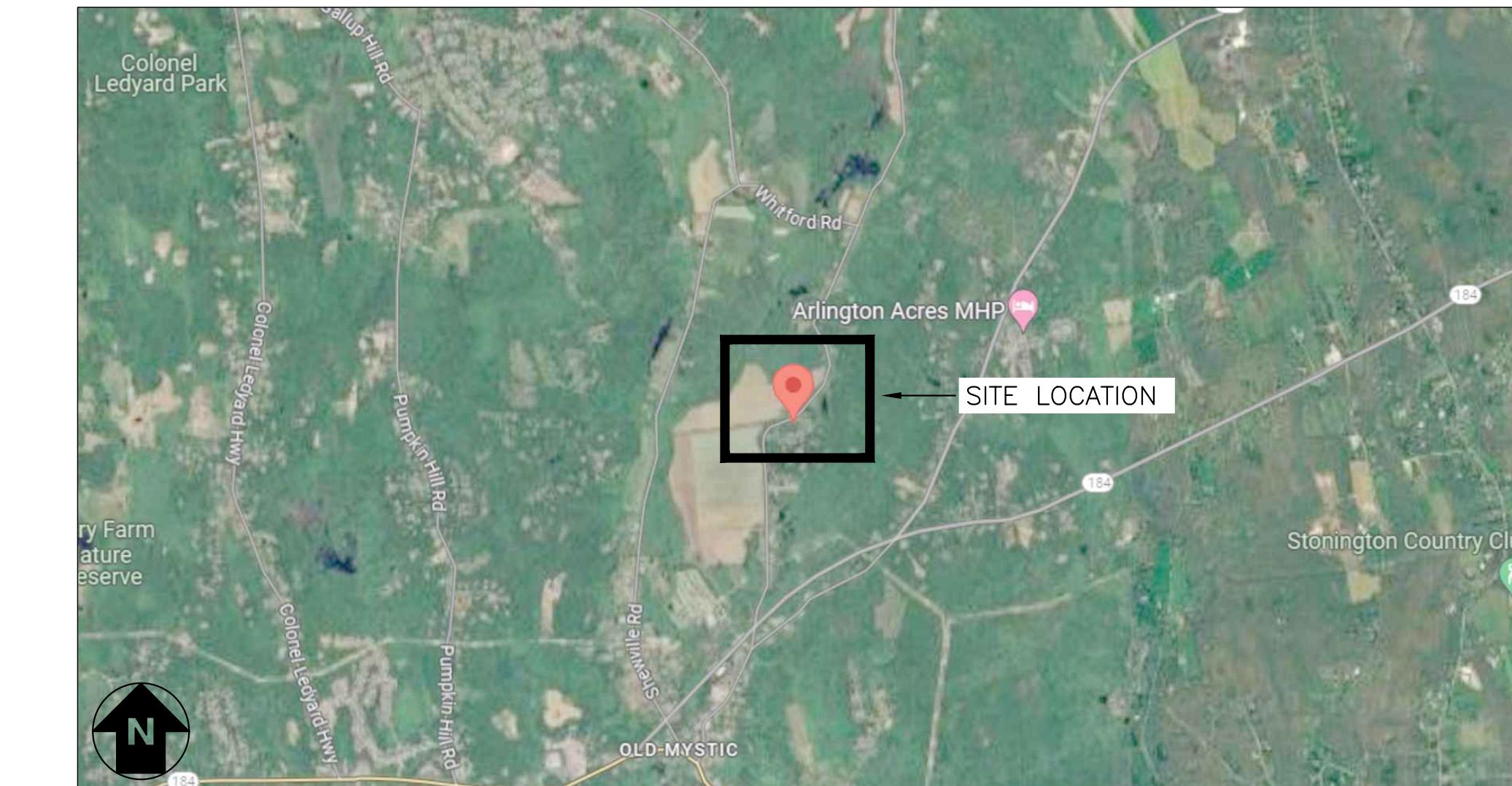


## SOLAR GROUND MOUNT SYSTEM AT

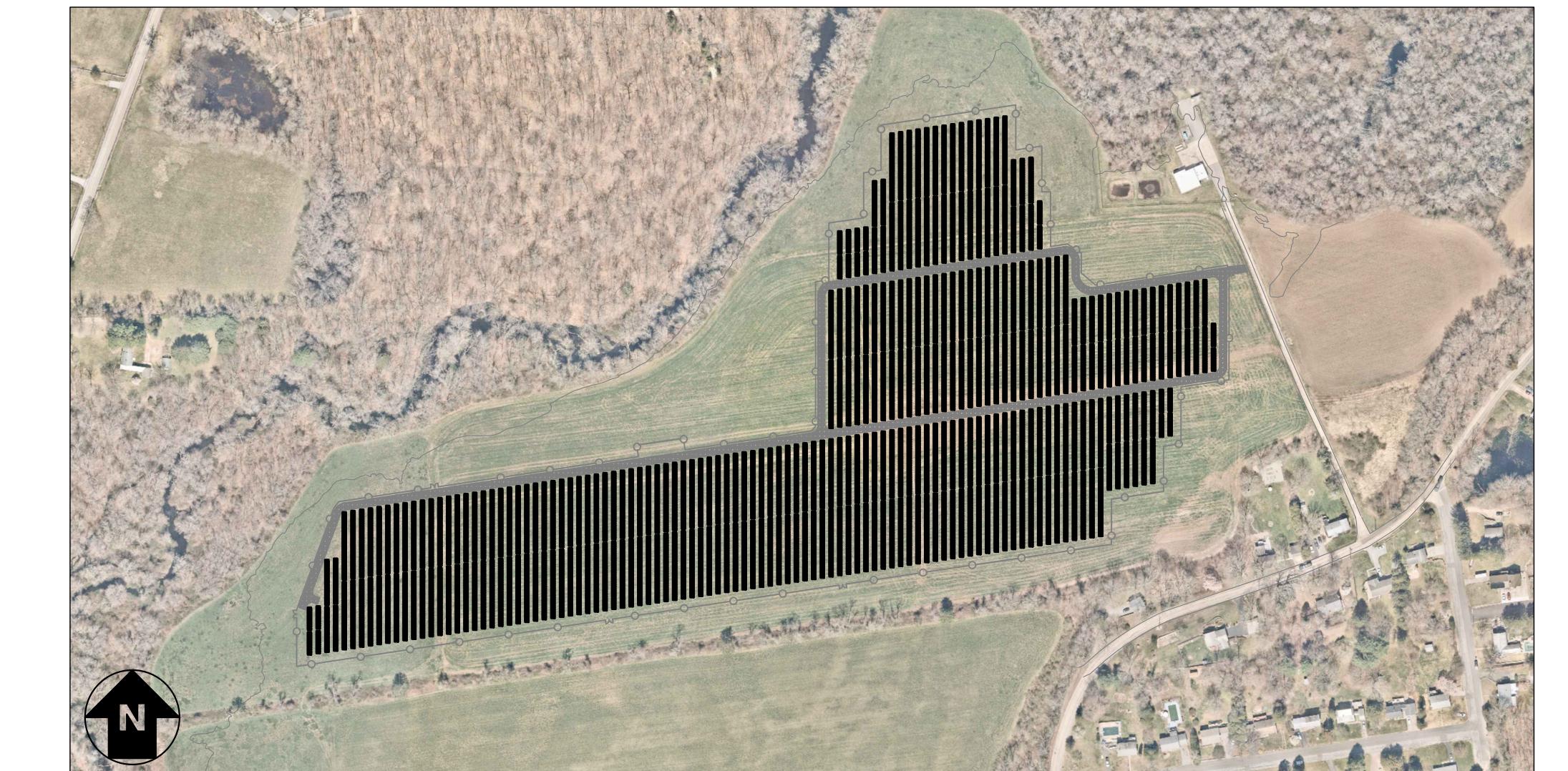
## MYSTIC LANTERN HILL

229 LANTERN HILL ROAD, MYSTIC, CT 06355



LOCATION MAP

SCALE: 1" = 800'-0"



SYSTEM PLAN

SCALE: 1" = 300'-0"

## TOTAL SYSTEM SUMMARY:

TOTAL DC SYSTEM SIZE: 6,430.320 KWDC  
 TOTAL AC SYSTEM SIZE: 4999.000 KWAC

MODULE MANUFACTURER: HELIENE  
 (QTY) MODULE TYPE 1: (11,908) HSPE 144HC M10 SL BIFACIAL 540W

MODULE TILT: SINGLE AXIS TRACKER  
 MODULE AZIMUTH: 0°

INVERTER MANUFACTURER: YASKAWA SOLECTRIA  
 (QTY) INVERTER TYPE 1: (39) XGI 1500-125/125-UL  
 (QTY) INVERTER TYPE 2: (1) XGI 1500-125/125-UL DERATED TO 124KW

## DEVELOPER:



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

## SUBSYSTEM SUMMARIES:

SYSTEM A  
 DC SYSTEM SIZE: 3,341.520 KWDC  
 AC SYSTEM SIZE: 2500.000 KWAC

SYSTEM B  
 DC SYSTEM SIZE: 3,088.800 KWDC  
 AC SYSTEM SIZE: 2499.000 KWAC

## NOTES SPECIFIC TO CONNECTICUT

ADOPTED NEC VERSION: 2020  
 ADOPTED IBC VERSION: 2021  
 ADOPTED IFC VERSION: 2021

## 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

## ENGINEERED BY:



111 RIVER STREET, SUITE 1110  
 HOBOKEN, NEW JERSEY 07030

## DRAWING INDEX

GENERAL	
G001	TITLE SHEET
ELECTRICAL	
E001	ELECTRICAL NOTES & SYMBOLS LIST
E100	OVERALL ELECTRICAL PLAN
E101	EQUIPMENT AREA PLAN - SYSTEM A
E102	EQUIPMENT AREA PLAN - SYSTEM B
E200	DC ELECTRICAL PLAN
E300	ONE LINE DIAGRAM MV & SYSTEM A
E301	ONE LINE DIAGRAM - SYSTEM B
E310	SCHEDULES & CALCULATIONS
E410	GROUNDING DETAILS
E420	ELECTRICAL DETAILS
E440	MESSENDER SYSTEM DETAILS
E500	LABELS & SIGNAGE
E600	EQUIPMENT DATA SHEETS
STRUCTURAL	
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

PUREPOWER	DATE: 08/23/2024	REVISION DESCRIPTION: CONCEPTUAL DESIGN	FM: ENG/CHM
ENGINEERING	12/29/2023	IC DOCS - REV 2	SK: SF, RI
111 RIVER STREET, HOBOKEN, NJ	12/20/2023	IC DOCS - REV 1	SK: SF, RI
WWW.PUREPOWER.COM	08/22/2023	INTERCONNECTION DOCUMENT	SK: CO, RI
CT LICENSE No. 0023262	08/22/2023		



Greenskies  
 127 WASHINGTON AVENUE  
 NORTH HAVEN, CT 06473  
 WWW.GREENSKIES.COM  
 a Clean Focus company

PROJECT:	SOLAR GROUND MOUNT SYSTEM AT MYSTIC LANTERN HILL 229 LANTERN HILL ROAD, MYSTIC, CT 06355	DC SYSTEM SIZE: AC SYSTEM SIZE: MODULE TYPE: MODULE QUANTITY: SAT. 0° AZIMUTH ORIENTATION:	36" x 24" PROJECT #: 07101
DRAWING INDEX			

08/23/2024

CONCEPTUAL DESIGN



APPROXIMATE LIMIT OF WETLANDS (TYPICAL)

100' WETLAND SETBACK (TYPICAL)  
(REFER TO CIVIL PLANS)

VHB DELINEATED FLOOD LINE (TYPICAL)

15' OFFSET FROM FENCE

50' BUFFER FROM ARCHAEOLOGICAL  
SIGNIFICANCE AREA (REFER TO CIVIL PLANS)ARCHAEOLOGICAL SIGNIFICANCE AREA  
(REFER TO CIVIL PLANS)

PROPERTY LINE (TYPICAL)

100' PROPERTY LINE OFFSET (TYPICAL)

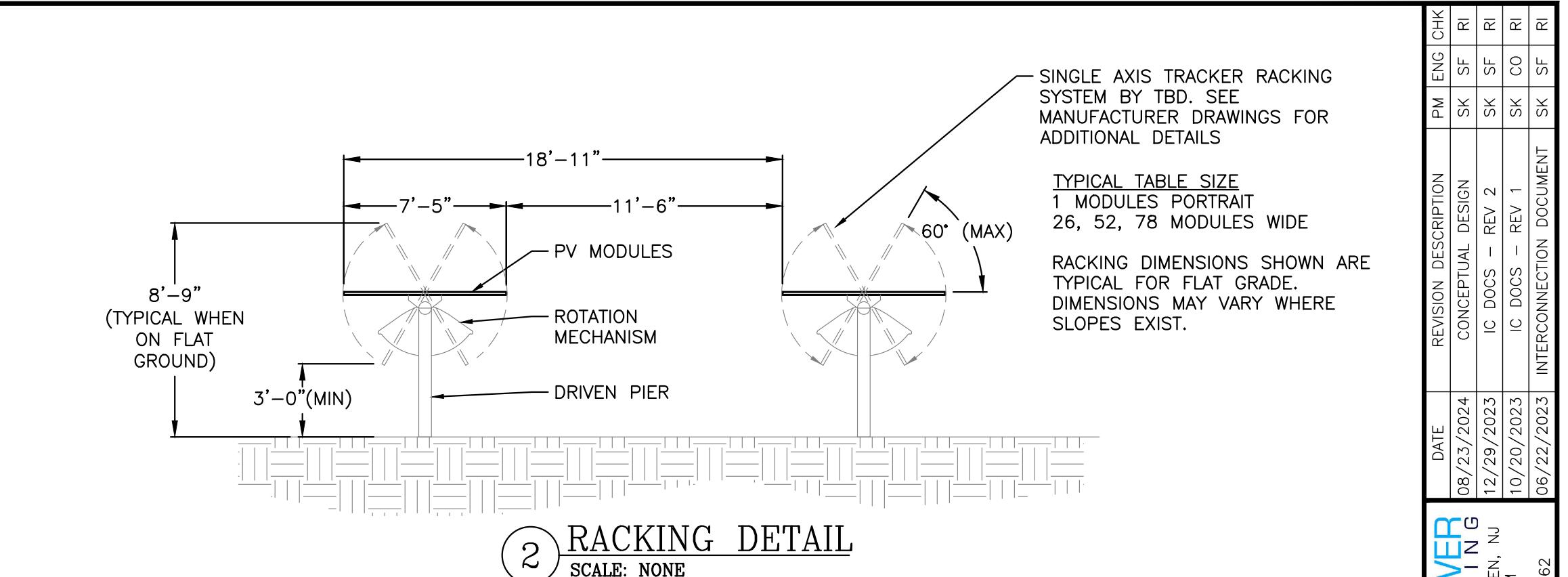
EQUIPMENT PAD B WITH SOLAR TRANSFORMER B,  
SOLAR AC SWITCHBOARD B, MONITORING CONTROL  
PANEL B AND GROUNDING TRANSFORMER B

7' HIGH CHAINLINK FENCE

GROUND MOUNT SOLAR ARRAY

MV FEEDERS IN DUCTBANK

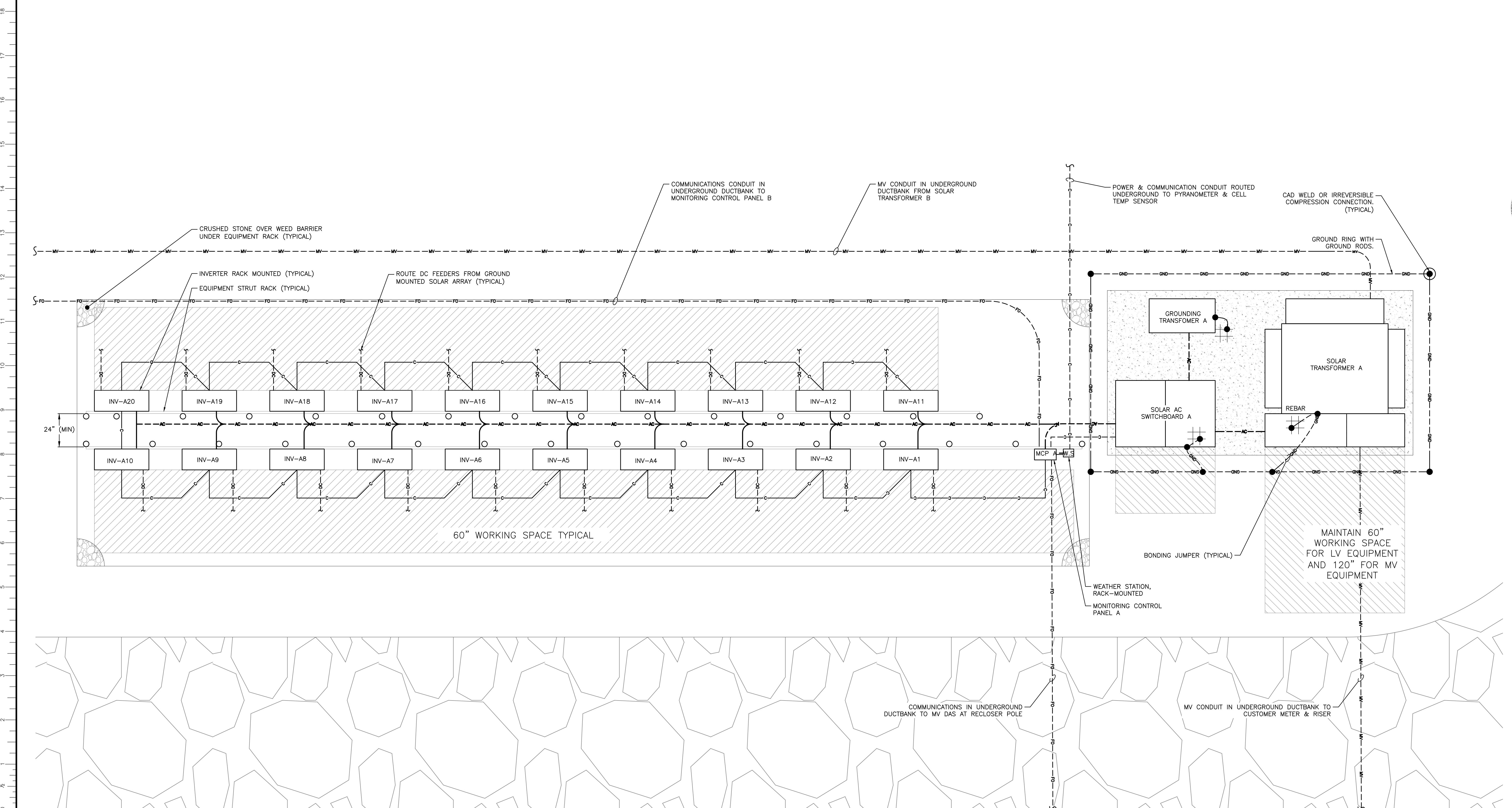
LANTERN HILL ROAD

② RACKING DETAIL  
SCALE: NONESINGLE AXIS TRACKER RACKING  
SYSTEM BY TBD. SEE  
MANUFACTURER DRAWINGS FOR  
ADDITIONAL DETAILS.TYPICAL TABLE SIZE  
1 MODULES PORTRAIT  
26, 52, 78 MODULES WIDE  
RACKING DIMENSIONS SHOWN ARE  
TYPICAL FOR FLAT GRADE.  
DIMENSIONS MAY VARY WHERE  
SLOPES EXIST.

PROJECT	SOLAR GROUND MOUNT SYSTEM AT MYSTIC LANTERN HILL	DC SYSTEM SIZE: 6,430,320 WNDC	AC SYSTEM SIZE: 4,389,300 KWAC	PAGE SIZE: 36" x 24"	DEVELOPER: GREENSKIES	DATE: 08/23/2024	REVISION DESCRIPTION: CONCEPTUAL DESIGN	EM: ENG CHK: SF: RI
229	LANTERN HILL ROAD, MYSTIC, CT 06355	AC MODULE TYPE: HYPE 540W	MODULE QUANTITY: 11,908	PROJECT #: 07101	127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 www.greenskies.com	08/23/2023	IC DOCS - REV 2	SK SF RI
		MODULE ORIENTATION: SAT. 0° AZIMUTH				10/20/2023	IC DOCS - REV 1	SK CO RI
						08/22/2023	INTERCONNECTION DOCUMENT	SK SF RI



a Clean Focus company



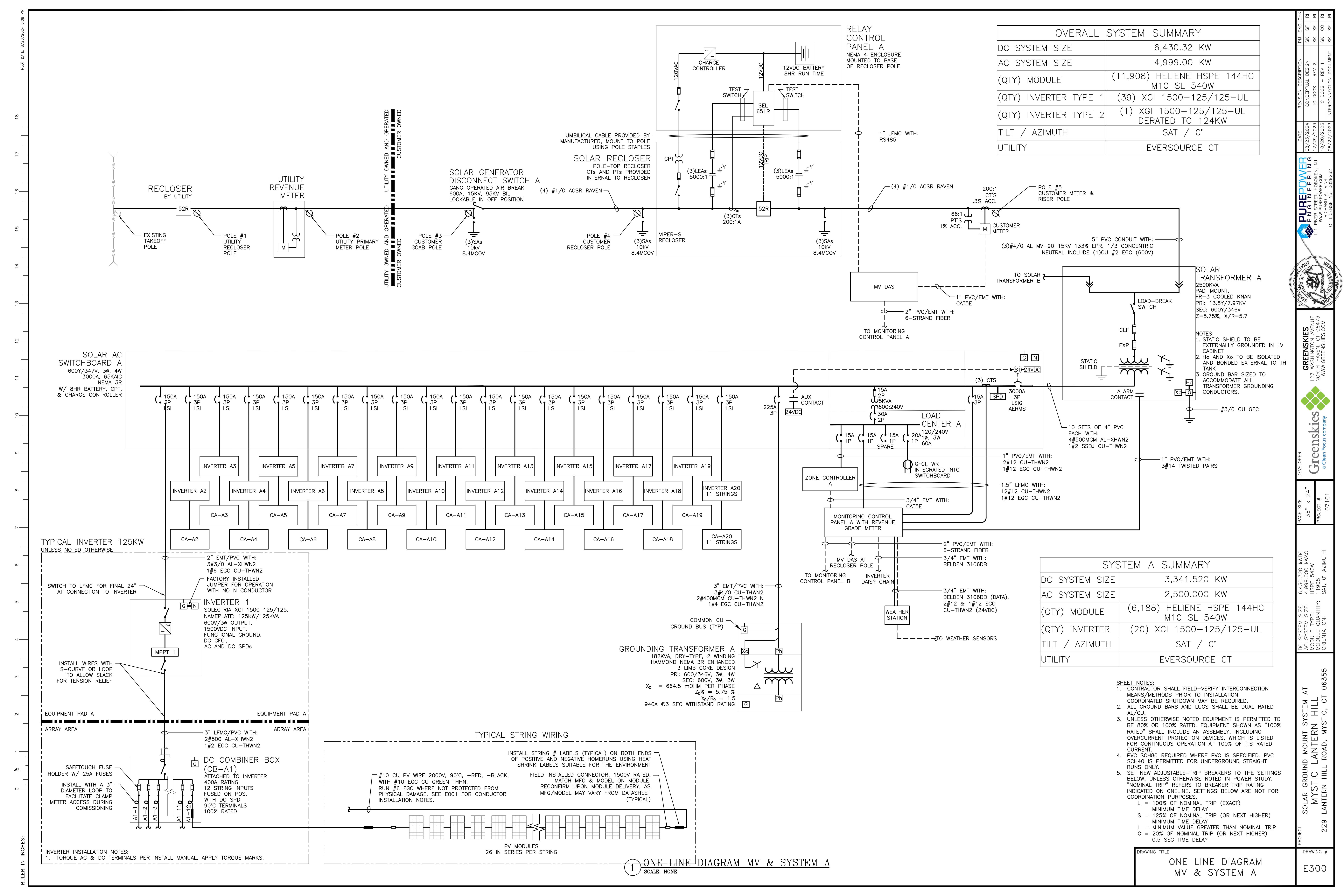
1 EQUIPMENT AREA PLAN - SYSTEM A  
SCALE: 3/8" = 1'-0"

PROJECT	SOLAR GROUND MOUNT SYSTEM AT MYSTIC LANTERN HILL		PAGE SIZE: 36" x 24"	REVISION DESCRIPTION: CONCEPTUAL DESIGN IC DOCS - REV 2
	229 LANTERN HILL ROAD, MYSTIC, CT 06355			
DATE	08/23/2024	12/29/2023	PROJECT #	SK ENG RI
IC DOCS - REV 1	10/20/2023	10/22/2023	IC DOCS - REV 2	SK SF RI
CT LICENSE No. 0023262	06/22/2023	06/22/2023	INTERCONNECTION DOCUMENT	SK CO RI

DRAWING TITLE  
EQUIPMENT AREA PLAN -  
SYSTEM A

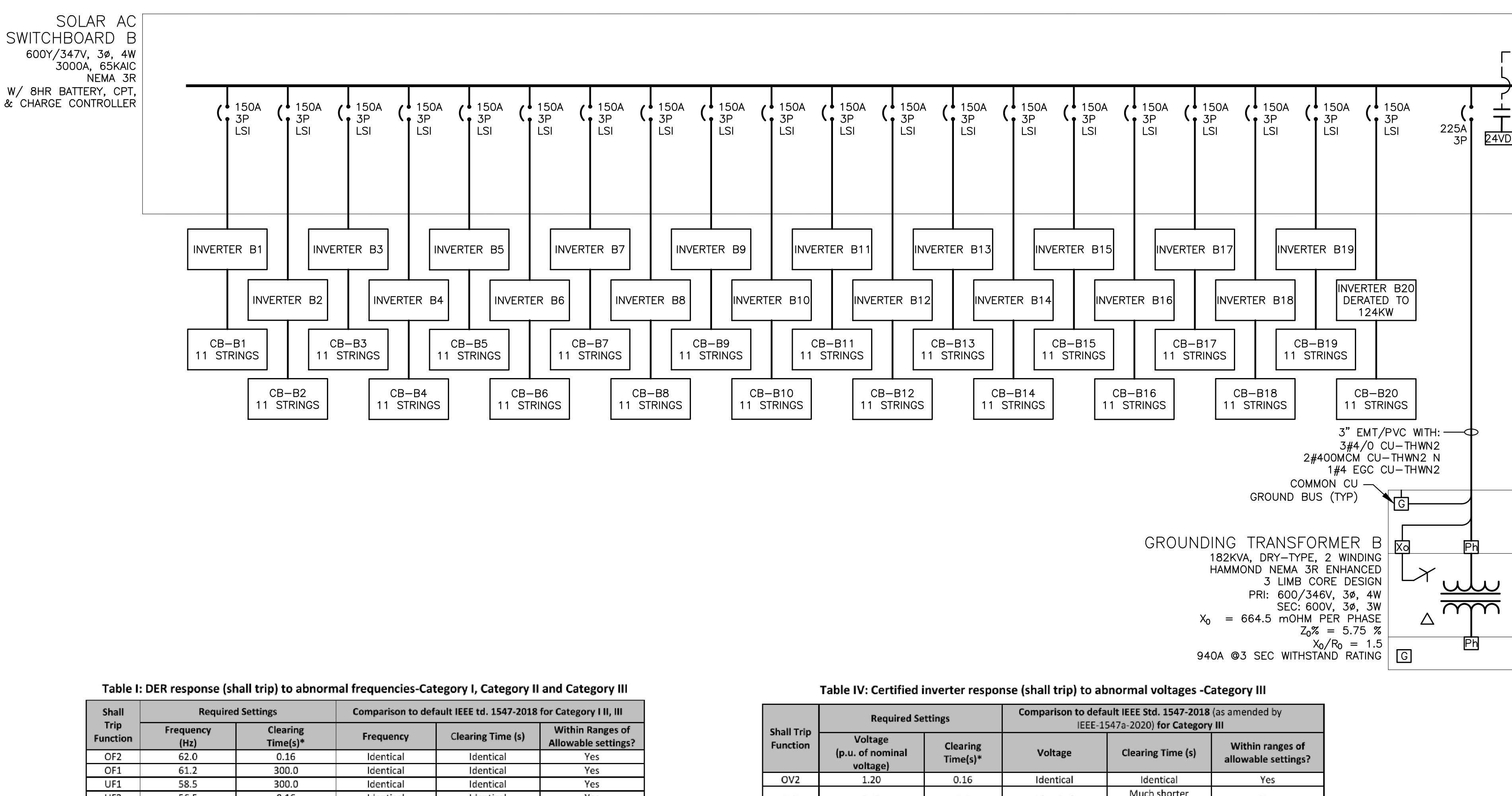
DRAWING #  
E101





SEL 651R RELAY										
SETTINGS ARE PRELIMINARY PENDING UTILITY APPROVAL AND NOT INTENDED FOR CONSTRUCTION										
Solar System Base AC Size = 4999KVA			209.14A BASE PRIMARY USED FOR 50/51 ELEMENTS				*Total Clear Time = 3 Cycle Breaker Plus Delay (Time Dial or DEF Time)			
1.05A BASE SECONDARY 50/51P,G,N,Q							7967.43V BASE PRIMARY USED FOR 27/59 ELEMENTS			
P,G,N,Q CT RATIO FACTOR = 200							1.59V BASE SECONDARY USED FOR 27/59 ELEMENTS			
P CT Minimum Rating = 200:1 1B0.5 C50 RF = 1.5 @ 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	1.40	7011.34	0.8800	2.95	—	3.00	180.00	—	Slow UV
27-2	L-N Volt	0.80	3983.72	0.5000	1.05	—	1.10	66.00	—	Fast UV
59-1	L-N Volt	1.75	8764.18	1.1000	1.95	—	2.00	120.00	—	Slow OV
59-2	L-N Volt	1.91	9560.92	1.2000	0.11	—	0.16	9.60	—	Fast OV
79-UV	L-N Volt	1.51	7569.06	0.9500	299.95	—	300.00	18000.00	—	Min Permissive Close Voltage
79-OV	L-N Volt	1.67	8365.81	1.0500	299.95	—	300.00	18000.00	—	Max Permissive Close Voltage
59N	3VO L-N Volt	0.27	1354.46	0.1700	1.95	—	2.00	120.00	—	Zero Sequence Overvolt
81U-1	Hz	58.50	58.50	0.9750	299.95	—	300.00	18000.00	—	Slow UF
81U-2	Hz	56.50	56.50	0.9417	0.11	—	0.16	9.60	—	Fast UF
810-1	Hz	61.20	61.20	1.0200	299.95	—	300.00	18000.00	—	Slow OF
810-2	Hz	62.00	62.00	1.0333	0.11	—	0.16	9.60	—	Fast OF
79-UF	Hz	59.50	59.50	0.9917	299.95	—	300.00	18000.00	—	Min Permissive Close Frequency
79-OF	Hz	60.50	60.50	1.0083	299.95	—	300.00	18000.00	—	Max Permissive Close Frequency
51P	A	1.31	261.43	1.2500	—	2	3.9 @2X	234.02 @2X	U4	Time Phase OC
50P	A	12.55	2509.72	12.0000	0.05	—	0.05	3.00	—	Instantaneous P OC
51N	A	0.00	41.83	0.2000	—	2	3.9 @2X	234.02 @2X	U4	Timed Neutral OC
50N	A	0.00	209.14	1.0000	0.05	—	0.05	3.00	—	Instantaneous N OC
74	—	—	—	—	0.05	—	0.05	3.00	—	Relay Alarm

2 RELAY SETTINGS TAKE  
SCALE: NONE



**Table I: DER response (shall trip) to abnormal frequencies-Category I, Category II and Category III**

Shall Trip Function	Required Settings		Comparison to default IEEE td. 1547-2018 for Category		
	Frequency (Hz)	Clearing Time(s)*	Frequency	Clearing Time (s)	Within Range Allowable
OF2	62.0	0.16	Identical	Identical	Yes
OF1	61.2	300.0	Identical	Identical	Yes
UF1	58.5	300.0	Identical	Identical	Yes
UF2	56.5	0.16	Identical	Identical	Yes

\* ALL DER device trip times shall account for relay/inverter processing times as prescribed by IEEE 1547-2018. In no instance shall relay and/or inverter settings trip faster than permitted by IEEE 1547-2018.

**Table II: Frequency ride-through requirements for DER of abnormal operating performance-Cate  
Category II, and Category III**

Frequency Range (Hz)	Operating Mode	Comparison to Std. 1547-2014 for Category I
$f > 62.0$	No ride-through requirements apply to this range	Identical
$61.2 < f \leq 61.8$	Mandatory Operation	Identical
$58.8 \leq f \leq 61.2$	Continuous Operation	Identical
$57.0 \leq f < 58.8$	Mandatory Operation	Identical
$f < 57.0$	No ride-through requirements apply to this range	Identical

**Table IV: Certified inverter response (shall trip) to abnormal voltages -Category 1**

Shall Trip Function	Required Settings		Comparison to default IEEE Std. 1547-2018 (as amended by IEEE-1547a-2020) for Category III		
	Voltage (p.u. of nominal voltage)	Clearing Time(s)*	Voltage	Clearing Time (s)	Within ranges of allowable settings?
OV2	1.20	0.16	Identical	Identical	Yes
OV1	1.10	2.0	Identical	Much shorter (default is 13 s)	Yes
UV1	0.88	3.0	Identical	Much shorter (default is 21 s)	Yes
UV2	0.70	3.0	Identical	Shorter	No

\* ALL DER device trip times shall account for relay/inverter processing times as prescribed by IEEE 1547-2018. In no instance may relay and/or inverter settings trip faster than permitted by IEEE 1547-2018.

**Table V: Voltage ride-through requirements for certified inverter abnormal operating performance-Category III**

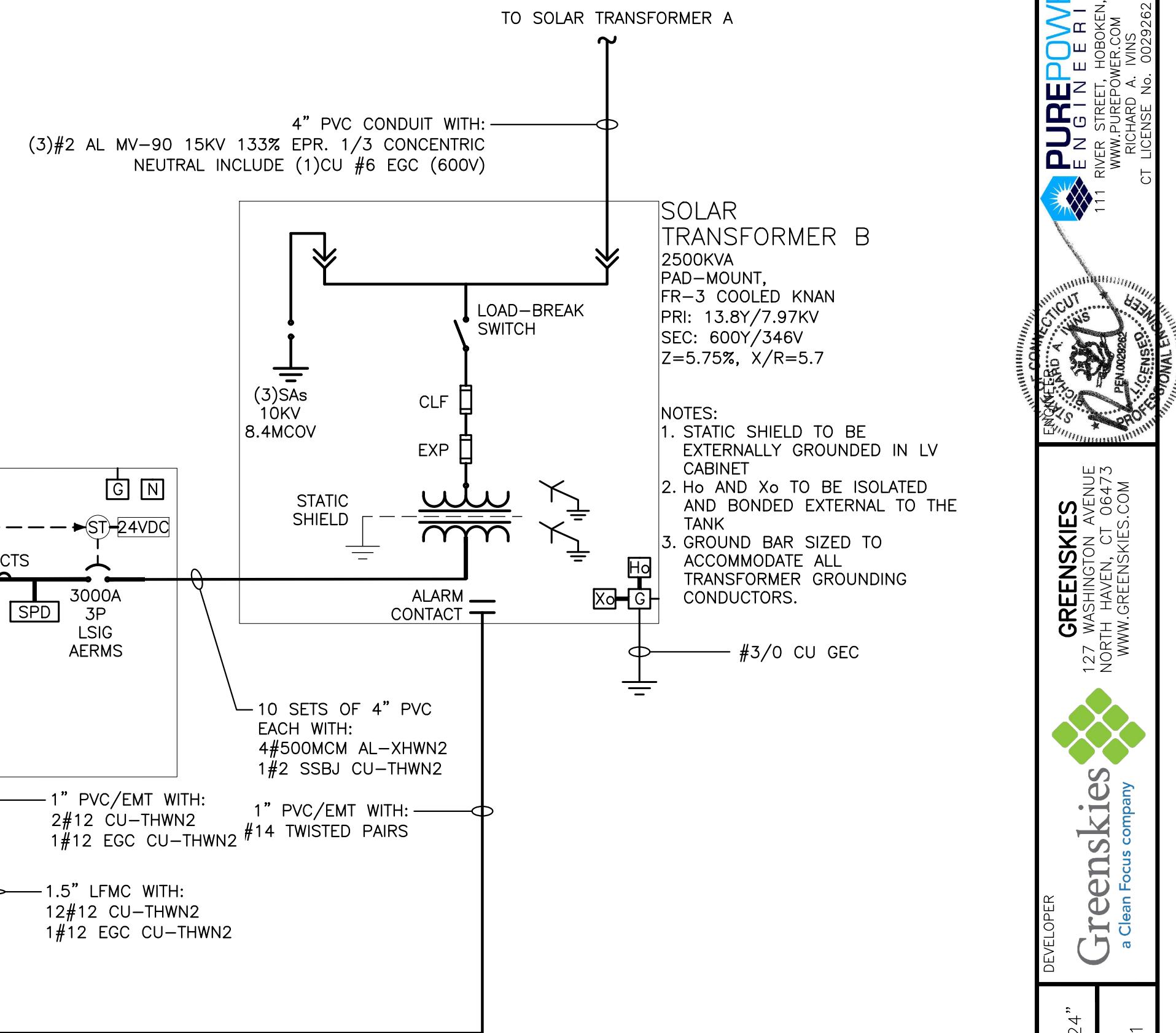
Voltage Range (p.u.)	Operating Mode/ Response	Comparison to IEEE Std. 1547-2018 for Category III
$V > 1.20$	Cease to Energize	Identical
$1.10 < V \leq 1.20$	Momentary Cessation	Identical
$0.88 \leq V \leq 1.10$	Continuous Operation	Identical
$0.5 \leq V < 0.88$	Mandatory Operation	Identical
$V < 0.50$	Momentary Cessation	Identical

# 1 ONE LINE DIAGRAM – SYSTEM B

SCALE: NONE

INVERTER UL1741-SB Compliant						
ANSI ELEMENT #	Pickup	Real	Level	Delay (sec)	Curve	Description
27-1	304.84	528V	88.0%	3.00		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
810-1	61.20	61.2Hz	102.0%	300.00		Slow OF
810-2	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

## 3 INVERTER SETTINGS TABLE



## SYSTEM B SUMMARY

SIZE	3,088.800 KW
SIZE	2,499.000 KW
ULE	(5,720) HELIENE HSPE 144HC M10 SL 540W
TER	(19) XGI 1500-125/125-UL
TER	(1) XGI 1500-125/125-UL DERATED TO 124KW
UTH	SAT / 0°
	EVERSOURCE CT

NOTES:

CONTRACTOR SHALL FIELD-VERIFY INTERCONNECTION MEANS/METHODS PRIOR TO INSTALLATION.

COORDINATED SHUTDOWN MAY BE REQUIRED.

ALL GROUND BARS AND LUGS SHALL BE DUAL RATED AL/CU.

UNLESS OTHERWISE NOTED EQUIPMENT IS PERMITTED TO BE 80% OR 100% RATED. EQUIPMENT SHOWN AS "100% RATED" SHALL INCLUDE AN ASSEMBLY, INCLUDING OVERCURRENT PROTECTION DEVICES, WHICH IS LISTED FOR CONTINUOUS OPERATION AT 100% OF ITS RATED CURRENT.

PVC SCH80 REQUIRED WHERE PVC IS SPECIFIED. PVC SCH40 IS PERMITTED FOR UNDERGROUND STRAIGHT RUNS ONLY.

SET NEW ADJUSTABLE-TRIP BREAKERS TO THE SETTINGS BELOW, UNLESS OTHERWISE NOTED IN POWER STUDY.

"NOMINAL TRIP" REFERS TO BREAKER TRIP RATING INDICATED ON ONELINE. 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 = MINIMUM VALUE GREATER THAN NOMINAL TRIP

G = 20% OF NOMINAL TRIP (OR NEXT HIGHER)  
0.5 SEC TIME DELAY

