

ABBREVIATIONS	
A	AMPERE
AC	ALTERNATING CURRENT
AFCI	ARC-FAULT CIRCUIT INTERRUPTER
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMERAGE INTERRUPTION CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
CB-#	COMBINER BOX
DAS	DATA AQUISITION SYSTEM
DC	DIRECT CURRENT
DWG	DRAWING
EMT	ELECTRICAL METALLIC TUBE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
IBC	INTERNATIONAL BUILDING CODE
IFC	INTERNATIONAL FIRE CODE
KW	KILOWATT
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MTS	MANUAL TRANSFER SWITCH
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE
NTS	NOT TO SCALE
OC	ON CENTER
OCPD	OVERCURRENT PROTECTION DEVICE
P	POLE
PH	PHASE
POC	POINT OF CONNECTION
PV	PHOTOVOLTAIC
RMC	RIGID METALLIC CONDUIT
SC	SOURCE CIRCUIT
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
V	VOLT OR VOLTAGE
W	WATT
XFMR	TRANSFORMER

SYMBOLS LEGEND	
	ELECTRICAL BREAKER
	ELECTRICAL DISCONNECT SWITCH
	ELECTRICAL FUSE
	ELECTRICAL FUSED DISCONNECT SWITCH
	METER
	SYSTEM OR EQUIPMENT GROUND
	CONDUIT DOWN
	CONTINUATION OF CONDUIT
	PHOTOVOLTAIC (PV) MODULE
	DC/AC INVERTER
	POWER TRANSFORMER
	CONNECTED CONDUCTOR

APPLICABLE CODES	
NATIONAL ELECTRIC CODE (NEC), 2014*	
INTERNATIONAL BUILDING CODE (IBC), 2015*	
INTERNATIONAL FIRE CODE (IFC), 2015*	
CONSTRUCTION TYPE: TYPE 2	
OCCUPANCY TYPE: B	
*INCLUDES ALL LOCAL AND STATE AMENDMENTS	

- ### SYSTEM NOTES
- SOLAR ARRAY CONSISTS OF PV MODULES, CONNECTED IN SERIES.
 - ARRAYS HAVE BEEN PLACED TO MINIMIZE OR ELIMINATE SHADING IMPACT FROM ADJACENT STRUCTURES AND/OR OBSTRUCTIONS.
 - ALL ARRAY LAYOUTS ADHERE TO LOCAL AHJ REQUIREMENTS FOR SETBACKS AND PATHWAYS.
 - MINIMUM 3 FOOT CLEARANCE PROVIDED FOR ALL ROOF TOP HVAC UNITS AND SERVICEABLE EQUIPMENT. MINIMUM 4 FOOT SETBACK TO ROOF EDGE.
 - INVERTERS SHALL BE TRANSFORMERLESS STRING INVERTERS, LOCATION PER PLAN.

SITE INFORMATION

UTILITY COMPANY: Evergy
METER NUMBERS: 23396913

- ### GENERAL NOTES
- ALL ELECTRICAL WORK SHALL BE PERFORMED BY A QUALIFIED LICENSED ELECTRICIAN AND/OR APPRENTICES WORKING UNDER THE DIRECT SUPERVISION OF THE LICENSED CONTRACTOR.
 - ALL WORK CARRIED OUT SHALL COMPLY WITH THE SPECIFICATIONS, APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
 - PRIOR TO COMMENCEMENT OF ANY WORK, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF AN DISCREPANCIES NOTED AMONG SITE CONDITIONS, MANUFACTURER RECOMMENDATIONS, OR AUTHORITY HAVING JURISDICTION. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER OF RECORD A WRITTEN "RFI"(REQUEST FOR INFORMATION) PROPOSING AN ALTERNATIVE OR SEEKING CLARIFICATION.
 - THE CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES.
 - UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, ACCESSORIES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
 - ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.
 - THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.
 - FALL ARREST PROTECTION PER OSHA REQUIREMENTS SHALL BE PROVIDED FOR ALL ROOF WORK.
 - WHEN INSTALLING IN FIRE RATED AREAS, SEAL ALL PENETRATIONS WITH UL LISTED MATERIALS APPROVED BY LOCAL JURISDICTION. CONTRACTOR SHALL KEEP AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS.
 - CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION. ALL DEBRIS AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.
 - THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES NOT PART OF THE SCOPE OF WORK AS IDENTIFIED IN THESE PLANS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.
 - DUE TO THE FACT THAT PV MODULES ARE ENERGIZED WHENEVER THEY ARE EXPOSED TO LIGHT, CONTRACTOR SHALL DISABLE THE ARRAY DURING INSTALLATION AND SERVICE BY SHORT CIRCUITING, OPEN CIRCUITING, OR COVERING ARRAY WITH AN OPAQUE COVER ACCORDING TO MANUFACTURER'S INSTRUCTION.
 - CONSTRUCTION LOADING ON THE ROOF, SUCH AS MATERIAL STAGED ON THE ROOF, SHALL BE LIMITED TO 20 PSF. CONCENTRATED LOADING SHALL BE AVOIDED TO PREVENT LOCALIZED DAMAGE TO THE ROOF.

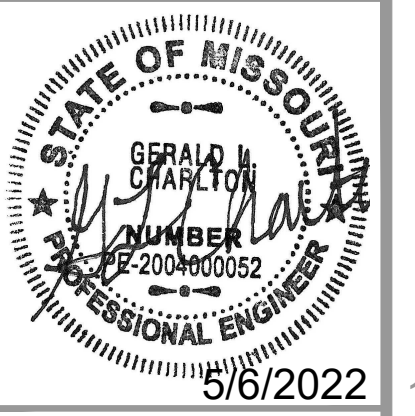
ELECTRICAL NOTES

- THE PV ELECTRIC SYSTEM IS INTENDED TO BE OPERATED IN PARALLEL WITH THE UTILITY ELECTRICAL SERVICE AND WILL BE CONNECTED TO THE EXISTING FACILITY POWER SYSTEM AT A SINGLE POC. THIS CONNECTION SHALL BE IN COMPLIANCE WITH NEC 705.12.
- ALL INVERTERS AND PANELBOARDS SHALL BE SECURED FROM UNAUTHORIZED ACCESS BY LOCK OR LOCATION.
- CONDUITS AND CABLES SHALL BE BOTTOM ENTRY ONLY TO ANY ENCLOSURE.
- FEEDERS SHALL MAINTAIN PHASE RELATIONSHIP THROUGHOUT THE SYSTEM. PHASES SHALL MATCH BUS OR CABLE ARRANGEMENTS IN EQUIPMENT TO WHICH THE FEEDERS ARE CONNECTED. COLOR CODING SHALL BE AS FOLLOWS:

	208/120 VAC	480/277 VAC		1000VDC
PHASE A	BLACK	BROWN	POSITIVE	RED
PHASE B	RED	ORANGE	NEGATIVE	BLACK
PHASE C	BLUE	YELLOW	GROUNDED CONDUCTOR	WHITE
GROUNDED CONDUCTOR	WHITE	WHITE	GROUND	GREEN
GROUND	GREEN	GREEN		
- PV STRING HOME RUNS MUST BE LABELED AT ALL TERMINATIONS. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, ACCESSORIES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- SUPPORT CONDUCTORS IN VERTICAL CONDUIT IN ACCORDANCE WITH THE REQUIREMENTS OF NEC 300.19.

GROUNDING NOTES

- ONLY ONE CONNECTION TO AC CIRCUITS WILL BE USED FOR SYSTEM GROUNDING (NEC 690.42).
- RACKING AND STRUCTURAL COMPONENTS MUST BE ELECTRICALLY BONDED TOGETHER BY AN ACCEPTABLE MEANS. RACKING SYSTEM SHALL BE LISTED TO UL2703.
- MODULES SHALL BE GROUNDED WITH EQUIPMENT GROUNDING CONDUCTORS BONDED TO A LOCATION APPROVED BY THE MANUFACTURER WITH A MEANS OF BONDING LISTED FOR THIS PURPOSE.
- A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 690.47 AND NEC 250.50 THROUGH NEC 250.166 SHALL BE PROVIDED. THE GROUNDING ELECTRODE SYSTEM OF THE BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE.
- PV SYSTEM SHALL BE GROUNDED IN ACCORDANCE WITH NEC 250.21 AND ALL METAL PARTS OR MODULE FRAMES ACCORDING TO NEC 690.43.
- ALL CONDUIT BETWEEN THE UTILITY AC DISCONNECT AND THE POC SHALL HAVE GROUNDED BUSHINGS AT BOTH ENDS OR OTHER METHODS AS APPROVED IN NEC 250.92.



Lee's Summit Detail Shop
LEGENDS & GEN. NOTES
89.6 KW DC Rooftop Photovoltaic System
2100 NE Independence Ave, Lee's Summit, MO 64064, USA

NAME OF CUSTOMER	TITLE	SUBJECT	PROJECT LOCATION

DESIGNED	CHECKED	APPROVED

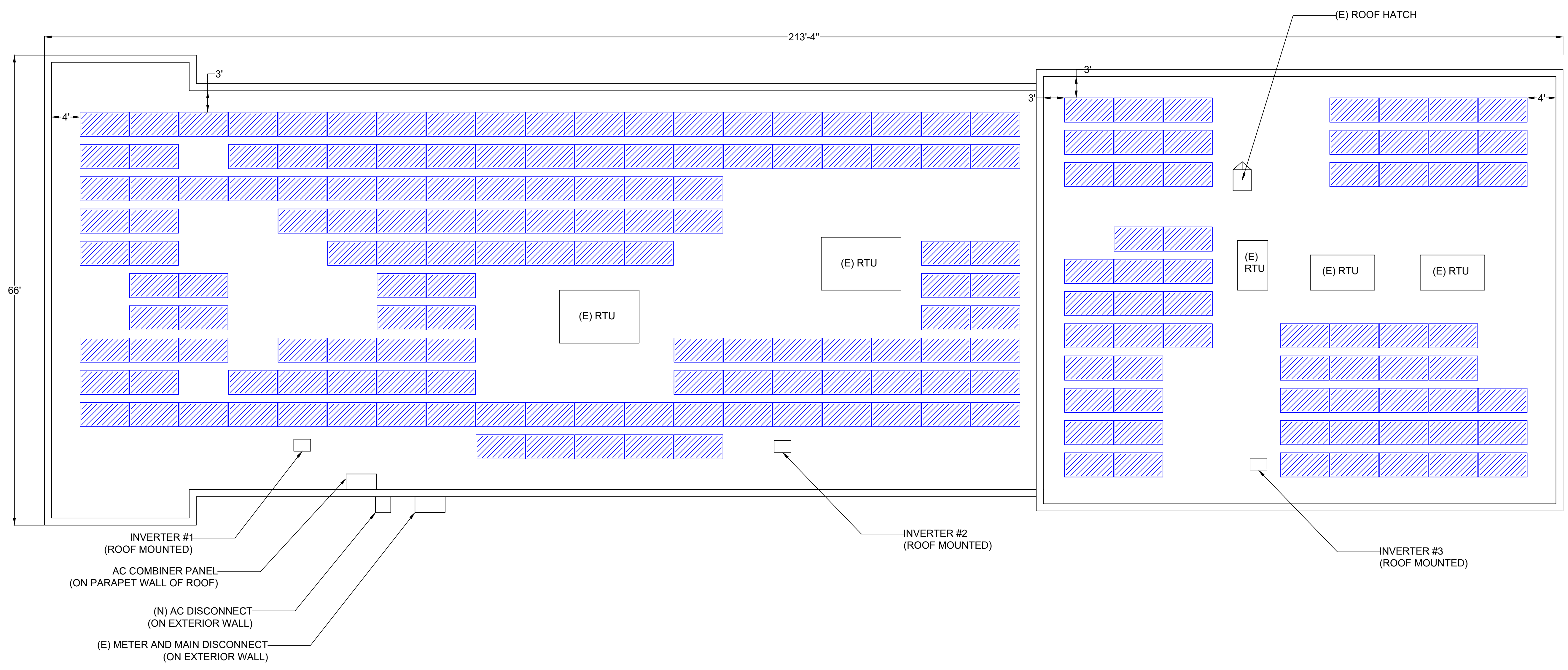
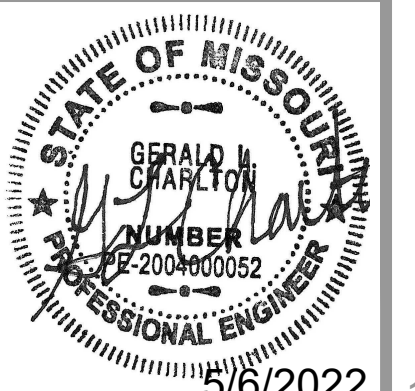
REVISIONS	DATE	REMARKS
Rev #1		

Artisan Solar
12916 5TH ST
GRANDVIEW, MO 64030
PH: (813) 601-0700

DWG NO: **G-1**
PROJ NO: NEI-210



MODULE MAKE	ZNSHINESOLAR				
MODULE TYPE	ZXM6-NHLDD144-450/M				
MODULE DIMENSIONS	82.44" X 40.86" X 1.18"				
MODULE COUNT PER ARRAY					
ARRAY	MODULE RATING (W)	AZIMUTH	TILT	MODULES	KWDC
ARRAY 1	450	180	10	199	89.55
		TOTAL		199	89.55



Lee's Summit Detail Shop
SITE PLAN
 89.6 KW DC Rooftop Photovoltaic System
 2100 NE Independence Ave, Lee's Summit,
 MO 64064, USA

NAME OF CUSTOMER	APPROVED
TITLE	CHECKED
SUBJECT	DESIGNED
PROJECT LOCATION	REMARKS
	DATE
	Rev #

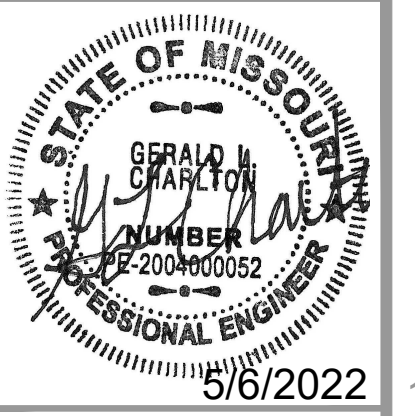
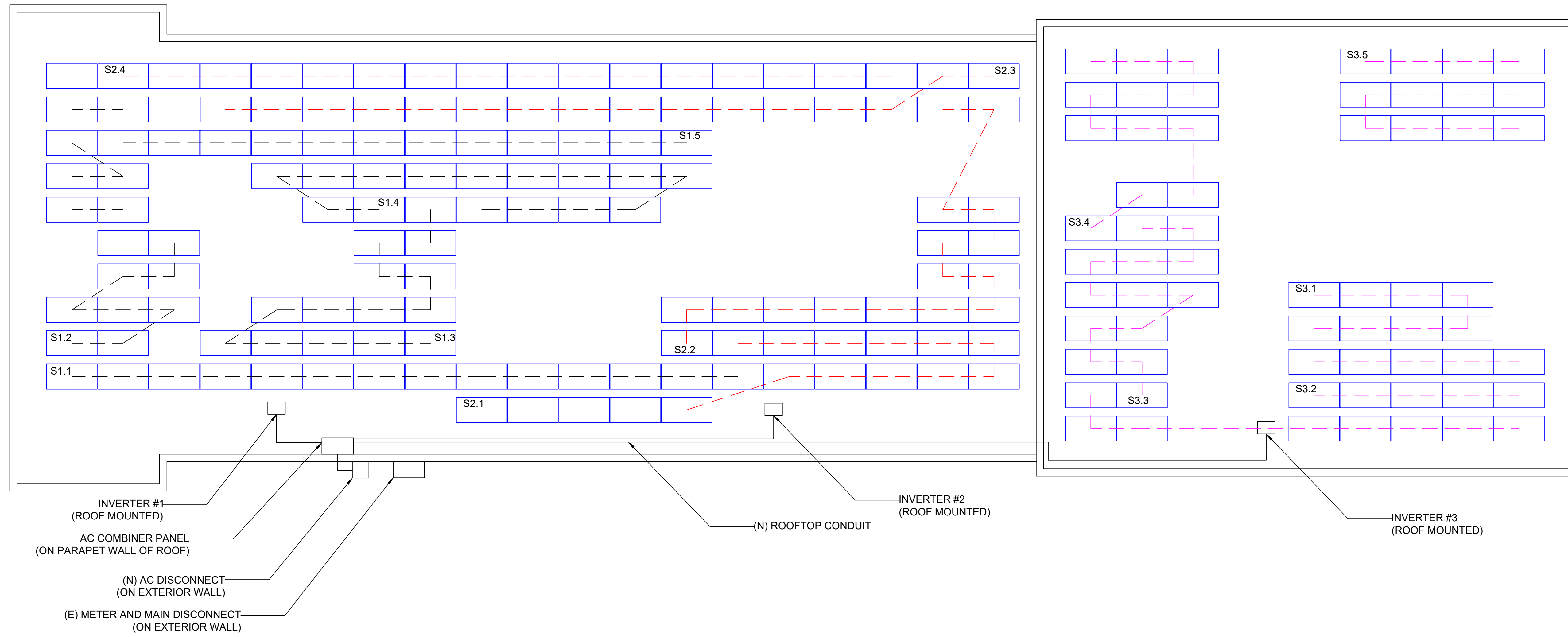
① ARRAY LAYOUT

Scale: 1/16"=1'

Artisun Solar
 12916 5TH ST
 GRANDVIEW, MO 64030
 PH: (813) 601-0700

DWG NO: **E-1**
 PROJ NO: NEI-210

STRING CONFIGURATION									
Array	Inverter No.	Inverter Capacity (KW)	MPPT No.	String Size	No. of Strings	Total Modules	Module Wattage (W)	Total DC Capacity (KW)	Module Count Per Inverter
ROOFTOP	1	22.7	1	14	3	42	450	18.9	72
			2	15	2	30	450	13.5	
	2	20	1	16	2	32	450	14.4	
			2	16	2	32	450	14.4	
	3	20	1	13	3	39	450	17.55	
			2	12	2	24	450	10.8	
TOTAL		62.7			14	199		89.55	



Lee's Summit Detail Shop
STRING DIAGRAM
 89.6 KW DC Rooftop Photovoltaic System
 2100 NE Independence Ave, Lee's Summit,
 MO 64064, USA

NAME OF CUSTOMER	TITLE	SUBJECT	PROJECT LOCATION

DESIGNED	CHECKED	APPROVED

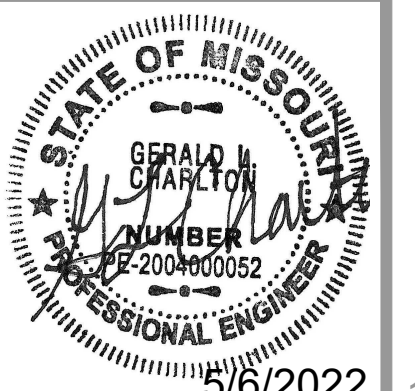
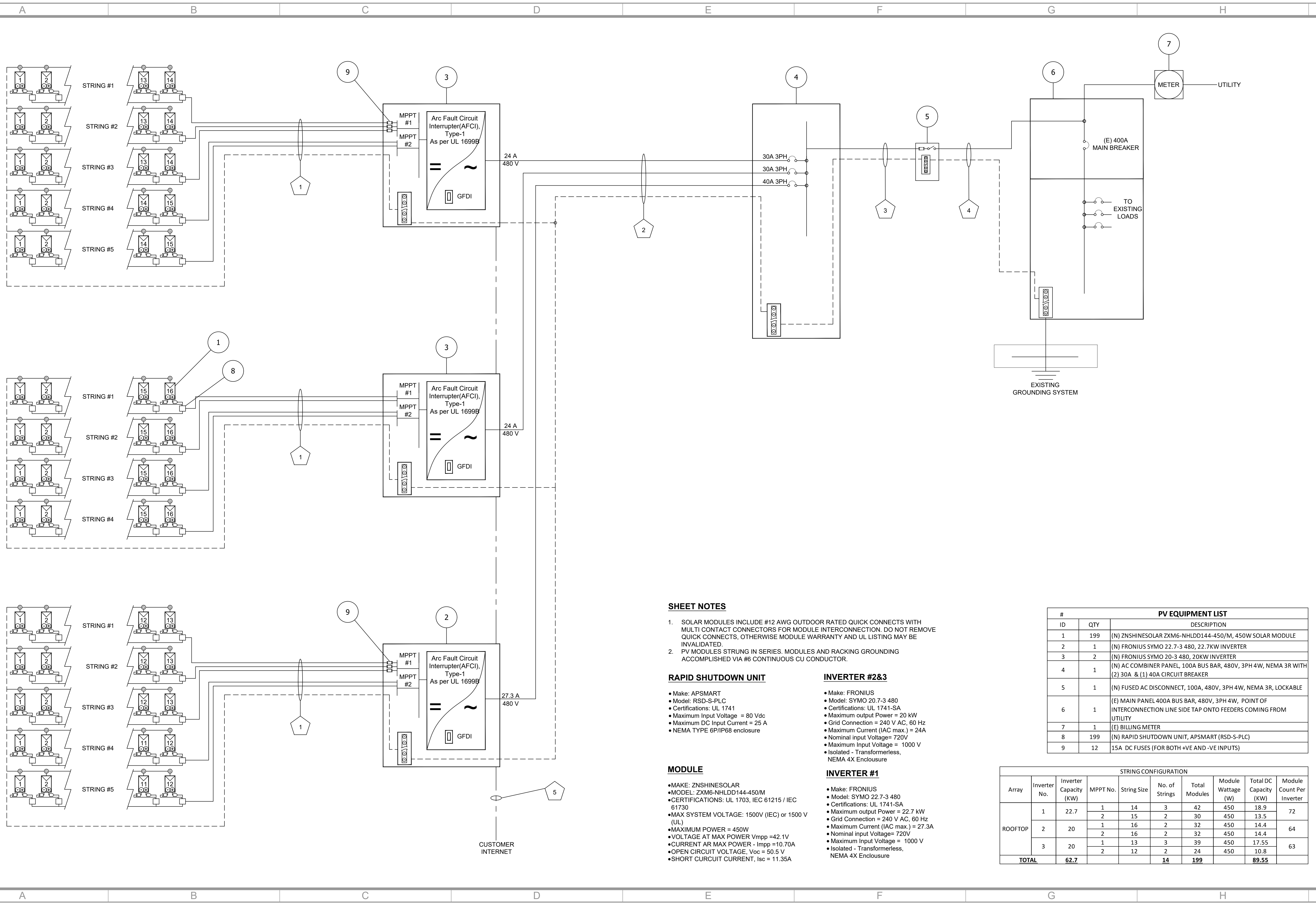
REV.#	DATE	REMARKS

1 STRING DIAGRAM

Artisun Solar
 12916 5TH ST
 GRANDVIEW, MO 64030
 PH: (813) 601-0700

DWG NO: **E-2**
 PROJ NO: NEI-210

Scale: 1/8"=1'



Lee's Summit Detail Shop
SINGLE LINE DIAGRAM
 89.6 KW DC Rooftop Photovoltaic System
 2100 NE Independence Ave, Lee's Summit,
 MO 64064, USA

NAME OF CUSTOMER	TITLE	SUBJECT	PROJECT LOCATION

Artisun Solar
 12916 5TH ST
 GRANDVIEW, MO 64030
 PH: (813) 601-0700

DWG NO: **E-3**
 PROJ NO: NEI-210

SHEET NOTES

- SOLAR MODULES INCLUDE #12 AWG OUTDOOR RATED QUICK CONNECTS WITH MULTI CONTACT CONNECTORS FOR MODULE INTERCONNECTION. DO NOT REMOVE QUICK CONNECTS, OTHERWISE MODULE WARRANTY AND UL LISTING MAY BE INVALIDATED.
- PV MODULES STRUNG IN SERIES. MODULES AND RACKING GROUNDING ACCOMPLISHED VIA #6 CONTINUOUS CU CONDUCTOR.

RAPID SHUTDOWN UNIT

- Make: APSMART
- Model: RSD-S-PLC
- Certifications: UL 1741
- Maximum Input Voltage = 80 Vdc
- Maximum DC Input Current = 25 A
- NEMA TYPE 6P/IP68 enclosure

MODULE

- MAKE: ZNSHINESOLAR
- MODEL: ZXM6-NHLD144-450/M
- CERTIFICATIONS: UL 1703, IEC 61215 / IEC 61730
- MAX SYSTEM VOLTAGE: 1500V (IEC) or 1500 V (UL)
- MAXIMUM POWER = 450W
- VOLTAGE AT MAX POWER Vmpp = 42.1V
- CURRENT AT MAX POWER - Impp = 10.70A
- OPEN CIRCUIT VOLTAGE, Voc = 50.5 V
- SHORT CIRCUIT CURRENT, Isc = 11.35A

INVERTER #2&3

- Make: FRONIUS
- Model: SYMO 20.7-3 480
- Certifications: UL 1741-SA
- Maximum output Power = 20 KW
- Grid Connection = 240 V AC, 60 Hz
- Maximum Current (IAC max.) = 24A
- Nominal input Voltage= 720V
- Maximum Input Voltage = 1000 V
- Isolated - Transformerless, NEMA 4X Enclosure

INVERTER #1

- Make: FRONIUS
- Model: SYMO 22.7-3 480
- Certifications: UL 1741-SA
- Maximum output Power = 22.7 KW
- Grid Connection = 240 V AC, 60 Hz
- Maximum Current (IAC max.) = 27.3A
- Nominal input Voltage= 720V
- Maximum Input Voltage = 1000 V
- Isolated - Transformerless, NEMA 4X Enclosure

#	ID	QTY	DESCRIPTION
1	199		(N) ZNSHINESOLAR ZXM6-NHLD144-450/M, 450W SOLAR MODULE
2	1		(N) FRONIUS SYMO 22.7-3 480, 22.7KW INVERTER
3	2		(N) FRONIUS SYMO 20-3 480, 20KW INVERTER
4	1		(N) AC COMBINER PANEL, 100A BUS BAR, 480V, 3PH 4W, NEMA 3R WITH (2) 30A & (1) 40A CIRCUIT BREAKER
5	1		(N) FUSED AC DISCONNECT, 100A, 480V, 3PH 4W, NEMA 3R, LOCKABLE
6	1		(E) MAIN PANEL 400A BUS BAR, 480V, 3PH 4W, POINT OF INTERCONNECTION LINE SIDE TAP ONTO FEEDERS COMING FROM UTILITY
7	1		(E) BILLING METER
8	199		(N) RAPID SHUTDOWN UNIT, APSMART (RSD-S-PLC)
9	12		15A DC FUSES (FOR BOTH +VE AND -VE INPUTS)

STRING CONFIGURATION									
Array	Inverter No.	Inverter Capacity (KW)	MPPT No.	String Size	No. of Strings	Total Modules	Module Wattage (W)	Total DC Capacity (KW)	Module Count Per Inverter
ROOFTOP	1	22.7	1	14	3	42	450	18.9	72
			2	15	2	30	450	13.5	
	2	20	1	16	2	32	450	14.4	64
			2	16	2	32	450	14.4	
	3	20	1	13	3	39	450	17.55	63
			2	12	2	24	450	10.8	
TOTAL		62.7			14	199		89.55	

WIRES AND CONDUIT SCHEDULE

TAG	INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	CONDUCTORS PER CONDUIT	CONDUIT	CONDUIT FILL %	OCPD	EGC PER CONDUIT	TEMP. CORR. FACTOR		# OF CURRENT CARRYING CONDUCTORS	CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT	BASE AMP	DERATED AMP	TERM. TEMP. RATING
1	ARRAY	INVERTER	(2) 12 AWG PV WIRE COPPER*	FREE AIR	NA	NA	(1) 6 AWG THWN-2 COPPER	0.91	38°C	NA	NA	9.43	15	30	27.3	90°C
2	INVERTER #1	AC COMBINER PANEL	(3) #10 PHASE, (1) #10 NEUTRAL, THWN-2 COPPER	0.75" DIA. RIGID	25.35%	40	(1) 6 AWG THWN-2 COPPER	0.91	38°C	3	1	27.3	34.125	40	36.4	90°C
2	INVERTER #2,#3	AC COMBINER PANEL	(3) #10 PHASE, (1) #10 NEUTRAL, THWN-2 COPPER	0.75" DIA. RIGID	25.35%	30	(1) 6 AWG THWN-2 COPPER	0.91	38°C	3	1	24	30	40	36.4	90°C
3	AC COMBINER PANEL	AC DISCONNECT	(3) #3 PHASE, (1) #3 NEUTRAL, THWN-2 COPPER	1.25" DIA RIGID	29.41%	100	(1) 6 AWG THWN-2 COPPER	0.91	38°C	3	1	75	94.13	115	104.65	90°C
4	AC DISCONNECT	MSP	(3) #3 PHASE, (1) #3 NEUTRAL, THWN-2 COPPER	1.25" DIA RIGID	29.41%	100	(1) 6 AWG THWN-2 COPPER	0.91	38°C	3	1	75	94.13	115	104.65	90°C
5	CAT 5E COMMUNICATION WIRE FOR INVERTER SHALL BE INSTALLED IN SEPARATE CONDUIT OR OUTDOOR RATED AND ROUTED TO CLIENT INTERNET ROUTER															

* 1000V RATED

SYSTEM PROPERTIES		
No Of Modules	199	Nos
Max. Ambient temp @ Site	38	°C
Min Ambient Temp @ site	-17.7	°C
STC Temp	25	°C
No of Modules in a String	18	Nos
Ambient temp (for cable sizing)	36-40	°C

Module	ZNSHINE SOLAR	
Module Power	450	W
Module Voc	50.5	V
Module Vmp	42.1	V
Module Isc	11.35	A
Module Imp	10.7	A
Temp Coefficient for Voc	-0.29%	%/°C
Temp Coefficient for Vmp	-0.29%	%/°C
Temp Coefficient for Isc	0.05%	%/°C
Max. System Voltage	1500	V

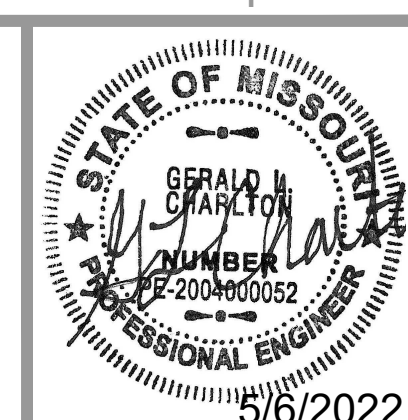
Maximum System Voltage		
No of Modules in a String	16	
No of Strings	4	Nos
Voc @ Max. Ambient	48.60	V
Voc@ Min. Ambient	56.75	V
Vmp @ Max. Ambient	40.51	V
Vmp @ Min. Ambient	47.31	V
MPPT Lower Range	648.21	V
MPPT Upper Range	757.01	V
Min. Operating Voltage	648.21	V
Max. Operating Voltage	757.01	V
ISC/String	11.35	A
Isc @ Max. Ambient	11.42	A
Isc @ Min. Ambient	11.11	A
Max. System Voltage	908.05	V

Maximum System Voltage		
No of Modules in a String	12	
No of Strings	2	Nos
Voc @ Max. Ambient	48.60	V
Voc@ Min. Ambient	56.75	V
Vmp @ Max. Ambient	40.51	V
Vmp @ Min. Ambient	47.31	V
MPPT Lower Range	486.15	V
MPPT Upper Range	567.76	V
Min. Operating Voltage	486.15	V
Max. Operating Voltage	567.76	V
ISC/String	11.35	A
Isc @ Max. Ambient	11.42	A
Isc @ Min. Ambient	11.11	A
Max. System Voltage	681.04	V

Maximum System Voltage		
No of Modules in a String	15	
No of Strings	2	Nos
Voc @ Max. Ambient	48.60	V
Voc@ Min. Ambient	56.75	V
Vmp @ Max. Ambient	40.51	V
Vmp @ Min. Ambient	47.31	V
MPPT Lower Range	607.69	V
MPPT Upper Range	709.70	V
Min. Operating Voltage	607.69	V
Max. Operating Voltage	709.70	V
ISC/String	11.35	A
Isc @ Max. Ambient	11.42	A
Isc @ Min. Ambient	11.11	A
Max. System Voltage	851.30	V

Maximum System Voltage		
No of Modules in a String	14	
No of Strings	3	Nos
Voc @ Max. Ambient	48.60	V
Voc@ Min. Ambient	56.75	V
Vmp @ Max. Ambient	40.51	V
Vmp @ Min. Ambient	47.31	V
MPPT Lower Range	567.18	V
MPPT Upper Range	662.39	V
Min. Operating Voltage	567.18	V
Max. Operating Voltage	662.39	V
ISC/String	11.35	A
Isc @ Max. Ambient	11.42	A
Isc @ Min. Ambient	11.11	A
Max. System Voltage	794.55	V

Maximum System Voltage		
No of Modules in a String	13	
No of Strings	3	Nos
Voc @ Max. Ambient	48.60	V
Voc@ Min. Ambient	56.75	V
Vmp @ Max. Ambient	40.51	V
Vmp @ Min. Ambient	47.31	V
MPPT Lower Range	526.67	V
MPPT Upper Range	615.07	V
Min. Operating Voltage	526.67	V
Max. Operating Voltage	615.07	V
ISC/String	11.35	A
Isc @ Max. Ambient	11.42	A
Isc @ Min. Ambient	11.11	A
Max. System Voltage	737.79	V



NAME OF CUSTOMER: Lee's Summit Detail Shop
 TITLE: WIRE SCHEDULE & CALCULATIONS
 SUBJECT: 89.6 KW DC Rooftop Photovoltaic System
 PROJECT LOCATION: 2100 NE Independence Ave, Lee's Summit, MO 64064, USA

DESIGNED	CHECKED	APPROVED
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rev #	DATE	REMARKS

Artisun Solar
 12816 5TH ST
 GRANDVIEW, MO 64030
 PH: (813) 601-0700

DWG NO: E-4
 PROJ NO: NEI-210

ALL LABEL MATERIAL SHALL BE WEATHER RESISTANT AND SUITABLE FOR THE ENVIRONMENT. LETTERS SHALL BE CAPITALIZED WITH A MIN. HEIGHT OF 3/8" (9.5MM) WHITE ON RED BACKGROUND. NOT ALL LABELS WILL BE APPLICABLE TO EVERY PROJECT



INCLUDE THE FOLLOWING LABELS ON ALL CONDUIT CONTAINING DC CONDUCTORS

PLACE EVERY 10' AND AFTER EACH BEND ON CONDUIT
PVLABELS.COM PLACARD 02-329

CAUTION: SOLAR CIRCUIT

INCLUDE THE FOLLOWING LABELS ON ALL SERVICEABLE EQUIPMENT

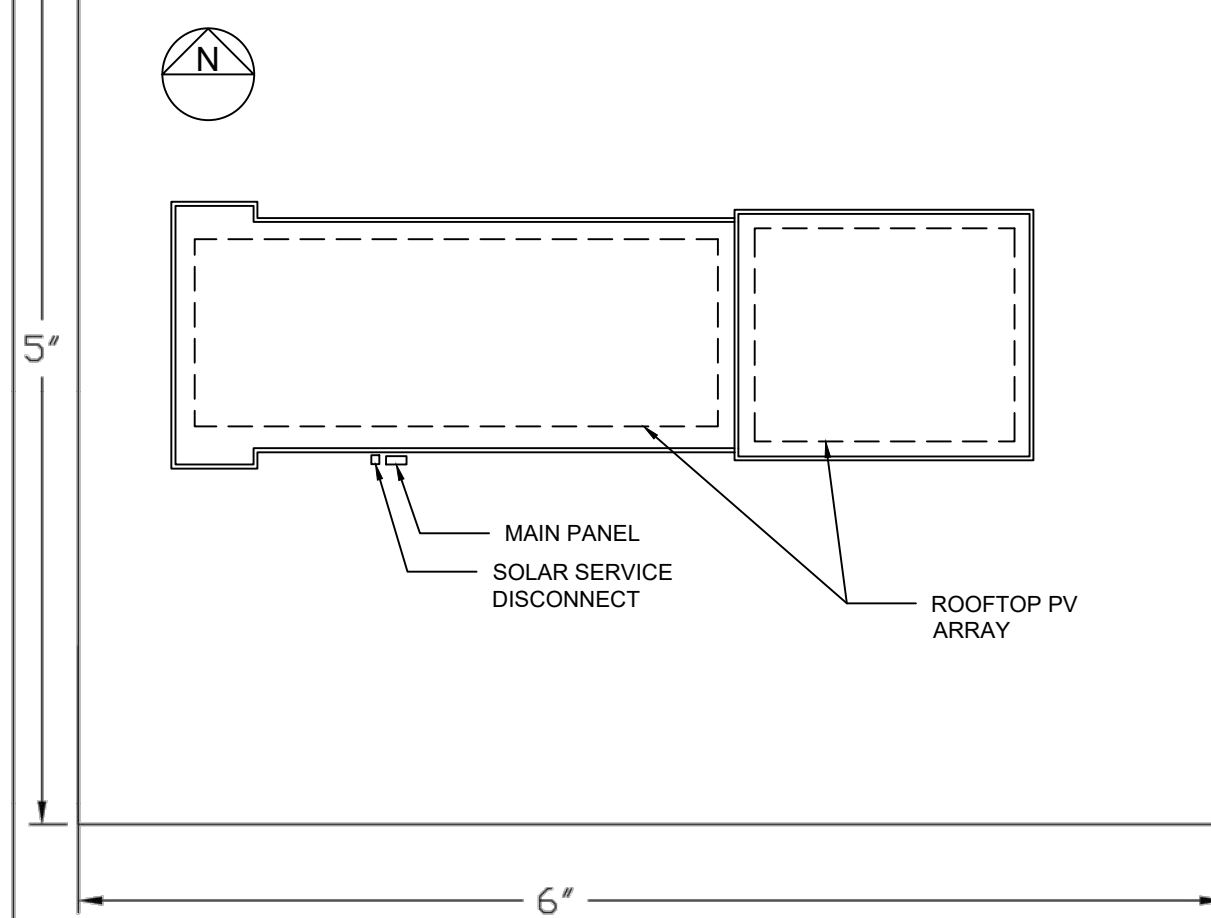
PVLABELS.COM LABEL 05-580



INCLUDE THE FOLLOWING LABELS ON UTILITY METER

A SITE DIRECTORY PLAQUE SHALL BE LOCATED ON OR BESIDE THE BI-DIRECTIONAL UTILITY BILLING METER PER NEC ARTICLE 705.10

CAUTION: POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH A DISCONNECT LOCATED AS SHOWN



PVLABELS.COM LABEL 03-211



INCLUDE THE FOLLOWING LABELS ON ALL ROOFTOP DC JUNCTION BOXES

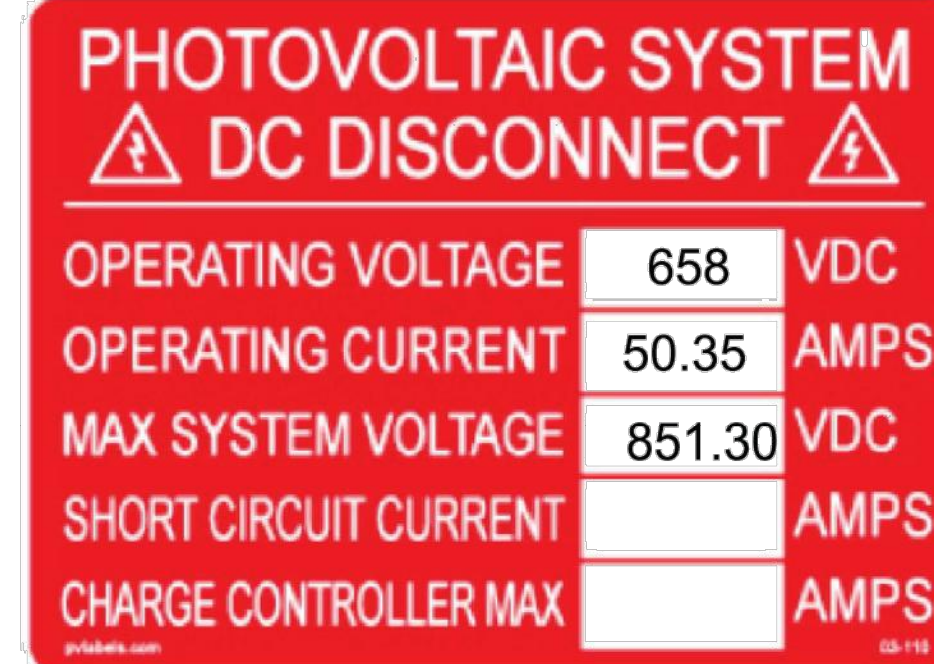
PVLABELS.COM LABEL 03-102



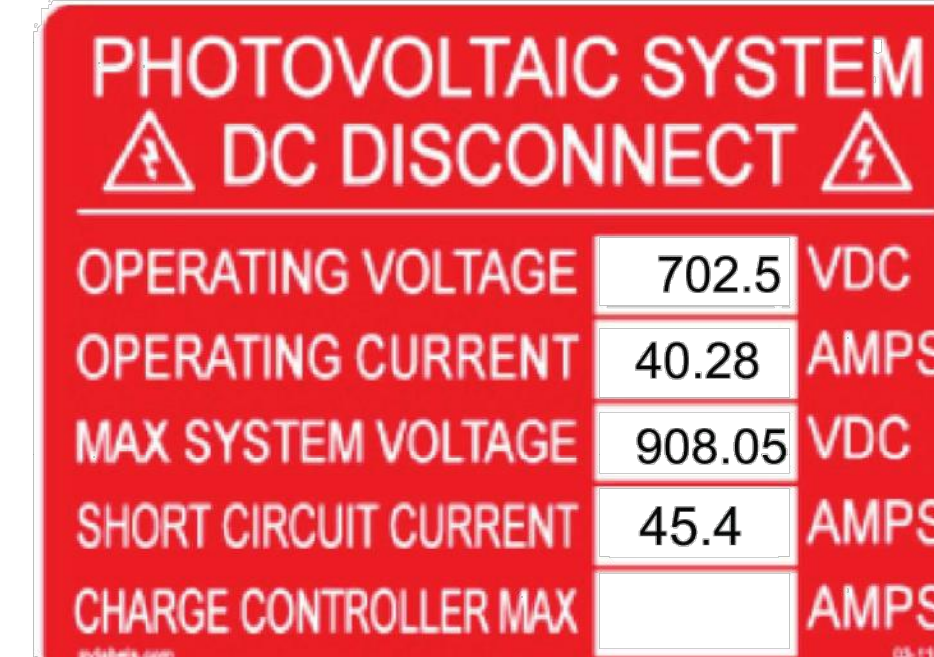
INCLUDE THE FOLLOWING LABELS ON INVERTERS

PVLABELS.COM LABEL 03-110

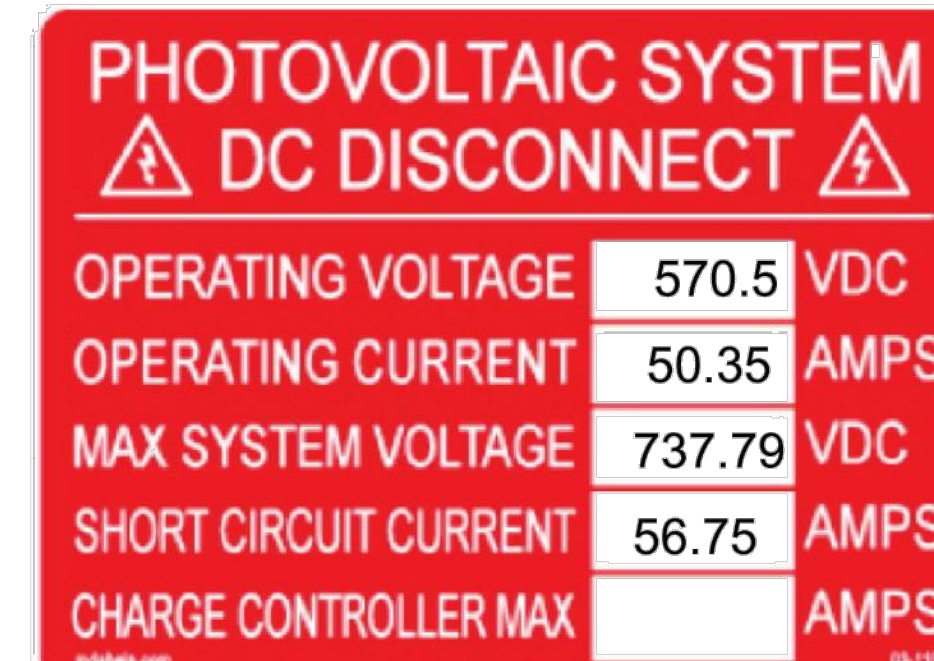
INVERTER #1



INVERTER #2



INVERTER #3



PVLABELS.COM LABEL 03-102



INCLUDE THE FOLLOWING LABELS ON POINT OF INTERCONNECTION EQUIPMENT

PVLABELS.COM LABEL 03-211



PVLABELS.COM LABEL 03-344



PVLABELS.COM LABEL 03-326



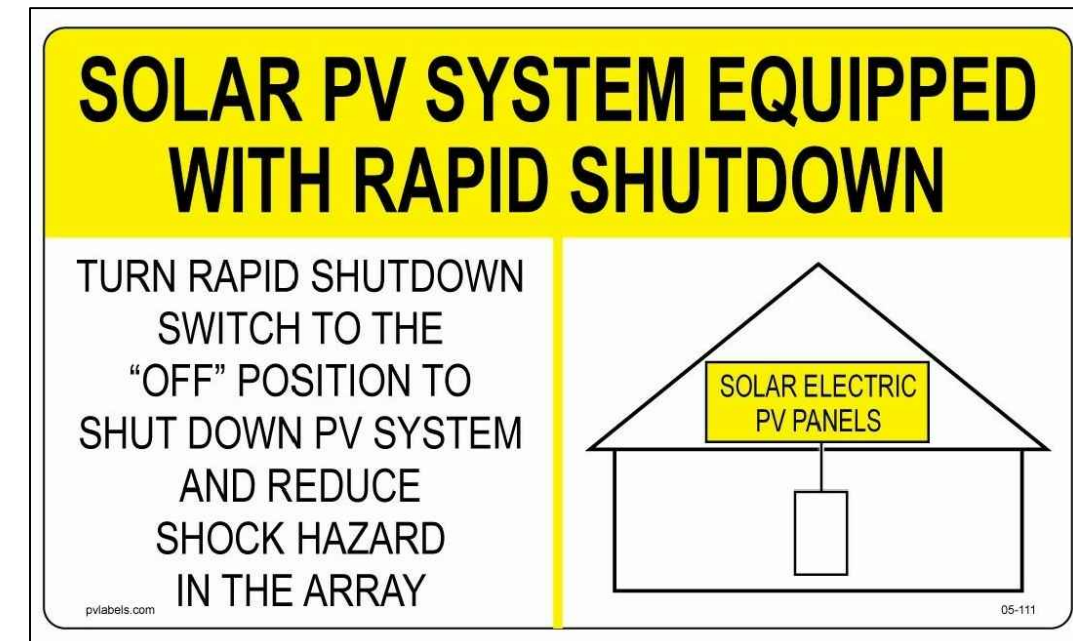
INCLUDE THE FOLLOWING LABELS ON AC DISCONNECTS

PVLABELS.COM LABEL 03-116

SYSTEM #1



PVLABELS.COM LABEL 02-316

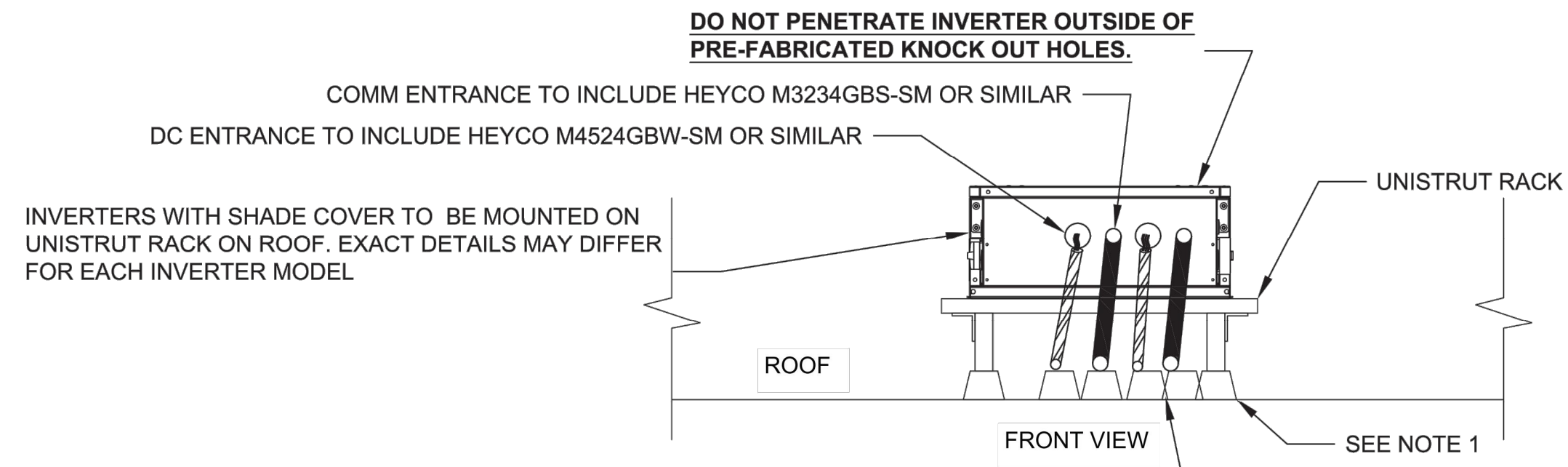


NAME OF CUSTOMER: Lee's Summit Detail Shop
TITLE: LABELS
SUBJECT: 89.6 KW DC Rooftop Photovoltaic System
PROJECT LOCATION: 2100 NE Independence Ave, Lee's Summit, MO 64064, USA

DESIGNED	CHECKED	APPROVED	REMARKS	DATE	REV #

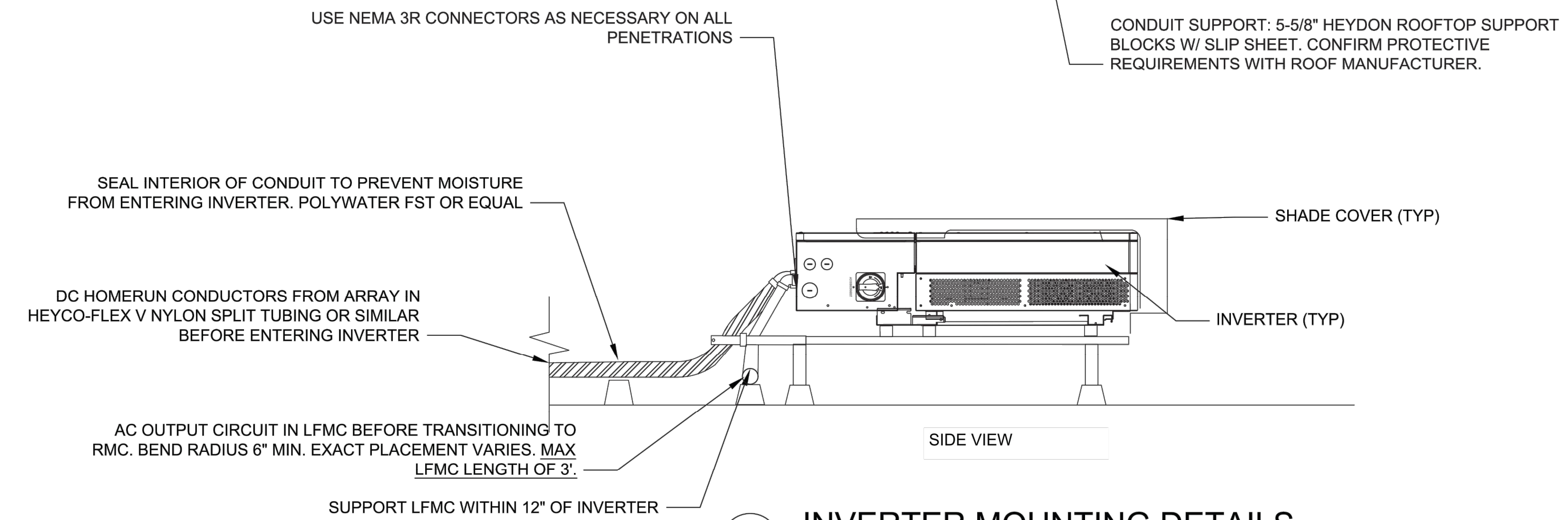
Artisun Solar
12916 5TH ST
GRANDVIEW, MO 64030
PH: (813) 601-0700

DWG NO: E-5
PROJ NO: NEI-210

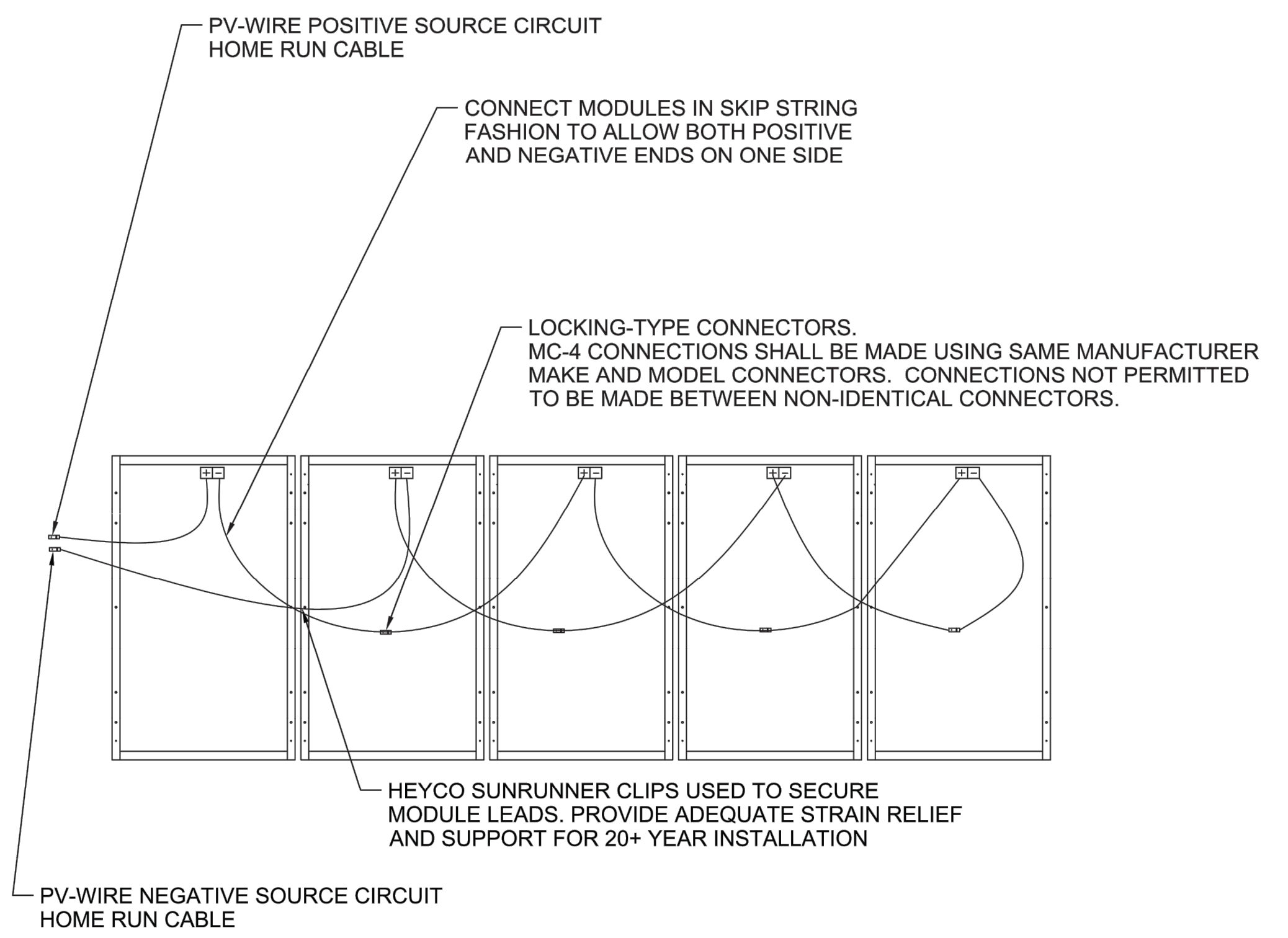


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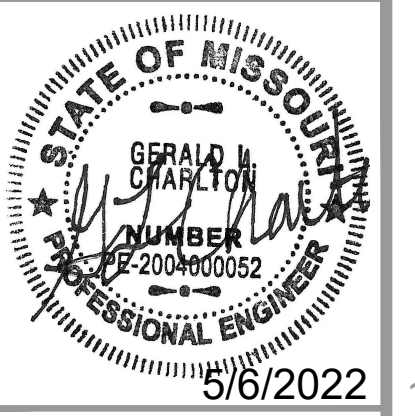
- INVERTER RACK ROOF ATTACHMENT WILL VARY ACCORDING TO ROOF TYPE ACCORDINGLY:
 A. FLAT ROOF: (4) 5-5/8" HEYDON ROOFTOP SUPPORT BLOCKS OR SIMILAR W/ SLIP SHEET. CONFIRM PROTECTIVE REQUIREMENTS WITH ROOF MANUFACTURER.
 B. STANDING SEAM: (4) SS U CLAMPS CLAMPS
 C. CORRUGATED METAL: (4) VERSABRACKETS OR SIMILAR. **ATTACHMENT MUST LAND ON ROOF STRUCTURAL MEMBER.**
- ALL CONDUITS TO BE PROPERLY BONDED PER NEC GUIDELINES.



1 INVERTER MOUNTING DETAILS
SCALE: NTS



2 PV STRING WIRING DETAIL
NTS

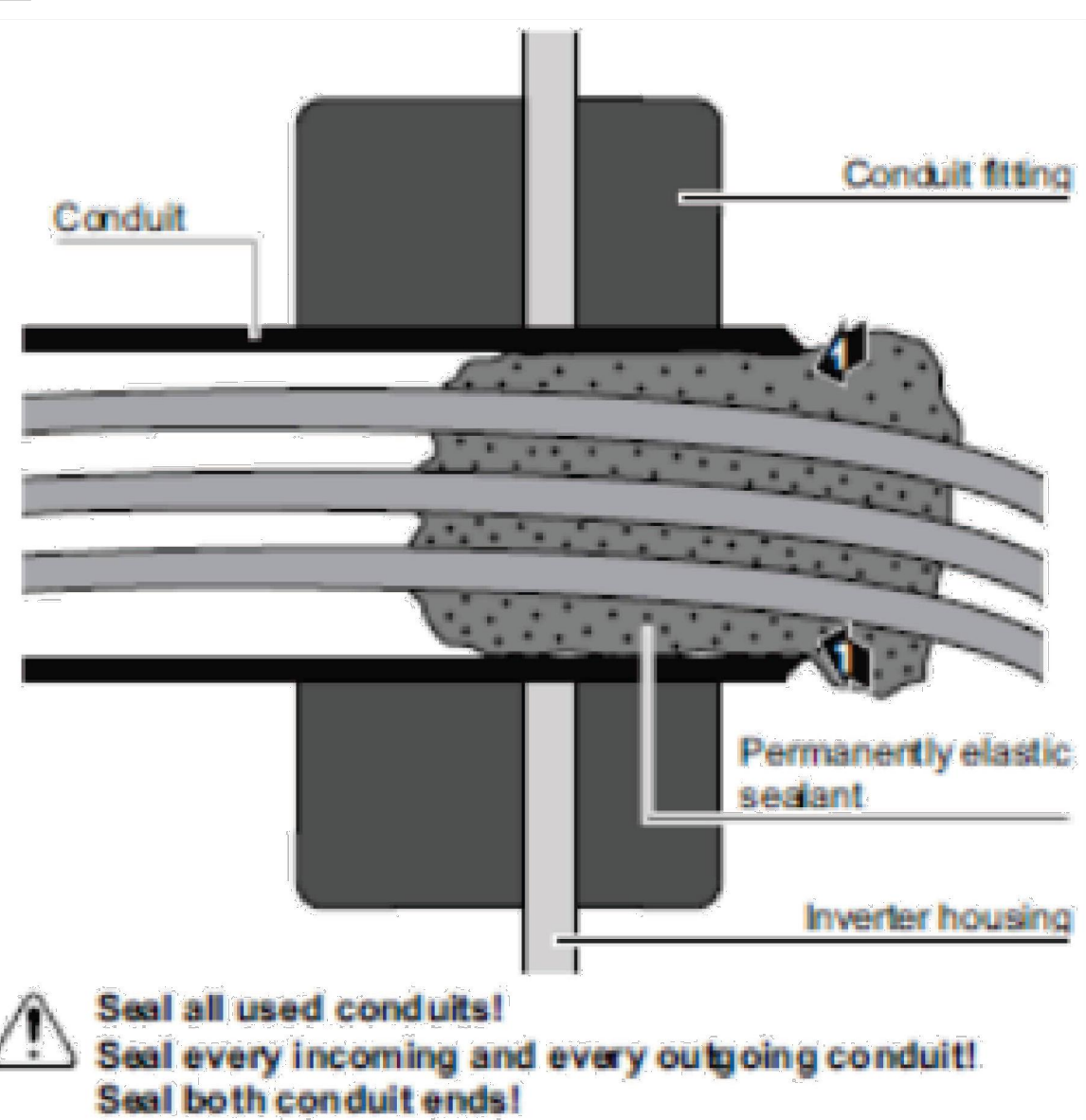
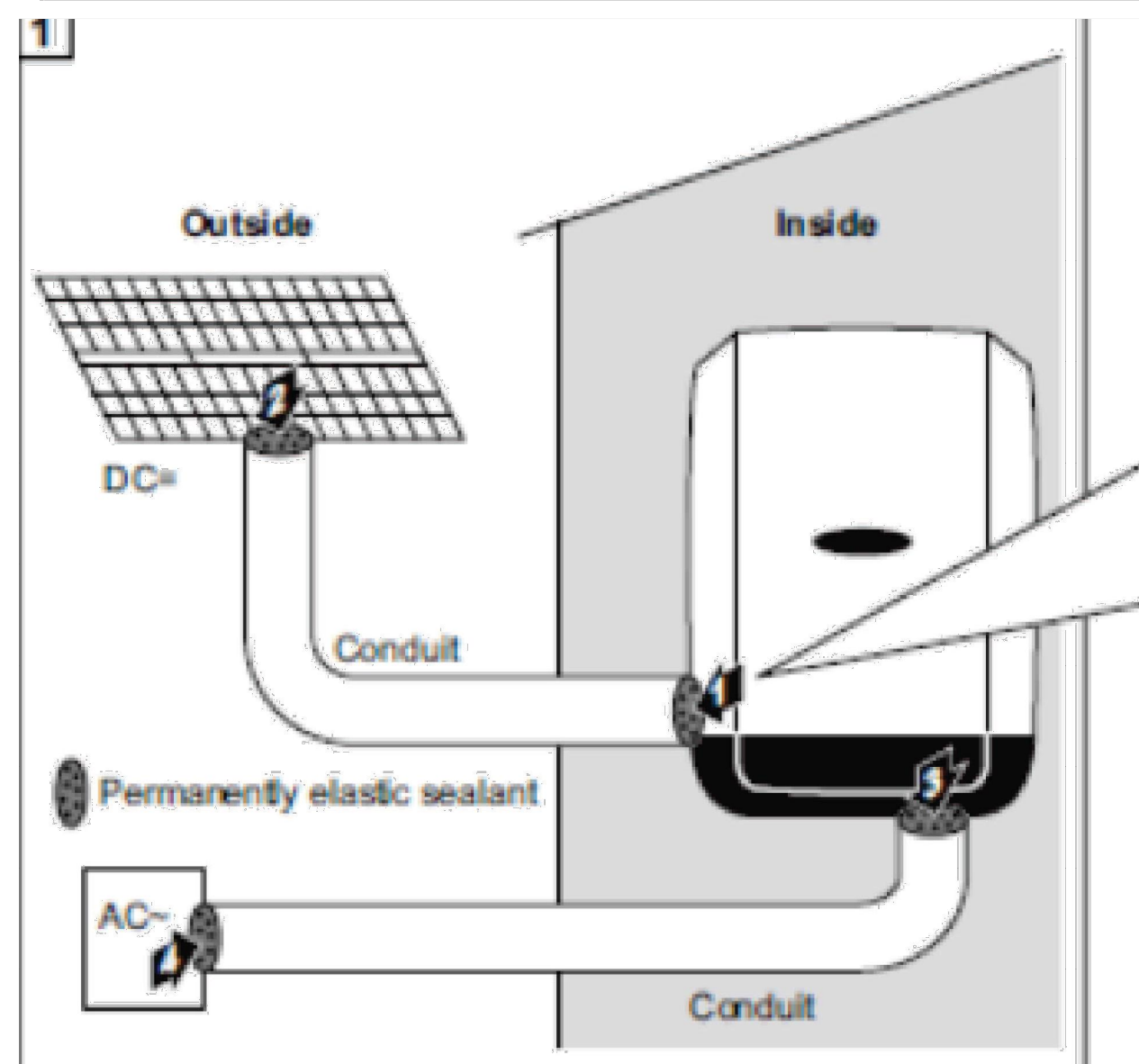
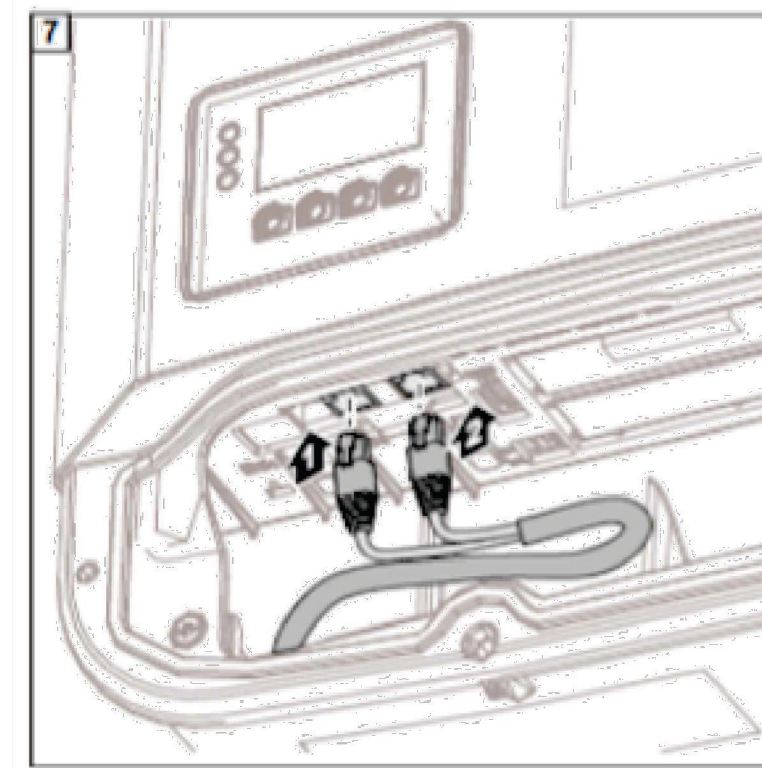
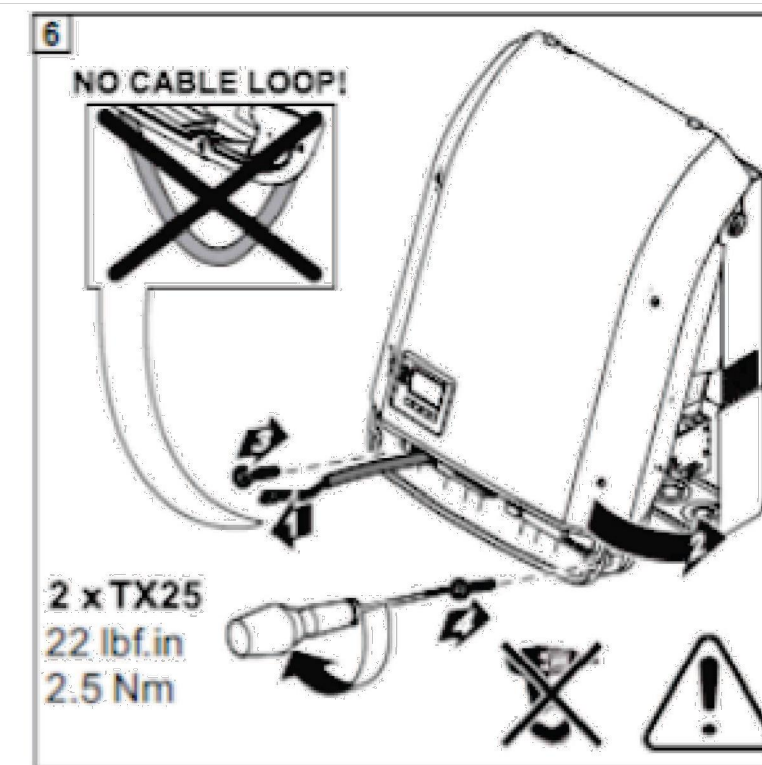
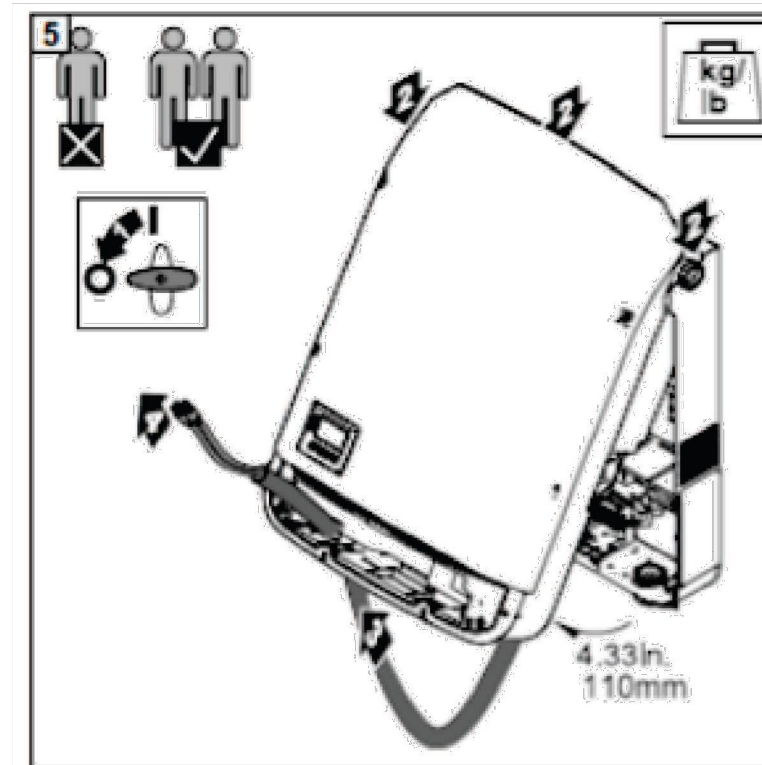
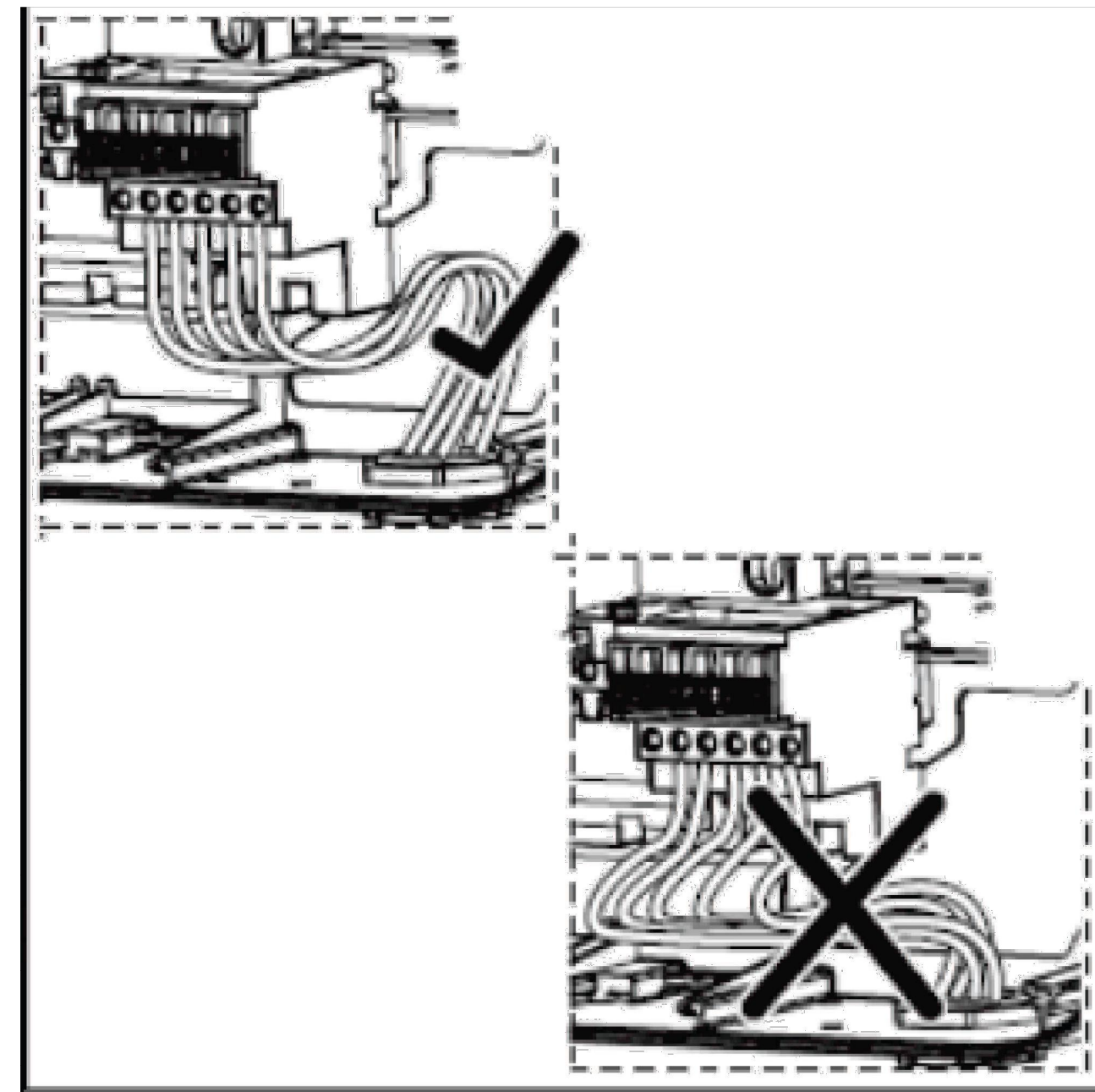


Lee's Summit Detail Shop
EQUIPMENT DETAIL
 89.6 KW DC Rooftop Photovoltaic System
 2100 NE Independence Ave, Lee's Summit,
 MO 64064, USA

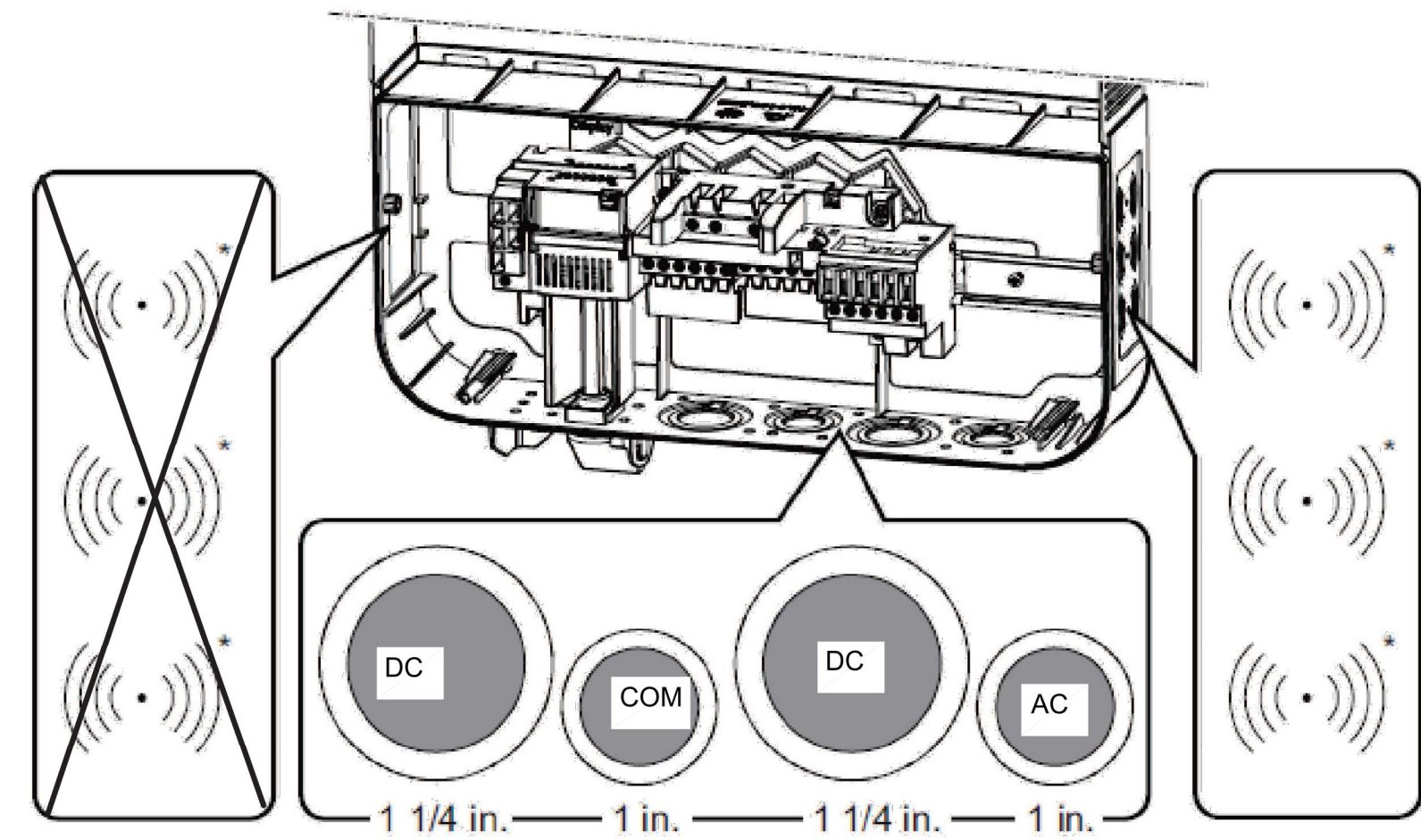
NAME OF CUSTOMER	Lee's Summit Detail Shop
TITLE	EQUIPMENT DETAIL
SUBJECT	89.6 KW DC Rooftop Photovoltaic System
PROJECT LOCATION	2100 NE Independence Ave, Lee's Summit, MO 64064, USA
DESIGNED	<input type="checkbox"/>
CHECKED	<input type="checkbox"/>
APPROVED	<input type="checkbox"/>
REMARKS	
DATE	
REV #	

Artisun Solar
 12916 5TH ST
 GRANDVIEW, MO 64030
 PH: (813) 601-0700

DWG NO: E-6
 PROJ NO: NEI-210



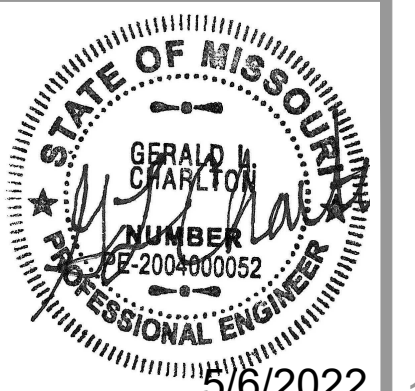
Seal all used conduits!
Seal every incoming and every outgoing conduit!
Seal both conduit ends!



1/2 in. ... DATCOM
3/4 in. - 1 1/4 in. ... AC ~ / DC =
* Conduit size
1/2 in. / 3/4 in. / 1 in.
** Conduit size
1/2 in. / 3/4 in. / 1 in. / 1 1/4 in.

METAL EMPOSSING
Remove parts fallen into the connection area before hanging the inverter to the wall bracket!

METAL EMPOSSING
Remove parts fallen into the connection area before hanging the inverter to the wall bracket!



Lee's Summit Detail Shop
EQUIPMENT DETAIL
89.6 KW DC Rooftop Photovoltaic System
2100 NE Independence Ave, Lee's Summit, MO 64064, USA

NAME OF CUSTOMER	TITLE	SUBJECT	PROJECT LOCATION

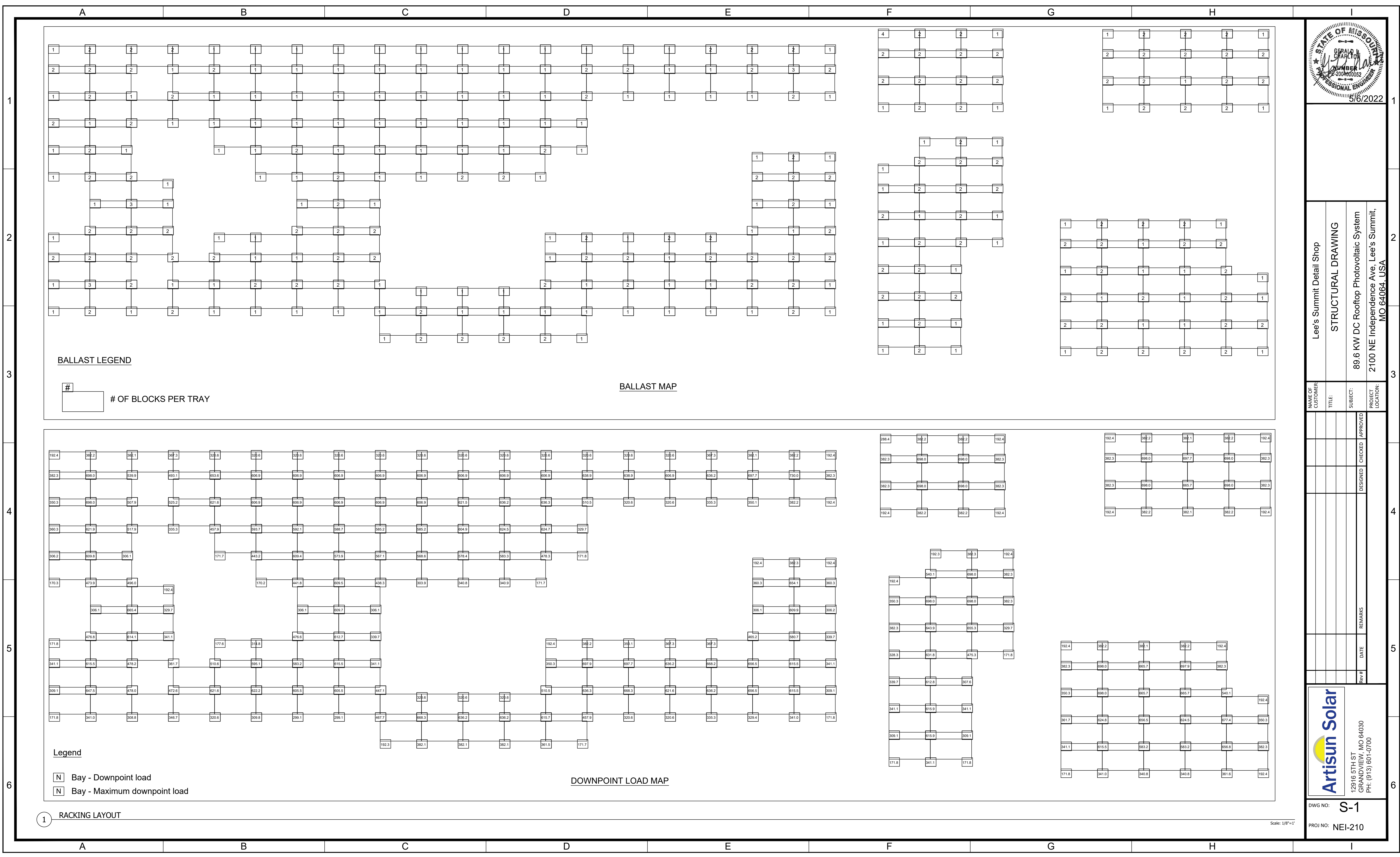
DESIGNED	CHECKED	APPROVED

REVISIONS	DATE	REMARKS

Artisun Solar
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GRANDVIEW, MO 64030
PH: (813) 601-0700

DWG NO: E-7
PROJ NO: NEI-210

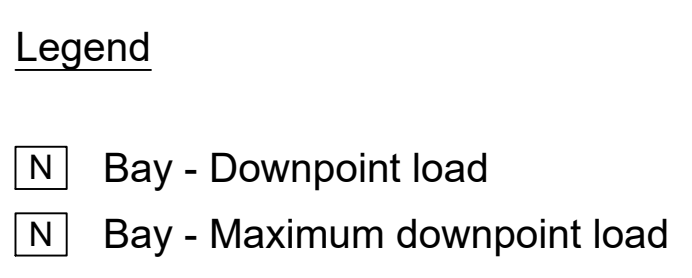
1 INSTALLATION MANUAL DETAILS
NTS



BALLAST LEGEND



BALLAST MAP



DOWNPOINT LOAD MAP

1 RACKING LAYOUT



NAME OF CUSTOMER	Lee's Summit Detail Shop
TITLE	STRUCTURAL DRAWING
SUBJECT	89.6 KW DC Rooftop Photovoltaic System
PROJECT LOCATION	2100 NE Independence Ave, Lee's Summit, MO 64064, USA

Rev #	DATE	REMARKS	DESIGNED	CHECKED	APPROVED

Artisun Solar
 12916 6TH ST
 GRANDVIEW, MO 64030
 PH: (816) 601-0700

DWG NO: **S-1**
 PROJ NO: NEI-210

Scale: 1/8"=1'

ZXM6-NHLDD144 Series

Zshinesolar 98B HALF-CELL Bifacial Light-Weight Double Glass Mono PV Module

Mono Poly Solutions

425W | 430W | 435W | 440W | 445W | 450W

Made with selected materials and components to ensure quality, longevity, efficiency and stable outputs, the ZXM6-NHLDD144 monocrystalline modules by ZSHINE SOLAR represents a highly flexible solution for diverse installation types, from small home PV systems to industrial rooftop plants to large utility arrays.

12 years product warranty/30 years output warranty
0.5% Annual Degradation over 30 years

More power output
Module RS decreases, FF (fill factor) increases, power gain is stable above 15%, and can be increased by 5-10W

Anti PID
Limited power degradation of ZXM6-NHLDD144 module caused by PID effect is guaranteed under strict testing condition for mass production

Bifacial technology
Enables additional energy harvesting from rear side (up to 25%)

High Efficiency
A high efficiency PERC solar cell with 9 busbars technology to ensure the efficiency of the solar module up to 20.70% and stable operation

Better Weak Illumination Response
Lower temperature coefficient and wide spectral response, higher power output, even under low-light settings

Grahpene Coating(Optional*)
Graphene coating modules can increase power generation and self-cleaning, also can save maintenance cost *Can be customized

ZSHINE PV-TECH CO., LTD. founded in 1988, is a world-leading high-performance PV module manufacturer, PV power station developer, EPC and power station owner. With its state-of-the-art production lines, the company boasts module output of 50W. Bloomberg has listed ZSHINE as a global Tier 1 PV manufacturer and Top 4 reliable PV supplier.

ZXM6-NHLDD144 Series

Zshinesolar 98B HALF-CELL Bifacial Light-Weight Double Glass Mono PV Module

ELECTRICAL PROPERTIES | STC*

Module Type	ZXM6-NHLDD144-425W	ZXM6-NHLDD144-430W	ZXM6-NHLDD144-435W	ZXM6-NHLDD144-440W	ZXM6-NHLDD144-445W	ZXM6-NHLDD144-450W
Nominal Power (P _{max} W)	425	430	435	440	445	450
Power Output Tolerance (P _{max} %)	0~+3	0~+3	0~+3	0~+3	0~+3	0~+3
Maximum Power Voltage (V _{mp} V)	41.1	41.3	41.5	41.7	41.9	42.1
Maximum Power Current (I _{mp} A)	10.35	10.42	10.49	10.56	10.63	10.70
Open Circuit Voltage (V _{oc} V)	49.5	49.7	49.9	50.1	50.3	50.5
Short Circuit Current (I _{sc} A)	11.00	11.07	11.14	11.21	11.28	11.35
Module Efficiency (%)	19.55	19.78	20.01	20.24	20.47	20.70

TEMPERATURE RATINGS

Temperature coefficient of P_{max}: -0.36%/°C
 Temperature coefficient of V_{oc}: -0.29%/°C
 Temperature coefficient of I_{sc}: 0.05%/°C

MECHANICAL DATA

Solar cells: Mono 166*93mm
 No. of Cells: 144 (6*24)
 Module dimension: 2094*1038*30 mm (With Frame)
 Weight: 28 kg
 Glass: 2.0mm+2.0mm heat strengthened glass
 Junction box: IP 68, 3 diodes
 Cables: 4 mm², 350 mm or Customized Length
 Connections: MC4 compatible or Customized Connectors

PACKAGING INFORMATION

Packing Type: 40' HQ
 Pallet Size: 36
 Pallet/Container: 792

I-V CURVES OF THE PV MODULE

Address: 1# Zhai Industrial Zone, Jintan (Jiangsu) 213211, P.R. China
 Tel: +86 519 682 0283 Email: info@zshinesolar.com

APsmart

Raising the bar in innovative DC MLPE solar power systems

RSD-S-PLC

Meets NEC 2017 & 2020 (690.12) requirements
 Executes rapid shutdown of system when Transmitter-PLC signal is absent
 Meets SunSpec requirements

The RSD-S-PLC meets SunSpec requirements, maintaining normal function by continually receiving a heartbeat signal from the APsmart Transmitter. The RSD executes rapid system shutdown when the Transmitter signal is absent. Users can manually execute rapid shutdown using Transmitter breaker switch.

RSD-S-PLC TECHNICAL DATA

MODEL: RSD-S-PLC

INPUT DATA (DC)

Input Operating Voltage Range: 8-80V
 Maximum Cont. Input Current (I_{max}): 15A
 Maximum Short Circuit Current (I_{sc}): 25A

OUTPUT DATA (DC)

Output Operating Voltage Range: 8-80V
 Maximum System Voltage: 1000V/1500V
 Maximum Series Fuse Rating: 30A

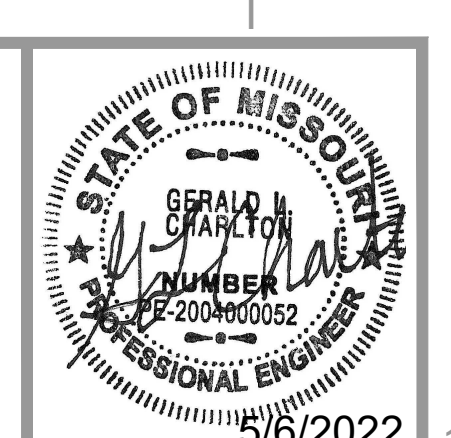
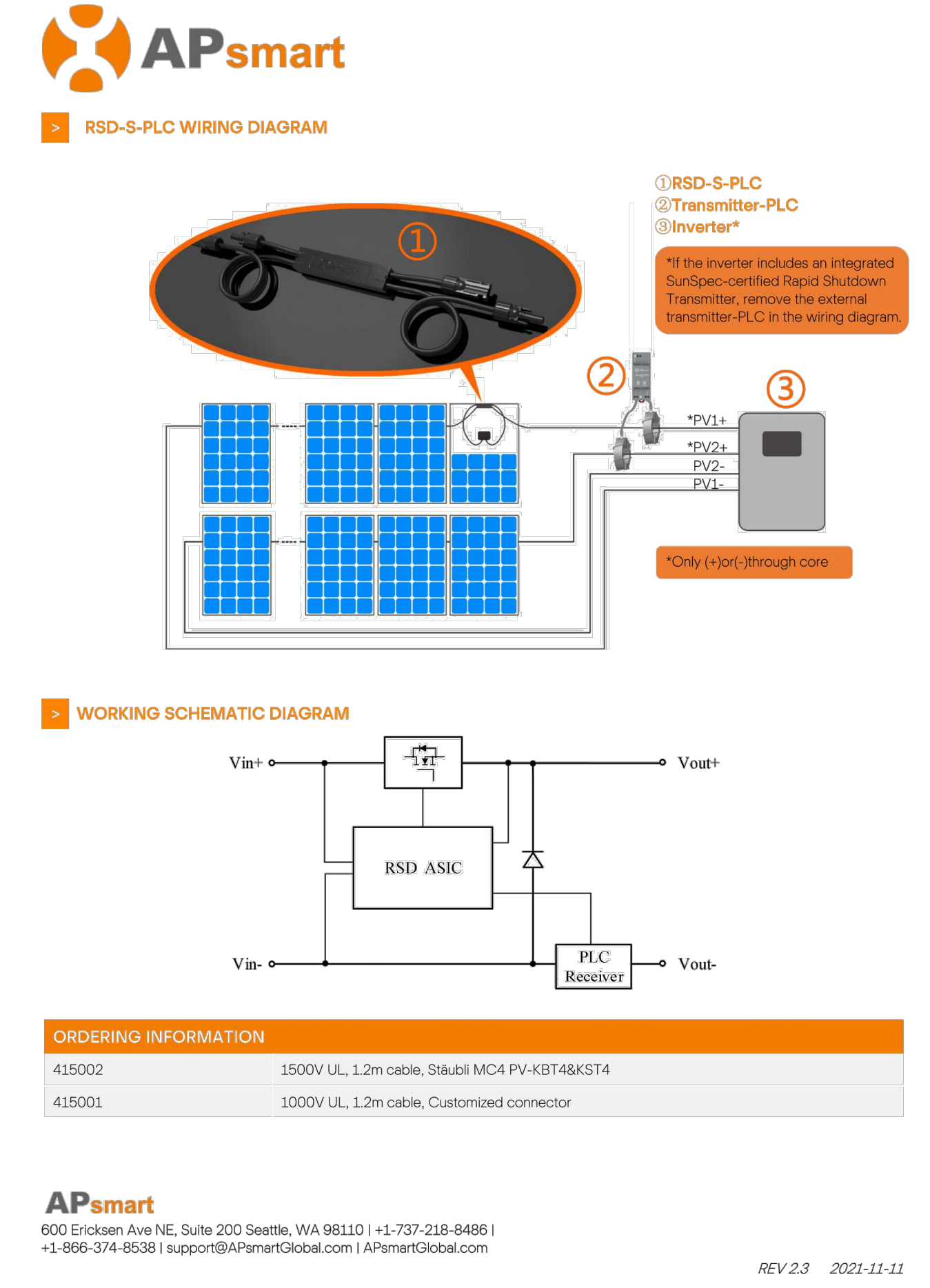
MECHANICAL DATA

Operating Ambient Temperature Range: -40°F to +185°F (-40°C to +85°C)
 Dimensions (without cable & connectors): 5" x 1.2" x 0.8" (129 mm x 30 mm x 16 mm)
 Cable Length: Input 250mm/Output 1200mm
 Cable Cross Section Size: UL12AWG
 Connector: Stäubli MC4 PV-KBT48KT4 or Customize
 Enclosure Rating: NEMA Type 6P/IP68
 Over Temperature Protection: Yes

FEATURES & COMPLIANCE

PLC: NEC 2017 & 2020 (690.12); UL1741; CSA C22.2 No. 330-17; IEC/EN62109-1; 2PF02305
 Safety Compliance: NEC 2017 & 2020 (690.12); UL1741; CSA C22.2 No. 330-17; IEC/EN62109-1; 2PF02305
 EMC Compliance: FCC Part15; ICES-003/IEC/EN61000-6-1/-2/-3/4

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 +1-866-374-6538 | support@APsmartGlobal.com | APsmartGlobal.com



Lee's Summit Detail Shop
 EQUIPMENT DATA SHEET

NAME OF CUSTOMER: 89.6 KW DC Rooftop Photovoltaic System
 TITLE: 2100 NE Independence Ave., Lee's Summit, MO 64064, USA
 SUBJECT: PROJECT LOCATION:
 DATE: REV #1

FRONIUS SYMO ADVANCED

Perfect Welding / Solar Energy / Perfect Charging

Powering three-phase projects that last - now with integrated SunSpec PLC

Featuring ten models ranging from 10 kW to 24 kW, the Fronius Symo Advanced is the ideal inverter for commercial applications. The new Advanced versions combine the benefits of the Fronius Symo with additional value for states with Module-Level Shutdown requirements including integrated PLC transmitter for SunSpec Rapid Shutdown communication standard, compliance with NEC pre-2014, 2014 and 2017, zero tilt mounting, light weight and field serviceability.

TECHNICAL DATA FRONIUS SYMO ADVANCED (208-240 V VERSIONS)

INPUT DATA	SYMO 10.0-3 208-240	SYMO 12.0-3 208-240	SYMO 15.0-3 208-240	SYMO 20.0-3 208-240	SYMO 24.0-3 208-240
Max. PV generator output (P _{g,max})	15 kW _{max}	18 kW _{max}	22.5 kW _{max}	30 kW _{max}	36 kW _{max}
Max. input current (I _{g,max}) (I _{g,max})	25 A / 16.5 A	31.2 A / 24.8 A	39.1 A / 30.5 A	51.7 A / 40.1 A	62.1 A / 48.5 A
Max. string short circuit current (MPP / MPPT)	33.2 A / 24.8 A	41.5 A / 32.4 A	51.7 A / 40.1 A	68.8 A / 53.6 A	82.6 A / 64.5 A
Nominal input voltage	350 V	370 V	350 V	370 V	370 V
DC input voltage range (U _{in,max} + U _{in,min})	200 - 600 V	200 - 600 V	200 - 600 V	200 - 600 V	200 - 600 V
Feed-in limit voltage (U _{in,max})	600 V	600 V	600 V	600 V	600 V
Usable MPPT voltage range (U _{mppt,max} + U _{mppt,min})	300 - 500 V	300 - 500 V	300 - 500 V	300 - 500 V	300 - 500 V
Max. input cables	2	2	2	2	2
Admissible conductor size DC	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner
Number of MPPT trackers	2	2	2	2	2

TECHNICAL DATA FRONIUS SYMO ADVANCED (480 V VERSIONS)

INPUT DATA	SYMO 10.0-3 480	SYMO 12.0-3 480	SYMO 15.0-3 480	SYMO 20.0-3 480	SYMO 24.0-3 480
Max. PV generator output (P _{g,max})	15 kW _{max}	18 kW _{max}	22.5 kW _{max}	30 kW _{max}	36 kW _{max}
Max. input current (I _{g,max}) (I _{g,max})	25 A / 16.5 A	31.2 A / 24.8 A	39.1 A / 30.5 A	51.7 A / 40.1 A	62.1 A / 48.5 A
Max. string short circuit current (MPP / MPPT)	33.2 A / 24.8 A	41.5 A / 32.4 A	51.7 A / 40.1 A	68.8 A / 53.6 A	82.6 A / 64.5 A
Nominal input voltage	480 V	480 V	480 V	480 V	480 V
DC input voltage range (U _{in,max} + U _{in,min})	200 - 600 V	200 - 600 V	200 - 600 V	200 - 600 V	200 - 600 V
Feed-in limit voltage (U _{in,max})	600 V	600 V	600 V	600 V	600 V
Usable MPPT voltage range (U _{mppt,max} + U _{mppt,min})	300 - 500 V	300 - 500 V	300 - 500 V	300 - 500 V	300 - 500 V
Max. input cables	2	2	2	2	2
Admissible conductor size DC	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner
Number of MPPT trackers	2	2	2	2	2

FRONIUS SYMO 24.0-3 480 CEC EFFICIENCY CURVE

FRONIUS SYMO 24.0-3 480 TEMPERATURE DERATING CURVE

TECHNICAL DATA FRONIUS SYMO (480 V VERSIONS)

OUTPUT DATA	SYMO 15.0-3 480	SYMO 20.0-3 480	SYMO 22.7-3 480	SYMO 24.0-3 480
AC nominal output (P _{ac,n})	14,995 W	19,995 W	22,727 W	23,995 W
Max. output power	14,995 VA	19,995 VA	22,727 VA	23,995 VA
Output configuration	480 / 237 V WYE	480 / 237 V WYE	480 / 237 V WYE	480 / 237 V WYE
Frequency (frequency range f _{min} - f _{max})	60 Hz (65 - 63 Hz)	60 Hz (65 - 63 Hz)	60 Hz (65 - 63 Hz)	60 Hz (65 - 63 Hz)
Subharmonic distortion (THD)	AWG 10-6 AWG 6	AWG 10-6 AWG 6	AWG 10-6 AWG 6	AWG 10-6 AWG 6
Total harmonic distortion	< 1.5%	< 1%	< 1.25%	< 1%
Power factor (cos φ _{ac})	10 A	20 A	27.3 A	29.9 A
Max. continuous output current	25 A	30 A	35 A	40 A
IGBT/IGBT breaker size	25 A	30 A	35 A	40 A

TECHNICAL DATA FRONIUS SYMO (480 V VERSIONS)

GENERAL DATA	SYMO 10.0-3 480	SYMO 12.0-3 480	SYMO 15.0-3 480	SYMO 20.0-3 480	SYMO 24.0-3 480
Dimensions (height x width x depth)	510 x 725 x 225 mm (20.1 x 28.5 x 8.9 inches)	510 x 725 x 225 mm (20.1 x 28.5 x 8.9 inches)	510 x 725 x 225 mm (20.1 x 28.5 x 8.9 inches)	510 x 725 x 225 mm (20.1 x 28.5 x 8.9 inches)	510 x 725 x 225 mm (20.1 x 28.5 x 8.9 inches)
Weight	41.7 kg (91.9 lbs)	41.7 kg (91.9 lbs)	41.7 kg (91.9 lbs)	41.7 kg (91.9 lbs)	41.7 kg (91.9 lbs)
Protection Class	IP65	IP65	IP65	IP65	IP65
Night time consumption	< 1 W	< 1 W	< 1 W	< 1 W	< 1 W
Inverter topology	Transistorless	Transistorless	Transistorless	Transistorless	Transistorless
Cooling	Regulated air cooling	Regulated air cooling	Regulated air cooling	Regulated air cooling	Regulated air cooling
Installation	Indoor and outdoor installation, 0° from 0 - 90 degrees*	Indoor and outdoor installation, 0° from 0 - 90 degrees*	Indoor and outdoor installation, 0° from 0 - 90 degrees*	Indoor and outdoor installation, 0° from 0 - 90 degrees*	Indoor and outdoor installation, 0° from 0 - 90 degrees*
DIN rail (height x width x depth)	max. 106 x 90 x 66 mm (max. 4.2 x 3.5 x 2.6 inches)	max. 106 x 90 x 66 mm (max. 4.2 x 3.5 x 2.6 inches)	max. 106 x 90 x 66 mm (max. 4.2 x 3.5 x 2.6 inches)	max. 106 x 90 x 66 mm (max. 4.2 x 3.5 x 2.6 inches)	max. 106 x 90 x 66 mm (max. 4.2 x 3.5 x 2.6 inches)
Permitted operating temperature range	-40 °C (-40 °F) - +140 °F	-40 °C (-40 °F) - +140 °F	-40 °C (-40 °F) - +140 °F	-40 °C (-40 °F) - +140 °F	-40 °C (-40 °F) - +140 °F
Eventuation	2000 ± 0.5% Hz with a max. input voltage of 1000 V / 3000 ± 11.1% Hz with a max. input voltage of 850 V	2000 ± 0.5% Hz with a max. input voltage of 1000 V / 3000 ± 11.1% Hz with a max. input voltage of 850 V	2000 ± 0.5% Hz with a max. input voltage of 1000 V / 3000 ± 11.1% Hz with a max. input voltage of 850 V	2000 ± 0.5% Hz with a max. input voltage of 1000 V / 3000 ± 11.1% Hz with a max. input voltage of 850 V	2000 ± 0.5% Hz with a max. input voltage of 1000 V / 3000 ± 11.1% Hz with a max. input voltage of 850 V
DC connection technology	6A DC and 6A DC screw terminals for copper (gold / standard) / fine stranded or aluminum (gold / standard)	6A DC and 6A DC screw terminals for copper (gold / standard) / fine stranded or aluminum (gold / standard)	6A DC and 6A DC screw terminals for copper (gold / standard) / fine stranded or aluminum (gold / standard)	6A DC and 6A DC screw terminals for copper (gold / standard) / fine stranded or aluminum (gold / standard)	6A DC and 6A DC screw terminals for copper (gold / standard) / fine stranded or aluminum (gold / standard)
DC connection technology	Some terminals 14-6 AWG	Some terminals 14-6 AWG	Some terminals 14-6 AWG	Some terminals 14-6 AWG	Some terminals 14-6 AWG
Admissible conductor size DC	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner	AWG 14-6 AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-6 AWG 2 copper or aluminum with input combiner
Number of MPPT trackers	2	2	2	2	2

FRONIUS SYMO ADVANCED

Perfect Welding / Solar Energy / Perfect Charging

THREE BUSINESS UNITS, ONE GOAL: TO SET THE STANDARD THROUGH TECHNOLOGICAL ADVANCEMENT.

What began in 1945 as a one-man operation now sets technological standards in the fields of welding technology, photovoltaics and battery charging. Today, the company has around 4,700 employees worldwide and 1,253 patents for product development show the innovative spirit within the company. Sustainable development means for us to implement environmentally relevant and social aspects equally with economic factors. Our goal has remained constant throughout: to be the innovation leader.

Further information about all Fronius products and our global sales partners and representatives can be found at www.fronius.com

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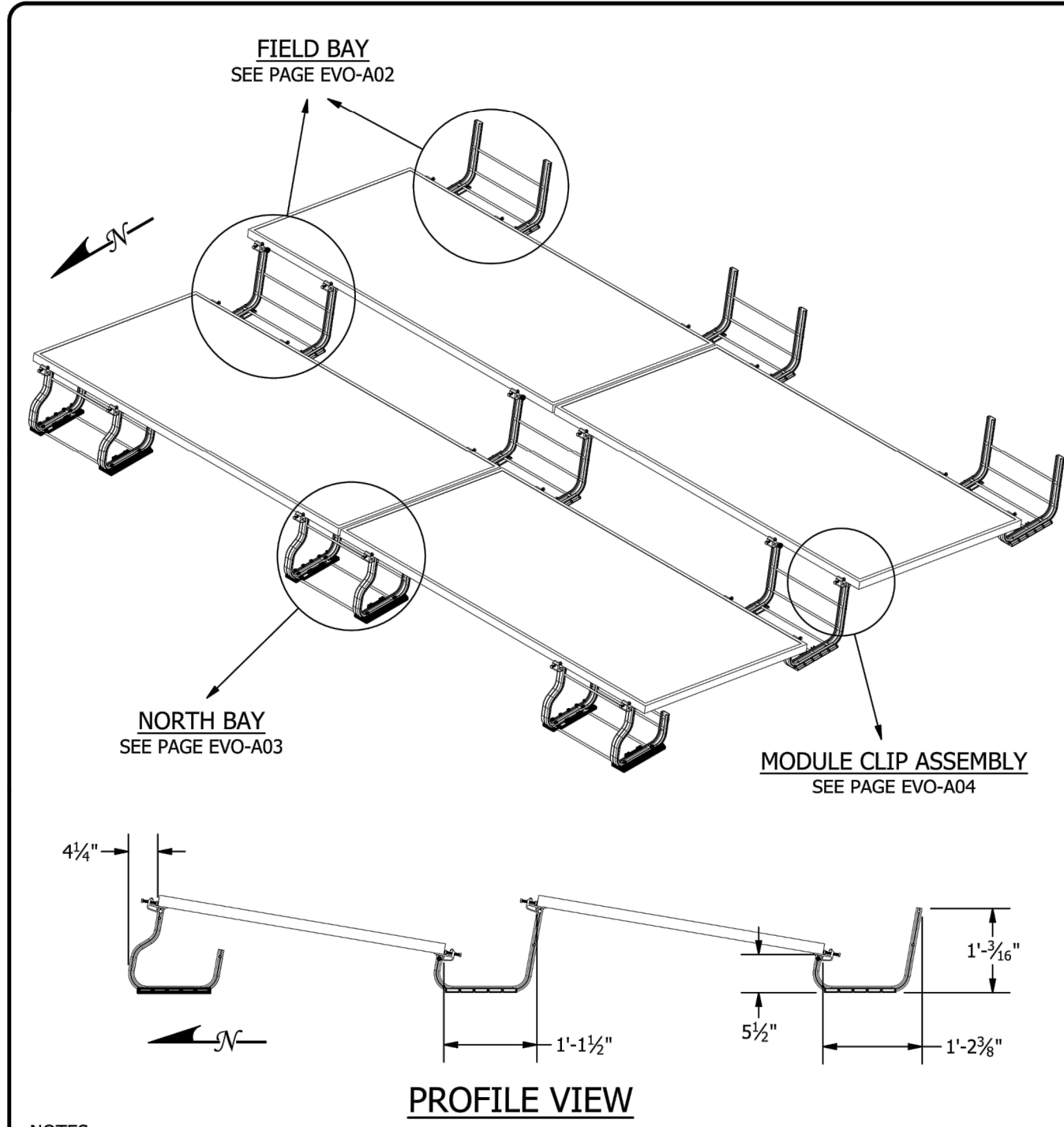
Further information about all Fronius products and our global sales partners and representatives can be found at www.fronius.com

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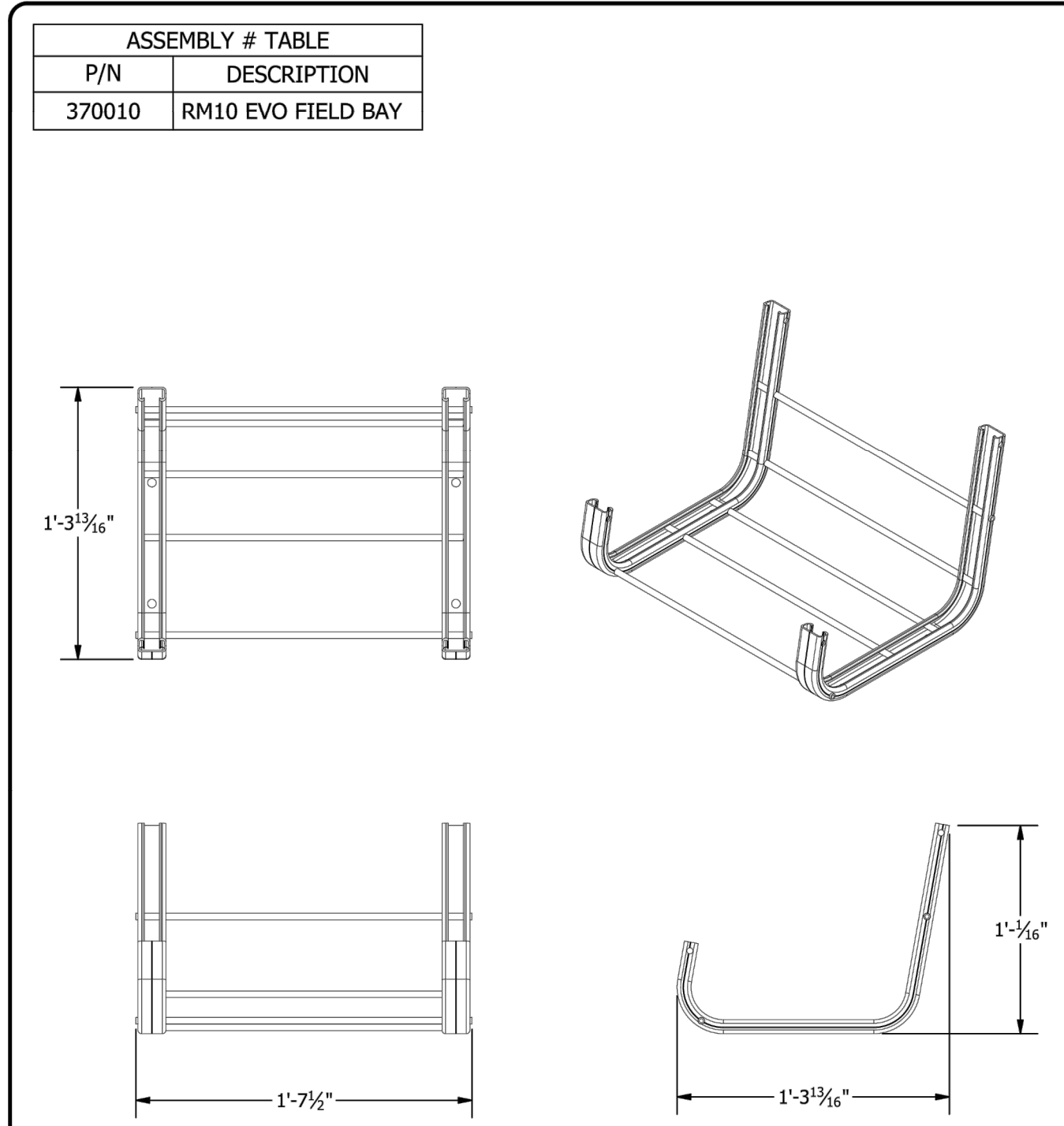
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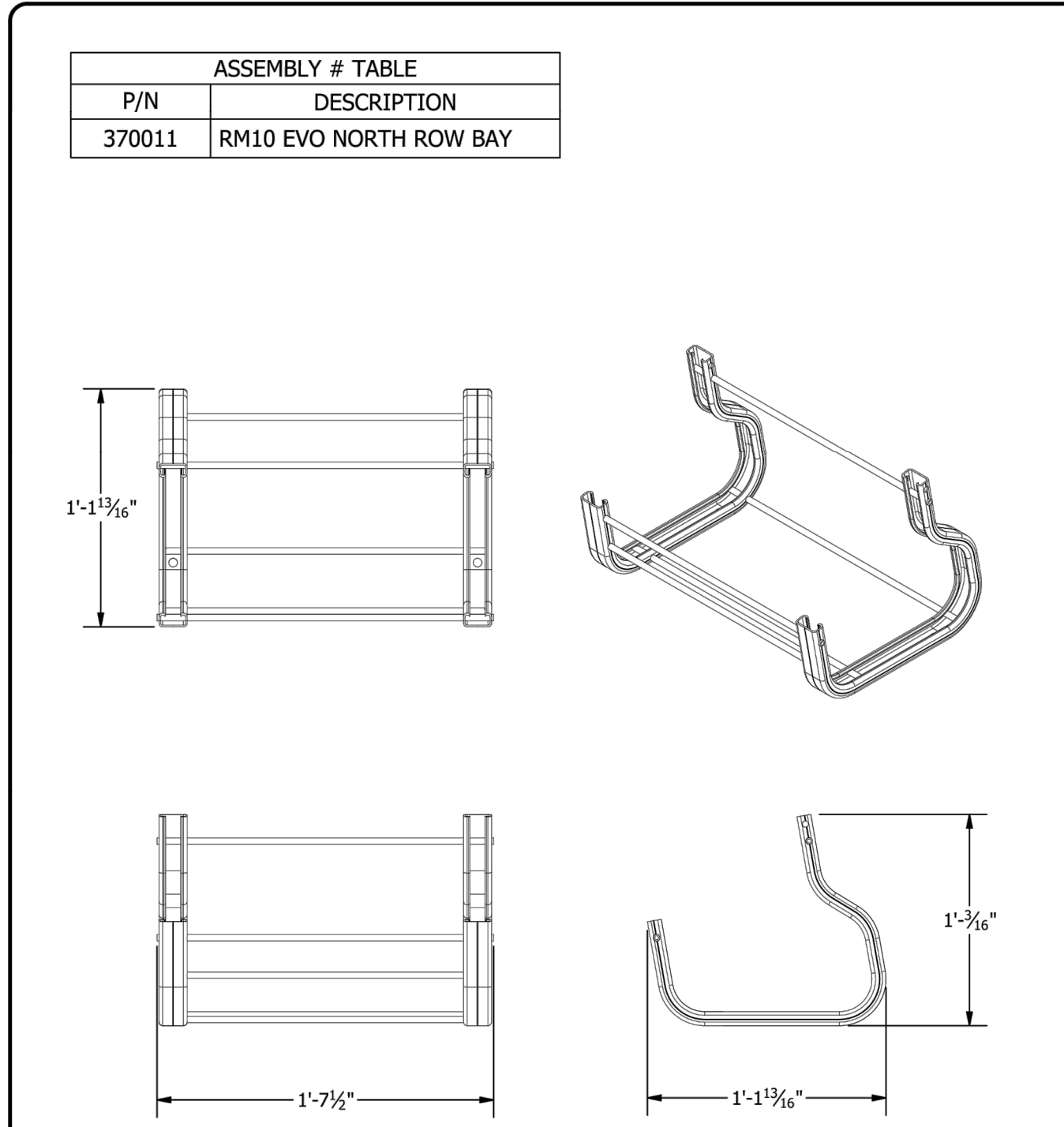
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 PROJ NO: NEI-210



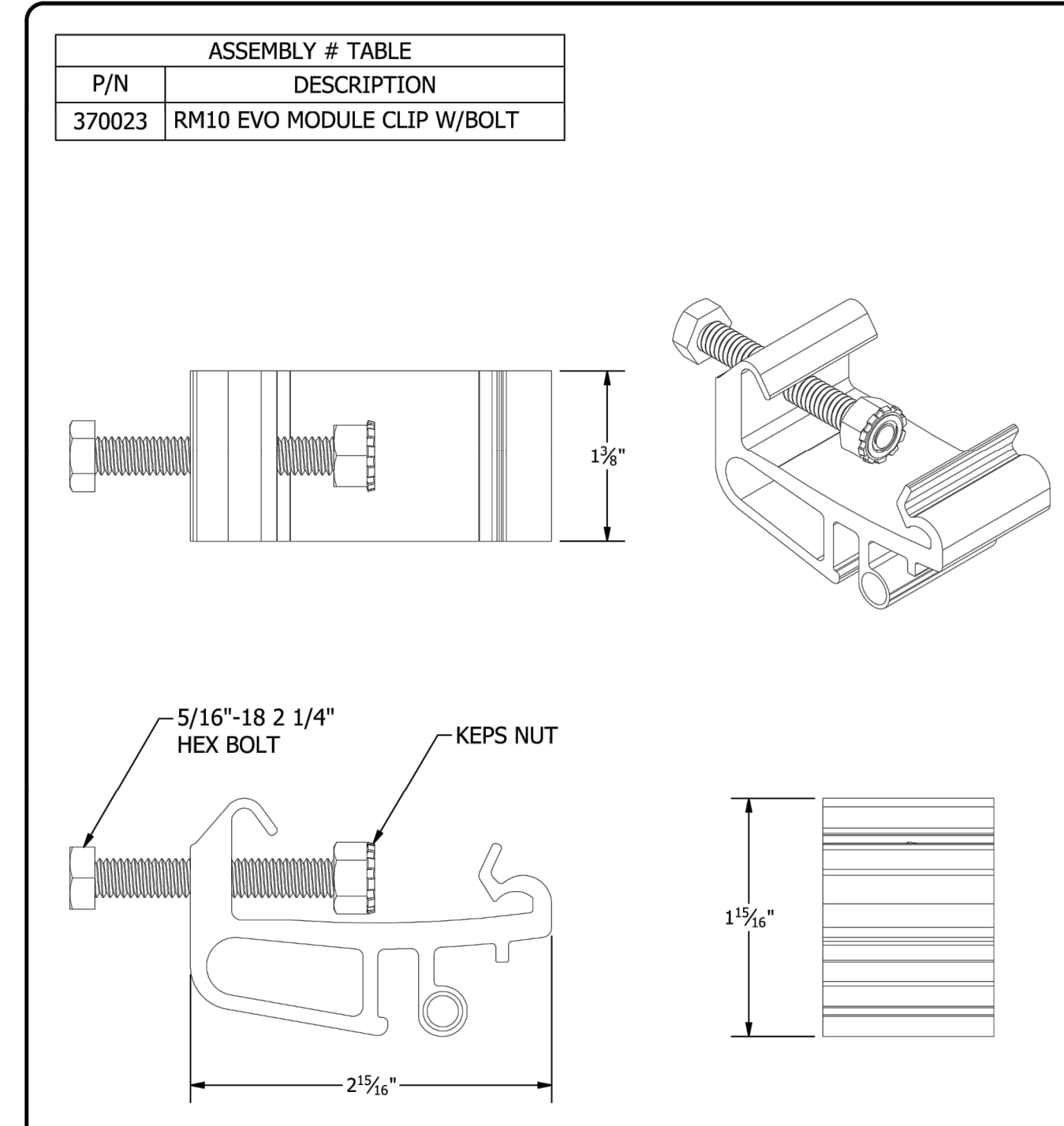
 1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM	PRODUCT LINE:	RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	EVO-A01 SHEET
	DRAWING TYPE:	SYSTEM ASSEMBLY		
	DESCRIPTION:	RM10 EVO		
	REVISION DATE:	12/10/2021		



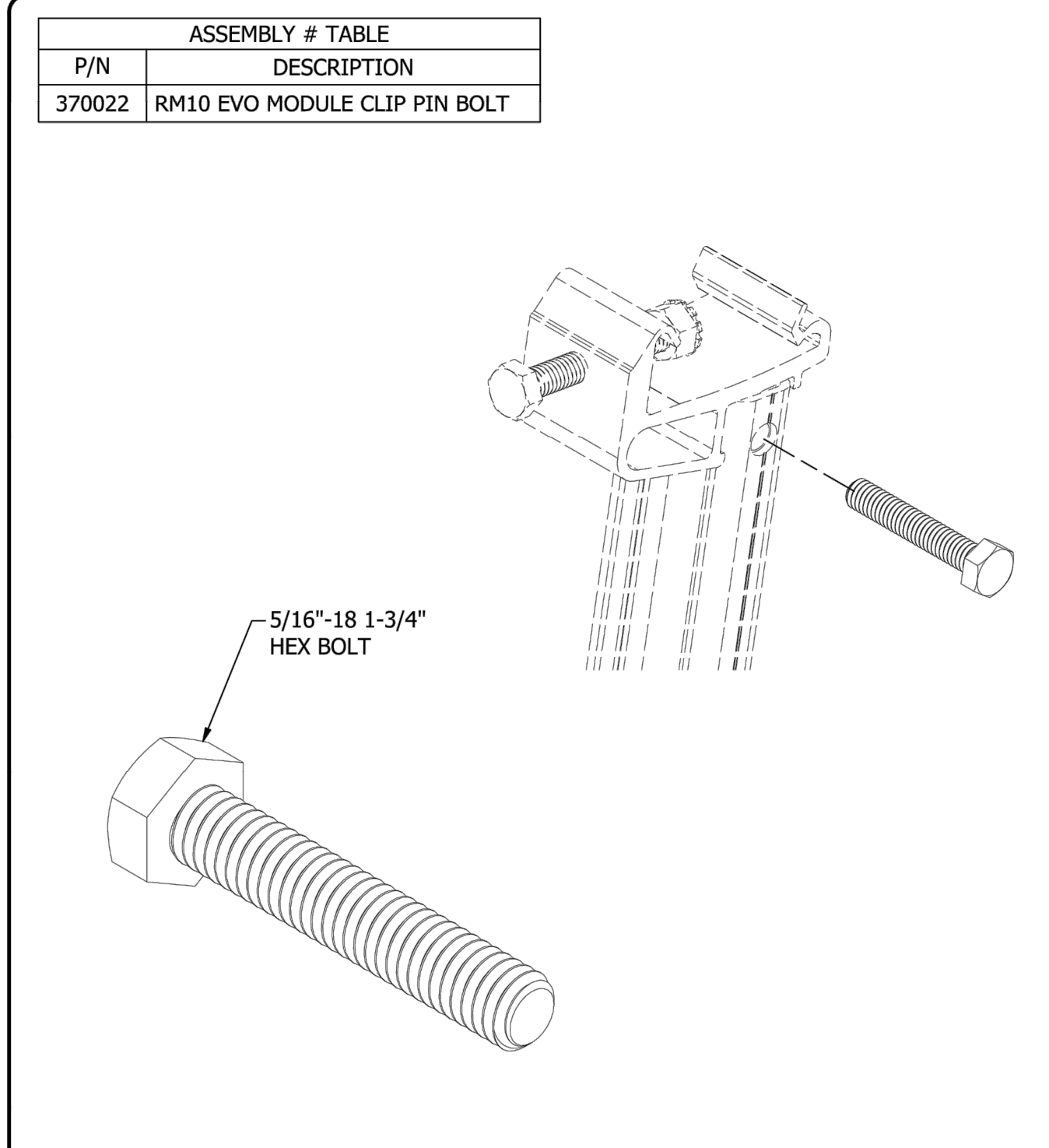
 1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM	PRODUCT LINE:	RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	EVO-A02 SHEET
	DRAWING TYPE:	PARTS ASSEMBLY		
	DESCRIPTION:	FIELD BAY ASSEMBLY		
	REVISION DATE:	12/10/2021		



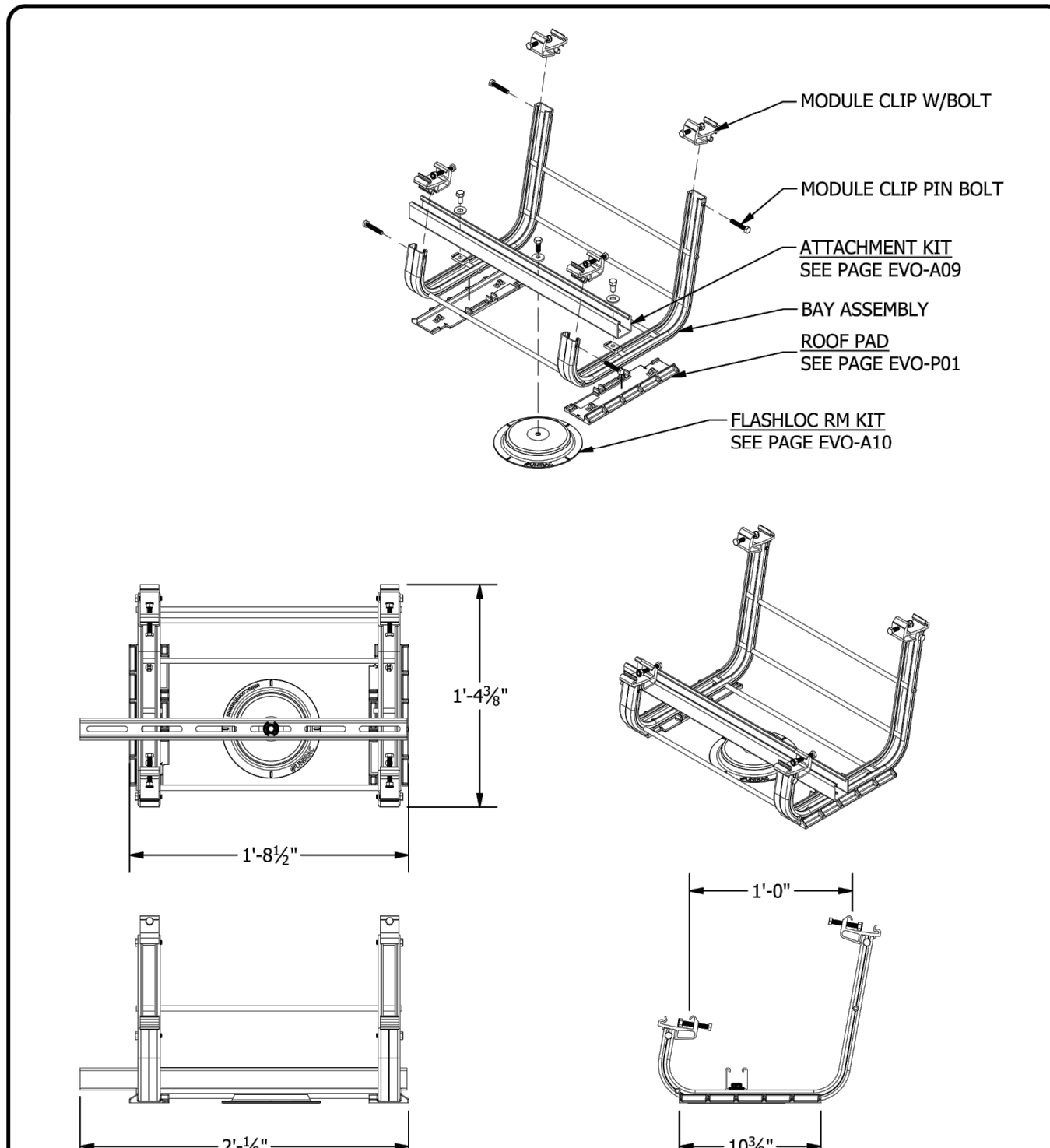
 1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM	PRODUCT LINE:	RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	EVO-A03 SHEET
	DRAWING TYPE:	PARTS ASSEMBLY		
	DESCRIPTION:	NORTH BAY ASSEMBLY		
	REVISION DATE:	12/10/2021		



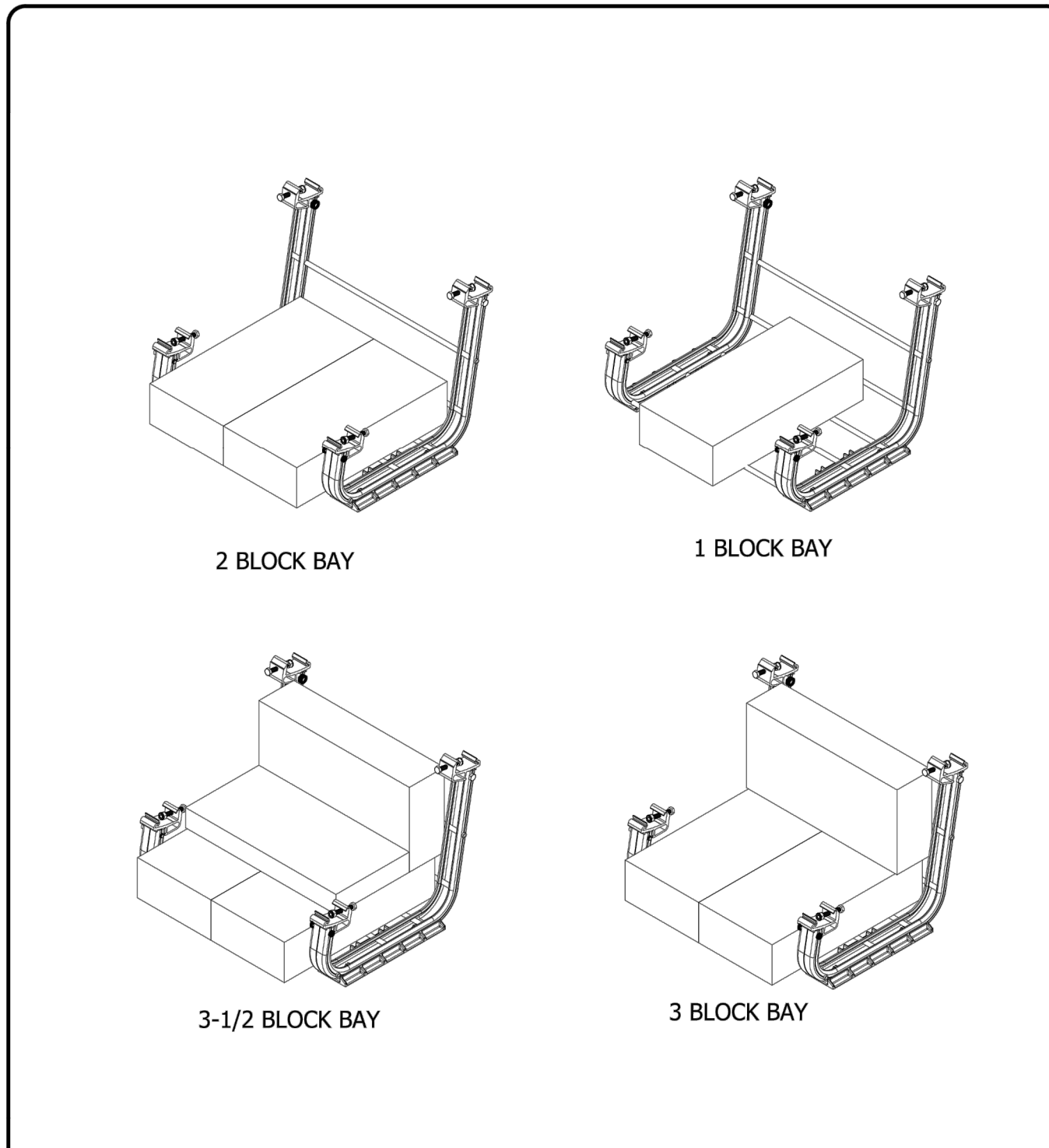
 1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM	PRODUCT LINE:	RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	EVO-A04 SHEET
	DRAWING TYPE:	PARTS ASSEMBLY		
	DESCRIPTION:	MODULE CLIP ASSEMBLY		
	REVISION DATE:	12/10/2021		



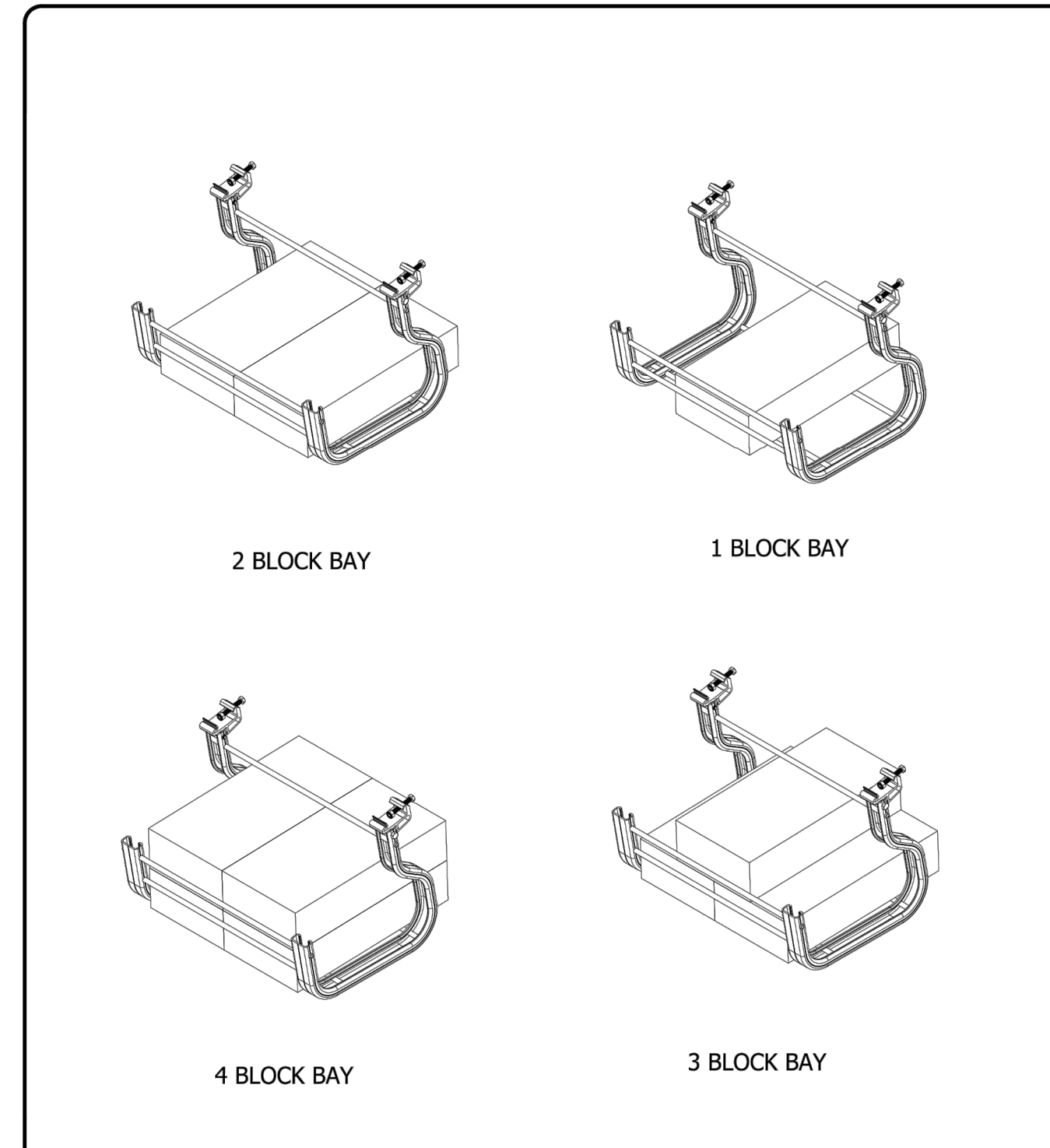
 1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM	PRODUCT LINE:	RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	EVO-A05 SHEET
	DRAWING TYPE:	PARTS		
	DESCRIPTION:	MODULE CLIP PIN BOLT		
	REVISION DATE:	12/10/2021		



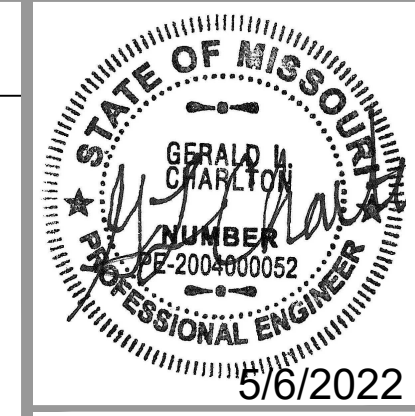
 1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM	PRODUCT LINE:	RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	EVO-A06 SHEET
	DRAWING TYPE:	PARTS ASSEMBLY		
	DESCRIPTION:	ROOF ATTACHMENT ASSEMBLY		
	REVISION DATE:	12/10/2021		



 1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM	PRODUCT LINE:	RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	EVO-A07 SHEET
	DRAWING TYPE:	PARTS ASSEMBLY		
	DESCRIPTION:	FIELD BAY BALLAST LAYOUT		
	REVISION DATE:	12/10/2021		



 1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM	PRODUCT LINE:	RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	EVO-A08 SHEET
	DRAWING TYPE:	PARTS ASSEMBLY		
	DESCRIPTION:	NORTH BAY BALLAST LAYOUT		
	REVISION DATE:	12/10/2021		



Lee's Summit Detail Shop

EQUIPMENT DATA SHEET

89.6 KW DC Rooftop Photovoltaic System

2100 NE Independence Ave, Lee's Summit, MO 64064, USA

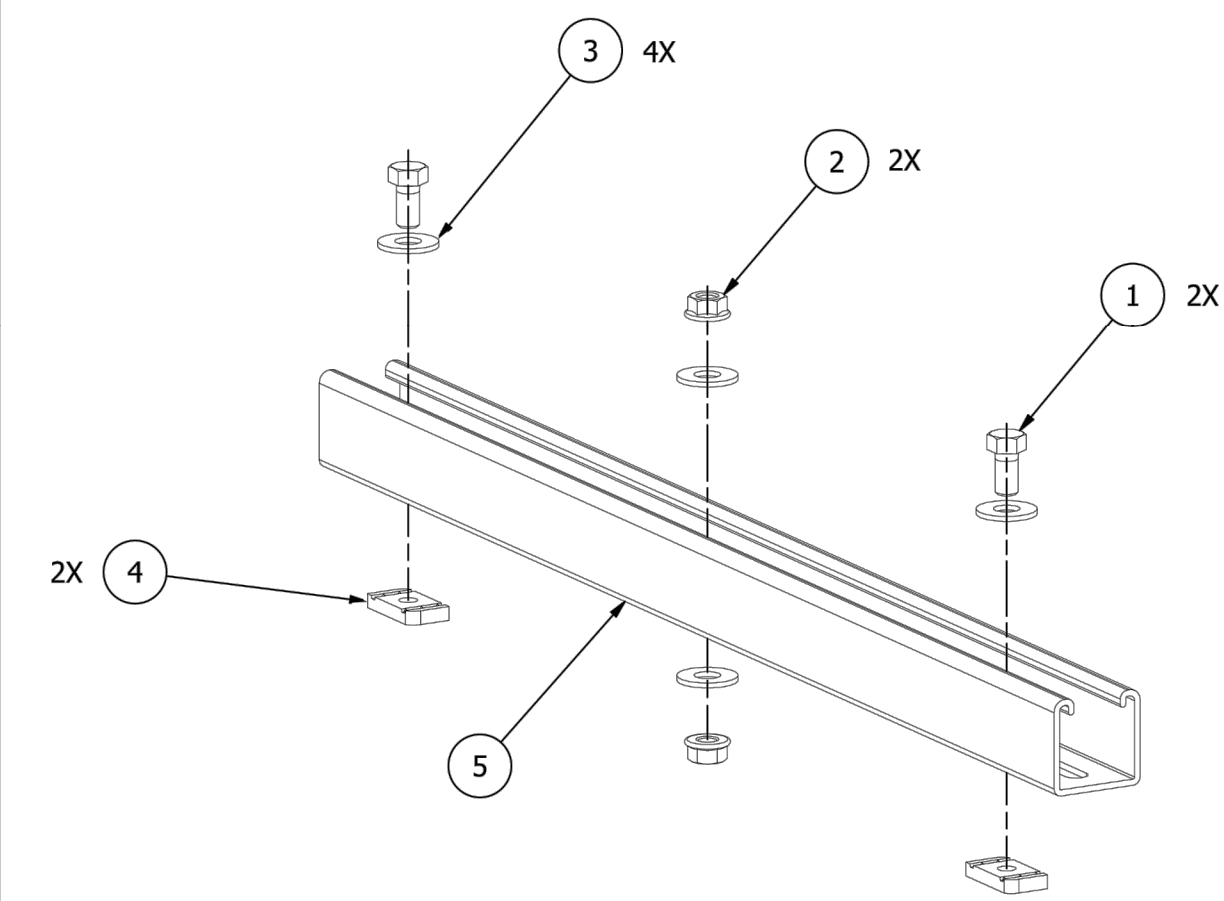
NAME OF CUSTOMER	TITLE	SUBJECT	PROJECT LOCATION

12916 5TH ST
GRANDVIEW, MO 64030
PH: (813) 601-0700

DWG NO: D-2

PROJ NO: NEI-210

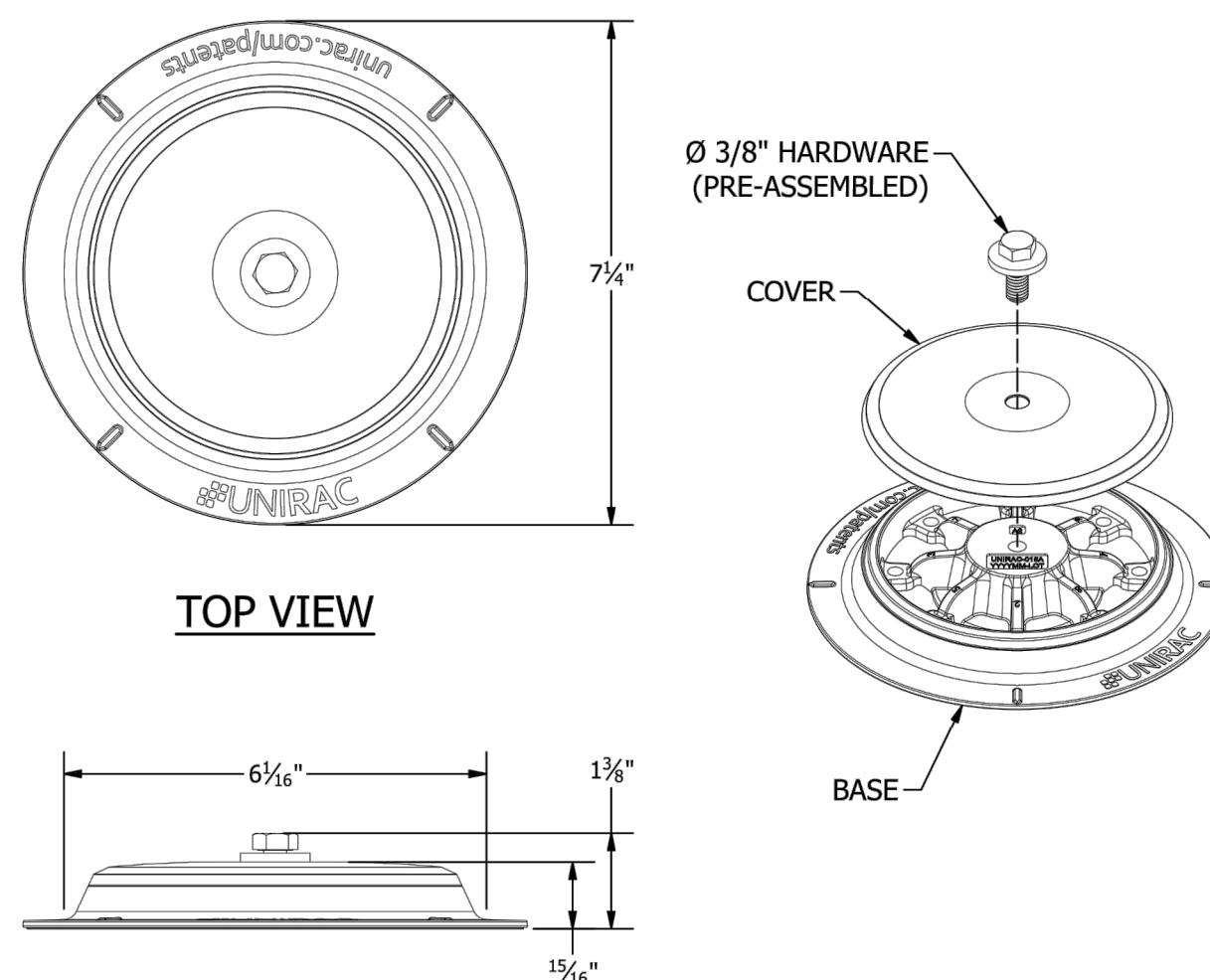
ASSEMBLY # TABLE	
P/N	DESCRIPTION
310771	RM10 ATTACHMENT KIT



ATTACHMENT PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	M30304	3/8-16 X 3/4 HEX BOLT, SS
2	2	M31184	3/8-16 HEX FLANGE NUT, SS
3	4	M31130	3/8 WASHER, SS
4	2	M30383	3/8-16 STRUT NUT, ZN
5	1	M40600	1 5/8 X 1 5/8 X 24 IN STRUT, GALV

<p>1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM</p>	PRODUCT LINE: RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL	EVO-A09 SHEET
	DRAWING TYPE: ASSEMBLY	PRODUCT PROTECTED BY ONE OR MORE US PATENTS	
	DESCRIPTION: RM10 ATTACHMENT KIT	LEGAL NOTICE	
	REVISION DATE: 12/10/2021		

NOTES:
 1. ATTACHMENT CAN ACCOMMODATE ROOFING SCREW SIZES #12 - #15. FASTENER SIZE, LENGTH, AND QUANTITY TO BE SELECTED BY STRUCTURAL ENGINEER OF RECORD WHEN DESIGNING FOR THE SPECIFIC PROJECT CONSTRUCTION AND CAPACITY.
 2. REFER TO THE UNIRAC INSTALLATION GUIDE FOR PROPER USE OF CHEM LINK M1 AND ONE-PART SEALANTS FOR WATER TIGHT INSTALLATION.

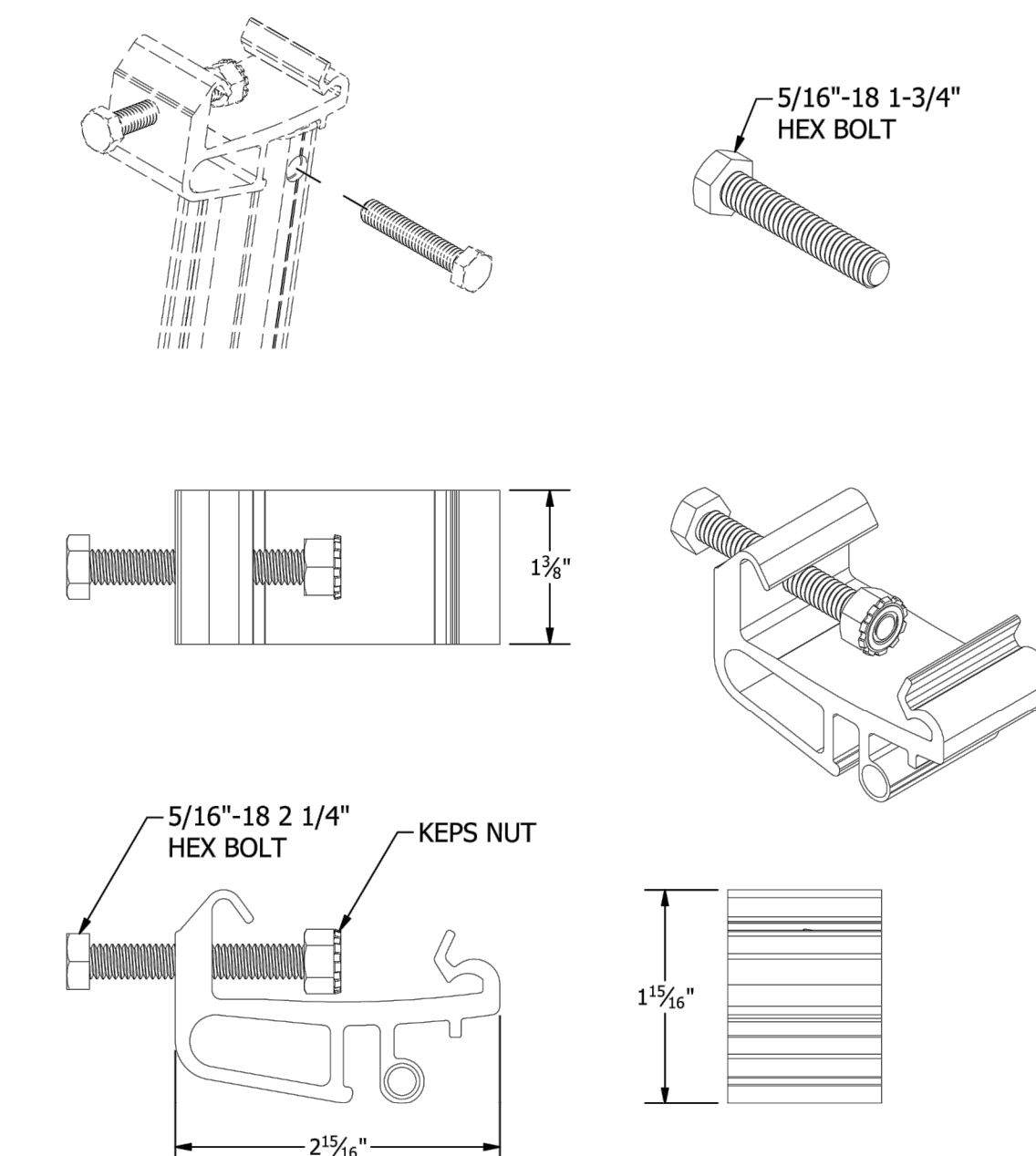


PART # TABLE	
P/N	DESCRIPTION
310999	FLASHLOC RM KIT

ULTIMATE TEST LOAD (WITH 8 ROOF FASTENERS)	
UPLIFT ULTIMATE CAPACITY	6,670 lbs.
SHEAR ULTIMATE CAPACITY	5,760 lbs.

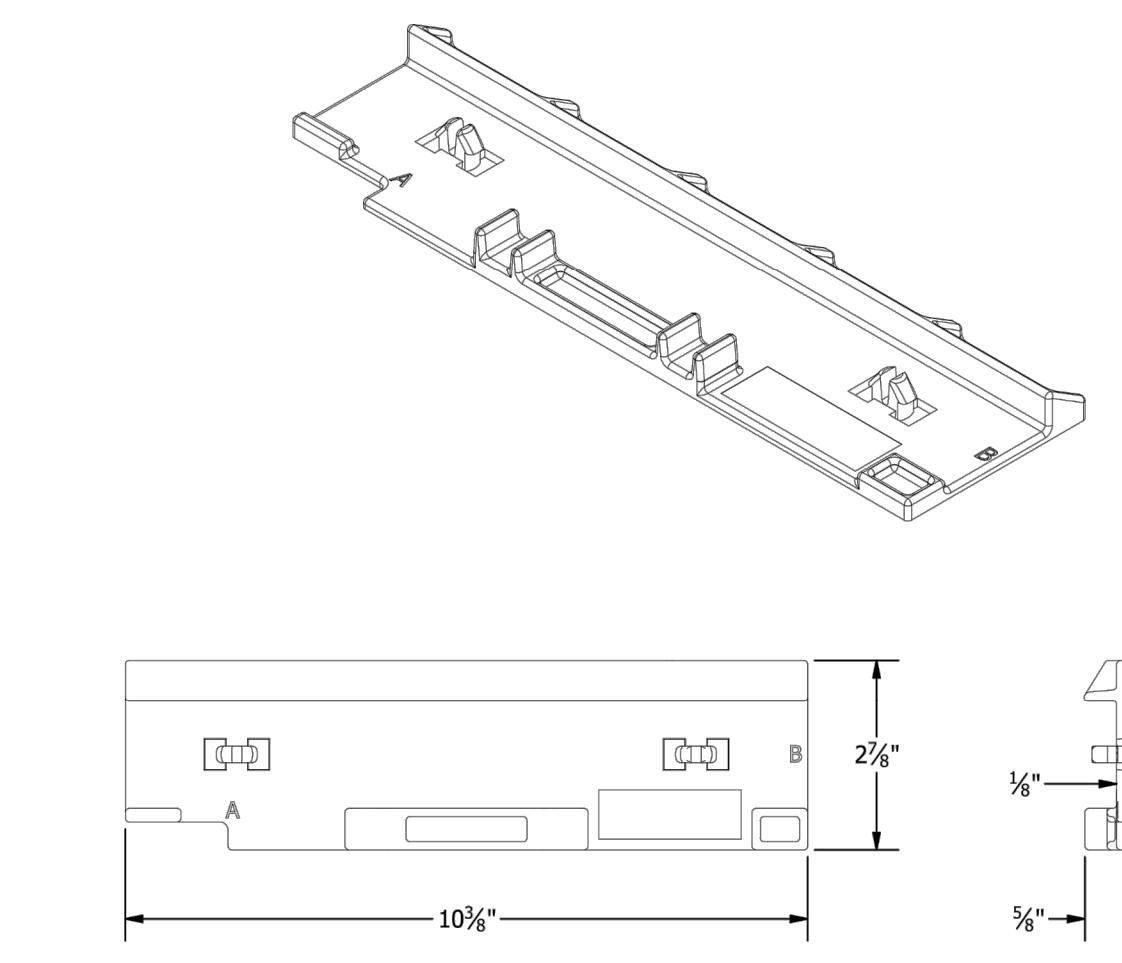
<p>1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM</p>	PRODUCT LINE: RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL	EVO-A10 SHEET
	DRAWING TYPE: ASSEMBLY DETAIL	PRODUCT PROTECTED BY ONE OR MORE US PATENTS	
	DESCRIPTION: FLASHLOC RM KIT	LEGAL NOTICE	
	REVISION DATE: 12/10/2021		

ASSEMBLY # TABLE	
P/N	DESCRIPTION
370020	RM10 EVO MODULE CLAMP KIT



<p>1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM</p>	PRODUCT LINE: RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL	EVO-A11 SHEET
	DRAWING TYPE: PARTS	PRODUCT PROTECTED BY ONE OR MORE US PATENTS	
	DESCRIPTION: MODULE CLIP PIN BOLT	LEGAL NOTICE	
	REVISION DATE: 12/10/2021		

PART # TABLE	
P/N	DESCRIPTION
310760	RM10 ROOF PAD



NOTES:
 1. MATERIAL: TPE 70 SHORE A: SANTOPRENE 201-73, ELASTOCON 2870 OR UNISOFT TPE ST-70A BK-2-01.
 2. FINISH: BLACK

<p>1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM</p>	PRODUCT LINE: RM10 EVO	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL	EVO-P01 SHEET
	DRAWING TYPE: PART	PRODUCT PROTECTED BY ONE OR MORE US PATENTS	
	DESCRIPTION: RM10 ROOF PAD	LEGAL NOTICE	
	REVISION DATE: 12/10/2021		



Lee's Summit Detail Shop
 EQUIPMENT DATA SHEET
 89.6 KW DC Rooftop Photovoltaic System
 2100 NE Independence Ave, Lee's Summit,
 MO 64064, USA

NAME OF CUSTOMER	TITLE	SUBJECT	PROJECT LOCATION

<p>12916 5TH ST GRANDVIEW, MO 64030 PH: (813) 601-0700</p>	DWG NO: D-3
	PROJ NO: NEI-210