

SOLAR ELECTRIC SYSTEM FOR MEXICO SENIOR HIGH



SOLAR SOLUTIONS
1617 Main St.
Kansas City MO, 64108
PH. (816) 866-0555

PROJECT INFORMATION:

**MEXICO SENIOR HIGH
49.41kW PV System**

639 NORTH WADE
MEXICO, MO 65265

ISSUE DATE:

01/03/2014

REV: _____ DATE: _____ BY: _____

ENGINEER:

DRAWN BY: _____ CHK.: _____ APV.: _____

NJK	AJN	KP
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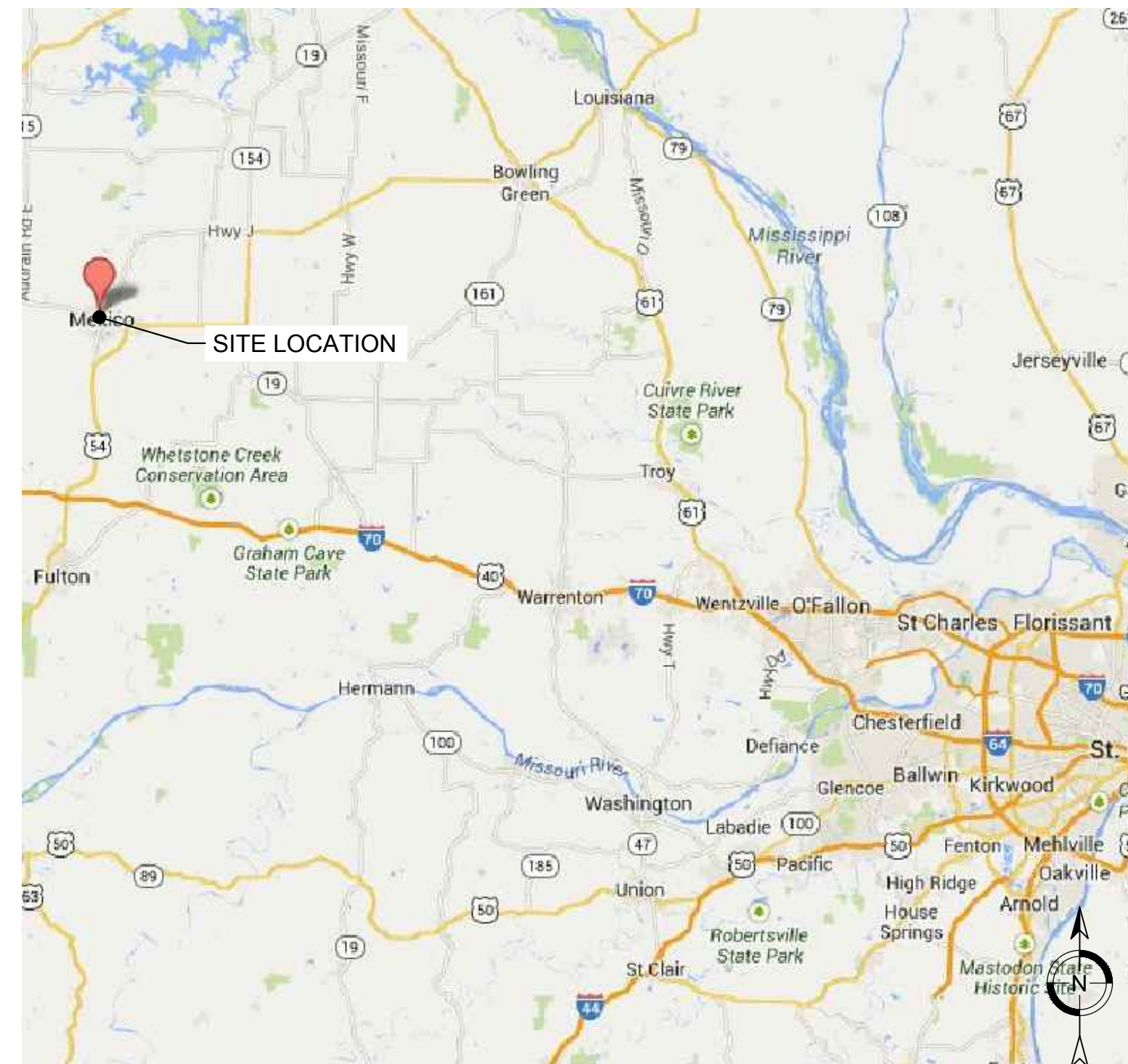
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SHEET TITLE:

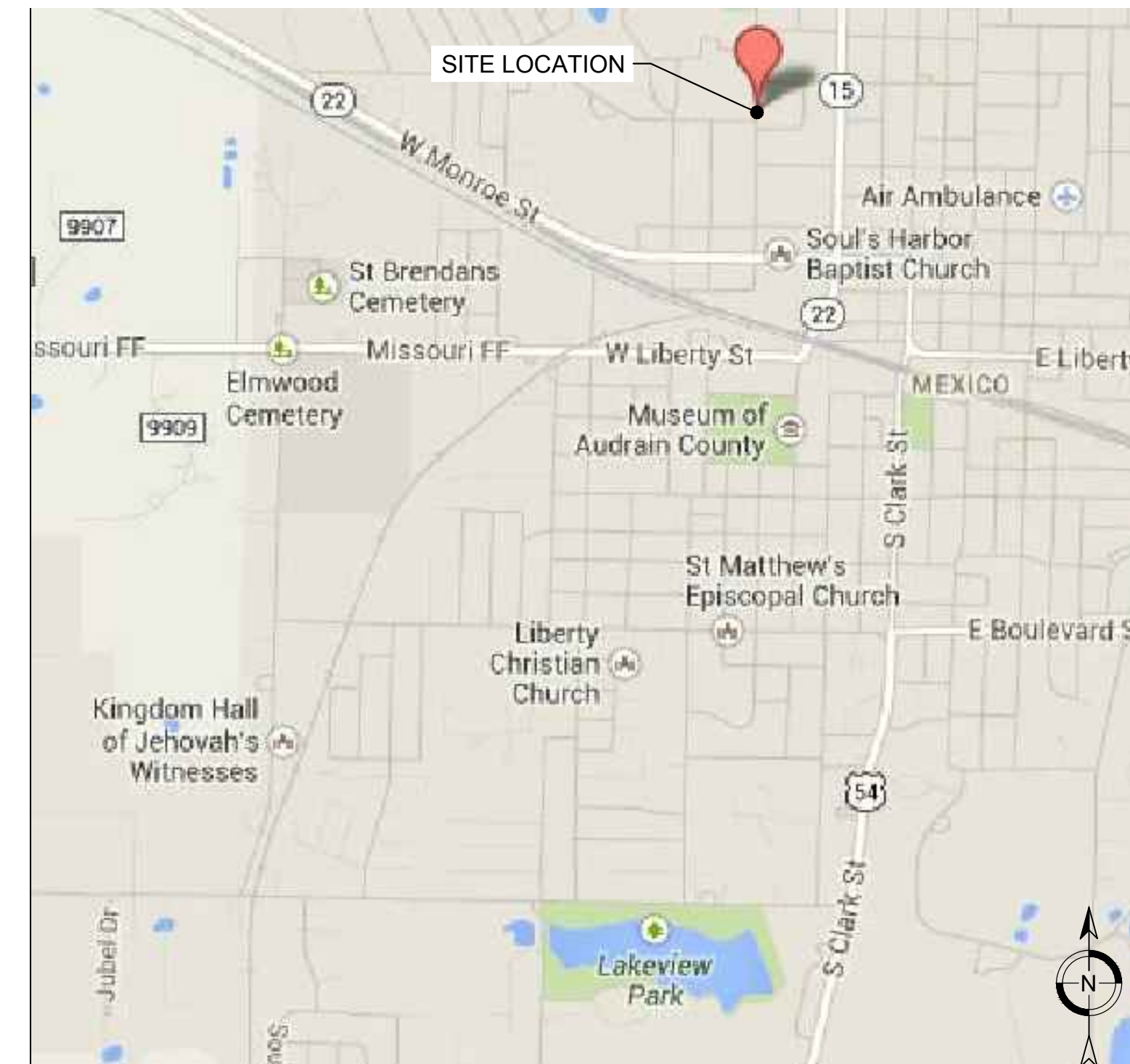
TITLE SHEET

SHEET NUMBER:

T1



VICINITY MAP



LOCAL MAP

SITE INFORMATION:

OWNER: MEXICO SENIOR HIGH
639 NORTH WADE
MEXICO, MO 65265
MEXICO COUNTY

CLIENT CONTACT: BRIGHTERGY, LLC
1617 MAIN ST.
KANSAS CITY, MO 64108

UTILITY COMPANY: AMEREN

SYSTEM #1 24.705kW
ACCOUNT NUMBER: 50500-09010
METER NUMBER: 08154159

SYSTEM #2 24.705kW
ACCOUNT NUMBER: 80500-09213
METER NUMBER: 09601829

CONTACT INFORMATION:

PROPERTY REPRESENTATIVE: KEVIN FREEMAN
PHONE#: (573) 581-3773

PROJECT MANAGER: MIKE RIEHL - BRIGHTERGY, LLC
(816) 866-0555

KCP&L DIRECTOR OF SUSTAINABILITY: ROLAND MALIWAT
(816) 701-7868

APPROVALS:

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

BRIGHTERGY: _____ DATE: _____

CONTRACTOR / LEAD INSTALLER: _____ DATE: _____

SHEET INDEX:

- T1 TITLE SHEET
- ST1 SITE PLAN
- E1.1 SYSTEM #1 ELECTRICAL LAYOUT
- E1.2 SYSTEM #1 ELECTRICAL LINE DIAGRAM
- E1.3 SYSTEM #1 NEC REQUIRED LABELS
- E2.1 SYSTEM #2 ELECTRICAL LAYOUT
- E2.2 SYSTEM #2 ELECTRICAL LINE DIAGRAM
- E2.3 SYSTEM #2 NEC REQUIRED LABELS
- E3 ELECTRICAL DETAILS
- S1.1 SYSTEM #1 RACKING LAYOUT
- S1.2 SYSTEM #1 RACKING DETAILS
- S2.1 SYSTEM #2 RACKING LAYOUT
- S2.2 SYSTEM #2 RACKING DETAILS

NOTE:

CONTRACTOR SHALL NOT COMMENCE WORK UNTIL A PERMIT AND INTERCONNECTION APPROVAL HAS BEEN OBTAINED WITH NO EXCEPTIONS



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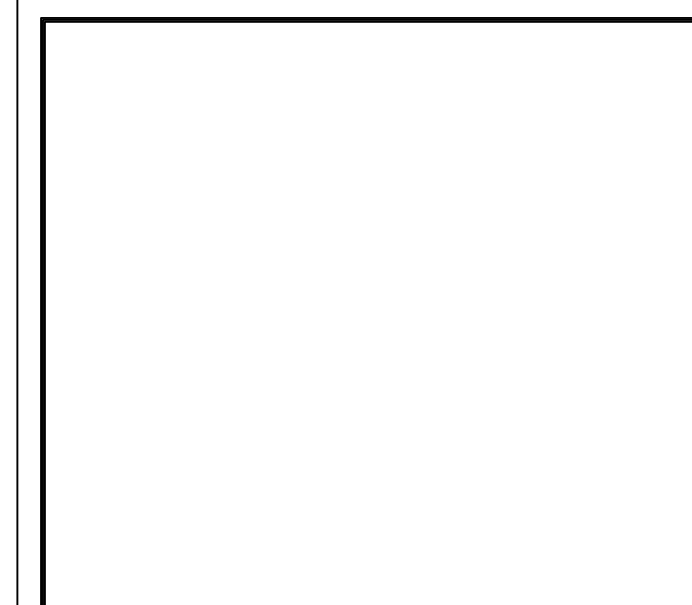
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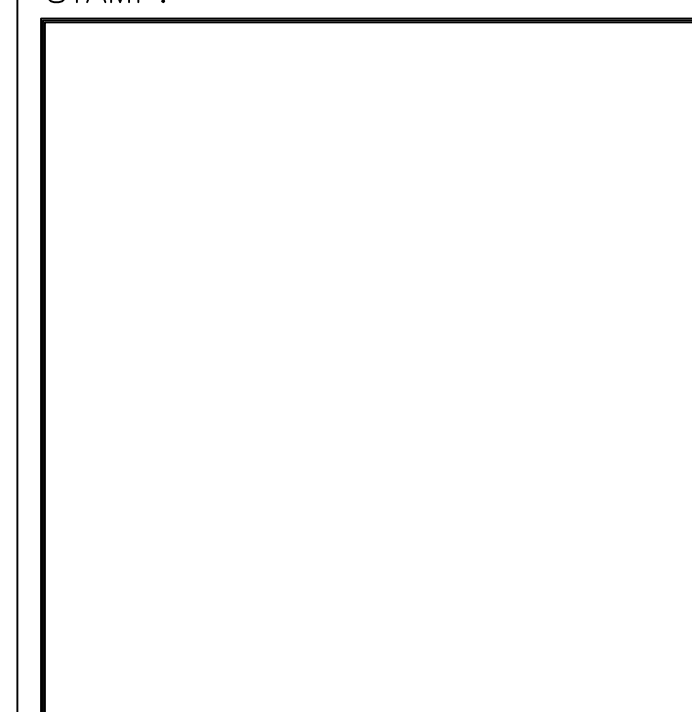
ENGINEER:



DRAWN BY: _____ CHK.: _____ APV.: _____

NJK AJN KP

STAMP:

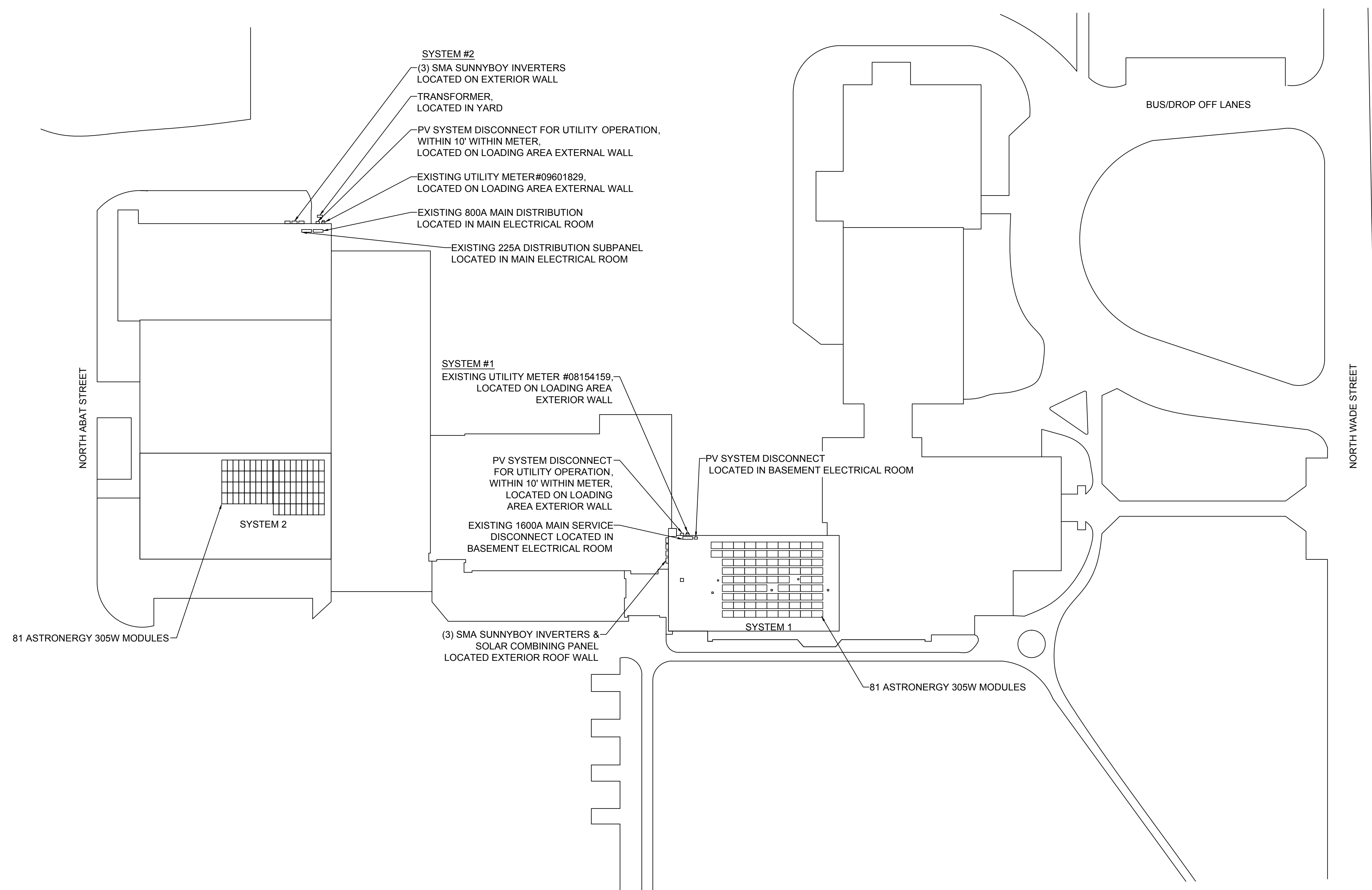


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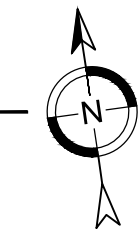
SITE PLAN

SHEET NUMBER:

ST1



1 SITE PLAN
SCALE: 1/32" = 1'-0"





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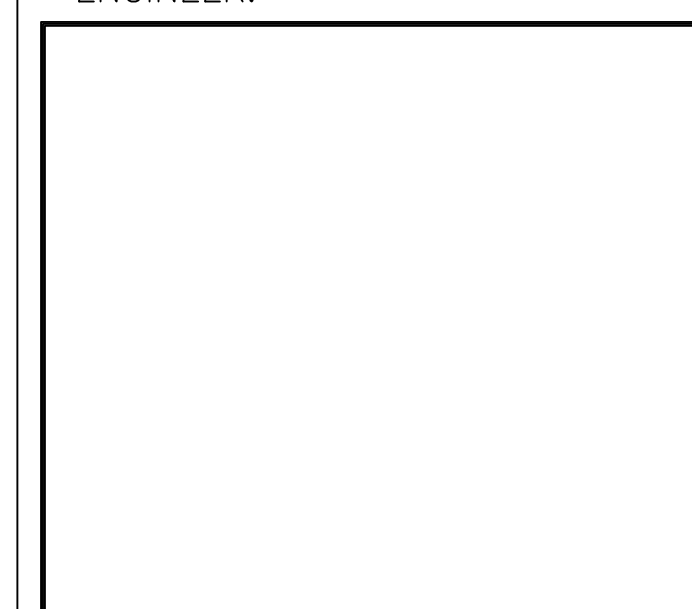
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MEXICO, MO 65265

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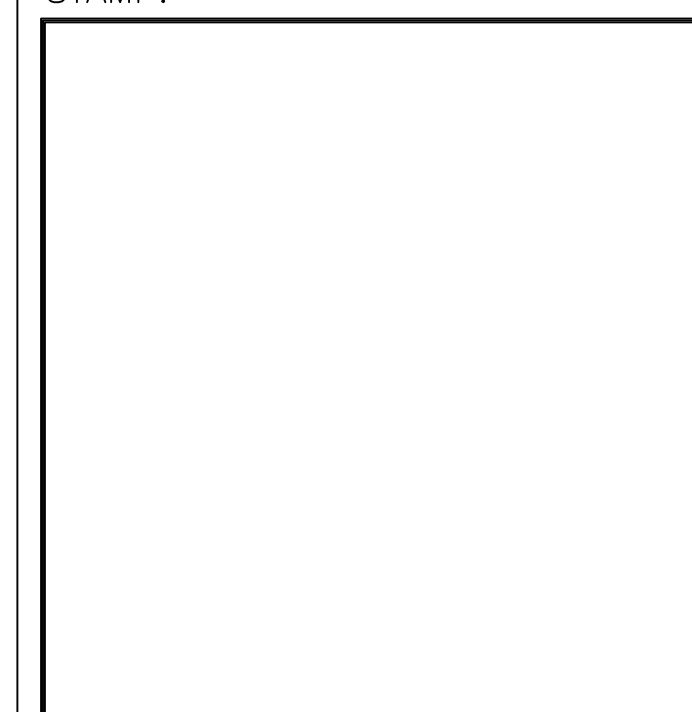
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NJK AJN KP

STAMP:

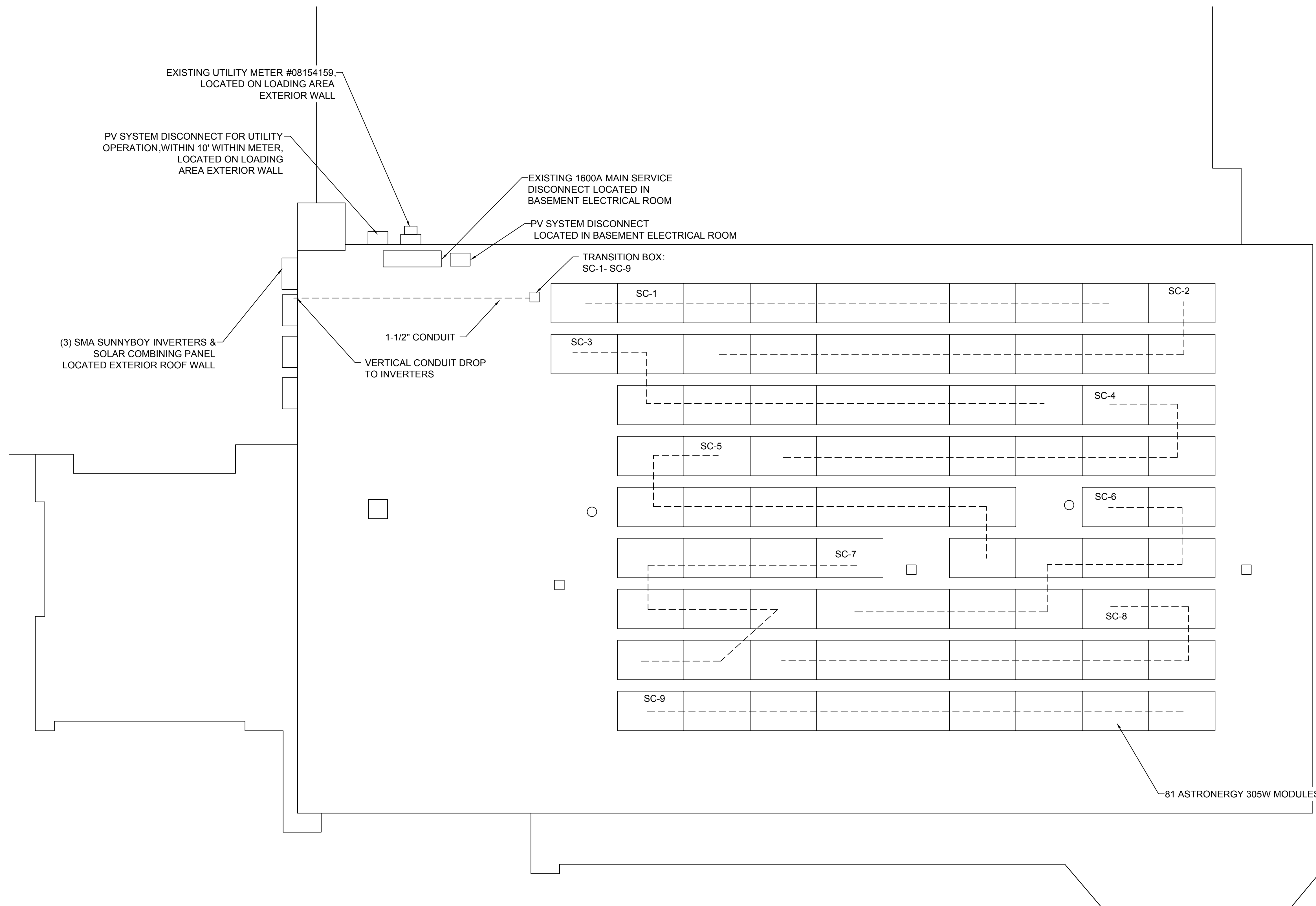


SHEET TITLE:

SYSTEM #1
ELECTRICAL
LAYOUT

SHEET NUMBER:

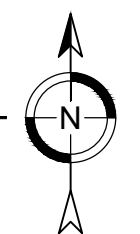
E1.1



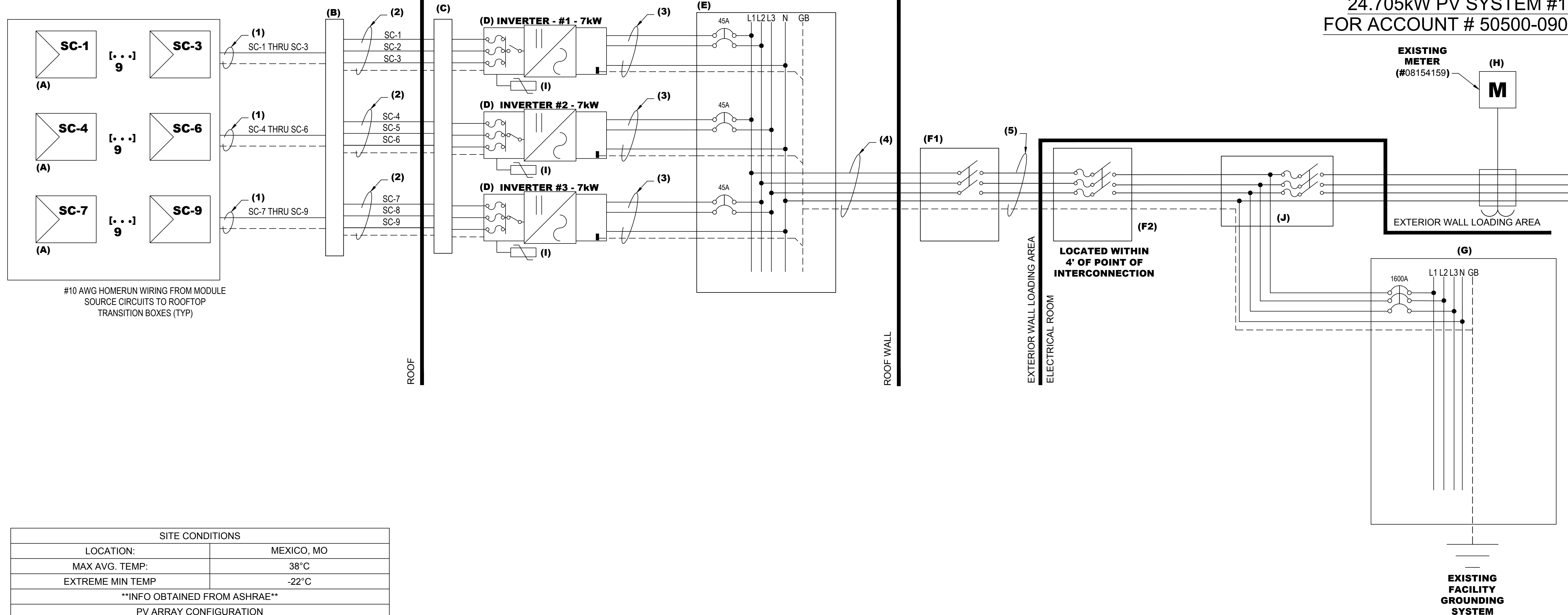
NOTES:

- CONDUIT SHALL BE SUPPORTED EVERY 10' O.C.
- CONDUIT ACROSS ROOF AT A MINIMUM OF 3-1/2" ABOVE ROOF SURFACE.

1 ELECTRICAL LAYOUT
SCALE: 3/16" = 1'-0"



24.705kW PV SYSTEM #1
FOR ACCOUNT # 50500-09010



#10 AWG HOMERUN WIRING FROM MODULE SOURCE CIRCUITS TO ROOFTOP TRANSITION BOXES (TYP)

SITE CONDITIONS	
LOCATION:	MEXICO, MO
MAX AVG. TEMP:	38°C
EXTREME MIN TEMP	-22°C
INFO OBTAINED FROM ASHRAE	
PV ARRAY CONFIGURATION	
MODULE MFR.:	ASTRONERGY
MODULE MFR. MODELS:	CHSM6612P-305
MODULE QTY.:	81
MODULES PER SOURCE CIRCUIT:	9
TOTAL SOURCE CIRCUITS:	9
TRANSITION BOX QTY.:	1
PV MODULE OUTPUT FOR ASTRONERGY CHSM6612P-305*	
VOC:	45.29 Vdc
TEMP. COEFFICIENT OF Voc	-0.322 %/°C
ISC	8.95 Adc
VMP	35.77 Vdc
IMP	8.53 Adc
PV SOURCE CIRCUIT OUTPUT FOR SC-1 THRU SC-9*	
VOC:	407.61 Vdc
TEMP. ADJUSTED	470.88 Vdc
ISC	8.95 Adc
VMP	321.9 Vdc
IMP	8.95 Adc
INDIVIDUAL 7KW INVERTER OUTPUT	
TYPE	SMA SB 7000US
RATED POWER:	7.0 KWac
OPERATING AC VOLTAGE:	208 V
MAX. CURRENT:	34 A
OUTPUT FREQUENCY	60 Hz
*BASED ON MODULE PERFORMANCE AT STANDARD TEST CONDITIONS (STC)	

ID	DESCRIPTION	QTY
(A)	ASTRONERGY CHSM6612P-305 (305W) MODULES, NEGATIVE GROUNDING	81
(B)	TRANSITION BOX, SIZE: 12"x12"x6", NEMA 4, ADJACENT TO ARRAY	1
(C)	WIREWAY, 6"x6"x6", NEMA 3R, BELOW INVERTERS	1
(D)	SMA SUNNYBOY 7.0 kW UTILITY INTERACTIVE DC-TO-AC INVERTER, 1-PHASE 3-WIRE, 208V VAC, NEMA 3R W/ INTEGRAL DC COMBINER	3
(E)	SOLAR COMBINING PANEL, 200A, 250V, NEMA 3R	1
(F1)	PV SYSTEM DISCONNECT, 250V, 100A, NEMA 3R	1
(F2)	PV SYSTEM DISCONNECT, 100AT, 80AF, 250V, NEMA 1	1
(G)	1600A MAIN DISTRIBUTION PANEL, 208V, 3P, 4W	1
(H)	EXISTING BILLING METER LOCATED ON TRANSFORMER, TO BE SWAPPED AFTER INSPECTION	1
(I)	LIGHTNING SUPPRESSOR(S) - PART #LA602 (DC)	3
(J)	POINT OF PV INTERCONNECTION, EXISTING MAIN SERVICE DISCONNECT: 1600A, 208V	1

NOTES
 (1) ALL HOMERUN WIRES TO TRANSITION BOXES ARE #10 AWG USE-2/RHW-2 DUAL RATED WIRES. ROUTED AS REQUIRED
 (2) ALL CONDUIT TO BE EMT, UNLESS OTHERWISE SPECIFIED BY LOCAL AHJ.
 (3) ALL EQUIPMENT TO BE LABELLED PER NEC REQUIREMENTS
 (4) SYSTEM TO BE INSTALLED WITH ADEQUATE AC AND DC TRANSIENT VOLTAGE SURGE SUPPRESSION.

TABLE 2: CONDUIT AND WIRING SCHEDULE							
ID	MAX AMPERAGE	EST. MAX LENGTH	# OF WIRES	WIRE SIZE (AWG)	VOLTAGE DROP	GROUND SIZE	CONDUIT SIZE
(1)	13.96 Adc	105'	6	#10 USE-2	0.67	#6	FREE AIR
(2)	13.96 Adc	50'	6	#10 THWN-2	0.32	#6	1-1/2"
(3)	42.5 Aac	35'	3	#6 THWN-2	0.55	#6	1"
(4)	73.5 Aac	10'	4	#4 THWN-2	0.16	#6	1"
(5)	73.5 Aac	4'	4	#4 THWN-2	0.10	#6	1"

* ALL DC CURRENTS ARE SHORT CIRCUIT VALUES.
 * ALL AC CURRENTS ARE NOMINAL PER-PHASE VALUES.
 * WIRE AMPACITY IS BASED ON NUMBER OF WIRES PER CONDUIT AND HEIGHT ABOVE ROOF. IF CONDUITS ARE INSTALLED DIFFERENTLY THAN SHOWN ABOVE WIRE SIZES MAY BE AFFECTED.
 * ALL CONDUCTORS ARE COPPER 90° C RATED.
 * DUAL RATED (THHN/THWN-2) CONDUCTORS ARE FAVORABLE.

Brightergy
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49.41kW PV System
 639 NORTH WADE
 MEXICO, MO 65265

ISSUE DATE: **01/03/2014**

REV:	DATE:	BY:

ENGINEER: _____

DRAWN BY: _____ CHK.: _____ APV.: _____
 NJK AJN KP

STAMP: _____

SHEET TITLE: **SYSTEM #1 ELECTRICAL LINE DIAGRAM**

SHEET NUMBER: **E1.2**

24.705kW PV SYSTEM #1
FOR ACCOUNT # 50500-09010



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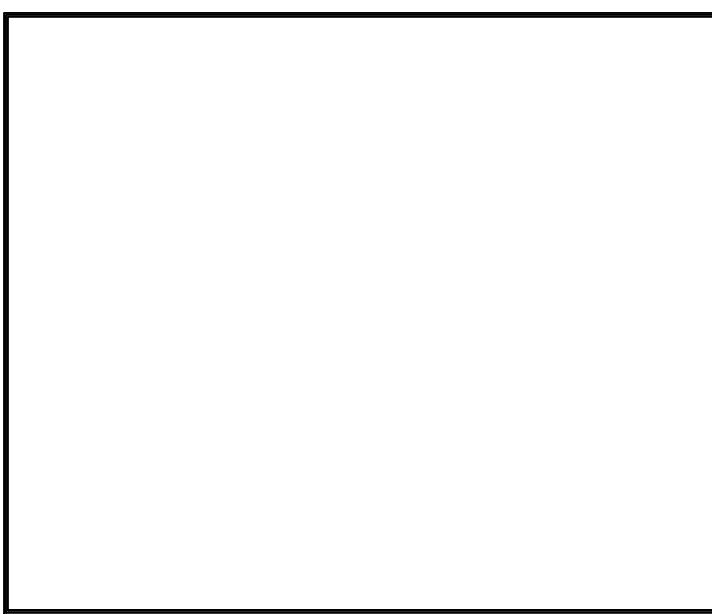
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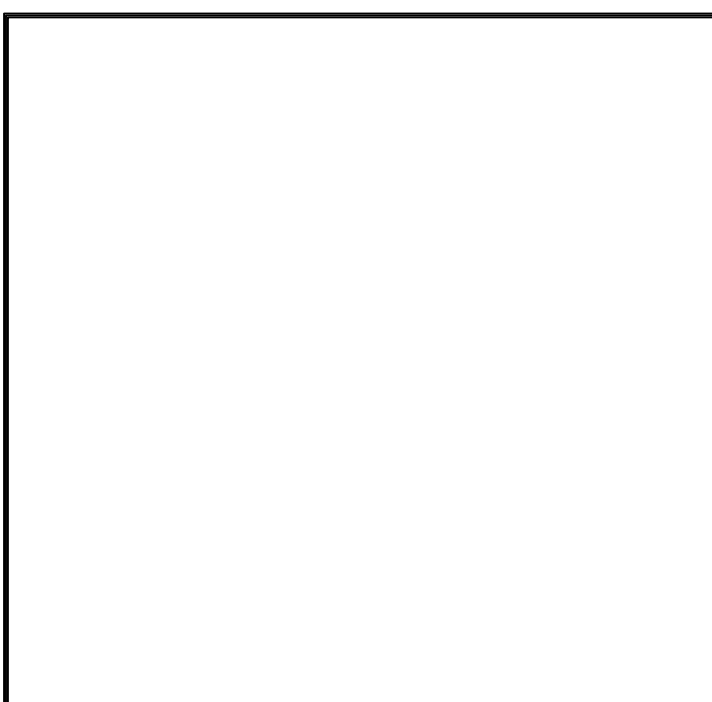
ENGINEER: _____



DRAWN BY: _____ CHK.: _____ APV.: _____

NJK AJN KP

STAMP: _____



SHEET TITLE:

SYSTEM #1 NEC
REQUIRED
LABELS

SHEET NUMBER:

E1.3

INVERTERS (3), AC DISCONNECT (2), MAIN SERVICE DISCONNECT (1), SOLAR COMBINING PANEL (1), & TRANSITION BOX (1) SHALL REQUIRE THE FOLLOWING LABEL (8)

AUTHORIZED PERSONNEL ONLY

PHOTOVOLTAIC SYSTEM INTERCONNECTION TO MDP & SOLAR COMBINING PANEL SHALL REQUIRE THE FOLLOWING LABELING 690.54 (2 REQUIRED)

PHOTOVOLTAIC INTERACTIVE SYSTEM POINT OF INTERCONNECTION
OPERATING AC VOLTAGE: 208Vac, 3-PHASE
RATED AC OUTPUT CURRENT: 58.8Aac

PHOTOVOLTAIC SYSTEM AC DISCONNECTS SHALL REQUIRE THE FOLLOWING LABELING 690.14(C)(2) & 690.54 (1 REQUIRED)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
OPERATING AC VOLTAGE: 208Vac, 3-PHASE
MAXIMUM OPERATING CURRENT: 58.8Aac

PV OUTPUT CIRCUIT SHALL BE LABELED ON 5-POLE COMBINER / INVERTER'S DC DISCONNECT WITH THE FOLLOWING INFORMATION PER NEC ARTICLE 690.53 & 690.4(B) (3 REQUIRED, 1 PER INVERTER)

INVERTER #1
GRID TIED PHOTOVOLTAIC POWER SOURCE
1) MAXIMUM POWER-POINT CURRENT: 25.59Aac
2) MAXIMUM POWER-POINT VOLTAGE: 321.9Vdc
3) MAXIMUM SYSTEM VOLTAGE (ADJUSTED): 470.9Vdc
4) SHORT CIRCUIT CURRENT (ADJUSTED): 33.56Aac

INVERTER #2
GRID TIED PHOTOVOLTAIC POWER SOURCE
1) MAXIMUM POWER-POINT CURRENT: 25.59Aac
2) MAXIMUM POWER-POINT VOLTAGE: 321.9Vdc
3) MAXIMUM SYSTEM VOLTAGE (ADJUSTED): 470.9Vdc
4) SHORT CIRCUIT CURRENT (ADJUSTED): 33.56Aac

INVERTER #3
GRID TIED PHOTOVOLTAIC POWER SOURCE
1) MAXIMUM POWER-POINT CURRENT: 25.59Aac
2) MAXIMUM POWER-POINT VOLTAGE: 321.9Vdc
3) MAXIMUM SYSTEM VOLTAGE (ADJUSTED): 470.9Vdc
4) SHORT CIRCUIT CURRENT (ADJUSTED): 33.56Aac

THE UTILITY INTERACTIVE INVERTER(S) SHALL BE LABELED WITH THE FOLLOWING PER NEC ARTICLE 690.5(C) (3 REQUIRED)

WARNING
ELECTRIC SHOCK HAZARD
IF A GROUND FAULT IS INDICATED,
NORMALLY GROUNDED CONDUCTORS MAY
BE UNGROUNDED AND ENERGIZED

THE DC COMBINERS / DC DISCONNECTS & AC DISCONNECTS SHALL BE LABELED WITH THE FOLLOWING PER NEC ARTICLE 690.14(C)(2) & 690.17 (5 REQUIRED)

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

THE PV DAS SHALL BE LABELED WITH THE FOLLOWING INFORMATION PER NEC ARTICLE 690.4(D) (1 REQUIRED)

PHOTOVOLTAIC SYSTEM DATA ACQUISITION SYSTEM
AUTHORIZED PERSONNEL ONLY

AC COMBINING PANEL SHALL REQUIRE THE FOLLOWING LABELING (1 REQUIRED PER BRANCH CIRCUIT)

SOLAR FED BREAKER INVERTER #1

SOLAR FED BREAKER INVERTER #2

SOLAR FED BREAKER INVERTER #3

MARKING: 2012 INTERNATIONAL FIRE CODE (IFC) 605.11.1

- THE FOLLOWING LABEL IS REQUIRED ON ALL INTERIOR AND EXTERIOR DIRECT CURRENT (DC) CONDUIT, ENCLOSURES, RACEWAYS AND CABLE ASSEMBLIES EVERY 10 FEET, WITHIN 1 FOOT OF TURNS OR BENDS AND WITHIN 1 FOOT ABOVE AND BELOW PENETRATIONS OF ROOF/CEILING ASSEMBLIES, WALLS OR BARRIERS.

- LABELS ALSO REQUIRED ON ALL DIRECT CURRENT (DC) JUNCTION BOXES, COMBINER BOXES, AND DISCONNECTS.

- AN ADDITIONAL LABEL SHALL BE PLACED ADJACENT TO THE MAIN SERVICE DISCONNECT IN A LOCATION CLEARLY VISIBLE FROM THE LOCATION WHERE THE DISCONNECT IS OPERATED.

- MATERIAL SHALL BE REFLECTIVE, WEATHER RESISTANT AND SUITABLE FOR THE ENVIRONMENT. LETTERS SHALL BE CAPITALIZED WITH A MIN. HEIGHT OF 3/8" (9.5MM) WHITE ON RED BACKGROUND.

WARNING:
PHOTOVOLTAIC POWER SOURCE

UTILITY BILLING METER, POINT OF INTERCONNECTION (& MDP, IF SEPARATE), AC COMBINING PANEL, & MAIN PV DISCONNECT SHALL RECEIVE A PERMANENT LABEL, DENOTING ALL ELECTRICAL POWER SOURCES PER NEC ARTICLE 705.12(D)(4) & 705.10 (4 REQUIRED)

EQUIPMENT FED BY TWO SOURCES: UTILITY AND PHOTOVOLTAIC SYSTEM, WITH PV PANELS ON ROOF, AND INVERTERS LOCATED ON ROOF WALL

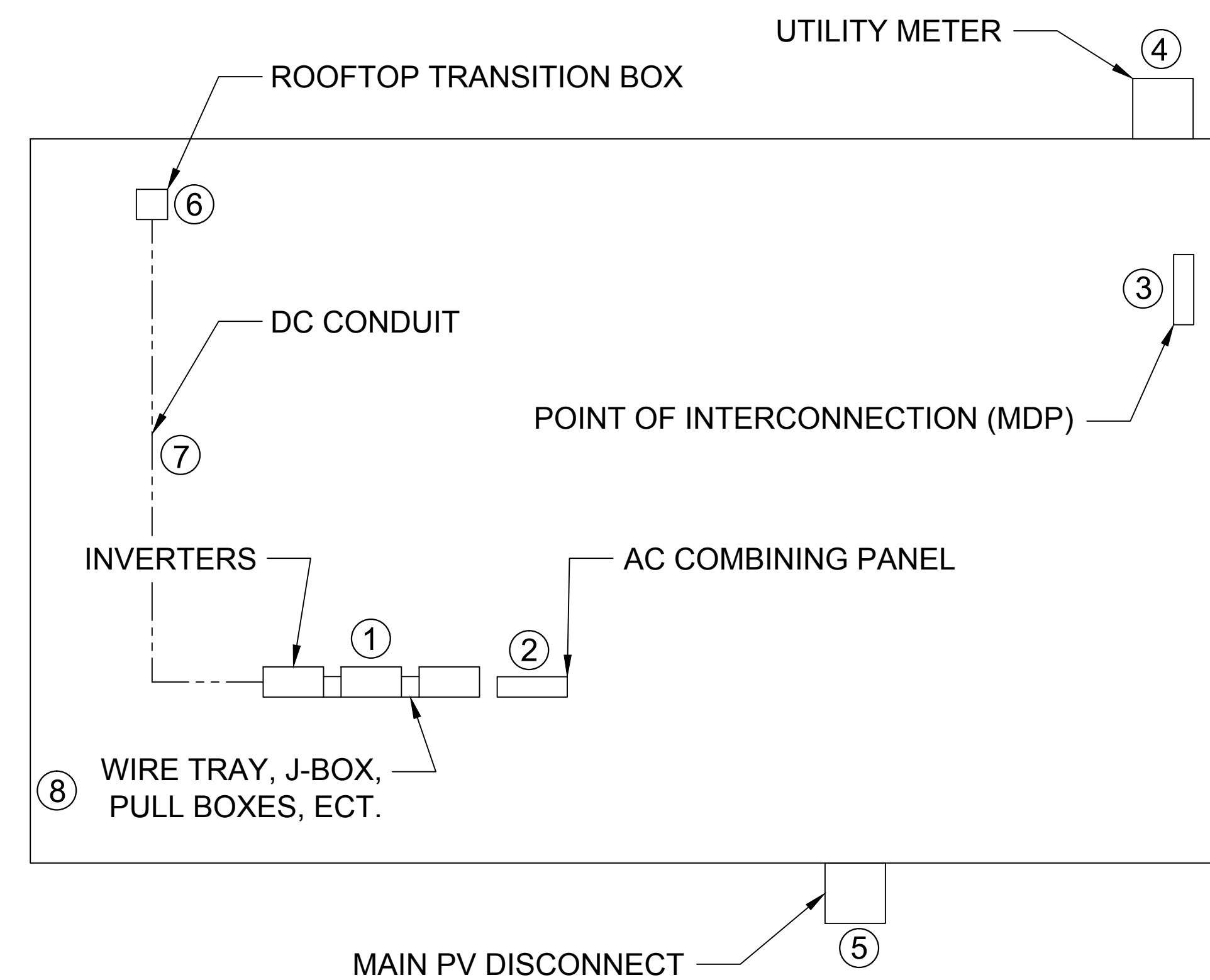
UTILITY ACCESSIBLE DISCONNECT SHALL RECEIVE A PERMANENT ENGRAVED PLAQUE, 3/8" MIN. LETTERING, PER UTILITY REQUIREMENTS (1 REQUIRED)

PV SYSTEM DISCONNECT FOR UTILITY OPERATION

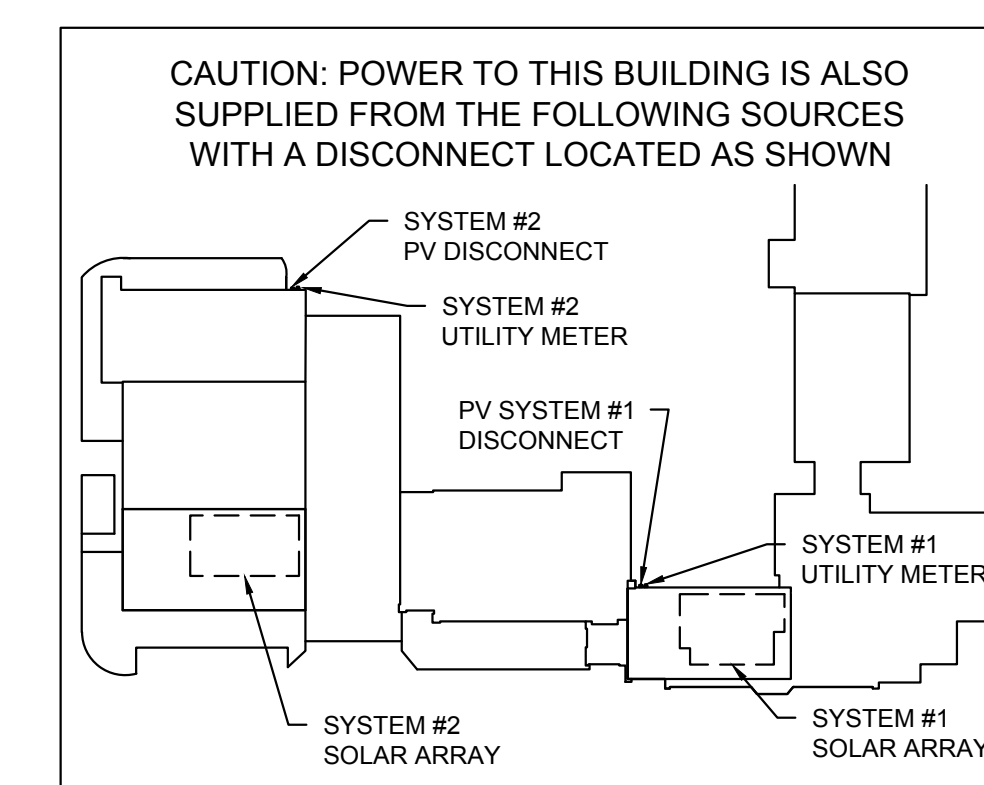
THE UTILITY METER ENCLOSURE FOR METER #08154159 SHALL REQUIRE THE FOLLOWING LABELING (1 REQUIRED)

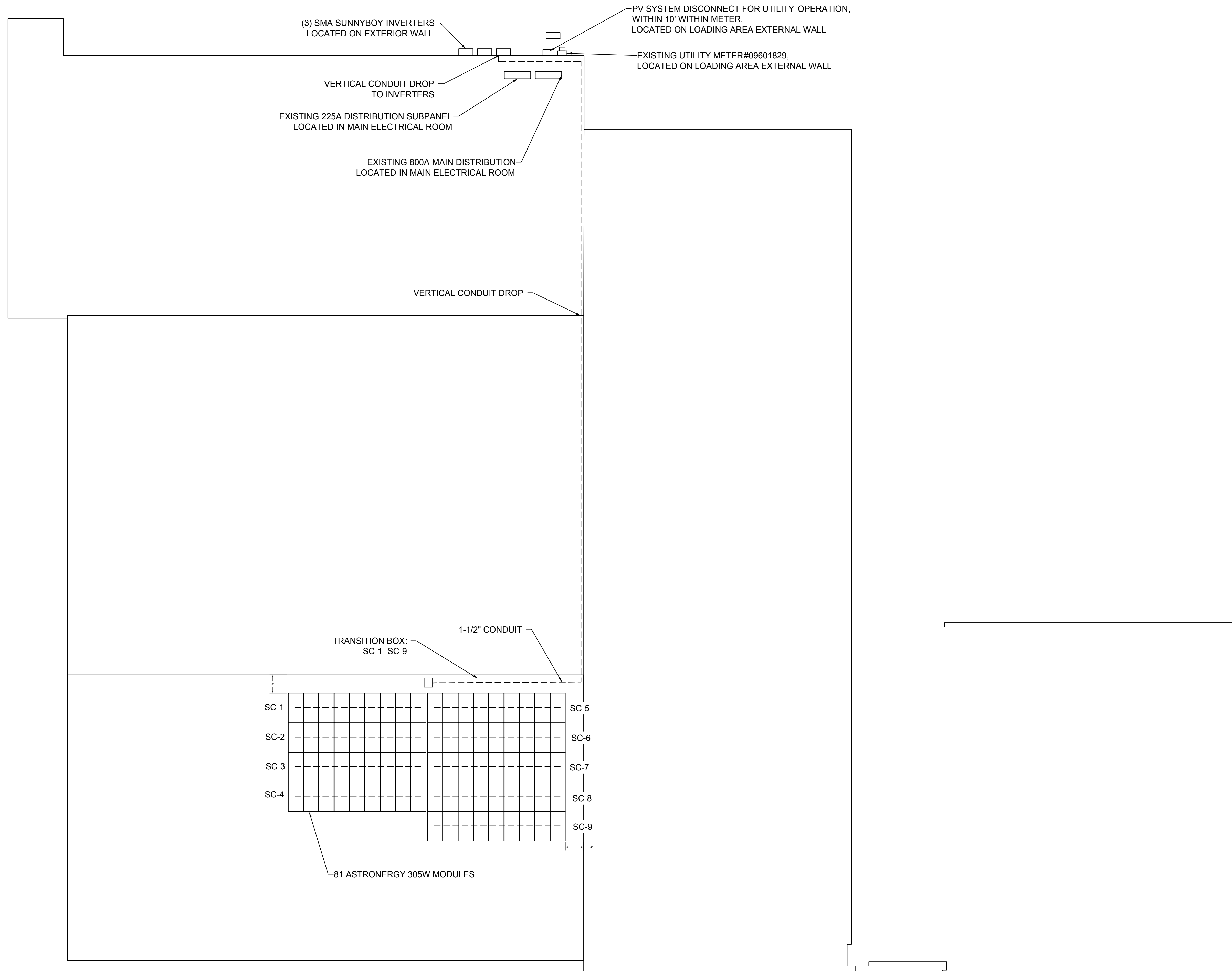
SYSTEM #1

SAMPLE LAYOUT FOR REFERENCE ONLY



A SITE DIRECTORY PLAQUE SHALL BE LOCATED ON OR BESIDE THE BI-DIRECTIONAL UTILITY BILLING METER PER NEC ARTICLE 705.10 (1 REQUIRED)





NOTES:

- CONDUIT SHALL BE SUPPORTED EVERY 10' O.C.
- CONDUIT ACROSS ROOF AT A MINIMUM OF 3-1/2" ABOVE ROOF SURFACE.

1
ELECTRICAL LAYOUT
 SCALE: 3/16" = 1'-0"



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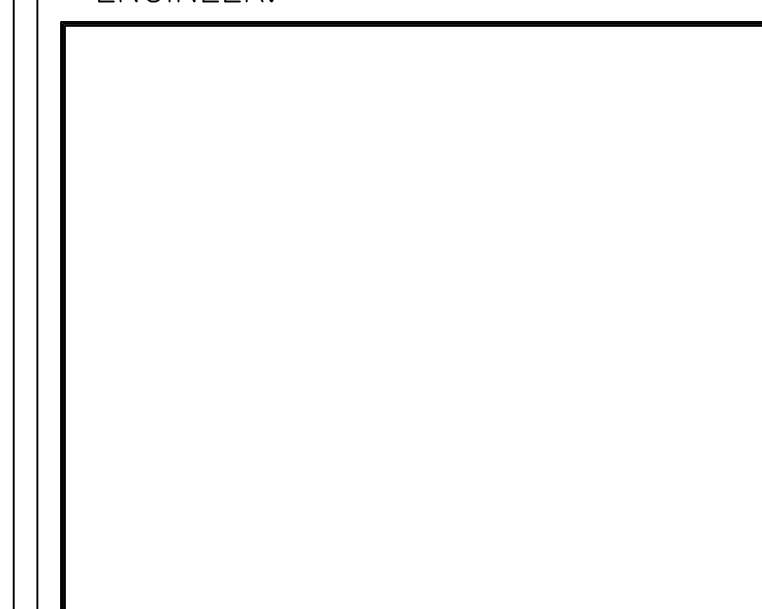
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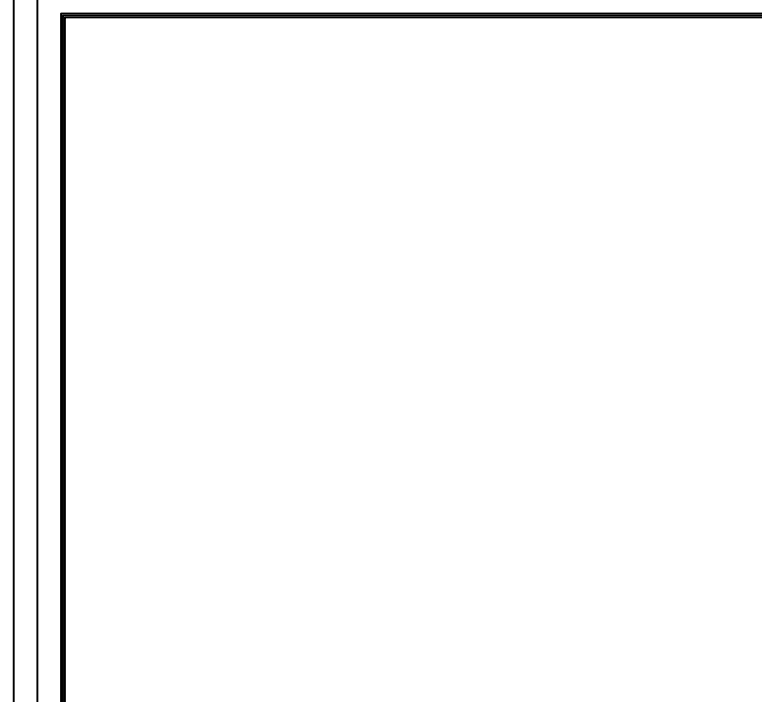
ENGINEER:



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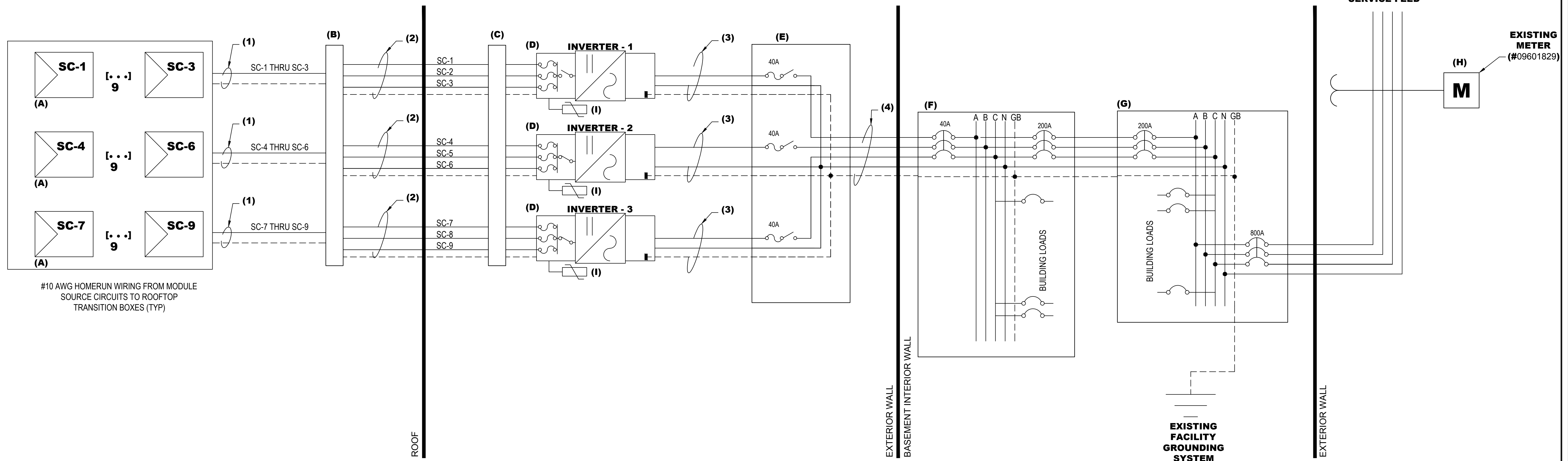
SHEET TITLE:

SYSTEM #2
ELECTRICAL
LAYOUT

SHEET NUMBER:

E2.1

****24.705kW PV SYSTEM #2
FOR ACCOUNT # 80500-09213****



#10 AWG HOMERUN WIRING FROM MODULE SOURCE CIRCUITS TO ROOFTOP TRANSITION BOXES (TYP)

SITE CONDITIONS	
LOCATION:	MEXICO, MO
MAX AVG. TEMP:	38°C
EXTREME MIN TEMP	-22°C
INFO OBTAINED FROM ASHRAE	
PV ARRAY CONFIGURATION	
MODULE MFR.:	ASTRONERGY
MODULE MFR. MODELS:	CHSM6612P-305
MODULE QTY.:	81
MODULES PER SOURCE CIRCUIT:	9
TOTAL SOURCE CIRCUITS:	9
TRANSITION BOX QTY.:	1
PV MODULE OUTPUT FOR ASTRONERGY CHSM6612P-305*	
VOC:	45.29 Vdc
TEMP. COEFFICIENT OF Voc	-0.322 %/°C
ISC	8.95 Adc
VMP	35.77 Vdc
IMP	8.53 Adc
PV SOURCE CIRCUIT OUTPUT FOR SC-1 THRU SC-9*	
VOC:	407.61 Vdc
TEMP. ADJUSTED	470.88 Vdc
ISC	8.95 Adc
VMP	321.9 Vdc
IMP	8.95 Adc
INDIVIDUAL 7KW INVERTER OUTPUT	
TYPE	SMA SB 7000US
RATED POWER:	7.0 KWac
OPERATING AC VOLTAGE:	277 V
MAX. CURRENT:	25 A
OUTPUT FREQUENCY	60 Hz
*BASED ON MODULE PERFORMANCE AT STANDARD TEST CONDITIONS (STC)	

TABLE 1: PHOTOVOLTAIC SYSTEM EQUIPMENT SCHEDULE		
ID	DESCRIPTION	QTY
(A)	ASTRONERGY CHSM6612P-305 (305W) MODULES, NEGATIVE GROUNDING	81
(B)	TRANSITION BOX, SIZE: 12"x12"x6", NEMA 4, ADJACENT TO ARRAY	1
(C)	WIREWAY, 6"x6"x6", NEMA 3R, BELOW INVERTERS	1
(D)	SMA SUNNYBOY 7.0 kW UTILITY INTERACTIVE DC-TO-AC INVERTER: 1-PHASE, 3-WIRE, 277 VAC, NEMA 3R W/ INTEGRAL DC COMBINER	3
(E)	PV SYSTEM DISCONNECT FOR UTILITY OPERATION: 250V, NEMA 3R, 60AT, 40AF	1
(F)	EXISTING DISTRIBUTION SUBPANEL: 225A, 200MCB, 480V, 3-PHASE, 4-WIRE	2
(G)	EXISTING MAIN DISTRIBUTION PANEL: 800A, 480V, 3-PHASE, 4-WIRE	1
(H)	EXISTING BILLING METER LOCATED ON TRANSFORMER, TO BE SWAPPED AFTER INSPECTION	1
(I)	LIGHTNING SUPPRESSOR(S) - PART #LA602 (DC)	3

- NOTES**
- (1) ALL HOMERUN WIRES TO TRANSITION BOXES ARE #10 AWG USE-2/RHW-2 DUAL RATED WIRES. ROUTED AS REQUIRED.
 - (2) ALL CONDUIT TO BE EMT, UNLESS OTHERWISE SPECIFIED BY LOCAL AHJ.
 - (3) ALL EQUIPMENT TO BE LABELLED PER NEC REQUIREMENTS.
 - (4) SYSTEM TO BE INSTALLED WITH ADEQUATE AC AND DC TRANSIENT VOLTAGE SURGE SUPPRESSION.
 - (5) POINT OF INTERCONNECTION:
 - (A) LOAD SIDE: THE SUM OF THE AMPERE RATINGS OF OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUSBAR OR CONDUCTOR SHALL NOT EXCEED 120 PERCENT OF THE RATING OF THE BUSBAR OR CONDUCTOR. NEC 705.12(D)2.
 - (B) SUPPLY SIDE: THE SUM OF THE RATINGS OF ALL OVERCURRENT DEVICES CONNECTED TO POWER PRODUCING SOURCES SHALL NOT EXCEED THE RATING OF THE SERVICE. NEC 705.12(A).

TABLE 2: CONDUIT AND WIRING SCHEDULE							
ID	MAX AMPERAGE	EST. MAX LENGTH	# OF WIRES	WIRE SIZE (AWG)	VOLTAGE DROP	GROUND SIZE	CONDUIT SIZE
(1)	13.96 Adc	40'	6	#10 USE-2	0.25	#6	FREE AIR
(2)	13.96 Adc	205'	6	#10 THWN-2	1.31	#6	1-1/2"
(3)	31.25 Aac	10'	2	#8 THWN-2	0.12	#8	1-1/2"
(4)	31.25 Aac	10'	4	#8 THWN-2	0.07	#8	1"

- * ALL DC CURRENTS ARE SHORT CIRCUIT VALUES.
- * ALL AC CURRENTS ARE NOMINAL PER-PHASE VALUES.
- * WIRE AMPACITY IS BASED ON NUMBER OF WIRES PER CONDUIT AND HEIGHT ABOVE ROOF. IF CONDUITS ARE INSTALLED DIFFERENTLY THAN SHOWN ABOVE WIRE SIZES MAY BE AFFECTED.
- * ALL CONDUCTORS ARE COPPER 90° C RATED.
- * DUAL RATED (THHN/THWN-2) CONDUCTORS ARE FAVORABLE.

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ENGINEER: _____

DRAWN BY: **NJK** CHK.: **AJN** APV.: **KP**

STAMP: _____

SHEET TITLE: **SYSTEM #2
ELECTRICAL
LINE DIAGRAM**

SHEET NUMBER: **E2.2**

24.705kW PV SYSTEM #2
FOR ACCOUNT # 80500-09213



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DRAWN BY: _____ CHK.: _____ APV.: _____

NJK AJN KP

STAMP: _____

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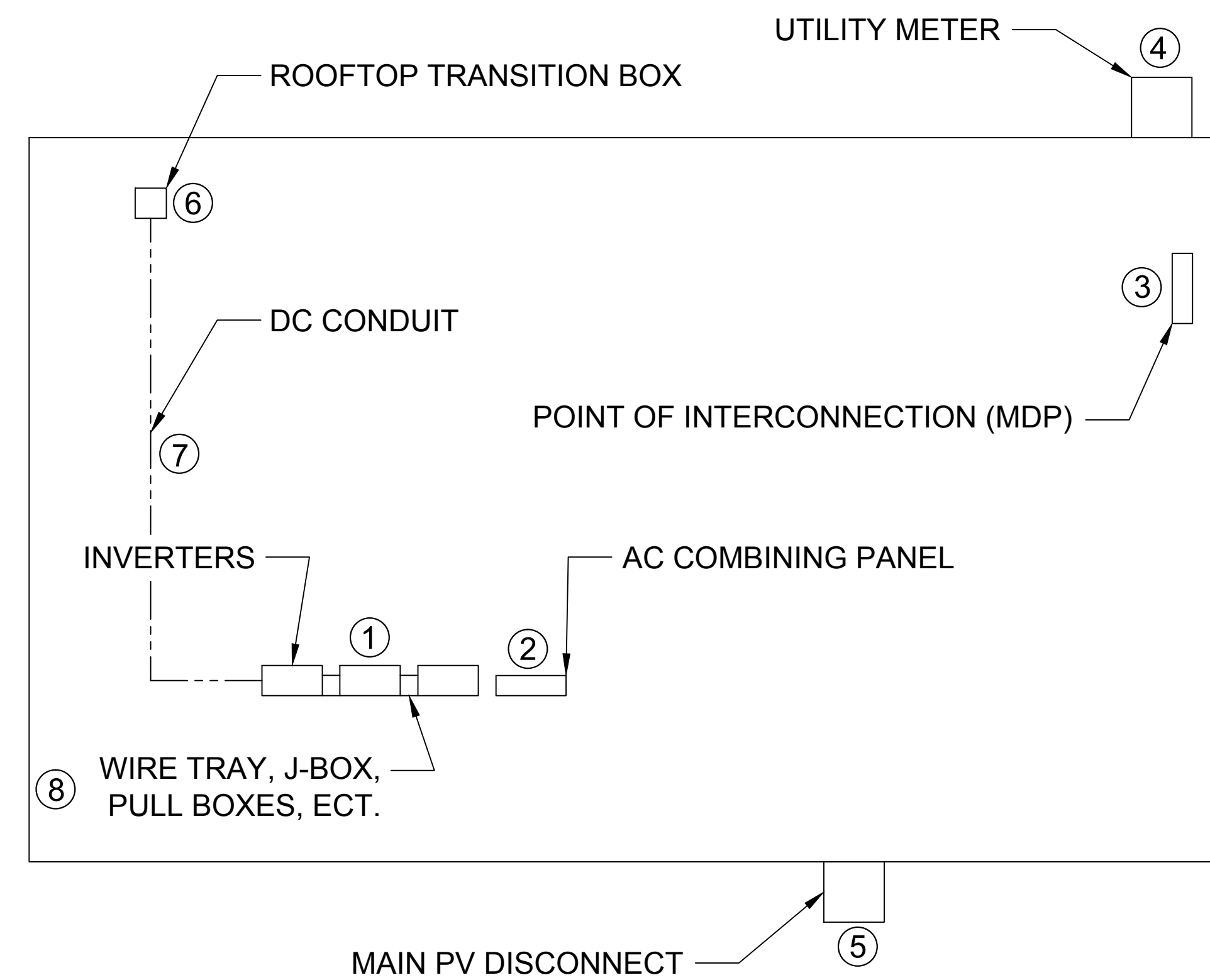
SHEET TITLE:

SYSTEM #2 NEC
REQUIRED
LABELS

SHEET NUMBER:

E2.3

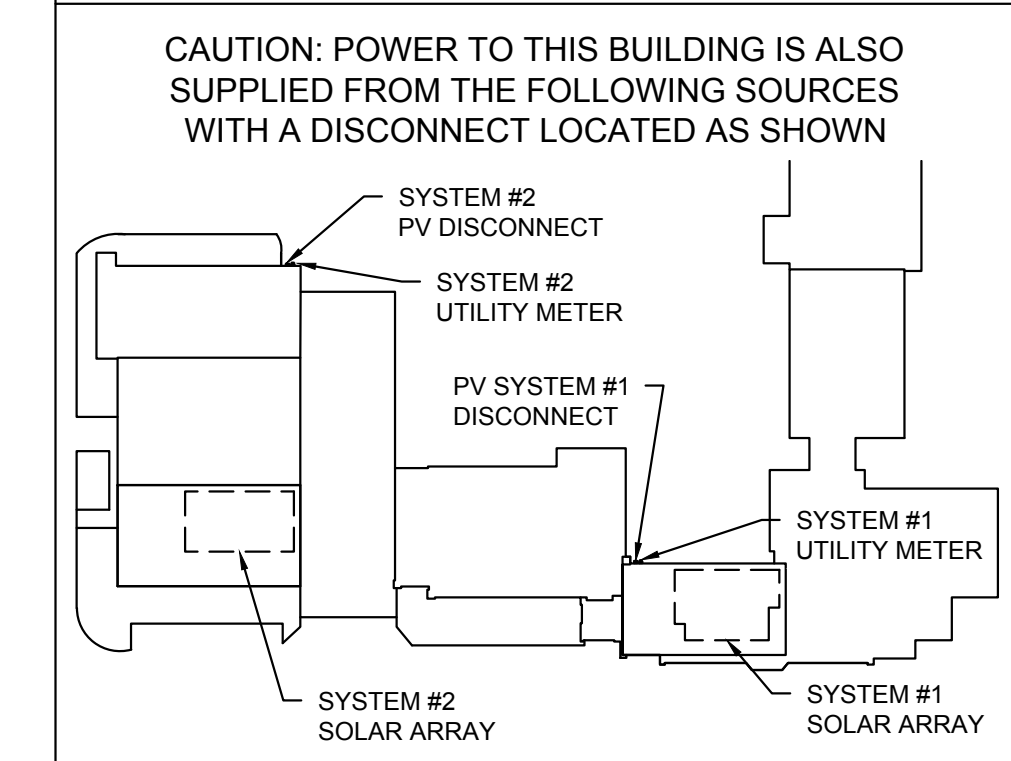
****SAMPLE LAYOUT FOR REFERENCE ONLY****



UTILITY BILLING METER, POINT OF INTERCONNECTION (& MDP, IF SEPARATE), AC COMBINING PANEL, & MAIN PV DISCONNECT SHALL RECEIVE A PERMANENT LABEL, DENOTING ALL ELECTRICAL POWER SOURCES PER NEC ARTICLE 705.12(D)(4) & 705.10 (4 REQUIRED)

EQUIPMENT FED BY TWO SOURCES: UTILITY AND PHOTOVOLTAIC SYSTEM, WITH PV PANELS ON ROOF, AND INVERTERS LOCATED ON EXTERIOR

A SITE DIRECTORY PLAQUE SHALL BE LOCATED ON OR BESIDE THE BI-DIRECTIONAL UTILITY BILLING METER PER NEC ARTICLE 705.10 (1 REQUIRED)



UTILITY ACCESSIBLE DISCONNECT SHALL RECEIVE A PERMANENT ENGRAVED PLAQUE, 3/8" MIN. LETTERING, PER UTILITY REQUIREMENTS (1 REQUIRED)

PV SYSTEM DISCONNECT FOR UTILITY OPERATION

THE UTILITY METER ENCLOSURE FOR METER #09601829 SHALL REQUIRE THE FOLLOWING LABELING (1 REQUIRED)

SYSTEM #2

INVERTERS (3), AC DISCONNECT (1), MAIN DISTRIBUTION PANEL OR SUBPANEL (1), SOLAR COMBINING PANEL (1), JUNCTION BOX (1) & TRANSITION BOX (1) SHALL REQUIRE THE FOLLOWING LABEL (8)

AUTHORIZED PERSONNEL ONLY

THE UTILITY INTERACTIVE INVERTER(S) SHALL BE LABELED WITH THE FOLLOWING PER NEC ARTICLE 690.5(C) (3 REQUIRED)

WARNING
ELECTRIC SHOCK HAZARD
IF A GROUND FAULT IS INDICATED,
NORMALLY GROUNDED CONDUCTORS MAY
BE UNGROUNDED AND ENERGIZED

THE DC COMBINERS / DC DISCONNECTS & AC DISCONNECTS SHALL BE LABELED WITH THE FOLLOWING PER NEC ARTICLE 690.14(C)(2) & 690.17 (4 REQUIRED)

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

THE PV DAS SHALL BE LABELED WITH THE FOLLOWING INFORMATION PER NEC ARTICLE 690.4(D) (1 REQUIRED)

PHOTOVOLTAIC SYSTEM DATA
ACQUISITION SYSTEM
AUTHORIZED PERSONNEL ONLY

WHEN PANELBOARD IS RATED FOR LESS THAN THE SUM OF THE AMPERE RATINGS OF ALL OCPD'S SUPPLYING IT, PV INTERCONNECT BREAKER SHALL BE LABELED AS FOLLOWS, PER NEC 705.12(D)6 (1 REQUIRED)

WARNING
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

PHOTOVOLTAIC SYSTEM INTERCONNECTION PANELBOARD SHALL REQUIRE THE FOLLOWING LABEL (1 REQUIRED)

SOLAR FED BREAKER

PHOTOVOLTAIC SYSTEM INTERCONNECTION TO MDP & SOLAR COMBINING PANEL SHALL REQUIRE THE FOLLOWING LABELING 690.54 (2 REQUIRED)

PHOTOVOLTAIC INTERACTIVE SYSTEM
POINT OF INTERCONNECTION
OPERATING AC VOLTAGE: 480V, 3-PHASE
RATED AC OUTPUT CURRENT: 25.0Aac

PHOTOVOLTAIC SYSTEM AC DISCONNECTS SHALL REQUIRE THE FOLLOWING LABELING 690.14(C)(2) & 690.54 (1 REQUIRED)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
OPERATING AC VOLTAGE: 480Vac, 3-PHASE
MAXIMUM OPERATING CURRENT: 25.0Aac

PV OUTPUT CIRCUIT SHALL BE LABELED ON 5-POLE COMBINER / INVERTER'S DC DISCONNECT WITH THE FOLLOWING INFORMATION PER NEC ARTICLE 690.53 & 690.4(B) (3 REQUIRED, 1 PER INVERTER)

INVERTER #1
GRID TIED PHOTOVOLTAIC POWER SOURCE
1) MAXIMUM POWER-POINT CURRENT: 25.59Aac
2) MAXIMUM POWER-POINT VOLTAGE: 321.9Vdc
3) MAXIMUM SYSTEM VOLTAGE (ADJUSTED): 470.9Vdc
4) SHORT CIRCUIT CURRENT (ADJUSTED): 33.56Aac

INVERTER #2
GRID TIED PHOTOVOLTAIC POWER SOURCE
1) MAXIMUM POWER-POINT CURRENT: 25.59Aac
2) MAXIMUM POWER-POINT VOLTAGE: 321.9Vdc
3) MAXIMUM SYSTEM VOLTAGE (ADJUSTED): 470.9Vdc
4) SHORT CIRCUIT CURRENT (ADJUSTED): 33.56Aac

INVERTER #3
GRID TIED PHOTOVOLTAIC POWER SOURCE
1) MAXIMUM POWER-POINT CURRENT: 25.59Aac
2) MAXIMUM POWER-POINT VOLTAGE: 321.9Vdc
3) MAXIMUM SYSTEM VOLTAGE (ADJUSTED): 470.9Vdc
4) SHORT CIRCUIT CURRENT (ADJUSTED): 33.56Aac

MARKING: 2012 INTERNATIONAL FIRE CODE (IFC) 605.11.1

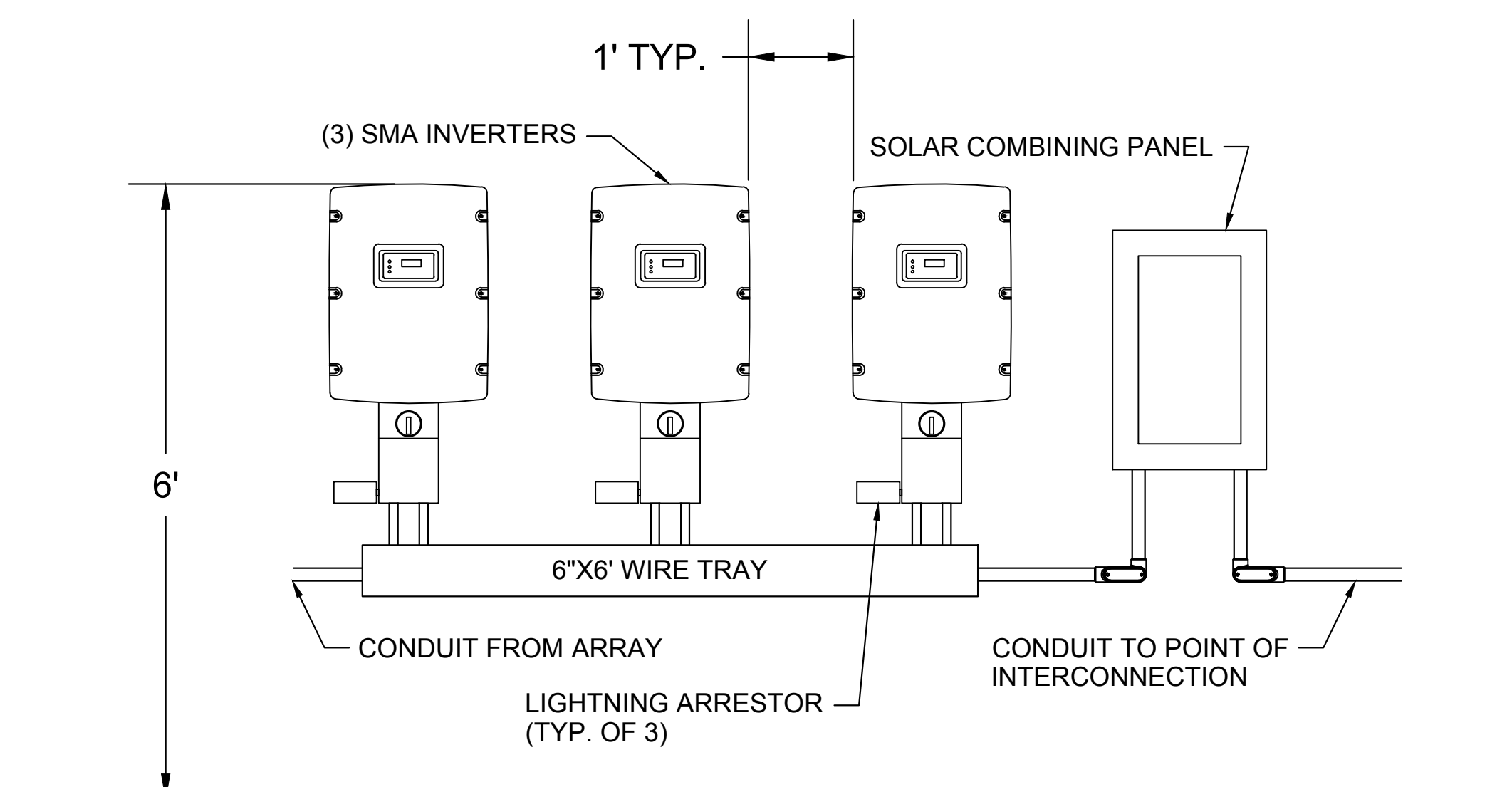
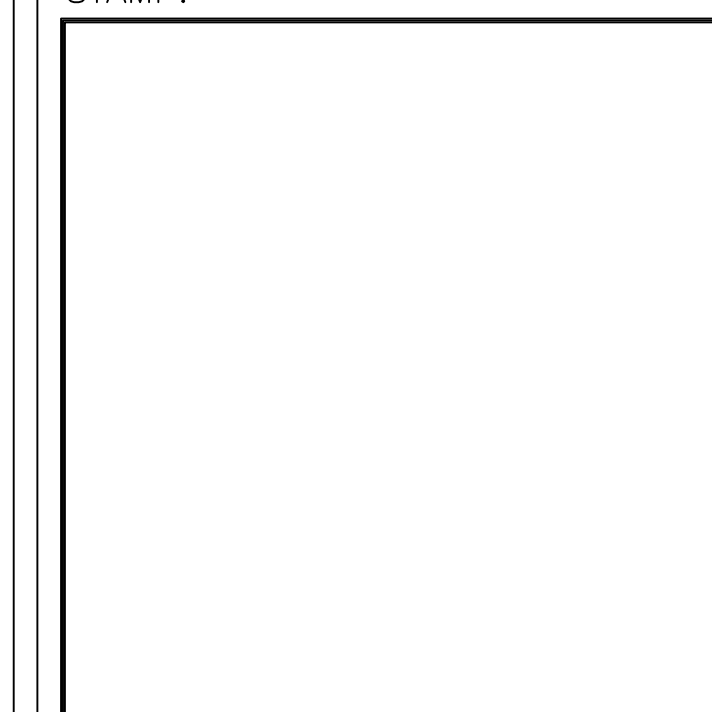
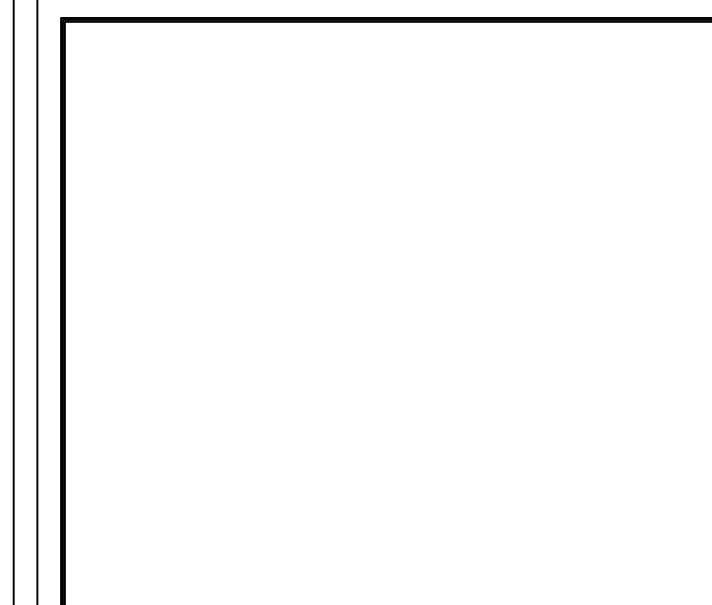
- THE FOLLOWING LABEL IS REQUIRED ON ALL INTERIOR AND EXTERIOR DIRECT CURRENT (DC) CONDUIT, ENCLOSURES, RACEWAYS AND CABLE ASSEMBLIES EVERY 10 FEET, WITHIN 1 FOOT OF TURNS OR BENDS AND WITHIN 1 FOOT ABOVE AND BELOW PENETRATIONS OF ROOF/CEILING ASSEMBLIES, WALLS OR BARRIERS.

- LABELS ALSO REQUIRED ON ALL DIRECT CURRENT (DC) JUNCTION BOXES, COMBINER BOXES, AND DISCONNECTS.

- AN ADDITIONAL LABEL SHALL BE PLACED ADJACENT TO THE MAIN SERVICE DISCONNECT IN A LOCATION CLEARLY VISIBLE FROM THE LOCATION WHERE THE DISCONNECT IS OPERATED.

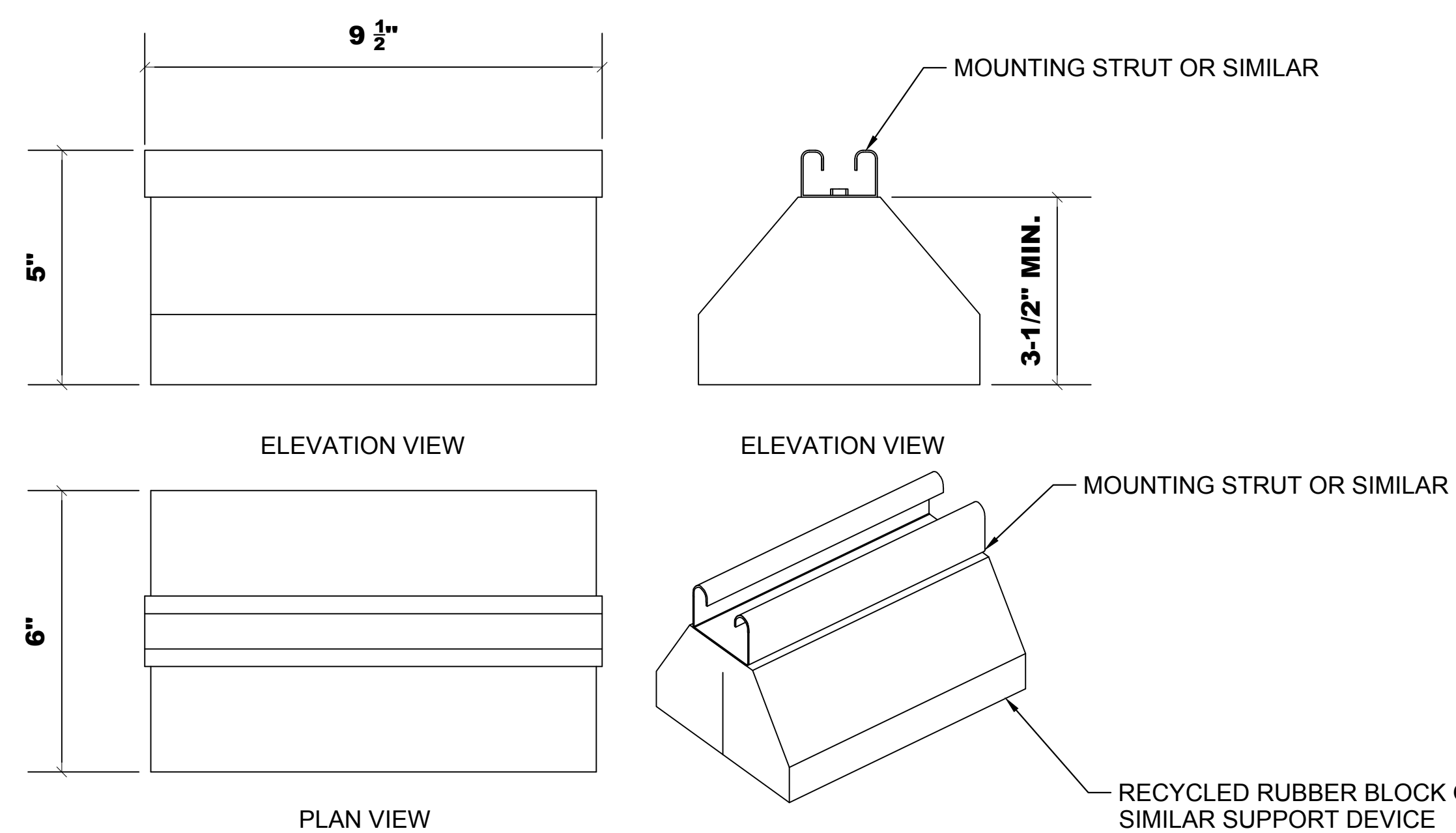
- MATERIAL SHALL BE REFLECTIVE, WEATHER RESISTANT AND SUITABLE FOR THE ENVIRONMENT. LETTERS SHALL BE CAPITALIZED WITH A MIN. HEIGHT OF 3/8" (9.5MM) WHITE ON RED BACKGROUND.

WARNING:
PHOTOVOLTAIC POWER SOURCE



1 EQUIPMENT ELEVATION

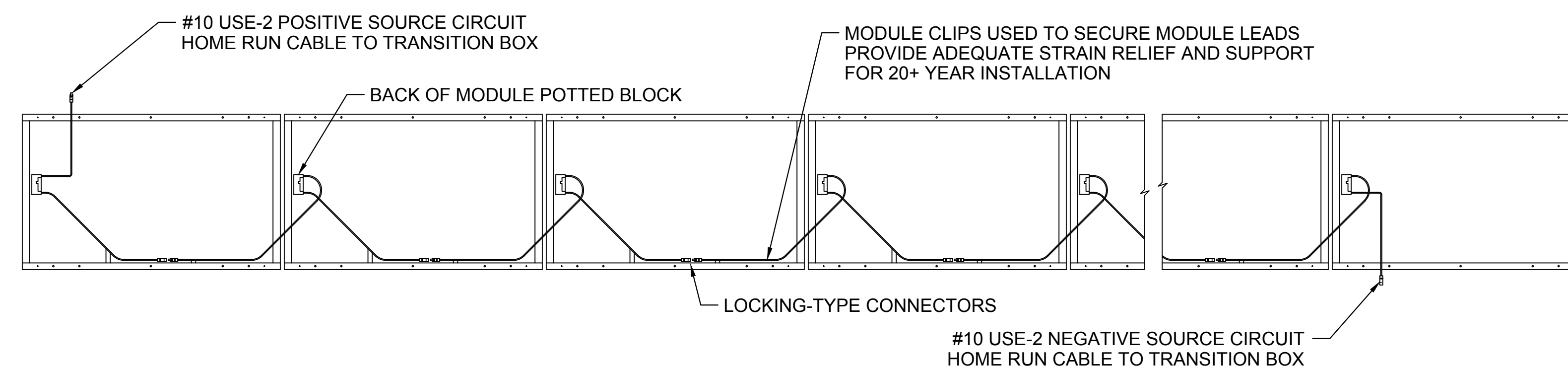
SCALE: 3/4" = 1'-0"



NOTE: PROVIDE QUANTITY AS REQUIRED TO SUPPORT EXTERNAL CONDUIT

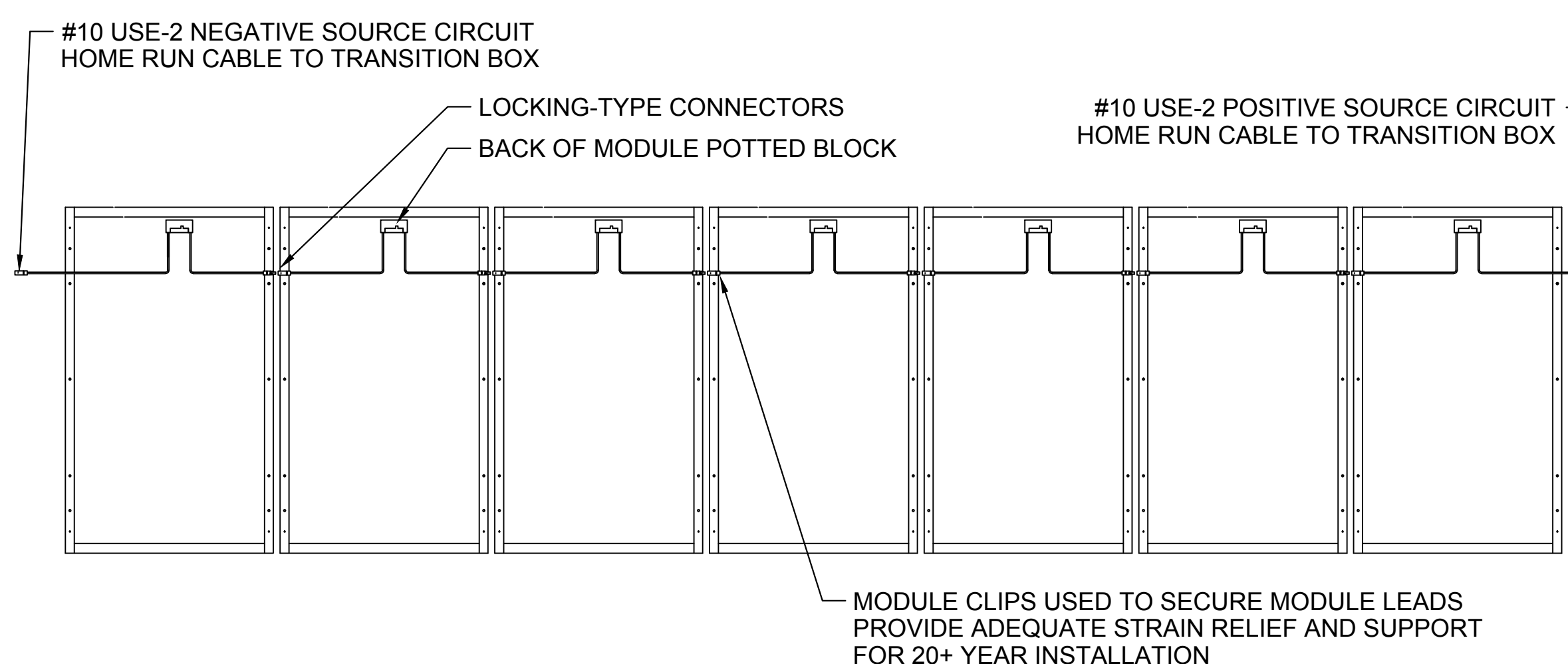
5 CONDUIT SUPPORT DETAIL

NTS



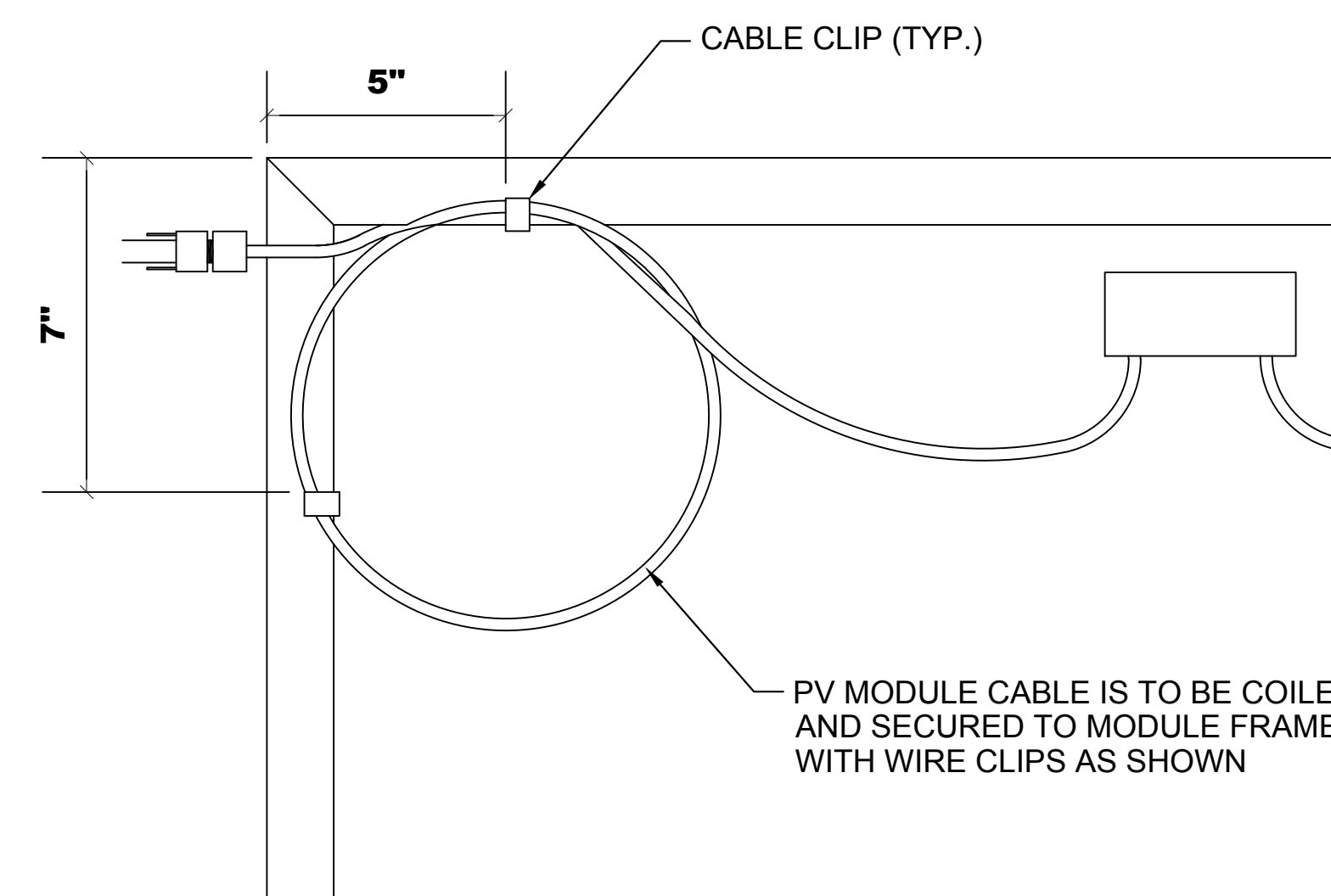
2 PV STRING WIRING DETAIL

NTS



3 PV STRING WIRING DETAIL

NTS



4 PV WIRE MANAGEMENT DETAIL

NTS

PROJECT INFORMATION:

MEXICO SENIOR HIGH
 49.41kW PV System

639 NORTH WADE
 MEXICO, MO 65265

ISSUE DATE:

01/03/2014

REV: DATE: BY:

ENGINEER:

DRAWN BY: CHK.: APV.:

NJK AJN KP

STAMP:






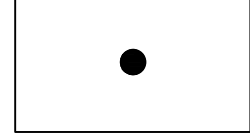
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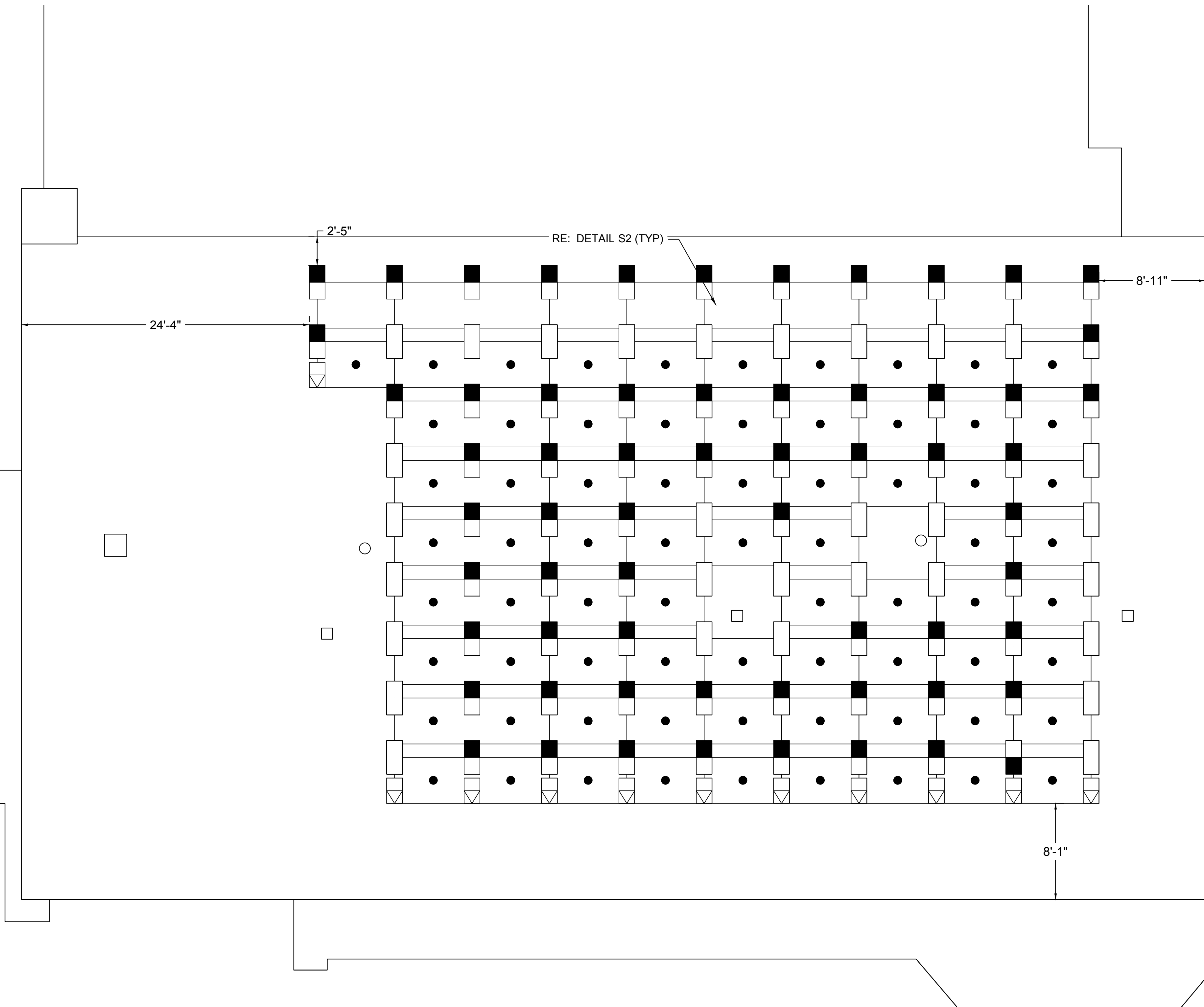
SYSTEM #1
 RACKING
 LAYOUT

SHEET NUMBER:

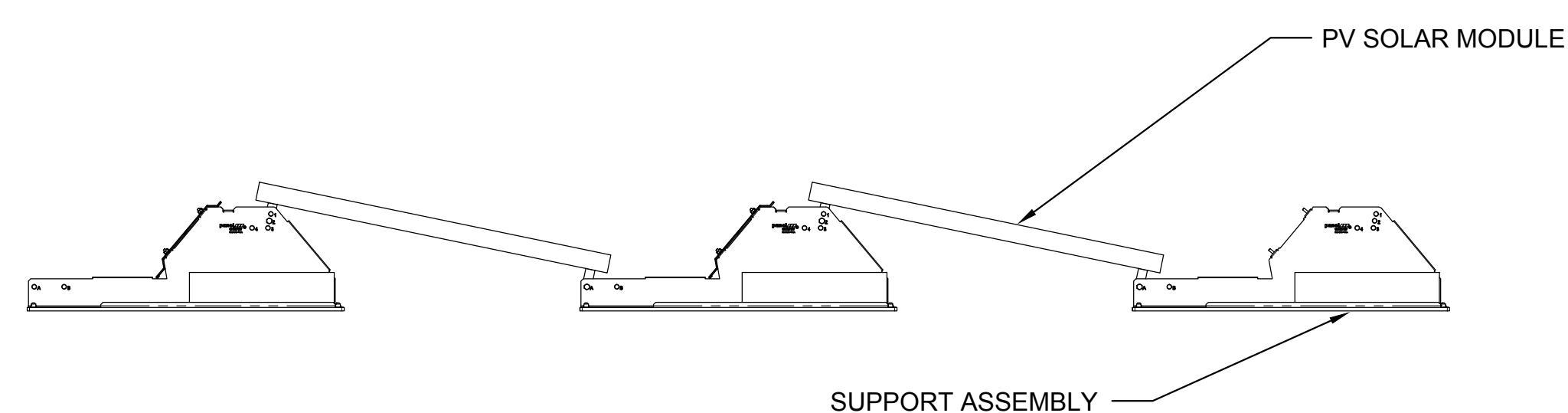
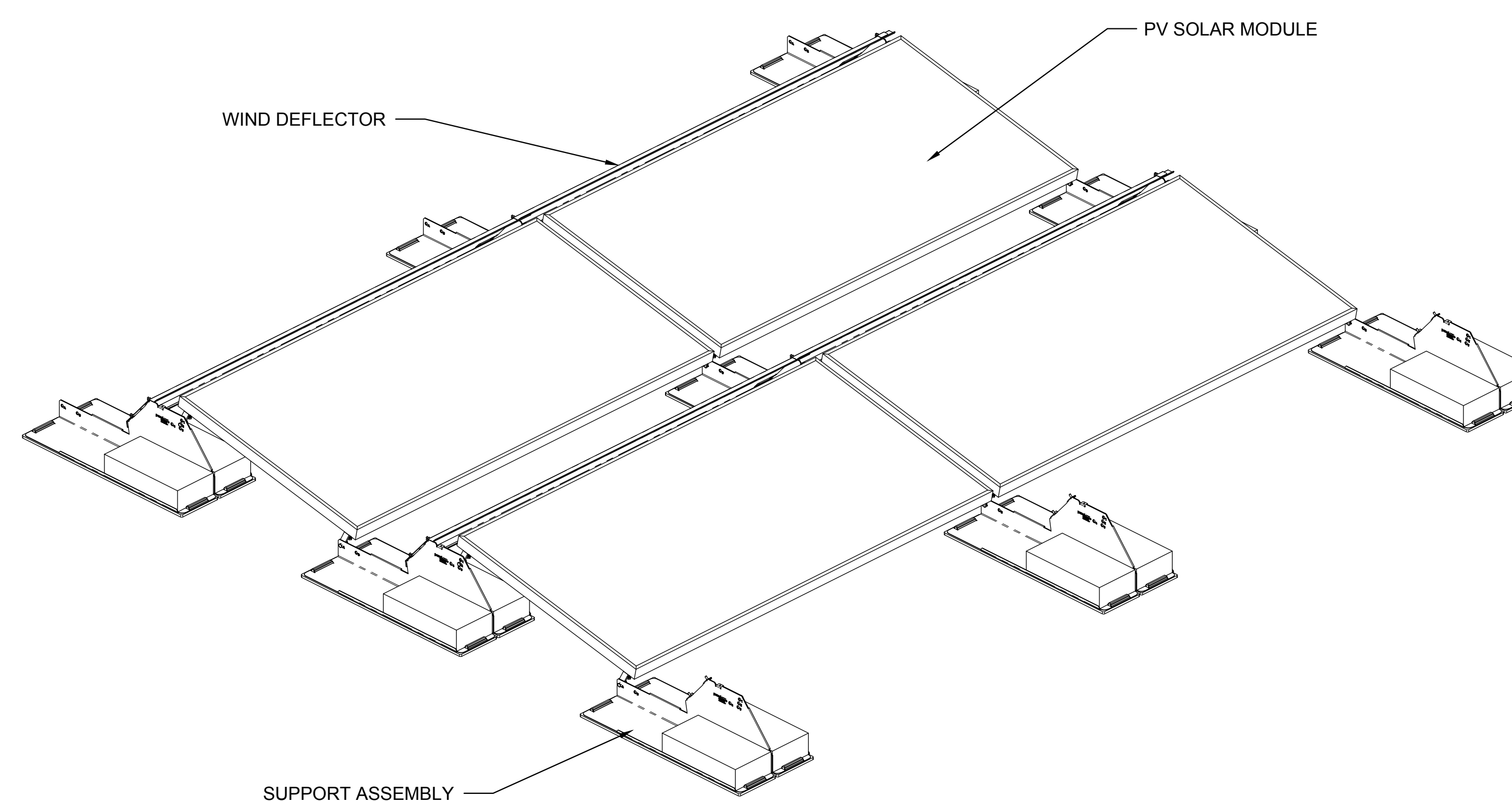
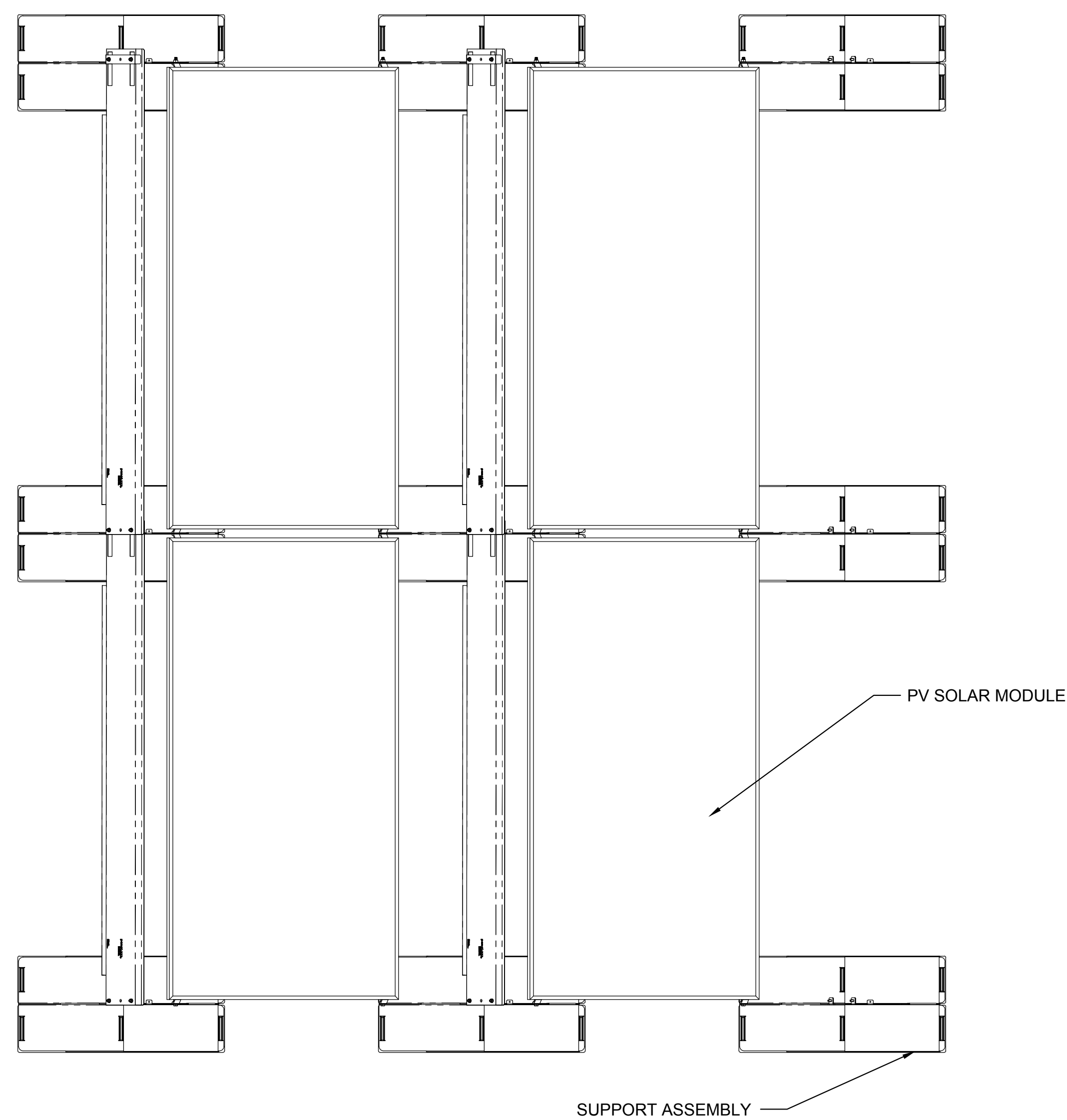
S1.1

BALLAST LEGEND

-  2 BLOCK
-  3 BLOCK
-  4 BLOCK
-  2 BLOCK SOUTH SUPPORT
-  WIND DEFLECTOR
-  NO WIND DEFLECTOR



1 ROOF BALLAST PLAN
 SCALE: 1/8" = 1'-0"



1 RACKING DETAIL
SCALE: 3/4" = 1'-0"



SOLAR SOLUTIONS

1617 Main St.
Kansas City MO, 64108
PH. (816) 866-0555

PROJECT INFORMATION:

MEXICO SENIOR HIGH
49.41kW PV System

639 NORTH WADE
MEXICO, MO 65265

ISSUE DATE:

01/03/2014

REV: _____ DATE: _____ BY: _____

ENGINEER:

DRAWN BY: _____ CHK.: _____ APV.: _____

NJK	AJN	KP
-----	-----	----

STAMP:

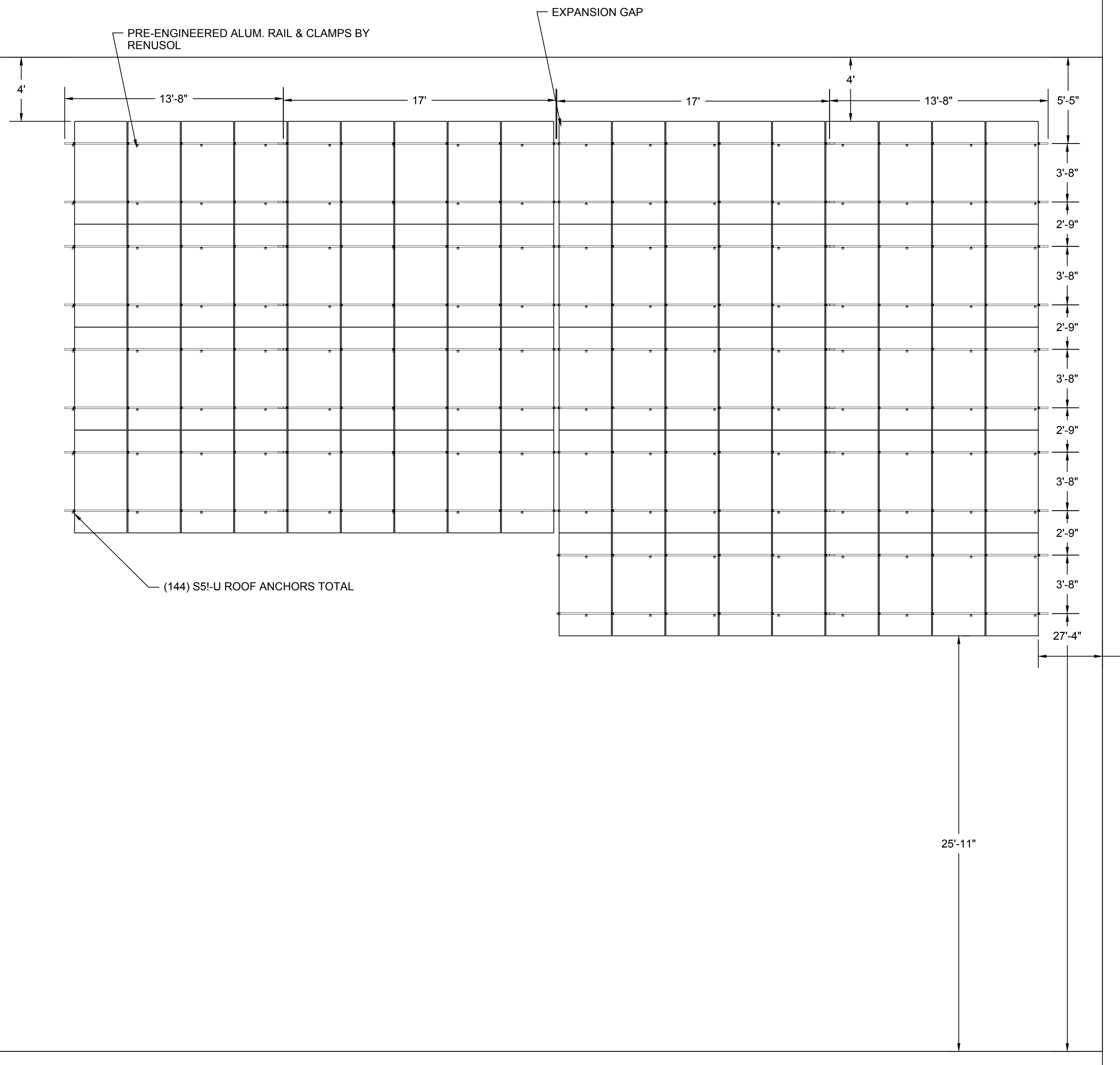
SHEET TITLE:

SYSTEM #2
RACKING
LAYOUT

SHEET NUMBER:

S2.1

- NOTES:
- RAILS MUST EXTEND 1.5" MINIMUM BEYOND END MODULES.
 - END MODULES MUST NOT EXTEND MORE THAN 24" FROM END ROOF ANCHORS.
 - ROOF ANCHORS MUST BE PLACED ON ONE SIDE OF EVERY SPLICE, ON NEAREST STRUCTURAL SUPPORT.
 - EXPANSION GAP REQUIRED WHERE INDICATED, RAIL GAP = 1", MODULE GAP = 4", MODULE NOT TO EXTEND MORE THAN 24" FROM NEAREST SUPPORT.



1 ARRAY RACKING LAYOUT
SCALE: 3/16" = 1'-0"



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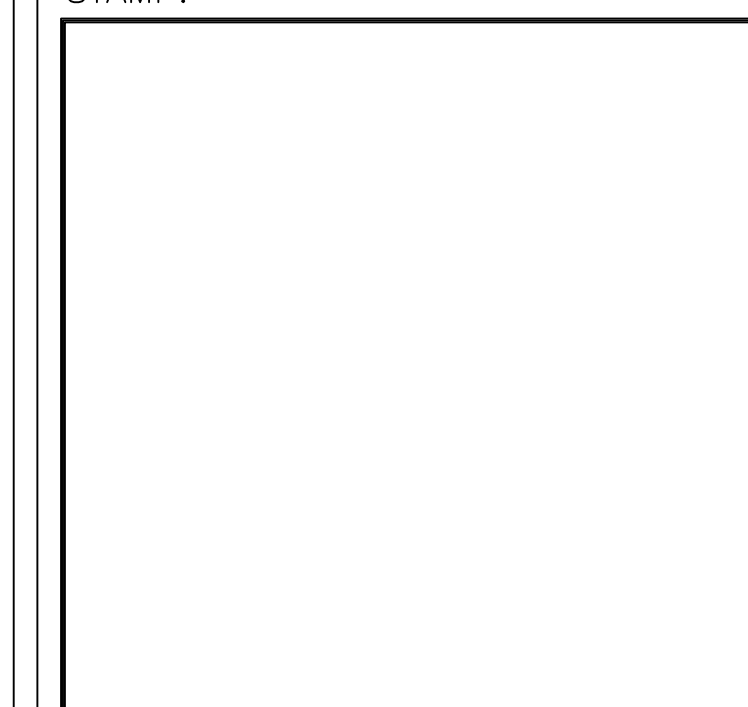
ENGINEER:



DRAWN BY: CHK.: APV.:

NJK AJN KP

STAMP:

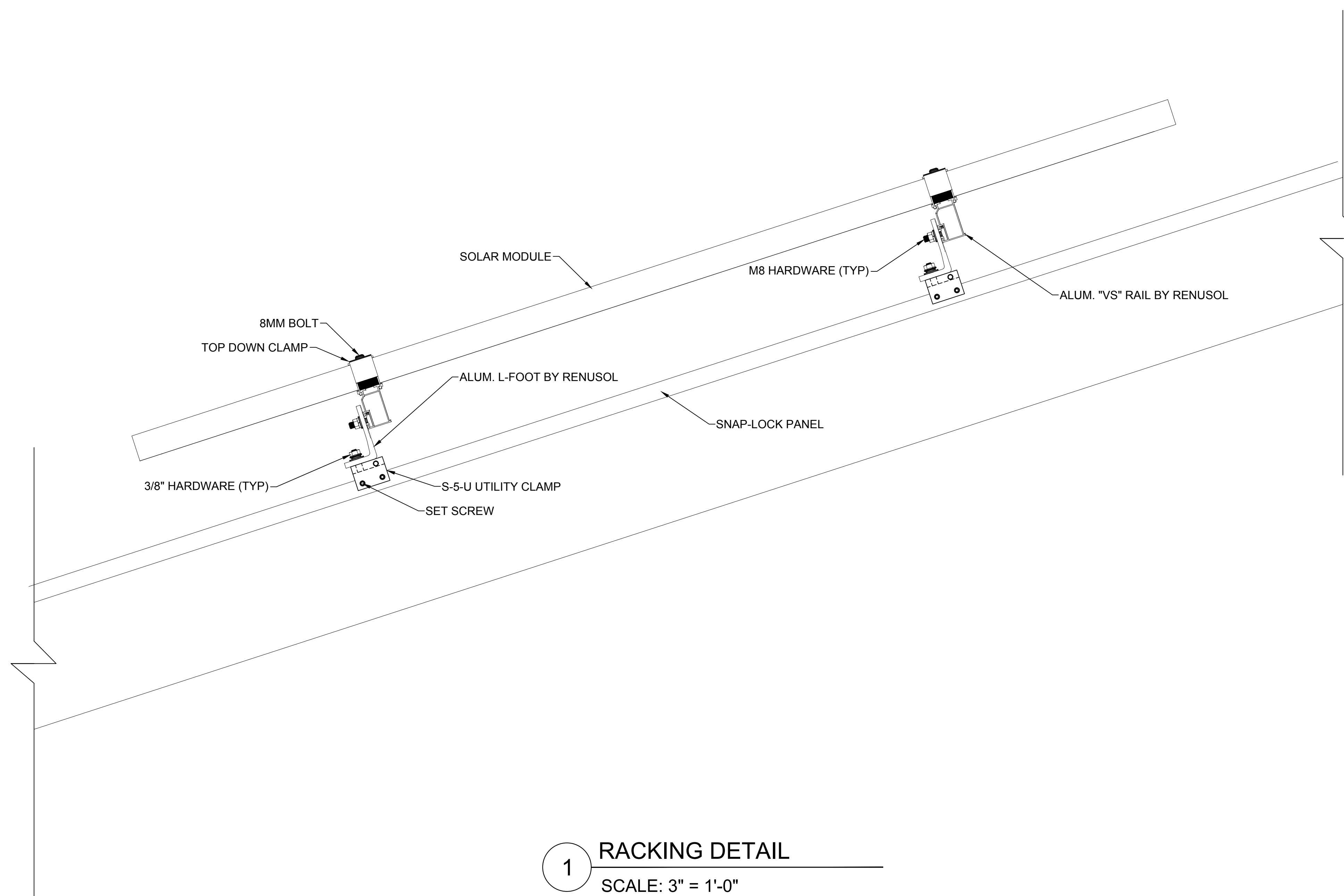


SHEET TITLE:

SYSTEM #2
RACKING
DETAILS

SHEET NUMBER:

S2.2



1 RACKING DETAIL
SCALE: 3" = 1'-0"