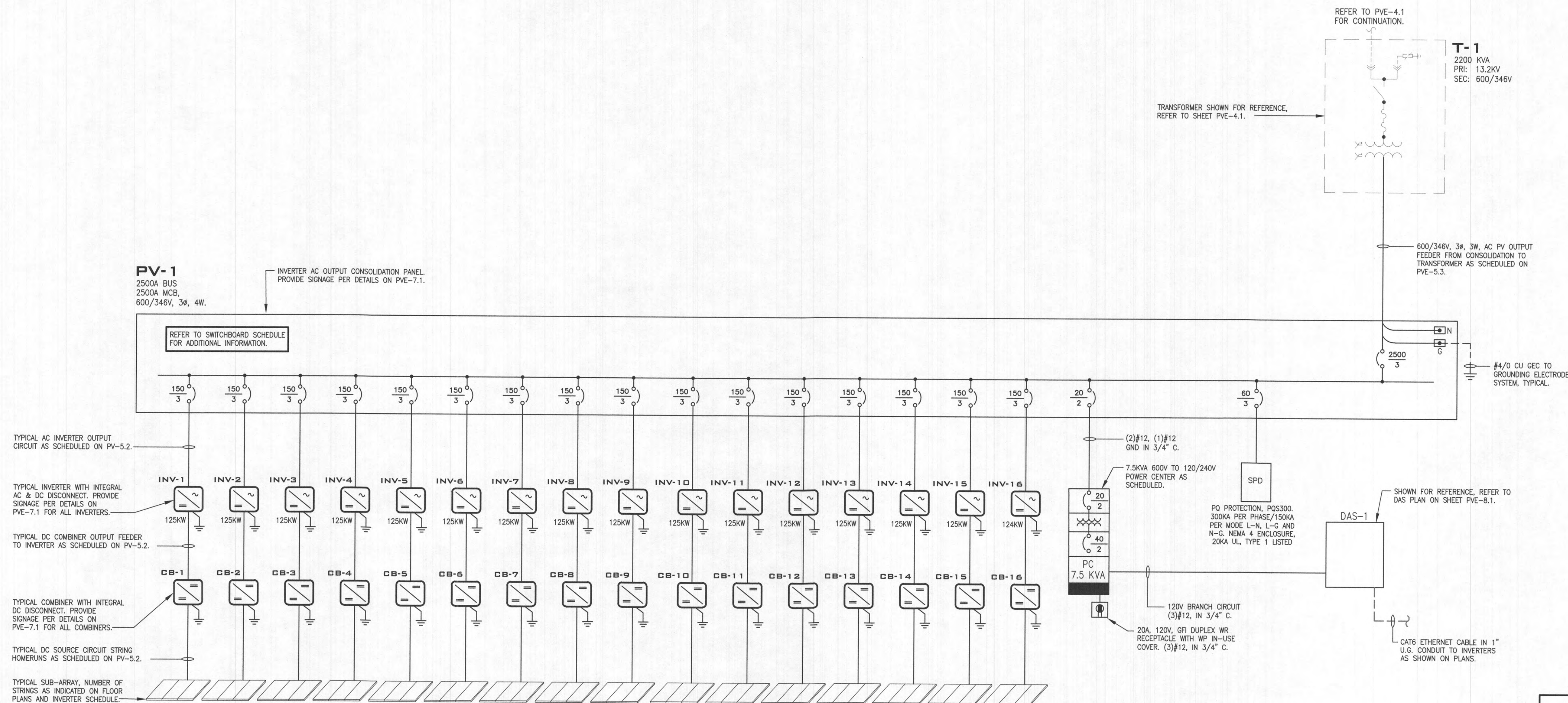


2 TYPICAL STRING DETAIL
SCALE: NTS

GENERAL NOTES:

- ALL GROUNDING ELECTRODES SHALL BE BONDED TOGETHER TO FORM THE GROUNDING ELECTRODE SYSTEM. REFER TO SHEET PVE-6.1 FOR ADDITIONAL INFORMATION. THIS IS A STANDALONE PV SYSTEM AND AS SUCH THERE IS NO BUILDING STRUCTURE OR WATERLINE ON THIS PROJECT.
- ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2017 NEC. REFER TO PVE-1.1 FOR ADDITIONAL REQUIREMENTS.
- CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 2017 SECTION 300.6(C)(1) AND SECTION 310.10(D). REFER TO PVE-1.1 FOR ADDITIONAL REQUIREMENTS.
- A PERMANENT PLAQUE OR DIRECTORY DENOTING ALL ELECTRIC POWER SOURCES OR IN THE PREMISES SHALL BE INSTALLED AT EACH SERVICE EQUIPMENT LOCATION AND LOCATIONS OF ALL ELECTRIC POWER SOURCES CAPABLE OF BEING INTERCONNECTED. REFER TO PVE-1.1 & PVE-7.1 FOR ADDITIONAL SIGNAGE REQUIREMENTS.
- ALL METALLIC RACEWAYS AND EQUIPMENT SHALL BE BONDED PER NEC 2017 SECTION 250.90 AND 250.96. REFER TO SHEET PVE-6.1 FOR ADDITIONAL INFORMATION.
- PHOTOVOLTAIC ARRAYS SHALL BE PROVIDED WITH DC GROUND FAULT PROTECTION PER NEC 690.41(B).
- THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 CU PER NEC 2017 250.64(B).
- ALL SWITCHBOARDS AND PANELBOARDS SHALL BE FIELD MARKED WARNING QUALIFIED PERSONAL OF POTENTIAL ARC FLASH HAZARDS AND APPROPRIATE PPE REQUIRED PER NEC 2017 ARTICLE 110.6 & IN COMPLIANCE WITH ARTICLE 110.21(B). REFER TO SHEET PVE-7.1 FOR ADDITIONAL INFORMATION.
- NATIONALLY RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH 2017 NEC 110.3.
- THE DC DISCONNECT AT THE INVERTER SHALL BE READILY ACCESSIBLE AFTER THE INSTALLATION IS COMPLETE PER NEC 2017 ARTICLE 690.17.
- THE DC GROUNDING ELECTRODE CONDUCTOR SHALL BE BONDED WITH THE AC GROUNDING ELECTRODE CONDUCTOR AND THE SIZE OF THE BONDING JUMPER BETWEEN AC AND DC SYSTEMS SHALL NOT BE SMALLER THAN THE LARGEST GROUNDING ELECTRODE CONDUCTOR PER NEC SECTION 690.47.
- WORKING CLEARANCE AROUND ELECTRICAL EQUIPMENT SHALL BE MAINTAINED IN ACCORDANCE WITH NEC 2017 ARTICLE 110.26.



1 PV SINGLE LINE DIAGRAM
SCALE: NTS

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3950 TEN OAKS RD PV SYSTEM SUMMARY

PV MODULE QUANTITY: 5,760 EA
PV MODULE WATTAGE: 485Wpdc
DC SYSTEM SIZE: 2,793.6kWpdc
AC SYSTEM SIZE: 1,999kVA
INVERTER QUANTITY: (16) 125kVA
(ONE INVERTER LIMITED TO 124kVA)

REVISION	DATE	BY	APP'D	ISSUED FOR PERMIT ONLY
1	08-08-23			

2651 EAUCLAIR BLVD, SUITE A
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Consulting Engineers

**TEN OAKS SOLAR
NEW PHOTOVOLTAIC SYSTEM**
3950 TEN OAKS ROAD GLENELG, MD 21737
DRAWING TITLE
PV SINGLE-LINE DIAGRAM

ENGINEER OF RECORD
STATE OF MARYLAND
DAVID E. ALLEN
PROFESSIONAL ENGINEER
NO. 42678

I HEREBY CERTIFY THAT THESE DOCUMENTS
WERE PREPARED OR APPROVED BY ME,
AND THAT I AM A DAILY LICENSED
PROFESSIONAL ENGINEER UNDER THE LAWS
OF THE STATE OF MARYLAND, LICENSE NO.
42678, EXPIRATION DATE 2024-08-12.

DATE: 08-08-23
SCALE: AS NOTED
PROJ. NO.: 230120
DESIGNED BY: JNH
DRAWN BY: JNH
CHECKED BY: DEA
DRAWING NO.: PVE-4.2

SWITCHBOARD SCHEDULE																			
PANEL: PV-1				RATING: 2500A MCB, NEMA 3R SERVICE: 600/346V, 3Ø, 4W				LUG LOCATION: BOTTOM MOUNTING: PAD-MOUNTED				A.I.C. : 65KAIC TYPE: TBD							
CKT	DESCRIPTION	KVA	CKT POLE	BRKR TRIP	BRANCH		CIRCUIT		Ø	CKT	DESCRIPTION	KVA	CKT POLE	BRKR TRIP	BRANCH		CIRCUIT		
					Ø	N	GND	C"							Ø	N	GND	C"	
1	INV-1.1	125	3	150	*	—	*	*	a	2	INV-1.2	125	3	150	*	—	*	*	
					*				b						*				
					*				c						*				
3	INV-1.3	125	3	150	*	—	*	*	a	4	INV-1.4	125	3	150	*	—	*	*	
					*				b						*				
					*				c						*				
5	INV-1.5	125	3	150	*	—	*	*	a	6	INV-1.6	125	3	150	*	—	*	*	
					*				b						*				
					*				c						*				
7	INV-1.7	125	3	150	*	—	*	*	a	8	INV-1.8	125	3	150	*	—	*	*	
					*				b						*				
					*				c						*				
9	INV-1.9	125	3	150	*	—	*	*	a	10	INV-1.10	125	3	150	*	—	*	*	
					*				b						*				
					*				c						*				
11	INV-1.11	125	3	150	*	—	*	*	a	12	INV-1.12	125	3	150	*	—	*	*	
					*				b						*				
					*				c						*				
13	INV-1.13	125	3	150	*	—	*	*	a	14	INV-1.14	125	3	150	*	—	*	*	
					*				b						*				
					*				c						*				
15	INV-1.15	125	3	150	*	—	*	*	a	16	INV-1.16	124	3	150	*	—	*	*	
					*				b						*				
					*				c						*				
17	SPACE	3							a	18	SPACE	3							
									b										
									c										
19	AUX LOAD TRANSFORMER	7.5	2	20	12	—	12	3/4	a	20	SURGE PROTECTION DEVICE	—	3	60	6	—	6	1	
					12				b						6				
									c										
CONNECTED LOAD (KVA) #A #B #C																			
EQUIPMENT SERVED				RATED OUTPUT (KW)				MAX AC OUTPUT POWER (KVA)				REMARKS:							
INVERTERS				1999				1999				— PROVIDE TYPE WRITTEN DIRECTORY							
MISC.				7.5				7.5				— PROVIDE NEUTRAL AND GROUND BARS							
												— NEMA 3R							
												— PROVIDE CIRCUIT BREAKERS LISTED FOR BACK-FEEDING.							
												— 2500A BUS							
												— * REFER TO CONDUCTOR SCHEDULE ON PVE-5.3 FOR WIRE AND CONDUIT SIZES.							
												— PROVIDE ARC-ENERGY REDUCTION MAINTENANCE SWITCH							
												— GROUND FAULT PROTECTION							
CONNECTED OUTPUT:				1999				1999											
AMPS:				1923				1923											

PANELBOARD SCHEDULE																			
PANEL: PG 1			RATING: 40A MCB, NEMA 3R SERVICE: 120/240V, 1ø, 3W						LUG LOCATION: BOTTOM MOUNTING: RACK				A.I.C. : 18KAIC TYPE: TBD						
CKT	DESCRIPTION	KVA	CKT POLE	BRKR TRIP	BRANCH		CIRCUIT		ø	CKT	DESCRIPTION	KVA	CKT POLE	BRKR TRIP	BRANCH		CIRCUIT		
					ø	N	GND	C"							ø	N	GND	C"	
1	RECEPTACLE	0.72	1	20	12	12	12	3/4	a	2	SPACE								
3	DAS UPS	2.5	1	20	12	12	12	3/4	b	4	SPACE								
5	SPARE		1	20					a	6	SPACE								
7	SPARE		1	20					b	8	SPACE								
9	SPARE		1	20					a	10	SPACE								
11	SPACE								b	12	SPACE								
CONNECTED LOAD (KVA) #A #B																			
EQUIPMENT SERVED			CONNECTED LOAD				LF	DF	DEMAND LOAD				REMARKS:						
MISC.			3.5						3.5				- PROVIDE TYPE WRITTEN DIRECTORY - PROVIDE NEUTRAL AND GROUND BARS - NEMA 3R - 7.5kVA MINI-POWER CENTER, 600V-120/240V						

PHOTOVOLTAIC (PV) MODULE SCHEDULE																						
VENDOR	MODEL	QUANTITY	BIFACIAL GAIN	RATED POWER @ STC	RATED POWER 9.4% GAIN	MODULE V_{OC} at T_{MIN}	OPEN CIRCUIT VOLTAGE	MAX POWER VOLTAGE	SHORT CIRCUIT CURRENT	SHORT CIRCUIT CURRENT 9.4% GAIN	MAX POWER CURRENT	MAX POWER CURRENT 9.4% GAIN	MAX SERIES FUSE RATING	RATED POWER	MODULE EFFICIENCY	TEMP COEFFICIENT OF V_{OC}	TEMP COEFFICIENT OF P_{MP}	NOMINAL OPERATING CELL TEMP	DIMENSIONS			MAX SYSTEM VOLTAGE
				P_{MAX}	P_{MAX}		V_{OC}	V_{MP}	I_{SC}	I_{SC}	I_{MP}	I_{MP}			η_M	TKV_{OC}	TKP_{MP}	NOCT	L	W	H	[lbs.]
QCELLS	Q,PEAK DUO XL-G10.3/BFG	5760	9%	485 W	531 W	59.4 V	53.63 V	45.63 V	11.16 A	12.21 A	10.63 A	11.63 A	20 A	19.49 W/sq-ft	22.7 %	-0.27 %/°C	-0.34 %/°C	42 °C	87.20 in	41.10 in	1.38 in	64.2 lbs
*BIFACIALITY 70%																						

PHOTOVOLTAIC (PV) MODULE SCHEDULE																						
VENDOR	MODEL	QUANTITY	BIFACIAL GAIN	RATED POWER @ STC	RATED POWER 9.4% GAIN	MODULE V_{OC} at T_{MIN}	OPEN CIRCUIT VOLTAGE	MAX POWER VOLTAGE	SHORT CIRCUIT CURRENT	SHORT CIRCUIT CURRENT 9.4% GAIN	MAX POWER CURRENT	MAX POWER CURRENT 9.4% GAIN	MAX SERIES FUSE RATING	RATED POWER	MODULE EFFICIENCY	TEMP COEFFICIENT OF V_{OC}	TEMP COEFFICIENT OF P_{MP}	NOMINAL OPERATING CELL TEMP	DIMENSIONS			MAX SYSTEM VOLTAGE
				P_{MAX}	P_{MAX}		V_{OC}	V_{MP}	I_{SC}	I_{SC}	I_{MP}	I_{MP}			η_M	TKV_{OC}	TKP_{MP}	NOCT	L	W	H	[lbs.]
QCELLS	Q,PEAK DUO XL-G10.3/BFG	5760	9%	485 W	531 W	59.3 V	53.63 V	45.63 V	11.16 A	12.21 A	10.63 A	11.63 A	20 A	19.49 W/sq-ft	22.7 %	-0.27 %/°C	-0.34 %/°C	42 °C	87.20 in	41.10 in	1.38 in	64.2 lbs
*BIFACIALITY 70%																						

DC SOURCE CIRCUIT (STRING) SCHEDULE																								
MODULES PER STRING	MODULE	MODULE WATTAGE	PEAK DC STC POWER	MODULE V_{OC} at T_{MIN}	SOURCE CIRCUIT V_{OC} at T_{MIN}	MAX SYSTEM VOLTAGE	SOURCE CIRCUIT I_{SC}	MAXIMUM CIRCUIT CURRENT PER NEC 690.8(A) $I_{SC} * 1.25$	CONDUCTOR AMPACITY CURRENT PER NEC 690.8(B) $I_{SC} * 1.56$	OCPD PER NEC 690.8(B) $I_{SC} * 1.56$	CONDUCTOR TYPE	CONDUCTOR MATERIAL	MAX # STRINGS PER JUMPER CONDUIT OR BUNDLE	SELECTED CONDUCTOR SIZE	CONDUCTOR MAX AMPACITY	DISTANCE ABOVE ROOF TO BOTTOM OF RACEWAY	TEMP DERATING FACTOR	MULTI CONDUCTOR DERATING FACTOR	DERATED CONDUCTOR AMPACITY	CONDUCTOR CIRCULAR MILS	ONE-WAY CONDUCTOR LENGTH (AVERAGE)	STRING V_{MP}	VOLTAGE DROP	VOLTAGE DROP %
24	Q,PEAK DUO XL-G10.3/BFG	485 W	11.64 kWp	59.3 V	1422.3 V	1500 V	12.21 A	15.26 A	19 A	25 A	2KV PV WIRE	Cu	7-9	8 AWG	55.00 A	NOT ON ROOF	0.96	0.70	36.96 A	16,510 CMIL	400 FT	1095.1 V	7.63 V	0.70 %

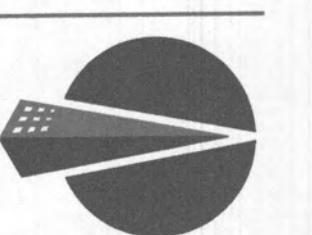
DC COMBINER SCHEDULE																															
MARK	VENDOR	MODEL NUMBER	# OF INPUTS	# OF 24 MODULE STRINGS	INPUT FUSE RATING	PEAK DC STC POWER	CIRCUIT CURRENT I _{SC} * #STRINGS WITH B.F.G	MAXIMUM CIRCUIT CURRENT PER NEC 690.8(A) I _{SC} * 1.25 WITH B.F.G	I _{max} x 1.56 WITH B.F.G	DC DISCONNECT RATING	CONDUCTOR TYPE	CONDUCTOR MATERIAL	CONDUCTOR TEMP RATING	NUMBER OF CURRENT CARRYING CONDUCTORS PER RACEWAY	SELECTED OUTPUT CONDUCTOR SIZE	CONDUCTOR MAX AMPACITY	GROUND MATERIAL	MIN GND PER 250.122 (GND)	TEMP DERATING FACTOR	MULTI CONDUCTOR DERATING FACTOR	DERATED CONDUCTOR AMPACITY	CONDUCTOR CIRCULAR MILS	ONE-WAY CONDUCTOR LENGTH	OUTPUT VOLTAGE	VOLTAGE DROP	VOLTAGE DROP %	CONDUCTOR X SECT. AREA	GND X SECT. AREA	TOTAL CONDUCTOR X SECT. AREA	CONDUIT FILL %	CONDUIT TRADE SIZE
CB-1	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	350 FT	1186 V	5.44 V	0.46 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-2	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	320 FT	1186 V	4.97 V	0.42 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-3	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	285 FT	1186 V	4.43 V	0.37 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-4	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	260 FT	1186 V	4.04 V	0.34 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-5	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	230 FT	1186 V	3.57 V	0.30 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-6	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	200 FT	1186 V	3.11 V	0.26 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-7	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	170 FT	1186 V	2.64 V	0.22 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-8	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	150 FT	1186 V	2.33 V	0.20 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-9	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	120 FT	1186 V	1.86 V	0.16 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-10	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	85 FT	1186 V	1.32 V	0.11 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-11	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	60 FT	1186 V	0.93 V	0.08 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-12	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	40 FT	1186 V	0.62 V	0.05 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-13	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	40 FT	1186 V	0.62 V	0.05 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-14	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	75 FT	1186 V	1.16 V	0.10 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-15	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320 A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	110 FT	1186 V	1.71 V	0.14 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
CB-16	TERRASMART	1500A-320A-18-4X	18	15	25A	174.60 kWp	183 A	229 A	286 A	320A	2KV PV WIRE	Alu	90°C	1-3	500 kcmil	350.00 A	Cu	4 AWG	0.96	1.00	336.00 A	500,000 CMIL	215 FT	1186 V	3.34 V	0.28 %	0.801 in²	0.135 in²	1.737 in²	24%	3"
0.22 %																															

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TEN OAKS SOLAR
NEW PHOTOVOLTAIC SYSTEM
3950 TEN OAKS ROAD GLENELG, MD 21737
DRAWING TITLE
DC SCHEDULES AND CALCULATIONS

ENGINEER OF RECORD
STATE OF MARYLAND
DAVID E. ALEX
PROFESSIONAL ENGINEER
MARYLAND
PROFESSIONAL ENGINEER
NO. 42678

I HEREBY CERTIFY THAT THESE DOCUMENTS
WERE PREPARED OR APPROVED BY ME,
AND THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER THE LAWS
OF THE STATE OF MARYLAND, LICENSE NO.
42678, EXPIRATION DATE: 2024-09-12.

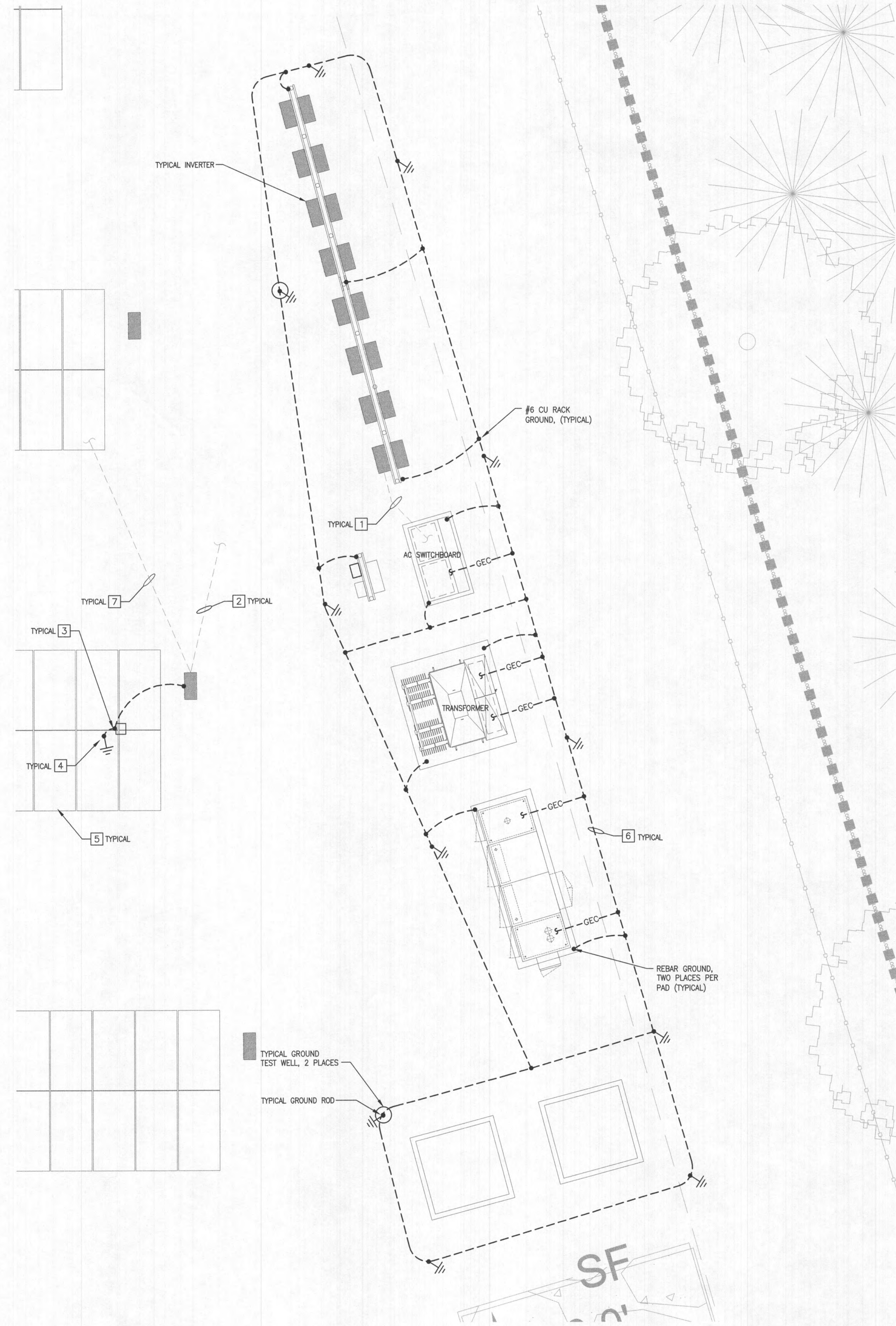
DATE: 08-08-23
SCALE: AS NOTED
PROJ. NO.: 230120
DESIGNED BY: JNH
DRAWN BY: JNH
CHECKED BY: DEA
DRAWING NO.: PVE-5.2

RECEIVED
AUG 11 2023
LICENSES & PERMITS
DIVISION

INVERTER AC OUTPUT CIRCUIT CONDUCTOR SCHEDULE																																								
MARK	NUMBER OF STRINGS	MODULES PER STRING	MODULE	MODULE RATED POWER @ STC	MODULE RATED POWER WITH 9.4 % GAIN	PEAK DC STC POWER	PEAK DC STC POWER WITH 9.4 % GAIN	INVERTER	RATED AC ACTIVE OUTPUT POWER	MAX AC APPARENT OUTPUT POWER	DC/AC RATIO	DC/AC RATIO WITH 9.4 % GAIN	I _{max}	I _{max} X 1.25	MINIMUM OCPD PER NEC 240.6	CONDUCTOR TYPE	CONDUCTOR MATERIAL	CONDUCTOR TEMP RATING	NUMBER OF CURRENT CARRYING CONDUCTORS PER RACEWAY	SELECTED PHASE CONDUCTOR SIZES 310.15(B)(16)	GROUND MATERIAL	MIN GND PER 250.122(B) (GND)	CONDUCTOR MAX AMPACITY	TEMP DERATING FACTOR 310.15(B)(2)(A)	MULTI CONDUCTOR DERATING FACTOR 310.15(B)(3)(a)	DERATED CONDUCTOR AMPACITY	AMPACITY CHECK	75°C TERMINAL TEST	75°C TERMINAL CHECK	ONE-WAY CONDUCTOR LENGTH	FEEDS INTO PANEL	SOURCE VOLTAGE	SOURCE PHASE	VOLTAGE DROP	3Ø VOLTAGE AT INVERTER	VOLTAGE DROP %	INVERTER SYSTEM VOLTAGE RISE	TOTAL CONDUCTOR X-SECT. AREA	CONDUIT FILL %	CONDUIT TRADE SIZE
CB-1	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	45 FT	PV-1	479.5 V	3Ø	1.2 V	478.4 V	0.20 %	121.6 V	0.911 in²	28%	2"
CB-2	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	45 FT	PV-1	479.5 V	3Ø	1.2 V	478.4 V	0.20 %	121.6 V	0.911 in²	28%	2"
CB-3	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	40 FT	PV-1	479.5 V	3Ø	1.1 V	478.5 V	0.18 %	121.5 V	0.911 in²	28%	2"
CB-4	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	40 FT	PV-1	479.5 V	3Ø	1.1 V	478.5 V	0.18 %	121.5 V	0.911 in²	28%	2"
CB-5	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	35 FT	PV-1	479.5 V	3Ø	0.9 V	478.6 V	0.15 %	121.4 V	0.911 in²	28%	2"
CB-6	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	35 FT	PV-1	479.5 V	3Ø	0.9 V	478.6 V	0.15 %	121.4 V	0.911 in²	28%	2"
CB-7	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	30 FT	PV-1	479.5 V	3Ø	0.8 V	478.8 V	0.13 %	121.2 V	0.911 in²	28%	2"
CB-8	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	30 FT	PV-1	479.5 V	3Ø	0.8 V	478.8 V	0.13 %	121.2 V	0.911 in²	28%	2"
CB-9	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	25 FT	PV-1	479.5 V	3Ø	0.7 V	478.9 V	0.11 %	121.1 V	0.911 in²	28%	2"
CB-10	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	25 FT	PV-1	479.5 V	3Ø	0.7 V	478.9 V	0.11 %	121.1 V	0.911 in²	28%	2"
CB-11	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	20 FT	PV-1	479.5 V	3Ø	0.5 V	479.0 V	0.09 %	121.0 V	0.911 in²	28%	2"
CB-12	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	20 FT	PV-1	479.5 V	3Ø	0.5 V	479.0 V	0.09 %	121.0 V	0.911 in²	28%	2"
CB-13	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	15 FT	PV-1	479.5 V	3Ø	0.4 V	479.1 V	0.07 %	120.9 V	0.911 in²	28%	2"
CB-14	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	15 FT	PV-1	479.5 V	3Ø	0.4 V	479.1 V	0.07 %	120.9 V	0.911 in²	28%	2"
CB-15	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	10 FT	PV-1	479.5 V	3Ø	0.3 V	479.3 V	0.04 %	120.7 V	0.911 in²	28%	2"
CB-16	15	24	Q.PEAK DUO XL-G10.3/BFG	485 W	531 W	174.60 kWp	191.01 kWp	SG125HV	125 kW	125 kW	1.40	1.53	120 A	150 A	150 A	XHHW-2	Alu	90°C	1-3	3/0 AWG	Cu	6 AWG	175.00 A	0.96	1.00	168.0 A	OK	155 A	OK	10 FT	PV-1	479.5 V	3Ø	0.3 V	479.3 V	0.04 %	120.7 V	0.911 in²	28%	2"
EXAMPLE CALCULATIONS: INV-1																																								
DERATED CONDUCTOR AMPACITY = CONDUCTOR MAX AMPACITY • TEMP DERATING FACTOR • MULTI CONDUCTOR DERATING FACTOR = 175.00 A x 0.96 X 1.00 = 168 A																																								
VOLTAGE DROP = V3 • K • I • D / CM = V3 • 21.2 • 120.0A • 45 ft / 167800 CMIL = 1.18 V																																								
VOLTAGE DROP % = VD • 100 % / VOLTAGE OUTPUT = 1.18 V • 100 % / 480 V = 0.20 %																																								
TOTAL CONDUCTOR X-SECT. AREA = 3 • CONDUCTOR X-SECT. AREA + 2 • GND X-SECT. AREA = 3 • 0.264 in² + 2 • 0.059 in² = 0.911 in²																																								
CONDUIT TRADE SIZE CHECK: (CONDUIT INTERNAL CROSS-SECTIONAL AREA • 40%) > [(3 • CONDUCTOR X-SECT. AREA) + 2 • GND X-SECT. AREA] → (3.291 in • 0.40) > [(3 • 0.264in) + 2 • 0.059 in] → 1.316in > 0.911 in → GOOD																																								

AC DISTRIBUTION OUTPUT CIRCUIT CONDUCTOR SCHEDULE																																	
MARK	NUMBER OF 125KW INVERTERS	NUMBER OF 124KW INVERTERS	RATED OUTPUT POWER (KW)	MAX AC OUTPUT POWER (KVA)	I _{max}	I _{max} X 1.25	OC PD PER NEC 240.6	CONDUCTOR TYPE	CONDUCTOR MATERIAL	CONDUCTOR TEMP RATING	NUMBER OF CURRENT CARRYING CONDUCTORS PER RACEWAY	SELECTED CONDUCTOR SIZE 310.15(B)(16) (φ)	GROUND & NEUTRAL MATERIAL	MIN EGC PER 250.122(B) OR GEC PER 250.66 (GND)	CONDUCTOR MAX AMPACITY	TEMP DERATING FACTOR 310.15(B)(2)(A)	MULTI CONDUCTOR DERATING FACTOR 310.15(B)(3)(a)	DERATED CONDUCTOR AMPACITY	AMPACITY CHECK	75°C TERMINAL TEST	75°C TERMINAL CHECK	CONDUCTOR CIRCULAR MILS	ONE-WAY CONDUCTOR LENGTH	SOURCE VOLTAGE	PHASE	VOLTAGE DROP	3Ø VOLTAGE AT PANEL	VOLTAGE DROP %	CONDUCTOR X-SECT. AREA	NEUTRAL AND/OR GND X-SECT. AREA	TOTAL CONDUCTOR X-SECT. AREA	CONDUIT FILL %	CONDUIT TRADE SIZE PER SET
PV-1	15	1	1999 KW	1999 KVA	1919 A	2399 A	2500 A	XHHW-2	Cu	90°C	1-3	(6) 600 kcmil	Cu	4/0 AWG*	2850.00 A	0.96	1.00	2736 A	OK	2520 A	OK	3,600,000 CMIL	20 FT	480 V	3Ø	0.24 V	479.8 V	0.04 %	0.871 in^2	0.320 in^2	2.933 in^2	23%	4"
EXAMPLE CALCULATIONS: (PV-1) K= 12.9 DERATED CONDUCTOR AMPACITY = CONDUCTOR MAX AMPACITY • TEMP DERATING FACTOR • MULTI CONDUCTOR DERATING FACTOR = 2850.00 A x 0.96 x 1.00 = 2736 A VOLTAGE DROP = $\sqrt{3} \bullet K \bullet I \bullet D$ / CM = $\sqrt{3} \bullet 12.9 \bullet 1919A \bullet 20 \text{ ft}$ / 3,600,000 CMIL = 0.24 V VOLTAGE DROP % = VD • 100 / VOLTAGE OUTPUT = 0.24 V • 100 / 480 V = 0.04 % * SERVICE LATERAL NEUTRAL SIZED BASED ON GROUNDING ELECTRODE CONDUCTOR, GEC NOT INCLUDED IN CONDUIT.																																	

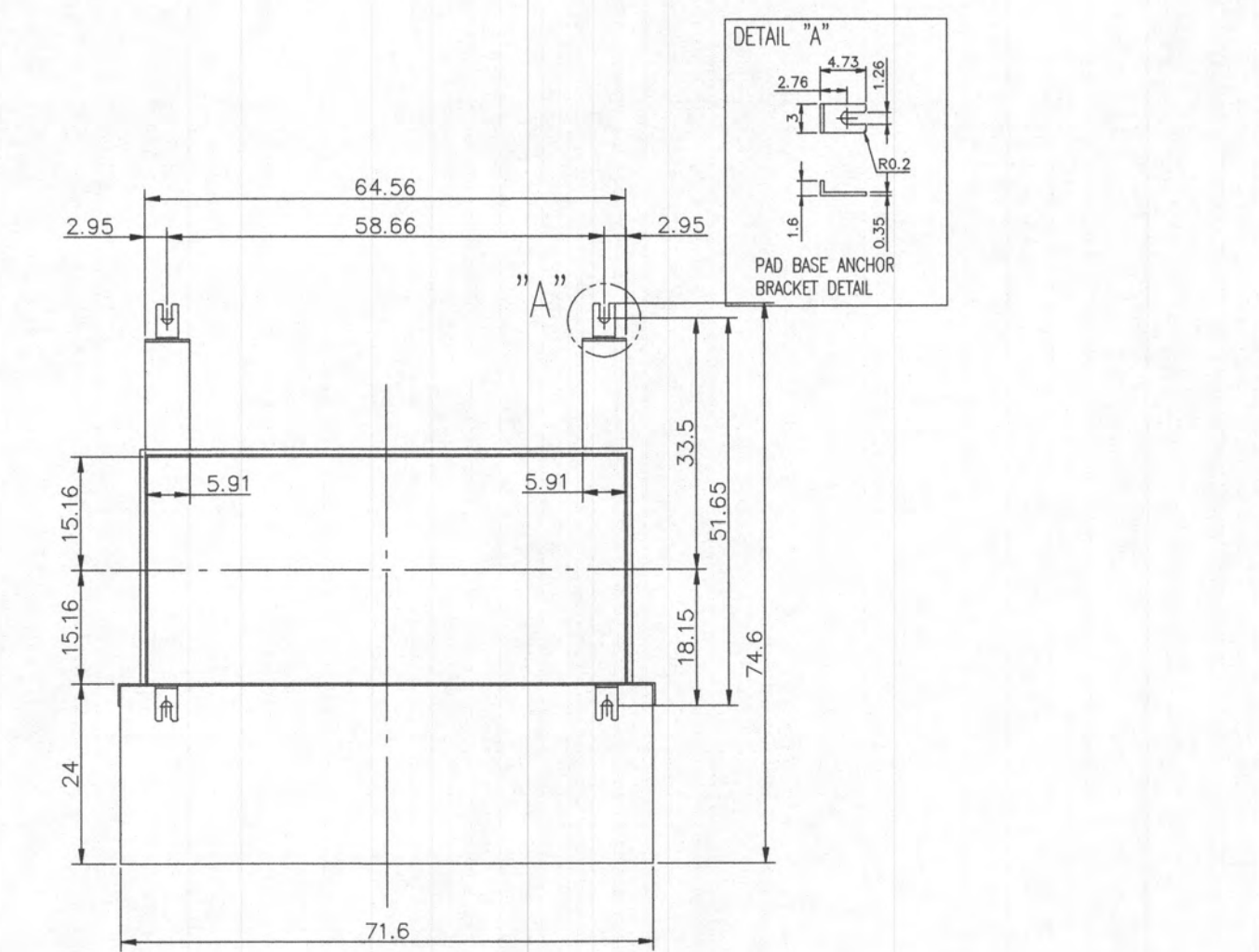
AC DISTRIBUTION MV OUTPUT CIRCUIT CONDUCTOR SCHEDULE																			
MARK	NUMBER OF 125KW INVERTERS	NUMBER OF 124KW INVERTERS	RATED OUTPUT POWER (KW)	MAX AC OUTPUT POWER (KVA)	GRID VOLTAGE kV	I _{MAX}	MAX FUSE	CONDUCTOR TYPE	CONDUCTOR MATERIAL	CONDUCTOR TEMP RATING	SELECTED CONDUCTOR SIZE 310.15(B)(16) (φ)	GROUND & NEUTRAL MATERIAL	CONDUCTOR MAX AMPACITY	ONE-WAY CONDUCTOR LENGTH	SOURCE VOLTAGE	PHASE	VOLTAGE DROP	3Ø VOLTAGE AT POC	VOLTAGE DROP %
T-1	15	1	1999 KW	1999 KVA	13.20 kV	96.2 A	125 A	MV-90	Alu	105°C	1/0 AWG	Cu	165 A	25 FT	13.20 kV	3Ø	0.11 V	13.20 kV	0.001 %
EXAMPLE CALCULATIONS: (T-1)										K= 21.2									
VOLTAGE DROP = √3 • K • I • D/CM = √3 • 21.2 • 13A • 25 ft / 105,600 CMIL = 0.11 V																			
VOLTAGE DROP % = VD • 100 / VOLTAGE OUTPUT = 0.11 V • 100 / 13.2 V = 0.00 %																			



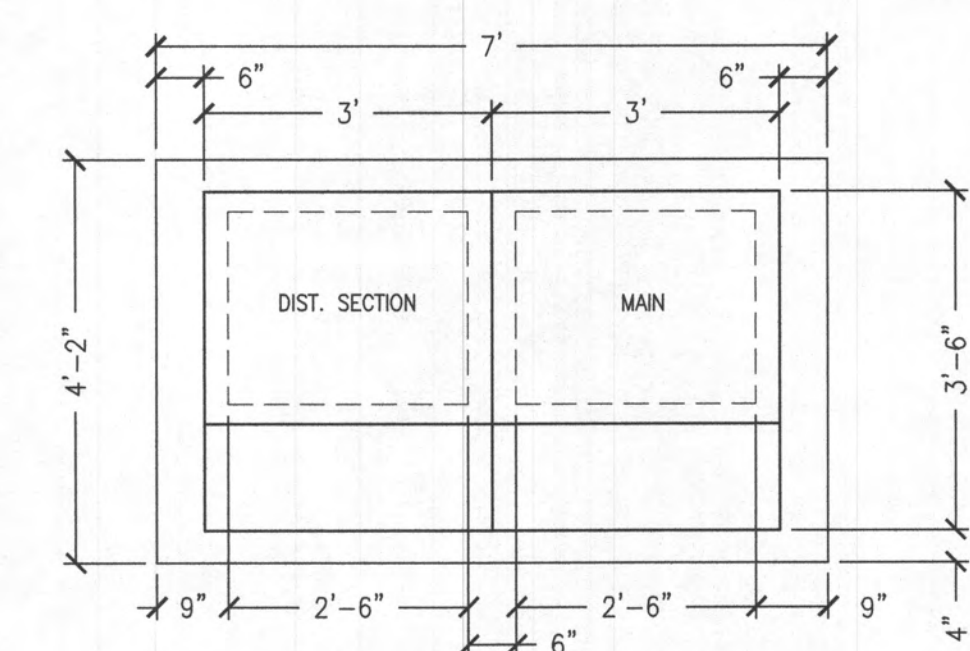
1 PARTIAL GROUNDING PLAN
SCALE: 1/4" = 1'-0"

GROUNDING NOTES:

- EQUIPMENT GROUNDING CONDUCTOR RUN WITH EACH COMBINER OUTPUT CIRCUIT TO RESPECTIVE INVERTER AS SCHEDULED ON PVE-5.2. (NOT ALL SHOWN.)
- EQUIPMENT GROUNDING CONDUCTOR RUN WITH EACH INVERTER OUTPUT CIRCUIT FROM INVERTER TO AC CONSOLIDATION PANEL AS SCHEDULED ON PVE-5.3. (NOT ALL SHOWN.)
- BOND #6 INSULATED COPPER FROM COMBINER EQUIPMENT GROUNDING TERMINAL TO NEW LAY IN TYPE GROUND LUG AT MODULE RACKING STRUCTURE COLUMN AND COMBINER RACKING STRUCTURE.
- BOND #6 INSULATED COPPER FROM RACKING SUPPORT COLUMN TO SUPPLEMENTAL GROUND ROD WITH LAY IN TYPE LUG. MINIMUM ONE GROUND ROD PER RACKING SUB-ARRAY.
- BOND NON-CONTINUOUS RACKS WITH #6 GROUNDING STRAPS TO ENSURE ALL RACKS WITHIN ROW ARE ADEQUATELY BONDED. (NOT SHOWN)
- BURIED #4/0 AWG BARE CU GROUNDING ELECTRODE CONDUCTOR. GROUND RING SHALL ENIRCLE THE EQUIPMENT PAD BURIED 30" BELOW GRADE. GROUNDING ELECTRODE SYSTEM SHALL BE TESTED TO ENSURE GROUNDING RESISTANCE IS LESS THEN 10 OHMS.
- ROUTE #6 CU EGC IN EACH DC JUMPER RACEWAY AND BOND INVERTER SUPPORT STRUCTURES AND MODULE RACKING STRUCTURES TO FORM A CONTINUOUSLY GROUNDING SYSTEM.



2 2000 KVA TRANSFORMER PAD CUTOUT DIMENSIONS
SCALE: 1/2" = 1'-0"



3 SWITCHBOARD PAD CUTOUT DIMENSIONS
SCALE: 1/2" = 1'-0"

PAD DIMENSIONS SHALL BE ADJUSTED ONCE FINAL EQUIPMENT SELECTION IS COMPLETED. PROVIDE SPARE CONDUITS FOR EACH UNDERGROUND AC FEEDER AND COMMUNICATIONS CONDUIT. COORDINATE WITH SHOP DRAWINGS.

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MIDDLETOWN, FL 32675
TEL: 321.253.1221
WWW.CEGENGINEERING.COM

CONSTRUCTION
ENGINEERING
GROUP
Consulting Engineers

TEN OAKS SOLAR
NEW PHOTOVOLTAIC SYSTEM
3950 TEN OAKS ROAD GLENELG, MD 21737
DRAWING TITLE
ENLARGED PLANS

ENGINEER OF RECORD
STATE OF MARYLAND
DAVID E. ALEY
PROFESSIONAL ENGINEER
NO. 42678
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 42678, EXPIRATION DATE 2024-09-12.

DATE:
08-08-23

SCALE:
AS NOTED

PROJ. NO.:
230120

DESIGNED BY:
JNH

DRAWN BY:
JNH

CHECKED BY:
DEA

DRAWING NO.:
PVE-6.1

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DRAWING TITLE
DETAILS

ENGINEER OF RECORD



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DATE: 08-08-23

SCALE: AS NOTED

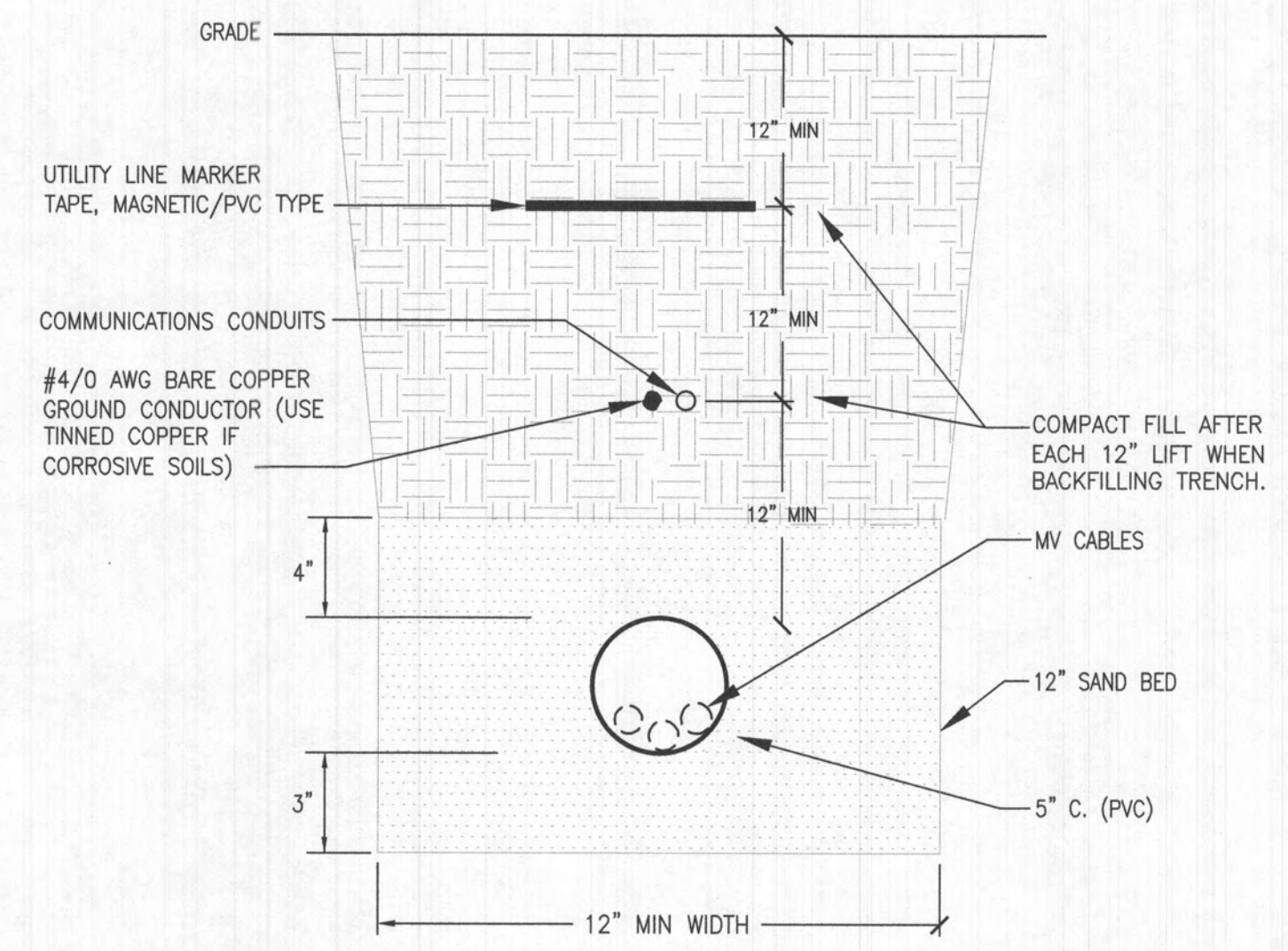
PROJ. NO.: 230120

DESIGNED BY: JNH

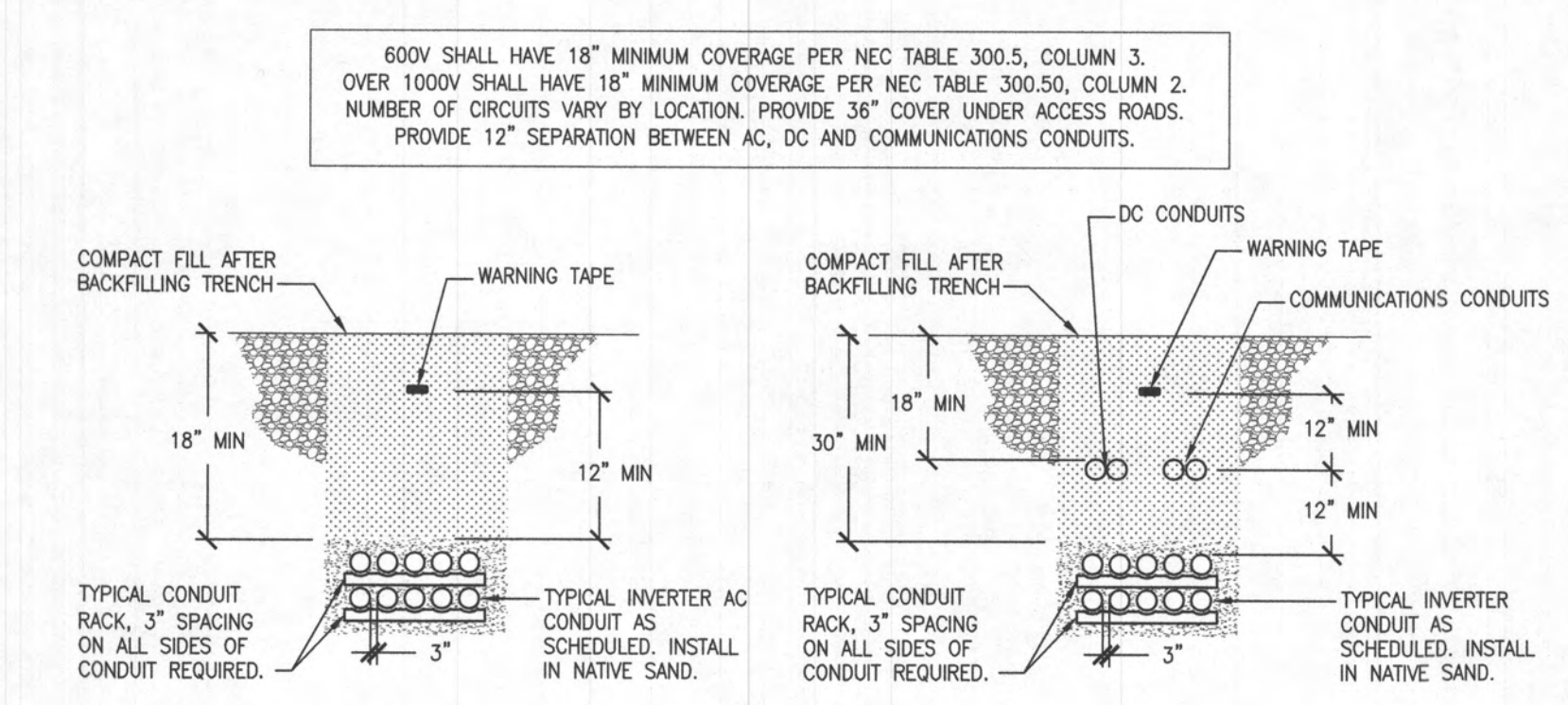
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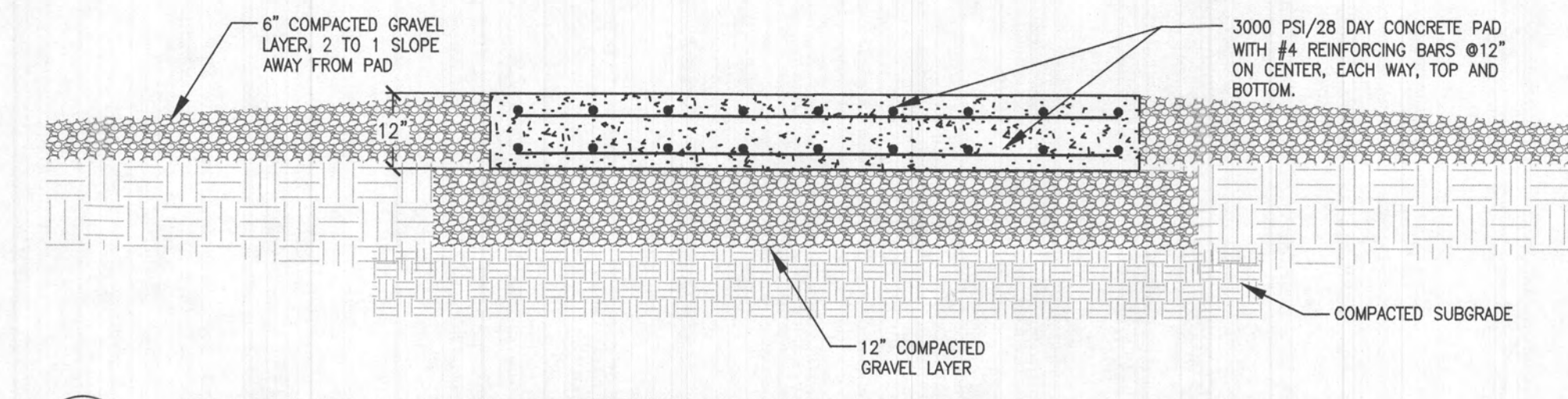
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1 MV CONDUIT TRENCH DETAIL
SCALE: N.T.S.



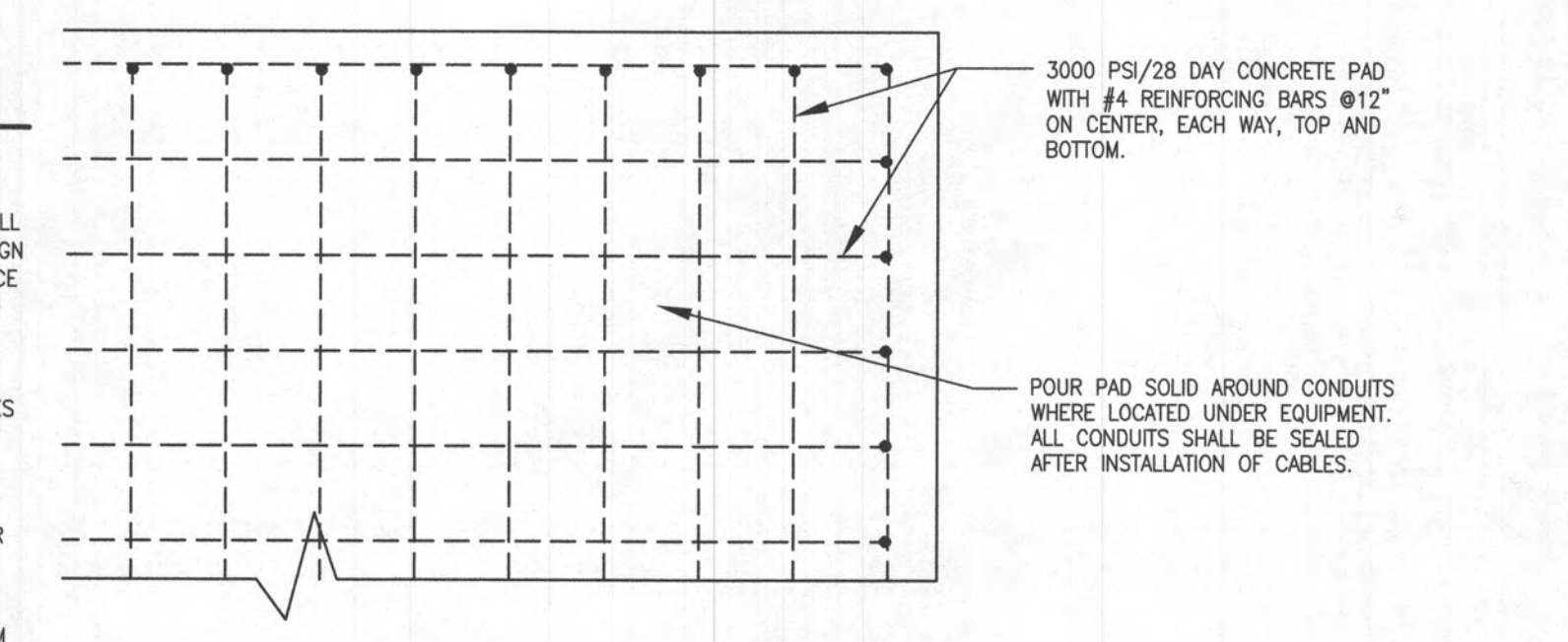
2 TYPICAL TRENCH DETAILS
SCALE: N.T.S.



3 TYPICAL CONCRETE PAD SECTION
SCALE: 1/2" = 1'-0"

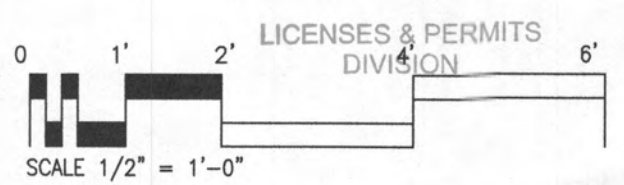
CONCRETE PAD:

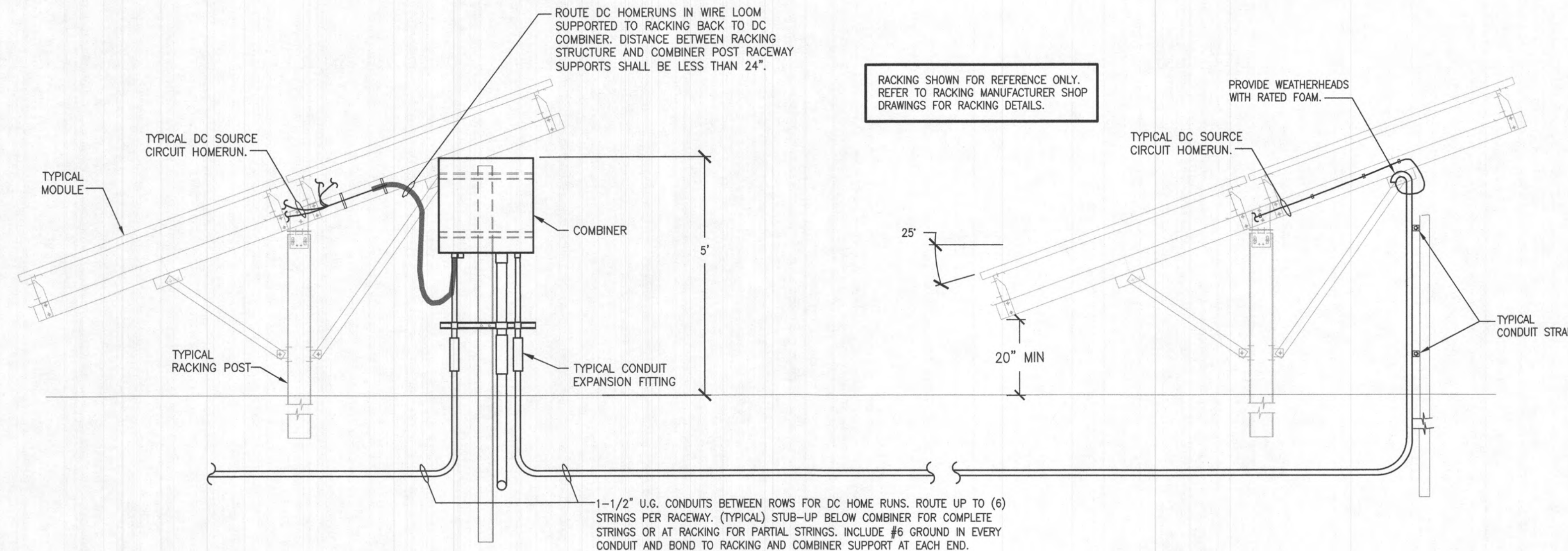
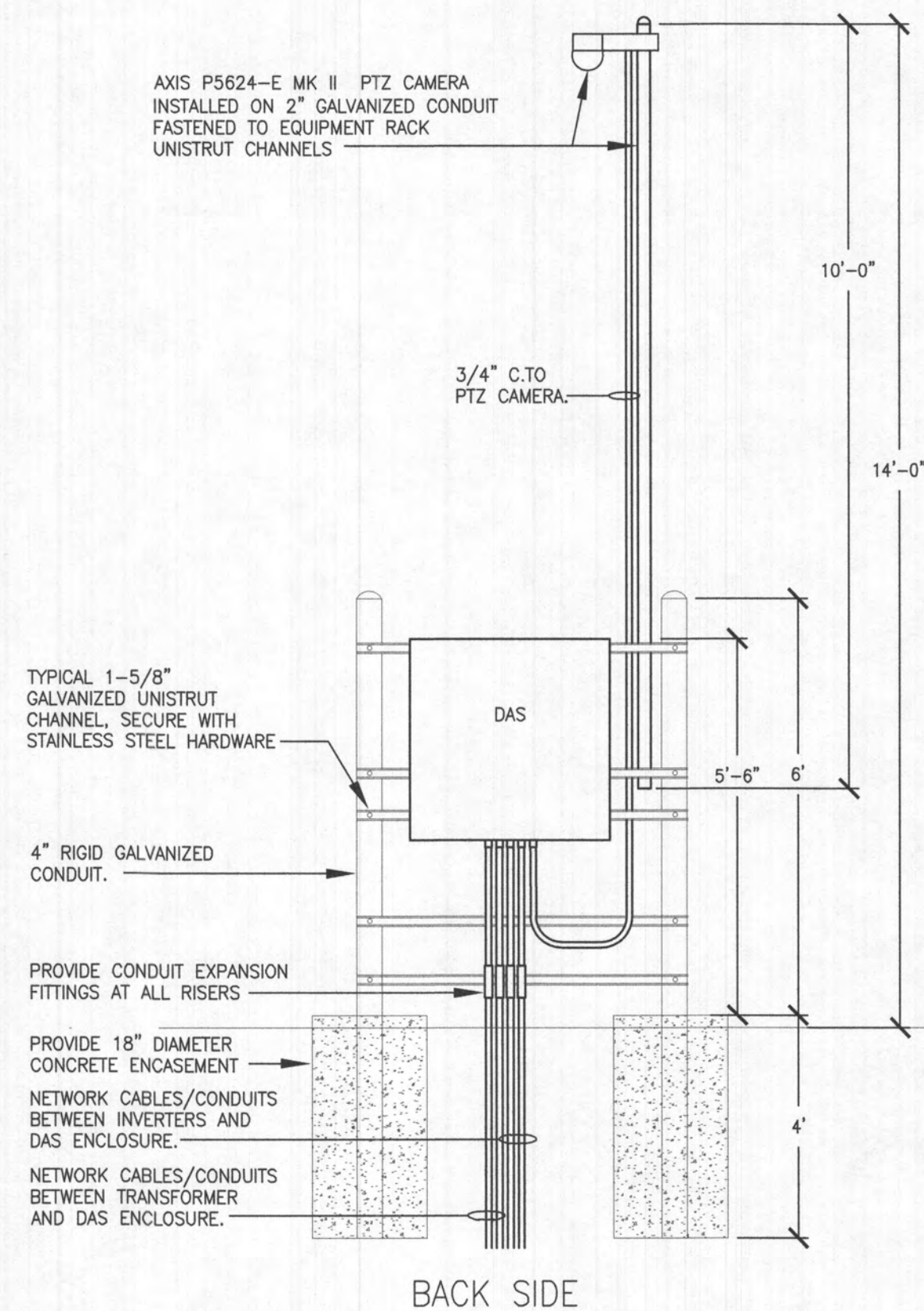
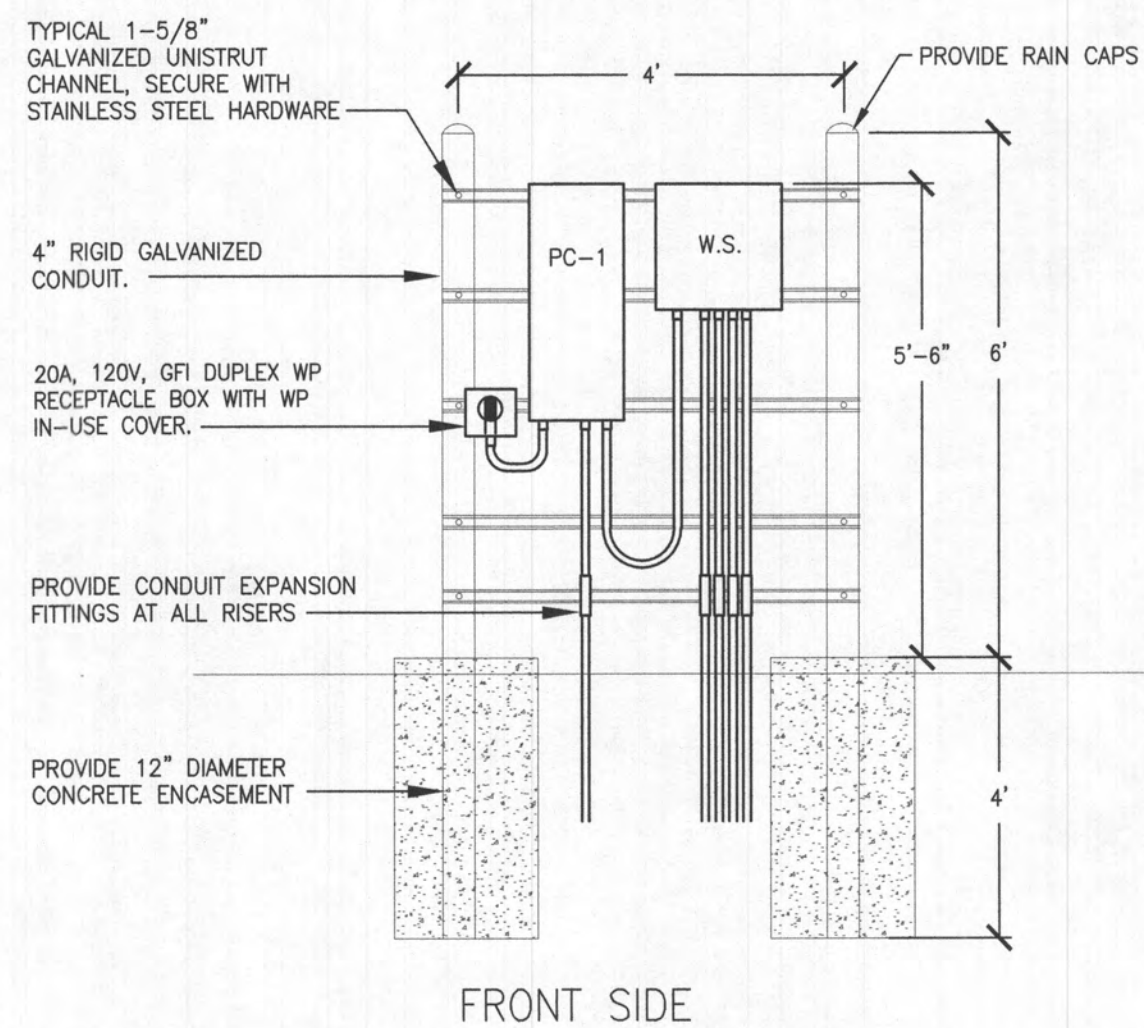
1. CONCRETE: ALL CONCRETE DESIGN AND PLACEMENT SHALL BE IN ACCORDANCE WITH ACI 318 AND ACI 301, LATEST EDITIONS. CONCRETE 28 DAY COMPRESSIVE STRENGTH AND PROPERTIES SHALL BE: f_c 3000 PSI, SLUMP 5"(±1"), AGGREGATE 3/4". SUBMIT DESIGN MIXES FOR APPROVAL. MAX. WATER/CEMENT RATIO 0.57. LAP SPLICE 40 BAR DIAMETERS U.O.N. TYPICAL CLEAR COVER TO REINFORCING U.O.N. 3" EXPOSED TO EARTH.
2. REINFORCING STEEL: ASTM A615 GRADE 60, DEFORMED ALL FOUNDATION AND SLAB REINFORCING TO BE SUPPORTED BY BRICKS OR STANDEES.
3. DESIGN LOADS, AS SCHEDULED.
4. VERIFY CONDUIT OPENING WINDOWS WITH INVERTER MANUFACTURER PRIOR TO CONSTRUCTION. INSTALL ANCHORAGE DEVICES PER MANUFACTURERS REQUIREMENTS.
5. COMPACT SUBGRADE TO 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY.



4 TYPICAL CONCRETE PAD PLAN
SCALE: 1/2" = 1'-0"

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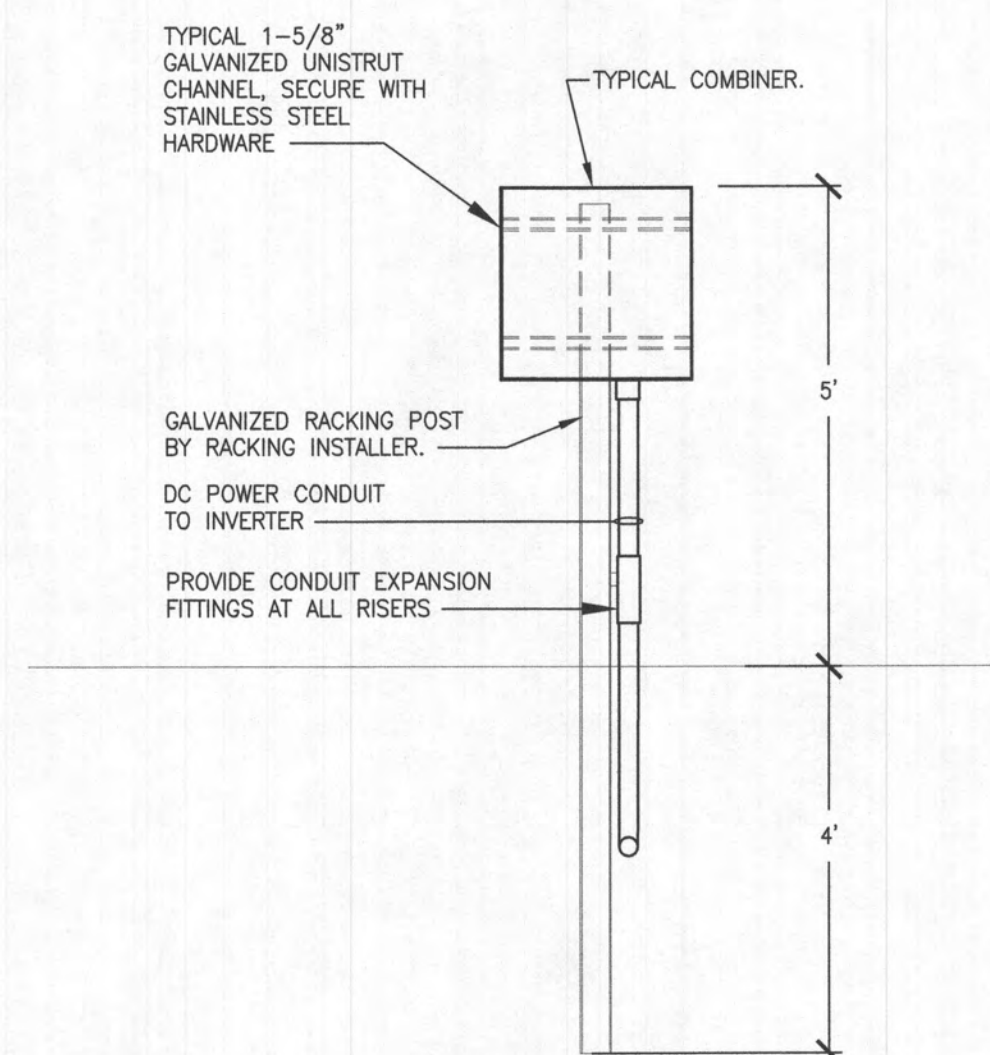


1 EQUIPMENT RACK ELEVATIONS

SCALE: 1/2" = 1'-0"

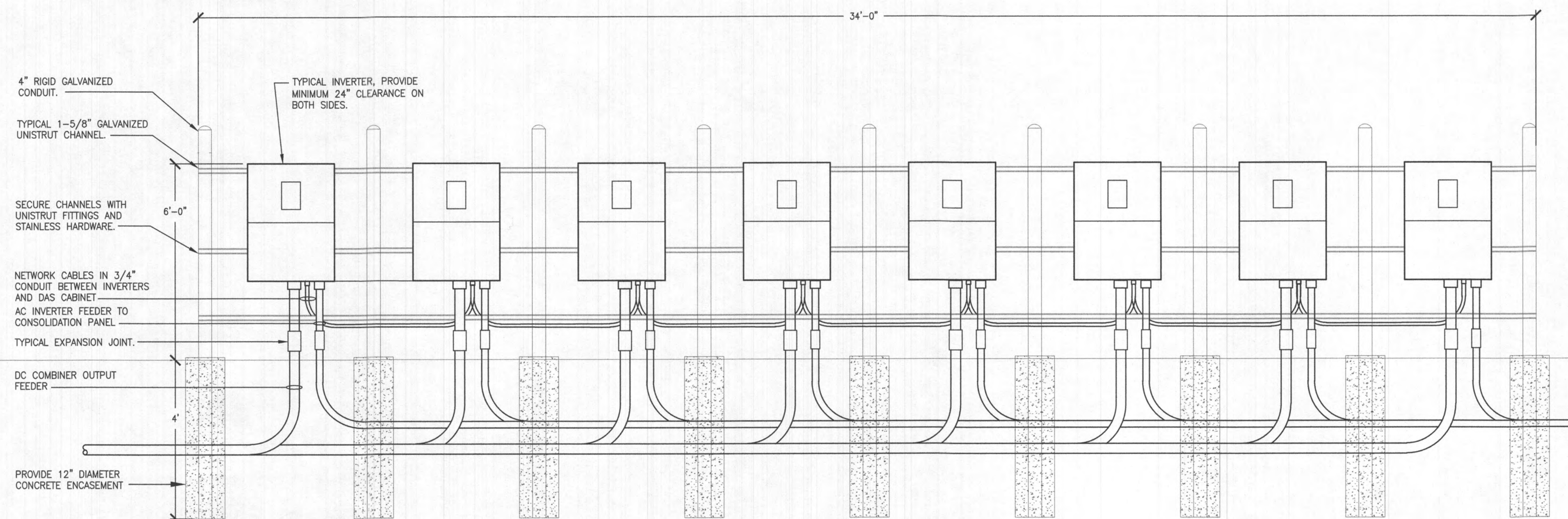
2 RACKING SECTION

SCALE: 1/2" = 1'-0"



3 COMBINER RACK ELEVATION

SCALE: 1/2" = 1'-0"



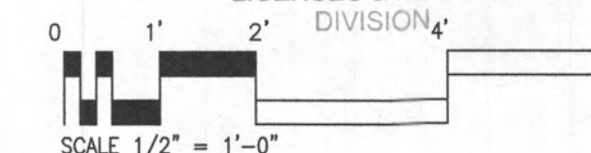
4 INVERTER RACK ELEVATION

SCALE: 1/2" = 1'-0"

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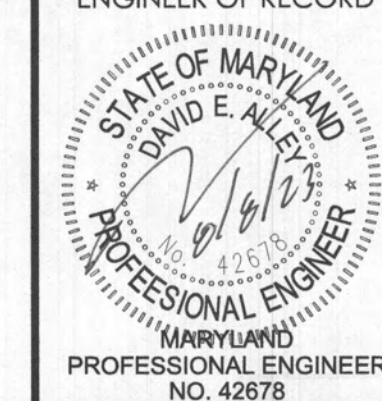
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SCALE 1/2" = 1'-0"

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3950 TEN OAKS ROAD GLENELG, MD 21737
DRAWING TITLE
SECTIONS & ELEVATIONS

ENGINEER OF RECORD



PROFESSIONAL ENGINEER NO. 42678

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DATE: 08-08-23

SCALE: AS NOTED

PROJ. NO.: 230120

DESIGNED BY: JNH

DRAWN BY: JNH

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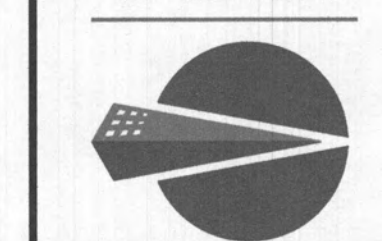
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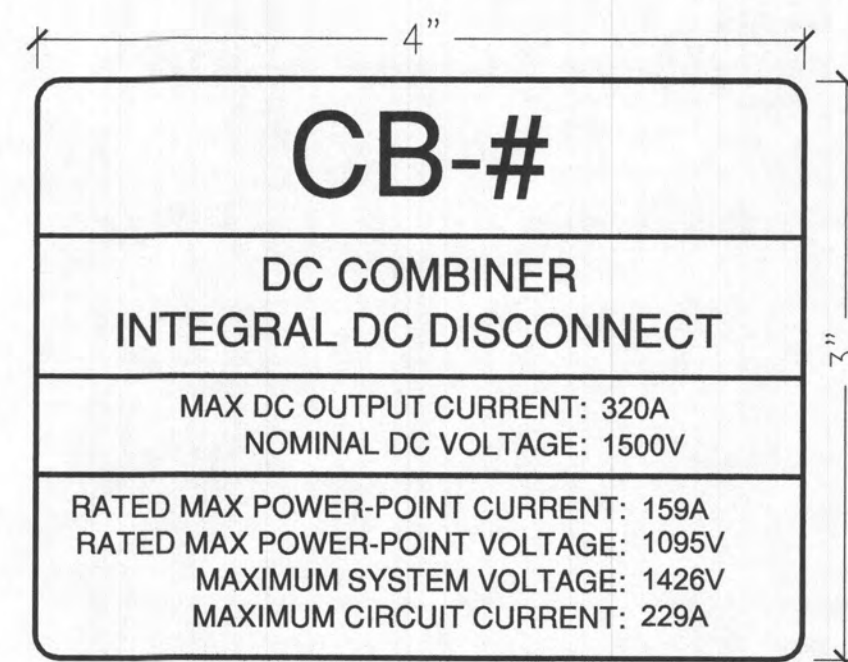
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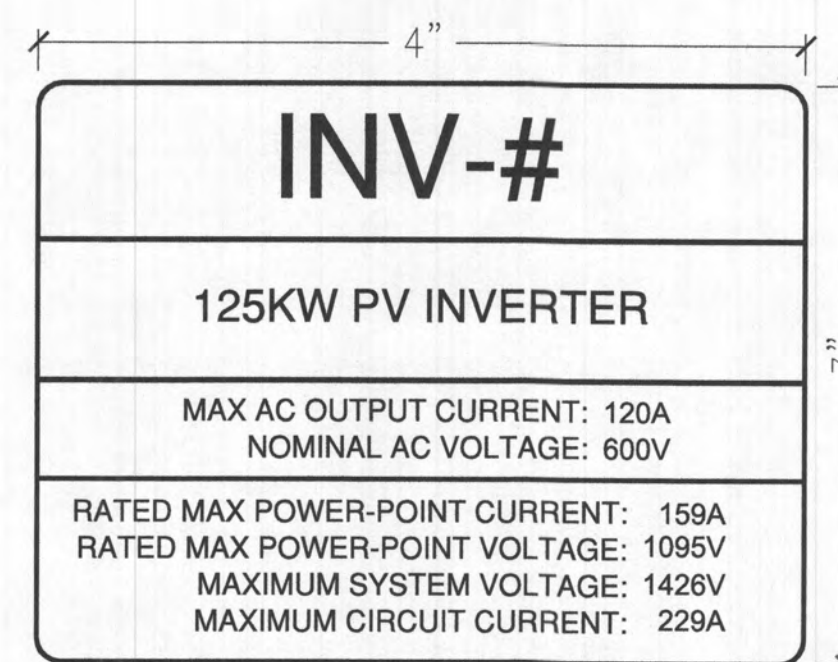
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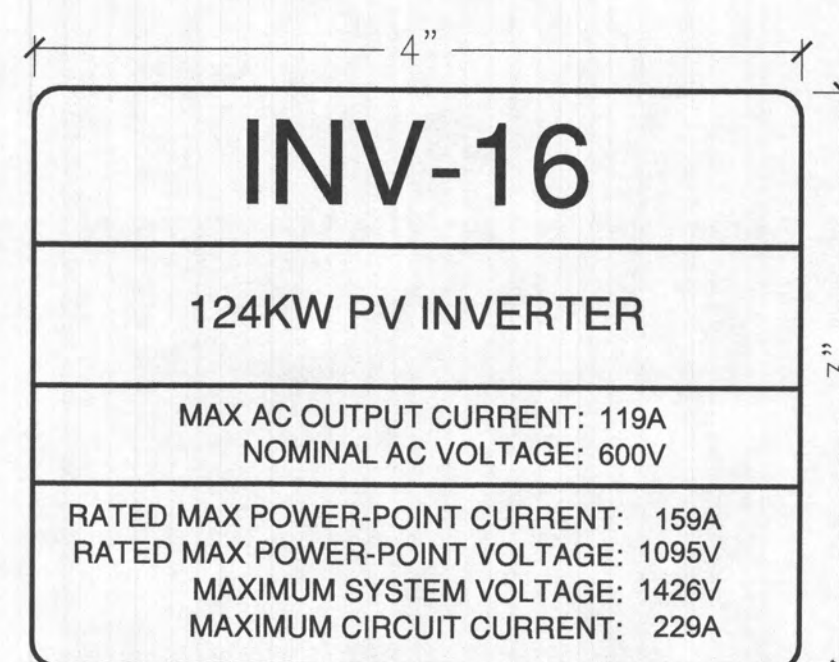




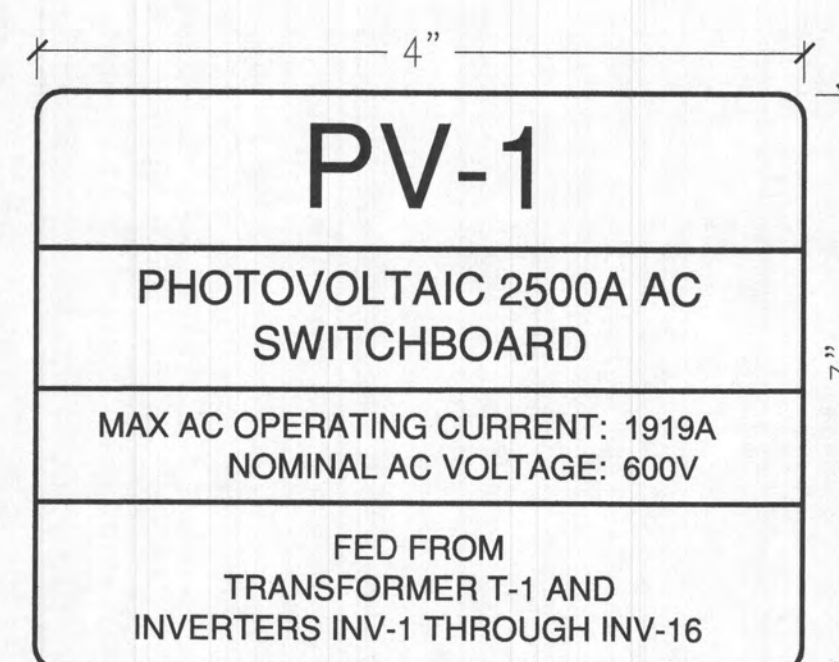
A LABEL 16 REQUIRED
SCALE: 1" = 1" ONE PER 15 STRING COMBINER



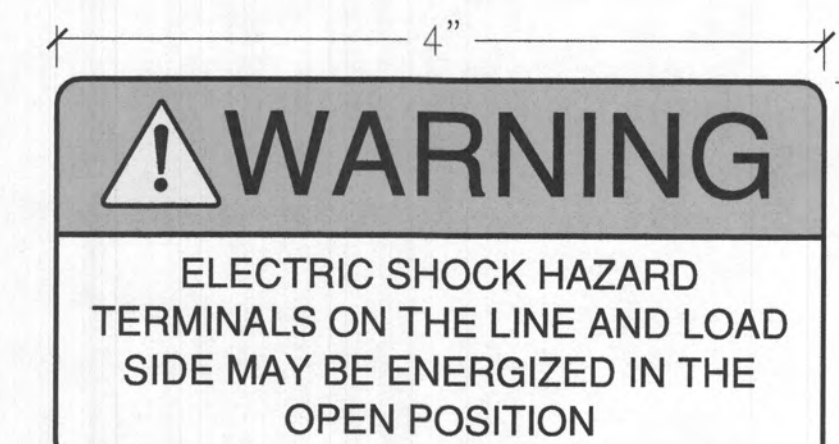
B PHENOLIC LABEL 15 REQUIRED
SCALE: 1" = 1" ONE PER 125KW STRING INVERTER



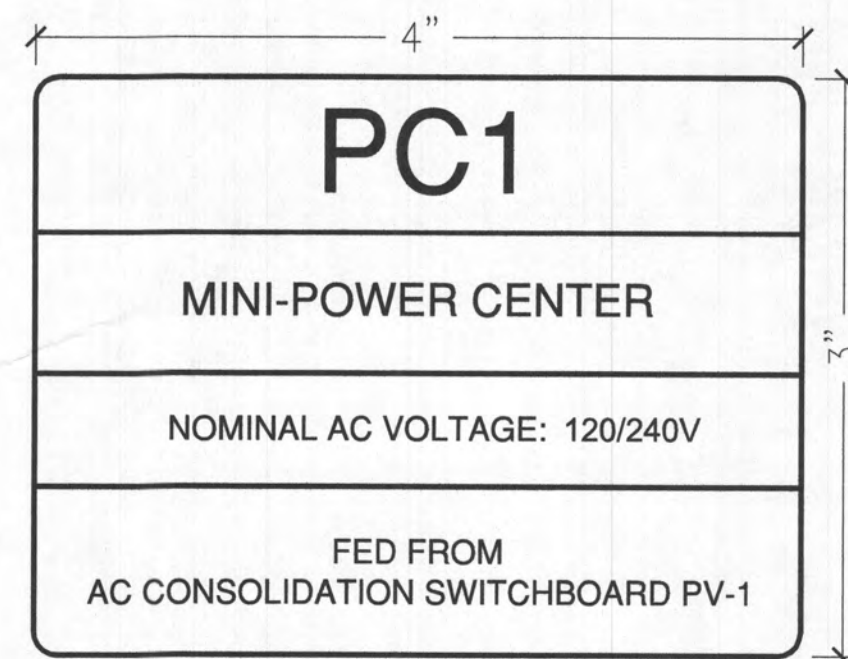
C PHENOLIC LABEL 1 REQUIRED
SCALE: 1" = 1" ONE PER 124KW STRING INVERTER



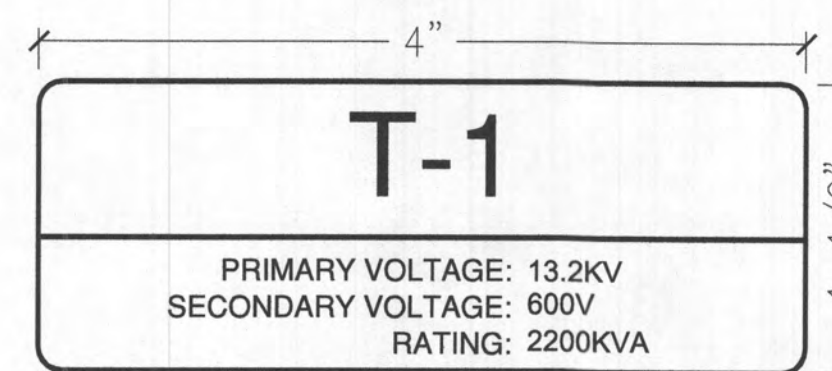
D PHENOLIC LABEL 1 REQUIRED
SCALE: 1" = 1" ONE FOR AC SWITCHBOARD



E LABEL 16 REQUIRED
SCALE: 1" = 1" ONE FOR EACH INVERTER



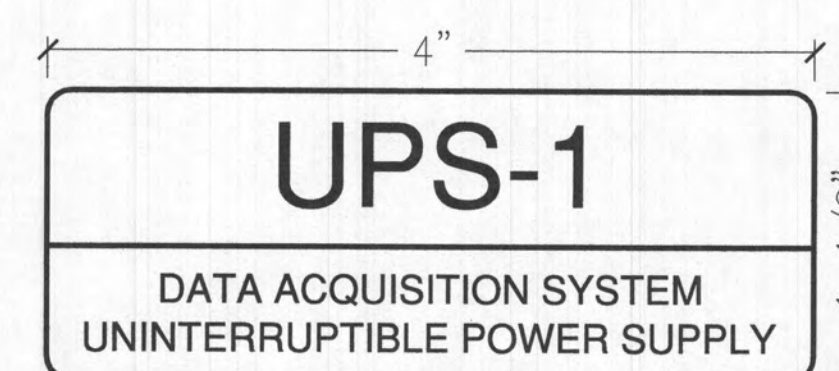
F PHENOLIC LABEL 1 REQUIRED
SCALE: 1" = 1" ONE FOR POWER CENTER



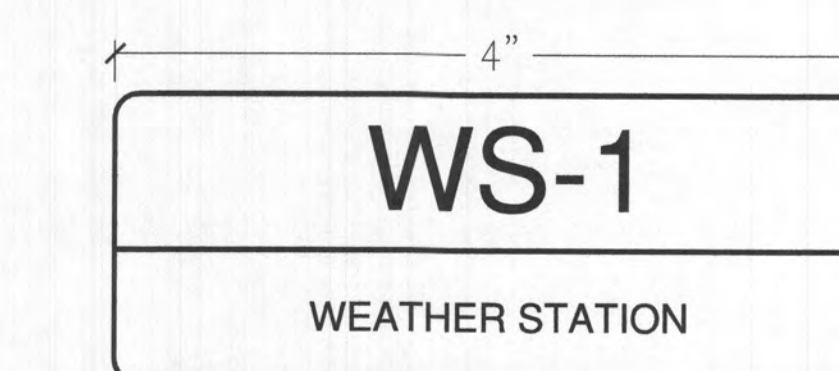
G PHENOLIC LABEL 1 REQUIRED
SCALE: 1" = 1" ONE FOR MV TRANSFORMER



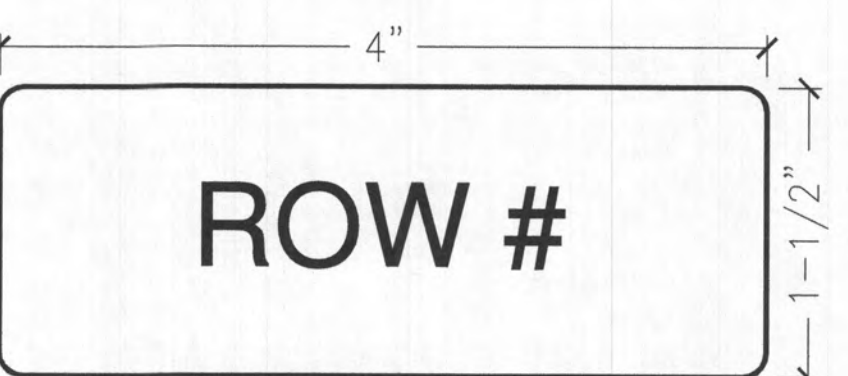
H PHENOLIC LABEL 1 REQUIRED
SCALE: 1" = 1" ONE FOR DAS ENCLOSURE



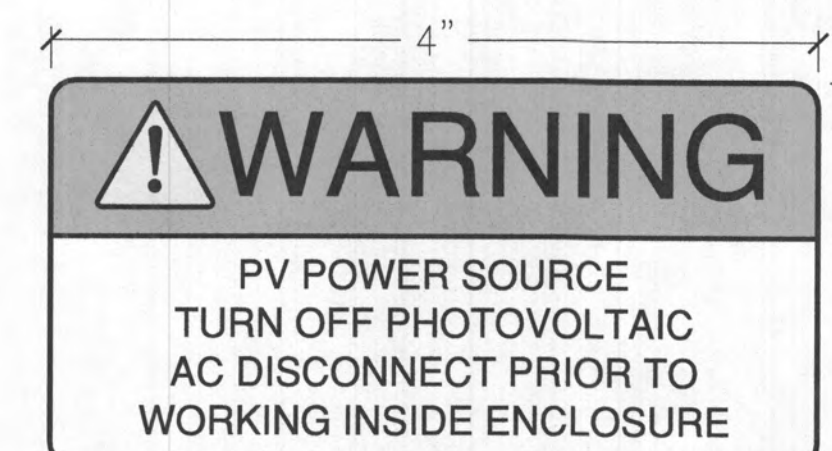
I PHENOLIC LABEL 1 REQUIRED
SCALE: 1" = 1" ONE PER UPS



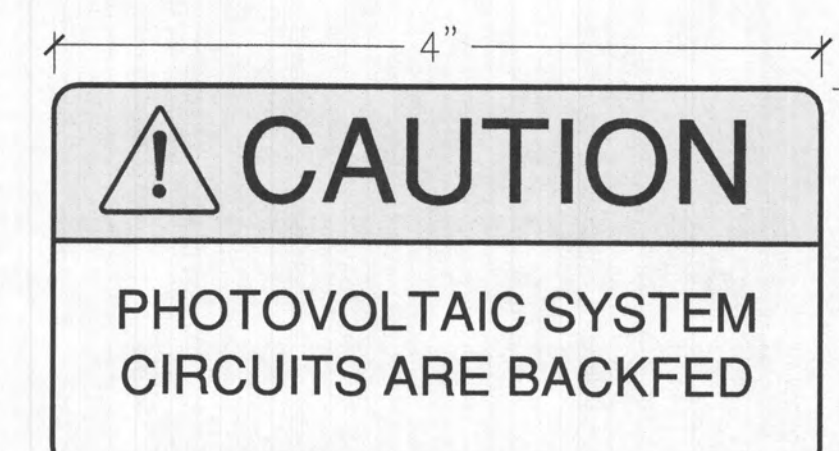
J PHENOLIC LABEL 1 REQUIRED
SCALE: 1" = 1" ONE FOR WEATHER STATION



K PHENOLIC LABEL 1 REQUIRED
SCALE: 1" = 1" PLACE ON EACH END OF ALL ROWS



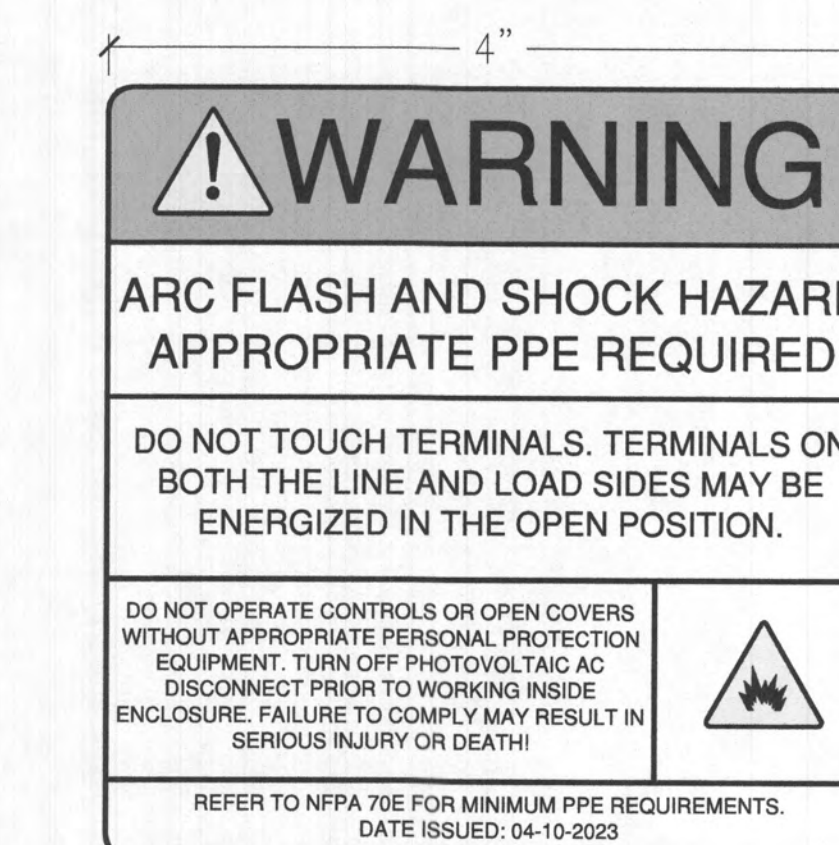
L LABEL 1 REQUIRED
SCALE: 1" = 1" ONE FOR MV TRANSFORMER



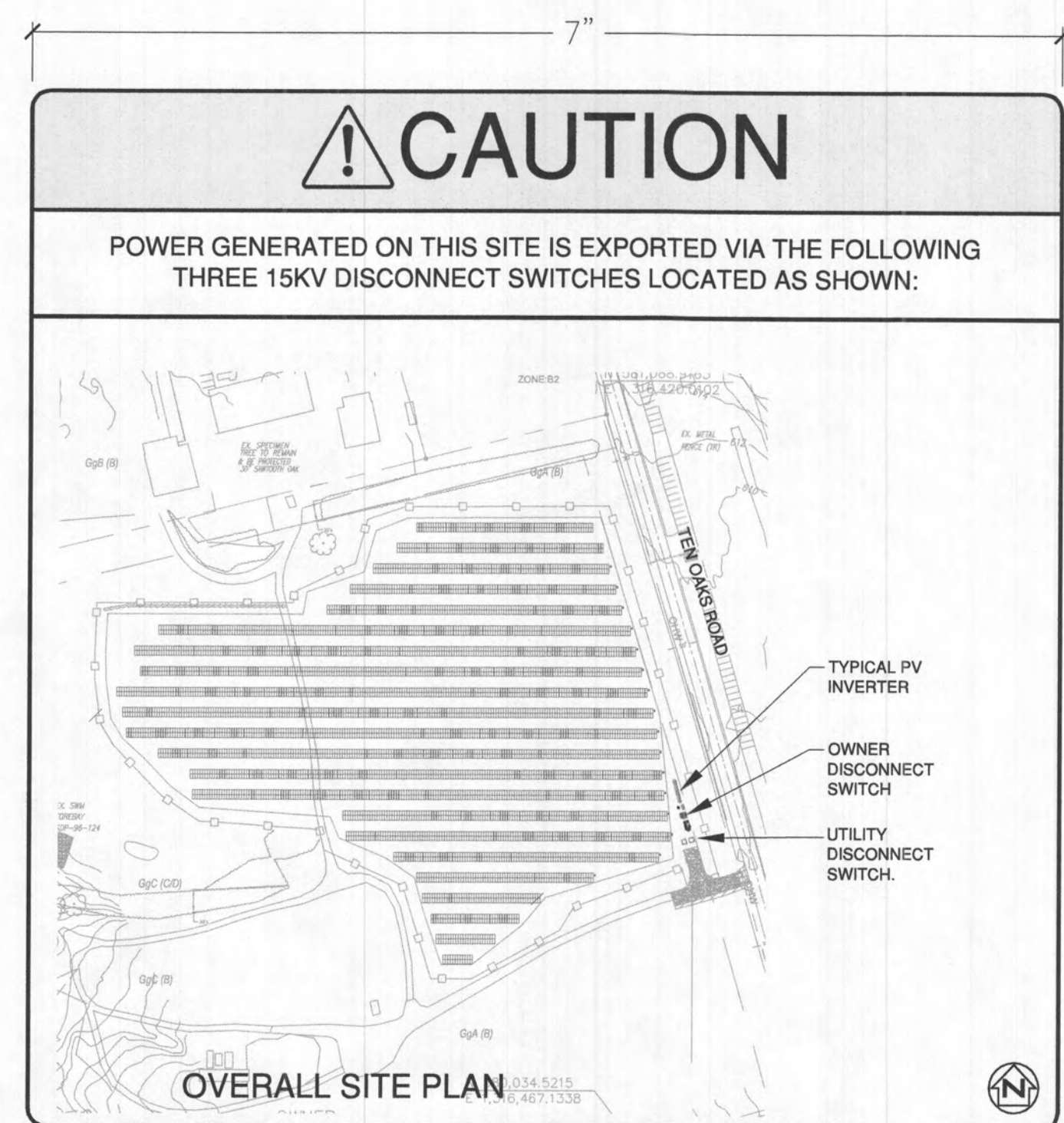
M LABEL 1 REQUIRED
SCALE: 1" = 1" ONE PER AC CONSOLIDATION SWITCHBOARD



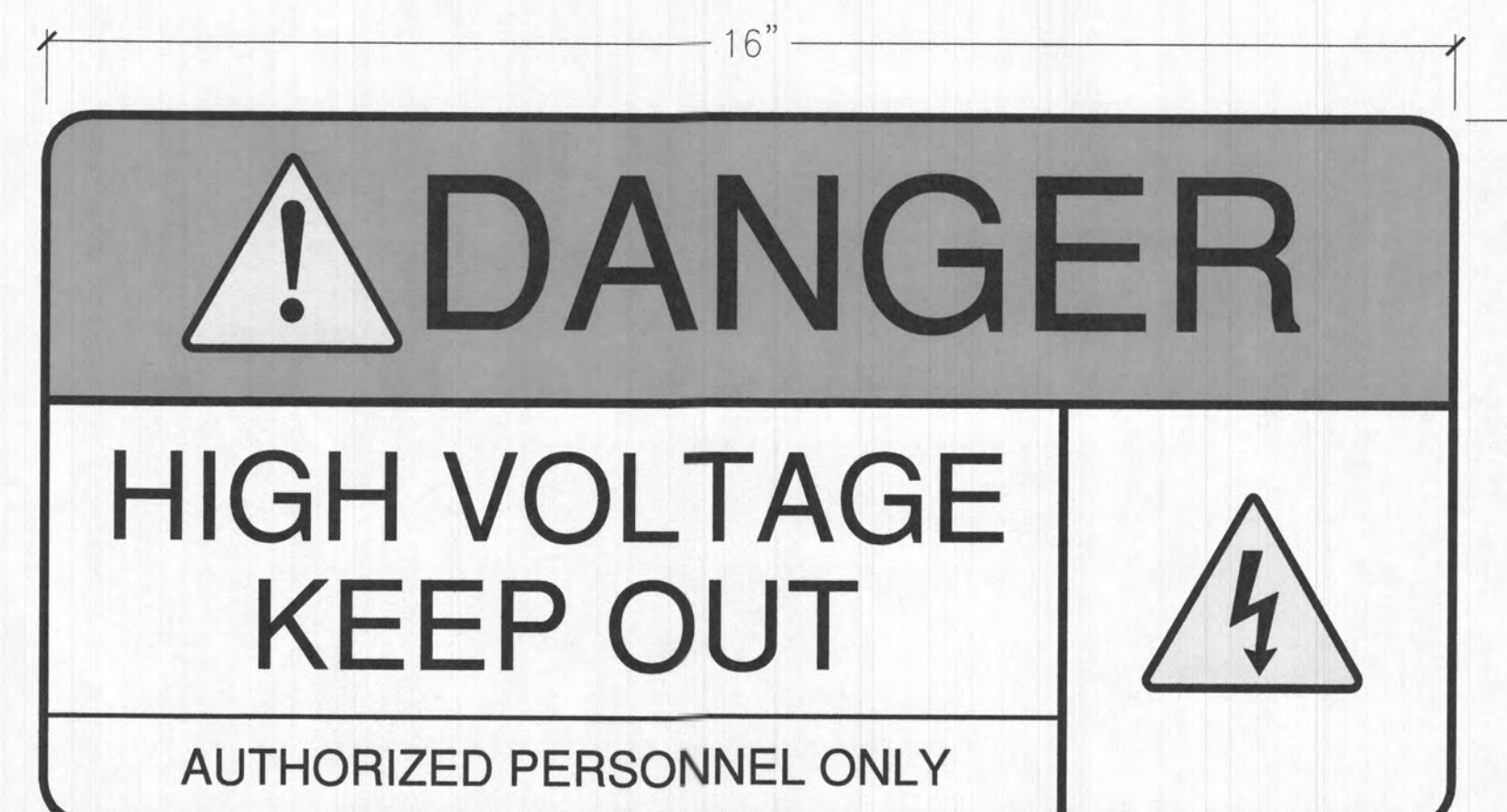
N LABEL 16 REQUIRED
SCALE: 1" = 1" ONE PER INVERTER



O LABEL 1 REQUIRED
SCALE: 1" = 1" ONE PER AC SWBD



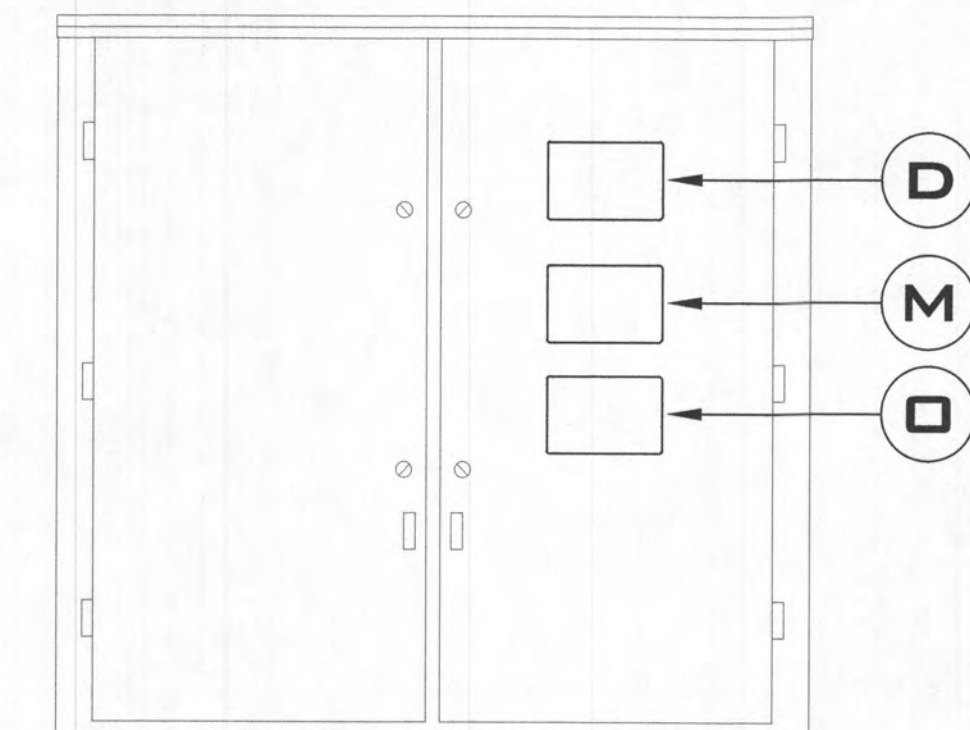
P LABEL 1 REQUIRED
SCALE: 1" = 1" LOCATE PER NEC 705.10



Q PRINTED ALUMINUM SIGN AT EACH GATE & EVERY 200' ALONG FENCE

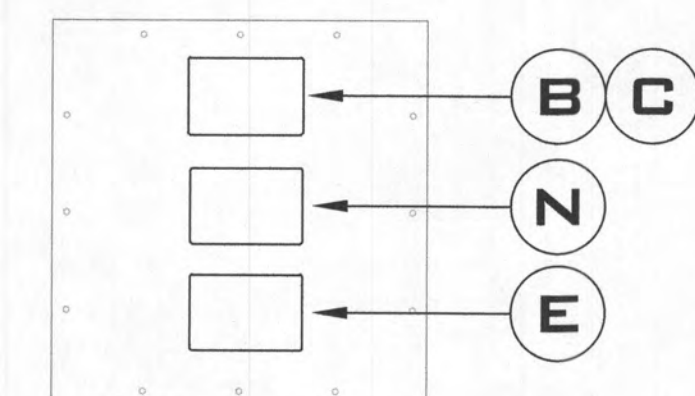
GENERAL NOTES:

1. LABELS AND MARKINGS SHALL BE APPLIED TO ALL APPROPRIATE COMPONENTS IN ACCORDANCE WITH THE NEC AND ANSI Z39.4-2011.
2. LABELS AND MARKINGS SHALL BE PERMANENTLY AFFIXED IN CONSPICUOUS SPACES TO THE APPROPRIATE EQUIPMENT ENCLOSURES, RACEWAYS AND/OR WIRING METHODS AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT WHERE THEY ARE INSTALLED.
3. SOLAR MODULES AND INVERTER(S) ARE SUPPLIED FROM THE MANUFACTURER WITH SUPPLEMENTAL MARKINGS PRE-APPLIED TO MEET ADDITIONAL REQUIREMENTS OF THE NEC.
4. ADJUST AND REPLACE "I" ON LABELS PER LABEL DESCRIPTIONS AND MATCHING THE SINGLE LINE DIAGRAM ON PVE-4.1. EXAMPLE, REPLACE INV-# WITH INV-1.
5. LOCATE FENCE SIGNAGE AT GATE AND ALONG FENCE PER NESC RULE 110A1.



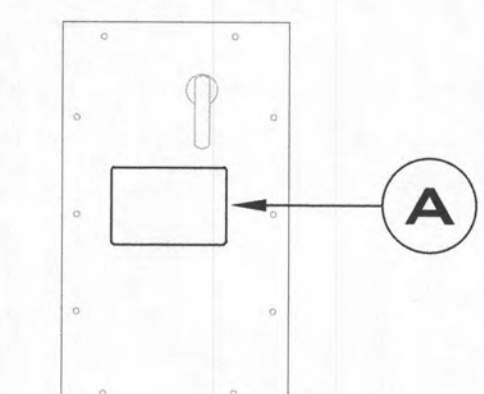
SWBD LABELING

SCALE: NONE



INVERTER LABELING

SCALE: NONE



COMBINER LABELING

SCALE: NONE

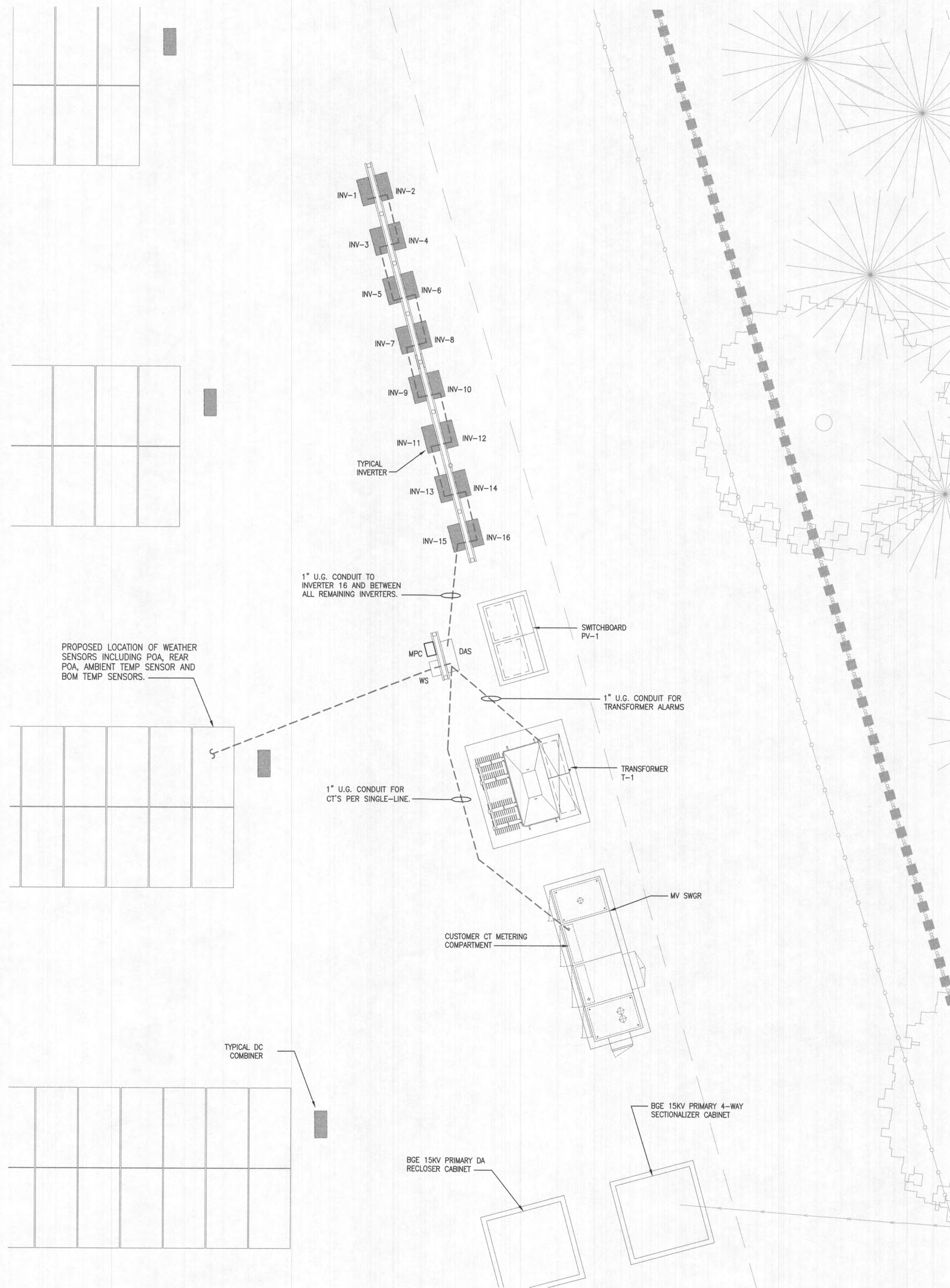
REV#	DATE	ISSUED FOR PERMIT ONLY
1	08-08-23	

2651 EAU CLAIRE BLVD, SUITE A
MEADOWS, FL 32055
WWW.CEGENGINEERING.COM
TEL: 321.253.1221
Consulting Engineers

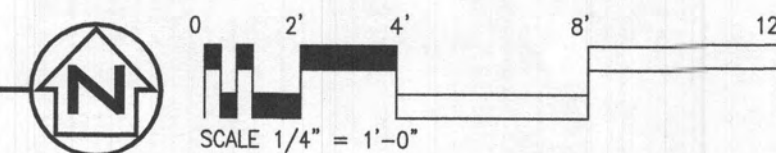
TEN OAKS SOLAR
NEW PHOTOVOLTAIC SYSTEM
3950 TEN OAKS ROAD GLENELG, MD 21737
DRAWING TITLE
SIGNAGE

ENGINEER OF RECORD
STATE OF MARYLAND DAVID E. ALEY PROFESSIONAL ENGINEER NO. 42878
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 42878, EXPIRATION DATE: 2024-09-12.
DATE: 08-08-23
SCALE: AS NOTED
PROJ. NO.: 230120
DESIGNED BY: JNH
DRAWN BY: JNH
CHECKED BY: DEA
DRAWING NO.: PVE-7.1

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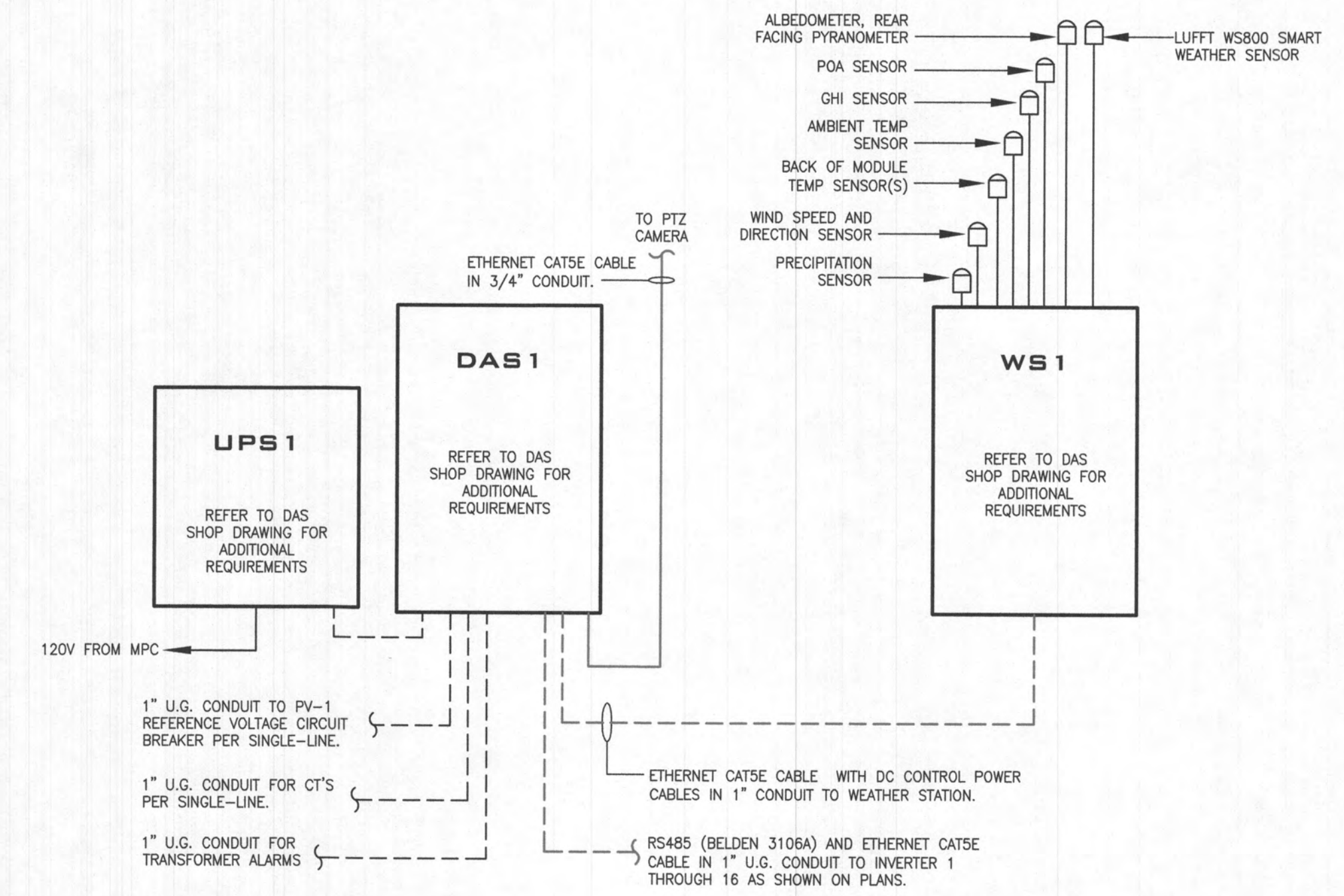


DATA ACQUISITION PLAN

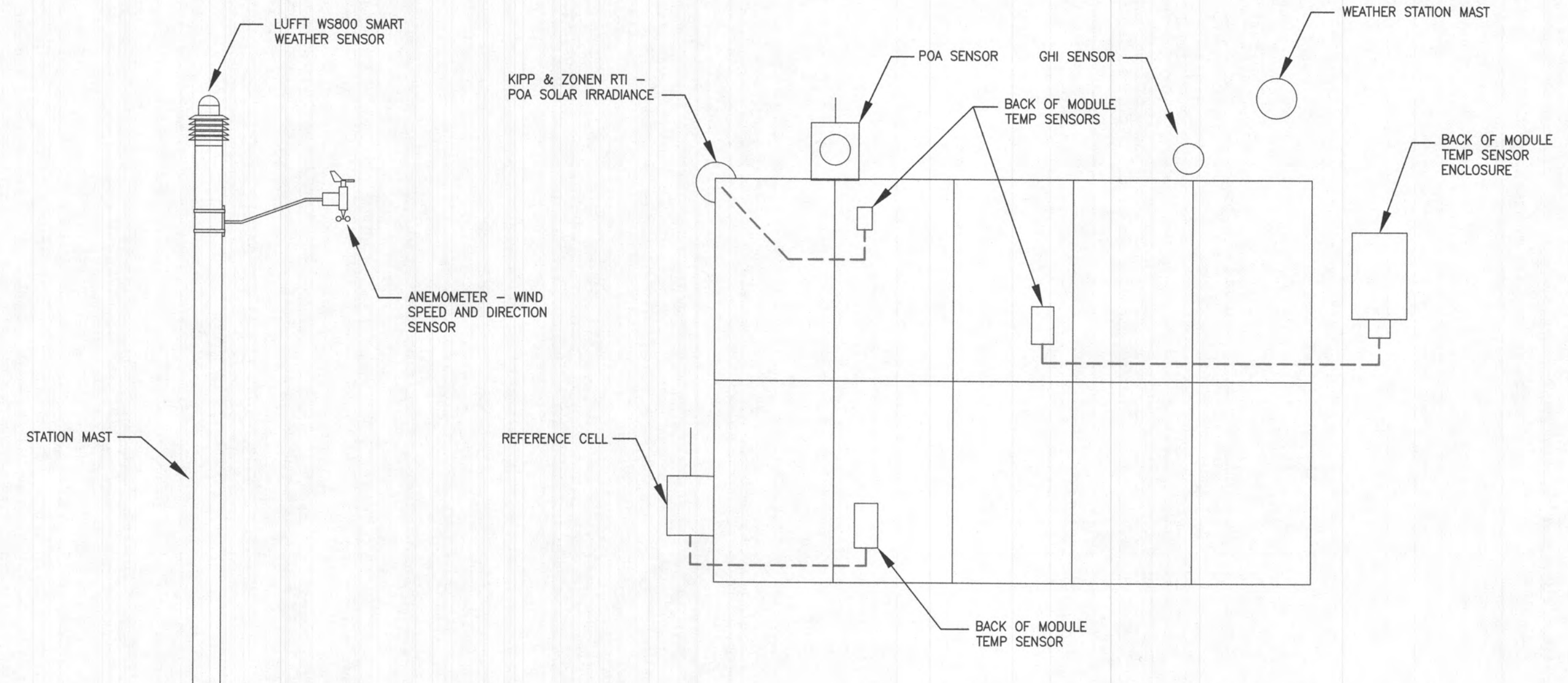


DAS NOTES:

1. CONNECT CABLES AT INVERTER DATA CONNECTION PORT INSIDE INVERTER. ROUTE CABLES THROUGH CABLE GLANDS.
2. SENSORS SHALL NOT BE INSTALLED IN A LOCATION THAT MAY CAUSE SHADING OF MODULES. FIELD LOCATE WITH DEVELOPER APPROVAL PRIOR TO INSTALLING.
3. CATSE SHIELD CONTINUITY SHOULD BE MAINTAINED FOR THE ENTIRE LENGTH OF THE DAISY CHAIN AND SHOULD BE CONNECTED TO GROUND AT THE DAS. THE SHIELD SHOULD NOT CONNECT TO ANY OF THE INVERTERS, METERS, OR SENSORS.
4. INVERTER MODBUS ID'S SHALL BE SET PER DAS SHOP DRAWINGS.
5. INSTALL ETHERNET CARDS IN INVERTERS PER INVERTER INSTALLATION MANUAL.
6. CONNECT CABLES AT INVERTER DATA CONNECTION PORT INSIDE INVERTER. ROUTE CABLES THROUGH CABLE GLANDS.



CONCEPT DAS DIAGRAM



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DIVISION

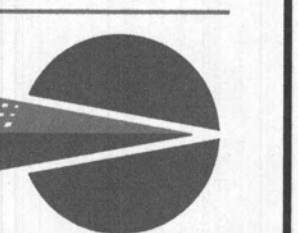
PRIOR TO PURCHASING ANY CABLES, CONTRACTOR SHALL REVIEW SELECTED COMMUNICATIONS VENDOR'S (MONITORING/DAS) SHOP DRAWINGS FOR VERIFICATION OF THE CORRECT CABLES AND CONDUITS REQUIRED FOR THE INVERTERS USED ON THIS SPECIFIC PROJECT. THERE ARE MULTIPLE VENDORS WITH DIFFERENT CABLING REQUIREMENTS (ETHERNET, RS-485) THAT USE DIFFERENT COMMUNICATION PROTOCOLS (MODBUS TCP, MODBUS RTU). FIELD VERIFY ALL REQUIREMENTS WITH EPC, INVERTER MANUFACTURER AND THE COMMUNICATIONS VENDOR.

CONSTRUCTION ENGINEERING GROUP, INC. 2023 EAU CLAIRE BLVD. SUITE A
MEADOWS, FL 32055
TEL: 321.233.1221
WWW.CEGENGINEERING.COM

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ENGINEER OF RECORD

STATE OF MARYLAND
DAVID E. ALLEY
PROFESSIONAL ENGINEER
NO. 42578
HARRIARD
PROFESSIONAL ENGINEER
NO. 42578

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WERE PREPARED OR APPROVED BY ME,
AND THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER THE LAWS
OF THE STATE OF MARYLAND, LICENSE NO.
42578, EXPIRATION DATE: 2024-09-12.

DATE: 08-08-23

SCALE: AS NOTED

PROJ. NO.: 230120

DESIGNED BY: JNH

DRAWN BY: JNH

CHECKED BY: DEA

DRAWING NO.: PVE-8.1

