GENERAL NOTES

1.1.1 **PROJECT NOTES:**

1.1.2 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.

1.1.3 GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE INVERTER IN ACCORDANCE WITH [NEC 690.5(A)]

1.1.4 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION

1.1.5 LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 690.64 (B)]

1.1.6 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY [NEC 690.4] & [NEC 690.60]
PV MODULES:UL 1703 CERTIFIED, NFPA 70 CLASS C FIRE
INVERTER(S):UL 1741 CERTIFIED, IEEE 1547, 929, 519
COMBINER BOX(S):UL 1703 OR UL 1741 ACCESSORY

1.2.1 **SCOPE OF WORK:**

1.2.2 PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE EXTERIOR ROOF-MOUNTED PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT.

1.3.1 **WORK INCLUDES:**

1.3.2 PV ROOF ATTACHMENTS - ECOFASTEN GF1

1.3.3 PV RACKING SYSTEM INSTALLATION - IRONRIDGE XR10

1.3.4 PV MODULE AND INVERTER INSTALLATION - SILFAB SLA290M/ SOLAR EDGE SE5000H-US (240V)

1.3.5 PV EQUIPMENT GROUNDING

1.3.6 PV SYSTEM WIRING TO A ROOF-MOUNTED SOLADECK JUNCTION BOX

1.3.7 PV INSTALLING SYSTEM MONITORING EQUIPMENT

1.3.8 PV LOAD CENTERS (IF NEC.)

1.3.9 PV METERING (IF NEC.)

1.3.10 PV DISCONNECTS

1.3.11 PV GROUNDING ELECTRODE & BONDING TO (E) GEC

1.3.12 PV FINAL COMMISSIONING

1.3.13 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV

SCOPE OF WORK

SYSTEM SIZE:	STC: 22 x 290W = 6.380kW PTC: 22 x 261.1W = 5.744kW DC (22) SILFAB SLA290M (1) SOLAR EDGE SE5000H-US (240V)
ATTACHMENT TYPE:	ECOFASTEN GF1
MSP UPGRADE:	NO

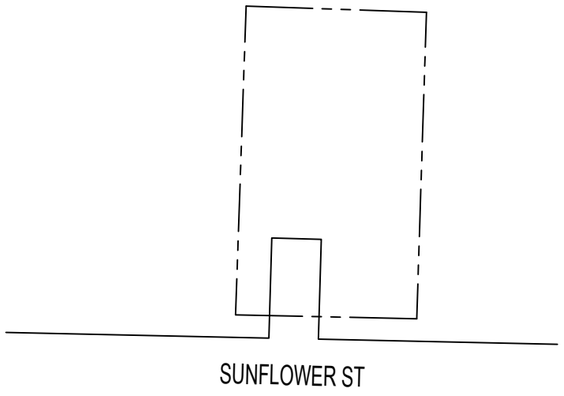
NEW PV SYSTEM: 6.380 kWp

BERRY RESIDENCE

1050 SUNFLOWER ST, CERTERTON, AR 72719
ASSESSOR'S #: 0601295000

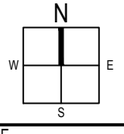
01 AERIAL PHOTO

NOT TO SCALE



02 PLAT MAP

NOT TO SCALE



SHEET LIST TABLE

PROJECT INFORMATION

OWNER

NAME:	TARA BERRY
PHONE:	(417) 439-8533
EMAIL:	TARA.BERRY78@YAHOO.COM

PROJECT MANAGER

NAME:	SUN SOLAR PROJECT TEAM
PHONE:	417-413-1786

CONTRACTOR

NAME:	SUN SOLAR, LLC
PHONE:	417-413-1786

AUTHORITIES HAVING JURISDICTION

BUILDING:	CITY OF CENTERTON AR
ZONING:	CITY OF CENTERTON AR
UTILITY:	EMPIRE DISTRICT ELECTRIC

DESIGN SPECIFICATIONS

OCCUPANCY:	II
CONSTRUCTION:	SINGLE-FAMILY
ZONING:	RESIDENTIAL
GROUND SNOW LOAD:	15 PSF
WIND EXPOSURE:	C
WIND SPEED:	115 MPH

APPLICABLE CODES & STANDARDS

BUILDING:	IBC 2012 IRC 2012
ELECTRICAL:	NEC 2017
FIRE:	IFC 2015

SUN SOLAR

CONTRACTOR

SUN SOLAR, LLC

PHONE: 417-413-1786

ADDRESS: 1900 WEST SUNSET, C-120
SPRINGFIELD,MO 65807

LIC. NO.:
HIC. NO.:
ELE. NO.:

NEW PV SYSTEM: 6.380 kWp

BERRY RESIDENCE

1050 SANFLOWER ST,
CENTERTON, AR 72719
APN: 0601295000

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

COVER PAGE

DATE: 03.20.2018

DESIGN BY: A.I.

CHECKED BY: M.M.

REVISIONS

T-001.00

(SHEET 1)

2.1.1 **SITE NOTES**

2.1.2 A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.

2.1.3 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS AN UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.

2.1.4 THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.

2.1.5 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION [NEC 110.26]

2.1.6 ALTERNATE POWER SOURCE PLACARD SHALL BE PLASTIC, ENGRAVED IN A CONTRASTING COLOR TO THE PLAQUE. THIS PLAQUE WILL BE ATTACHED USING AN APPROVED METHOD. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC.

2.1.7 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.]

2.1.8 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SHALL SERVE TO PROTECT THE BUILDING OR STRUCTURE.

2.1.9 RIGID CONDUIT (AND/OR NIPPLES) MUST HAVE A PULL BUSHING TO PROTECT WIRES.

2.1.10 BOLTED CONNECTION REQUIRED IN DC DISCONNECTS ON THE WHITE GROUNDED CONDUCTOR (USE POLARIS BLOCK OR NEUTRAL BAR)

2.1.11 ANY CONNECTION ABOVE LIVE PARTS MUST BE WATERTIGHT. REDUCING WASHERS DISALLOWED ABOVE LIVE PARTS, MEYERS HUBS RECOMMENDED

2.2.1 **SOLAR CONTRACTOR**

2.2.2 MODULE CERTIFICATIONS WILL INCLUDE UL1703, IEC61646, IEC61730.

2.2.3 IF APPLICABLE, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE MARKED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.

2.2.4 AS INDICATED BY DESIGN, OTHER NRTL LISTED MODULE GROUNDING DEVICES MAY BE USED IN PLACE OF STANDARD GROUNDING LUGS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ.

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

2.2.6 CONDUIT POINT OF PENETRATION FROM EXTERIOR TO INTERIOR TO BE INSTALLED AND SEALED WITH A SUITABLE SEALING COMPOUND.

2.2.7 DC WIRING LIMITED TO MODULE FOOTPRINT W/ ENPHASE AC SYSTEM.

2.2.8 WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS.

2.2.9 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC UNLESS NOT AVAILABLE.

2.2.10 ALL INVERTERS, MOTOR GENERATORS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AC PHOTOVOLTAIC MODULES, SOURCE CIRCUIT COMBINERS, AND CHARGE CONTROLLERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D).

2.2.11 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE.

2.3.1 **EQUIPMENT LOCATIONS**

2.3.2 ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY [NEC 110.26].

2.3.3 EQUIPMENT INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY [NEC 690.31 (A)-(B)] AND [NEC TABLE 310.15 (B)(2)(C)].

2.3.4 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.

2.3.5 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.

2.3.6 ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

2.4.1 **WIRING & CONDUIT NOTES**

2.4.2 ALL CONDUIT SIZES AND TYPES, SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR THE SITE APPLICATIONS

2.4.3 ALL PV CABLES AND HOMERUN WIRES BE #10AWG *USE-2, PV WIRE, OR PROPRIETARY SOLAR CABLING SPECIFIED BY MFR, OR EQUIVALENT; ROUTED TO SOURCE CIRCUIT COMBINER BOXES AS REQUIRED

2.4.4 ALL CONDUCTORS AND OCPD SIZES AND TYPES SPECIFIED ACCORDING TO [NEC 690.8 (A)(1) & (B)(1)], [NEC 240] [NEC 690.7] FOR MULTIPLE CONDUCTORS

2.4.5 ALL PV DC CONDUCTORS IN CONDUIT EXPOSED TO SUNLIGHT SHALL BE DERATED ACCORDING TO [NEC TABLE 310.15 (B)(2)(C)] BLACK ONLY**

2.4.6 EXPOSED ROOF PV DC CONDUCTORS SHALL BE USE-2, 90°C RATED, WET AND UV RESISTANT, AND UL LISTED RATED FOR 600V, UV RATED SPIRAL WRAP SHALL BE USED TO PROTECT WIRE FROM SHARP EDGES

2.4.7 PHASE AND NEUTRAL CONDUCTORS SHALL BE DUAL RATED THHN/THWN-2 INSULATED, 90°C RATED, WET AND UV RESISTANT, RATED FOR 600V PER NEC 2008 OR 1000V PER NEC 2011

2.4.8 4-WIRE DELTA CONNECTED SYSTEMS HAVE THE PHASE WITH THE HIGHER VOLTAGE TO GROUND MARKED ORANGE OR IDENTIFIED BY OTHER EFFECTIVE MEANS

2.4.9 ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION

2.4.10 VOLTAGE DROP LIMITED TO 2% FOR DC CIRCUITS AND 1% FOR AC CIRCUITS

2.4.11 NEGATIVE GROUNDED SYSTEMS DC CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS: DC POSITIVE - RED (OR MARKED RED), DC NEGATIVE - GREY (OR MARKED GREY)

2.4.12 POSITIVE GROUNDED SYSTEMS DC CONDUCTORS COLOR CODED: DC POSITIVE - GREY (OR MARKED GREY), DC NEGATIVE - BLACK (OR MARKED BLACK)

2.4.13 AC CONDUCTORS >4AWG COLOR CODED OR MARKED: PHASE A OR L1- BLACK, PHASE B OR L2- RED, PHASE C OR L3- BLUE, NEUTRAL- WHITE/GRAY

*USE-2 IS NOT INDOOR RATED BUT PV CABLE IS RATED THWN/THWN-2 AND MAY BE USED INSIDE

**USE-2 IS AVAILABLE AS UV WHITE

2.5.1 **STRUCTURAL NOTES:**

2.5.2 RACKING SYSTEM & PV ARRAY SHALL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL.

2.5.3 ROOF MOUNTED STANDARD RAIL REQUIRES ONE THERMAL EXPANSION GAP FOR EVERY RUN OF RAIL GREATER THAN 40'.

2.5.4 ARRAY SHALL BE A MIN. HEIGHT OF 3" ABOVE THE COMPOSITION ROOF.

2.5.5 JUNCTION BOX SHALL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.

2.5.6 ROOFTOP PENETRATIONS PERTAINING TO SOLAR RACKING WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.

2.5.7 ALL PV RELATED RACKING ATTACHMENTS WILL BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER. O.C. FINAL ATTACHMENT LOCATIONS MAY BE ADJUSTED IN THE FIELD AS NECESSARY.

2.5.8 ALL PV RELATED RACKING ATTACHMENTS SHALL BE STAGGERED BY ROW AMONGST THE ROOF FRAMING MEMBERS.

2.6.1 **GROUNDING NOTES**

2.6.2 A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH [NEC 690-47] AND [NEC 250-50] THROUGH [NEC 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.

2.6.3 GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #6 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM.

2.6.4 PV SYSTEM SHALL BE GROUNDED IN ACCORDANCE TO [NEC 250.21], [NEC TABLE 250.122], AND ALL METAL PARTS OR MODULE FRAMES ACCORDING TO [NEC 690.43].

2.6.5 MODULE SOURCE CIRCUITS SHALL BE GROUNDED IN ACCORDANCE TO [NEC 690.42].

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

2.6.7 EACH MODULE WILL BE GROUNDED USING THE SUPPLIED CONNECTIONS POINTS IDENTIFIED IN THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

2.6.8 ENCLOSURES SHALL BE PROPERLY PREPARED WITH REMOVAL OF PAINT/FINISH AS APPROPRIATE WHEN GROUNDING EQUIPMENT WITH TERMINATION GROUNDING LUGS.

2.6.9 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVISES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR DIRECT BURIAL.

2.6.10 GROUNDING AND BONDING CONDUCTORS SHALL BE COPPER, SOLID OR STRANDED, AND BARE WHEN EXPOSED.

2.6.11 EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZE ACCORDING TO [NEC 690.45] AND BE A MINIMUM OF #10AWG WHEN NOT EXPOSED TO DAMAGE (#6AWG SHALL BE USED WHEN EXPOSED TO DAMAGE).

2.6.12 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLOR CODED GREEN (OR MARKED GREEN IF #4 AWG OR LARGER)

2.6.13 ALL CONDUIT BETWEEN THE UTILITY AC DISCONNECT AND THE POINT OF CONNECTION SHALL HAVE GROUNDED BUSHINGS AT BOTH ENDS.

2.6.14 AC SYSTEM GEC SIZED ACCORDING TO [NEC 690.47], [NEC TABLE 250.66], DC SYSTEM GEC SIZED ACCORDING TO [NEC 250.166], MINIMUM #8AWG WHEN INSULATED, #6AWG WHEN EXPOSED TO DAMAGE.

2.6.15 EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENTS, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A) REGARDLESS OF VOLTAGE.

2.7.1 **INTERCONNECTION NOTES**

2.7.2 PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED AT THE OPPOSITE END OF THE BUS FROM THE MAIN SERVICE BREAKER OR TRANSFORMER INPUT FEEDER IN ACCORDANCE WITH [NEC 690.64(B)(7)]

2.7.3 SUM OF BREAKER RATINGS SUPPLYING THE BUS MAY NOT EXCEED 120% OF THE THE BUSBAR RATING PER [NEC 690.64(B)(2)] AND/OR [NEC 705.12(D)(1).

2.7.4 GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9] & [NEC 230.95] ALL EQUIPMENT TO BE RATED FOR BACKFEEDING.

2.7.5 SUPPLY SIDE INTERCONNECTION ACCORDING TO [NEC 690.64(A)] AND/OR [NEC 705.12(A)] WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH [NEC 230.42(B)]

2.7.6 MICROINVERTER BRANCHES SHALL BE CONNECTED TO A SINGLE BREAKER OCPD IN ACCORDANCE WITH [NEC 110.3(B)].

2.8.1 **DISCONNECT NOTES**

2.8.2 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED “LINE SIDE” (TYPICALLY THE UPPER TERMINALS)

2.8.3 AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH

2.8.4 DC CURRENT CONDUCTORS ARE TO REMAIN OUTSIDE OF BUILDING PRIOR TO EITHER A FUSEABLE SOURCE CIRCUIT COMBINER BOX OR A LOAD-BREAK DISCONNECTING DEVICE

SUN SOLAR

CONTRACTOR

SUN SOLAR, LLC

PHONE: 417-413-1786

ADDRESS: 1900 WEST SUNSET, C-120
SPRINGFIELD,MO 65807

LIC. NO.:
HIC. NO.:
ELE. NO.:

NEW PV SYSTEM: 6.380 kWp

BERRY RESIDENCE

1050 SANFLOWER ST,
CENTERTON, AR 72719
APN: 0601295000

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

NOTES

DATE: 03.20.2018

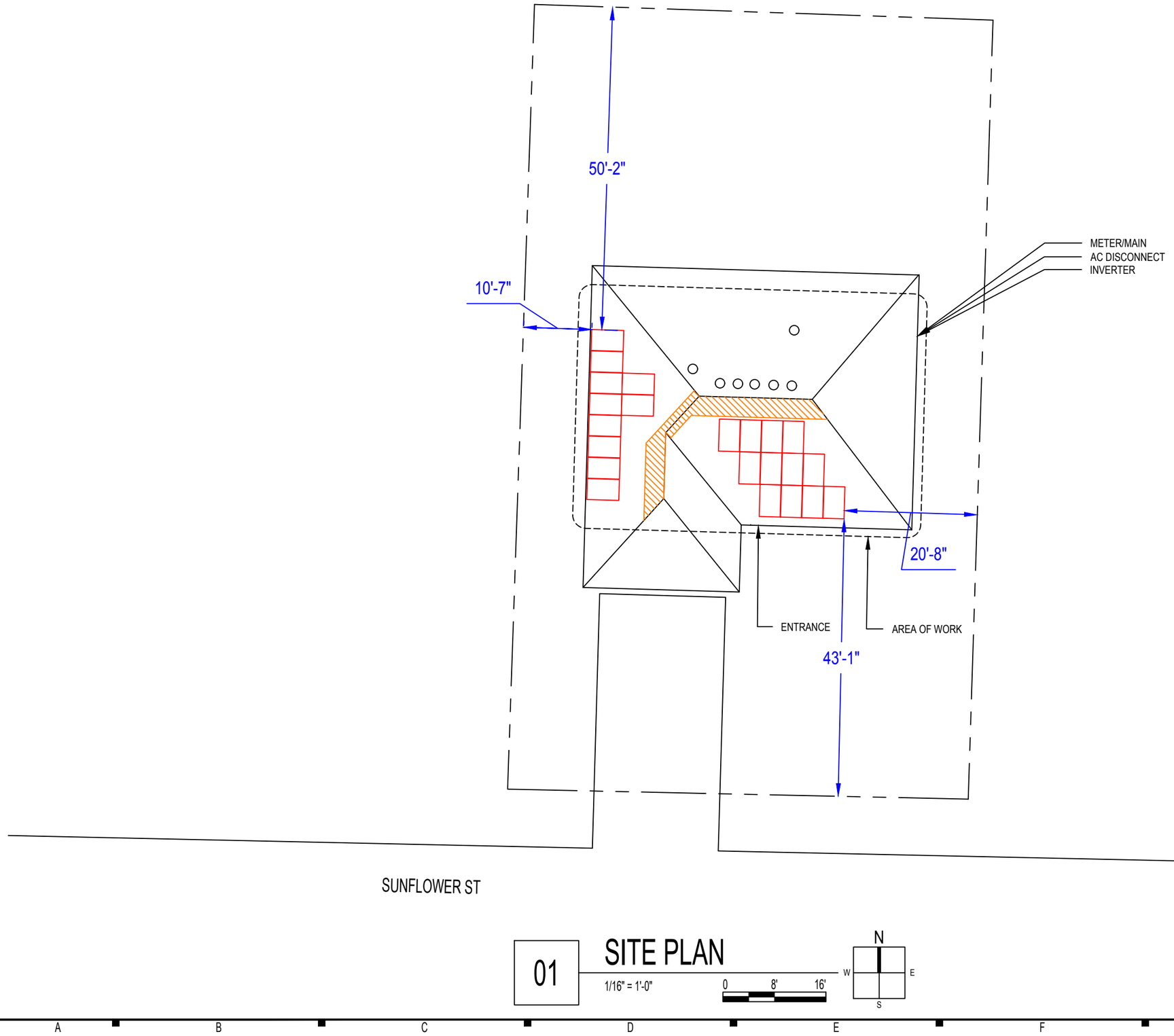
DESIGN BY: A.I.

CHECKED BY: M.M.

REVISIONS

G-001.00

(SHEET 2)



01 SITE PLAN

1/16" = 1'-0"

0 8' 16'

N W E S

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS

PROPERTY LINE

SUN SOLAR

CONTRACTOR

SUN SOLAR, LLC

PHONE: 417-413-1786

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SPRINGFIELD,MO 65807

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PAPER SIZE: 11" x 17" (ANSI B)

SITE PLAN

DATE: 03.20.2018

DESIGN BY: A.I.

CHECKED BY: M.M.

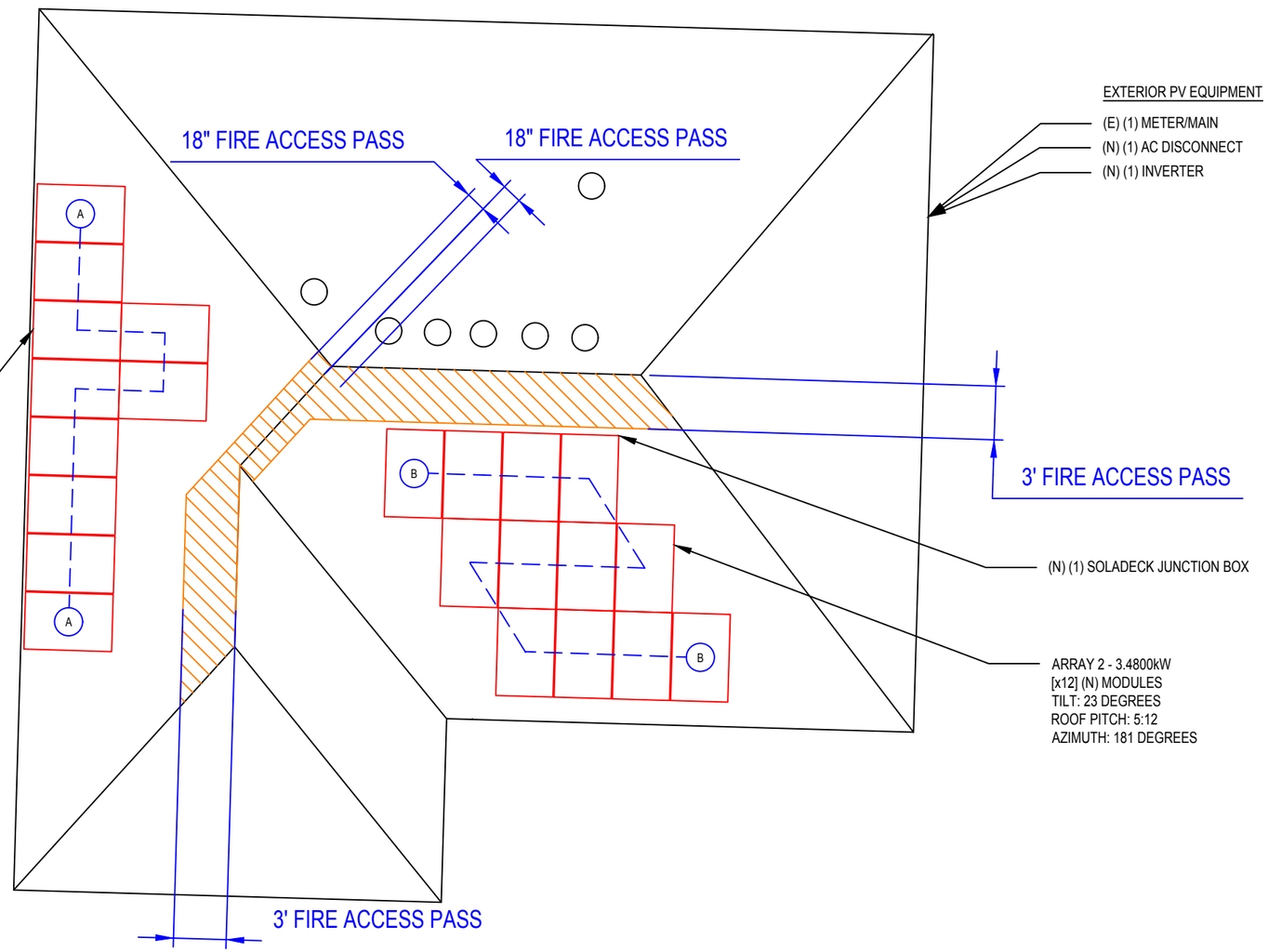
REVISIONS

A-101.00

(SHEET 3)

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS



ARRAY 1 - 2.900kW
[x10] (N) MODULES
TILT: 23 DEGREES
ROOF PITCH: 5:12
AZIMUTH: 271 DEGREES

EXTERIOR PV EQUIPMENT
(E) (1) METER/MAIN
(N) (1) AC DISCONNECT
(N) (1) INVERTER

(N) (1) SOLADECK JUNCTION BOX

ARRAY 2 - 3.4800kW
[x12] (N) MODULES
TILT: 23 DEGREES
ROOF PITCH: 5:12
AZIMUTH: 181 DEGREES

MODULE STRINGING

A MODULE STRINGING

B MODULE STRINGING

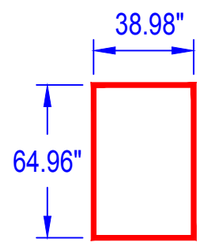
FIRE CLEARANCE

SOLAR (PV) MODULE

01 ELECTRICAL PLAN

1/8" = 1' 0 4' 8'

N W E S



MODULE:
SILFAB
SLA290M
290 WATTS

SUN SOLAR

CONTRACTOR

SUN SOLAR, LLC

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SPRINGFIELD,MO 65807

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ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

ELECTRICAL PLAN

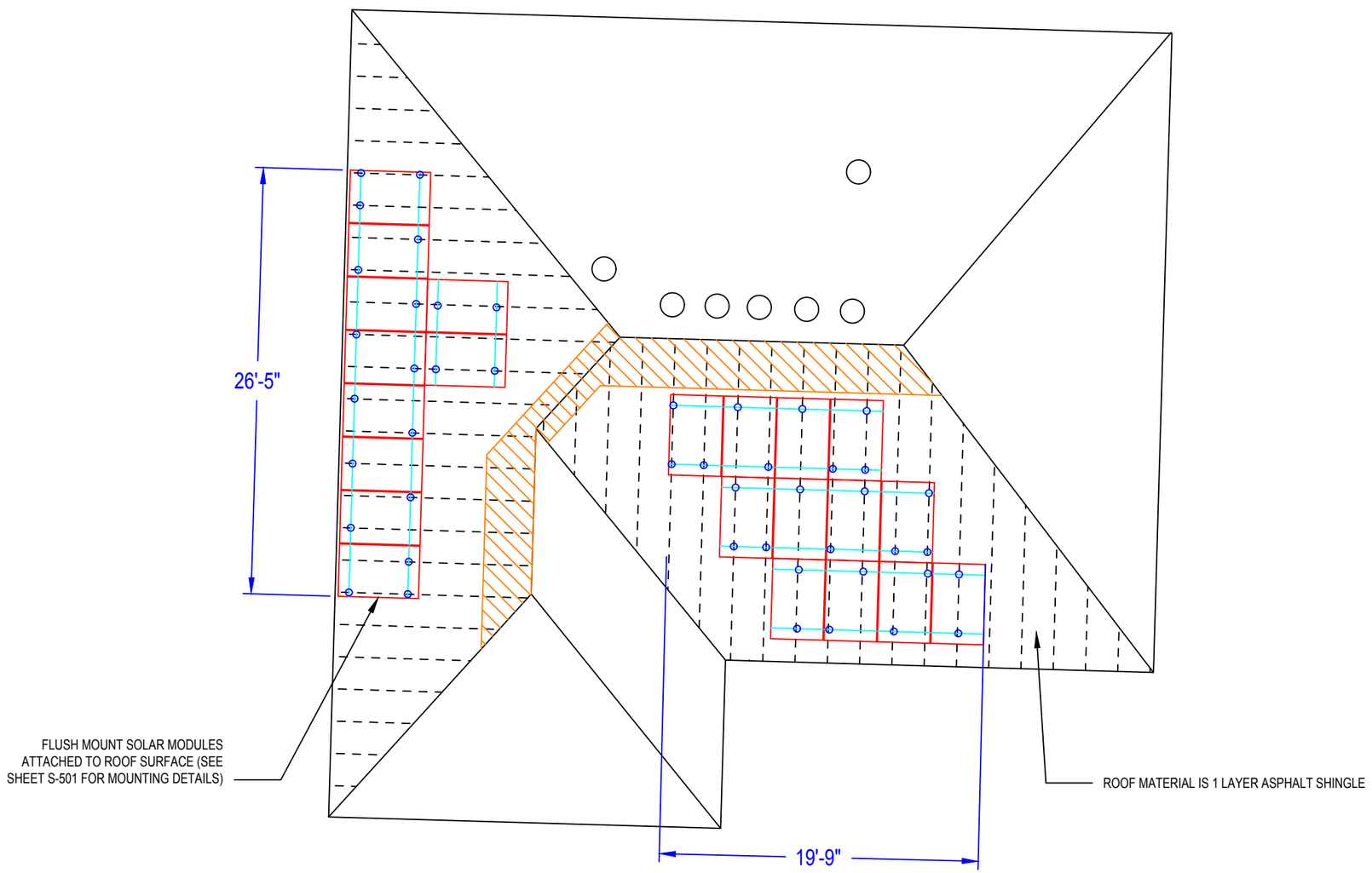
DATE: 03.20.2018
DESIGN BY: A.I.
CHECKED BY: M.M.

REVISIONS

A-102.00
(SHEET 4)

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS



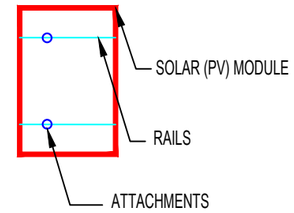
01 SOLAR ATTACHMENT PLAN

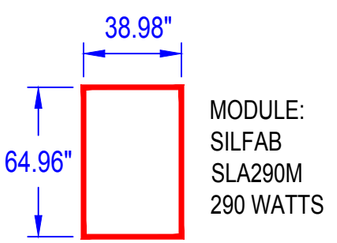
1/8" = 1'

0 4' 8'

N W E S

ROOF TRUSS





MODULE:
SILFAB
SLA290M
290 WATTS

SUN SOLAR

CONTRACTOR

SUN SOLAR, LLC

PHONE: 417-413-1786

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PAPER SIZE: 11" x 17" (ANSI B)

SOLAR ATTACHMENT PLAN

DATE: 03.20.2018

DESIGN BY: A.I.

CHECKED BY: M.M.

REVISIONS

A-103.00

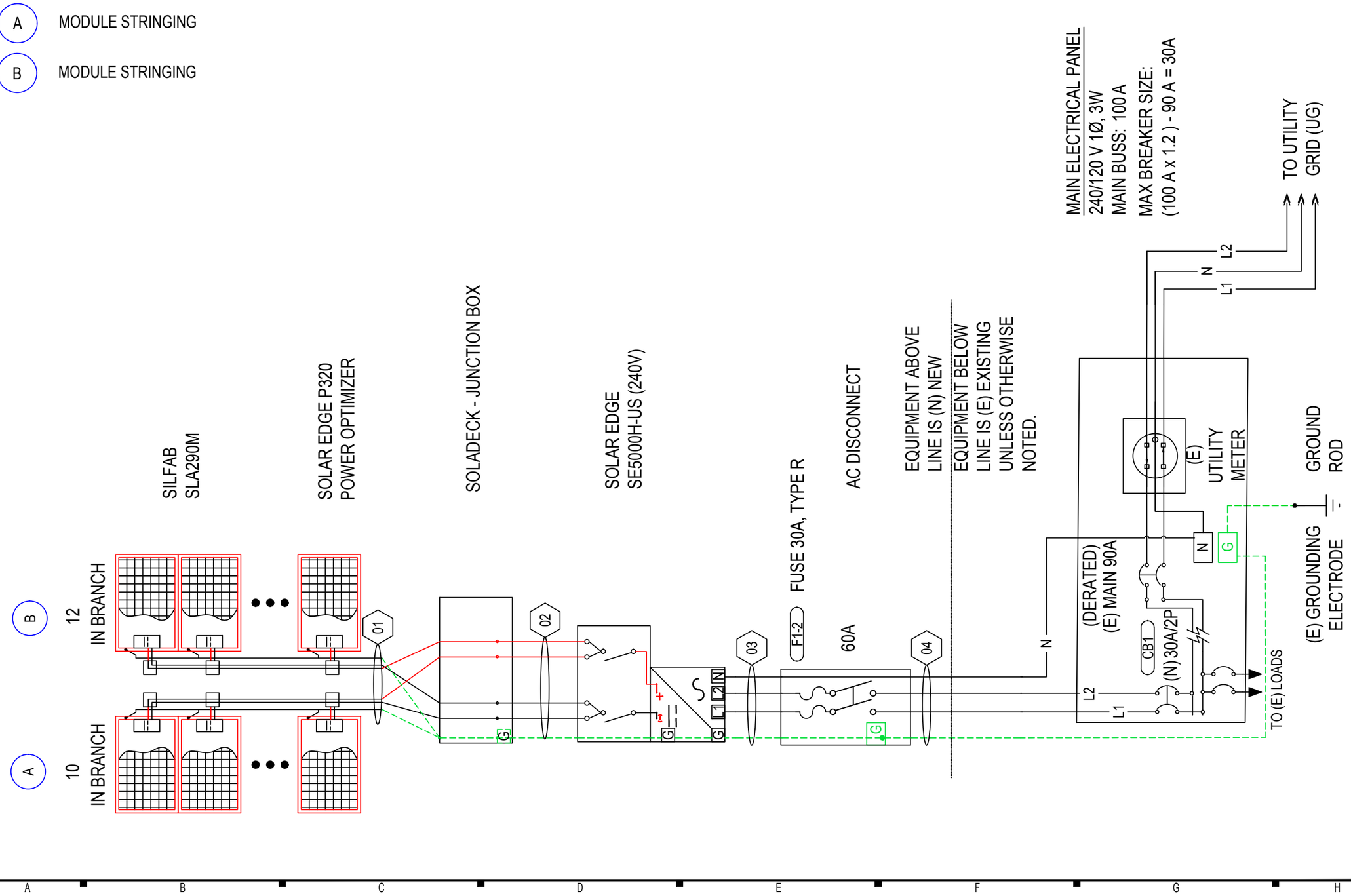
(SHEET 5)

CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS

ID	TYPICAL	CONDUCTOR	CONDUIT	CURRENT-CARRYING CONDUCTORS IN CONDUIT	OCPD	EGC	TEMP. CORR. FACTOR	CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT (125%)	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	AMP. @ TERMINAL
01	2	10 AWG PV WIRE, COPPER	FREE AIR	2	N/A	6 AWG BARE, COPPER	0.71 (58°C)	1	15A	18.75A	55A	39.05A	75°C	50A
02	1	10 AWG THWN-2, COPPER	0.75" DIA EMT	4	N/A	10 AWG THWN-2, COPPER	0.71 (58°C)	0.8	15A	18.75A	40A	22.72A	75°C	35A
03	1	10 AWG THWN-2, COPPER	0.75" DIA EMT	2	30A	10 AWG THWN-2, COPPER	0.91 (36°C)	1	21A	26.25A	40A	36.4A	75°C	35A
04	1	10 AWG THWN-2, COPPER	0.75" DIA EMT	2	30A	10 AWG THWN-2, COPPER	0.91 (36°C)	1	21A	26.25A	40A	36.4A	75°C	35A

A MODULE STRINGING

B MODULE STRINGING



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LINE DIAGRAM

DATE: 03.20.2018

DESIGN BY: A.I.

CHECKED BY: M.M.

REVISIONS

E-601.00

(SHEET 6)

SYSTEM SUMMARY

	STRING #1	STRING #2
POWERBOX MAX OUTPUT CURRENT	15A	15A
OPTIMIZERS IN SERIES	10	12
NOMINAL STRING VOLTAGE	380V	380V
ARRAY OPERATING CURRENT	7.63A	9.16A
ARRAY STC POWER	6,380W	
ARRAY PTC POWER	5,744W	
MAX AC CURRENT	21A	
MAX AC POWER	5,000W	
DERATED (CEC) AC POWER	5,000W	

DESIGN TEMPERATURES

ASHRAE EXTREME LOW	-19.3°C (-2.7°F), SOURCE: BENTONVILLE MUNI THA (36.35°; -94.22°)
ASHRAE 2% HIGH	36°C (96.8°F), SOURCE: BENTONVILLE MUNI THA (36.35°; -94.22°)

MODULES

REF.	QTY.	MAKE AND MODEL	PMAX	PTC	ISC	IMP	VOC	VMP	TEMP. COEFF. OF VOC	FUSE RATING
P1-22	22	SILFAB SLA290M	290W	261.1W	9.54A	8.97A	39.6V	32.4V	-0.119V/°C (-0.3%/°C)	15A

POWER OPTIMIZERS

REF.	QTY.	MODEL	RATED INPUT POWER	MAX OUTPUT CURRENT	MAX INPUT ISC	MAX DC VOLTAGE	WEIGHTED EFFICIENCY
PO1-22	22	SOLAR EDGE P320	320W	15A	11A	48V	98.8%

INVERTERS

REF.	QTY.	MAKE AND MODEL	AC VOLTAGE	GROUND	OCPD RATING	RATED POWER	MAX OUTPUT CURRENT	MAX INPUT CURRENT	MAX INPUT VOLTAGE	CEC WEIGHTED EFFICIENCY
I1	1	SOLAR EDGE SE5000H-US (240V)	240V	FLOATING	30A	5000W	21A	13.5A	480V	99.0%

DISCONNECTS

REF.	QTY.	MAKE AND MODEL	RATED CURRENT	MAX RATED VOLTAGE
SW1	1	SQUARE D D222NRB OR EQUIV.	60A	240VAC

OCPDS

REF.	QTY.	RATED CURRENT	MAX VOLTAGE
CB1	1	30A	240VAC
F1-2	1	30A	240VAC

BILL OF MATERIALS

CATEGORY	MAKE	MODEL NUMBER	REF	QTY	UNIT	QTY/UNIT	DESCRIPTION
MODULE	SILFAB	SLA290M	PM1-22	22	PIECES	1	SILFAB SLA290M 290W 60 CELLS, MONOCRYSTALLINE SILICON
INVERTER	SOLAR EDGE	SE5000H-US (240V)	I1	1	PIECE	1	SOLAR EDGE SE5000H-US (240V) 5000W INVERTER
MODULE OPTIMIZER	SOLAR EDGE	P320	PO1-22	22	PIECES	1	SOLAR EDGE P320 OPTIMIZER (REQUIRED PART OF INVERTER'S DISTRIBUTED DC ARCHITECTURE)
DISCONNECT	SQUARE D	D222NRB	SW1	1	PIECE	1	SQUARE D D222NRB, 2-POLE, 60A, 240VAC OR EQUIVALENT
WIRING		GEN-10-AWG-PV-WIRE-CU	WR1	180	FEET	1	10 AWG PV WIRE, COPPER (POSITIVE AND NEGATIVE)
WIRING		GEN-6-AWG-BARE-CU	WR1	90	FEET	1	6 AWG BARE, COPPER (GROUND)
WIRING		GEN-10-AWG-THWN-2-CU-RD	WR2	40	FEET	1	10 AWG THWN-2, COPPER, RED (POSITIVE)
WIRING		GEN-10-AWG-THWN-2-CU-BLK	WR2	40	FEET	1	10 AWG THWN-2, COPPER, BLACK (NEGATIVE)
WIRING		GEN-10-AWG-THWN-2-CU-RD	WR3-4	20	FEET	1	10 AWG THWN-2, COPPER, RED (LINE 1)
WIRING		GEN-10-AWG-THWN-2-CU-BLK	WR3-4	20	FEET	1	10 AWG THWN-2, COPPER, BLACK (LINE 2)
WIRING		GEN-10-AWG-THWN-2-CU-WH	WR3-4	20	FEET	1	10 AWG THWN-2, COPPER, WHITE (NEUTRAL)
WIRING		GEN-10-AWG-THWN-2-CU-GR	WR2-4	60	FEET	1	10 AWG THWN-2, COPPER, GREEN (GROUND)
WIREWAY		GEN-EMT-0,75" DIA	WW2-4	40	FEET	1	EMT CONDUIT, 0.75" DIA
OCPD	GENERIC MANUFACTURER	GEN-CB-30A-240VAC	CB1	1	PIECE	1	CIRCUIT BREAKER, 30A, 240VAC
OCPD	GENERIC MANUFACTURER	GEN-FU-30A-240VAC	F1-2	2	PIECE	1	FUSE, 30A, TYPE R 240VAC
TRANSITION BOX	SOLADECK	0783-3R-4ER6	JB1	1	PIECE	1	SOLADECK: 4 INPUTS OR EQUIVALENT
RACKING	IRONRIDGE	XR-10-168A		12	EACH	1	XR10, RAIL 168" (14 FEET) CLEAR
RACKING	IRONRIDGE	XR-10-SPLC-BD		2	EACH	1	KIT, XR10 BONDED SPLICE
RACKING	IRONRIDGE	UFO-CL-001		14	EACH	1	KIT, 4PCS, UNIVERSAL MODULE CLAMP
RACKING	IRONRIDGE	GD-LUG-003		5	EACH	1	KIT, 2PCS, GROUNDING LUG, LOW PROFILE
RACKING	IRONRIDGE	UFO-STP-38MM		3	EACH	1	KIT, 4PCS, STOPPER SLEEVE, 38MM, CLEAR
ATTACHMENTS	ECOFASTEN SOLAR	GF1		46	PIECES	1	ECOFASTEN SOLAR GF-1 FLASHING
ATTACHMENTS	ECOFASTEN SOLAR	L-102-3		46	PIECES	1	ECOFASTEN SOLAR L-102-3 BRACKET OR EQUIVALENT
ATTACHMENTS	ECOFASTEN SOLAR	EPDM 304-18.8		46	PIECES	1	ECOFASTEN SOLAR 5/16" EPDM BONDED 304-18.8 SS WASHER
ATTACHMENTS	ECOFASTEN SOLAR	LB		46	PIECES	1	ECOFASTEN SOLAR LAG BOLT 5/16"

SUN SOLAR

CONTRACTOR

SUN SOLAR, LLC

PHONE: 417-413-1786

ADDRESS: 1900 WEST SUNSET, C-120
SPRINGFIELD,MO 65807

LIC. NO.:
HIC. NO.:
ELE. NO.:

NEW PV SYSTEM: 6.380 kWp

BERRY RESIDENCE

1050 SANFLOWER ST,
CENTERTON, AR 72719
APN: 0601295000

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

DESIGN TABLES

DATE: 03.20.2018

DESIGN BY: A.I.

CHECKED BY: M.M.

REVISIONS

E-602.00

(SHEET 7)

! WARNING !
ELECTRIC SHOCK HAZARD.
THE DC CONDUCTORS OF THIS
PHOTOVOLTAIC SYSTEM ARE UNGROUNDED
AND MAY BE ENERGIZED.

PLACARD 3
AT EACH JUNCTION, COMBINER, DISCONNECT AND DEVICE WHERE ENERGIZED UNGROUNDED CONDUCTORS MAY BE EXPOSED DURING SERVICE
[NEC 690.35(F)]

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

LABEL 2
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT
[NEC 690.17]

OPERATING CURRENT: 13.50 A DC
OPERATING VOLTAGE: 380 V DC
MAX SHORT CURRENT: 30 A DC
MAX VOLTAGE: 480 V DC

LABEL 3
AT EACH DC DISCONNECTING MEANS
[NEC 690.53]

PHOTOVOLTAIC AC DISCONNECT
OPERATING CURRENT: 21 A AC
OPERATING VOLTAGE: 240 V AC

LABEL 4
AT POINT OF INTERCONNECTION, MARKED AT DISCONNECTING MEANS
[NEC 690.54]

! WARNING !
DUAL POWER SOURCES.
SECOND SOURCE IS PV SYSTEM

LABEL 5

! CAUTION !
PHOTOVOLTAIC SYSTEM
CIRCUIT IS BACKFED

LABEL 6

INTERACTIVE PHOTOVOLTAIC SYSTEM
CONNECTED
PHOTOVOLTAIC SYSTEM DISCONNECT LOCATED
EAST SIDE OF THE HOUSE

PLAQUE

AT POINT OF INTERCONNECTION; LABEL, SUCH AS LABEL 5 OR LABEL 6 MUST IDENTIFY PHOTOVOLTAIC SYSTEM
[NEC 705.12(D)(4)]

DIRECTORY
PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF NOT IN THE SAME LOCATION
[NEC 690.56(B)]
WHERE THE INVERTERS ARE REMOTELY LOCATED FROM EACH OTHER, A DIRECTORY IN ACCORDANCE WITH 705.10 SHALL BE INSTALLED AT EACH DC PV SYSTEM DISCONNECTING MEANS, AT EACH AC DISCONNECTING MEANS, AND AT THE MAIN SERVICE DISCONNECTING MEANS SHOWING THE LOCATION OF ALL AC AND DC PV SYSTEM DISCONNECTING MEANS IN THE BUILDING.
[NEC 690.4(H)]

INTERACTIVE PHOTOVOLTAIC SYSTEM
CONNECTED

LABEL 7
AT UTILITY METER
[NEC 690.56(B)]

PHOTOVOLTAIC DC DISCONNECT

LABEL 8
AT EACH DC DISCONNECTING MEANS
[NEC 690.13(B)]

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

LABEL 9
AT RAPID SHUTDOWN SWITCH
[NEC 690.56(B)].
LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE
[IFC 605.11.1.1]

WARNING: PHOTOVOLTAIC
POWER SOURCE

LABEL 10
AT EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS; SPACED AT MAXIMUM 10 FT SECTION OR WHERE SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.
[NEC 690.31(G)]
LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE
[IFC 605.11.1.1]

PHOTOVOLTAIC AC DISCONNECT

LABEL 11
AT EACH AC DISCONNECTING MEANS
[NEC 690.13(B)]

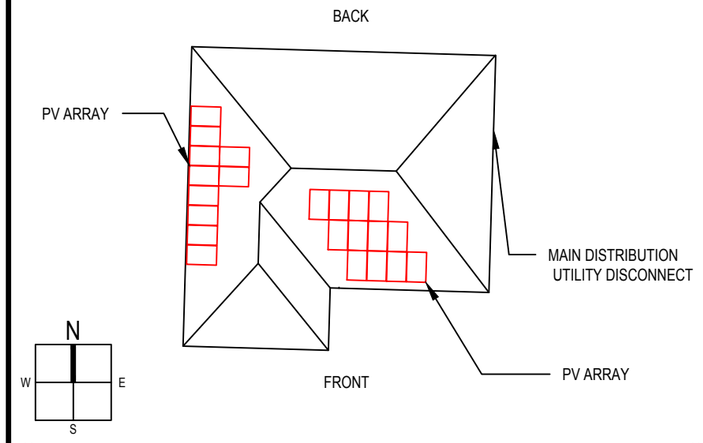
! WARNING !
INVERTER OUTPUT CONNECTION.
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

LABEL 12
AT POINT OF INTERCONNECTION
OVERCURRENT DEVICE
[NEC 705.12(D)(7)]

LABELING NOTES
1.1 LABELING REQUIREMENTS BASED ON THE 2014 NATIONAL ELECTRICAL CODE, INTERNATIONAL FIRE CODE 605.11, OSHA STANDARD 1910.145, ANSI Z535
1.2 MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
1.3 LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
1.4 LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.
1.5 ALERTING WORDS TO BE COLOR CODED. "DANGER" WILL HAVE RED BACKGROUND; "WARNING" WILL HAVE ORANGE BACKGROUND; "CAUTION" WILL HAVE YELLOW BACKGROUND. [ANSI Z535]

!CAUTION!

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM ROOF MOUNTED SOLAR ARRAYS WITH SAFETY DISCONNECTS AS SHOWN:



SUN SOLAR

CONTRACTOR

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ADDRESS: 1900 WEST SUNSET, C-120
SPRINGFIELD,MO 65807

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NEW PV SYSTEM: 6.380 kWp

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CENTERTON, AR 72719
APN: 0601295000

ENGINEER OF RECORD

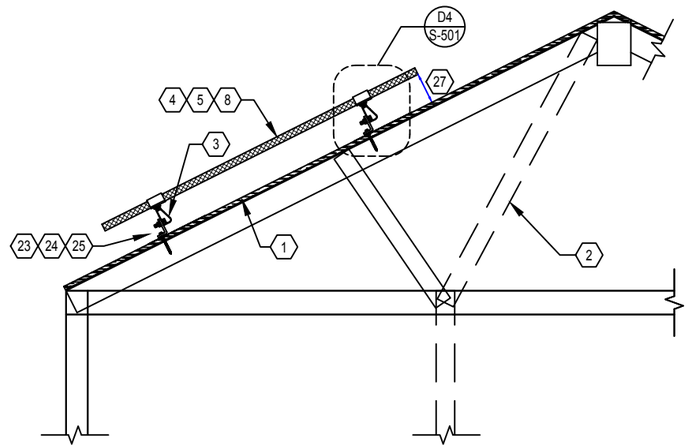
PAPER SIZE: 11" x 17" (ANSI B)

PLACARDS

DATE: 03.20.2018
DESIGN BY: A.I.
CHECKED BY: M.M.

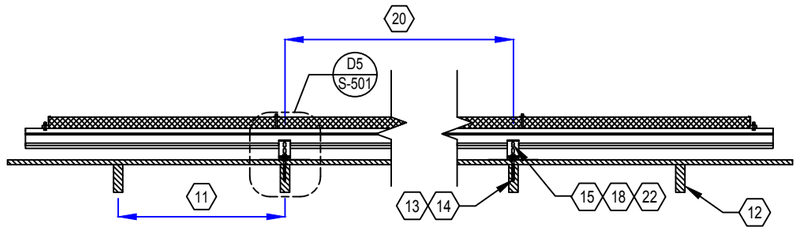
REVISIONS

E-603.00
(SHEET 8)



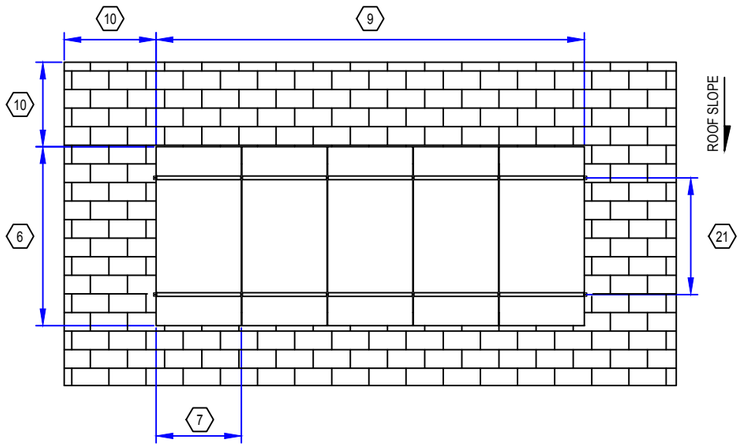
D1 RACKING DETAIL (TRANSVERSE)

NOT TO SCALE



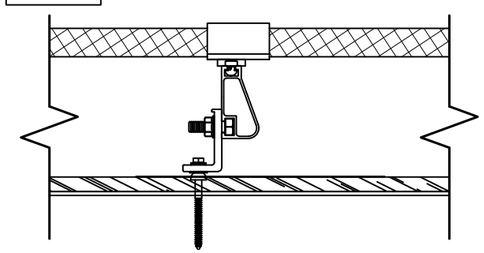
D2 RACKING DETAIL (LONGITUDINAL)

NOT TO SCALE



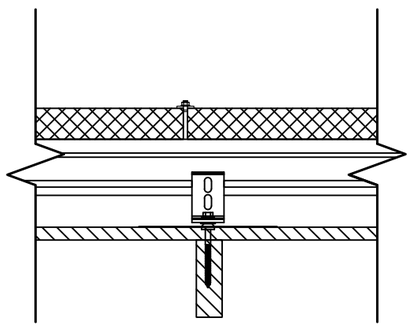
D3 RACKING DETAIL (TOP)

NOT TO SCALE



D4 DETAIL (TRANSVERSE)

NOT TO SCALE



D5 DETAIL (LONGITUDINAL)

NOT TO SCALE

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS

SHEET KEYNOTES

1. ROOF MATERIAL: ASPHALT SHINGLE
2. ROOF STRUCTURE: TRUSS
3. ATTACHMENT TYPE: ECOFASTEN GF1
4. MODULE MANUFACTURER: SILFAB
5. MODULE MODEL: SLA-290M
6. MODULE LENGTH: 64.96"
7. MODULE WIDTH: 38.98"
8. MODULE WEIGHT: 41.89 LBS.
9. SEE SHEET A-103 FOR DIMENSION(S)
10. MIN. FIRE OFFSET: 3' FROM RIDGE/RAKE, 18" FROM HIPS/VALLEYS
11. TRUSS SPACING: 24 IN. O.C.
12. TRUSS SIZE: 2X4 NOMINAL
13. LAG BOLT DIAMETER: 5/16 IN.
14. LAG BOLT EMBEDMENT: 2 IN.
15. TOTAL # OF ATTACHMENTS: 46
16. TOTAL AREA: 386.85 SQ. FT.
17. TOTAL WEIGHT: 1014.70 LBS.
18. WEIGHT PER ATTACHMENT: 22.06 LBS.
19. DISTRIBUTED LOAD: 2.62 PSF.
20. MAX. HORIZONTAL STANDOFF: 48 IN.
21. MAX. VERTICAL STANDOFF: LANDSCAPE: 26 IN., PORTRAIT: 33 IN.
22. STANDOFF STAGGERING: YES
23. RAIL MANUFACTURER (OR EQUIV.): IRONRIDGE
24. RAIL MODEL (OR EQUIVALENT): XR10
25. RAIL WEIGHT: 0.436 PLF.
26. MAX. TRUSS SPAN: 9 FT.
27. MODULE CLEARANCE: 3 IN. MIN., 6 IN. MAX.

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CENTERTON, AR 72719
APN: 0601295000

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

ASSEMBLY DETAILS

DATE: 03.20.2018

DESIGN BY: A.I.

CHECKED BY: M.M.

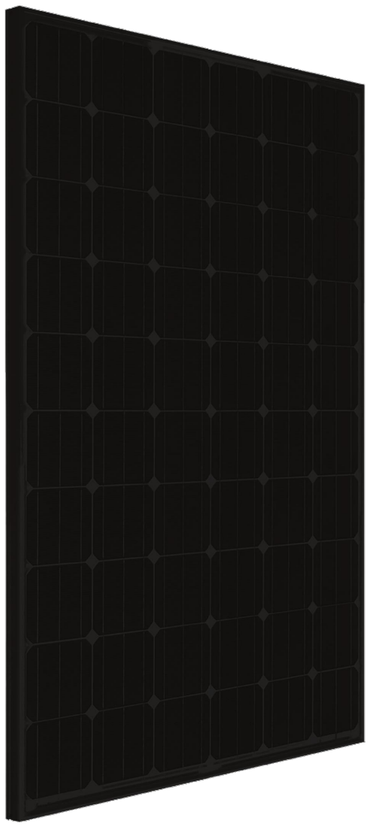
REVISIONS

S-501.00

(SHEET 9)

Technical Datasheet

SILFAB
SLA-M 280/285/290/295/300



The Silfab SLA-M 60-cell monocrystalline module series is the result of the experience of the Silfab technical team, specialized in the entire photovoltaic value chain, with modules produced and operating for over 33 years.

The SLA-M modules are ideal for ground-mount, roof-top and solar tracking installations where maximum power density is preferred.

Maximum Efficiency
60 of the highest efficiency, best quality monocrystalline cells result in a maximum power rating of up to 300 Wp.

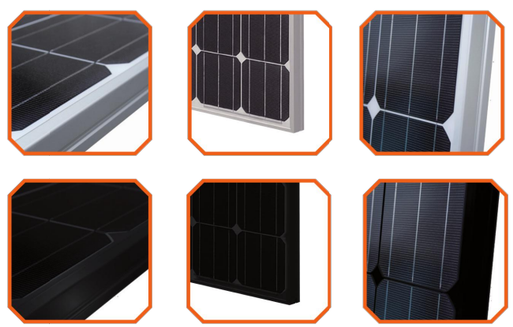
Positive Tolerance
(-0/+5W) module sorting achieves the maximum electrical performance of the PV system.

Industry Experts
Silfab's technical team has specialized experience in the entire photovoltaic value chain, with modules produced and operating for over 33 years.

Highest Automation
Strict quality controls during each step at one of the world's most automated module production facilities.

Increased Quality
Top quality materials and 100% EL testing guarantee a trustworthy 25-year performance warranty.

Reduced Weight
Engineered to accommodate low load bearing structures while maintaining highly durable mechanical characteristics including a maximum loading of 5400 Pa.



Available in Black

Electrical Specifications - Standard Test Conditions		SLA280M	SLA285M	SLA290M	SLA295M	SLA300M
Module Power (Pmax)	Wp	280	285	290	295	300
Maximum power voltage (Vpmax)	V	31.7	32.0	32.4	32.7	32.9
Maximum power current (Ipmax)	A	8.83	8.91	8.97	9.04	9.26
Open circuit voltage (Voc)	V	38.7	39.1	39.6	40	40.53
Short circuit current (Isc)	A	9.40	9.47	9.54	9.61	9.76
Module efficiency	%	17.1	17.4	17.8	18.06	18.8
Maximum system voltage (VDC)	V			1000		
Series fuse rating	A			15		
Power tolerance	Wp			-0/+5		

Measurement conditions: STC 1000 W/m² • AM 1.5 • Temperature 25 °C • Measurement uncertainty ≤ 3% • Sun simulator calibration reference modules from Fraunhofer Institute.
Electrical characteristics may vary by ±5% and power by -0/+5W.

Temperature Ratings		SILFAB SLA Mono
Temperature Coefficient Isc	%/K	0.03
Temperature Coefficient Voc	%/K	-0.30
Temperature Coefficient Pmax	%/K	-0.38
NOCT (± 2°C)	°C	45
Operating temperature	°C	-40/+85

Mechanical Properties and Components		SILFAB SLA Mono
Module weight (± 1 kg)	kg	19
Dimensions (H x L x D; ± 1mm)	mm	1650 x 990 x 38
Maximum surface load (wind/snow)*	N/m²	5400
Hail impact resistance		ø 25 mm at 83 km/h
Cells		60 - Si monocrystalline - 3 or 4 busbar - 156 x 156 mm
Glass		3.2 mm high transmittance, tempered, antireflective coating
Encapsulant		PID-resistant EVA
Backsheet		Multilayer polyester-based
Frame		Anodized Al
Junction Box		3 diodes-45V/12A, IP67
Cables and connectors*		1200 mm ø 5.7 mm (4 mm²), gzx connector, MC4 comparable

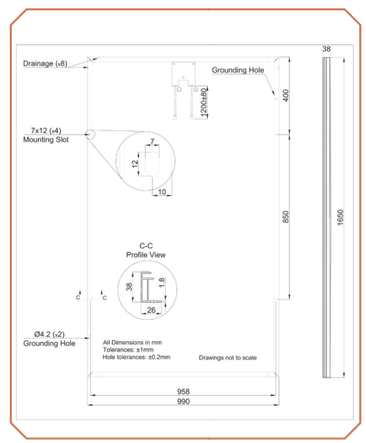
* See installation manual

Warranties	SILFAB SLA Mono
Module product warranty	12 years
	25 years
Linear power performance guarantee	≥ 97% end of 1st year ≥ 90% end of 12th year ≥ 82% end of 25th year

Certifications	SILFAB SLA Mono
Product	ULC ORD C1703, UL 1703, IEC 61215, IEC 61730, CEC listed
Factory	UL Fire Rating: Type 2 (Type 1 on request)
	ISO 9001:2008

Caution: Read the safety and installation manual before using this product.

Third-party generated pan files from PV Evolution Labs are available for 280M, 285M, 290M, 295M and 300M.



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info@silfab.ca • www.silfab.ca

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RESOURCE DOCUMENT

DATE: 03.20.2018
DESIGN BY: A.I.
CHECKED BY: M.M.

REVISIONS

R-001.00
(SHEET 10)

solaredge

SolarEdge Single Phase Inverters

for North America

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

INVERTERS

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Integrated arc fault protection for NEC 2011 690.11 and integrated rapid shutdown for NEC 2014 690.12
- Extremely small
- High reliability without any electrolytic capacitors
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

HD wave

USA-CANADA-GERMANY-ITALY-FRANCE-JAPAN-CHINA-AUSTRALIA-THE NETHERLANDS-UK-ISRAEL-TURKEY-SOUTH AFRICA-BULGARIA www.solaredge.us

solaredge

Single Phase Inverters for North America

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

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	
OUTPUT						
Rated AC Power Output	3000	3800	5000	6000	7600	VA
Max. AC Power Output	3000	3800	5000	6000	7600	VA
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	-	✓	-	-	Vac
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	Vac
AC Frequency (Nominal)			59.3 - 60 - 60.5[1]			Hz
Maximum Continuous Output Current 208V	-	-	24	-	-	A
Maximum Continuous Output Current 240V	12.5	16	21	25	32	A
GFDI Threshold			1			A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds			Yes			
INPUT						
Maximum DC Power	4650	5900	7750	9300	11800	W
Transformer-less, Ungrounded			Yes			
Maximum Input Voltage			480			Vdc
Nominal DC Input Voltage		380			400	Vdc
Maximum Input Current 208V	-	-	15.5	-	-	Adc
Maximum Input Current 240V	8.5	10.5	13.5	16.5	20	Adc
Max. Input Short Circuit Current			45			Adc
Reverse-Polarity Protection			Yes			
Ground-Fault Isolation Detection			600kΩ Sensitivity			
Maximum Inverter Efficiency	99		99.2			%
CEC Weighted Efficiency			99			%
Nighttime Power Consumption			< 2.5			W
SELF-SUSTAINING POWER OUTLET (OPTIONAL)						
Nominal Output Voltage			120			V
Maximum Output Power			1500[2]			W
External Outlet with GFDI			Yes			
ADDITIONAL FEATURES						
Supported Communication Interfaces			RS485, Ethernet, ZigBee (optional), Cellular (optional)			
Revenue Grade Data, ANSI C12.20			Optional[3]			
Rapid Shutdown - NEC 2014 690.12			Automatic Rapid Shutdown upon AC Grid Disconnect			
STANDARD COMPLIANCE						
Safety			UL1741, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07			
Grid Connection Standards			IEEE1547, Rule 21, Rule14 (HI)			
Emissions			FCC Part 15 Class B			
INSTALLATION SPECIFICATIONS						
AC Output Conduit Size / AWG Range			0.75-1" Conduit / 14-6 AWG			
DC Input Conduit Size / # of Strings / AWG Range			0.75-1" Conduit /1-2 strings / 14-6 AWG			
Dimensions with Safety Switch (HxWxD)			17.7 x 14.6 x 6.8 / 450 x 370 x 174			in / mm
Weight with Safety Switch			25.3 / 11.5			lb / kg
Noise			< 25			dBA
Cooling			Natural Convection			
Operating Temperature Range			-13 to +140 / -25 to +60[4] (-40°F / -40°C option)[5]			°F / °C
Protection Rating			NEMA 3R (Inverter with Safety Switch)			

(1) For other regional settings please contact SolarEdge support
(2) Depends on PV availability
(3) Revenue grade inverter P/N: SExxxxH-US000NNC2
(4) Power de-rating from 50°C
(5) -40 version P/N: SExxxxH-US000NNU4

SUNSPEC ALLIANCE **RoHS**

SUN SOLAR

CONTRACTOR

SUN SOLAR, LLC

PHONE: 417-413-1786
ADDRESS: 1900 WEST SUNSET, C-120 SPRINGFIELD,MO 65807

LIC. NO.:
HIC. NO.:
ELE. NO.:

NEW PV SYSTEM: 6.380 kWp

BERRY RESIDENCE

1050 SANFLOWER ST,
CENTERTON, AR 72719
APN: 0601295000

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

RESOURCE DOCUMENT

DATE: 03.20.2018
DESIGN BY: A.I.
CHECKED BY: M.M.

REVISIONS

R-002.00

(SHEET 11)

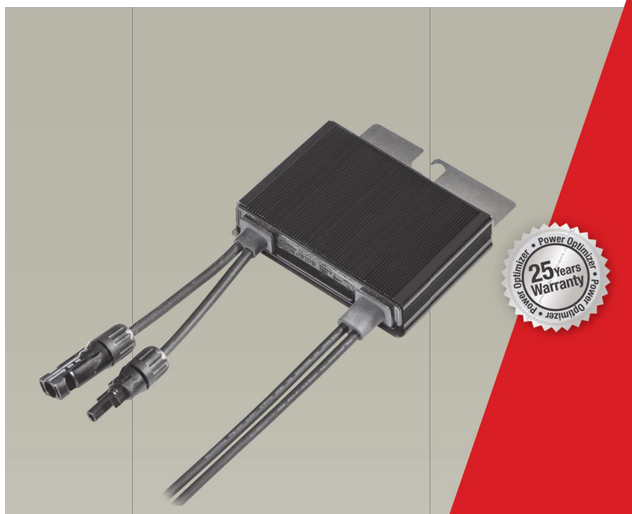
solaredge

SolarEdge Power Optimizer

Module Add-On For North America

P300 / P320 / P370 / P400 / P405

POWER OPTIMIZER



PV power optimization at the module-level

- 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
- Module-level voltage shutdown for installer and firefighter safety

USA - CANADA - GERMANY - ITALY - FRANCE - JAPAN - CHINA - AUSTRALIA - THE NETHERLANDS - UK - ISRAEL - TURKEY - SOUTH AFRICA - BULGARIA - INDIA www.solaredge.us

solaredge

SolarEdge Power Optimizer

Module Add-On for North America

P300 / P320 / P370 / P400 / P405

	P300 (for 60-cell modules)	P320 (for high-power 60-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P405 (for thin film modules)	
INPUT						
Rated Input DC Power[1]	300	320	370	400	405	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	125	Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	12.5 - 105	Vdc
Maximum Short Circuit Current (Isc)	10	11		10.1		Adc
Maximum DC Input Current	12.5	13.75		12.63		Adc
Maximum Efficiency			99.5			%
Weighted Efficiency			98.8			%
Overvoltage Category			II			
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)						
Maximum Output Current	15					Adc
Maximum Output Voltage	60				85	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)						
Safety Output Voltage per Power Optimizer	1					Vdc
STANDARD COMPLIANCE						
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3					
Safety	IEC62109-1 (class II safety), UL1741					
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)	128 x 152 x 27.5 / 5 x 5.97 x 1.08			128 x 152 x 35 / 5 x 5.97 x 1.37	128 x 152 x 50 / 5 x 5.97 x 1.96	mm / in
Weight (including cables)	630 / 1.4			750 / 1.7	845 / 1.9	gr / lb
Input Connector	MC4 Compatible		MC4 / Amphenol AH4	MC4 Compatible		
Output Wire Type / Connector	Double Insulated; MC4 Compatible		Double Insulated; MC4 / Amphenol AH4	Double Insulated; MC4 Compatible		
Output Wire Length	0.95 / 3.0		1.2 / 3.9			m / ft
Operating Temperature Range	-40 - +85 / -40 - +185					˚C / ˚F
Protection Rating	IP68 / NEMA6P					
Relative Humidity	0 - 100					%

[1] Rated STC power of the module. Module of up to +5% power tolerance allowed.

PV SYSTEM DESIGN USING A SOLAREDGE INVERTER[2][3]	SINGLE PHASE HD-WAVE	SINGLE PHASE	THREE PHASE 208V	THREE PHASE 480V	
Minimum String Length (Power Optimizers)	8		10	18	
Maximum String Length (Power Optimizers)	25		25	50	
Maximum Power per String	5700 (6000 with SE7600H-US)	5250	6000	12750	W
Parallel Strings of Different Lengths or Orientations	Yes				

[2] For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf.
[3] It is not allowed to mix P405 with P300/P370/P400/P600/P700 in one string.

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R-003.00
(SHEET 12)

Tech Brief

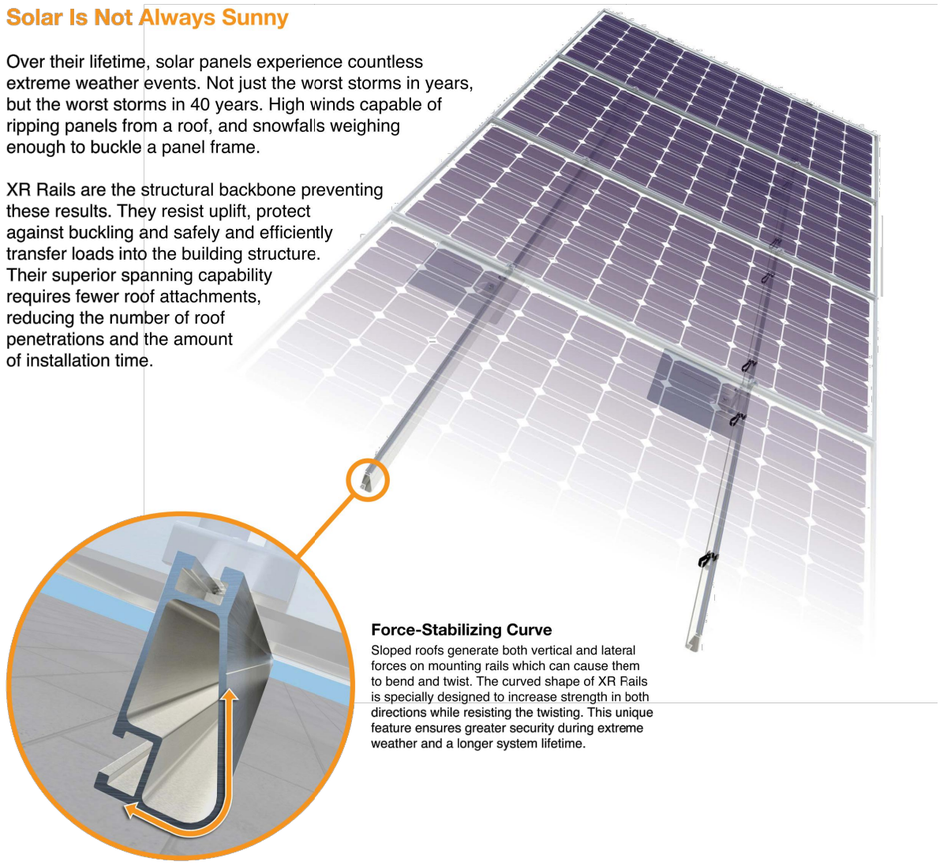
IRONRIDGE

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 marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

Tech Brief

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 6 foot spans, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear 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 8 feet.

- 8' 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 12 feet or more for commercial applications.

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

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	100	XR10		XR100		XR1000	
	120						
	140						
	160						
10-20	100						
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
80-90	160						

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REVISIONS

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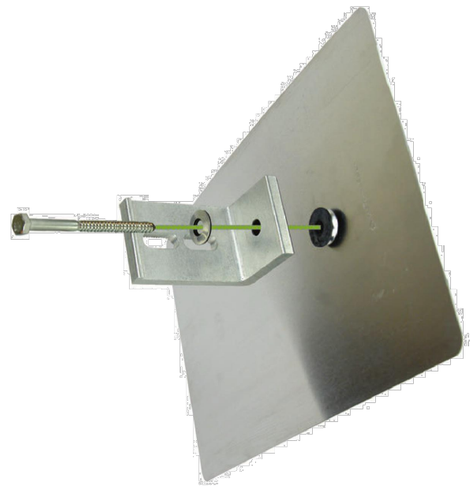
(SHEET 13)

GreenFasten™ GF1 PRODUCT GUIDE



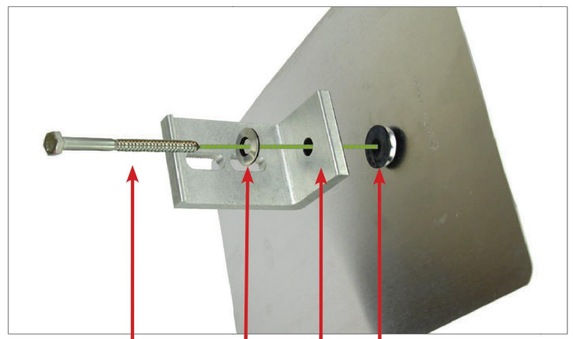
EcoFasten Solar®

Exploded Product View, Bill of Materials

Materials Needed for Assembly

Item No.	Description of Material/Part	Quantity
1	GF-1 Flashing	1
2	L-102-3" Bracket * (other options available)	1
3	5/16" EPDM Bonded 304-18.8 SS Washer	1
4	Lag Bolt 5/16"	1

Required Tools



STEEP-SLOPE APPLICATIONS

EcoFasten Solar®

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(SHEET 14)

Product Data Sheet

D222NRB

Safety Switch , 60A, Fusible, Cartridge (Class H, K or R), 2-Pole

SQUARE D by Schneider Electric

List Price $326.00 USD

Availability **Stock Item: This item is normally stocked in our distribution facility.**

Technical Characteristics

Terminal Type	Lugs
Type of Duty	General Duty
Maximum Voltage Rating	240VAC
Wire Size	#10 to #2 AWG(Al) - #14 to #2 AWG(Cu)
Depth	4.83 Inches
Height	14.88 Inches
Width	6.63 Inches
Action	Single Throw
Ampere Rating	60A
Approvals	UL Listed File: E2875
Enclosure Rating	NEMA 3R
Enclosure Type	Rainproof and Sleet/Ice proof (Indoor/Outdoor)
Enclosure Material	Galvannealed Steel
Factory Installed Neutral	Yes
Fuse Type	Cartridge (Class H, K or R)
Disconnect Type	Fusible
Short Circuit Current Rating	100kA (max. depending on fuse type)
Mounting Type	Surface
Number of Poles	2-Pole

Shipping and Ordering

Category	00106 - Safety Switch, General Duty, 30 - 200 Amp, NEMA3R
Discount Schedule	DE1A
GTIN	00785901460640
Package Quantity	1
Weight	8.35 lbs.
Availability Code	Stock Item: This item is normally stocked in our distribution facility.
Returnability	Y
Country of Origin	US

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.

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Schneider Electric

SUN SOLAR

CONTRACTOR

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(SHEET 15)