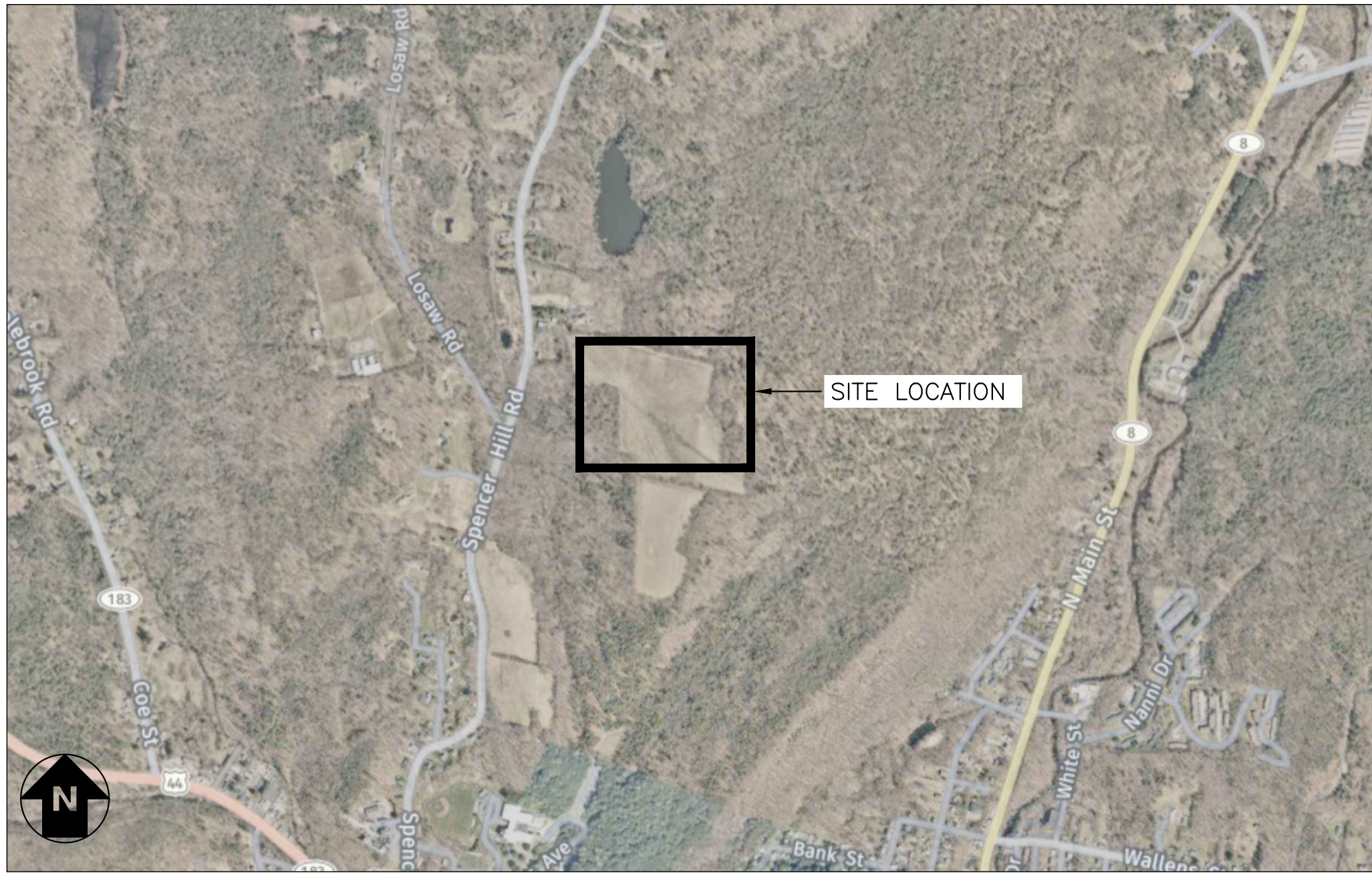
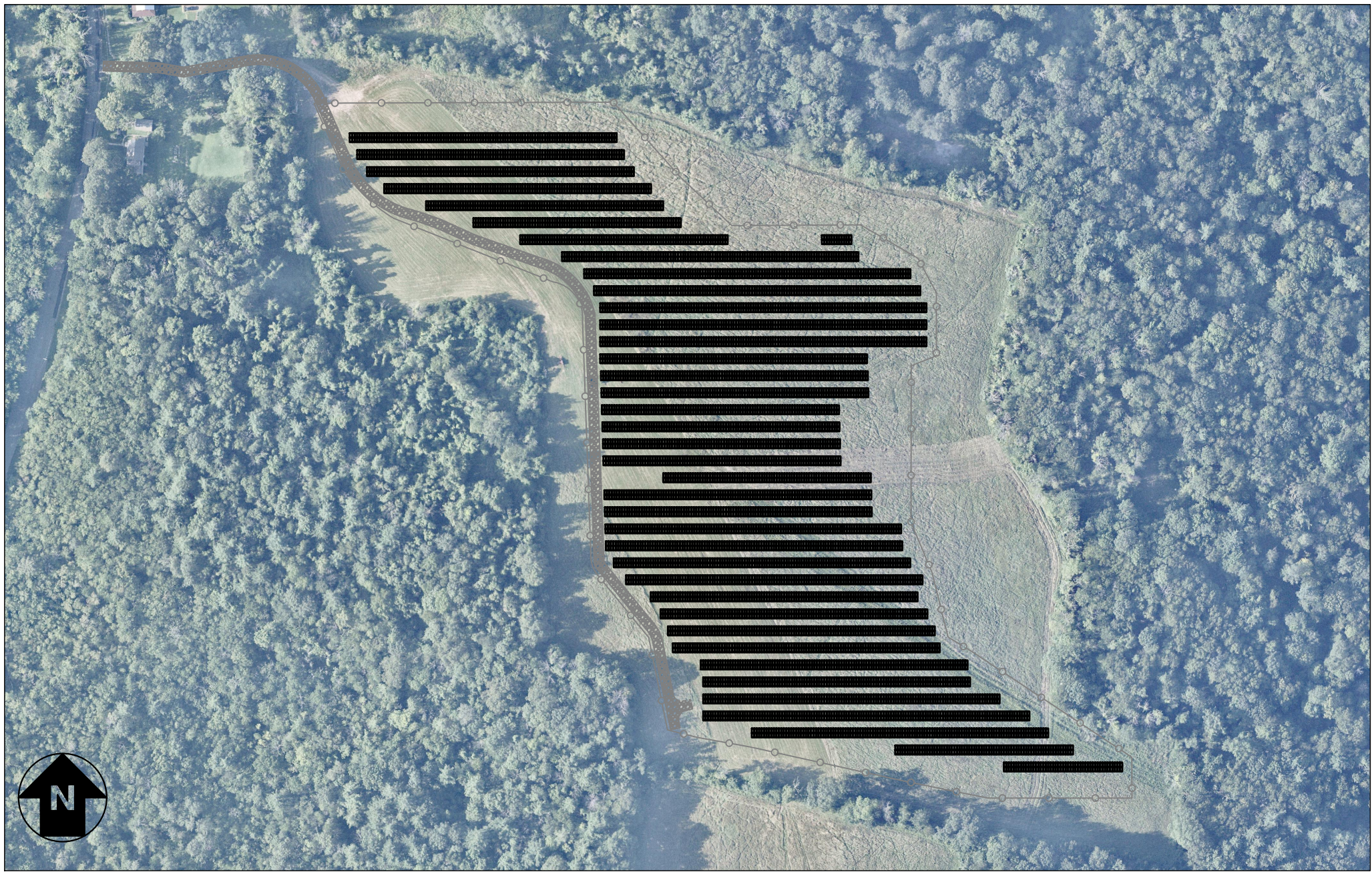


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RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
PLOT DATE: 2/8/2023 6:34 PM

SOLAR GROUND MOUNT SYSTEM AT
WINCHESTER
41.939445, -73.069261
SPENCER HILL ROAD, WINCHESTER, CT 06098



LOCATION MAP
SCALE: 1" = 1000'-0"



SYSTEM PLAN
SCALE: 1" = 200'

TOTAL SYSTEM SUMMARY:

TOTAL DC SYSTEM SIZE: 4,445.280 kWDC
TOTAL AC SYSTEM SIZE: 3,740.000 kWAC

MODULE MANUFACTURER: LONGI SOLAR
(QTY) MODULE TYPE 1: (8,232) LR5-72HBD-540M 540W

MODULE TILT: 20°
MODULE AZIMUTH: 0°

INVERTER MANUFACTURER: YASKAWA SOLECTRIA
(QTY) INVERTER TYPE 1: (29) XGI 1500-125/125-UL
(QTY) INVERTER TYPE 2: (1) XGI 1500-125/125-UL (115KW DERATE)

SUBSYSTEM SUMMARIES:

SYSTEM A
TOTAL DC SIZE: 2,371.680 kWDC
AC SYSTEM SIZE: 1,990.000 kWAC
MODULE QUANTITY: 4,392

SYSTEM B
TOTAL DC SIZE: 2,073.600 kWDC
AC SYSTEM SIZE: 1,750.000 kWAC
MODULE QUANTITY: 3,840

SCOPE OF WORK SUMMARY

- GROUND MOUNT PV ARRAY:
- INSTALL SOLAR MODULES AND RACKING SYSTEM ON GROUND LEVEL.
 - INSTALL INVERTERS AND ELECTRICAL DISTRIBUTION EQUIPMENT.
 - INTERCONNECT AT NEW UTILITY SERVICE

DEVELOPER:



127 WASHINGTON AVENUE
WEST BUILDING, GARDEN LEVEL
NORTH HAVEN, CT 06473

ENGINEERED BY:



111 RIVER STREET, SUITE 1110
HOBOKEN, NEW JERSEY, 07030

DRAWING INDEX

GENERAL		CONCEPTUAL DESIGN (REV 1)	CONCEPTUAL DESIGN (REV 2)	01/27/2023	02/01/2023	02/08/2023
G001	TITLE SHEET	●	●	●		
G200	ARRAY PLAN					
G300	FIRE ACCESS PLAN					
ELECTRICAL						
E001	ELECTRICAL NOTES & SYMBOLS LIST					
E100	ELECTRICAL PLAN	●	●	●		
E110	ELECTRICAL AREA PLAN & INVERTER AREA					
E200	DC ELECTRICAL PLAN					
E300	ONE LINE DIAGRAM - SYSTEM A	●	●	○		
E301	ONE LINE DIAGRAM - SYSTEM B	●	●	○		
E302	RELAY AND INVERTER SETTINGS	●	○	○		
E310	SCHEDULES & CALCULATIONS					
E410	GROUNDING DETAILS					
E420	ELECTRICAL DETAILS					
E500	LABELS & SIGNAGE					
E600	EQUIPMENT DATA SHEETS					
STRUCTURAL						
S100	ROOF STAGING PLAN					
S200	STRUCTURAL PLANS AND NOTES					
S400	STRUCTURAL DETAILS					

LEGEND:	
UPDATED DRAWING ISSUED	●
UNCHANGED, PREVIOUSLY ISSUED DRAWING STILL CURRENT	○
DRAWING REMOVED FROM SET	×

DRAWING TITLE
TITLE SHEET

DRAWING #
G001

PROJECT

SOLAR GROUND MOUNT SYSTEM AT
WINCHESTER
41.939445, -73.069261
WINCHESTER, CT 06098

DC SYSTEM SIZE:
4,445.280 kWDC
AC SYSTEM SIZE:
3,740.000 kWAC
MODULE TYPE:
LR5-72HBD-540M 540W
MODULE QUANTITY:
8232
ORIENTATION:
20° TILT, 0° AZIMUTH

DEVELOPER

Greenskies
a Clean Focus company

127 WASHINGTON AVENUE
NORTH HAVEN, CT 06473
WWW.GREENSKIES.COM

ENGINTEERING
RICHARD A. WINN
CT LICENSE No. 002962

PAGE SIZE
36" x 24"

PROJECT #
05705

REVISION DESCRIPTION

DATE

02/08/2023
CONCEPTUAL DESIGN (REV 2)

02/01/2023
CONCEPTUAL DESIGN (REV 1)

01/27/2023
CONCEPTUAL DESIGN

PM

ENG

CHK

AD

RI

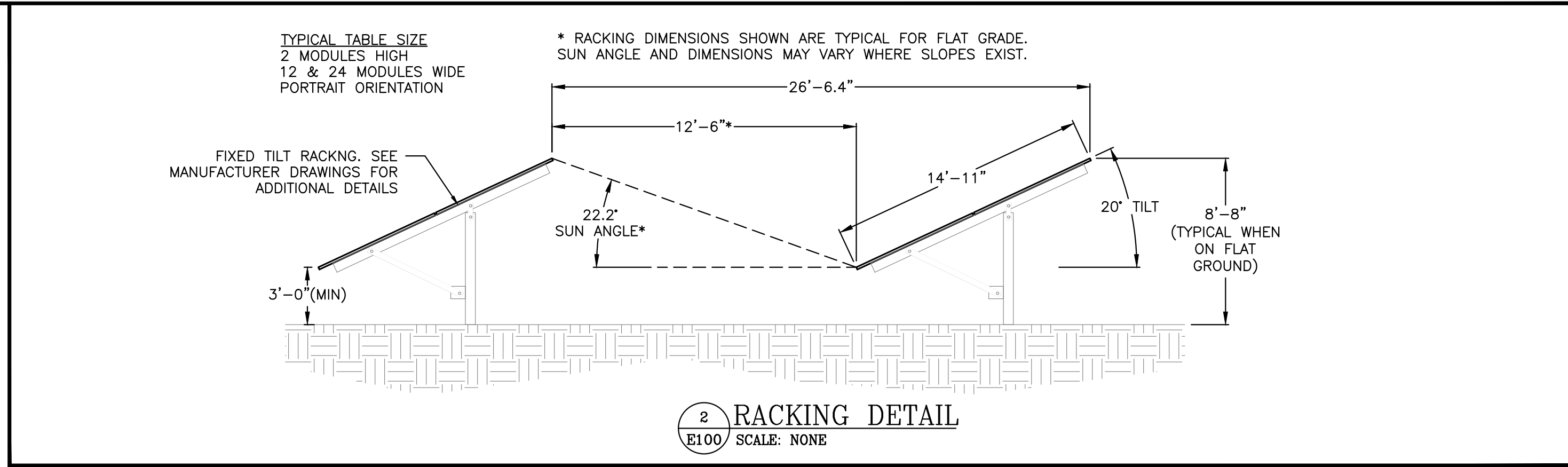
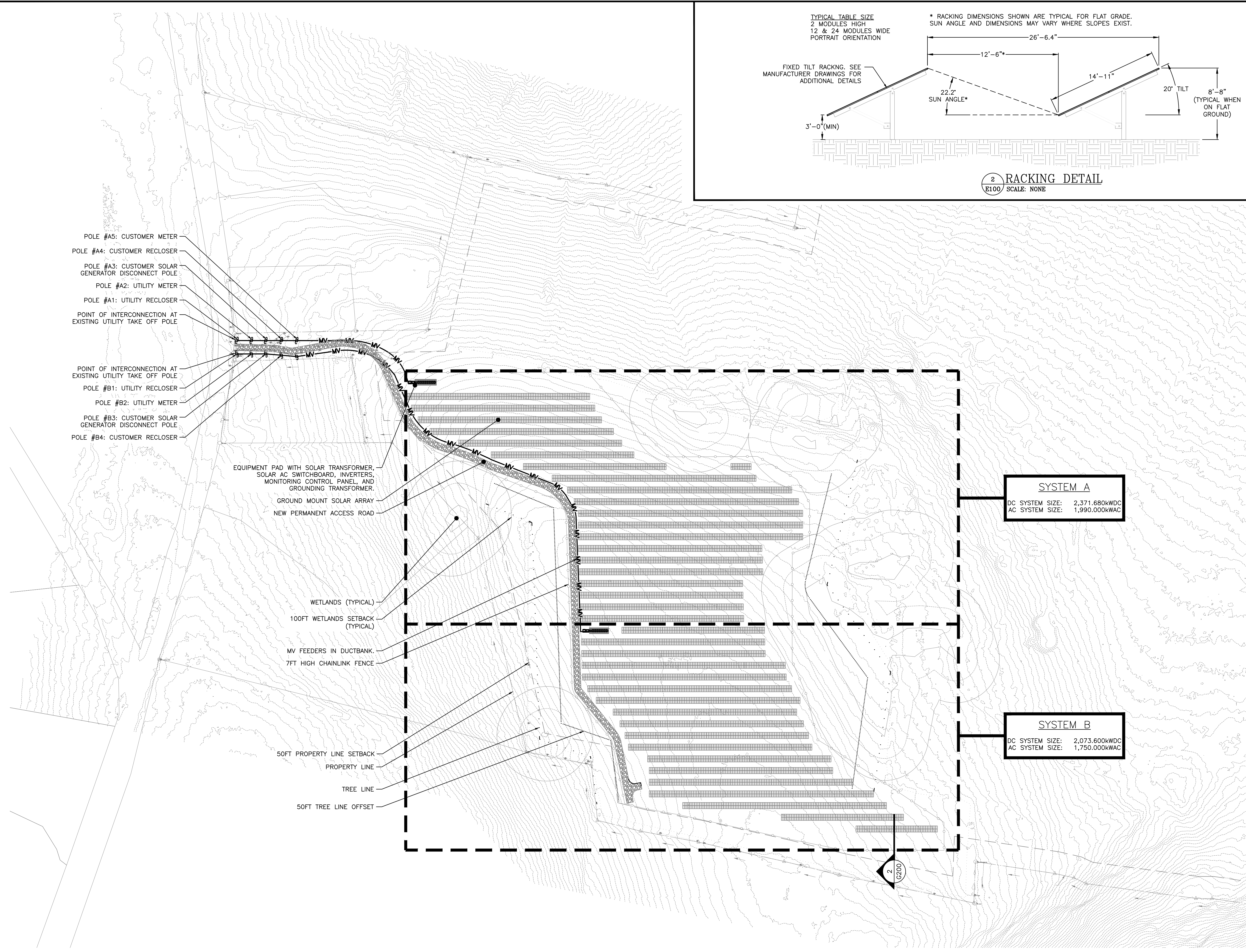
AD

RI

AD

RI

PLOT DATE: 2/9/2023 6:34 PM
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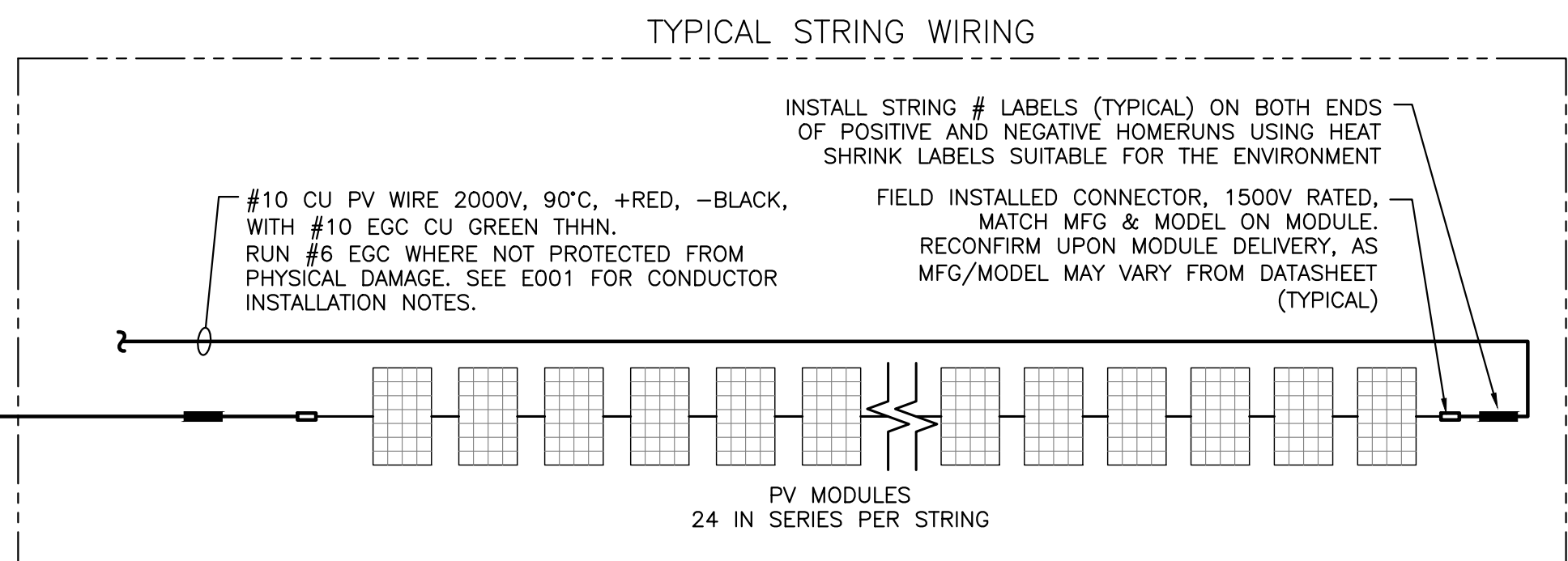
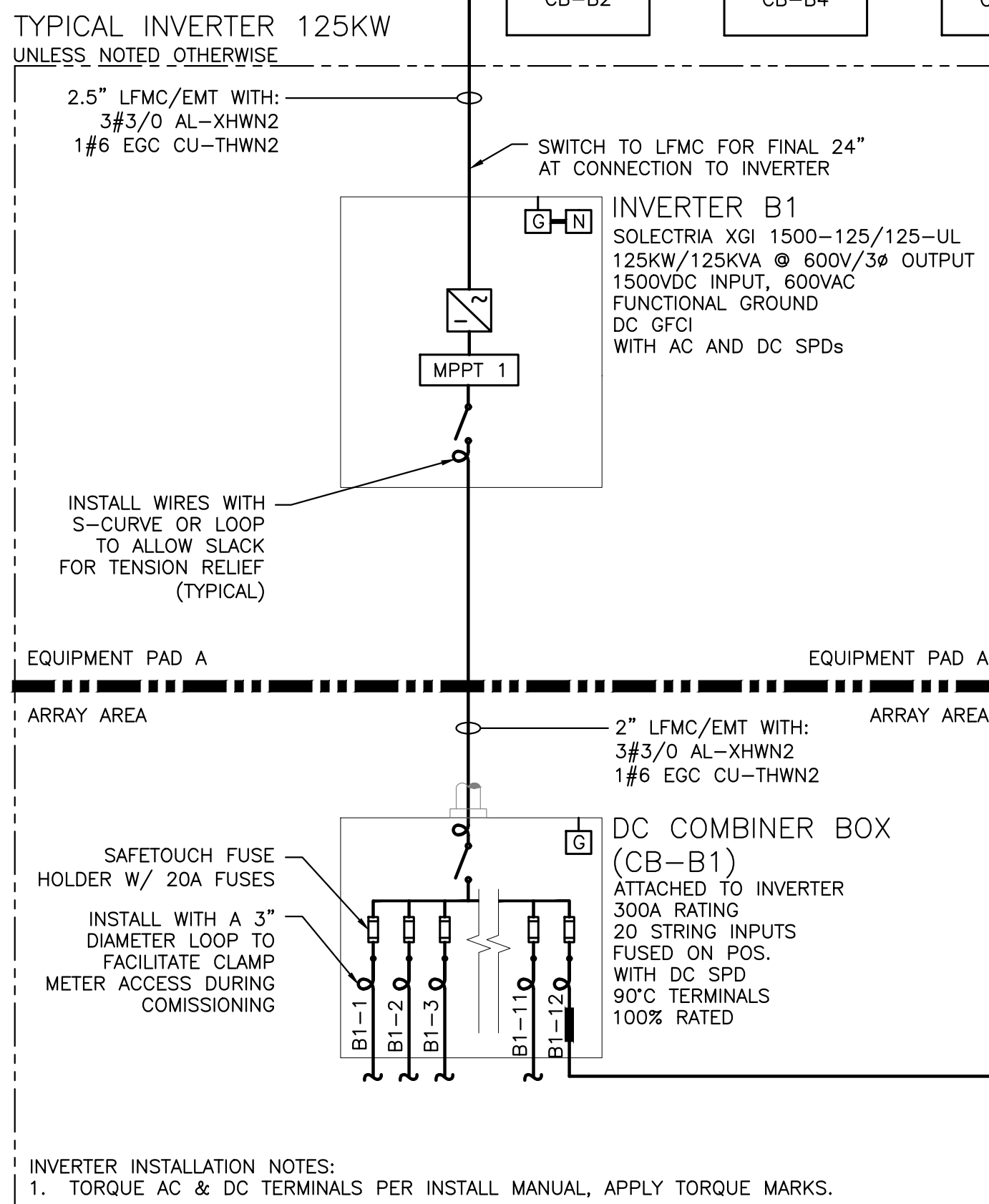
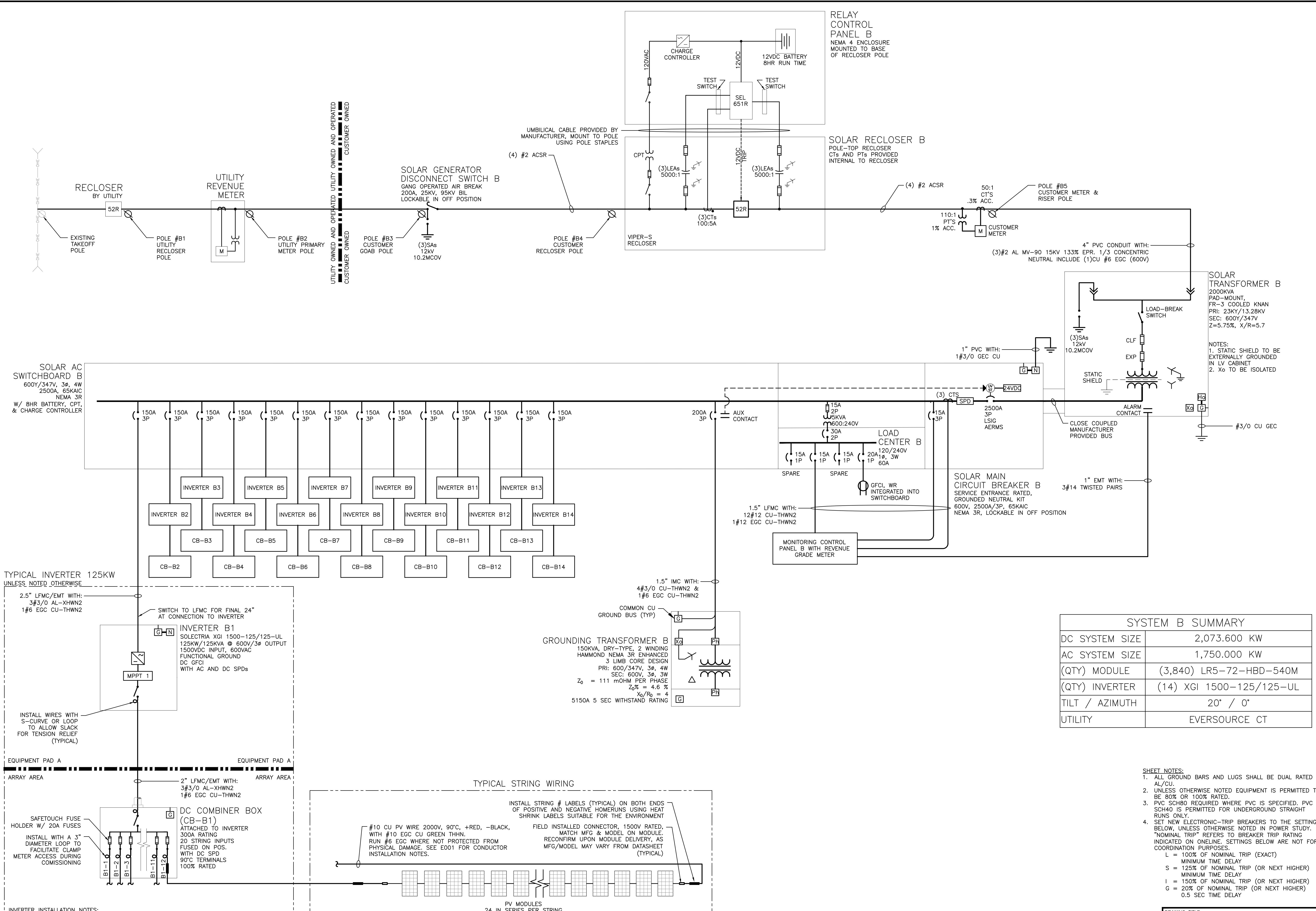


PROJECT SOLAR GROUND MOUNT SYSTEM AT WINCHESTER 41.939445, -73.069261 WINCHESTER, CT 06098	DC SYSTEM SIZE: 4,445.280 kWDC AC SYSTEM SIZE: 3,740.000 kWAC MODULE TYPE: LR5-72HBD-540W 540W MODULE QUANTITY: 8232 ORIENTATION: 20° TILT, 0° AZIMUTH	PAGE SIZE 36" x 24" PROJECT # 05705	DEVELOPER Greenskies a Clean Focus company 127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM	 Greenskies a Clean Focus company		REVISION	DESCRIPTION	DATE	DATE	DATE	DATE			
						SK	AD	RI	SK	AD	RI	SK	AD	RI
						02/08/2023	CONCEPTUAL DESIGN (REV 2)	02/01/2023	CONCEPTUAL DESIGN (REV 1)	01/27/2023	CONCEPTUAL DESIGN			

PUREPOWER
ENGINEERING
111 W. MAIN ST., SUITE 200
NORWICH, CT 06250
WWW.PUREPOWER.COM
RICHARD A. MINIS
CT LICENSE No. 0029262

PLOT DATE: 2/9/2023 6:34 PM

RULER IN INCHES:



1 ONE LINE DIAGRAM - SYSTEM B
E301 SCALE: NONE

SYSTEM B SUMMARY	
DC SYSTEM SIZE	2,073.600 KW
AC SYSTEM SIZE	1,750.000 KW
(QTY) MODULE	(3,840) LR5-72-HBD-540M
(QTY) INVERTER	(14) XGI 1500-125/125-UL
TILT / AZIMUTH	20° / 0°
UTILITY	EVERSOURCE CT

- SHEET NOTES:**
- ALL GROUND BARS AND LUGS SHALL BE DUAL RATED AL/CU.
 - UNLESS OTHERWISE NOTED EQUIPMENT IS PERMITTED TO BE 80% OR 100% RATED.
 - PVC SCH80 REQUIRED WHERE PVC IS SPECIFIED. PVC SCH40 IS PERMITTED FOR UNDERGROUND STRAIGHT RUNS ONLY.
 - SET NEW ELECTRONIC-TRIP BREAKERS TO THE SETTINGS BELOW, UNLESS OTHERWISE NOTED IN POWER STUDY. "NOMINAL TRIP" REFERS TO BREAKER TRIP RATING INDICATED ON ONLINE. SETTINGS BELOW ARE NOT FOR COORDINATION PURPOSES.
L = 100% OF NOMINAL TRIP (EXACT) MINIMUM TIME DELAY
S = 125% OF NOMINAL TRIP (OR NEXT HIGHER) MINIMUM TIME DELAY
I = 150% OF NOMINAL TRIP (OR NEXT HIGHER)
G = 20% OF NOMINAL TRIP (OR NEXT HIGHER) 0.5 SEC TIME DELAY

DRAWING TITLE
ONE LINE DIAGRAM
SYSTEM B

PROJECT SOLAR GROUND MOUNT SYSTEM AT WINCHESTER 41.939445, -73.069261 WINCHESTER, CT 06098	DEVELOPER Greenskies a Clean Focus company	ENGINTECH 127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM	REVISION DESCRIPTION DATE 02/08/2023 CONCEPTUAL DESIGN (REV 2) 02/01/2023 CONCEPTUAL DESIGN (REV 1) 01/27/2023 CONCEPTUAL DESIGN	PW ENG CHK	SK	AD	RI
					SK	AD	RI
					SK	AD	RI
					SK	AD	RI

PLOT DATE: 2/9/2023 5:04 PM

RULER IN INCHES:

SEL 651R RELAY										
SETTINGS ARE PRELIMINARY PENDING UTILITY APPROVAL AND NOT INTENDED FOR CONSTRUCTION										
Solar System Base AC Size = 4445KVA			111.58A BASE PRIMARY USED FOR 50/51 ELEMENTS			*Total Clear Time = 3 Cycle Breaker Plus Delay (Time Dial or DEF Time)				
5.58A BASE SECONDARY 50/51P,G,N,Q			5.58A BASE SECONDARY 50/51N			13279.06V BASE PRIMARY USED FOR 27/59 ELEMENTS				
P,G,N,Q CT RATIO FACTOR = 20			N CT RATIO FACTOR = 20			2.66V BASE SECONDARY USED FOR 27/59 ELEMENTS				
P CT = 100:5 180.5 C50 RF = 2 @ 30C			N CT = 100:5 180.5 C50 RF = 1 @ 30C			LEA RATIO FACTOR = 5000				
ANSI ELEMENT #	Unit	Pickup (Secondary)	Real (Primary)	Level	Def. Time Delay (s)	Time Dial	Total Clear Time (s)*	Total Clear Time (cyc)*	Curve	Description
27-1	L-N Volt	2.34	11685.57	0.88	1.95	-	2.00	120.00	-	Slow UV
27-2	L-N Volt	1.33	6639.53	0.50	1.05	-	1.10	66.00	-	Fast UV
59-1	L-N Volt	2.92	14606.96	1.10	1.95	-	2.00	120.00	-	Slow OV
59-2	L-N Volt	3.19	15934.87	1.20	0.11	-	0.16	9.60	-	Fast OV
79-UV	L-N Volt	2.52	12615.10	0.95	299.95	-	300.00	18000.00	-	Min Permissive Close Voltage
79-OV	L-N Volt	2.79	13943.01	1.05	299.95	-	300.00	18000.00	-	Max Permissive Close Voltage
81U-1	Hz	58.50	58.50	0.98	299.95	-	300.00	18000.00	-	Slow UF
81U-2	Hz	56.50	56.50	0.94	0.11	-	0.16	9.60	-	Fast UF
81O-1	Hz	61.20	61.20	1.02	299.95	-	300.00	18000.00	-	Slow OF
81O-2	Hz	62.00	62.00	1.03	0.11	-	0.16	9.60	-	Fast OF
79-UF	Hz	59.50	59.50	0.99	299.95	-	300.00	18000.00	-	Min Permissive Close Frequency
79-OF	Hz	60.50	60.50	1.01	299.95	-	300.00	18000.00	-	Max Permissive Close Frequency
51P	A	6.97	139.47	1.25	-	2	3.9 @2X	234.02 @2X	U4	Time Phase OC
50P	A	66.95	1338.95	12.00	0.00	-	0.05	3.00	-	Instantaneous P OC
51G	A	1.12	22.32	0.20	-	2	3.9 @2X	234.02 @2X	U4	Timed Ground OC
50G	A	5.58	111.58	1.00	0.00	-	0.05	3.00	-	Instantaneous G OC
51N	A	1.12	22.32	0.20	-	2	3.9 @2X	234.02 @2X	U4	Timed Neutral OC
50N	A	5.58	111.58	1.00	0.00	-	0.05	3.00	-	Instantaneous N OC
46	A	0.00	0.00	0.25	1.95	-	2.00	120.00	-	current unbalance >25% Power Level
32	3PH Watt	22.23	2222500.00	0.50	0.95	-	1.00	60.00	-	directional power
74	-	-	-	-	0.00	-	0.05	3.00	-	Relay Alarm

1
E302 RELAY SETTINGS TABLE
SCALE: NONE

INVERTER UL1741-SA Compliant						
ANSI ELEMENT #	Pickup	Real	Level	Delay (sec)	Curve	Description
27-1	304.84	528V	88.0%	2.00		Slow UV
27-2	173.21	300V	50.0%	1.10		Fast UV
59-1	381.05	660V	110.0%	2.00		Slow OV
59-2	415.69	720V	120.0%	0.16		Fast OV
81U-1	58.50	58.5Hz	97.5%	300.00		Slow UF
81U-2	56.50	56.5Hz	94.2%	0.16		Fast UF
81O-1	61.20	61.2Hz	102.0%	300.00		Slow OF
81O-2	62.00	62Hz	103.3%	0.16		Fast OF
PF Set Point		1.00				Power Factor Control
Var Control		OFF				Reactive Power Control
Ramp Rate		10%/1 sec				dkw / dt
Freq Control		OFF				Speed Control

1
E302 INVERTER SETTINGS TABLE
SCALE: NONE