREGARD ANY NOTES THAT DO NOT APPLY TO THIS PROJECT.

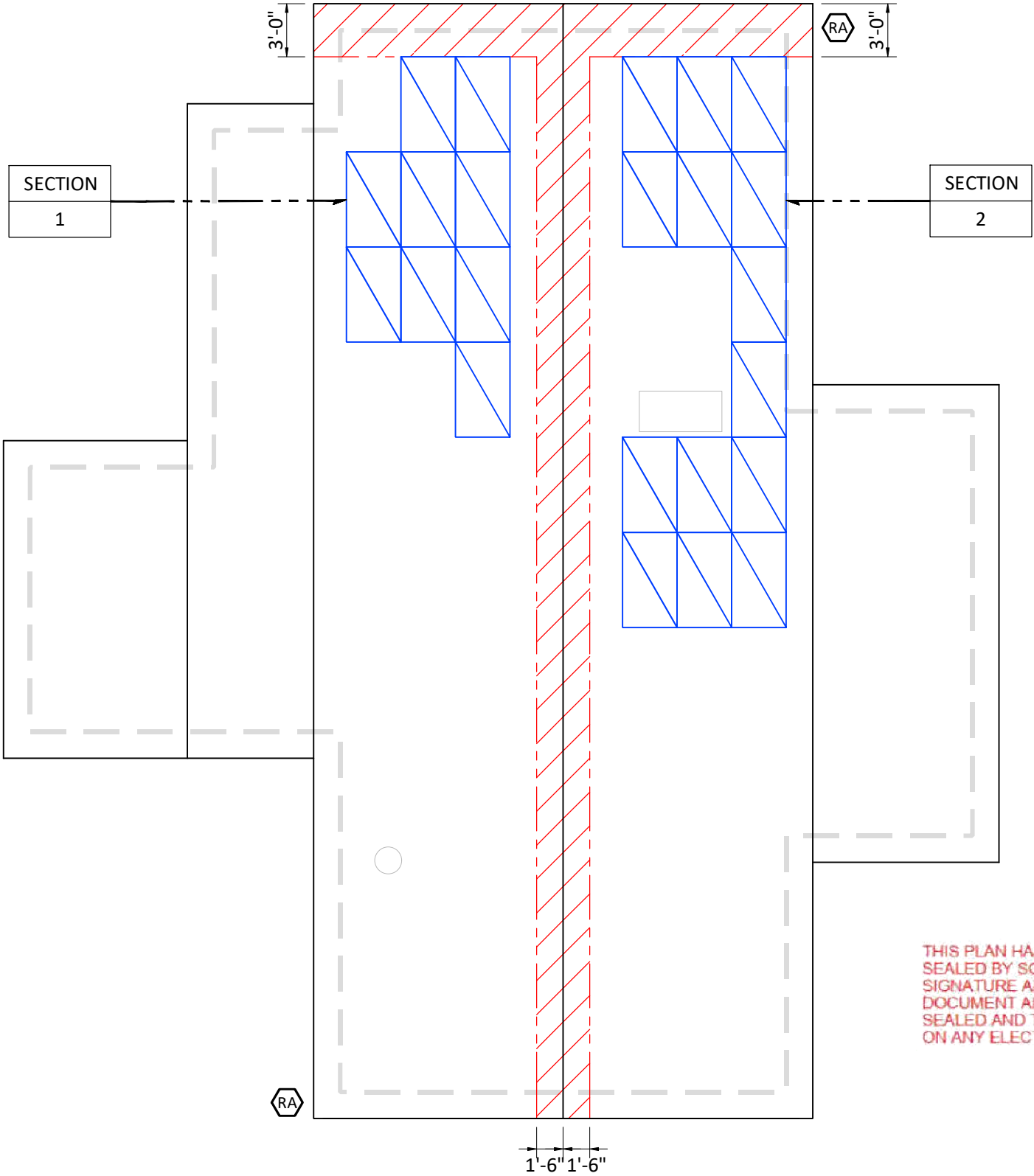
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Daybreak Install LLC CVC56966 2100 N Main St Ste. 212 Fort Worth, TX 76164 (817) 995-9572	7.245 kW PHOTOVOLTAIC PLANS		REV	DATE	RELEASE	
	NAME	Manchester, Lawrence				
	ADDRESS	1524 Little Rd			05/26/2021	SUBMIT FOR PERMIT
	ADDRESS	Lake City, FL 32024				
	APN					
			N-001			
			GENERAL NOTES			

PV AC DISCONNECT LOCATED ON ACCESSIBLE EXTERIOR WALL
WITH EXTERNAL HANDLE VISIBLE, LOCKABLE & LABELED
WITHIN 10 FEET OF THE METER

NOTE: ALL ELECTRICAL LAYOUT DETAILS ON SHEET E-100



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QTY 23 PEIMAR SG315M (BF) MODULES QTY 1 SolarEdge SE6000H-US (240V) INVERTER

2018 IFC ROOF ACCESS REQUIREMENTS

THE FOLLOWING INFORMATION INDICATES THE REQUIRED ROOF TOP CLEARANCES FOR PANELS/ARRAYS INSTALLED ON RESIDENTIAL BUILDINGS WITH SLOPES GREATER THAN 2:12:

ROOF ACCESS POINTS - ROOF ACCESS POINTS 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.

HIP ROOF LAYOUTS - PANELS/MODULES INSTALLED ON RESIDENTIAL BUILDINGS WITH HIP ROOF LAYOUTS SHALL BE LOCATED IN A MANNER THAT PROVIDES A 3-FOOT-WIDE CLEAR ACCESS PATHWAY FROM THE EAVE TO THE RIDGE ON EACH ROOF SLOPE WHERE PANELS/MODULES ARE LOCATED. THE ACCESS PATHWAY SHALL BE LOCATED AT A STRUCTURALLY STRONG LOCATION ON THE BUILDING CAPABLE OF SUPPORTING THE LIVE LOAD OF FIRE FIGHTERS ACCESSING THE ROOF.

SINGLE RIDGE - PANELS/MODULES INSTALLED ON RESIDENTIAL BUILDINGS WITH A SINGLE RIDGE SHALL BE LOCATED IN A MANNER THAT PROVIDES TWO, 3-FOOT-WIDE ACCESS PATHWAYS FROM THE EAVE TO THE RIDGE ON EACH ROOF SLOPE WHERE PANELS/MODULES ARE LOCATED.

HIPS AND VALLEYS - PANELS/MODULES INSTALLED ON RESIDENTIAL BUILDINGS WITH ROOF HIPS AND VALLEYS SHALL BE LOCATED NO CLOSER THAN 18 INCHES TO A HIP OR A VALLEY WHERE PANELS/MODULES ARE TO BE PLACED ON BOTH SIDES OF A HIP OR VALLEY. WHERE PANELS ARE TO BE LOCATED ON ONLY ONE SIDE OF A HIP OR VALLEY THAT IS OF EQUAL LENGTH, THE PANELS SHALL BE PERMITTED TO BE PLACED DIRECTLY ADJACENT TO THE HIP OR VALLEY.

RESIDENTIAL BUILDING SMOKE VENTILATION - PANELS/MODULES INSTALLED ON RESIDENTIAL BUILDINGS SHALL BE LOCATED NO HIGHER THAN 3 FEET BELOW THE RIDGE IN ORDER TO ALLOW FOR FIRE DEPARTMENT SMOKE VENTILATION OPERATIONS.

SEE HATCH DEFINITION BELOW

*NOTE: DESIGNATION OF RIDGE, HIP, AND VALLEY DOES NOT APPLY TO ROOFS WITH 2:12 OR LESS PITCH.

PV SITE LAYOUT LEGEND

SECTION	PV ARRAY TAG	RA	ROOF ACCESS POINT
1	SECTION #	SA	SITE ACCESS
	MODULE GROUP	GA	GATE ACCESS

AZIMUTH AND TILT TABLE

SECTION #	AZIMUTH	ROOF PITCH / TILT
SECTION-1	270	20°
SECTION-2	90	20°

SQUARE FOOTAGE CALCULATIONS

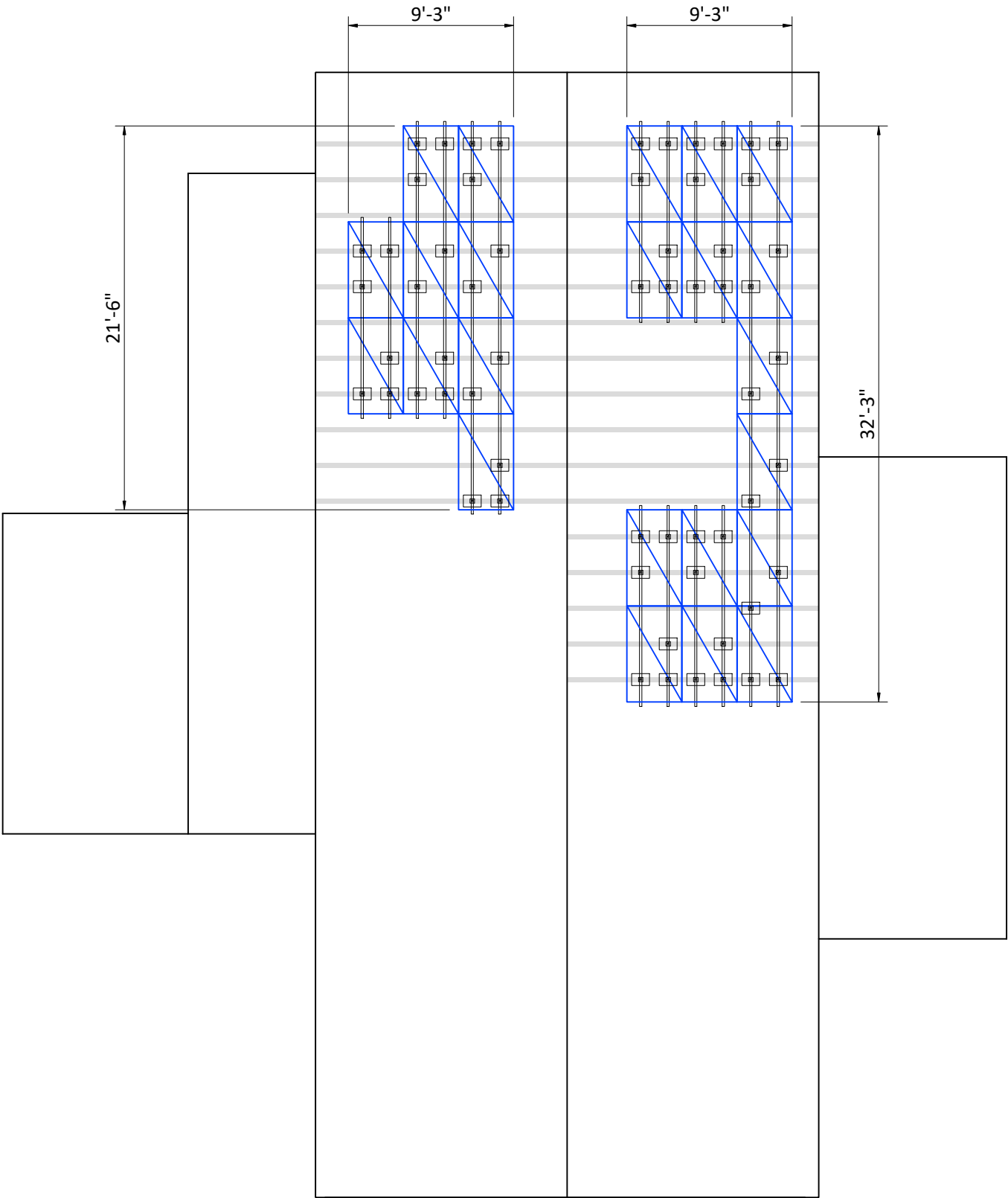
ROOF REFERENCE	SQUARE FOOTAGE
EXISTING ROOF	2510
SECTION-1	157
SECTION-2	245
TOTAL PERCENTAGE	16.02%

* EXISTING DIMENSIONS ARE APPROX.
CONFIRM ALL DIMENSIONS SHOWN

SCALE: 1/8" = 1'0" @ SHEET SIZE A3

REV	DATE	RELEASE	PV ARRAY LAYOUT			
	05/26/2021	SUBMIT FOR PERMIT	PV-100R			
7.245 kW PHOTOVOLTAIC PLANS			NAME			
CVC56966			ADDRESS			
2100 N Main St Ste. 212			ADDRESS			
Fort Worth, TX 76164			APN			
(817) 995-9572						





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SHEET NOTES

A. FOR MANUFACTURED PLATED WOOD TRUSSES AT SLOPES OF FLAT TO 6:12, THE HORIZONTAL ANCHOR SPACING SHALL NOT EXCEED 6'-0" AND ANCHORS IN ADJACENT ROWS SHALL BE STAGGERED. UNLESS NOTED OTHERWISE PER RACKING MANUFACTURER CERTIFIED ENGINEERED PRODUCT AND LOCAL REQUIREMENTS.

B. ANCHORS ARE ALSO KNOWN AS "STAND-OFFS," "MOUNTS," OR "STANCHIONS." HORIZONTAL ANCHOR SPACING IS ALSO KNOWN AS "CROSS-SLOPE" OR "EAST-WEST" ANCHOR SPACING. MAXIMUM HORIZONTAL ANCHOR SPACING SHOWN IN DETAIL. UNLESS NOTED OTHERWISE PER RACKING MANUFACTURER CERTIFIED ENGINEERED PRODUCT AND LOCAL REQUIREMENTS. SEE "TABLE OF DIMENSIONS" EACH SECTION DETAILED FOR HORIZONTAL ANCHOR SPACING.

C. SEE SHEET S-200 FOR SPECIFIC RACKING COMPONENT MANUFACTURERS.

PV RACKING LEGEND

ROOF RACKING RAIL

ROOF RACKING RAIL SPLICE

ROOF RACKING STANCHION W/ RETRO FIT FLASHING

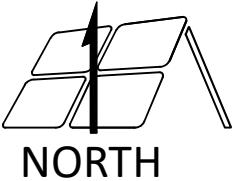
SECTION 1

PV ARRAY TAG SECTION # MODULE GROUP

* DETAILS IN TOP VIEW

EXISTING ROOF CONSTRUCTION	
COMPONENT	TYPE
ROOF STRUCTURAL CONSTRUCTION	Pre-Eng Roof Trusses 24" O.C.
FRAMING INFO	2"x3" @ 24" MAX OC
ROOFING COVERING	Standing Metal Seam
RACKING MAX PSF	2.86 PSF

RACKING BILL OF MATERIALS (BOM)			
COMPONENT	QTY	MODEL	LENGTH
PV RAIL 1			
PV RAIL SPLICE 1			
PV RAIL 2			
PV RAIL SPLICE 2			
RAIL TO ROOF ATTACHMENT			



* EXISTING ROOF DIMENSIONS ARE APPROX. CONFIRM ALL DIMENSIONS SHOWN

SCALE: 1/8" = 1'0" @ SHEET SIZE A3

QTY 23 PEIMAR SG315M (BF) MODULES QTY 1 SolarEdge SE6000H-US (240V) INVERTER

7.245 kW PHOTOVOLTAIC PLANS

NAME
ADDRESS
ADDRESS
APN

Manchester, Lawrence
1524 Little Rd
Lake City, FL 32024

APN

Daybreak Install LLC
2100 N Main St Ste. 212
Fort Worth, TX 76164
(817) 995-9572

CVC56966

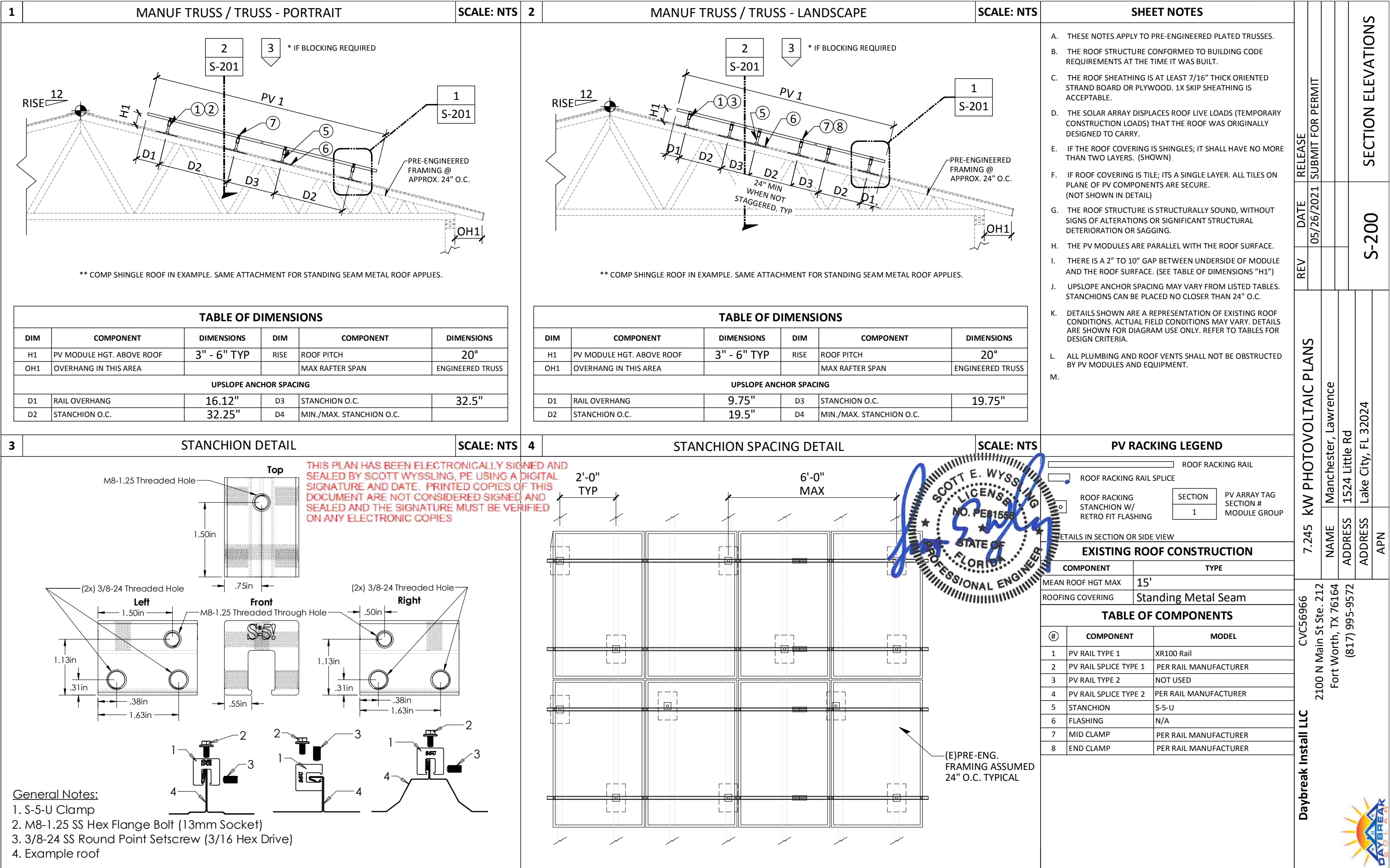
DATE
05/26/2021

RELEASE
SUBMIT FOR PERMIT

S-100

RACKING LAYOUT





1	STANCHION ATTACHMENT DETAIL	SCALE: NTS	2	RAIL SPLICE DETAIL - HORIZONTAL RAIL	SCALE: NTS	SHEET NOTES	
					1. A MINIMUM OF (1) 5/16" DIAMETER LAG SCREWS WITH 2.5" EMBEDMENT INTO THE RAFTER USED, OR THE ANCHOR FASTENER MUST MEET THE MANUFACTURER'S ENGINEERING. 2. ADHERE TO RACKING MANUFACTURERS INSTALLATION INSTRUCTIONS PERTAINING TO CANTILEVER.		
					PV RACKING LEGEND ROOF RACKING RAIL ROOF RACKING RAIL SPLICE ROOF RACKING STANCHION W/ RETRO FIT FLASHING SECTION 1 PV ARRAY TAG SECTION # MODULE GROUP * DETAILS IN SECTION OR SIDE VIEW		
3	RAIL EXTENSION DETAIL	SCALE: NTS	4	NOT USED	SCALE: NTS		
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7.245 KW PHOTOVOLTAIC PLANS

NAME

ADDRESS

ADDRESS

APN

CVC56966

2100 N Main St Ste. 212

Fort Worth, TX 76164

(817) 995-9572

Daybreak Install LLC

SCOTT E. WYSSLING

NO. PE01558

STATE OF FLORIDA

PROFESSIONAL ENGINEER

Manchester, Lawrence

1524 Little Rd

Lake City, FL 32024

APN

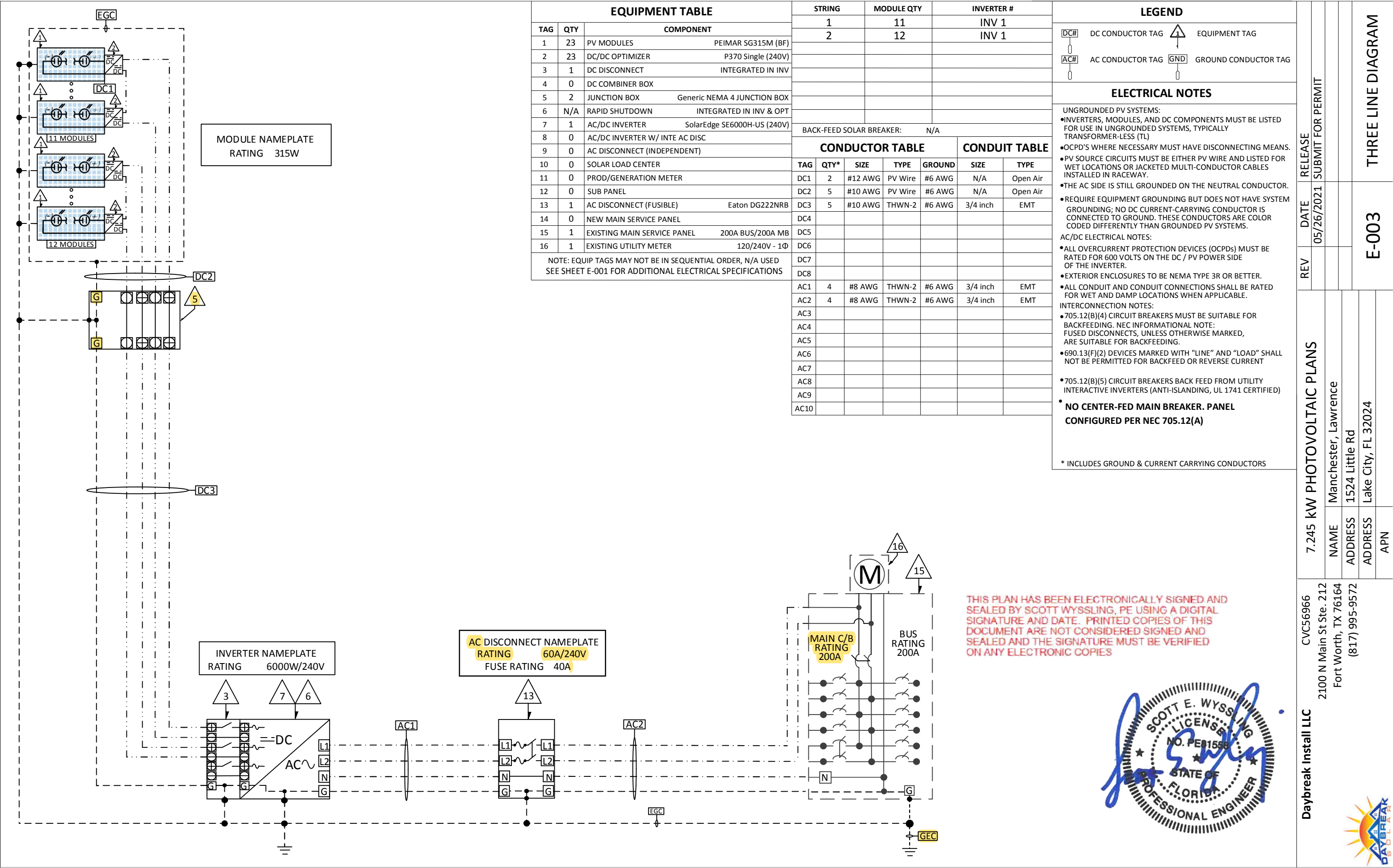
Daybreak Install LLC

SCOTT E. WYSSLING

NO. PE01558

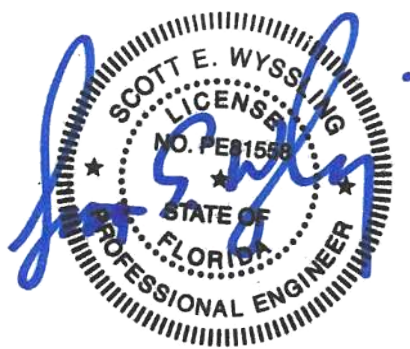
STATE OF FLORIDA

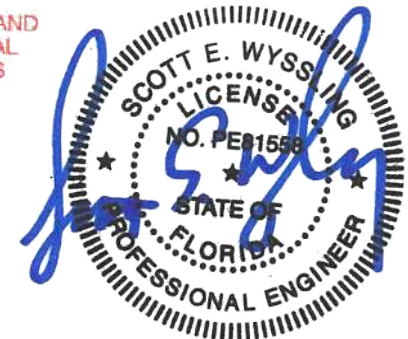
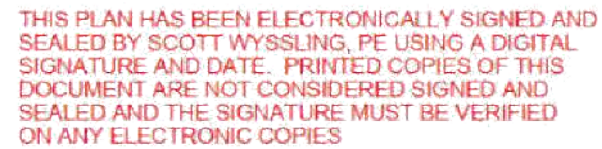
PROFESSIONAL ENGINEER



REV	DATE	RELEASE	DATE	THREE LINE DIAGRAM
	05/26/2021	SUBMIT FOR PERMIT		
E-003				
7.245 kW PHOTOVOLTAIC PLANS				
NAME Manchester, Lawrence				
ADDRESS 1524 Little Rd				
ADDRESS Lake City, FL 32024				
APN				
CVC56966				
2100 N Main St Ste. 212				
Fort Worth, TX 76164				
(817) 995-9572				
Daybreak Install LLC				

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SCALE: 1/8" = 1'0" @ SHEET SIZE A3

1	CONDUIT, RACEWAY, J-BOX, AND PULL BOXES	SCALE: 1/2" = 1'-0"	2	J-BOX, DC COMBINER, AND DC DISCONNECT	SCALE: 1/4" = 1'-0"	3	DC COMBINER BOX	SCALE: 1/2" = 1'-0"	SHEET NOTES				
WARNING: PHOTOVOLTAIC POWER SOURCE 1. PLACE ON CONDUIT AND/OR RACEWAYS EVERY 10' (60"), 12" FROM BENDS, 12" ABOVE AND BELOW PENETRATIONS. 2. CODE REFERENCE: NEC 690.31(G)(3) 3. MINIMUM OF 1 1/8" x 5 3/4" 4. FONT: 3/8" AND .8 WIDTH FACTOR. 5. REFLECTIVE WHITE LETTERS ON A RED BACKGROUND.			WARNING: ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED 1. ONLY FOR UNGROUNDED SYSTEMS. 2. PLACED ON ALL ENCLOSURES WITH UNGROUNDED CIRCUITS OR DEVICES WHICH ARE ENERGIZED AND MAY BE EXPOSED DURING SERVICE. 3. MINIMUM OF 3" x 10 1/2" 4. FONT: 3/8" 5. WHITE LETTERS ON A RED BACKGROUND.			DC COMBINER BOX COMBINER # 1 1. USE PLACARD "COMBINER # 1" WHEN MORE THAN 1 DC COMBINER IS USED. NUMBER ACCORDING TO THREE LINE DIAGRAM AND CALCULATIONS. 2. MINIMUM OF 1" x 4" 3. FONT: 3/8" AND .75 TO .8 WIDTH FACTOR 4. WHITE LETTERS ON A RED BACKGROUND.			CODE ABBREVIATIONS: NATIONAL ELECTRICAL CODE (NEC) INTERNATIONAL BUILDING CODE (IBC) INTERNATIONAL RESIDENTIAL CODE (IRC) INTERNATIONAL FIRE CODE (IFC) UNDERWRITERS LABORATORY (UL) 1. COMBINATION PLACARDS MAY BE USED IN PLACE OF MULTIPLE PLACARDS FOR THE SAME DEVICE. ALL INFORMATION FROM THE MULTIPLE PLACARDS MUST BE PRESENT. 2. BLACK LETTERS WITH YELLOW BACKGROUND MAY BE USED IN PLACE OF THE STANDARD WHITE LETTERS WITH RED BACKGROUND WITH AHJ APPROVAL. 3. ALL INTERIOR AND EXTERIOR DC CONDUIT, ENCLOSURES, RACEWAYS, CABLE ASSEMBLIES, JUNCTION BOXES, COMBINER BOXES AND DISCONNECTS ARE MARKED. (NEC 690.31[G], NEC 690.13 & 690.53) 4. THE MARKINGS ON THE CONDUITS, RACEWAYS AND CABLE ASSEMBLIES ARE EVERY 10 FEET, WITHIN ONE FOOT OF ALL TURNS OR BENDS AND WITHIN ONE FOOT ABOVE AND BELOW ALL PENETRATIONS OF ROOF/CEILING ASSEMBLIES, WALLS AND BARRIERS. (IFC 605.11.1.4, NEC 690.31[G][3]) 5. WHERE PV CIRCUITS ARE EMBEDDED IN BUILT-UP, LAMINATE OR MEMBRANE ROOFING MATERIALS IN ROOF AREAS NOT COVERED BY PV MODULES AND ASSOCIATED EQUIPMENT, THE LOCATION OF CIRCUITS SHALL BE CLEARLY MARKED. 6. REQUIRED LABELS SHALL BE PERMANENT AND SUITABLE FOR THE ENVIRONMENT. MATERIALS USED FOR MARKING MUST BE WEATHER RESISTANT. UL STANDARD IS RECOMMENDED TO DETERMINE WEATHER RATING. UL LISTING OF MARKINGS IS NOT REQUIRED. SEE UL LABELING SYSTEM 969 (UL 969) 7. MARKING CONTENT AND FORMAT: 7.1. ARIAL OR SIMILAR FONT, NON-BOLD. 7.2. MINIMUM 3/8" LETTER HEIGHT FOR HEADERS. 7.3. MINIMUM 1/16" LETTER HEIGHT FOR DATA 7.4. CONTRASTING BACKGROUND AND LETTERING. 7.5. ALL CAPITAL LETTERS. 7.6. CONTRASTING SPACE BETWEEN ROWS OF TEXT 7.7. DIMENSIONS OF PLACARDS ARE APPROXIMATE. MAY BE REDUCED AND / OR INCREASED TO UL APPROVED MANUFACTURED PRODUCT				
4	NON-LOAD BREAK DC COMBINER / J-BOX	SCALE: 1/2" = 1'-0"	5	DC DISCONNECTS	SCALE: 1/4" = 1'-0"	6	INVERTER(S)	SCALE: 1/4" = 1'-0"	7.245 kW PHOTOVOLTAIC PLANS NAMEManchester, Lawrence ADDRESS1524 Little Rd ADDRESSLake City, FL 32024 APN				
DO NOT OPEN UNDER LOAD 1. CODE REFERENCE: NEC 690.13(C) 2. USE ON NON-LOAD BREAK RATED DISCONNECTION. 3. MINIMUM OF 1" x 6" 4. FONT: 3/8" AND .8 WIDTH FACTOR 5. WHITE LETTERS ON A RED BACKGROUND. DO NOT DISCONNECT UNDER LOAD			WARNING: ELECTRIC SHOCK HAZARD DO NOT TOUCH TERMINALS TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION 1. PLACED ON DC DISCONNECT(S) AND ON ANY EQUIPMENT THAT STAYS ENERGIZED IN THE OFF POSITION FROM THE PV SUPPLY. 2. CODE REFERENCE: NEC 690.13(B) 3. MINIMUM OF 3 1/2" x 10" 4. FONT: 3/8" 5. WHITE LETTERS ON A RED BACKGROUND.			WARNING: ELECTRIC SHOCK HAZARD IF A GROUND FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED 2. MINIMUM OF 3 1/2" x 10 1/2" 3. FONT: 3/8" 4. WHITE LETTERS ON A RED BACKGROUND. THIS PLAN HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY SCOTT WYSSLING, PE USING A DIGITAL SIGNATURE AND DATE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES							
8	INVERTER(S)	SCALE: 1/2" = 1'-0"	9	AC AND DC DISCONNECTS	SCALE: 1/4" = 1'-0"	SOLAR kWh METER		SCALE: 1/2" = 1'-0"	11	MAIN SERVICE PANEL	SCALE: 1/4" = 1'-0"	7.245 kW PHOTOVOLTAIC PLANS NAMEManchester, Lawrence ADDRESS1524 Little Rd ADDRESSLake City, FL 32024 APN	
INVERTER # 1 1. USE PLACARD "INVERTER # 1" WHEN MORE THAN 1 INVERTER IS USED. NUMBER ACCORDING TO THREE LINE DIAGRAM AND CALCULATIONS. 2. MINIMUM OF 1" x 4" 3. FONT: 3/8" 4. WHITE LETTERS ON A RED BACKGROUND.			AC DISCONNECT # 1 DC DISCONNECT # 1 USE PLACARD "[AC][DC] DISCONNECT # 1" WHEN MORE THAN ONE DISCONNECT IS USED. NUMBER ACCORDING TO THREE LINE DIAGRAM AND CALCULATIONS. PV SYSTEM DISCONNECT 1. PLACE ON ALL AC AND DC DISCONNECTS 2. CODE REFERENCE: NEC 690.13(B) 3. MINIMUM OF 1" x 10 1/2" 4. FONT: 3/8" 5. WHITE LETTERS ON A RED BACKGROUND.			SOLAR PRODUCTION METER CUSTOMER OWNED PHOTOVOLTAIC SYSTEM kWh METER 1. USE PLACARD ON CUSTOMER GENERATION METER. 2. VERIFY WHICH PLACARD IS REQUIRED WITH AHJ. 3. MINIMUM OF 1" x 4" 4. FONT: 3/8" AND .8 WIDTH FACTOR 5. WHITE LETTERS ON A RED BACKGROUND.		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. SOLAR ELECTRIC PV PANELS 2. CODE REFERENCE: NEC 690.56(C)(1)(a) 3. TITLE: MIN. 3/8" BLACK CHARACTERS ON YELLOW BACKGROUND, REMAINING CHARACTERS MIN. 3/16" IN BLACK ON WHITE BACKGROUND.					
QTY 23 PEIMAR SG315M (BF) MODULES												QTY 1 SolarEdge SE6000H-US (240V) INVERTER	

QTY 23 PEIMAR SG315M (BF) MODULES

QTY 1 SolarEdge SE6000H-US (240V) INVERTER



1	DC DISCONNECTS & DISCO. COMBINER	SCALE: 1/4" = 1'-0"	2	AC DISCONNECT, AC SUB-PANEL	SCALE: 1/4" = 1'-0"	3	UTILITY METER, SERVICE PANEL, SUB-PANEL	SCALE: 1/4" = 1'-0"	SHEET NOTES	7.245	CVC56966	2100 N Main St Ste. 212 Fort Worth, TX 76164 (817) 995-9572	NAME Manchester, Lawrence	ADDRESS 1524 Little Rd	ADDRESS Lake City, FL 32024	APN	P-002	DYNAMIC PLACARDS																	
									REV										DATE 05/26/2021	RELEASE SUBMIT FOR PERMIT															
PV SYSTEM DC DISCONNECT MAXIMUM CIRCUIT CURRENT30.0 ADC MAXIMUM VOLTAGE480 VDC #1 PHOTOVOLTAIC SYSTEM DC DISCONNECT MAX. CIRCUIT CURRENT30.0 ADC MAXIMUM VOLTAGE480 VDC PV SYSTEM DC DISCONNECT MAXIMUM CIRCUIT CURRENTADC MAXIMUM VOLTAGEVDC #2 PHOTOVOLTAIC SYSTEM DC DISCONNECT MAX. CIRCUIT CURRENTADC MAXIMUM VOLTAGEVDC PV SYSTEM DC DISCONNECT MAXIMUM CIRCUIT CURRENTADC MAXIMUM VOLTAGEVDC #3 PHOTOVOLTAIC SYSTEM DC DISCONNECT MAX. CIRCUIT CURRENTADC MAXIMUM VOLTAGEVDC 1. PLACARD PLACED ON EACH DISCONNECT, IF MORE THAN ONE PRESENT. 2. VALUES MUST MATCH EQUIPMENT CALCULATIONS. SEE SHEET "E-001 / DC DISCONNECT [#]" 3. CODE REFERENCE: NEC 690.53 4. MINIMUM OF 2 1/2" x 8" OR 5" x 2 1/2" RESPECTIVELY. 5. FONT: 3/8" HEADER, 3/16" DATA 6. WHITE LETTERS ON A RED BACKGROUND. 7. IN SOME CASES TWO LABELS MAY BE REQUIRED. AN INVERTER WITH INTEGRATED DC DISCONNECT UTILIZING TWO MPPT TRACKERS; IF CONFIGURATION USES DIFFERENT MODULES.									AC DISCONNECT #1 - INDEPENDENT/ SEPARATE PV SYSTEM AC DISCONNECT RATED AC OUTPUT CURRENT25.0 AMPS AC NORMAL OPERATING VOLTAGE240 VOLTS PHOTOVOLTAIC SYSTEM AC DISCONNECT RATED AC OUTPUT CURRENT25.0 AMPS AC NORMAL OPERATING VOLTAGE240 VOLTS STRING INVERTER #1 - INTEGRATED AC DISCONNECT PV SYSTEM AC DISCONNECT RATED AC OUTPUT CURRENT25.0 AMPS AC NORMAL OPERATING VOLTAGE240 VOLTS PHOTOVOLTAIC SYSTEM AC DISCONNECT RATED AC OUTPUT CURRENT25.0 AMPS AC NORMAL OPERATING VOLTAGE240 VOLTS STRING INVERTER #2 - INTEGRATED AC DISCONNECT PV SYSTEM AC DISCONNECT RATED AC OUTPUT CURRENTAMPS AC NORMAL OPERATING VOLTAGEVOLTS PHOTOVOLTAIC SYSTEM AC DISCONNECT RATED AC OUTPUT CURRENTAMPS AC NORMAL OPERATING VOLTAGEVOLTS AC SUB-PANEL #1 PV SYSTEM AC DISCONNECT RATED AC OUTPUT CURRENTAMPS AC NORMAL OPERATING VOLTAGEVOLTS PHOTOVOLTAIC SYSTEM AC DISCONNECT RATED AC OUTPUT CURRENTAMPS AC NORMAL OPERATING VOLTAGEVOLTS 1. PLACARD PLACED ON EACH SOLAR SYSTEM DISCONNECTING COMPONENT. 2. VALUES MUST MATCH EQUIPMENT CALCULATIONS. SEE SHEET "E-001 / AC DISCONNECT [#]" 3. CODE REFERENCE: NEC 690.54 4. MINIMUM OF 1 1/2" x 8 1/2" OR 1 3/4" x 6 1/2" RESPECTIVELY. 5. FONT: 3/8" HEADER, 3/16" DATA 6. WHITE LETTERS ON A RED BACKGROUND.									WARNING DUAL POWER SOURCES RATED AC OUTPUT CURRENT25.0 AMPS AC NORMAL OPERATING VOLTAGE240 VOLTS #1 BUILDING CONTAINS TWO SOURCES OF POWER: UTILITY, SOLAR PV UTILITY SERVICE DISCONNECT LOCATED BELOW. SOLAR PV SYSTEM DISCONNECT LOCATED [N/E/S/W] WALL OF BUILDING #2 BUILDING CONTAINS TWO SOURCES OF POWER: UTILITY, SOLAR PV UTILITY SERVICE DISCONNECT LOCATED BELOW. SOLAR PV SYSTEM DISCONNECT LOCATED [N/E/S/W] WALL OF BUILDING #3 1. (#1) PLACARD PLACED AT MAIN UTILITY SERVICE DISCONNECT/BREAKER AND PV SYSTEM SUPPLY BREAKER AT POINT OF INTERCONNECTION. (#2 & #3) PLACARD(S) REQUIRED WITH #1 PLACARD WHEN UTILITY SERVICE AND PV SYSTEM DISCONNECT(S) ARE NOT LOCATED NEXT TO EACH OTHER. MAP PLACARD REQUIRED AS SPECIFIED. 2. VALUES MUST MATCH EQUIPMENT CALCULATIONS. 2.1. VALUES WILL MATCH LOAD CENTER OR SUB-PANEL VALUES IF INSTALLED AFTER INVERTERS. IF AC CONNECTION TO SERVICE PANEL COMES FROM INVERTERS; SEE SHEET "E-001 / STRING INVERTER[#] SPECIFICATIONS". 2.1.1. INVERTERS ARE PARALLEL CONNECTIONS. 2.1.2. "RATED AC OUTPUT CURRENT" WILL BE THE SUM OF THE INVERTERS 2.1.3. "AC NORMAL OPERATING VOLTAGE" WILL BE THE NAME PLATE RATING OF THE INVERTER 3. CODE REFERENCE: NEC 690.54, NEC 705.12(B)(3) 4. MINIMUM OF 2" x 6 1/2" (#1), VARIES (#2 & #3) 5. FONT: 3/8" HEADER, 3/16" DATA (#1), 1/4" (#2 & #3) 6. WHITE LETTERS ON A RED BACKGROUND.									CODE ABBREVIATIONS: NATIONAL ELECTRICAL CODE (NEC) INTERNATIONAL BUILDING CODE (IBC) INTERNATIONAL RESIDENTIAL CODE (IRC) INTERNATIONAL FIRE CODE (IFC) UNDERWRITERS LABORATORY (UL) 1. COMBINATION PLACARDS MAY BE USED IN PLACE OF MULTIPLE PLACARDS FOR THE SAME DEVICE. ALL INFORMATION FROM THE MULTIPLE PLACARDS MUST BE PRESENT. 2. BLACK LETTERS WITH YELLOW BACKGROUND MAY BE USED IN PLACE OF THE STANDARD WHITE LETTERS WITH RED BACKGROUND WITH AHJ APPROVAL. 3. ALL INTERIOR AND EXTERIOR DC CONDUIT, ENCLOSURES, RACEWAYS, CABLE ASSEMBLIES, JUNCTION BOXES, COMBINER BOXES AND DISCONNECTS ARE MARKED. (NEC 690.31[E][3], NEC 690.31[E][4] & 690.53) 4. REQUIRED LABELS SHALL BE PERMANENT AND SUITABLE FOR THE ENVIRONMENT. MATERIALS USED FOR MARKING MUST BE WEATHER RESISTANT. UL STANDARD IS RECOMMENDED TO DETERMINE WEATHER RATING. UL LISTING OF MARKINGS IS NOT REQUIRED. SEE UL LABELING SYSTEM 969 (UL 969) 5. MARKING CONTENT AND FORMAT: 5.1. ARIAL OR SIMILAR FONT, NON-BOLD. 5.2. MINIMUM 3/8" LETTER HEIGHT FOR HEADERS. 5.3. MINIMUM 1/16" LETTER HEIGHT FOR DATA 5.4. CONTRASTING BACKGROUND AND LETTERING. 5.5. ALL CAPITAL LETTERS. 5.6. CONTRASTING SPACE BETWEEN ROWS OF TEXT 5.7. DIMENSIONS OF PLACARDS ARE APPROXIMATE. MAY BE REDUCED AND / OR INCREASED TO UL APPROVED MANUFACTURED PRODUCT 6. ANSI Z535.4 PRODUCT SAFETY SIGNS AND LABELS: THIS INFORMATIONAL NOTE AND ITS REQUIREMENTS FOR PLACARDS MAY BE USED WITH PRIOR APPROVAL OF THE AHJ. MOST NOTABLE DIFFERENCES IS COLOR OF PLACARDS AND USE OF HAND WRITTEN VALUES WITH INDUSTRIAL MARKERS ON STANDARD PLACARDS WHERE THE VALUE MAY CHANGE AT A FUTURE DATE. I.E. ADDING MODULES AT A FUTURE DATE, OR STANDARD PLACARD MANUFACTURER INSTALLED ON ELECTRICAL COMPONENT. AHJ APPROVAL REQUIRED. (SEE NOTE #1 FOR INDIVIDUAL PLACARDS)								
4	MAP PLACARD: MAIN SERVICE PANEL AND PV INVERTER (IF NOT SAME LOCATION)	SCALE: 1/2" = 1'-0"	5	MAP PLACARD: MAIN SERVICE PANEL AND PV INVERTER (IF NOT SAME LOCATION)	SCALE: 1/2" = 1'-0"	CAUTION POWER TO THIS BUILDING IS SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN: UTILITY METER & SERVICE PANEL AC DISCO INVERTER W/ DC DISCO SOLAR ARRAY ON ROOF TOP WARNING ELECTRIC SHOCK HAZARD - DO NOT TOUCH TERMINALS TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION 1. PLACARD PLACED AT ELECTRICAL SERVICE AND AT THE PV INVERTER AND PV DISCONNECTS IF NOT AT THE SAME LOCATION. 2. MAP PLACARD PROVIDES A DIRECTORY OF THE SERVICE DISCONNECTING MEANS AND PHOTOVOLTAIC SYSTEM DISCONNECTION MEANS. 3. CODE REFERENCE: NEC 690.56(A)(B), 705.10 4. WHITE LETTERS ON A RED BACKGROUND. 5. MINIMUM OF 7 3/4" x 5" 6. FONT: 3/4" "CAUTION", 1/4" "WARNING", 3/16" HEADER, 1/8" DATA AND NOTES 7. PLACARD WILL BE PLACED ADJACENT TO THE MAIN SERVICE DISCONNECT IN A LOCATION CLEARLY VISIBLE FROM WHERE THE DISCONNECT IS OPERATED. (IFC 605.11.1.3)									CAUTION POWER TO THIS BUILDING IS SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN: UTILITY METER & SERVICE PANEL AC DISCO INVERTER W/ DC DISCO SOLAR ARRAY ON ROOF TOP THIS PLAN HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY SCOTT E. WYSSLING, PE USING A DIGITAL SIGNATURE AND DATE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES 1. PLACARD PLACED AT ELECTRICAL SERVICE AND AT THE PV INVERTER AND PV DISCONNECTS IF NOT AT THE SAME LOCATION. 2. MAP PLACARD PROVIDES A DIRECTORY OF THE SERVICE DISCONNECTING MEANS AND PHOTOVOLTAIC SYSTEM DISCONNECTION MEANS. 3. CODE REFERENCE: NEC 690.56(A)(B), 705.10 4. WHITE LETTERS ON A RED BACKGROUND. 5. MINIMUM OF 6 1/2" x 6 1/2" 6. FONT: 3/4" "CAUTION", 1/4" HEADER, 1/8" DATA AND NOTES 7. PLACARD WILL BE PLACED ADJACENT TO THE MAIN SERVICE DISCONNECT IN A LOCATION CLEARLY VISIBLE FROM WHERE THE DISCONNECT IS OPERATED. (IFC 605.11.1.3)									SCOTT E. WYSSLING LICENSED NO. PE01558 STATE OF FLORIDA PROFESSIONAL ENGINEER											
RESPONSIBILITY NOTES																																			
1. PRIME CONTRACTOR / PERMIT APPLICANT SIGNER IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE PHOTOVOLTAIC SYSTEM INSTALLATION. PRIME CONTRACTOR / PERMIT APPLICANT SIGNER WILL BE RESPONSIBLE FOR COLLECTION OF EXISTING ONSITE INFORMATION REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE EXTERIOR MOUNTED PORTION OF THE PHOTOVOLTAIC SYSTEM DETAILED IN THIS DOCUMENT. 2. ADVANCED SOLAR SOLUTIONS, INC IS RESPONSIBLE FOR APPLYING SUPPLIED INFORMATION INTO A SET OF PERMIT DRAWINGS. ANY CHANGES TO DRAWINGS ARE SUBJECT TO CONTRACT CONDITIONS BETWEEN THE CLIENT AND ADVANCED SOLAR SOLUTIONS, INC. IN ACCORDANCE WITH THE REQUIREMENTS OF THE AHJ.																																			



HIGH-EFFICIENCY LINE

PEIMAR
Italian PHOTOVOLTAIC MODULES

ELECTRICAL CHARACTERISTICS (STC)*

	SG315M (BF)
Nominal Output (Pmax)	315 W
Flash Test Power Tolerance	0/+5 W
Voltage at Pmax (Vmp)	33 V
Current at Pmax (Imp)	9.57 A
Open Circuit Voltage (Voc)	40.93 V
Short Circuit Current (Isc)	9.82 A
Maximum System Voltage	1500 V
Maximum Series Fuse Rating	15 A
Module Efficiency	19.36%

MECHANICAL CHARACTERISTICS

Solar Cells	60 (6x10) monocrystalline PERC
Solar Cells Size	156x156 mm / 6x6"
Front Cover	3.2 mm / 0.12" thick, low iron tempered glass
Back Cover	TPT (Tedlar-PET-Tedlar)
Encapsulant	EVA (Ethylene vinyl acetate)
Frame	Anodized aluminium alloy, double wall
Frame finishing	Black
Backsheet finishing	White
Diodes	3 Bypass diodes serviceable
Junction Box	IP67 rated
Connector	MC4 or compatible connector
Cables Length	900 mm / 35.4"
Cables Section	4,0 mm² / 0.006 in²
Dimensions	1640x992x40 mm / 64.5x39x1.57"
Weight	18 Kg / 39.7 lbs
Max. Load	Certified to 5400 Pa

TEMPERATURE CHARACTERISTICS

NOCT**	45±2 °C
Temperature Coefficient of Pmax	-0.40 %/°C
Temperature Coefficient of Voc	-0.32 %/°C
Temperature Coefficient of Isc	0.047 %/°C
Operating Temperature	-40 °C ~ +85°C

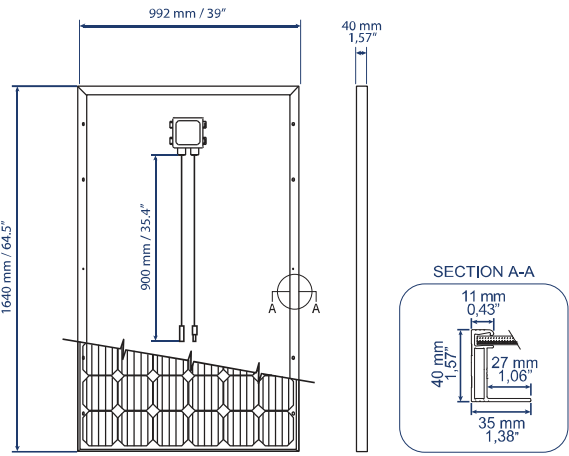
PACKAGING***

Pallet dimensions	1700x1200x1200 mm / 67x47x47"
Pieces per pallet	27
Weight	516 Kg / 1138 lbs

CERTIFICATIONS

Fire Resistance Rating	Class C (for ULC/ORD-C1703-01)
Module fire performance	Type 1 (for UL 1703)

DIMENSIONS

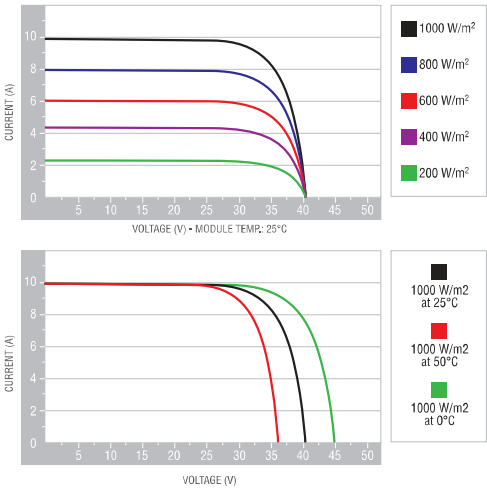


*STC: (Standard Test Condition) Irradiance 1000W/m²; Module Temperature 25°C; Air Mass 1.5
**NOCT: (Nominal Operation Cell Temperature) Sun 800W/m²; Air 20°C; Wind speed 1m/s
***Pallets can be stacked up to two

It is important to point out, that all technical specifications, information and figures contained in this datasheet are estimated values. Peimar reserves the right to change the technical specifications, information and figures contained in this document at any time without notice.
US_VERS 1_05/2019

CURRENT/VOLTAGE CHARACTERISTICS

Values apply to modules: SG315M (BF)



PEIMAR
Italian PHOTOVOLTAIC MODULES

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Italian PHOTOVOLTAIC MODULES



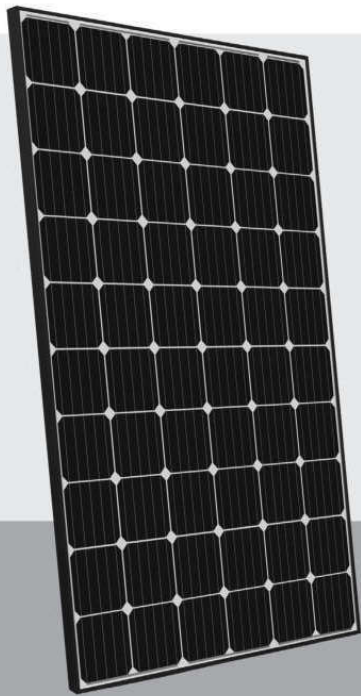
ASSURED ENERGY
Product Liability Insurance QBE



PERC TECHNOLOGY*
Passivated Emitter and Rear Cell



30 YEAR LINEAR POWER WARRANTY
ANNI GARANZIA LINEARE PRODUZIONE
20 YEAR PRODUCT WARRANTY
ANNI GARANZIA PRODOTTO



HIGH EFFICIENCY LINE

"MADE IN ITALY" MODULE

PEIMAR monocrystalline solar panels, produced using a combination of innovative production processes and advanced engineering techniques, provide customers with maximum output and super high performance (over 20% efficiency). This allows fewer panels to be used to generate more energy, ideal if space is restricted or environmental conditions are challenging. Modern design, using matching black cells and frames and a very long lifespan ensure this monocrystalline are a great option.

*Thanks to the use of PERC cells, PEIMAR modules are able to reach even higher efficiencies, as they facilitate the light imprisonment in close proximity to the rear surface and optimise the electron capture.



POSITIVE POWER OUTPUT TOLERANCE



MODULE FIRE PERFORMANCE: CLASS I



ANTI-REFLECTIVE GLASS



HAILSTORM RESISTANCE

CELLS

60
MONO



QTY:
60 CELLS
TYPE:
MONO 5BB
PERC TECHNOLOGY
DIMENSION:
156x156 mm / 6x6"

FRAME



BACKSHEET



JUNCTION BOX



Daybreak Install LLC

CVC56966

2100 N Main St Ste. 212

Fort Worth, TX 76164

(817) 995-9572

7.245 kW PHOTOVOLTAIC PLANS

NAME Manchester, Lawrence

ADDRESS 1524 Little Rd

ADDRESS Lake City, FL 32024

APN

RELEASE
SUBMIT FOR PERMIT

DATE
05/26/2021

REV

R-100

EQUIP. CUT SHEETS





Certificate of Compliance

Certificate: 70216168

Master Contract: 274817

Project: 80011096

Date Issued: 2019-10-08

Issued To: Peimar Inc
309 Fellowship Road, Suite 115
East Gate Center
Mount Laurel, New Jersey, 08054
United States

Attention: Stefano Caruso

The products listed below are eligible to bear the CSA Mark shown with adjacent indicator 'US'



Issued by: *Uday Singh*
Uday Singh

PRODUCTS

CLASS 5311 90 - POWER SUPPLIES - Photovoltaic Modules and Panels (Certified to U.S. Standards)

Photovoltaic Modules

- Model SGXXXM Series, mono-crystalline silicon, 72 Cell, where xxx is the power output from 380 W to 305 W.

Electrical data:

Model	Rated Max @ STC (Watts)	Voltage at Rated @ Max Power (V)	Current at Rated Max Power @ STC (A)	Open Circuit Voltage @ STC (A)	Short Circuit Current @ STC (A)
	(Pmax)	(Vmp)	(Imp)	(Voc)	(Isc)



Certificate: 70216168
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SG380M	380	38.70	9.83	47.21	10.45
SG375M	375	38.50	9.75	47.10	10.31
SG370M	370	38.40	9.65	46.90	10.24
SG365M	365	38.30	9.54	46.80	10.12
SG360M	360	38.20	9.47	46.70	10.09
SG355M	355	38.10	9.35	46.60	10.00
SG350M	350	38.00	9.22	46.20	9.94
SG345M	345	37.90	9.12	45.80	9.90
SG340M	340	37.86	9.00	45.31	9.86
SG335M	335	37.82	8.87	45.25	9.73
SG330M	330	37.80	8.74	45.20	9.58
SG325M	325	37.60	8.65	45.00	9.54
SG320M	320	37.50	8.54	44.80	9.50
SG315M	315	37.46	8.43	44.70	9.40
SG310M	310	37.40	8.31	44.60	9.28
SG305M	305	37.31	8.22	44.40	9.18
Max Series Fuse Rating (A)	20				
Max System Voltage (V)	1500				
Fire Performance Rating	Type 1				

- Model SGXXXP Series, multi-crystalline silicon, 72 Cell, where xxx is the power output from 350 W to 305 W.

Model	Rated Max @ STC (Watts)	Voltage at Rated @ Max Power (V)	Current at Rated Max Power @ STC (A)	Open Circuit Voltage @ STC (A)	Short Circuit Current @ STC (A)
	(Pmax)	(Vmp)	(Imp)	(Voc)	(Isc)
SG350P	350	37.81	9.27	46.57	9.85
SG345P	345	37.69	9.16	46.41	9.74
SG340P	340	37.58	9.05	46.26	9.63
SG335P	335	37.48	8.94	46.10	9.54
SG330P	330	37.38	8.83	45.98	9.42
SG325P	325	37.28	8.72	45.87	9.31
SG320P	320	37.17	8.61	45.75	9.19
SG315P	315	37.06	8.50	45.64	9.07
SG310P	310	36.95	8.39	45.52	8.95
SG305P	305	36.84	8.28	45.41	8.84
Max Series Fuse Rating (A)	20				

Daybreak Install LLC

CVC56966

2100 N Main St Ste. 212
Fort Worth, TX 76164
(817) 995-9572

7.245 kW PHOTOVOLTAIC PLANS

NAME

ADDRESS

ADDRESS

APN

Manchester, Lawrence
1524 Little Rd
Lake City, FL 32024

REV

DATE

RELEASE

05/26/2021

SUBMIT FOR PERMIT

R-101

EQUIP. CUT SHEETS





Certificate: 70216168
Project: 80011096

Master Contract: 274817
Date Issued: 2019-10-08

SG300P	300	32.21	9.32	39.14	9.79
SG295P	295	32.07	9.21	39.03	9.67
SG290P	290	31.92	9.09	38.92	9.57
SG285P	285	31.74	8.98	38.79	9.46
SG280P	280	31.61	8.86	38.68	9.35
SG275P	275	31.47	8.74	38.57	9.24
SG270P	270	31.36	8.61	38.45	9.11
SG265P	265	31.26	8.48	38.31	8.99
SG260P	260	31.14	8.35	38.19	8.85
Max Series Fuse Rating (A)	20				
Max System Voltage (V)	1500				
Fire Performance Rating	Type 1				

- Notes:
- Rated electrical characteristics are within +/-10% of measured values at Standard Test Conditions of 100 mW/cm2 irradiance, AM 1.5 spectrum, and 25°C.
 - 1500V maximum system voltage can only be used with 1500V rated components (Junction box, connector and cable)

APPLICABLE REQUIREMENTS

UL 1703-3 rd Edition	Flat-Plate Photovoltaic Modules and Panels
---------------------------------	--



Supplement to Certificate of Compliance

Certificate: 70216168

Master Contract: 274817

The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
80011096	2019-10-08	Updated report 70216168 to add 2 cells to the components. Added model number SGXXXP to the report. Testing was compliant to UL1703 3 rd edition.
70216168	2019-06-17	New certification for 72/60 cell monocrystalline module. Testing was compliant to UL1703 3 rd edition.

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			EQUIP. CUT SHEETS		



Single Phase Inverter with HD-Wave Technology

for North America

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



12-25
YEAR
WARRANTY

INVERTERS

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	600k Ω 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	3/4" minimum / 14-6 AWG					3/4" minimum /14-4 AWG			
DC Input Conduit Size / # of Strings / AWG Range	3/4" minimum / 1-2 strings / 14-6 AWG					3/4" minimum / 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	-40 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

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RoHS

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Power Optimizer

For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505



POWER OPTIMIZER

PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

solaredge.com



Power Optimizer For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505

Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high-power 60-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P401 (for high power 60 and 72 cell modules)	P405 (for high-voltage modules)	P485 (for high-voltage modules)	P505 (for higher current modules)	
INPUT									
Rated Input DC Power ⁽¹⁾	320	340	370	400		405	485	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	60	125 ⁽²⁾		83 ⁽²⁾	Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	8-60	12.5 - 105		12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)	11			10.1	11.75	11		14	Adc
Maximum DC Input Current	13.75			12.5	14.65	12.5		17.5	Adc
Maximum Efficiency	99.5								%
Weighted Efficiency	98.8							98.6	%
Overvoltage Category	II								
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)									
Maximum Output Current	15								Adc
Maximum Output Voltage	60					85			Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)									
Safety Output Voltage per Power Optimizer	1 ± 0.1								Vdc
STANDARD COMPLIANCE									
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3								
Safety	IEC62109-1 (class II safety), UL1741								
Material	UL94 V-0 , UV Resistant								
RoHS	Yes								
INSTALLATION SPECIFICATIONS									
Maximum Allowed System Voltage	1000								Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters								
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1			129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 153 x 29.5 / 5.1 x 6 x 1.16	129 x 159 x 49.5 / 5.1 x 6.3 x 1.9		129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	630 / 1.4			750 / 1.7	655 / 1.5	845 / 1.9		1064 / 2.3	gr / lb
Input Connector	MC4 ⁽³⁾						Single or dual MC4 ⁽³⁾⁽⁴⁾	MC4 ⁽³⁾	
Input Wire Length	0.16 / 0.52								m / ft
Output Wire Type / Connector	Double Insulated / MC4								
Output Wire Length	0.9 / 2.95		1.2 / 3.9						m / ft
Operating Temperature Range ⁽⁵⁾	-40 - +85 / -40 - +185								°C / °F
Protection Rating	IP68 / NEMA6P								
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) NEC 2017 requires max input voltage be not more than 80V
(3) For other connector types please contact SolarEdge
(4) For dual version for parallel connection of two modules use P485-4NMDMRM. 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. When connecting a single module seal the unused input connectors with the supplied pair of seals.
(5) For ambient temperature above +85°C / +185°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 ⁽⁶⁾⁽⁷⁾	Single Phase HD-Wave	Single phase	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length (Power Optimizers)	P320, P340, P370, P400, P401 P405, P485, P505	8	10	18	
Maximum String Length (Power Optimizers)		6	8	14	
		25	25	50 ⁽⁸⁾	
Maximum Power per String	5700 (6000 with SE7600-US - SE11400-US)	5250	6000 ⁽⁹⁾	12750 ⁽¹⁰⁾	W
Parallel Strings of Different Lengths or Orientations	Yes				

(6) For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf
(7) It is not allowed to mix P405/P485/P505 with P320/P340/P370/P400/P401 in one string
(8) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement
(9) For 208V grid: it is allowed to install up to 6,500W per string when the maximum power difference between each string is 1,000W
(10) For 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



Daybreak Install LLC

2100 N Main St Ste. 212
Fort Worth, TX 76164
(817) 995-9572

CVC56966

7.245 kW PHOTOVOLTAIC PLANS

NAME

ADDRESS

ADDRESS

APN

Manchester, Lawrence

1524 Little Rd

Lake City, FL 32024

RELEASE

DATE

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05/26/2021

R-104

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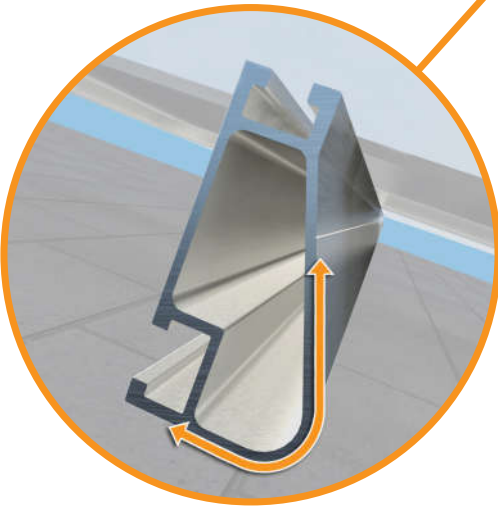
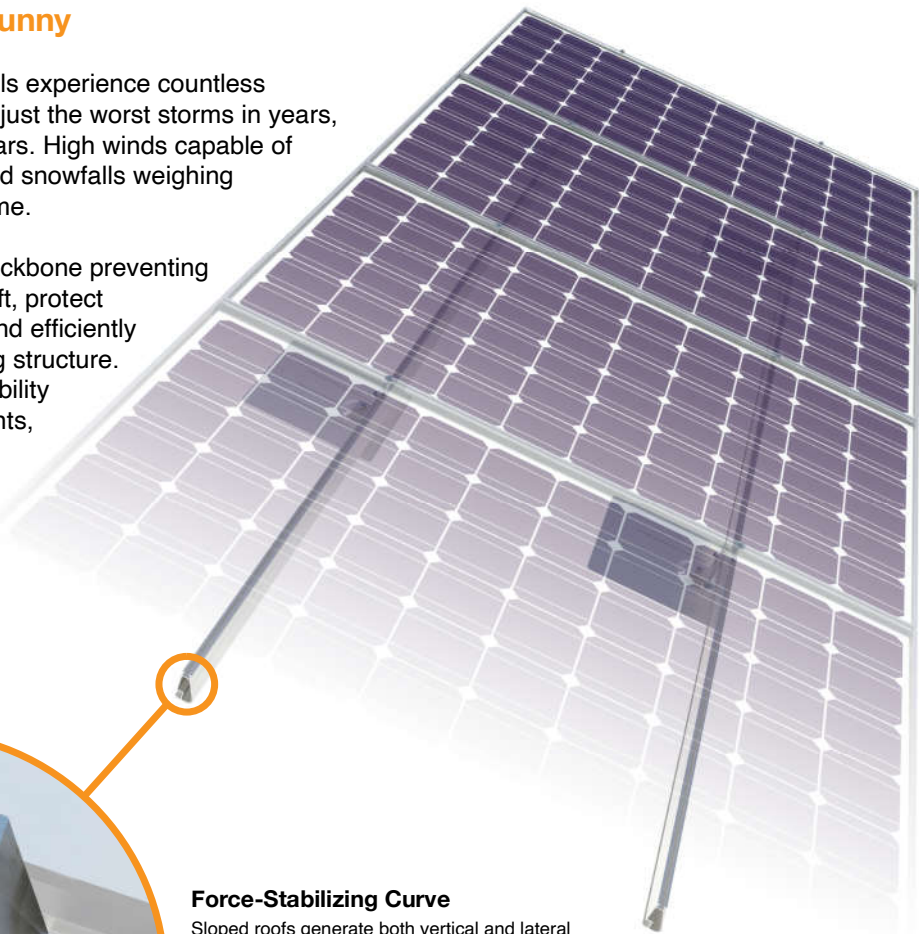


XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs



XR Rails are compatible with FlashFoot and other pitched roof attachments.



IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



XR Rail Family

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.



XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available



XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 10 feet.

- 10' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available



XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans up to 12 feet for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	90	XR10		XR100		XR1000	
	120						
	140						
	160						
20	90						
	120						
	140						
	160						
30	90						
	160						
40	90						
	160						
80	160						
120	160						

*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidance.

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Class A Fire Rating

Tech Brief

Background

All roofing products are tested and classified for their ability to resist fire.

Recently, these fire resistance standards were expanded to include solar equipment as part of the roof system. Specifically, this requires the modules, mounting hardware and roof covering to be tested together as a system to ensure they achieve the same fire rating as the original roof covering.

These new requirements are being adopted throughout the country in 2016.

IronRidge Certification

IronRidge was the first company to receive a Class A Fire Rating—the highest possible rating—from Intertek Group plc., a Nationally Recognized Testing Laboratory.

IronRidge Flush Mount and Tilt Mount Systems were tested on sloped and flat roofs in accordance with the new UL 1703 & UL 2703 test standards. The testing evaluated the system’s ability to resist flame spread, burning material and structural damage to the roof.

Refer to the table below to determine the requirements for achieving a Class A Fire Rating on your next project.

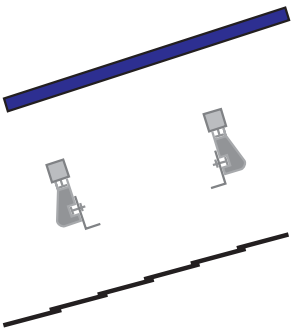
Fire Testing Process

Test Setup

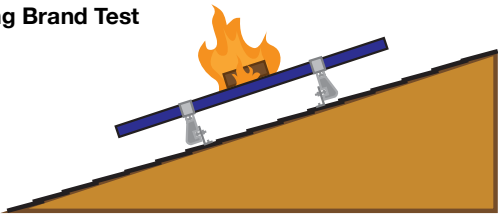
Solar Modules
Solar modules are given a Type classification based on their materials and construction.

Mounting System
Mounting is tested as part of a system that includes type-tested modules and fire-rated roof covering.

Roof Covering
Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance.

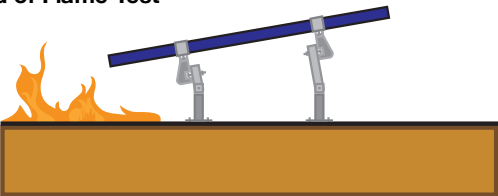


Burning Brand Test



A burning wooden block is placed on module as a fan blows at 12 mph. Flame cannot be seen on underside of roof within 90 minutes.

Spread of Flame Test



Flame at southern edge of roof is aimed up the roof as a fan blows at 12 mph. The flame cannot spread 6 feet or more in 10 minutes.

System	Roof Slope	Module	Fire Rating*
Flush Mount 	Any Slope	Type 1, 2, & 3	Class A
Tilt Mount 	≤ 6 Degrees	Type 1, 2, & 3	Class A

*Class A rated PV systems can be installed on Class A, B, and C roofs.

Frequently Asked Questions

What is a “module type”?

The new UL1703 standard introduces the concept of a PV module type, based on 4 construction parameters and 2 fire performance parameters. The purpose of this classification is to certify mounting systems without needing to test it with every module.

What roofing materials are covered?

All fire rated roofing materials are covered within this certification including composition shingle, clay and cement tile, metal, and membrane roofs.

What if I have a Class C roof, but the jurisdiction now requires Class A or B?

Generally, older roofs will typically be “grandfathered in”, and will not require re-roofing. However, if 50% or more of the roofing material is replaced for the solar installation the code requirement will be enforced.

Where is the new fire rating requirement code listed?

2012 IBC: 1509.7.2 Fire classification. Rooftop mounted photovoltaic systems shall have the same fire classification as the roof assembly required by Section 1505.

Where is a Class A Fire Rating required?

The general requirement for roofing systems in the IBC refers to a Class C fire rating. Class A or B is required for areas such as Wildland Urban Interface areas (WUI) and for very high fire severity areas. Many of these areas are found throughout the western United States. California has the most Class A and B roof fire rating requirements, due to wild fire concerns.

Are standard mid clamps covered?

Mid clamps and end clamps are considered part of the PV “system”, and are covered in the certification.

More Resources



Installation Manuals

Visit our website for manuals that include UL 2703 Listing and Fire Rating Classification.

Go to IronRidge.com

What attachments and flashings are deemed compatible with Class A?

Attachments and their respective flashings are not constituents of the rating at this time. All code-compliant flashing methods are acceptable from a fire rating standpoint.

What mounting height is acceptable?

UL fire testing was performed with a gap of 5”, which is considered worst case in the standard. Therefore, the rating is applicable to any module to roof gap.

Am I required to install skirting to meet the fire code?

No, IronRidge achieved a Class A fire rating without any additional racking components.

What determines Fire Classification?

Fire Classification refers to a fire-resistance rating system for roof covering materials based on their ability to withstand fire exposure.

Class A - effective against severe fire exposure
Class B - effective against moderate fire exposure
Class C - effective against light fire exposure

What if the roof covering is not Class A rated?

The IronRidge Class A rating will not diminish the fire rating of the roof, whether Class A, B, or C.

What tilts is the tilt mount system fire rated for?

The tilt mount system is rated for 1 degrees and up and any roof to module gap, or mounting height.

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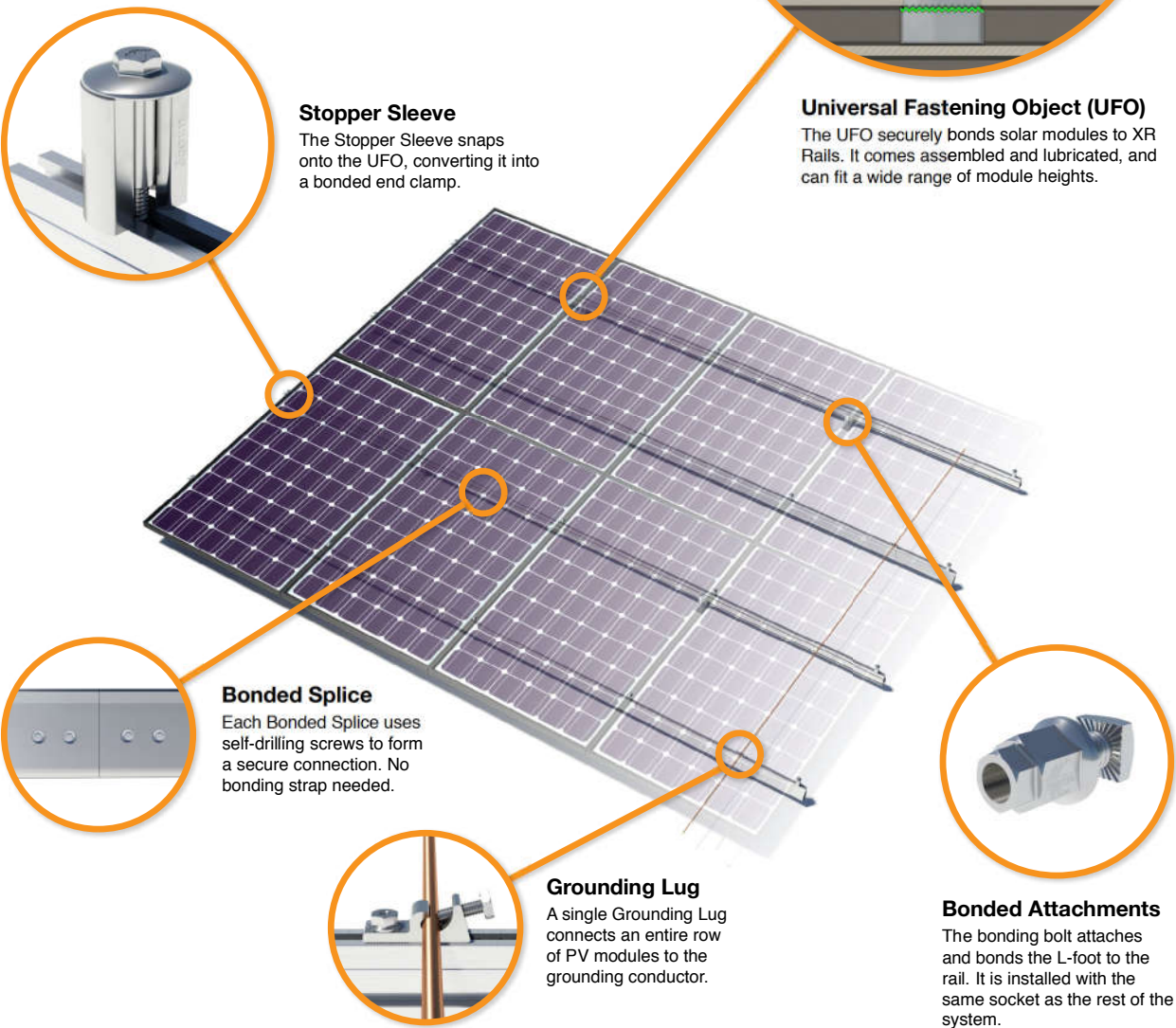




Simplified Grounding for Every Application

The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



Stopper Sleeve

The Stopper Sleeve snaps onto the UFO, converting it into a bonded end clamp.

Universal Fastening Object (UFO)

The UFO securely bonds solar modules to XR Rails. It comes assembled and lubricated, and can fit a wide range of module heights.

Bonded Splice

Each Bonded Splice uses self-drilling screws to form a secure connection. No bonding strap needed.

Grounding Lug

A single Grounding Lug connects an entire row of PV modules to the grounding conductor.

Bonded Attachments

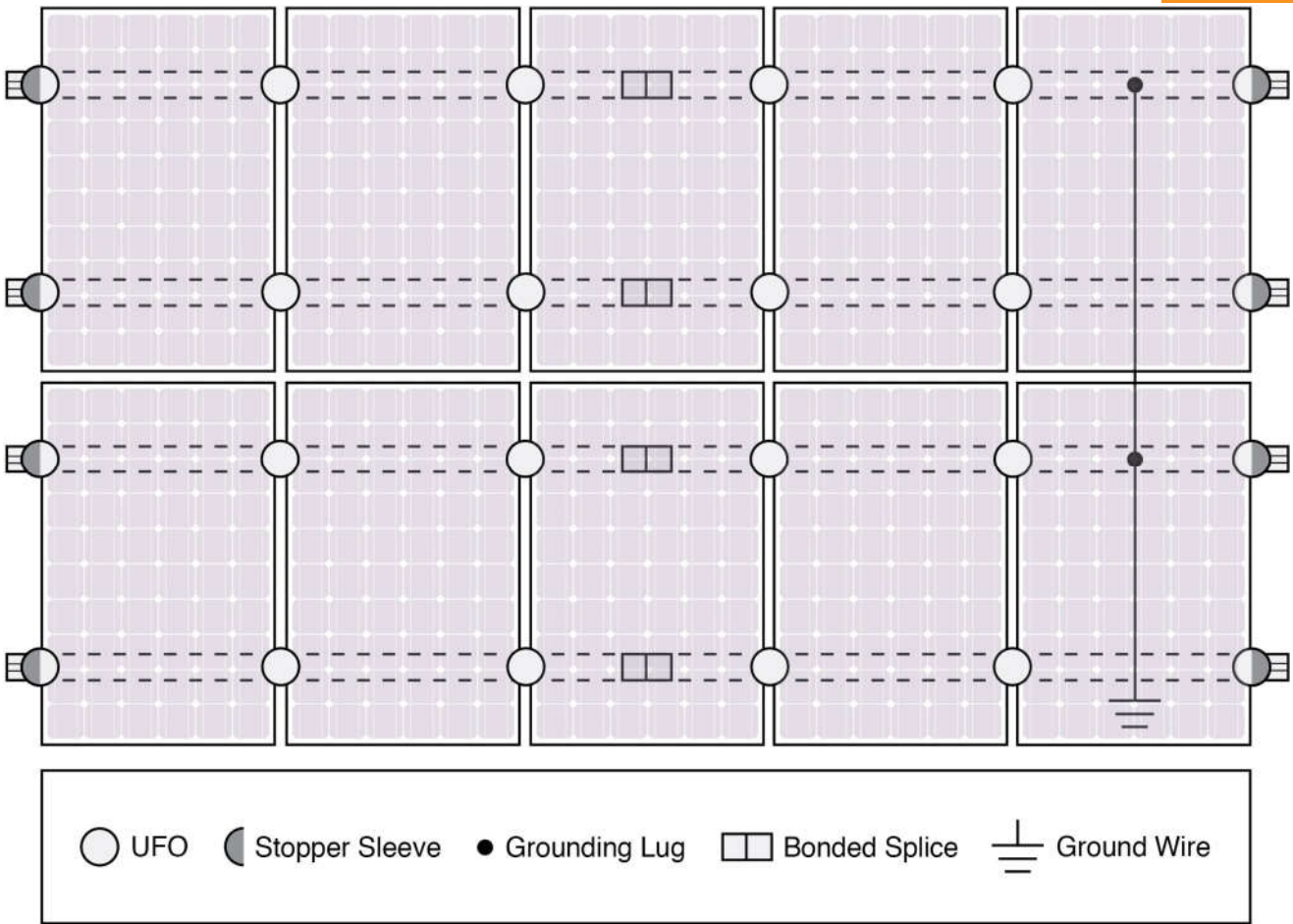
The bonding bolt attaches and bonds the L-foot to the rail. It is installed with the same socket as the rest of the system.

UFO Family of Components

Tech Brief

System Diagram

Tech Brief



Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to [IronRidge.com/UFO](https://www.ironridge.com/UFO)

Cross-System Compatibility			
Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✓	✓	XR1000 Only
UFO/Stopper	✓	✓	✓
Bonded Splice	✓	✓	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Enphase - M250-72, M250-60, M215-60, C250-72 Darfon - MIG240, MIG300, G320, G640 SolarEdge - P300, P320, P400, P405, P600, P700, P730		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		

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The right way to attach almost anything to metal roofs!

S-5![®]

The Right Way!

S-5-U Clamp

The S-5-U clamp is by far our most popular and most versatile clamp. It fits about 85% of the standing seam profiles manufactured in North America—including most structural and architectural profiles. It can be used on vertically oriented seams and, by rotating the clamp 90 degrees, it can also be used on most horizontal 2" seam profiles.

Its simple design, generous dimensioning, and multiple hole orientations are what make the S-5-U clamp so versatile for use with the S-5![®] snow retention products, such as ColorGard[®], as well as with other heavy-duty applications.

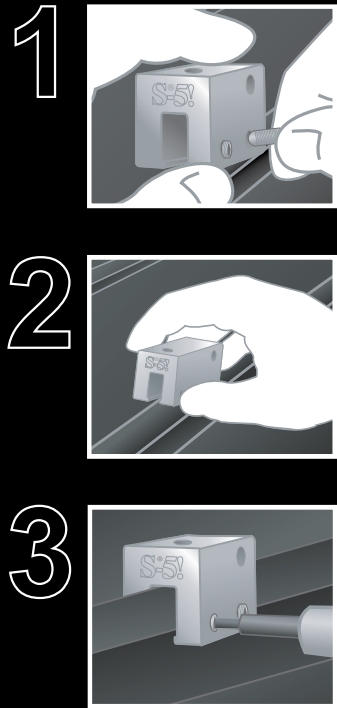
Installation is as simple as setting the specially patented round-point setscrews into the clamp, placing the clamp on the seam, and tightening them to the specified tension. Then, affix ancillary items using the bolt provided with the product. Go to www.S-5.com/tools for information and tools available for properly attaching and tensioning S-5![®] clamps.

S-5-U Mini Clamp

The S-5-U Mini is a bit shorter than the S-5-U and has one setscrew rather than two. The mini is the choice for attaching all kinds of rooftop accessories: signs, walkways, satellite dishes, antennas, rooftop lighting, lightning protection systems, solar arrays, exhaust stack bracing, conduit, condensate lines, mechanical equipment—just about anything!*

*S-5![®] mini clamps are not compatible with, and should not be used with S-5![®] SnoRail™/SnoFence™ or ColorGard[®] snow retention systems.

The S-5-U clamp is our most popular and versatile clamp, fitting about 85% of the standing seam profiles in North America.



S-5-U and S-5-U Mini

888-825-3432 | www.S-5.com |

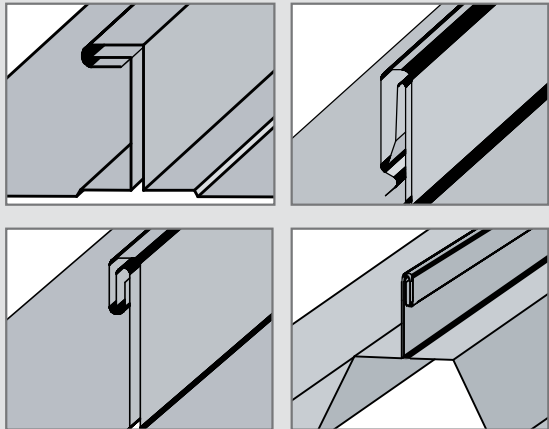
S-5![®]
The Right Way!

The strength of the S-5-U clamp is in its simple design. The patented setscrews will slightly dimple the metal seam material but not pierce it—leaving the roof manufacturer's warranty intact.

The S-5-U and S-5-U Mini clamps are each furnished with the hardware shown to the right. Each box also includes a bit tip for tightening setscrews using an electric screw gun. A structural aluminum attachment clamp, the S-5-U is compatible with most common metal roofing materials excluding copper. All included hardware is stainless steel. Please visit www.S-5.com for more information including CAD details, metallurgical compatibilities and specifications.

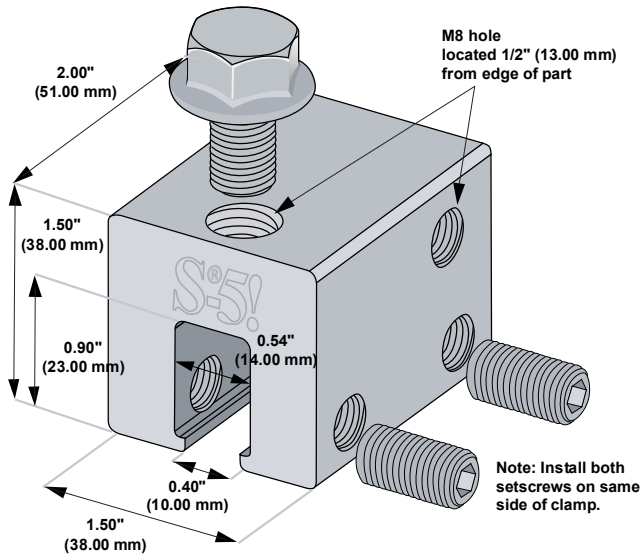
The S-5-U clamp has been tested for load-to-failure results on most major brands and profiles of standing seam roofing. The independent lab test data found at www.S-5.com can be used for load-critical designs and applications. S-5![®] holding strength is unmatched in the industry.

Example Profiles

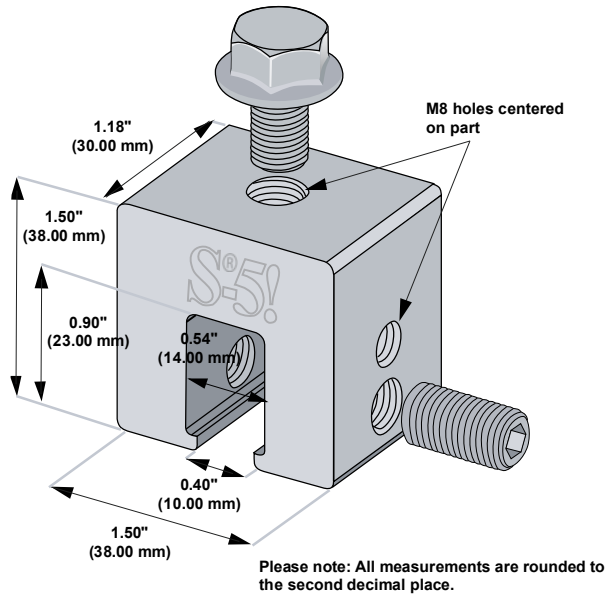


For horizontal seams under 0.65", do not use this clamp. Visit www.S-5.com for more detailed information and proper clamp usage.

S-5-U Clamp



S-5-U Mini Clamp



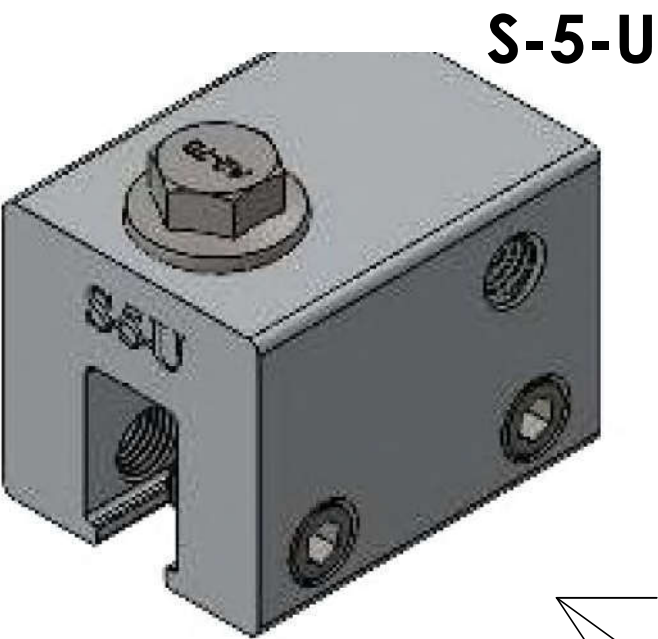
S-5![®] Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. Visit the website at www.S-5.com for complete information on patents and trademarks. For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses. Clamp setscrew tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel, and between 130 and 150 inch pounds for all other metals and thinner gauges of steel. Consult the S-5![®] website at www.S-5.com for published data regarding holding strength.

Copyright 2015, Metal Roof Innovations, Ltd. S-5![®] products are patent protected. S-5![®] aggressively protects its patents, trademarks, and copyrights. Version 052115.

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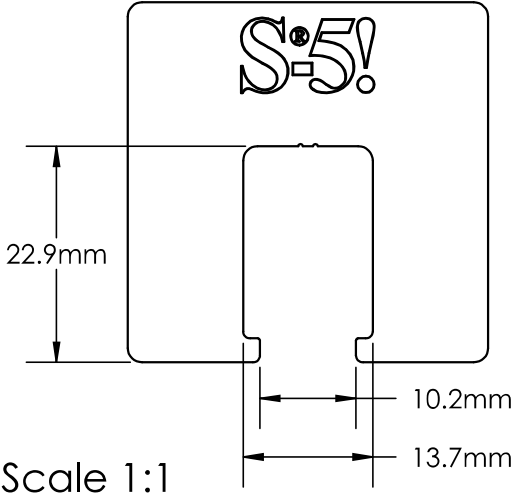
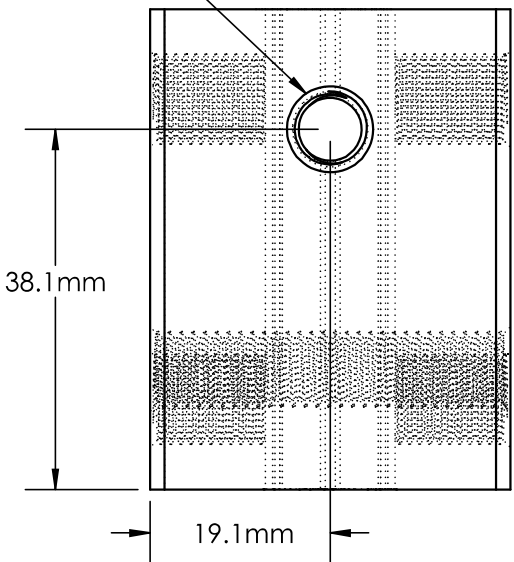
Daybreak Install LLC CVC56966 2100 N Main St Ste. 212 Fort Worth, TX 76164 (817) 995-9572	7.245 kW PHOTOVOLTAIC PLANS		REV	DATE	RELEASE
	NAME	Manchester, Lawrence		05/26/2021	SUBMIT FOR PERMIT
	ADDRESS	1524 Little Rd			
	ADDRESS	Lake City, FL 32024			
	APN				
			R-108		EQUIP. CUT SHEETS



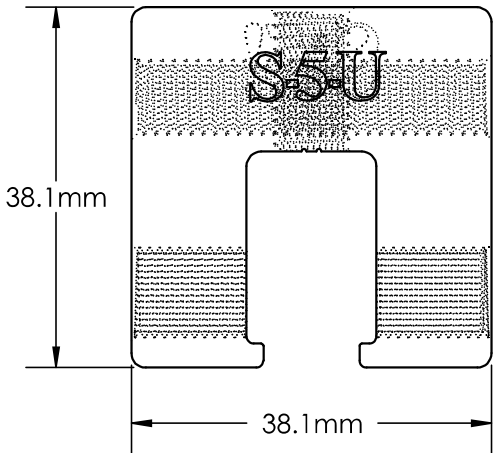
S-5-U

M8-1.25 Threaded Hole

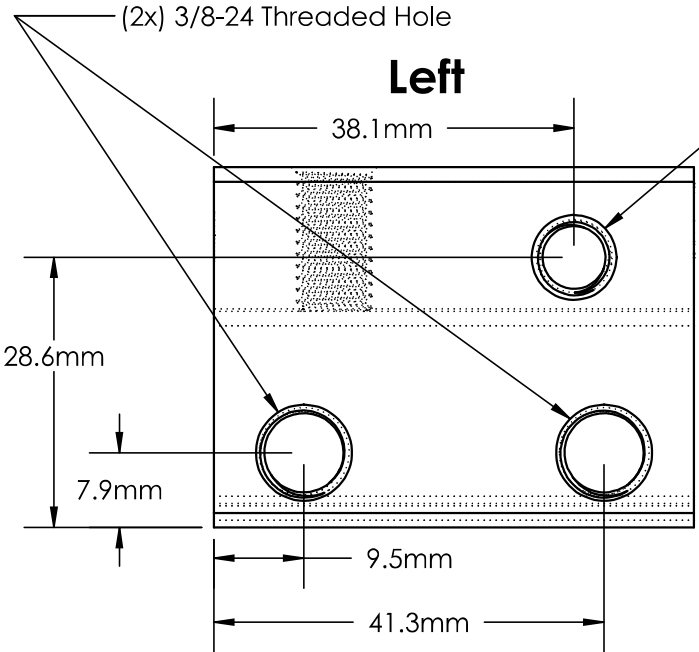
Top



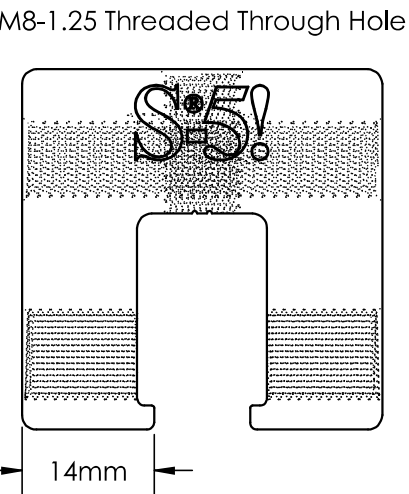
Back



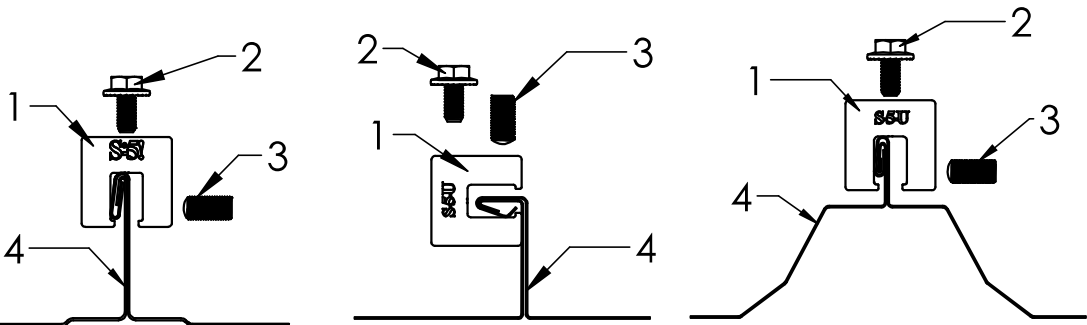
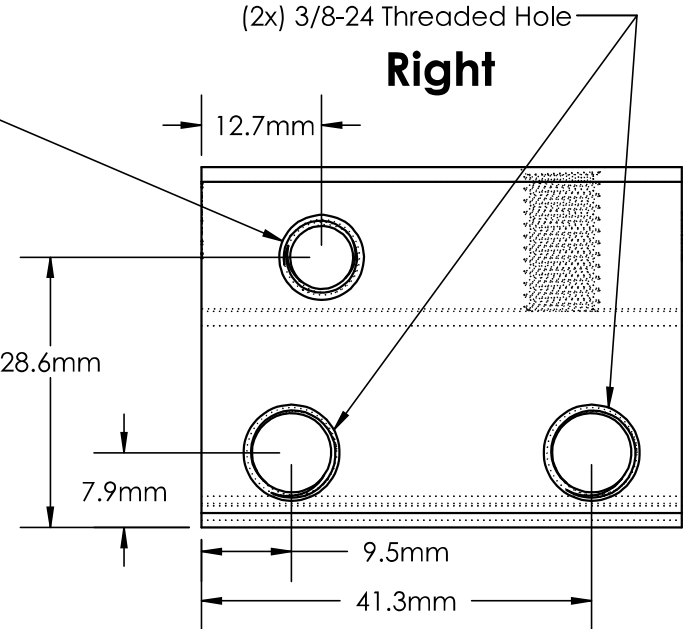
Left



Front



Right



General Notes:

1. S-5-U Clamp
2. M8-1.25 SS Hex Flange Bolt (13mm Socket)
3. 3/8-24 SS Round Point Setscrew (3/16 Hex Drive)
4. Example roof

**FOR STANDING SEAM SPECIFIC MECHANICAL LOAD TEST
INFORMATION AND CLAMP INSTALLATION INFORMATION
PLEASE VISIT: WWW.S-5.COM**

MATERIAL:	 The Right Way!			METAL ROOF INNOVATIONS, LTD. 8655 TABLE BUTTE RD COLORADO SPRINGS, CO 80908 719-495-0518 719-495-0045(FAX)			
EST ASSEMBLY WEIGHT:							
168.96 g							
SUPPLIED HARDWARE:	TITLE S-5-U						
M8-1.25 x 16 mm HEX Bolt (2x) 3/8-24 x .800" Setscrews							
SCALE:	DRAWING NO.	DRAWN BY	DATE				
1:1	U11-B-16-D	Kati Kadakas	4/11/2016				
EST. WEIGHT:	S-5!® PRODUCTS ARE PROTECTED BY MULTIPLE U.S. AND FOREIGN PATENTS. VISIT OUR WEBSITE AT WWW.S-5.COM FOR COMPLETE INFORMATION ON PATENTS AND TRADEMARKS.						
Clamp: 137.89 g							
Setscrew: 7.71 g							
Bolt: 15.65 g							

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	ADDRESS Lake City, FL 32024			R-109		
	APN					
				EQUIP. CUT SHEETS		



The right way to attach almost anything to metal roofs!

Installation Instructions

S-5!® Warning! Please use these products responsibly! Visit our website or contact your S-5! distributor for available load test results. The user and/or installer of these parts is responsible for all necessary engineering and design to ensure the S-5! clamps have been properly spaced and configured. **Notice to S-5! users:** Due to the many variables involved with specific panel products, climates, snow melt phenomena, and job particulars, the manufacturer cannot and does not express any opinions as to the suitability of any S-5! assembly for any specific application and assumes no liability with respect thereto. S-5! products are tested for ultimate holding strength on various profile types and materials. Visit www.S-5.com for more details. This document is an installation guide only and the photographs and drawings herein are for the purpose of illustrating installation, tools and techniques, not system designs. Information contained within is intended to apply to the document as a whole.

The S-5-U, S-5-S, S-5-E, S-5-B, and S-5-V clamps are made for standing seam profiles. For horizontal seam applications, the setscrew(s) must be accessible from the top for tightening. S-5-U clamps have two bolt holes to accommodate either vertical or horizontal seam applications; visit www.S-5.com for more details.

Tools Needed

- Screw Gun*
- 3/16" Allen Bit Tip (provided)
- Dial-Calibrated Torque Wrench
(For accurate tension values, do NOT use a clicking torque wrench; inquire with S-5! for proper tool sourcing)

To Install the S-5-U, S-5-S, S-5-E, S-5-B, and S-5-V

- Partially thread the setscrews into the clamp by hand. (The S-5-U has four setscrew locations to make the clamp more versatile; however, only two setscrews are used per clamp. Both setscrews should always be loaded into the same side of the clamp.)
- Determine how to position the clamp. When attaching to machine-folded seams (regardless of panel profile and geometry), S-5! clamps are designed to engage the seam as shown in Illustration A; with setscrew opposite seam fold. On many snap-together type seams, the setscrews are on the open (or overlap) side of the seam. On some seams, this aspect of clamp orientation is not critical.
- Tighten the setscrews using a screw gun* and the included screw gun bit tip. Setscrews should be tensioned and re-tensioned as the seam material compresses, i.e. tighten the first setscrew, then the second; then repeat until each setscrew achieves the recommended torque. The setscrews will dimple the seam material but will not penetrate it. When relying on published load values, setscrew tension should be verified periodically using a calibrated torque wrench as indicated below to ensure the tool is consistently achieving the proper torque range.

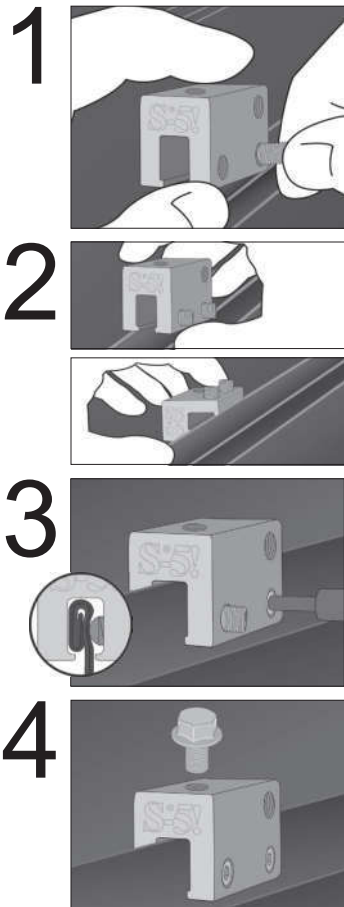
* For time-saving tool recommendations, call S-5!

Specified Torque	Inch Pounds	Foot Pounds	Nm
22ga steel	160–180	13–15	18–20
All other metals and thinner gauges of steel	130–150	11–12.5	15–17

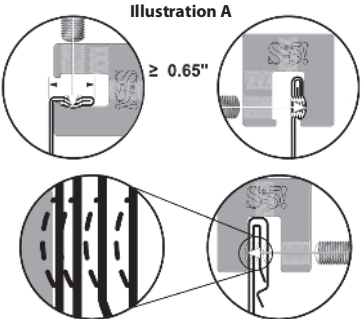
Once installed correctly, these clamps require no maintenance or re-inspection for the life of the roof.

- For critical attachment applications utilizing an M8-1.25 X 16 mm Hex Flange Bolt, tighten the included M8 bolt to 160 inch pounds (13 foot pounds).

tions are for use by those experienced in the trade. Always follow appropriate safety precautions and use appropriate tools.



Above illustrations show S-5-U clamp on a vertical seam. Step 2 shows both vertical and horizontal applications.



(Top) S-5-U clamp on both vertical and horizontal seams. (Bottom) S-5-S on a snap together seam with blow up illustrating deformation of seam as setscrew is tightened. **For horizontal seams equal to or greater than .65" use the S-5-U in its horizontal orientation.** **For horizontal seams equal to or less than .50" use the S-5-S mounted vertically.**

888-825-3432 | www.S-5.com S-5-U, S-5-S, S-5-E, S-5-B, S-5-V, & Mini Install

S-5-U Mini, S-5-S Mini, S-5-E Mini, S-5-B Mini, and S-5-V Mini Installation Instructions

To Install the S-5-U Mini, S-5-S Mini, S-5-E Mini, S-5-B Mini, and S-5-V Mini

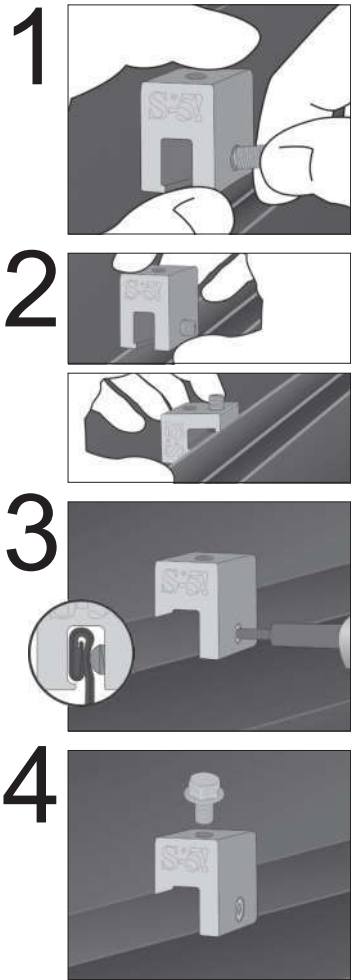
- Partially thread the setscrew into the clamp by hand.
- Determine how to position the clamp. When attaching to machine-folded seams (regardless of panel profile and geometry), S-5!® clamps are designed to engage the seam as shown in Illustration A on the front page; with setscrew opposite seam fold. On many snap-together type seams, the setscrew is on the open (or overlap) side of the seam. On some seams, this aspect of clamp orientation is not critical.
- Tighten the setscrew using a screw gun* and the included screw gun bit tip. The setscrew will dimple the seam material but will not penetrate it. When relying on published load values, setscrew tension should be verified periodically using a calibrated torque wrench as indicated below to ensure the tool is consistently achieving the proper torque range.

*For time-saving tool recommendations, call S-5!

Specified Torque	Inch Pounds	Foot Pounds	Nm
22ga steel	160–180	13–15	18–20
All other metals and thinner gauges of steel	130–150	11–12.5	15–17

Once installed correctly, these clamps require no maintenance or re-inspection for the life of the roof.

- For critical attachment applications utilizing an M8-1.25 X 16 mm Hex Flange Bolt, tighten the included M8 bolt to 160 inch pounds (13 foot pounds).



Above illustrations show S-5-E Mini clamp on a vertical seam. Step 2 shows S-5-E Mini on vertical applications and S-5-U Mini on horizontal applications.

S-5!® Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. Visit the website at www.S-5.com for complete information on patents and trademarks. For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses, i.e. tighten the first setscrew, then the second; then repeat until each setscrew achieves the recommended torque. Clamp setscrew tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel, and between 130 and 150 inch pounds for all other metals and thinner gauges of steel. Consult the S-5! website at www.S-5.com for published data regarding holding strength. Copyright 2014, Metal Roof Innovations, Ltd. S-5! products are patent protected. S-5! aggressively protects its patents, trademarks, and copyrights. Version 011515.

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						05/26/2021	SUBMIT FOR PERMIT	
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			ADDRESS	1524 Little Rd				
			ADDRESS	Lake City, FL 32024				
			APN					
							R-110	EQUIP. CUT SHEETS





General Duty Cartridge Fuse Safety Switch

DG222NRB

UPC:782113144221

Dimensions:

- Height: 7 IN
- Length: 6.41 IN
- Width: 8.4 IN

Weight:9 LB

Notes:Maximum hp ratings apply only when dual element fuses are used. 3-Phase hp rating shown is a grounded B phase rating, UL listed.

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: General Duty/Cartridge Fuse
- Amperage Rating: 60A
- Enclosure: NEMA 3R
- Enclosure Material: Painted galvanized steel
- Fuse Class Provision: Class H fuses
- Fuse Configuration: Fusible with neutral
- Number Of Poles: Two-pole
- Number Of Wires: Three-wire
- Product Category: General Duty Safety Switch
- Voltage Rating: 240V

Supporting documents:

- Eatons Volume 2-Commercial Distribution
- Eaton Specification Sheet - DG222NRB

Certifications:

- UL Listed



pe.eaton.com

1.1

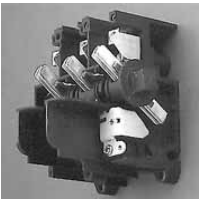
Switching Devices

Safety Switches

1

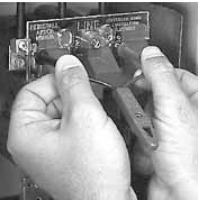
All general-duty switches above 100A and all heavy-duty switches incorporate these K-Series switch design features.

- Two points of contact provide a positive open and close, easier operation, and also help prevent contact burning for longer contact life



Visible Double-Break Rotary Blade Mechanism

- Protects against accidental contact with energized parts. Probe holes enable the user to test if the line side is energized without removing the shield. Not provided on general-duty switches, but available as a field kit or factory installed



Clear Line Shield



Clearly Visible Handle

- The position (ON or OFF) can be clearly seen from a distance and the length provides for easy operation



Triple Padlocking Capability

- Personnel safety feature because the large hasp can accommodate up to three 3/8-inch (9.5 mm) shank locks



Additional Locking Capability

- Cabinet door can be further padlocked at the top and bottom as applicable



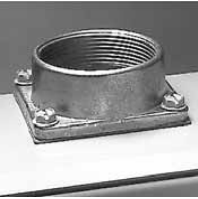
Interlocking Mechanism

- Door cannot be opened when the handle is in the ON position. Front and side operable defeater mechanism provides for user access when necessary on single-throw switches



Tangential Knockouts

- An ample number are provided on the top, bottom and sides of both NEMA Types 1 and 3R enclosures through 200A



Bolt-On Hub Kits

- For switches in a NEMA Type 3R, 30–200A. Use a Myers type hub for all others

Standards and Certifications

- UL listed File No. E5239
- Meets UL 98 for enclosed switches and NEMA Std. KS-1



Seismic Qualifications

- General-duty switches exceed the requirements of Uniform Building Code (UBC) and California Code Title 24 OSP-0011-10, OSP-0012-10



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