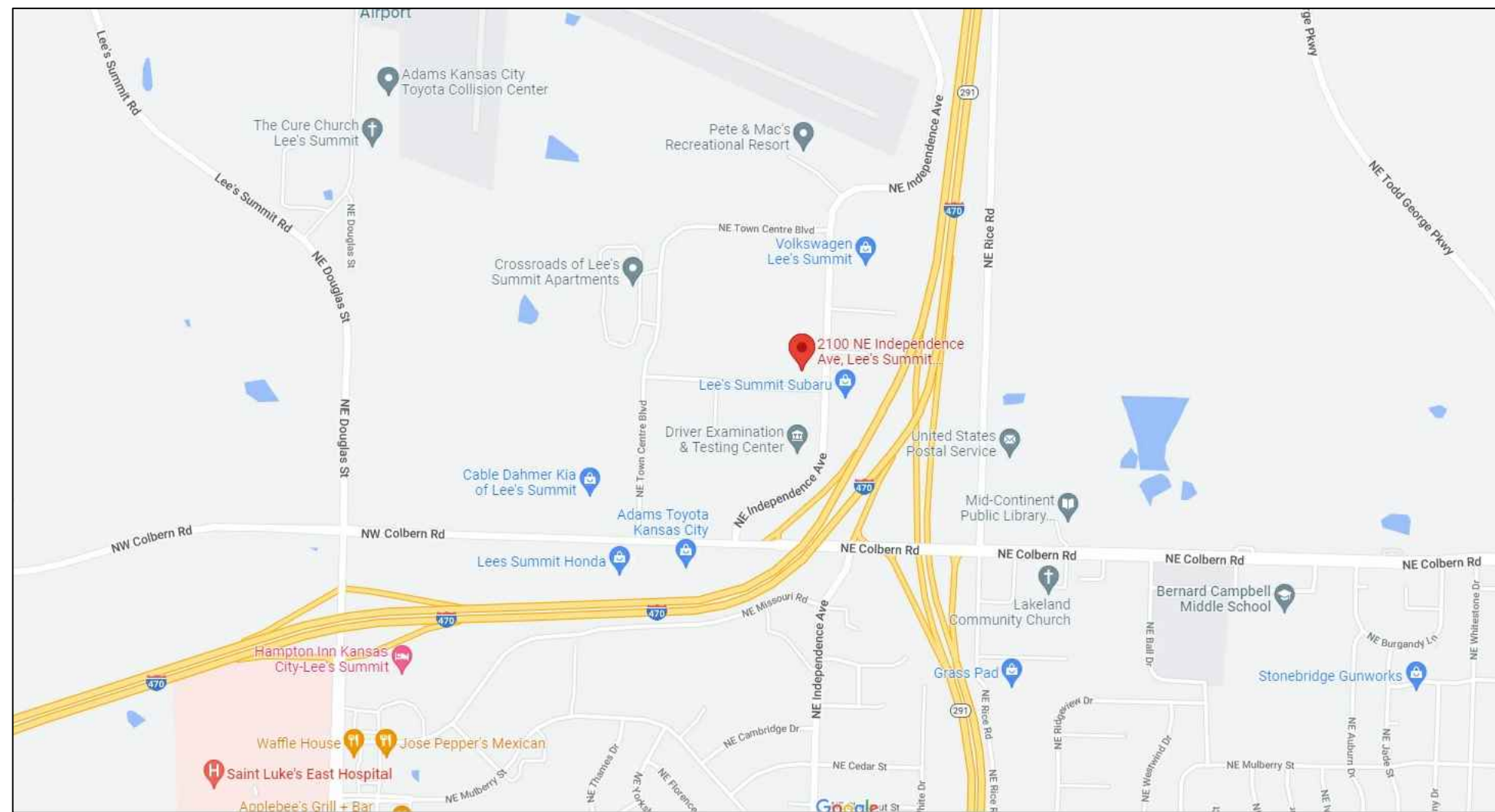


94.05 KW DC ROOFTOP PHOTOVOLTAIC SYSTEM
2100 NE INDEPENDENCE AVE, LEE'S SUMMIT, MO 64064, USA



1 VICINITY MAP

Scale: NTS



2 AERIAL VIEW

Scale: NTS

PROJECT INFORMATION

SCOPE OF WORK:

THE PROJECT IS TO INSTALL A ROOF MOUNT PHOTOVOLTAIC SYSTEM AND ALL ASSOCIATED POWER EQUIPMENT AT A COMMERCIAL PROPERTY. SYSTEM WILL BE INTERCONNECTED TO THE ELECTRICAL UTILITY GRID PER THE REQUIREMENTS OF THE UTILITY COMPANY AND ALL APPLICABLE LOCAL AND NATIONAL CODES.

SYSTEM SPECIFICATIONS

MODULE -	ZNSHINESOLAR
TOTAL MODULE COUNT	209
NOMINAL POWER	450W
TOTAL DC SYSTEM RATING	94.05 KW DC
INVERTER -	FRONIUS (SYMO 24.0-3 480)
TOTAL INVERTER COUNT	2
TOTAL INVERTER OUTPUT	48 KW AC
INVERTER -	FRONIUS (SYMO 20.0-3 480)
TOTAL INVERTER COUNT	1
TOTAL INVERTER OUTPUT	20 KW AC

DESIGN CRITERIA

DC DESIGN WILL BE BASED ON A 1000V DC.
ASHRAE DATA AVAILABLE FOR LEE'S SUMMIT MUNICIPAL IS AS FOLLOWS:

2% AVERAGE HIGHEST TEMP	38°C
EXTREME MINIMUM	-17.7°C

BUILDING NOTES

NO. OF STORIES	1
BUILDING HEIGHT	30'

NOTES

MODULE TILT	10°
MOUNTING TYPE	ROOFTOP
SOLAR ARRAY FOOTPRINT	4298.4 SQ. FT

LIST OF DRAWINGS / DOCUMENTS

DRAWINGS:

COVER SHEET	T-1
LEGENDS & GEN. NOTES	G-1
SITE PLAN	E-1
STRING DIAGRAM	E-2
SINGLE LINE DIAGRAM	E-3
WIRE SCHEDULE & CALCULATION	E-4
LABELS	E-5
EQUIPMENT DETAILS	E-6
EQUIPMENT DETAILS	E-7
STRUCTURAL DRAWINGS	S-1
EQUIPMENT DATA SHEETS	D-1
EQUIPMENT DATA SHEETS	D-2
EQUIPMENT DATA SHEETS	D-3

DOCUMENTS:

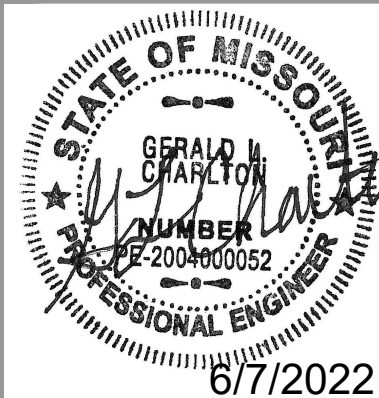
CALCULATIONS

GENERAL NOTES

THE DRAWINGS, SPECIFICATIONS AND ELECTRICAL DIAGRAMS CONTAINED HEREIN HAVE BEEN PREPARED BY DESIGN PROFESSIONALS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THE STATE OF MISSOURI, AND HAVE BEEN EXAMINED FOR:

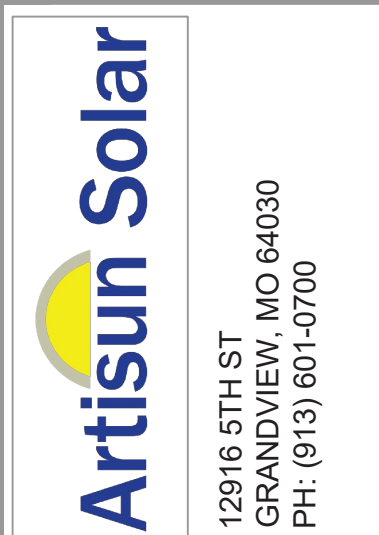
- DESIGN INTENT
- APPLICABLE CODES, REGULATIONS, AND STANDARDS
- COORDINATION OF THE WORK SHOWN ON RELATED PLANS

THE WORK IS DETERMINED TO BE ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

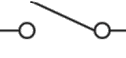
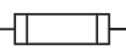
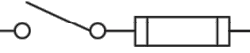
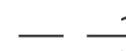
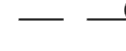


NAME OF CUSTOMER	Lee's Summit Detail Shop
TITLE:	COVER SHEET
SUBJECT:	94.05 KW DC Rooftop Photovoltaic System
PROJECT LOCATION:	2100 NE Independence Ave, Lee's Summit, MO 64064, USA

DESIGNED	CHECKED	APPROVED
1	05-27-2022	05-27-2022
Rev #	DATE	REMARKS



DWG NO: T-1
PROJ NO: NEI-210

ABBREVIATIONS		SYMBOLS LEGEND		SYSTEM NOTES	GENERAL NOTES
A	AMPERE		ELECTRICAL BREAKER	1. SOLAR ARRAY CONSISTS OF PV MODULES, CONNECTED IN SERIES. 2. ARRAYS HAVE BEEN PLACED TO MINIMIZE OR ELIMINATE SHADING IMPACT FROM ADJACENT STRUCTURES AND/OR OBSTRUCTIONS. 3. ALL ARRAY LAYOUTS ADHERE TO LOCAL AHJ REQUIREMENTS FOR SETBACKS AND PATHWAYS. 4. MINIMUM 3 FOOT CLEARANCE PROVIDED FOR ALL ROOF TOP HVAC UNITS AND SERVICEABLE EQUIPMENT. MINIMUM 4 FOOT SETBACK TO ROOF EDGE. 5. INVERTERS SHALL BE TRANSFORMERLESS STRING INVERTERS, LOCATION PER PLAN.	1. ALL ELECTRICAL WORK SHALL BE PERFORMED BY A QUALIFIED LICENSED ELECTRICIAN AND/OR APPRENTICES WORKING UNDER THE DIRECT SUPERVISION OF THE LICENSED CONTRACTOR. 2. ALL WORK CARRIED OUT SHALL COMPLY WITH THE SPECIFICATIONS, APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS. 3. 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. 4. 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. 5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, ACCESSORIES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS. 6. 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. 7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE. 8. 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. 9. FALL ARREST PROTECTION PER OSHA REQUIREMENTS SHALL BE PROVIDED FOR ALL ROOF WORK. 10. 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. 11. 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. 12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES NOT PART OF THE SCOPE OF WORK AS IDENTIFIED IN THESE PLANS. 13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION. 14. 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. 15. 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.
AC	ALTERNATING CURRENT		ELECTRICAL DISCONNECT SWITCH		
AFCI	ARC-FAULT CIRCUIT INTERRUPTER		ELECTRICAL FUSE		
AHJ	AUTHORITY HAVING JURISDICTION		ELECTRICAL FUSED DISCONNECT SWITCH		
AIC	AMERAGE INTERRUPTION CAPACITY		METER		
ATS	AUTOMATIC TRANSFER SWITCH		SYSTEM OR EQUIPMENT GROUND		
AWG	AMERICAN WIRE GAUGE		CONDUIT DOWN		
CB-#	COMBINER BOX		CONTINUATION OF CONDUIT		
DAS	DATA AQUISITION SYSTEM		PHOTOVOLTAIC (PV) MODULE		
DC	DIRECT CURRENT		DC/AC INVERTER		
DWG	DRAWING		POWER TRANSFORMER		
EMT	ELECTRICAL METALLIC TUBE		CONNECTED CONDUCTOR		
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				
		APPLICABLE CODES		SITE INFORMATION	
		NATIONAL ELECTRIC CODE (NEC), 2017 INTERNATIONAL BUILDING CODE (IBC), 2018 INTERNATIONAL MECHANICAL CODE, 2018 INTERNATIONAL PLUMBING CODE, 2018 INTERNATIONAL FUEL GAS CODE, 2018 INTERNATIONAL FIRE CODE (IFC), 2018 ICC/ANSI A117.1-2009 AS AMENDED AND ADOPTED BY THE CITY OF LEE'S SUMMIT CONSTRUCTION TYPE: TYPE 2 OCCUPANCY TYPE: B *INCLUDES ALL LOCAL AND STATE AMENDMENTS			
				UTILITY COMPANY: Everygy METER NUMBERS: 23396913	

ELECTRICAL NOTES

1. 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.
2. ALL INVERTERS AND PANELBOARDS SHALL BE SECURED FROM UNAUTHORIZED ACCESS BY LOCK OR LOCATION.
3. CONDUITS AND CABLES SHALL BE BOTTOM ENTRY ONLY TO ANY ENCLOSURE.
4. 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	GROUNDING CONDUCTOR	WHITE
GROUNDING CONDUCTOR	WHITE	WHITE	GROUND	GREEN
GROUND	GREEN	GREEN		
5. 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.
6. SUPPORT CONDUCTORS IN VERTICAL CONDUIT IN ACCORDANCE WITH THE REQUIREMENTS OF NEC 300.19.

	208/120 VAC	480/277 VAC		1000VDC
PHASE A	BLACK	BROWN	POSITIVE	RED
PHASE B	RED	ORANGE	NEGATIVE	BLACK
PHASE C	BLUE	YELLOW	GROUND	WHITE
GROUND	WHITE	WHITE	GROUND	GREEN
	GREEN	GREEN		

5. 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.
6. SUPPORT CONDUCTORS IN VERTICAL CONDUIT IN ACCORDANCE WITH THE REQUIREMENTS OF NEC 300.19.

GROUNDING NOTES

1. ONLY ONE CONNECTION TO AC CIRCUITS WILL BE USED FOR SYSTEM GROUNDING (NEC 690.42).
2. RACKING AND STRUCTURAL COMPONENTS MUST BE ELECTRICALLY BONDED TOGETHER BY AN ACCEPTABLE MEANS. RACKING SYSTEM SHALL BE LISTED TO UL2703.
3. 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.
4. 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.
5. PV SYSTEM SHALL BE GROUNDED IN ACCORDANCE WITH NEC 250.21 AND ALL METAL PARTS OR MODULE FRAMES ACCORDING TO NEC 690.43.
6. 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.

STATE OF MISSOURI
GERALD CHARLTON
NUMBER
PE-2004000052
PROFESSIONAL ENGINEER
6/7/2022

NAME OF CUSTOMER	Lee's Summit Detail Shop
TITLE:	LEGENDS & GEN. NOTES
SUBJECT:	94.05 KW DC Rooftop Photovoltaic System
PROJECT LOCATION:	2100 NE Independence Ave, Lee's Summit, MO 64064, USA

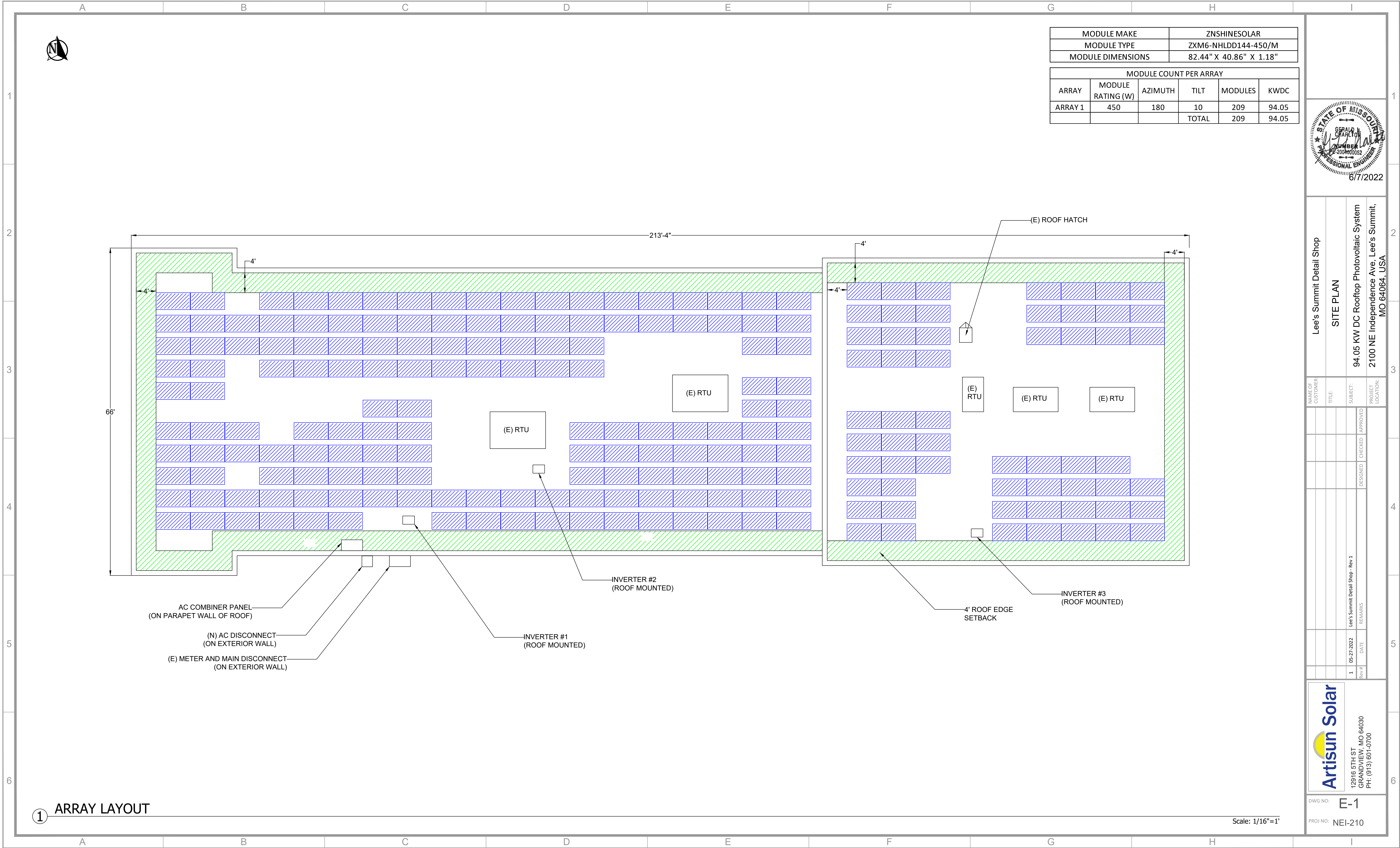
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 **Artisun Solar**

12916 5TH ST
GRANDVIEW, MO 64030
PH: (913) 601-0700

DWG NO: G-1

PROJ NO: NEI-210



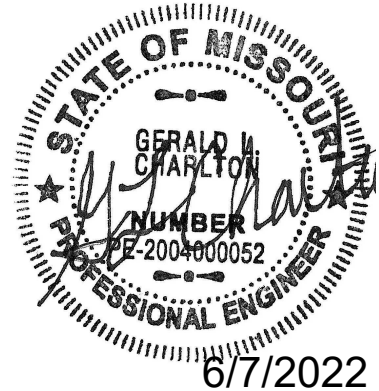
MODULE COUNT PER ARRAY					
ARRAY	MODULE RATING (W)	AZIMUTH	TILT	MODULES	KWDC
ARRAY 1	450	180	10	209	94.05
			TOTAL	209	94.05



Artisun Solar

12916 5TH ST
 GRANDVIEW, MO 64030
 PH: (913) 601-0700

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	24	1	14	3	42	450	18.9	74
			2	16	2	32	450	14.4	
	2	24	1	15	3	45	450	20.25	77
			2	16	2	32	450	14.4	
	3	20	1	15	2	30	450	13.5	58
			2	14	2	28	450	12.6	
TOTAL		68			14	209		94.05	



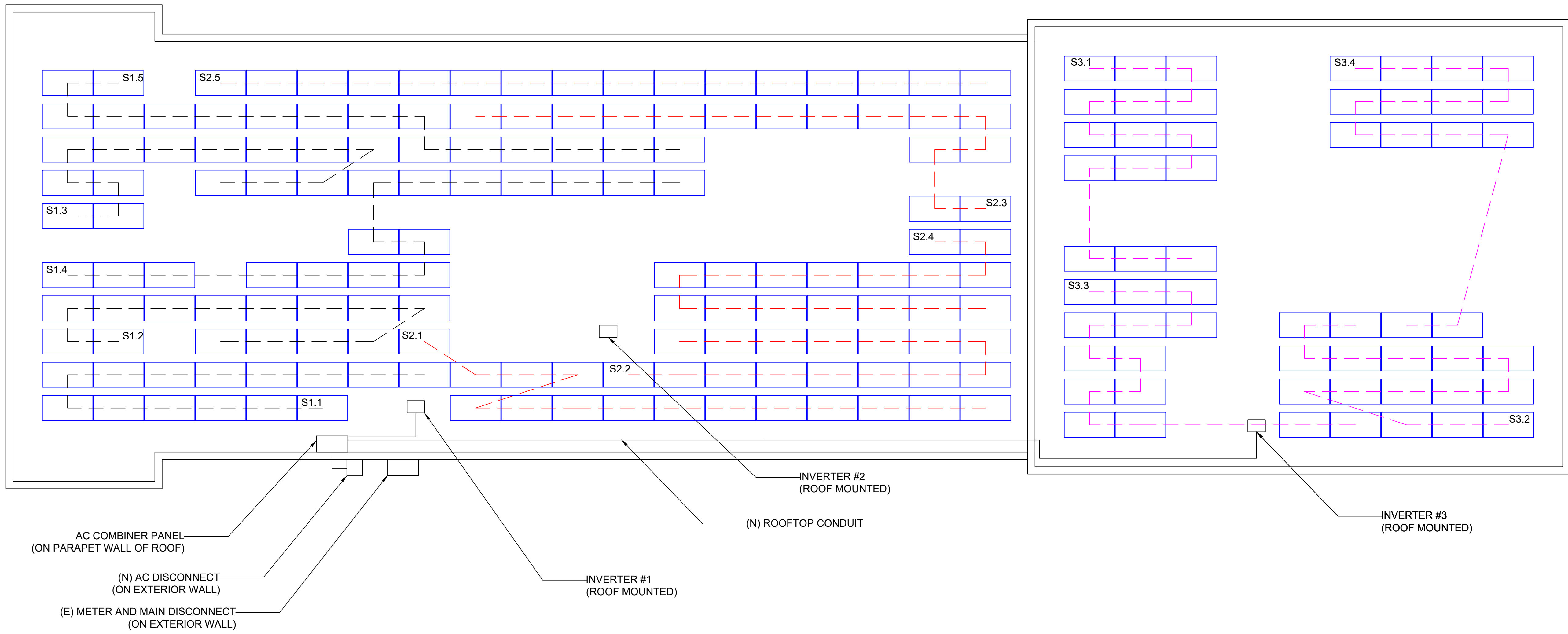
NAME OF CUSTOMER		Lee's Summit Detail Shop	
TITLE:		STRING DIAGRAM	
SUBJECT:		94.05 KW DC Rooftop Photovoltaic System	
PROJECT LOCATION:		2100 NE Independence Ave, Lee's Summit, MO 64064, USA	

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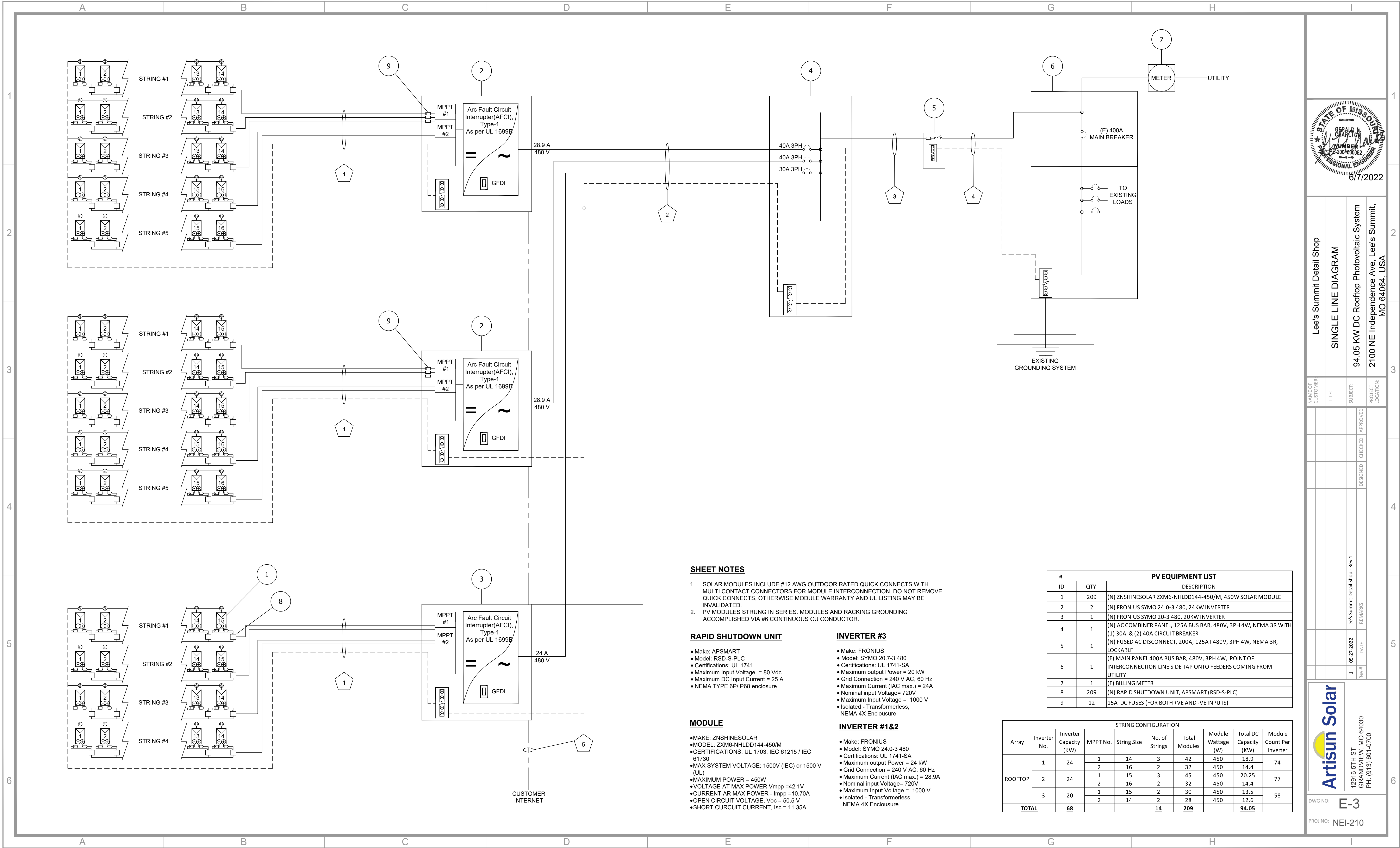
12916 5TH ST
GRANDVIEW, MO 64030
PH: (913) 601-0700

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



1 STRING DIAGRAM

Scale: 1/8"=1'



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-NHLDD144-450/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 #3

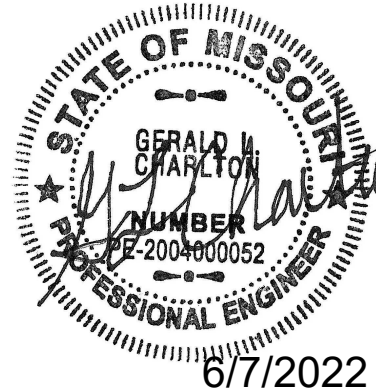
- Make: FRONIUS
- Model: SYMO 20.7-3 480
- Certifications: UL 1741-SA
- Maximum output Power = 20 kW
- Grid Connection = 240 V AC, 60 Hz
- Maximum Current (IAC max.) = 24A
- Nominal input Voltage= 720V
- Maximum Input Voltage = 1000 V
- Isolated - Transformerless, NEMA 4X Enclosure

INVERTER #1&2

- Make: FRONIUS
- Model: SYMO 24.0-3 480
- Certifications: UL 1741-SA
- Maximum output Power = 24 kW
- Grid Connection = 240 V AC, 60 Hz
- Maximum Current (IAC max.) = 28.9A
- Nominal input Voltage= 720V
- Maximum Input Voltage = 1000 V
- Isolated - Transformerless, NEMA 4X Enclosure

#			PV EQUIPMENT LIST
ID	QTY	DESCRIPTION	
1	209	(N) ZNSHINESOLAR ZXM6-NHLDD144-450/M, 450W SOLAR MODULE	
2	2	(N) FRONIUS SYMO 24.0-3 480, 24KW INVERTER	
3	1	(N) FRONIUS SYMO 20-3 480, 20KW INVERTER	
4	1	(N) AC COMBINER PANEL, 125A BUS BAR, 480V, 3PH 4W, NEMA 3R WITH (1) 30A & (2) 40A CIRCUIT BREAKER	
5	1	(N) FUSED AC DISCONNECT, 200A, 125AT 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	209	(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	24	1	14	3	42	450	18.9	74
			2	16	2	32	450	14.4	
	2	24	1	15	3	45	450	20.25	77
			2	16	2	32	450	14.4	
	3	20	1	15	2	30	450	13.5	58
			2	14	2	28	450	12.6	
TOTAL		68			14	209		94.05	



Lee's Summit Detail Shop
SINGLE LINE DIAGRAM

NAME OF CUSTOMER: Lee's Summit Detail Shop
TITLE: SINGLE LINE DIAGRAM
SUBJECT: 94.05 KW DC Rooftop Photovoltaic System
PROJECT LOCATION: 2100 NE Independence Ave, Lee's Summit, MO 64064, USA

DATE	REVISION	APPROVED	CHECKED	DESIGNED
05-27-2022	Rev 1	1		



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

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, #2	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	28.9	36.125	40	36.4	90°C
2	INVERTER #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%	125	(1) 6 AWG THWN-2 COPPER	0.91	38°C	3	1	82	102.25	115	104.65	90°C
4	AC DISCONNECT	MSP	(3) #3 PHASE, (1) #3 NEUTRAL, THWN-2 COPPER	1.25" DIA RIGID	29.41%	125	(1) 6 AWG THWN-2 COPPER	0.91	38°C	3	1	82	102.25	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	209	Nos
Max. Ambient temp @ Site	38	°C
Min Ambient Temp @ site	-17.7	°C
STC Temp	25	°C
No of Modules in a String	16	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	15	
No of Strings	5	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	5	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



NAME OF CUSTOMER	Lee's Summit Detail Shop
TITLE	WIRE SCHEDULE & CALCULATIONS
SUBJECT	94.05 KW DC Rooftop Photovoltaic System
PROJECT LOCATION	2100 NE Independence Ave., Lee's Summit, MO 64064, USA

[illegible]

 **Artisun Solar**

12916 5TH ST
GRANDVIEW, MO 64030
PH: (913) 601-0700

DWG NO: E-4

PROJ NO: NEI-210

A	B	C	D	E	F	G	H
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		INCLUDE THE FOLLOWING LABELS ON ALL ROOFTOP DC JUNCTION BOXES		INCLUDE THE FOLLOWING LABELS ON INVERTERS		INCLUDE THE FOLLOWING LABELS ON POINT OF INTERCONNECTION EQUIPMENT	
PLACE EVERY 10' AND AFTER EACH BEND ON CONDUIT PVLABELS.COM PLACARD 02-329		PVLABELS.COM LABEL 03-102		PVLABELS.COM LABEL 03-110 INVERTER #1		PVLABELS.COM LABEL 03-211	
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							
PVLABELS.COM LABEL 03-211							
		PVLABELS.COM LABEL 03-102					
A	B	C	D	E	F	G	H

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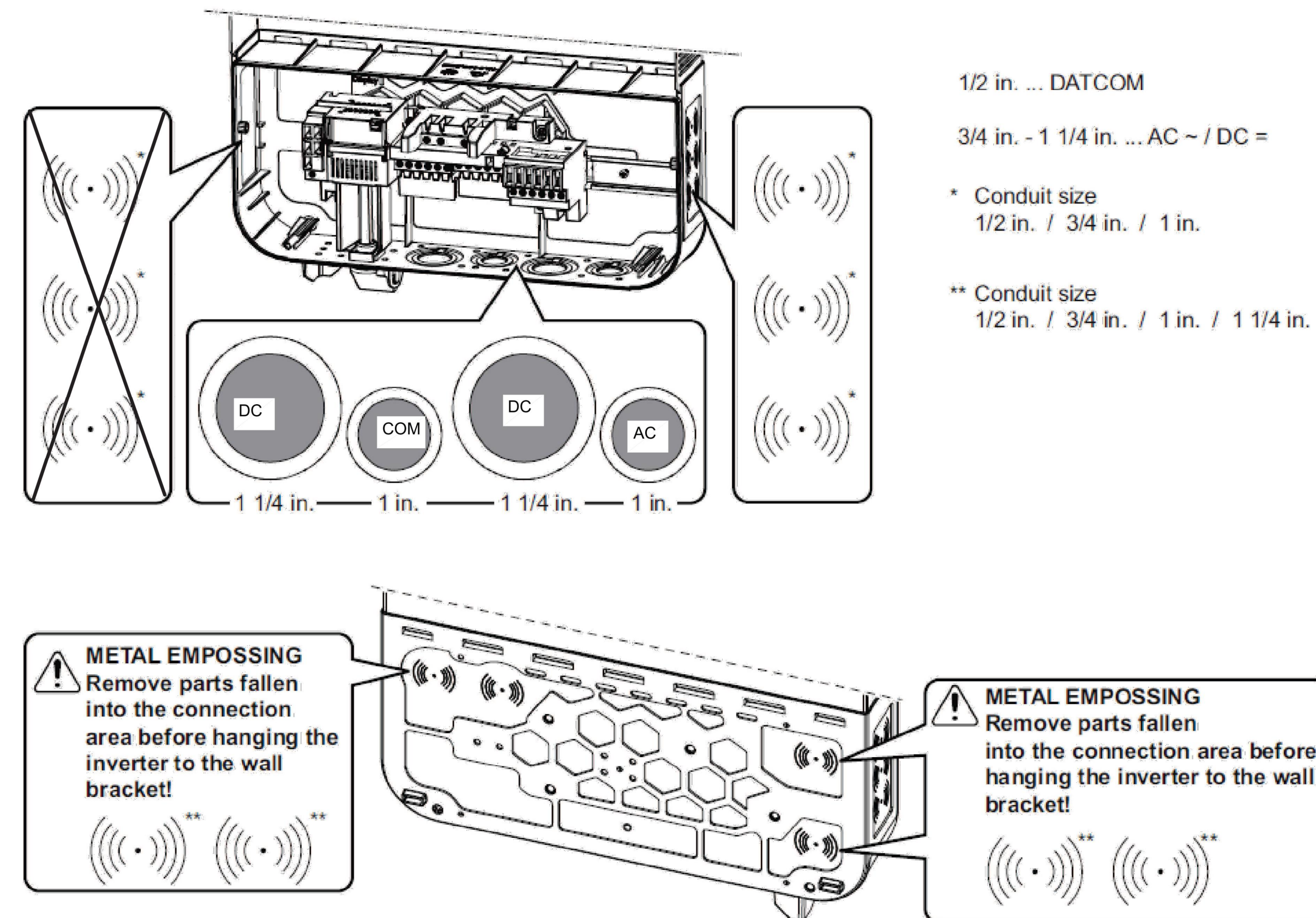
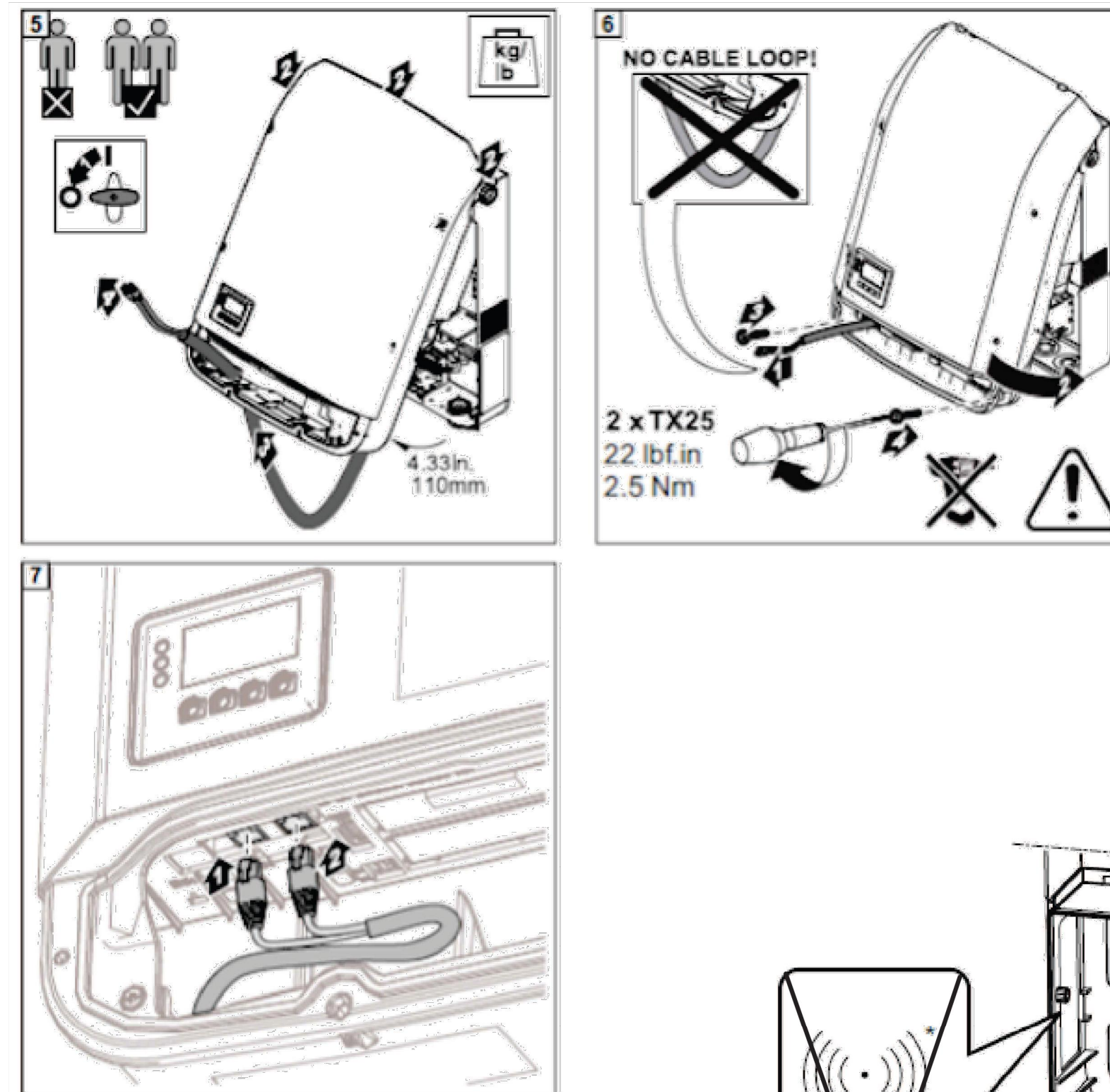
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STATE OF MISSOURI
GRANDVIEW CITY
PLUMBING & ELECTRICAL ENGINEERING
LICENSE NUMBER PE-2004000052
DATE 6/7/2022

Lee's Summit Detail Shop			
NAME OF CUSTOMER	TITLE	SUBJECT:	PROJECT LOCATION:
	LABELS	94.05 KW DC Rooftop Photovoltaic System	Independence Ave. Lee's Summit, MO 64064, USA

DWG NO: E-5

PROJ NO: NEI-210



STATE OF MISSOURI
GERALD CHARLTON
NUMBER
PE-2004000052
PROFESSIONAL ENGINEER
6/7/2022

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

[illegible]

Artisun Solar
12916 5TH ST
GRANDVIEW, MO 64030
PH: (913) 601-0700

WG NO: E-7

ROJ NO: NEI-210

