

SHOP / WAREHOUSE PAGE

PROJECT COORDINATOR



INSTALLERS



CONTRACTOR

SUN SOLAR, LLC

ADDRESS: 2531 N PATTERSON AVE
SPRINGFIELD, MO 65803
PHONE: 417-413-1786

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DAMAGES AND PROSECUTIONS.

NEW PV SYSTEM: 99.62 kW

MIDWEST KARTING LLC
COMMERCIAL

2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO. 64064

PROJECT # 1866

ENGINEER OF RECORD
BILLY R.
ARTHUR
NUMBER
PE-017508

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS



CONTRACTOR

SUN SOLAR, LLC

ADDRESS: 2531 N PATTERSON AVE
SPRINGFIELD, MO 65803

PHONE: 417-413-1786

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NEW PV SYSTEM: 99.62 kW
MIDWEST KARTING LLC
COMMERCIAL

2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO. 64064

PROJECT #: 8063

ENGINEER OF RECORD
BILLY R. ARTHUR
NUMBER
PE-017508

COVER PAGE

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

T-001.00

GENERAL NOTES

- 1.1.1 PROJECT NOTES:
- 1.1.2 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
- 1.1.3 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION
- 1.1.4 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC 690.4: PV MODULES: UL1703, IEC61730, AND IEC61215, AND NFPA 70 CLASS C FIRE INVERTERS: UL 1741 CERTIFIED, IEEE 1547, 929, 519 COMBINER BOX(ES): UL 1703 OR UL 1741 ACCESSORY
- 1.1.5 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.
- 1.1.6 ALL INVERTERS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D), SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3].
- 1.1.7 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.
- 1.2.1 SCOPE OF WORK:
- 1.2.2 PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE EXTERIOR ROOF-MOUNTED PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT.
- 1.3.1 WORK INCLUDES:
- 1.3.2 PV ROOF ATTACHMENTS
- 1.3.3 PV RACKING SYSTEM INSTALLATION
- 1.3.4 PV MODULE AND INVERTER INSTALLATION
- 1.3.5 PV EQUIPMENT GROUNDING
- 1.3.6 PV SYSTEM WIRING TO A ROOF-MOUNTED JUNCTION BOX
- 1.3.7 PV LOAD CENTERS (IF INCLUDED)
- 1.3.8 PV METERING/MONITORING (IF INCLUDED)
- 1.3.9 PV DISCONNECTS
- 1.3.10 PV FINAL COMMISSIONING
- 1.3.11 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV
- 1.3.12 SIGNAGE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE

SPECIAL NOTE:

SCOPE OF WORK
SYSTEM SIZE:

(229x) SUNPOWER E-SERIES COMMERCIAL PANELS 435W
(2x) SMA STP 50-US-41 (480V)

ATTACHMENT TYPE:
RACKING TYPE:

STC: 229 x 435W=99.62 kW
DYNORAXX EVOLUTION FR
DYNORAXX EVOLUTION FR

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COMMERCIAL

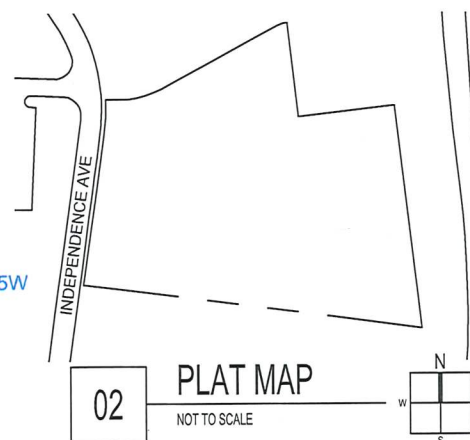
2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO. 64064
PROJECT #: 8063



01

AERIAL PHOTO

NOT TO SCALE



02

PLAT MAP

NOT TO SCALE

PROJECT INFORMATION

OWNER: DEBBIE HILL
PHONE: (816)868-6025
E MAIL: debbie.hill@midwestkarting.com
PROJECT #: 8063

PROJECT MANAGER/INSTALLER
NAME: SUN SOLAR PROJECT TEAM
PHONE: (417) 413-1786

DESIGNER: MEGAN EVANS

AUTHORITIES HAVING JURISDICTION
BUILDING: LEE'S SUMMIT, MO.
ZONING: LEE'S SUMMIT, MO.
UTILITY: EVERGY
ACCT. #: 9737337540

DESIGN SPECIFICATIONS

OCCUPANCY: II
CONSTRUCTION: COMMERCIAL
ZONING: COMMERCIAL
GROUND SNOW LOAD: 20 PSF
WIND EXPOSURE: B
WIND SPEED: 120 MPH

APPLICABLE CODES & STANDARDS

BUILDING: IBC 2018
ELECTRICAL: NEC 2017
FIRE: IFC 2018

	A	B	C	D	E	F	G	H
1	2.1.1	SITE NOTES: A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS. THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES. THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION NEC 110.26. ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE BUILDING OR STRUCTURE.	2.4.9	THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A	2.7.5	PV WIRE BLACK WIRE MAY BE FIELD-MARKED WHITE [NEC 200.6 (A)(6)].		
	2.1.2			GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO NEC 250, NEC 690.47 AND AHJ.	2.7.6	MODULE WIRING SHALL BE LOCATED AND SECURED UNDER THE ARRAY.		
	2.1.3			2.4.10	DC PV ARRAYS SHALL BE PROVIDED WITH DC GROUND-FAULT PROTECTION MEETING THE REQUIREMENTS OF 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS	2.7.7	ACCORDING TO NEC 200.7, UNGROUNDED SYSTEMS DC CONDUCTORS COLORED OR MARKED AS FOLLOWS:	
	2.1.4						DC POSITIVE- RED, OR OTHER COLOR EXCLUDING WHITE, GREY AND GREEN	
	2.1.5			2.5.1	INTERCONNECTION NOTES:		DC NEGATIVE- BLACK, OR OTHER COLOR EXCLUDING WHITE, GREY AND GREEN	
	2.1.6			2.5.2	LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12 (B)]	2.7.8	AC CONDUCTORS COLORED OR MARKED AS FOLLOWS:	
2	2.2.1	EQUIPMENT LOCATIONS ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26. WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A),(C) AND NEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C). JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34. ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT. ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES. ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.	2.5.3	THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC 705.12(B)(2)(3)].		PHASE A OR L1- BLACK		
	2.2.2			THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE		PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE		
	2.2.3			END OF THE BUS FROM THE UTILITY SOURCE OCPD [NEC 705.12(B)(2)(3)].		PHASE C OR L3- BLUE, YELLOW, ORANGE*, OR OTHER CONVENTION		
	2.2.4			AT MULTIPLE ELECTRIC POWER SOURCES OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVERCURRENT DEVICE MAY BE EXCLUDED ACCORDING TO NEC 705.12 (B)(2)(3)(C).		NEUTRAL- WHITE OR GREY		
	2.2.5			FEEDER TAP INTERCONNECTION (LOAD SIDE) ACCORDING TO NEC 705.12 (B)(2)(1)				
	2.2.6			SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42				
3	2.3.1	STRUCTURAL NOTES: RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAIL MANUFACTURER'S INSTRUCTIONS. JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS. ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR. ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER. WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.	2.5.8	BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)].		* IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [NEC 110.15].		
	2.3.2							
	2.3.3		2.6.1	DISCONNECTION AND OVER-CURRENT PROTECTION NOTES:				
	2.3.4		2.6.2	DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).				
	2.3.5		2.6.3	DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH.				
	2.3.6		2.6.4	BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED, THEREFORE BOTH MUST OPEN WHERE A DISCONNECT IS REQUIRED, ACCORDING TO NEC 690.13.				
4	2.4.1	GROUNDING NOTES: GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE. PV SYSTEMS REQUIRE AN EQUIPMENT GROUNDING CONDUCTOR. ALL METAL ELECTRICAL EQUIPMENT AND STRUCTURAL COMPONENTS BONDED TO GROUND, IN ACCORDANCE WITH 250.134 OR 250.136(A). ONLY THE DC CONDUCTORS ARE UNGROUNDED. PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122. METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURE CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A). EACH MODULE WILL BE GROUNDED USING WEBB GROUNDING CLIPS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. IF WEBBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURERS' 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. GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119]	2.6.5	ISOLATING DEVICES OR EQUIPMENT DISCONNECTING MEANS SHALL BE INSTALLED IN CIRCUITS CONNECTED TO EQUIPMENT AT A LOCATION WITHIN THE EQUIPMENT, OR WITHIN SIGHT AND WITHIN 10 FT OF THE EQUIPMENT. AN EQUIPMENT DISCONNECTING MEANS SHALL BE PERMITTED TO BE REMOTE FROM THE EQUIPMENT WHERE THE EQUIPMENT DISCONNECTING MEANS CAN BE REMOTELY OPERATED FROM WITHIN 10 FT OF THE EQUIPMENT, ACCORDING TO NEC 690.15 (A).				
	2.4.2		2.6.6	PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.12(A) THROUGH (D)				
	2.4.3		2.6.7	ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.				
	2.4.4		2.6.8	BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED, THEREFORE BOTH REQUIRE OVER-CURRENT PROTECTION, ACCORDING TO NEC 240.21. (SEE EXCEPTION IN NEC 690.9)				
	2.4.5		2.6.9	IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.				
	2.4.6		2.7.1	WIRING & CONDUIT NOTES:				
5	2.4.7	2.7.2	ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.					
	2.4.8		ALL CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.					
6			EXPOSED PV SOURCE CIRCUITS AND OUTPUT CIRCUITS SHALL USE WIRE LISTED AND IDENTIFIED AS PHOTOVOLTAIC (PV) WIRE [690.31 (C)]. PV MODULES WIRE LEADS SHALL BE LISTED FOR USE ON PV ARRAYS, ACCORDING TO NEC 690.31 (A).					



CONTRACTOR

SUN SOLAR, LLC

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NEW PV SYSTEM: 99.62 kW

MIDWEST KARTING LLC
COMMERCIAL

2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO. 64064



DATE: 3/27/23

DESIGN BY: M.EVANS

CHECKED BY: B.A.

REVISIONS

G-001.00

(SHEET 2)



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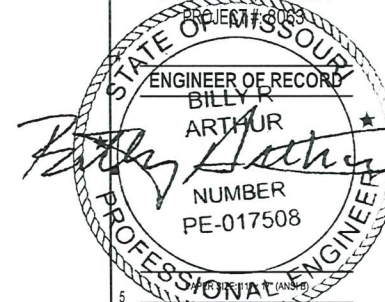
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2911 NE INDEPENDENCE AVE.
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PROJECT # 8083



SITE PLAN

DATE: 3/27/23

DESIGN BY: M. EVANS

CHECKED BY: B. A.

REVISIONS

A-101.00
(SHEET 3)

GENERAL NOTES

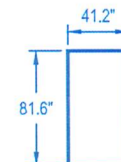
1. FIELD VERIFY ALL MEASUREMENTS

EQUIPMENT REPRESENTED BY (E) EXISTING
EQUIPMENT REPRESENTED BY (N) NEW

----- AREA OF WORK

----- PROPERTY LINE

IFC FIRE CLEARANCE



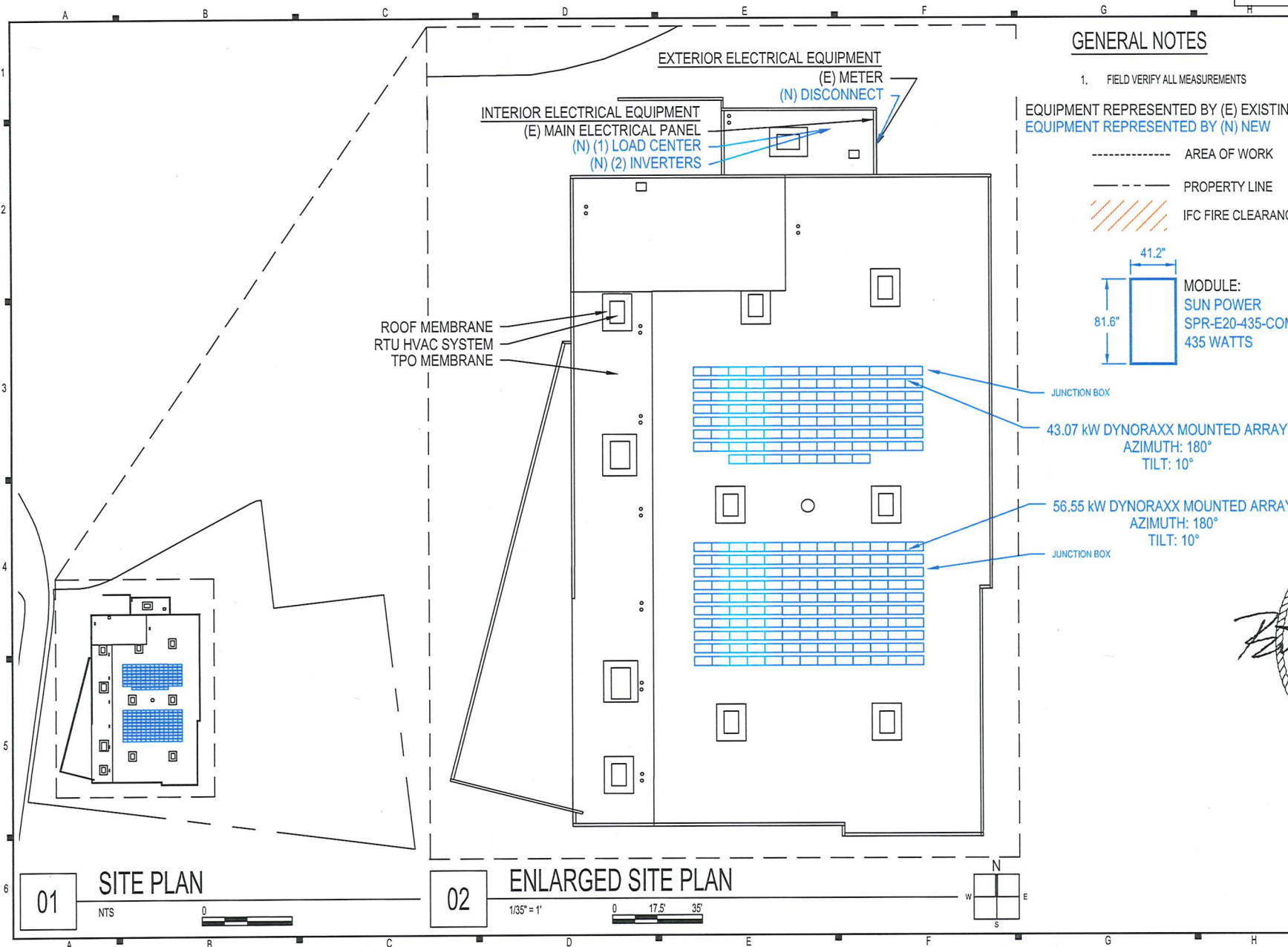
MODULE:
SUN POWER
SPR-E20-435-COM
435 WATTS

JUNCTION BOX

43.07 kW DYNORAXX MOUNTED ARRAY
AZIMUTH: 180°
TILT: 10°

56.55 kW DYNORAXX MOUNTED ARRAY
AZIMUTH: 180°
TILT: 10°

JUNCTION BOX



01 SITE PLAN

NTS



02 ENLARGED SITE PLAN

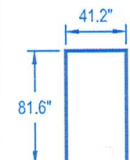
1/32" = 1'



GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS

--- PROPERTY LINE
--- MODULE STRINGING



MODULE:
SUN POWER
SPR-E20-435-COM
435 WATTS

EQUIPMENT REPRESENTED BY (E) EXISTING
EQUIPMENT REPRESENTED BY (N) NEW

EXTERIOR EAST WALL OF BUILDING

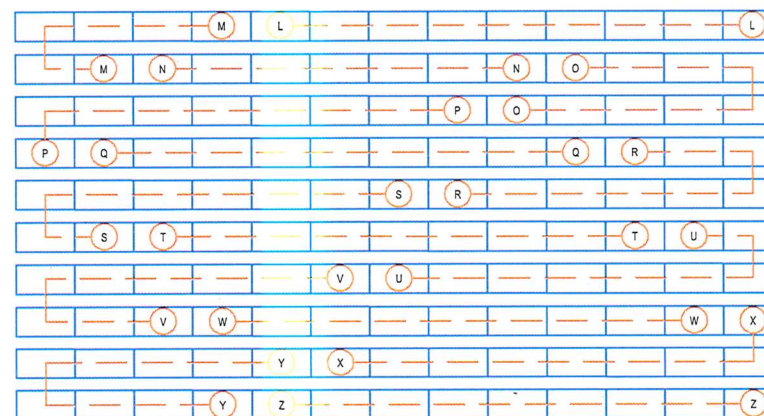
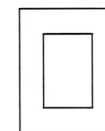
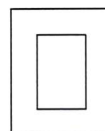
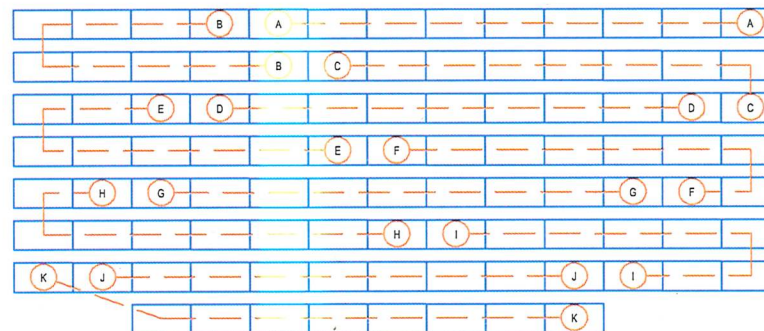
(E) METER
(N) AC DISCONNECT

INTERIOR EAST WALL OF BUILDING

(E) MAIN ELECTRICAL PANEL

INTERIOR MECHANICAL ROOM ON NORTH EAST SIDE OF BUILDING

(N) AC LOAD CENTER
(N) INVERTERS:
(1x) SMA STP 50-US-41 (480V)
12 STRINGS OF 9 MODULES
(1x) SMA STP 50-US-41 (480V)
1 STRING OF 6 MODULES
1 STRING OF 7 MODULES
12 STRINGS OF 9 MODULES



01

ENLARGED ELECTRICAL PLAN

1/14"=1'

0 7' 14'



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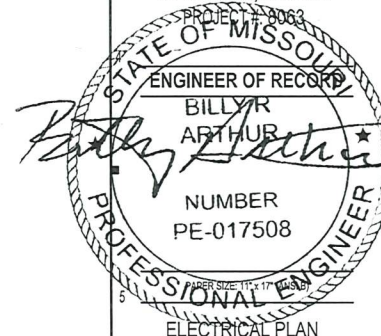
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ELECTRICAL PLAN

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

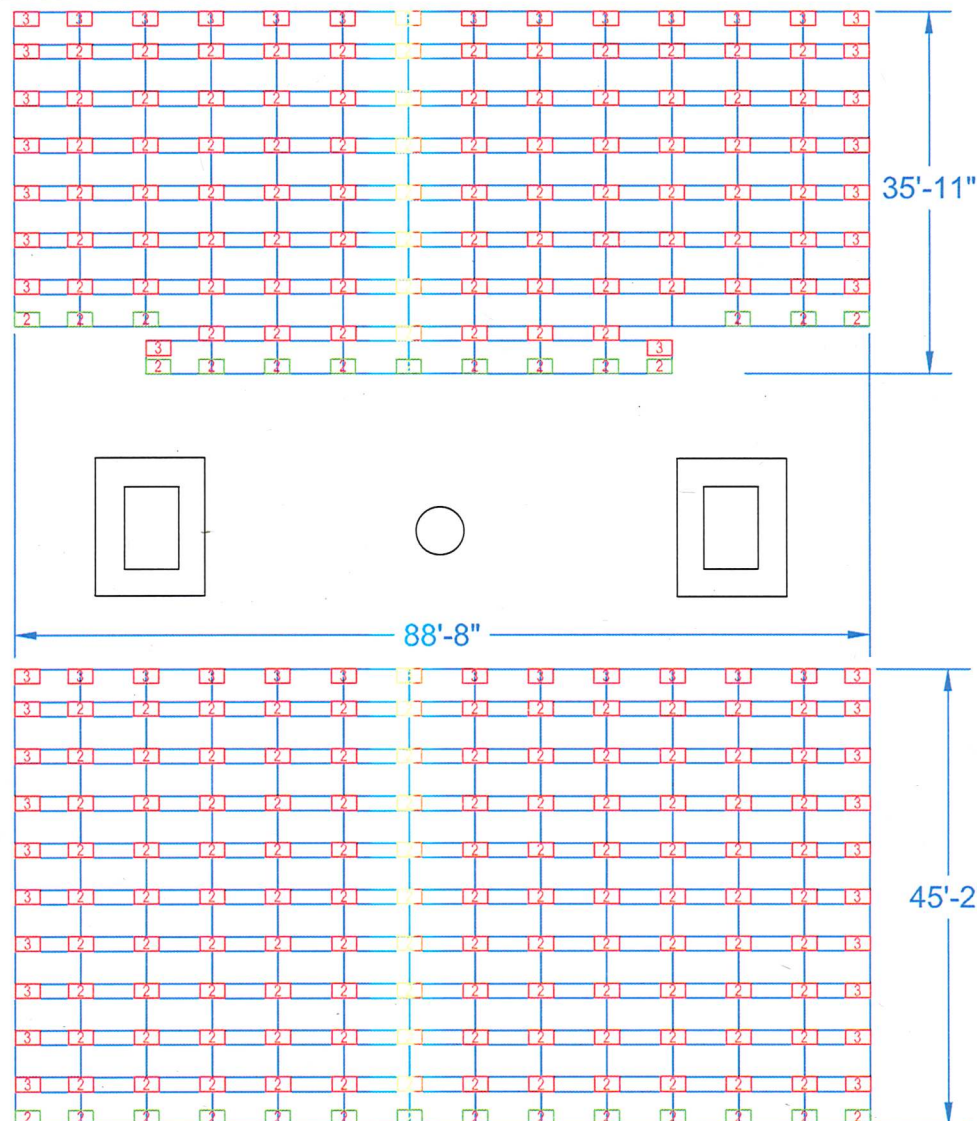
A-102.00
(SHEET 4)

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS



= NUMBER OF BALLAST BLOCKS PER BASKET



01

SOLAR ATTACHMENT PLAN

1/13"=1'

0 6.5' 13'



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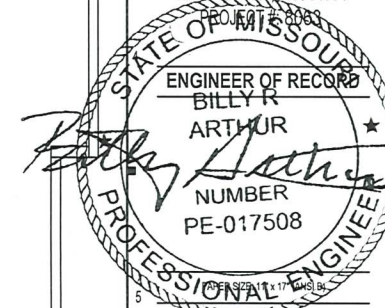
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SOLAR ATTACHMENT PLAN

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B.A.

REVISIONS

A-103.00
(SHEET 5)



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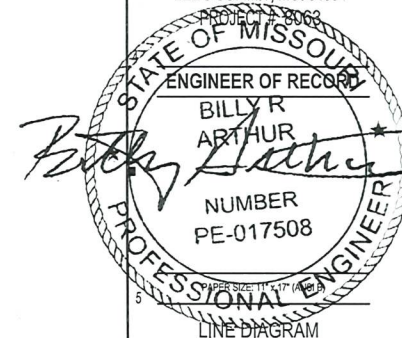
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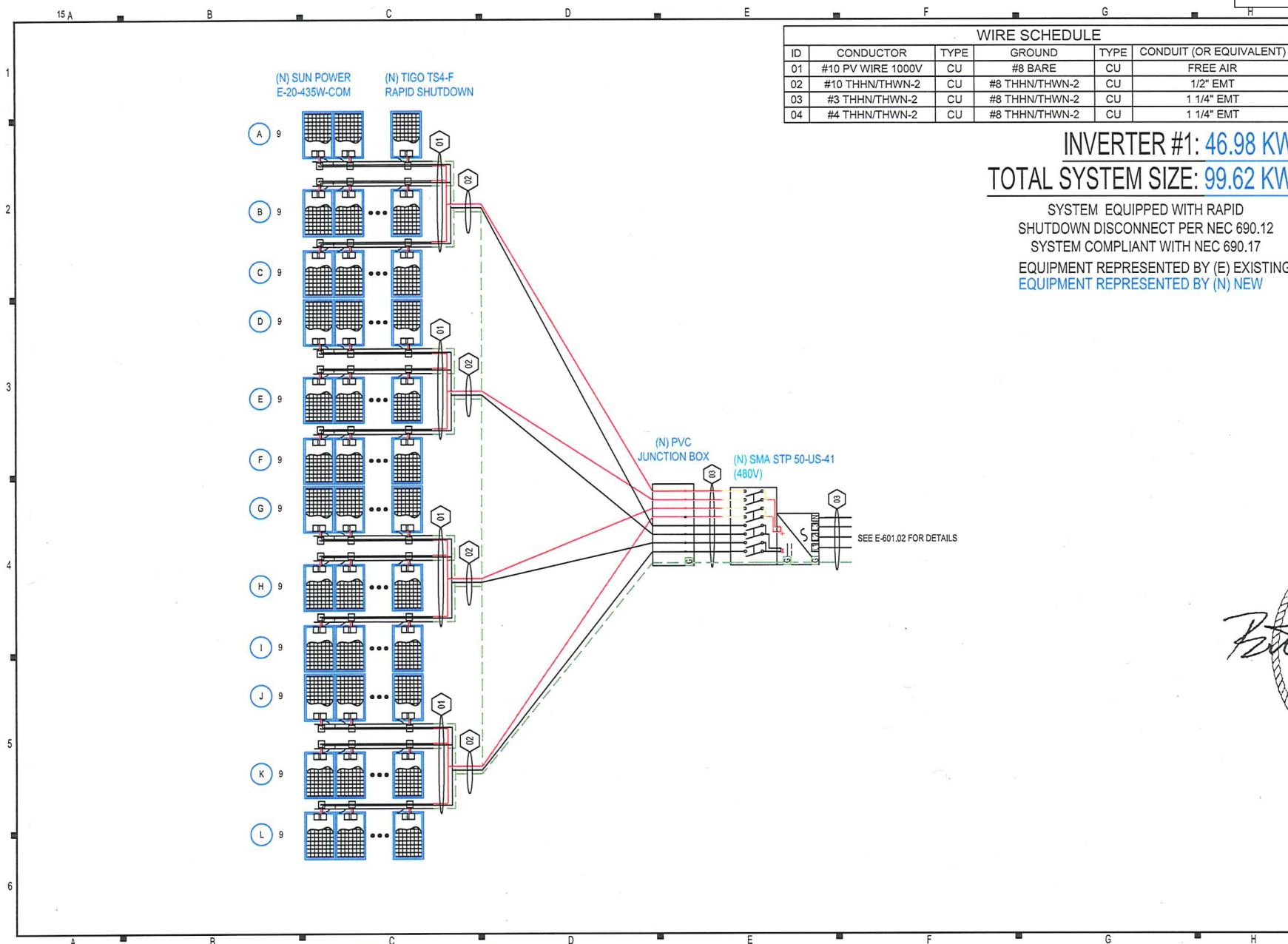
REVISIONS

E-601.01
(SHEET 6)

WIRE SCHEDULE					
ID	CONDUCTOR	TYPE	GROUND	TYPE	CONDUIT (OR EQUIVALENT)
01	#10 PV WIRE 1000V	CU	#8 BARE	CU	FREE AIR
02	#10 THHN/THWN-2	CU	#8 THHN/THWN-2	CU	1/2" EMT
03	#3 THHN/THWN-2	CU	#8 THHN/THWN-2	CU	1 1/4" EMT
04	#4 THHN/THWN-2	CU	#8 THHN/THWN-2	CU	1 1/4" EMT

INVERTER #1: 46.98 KW
TOTAL SYSTEM SIZE: 99.62 KW

SYSTEM EQUIPPED WITH RAPID
SHUTDOWN DISCONNECT PER NEC 690.12
SYSTEM COMPLIANT WITH NEC 690.17
EQUIPMENT REPRESENTED BY (E) EXISTING
EQUIPMENT REPRESENTED BY (N) NEW





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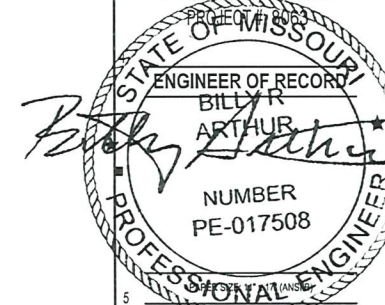
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DAMAGES AND PROSECUTIONS.

NEW PV SYSTEM: 99.62 kW

MIDWEST KARTING LLC
COMMERCIAL

2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO. 64064



LINE DIAGRAM

DATE: 3/27/23

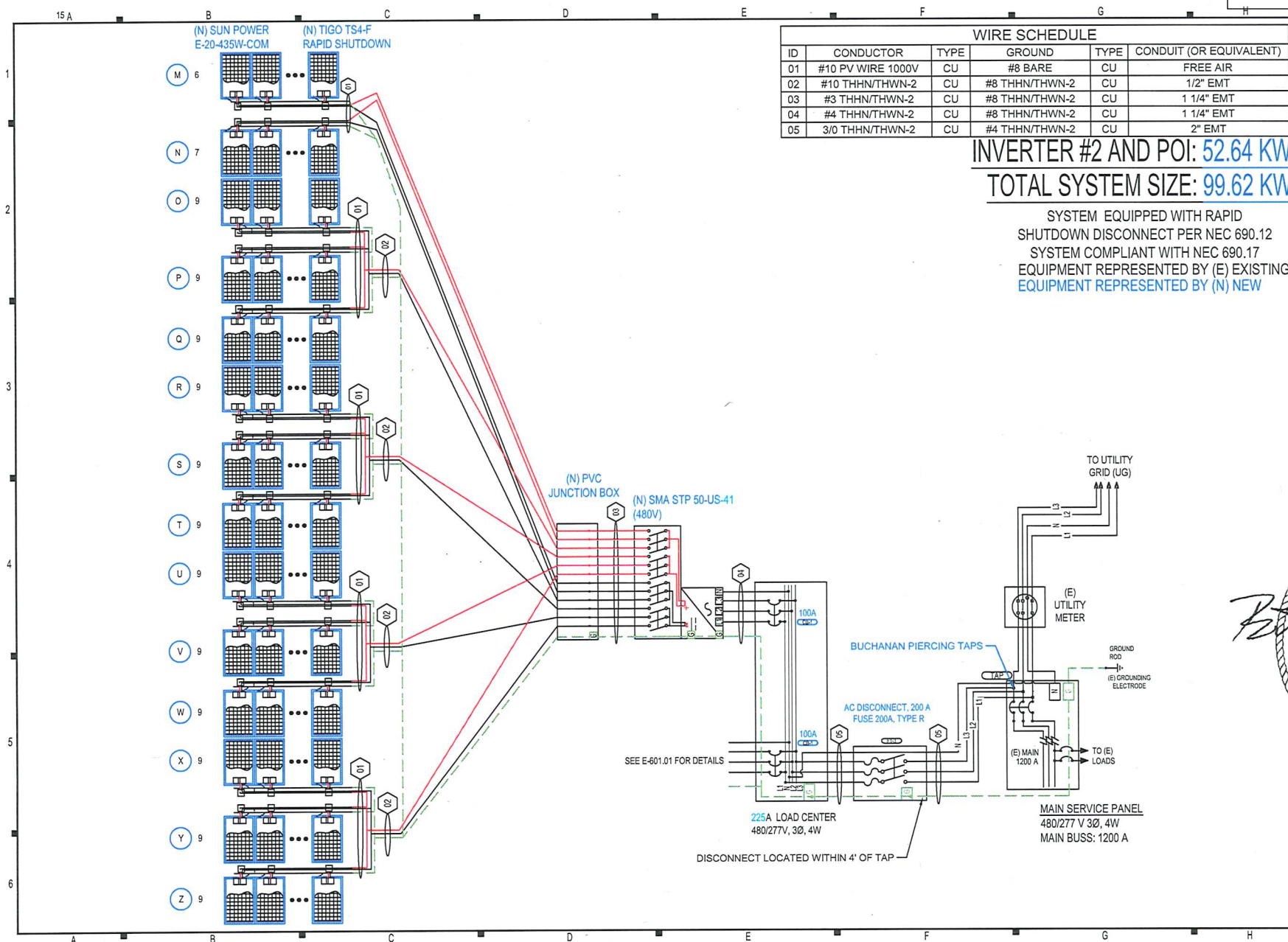
DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

E-601.02

(SHEET 6)





CONTRACTOR

SUN SOLAR, LLC

ADDRESS: 2531 N PATTERSON AVE
SPRINGFIELD, MO 65803
PHONE: 417-413-1786

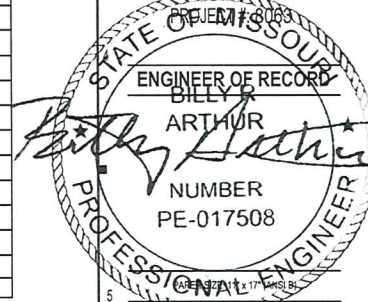
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NEW PV SYSTEM: 99.62 kW

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COMMERCIAL

2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO 64064



BOM

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

E-602.00
(SHEET 7)

BILL OF MATERIALS

CATEGORY	MAKE	MODEL NUMBER	REF	QTY	UNIT	DESCRIPTION
MODULE	SUN POWER	SPR-E-20-435-COM	PM1-229	229	PIECES	SUN POWER E-20-435-COM
INVERTER	SMA	SUNNY TRIPOWER CORE1-50-US	I1-2	2	PIECE	SMA SUNNY TRIPOWER CORE1-50-US
RAPID SHUT DOWN	TIGO	TS4-F	TS4-F	229	PIECE	TIGO TS4-F
DISCONNECT	SQUARE D	H364RB	SW1	1	PIECE	SQUARE D H364RB SWITCH FUSIBLE GD 3-POLE 200A NEMA 3R, 600VAC OR EQUIVALENT
SUBPANEL	SQUARE D	NF430L2C	SP1	1	PIECE	SQUARE D NF430L2C PNLBRD INTERIOR 250A, 3PH, 4WIRE, MN LUG, CU SUBPANEL 480VAC OR EQUIVALENT
SUBPANEL	SQUARE D	NC38FHR	SP1	1	PIECE	SQUARE D NC38FHR ENCLOSURE BOX- NQNF - NEMA 1 - 20x38IN.
WIRING		GEN-10-AWG-1000V-PV-WIRE-CU	WR1		FEET	10 AWG 1000V PV WIRE, COPPER (POSITIVE AND NEGATIVE)
WIRING		GEN-8-AWG-BARE-CU	WR1		FEET	8 AWG BARE, COPPER (GROUND)
WIRING		GEN-#10-AWG-THHN/THWN-2-CU-RD	WR2		FEET	#10 AWG THHN/THWN-2, COPPER, RED (POSITIVE)
WIRING		GEN-#10-AWG-THHN/THWN-2-CU-BLK	WR2		FEET	#10 AWG THHN/THWN-2, COPPER, RED (NEGATIVE)
WIRING		GEN-#8-AWG-THHN/THWN-2-CU-GR	WR2		FEET	#8 AWG THHN/THWN-2, COPPER, GREEN (GROUND)
WIRING		GEN-#3-AWG-THHN/THWN-2-CU-RD	WR3		FEET	#3 AWG THHN/THWN-2, COPPER, RED (POSITIVE)
WIRING		GEN-#3-AWG-THHN/THWN-2-CU-BLK	WR3		FEET	#3 AWG THHN/THWN-2, COPPER, RED (NEGATIVE)
WIRING		GEN-#8-AWG-THHN/THWN-2-CU-GR	WR3		FEET	#8 AWG THHN/THWN-2, COPPER, GREEN (GROUND)
WIRING		GEN-#4-AWG-THHN/THWN-2-CU-BLK	WR4		FEET	#4 AWG THHN/THWN-2, COPPER, BLACK (LINE 1)
WIRING		GEN-#4-AWG-THHN/THWN-2-CU-RD	WR4		FEET	#4 AWG THHN/THWN-2, COPPER, RED (LINE 2)
WIRING		GEN-#4-AWG-THHN/THWN-2-CU-BLU	WR4		FEET	#4 AWG THHN/THWN-2, COPPER, BLUE (LINE 3)
WIRING		GEN-#4-AWG-THHN/THWN-2-CU-WH	WR4		FEET	#4 AWG THHN/THWN-2, COPPER, WHITE (NEUTRAL)
WIRING		GEN-#8-AWG-THHN/THWN-2-CU-GR	WR4		FEET	#8 AWG THHN/THWN-2, COPPER, GREEN (GROUND)
WIRING		GEN-3/0-AWG-THHN/THWN-2-CU-BLK	WR5		FEET	3/0 AWG THHN/THWN-2, COPPER, BLACK (LINE 1)
WIRING		GEN-3/0-AWG-THHN/THWN-2-CU-RD	WR5		FEET	3/0 AWG THHN/THWN-2, COPPER, RED (LINE 2)
WIRING		GEN-3/0-AWG-THHN/THWN-2-CU-BLU	WR5		FEET	3/0 AWG THHN/THWN-2, COPPER, BLUE (LINE 3)
WIRING		GEN-3/0-AWG-THHN/THWN-2-CU-WH	WR5		FEET	3/0 AWG THHN/THWN-2, COPPER, WHITE (NEUTRAL)
WIRING		GEN-#4-AWG-THHN/THWN-2-CU-GR	WR5		FEET	#4 AWG THHN/THWN-2, COPPER, GREEN (GROUND)
WIREWAY		GEN-EMT-1/2" DIA	VW2-3		FEET	EMT CONDUIT, 1/2" DIA
WIREWAY		GEN-EMT-1 1/4" DIA	VW2-3		FEET	EMT CONDUIT, 1 1/4" DIA
WIREWAY		GEN-EMT-2" DIA	VW2-3		FEET	EMT CONDUIT, 2" DIA
OCPD	GENERIC MANUFACTURER	GEN-CB-100A-208VAC	CB1-2	2	PIECE	CIRCUIT BREAKER, 100A, 208VAC
OCPD	GENERIC MANUFACTURER	GEN-FU-200A-208VAC	F1-3	4	PIECE	FUSE, 200A, 208VAC
COMBINER BOX	GENERIC MANUFACTURER	GEN-0786-3R5	JB-1	2	PIECE	COMBINER/PASS-THROUGH BOX, WITH 4 TERMINAL BLOCKS
TAP CONNECTOR	BUCHANAN	BTC4/0-10	TAP	3	PIECE	BUCHANAN B-TAP INSULATION PIERCING TAP CONNECTORS
RACKING	DYNORAXX	DYNORAXX 2 LEG BASKET		29	PIECE	DYNORAXX 2 LEG FIBERGLASS BASKET
RACKING	DYNORAXX	DYNORAXX 4 LEG BASKET		247	PIECE	DYNORAXX 4 LEG FIBERGLASS BASKET
RACKING	DYNORAXX	DYNOSLIDE FG RAIL LONG W/TEETH POLYGLASS		460	PACKS	DYNORAIL WITH THE DYNOSLIDE TOOLLESS FASTENING
RACKING	DYNORAXX	SLP6-200S-S		920	PACKS	LOCKING PIN
ATTACHMENT	IRONRIDGE	DYNOBOND 8"		9	PIECE	DYNOBOND UL RECOGNIZED GROUNDING 8" WIRE LENGTH (PACKS OF 25)
ATTACHMENT	IRONRIDGE	DYNOBOND 38"		4	PIECE	DYNOBOND UL RECOGNIZED GROUNDING 38" WIRE LENGTH (PACKS OF 5)



CONTRACTOR

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SPRINGFIELD, MO 65803
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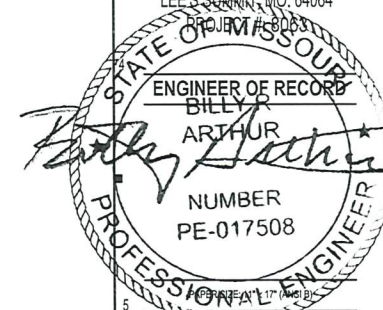
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NEW PV SYSTEM: 99.62 kW

MIDWEST KARTING LLC
COMMERCIAL

2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO. 64064



PLACARDS

DATE: 3/27/23

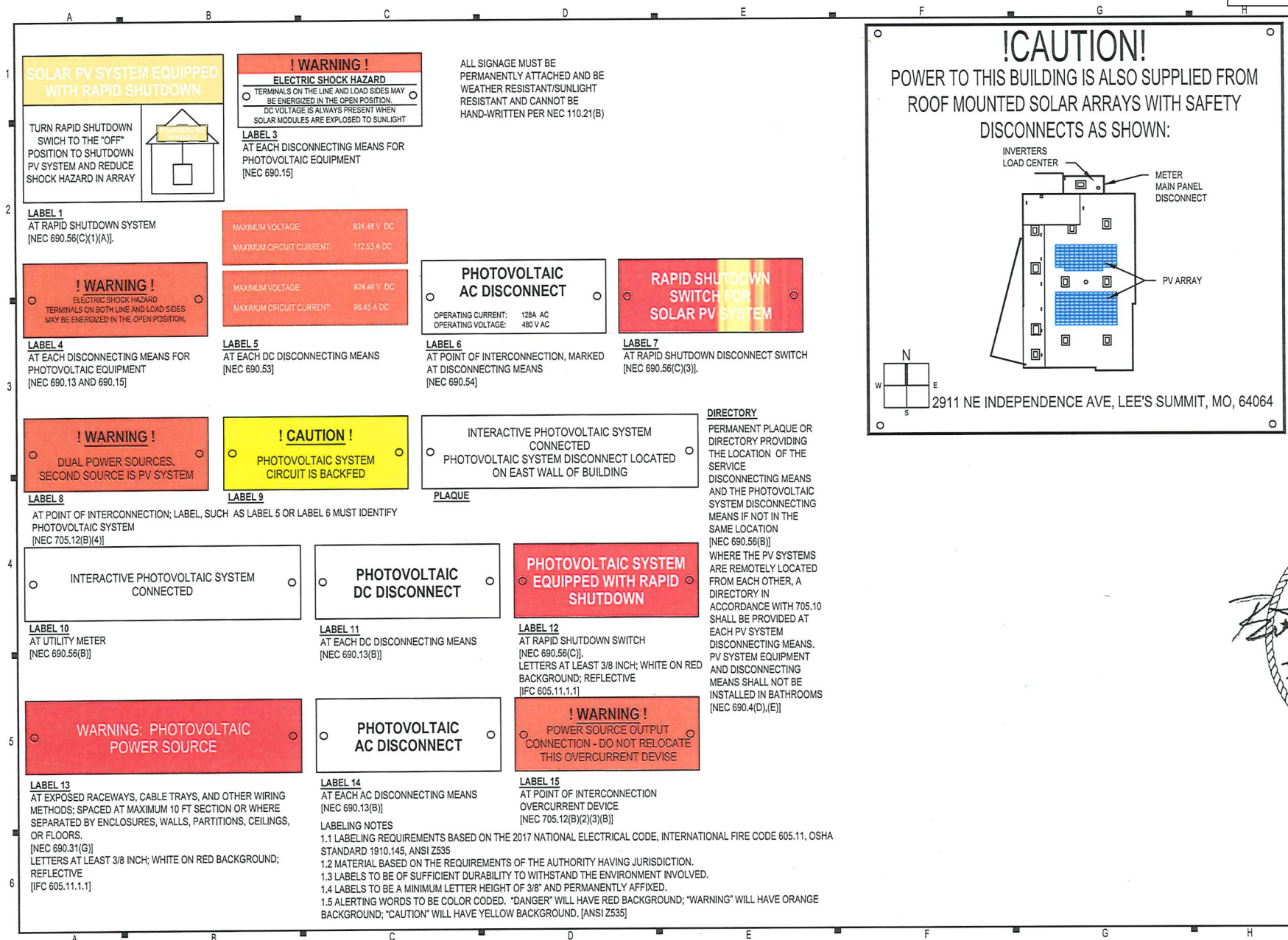
DESIGN BY: M EVANS

CHECKED BY: B. A.

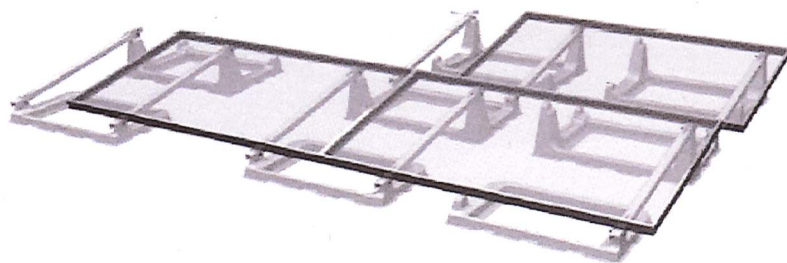
REVISIONS

E-603.00

(SHEET 6)



Evolution FR



ev-o-lu-tion
noun \ēvəloo'shən
a process of continuous change
from a lower, simpler state,
to a higher, more complex,
or better state
: growth

DynoRaxx® Evolution delivers a tool-less ballasted racking system for mounting PV solar panels on flat roofs and surfaces. The proprietary design of the DynoRaxx® ballasted-racking system has been created to simplify and speed installation without compromising quality or performance. With DynoRaxx® Evolution FR, buying commercial solar panel racking has never been more cost-effective.

Three Components	No Tools Needed
Universal Design	Rugged Construction
Space-Saving Reverse Basket Design	Base protecting / Non-penetrating

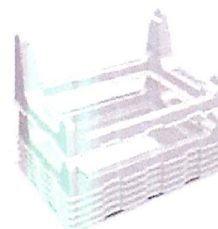
Innovative Design

- Fiberglass
- Proprietary racking enables fast installation in less than half the time of other systems
- No tools needed for assembly — one stop pivot clamp secures panels to racking
- Versatility to accommodate all framed PV solar panels on the market
- Eliminates need to penetrate roof with fasteners on most installations
- Smaller footprint than competitive systems saves roof space and adds flexibility
- 10° tilt available
- Elevated system — does not impede water drainage
- Non-corrosive
- No thermal expansion

www.dynoraxx.com Phone: 1.866.620.2410 talk@dynoraxx.com



Three Major Components



Stack for Shipping

Rugged Construction

- Baskets — fiberglass
- Rails — fiberglass
- Clamps — 304 stainless steel

Easy Installation

- Initial measurement and chalk line needed for placement of first row
- Precision components require no field measuring
- Assemblies without tools
- Save time and labor to install more modules per hour

High Performance

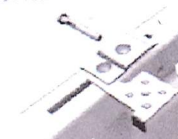
- PE Certified
- ASCE 7-05 compliant
- IBC 2006 compliant
- Wind tunnel tested

Fast Turnaround

- No special orders — ships quickly upon receipt of order
- Racking is palletized — no special shipping requirements
- Tool-less design

Cost Savings

- Fewer man hours to install
- Baskets stack like cups — Huge Shipping Savings
- A superior, cost-effective solution



Tool-less Design

DynoRaxx® Evolution Warranty

- DynoRaxx® Evolution carries a 10-year limited material and workmanship warranty.
- Contact us for complete details on the DynoRaxx® warranty.

ARRA and Ontario FIT Compliant

4506 Shendan Drive, Suite 120
Buffalo NY 14221
Phone: 1.866.620.2410 Toll Free Fax: 1.866.807.7881
www.dynoraxx.com



CONTRACTOR

SUN SOLAR, LLC

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NEW PV SYSTEM: 99.62 KW
MIDWEST KARTING LLC
COMMERCIAL

2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO 64064
PROJECT # 2022-0066

ENGINEER OF RECORD
ARTHUR
NUMBER
PE-017508

ASSEMBLY DETAILS

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

S-501.01

(SHEET 9)



CONTRACTOR

SUN SOLAR, LLC

2 ADDRESS: 2531 N PATTERSON AVE
SPRINGFIELD, MO 65803
PHONE: 417-413-1786

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NEW PV SYSTEM: 99.62 kW

MIDWEST KARTING LLC
COMMERCIAL

2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO. 64064

PROJECT # 606

ENGINEER OF RECORD
BILLY R.
ARTHUR
NUMBER
PE-017508

ASSEMBLY DETAILS

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

S-501.02

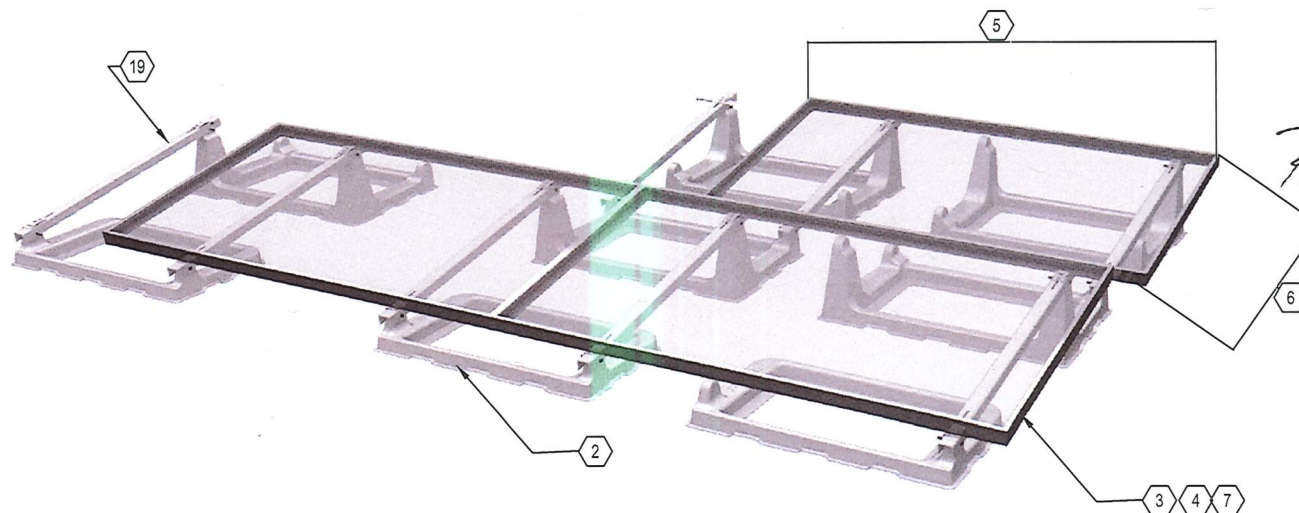
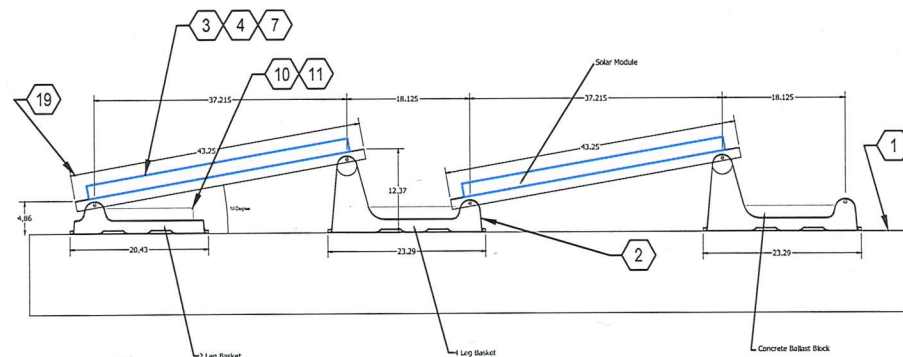
(SHEET 9)

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS

SHEET KEYNOTES

1. GROUND MATERIAL: TPO
2. RACKING TYPE: DYNORAXX
3. MODULE MANUFACTURER: SUNPOWER
4. MODULE MODEL: SPR-E20-435-COM
5. MODULE LENGTH: 81.6 IN.
6. MODULE WIDTH: 41.2 IN.
7. MODULE WEIGHT: 56.0 LBS.
8. SEE SHEET A-103 FOR DIMENSION(S)
9. TOTAL # BASKETS:
 - 9.1. 2 LEG BASKETS: 29
 - 9.2. 4 LEG BASKETS: 247
10. TOTAL # BALLAST BLOCKS: 612
11. WEIGHT PER BLOCK: 34 LBS
12. TOTAL AREA: 7027 SQ. FT.
13. TOTAL WEIGHT: 36697 LBS.
14. WEIGHT PER BASKET: 132 LBS.
15. DISTRIBUTED LOAD: 5.22 PSF.
16. MAX. HORIZONTAL STANDOFF: 14 IN.
17. STANDOFF STAGGERING: YES
18. RAIL MANUFACTURER (OR EQUIV.): DYNORAXX
19. RAIL MODEL (OR EQUIVALENT): DYNORAIL
20. RAIL WEIGHT: 4 LBS
21. MODULE CLEARANCE: 3 IN. MIN., 6 IN. MAX.





CONTRACTOR

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SPRINGFIELD, MO 65803

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LEE'S SUMMIT, MO 64064

PROJECT # 1908

ENGINEER OF RECORD

ARTHUR

NUMBER
PE-017508

RESOURCE DOCUMENT

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

R-001.00

(SHEET 10)



SunPower® E-Series Commercial Solar Panels | E20-435-COM



SunPower® E-Series Commercial Solar Panels | E20-435-COM

Helix™ Roof Compatible Modules

Factory-installed clip enable tool-free panel
installation, decreasing installation time and
minimizing business disruption.¹

More than 20% Efficiency

Captures more sunlight and generates more
power than conventional panels.

High Performance

Delivers excellent performance in real-world
conditions, such as high temperatures, clouds
and low light.²

Commercial Grade

Optimized to maximize returns and energy
production, the E-Series panel is a bankable
solution for commercial solar applications.



Maxeon® Solar Cells: Fundamentally better.
Engineered for performance, designed for reliability.

Engineered for Peace of Mind

Designed to deliver consistent, trouble-free
energy over a very long lifetime.³

Designed for Reliability

The SunPower Maxeon solar cell is the only cell
built on a solid metal foundation. Virtually
impervious to the corrosion and cracking that
degrade conventional panels.

#1 Rank in Fraunhofer durability test.⁴

High Performance & Excellent Reliability



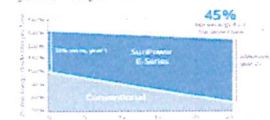
SPR E20-435-COM



High Efficiency

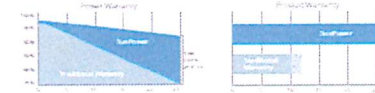
Generate more energy per square foot

More energy to power your system. E-Series residential systems convert more
sunlight to electricity by producing 31% more energy in the first year. This
advantage increased over time, producing 45% more energy over the first 35
years to meet your needs.⁵



Best Reliability, Best Warranty

A better warranty starts with a better product. Proven performance backs up
our industry-best coverage, including our warrantee 0.25% per year
degradation rate.⁶



More guaranteed power: 92% per first year,
+0.25% per year to year 25

Guaranteed Power and Productivity
Power coverage

Electrical Data	
SPR E20-435-COM	
Number Power Outputs	435 W
Power Tolerance	+5/-3%
Avg. Panel Efficiency	20.5%
Rated Voltage (Vmp)	73.9 V
Rated Current (Imp)	5.97 A
Open Circuit Voltage (Voc)	85.0 V
Short Circuit Current (Isc)	6.43 A
Maximum Power (Pmax)	1500 W @ 1000 V MTC
Maximum System Voltage	1500 V
Power Temperature Coefficient	-0.35% / °C
Voltage Temperature Coefficient	-0.0025% / °C
Current Temperature Coefficient	0.005% / °C

Operating Condition And Mechanical Data	
Temperature	-40° F to +133° F (-40° C to +55° C)
Impact Resistance	1 inch (25.4 mm) diameter ball at 50 mph (80 km/h)
Appearance	Class B
Solar Cells	128 Monocrystalline Maxeon Gen II
Temper and Seal	1-ply laminated tempered anti-reflective
Junction Box	IP68, 100% waterproof
Weight	50 lbs (22.7 kg)
Wind	140 mph, 3 sec gust, 2400 Pa front & back
Max. Snow	Static, 112 psf, 5400 Pa front
Frame	Class 2 silver anodized, 6061-T6



Please visit our safety and installation guide

Document # 621412 Rev 9.07.18 US

Data sheet

SUNPOWER®

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SUNPOWER®

Product data sheet

Specifications

SQUARE

Green Premium



Enclosure cover, NQ and NF
panelboards, NEMA 1, flush, hinged,
20in W x 38in H

NC35FHR

Product availability: Stock - Normally stocked in distribution
facility

Price* : 687.00 USD

Main

Product	Flush cover
Color	Gray
Cover type	Flush cover
Type of front plate	Hinged

Complementary

Material	Steel
Height	38 in (965.20 mm)
Width	20 in (508.00 mm)
Tightening torque	Cover 10...12 lb.in

Environment

Enclosure Rating	NEMA 1
Product Certifications	cULus

Ordering and shipping details

Category	06352-NF / NQ TRIMS RITA
Discount Schedule	PE1A
GTIN	700901206040
Returnability	Yes
Country of origin	US

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	2.01 in (5.1 cm)
Package 1 Width	22.09 in (56.1 cm)
Package 1 Length	42.72 in (108.5 cm)
Package 1 Weight	22.53 lb(US) (10.219 kg)

* Price is "List Price" and may be subject to a trade discount - check with your local distributor or retailer for actual price.

Feb 13, 2023

Schneider

1

Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including Nickel compounds, which is known to the State of California to cause cancer, and Bisphenol A (BPA), which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
REACH Regulation	REACH Declaration
REACH free of SVHC	Yes
EU RoHS Directive	Compliant see RoHS Declaration
Toxic heavy metal free	Yes
Mercury free	Yes
China RoHS Regulation	China RoHS declaration
RoHS exemption information	Yes
Environmental Disclosure	Product Environmental Profile

Contractual warranty

Warranty	18 months
----------	-----------

Recommended replacement(s)



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RESOURCE DOCUMENT

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

R-002.02
(SHEET 12)



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PHONE: 417-413-1786

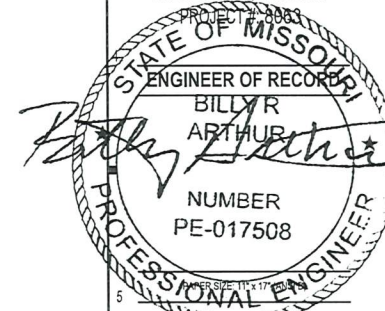
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DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

R-003.00
(SHEET 13)

Product data sheet
Characteristics

NF430L2C

NF Pnlbrd Interior 250A, 3 PH, 4 Wire, 30 CCT,
Mn Lug, Cu

Product availability : Stock - Normally stocked in distribution facility



Price** : 2,624.00 USD



Main

Panelboard Type	Main lugs
Branch Circuit Breaker Type	EDB/EDG/EDJ
Busbar Material	Copper

Complementary

Number of spaces	30
Enclosure Nominal Height	38 in (965.20 mm) 50 in (1270.00 mm)
Enclosure Nominal Width	20 in (508.00 mm)
Enclosure Nominal Width	5.75 in (146.05 mm) NEMA 1 6.5 in (165.10 mm) NEMA 3R/5/12
Line Rated Current	250 A
[Iu] rated interrupted current	65 kA
Wiring configuration	4-wire
Number of Phases	3 phase
Voltage Rating	480Y/277 V AC
Connections - terminals	Lug line AWG 6...350 kcmil aluminum Lug neutral AWG 6...350 kcmil aluminum
Net weight	31.00 lb(US) (14.06 kg)
Tightening torque	40.01...59.01 lb/in (4.52...5.26 N.m) 0.02...0.10 in ² (13.30...67.43 mm ²) AWG 6...AWG 2/0 100.01 lb/in (11.3 N.m) 0.02...0.10 in ² (13.30...67.43 mm ²) AWG 6...AWG 2/0 274.99 lb/in (31.07 N.m) 0.02...0.27 in ² (13.30...177.3 mm ²) AWG 6...350 kcmil 274.99 lb/in (31.07 N.m) 0.02...0.29 in ² (13.30...128.7 mm ²) AWG 6...250 kcmil 274.99 lb/in (31.07 N.m) 0.17...0.24 in ² (107.2...102 mm ²) AWG 4...300 kcmil
Width	10.44 in (265.18 mm)
Height	33 in (838.20 mm)

Jul 5, 2023

Label by: Schneider

1

Environment

Standards	CSA C22.2 UL 67
-----------	--------------------

Ordering and shipping details

Category	08350 - NF MLO INTERIOR RTA
Discount Schedule	PE1A
GTIN	00785801671484
Returnability	Yes
Country of origin	MX

Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including Nickel compounds and Diisodecyl phthalate (DIDP) which is known to the State of California to cause Carcinogen and Reproductive harm. For more information go to www.p65warnings.ca.gov
REACH Regulation	REACH Declaration
REACH free of SVHC	Yes
EU RoHS Directive	Compliant EU RoHS Declaration
Toxic heavy metal free	Yes
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration
Environmental Disclosure	Product Environmental Profile

Contractual warranty

Warranty	18 months
----------	-----------

2

Label by: Schneider



CONTRACTOR

SUN SOLAR, LLC

ADDRESS: 2531 N PATTERSON AVE
SPRINGFIELD, MO 65803
PHONE: 417-413-1786

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

UNAUTHORIZED USE OF THIS
DRAWING SET WITHOUT WRITTEN
PERMISSION FROM CONTRACTOR IS IN
VIOLATION OF U.S. COPYRIGHT LAWS
AND WILL BE SUBJECT TO CIVIL
DAMAGES AND PROSECUTIONS.

NEW PV SYSTEM: 99.62 kW

MIDWEST KARTING LLC
COMMERCIAL

2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO. 64064



RESOURCE DOCUMENT

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

R-004.00
(SHEET 14)

Product data sheet
Characteristics

H364RB
SWITCH FUSIBLE HD 600V 200A 3P NEMA3R

Product availability : Stock - Normally stocked in distribution facility



Price** : 2,259.00 USD



Main

Product	Single Throw Safety Switch
Current Rating	200 A
Certifications	UL listed file E2875
Enclosure Rating	NEMA 3R galvanized steel
Factory Installed Neutral	None
Disconnect Type	Fusible disconnect
Short Circuit Current Rating	10 kA H or K 200 kA R, J or L
Mounting Type	Surface
Number of Poles	3
Electrical Connection	Lugs
Duty Rating	Heavy duty
Voltage Rating	600 V ACDC
Wire Size	AWG 6...250 kcmil copper or aluminium

Complementary

Width	473.20 mm (18.63 in)
Height	742.35 mm (29.25 in)
Depth	215.30 mm (8.5 in)
Tightening torque	31.07 N.m (275 lbf.in) 0.02...0.20 in* (13.3...127 mm*) AWG 6...250 kcmil

Ordering and shipping details

Category	00009 - H3HU SW,253P,N3R,30-200A
Discount Schedule	DE1
GTIN	00785901482710
Package weight(Lbs)	20.82 kg (45.9 lb(US))
Returnability	Yes

Jan 3, 2022

Schneider

Country of origin US

Offer Sustainability

Sustainable offer status Green Premium product
California proposition 65 WARNING: This product can expose you to chemicals including: Lead and lead compounds which is known to the State of California to cause Carcinogen & Reproductive harm. For more information go to www.p65warnings.ca.gov

REACH Regulation	REACH Declaration
REACH free of SVHC	Yes
EU RoHS Directive	Compliant
	EU RoHS Declaration
Toxic heavy metal free	Yes
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration Pro-active China RoHS declaration (out of China RoHS legal scope)
Environmental Disclosure	Product Environmental Profile
Circularity Profile	No need of specific recycling operations

Contractual warranty

Warranty 18 months



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COMMERCIAL

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LEE'S SUMMIT, MO. 64064

PROJECT # 20083

ENGINEER OF RECORD

BILLY R
ARTHUR

NUMBER
PE-017508

RESOURCE DOCUMENT

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

R-005.00
(SHEET 15)



Fire Safety

TS4-F is a rapid shutdown solution that pairs with an integrated modular junction box base (TS4-F). Install with Tigo RSS Transmitter for rapid shutdown activation.

Features

- Meets NEC 690.12 rapid shutdown requirements
- Module-level deactivation
- Automatic or manual shutdown
- PLC signaling

Protect your investment by enhancing safety with TS4-F

- UL-Certified for TS4-B (integrated)
- Uses Tigo's Ultra High Definition (UHD) Core technology for superior performance
- Refer to [UL GLS PVRSS listing](#) for rapid shutdown system listed inverters



Deploy TS4-F to prevent fire damage caused by faulty installations, defective equipment, or other environmental hazards.

Tigo
04/23/18

This product is patent protected



Meet rapid shutdown specifications with TS4-F

Tigo has further expanded its smart module platform with the TS4-F Fire Safety cover. TS4 increases your freedom of choice by allowing you to select the right features for each project and budget.

Electrical

Voltage Range	16 - 60V
Maximum Current	18A
Maximum Power	475W
Communication Type	PLC
Impedance Matching Function	No
Output Voltage Limit	No
Rapid Shutdown UL Listed (NEC 2014 & 2017 690.12)	Yes

Mechanical

Operating Temperature Range	-40°C to +85°C (-40°F to +185°F), RH < 85%
Storage Temperature Range	-40°C to +85°C (-40°F to +185°F), RH < 60%
Cooling Method	Natural Convection
Dimensions (base with cover)	102.2mm x 100mm x 25.5mm
Weight (base and cover)	670g
Outdoor Rating	IP67/IP68, NEMA 3R

Cabling

Type	PV Wire
Output Cable Length	1.0m (standard), 1.2m (optional)
Rating Option	1000V (standard), 1500V (optional)
Cable Cross-Section	6.3 ± 0.3mm
Connectors	MCA, MCA comparable, EVOC
Maximum String Voltage	1500V UL/IEC

† All TS4 covers are 1500V compatible. Specify max system voltage when ordering modules with TS4 base for appropriate cables & connectors.
Rapid shutdown activation of TS4-F requires RSS transmitter.

For sales info:
sales@tigoenergy.com or 1.408.402.0802

For product info:
www.tigoenergy.com/products



FC IC C UL US
Microprocessor Rapid Shutdown System Equipment
Component 00002

For technical info:
Visit support.tigoenergy.com

For additional info and product selection assistance, use Tigo's online design tool at tigoenergy.com/design

Tigo

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7/14/2017

Ideal Industries - Buchanan B-TAP® Insulation Piercing Tap Connectors



Buchanan B-TAP® Insulation Piercing Tap Connectors



Features

- Eliminates split bolts and tape
- Easy two-minute installation requires only box/socket wrench
- Torque regulating nut breaks off at proper tension
- Installs on energized systems
- Insulation piercing teeth
- Self-insulating, weather-proof
- 600V dual-rated

Models

Wire Range				Number of Taps	Catalog Number
Run		Tap			
Max.	Min.	Max.	Min.		
#1/0 AWG	#8 AWG	#2 AWG	#10 AWG	1	BTC1/0-10
#2/0 AWG	#4 AWG	#10 AWG	#14 AWG	1	BTC2/0-14
#4/0 AWG	#2 AWG	#4/0 AWG	#2 AWG	2	BTC4/0-2
#4/0 AWG	#3 AWG	#2 AWG	#10 AWG	1	BTC4/0-10
#4/0 AWG	#2 AWG	#2/0 AWG	#6 AWG	1	BTC4/0-6
250 MCM	#1 AWG	#4/0 AWG	#4 AWG	1	BTC250-4
350 MCM	#1/0 AWG	350 MCM	#1/0 AWG	2	BTC350-1/0
500 MCM	#2/0 AWG	#4/0 AWG	#4 AWG	2	BTC500-4
500 MCM	#4/0 AWG	350 MCM	#1/0 AWG	2	BTC500-1/0
500 MCM	#2/0 AWG	#10 AWG	#14 AWG	1	BTC500-14
Assortment - One of each except BTC500-14					BTCA-2

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http://www.idealindustries.ca/products/wire_termination/lugs/lugs_tap_b-tap_connectors.php

1/1



CONTRACTOR

SUN SOLAR, LLC

ADDRESS: 2531 N PATTERSON AVE
SPRINGFIELD, MO 65803

PHONE: 417-413-1786

LIC. NO.:

HIC. NO.:

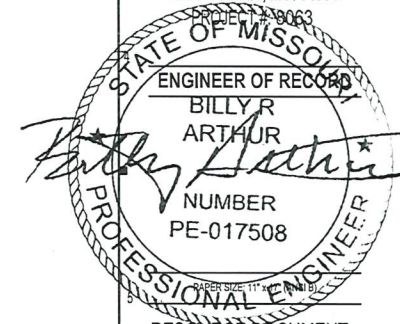
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NEW PV SYSTEM: 99.62 kW

MIDWEST KARTING LLC
COMMERCIAL

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LEE'S SUMMIT, MO. 64064



RESOURCE DOCUMENT

DATE: 3/27/23

DESIGN BY: M EVANS

CHECKED BY: B. A.

REVISIONS

R-006.00

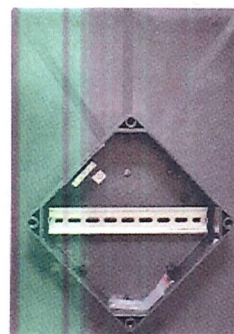
(SHEET 15)

sollection™
by **vinckler**

RJ-1

Residential Transition Box

The Sollection RJ-1 rooftop junction box with flashing provides a safe, secure, and NEMA 4X watertight solution for the Solar installer to penetrate the roof for attic runs and make the proper wire connections. The product is designed to be simple to install, minimize time on the roof, while additionally providing higher levels of protection for the point of penetration in the roof as well as electrical connections inside the junction box.



Key Features

- Designed specifically for solar installations
- Light weight
- Non-metallic ---Will NOT rust/corrode
- Easy to drill/modify
- Captive screws in cover- will not fall out
- Minimal design, small footprint
- NEMA 4X rated
- All roof penetrations cover by Nema 4x enclosure

Specifications

Enclosure

Material: Polycarb blend w/ UV inhibitors
UV Stabilized: Yes
Impact Resistance: Yes
Weight: 2.73lb
Color: Graphite Black

Dimensions

Flashing Dimensions (Approximate): 13" x 18"
Enclosure Dimensions (Approximate): 8" x 8"
Total Product Height: 3.5"
Cubic Inches: 224 Cubic Inches



Sollection by Vynckler
Vynckler Enclosure Systems
271 McCarty Street, Houston, TX 77029 USA
+1 360 227 0277
www.sollection.com



CONTRACTOR

SUN SOLAR, LLC

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NEW PV SYSTEM: 99.62 kW

MIDWEST KARTING LLC
COMMERCIAL

2911 NE INDEPENDENCE AVE.
LEE'S SUMMIT, MO. 64064

PROJECT # 2003

ENGINEER OF RECORD

BILLY R. ARTHUR

NUMBER

PE-017508

PROFESSIONAL ENGINEER

STATE OF MISSOURI

PE-017508

PE-017508

PE-017508

PE-017508

PE-017508

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