

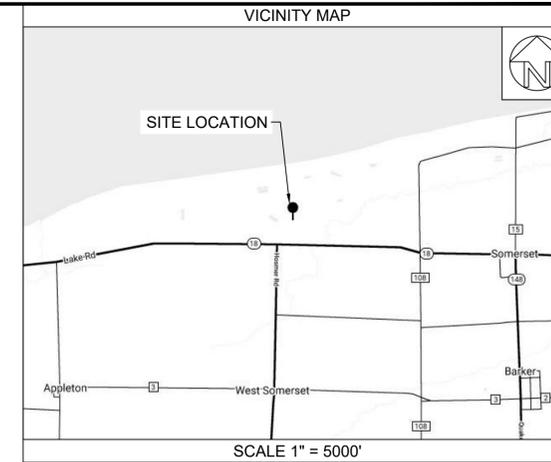


APPENDIX 5-B

Electrical Design Drawings – Medium Voltage Design

SOLAR PV ELECTRICAL PLAN

SOMERSET SOLAR PROJECT SOLAR POWER GENERATION FACILITY



LAKE ROAD SOMERSET, NEW YORK

PROJECT OWNER
AES CLEAN ENERGY DEVELOPMENT, LLC
292 MADISON AVENUE, 15TH FLOOR
NEW YORK, NY 10017

SOLAR PV ELECTRICAL ENGINEER
AVOCA ENGINEERING & ARCHITECTURE, PLLC
CERT# 0018186
242 OLD NEW BRUNSWICK ROAD
PISCATAWAY, NJ 08854
(732) 465-1002
KEVIN LEARY, P.E.
PE No. 091857 EXP. 04/30/2024

HIGH VOLTAGE ELECTRICAL AND CIVIL ENGINEER
TETRA TECH
ENGINEERING CORPORATION, P.C.
CERT# 0018815
3136 SOUTH WINTON RD, SUITE 303
ROCHESTER, NEW YORK 14624
(585) 417-4009

AUTHORITY HAVING JURISDICTION (AHJ)
OFFICE OF RENEWABLE ENERGY SITING (ORES)
C/O: OGS MAILROOM
EMPIRE STATE PLAZA
240 STATE STREET
P-1 SOUTH, J DOCK
ALBANY, N.Y. 12242

DESIGN CRITERIA
1. 2020 BUILDING CODE OF NY STATE (BASED ON 2018 INTERNATIONAL BUILDING CODE)
2. NATIONAL ELECTRICAL CODE (NFPA 70), 2017 EDITION
3. 105 MPH WIND - EXPOSURE C
4. 50 PSF GROUND SNOW LOAD

PROJECT DESCRIPTION
THE PROJECT CONSISTS OF THE FOLLOWING:

- INSTALLATION OF THE SOLAR PV MODULES AND RACKING SYSTEM.
- INSTALLATION OF DC CABLES, CONDUITS AND DISCONNECTS.
- INSTALLATION OF THE DC TO AC INVERTERS, AC COLLECTION SYSTEM AND STEP-UP TRANSFORMERS.
- INSTALLATION OF A PROJECT SUBSTATION AND THE INTERCONNECTION WITH NYSEG (ELECTRIC UTILITY), INCLUDING CONDUIT AND WIRE.
- INSTALLATION OF A PERIMETER FENCE.

GENERAL NOTES

- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, CONDITIONS AND BRING TO THE ENGINEER'S ATTENTION ANY DISCREPANCY OBSERVED IMMEDIATELY.
- THE CONTRACTOR SHALL COORDINATE OBTAINING ALL REQUIRED PERMITS.
- ALL DRAWINGS NOTES, & SPECIFICATIONS ARE COMPLIMENTARY, ANY WORK SHOWN OR REFERRED TO ON ANY ONE DRAWINGS SHALL BE PROVIDED AS THOUGH SHOWN ON ALL RELATED DRAWINGS. IN THE EVENT OF A CONFLICT, THE CONTRACTOR SHALL VERIFY WITH THE ENGINEER.
- THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ENGINEER AND/OR OWNER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY BRACING, SHORING AND PROTECTING ALL WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE, DISTORTIONS AND MISALIGNMENT. SUCH TEMPORARY BRACING AND SHORING SHALL REMAIN IN-PLACE UNTIL PERMANENT CONSTRUCTION HAS BEEN COMPLETED.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS INCLUDING SAFETY.
- FOR DETAILED NOTES SEE PV-E.00.01.

DRAWING SCHEDULE		
DWG.NO.	DRAWING TITLE	REV.
PV-G.00.01	TITLE SHEET	0
PV-E.00.01	ELECTRICAL NOTES 1 OF 3	0
PV-E.00.02	ELECTRICAL NOTES 2 OF 3	0
PV-E.00.03	ELECTRICAL NOTES 3 OF 3	0
PV-E.01.01	OVERALL ELECTRICAL PLAN	0
PV-E.01.02	ENLARGED ELECTRICAL PLAN - AREA 1	0
PV-E.01.03	ENLARGED ELECTRICAL PLAN - AREA 2	0
PV-E.01.04	ENLARGED ELECTRICAL PLAN - AREAS 3 AND 4	0
PV-E.01.05	ENLARGED ELECTRICAL PLAN - AREAS 5 AND 6	0
PV-E.01.06	ENLARGED ELECTRICAL PLAN - AREA 7	0
PV-E.01.07	ENLARGED ELECTRICAL PLAN - AREA 8	0
PV-E.01.08	ENLARGED ELECTRICAL PLAN - AREAS 9 AND 10	0
PV-E.01.09	34.5KV MV SITE PLAN	0
PV-E.02.01	34.5KV AC ONE LINE DIAGRAM	0
PV-E.02.02	AC CABLE SCHEDULE INVERTERS TO SUBSTATION	0
PV-E.03.01	DC ONE LINE DIAGRAM	0
PV-E.04.01	DC COMBINER LAYOUT - REPRESENTATIVE	0
PV-E.04.02	DC CONDUCTOR SCHEDULE - REPRESENTATIVE	0
PV-E.05.01	INVERTER PLAN VIEW - SG3150U-MV	0
PV-E.05.02	FOUNDATION DETAILS - SG3150U-MV - 1 OF 2	0
PV-E.05.03	FOUNDATION DETAILS - SG3150U-MV - 2 OF 2	0
PV-E.05.04	INVERTER PLAN VIEW - SG3600UD-MV	0
PV-E.05.05	FOUNDATION DETAILS -SG3600UD-MV - 1 OF 2	0
PV-E.05.06	FOUNDATION DETAILS -SG3600UD-MV - 1 OF 2	0
PV-E.05.11	CONDUIT MANAGEMENT - STANDARD 1 OF 3	0
PV-E.05.12	CONDUIT MANAGEMENT - STANDARD 2 OF 3	0
PV-E.05.13	CONDUIT MANAGEMENT - STANDARD 3 OF 3	0
PV-E.05.21	CONDUIT MANAGEMENT - BALLASTED 1 OF 2	0
PV-E.05.22	CONDUIT MANAGEMENT - BALLASTED 2 OF 2	0
PV-E.06.01	MV EQUIPMENT DETAILS - STANDARD	0
PV-E.06.11	LV EQUIPMENT DETAILS - BALLASTED	0
PV-E.07.01	INVERTER CONTAINER GROUNDING DETAILS	0
PV-E.07.02	GENERAL GROUNDING DETAILS	0
PV-E.07.03	STRUCTURE GROUNDING - TRACKER	0
PV-E.07.04	STRUCTURE GROUNDING - FIXED TILT	0
PV-E.07.05	MV EQUIPMENT GROUNDING	0
PV-E.07.06	CHAIN LINK FENCE GROUNDING DETAILS	0
PV-E.07.07	AGRICULTURAL FENCE GROUNDING DETAILS	0
PV-E.08.01	MV TRENCH DETAILS	0
PV-E.08.02	CABLING TYPICAL INSTALLATION DETAILS	0
PV-E.08.03	TYPICAL DIRECTIONAL BORE (HDD) DETAILS	0
PV-E.08.04	LV TRENCH DETAILS	0
PV-E.09.01	WIRING DETAILS - TRACKERS	0
PV-E.09.02	WIRING DETAILS - FIXED TILT	0
PV-E.10.01	COMMUNICATIONS SITE PLAN	0
PV-E.12.01	EQUIPMENT SPECIFICATIONS	0

PROJECT SPECIFICATIONS DESIGN SUMMARY	
AC SYSTEM SIZE AT POI (MW)	125.000
AC INVERTER NAMEPLATE (MW)	136.800
POWER FACTOR	0.95 LEADING TO 0.95 LAGGING
DC SYSTEM SIZE (MW)	151.526
DC/AC RATIO AT POI	1.212
MV TRANSFORMER & INVERTER	(16) SUNGROW SG3150U-MV (24) SUNGROW SG3600UD-MV
RACKING SYSTEM	NEXTRACKER SINGLE-AXIS TRACKER (SAT) TERRASMART FIXED TILT (FT) RACKING
STRING SIZE AND VOLTAGE	SAT: 27 MODS PER STRING, 1500 VDC FT: 26 MODS PER STRING, 1500 VDC
PV MODULE	BYD MLTK-36 540
PV MODULE RATING	540 W
QUANTITY OF PV MODULES BY RACKING SYSTEM AND FOUNDATION TYPES	BALLASTED FT: 35,698 DRIVEN FT: 4,524 DRIVEN SAT: 240,381 TOTAL: 280,603
TOTAL STRING COUNT	10,450
RACK CONFIGURATION	SAT, 1 IN PORTRAIT FIXED TILT, 2 IN PORTRAIT
TILT (°)	± 60° (SAT) 20° (FIXED TILT)
AZIMUTH (°)	180°
GCR (%)	41.52% (SAT) 44.70% (FIXED TILT)
PITCH	18.00 FT (SAT) 31.62 FT (FIXED TILT)
CLEAR ROW SPACING	10.53 FT (SAT) 17.49 FT (FIXED TILT)
LATITUDE (°)	43.3525880
LONGITUDE (°)	-78.6014000
UTILITY	NYSEG
CODE CYCLE	NEC 2017

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IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW, ARTICLE 145, FOR ANY PERSON, UNLESS UNDER THE DIRECTION OF A NEW YORK STATE LICENSED PROFESSIONAL ENGINEER, TO ALTER AN ITEM ON THIS DOCUMENT IN ANY WAY.

KEY PLAN:

REVISIONS:

NO.	DATE	DESCRIPTION
0	03/08/2023	ISSUED FOR 94-C PERMIT

PROJECT TITLE:
SOMERSET SOLAR PROJECT

PROJECT LOCATION:
LAKE ROAD
SOMERSET, NY

SHEET TITLE & DESCRIPTION:
TITLE SHEET

ISSUED FOR 94-C PERMIT ONLY
NOT FOR CONSTRUCTION

PROJ NUM: SU20.0012
DES: CB
DWN: CB
CHK: KL
APV: KL
DATE: 08/05/2022
SCALE AT 22" x 34":
AS SHOWN

SHEET NO: PV-G.00.01 REV: 0

1. DEFINITIONS

- 1.1. **DC STRING:** A DESIGNATED QUANTITY OF SOLAR MODULES WIRED IN SERIES (POSITIVE TO NEGATIVE)
- 1.2. **PV SOURCE CIRCUIT:** A SINGLE DC STRING CIRCUIT UP TO A COMMON CONNECTION POINT
- 1.3. **PV OUTPUT CIRCUIT:** A CIRCUIT BETWEEN TWO OR MORE ELECTRICALLY PARALLELED PV SOURCE CIRCUITS AND THE PV INVERTER
- 1.4. **COMBINER BOX:** AN ELECTRICAL BOX WHERE PV SOURCE OR OUTPUT CIRCUITS ARE FUSED AND ELECTRICALLY PARALLELED. TYPICALLY CONTAINS A DC DISCONNECT.

2. CODE COMPLIANCE

- 2.1. ALL INSTALLATION PRACTICES SHALL CONFORM TO THE NEC, NFPA, NFPA70E, NESC, AND OTHER APPLICABLE LOCAL CODES AND STANDARDS. ANY WORK THAT DOES NOT COMPLY SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- 2.2. WHEN CODE AND OWNER SPECIFICATIONS CONFLICT, CONTRACTOR SHALL CONTACT OWNER ENGINEERING FOR DIRECTION.

3. GENERAL PROVISIONS

- 3.1. THIS SOLAR ELECTRIC SYSTEM IS INTENDED TO OPERATE IN PARALLEL WITH POWER RECEIVED FROM THE UTILITY. THIS SYSTEM IS INTENDED TO CONNECT TO THE EXISTING UTILITY POWER SYSTEM AT A SINGLE POCO.
- 3.2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ANY EXISTING UTILITIES AND EQUIPMENT ENCOUNTERED IN THE WORK AREAS.
- 3.3. ALL COMMUNICATION AND/OR APPROVALS WITH OWNER ENGINEERS SHALL BE THROUGH THE RFI PROCESS.
- 3.4. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS ON THE DRAWINGS, AND LAYOUT ALL AREAS OF THE ARRAY AND EQUIPMENT PRIOR TO ANY INSTALLATION WORK IN ORDER TO VERIFY THAT NO DISCREPANCIES, EXISTING CONDITIONS, OR OBSTRUCTIONS EXIST. IF ISSUES ARE DISCOVERED, CONTRACTOR SHALL SUBMIT A RFI TO THE ENGINEER AND INSTALLATION WORK SHALL NOT COMMENCE UNTIL FORMAL DIRECTION IS RECEIVED.
- 3.5. CHANGES FROM DRAWINGS ARE NOT PERMITTED UNLESS APPROVED BY OWNER IN WRITING.
- 3.6. ALL CONTRACTORS SHALL PROVIDE TO OWNER CONCISE MARK-UPS OF CHANGES TO DRAWINGS FOR USE IN RECORD DRAWINGS.
- 3.7. ALL CONTRACTORS SHALL REPORT ANY NON-CONFORMING WORK THAT IS BEING PERFORMED OR NON-CONFORMING MATERIAL THAT IS BEING USED TO THE OWNER PROJECT MANAGER.

4. WORK QUALITY

- 4.1. ALL PV MODULES SHALL BE PHYSICALLY INSPECTED PRIOR TO INSTALLATION ON RACKING. MODULES WITH UNDERSIDE SCRATCHES THAT PENETRATE THE PROTECTIVE LAMINATE LAYER SHALL NOT BE INSTALLED. ALL DAMAGED MODULES SHALL BE REPORTED TO SITE PROJECT MANAGER IMMEDIATELY.
- 4.2. INTERNAL PARTS OF ELECTRICAL EQUIPMENT, INCLUDING BUSBARS, WIRING TERMINALS, INSULATORS, AND OTHER SURFACES, SHALL NOT BE DAMAGED OR CONTAMINATED BY FOREIGN MATERIALS SUCH AS PAINT, PLASTER, CLEANERS, ABRASIVES, OR CORROSIVE RESIDUES. THERE SHALL BE NO DAMAGED PARTS THAT MAY VOID LISTING OR ADVERSELY AFFECT SAFE OPERATION OR MECHANICAL STRENGTH OF THE EQUIPMENT SUCH AS PARTS THAT ARE BROKEN, BENT, CUT, OR DETERIORATING BY CORROSION, CHEMICAL ACTION, OR OVERHEATING.
- 4.3. ALL HOT-DIPPED GALVANIZED FERROUS MATERIAL THAT WILL BE SUBJECT TO ANY DRILLING, ARE PILE DRIVEN, AND/OR COMPROMISE THE INTEGRITY OF THE GALVANIZED PROTECTION, SHALL BE TREATED WITH GALVANIZED ZINC COMPOUND TO PREVENT CORROSION.
- 4.4. IMPACT DRIVERS SHALL NOT BE USED FOR TIGHTENING ANY HARDWARE.
- 4.5. ALL PACKAGING SHALL BE REMOVED FROM ALL EQUIPMENT PRIOR TO COMMISSIONING.
- 4.6. RACKING CONTRACTOR SHALL INSTALL MODULES SQUARE AND PLUMB WITH ADJACENT MODULES, IN AN AESTHETIC WAY, WITHIN THE ADJUSTABILITY OF THE RACKING. RACKING SUBJECT TO INSPECTION AND FIELD REVIEW BY OWNER.
- 4.7. ALL WIRE MANAGEMENT SHALL BE DONE NEATLY AND IN AN ORDERLY AND PROFESSIONAL MANNER.
- 4.8. ALL MODULE, DC STRING, AND PV OUTPUT CIRCUIT CONNECTORS SHALL BE CLEAN AND KEPT DRY UNTIL CONNECTED.
- 4.9. COPPER SHALL NOT COME IN CONTACT WITH ALUMINUM.
- 4.10. ALL UNTERMINATED ENDS OF MEDIUM VOLTAGE CABLE SHALL BE SEALED WITH HEAT SHRINKABLE END CAPS TO PREVENT MOISTURE INGRESS.

5. MATERIALS AND METHODS

5.1. GENERAL

- 5.1.1. ALL MATERIALS SHALL BE NEW, IN PROPER WORKING CONDITION, AND MARKED AND LISTED BY A NATIONAL RECOGNIZED TESTING LABORATORY. THE MATERIALS SHALL BE USED FOR THEIR INTENDED PURPOSES.
- 5.1.2. ALL EQUIPMENT SHALL BE ASSEMBLED, INSTALLED, AND TESTED PER MANUFACTURER'S SPECIFICATIONS AND MANUALS. IF INSTALLATION MANUALS ARE NOT PROVIDED THEY MUST BE REQUESTED, RECEIVED AND REVIEWED PRIOR TO INSTALLATION.
- 5.1.3. ALL CONTRACTOR FURNISHED MATERIALS SHALL BE SUBMITTED TO OWNER AND RECEIVE APPROVAL PRIOR TO USE.
- 5.1.4. ALL EQUIPMENT SHALL BE SECURED FROM UNAUTHORIZED AND UNQUALIFIED PERSONNEL BY PADLOCKS PROVIDED BY THE CONTRACTOR.

5.2. RACEWAYS, CONDUIT BODIES, AND BOXES

- 5.2.1. NEW CONDUIT ROUTING SHOWN IS DIAGRAMMATIC. CONTRACTOR SHALL LAY OUT RUNS TO SUIT FIELD CONDITIONS AND THE COORDINATION REQUIREMENTS OF OTHER TRADES. ALL CHANGES MUST BE PRE-APPROVED WITH OWNER ENGINEERING AND DOCUMENTED IN RECORD DRAWINGS.
- 5.2.2. COMPLETELY INSTALL ALL CONDUIT RUNS AND BACKFILL DUCTBANKS BEFORE PULLING CABLE. PULL A FLEXIBLE MANDREL AND BRUSH THROUGH EACH CONDUIT AFTER INSTALLATION. IF WET, SWAB CONDUIT INTERIOR BEFORE PULLING CABLES. LUBRICATE CONDUCTORS AS NEEDED.
- 5.2.3. CONTRACTOR MAY INCREASE RACEWAY SIZE AS NEEDED WITH APPROVAL FROM OWNER ENGINEERING.
- 5.2.4. ALL CUT RACEWAY THREADS SHALL BE PROTECTED FROM CORROSION WITH COLD GALVANIZING ZINC COMPOUND APPLIED TO THE CUT SURFACE.
- 5.2.5. A WEATHER HEAD SHALL BE USED WHEN CONDUCTORS ENTER CONDUITS WITHOUT AN ENCLOSURE, WHEN NOT ON ROOF.
- 5.2.6. ALL CONDUITS AND RACEWAYS INSIDE BUILDING LOCATIONS WHERE NOT SUBJECT TO SEVERE PHYSICAL DAMAGE SHALL BE EMT.
- 5.2.7. ALL EMT FITTINGS SHALL BE COMPRESSION TYPE, NOT SET SCREW TYPE.
- 5.2.8. ALL RACEWAY FITTINGS IN OUTDOOR LOCATIONS SHALL BE RAIN-TIGHT COMPRESSION TYPE, UON.
- 5.2.9. FLEXIBLE CONDUIT OF ANY KIND WHICH IS NOT SUPPLIED BY EQUIPMENT MANUFACTURER SHALL NOT BE INSTALLED UNLESS APPROVED BY OWNER ENGINEERING.
- 5.2.10. ALL RMC CONDUIT IN CONTACT WITH EARTH SHALL BE PAINTED WITH RUST-OLEUM C9578 EPOXY OR APPROVED EQUAL TO 6" ABOVE FINISHED GRADE.
- 5.2.11. SCHEDULE 40 PVC SHALL BE USED FOR BURIED CONDUITS (NOT UNDER ROADS) OR FOR CONDUITS ENCASED IN CONCRETE UON ON THE DRAWINGS.
- 5.2.12. RACEWAYS IN EXPOSED EXTERIOR LOCATIONS OR UNDER ROADS SHALL BE RMC OR SCHEDULE 80 PVC.
- 5.2.13. PVC INSTALLED IN EXPOSED EXTERIOR LOCATIONS SHALL BE LISTED AND MARKED AS UV RESISTANT.
- 5.2.14. LONG STRAIGHT EXPOSED CONDUIT RUNS, 100 FEET OR MORE, SHALL HAVE EXPANSION FITTINGS INSTALLED PER NEC 300.7(B). EXPANSION FITTINGS SHALL ALSO BE USED WHEN CONDUIT SPANS AN EXPANSION JOINT.
- 5.2.15. ALL CONDUITS TRANSITIONING FROM UNDER TO ABOVEGROUND AND TERMINATING ON A COMBINER BOX OR OTHER RAISED EQUIPMENT, SHALL HAVE AN EXPANSION/DEFLECTION FITTING INSTALLED PER NEC 300.5(J).
- 5.2.16. WHEN TRANSITIONING FROM FREE AIR TO CONDUIT, A FITTING SHALL BE USED TO PREVENT THE ENTRY OF MOISTURE.
- 5.2.17. "L" AND "T" CONDUIT BODIES SHALL NOT BE USED. MOGUL-TYPE CONDUIT BODIES SHALL BE CONSIDERED BY OWNER ENGINEERING UPON REQUEST.
- 5.2.18. HDPE COUPLINGS WITH OTHER TYPES OF CONDUIT SHALL BE LISTED FOR THOSE CONDUIT TYPES.
- 5.2.19. USE UL-514B (OR APPROVED EQUAL) HUB LISTED TO PROVIDE MOISTURE PROTECTION FOR CONDUIT ENTRANCES IN ALL APPLICABLE LOCATIONS AS REQUIRED BY NEC 314.15. CONDUITS SHALL NOT ENTER THROUGH THE TOP OF ANY OUTDOOR EQUIPMENT.
- 5.2.20. ALL VERTICAL MV CONDUIT SWEEPS SHALL HAVE MINIMUM 36 INCH RADIUS. HORIZONTAL MV CONDUIT SWEEPS SHALL HAVE MINIMUM 60 INCH RADIUS.
- 5.2.21. MAINTAIN MINIMUM 6 INCHES OF EDGE TO EDGE SPACING HORIZONTALLY AND VERTICALLY AT CROSSINGS BETWEEN MV CONDUITS OR DUCTBANKS AND LOW-VOLTAGE OR COMMUNICATIONS CONDUITS.

- 5.2.22. MAINTAIN ALL CONDUIT ENTRIES TO EQUIPMENT WITHIN MANUFACTURER'S DESIGNATED CONDUIT ENTRY SPACE. ARRANGE CONDUITS TO PERMIT THE MOST DIRECT ROUTING OF CABLES TO TERMINALS AND TO ALLOW ADEQUATE SLACK FOR DISCONNECTION AND PARKING OF MV ELBOW CONNECTORS.
- 5.2.23. ALL CONDUITS STUBBED OR ENTERING EQUIPMENT TO BE EQUIPPED WITH BUSHINGS OR APPROVED EQUAL TO PREVENT ABRASION PRIOR TO PULLING CABLE.
- 5.2.24. ALL CONDUIT PASSING THROUGH FIRE-RATED ASSEMBLIES SHALL BE SEALED WITH A FIRE-RATED, LISTED FIRE STOPPING PRODUCT.
- 5.2.25. ALL CONDUIT PASSING THROUGH WATERTIGHT ASSEMBLIES SHALL BE SEALED WITH A LISTED WATERPROOFING PRODUCT. WATERTIGHT CONDUIT WASHERS OR NUTS SHALL BE USED ON BOTH SIDES OF CONDUIT ENTRY.
- 5.2.26. ALL SPARE OR EMPTY CONDUITS SHALL BE PROVIDED WITH A NYLON DRAG LINE, SHALL BE CAPPED ON BOTH ENDS, AND LABELED AS SPARE.
- 5.2.27. SEAL ALL CONDUIT OPENINGS, INCLUDING WEATHERHEADS, WITH APPROVED POLYURETHANE KIT FOAM OR APPROVED EQUAL TO PREVENT TRANSMISSION OF HUMID AIR BETWEEN INTERIOR AND EXTERIOR OF EQUIPMENT AND PREVENT PEST INGRESS.

5.3. CONDUCTORS

- 5.3.1. CONDUCTOR INSULATION COLOR SPECIFICATION:

LV AC CONDUCTORS		
	480/277V	208/120V
PHASE A	BROWN	BLACK
PHASE B	ORANGE	RED
PHASE C	YELLOW	BLUE
GROUNDING CONDUCTOR	GRAY OR WHITE	WHITE
EGC	GREEN OR BARE	GREEN OR BARE
GEC	GREEN W/ ORANGE OR BARE	GREEN W/ ORANGE OR BARE
DC CONDUCTORS - NEC 2017		
NEGATIVE FUNCTIONAL GROUNDED OR UNGROUNDED		
POSITIVE (+)	RED WIRE OR BLACK WITH RED TRACER	
NEGATIVE (-)	BLACK WIRE, NO MARKING	
DC GEC/EGC	GREEN OR BARE	

- 5.3.2. EACH PHASE CONDUCTOR SHALL BE TAPED AND LABELED TO PROPERLY IDENTIFY CIRCUITS.
- 5.3.3. ALL CONDUCTORS SHALL BE OF THE EXACT SIZE, TYPE, AND MATERIAL SPECIFIED ON THESE DRAWINGS. ANY DEVIATION REQUIRES APPROVAL FROM OWNER ENGINEERING.
- 5.3.4. ALL PV SOURCE AND OUTPUT CIRCUIT WIRING WILL BE PV-WIRE TYPE, 2000V, 90 DEGREE C, WET RATED AND UV RESISTANT.
- 5.3.5. ALL 600V CLASS AC WIRING SHALL BE TYPE XHHW-2 RATED AT 90 DEGREES C, UON. THIS NOTE WILL BE SUPERSEDED BY ANY EQUIPMENT SPECIFICATIONS REQUIRING LV AC WIRE TO MEET HIGHER VOLTAGE OR INSULATION STANDARDS.
- 5.3.6. ALL COMMUNICATION CABLES SHALL BE SUBMITTED FOR APPROVAL. CABLES SHALL BE PROVIDED WITH APPROPRIATE SHIELDS, DRAIN WIRES, AND COMMON WIRES PER COMMUNICATION EQUIPMENT MANUFACTURER RECOMMENDATIONS. RS-485 CABLES SHALL BE BELDEN 3106A OR APPROVED EQUAL WITH MINIMUM 2 PAIRS AND SHIELD AND DRAIN WIRES.
- 5.3.7. NO CONDUCTOR SHALL BE INSTALLED IN CONTACT WITH SHARP EDGES OF RACKING OR RACEWAYS THAT COULD COMPROMISE CONDUCTOR INSULATION.
- 5.3.8. ALL DC MATERIALS SHALL BE NRTL LISTED FOR THE SYSTEM VOLTAGE SHOWN IN THE DC DESIGN.
- 5.3.9. SUPPORT CONDUCTORS IN VERTICAL CONDUITS IN ACCORDANCE WITH THE REQUIREMENTS OF NEC 300.19.
- 5.3.10. LV CABLE SPLICES SHALL NOT BE USED UNLESS APPROVED BY PROJECT ENGINEER ON A CASE-BY-CASE BASIS. IN SUCH CASES, ALL SPLICES TO BE MADE IN ACCESSIBLE LOCATIONS WITH LISTED SPLICE LUG KITS.
- 5.3.11. MV CABLE SPLICES TO BE COORDINATED WITH ENGINEER. ENGINEER SHALL BE NOTIFIED IF AN UNDERGROUND BREAK IN A MV FEEDER IS REQUIRED BY FIELD CONDITIONS.
- 5.3.12. MV CONDUCTORS SHALL BE PULLED USING DIRECT CONNECTION OF PULLING EYES TO THE CONDUCTORS OF EACH CABLE IN THE CIRCUIT OR BY INDIVIDUAL KELLEMS GRIPS APPLIED TO EACH CABLE OF THE CIRCUIT OVER THE INSULATION WITH THE TAPE SHIELDING REMOVED. USE OF KELLEMS GRIPS OVER THE OUTER JACKET OF THE CONDUCTOR OR OVER THE SHIELDING TAPE IS NOT PERMITTED.
- 5.3.13. MV CABLES SHALL BE OF THE UL TYPE SPECIFIED AND BE RATED FOR VOLTAGE INDICATED IN THE DESIGN. THESE CABLES SHALL HAVE BEEN DESIGNED, MANUFACTURED, AND/OR TESTED ACCORDING TO THE FOLLOWING STANDARDS: UL 1072, ICEA S-94-649 (NEMA WC 74).

- 5.3.14. CABLE PULLING TENSION SHALL NOT EXCEED CABLE MANUFACTURER RECOMMENDATIONS. INSTALL HANDHOLES OR PULL BOXES TO REDUCE PULLING TENSION AS NEEDED.
- 5.3.15. TERMINATE ALL CONTROL WIRING BETWEEN PIECES OF EQUIPMENT ON FIELD WIRING TERMINAL BOARDS. LABEL ALL CONTROL WIRES WITH TERMINAL BOARD AND TERMINAL NUMBER IDENTIFICATION AT BOTH ENDS. COLOR CODING TAPE SHALL BE PREMIUM GRADE PRESSURE SENSITIVE VINYL; HEAT, COLD, MOISTURE, UV, AND FADE RESISTANT. USE COMPRESSION TOOL LISTED FOR USE WITH SELECTED COMPRESSION CONNECTOR PER MANUFACTURER.
- 5.3.16. ALL CONNECTORS AND CORRESPONDING CRIMPING TOOLS SHALL BE LISTED FOR THEIR SPECIFIC APPLICATION.
- 5.3.17. USE OF A "ONE-SHOT" CRIMPER OR "DIE-LESS CRIMPERS" SHALL NOT BE USED.
- 5.3.18. COMPRESSION STYLE LUGS AND TERMINATIONS SHALL BE RATED FOR THE MAXIMUM DC AND AC VOLTAGE OF THE SYSTEM.
- 5.3.19. ALL PV WIRE INSTALLED ON TRACKER SYSTEMS SHALL COMPLY WITH NEC 690.31(E), SPECIFICALLY THE MINIMUM STRANDING REQUIREMENT AS FOLLOWS: #10AWG CU - MINIMUM 19 STRANDS, #8AWG CU - MINIMUM 49 STRANDS, OR AS APPROVED BY AHJ.

5.4. ALUMINUM CONDUCTORS

- 5.4.1. MINIMUM WIRE SIZE FOR CURRENT CARRYING CONDUCTORS WHEN IMPLEMENTING ALUMINUM AS A CONDUCTOR SHALL BE 1/0 AWG STRANDED, COMPACT ELECTRICAL GRADE AA-8000 SERIES ALLOY.
- 5.4.2. ALL TERMINATIONS SHALL BE SPECIFICALLY LISTED FOR USE WITH ALUMINUM CONDUCTORS.
- 5.4.3. OXIDE INHIBITOR MUST BE APPLIED TO EXPOSED CONDUCTOR IMMEDIATELY AFTER STRIPPING AND BRUSHING AND IMMEDIATELY PRIOR TO INSTALLATION OF THE LUG. IN ADDITION, COMPRESSION LUGS MUST BE PRE-FILLED WITH OXIDE INHIBITOR.

5.5. MEDIUM VOLTAGE REQUIREMENTS

- 5.5.1. ELBOWS, BUSHINGS, AND TEST CAPS MUST BE CLEAN AND PROPERLY LUBRICATED PER MANUFACTURER'S INSTRUCTIONS BEFORE FINAL CONNECTION.
- 5.5.2. POWER CABLE, ELBOW, AND MV TERMINATION DRAINS SHALL BE INSTALLED IN A MANNER THAT WILL ALLOW FOR THE REMOVAL, STANDING OFF, AND/OR LANDING OF ELBOWS WITH MINIMUM BENDING RADIUS PER NEC 300.34.
- 5.5.3. TAPE SHIELD ADAPTER KITS ARE TO BE USED WITH POWER CABLE THAT HAS TAPE SHIELDING.
- 5.5.4. MOUNT MV FAULT INDICATORS SUCH THAT INDICATOR WINDOW IS READILY VISIBLE WITHOUT THE NEED TO ENTER THE CABLE COMPARTMENT OR MOVE CONDUCTORS OR OTHER COMPONENTS. LABEL FAULT INDICATORS WITH CIRCUIT ID CONSISTENT WITH SECTION 5.5.7.
- 5.5.5. ALL MV WORK SHALL COMPLY WITH THE LATEST EDITION OF ANSI C2 - NATIONAL ELECTRICAL SAFETY CODE (NEC).
- 5.5.6. SHOP DRAWINGS SHALL BE SUBMITTED TO OWNER FOR REVIEW AND APPROVAL FOR ALL CONTRACTOR-FURNISHED MV MATERIALS INCLUDING BUT NOT LIMITED TO: MV CABLES AND TERMINATIONS, SWITCHGEAR, SECTIONALIZING CABINETS.
- 5.5.7. ARRANGE PHASES IN ALL MV EQUIPMENT AS A-B-C FROM LEFT TO RIGHT OR TOP TO BOTTOM AS VIEWED FROM THE FRONT.
- 5.5.8. MV GROUND MOUNTED TERMINATIONS SHALL BE WITH CONNECTORS THAT ARE INSULATED, SHIELDED, AND IEEE 386 COMPLIANT.
- 5.5.9. LOADBREAK AND DEADBREAK ELBOWS SHALL BE CONFIGURED WITH CAPACITIVE TEST POINTS.
- 5.5.10. POLE MOUNTED TERMINATIONS SHALL BE COLD OR HEAT SHRINK KITS INTENDED FOR OUTDOOR USE AND SHALL COMPLY WITH IEEE 48 AS A CLASS I TERMINATION.

5.6. TERMINATIONS

- 5.6.1. ALL EQUIPMENT SHALL HAVE A TERMINAL TEMPERATURE RATING EQUAL TO OR GREATER THAN THAT OF THE ASSOCIATED CONDUCTORS.
- 5.6.2. STRIPPED CONDUCTORS SHOULD BE CLEAN AND FREE FROM DAMAGE AT ALL TERMINATIONS.
- 5.6.3. NEMA RATED, TIN COATED, LONG BARREL COMPRESSION LUGS SHALL BE USED ON ALL TERMINATIONS. MECHANICAL TERMINATIONS SHALL NOT BE INSTALLED.
- 5.6.4. ALL ELECTRICAL CONNECTIONS SHALL USE CONICAL OR BELLEVILLE LOCK WASHERS.
- 5.6.5. ALL COPPER TERMINATION AC AND DC SHALL HAVE KOPR-SHIELD OR EQUIVALENT APPLIED.



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KEY PLAN:

REVISIONS:

NO.	DATE	DESCRIPTION
0	03/08/2023	ISSUED FOR 94-C PERMIT

PROJECT TITLE:

SOMERSET SOLAR PROJECT

PROJECT LOCATION:

LAKE ROAD
SOMERSET, NY

SHEET TITLE & DESCRIPTION:

ELECTRICAL NOTES
1 OF 3



PROJ NUM:	SU20.0012
DES:	CB
DWN:	CB
CHK:	KL
APV:	KL
DATE:	08/05/2022
SCALE AT 22" x 34":	

AS SHOWN

SHEET NO:	PV-E.00.01	REV:	0
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- 5.6.6. OXIDE INHIBITOR SHALL BE REQUIRED BETWEEN COMPRESSION LUGS AND BUS BARS WHEN ONE OR BOTH ARE UNCOATED AND ALUMINUM.
- 5.6.7. ALL MECHANICAL CONNECTIONS OTHER THAN ELBOW CONNECTORS SHALL BE MADE USING UL-LISTED CIRCUMFERENTIAL COMPRESSION LUGS. LUGS TO MATCH CONDUCTOR SIZE AND TYPE.
- 5.6.8. MODULE LEAD CONNECTORS SHALL BE INSTALLED SUCH THAT THEY ARE EASILY ACCESSIBLE AND PROTECTED FROM EXPOSURE TO DIRECT SUNLIGHT OR RAIN. THEY SHALL NOT BE INSTALLED WITHIN TUBING, CONDUIT OR MODULE GAPS.
- 5.6.9. PV SOURCE CIRCUIT CONNECTORS MUST BE IDENTICAL TO MAKE AND MODEL AS THE MODULE CONNECTORS. THE CONNECTION TO SOURCE CIRCUITS MUST BE PER THE MODULE AND CONNECTOR MANUFACTURER INSTRUCTIONS. CONNECTORS LISTED AS "COMPATIBLE" BUT NOT IDENTICAL SHALL NOT BE ACCEPTED. CONTRACTOR TO VERIFY THAT THE SOURCE CIRCUIT CONDUCTOR DIAMETER IS COMPATIBLE WITH THE CONNECTOR USED.
- 5.6.10. ALL LUG HOLE AND SPACING SIZE SHALL MATCH EQUIPMENT STUD SIZE AND/OR BUSBAR HOLE SIZE AND SPACING.
- 5.6.11. VERIFY UTILITY PHASE SEQUENCE AND COORDINATE INSTALLATION OF FEEDER CONDUCTORS TO PROVIDE CORRECT PHASE SEQUENCE AT ALL AC TERMINALS.
- 5.6.12. STRANDED COMMUNICATION CABLE TERMINATIONS SHALL BE CRIMPED WITH FERRULES OR SPADES LISTED FOR THE WIRE SIZE BEING USED.

5.7. GROUNDING & BONDING

- 5.7.1. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ETC.
- 5.7.2. GROUNDING LUGS AND CONNECTIONS USED OUTDOORS AND EXPOSED TO THE ENVIRONMENT SHALL BE LISTED FOR DIRECT BURIAL (DB). THIS INFORMATION WILL BE CLEARLY NOTED ON PRODUCT SUBMITTALS TO BE APPROVED BY OWNER. NO EXOTHERMIC WELDS SHALL BE ALLOWED ON THE BALLASTED PORTION OF THE PROJECT; ONLY IRREVERSIBLE CRIMPS SHALL BE USED IN THESE LOCATIONS.
- 5.7.3. ALL GROUND SPLICES ABOVE GRADE MUST BE DONE WITH IRREVERSIBLE CRIMP.
- 5.7.4. ALL EGC'S SHALL BE BARE COPPER, UON.
- 5.7.5. AFTER INSTALLATION, ALL BARE CU WIRES SHALL NOT BE IN CONTACT WITH GALVANICALLY REACTIVE METALS, SUCH AS ALUMINUM MODULE FRAMES AND RACKING.
- 5.7.6. GEC'S WILL HAVE AS SHORT A DISTANCE TO THE GROUNDING ELECTRODE AS POSSIBLE AND A MINIMUM NUMBER OF TURNS.
- 5.7.7. ALL BELOW GRADE GEC SPLICES AND CONNECTIONS SHALL BE IRREVERSIBLE, UL LISTED CONNECTION, UON.
- 5.7.8. ALL NON-CURRENT CARRYING METAL PARTS THAT COME IN CONTACT WITH CURRENT-CARRYING CONDUCTORS SHALL BE GROUNDED. IF THE EQUIPMENT GROUNDING POINT OF CONTACT IS PAINTED, THE PAINT/FINISH AT THAT LOCATION SHALL BE PROPERLY REMOVED.
- 5.7.9. RACKING COMPONENTS AND STRUCTURAL SUPPORTS MUST BE ELECTRICALLY BONDED TOGETHER BY A LISTED MEANS.
- 5.7.10. INTER-RACK BONDING JUMPERS SHALL BE FLEXIBLE TIN COATED COPPER BRAIDING (IE: WILEY WEEBS) OR SOLID COPPER WIRE OF SIZE, TYPE, AND TERMINATION METHOD SPECIFIED.
- 5.7.11. MODULES SHALL BE GROUNDED TO RACKING SUPPORTS WITH A METHOD APPROVED AND LISTED BY THE RACKING MANUFACTURER. GROUNDING CLIPS OR WASHERS SHALL BE ARRANGED PER THE MANUFACTURER INSTRUCTIONS SO THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT THE RACKING GROUNDING CONNECTION OF ANY OTHER MODULE.

5.8. EQUIPMENT

- 5.8.1. ALL ELECTRICAL EQUIPMENT LOCATED OUTDOORS (JUNCTION BOXES, COMBINER BOXES, OTHER ENCLOSURES, ETC.) SHALL BE ENVIRONMENTALLY RATED TO AT LEAST NEMA 4 IF MOUNTED VERTICALLY, AND NEMA 4X IF MOUNTED WITH ACCESS DOOR/PANEL MOUNTED OUT OF VERTICAL. PROVIDE NEMA 3R ENCLOSURES WHERE NEMA 4 IS NOT AVAILABLE.
- 5.8.2. ANY METAL SHAVINGS RESULTING FROM SITE WORK SHALL BE CLEANED FROM ENCLOSURE INTERIORS, TOP SURFACES OF ENCLOSURE, ROOF SURFACE, AND ANY ADDITIONAL AREAS WHERE OXIDATION OR CONDUCTIVE METAL SHAVINGS MAY CAUSE RUST, ELECTRICAL SHORT CIRCUIT OR OTHER DAMAGE.
- 5.8.3. ALL NEMA-3R OUTDOOR ENCLOSURES SHALL BE INSTALLED WITH A MANUFACTURER APPROVED MEANS OF DRAINAGE AND VENTILATION.

- 5.8.4. ALL CIRCUIT BREAKERS THAT ARE SUBJECT TO REVERSE POWER FLOW SHALL BE LISTED AS BACKFEED COMPATIBLE.
- 5.8.5. UNDERGROUND PULL BOXES OR HANDHOLES SHALL BE OPEN BOTTOM TYPE WITH 12 INCHES MINIMUM OF CLASS 5 STONE AT THE BASE TO ALLOW FOR DRAINAGE, UON PER THE DRAWINGS. PULL BOXES SHALL BE RATED FOR THE MECHANICAL LOAD APPROPRIATE FOR THE INSTALLED LOCATION.
- 5.8.6. DOORS OR REMOVABLE PANELS PROVIDING ACCESS TO PARTS NORMALLY ENERGIZED SHALL BE PADLOCKABLE CLOSED OR SHALL REQUIRE TOOLS FOR REMOVAL.
- 5.8.7. MV EQUIPMENT INSTALLED OUTSIDE OF FENCES WHERE ACCESSIBLE TO THE PUBLIC SHALL COMPLY WITH NEC REQUIREMENTS FOR TAMPER-PROOF CONSTRUCTION.
- 5.8.8. EQUIPMENT SHALL BE SECURELY ANCHORED TO CONCRETE PADS OR FOUNDATIONS PER MANUFACTURER'S INSTRUCTIONS USING 1/2" STAINLESS STEEL THREADED RODS EMBEDDED IN PAD 5" MINIMUM AND SECURED WITH ADHESIVE ANCHOR HILTI HIT-HY-200-A OR APPROVED EQUAL. ANCHOR BOLTS MAY BE USED ONLY AFTER OWNER ENGINEERING REVIEW AND APPROVAL.
- 5.8.9. ALL OPENINGS INTO EQUIPMENT SHALL BE SEALED WITH GALVANIZED STEEL PLATE OR SCREEN TO PREVENT ENTRY OF INSECTS AND RODENTS.
- 5.8.10. WHEN REQUIRED BY EQUIPMENT MANUFACTURER, CAULK ALONG BOTTOM PERIMETER OF EQUIPMENT MOUNTED ON CONCRETE PADS TO PREVENT WATER ENTRY BETWEEN BOTTOM OF ENCLOSURE AND TOP OF CONCRETE SLAB. USE ONLY EXTERIOR 100% ACRYLIC SILICONE ELASTOMERIC CAULK.
- 5.8.11. PROVIDE 12 INCHES OF CLASS 5 GRAVEL DRAINAGE BEDDING IN THE BOTTOM OF ALL BOTTOM CONDUIT ENTRIES TO OPEN CABLE COMPARTMENTS.
- 5.8.12. ALL CONDUCTORS SHALL BE ROUTED TO MAINTAIN ACCESS TO INDICATORS, VALVES, SAMPLE PORTS, SWITCHES, TAP CHANGES, FUSE WELLS, AND OTHER COMPONENTS AND ACCESSORIES REQUIRING OPERATOR ACCESS.
- 5.8.13. EQUIPMENT SHALL BE INSTALLED SO AS NOT TO SHADE THE PV ARRAY. ANY POTENTIAL SHADING ISSUES SHALL BE REVIEWED BY OWNER ENGINEERING PRIOR TO INSTALLATION.
- 5.8.14. FUSES SHALL NOT BE INSTALLED UNTIL JUST PRIOR TO COMMISSIONING.
- 5.8.15. CABLE TRAY SHALL BE CONSTRUCTED OF ALUMINUM WITH 9" RUNG SPACING. 6" CHANNEL WITH A MINIMUM INSIDE DEPTH OF 5". SOLID COVER AND EXPANSION FITTINGS AS REQUIRED.

5.9. TRANSFORMERS

- 5.9.1. ALL CONDUCTORS SHALL BE ROUTED TO MAINTAIN ACCESS TO INDICATORS, VALVES, SAMPLE PORTS, SWITCHES, TAP CHANGES, FUSE WELLS, AND OTHER COMPONENTS AND ACCESSORIES REQUIRING OPERATOR ACCESS.
- 5.9.2. VERIFY THE FOLLOWING:
 - 5.9.2.1. FACTORY WIRING DIAGRAM IS ACCURATE
 - 5.9.2.2. TRANSFORMER IS LEVEL
 - 5.9.2.3. MEDIUM & LOW VOLTAGE CONDUITS ARE SEPARATED AND IN THEIR OWN COMPARTMENT
 - 5.9.2.4. LOCK OR CONICAL NUTS USED FOR ALL CONNECTIONS
 - 5.9.2.5. HARDWARE IS THE PROPER LENGTH

5.10. HARDWARE

- 5.10.1. ALL HARDWARE IN EXPOSED LOCATIONS SHALL BE STAINLESS STEEL OR HOT-DIPPED GALVANIZED STEEL. ZINC-COATED FASTENERS ARE PREFERRED INSIDE NEMA 3R OR HIGHER ENCLOSURES.
- 5.10.2. ALL HARDWARE USED FOR GROUNDING & BONDING ABOVE GRADE SHALL BE STAINLESS STEEL.
- 5.10.3. ANTI-SEIZE LUBRICANT MUST BE USED ON STAINLESS HARDWARE.
- 5.10.4. ALL ELECTRICAL AND MECHANICAL HARDWARE TO BE TORQUED PER DEVICE LISTING, OR MANUFACTURERS RECOMMENDATIONS USING A CALIBRATED TORQUE WRENCH. CONNECTORS ARE TO BE MARKED WITH PERMANENT MARKING PAINT, AFTER TORQUING.

5.11. WIRE MANAGEMENT

- 5.11.1. ALL WIRE MANAGEMENT METHODS AND MATERIALS SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION.
- 5.11.2. ALL EXPOSED CABLES, SUCH AS MODULE LEADS AND PV CIRCUIT WIRING SHALL BE SECURED WITH MECHANICAL OR OTHER APPROVED SUNLIGHT RESISTANT MEANS. THE USE OF PLASTIC CABLE TIES IS NOT AN APPROVED METHOD TO SUPPORT OR ATTACH WIRE TO A STRUCTURE.

- 5.11.3. PV SOURCE AND OUTPUT CONDUCTOR CABLE CLIPS SHALL BE STAINLESS STEEL (E.G. ACC CLIPS BY WILEY OR EQUIVALENT.)
- 5.11.4. PLASTIC CABLE TIES MAY ONLY BE USED TO BUNDLE PV SOURCE CIRCUIT WIRING AND SHALL BE MADE OF WEATHER-RESISTANT NYLON-12. FOR WIRE SUPPORT, ONLY STAINLESS STEEL CLIPS OR PVC-COATED STAINLESS STEEL CABLE TIES MAY BE USED (HEYCO OR APPROVED EQUAL).
- 5.11.5. PV SOURCE OUTPUT CIRCUIT WIRING SHALL BE SUPPORTED ADEQUATELY IN LENGTHS NOT TO EXCEED 24". MODULE TO MODULE INTERCONNECTIONS SHALL BE SUPPORTED AT A MAXIMUM OF 12" FROM THE J-BOX AND THE MODULE TO MODULE CONNECTION POINT.
- 5.11.6. PROTECT WIRE FROM SHARP EDGES WITH UV RATED SPIRAL WRAP, EDGE-GUARD, OR SPLIT LOOM SUPPORTED BY CABLE TIES.

5.12. CONCRETE PADS AND UNDERGROUND

- 5.12.1. CONCRETE SPECIFICATIONS: SEE CIVIL PLANS.
- 5.12.2. NOT USED.
- 5.12.3. CONDUITS STUBBED UP FROM BELOW GROUND SHALL BE IN THE APPROPRIATE LOCATIONS AND PLUMB.
- 5.12.4. CONDUITS STUBBED UP SHALL IMMEDIATELY BE CAPPED TO PREVENT WATER ENTRY DURING CONSTRUCTION.
- 5.12.5. TOPS OF CONDUIT SHALL BE A MINIMUM OF 4 INCHES ABOVE THE CONCRETE PAD OR GRAVEL BEDDING TO PREVENT INGRESS OF WATER.
- 5.12.6. CONDUITS IN CONCRETE PADS SHALL BE PROPERLY SECURED TO AVOID CONDUIT DISPLACEMENT DURING POUR.
- 5.12.7. DIRECT BURIAL CONDUCTORS SHALL ENTER CONCRETE PADS THROUGH UNDERGROUND CONDUIT SLEEVE EXTENDING AT LEAST 36" OUT FROM EQUIPMENT PAD.
- 5.12.8. BARE CU EQUIPMENT GROUND JUMPER SHALL BE IN CONDUIT AND SHALL EXTEND AT LEAST 6" OUT FROM EQUIPMENT PAD.
- 5.12.9. CONCRETE REBAR: SEE CIVIL PLANS.
- 5.12.10. EXCAVATION & TRENCHING INSPECTIONS SHALL BE DOCUMENTED AND INSPECTED DAILY AND RIGHT AFTER A RAIN EVENT.
- 5.12.11. IN ANY EXCAVATION/TRENCH GREATER THAN 4' IN DEPTH, OSHA-COMPLIANT ACCESS/EGRESS LADDERS SHALL BE PLACED NO MORE THAN EVERY 50'.
- 5.12.12. CONDUITS WITH NEGATIVE SLOPE TOWARD ELECTRICAL EQUIPMENT SHALL HAVE A PULL BOX OR VAULT ADJACENT TO THE ENTRY POINT INTO THE ELECTRICAL EQUIPMENT WITH CRUSHED STONE IN THE BOTTOM FOR DRAINAGE.
- 5.12.13. CABLES OR CONDUIT BURIED BELOW STREAMS OR DRAINAGE TRENCHES SHALL MAINTAIN THEIR NEC REQUIRED DEPTH BELOW THE BOTTOM OF THE STREAM OR TRENCH.
- 5.12.14. PROVIDE 12" OF CLASS 5 GRAVEL DRAINAGE BEDDING UNDER THE TRANSFORMER OPEN CONDUIT AREA.

5.13. RACKING AND MODULES

- 5.13.1. RACKING IS TO BE INSTALLED PER THE STAMPED AND SIGNED RACKING MANUFACTURER'S STRUCTURAL SHEETS AND STRUCTURAL CALCULATIONS.
- 5.13.2. ALL RACKING COMPONENTS ARE TO BE INSPECTED AND ACCEPTED AT TIME OF DELIVERY. ANY DEFECTS SHOULD BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER PRIOR TO INSTALLATION.
- 5.13.3. MODULES SHALL NOT BE STACKED DURING INSTALLATION WITHOUT APPROPRIATE DIVIDERS. EXTRA CARE MUST BE TAKEN TO NOT SCRATCH OR DAMAGE THE MODULE GLASS OR BACKSHEETS. ANY SCRATCHED OR DAMAGED MODULES SHALL BE REPLACED SOLELY AT THE CONTRACTOR'S EXPENSE.
- 5.13.4. NO PERSONNEL SHALL STEP OR STAND ON MODULES AT ANY TIME, NOR SHALL INSTALLERS LEAN ON MODULE GLASS. RACK STRUCTURE AND MODULES ARE NOT DESIGNED FOR LIVE LOADS AND MAY VOID WARRANTY.

5.14. SAFETY SIGNS AND LABELING

- 5.14.1. CONTRACTOR SHALL PROVIDE ALL SIGNS AND LABELS PER THESE DRAWINGS, LOCAL UTILITY REQUIREMENTS, OSHA AND THE NEC INCLUDING BUT NOT LIMITED TO SECTIONS 110, 690, AND 705.
- 5.14.2. ALL SIGNS SHALL BE HDPE PLASTIC, TWO-COLOR ENGRAVED, AND UV STABILIZED.
- 5.14.3. ALL EQUIPMENT SHALL BE LABELED ON THE FRONT EXTERIOR TO CORRESPOND TO THE IDENTIFICATION SHOWN ON THE DRAWINGS.
- 5.14.4. SIGNS SHALL BE FIXED TO EQUIPMENT WITH OUTDOOR RATED TWO-PART EPOXY. DOUBLE-SIDED TAPE SHALL NOT BE USED UNDER ANY CONDITIONS.
- 5.14.5. ALL CABLES SHALL BE LABELED AT EACH END AND AT SPLICE LOCATIONS, AT AN ACCESSIBLE POINT INSIDE EQUIPMENT ENCLOSURE, IF POSSIBLE, WITH CIRCUIT AND PHASE IDENTIFICATION CORRESPONDING TO THE DRAWINGS.
- 5.14.6. CABLE AND CONDUCTOR LABELS SHALL BE HEAT SHRINK AND APPROVED FOR THEIR ENVIRONMENT. LABELS SHALL NOT COVER COMPRESSION LUGS.
- 5.14.7. MV CABLE LABELS SHALL BE ENGRAVED, TWO-COLOR ENGRAVED PLASTIC, SECURED WITH UV-RESISTANT WIRE TIES. THESE LABELS SHALL BE VISIBLE FROM OUTSIDE THE ENCLOSURE WITHOUT REACHING INSIDE OR MOVING CABLES.
- 5.14.8. PROVIDE ARC FLASH HAZARD WARNING LABELS COMPLYING WITH ANSI Z535.4 AND NFPA 70E ON ALL EQUIPMENT PER DRAWINGS. LABELS SHALL BE APPLIED ON ACCESSIBLE DOORS OR BARRIERS OF OUTDOOR EQUIPMENT.
- 5.14.9. PROVIDE LABELING FOR THE TRANSFORMER ID, CABLES, HIGH VOLTAGE COMPARTMENT (WARNING AND RATING), AND LOW VOLTAGE COMPARTMENT (RATING).
- 5.14.10. ALL ELECTRICAL PANELS SHALL BE PROVIDED WITH A CLEARLY LEGIBLE AND ACCURATE PANEL SCHEDULE OR CIRCUIT DIRECTORY.

5.15. FIELD ACCEPTANCE TESTING

- 5.15.1. CONTRACTOR SHALL PROVIDE FIELD ACCEPTANCE TESTING IN ACCORDANCE WITH ANSI/NETA ATS-2013. THE FOLLOWING EQUIPMENT SHALL BE FIELD TESTED:
 - 5.15.1.1. MV STEP-UP TRANSFORMER
 - 5.15.1.2. MV CABLES
 - 5.15.1.3. LV CABLES
 - 5.15.1.4. GROUND GRID
- 5.15.2. CONTRACTOR SHALL PROVIDE I-V CURVE TRACE TESTING IN ACCORDANCE WITH IEC 61829.
- 5.15.3. WRITTEN FIELD ACCEPTANCE TEST REPORTS SHALL BE FURNISHED TO THE ENGINEER.



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PROJECT LOCATION:

LAKE ROAD
SOMERSET, NY

SHEET TITLE & DESCRIPTION:

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2 OF 3



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ACRONYMS AND ABBREVIATIONS

AAC	ALL ALUMINUM CONDUCTOR
AAAC	ALL ALUMINUM ALLOY CONDUCTOR
AC	ALTERNATING CURRENT
ACSR	ALUMINUM CONDUCTOR STEEL REINFORCED
AHJ	AUTHORITY HAVING JURISDICTION
AL	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWG	AMERICAN WIRE GAUGE
AZ	AZIMUTH
C	CELSIUS
CB	CIRCUIT BREAKER
CBX	COMBINER BOX
C/L	CENTER LINE
CIC	CABLE IN CONDUIT
COMM	COMMUNICATIONS
CONT'D	CONTINUED
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
DAS	DATA ACQUISITION SYSTEM
DC	DIRECT CURRENT
DCD	DC DISCONNECT
DG	DISTRIBUTED GENERATION
DISC	DISCONNECT
(E)	EXISTING
EC	ELECTRICAL CONTRACTOR
EGC	EQUIPMENT GROUNDING CONDUCTOR
EMT	ELECTRICAL METALLIC TUBING
F	FAHRENHEIT
FT	FIXED TILT
GCR	GROUND COVERAGE RATIO
GEC	GROUNDING ELECTRODE CONDUCTOR
GET	GROUNDING ELECTRODE TERMINAL
GND	GROUND
GOAB	GANG OPERATED AIR BREAK
GR	GROUND RING
HDPE	HIGH DENSITY POLYETHYLENE
ID	INSIDE DIAMETER
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KV	KILOVOLT
KW	KILOWATT
LEA	LOW-ENERGY ANALOG
LFMC	LIQUID-TIGHT FLEXIBLE METAL CONDUIT
LFNC	LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT
LV	LOW VOLTAGE, <2000V
MET	METEOROLOGICAL
MIN	MINIMUM
MISC	MISCELLANEOUS
MOV	METAL OXIDE VARISTOR
MCOV	MAXIMUM CONTINUOUS OPERATING VOLTAGE
MV	MEDIUM VOLTAGE
MVA	MEGA VOLT-AMPS
MW	MEGAWATT
(N)	NEW
NEC	NATIONAL ELECTRICAL CODE
NEG	NEGATIVE
NESC	NATIONAL ELECTRIC SAFETY CODE
NRTL	NATIONALLY RECOGNIZED TESTING LAB
OC	ON CENTER
OCPD	OVER CURRENT PROTECTION DEVICE
OD	OUTSIDE DIAMETER
OH	OVERHEAD
P	POLE
PDI	POLYMER DEADEND INSULATOR
PH/Ø	PHASE
PNL	PANEL
POCC	POINT OF COMMON COUPLING
POI	POINT OF INTERCONNECTION
POS	POSITIVE
PT	POTENTIAL TRANSFORMER
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE
RFI	REQUEST FOR INFORMATION
RMC	RIGID METAL CONDUIT
SAT	SINGLE-AXIS TRACKER
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCB	SOLAR COMBINER BOX
SCH	SCHEDULE
SW	SWITCH

TBD	TO BE DETERMINED
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
UV	ULTRAVIOLET
V	VOLT
VA	VOLT AMPS
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
VT	VOLTAGE TRANSFORMER
WS	WEATHER STATION
XFMR	TRANSFORMER

LEGEND

	SWITCH
	SWITCH WITH FUSED CUTOUT
	SWITCH WITH EXTERNAL OPERATOR
	GANG OPERATED AIR-BREAK
	HOOK STICK SWITCH
	FUSED CUT-OUT
	CONTACTOR
	POLE
	TRANSFORMER
	LEA
	FUSE
	TERMINATION
	FAULT CIRCUIT INDICATOR
	LIGHTNING ARRESTER
	GROUND
	GROUND WYE
	WYE
	DELTA
	INVERTER

KEY PLAN:

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PROJECT LOCATION:

**LAKE ROAD
SOMERSET, NY**

SHEET TITLE & DESCRIPTION:

**ELECTRICAL NOTES
3 OF 3**

**ISSUED FOR 94-C PERMIT ONLY
NOT FOR CONSTRUCTION**

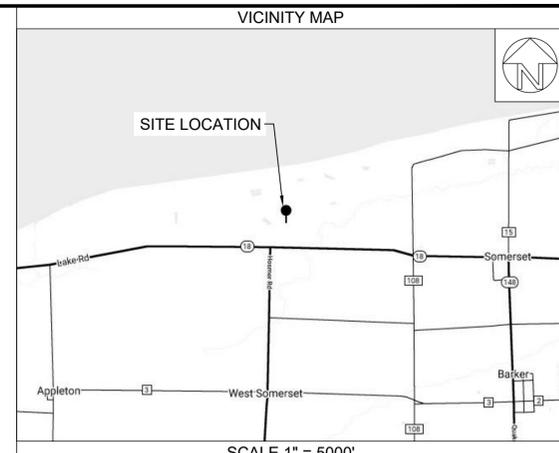
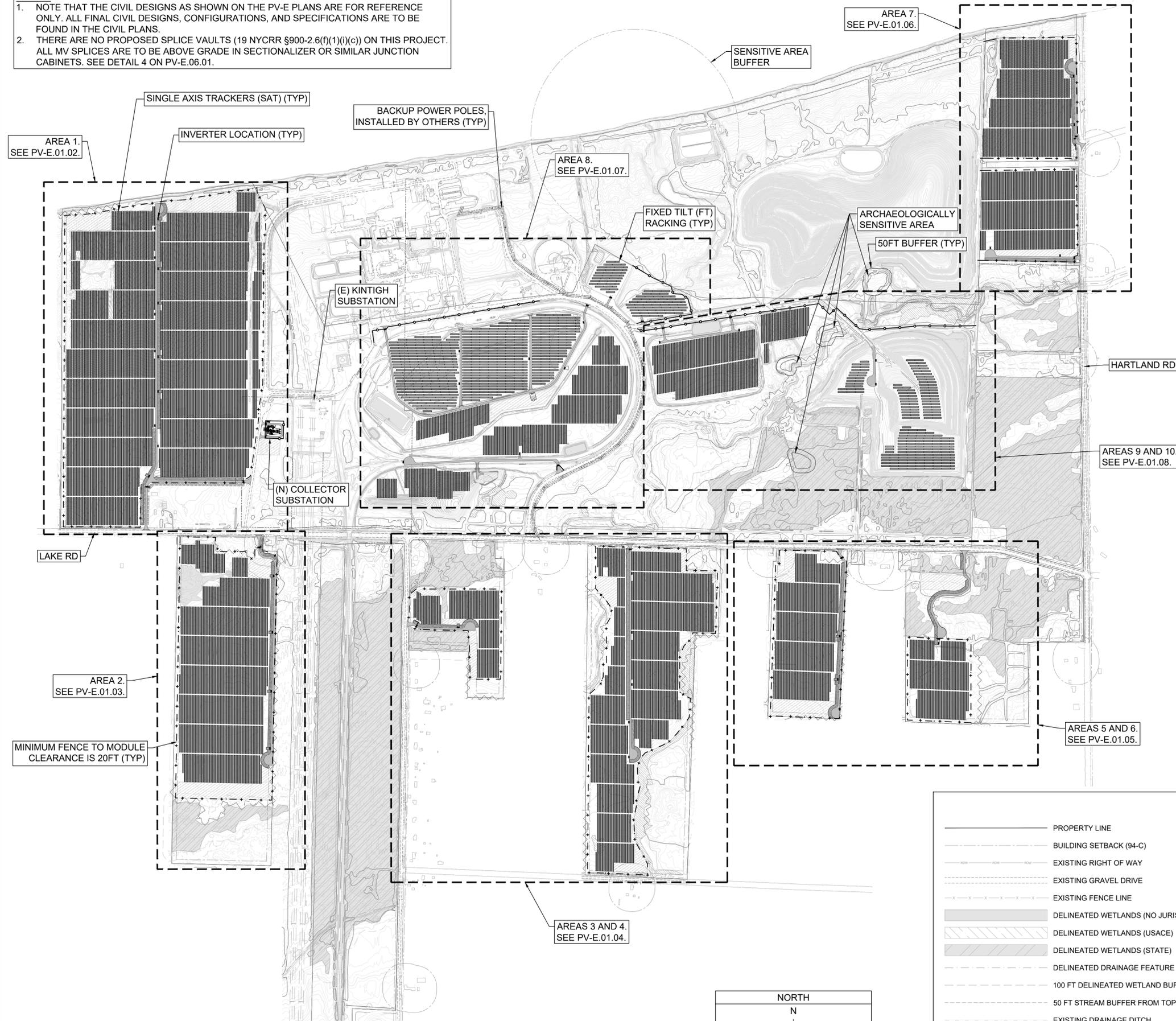
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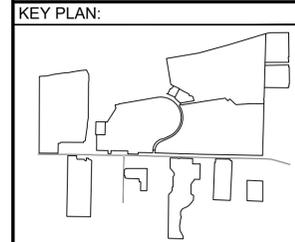
NOTES:

- NOTE THAT THE CIVIL DESIGNS AS SHOWN ON THE PV-E PLANS ARE FOR REFERENCE ONLY. ALL FINAL CIVIL DESIGNS, CONFIGURATIONS, AND SPECIFICATIONS ARE TO BE FOUND IN THE CIVIL PLANS.
- THERE ARE NO PROPOSED SPLICE VAULTS (19 NYCRR §900-2.6(f)(1)(i)(c)) ON THIS PROJECT. ALL MV SPLICES ARE TO BE ABOVE GRADE IN SECTIONALIZER OR SIMILAR JUNCTION CABINETS. SEE DETAIL 4 ON PV-E.06.01.



PROJECT SPECIFICATIONS DESIGN SUMMARY

AC SYSTEM SIZE AT POI (MW)	125.000
AC INVERTER NAMEPLATE (MW)	136.800
POWER FACTOR	0.95 LEADING TO 0.95 LAGGING
DC SYSTEM SIZE (MW)	151.526
DC/AC RATIO AT POI	1.212
MV TRANSFORMER & INVERTER	(16) SUNGROW SG3150U-MV (24) SUNGROW SG3600UD-MV
RACKING SYSTEM	NEXTRACKER SINGLE-AXIS TRACKER (SAT) TERRASMART FIXED TILT (FT) RACKING
STRING SIZE AND VOLTAGE	SAT: 27 MODS PER STRING, 1500 VDC FT: 26 MODS PER STRING, 1500 VDC
PV MODULE	BYD MLTK-36 540
PV MODULE RATING	540 W
QUANTITY OF PV MODULES BY RACKING SYSTEM AND FOUNDATION TYPES	BALLASTED FT: 35,698 DRIVEN FT: 4,524 DRIVEN SAT: 240,381 TOTAL: 280,603
TOTAL STRING COUNT	10,450
RACK CONFIGURATION	SAT, 1 IN PORTRAIT FIXED TILT, 2 IN PORTRAIT
TILT (°)	± 60° (SAT) 20° (FIXED TILT)
AZIMUTH (°)	180°
GCR (%)	41.52% (SAT) 44.70% (FIXED TILT)
PITCH	18.00 FT (SAT) 31.62 FT (FIXED TILT)
CLEAR ROW SPACING	10.53 FT (SAT) 17.49 FT (FIXED TILT)
LATITUDE (°)	43.3525680
LONGITUDE (°)	-78.6014000
UTILITY	NYSEG
CODE CYCLE	NEC 2017



REVISIONS:

NO.	DATE	DESCRIPTION
0	03/08/2023	ISSUED FOR 94-C PERMIT

PROJECT TITLE:

SOMERSET SOLAR PROJECT

PROJECT LOCATION:

LAKE ROAD
SOMERSET, NY

SHEET TITLE & DESCRIPTION:

OVERALL ELECTRICAL PLAN

ISSUED FOR 94-C PERMIT ONLY
NOT FOR CONSTRUCTION

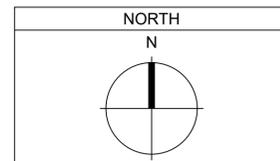
PROJ NUM: SU20.0012
DES: CB
DWN: CB
CHK: KL
APV: KL
DATE: 08/05/2022
SCALE AT 22" x 34":

AS SHOWN

SHEET NO: PV-E.01.01 **REV:** 0

LEGEND

—	PROPERTY LINE	~~~~~	EXISTING TREE LINE
- - - - -	BUILDING SETBACK (94-C)	~~~~~	EXISTING BRUSH LINE
- - - - -	EXISTING RIGHT OF WAY	- - - - -	EXISTING EASEMENTS
- - - - -	EXISTING GRAVEL DRIVE	~~~~~	PROPOSED TREE LINE
- - - - -	EXISTING FENCE LINE	~~~~~	PROPOSED BRUSH LINE
▨	DELINEATED WETLANDS (NO JURISDICTION)	—○—○—	PROPOSED CHAIN LINK FENCE
▨	DELINEATED WETLANDS (USACE)	- + - + -	PROPOSED AGRICULTURAL FENCE
▨	DELINEATED WETLANDS (STATE)	—	PROPOSED ACCESS ROAD
- - - - -	DELINEATED DRAINAGE FEATURE	.....	PROPOSED GRASSED FILTER STRIP
- - - - -	100 FT DELINEATED WETLAND BUFFER	.....	PROPOSED VEGETATIVE SCREENING
- - - - -	50 FT STREAM BUFFER FROM TOP OF BANK	▨	TEMPORARY LAYDOWN/ PARKING AREA
- - - - -	EXISTING DRAINAGE DITCH		
- - - - -	EXISTING WATER EDGE		
- - - - -	APPROXIMATE TOP OF STREAM BANK		
- - - - -	EXISTING RAILROAD		

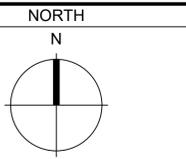


1 OVERALL ELECTRICAL PLAN

0 600' 1200'

SCALE: 1" = 600'

PLOTTED: 08/05/2023 10:41 AM
FILE: PV-E.01.GENERAL SITE OVERVIEW.DWG



A1-INV11 FOOTPRINT

A1-INV10 FOOTPRINT

A1-INV7 FOOTPRINT

A1-INV6 FOOTPRINT

A1-INV3 FOOTPRINT

A1-INV1 FOOTPRINT

A1-INV12

A1-INV11

A1-INV10

A1-INV9

A1-INV8

A1-INV7

A1-INV6

A1-INV5

A1-INV4

A1-INV3

A1-INV2

A1-INV1

A1-INV12 FOOTPRINT

A1-INV9 FOOTPRINT

A1-INV8 FOOTPRINT

A1-INV5 FOOTPRINT

A1-INV4 FOOTPRINT

A1-INV2 FOOTPRINT

INVERTER LOCATION (TYP)

INVERTER NUMBER (TYP)

SECTIONALIZER LOCATION (TYP)

SECTIONALIZER NUMBER (TYP)

MINIMUM FENCE TO MODULE CLEARANCE IS 20FT (TYP)

SINGLE AXIS TRACKERS (SAT) (TYP)

APPROXIMATE LOCATION OF ACTIVE WELL (TYP). WELL TO BE FIELD VERIFIED AND RACKING TO BE ADJUSTED AS NECESSARY.



(N) ACCESS GATE (TYP)

SEC1

SEC7

SEC8

PROJECT SPECIFICATIONS DESIGN SUMMARY	
AC SYSTEM SIZE AT POI (MW)	125.000
AC INVERTER NAMEPLATE (MW)	136.800
POWER FACTOR	0.95 LEADING TO 0.95 LAGGING
DC SYSTEM SIZE (MW)	151.526
DC/AC RATIO AT POI	1.212
MV TRANSFORMER & INVERTER	(16) SUNGROW SG3150U-MV (24) SUNGROW SG3600UD-MV
RACKING SYSTEM	NEXTRACKER SINGLE-AXIS TRACKER (SAT) TERRASMART FIXED TILT (FT) RACKING
STRING SIZE AND VOLTAGE	SAT: 27 MODS PER STRING, 1500 VDC FT: 26 MODS PER STRING, 1500 VDC
PV MODULE	BYD MLTK-36 540
PV MODULE RATING	540 W
QUANTITY OF PV MODULES BY RACKING SYSTEM AND FOUNDATION TYPES	BALLASTED FT: 35,698 DRIVEN FT: 4,524 DRIVEN SAT: 240,381 TOTAL: 280,603
TOTAL STRING COUNT	10,450
RACK CONFIGURATION	SAT, 1 IN PORTRAIT FIXED TILT, 2 IN PORTRAIT
TILT (°)	± 60° (SAT) 20° (FIXED TILT)
AZIMUTH (°)	180°
GCR (%)	41.52% (SAT) 44.70% (FIXED TILT)
PITCH	18.00 FT (SAT) 31.62 FT (FIXED TILT)
CLEAR ROW SPACING	10.53 FT (SAT) 17.49 FT (FIXED TILT)
LATITUDE (°)	43.3525680
LONGITUDE (°)	-78.6014000
UTILITY	NYSEG
CODE CYCLE	NEC 2017

NOTES:

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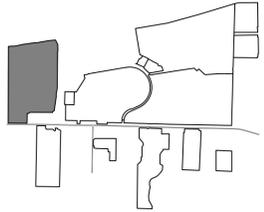
INVERTER INFORMATION									
INVERTER NUMBER	INVERTER TYPE	INVERTER DETAIL SHEET	FOUNDATION TYPE	FOUNDATION DETAIL SHEET	DC/AC RATIO	DC [kW]	MODULE QUANTITY PER RACK TYPE		
							BALLASTED FT	DRIVEN FT	DRIVEN SAT
A1-INV1	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.081	3,892.28	0	0	7,209
A1-INV2	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.077	3,878.28	0	0	7,182
A1-INV3	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.077	3,878.28	0	0	7,182
A1-INV4	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.077	3,878.28	0	0	7,182
A1-INV5	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.081	3,892.28	0	0	7,209
A1-INV6	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.077	3,878.28	0	0	7,182
A1-INV7	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.081	3,892.28	0	0	7,209
A1-INV8	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.081	3,892.28	0	0	7,209
A1-INV9	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.081	3,892.28	0	0	7,209
A1-INV10	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.073	3,863.70	0	0	7,155
A1-INV11	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.081	3,892.28	0	0	7,209
A1-INV12	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.077	3,878.28	0	0	7,182

LEGEND

—	PROPERTY LINE	~~~~~	EXISTING TREE LINE
- - -	BUILDING SETBACK (94-C)	-----	EXISTING BRUSH LINE
----	EXISTING RIGHT OF WAY	-----	EXISTING EASEMENTS
----	EXISTING GRAVEL DRIVE	~~~~~	PROPOSED TREE LINE
----	EXISTING FENCE LINE	~~~~~	PROPOSED BRUSH LINE
▨	DELINEATED WETLANDS (NO JURISDICTION)	○—○	PROPOSED CHAIN LINK FENCE
▨	DELINEATED WETLANDS (USACE)	— + — +	PROPOSED AGRICULTURAL FENCE
▨	DELINEATED WETLANDS (STATE)	—	PROPOSED ACCESS ROAD
----	DELINEATED DRAINAGE FEATURE	.....	PROPOSED GRASSSED FILTER STRIP
----	100 FT DELINEATED WETLAND BUFFER	.....	PROPOSED VEGETATIVE SCREENING
----	50 FT STREAM BUFFER FROM TOP OF BANK	▨	TEMPORARY LAYDOWN/ PARKING AREA
----	EXISTING DRAINAGE DITCH		
----	EXISTING WATER EDGE		
----	APPROXIMATE TOP OF STREAM BANK		
----	EXISTING RAILROAD		



KEY PLAN:



REVISIONS:

NO.	DATE	DESCRIPTION
0	03/08/2023	ISSUED FOR 94-C PERMIT

PROJECT TITLE:

SOMERSET SOLAR PROJECT

PROJECT LOCATION:

LAKE ROAD
SOMERSET, NY

SHEET TITLE & DESCRIPTION:

ENLARGED ELECTRICAL PLAN - AREA 1

ISSUED FOR 94-C PERMIT ONLY
NOT FOR CONSTRUCTION

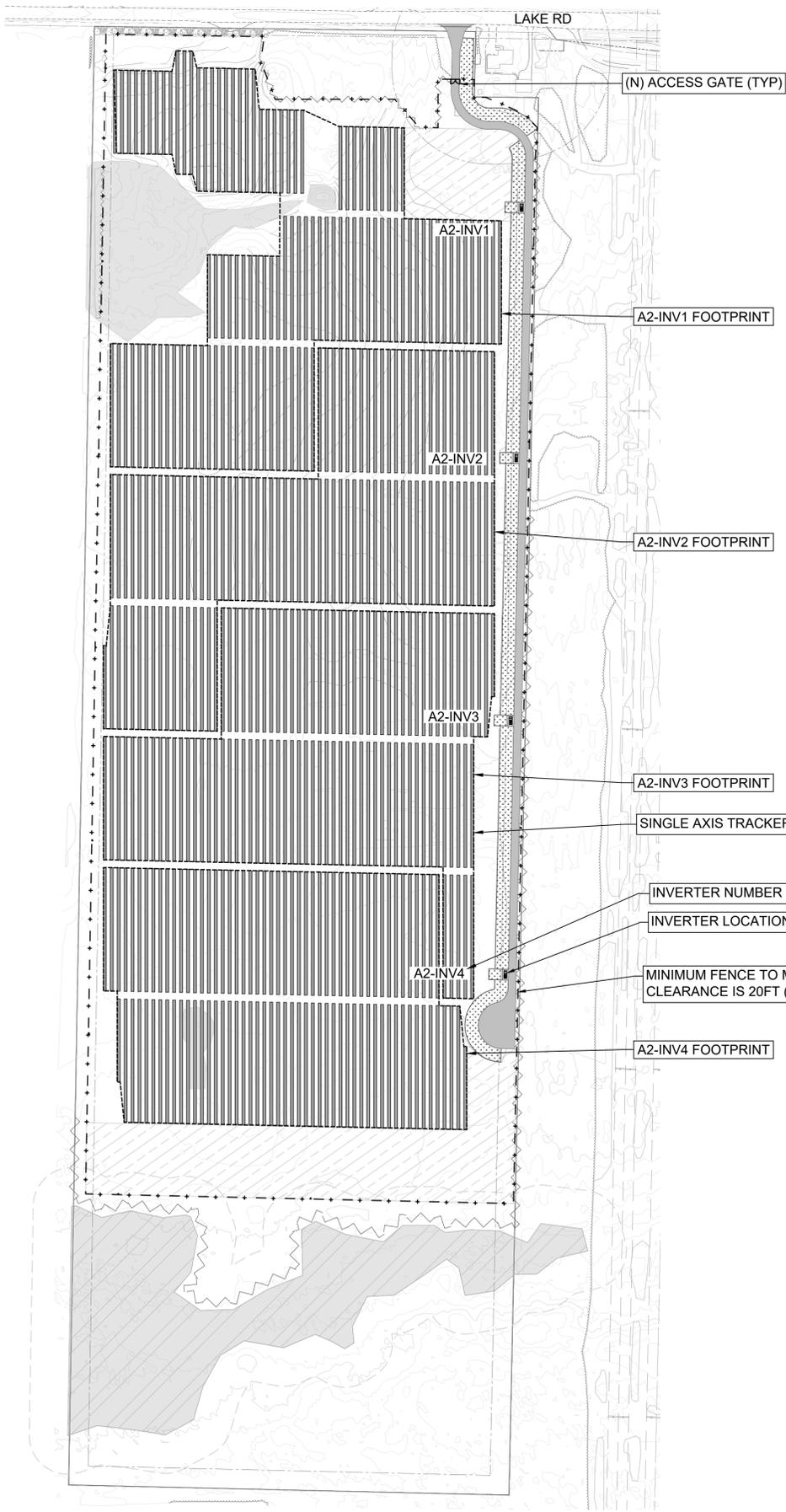
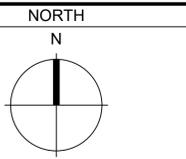
PROJ NUM:	SU20.0012
DES:	CB
DWN:	CB
CHK:	KL
APV:	KL
DATE:	08/05/2022
SCALE AT 22" x 34":	

AS SHOWN

SHEET NO:	PV-E.01.02	REV:	0
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1
ENLARGED ELECTRICAL PLAN - AREA 1
SCALE: 1" = 200'

PLOTTED: 8/5/2023 10:41 AM FILE: PV-E.01.02 GENERAL SITE COVERED.DWG



PROJECT SPECIFICATIONS DESIGN SUMMARY	
AC SYSTEM SIZE AT POI (MW)	125.000
AC INVERTER NAMEPLATE (MW)	136.800
POWER FACTOR	0.95 LEADING TO 0.95 LAGGING
DC SYSTEM SIZE (MW)	151.526
DC/AC RATIO AT POI	1.212
MV TRANSFORMER & INVERTER	(16) SUNGROW SG3150U-MV (24) SUNGROW SG3600UD-MV
RACKING SYSTEM	NEXTRACKER SINGLE-AXIS TRACKER (SAT) TERRASMART FIXED TILT (FT) RACKING
STRING SIZE AND VOLTAGE	SAT: 27 MODS PER STRING, 1500 VDC FT: 26 MODS PER STRING, 1500 VDC
PV MODULE	BYD MLTK-36 540
PV MODULE RATING	540 W
QUANTITY OF PV MODULES BY RACKING SYSTEM AND FOUNDATION TYPES	BALLASTED FT: 35,698 DRIVEN FT: 4,524 DRIVEN SAT: 240,381 TOTAL: 280,603
TOTAL STRING COUNT	10,450
RACK CONFIGURATION	SAT, 1 IN PORTRAIT FIXED TILT, 2 IN PORTRAIT
TILT (°)	± 60° (SAT) 20° (FIXED TILT)
AZIMUTH (°)	180°
GCR (%)	41.52% (SAT) 44.70% (FIXED TILT)
PITCH	18.00 FT (SAT) 31.62 FT (FIXED TILT)
CLEAR ROW SPACING	10.53 FT (SAT) 17.49 FT (FIXED TILT)
LATITUDE (°)	43.3525680
LONGITUDE (°)	-78.6014000
UTILITY	NYSEG
CODE CYCLE	NEC 2017

NOTES:

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INVERTER INFORMATION									
INVERTER NUMBER	INVERTER TYPE	INVERTER DETAIL SHEET	FOUNDATION TYPE	FOUNDATION DETAIL SHEET	DC/AC RATIO	DC [kW]	MODULE QUANTITY PER RACK TYPE		
							BALLASTED FT	DRIVEN FT	DRIVEN SAT
A2-INV1	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.199	4,315.68	0	0	7,992
A2-INV2	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.199	4,315.68	0	0	7,992
A2-INV3	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.199	4,315.68	0	0	7,992
A2-INV4	SG3600UD-MV	PV-E.05.04	POSTS/PIERS	PV-E.05.05	1.207	4,344.84	0	0	8,046

LEGEND			
—	PROPERTY LINE	~~~~~	EXISTING TREE LINE
- - - - -	BUILDING SETBACK (94-C)	~~~~~	EXISTING BRUSH LINE
- - - - -	EXISTING RIGHT OF WAY	- - - - -	EXISTING EASEMENTS
- - - - -	EXISTING GRAVEL DRIVE	~~~~~	PROPOSED TREE LINE
- - - - -	EXISTING FENCE LINE	~~~~~	PROPOSED BRUSH LINE
▨	DELINEATED WETLANDS (NO JURISDICTION)	—○—○—	PROPOSED CHAIN LINK FENCE
▨	DELINEATED WETLANDS (USACE)	- + - + -	PROPOSED AGRICULTURAL FENCE
▨	DELINEATED WETLANDS (STATE)	—	PROPOSED ACCESS ROAD
- - - - -	DELINEATED DRAINAGE FEATURE	—	PROPOSED GRASSED FILTER STRIP
- - - - -	100 FT DELINEATED WETLAND BUFFER	—	PROPOSED VEGETATIVE SCREENING
- - - - -	50 FT STREAM BUFFER FROM TOP OF BANK	—	TEMPORARY LAYDOWN/ PARKING AREA
- - - - -	EXISTING DRAINAGE DITCH		
- - - - -	EXISTING WATER EDGE		
- - - - -	APPROXIMATE TOP OF STREAM BANK		
- - - - -	EXISTING RAILROAD		

1
ENLARGED ELECTRICAL PLAN - AREA 2
SCALE: 1" = 200'

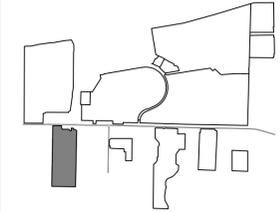


AES CLEAN ENERGY DEVELOPMENT, LLC
292 MADISON AVENUE, 15TH FLOOR
NEW YORK, NY 10017



IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW, ARTICLE 145, FOR ANY PERSON, UNLESS UNDER THE DIRECTION OF A NEW YORK STATE LICENSED PROFESSIONAL ENGINEER, TO ALTER AN ITEM ON THIS DOCUMENT IN ANY WAY.

KEY PLAN:



REVISIONS:

NO.	DATE	DESCRIPTION
0	03/08/2023	ISSUED FOR 94-C PERMIT

PROJECT TITLE:

SOMERSET SOLAR PROJECT

PROJECT LOCATION:

LAKE ROAD
SOMERSET, NY

SHEET TITLE & DESCRIPTION:

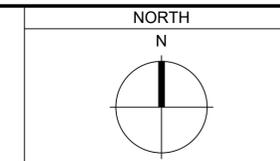
ENLARGED ELECTRICAL PLAN - AREA 2



PROJ NUM:	SU20.0012
DES:	CB
DWN:	CB
CHK:	KL
APV:	KL
DATE:	08/05/2022
SCALE AT 22" x 34":	

AS SHOWN

SHEET NO:	PV-E.01.03	REV:	0
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PROJECT SPECIFICATIONS DESIGN SUMMARY	
AC SYSTEM SIZE AT POI (MW)	125.000
AC INVERTER NAMEPLATE (MW)	136.800
POWER FACTOR	0.95 LEADING TO 0.95 LAGGING
DC SYSTEM SIZE (MW)	151.526
DC/AC RATIO AT POI	1.212
MV TRANSFORMER & INVERTER	(16) SUNGROW SG3150U-MV (24) SUNGROW SG3600UD-MV
RACKING SYSTEM	NEXTRACKER SINGLE-AXIS TRACKER (SAT) TERRASMART FIXED TILT (FT) RACKING
STRING SIZE AND VOLTAGE	SAT: 27 MODS PER STRING, 1500 VDC FT: 26 MODS PER STRING, 1500 VDC
PV MODULE	BYD MLTK-36 540
PV MODULE RATING	540 W
QUANTITY OF PV MODULES BY RACKING SYSTEM AND FOUNDATION TYPES	BALLASTED FT: 35,698 DRIVEN FT: 4,524 DRIVEN SAT: 240,381 TOTAL: 280,603
TOTAL STRING COUNT	10,450
RACK CONFIGURATION	SAT, 1 IN PORTRAIT FIXED TILT, 2 IN PORTRAIT
TILT (°)	± 60° (SAT) 20° (FIXED TILT)
AZIMUTH (°)	180°
GCR (%)	41.52% (SAT) 44.70% (FIXED TILT)
PITCH	18.00 FT (SAT) 31.62 FT (FIXED TILT)
CLEAR ROW SPACING	10.53 FT (SAT) 17.49 FT (FIXED TILT)
LATITUDE (°)	43.3525680
LONGITUDE (°)	-78.6014000
UTILITY	NYSEG
CODE CYCLE	NEC 2017

NOTES:

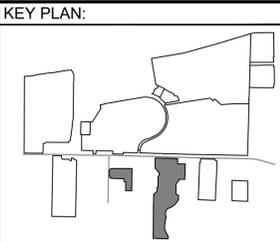
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INVERTER INFORMATION									
INVERTER NUMBER	INVERTER TYPE	INVERTER DETAIL SHEET	FOUNDATION TYPE	FOUNDATION DETAIL SHEET	DC/AC RATIO	DC [kW]	MODULE QUANTITY PER RACK TYPE		
							BALLASTED FT	DRIVEN FT	DRIVEN SAT
A3-INV1	SG3150U-MV	PV-E.05.01	POSTS/PIERS	PV-E.05.02	1.055	3,324.24	0	0	6,156
A4-INV1	SG3150U-MV	PV-E.05.01	POSTS/PIERS	PV-E.05.02	1.176	3,703.32	0	0	6,858
A4-INV2	SG3150U-MV	PV-E.05.01	POSTS/PIERS	PV-E.05.02	1.176	3,703.32	0	0	6,858
A4-INV3	SG3150U-MV	PV-E.05.01	POSTS/PIERS	PV-E.05.02	1.176	3,703.32	0	0	6,858
A4-INV4	SG3150U-MV	PV-E.05.01	POSTS/PIERS	PV-E.05.02	1.176	3,703.32	0	0	6,858

LEGEND			
—	PROPERTY LINE	~~~~~	EXISTING TREE LINE
- - - - -	BUILDING SETBACK (94-C)	~~~~~	EXISTING BRUSH LINE
- - - - -	EXISTING RIGHT OF WAY	- - - - -	EXISTING EASEMENTS
- - - - -	EXISTING GRAVEL DRIVE	~~~~~	PROPOSED TREE LINE
- - - - -	EXISTING FENCE LINE	~~~~~	PROPOSED BRUSH LINE
▨	DELINEATED WETLANDS (NO JURISDICTION)	○—○—○	PROPOSED CHAIN LINK FENCE
▨	DELINEATED WETLANDS (USACE)	- + - + -	PROPOSED AGRICULTURAL FENCE
▨	DELINEATED WETLANDS (STATE)	—	PROPOSED ACCESS ROAD
- - - - -	DELINEATED DRAINAGE FEATURE	.....	PROPOSED GRASSED FILTER STRIP
- - - - -	100 FT DELINEATED WETLAND BUFFER	.....	PROPOSED VEGETATIVE SCREENING
- - - - -	50 FT STREAM BUFFER FROM TOP OF BANK	▨	TEMPORARY LAYDOWN/ PARKING AREA
- - - - -	EXISTING DRAINAGE DITCH		
- - - - -	EXISTING WATER EDGE		
- - - - -	APPROXIMATE TOP OF STREAM BANK		
- - - - -	EXISTING RAILROAD		



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REVISIONS:

NO.	DATE	DESCRIPTION
0	03/08/2023	ISSUED FOR 94-C PERMIT

PROJECT TITLE:
SOMERSET SOLAR PROJECT

PROJECT LOCATION:
**LAKE ROAD
SOMERSET, NY**

SHEET TITLE & DESCRIPTION:
**ENLARGED ELECTRICAL PLAN
- AREAS 3 AND 4**

**ISSUED FOR 94-C PERMIT ONLY
NOT FOR CONSTRUCTION**

PROJ NUM: SU20.0012
DES: CB
DWN: CB
CHK: KL
APV: KL
DATE: 08/05/2022
SCALE AT 22" x 34":
AS SHOWN

SHEET NO: **PV-E.01.04** REV: **0**

1
0 200' 400'
SCALE: 1" = 200'

ENLARGED ELECTRICAL PLAN - AREAS 3 AND 4

PLOTTED: 08/05/2023 09:51 AM FILE: PV-E.01.04 GENERAL SITE COVERED.DWG