

GROUND MOUNT SYSTEM AT CSCU BOOMBRIDGE

227 BOOMBRIDGE RD., STONINGTON, CT 06359



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



SYSTEM PLAN
SCALE: 1" = 500'-0"

TOTAL SYSTEM SUMMARY:

TOTAL DC SYSTEM SIZE: 6112.600 kWDC
AC SYSTEM SIZE: 4999.000 kWAC

MODULE MANUFACTURER: CANADIAN SOLAR / HT-SAAE
MODULE MODEL: CS3W-400PB-AG / HT72-166M 450W
MODULES PER STRING: 26
MODULE QUANTITY: 3640 / 10348
STRING QUANTITY: 140 / 398

MODULE TILT: 30°
MODULE AZIMUTH: 0°

INVERTER MANUFACTURER: CANADIAN SOLAR
INVERTER MODEL: CSI-125KTL-GS-E
INVERTER QUANTITY: 40

SUBSYSTEM SUMMARIES:

SYSTEM 1	SYSTEM 2	SYSTEM 3	SYSTEM 4	SYSTEM 5
TOTAL DC SIZE: 1215.500 kWDC	TOTAL DC SIZE: 1203.800 kWDC	TOTAL DC SIZE: 1238.900 kWDC	TOTAL DC SIZE: 1227.200 kWDC	TOTAL DC SIZE: 1227.200 kWDC
AC SYSTEM SIZE: 999.000 kWAC	AC SYSTEM SIZE: 1000.000 kWAC	AC SYSTEM SIZE: 1000.000 kWAC	AC SYSTEM SIZE: 1000.000 kWAC	AC SYSTEM SIZE: 1000.000 kWAC
MODULE QUANTITY: 728 (400W)	MODULE QUANTITY: 728 (400W)	MODULE QUANTITY: 728 (400W)	MODULE QUANTITY: 728 (400W)	MODULE QUANTITY: 728 (400W)
MODULE QUANTITY: 2054 (450W)	MODULE QUANTITY: 2028 (450W)	MODULE QUANTITY: 2106 (450W)	MODULE QUANTITY: 2080 (450W)	MODULE QUANTITY: 2080 (450W)
STRING QUANTITY: 107	STRING QUANTITY: 106	STRING QUANTITY: 109	STRING QUANTITY: 108	STRING QUANTITY: 108

SCOPE OF WORK SUMMARY

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

DEVELOPER:



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

ENGINEERED BY:



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

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LEGEND:

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

DRAWING TITLE
TITLE SHEET

DRAWING #
G001

PROJECT
SOLAR GROUND MOUNT AT
CSCU BOOMBRIDGE
227 BOOMBRIDGE ROAD
STONINGTON, CT 06359

PAGE SIZE
36" x 24"
PROJECT #
19.1312

DC SYSTEM SIZE: 6112.600 kW
AC SYSTEM SIZE: 4999.000 kW
MODULE TYPE: CS 400W / HT 450W
MODULE QUANTITY: 13,988
STRING QUANTITY: 538
ORIENTATION: 30° TILT, 0° AZIMUTH

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



PUREPOWER ENGINEERING
111 RIVER STREET
HOBOKEN, NJ
WWW.PUREPOWER.COM
RICHARD A. VONNEGUT
CT LICENSE NO. 0382982

DATE	REVISION DESCRIPTION	PM / ENG / CHK
03/09/2021	PERMIT REVIEW SET (REV. 1)	SK / SK / RI
03/29/2021	PERMIT REVIEW SET	SK / SK / RI

RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
PLOT DATE: 3/12/2021 6:52 PM

RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

PLOT DATE: 3/12/2021 6:52 PM

SOLAR PV GENERAL NOTES

1. INSTALL A COMPLETE AND OPERATIONAL SOLAR PHOTOVOLTAIC SYSTEM INCLUDING THE RECONNECTION OF ANY EXISTING ELECTRICAL EQUIPMENT DISTURBED DURING SOLAR PHOTOVOLTAIC ARRAY INSTALLATION.
2. THESE DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL LOCATION AND ARRANGEMENT OF THE SOLAR PV SYSTEM. THEY DO NOT SHOW ALL MATERIALS NEEDED. CONTRACTOR IS REQUIRED TO PROVIDE ANY AND ALL CONDUITS, CONNECTORS, SWEEPS, SUPPORTS, BENDS, FITTINGS, HANGERS, COVER PLATES, AND ADDITIONAL PULL AND JUNCTION BOXES WHICH THE CONTRACTOR MUST PROVIDE TO COMPLETE THE SOLAR PV SYSTEM IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC).
3. THE DEFINITION OF ELECTRICAL TERMS USED SHALL BE AS DEFINED STATES' ADOPTED EDITION OF THE NEC.
4. THE TERM "SIZE" SHALL MEAN ONE OR MORE OF THE FOLLOWING: "LENGTH, CURRENT AND VOLTAGE RATING, NUMBER OF POLES, NEMA SIZE, AND OTHER SIMILAR ELECTRICAL CHARACTERISTICS".
5. CONTRACTOR IS REQUIRED TO SURVEY AND INSPECT ALL AREAS PRIOR TO PERFORMING SERVICES TO ENSURE CLEARANCES CAN BE MET AND NO INTERFERENCES EXIST. NO CUTTING OR DRILLING IS TO BE PERFORMED PRIOR TO LOCATING EXISTING STRUCTURAL MEMBERS AND UTILITIES.
6. SERVICE ENTRANCE RATED EQUIPMENT, C/T CABINETS, AND METER SOCKETS ARE TO BE APPROVED FOR USE BY THE LOCAL UTILITY COMPANY.
7. ELECTRICAL EQUIPMENT INSTALLED MUST BE LABELED, UL LISTED, AND INSTALLED ACCORDINGLY.
8. REQUIRED PERMITS AND INSPECTIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE COORDINATED WITH THE AUTHORITY HAVING JURISDICTION (AHJ).
9. ALL WORK IS TO BE PERFORMED BY LICENSED WORKMEN AND COMPLETED IN ACCORDANCE WITH THE STATES' ADOPTED NEC.
10. THE SOLAR PV SYSTEM EQUIPMENT ON THE DC SIDE IS RATED FOR 1500V AND IS IN COMPLIANCE WITH NEC 690.80. THE INVERTERS, MODULES, STRING FEEDERS, AND RELATED COMPONENTS ARE ALL RATED AND LABELED AS 1000V.
11. EMT CONDUIT IS ALLOWED IN EXTERIOR LOCATIONS WHEN RAIN-TIGHT CONNECTORS AND FITTINGS ARE USED, AND THE CONDUIT IS NOT EXPOSED TO ANY POTENTIAL PHYSICAL DAMAGE. ALL SUPPORTS, BOLTS, STRAPS, AND SCREWS SHALL BE CORROSION RESISTANT.
12. ALL RACEWAYS ARE TO BE METALLIC UNLESS OTHERWISE NOTED. APPLY AN ADHESIVE LABEL ALONG ALL RACEWAYS SHEET E500. LABEL SHALL BE APPLIED EVERY 10', AT EVERY TURN, AND ABOVE AND BELOW ALL PENETRATIONS.
13. ALL CONDUCTORS SHALL BE LISTED FOR USE IN APPROPRIATE RACEWAY.
14. ALL BREAKERS INSTALLED AS PART OF THE NEW SOLAR PV SYSTEM MUST BE RATED FOR REVERSE FEED.
15. COMMUNICATIONS CABLES INSTALLED BETWEEN MONITORING EQUIPMENT AND CLIENT NETWORK EQUIPMENT (SWITCHES, ROUTERS, SERVERS, ETC.) SHALL HAVE A GREEN OUTER JACKET. CABLES SHALL HAVE CABLE TAGS INSTALLED AT BOTH ENDS OF CABLE TO SHOW PROPER IDENTIFICATION.
16. CONTRACTOR SHALL TORQUE TEST ALL FIELD TERMINATED WIRES PER MANUFACTURER'S SPECS AND PROVIDE PERMANENT MARKINGS ACROSS THE BOLT AND WASHER INDICATING ACHIEVED TORQUE.
17. BARE COPPER GROUND CONDUCTORS SHALL BE SIZED PER NEC. EQUIPMENT GROUNDING CONDUCTORS (EGC) SHALL BE INSTALLED IN CONDUIT.
18. POLARIS SPLICES SHALL NOT BE USED ON THIS PROJECT IN ANY CAPACITY.
19. CONTRACTOR SHALL SUBMIT A FORMAL RFI (REQUEST FOR INFORMATION) FOR ANY CONFUSION OR DISCREPANCY IN THE DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR ANY INSTALLATION DEVIATIONS WITHOUT APPROVAL FROM GREENSKIES OR THE ENGINEER OF RECORD.
20. MOGUL LB CONDUIT BODIES SHALL NOT BE USED ON THIS PROJECT.
21. TEMPERATURE RATINGS OF ALL CONDUCTORS, TERMINATIONS, BREAKERS, OR OTHER DEVICES ASSOCIATED WITH THE SOLAR PV SYSTEM SHALL BE RATED FOR AT LEAST 75 DEGREE C.
22. ALL METALLIC CONDUITS SHALL HAVE BOND BUSHINGS ON BOTH ENDS AND EQUIPMENT GROUNDING CONDUCTORS (EGC) ROUTED THROUGH CONDUIT.

PV ARRAY WORK NOTES

1. WORK INCLUDES INSTALLING PROPOSED SOLAR PANEL ARRAY PER THE MANUFACTURERS INSTALLATION PROCEDURES AND INSTRUCTIONS, ALONG WITH ASSOCIATED ELECTRICAL WIRING.
2. WORK AREAS SHALL BE MARKED, FENCED, AND OTHERWISE SECURED SO AS TO PROVIDE PROPER PROTECTION FOR THE PUBLIC AND AS REQUIRED BY THE BUILDING INSPECTOR.
3. DIMENSION OF EXISTING ELEMENTS SHOWN WERE DETERMINED THROUGH A COMBINATION OF EXISTING DRAWINGS AND FIELD INVESTIGATIONS, AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY. ALL EXISTING CONDITIONS AND DIMENSIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
4. ARRAY LAYOUT IS BASED ON A COMBINATION OF SHADING, AND STRINGING. THE CONTRACTOR SHALL NOT DEVIATE FROM THE LAYOUT SHOWN WITHOUT APPROVAL FROM THE ENGINEER.
5. ELECTRICAL RUNS SHOWN ON PLAN REPRESENT THE PROPOSED LAYOUT. THE CONTRACTOR SHALL NOT RELOCATE INVERTERS OR PANELBOARDS WITHOUT APPROVAL FROM THE ENGINEER.
6. THE INSTALLER SHALL VERIFY THE PROJECT SOUTH DIRECTION IN THE FIELD, AND INSTALL THE MODULES AS INDICATED ON THE PLANS. THE MODULES SHALL BE INSTALLED AS TILTED TOWARDS THE GENERAL DIRECTION OF PROJECT SOUTH.
7. THE FRONT OF THE INVERTER SHALL NOT FACE PROJECT SOUTH. ORIENT THE INVERTER SUCH THAT IT IS FACING NORTH WHEN POSSIBLE. IF SPACE IS A LIMITING FACTOR THEN THE INVERTER SHALL BE ALLOWED TO FACE PROJECT EAST OR WEST.
8. NO CONDUCTOR OR CONNECTOR SHALL BE EXPOSED TO THE ELEMENTS OUTSIDE OF THE BOUNDARIES OF EACH SUB-ARRAY.
9. CONDUIT ABOVE GRADE SHALL ENTER UNDERNEATH RACKING, WHERE APPLICABLE, IN ORDER TO PROTECT CONDUCTORS.
10. CONDUIT BETWEEN SUB-ARRAYS SHALL BE SECURED TO THE RACKING SYSTEM VIA CONDUIT CLAMPS.
11. CONTRACTOR SHALL ENSURE DC WIRING IS SECURED UNDERNEATH THE ARRAY.
12. IN ADDITION TO HEAT SHRINK LABELING ON THE STRING HOMERUN CONDUCTORS, PLACARDS SHALL BE AFFIXED TO THE CROSS BEAMS OF THE RACKING.
13. CONTRACTOR SHALL UTILIZE SUNBUNDLER STAINLESS STEEL CABLE TIES FOR WIRE MANAGEMENT. STANDARD NYLON/PLASTIC CABLE TIES ARE NOT ACCEPTABLE.

INVERTER INFORMATION			
MANUFACTURER	CANADIAN SOLAR		
MODEL	CSI-125KTL-GS-E		
DC RATING			
V-MAX	1500V		
I-MAX OPERATING	150.0A		
AC RATING			
P-OUT	125.0kW		
V-NOM	600V, 3Ø		
I-OUT	120A		
CONFIGURATION	WYE + N		
DESIGN CRITERIA			
STRINGS PER INVERTER	14		
MODULES PER STRING	26		
MODULE WATTS	400 450		
MODULE QUANTITY	364 364		
INVERTER/COMBINER BOX WATTS (WDC)	145600 163800		
INVERTER/COMBINER BOX CURRENT (ADC)	209.8 227.7		
INVERTER STRING FUSE SIZE (ADC)	20		
TRIP SETTINGS			
PROTECTIVE DEVICE	TRIP SETTING	VALUE	M
UNDER VOLTAGE - FAST	27-1	50%	300 V 0.16 SEC.
UNDER VOLTAGE - SLOW	27-2	88%	528 V 2.0 SEC.
OVER VOLTAGE - SLOW	59-1	110%	600 V 1.00 SEC.
OVER VOLTAGE - FAST	59-2	120%	720 V 0.16 SEC.
UNDER-FREQUENCY	81-U	57.0 Hz	57.0 Hz 0.16 SEC.
OVER-FREQUENCY	81-O	60.5 Hz	60.5 Hz 0.16 SEC.

LEGEND – GENERAL

- LIGHT LINE INDICATES EXISTING OR BEYOND THE SCOPE OF PROJECT
- DARK LINE INDICATES NEW OR WITHIN THE SCOPE OF PROJECT
- DASHED LINE INDICATES EQUIPMENT AT A DIFFERENT ELEVATION
- EXISTING TEXT LIGHT TEXT INDICATES EXISTING OR BEYOND THE SCOPE OF PROJECT
- NEW TEXT DARK TEXT INDICATES NEW OR WITHIN THE SCOPE OF PROJECT

LEGEND – PLAN SYMBOLS

- SOLAR MODULE
- RACEWAY TURNING UP OR TOWARDS OBSERVER
- RACEWAY TURNING DOWN OR AWAY FROM OBSERVER
- CABLE TRAY
- PULLBOX
- JUNCTION BOX
- PANEL BOARD
- LOCAL DISCONNECT SWITCH
- SIMPLEX RECEPTACLE, RATED: 125–VOLTS AC, 20A
- DUPLEX RECEPTACLE, RATED: 125–VOLTS AC, 20A
- WEATHERPROOF DUPLEX RECEPTACLE, RATED: 125–VOLTS AC, 20A
- GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE, RATED: 125–VOLTS AC, 20A
- DOUBLE DUPLEX (QUAD) RECEPTACLE
- CEILING/PENDANT-MOUNT LIGHT, SEE FIXTURE SCHEDULE FOR TYPE
- WALL-MOUNT LIGHT, SEE FIXTURE SCHEDULE FOR TYPE
- GROUND ROD
- GROUND ROD W/ TEST WELL

LEGEND – ONE LINE DIAGRAM AND WIRING DIAGRAM SYMBOLS

- CIRCUIT BREAKER, FRAME SIZE AND TRIP SETTING AS NOTED
- DISCONNECT SWITCH
- INVERTER
- BUS CONNECTION POINT
- CROSSING POINT (NO CONNECTION)
- NORMALLY CLOSED – NORMALLY OPEN CONTACTS
- TRANSFORMER CONTROL/POWER, SIZE AND RATING AS NOTED
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER
- FUSE, SIZE/RATING AS NOTED
- FUSED DISCONNECT SWITCH
- EARTH GROUND
- PUSHBUTTON SWITCHES; NUMBER AND TYPE OF CONTACT BLOCKS MAY VARY
- PUSHBUTTON SWITCHES MUSHROOM HEAD; NUMBER AND TYPE OF CONTACT BLOCKS MAY VARY
- KEYED INTERLOCK (KIRK KEY OR EQ.)
- SHUNT TRIP COIL

ABBREVIATIONS

- A AMPERES
- AERMS ARC ENERGY REDUCING MAINTENANCE SWITCH
- AF AMPERE FRAME
- A.F.F. ABOVE FINISH FLOOR
- A.F.G. ABOVE FINISH GRADE
- AFDI ARC FAULT DETECTION & INTERRUPTER
- AIC AMPS INTERRUPTING CAPACITY
- AT AMPERE TRIP
- ATS AUTOMATIC TRANSFER SWITCH
- AWG AMERICAN WIRE GAUGE
- BKR CIRCUIT BREAKER
- C CONDUIT
- CB COMBINER BOX
- CKT CIRCUIT
- CP CONTROL PANEL
- CU COPPER
- DISC DISCONNECT
- EGC EQUIPMENT GROUNDING CONDUCTOR
- ELEC ELECTRIC, ELECTRICAL
- EMERG EMERGENCY
- EMT ELECTRICAL METALLIC TUBING
- EQUIP EQUIPMENT
- EXIST EXISTING
- G, GND GROUND
- GEC GROUNDING ELECTRODE CONDUCTOR
- GFCI GROUND-FAULT CIRCUIT INTERRUPTER
- GFPE GROUND-FAULT PROTECTION OF EQUIPMENT
- HID HIGH-INTENSITY DISCHARGE (LIGHTING)
- HZ HERTZ
- IMC INTERMEDIATE METALLIC CONDUIT
- kAIC 1000 AMPS INTERRUPT CAPACITY
- kCMIL 1000 CIRCULAR MILLS
- kVA KILO-VOLT AMPERE
- kW KILOWATT
- LA LIGHTNING & SURGE ARRESTOR
- LED LIGHT-EMITTING DIODE
- LSIG LONG, SHORT, INSTANTANEOUS, & GROUND FAULT LIGHTING
- LTC LIGHTING
- MAX MAXIMUM
- MFG MANUFACTURER
- MLO MAIN LUGS ONLY
- MPPT MAXIMUM POWER POINT TRACKING
- NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
- NTS NOT TO SCALE
- P POLE
- PF POWER FACTOR
- PLC PROGRAMMABLE LOGIC CONTROLLER
- POI POINT OF INTERCONNECTION
- PRI PRIMARY
- PVC POLYVINYL CHLORIDE
- PWR POWER
- RCPT RECEPTACLE
- RGS RIGID GALVANIZED STEEL CONDUIT
- RMC RIGID METAL CONDUIT
- SA SURGE ARRESTOR
- SEC SECONDARY
- SPD SURGE PROTECTION DEVICE
- SSBJ SUPPLY SIDE BONDING JUMPER
- ST SHUNT TRIP
- STP SHIELDED TWISTED PAIR
- SW SWITCH
- TBD TO BE DETERMINED
- TP TWISTED PAIR
- TYP TYPICAL
- V VOLT
- VA VOLT-AMPERE
- W WATT
- WP WEATHERPROOF
- XFMR TRANSFORMER
- Ø DIAMETER OR PHASE

NOTES SPECIFIC TO CONNECTICUT

ADOPTED NEC VERSION: 2017

UTILITY: EVERSOURCE

UTILITY DISCONNECT SWITCH REQUIREMENTS:
 AN EXTERNAL DISCONNECT AT THE PCC OR AT ANOTHER MUTUALLY AGREEABLE POINT THAT IS ACCESSIBLE TO COMPANY PERSONNEL AT ALL HOURS OF ALL DAYS AND THAT CAN BE OPENED FOR ISOLATION IF REQUIRED. THE SWITCH SHALL BE GANG OPERATED, HAVE A VISIBLE AIR GAP BETWEEN SWITCH CONTACTS, BE RATED TO INTERRUPT THE MAXIMUM GENERATOR OUTPUT AND BE CAPABLE OF BEING LOCKED OPEN, TAGGED AND GROUNDED ON COMPANY SIDE BY COMPANY PERSONNEL. THIS DEVICE MAY BE OPERATED MANUALLY, REMOTELY OR THROUGH THE OPERATION OF A COMPANY TRANSFER TRIP SCHEME.

DRAWING TITLE
**ELECTRICAL NOTES
 & SYMBOL LIST**

DRAWING #
E001

PROJECT: SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359

DEVELOPER: Greenskies a Clean Focus company

DC SYSTEM SIZE: 6112.600 kW
 AC SYSTEM SIZE: 4999.000 kW
 MODULE TYPE: CS 400W / HT 450W
 STRING QUANTITY: 538
 ORIENTATION: 30° TILT, 0° AZIMUTH

DATE: 03/09/2021
 PERMIT REVIEW SET (REV. 1):
 PERMIT REVIEW SET

PAGE SIZE: 36" x 24"
 PROJECT #: 19-1312

REVISION DESCRIPTION

DATE

REVISION DESCRIPTION

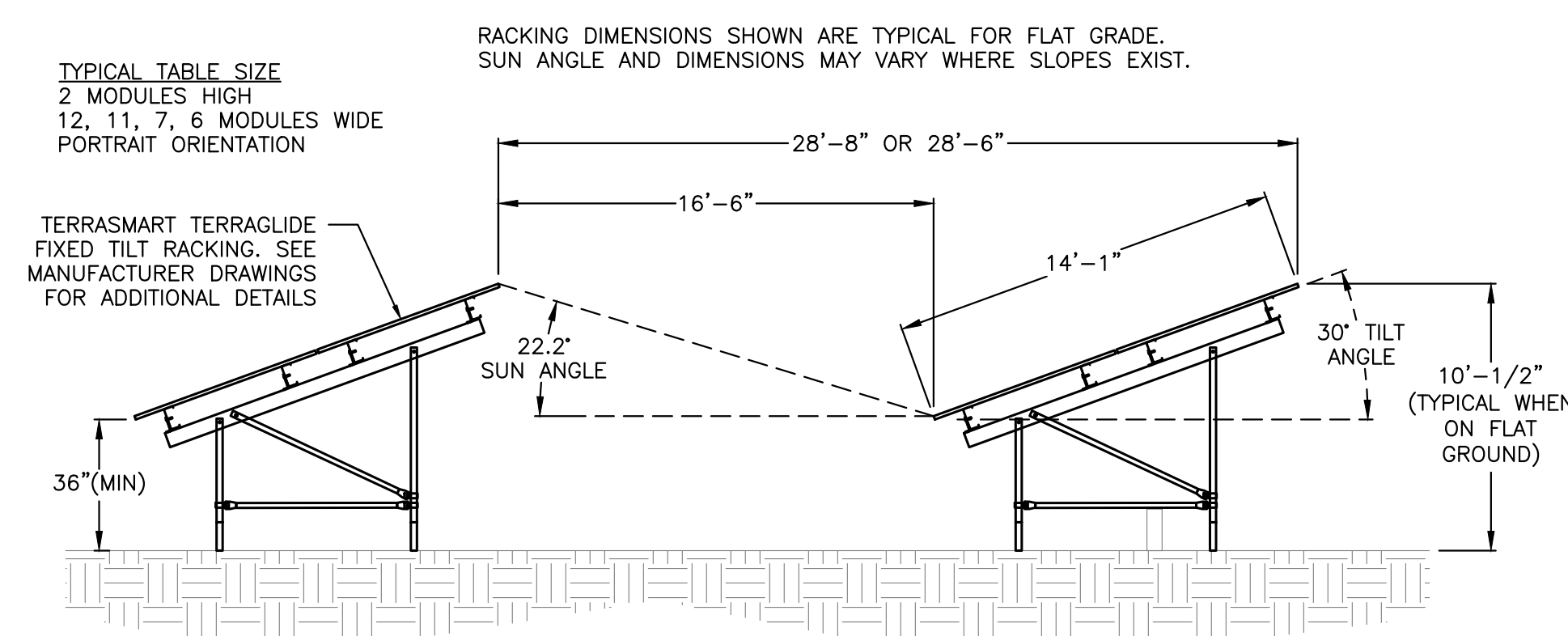
DATE

REVISION DESCRIPTION

DATE

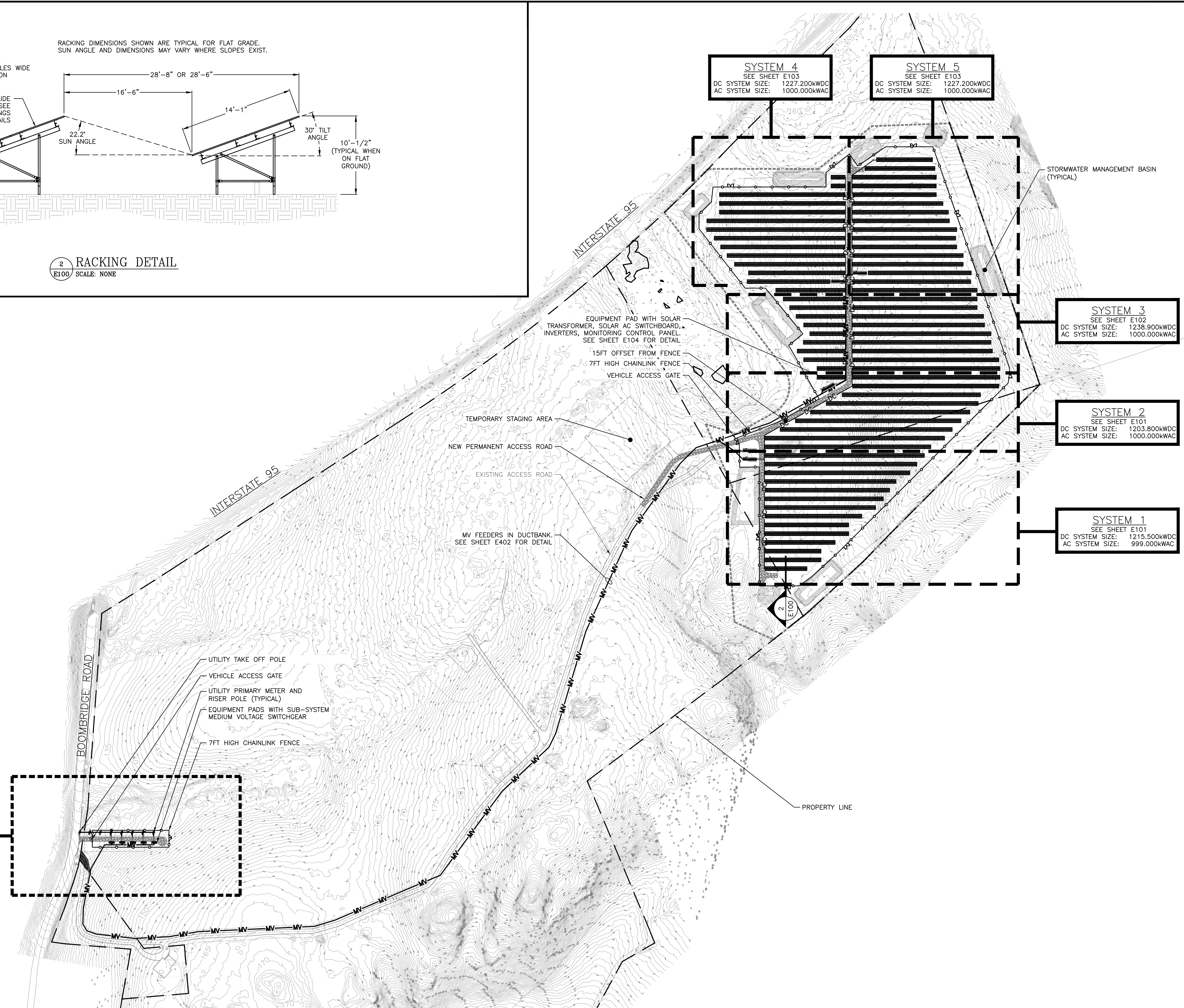
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PLOT DATE: 3/12/2021 6:52 PM



2 RACKING DETAIL
E100 SCALE: NONE

MV EQUIPMENT AREA
SEE SHEET E106



1 AC ELECTRICAL PLAN
E100 SCALE: 1" = 150'-0"

SYSTEM 4
SEE SHEET E103
DC SYSTEM SIZE: 1227.200kWDC
AC SYSTEM SIZE: 1000.000kWAC

SYSTEM 5
SEE SHEET E103
DC SYSTEM SIZE: 1227.200kWDC
AC SYSTEM SIZE: 1000.000kWAC

SYSTEM 3
SEE SHEET E102
DC SYSTEM SIZE: 1238.900kWDC
AC SYSTEM SIZE: 1000.000kWAC

SYSTEM 2
SEE SHEET E101
DC SYSTEM SIZE: 1203.800kWDC
AC SYSTEM SIZE: 1000.000kWAC

SYSTEM 1
SEE SHEET E101
DC SYSTEM SIZE: 1215.500kWDC
AC SYSTEM SIZE: 999.000kWAC

PROJECT	SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359	DRAWING #	E100
DC SYSTEM SIZE:	6112.600 kW	PAGE SIZE	36" x 24"
AC SYSTEM SIZE:	4999.000 kW	PROJECT #	19.1312
MODULE TYPE:	CS 400W / HT 450W	DEVELOPER	Greenskies a Clean Focus company
MODULE QUANTITY:	13,988	127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM	GREENSKIES
STRING QUANTITY:	538	111 BINGER STREET EUREKA, CA 95631 WWW.PUREPOWER.COM	PUREPOWER
ORIENTATION:	30° TILT, 0° AZIMUTH	DATE	03/09/2021
		REVISION DESCRIPTION	PERMIT REVIEW SET (REV 1)
			PERMIT REVIEW SET
			SK 1 SK 1
			SK 1 SK 1
			SK 1 SK 1

DRAWING TITLE: OVERALL AC ELECTRICAL PLAN

PLLOT DATE: 3/12/2021 6:52 PM
RULER IN INCHES: 0 1/2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

CONTINUED ON E102

DC SOURCE CIRCUITS FROM ARRAY ROUTED UNDERGROUND TO INVERTERS. INSTALL HANDHOLE AS NECESSARY (TYPICAL). SEE DETAIL ON SHEET E402.

UNDERGROUND MEDIUM VOLTAGE AC & MONITORING CONDUITS (TYPICAL). SEE DETAIL ON SHEET E402

ELECTRICAL EQUIPMENT PLAN
SEE SHEET E104

INVERTERS 9-16, MINI POWER ZONE 2, AND MONITORING CONTROL PANEL 2 ON EQUIPMENT RACK

EQUIPMENT PAD WITH SOLAR TRANSFORMER 2, GROUNDING TRANSFORMER 2, AND SOLAR AC SWITCHBOARD 2

EQUIPMENT PAD WITH SOLAR TRANSFORMER 1, GROUNDING TRANSFORMER 1 AND SOLAR AC SWITCHBOARD 1

INVERTERS 1-8, MINI POWER ZONE 1, AND MONITORING CONTROL PANEL 1 ON EQUIPMENT RACK

PYRANOMETER SENSOR 2 MOUNTED TO MODULE FRAME, REFER TO INSTALLATION MANUAL FOR DETAILS

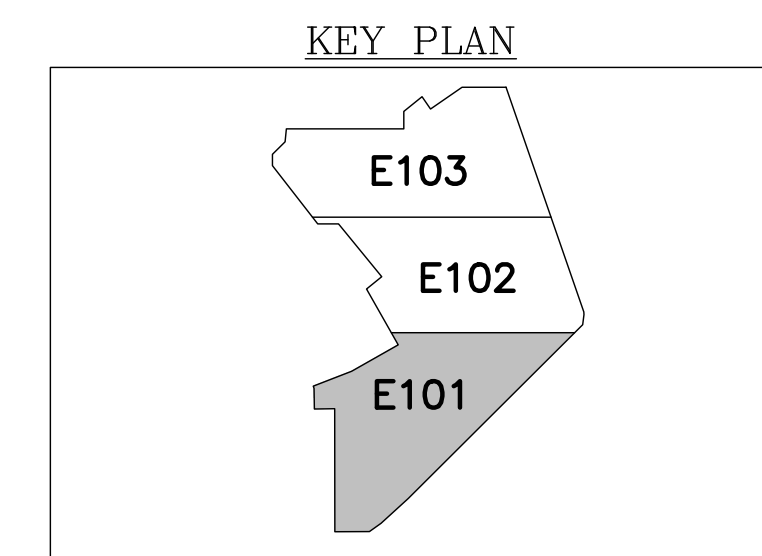
MODULE CELL TEMP SENSOR 2 AT BACK OF MODULE CENTER, REFER TO INSTALLATION MANUAL FOR DETAILS.

PYRANOMETER SENSOR 1 MOUNTED TO MODULE FRAME, REFER TO INSTALLATION MANUAL FOR DETAILS

MODULE CELL TEMP SENSOR 1 AT BACK OF MODULE CENTER, REFER TO INSTALLATION MANUAL FOR DETAILS.

MODULE LEGEND

	CANADIAN SOLAR 400W
	HT-SAAE 400W



1 PARTIAL ELECTRICAL PLAN - SYSTEMS 1 & 2
E101 SCALE: 1" = 30'-0"



REVISION DESCRIPTION	DATE	DATE	DATE	DATE

PURE POWER ENGINEERING
111 SINGER STREET, SUITE 200, EAST GRANBY, CT 06026
WWW.PUREPOWER.COM
RICHARD A. YOUNG, P.E.
CT LICENSE NO. 03629262

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

DEVELOPER
Greenskies
a Clean Focus company

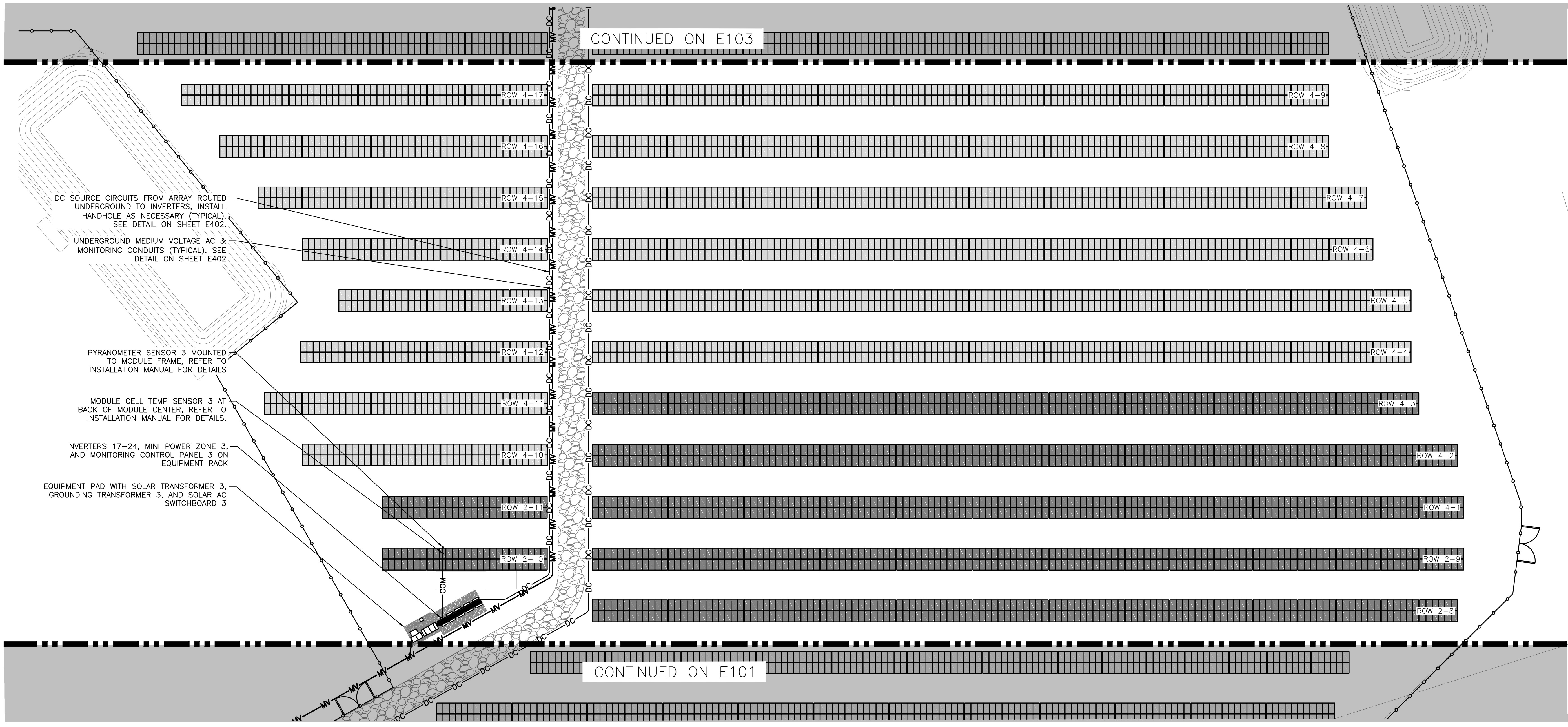
PAGE SIZE: 36" x 24"
PROJECT #: 19.1312

DC SYSTEM SIZE: 6112.600 kW
AC SYSTEM SIZE: 4999.000 kW
MODULE TYPE: CS 400W / HT 450W
STRING QUANTITY: 538
ORIENTATION: 30° TILT, 0° AZIMUTH

PROJECT
SOLAR GROUND MOUNT AT
CSCU BOOMBRIDGE
227 BOOMBRIDGE ROAD
STONINGTON, CT 06359

DRAWING #
E101

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



DC SOURCE CIRCUITS FROM ARRAY ROUTED UNDERGROUND TO INVERTERS, INSTALL HANDHOLE AS NECESSARY (TYPICAL). SEE DETAIL ON SHEET E402.

UNDERGROUND MEDIUM VOLTAGE AC & MONITORING CONDUITS (TYPICAL). SEE DETAIL ON SHEET E402.

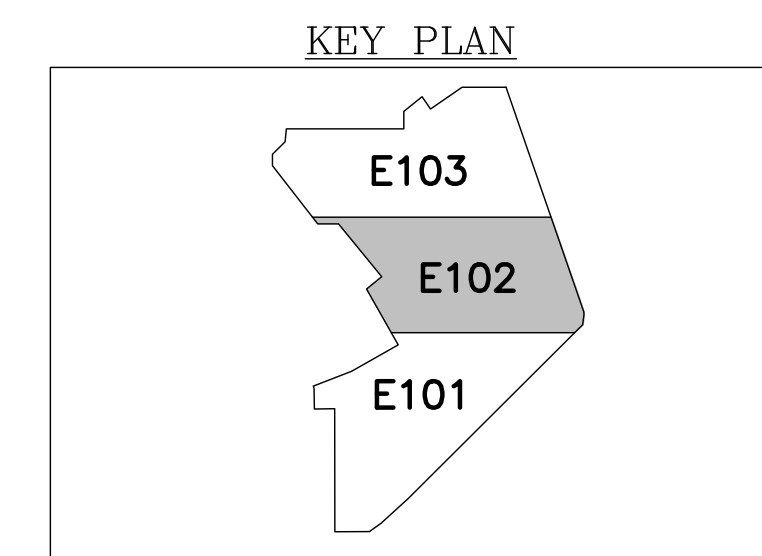
PYRANOMETER SENSOR 3 MOUNTED TO MODULE FRAME, REFER TO INSTALLATION MANUAL FOR DETAILS.

MODULE CELL TEMP SENSOR 3 AT BACK OF MODULE CENTER, REFER TO INSTALLATION MANUAL FOR DETAILS.

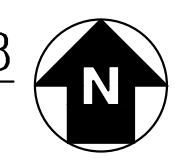
INVERTERS 17-24, MINI POWER ZONE 3, AND MONITORING CONTROL PANEL 3 ON EQUIPMENT RACK.

EQUIPMENT PAD WITH SOLAR TRANSFORMER 3, GROUNDING TRANSFORMER 3, AND SOLAR AC SWITCHBOARD 3.

MODULE LEGEND	
	CANADIAN SOLAR 400W
	HT-SAAE 400W



1 PARTIAL ELECTRICAL PLAN - SYSTEM 3
 E102 SCALE: 1" = 30'-0"



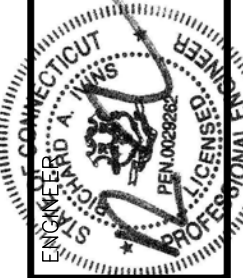
DRAWING TITLE
 PARTIAL ELECTRICAL PLAN - SYSTEM 3

DRAWING #
 E102

PROJECT
 SOLAR GROUND MOUNT AT
 CSCU BOOMBRIDGE
 227 BOOMBRIDGE ROAD
 STONINGTON, CT 06359

PAGE SIZE
 36" x 24"
 PROJECT #
 19.13.12

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



PURE POWER
 ENGINEERING
 111 BOWER STREET
 HARTFORD, CT 06103
 WWW.PUREPOWER.COM
 RICHARD A. VONNEGUT
 CT LICENSE NO. 03629262

DATE	REVISION DESCRIPTION	PM / ENG / CHK
03/09/2021	PERMIT REVIEW SET (REV. 1)	SK / SK / RI
03/29/2021	PERMIT REVIEW SET	SK / SK / RI

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

PLOT DATE: 3/12/2021 6:52 PM

DC SOURCE CIRCUITS FROM ARRAY ROUTED UNDERGROUND TO INVERTERS, INSTALL HANDHOLE AS NECESSARY (TYPICAL). SEE DETAIL ON SHEET E402.

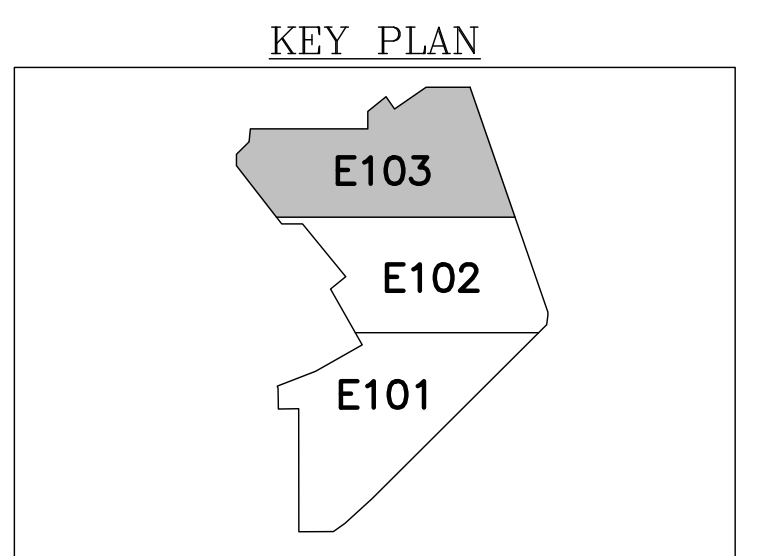


CONTINUED ON E102

MODULE LEGEND

	CANADIAN SOLAR 400W
	HT-SAAE 400W

- 1 PYRANOMETER SENSOR 4 MOUNTED TO MODULE FRAME. REFER TO INSTALLATION MANUAL FOR DETAILS.
- 2 MODULE CELL TEMP SENSOR 4 AT BACK OF MODULE CENTER, REFER TO INSTALLATION MANUAL FOR DETAILS.
- 3 INVERTERS 25-32, MINI POWER ZONE 4, AND MONITORING CONTROL PANEL 4 ON EQUIPMENT RACK
- 4 EQUIPMENT PAD WITH SOLAR TRANSFORMER 4, GROUNDING TRANSFORMER 4, AND SOLAR AC SWITCHBOARD 4
- 5 INVERTERS 33-40, MINI POWER ZONE 5, AND MONITORING CONTROL PANEL 5 ON EQUIPMENT RACK
- 6 EQUIPMENT PAD WITH SOLAR TRANSFORMER 5, GROUNDING TRANSFORMER 5, AND SOLAR AC SWITCHBOARD 5
- 7 PYRANOMETER SENSOR 5 MOUNTED TO MODULE FRAME, REFER TO INSTALLATION MANUAL FOR DETAILS.
- 8 MODULE CELL TEMP SENSOR 5 AT BACK OF MODULE CENTER, REFER TO INSTALLATION MANUAL FOR DETAILS.



1 PARTIAL ELECTRICAL PLAN - SYSTEM 4 & 5
 E103 SCALE: 1" = 30'-0"



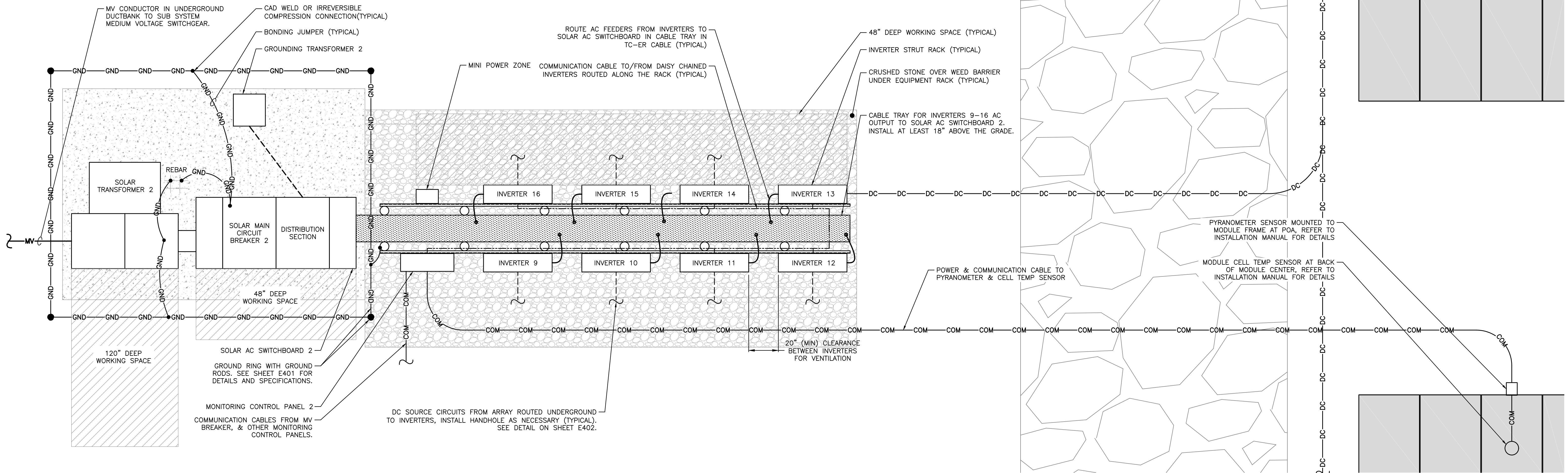
DRAWING TITLE
PARTIAL ELECTRICAL PLAN - SYSTEM 4 & 5

<p>PURE POWER 111 BINGER STREET, SUITE 100 NORTH HAVEN, CT 06473 WWW.PUREPOWER.COM</p> <p>DATE: 03/09/2021 REVISION DESCRIPTION: PERMIT REVIEW SET (REV. 1)</p>	<p>GREENSKIES 127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM</p> <p>DEVELOPER: Greenskies a Clean Focus Company</p> <p>PAGE SIZE: 36" x 24" PROJECT #: 19.1312</p> <p>DC SYSTEM SIZE: 6112,600 kW AC SYSTEM SIZE: 4999,000 kW MODULE TYPE: CS 400W / HT 450W STRING QUANTITY: 538 ORIENTATION: 30° TILT, 0° AZIMUTH</p>
<p>PROJECT: SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359</p>	
<p>DRAWING #: E103</p>	

PLANT DATE: 3/12/2021 6:52 PM
 RULER IN INCHES: 0 1/2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

- NOTES:
1. ELECTRICAL EQUIPMENTS LOCATED OUTSIDE MUST NOT HAVE CONDUITS PENETRATING ON TOP OF THE EQUIPMENT.
 2. CONDUITS, CABLE TRAYS AND TROUGHS SHALL NOT PROTRUDE MORE THAN 6" INTO WORKING SPACE OF EQUIPMENT.
 3. MOUNT EQUIPMENT AS PER INSTALLATION MANUAL INSTRUCTION.
 4. ELECTRICAL EQUIPMENT MOUNTED WITH UNISTRUT CHANNEL. USE FASTENER SPECIFICALLY INTENDED FOR THE TYPE & CONSTRUCTION. MOUNT EQUIPMENT AS PER INSTALLATION MANUAL.
 5. TRANSITION TO MAX. 24" OF LFCM FOR FINAL CONNECTION TO INVERTER (TYPICAL AC, DC & COMMUNICATION).
 6. TRENCHED CONDUITS SEPARATED BY CONDUIT SPACERS CARLON OR EQUIVALENT.
 7. FEEDER BENDING RADIUS SHALL BE AT LEAST 5 TIMES THAT OF THE CONDUCTOR DIAMETER AS PER NEC GUIDELINES.
 8. THE EQUIPMENT OVERALL DIMENSION MAY VARY DEPENDING ON THE ACTUAL ACQUIRED EQUIPMENT BY THE CONTRACTOR. THE DIMENSION SHALL BE VERIFIED BY THE CONTRACTOR IN FIELD.

MAINTAIN 48" WORKING SPACE FOR LV EQUIPMENT AND 120" FOR MV EQUIPMENT



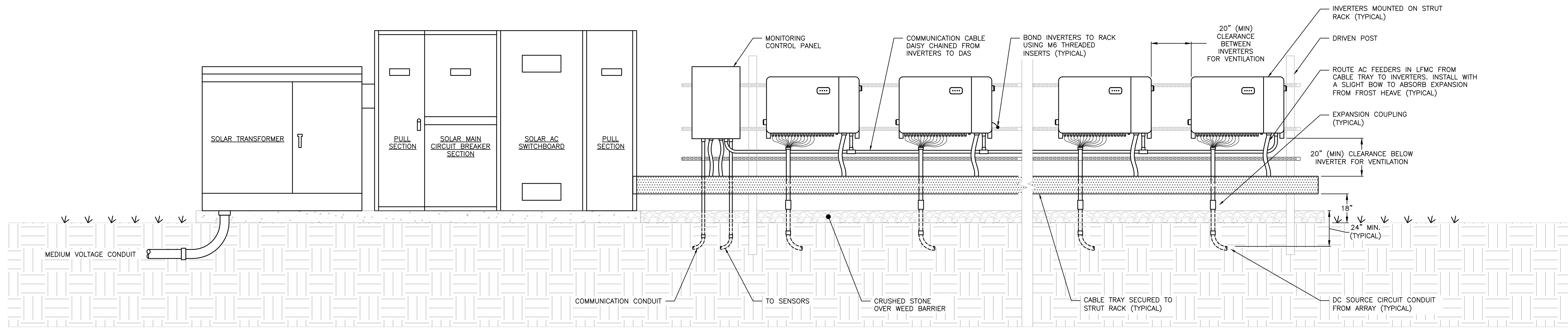
1 TYPICAL INVERTER & ELECTRICAL EQUIPMENT PLAN
 E104 SCALE: 3/8" = 1'-0"

DRAWING TITLE	DRAWING #
TYPICAL INVERTER & ELECTRICAL EQUIPMENT PLAN	E104

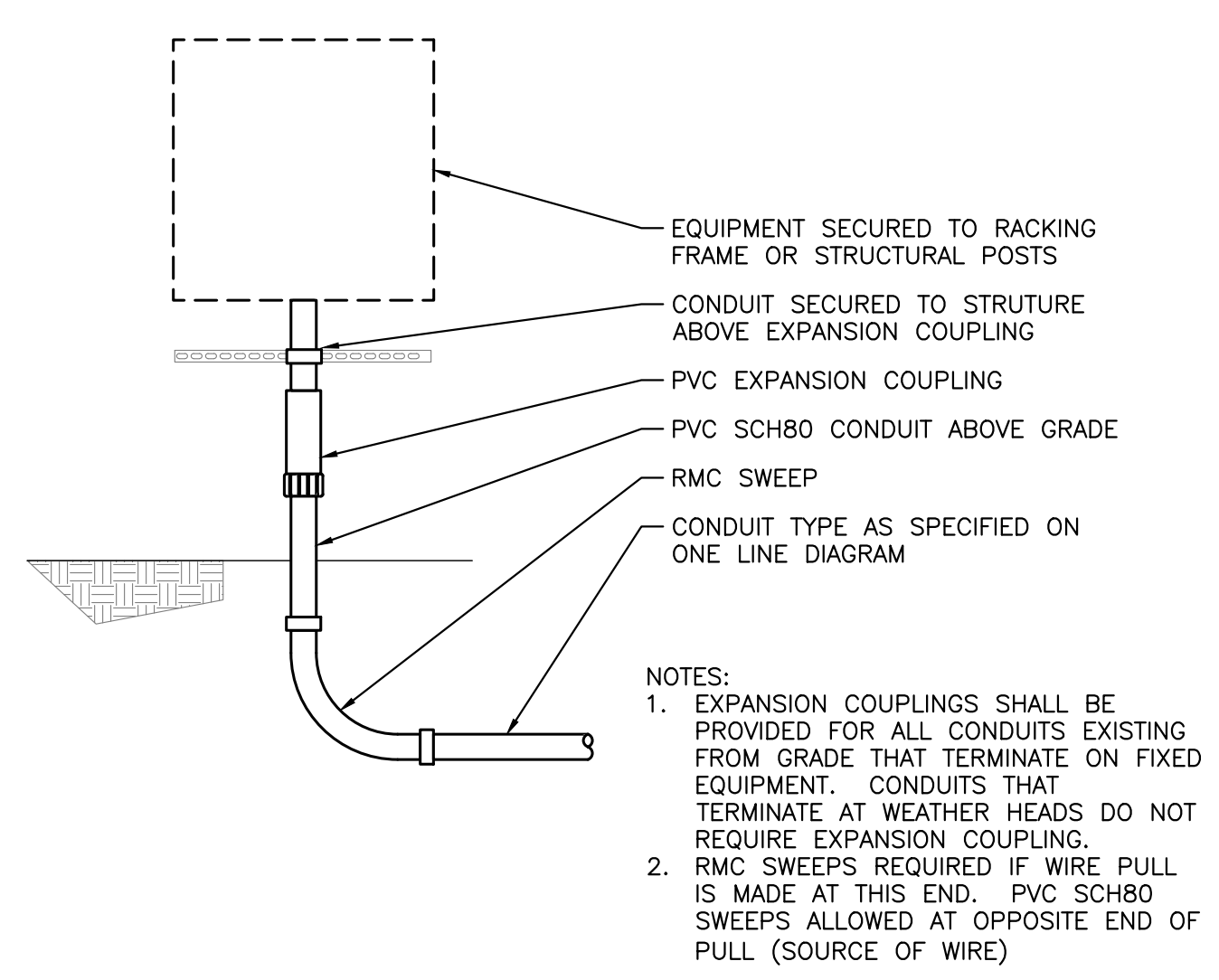
 GREENSKIES 127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM	DEVELOPER Greenskies a Clean Focus company	PAGE SIZE 36" x 24" PROJECT # 19.1312	DC SYSTEM SIZE: 6112,600 kW AC SYSTEM SIZE: 4999,000 kW MODULE TYPE: CS 400W / HT 450W STRING QUANTITY: 13,988 ORIENTATION: 30° TILT, 0° AZIMUTH	DATE 03/09/2021 03/29/2021	REVISION DESCRIPTION PERMIT REVIEW SET (REV 1) PERMIT REVIEW SET	PM / ENG / CHK SK / SK / RI SK / SK / RI
	111 BINGER STREET RICHARD A. UNTER CT LICENSE NO. 00829262	 RICHARD A. UNTER PROFESSIONAL ENGINEER ELECTRICAL STATE OF CONNECTICUT LICENSE NO. 10426	PROJECT SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359	DRAWING # E104		

RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

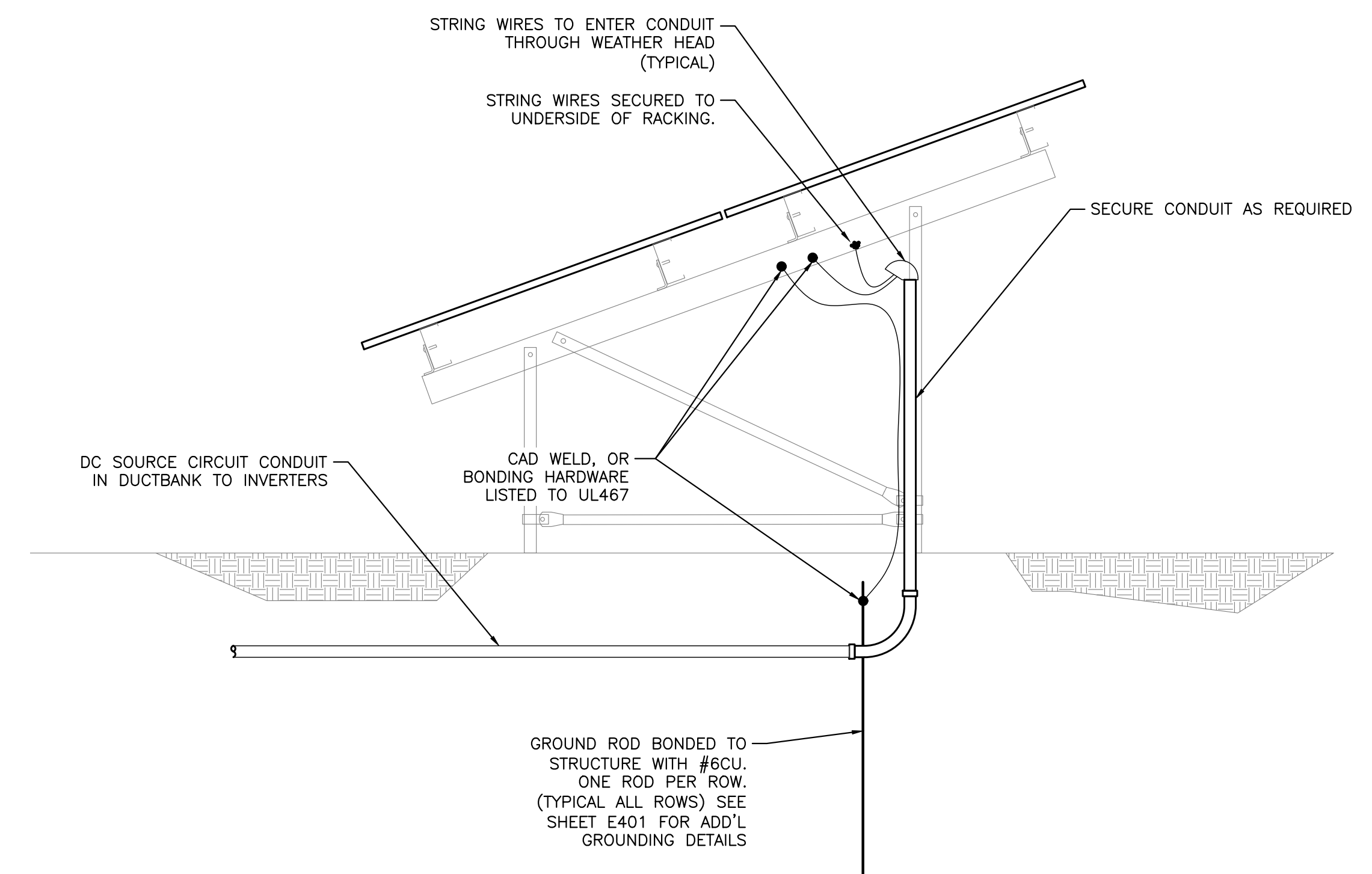
PLOT DATE: 3/12/2021 6:53 PM



1 TYPICAL ELECTRICAL EQUIPMENT AREA ELEVATION
E105 SCALE: NONE



2 TYPICAL CONDUIT TRANSITION ABOVE GRADE
E105 SCALE: NONE



3 TYPICAL STRING CONDUIT ELEVATION - SIDE VIEW
E105 SCALE: NONE

DATE	REVISION DESCRIPTION	PM	ENG	CHK
03/09/2021	PERMIT REVIEW SET (REV 1)	SK	SK	RI
03/17/2021	PERMIT REVIEW SET	SK	SK	RI

PURE POWER G
111 BOWER STREET
EUREKA, IN
WWW.PUREPOWER.COM
RICHARD A. VONN
CT LICENSE NO. 03029262

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

DEVELOPER
Greenskies
a Clean Focus company

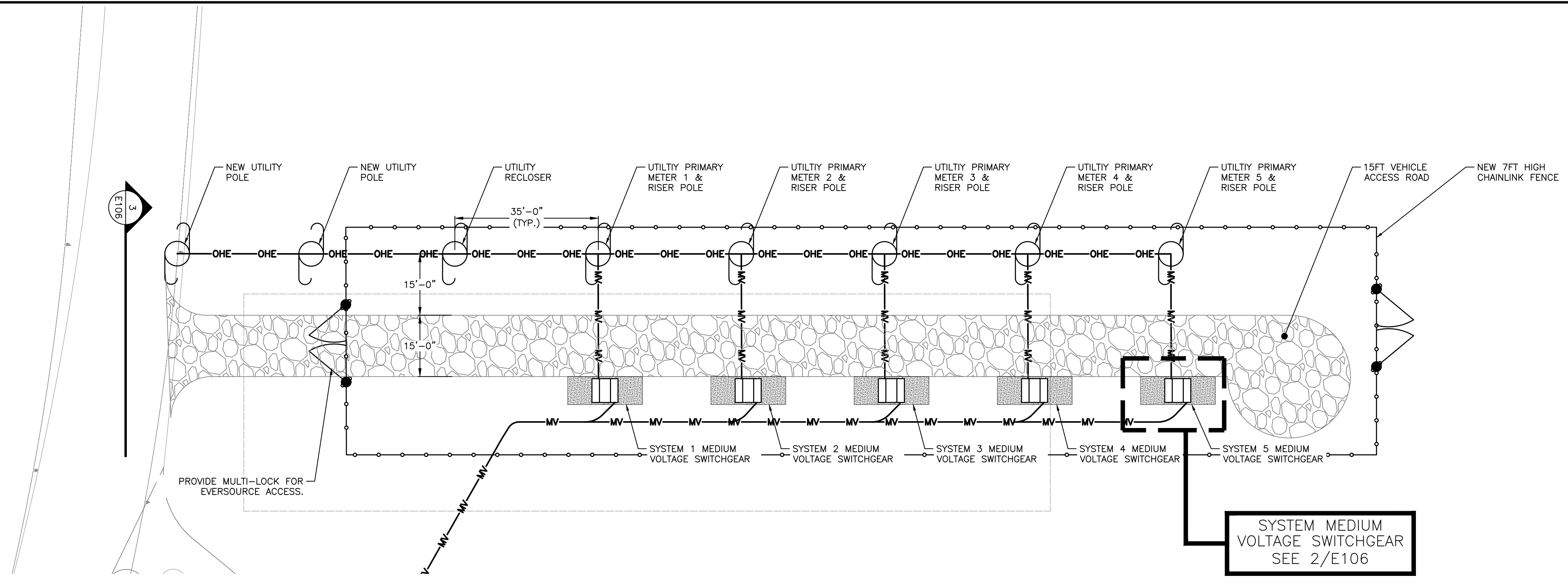
PAGE SIZE: 3.6" x 2.4"
PROJECT #: 19.1312

DC SYSTEM SIZE: 6112.600 kW
AC SYSTEM SIZE: 4999.000 kW
MODULE TYPE: CS 400W / HT 450W
MODULE QUANTITY: 13,988
STRING QUANTITY: 538
ORIENTATION: 30° TILT, 0° AZIMUTH

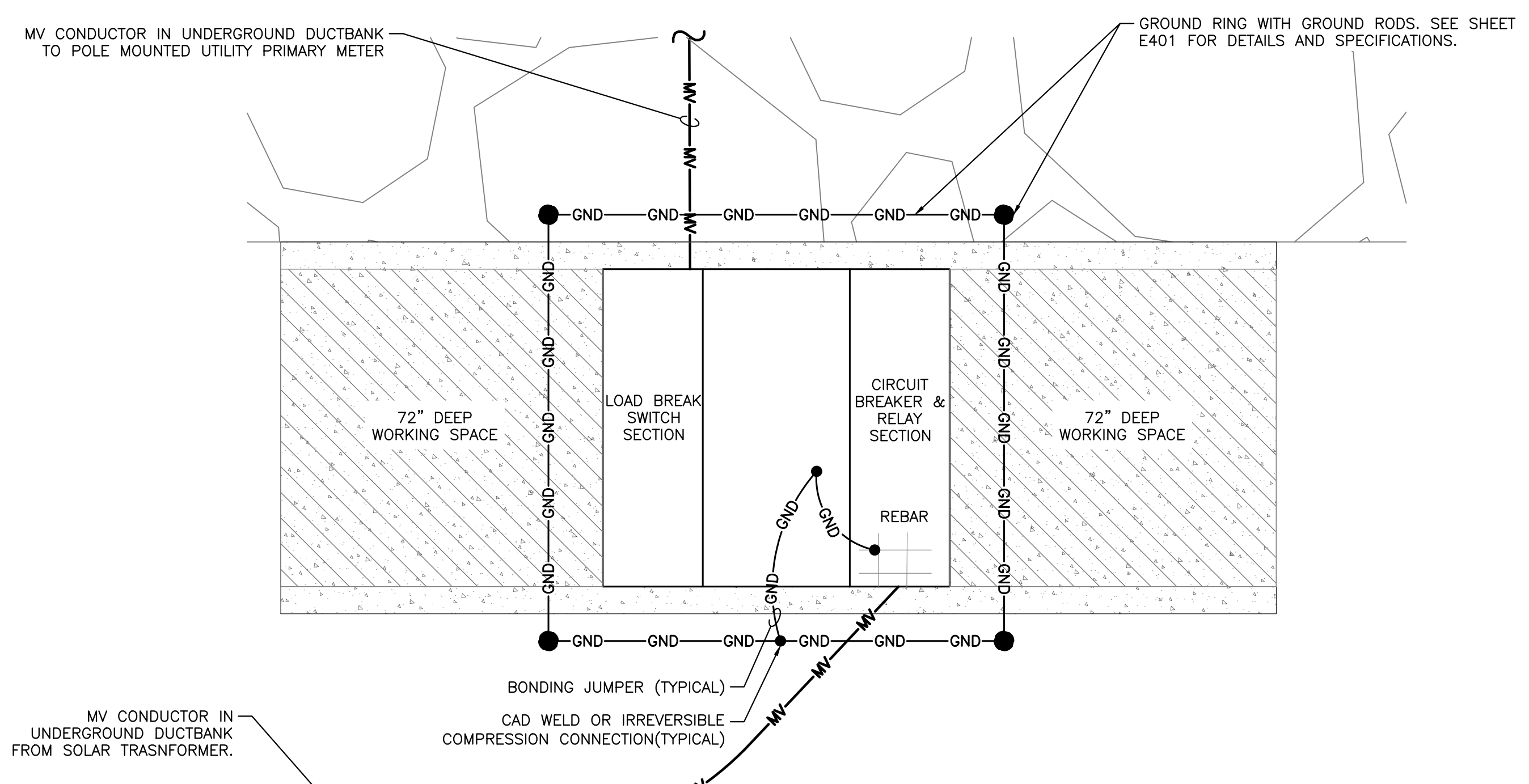
PROJECT
SOLAR GROUND MOUNT AT
CSCU BOOMBRIDGE
227 BOOMBRIDGE ROAD
STONINGTON, CT 06359

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

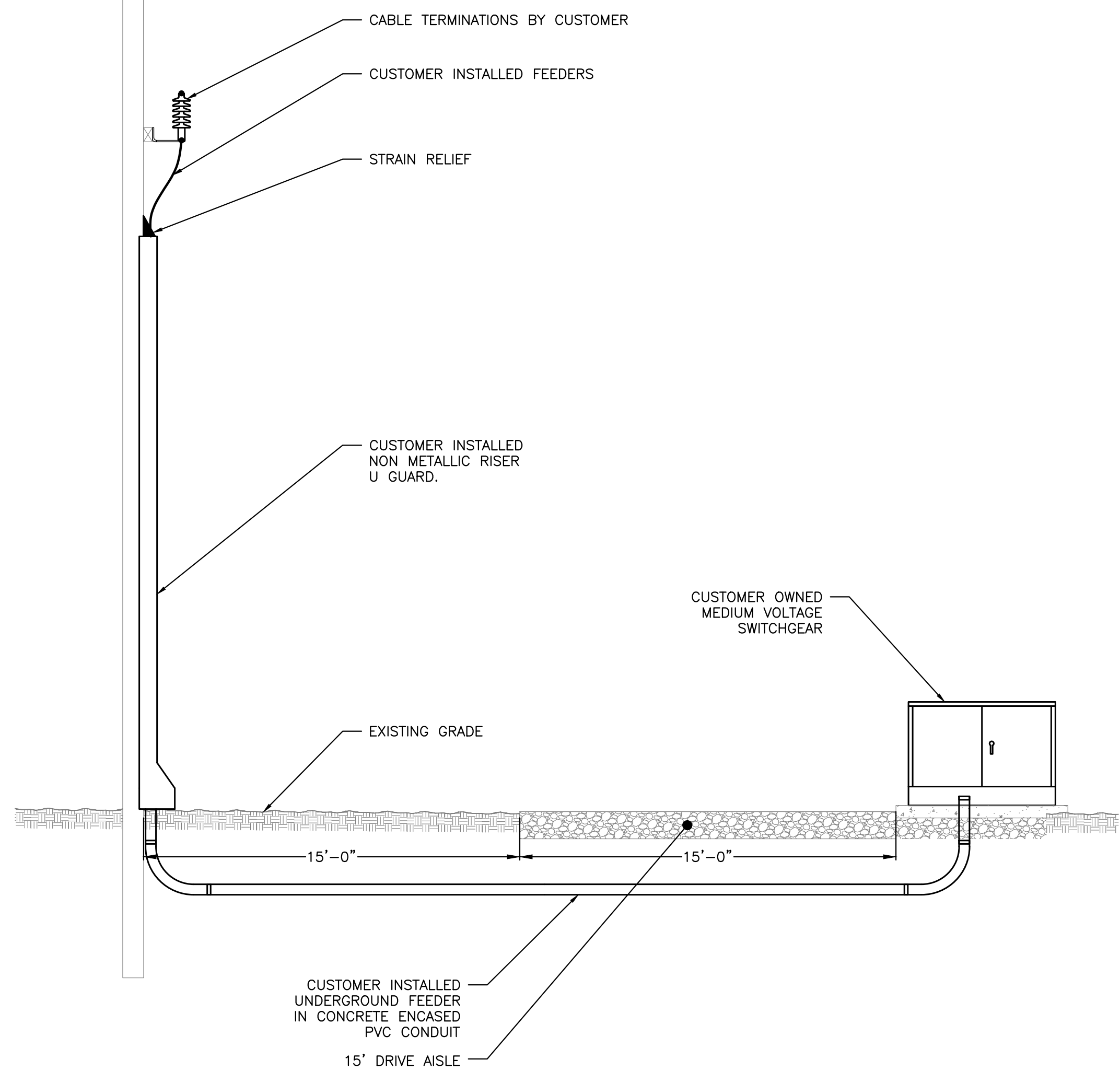
PLOT DATE: 3/12/2021 6:53 PM



1 MEDIUM VOLTAGE EQUIPMENT AREA
E106 SCALE: 1/16" = 1'-0"



2 SYSTEM MEDIUM VOLTAGE PLAN (TYPICAL)
E106 SCALE: 1/2" = 1'-0"



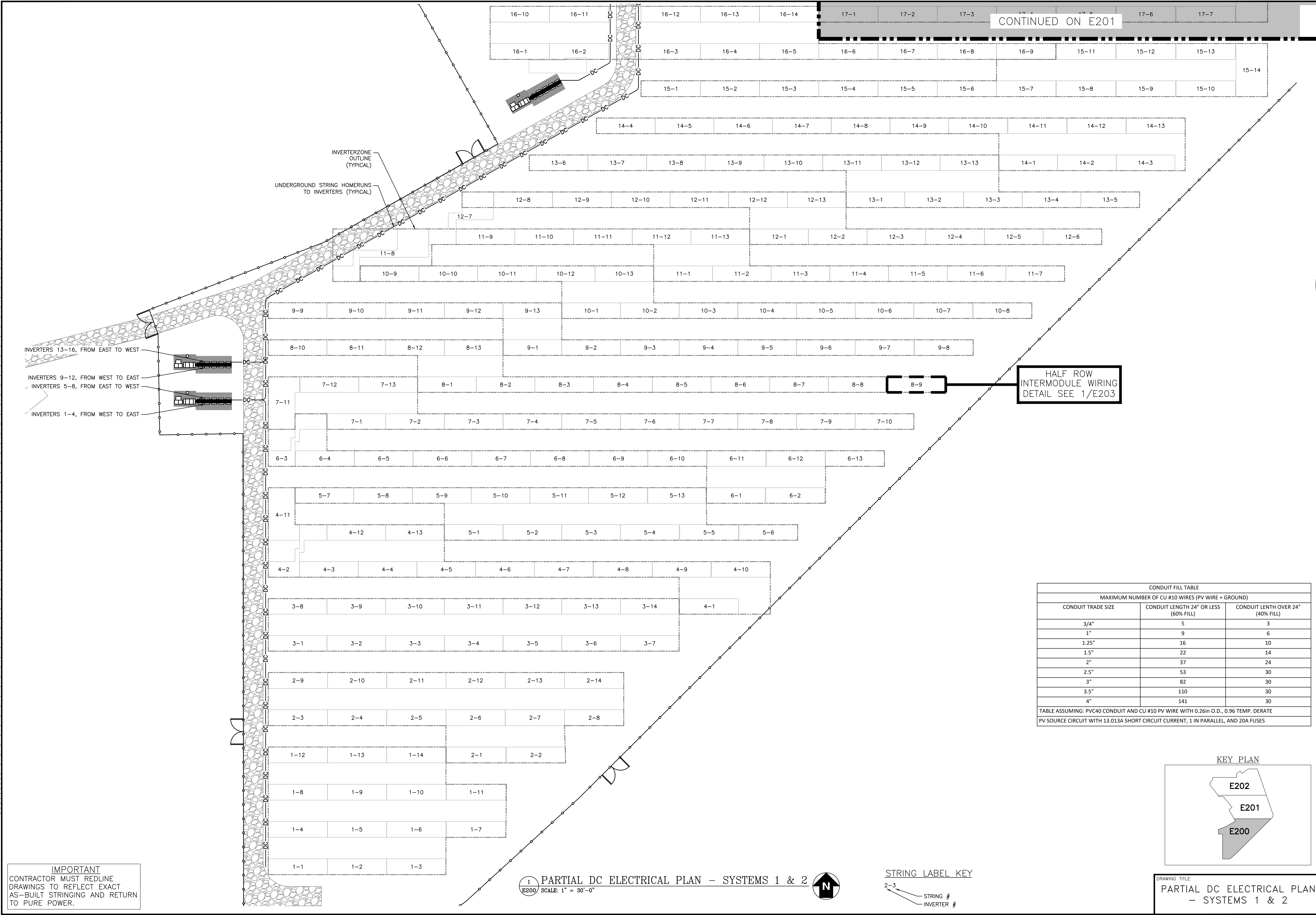
3 MV EQUIPMENT ELEVATION
E106 SCALE: 1/2" = 1'-0"

DRAWING TITLE
MEDIUM VOLTAGE EQUIPMENT PLAN

<p>Greenskies a Clean Focus company</p> <p>127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM</p>	<p>REGISTERED PROFESSIONAL ENGINEER RICHARD A. UNKEN ELECTRICAL ENGINEERING STATE OF CONNECTICUT LICENSE NO. 13023</p>	<p>PURE POWER 111 RIVER STREET EUREKA, IN WWW.PUREPOWER.COM RICHARD A. UNKEN CT LICENSE NO. 0302982</p>	<p>DATE: 03/29/2021</p> <p>REVISION DESCRIPTION: PERMIT REVIEW SET</p> <p>DATE: 03/29/2021</p> <p>REVISION DESCRIPTION: SK 1 SK 1 R</p>	
	<p>PAGE SIZE: 3.6" x 24"</p> <p>PROJECT #: 19.1312</p> <p>DEVELOPER: GREENSKIES</p>	<p>DC SYSTEM SIZE: 6112,600 kW AC SYSTEM SIZE: 4999,000 kW MODULE TYPE: CS 400W / HT 450W STRING QUANTITY: 13,988 STRING QUANTITY: 538 ORIENTATION: 30° TILT, 0° AZIMUTH</p>	<p>PROJECT: SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359</p>	<p>DRAWING # E106</p>

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

PLOT DATE: 3/12/2021 6:53 PM



CONTINUED ON E201

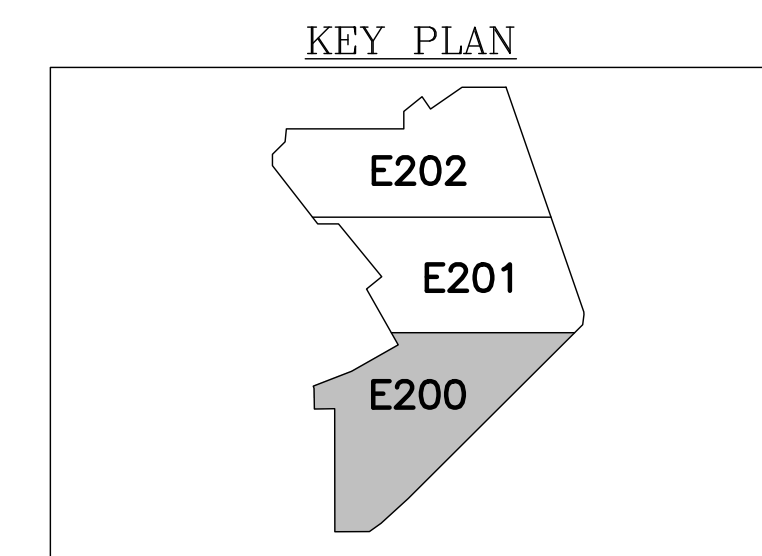
IMPORTANT
CONTRACTOR MUST REDLINE DRAWINGS TO REFLECT EXACT AS-BUILT STRINGING AND RETURN TO PURE POWER.

1 PARTIAL DC ELECTRICAL PLAN - SYSTEMS 1 & 2
E200 SCALE: 1" = 30'-0"

STRING LABEL KEY
○ STRING #
□ INVERTER #

CONDUIT FILL TABLE		
MAXIMUM NUMBER OF CU #10 WIRES (PV WIRE + GROUND)		
CONDUIT TRADE SIZE	CONDUIT LENGTH 24" OR LESS (60% FILL)	CONDUIT LENGTH OVER 24" (40% FILL)
3/4"	5	3
1"	9	6
1.25"	16	10
1.5"	22	14
2"	37	24
2.5"	53	30
3"	82	30
3.5"	110	30
4"	141	30

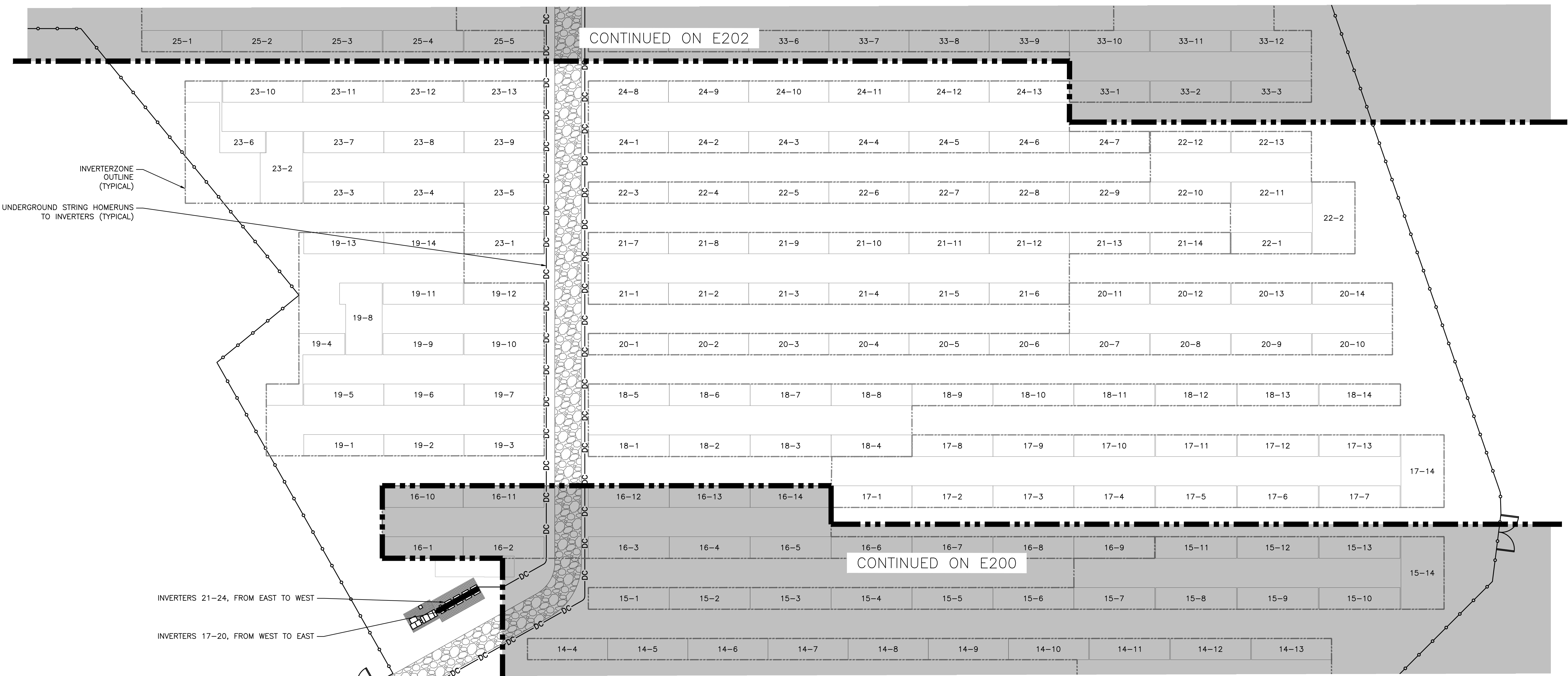
TABLE ASSUMING: PVC40 CONDUIT AND CU #10 PV WIRE WITH 0.26in O.D., 0.96 TEMP. DERATE
PV SOURCE CIRCUIT WITH 13.013A SHORT CIRCUIT CURRENT, 1 IN PARALLEL, AND 20A FUSES



DRAWING TITLE
PARTIAL DC ELECTRICAL PLAN - SYSTEMS 1 & 2

<p>DATE</p> <p>REVISION DESCRIPTION</p>	<p>DATE</p> <p>REVISION DESCRIPTION</p>	<p>DATE</p> <p>REVISION DESCRIPTION</p>	<p>DATE</p> <p>REVISION DESCRIPTION</p>	<p>DATE</p> <p>REVISION DESCRIPTION</p>	<p>DATE</p> <p>REVISION DESCRIPTION</p>
<p>PURE POWER 111 BOWER STREET EUREKA, IN WWW.PUREPOWER.COM</p>					
<p>GREENSKIES 127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM</p>					
<p>Greenskies a Clean Focus company</p>					
<p>DEVELOPER PROJECT # 19.1312</p>					
<p>DC SYSTEM SIZE: 6112.600 kW AC SYSTEM SIZE: 4999.000 kW MODULE TYPE: CS 400W / HT 450W STRING QUANTITY: 538 ORIENTATION: 30° TILT, 0° AZIMUTH</p>					
<p>PROJECT SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359</p>					
					<p>DRAWING # E200</p>

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



CONDUIT FILL TABLE		
MAXIMUM NUMBER OF CU #10 WIRES (PV WIRE + GROUND)		
CONDUIT TRADE SIZE	CONDUIT LENGTH 24" OR LESS (60% FILL)	CONDUIT LENGTH OVER 24" (40% FILL)
3/4"	5	3
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3.5"	110	30
4"	141	30

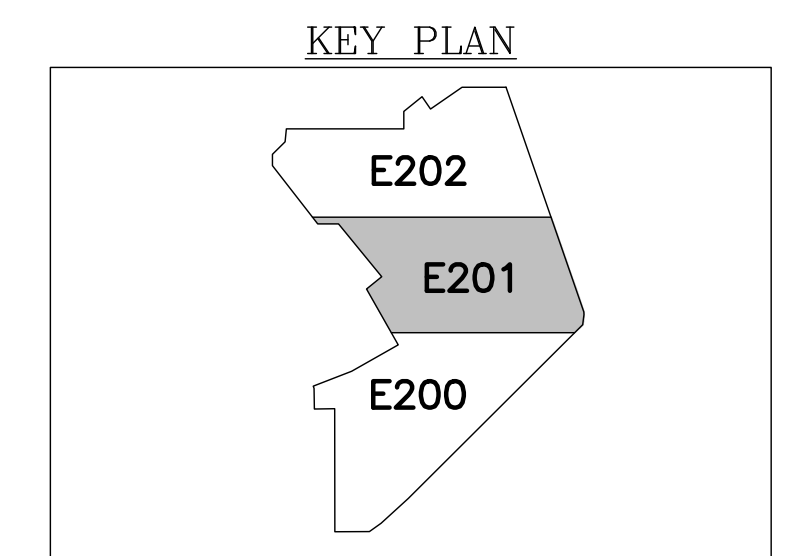
TABLE ASSUMING: PVC40 CONDUIT AND CU #10 PV WIRE WITH 0.26in O.D., 0.96 TEMP. DERATE
PV SOURCE CIRCUIT WITH 13.013A SHORT CIRCUIT CURRENT, 1 IN PARALLEL, AND 20A FUSES

IMPORTANT
CONTRACTOR MUST REDLINE DRAWINGS TO REFLECT EXACT AS-BUILT STRINGING AND RETURN TO PURE POWER.

1
E201 PARTIAL DC ELECTRICAL PLAN - SYSTEM 3
SCALE: 1" = 30'-0"



STRING LABEL KEY
2-3 → STRING #
→ INVERTER #



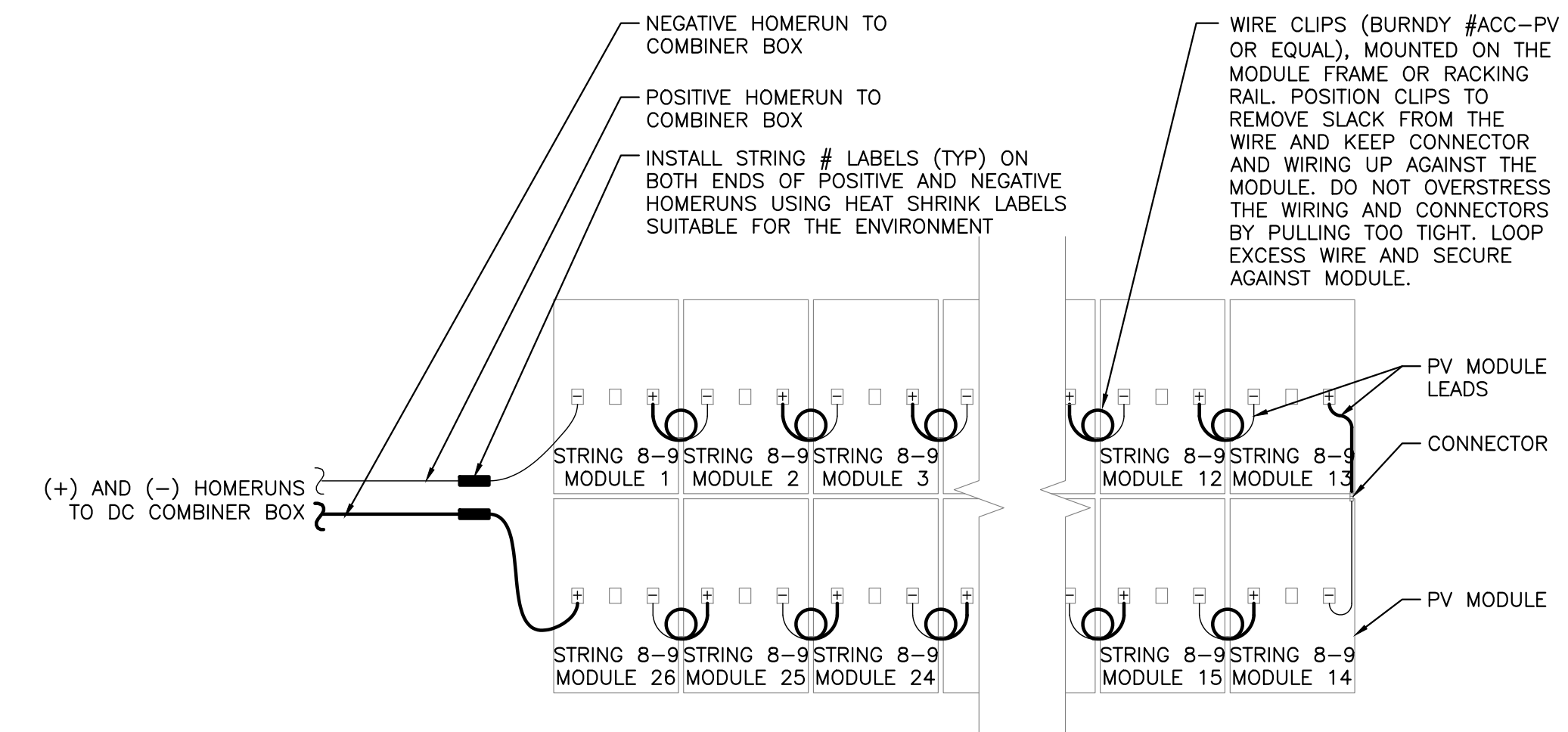
DRAWING TITLE
PARTIAL DC ELECTRICAL PLAN - SYSTEM 3

DRAWING #
E201

PROJECT: SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359
 DEVELOPER: Greenskies a Clean Focus company
 GREENSKIES 127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM
 DATE: 03/09/2021
 REVISION DESCRIPTION: PERMIT REVIEW SET (REV. 1)
 DATE: 03/09/2021
 REVISION DESCRIPTION: PERMIT REVIEW SET (REV. 1)
 DATE: 03/09/2021
 REVISION DESCRIPTION: PERMIT REVIEW SET (REV. 1)
 DATE: 03/09/2021
 REVISION DESCRIPTION: PERMIT REVIEW SET (REV. 1)

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

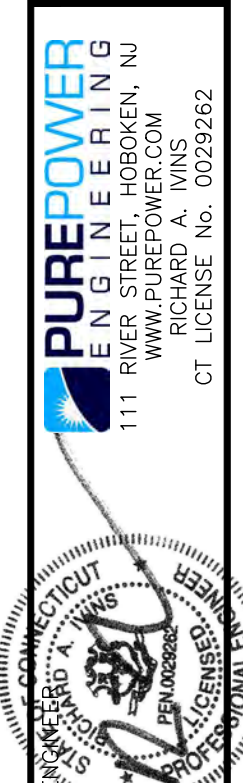
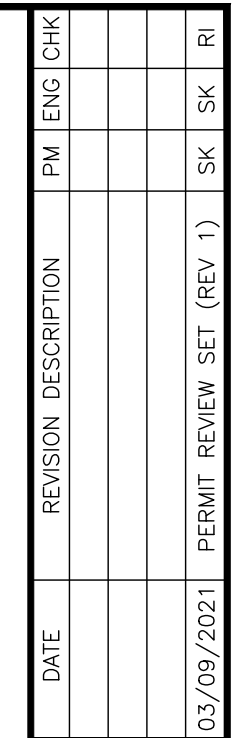
PLOT DATE: 3/12/2021 6:54 PM



1 HALF ROW INTERMODULE WIRING DETAIL
 B203 / SCALE: NONE

DRAWING TITLE	DRAWING #
STRING WIRING DETAILS	E203

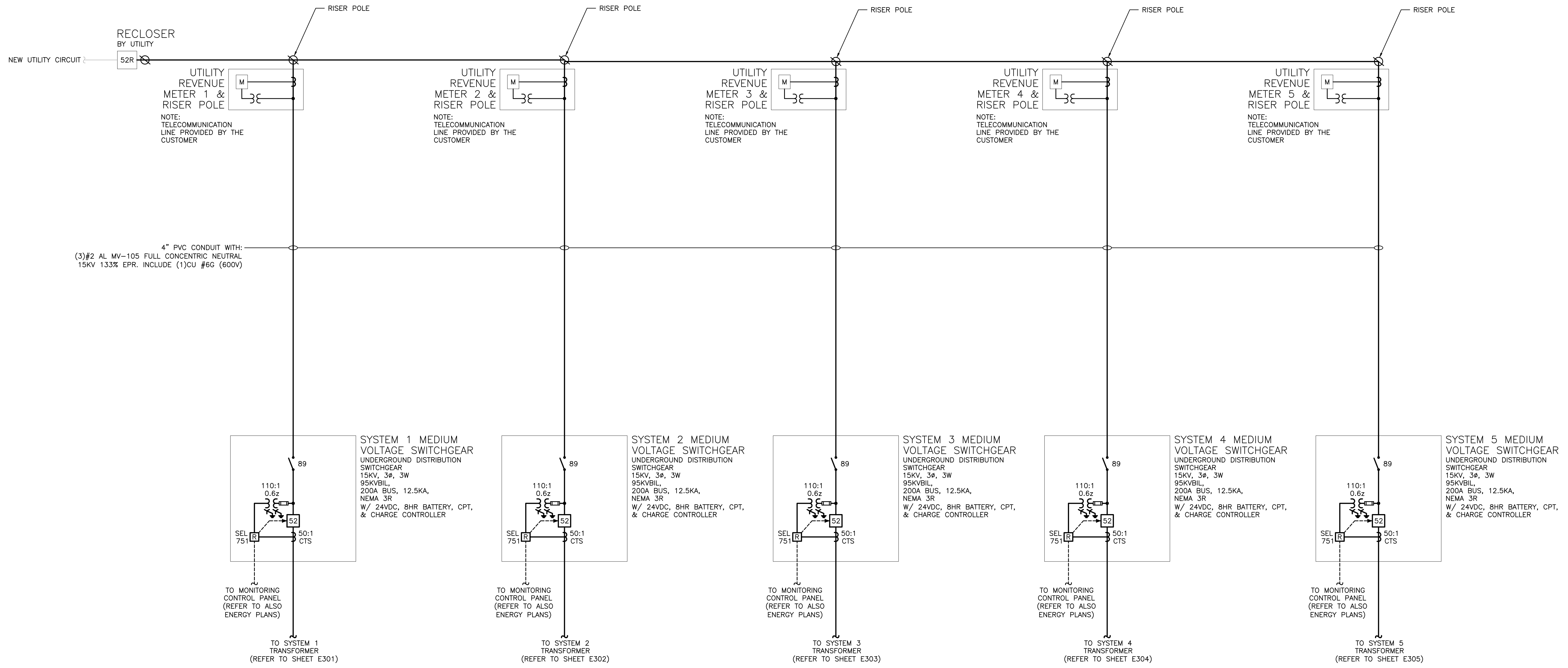
PROJECT	SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359
DC SYSTEM SIZE:	6112.600 kW
AC SYSTEM SIZE:	4999.000 kW
MODULE TYPE:	CS 400W / HT 450W
STRING QUANTITY:	538
ORIENTATION:	30° TILT, 0° AZIMUTH
DEVELOPER	Greenskies a Clean Focus company
DATE	03/09/2021
REVISION DESCRIPTION	PERMIT REVIEW SET (REV. 1)
DATE	03/09/2021
REVISION DESCRIPTION	SK SK R



RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

OVERALL SYSTEM SIZE	
DC SYSTEM SIZE	6,112.600 KW
AC SYSTEM SIZE	4,999.000 KW
MODULE	CANADIAN CS3W-400PB-AG / HT-SAAE HT72-166M 450
MODULE QTY	3640 / 10348
INVERTER	CANADIAN SOLAR CSI-125KTL-GS-E / 124KW DERATE
INVERTER QTY	39 / 1

EXTERNAL RELAY SETTINGS								
ANSI ELEMENT #	Pickup	Real	Units	Level	Delay (sec)	Total Clear Time (sec)*	Curve	Description
27	63.73	7010	V	88%	1.95	2.00		Slow UV
27	36.21	3983	V	50%	1.05	1.10		Fast UV
27C	57.94	6373	V	80%				Voltage Pickup for S1C & S1CG
59	79.67	8764	V	110%	1.95	2.00		Slow OV
59	86.91	9560	V	120%	0.11	0.16		Fast OV
59N	9.41	1035	V	13%	1.95	2.00		Neutral Shift
81U-1	56.50	56.50	Hz	94%	0.11	0.16		Fast UF
81U-2	58.50	58.50	Hz	98%	299.95	300.00		Slow UF
81O-1	62.00	62.00	Hz	103%	0.11	0.16		Fast OF
81O-2	61.20	61.20	Hz	102%	299.95	300.00		Slow OF
51N	0.20	10	A	25%	1.95	2.00	U4	Timed Neutral OC
50P	12.55	628	A	1500%	0.00	0.05		Instant Phase OC
51P	1.25	63	A	150%	1.95	2.00	U4	Timed Phase OC
79	68.80	7568	V	95%	299.95	300.00		Min Reclosing Voltage Value
79	76.05	8366	V	105%	299.95	300.00		Max Reclosing Voltage Value
79	59.50	59.50	Hz	99%	299.95	300.00		Min Reclosing Frequency Value
79	60.50	60.50	Hz	101%	299.95	300.00		Max Reclosing Frequency Value
41.83A USED FOR 50/51 ELEMENTS				7967.4V USED FOR 27/59 ELEMENTS				
CT RATIO FACTOR = 50				PT RATIO FACTOR = 110				
* total clear time includes 0.05 sec breaker opening time								



1 ONE LINE DIAGRAM
E300 SCALE: NONE

DRAWING TITLE
ONE LINE DIAGRAM - MEDIUM VOLTAGE

PROJECT: SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359

DC SYSTEM SIZE: 6112.600 KW
AC SYSTEM SIZE: 4999.000 KW
MODULE TYPE: CS 400W / HT 450W
STRING QUANTITY: 538
ORIENTATION: 30° TILT, 0° AZIMUTH

PAGE SIZE: 36" x 24"
PROJECT #: 19.1312

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

PURE POWER ENGINEERING INC. 111 BINGER STREET STONINGTON, CT 06334-1000 CT LICENSE NO. 03929862

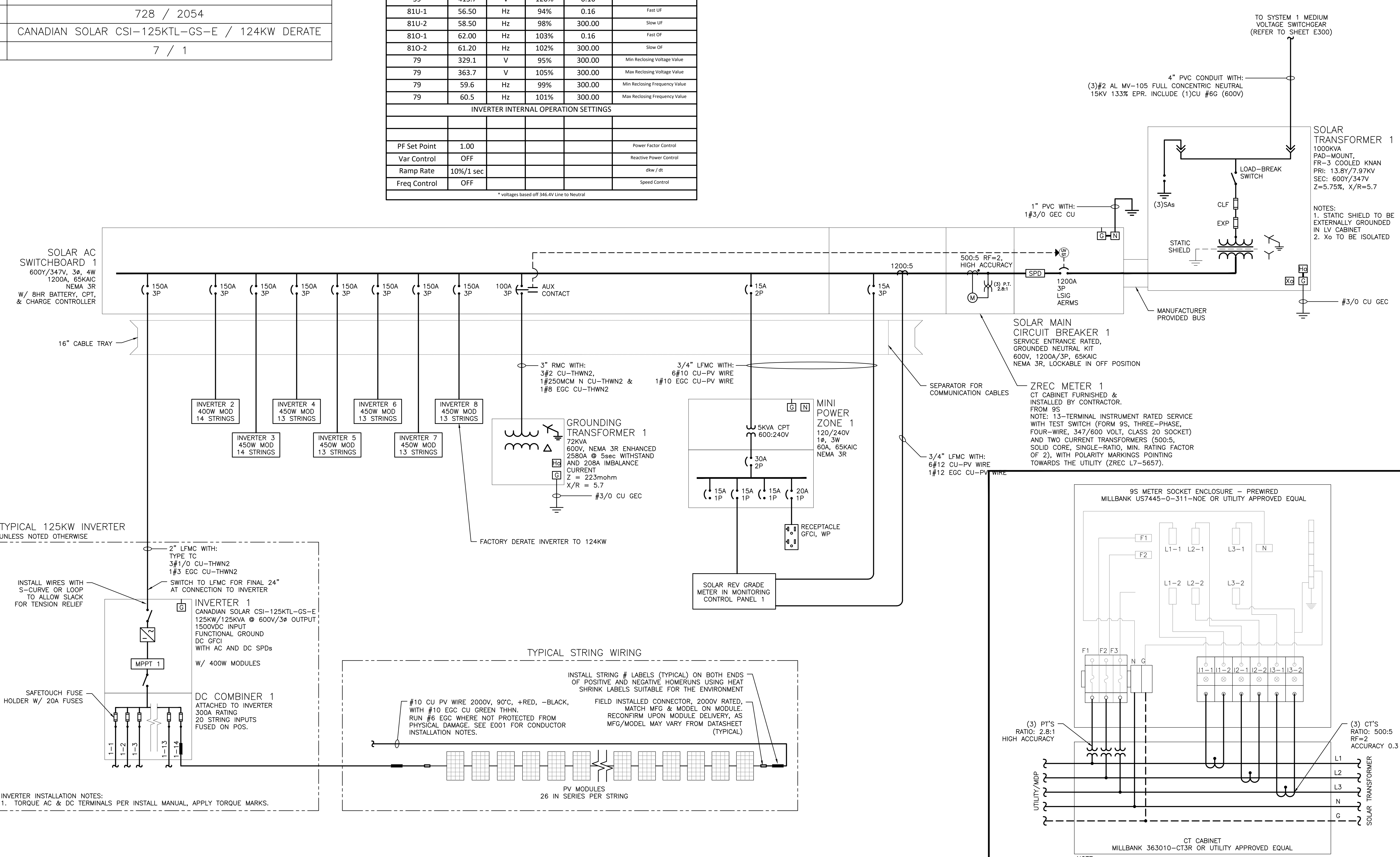
REVISION DESCRIPTION DATE
PERMIT REVIEW SET (REV 1) 03/09/2021
PERMIT REVIEW SET 01/29/2021
INTERCONNECTION DOCUMENTS 07/09/2020
INTERCONNECTION DOCUMENTS 03/24/2020

RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
 PLOT DATE: 3/12/2021 6:54 PM

SYSTEM 1 SUMMARY	
DC SYSTEM SIZE	1,215.500 KW
AC SYSTEM SIZE	999.000 KW
MODULE	CANADIAN CS3W-400PB-AG / HT-SAAE HT72-166M 450
MODULE QTY	728 / 2054
INVERTER	CANADIAN SOLAR CSI-125KTL-GS-E / 124KW DERATE
INVERTER QTY	7 / 1

INVERTER INTERNAL PROTECTIVE SETTINGS: UL1741-SA COMPLIANT					
ANSI ELEMENT #	Pickup	Units*	Level	Total Clear Time (sec)	Description
27	304.8	V	88%	2.00	Slow LIV
27	173.2	V	50%	1.10	Fast UV
59	381.1	V	110%	2.00	Slow OV
59	415.7	V	120%	0.16	Fast OV
81U-1	56.50	Hz	94%	0.16	Fast UF
81U-2	58.50	Hz	98%	300.00	Slow UF
81O-1	62.00	Hz	103%	0.16	Fast OF
81O-2	61.20	Hz	102%	300.00	Slow OF
79	329.1	V	95%	300.00	Min Reclosing Voltage Value
79	363.7	V	105%	300.00	Max Reclosing Voltage Value
79	59.6	Hz	99%	300.00	Min Reclosing Frequency Value
79	60.5	Hz	101%	300.00	Max Reclosing Frequency Value
INVERTER INTERNAL OPERATION SETTINGS					
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

* voltages based off 346.4V Line to Neutral



1 ONE LINE DIAGRAM - SYSTEM 1
SCALE: NONE

2 ZREC METER WIRING DIAGRAM (TYPICAL)
SCALE: NONE

DRAWING TITLE
ONE LINE DIAGRAM - SYSTEM 1

DATE	03/09/2021	REVISION DESCRIPTION	PERMIT REVIEW SET (REV 1)
DATE	01/29/2021	REVISION DESCRIPTION	PERMIT REVIEW SET
DATE	07/09/2020	REVISION DESCRIPTION	INTERCONNECTION DOCUMENTS
DATE	03/24/2020	REVISION DESCRIPTION	INTERCONNECTION DOCUMENTS

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

PROJECT: **SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE**
 227 BOOMBRIDGE ROAD
 STONINGTON, CT 06359

DC SYSTEM SIZE: 6112.600 KW
 AC SYSTEM SIZE: 4999.000 KW
 MODULE TYPE: CS 400W / HT 450W
 STRING QUANTITY: 13,988
 STRING ORIENTATION: 30° TILT, 0° AZIMUTH

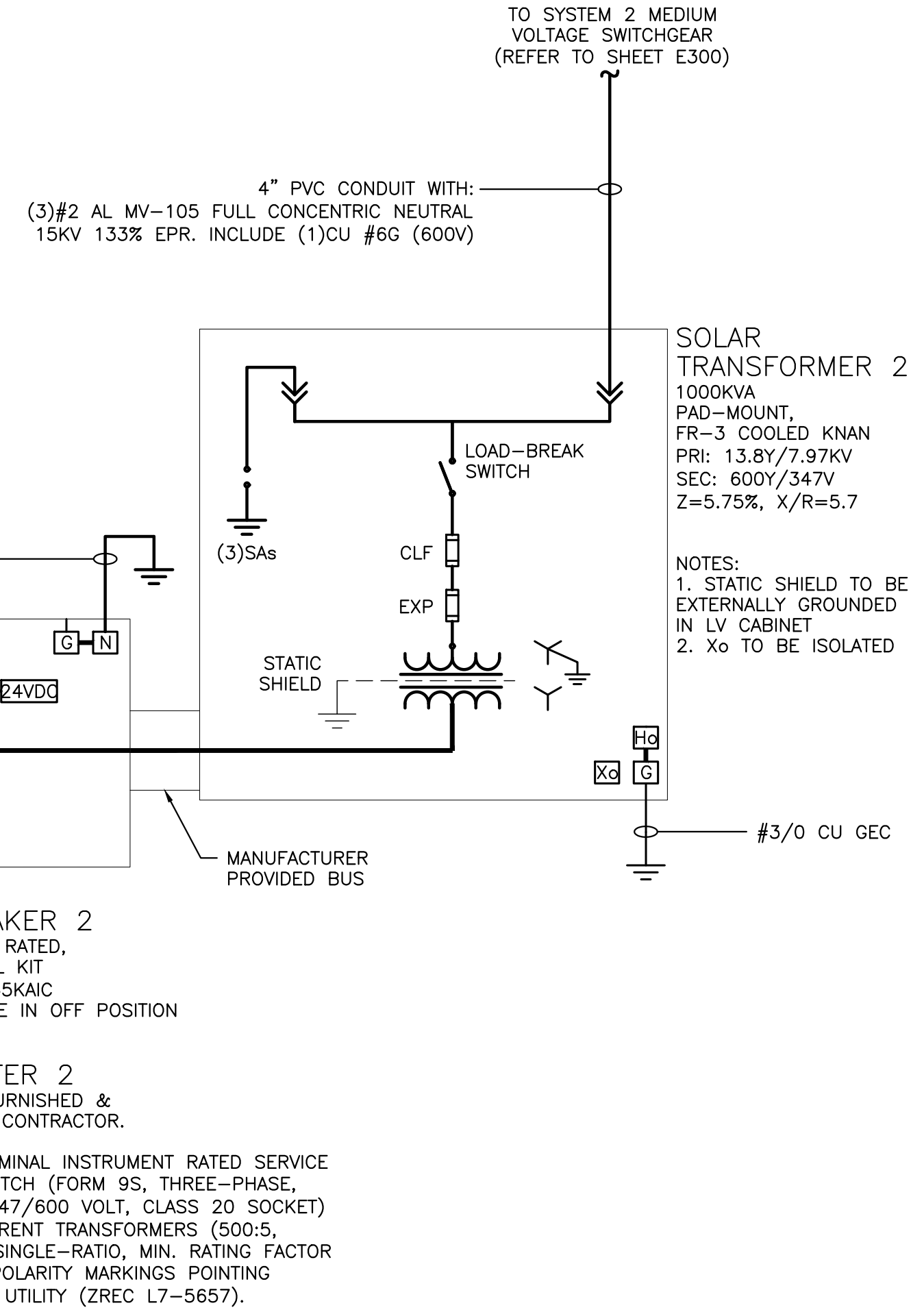
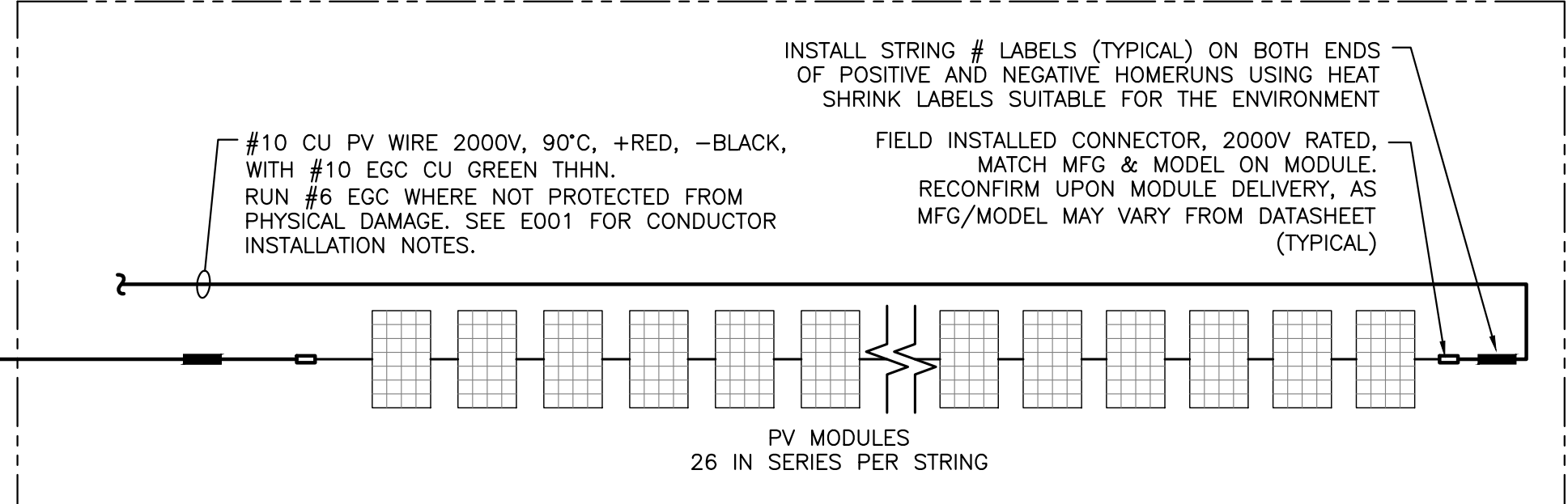
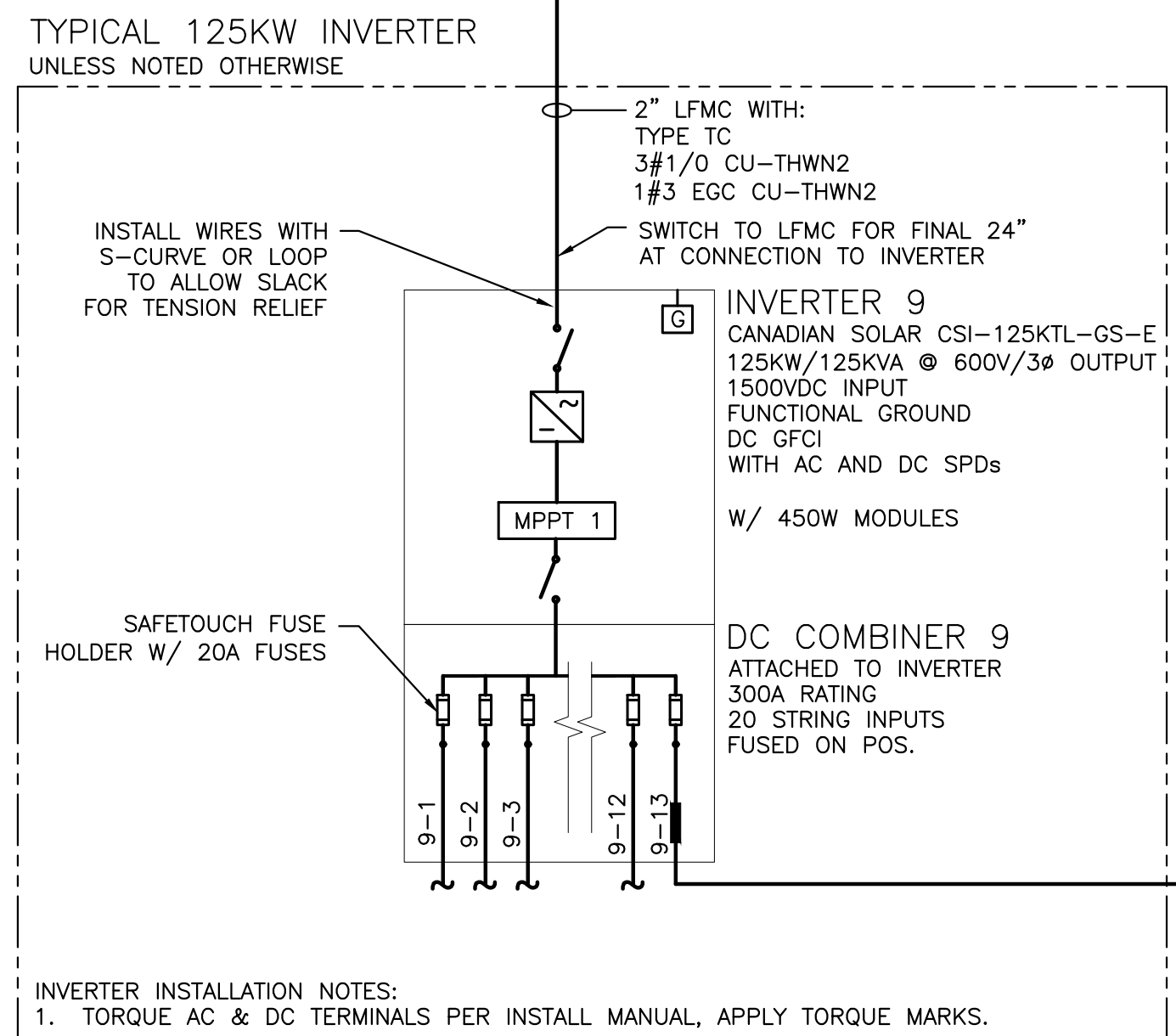
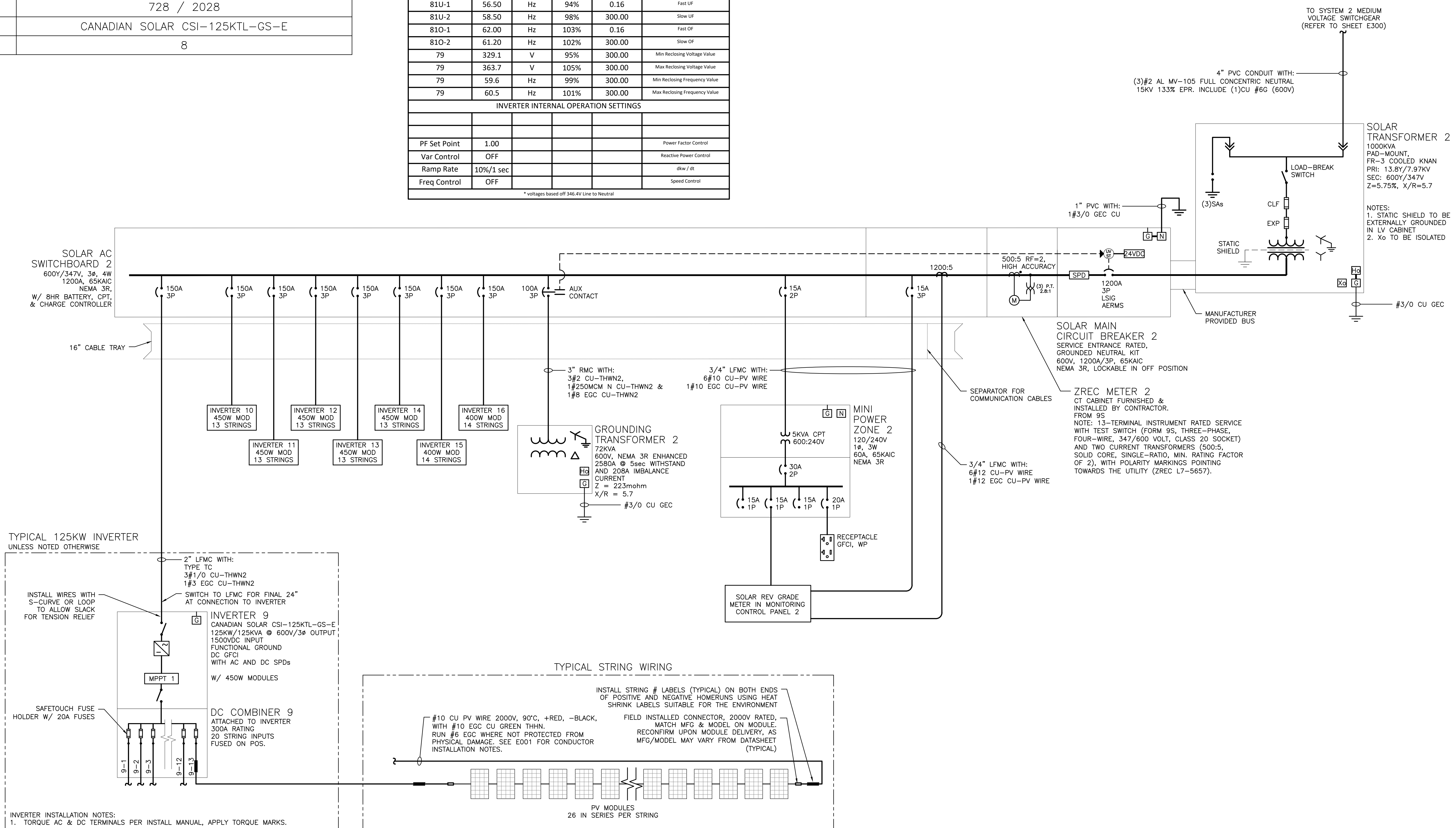
PAGE SIZE: 3.6" x 24"
 PROJECT #: 19.1312

PLT DATE: 3/12/2021 6:54 PM
RULER IN INCHES: 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0

SYSTEM 2 SUMMARY	
DC SYSTEM SIZE	1,203.800 KW
AC SYSTEM SIZE	1000.000 KW
MODULE	CANADIAN CS3W-400PB-AG / HT-SAAE HT72-166M 450
MODULE QTY	728 / 2028
INVERTER	CANADIAN SOLAR CSI-125KTL-GS-E
INVERTER QTY	8

INVERTER INTERNAL PROTECTIVE SETTINGS: UL1741-SA COMPLIANT					
ANSI ELEMENT #	Pickup	Units*	Level	Total Clear Time (sec)	Description
27	304.8	V	88%	2.00	Slow UV
27	173.2	V	50%	1.10	Fast UV
59	381.1	V	110%	2.00	Slow OV
59	415.7	V	120%	0.16	Fast OV
81U-1	56.50	Hz	94%	0.16	Fast UF
81U-2	58.50	Hz	98%	300.00	Slow UF
81O-1	62.00	Hz	103%	0.16	Fast OF
81O-2	61.20	Hz	102%	300.00	Slow OF
79	329.1	V	95%	300.00	Min Reclosing Voltage Value
79	363.7	V	105%	300.00	Max Reclosing Voltage Value
79	59.6	Hz	99%	300.00	Min Reclosing Frequency Value
79	60.5	Hz	101%	300.00	Max Reclosing Frequency Value
INVERTER INTERNAL OPERATION SETTINGS					
PF Set Point	1.00				Power Factor Control
Var Control	OFF				Reactive Power Control
Ramp Rate	10%/1 sec				dVw / dt
Freq Control	OFF				Speed Control

* voltages based off 346.4V Line to Neutral

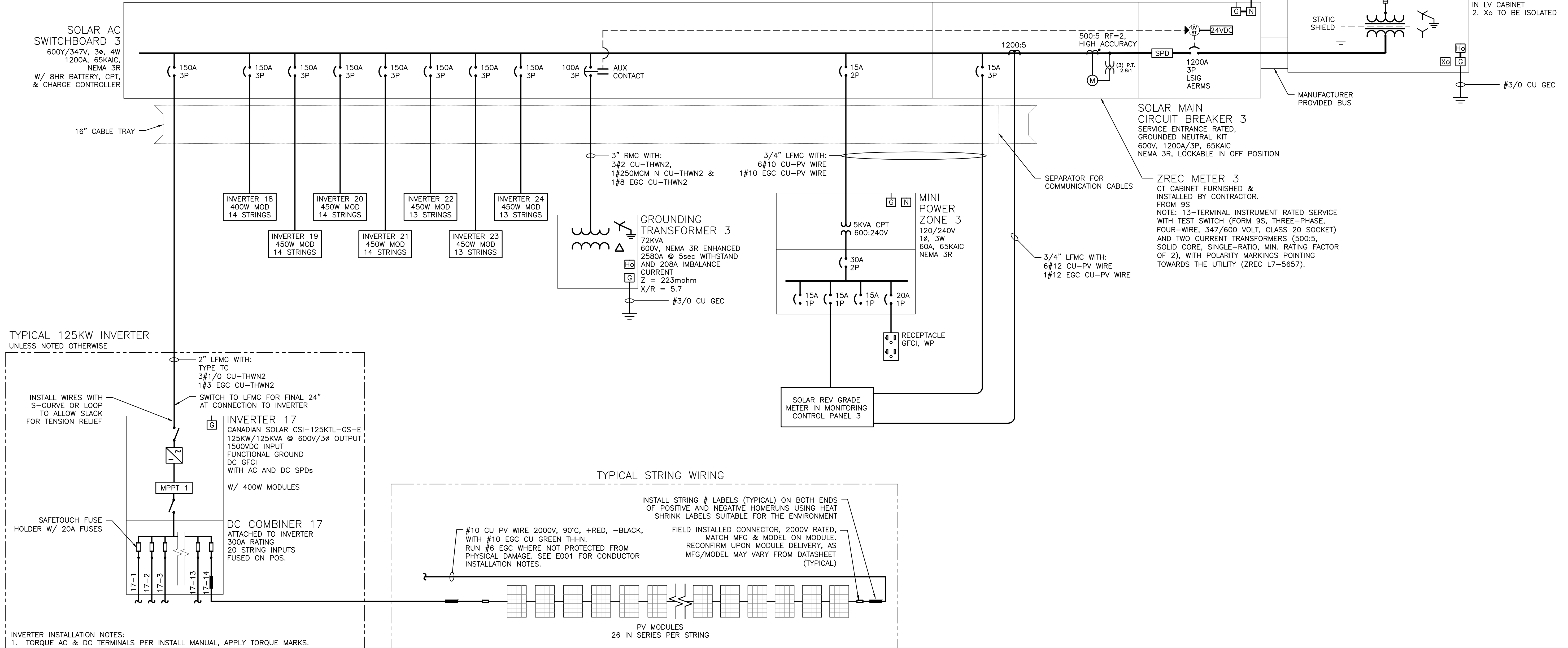


RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

SYSTEM 3 SUMMARY	
DC SYSTEM SIZE	1,238.900 KW
AC SYSTEM SIZE	1000.000 KW
MODULE	CANADIAN CS3W-400PB-AG / HT-SAAE HT72-166M 450
MODULE QTY	728 / 2106
INVERTER	CANADIAN SOLAR CSI-125KTL-GS-E
INVERTER QTY	8

INVERTER INTERNAL PROTECTIVE SETTINGS: UL1741-SA COMPLIANT					
ANSI ELEMENT #	Pickup	Units*	Level	Total Clear Time (sec)	Description
27	304.8	V	88%	2.00	Slow UV
27	173.2	V	50%	1.10	Fast UV
59	381.1	V	110%	2.00	Slow OV
59	415.7	V	120%	0.16	Fast OV
81U-1	56.50	Hz	94%	0.16	Fast UF
81U-2	58.50	Hz	98%	300.00	Slow UF
81O-1	62.00	Hz	103%	0.16	Fast OF
81O-2	61.20	Hz	102%	300.00	Slow OF
79	329.1	V	95%	300.00	Min Reclosing Voltage Value
79	363.7	V	105%	300.00	Max Reclosing Voltage Value
79	59.6	Hz	99%	300.00	Min Reclosing Frequency Value
79	60.5	Hz	101%	300.00	Max Reclosing Frequency Value
INVERTER INTERNAL OPERATION SETTINGS					
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

* voltages based off 346.4V Line to Neutral



 111 RIVER STREET, EUREKA, CA 95501 WWW.PUREPOWER.COM RICHARD A. VONN CT LICENSE NO. 03629262	REVISION DESCRIPTION PERMIT REVIEW SET (REV 1) PERMIT REVIEW SET INTERCONNECTION DOCUMENTS	DATE 03/09/2021 01/29/2021 03/24/2020	PM SK RI SK SK SK BK AD RI	
	DEVELOPER Greenskies a Clean Focus company 127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM	PAGE SIZE 3.6" x 24"	PROJECT # 19.1312	DC SYSTEM SIZE: 612,600 KW AC SYSTEM SIZE: 4999,000 KW MODULE TYPE: CS 400W / HT 450W STRING QUANTITY: 13,988 STRING QUANTITY: 538 ORIENTATION: 30° TILT, 0° AZIMUTH
	PROJECT SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359	DRAWING # E303	DRAWING TITLE ONE LINE DIAGRAM - SYSTEM 3	DRAWING # E303

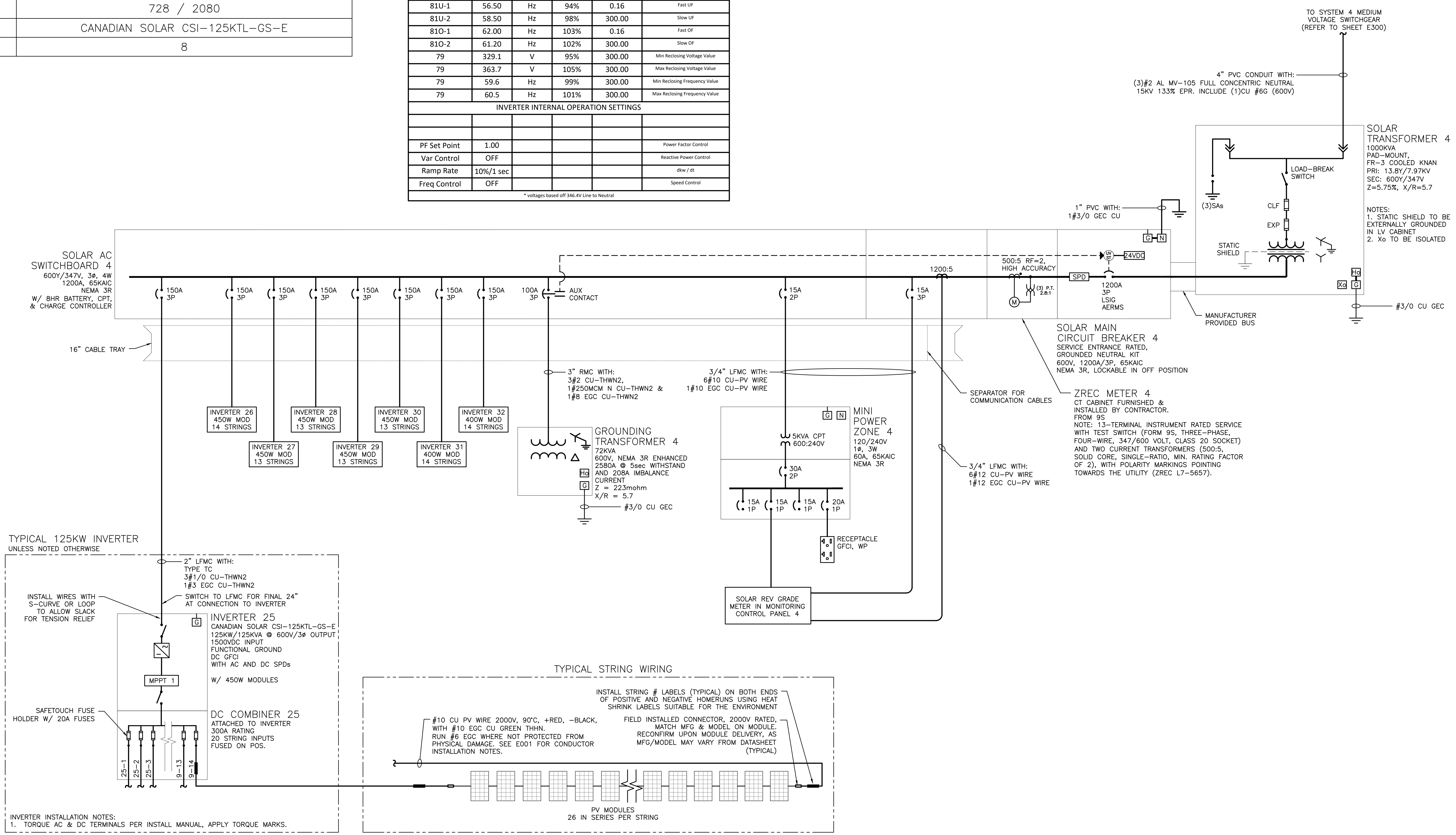
1 ONE LINE DIAGRAM - SYSTEM 3
SCALE: NONE

RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

SYSTEM 4 SUMMARY	
DC SYSTEM SIZE	1,227.200 KW
AC SYSTEM SIZE	1000.000 KW
MODULE	CANADIAN CS3W-400PB-AG / HT-SAAE HT72-166M 450
MODULE QTY	728 / 2080
INVERTER	CANADIAN SOLAR CSI-125KTL-GS-E
INVERTER QTY	8

INVERTER INTERNAL PROTECTIVE SETTINGS: UL1741-SA COMPLIANT					
ANSI ELEMENT #	Pickup	Units*	Level	Total Clear Time (sec)	Description
27	304.8	V	88%	2.00	Slow UV
27	173.2	V	50%	1.10	Fast UV
59	381.1	V	110%	2.00	Slow OV
59	415.7	V	120%	0.16	Fast OV
81U-1	56.50	Hz	94%	0.16	Fast UF
81U-2	58.50	Hz	98%	300.00	Slow UF
81O-1	62.00	Hz	103%	0.16	Fast OF
81O-2	61.20	Hz	102%	300.00	Slow OF
79	329.1	V	95%	300.00	Min Reclosing Voltage Value
79	363.7	V	105%	300.00	Max Reclosing Voltage Value
79	59.6	Hz	99%	300.00	Min Reclosing Frequency Value
79	60.5	Hz	101%	300.00	Max Reclosing Frequency Value
INVERTER INTERNAL OPERATION SETTINGS					
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

* voltages based off 346.4V Line to Neutral



1 ONE LINE DIAGRAM - SYSTEM 4
E304 SCALE: NONE

PURE POWER
111 BINGER STREET, SUITE 101, WASHINGTON, CT 06473
WWW.PUREPOWER.COM
CT LICENSE NO. 03629262

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

DEVELOPER: GREENSKIES
PROJECT # 19.1312
PAGE SIZE: 36" x 24"
DC SYSTEM SIZE: 612,600 KW
AC SYSTEM SIZE: 499,000 KW
MODULE TYPE: CS 400W / HT 450W
STRING QUANTITY: 538
ORIENTATION: 30° TILT, 0° AZIMUTH

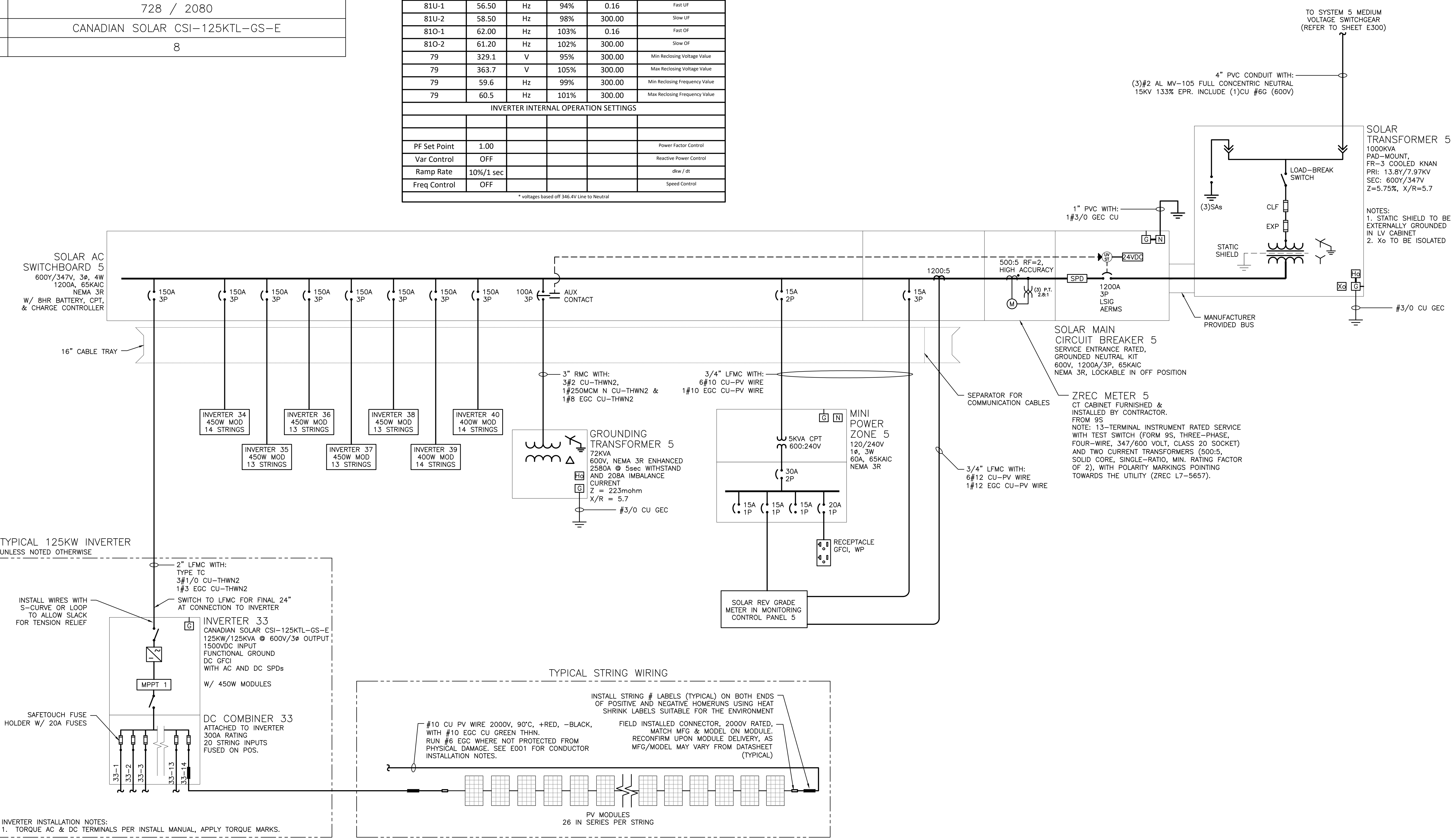
REVISION DESCRIPTION: DATE
PERMIT REVIEW SET (REV 1) 03/09/2021
PERMIT REVIEW SET 01/29/2021
INTERCONNECTION DOCUMENTS 03/24/2020

RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

SYSTEM 5 SUMMARY	
DC SYSTEM SIZE	1,227.200 KW
AC SYSTEM SIZE	1000.000 KW
MODULE	CANADIAN CS3W-400PB-AG / HT-SAAE HT72-166M 450
MODULE QTY	728 / 2080
INVERTER	CANADIAN SOLAR CSI-125KTL-GS-E
INVERTER QTY	8

INVERTER INTERNAL PROTECTIVE SETTINGS: UL1741-SA COMPLIANT					
ANSI ELEMENT #	Pickup	Units*	Level	Total Clear Time (sec)	Description
27	304.8	V	88%	2.00	Slow UV
27	173.2	V	50%	1.10	Fast UV
59	381.1	V	110%	2.00	Slow OV
59	415.7	V	120%	0.16	Fast OV
81U-1	56.50	Hz	94%	0.16	Fast UF
81U-2	58.50	Hz	98%	300.00	Slow UF
81O-1	62.00	Hz	103%	0.16	Fast OF
81O-2	61.20	Hz	102%	300.00	Slow OF
79	329.1	V	95%	300.00	Min Reclosing Voltage Value
79	363.7	V	105%	300.00	Max Reclosing Voltage Value
79	59.6	Hz	99%	300.00	Min Reclosing Frequency Value
79	60.5	Hz	101%	300.00	Max Reclosing Frequency Value
INVERTER INTERNAL OPERATION SETTINGS					
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

* voltages based off 346.4V Line to Neutral



 111 RIVER STREET, SUITE 200 NORTH HAVEN, CT 06473 WWW.PUREPOWER.COM RICHARD A. VONN CT LICENSE NO. 00392862	REVISION DESCRIPTION DATE 03/09/2021 PERMIT REVIEW SET (REV 1) 01/29/2021 PERMIT REVIEW SET 03/24/2020 INTERCONNECTION DOCUMENTS	PM LENG CHK SK SK RI SK SK RI SK SK RI BK AD RI	
	DEVELOPER 127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM a Clean Focus company	PAGE SIZE 3.6" x 24"	PROJECT # 19.1312
	DC SYSTEM SIZE: 612,600 KW AC SYSTEM SIZE: 4999,000 KW MODULE TYPE: CS 400W / HT 450W STRING QUANTITY: 538 ORIENTATION: 30° TILT, 0° AZIMUTH	PROJECT SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359	DRAWING # E305
	DRAWING TITLE ONE LINE DIAGRAM - SYSTEM 5		SCALE: NONE

1 ONE LINE DIAGRAM - SYSTEM 5
SCALE: NONE

RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

PLOT DATE: 3/12/2021 6:54 PM

AC FEEDER CALCULATIONS

EQUIPMENT SUPPLIED	FED FROM	VOLTAGE	FULL LOAD AMPS 'FLA'	FLA x 1.25	OCPD SIZE	GROUND SIZE	CONDUCTORS PER PHASE	PHASE CONDUCTOR SIZE	NEUTRAL CONDUCTOR SIZE	75° AMPACITY	90° AMPACITY	90° AMPACITY WITH C.O.U.	C.O.U. DERATE AMBIENT TEMP	C.O.U. DERATE CONDUIT FILL	FEEDER LENGTH (FEET)	SEGMENT VOLTAGE DROP AT FLA	TOTAL VOLTAGE DROP AT FLA
SOLAR AC SWITCHBOARD 1	SOLAR TRANSFORMER 1	600	960.0	1200.0	1200	CU #3/0 GEC	4	CU 350MCM	CU 350MCM	1240	1400	1344	0.96	1.00	10	0.03%	0.03%
INVERTER 1	SOLAR AC SWITCHBOARD 1	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	20	0.08%	0.11%
INVERTER 2	SOLAR AC SWITCHBOARD 1	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	25	0.10%	0.13%
INVERTER 3	SOLAR AC SWITCHBOARD 1	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	30	0.12%	0.15%
INVERTER 4	SOLAR AC SWITCHBOARD 1	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	35	0.15%	0.17%
INVERTER 5	SOLAR AC SWITCHBOARD 1	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	35	0.15%	0.17%
INVERTER 6	SOLAR AC SWITCHBOARD 1	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	30	0.12%	0.15%
INVERTER 7	SOLAR AC SWITCHBOARD 1	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	25	0.10%	0.13%
INVERTER 8	SOLAR AC SWITCHBOARD 1	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	20	0.08%	0.11%
SOLAR AC SWITCHBOARD 2	SOLAR TRANSFORMER 2	600	960.0	1200.0	1200	CU #3/0 GEC	4	CU 350MCM	CU 350MCM	1240	1400	1344	0.96	1.00	10	0.03%	0.03%
INVERTER 9	SOLAR AC SWITCHBOARD 2	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	20	0.08%	0.11%
INVERTER 10	SOLAR AC SWITCHBOARD 2	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	25	0.10%	0.13%
INVERTER 11	SOLAR AC SWITCHBOARD 2	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	30	0.12%	0.15%
INVERTER 12	SOLAR AC SWITCHBOARD 2	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	35	0.15%	0.17%
INVERTER 13	SOLAR AC SWITCHBOARD 2	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	35	0.15%	0.17%
INVERTER 14	SOLAR AC SWITCHBOARD 2	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	30	0.12%	0.15%
INVERTER 15	SOLAR AC SWITCHBOARD 2	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	25	0.10%	0.13%
INVERTER 16	SOLAR AC SWITCHBOARD 2	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	20	0.08%	0.11%
SOLAR AC SWITCHBOARD 3	SOLAR TRANSFORMER 3	600	960.0	1200.0	1200	CU #3/0 GEC	4	CU 350MCM	CU 350MCM	1240	1400	1344	0.96	1.00	10	0.03%	0.03%
INVERTER 17	SOLAR AC SWITCHBOARD 3	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	20	0.08%	0.11%
INVERTER 18	SOLAR AC SWITCHBOARD 3	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	25	0.10%	0.13%
INVERTER 19	SOLAR AC SWITCHBOARD 3	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	30	0.12%	0.15%
INVERTER 20	SOLAR AC SWITCHBOARD 3	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	35	0.15%	0.17%
INVERTER 21	SOLAR AC SWITCHBOARD 3	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	35	0.15%	0.17%
INVERTER 22	SOLAR AC SWITCHBOARD 3	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	30	0.12%	0.15%
INVERTER 23	SOLAR AC SWITCHBOARD 3	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	25	0.10%	0.13%
INVERTER 24	SOLAR AC SWITCHBOARD 3	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	20	0.08%	0.11%
SOLAR AC SWITCHBOARD 4	SOLAR TRANSFORMER 4	600	960.0	1200.0	1200	CU #3/0 GEC	4	CU 350MCM	CU 350MCM	1240	1400	1344	0.96	1.00	10	0.03%	0.03%
INVERTER 25	SOLAR AC SWITCHBOARD 4	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	20	0.08%	0.11%
INVERTER 26	SOLAR AC SWITCHBOARD 4	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	25	0.10%	0.13%
INVERTER 27	SOLAR AC SWITCHBOARD 4	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	30	0.12%	0.15%
INVERTER 28	SOLAR AC SWITCHBOARD 4	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	35	0.15%	0.17%
INVERTER 29	SOLAR AC SWITCHBOARD 4	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	35	0.15%	0.17%
INVERTER 30	SOLAR AC SWITCHBOARD 4	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	30	0.12%	0.15%
INVERTER 31	SOLAR AC SWITCHBOARD 4	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	25	0.10%	0.13%
INVERTER 32	SOLAR AC SWITCHBOARD 4	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	20	0.08%	0.11%
SOLAR AC SWITCHBOARD 5	SOLAR TRANSFORMER 5	600	960.0	1200.0	1200	CU #3/0 GEC	4	CU 350MCM	CU 350MCM	1240	1400	1344	0.96	1.00	10	0.03%	0.03%
INVERTER 33	SOLAR AC SWITCHBOARD 5	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	20	0.08%	0.11%
INVERTER 34	SOLAR AC SWITCHBOARD 5	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	25	0.10%	0.13%
INVERTER 35	SOLAR AC SWITCHBOARD 5	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	30	0.12%	0.15%
INVERTER 36	SOLAR AC SWITCHBOARD 5	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	35	0.15%	0.17%
INVERTER 37	SOLAR AC SWITCHBOARD 5	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	35	0.15%	0.17%
INVERTER 38	SOLAR AC SWITCHBOARD 5	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	30	0.12%	0.15%
INVERTER 39	SOLAR AC SWITCHBOARD 5	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	25	0.10%	0.13%
INVERTER 40	SOLAR AC SWITCHBOARD 5	600	120.0	150.0	150	CU #4	1	CU #1/0	NONE	150	170	163.2	0.96	1.00	20	0.08%	0.11%

AVERAGE AC VOLTAGE DROP FROM POI TO INVERTERS: 0.13%

MV FEEDER CALCULATIONS

EQUIPMENT SUPPLIED	FED FROM	CIRCUIT ROUTING	VOLTAGE [V]	APPARENT POWER [KVA]	FEEDER LENGTH [FT]	FULL LOAD AMPS 'FLA' [A]	OCPD TYPE	OCPD TRIP RATING [A]	OCPD TRIP % OF FLA	CONDUCTOR MATERIAL	CONDUCTOR SIZE	NEC TABLE REFERENCE	TEMPERATURE ADJUSTMENT	ADJUSTED CONDUCTOR AMPACITY [A]	CHECK CONDUCTOR AMPACITY > FLA?	CHECK OCPD RATING > FLA x 1.25?	CHECK OCPD COMPLIANT WITH 240.101(A)?	SEGMENT VOLTAGE DROP AT FLA	TOTAL VOLTAGE DROP AT FLA	PVC CONDUIT SIZE	ADDITIONAL GROUND CABLE	FULL CONDUCTOR SPEC
SOLAR MV SWITCHGEAR 1	SOLAR TRANSFORMER 1	UNDERGROUND IN CONDUIT	13,800	1,000	3,480	41.8	BREAKER	65	155%	AL	#2	310.60(C)(78)	1.00	120	PASS	PASS	PASS	0.58%	0.58%	4"	NONE	(3) #2 AL MV105 FULL CONCENTRIC NEUTRAL 15KV 133% EPR.
SOLAR MV SWITCHGEAR 2	SOLAR TRANSFORMER 2	UNDERGROUND IN CONDUIT	13,800	1,000	3,400	41.8	BREAKER	65	155%	AL	#2	310.60(C)(78)	1.00	120	PASS	PASS	PASS	0.57%	0.57%	4"	NONE	(3) #2 AL MV105 FULL CONCENTRIC NEUTRAL 15KV 133% EPR.
SOLAR MV SWITCHGEAR 3	SOLAR TRANSFORMER 3	UNDERGROUND IN CONDUIT	13,800	1,000	3,780	41.8	BREAKER	65	155%	AL	#2	310.60(C)(78)	1.00	120	PASS	PASS	PASS	0.64%	0.64%	4"	NONE	(3) #2 AL MV105 FULL CONCENTRIC NEUTRAL 15KV 133% EPR.
SOLAR MV SWITCHGEAR 4	SOLAR TRANSFORMER 4	UNDERGROUND IN CONDUIT	13,800	1,000	4,160	41.8	BREAKER	65	155%	AL	#2	310.60(C)(78)	1.00	120	PASS	PASS	PASS	0.70%	0.70%	4"	NONE	(3) #2 AL MV105 FULL CONCENTRIC NEUTRAL 15KV 133% EPR.
SOLAR MV SWITCHGEAR 5	SOLAR TRANSFORMER 5	UNDERGROUND IN CONDUIT	13,800	1,000	4,250	41.8	BREAKER	65	155%	AL	#2	310.60(C)(78)	1.00	120	PASS	PASS	PASS	0.71%	0.71%	4"	NONE	(3) #2 AL MV105 FULL CONCENTRIC NEUTRAL 15KV 133% EPR.

NOTE: DISTANCES ARE ESTIMATES GENERATED FOR ENGINEER'S CALCULATIONS; CONTRACTOR IS RESPONSIBLE FOR OWN MEASUREMENTS AND TAKEOFFS.

DC STRING WIRING CALCULATION (WORST CASE)	
STRING ISC [AMPS]	13.01
MAXIMUM CIRCUIT CURRENT [AMPS]	16.27
1.25x MAX CIRCUIT CURRENT [AMPS]	20.33
MAX # OF WIRES PER CONDUIT	30
CONDUIT FILL DERATE	0.45
MAX AMBIENT TEMPERATURE	32
TEMPERATURE DERATE	0.96
WIRE GAUGE	CU #10
75DEG AMPACITY WITHOUT COU ADJUSTMENT [AMPS]	35
IS 75 DEG AMPACITY WITHOUT COU ADJUSTMENT >= 1.25x MAX CIRCUIT CURRENT?	YES. COMPLIES WITH 690.8(B)(1)
90DEG AMPACITY WITH COU ADJUSTMENT [AMPS]	17.28
IS 90DEG AMPACITY WITH COU ADJUSTMENT >= 1.0x MAX CIRCUIT CURRENT?	YES. COMPLIES WITH 690.8(B)(2)
PV SOURCE CIRCUIT FUSE RATING [AMPS]	20
AVAILABLE FAULT CURRENT FROM ALL PARALLEL SOURCES [AMPS]	16.26625
IS FUSE RATING >= 1.25x MAX CIRCUIT CURRENT?	YES. COMPLIES WITH 690.9(B)

MODULE SPECIFICATIONS	
MAKE/MODEL	HT72-166M 450W (10% GAIN)
POWER [W]	495
ISC [A]	13.01
IMP [A]	12.06
VOC [V]	50.00
VMP [V]	41.10
β VOC [%/degC]	-0.290%
SITE CLIMATE CRITERIA	
ASHRAE HIGH [°C]	32
ASHRAE LOW [°C]	-19
STRING SPECIFICATIONS AT STC	
MODULES/STRING	26
POWER [W]	12870
STRING ISC [A]	13.01
STRING IMP [A]	12.06
STRING VMP [V]	1068.60
STRING MAX VOLTAGE CALCULATION	
VOC TEMP ADJUSTMENT @ -19 °C	1.1276
VOC @ -19 °C [V]	56.38
MAX STRING VOC [V]	1465.9

MODULE SPECIFICATIONS	
MAKE/MODEL	Canadian 400W (10% GAIN)
POWER [W]	440
ISC [A]	11.99
IMP [A]	11.37
VOC [V]	47.20
VMP [V]	38.70
β VOC [%/degC]	-0.290%
SITE CLIMATE CRITERIA	
ASHRAE HIGH [°C]	32
ASHRAE LOW [°C]	-19
STRING SPECIFICATIONS AT STC	
MODULES/STRING	26
POWER [W]	11440
STRING ISC [A]	11.99
STRING IMP [A]	11.37
STRING VMP [V]	1006.20

PLLOT DATE: 3/12/2021 6:54 PM
RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

INVERTERS 1 THRU 8

STRING NUMBER	STRING TO INVERTER WIRE GAUGE	STRING TO INVERTER IMPEDANCE (Ω/ft)	STRING DISTANCE (FEET)	STRING VOLTAGE DROP
1-1	#10	0.00124	430	1.21%
1-2	#10	0.00124	475	1.33%
1-3	#10	0.00124	520	1.46%
1-4	#10	0.00124	400	1.12%
1-5	#10	0.00124	445	1.25%
1-6	#10	0.00124	490	1.37%
1-7	#10	0.00124	540	1.51%
1-8	#10	0.00124	370	1.04%
1-9	#10	0.00124	415	1.16%
1-10	#10	0.00124	465	1.30%
1-11	#10	0.00124	510	1.43%
1-12	#10	0.00124	345	0.97%
1-13	#10	0.00124	390	1.09%
1-14	#10	0.00124	435	1.22%
2-1	#10	0.00124	475	1.33%
2-2	#10	0.00124	520	1.46%
2-3	#10	0.00124	310	0.87%
2-4	#10	0.00124	355	1.00%
2-5	#10	0.00124	400	1.12%
2-6	#10	0.00124	445	1.25%
2-7	#10	0.00124	490	1.37%
2-8	#10	0.00124	535	1.50%
2-9	#10	0.00124	280	0.78%
2-10	#10	0.00124	325	0.91%
2-11	#10	0.00124	370	1.04%
2-12	#10	0.00124	415	1.16%
2-13	#10	0.00124	465	1.30%
2-14	#10	0.00124	510	1.43%
3-1	#10	0.00124	245	0.69%
3-2	#10	0.00124	290	0.81%
3-3	#10	0.00124	335	0.94%
3-4	#10	0.00124	380	1.07%
3-5	#10	0.00124	425	1.19%
3-6	#10	0.00124	470	1.32%
3-7	#10	0.00124	515	1.44%
3-8	#10	0.00124	215	0.60%
3-9	#10	0.00124	260	0.73%
3-10	#10	0.00124	310	0.87%
3-11	#10	0.00124	355	1.00%
3-12	#10	0.00124	400	1.12%
3-13	#10	0.00124	445	1.25%
3-14	#10	0.00124	490	1.37%
4-1	#10	0.00124	530	1.49%
4-2	#10	0.00124	170	0.48%
4-3	#10	0.00124	205	0.57%
4-4	#10	0.00124	250	0.70%
4-5	#10	0.00124	300	0.84%
4-6	#10	0.00124	345	0.97%
4-7	#10	0.00124	390	1.09%
4-8	#10	0.00124	435	1.22%
4-9	#10	0.00124	480	1.35%

INVERTERS 9 THRU 16

STRING NUMBER	STRING TO INVERTER WIRE GAUGE	STRING TO INVERTER IMPEDANCE (Ω/ft)	STRING DISTANCE (FEET)	STRING VOLTAGE DROP
4-10	#10	0.00124	525	1.47%
4-11	#10	0.00124	130	0.36%
4-12	#10	0.00124	200	0.56%
4-13	#10	0.00124	245	0.69%
5-1	#10	0.00124	295	0.83%
5-2	#10	0.00124	340	0.95%
5-3	#10	0.00124	385	1.08%
5-4	#10	0.00124	430	1.21%
5-5	#10	0.00124	475	1.33%
5-6	#10	0.00124	520	1.46%
5-7	#10	0.00124	150	0.42%
5-8	#10	0.00124	195	0.55%
5-9	#10	0.00124	240	0.67%
5-10	#10	0.00124	285	0.80%
5-11	#10	0.00124	335	0.94%
5-12	#10	0.00124	380	1.07%
5-13	#10	0.00124	425	1.19%
6-1	#10	0.00124	475	1.33%
6-2	#10	0.00124	520	1.46%
6-3	#10	0.00124	95	0.27%
6-4	#10	0.00124	130	0.36%
6-5	#10	0.00124	175	0.49%
6-6	#10	0.00124	220	0.62%
6-7	#10	0.00124	265	0.74%
6-8	#10	0.00124	310	0.87%
6-9	#10	0.00124	355	1.00%
6-10	#10	0.00124	400	1.12%
6-11	#10	0.00124	445	1.25%
6-12	#10	0.00124	490	1.37%
6-13	#10	0.00124	540	1.51%
7-1	#10	0.00124	130	0.36%
7-2	#10	0.00124	175	0.49%
7-3	#10	0.00124	220	0.62%
7-4	#10	0.00124	265	0.74%
7-5	#10	0.00124	310	0.87%
7-6	#10	0.00124	355	1.00%
7-7	#10	0.00124	400	1.12%
7-8	#10	0.00124	450	1.26%
7-9	#10	0.00124	495	1.39%
7-10	#10	0.00124	540	1.51%
7-11	#10	0.00124	60	0.17%
7-12	#10	0.00124	100	0.28%
7-13	#10	0.00124	150	0.42%
8-1	#10	0.00124	200	0.56%
8-2	#10	0.00124	245	0.69%
8-3	#10	0.00124	290	0.81%
8-4	#10	0.00124	335	0.94%
8-5	#10	0.00124	380	1.07%
8-6	#10	0.00124	425	1.19%
8-7	#10	0.00124	470	1.32%
8-8	#10	0.00124	515	1.44%
8-9	#10	0.00124	560	1.57%
8-10	#10	0.00124	110	0.31%
8-11	#10	0.00124	155	0.43%
8-12	#10	0.00124	200	0.56%
8-13	#10	0.00124	245	0.69%

INVERTERS 9 THRU 16

STRING NUMBER	STRING TO INVERTER WIRE GAUGE	STRING TO INVERTER IMPEDANCE (Ω/ft)	STRING DISTANCE (FEET)	STRING VOLTAGE DROP
9-1	#10	0.00124	270	0.76%
9-2	#10	0.00124	315	0.88%
9-3	#10	0.00124	360	1.01%
9-4	#10	0.00124	405	1.14%
9-5	#10	0.00124	450	1.26%
9-6	#10	0.00124	495	1.39%
9-7	#10	0.00124	540	1.51%
9-8	#10	0.00124	585	1.64%
9-9	#10	0.00124	115	0.32%
9-10	#10	0.00124	160	0.45%
9-11	#10	0.00124	205	0.57%
9-12	#10	0.00124	250	0.70%
9-13	#10	0.00124	300	0.84%
10-1	#10	0.00124	335	0.94%
10-2	#10	0.00124	385	1.08%
10-3	#10	0.00124	430	1.21%
10-4	#10	0.00124	475	1.33%
10-5	#10	0.00124	520	1.46%
10-6	#10	0.00124	565	1.58%
10-7	#10	0.00124	610	1.71%
10-8	#10	0.00124	655	1.84%
10-9	#10	0.00124	210	0.59%
10-10	#10	0.00124	255	0.71%
10-11	#10	0.00124	300	0.84%
10-12	#10	0.00124	345	0.97%
10-13	#10	0.00124	390	1.09%
11-1	#10	0.00124	430	1.21%
11-2	#10	0.00124	475	1.33%
11-3	#10	0.00124	520	1.46%
11-4	#10	0.00124	565	1.58%
11-5	#10	0.00124	610	1.71%
11-6	#10	0.00124	660	1.85%
11-7	#10	0.00124	705	1.98%
11-8	#10	0.00124	220	0.62%
11-9	#10	0.00124	305	0.86%
11-10	#10	0.00124	355	1.00%
11-11	#10	0.00124	400	1.12%
11-12	#10	0.00124	445	1.25%
11-13	#10	0.00124	490	1.37%
12-1	#10	0.00124	530	1.49%
12-2	#10	0.00124	575	1.61%
12-3	#10	0.00124	620	1.74%
12-4	#10	0.00124	665	1.86%
12-5	#10	0.00124	710	1.99%
12-6	#10	0.00124	755	2.12%
12-7	#10	0.00124	300	0.84%
12-8	#10	0.00124	360	1.01%
12-9	#10	0.00124	405	1.14%
12-10	#10	0.00124	450	1.26%
12-11	#10	0.00124	495	1.39%
12-12	#10	0.00124	540	1.51%

INVERTERS 17 THRU 24

STRING NUMBER	STRING TO INVERTER WIRE GAUGE	STRING TO INVERTER IMPEDANCE (Ω/ft)	STRING DISTANCE (FEET)	STRING VOLTAGE DROP
12-13	#10	0.00124	585	1.64%
13-1	#10	0.00124	625	1.75%
13-2	#10	0.00124	670	1.88%
13-3	#10	0.00124	715	2.00%
13-4	#10	0.00124	760	2.13%
13-5	#10	0.00124	805	2.26%
13-6	#10	0.00124	410	1.15%
13-7	#10	0.00124	455	1.28%
13-8	#10	0.00124	500	1.40%
13-9	#10	0.00124	545	1.53%
13-10	#10	0.00124	590	1.65%
13-11	#10	0.00124	635	1.78%
13-12	#10	0.00124	680	1.91%
13-13	#10	0.00124	725	2.03%
14-1	#10	0.00124	780	2.19%
14-2	#10	0.00124	825	2.31%
14-3	#10	0.00124	870	2.44%
14-4	#10	0.00124	495	1.39%
14-5	#10	0.00124	540	1.51%
14-6	#10	0.00124	585	1.64%
14-7	#10	0.00124	630	1.77%
14-8	#10	0.00124	675	1.89%
14-9	#10	0.00124	725	2.03%
14-10	#10	0.00124	770	2.16%
14-11	#10	0.00124	815	2.28%
14-12	#10	0.00124	860	2.41%
14-13	#10	0.00124	905	2.54%
15-1	#10	0.00124	565	1.58%
15-2	#10	0.00124	610	1.71%
15-3	#10	0.00124	655	1.84%
15-4	#10	0.00124	700	1.96%
15-5	#10	0.00124	750	2.10%
15-6	#10	0.00124	795	2.23%
15-7	#10	0.00124	840	2.35%
15-8	#10	0.00124	885	2.48%
15-9	#10	0.00124	930	2.61%
15-10	#10	0.00124	980	2.75%
15-11	#10	0.00124	915	2.57%
15-12	#10	0.00124	960	2.69%
15-13	#10	0.00124	1005	2.82%
15-14	#10	0.00124	1030	2.89%
16-1	#10	0.00124	485	1.36%
16-2	#10	0.00124	530	1.49%
16-3	#10	0.00124	600	1.68%
16-4	#10	0.00124	645	1.81%
16-5	#10	0.00124	690	1.93%
16-6	#10	0.00124	735	2.06%
16-7	#10	0.00124	780	2.19%
16-8	#10	0.00124	830	2.33%
16-9	#10	0.00124	875	2.45%
16-10	#10	0.00124	510	1.43%
16-11	#10	0.00124	555	1.56%
16-12	#10	0.00124	600	1.70%
16-13	#10	0.00124	645	1.83%
16-14	#10	0.00124	690	1.96%

INVERTERS 17 THRU 24

STRING NUMBER	STRING TO INVERTER WIRE GAUGE	STRING TO INVERTER IMPEDANCE (Ω/ft)	STRING DISTANCE (FEET)	STRING VOLTAGE DROP
17-1	#10	0.00124	305	0.86%
17-2	#10	0.00124	350	0.98%
17-3	#10	0.00124	395	1.11%
17-4	#10	0.00124	440	1.23%
17-5	#10	0.00124	485	1.36%
17-6	#10	0.00124	530	1.49%
17-7	#10	0.00124	580	1.63%
17-8	#10	0.00124	375	1.05%
17-9	#10	0.00124	425	1.19%
17-10	#10	0.00124	470	1.32%
17-11	#10	0.00124	515	1.44%
17-12	#10	0.00124	560	1.57%
17-13	#10	0.00124	605	1.70%
17-14	#10	0.00124	630	1.77%
18-1	#10	0.00124	185	0.52%
18-2	#10	0.00124	230	0.64%
18-3	#10	0.00124	280	0.78%
18-4	#10	0.00124	325	0.91%
18-5	#10	0.00124	215	0.60%
18-6	#10	0.00124	260	0.73%
18-7	#10	0.00124	305	0.86%
18-8	#10	0.00124	350	0.98%
18-9	#10	0.00124	400	1.12%

RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

PLOT DATE: 3/12/2024 6:54 PM

INVERTERS 25 THRU 32

STRING NUMBER	STRING TO INVERTER WIRE GAUGE	STRING TO INVERTER IMPEDANCE (Ω/ft)	STRING DISTANCE (FEET)	STRING VOLTAGE DROP
25-1	#10	0.00124	215	0.60%
25-2	#10	0.00124	170	0.48%
25-3	#10	0.00124	125	0.35%
25-4	#10	0.00124	75	0.21%
25-5	#10	0.00124	35	0.10%
25-6	#10	0.00124	280	0.78%
25-7	#10	0.00124	235	0.66%
25-8	#10	0.00124	190	0.53%
25-9	#10	0.00124	145	0.41%
25-10	#10	0.00124	100	0.28%
25-11	#10	0.00124	50	0.14%
25-12	#10	0.00124	115	0.32%
25-13	#10	0.00124	70	0.20%
25-14	#10	0.00124	30	0.08%
26-1	#10	0.00124	290	0.81%
26-2	#10	0.00124	245	0.69%
26-3	#10	0.00124	200	0.56%
26-4	#10	0.00124	155	0.43%
26-5	#10	0.00124	365	1.02%
26-6	#10	0.00124	320	0.90%
26-7	#10	0.00124	275	0.77%
26-8	#10	0.00124	230	0.64%
26-9	#10	0.00124	185	0.52%
26-10	#10	0.00124	140	0.39%
26-11	#10	0.00124	95	0.27%
26-12	#10	0.00124	65	0.18%
26-13	#10	0.00124	420	1.18%
26-14	#10	0.00124	375	1.05%
27-1	#10	0.00124	320	0.90%
27-2	#10	0.00124	275	0.77%
27-3	#10	0.00124	230	0.64%
27-4	#10	0.00124	185	0.52%
27-5	#10	0.00124	140	0.39%
27-6	#10	0.00124	95	0.27%
27-7	#10	0.00124	110	0.31%
27-8	#10	0.00124	325	0.91%
27-9	#10	0.00124	280	0.78%
27-10	#10	0.00124	235	0.66%
27-11	#10	0.00124	190	0.53%
27-12	#10	0.00124	145	0.41%
27-13	#10	0.00124	155	0.43%
28-1	#10	0.00124	455	1.28%
28-2	#10	0.00124	410	1.15%
28-3	#10	0.00124	365	1.02%
28-4	#10	0.00124	505	1.42%
28-5	#10	0.00124	460	1.29%
28-6	#10	0.00124	415	1.16%
28-7	#10	0.00124	370	1.04%
28-8	#10	0.00124	325	0.91%
28-9	#10	0.00124	280	0.78%
28-10	#10	0.00124	235	0.66%
28-11	#10	0.00124	190	0.53%

28-12	#10	0.00124	145	0.41%
28-13	#10	0.00124	190	0.53%
29-1	#10	0.00124	565	1.58%
29-2	#10	0.00124	520	1.46%
29-3	#10	0.00124	475	1.33%
29-4	#10	0.00124	430	1.21%
29-5	#10	0.00124	385	1.08%
29-6	#10	0.00124	340	0.95%
29-7	#10	0.00124	295	0.83%
29-8	#10	0.00124	245	0.69%
29-9	#10	0.00124	200	0.56%
29-10	#10	0.00124	590	1.65%
29-11	#10	0.00124	545	1.53%
29-12	#10	0.00124	500	1.40%
29-13	#10	0.00124	455	1.28%
30-1	#10	0.00124	415	1.16%
30-2	#10	0.00124	370	1.04%
30-3	#10	0.00124	325	0.91%
30-4	#10	0.00124	280	0.78%
30-5	#10	0.00124	235	0.66%
30-6	#10	0.00124	220	0.62%
30-7	#10	0.00124	335	0.94%
30-8	#10	0.00124	380	1.07%
30-9	#10	0.00124	310	0.87%
30-10	#10	0.00124	360	1.01%
30-11	#10	0.00124	405	1.14%
30-12	#10	0.00124	320	0.90%
30-13	#10	0.00124	370	1.04%
31-1	#10	0.00124	590	1.65%
31-2	#10	0.00124	545	1.53%
31-3	#10	0.00124	500	1.40%
31-4	#10	0.00124	455	1.28%
31-5	#10	0.00124	410	1.15%
31-6	#10	0.00124	360	1.01%
31-7	#10	0.00124	315	0.88%
31-8	#10	0.00124	270	0.76%
31-9	#10	0.00124	240	0.67%
31-10	#10	0.00124	620	1.74%
31-11	#10	0.00124	575	1.61%
31-12	#10	0.00124	530	1.49%
31-13	#10	0.00124	480	1.35%
31-14	#10	0.00124	435	1.22%
32-1	#10	0.00124	395	1.11%
32-2	#10	0.00124	350	0.98%
32-3	#10	0.00124	305	0.86%
32-4	#10	0.00124	265	0.74%
32-5	#10	0.00124	655	1.84%
32-6	#10	0.00124	610	1.71%
32-7	#10	0.00124	560	1.57%
32-8	#10	0.00124	515	1.44%
32-9	#10	0.00124	470	1.32%
32-10	#10	0.00124	425	1.19%
32-11	#10	0.00124	380	1.07%
32-12	#10	0.00124	335	0.94%
32-13	#10	0.00124	290	0.81%
32-14	#10	0.00124	320	0.90%

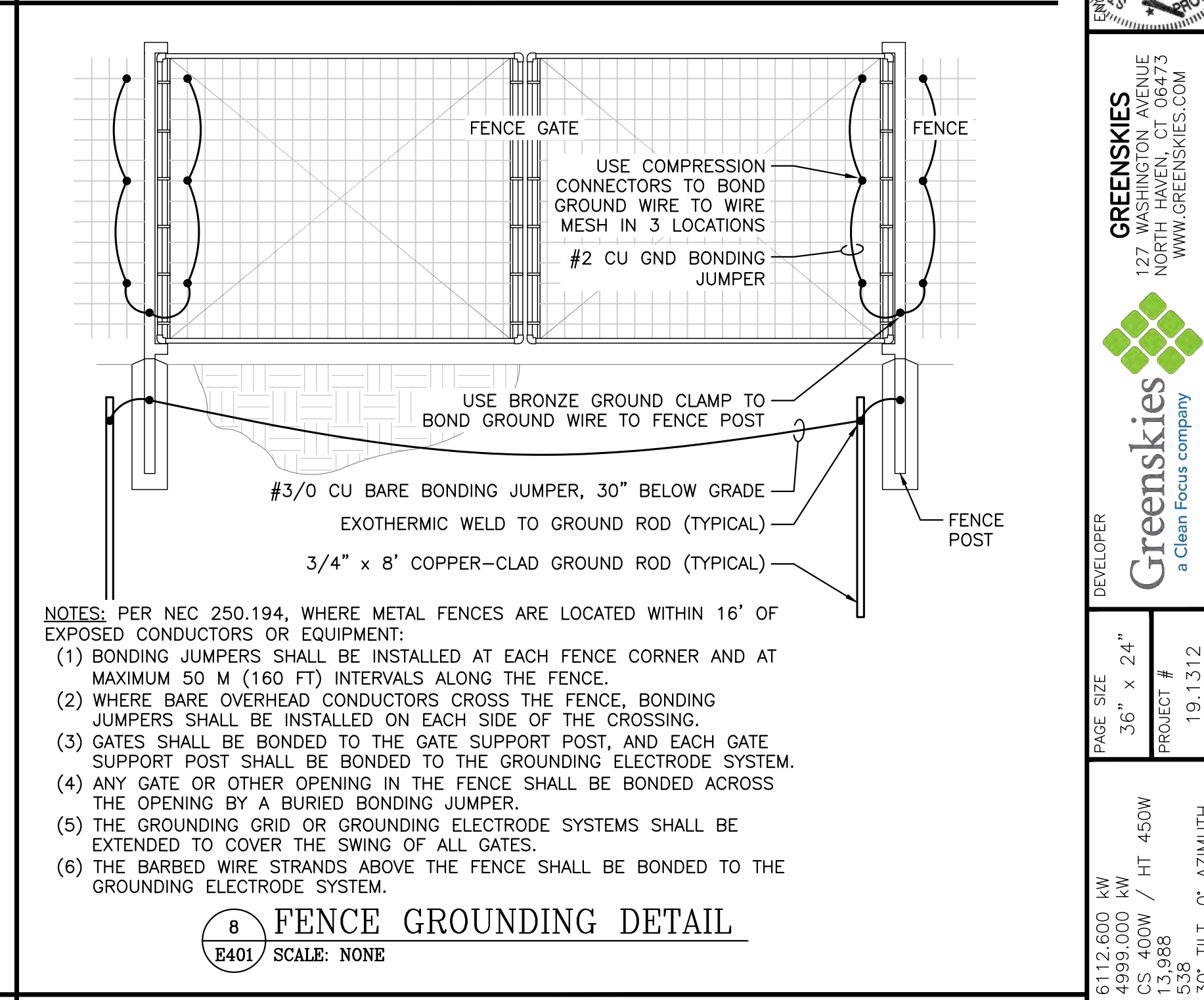
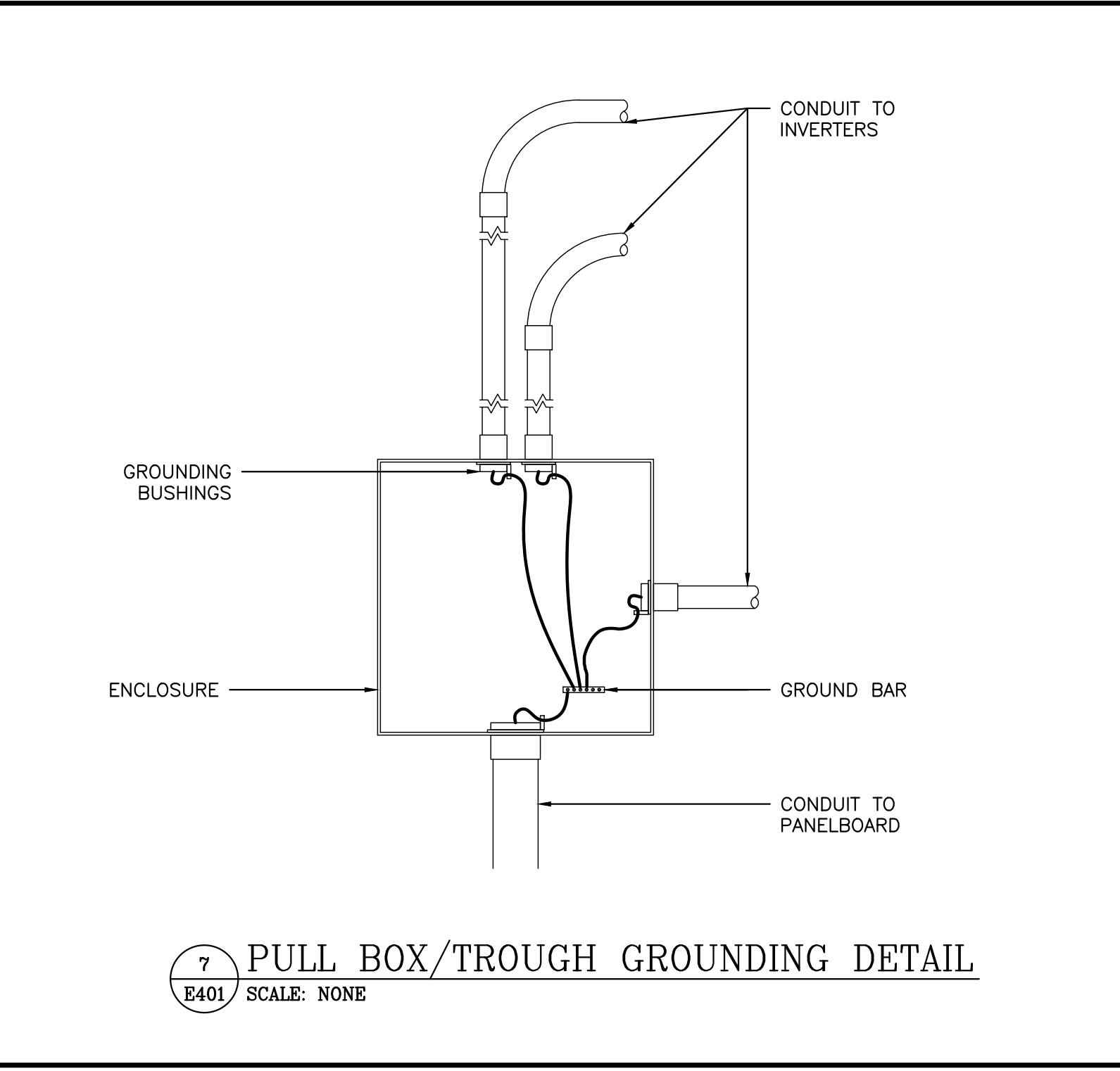
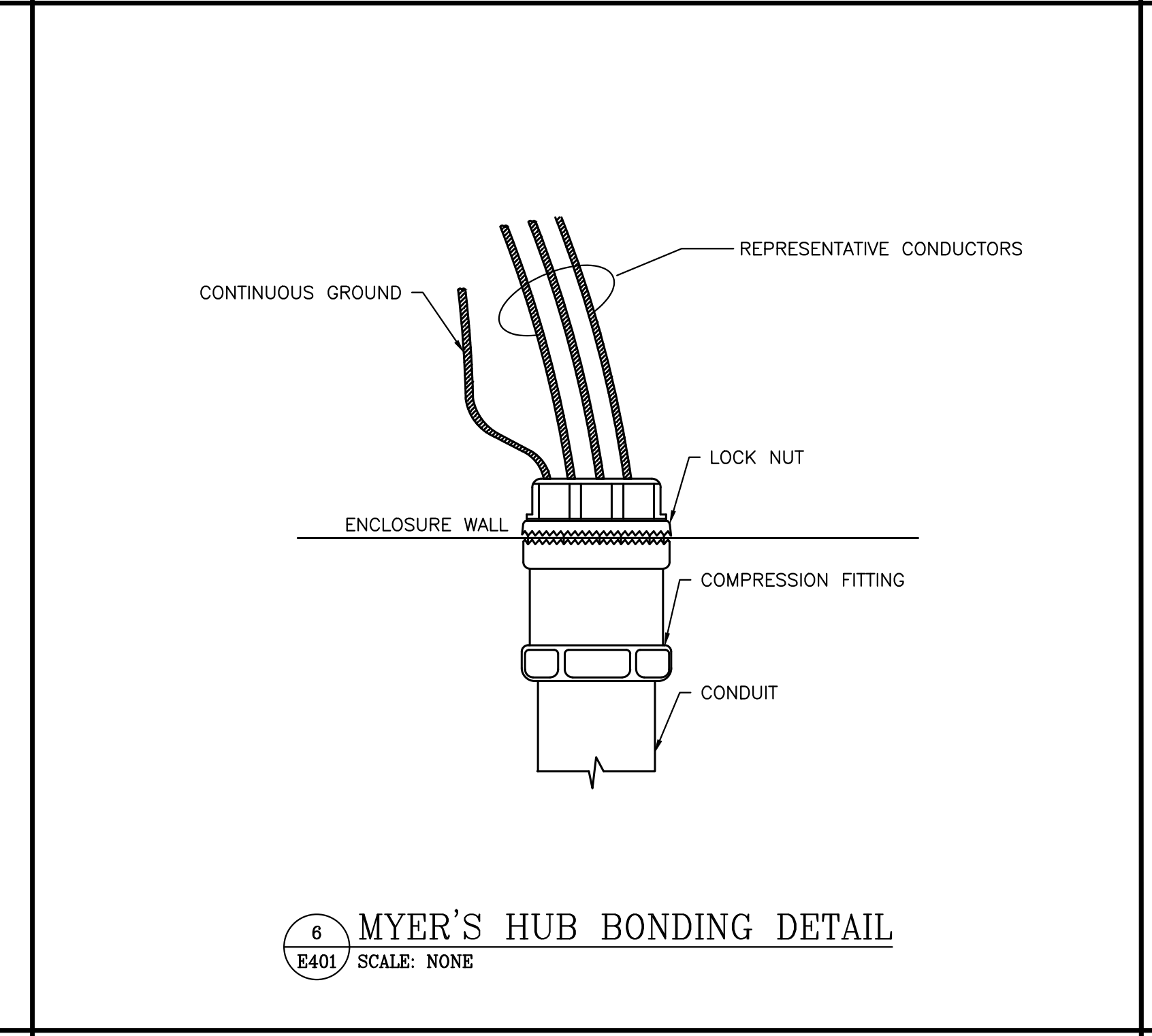
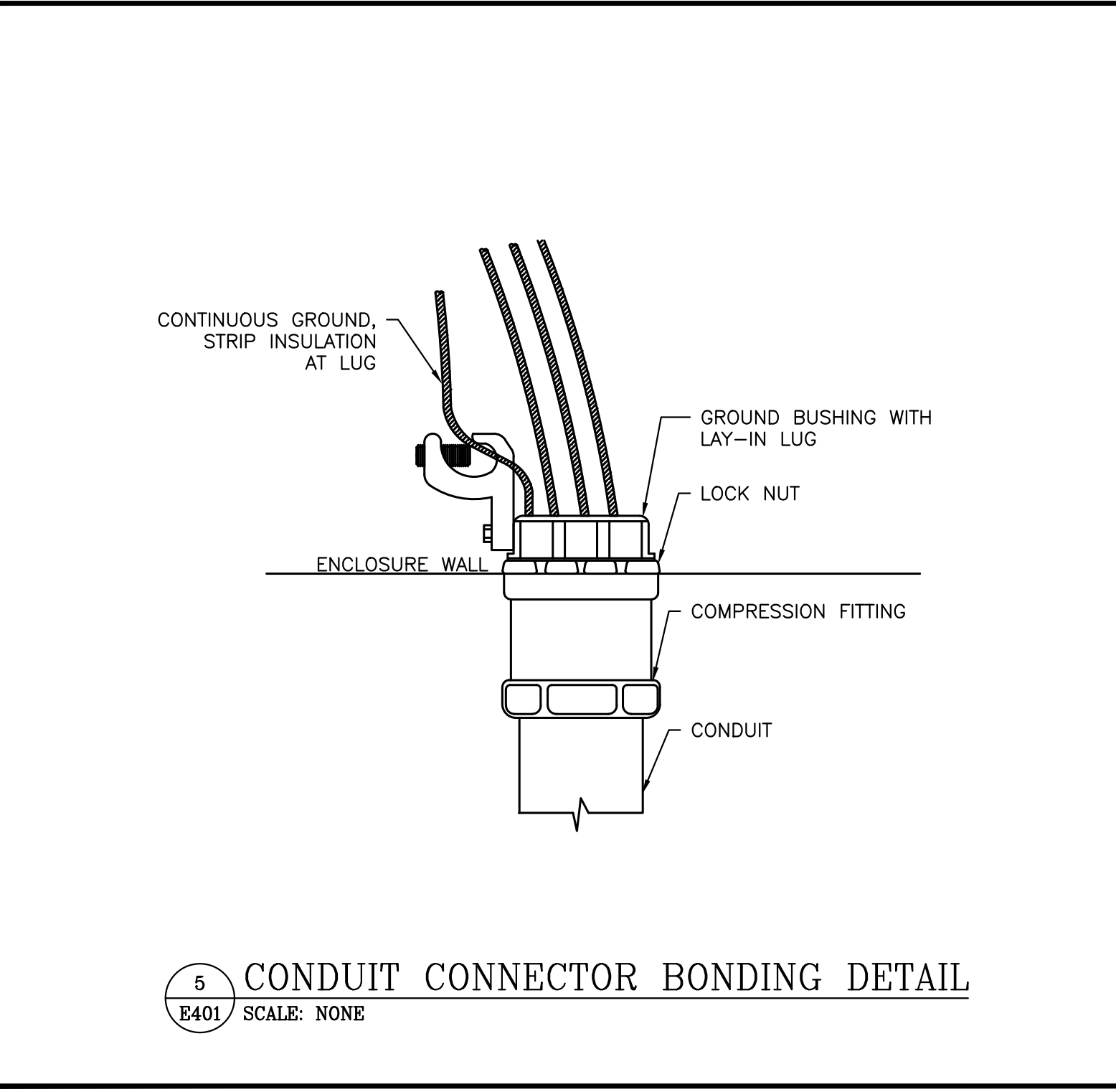
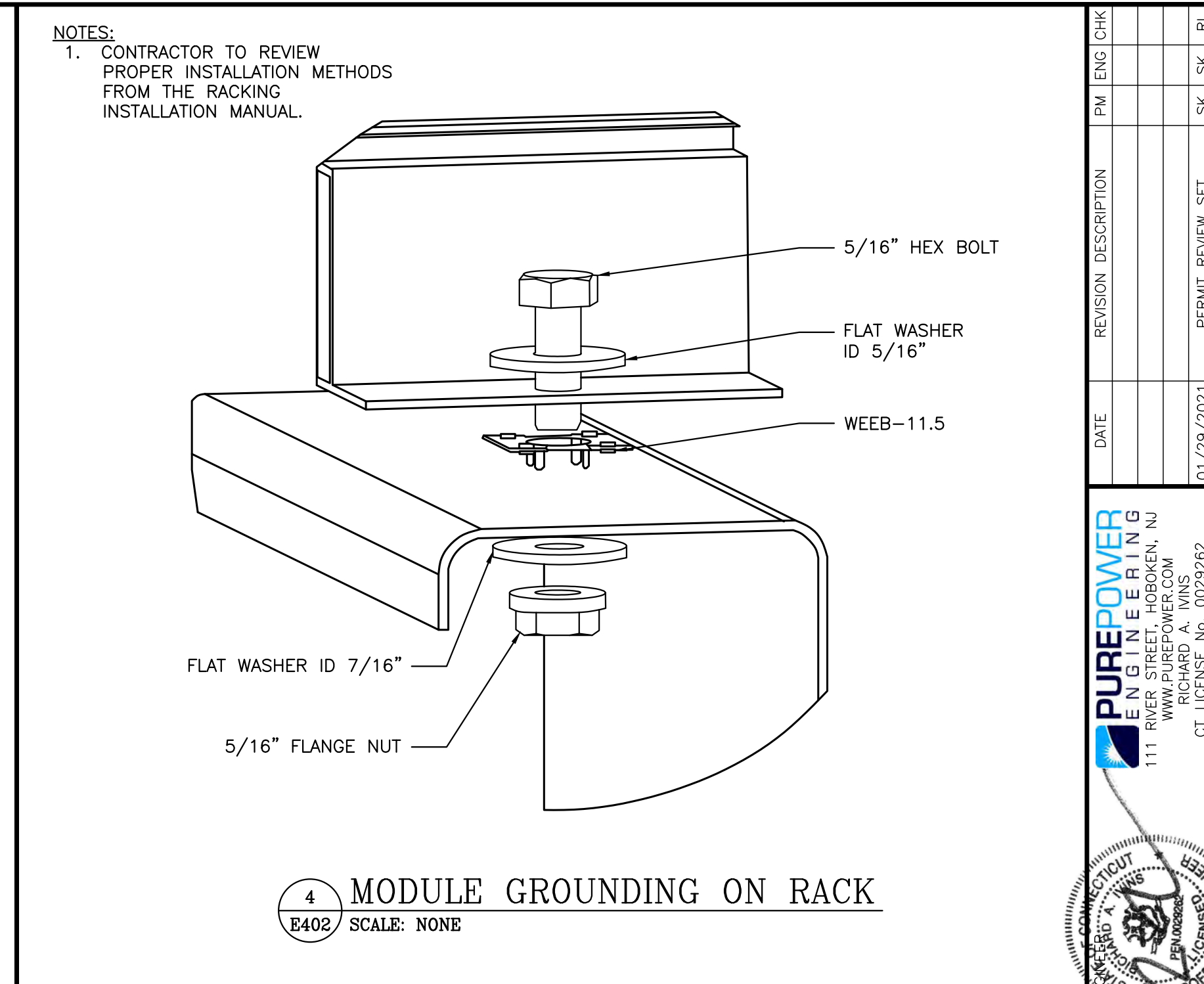
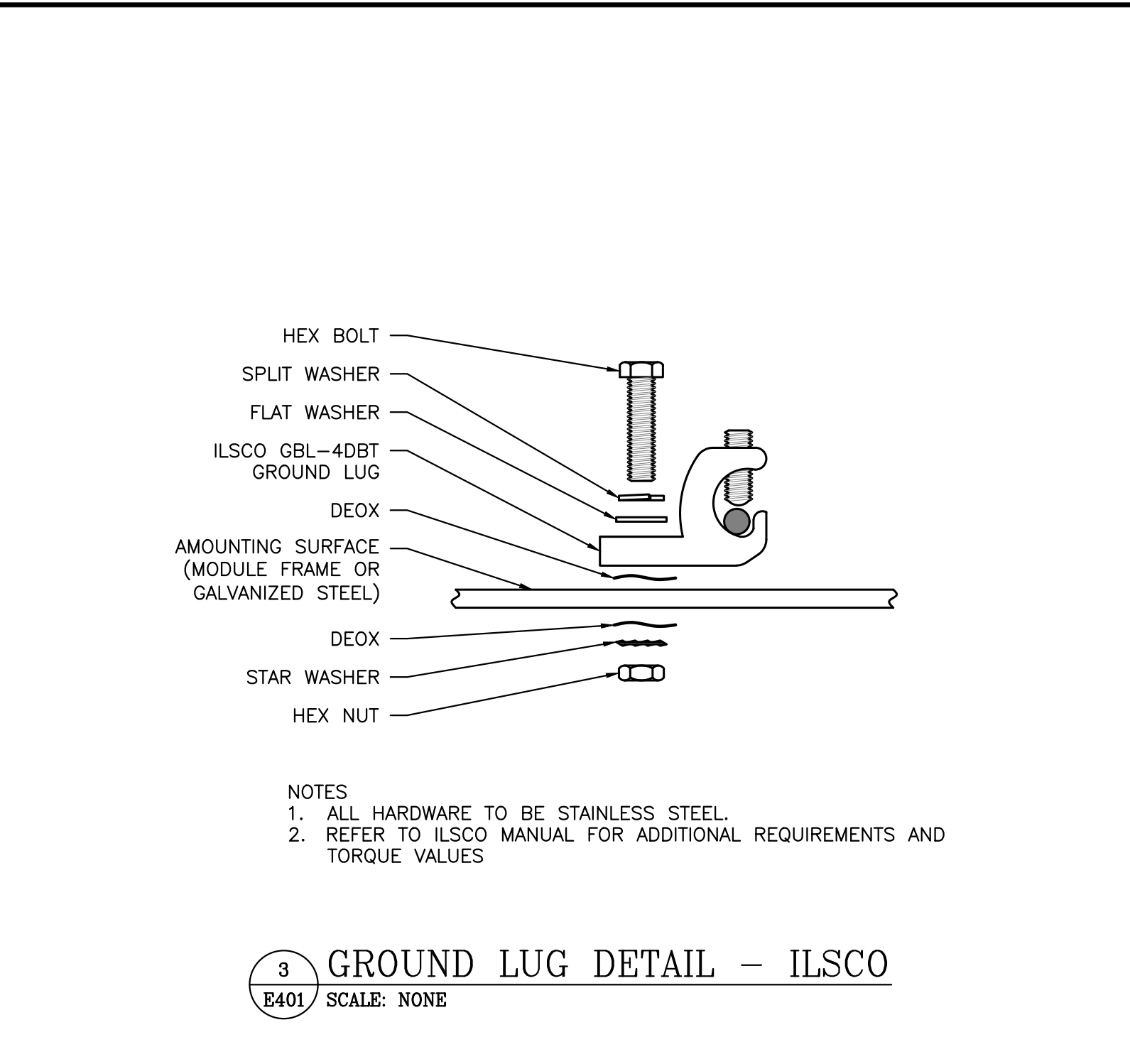
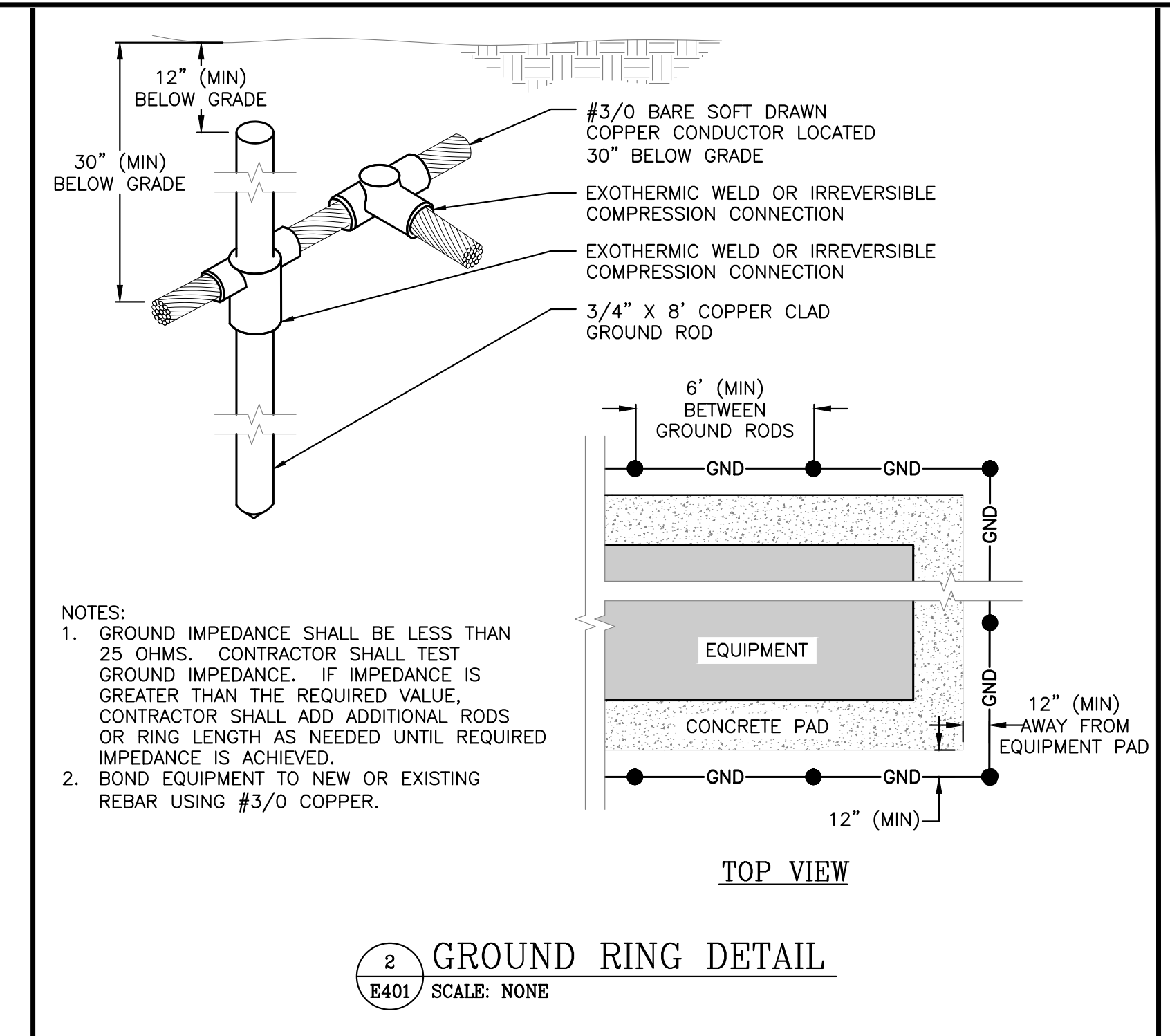
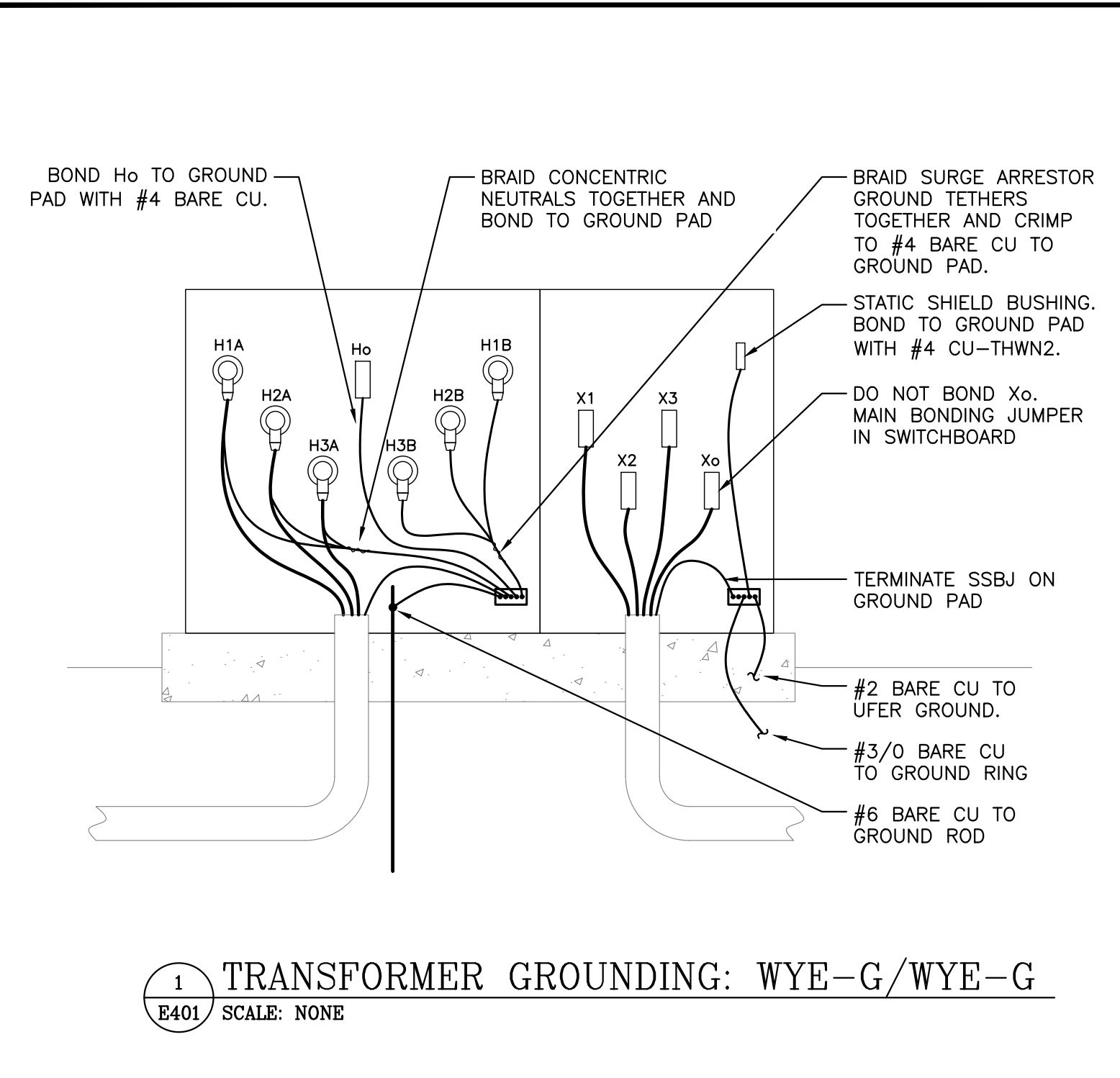
INVERTERS 33 THRU 40

STRING NUMBER	STRING TO INVERTER WIRE GAUGE	STRING TO INVERTER IMPEDANCE (Ω/ft)	STRING DISTANCE (FEET)	STRING VOLTAGE DROP
33-1	#10	0.00124	350	0.98%
33-2	#10	0.00124	395	1.11%
33-3	#10	0.00124	445	1.25%
33-4	#10	0.00124	60	0.17%
33-5	#10	0.00124	95	0.27%
33-6	#10	0.00124	140	0.39%
33-7	#10	0.00124	185	0.52%
33-8	#10	0.00124	235	0.66%
33-9	#10	0.00124	280	0.78%
33-10	#10	0.00124	325	0.91%
33-11	#10	0.00124	370	1.04%
33-12	#10	0.00124	415	1.16%
33-13	#10	0.00124	320	0.90%
33-14	#10	0.00124	365	1.02%
34-1	#10	0.00124	35	0.10%
34-2	#10	0.00124	35	0.10%
34-3	#10	0.00124	90	0.25%
34-4	#10	0.00124	135	0.38%
34-5	#10	0.00124	180	0.50%
34-6	#10	0.00124	225	0.63%
34-7	#10	0.00124	265	0.74%
34-8	#10	0.00124	70	0.20%
34-9	#10	0.00124	115	0.32%
34-10	#10	0.00124	160	0.45%
34-11	#10	0.00124	205	0.57%
34-12	#10	0.00124	250	0.70%
34-13	#10	0.00124	295	0.83%
34-14	#10	0.00124	340	0.95%
35-1	#10	0.00124	50	0.14%
35-2	#10	0.00124	65	0.18%
35-3	#10	0.00124	110	0.31%
35-4	#10	0.00124	155	0.43%
35-5	#10	0.00124	200	0.56%
35-6	#10	0.00124	245	0.69%
35-7	#10	0.00124	290	0.81%
35-8	#10	0.00124	335	0.94%
35-9	#10	0.00124	80	0.22%
35-10	#10	0.00124	95	0.27%
35-11	#10	0.00124	140	0.39%
35-12	#10	0.00124	185	0.52%
35-13	#10	0.00124	230	0.64%
36-1	#10	0.00124	270	0.76%
36-2	#10	0.00124	315	0.88%
36-3	#10	0.00124	360	1.01%
36-4	#10	0.00124	115	0.32%
36-5	#10	0.00124	115	0.32%
36-6	#10	0.00124	160	0.45%
36-7	#10	0.00124	205	0.57%
36-8	#10	0.00124	250	0.70%
36-9	#10	0.00124	295	0.83%
36-10	#10	0.00124	340	0.95%
36-11	#10	0.00124	325	0.91%
36-12	#10	0.00124	370	1.04%

36-13	#10	0.00124	390	1.09%
37-1	#10	0.00124	135	0.38%
37-2	#10	0.00124	140	0.39%
37-3	#10	0.00124	185	0.52%
37-4	#10	0.00124	230	0.64%
37-5	#10	0.00124	275	0.77%
37-6	#10	0.00124	190	0.53%
37-7	#10	0.00124	145	0.41%
37-8	#10	0.00124	195	0.55%
37-9	#10	0.00124	240	0.67%
37-10	#10	0.00124	285	0.80%
37-11	#10	0.00124	330	0.93%
37-12	#10	0.00124	375	1.05%
37-13	#10	0.00124	420	1.18%
38-1	#10	0.00124	295	0.83%
38-2	#10	0.00124	340	0.95%
38-3	#10	0.00124	385	1.08%
38-4	#10	0.00124	430	1.21%
38-5	#10	0.00124	320	0.90%
38-6	#10	0.00124	365	1.02%
38-7	#10	0.00124	410	1.15%
38-8	#10	0.00124	455	1.28%
38-9	#10	0.00124	285	0.80%
38-10	#10	0.00124	330	0.93%
38-11	#10	0.00124	375	1.05%
38-12	#10	0.00124	420	1.18%
38-13	#10	0.00124	465	1.30%
39-1	#10	0.00124	270	0.76%
39-2	#10	0.00124	295	0.83%
39-3	#10	0.00124	340	0.95%
39-4	#10	0.00124	385	1.08%
39-5	#10	0.00124	430	1.21%
39-6	#10	0.00124	475	1.33%
39-7	#10	0.00124	295	0.83%
39-8	#10	0.00124	325	0.91%
39-9	#10	0.00124	370	1.04%
39-10	#10	0.00124	415	1.16%
39-11	#10	0.00124	460	1.29%
39-12	#10	0.00124	505	1.42%
39-13	#10	0.00124	490	1.37%
39-14	#10	0.00124	535	1.50%
40-1	#10	0.00124	390	1.09%
40-2	#10	0.00124	320	0.90%
40-3	#10	0.00124	355	1.00%
40-4	#10	0.00124	405	1.14%
40-5	#10	0.00124	450	1.26%
40-6	#10	0.00124	380	1.07%
40-7	#10	0.00124	425	1.19%
40-8	#10	0.00124	470	1.32%
40-9	#10	0.00124	520	1.46%
40-10	#10	0.00124	565	1.58%
40-11	#10	0.00124	450	1.26%
40-12	#10	0.00124	495	1.39%
40-13	#10	0.00124	540	1.51%
40-14	#10	0.00124	585	1.64%
AVERAGE STRING VOLTAGE DROP				1.10%

 <p>Greenskies a Clean Focus company</p>		<p>DATE: 03/09/2024</p>	<p>REVISION DESCRIPTION</p>	<p>PM TENG CHK</p>
		<p>PROJECT: SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359</p>	<p>DATE: 03/09/2024</p>	<p>REVISION SET (REV. 1)</p>
<p>DC SYSTEM SIZE: 6112.600 kW AC SYSTEM SIZE: 4999.000 kW MODULE TYPE: CS 400W / HT 450W MODULE QUANTITY: 13,988 STRING QUANTITY: 538 ORIENTATION: 30° TILT, 0° AZIMUTH</p>	<p>PAGE SIZE: 36" x 24" PROJECT #: 19.1312</p>	<p>DRAWING TITLE</p>	<p>DRAWING #</p>	<p>E312</p>

RULER IN INCHES: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



NEC 250.102(C)(1) SSBJ IS SIZED PER TABLE 250.102(C)(1) BASED ON THE SIZE OF PHASE CONDUCTORS IN EACH INDIVIDUAL CONDUIT

NEC 250.102(C)(2) SSBJ IS SIZED PER TABLE 250.102(C)(1) BASED ON THE COMBINED AREA OF PARALLEL PHASE CONDUCTORS

9 SUPPLY SIDE BONDING JUMPERS (SSBJ)
E401 SCALE: NONE

SIZE OF LARGEST UNGROUNDED CONDUCTOR OR EQUIVALENT AREA FOR PARALLEL CONDUCTORS (AWG/KCMIL)		SIZE OF GROUNDED CONDUCTOR OR BONDING JUMPER (AWG/KCMIL)	
COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM	COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM
2 OR SMALLER	1/0 OR SMALLER	8	6
1 OR 1/0	2/0 OR 3/0	6	4
2 OR 2/0	4/0 OR 250	4	2
OVER 3/0 THROUGH 350	OVER 250 THROUGH 500	2	1/0
OVER 350 THROUGH 600	OVER 500 THROUGH 900	1/0	3/0
OVER 600 THROUGH 1100	OVER 900 THROUGH 1750	2/0	4/0
OVER 1100	OVER 1750	REFER TO NOTES IN NEC TABLE 250.102(C)(1)	

A) FOR CONCENTRIC KNOCKOUTS, USE BONDING JUMPERS AS FOLLOWS:

OVERCURRENT DEVICE CIRCUIT NOT EXCEEDING (AMPERES)	SIZE (AWG OR KCMIL)	
	COPPER	ALUMINUM
15	14	12
20	12	10
60	10	8
100	8	6
200	6	4
300	4	2
400	3	1
500	2	1/0
600	1	2/0
800	1/0	3/0
1000	2/0	4/0
1200	3/0	250
1600	4/0	350
2000	250	400
2500	350	600
3000	400	600
4000	500	750

FOR PARALLEL FEEDERS - NEC 250.102(D) EQUIPMENT BONDING JUMPER IS SIZED PER TABLE 250.122, REGARDLESS IF COMBINED OR INDIVIDUAL BONDING JUMPERS ARE USED

1) INDIVIDUAL

2) COMBINED

B) FOR NON-CONCENTRIC KNOCKOUTS, THE FOLLOWING METHODS SHALL BE PERMITTED (PER NEC 250.97)

- 1) THREADLESS COUPLINGS AND CONNECTORS FOR CABLES WITH METAL SHEATHS
- 2) TWO LOCKNUTS, ON RIGID METAL CONDUIT OR INTERMEDIATE METAL CONDUIT, ONE INSIDE AND ONE OUTSIDE OF BOXES AND CABINETS
- 3) FITTINGS WITH SHOULDERS THAT SEAT FIRMLY AGAINST THE BOX OR CABINET, SUCH AS ELECTRICAL METALLIC TUBING CONNECTORS, FLEXIBLE METAL CONDUIT CONNECTORS, AND CABLE CONNECTORS, WITH AN LOCKNUT ON THE INSIDE OF BOXES AND CABINETS LISTED FITTINGS (SUCH AS MYER'S HUB)

10 LOAD SIDE EQUIPMENT BONDING JUMPER
E401 SCALE: NONE

NOTES:
1. CONTRACTOR TO REVIEW PROPER INSTALLATION METHODS FROM THE RACKING INSTALLATION MANUAL.

DATE: 01/29/2021
REVISION DESCRIPTION: PERMIT REVIEW SET

PROJECT: SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359

DRAWING TITLE: GROUNDING DETAILS
DRAWING #: E401

PURE POWER ENERGY SERVICES, INC.
111 FINGER STREET, EUREKA, IN
WWW.PUREPOWER.COM
RICHARD A. VONN
CT LICENSE NO. 00392862

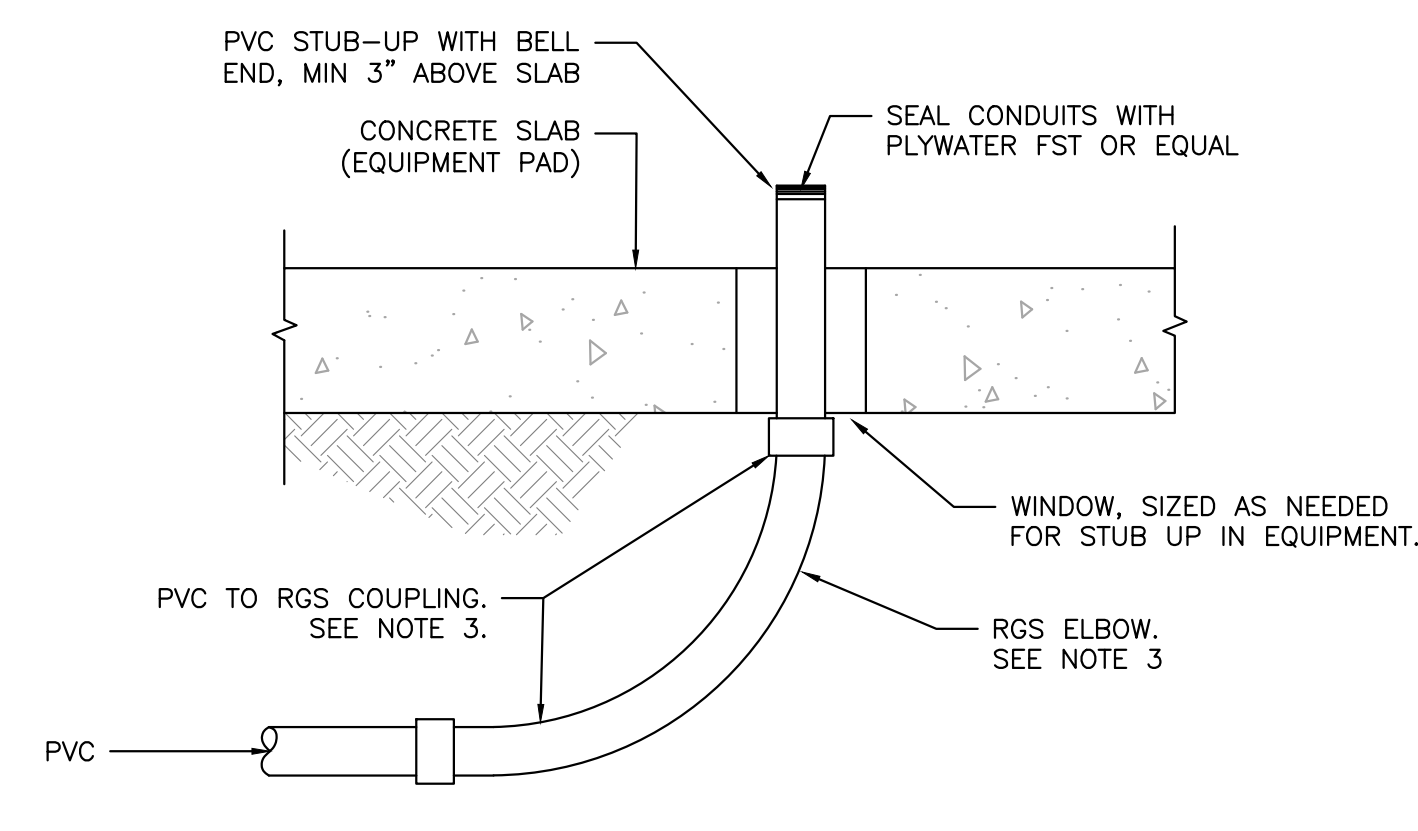
GREENSKIES
127 WASHINGTON AVENUE
NORTH HAVEN, CT 06473
WWW.GREENSKIES.COM

DEVELOPER: Greenskies a Clean Focus company

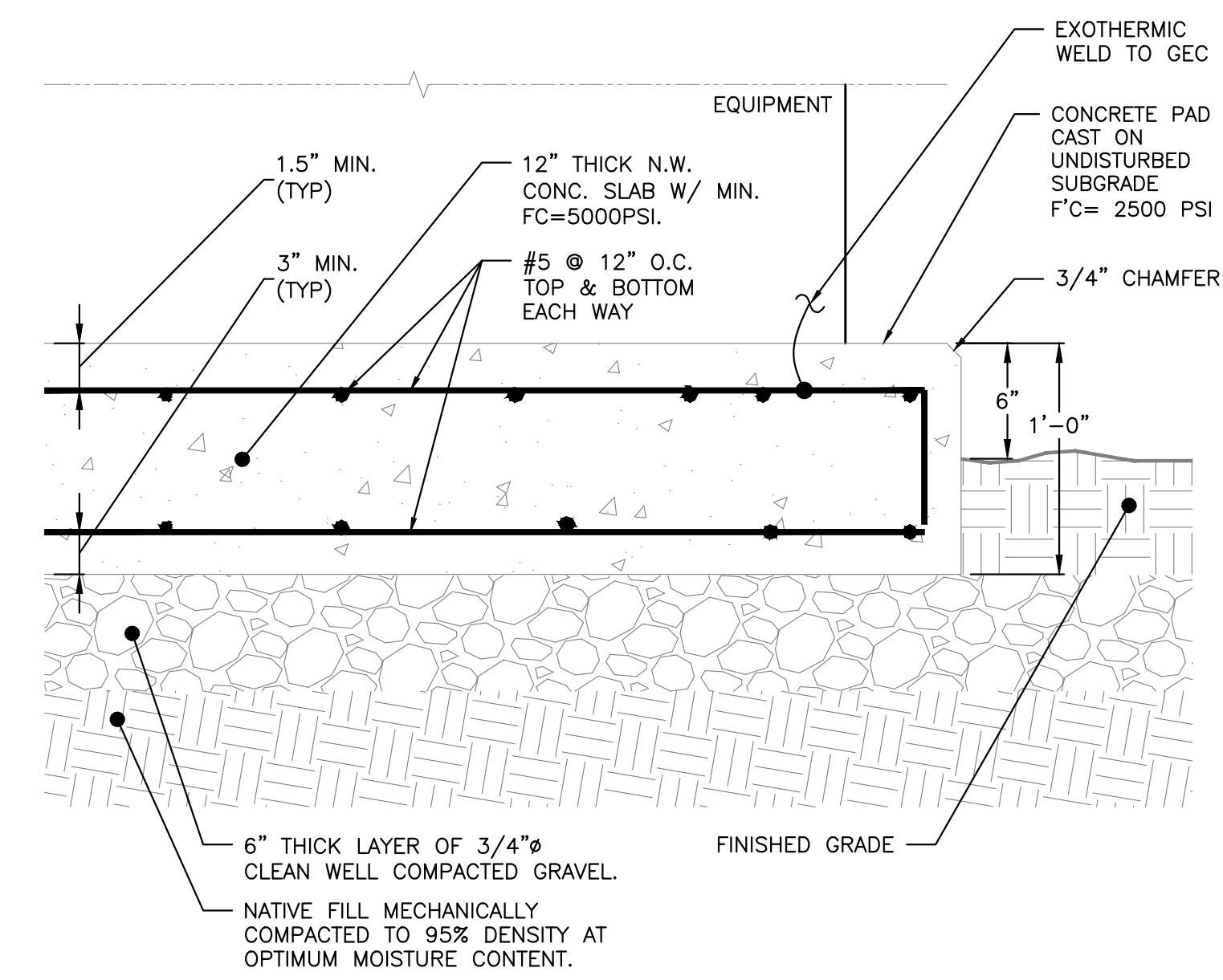
PAGE SIZE: 36" x 24"
PROJECT #: 19.1312
DC SYSTEM SIZE: 6112.600 kW
AC SYSTEM SIZE: 4999.000 kW
MODULE TYPE: CS 400W / HT 450W
STRING QUANTITY: 538
ORIENTATION: 30° TILT, 0° AZIMUTH

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

NOTES:
 1. INITIALLY INSTALL COUPLING CAP TO PREVENT DAMAGE TO STUB-UP UNTIL GEAR IS SET.
 2. INSTALL ROUNDED FITTING BEFORE PULLING CABLES TO AVOID DAMAGE TO CABLES.
 3. RMC ELBOW ONLY REQUIRED ON ONE SIDE OF EACH PULL NEAREST THE LOCATION OF THE PULLING MACHINE. ON OPPOSITE SIDE, PVC SCH80 ELBOWS ARE PERMITTED.

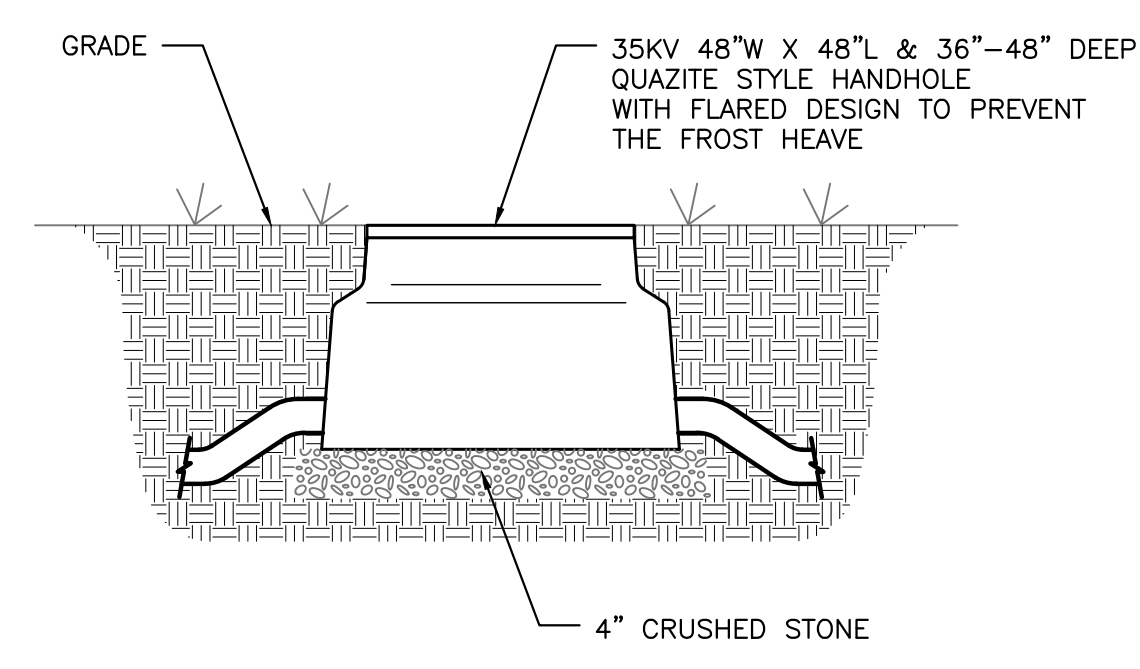


1 EQUIPMENT PAD STUB-UP DETAIL
 E402 SCALE: NONE



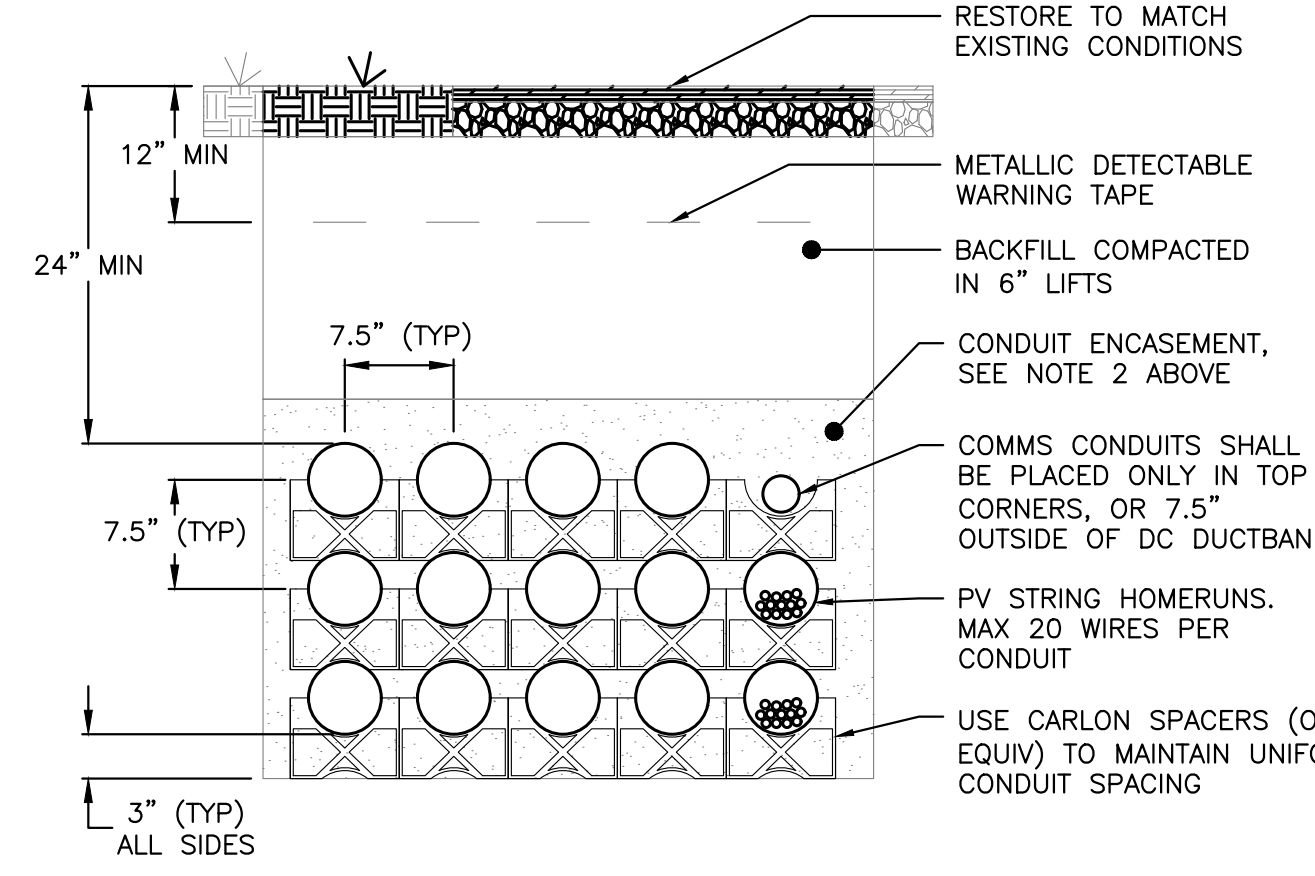
2 CONCRETE PAD DETAIL
 E402 SCALE: NONE

NOTES:
 1. HANDHOLES TO BE PLACED AS NECESSARY
 2. SEPARATE HANDHOLES REQUIRED FOR DATA AND POWER ACCESS
 3. LOCATIONS OF HANDHOLES TO BE DETERMINED IN FIELD BY CONTRACTOR
 4. HANDHOLES SHALL BE UL LISTED, GASKETED, SUITABLE FOR TIER 15 LOADING.
 5. IN AREAS OF VEHICLE TRAFFIC, HANDHOLES SHALL BE SUITABLE FOR H2O LOADING.
 6. HANDHOLES SHALL BE PROVIDED WITH BASES AND SS HEX BOLTS.



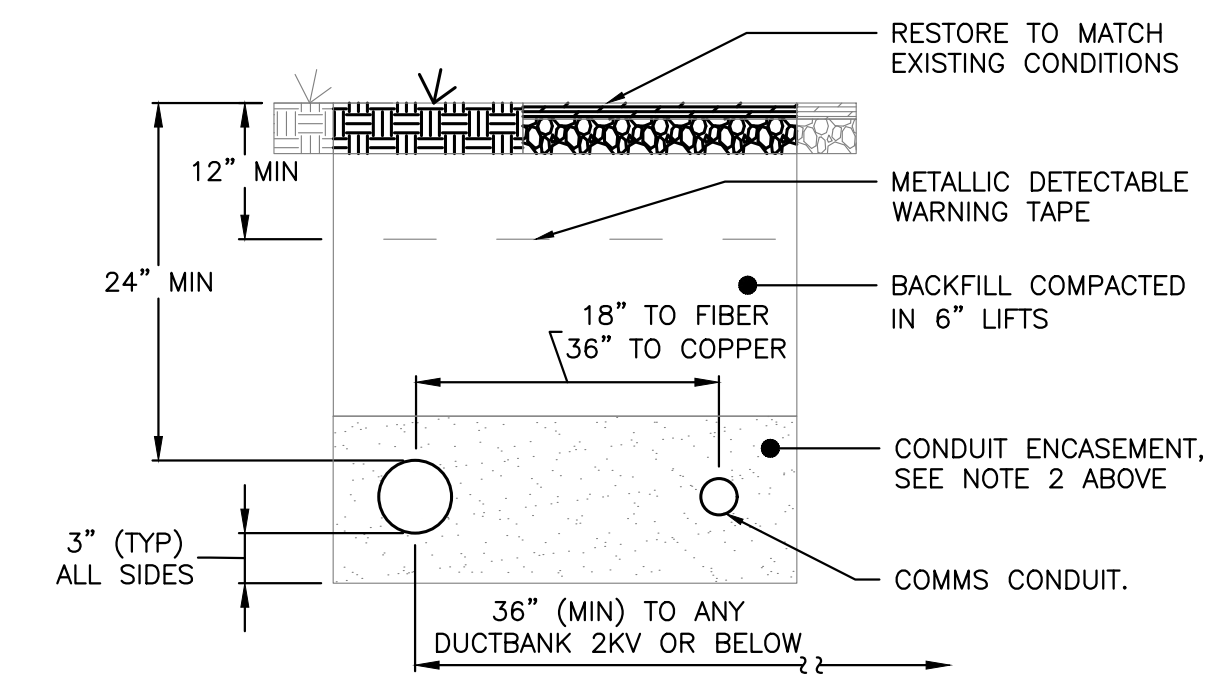
3 HANDHOLE DETAIL
 E402 SCALE: NONE

NOTES:
 1. ALL UNDERGROUND CONDUIT SHALL BE PVC AND TRANSITION TO RMC FOR ELBOW. RMC ELBOW DOES NOT NEED TO BE BONDED IF THE ENTIRE ELBOW IS \geq 18\"/>



4 TYPICAL 1500VDC DUCTBANK DETAIL
 E402 SCALE: NONE

NOTES:
 1. ALL UNDERGROUND CONDUIT SHALL BE PVC AND TRANSITION TO RMC FOR ELBOW. RMC ELBOW DOES NOT NEED TO BE BONDED IF THE ENTIRE ELBOW IS \geq 18\"/>



5 TYPICAL MV DUCTBANK DETAIL
 E402 SCALE: NONE

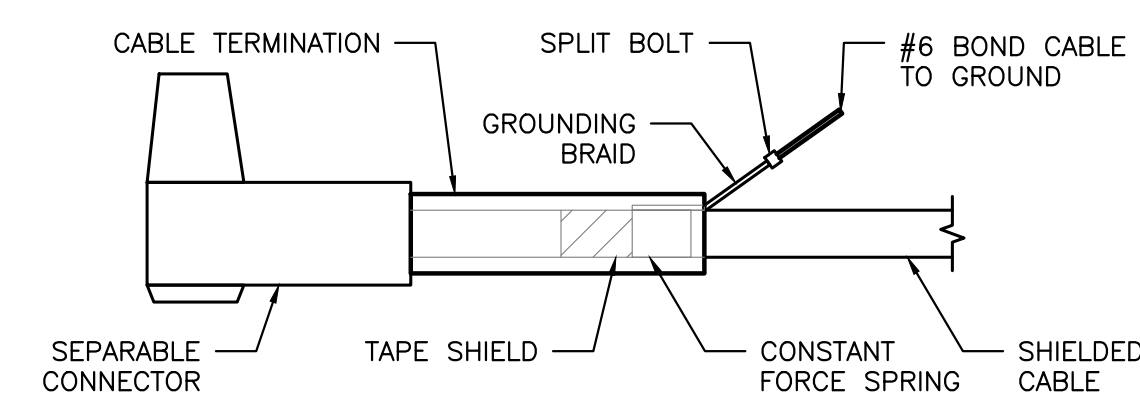
NOTES:
 1. INSTALL EXPANSION COUPLING EVERY 100' OF STRAIGHT CONDUIT RUN.
 2. IF EXPANSION COUPLINGS ARE INSTALLED AT LENGTHS LESS THAN 100', THE OFFSET FROM CENTER SHALL BE ADJUSTED PROPORTIONALLY.
 3. IF EXPANSION JOINT IS NOT PROVIDED WITH INTERNAL BONDING JUMPER, AND EXTERNAL BONDING JUMPER MUST BE USED

- 0'F - EXTEND 3/8" BEYOND CENTER
- 30'F - EXTEND 3/16" BEYOND CENTER
- 60'F - CENTERED
- 90'F - CONTRACT 3/16" BEYOND CENTER
- 120'F - CONTRACT 3/8" BEYOND CENTER

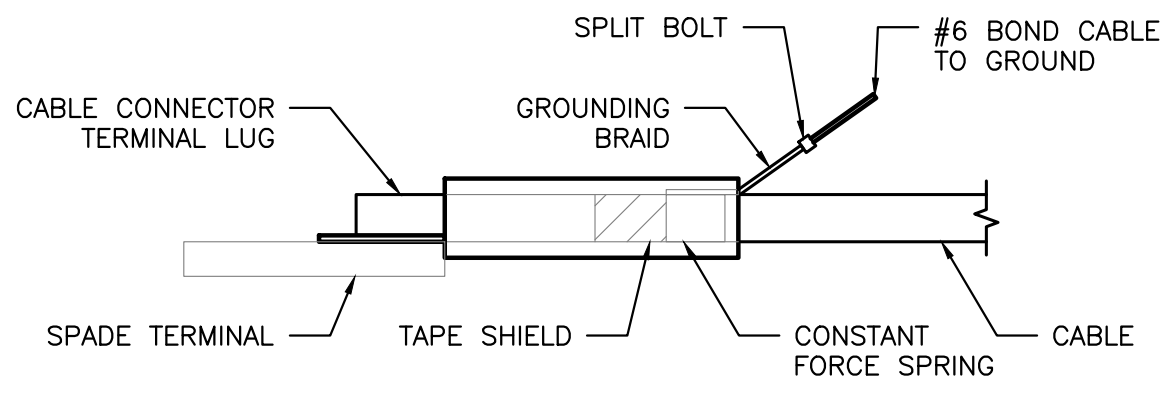
NOTE: THE COEFFICIENT OF THERMAL EXPANSION IN STEEL CONDUIT= 0.65 X 10⁻⁶IN./IN./°F AT 120°F, THE LENGTH CHANGE IS 0.94 INCHES PER 100 FEET OF CONDUIT RUN.

EMT, IMC & RMC

6 EXPANSION COUPLING DETAIL
 E402 SCALE: NONE

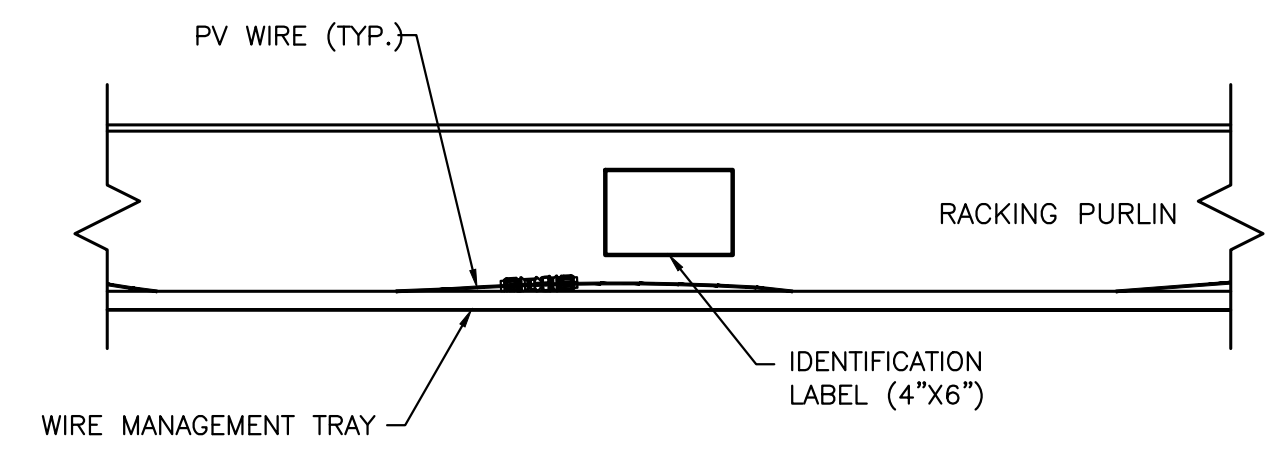


DEAD FRONT MV TERMINATION



LIVE FRONT MV TERMINATION

7 SHIELDED CABLE DETAIL
 E402 SCALE: NONE



NOTES:
 1. INSTALL MANUFACTURED LABEL IDENTIFYING THE INVERTER AND STRING NUMBER. LABEL MUST HAVE RED BACKGROUND FOR POSITIVE OR BLACK BACKGROUND FOR NEGATIVE. TEXT SHALL BE WHITE WITH A HEIGHT OF 3/4\"/>

8 STRING PLACARD DETAIL
 E402 SCALE: NONE

PROJECT: SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359
 DC SYSTEM SIZE: 6112.600 kW
 AC SYSTEM SIZE: 4999.000 kW
 MODULE TYPE: CS 400W / HT 450W
 STRING QUANTITY: 538
 ORIENTATION: 30° TILT, 0° AZIMUTH
 DEVELOPER: Greenskies a Clean Focus company
 127 WASHINGTON AVENUE NORTH HAVEN, CT 06473 WWW.GREENSKIES.COM
 DATE: 01/29/2021
 PERMIT REVIEW SET: SK SR
 REVISION DESCRIPTION: PM TENG CHK

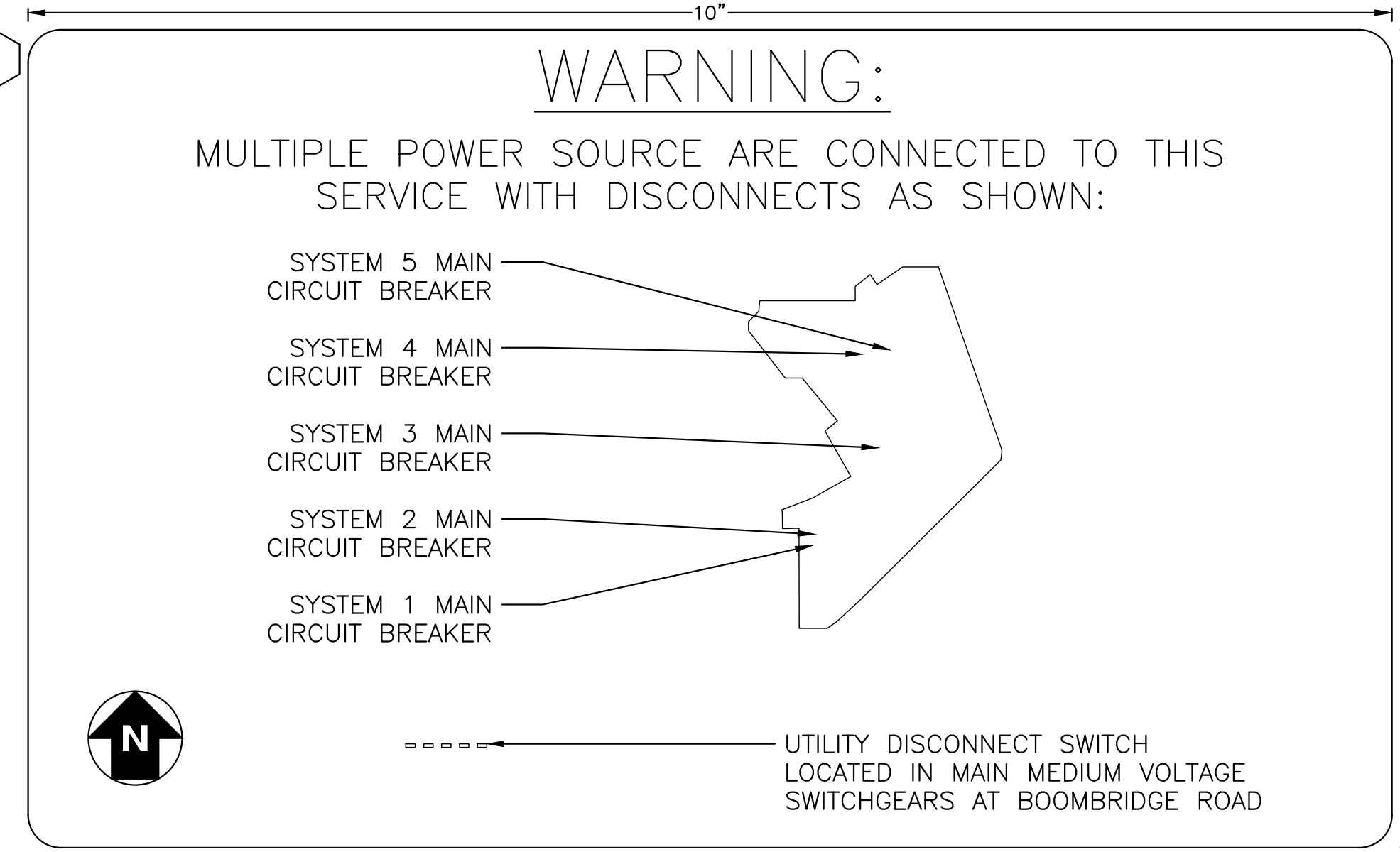
PLT DATE: 3/12/2021 6:54 PM
RULER IN INCHES: 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0, 1/2

GENERAL NOTES FOR LABELS:
1. LABEL SCALE 1:2 UNLESS NOTED
2. LETTERING ON SIGNS SHALL BE CAPITAL LETTERS
3. CLEARLY LABEL ALL CIRCUIT BREAKERS IN THE PANELBOARD(S). THE LABEL SHALL INDICATE THE NAME OF THE DEVICE IT SERVES.

LABEL FORMAT NOTES:
1. **FORMAT 1:** ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND. TEXT HEIGHT: TITLES 3/8", ALL OTHER TEXT 5/32".
2. **FORMAT 2:** ENGRAVED MELAMINE, BLACK TEXT ON WHITE BACKGROUND. TEXT HEIGHT: 3/8".
3. **FORMAT 3:** REFLECTIVE UV RATED LABEL, RED BACKGROUND WITH WHITE CAPITAL LETTERS AT LEAST 3/8" TALL. LABELS SHALL BE SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.
4. **FORMAT 4:** ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND. TEXT HEIGHT: TITLES 5/32", ALL OTHER TEXT 3/32".

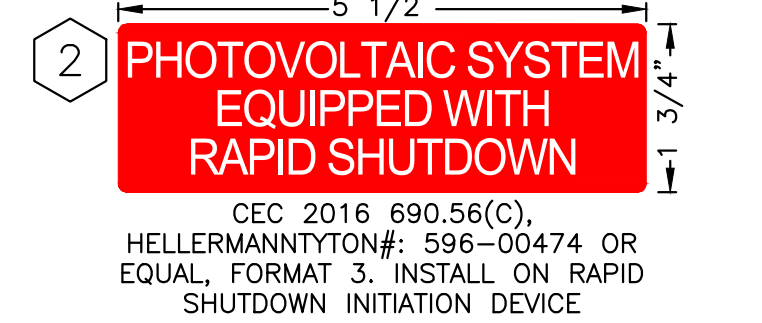
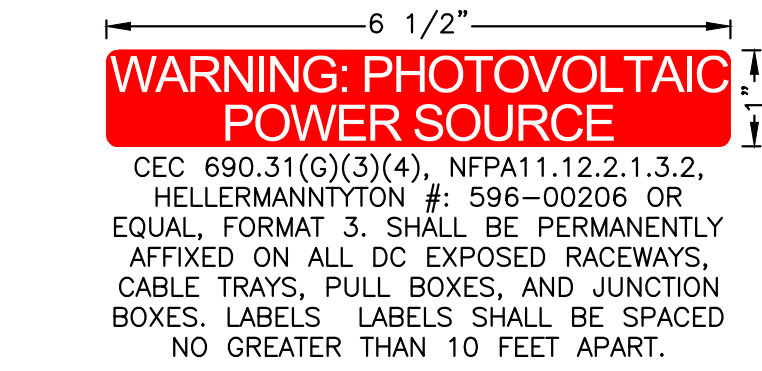
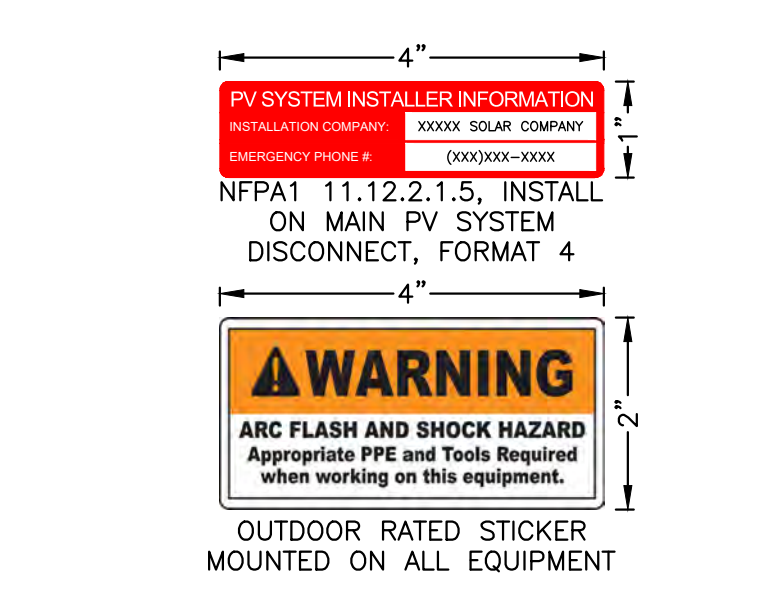
PER 2017 NEC 690.31(B)(1), PV SYSTEM CIRCUIT CONDUCTORS SHALL BE IDENTIFIED AT ALL ACCESSIBLE POINTS OF TERMINATION, CONNECTION, AND SPLICES.

1. STRING HOMERUNS AT ARRAY
2. DC INPUT TERMINALS OF COMBINER BOX
3. DC OUTPUT TERMINALS OF COMBINER BOX
4. DC INPUT TERMINALS OF INVERTER
5. AC OUTPUT TERMINALS OF INVERTER
6. AC INPUT & OUTPUT TERMINALS OF EACH SUCCESSIVE DEVICE (WHERE APPLICABLE)

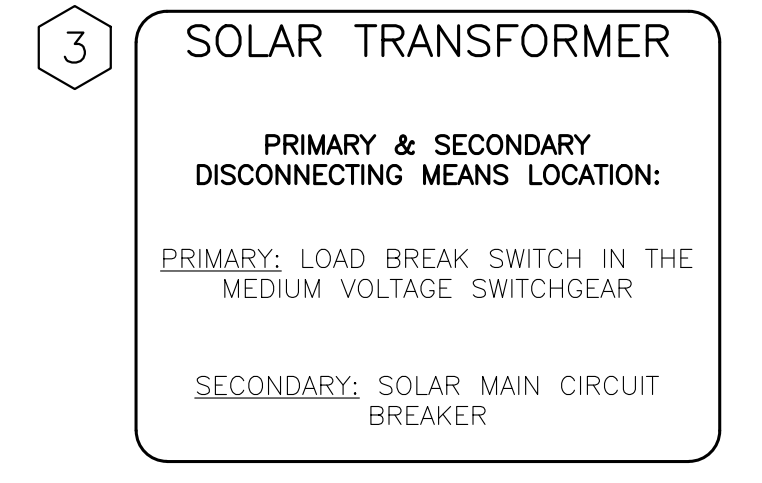


NEC 705.10 & 690.56(B)
INSTALL AT MAIN DISCONNECT OF ALL POWER SOURCES. ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND, TITLE MIN. 1/2", DESCRIPTION 5/16", ALL OTHER TEXT 1/8"

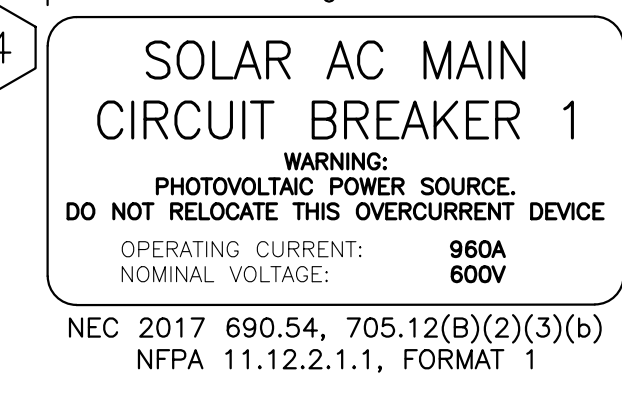
2 DIRECTORY LABEL
E500 SCALE: 1:1



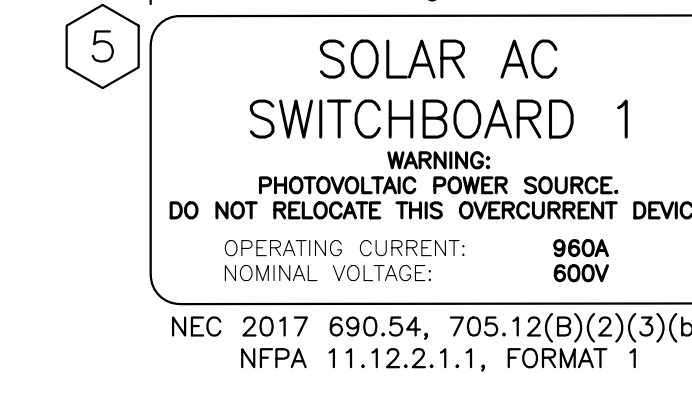
3 TYPICAL FOR TRANSFORMERS 1-5



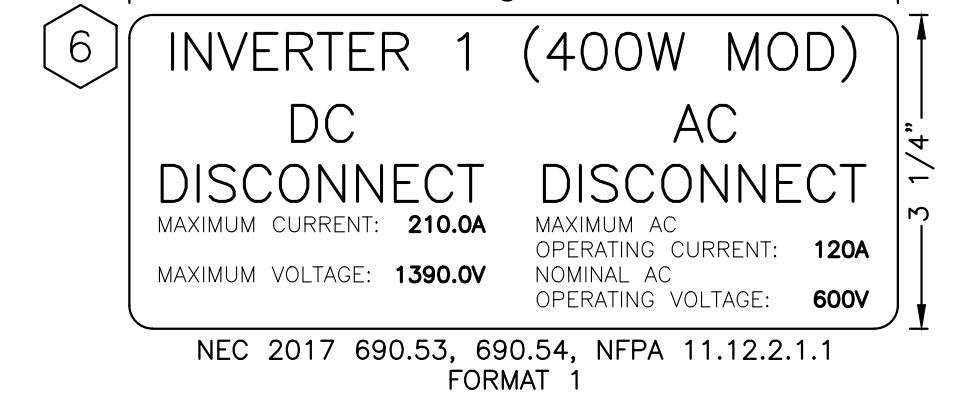
4 TYPICAL FOR SYSTEMS 1-5



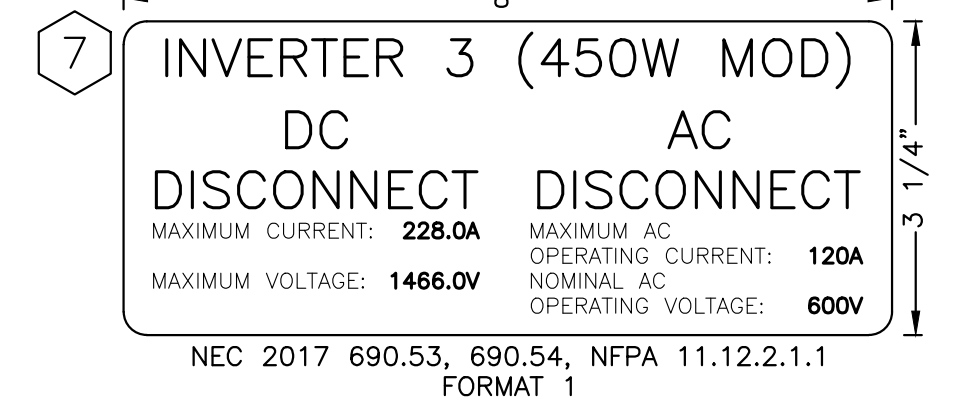
5 TYPICAL FOR SYSTEMS 1-5



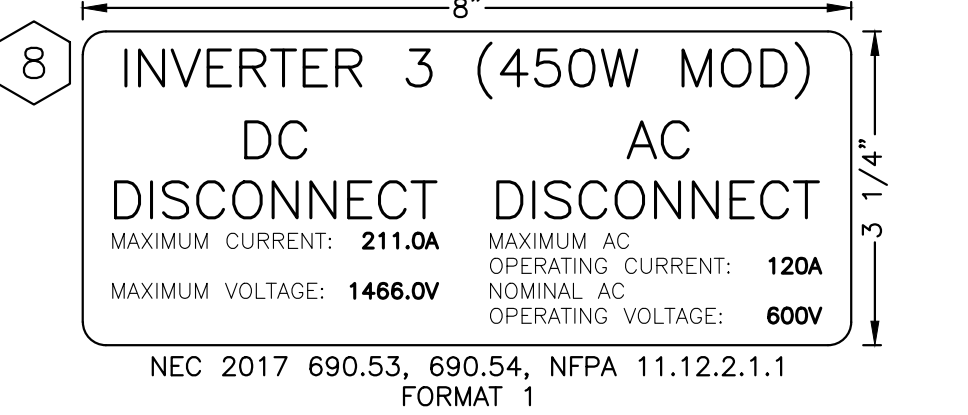
6 TYPICAL FOR INVERTER(S) WITH 14 STRINGS OF 400W MODULES



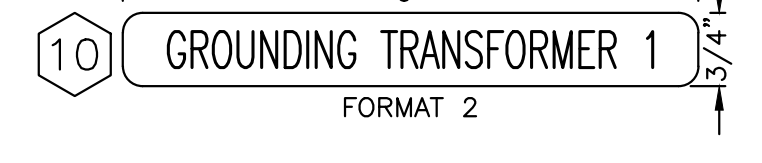
7 TYPICAL FOR INVERTER(S) WITH 14 STRINGS OF 450W MODULES



8 TYPICAL FOR INVERTER(S) WITH 13 STRINGS OF 450W MODULES



10 TYPICAL FOR GROUNDING TRANSFORMER 1-5



Grid of labels and signs including: Main Service Disconnect Sign, Electric Shock Hazard Sign, Inverter Directory Sign, Interactive Photovoltaic System Connected, Photovoltaic Disconnect Sign, Greenskies Emergency Contact Information, Caution! Photovoltaic System Circuit is Backfed, Customer Owned Production Meter, Power Source Backfeed Sign, Deck Monitoring/REC Meter Sign, Utility Bi-Directional Meter Sign, Warning: Solar AC Circuit, Solar Photovoltaic Power Source Located on Premises, AC Raceway Label, Building Front Sign.

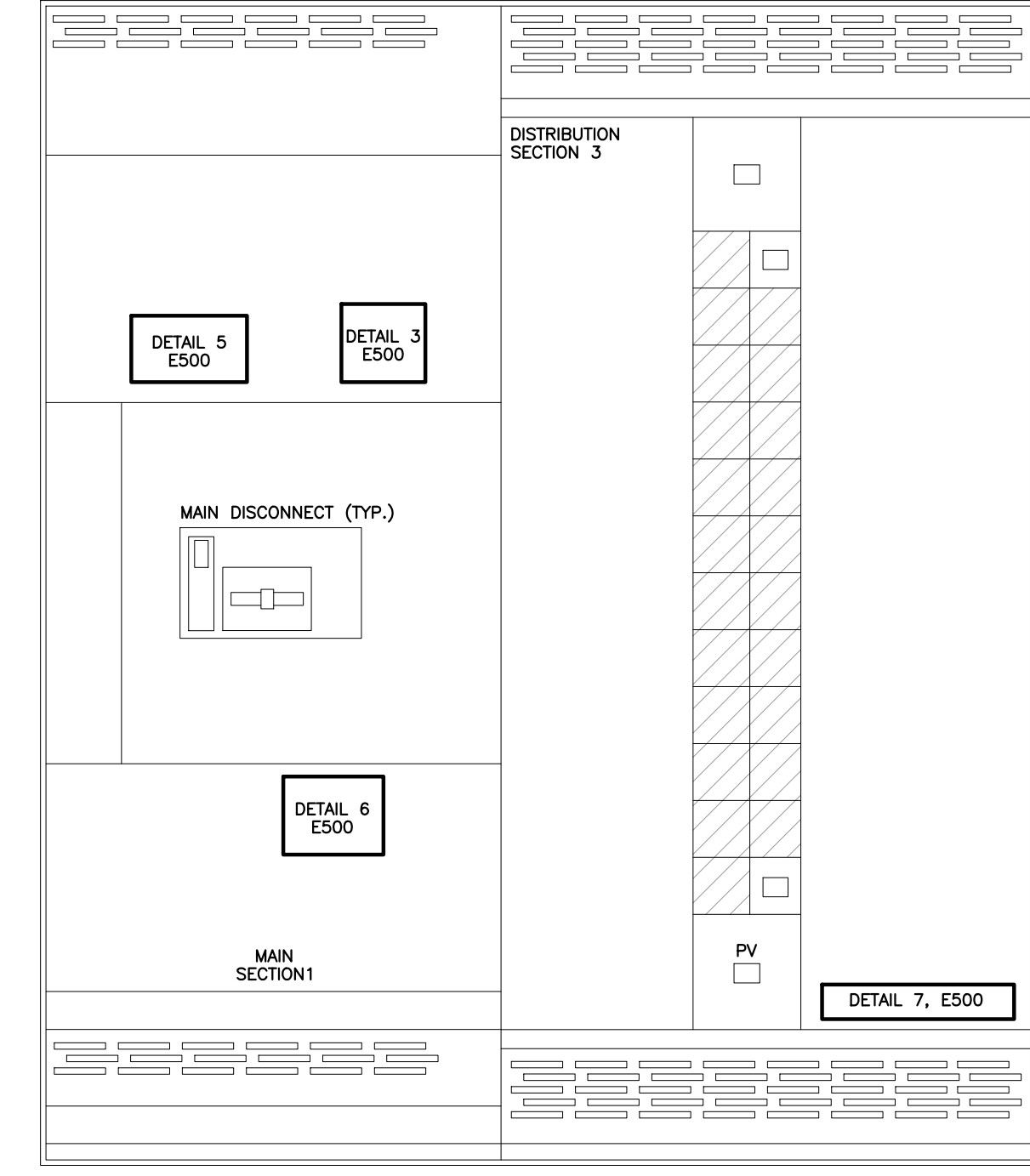


FIGURE 1. EXISTING BUILDING SWITCHGEAR (TYP.)
NOTE: SWITCHGEAR MAY BE CONFIGURED DIFFERENTLY (E.G., NO MAIN BREAKER, TWO SECTION SWITCHGEAR, BREAKER TYPES, ETC.). CONTRACTOR SHALL ADJUST SIGNAGE IN THE FIELD IF NEEDED PER NEC.

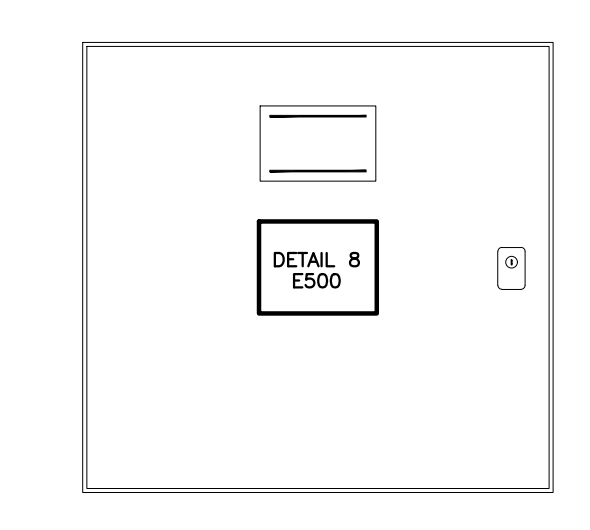


FIGURE 3. DECK MONITOR (TYP.)

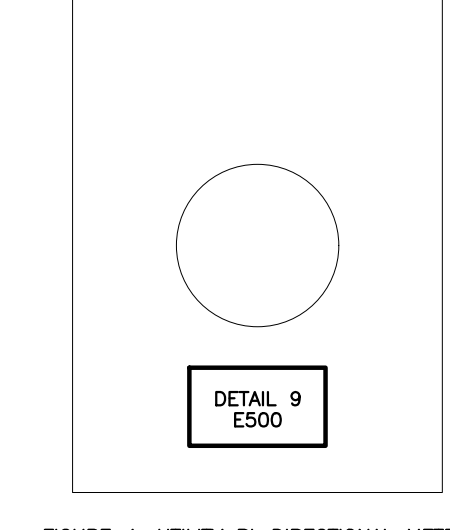


FIGURE 4. UTILITY BI-DIRECTIONAL METER (TYP.)

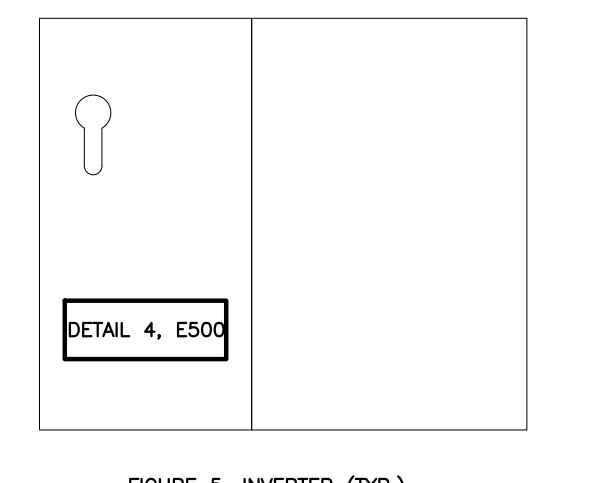


FIGURE 5. INVERTER (TYP.)

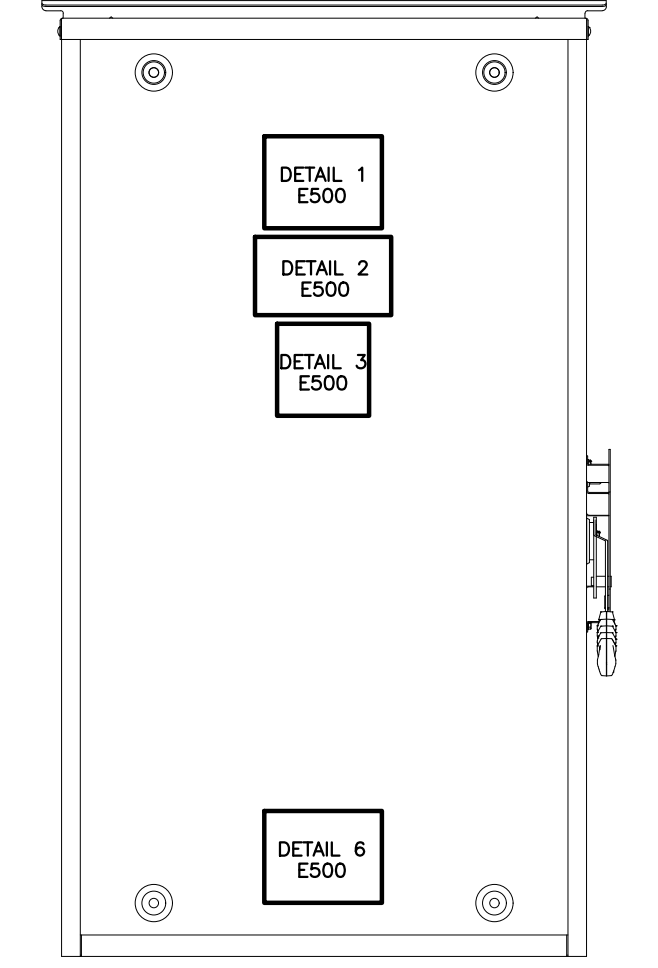


FIGURE 2. AC DISCONNECT (TYP.)

1 TYPICAL LABELS & SIGNAGE
E500 SCALE: 1" = 10'-0"

4 CLIENT REQUIRED LABELS
E500 SCALE: 1" = 20'-0"

DRAWING TITLE: LABELS & SIGNAGE

Project Information: PROJECT: SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE, 227 BOOMBRIDGE ROAD, STONINGTON, CT 06359. DRAWING #: E500.

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

Developer: GREENSKIES, a Clean Focus company.

DC SYSTEM SIZE: 6112.600 kW, AC SYSTEM SIZE: 4999.000 kW, MODULE TYPE: CS 400W / HT 450W, STRING QUANTITY: 538, ORIENTATION: 30° TILT, 0° AZIMUTH.

Page Size: 36" x 24", Project #: 19.1312.

Revision Table:
DATE: 03/09/2021, PERMIT REVIEW SET (REV. 1), SK, SK, RI, RI.
DATE: 01/29/2021, PERMIT REVIEW SET, SK, SK, RI, RI.

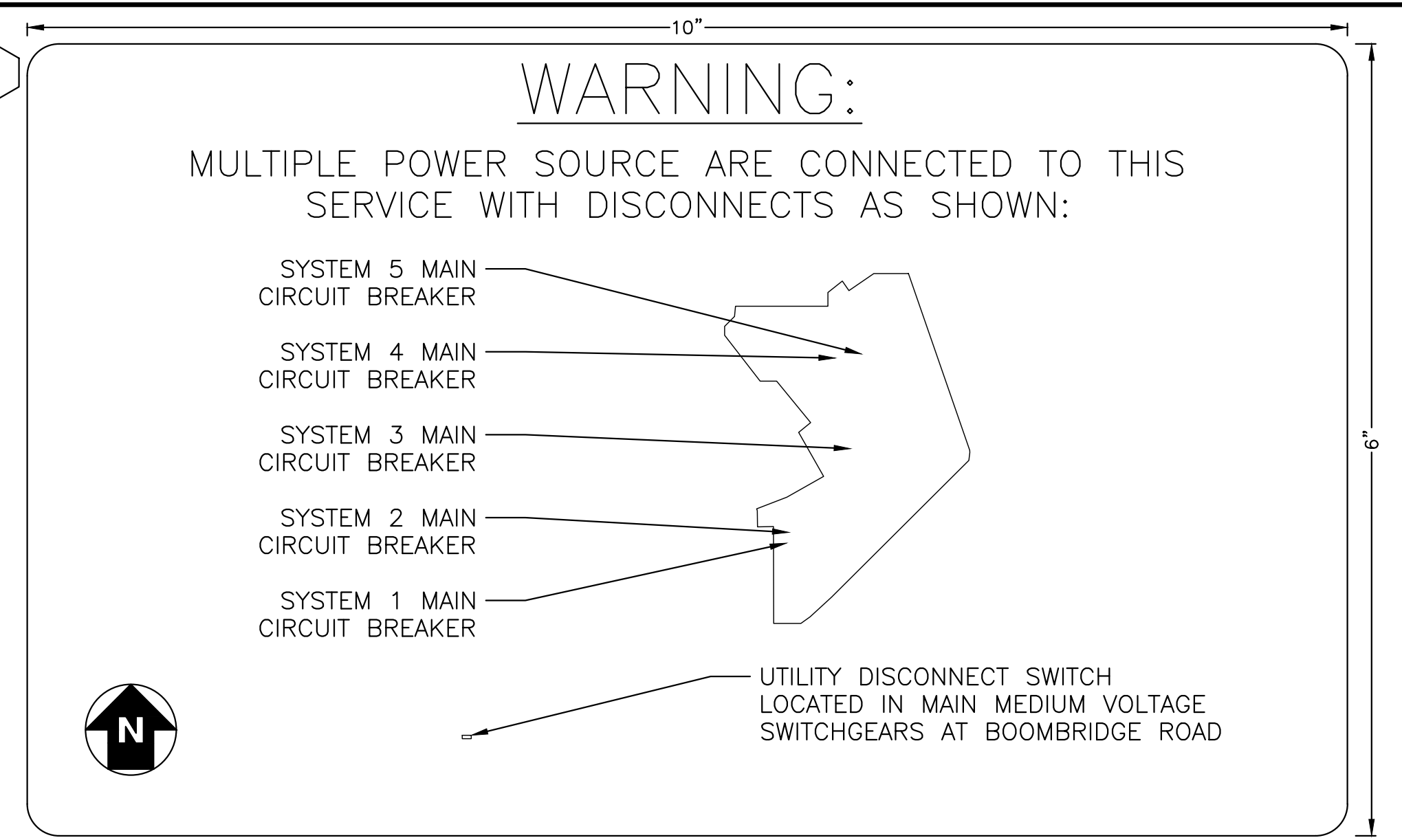
RULER IN INCHES: 0 1/2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

GENERAL NOTES FOR LABELS:
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3. CLEARLY LABEL ALL CIRCUIT BREAKERS IN THE PANELBOARD(S). THE LABEL SHALL INDICATE THE NAME OF THE DEVICE IT SERVES.

LABEL FORMAT NOTES:
1. **FORMAT 1:** ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND. TEXT HEIGHT: TITLES 3/8", ALL OTHER TEXT 5/32".
2. **FORMAT 2:** ENGRAVED MELAMINE, BLACK TEXT ON WHITE BACKGROUND. TEXT HEIGHT: 3/8".
3. **FORMAT 3:** REFLECTIVE UV RATED LABEL, RED BACKGROUND WITH WHITE CAPITAL LETTERS AT LEAST 3/8" TALL. LABELS SHALL BE SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.
4. **FORMAT 4:** ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND. TEXT HEIGHT: TITLES 5/32", ALL OTHER TEXT 3/32".

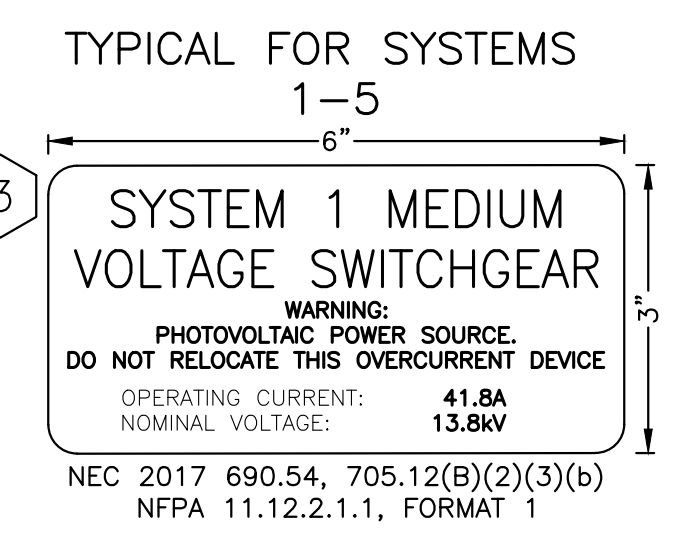
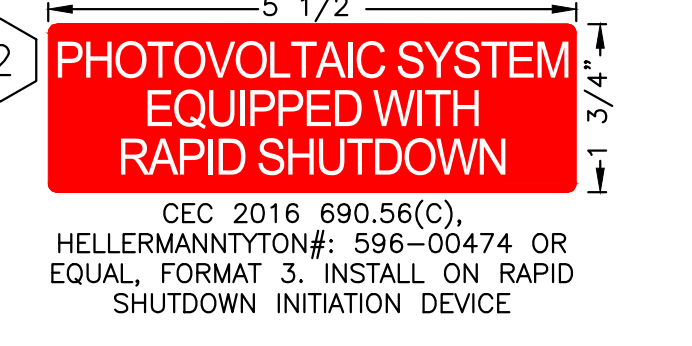
PER 2017 NEC 690.31(B)(1), PV SYSTEM CIRCUIT CONDUCTORS SHALL BE IDENTIFIED AT ALL ACCESSIBLE POINTS OF TERMINATION, CONNECTION, AND SPLICES.

1. STRING HOMERUNS AT ARRAY
2. DC INPUT TERMINALS OF COMBINER BOX
3. DC OUTPUT TERMINALS OF COMBINER BOX
4. DC INPUT TERMINALS OF INVERTER
5. AC OUTPUT TERMINALS OF INVERTER
6. AC INPUT & OUTPUT TERMINALS OF EACH SUCCESSIVE DEVICE (WHERE APPLICABLE)

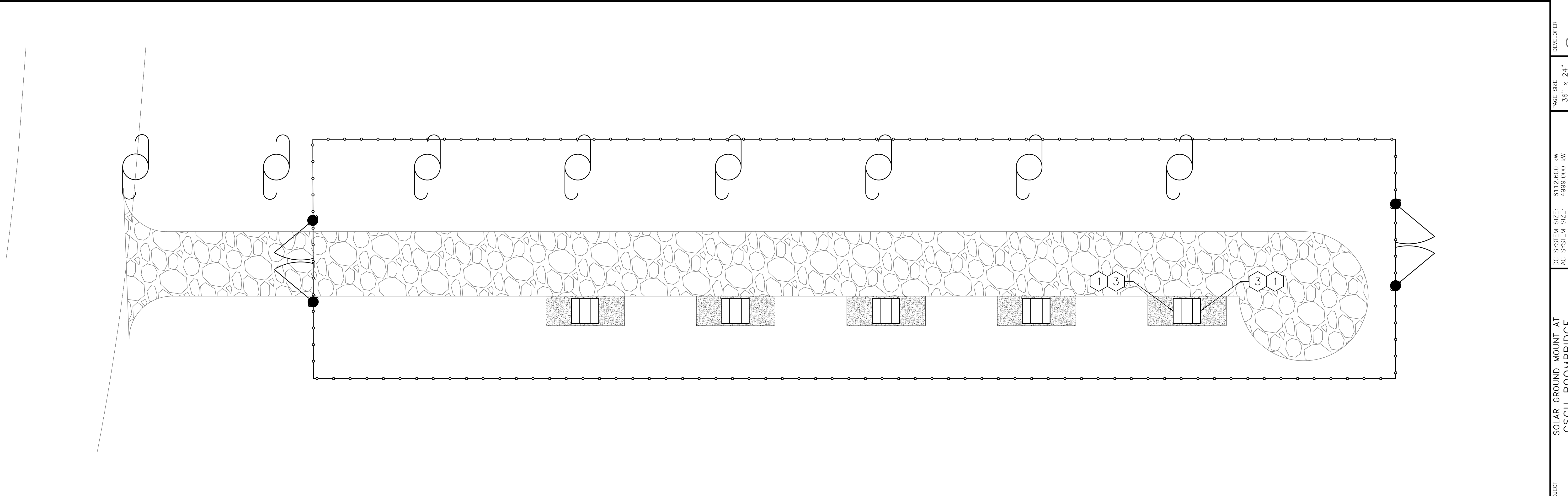


NEC 705.10 & 690.56(B)
INSTALL AT MAIN DISCONNECT OF ALL POWER SOURCES. ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND, TITLE MIN. 1/2", DESCRIPTION 5/16", ALL OTHER TEXT 1/8"

1 DIRECTORY LABEL
E501 / SCALE: 1:1



TYPICAL FOR SYSTEMS 1-5
3 SYSTEM 1 MEDIUM VOLTAGE SWITCHGEAR



2 MEDIUM VOLTAGE LABELS & SIGNAGE
E501 / SCALE: 3/32" = 1'-0"

PROJECT	SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE 227 BOOMBRIDGE ROAD STONINGTON, CT 06359	DRAWING #	E501
DC SYSTEM SIZE:	6112.600 kW	DATE	03/29/2021
AC SYSTEM SIZE:	4999.000 kW	REVISION DESCRIPTION	
MODULE TYPE:	CS 400W / HT 450W	DATE	
STRING QUANTITY:	13,988	DATE	
ORIENTATION:	33° TILT, 0° AZIMUTH	DATE	
PAGE SIZE	3.6" x 24"	DATE	
PROJECT #	19.1312	DATE	

PURE POWER
111 BRIGER STREET, SUITE 200, STONINGTON, CT 06359
WWW.PUREPOWER.COM
CT LICENSE NO. 03029282

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

DEVELOPER: GREENSKIES

DATE: 03/29/2021

REVISION DESCRIPTION: SK SK R

PL01 DATE: 3/12/2021 6:25 PM
RULER IN INCHES: 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
PROJECT: SOLAR GROUND MOUNT AT CSCU BOOMBRIDGE
DC SYSTEM SIZE: 612,600 kW
AC SYSTEM SIZE: 499,000 kW
MODULE TYPE: CS 400W / HT 450W
STRING QUANTITY: 13,988
ORIENTATION: 30° TILT, 0° AZIMUTH

NEW

CanadianSolar

BiHiKu

SUPER HIGH POWER BIFACIAL POLY PERC MODULE

390 W ~ 410 W

UP TO 30% MORE POWER FROM THE BACK SIDE

CS3W-390|395|400|405|410PB-AG

MORE POWER

- EXTRA POWER** Up to 30% more power from the back side
- 24% more front side power than conventional modules
- Low NMOT: 41 ± 3 °C
- Low temperature coefficient (Pmax): -0.37 % / °C
- Better shading tolerance

MORE RELIABLE

- Lower internal current, lower hot spot temperature
- Minimizes micro-cracks and snail trails
- Heavy snow load up to 5400 Pa, wind load up to 2400 Pa *
- Fire Class A and Type 3 / Type 13

30 years linear power output warranty*

12 years enhanced product warranty on materials and workmanship*

MANAGEMENT SYSTEM CERTIFICATES*

ISO 9001:2015 / Quality management system
ISO 14001:2015 / Standards for environmental management system
OHSAS 18001:2007 / International standards for occupational health & safety

PRODUCT CERTIFICATES*

IEC 61215 / IEC 61730: VDE / CE / MCS / INMETRO
UL 1703 / IEC 61215 performance CEC listed (US)
UL 1703: CSA / IEC 61701 ED2: VDE / IEC 62716: VDE / IEC 60668-2-68: SGS Take-away

CANADIAN SOLAR (USA), INC.
3000 Oak Road, Suite 400, Walnut Creek, CA 94597, USA | www.canadiansolar.com/na | sales.us@canadiansolar.com

Reliable State-owned Enterprise Deliver Solar Power since 1960s

HT72-166M Transparent

High Efficiency Low LID Bifacial PERC with Half-cut Technology

NEW

435W/440W / 445W/450W/455W

Big Size: Cell 1.66*83

Shanghai Aerospace Automobile Electromechanical Co., Ltd.
Factory: Turkey HT Solar Energy Joint Stock Company
Lianyungang ShenZhou New Energy Co., Ltd.

Half cut cell technology can reduce the internal power loss and improve component overall power. Excellent heat dissipation avoids hot spot production.

Transparent Backsheet structure which enhance the module performance generally (per different reflective condition) lower LCOE and higher IRR

12Ys Products Warranty

30Ys Warranty on power output

EL Microcrack resistant Double glass structure enhance reliability, triple EL tested of high quality control.

5W Positive tolerance 0+5w guaranteed

PID Resistant

Comprehensive and first-rat certification system
IEC61215, 2018 IEC61730: 2018 Latest Standard and UL 61730 Latest Standard, ISO9001, ISO14001 and OHSAS18001, meeting the highest international standards of product quality control

2% All the modules are sorted and packaged by amperage, reducing mismatch losses and maximizing system output.

2% Entire module certified to withstand extreme wind (2400 Pa) and snow loads (5400 Pa)

SA

MULTIWAY+

NEW

CanadianSolar

THREE-PHASE STRING INVERTER 125 KW

CSI-125KTL-GS-E

Canadian Solar's grid-tied, transformer-less string inverters help accelerate the use of three-phase string architecture for commercial rooftop and small ground-mount applications. An NRTL approved, cost-effective alternative to central inverters, these inverters are modular design building blocks that provide high yield and enable significant BOS cost savings. They provide up to 99.1% conversion efficiency, and a wide operating range for maximum energy harvest.

10 years Standard warranty, extension up to 20 years

KEY FEATURES

- Maximum efficiency of 99.1%, CEC efficiency of 98.6%
- Single MPPT for higher conversion efficiency
- Transformerless design
- PID mitigation capability

HIGH RELIABILITY

- Advanced thermal design with variable speed fans
- Ground-fault detection and interruption circuit

BROAD ADAPTIBILITY

- NEMA 4X (IP65), outdoor application
- Utility interactive controls: active power derating, reactive power control and over frequency derating
- Integrated wiring box design
- Integrated DC and AC load rated disconnects
- Wide MPPT range for flexible string sizing
- AC terminals compatible with copper and aluminum conductors
- Supports up to 20 DC string inputs

EFFICIENCY CURVE

CSI-125KTL-GS-E @ 900 V

CANADIAN SOLAR (USA), INC. is committed to providing high quality solar products, solar system solutions and services to customers around the world. As a leading PV project developer and manufacturer of solar modules with over 33 GW deployed around the world since 2001, Canadian Solar Inc. (NASDAQ: CSIQ) is one of the most bankable solar companies worldwide.

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Engineering Drawing (mm)

Rear View, Frame Cross Section, Mounting Hole

CS3W-400PB-AG / I-V CURVES

ELECTRICAL DATA | STC*

	Nominal Power (W)	Opt. Power (W)	Opt. Voltage (Vmp)	Opt. Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)	Module Efficiency (%)
CS3W-390PB-AG	390	38.3 V	10.19 A	46.8 V	10.24 A	17.45 A	17.45%
Bifacial**	410 W	38.3 V	10.71 A	46.8 V	11.28 A	18.35%	19.20%
Gain**	20%	468 W	38.3 V	12.23 A	46.8 V	12.99 A	20.95%
CS3W-395PB-AG	395	38.3 V	10.26 A	46.8 V	13.96 A	22.69%	18.80%
Bifacial**	415 W	38.3 V	10.78 A	47 V	11.36 A	18.57%	19.47%
Gain**	20%	474 W	38.3 V	12.31 A	47 V	12.98 A	21.21%
CS3W-400PB-AG	400	38.7 V	10.34 A	47.2 V	10.9 A	17.90%	18.80%
Bifacial**	420 W	38.7 V	10.86 A	47.2 V	11.45 A	18.80%	19.69%
Gain**	20%	480 W	38.7 V	12.41 A	47.2 V	13.08 A	21.48%
CS3W-405PB-AG	405	38.9 V	10.42 A	47.4 V	10.88 A	18.19%	19.25%
Bifacial**	425 W	38.9 V	10.94 A	47.4 V	11.53 A	19.02%	19.92%
Gain**	20%	486 W	38.9 V	12.5 A	47.4 V	13.18 A	21.75%
CS3W-410PB-AG	410	39.1 V	10.58 A	47.6 V	11.65 A	18.99%	19.35%
Bifacial**	431 W	39.1 V	11.05 A	47.6 V	12.27 A	20.18%	20.82%
Gain**	20%	492 W	39.1 V	12.59 A	47.6 V	13.82 A	22.02%
CS3W-415PB-AG	415	39.1 V	10.64 A	47.6 V	11.65 A	18.99%	19.35%
Bifacial**	433 W	39.1 V	11.11 A	47.6 V	12.27 A	20.18%	20.82%
Gain**	20%	494 W	39.1 V	12.61 A	47.6 V	13.84 A	22.02%

MECHANICAL DATA

Specification: Data

Cell Type: Poly-crystalline

Cell Arrangement: 144 [2X (12 X 6)]

Dimensions: 2132*1048*30 mm (83.9*41.3*1.2 in.)

Weight: 28.2 kg (62.2 lbs)

Front / Back Glass: 2.0 mm heat strengthened glass

Frame: Anodized aluminum alloy

J-Box: IP68, 3 diodes

Cable Length (including Connector): 4.0 m (13.1 ft) (1.7 m (+) / 280 mm (-) including Connector)

Connector: T4 series

Per Pallet: 35 pieces

Per Container (40 HQ): 700 pieces or 560 pieces (only for US and Canada)

TEMPERATURE CHARACTERISTICS

Specification: Data

Temperature Coefficient (Pmax): -0.37 % / °C

Temperature Coefficient (Isc): -0.29 % / °C

Temperature Coefficient (Voc): 0.05 % / °C

Nominal Module Operating Temperature: 41 ± 3 °C

WARRANTY

12-year product warranty
30-year warranty on power output
Specific information is referred to the product quality guarantee

PARNER SECTION

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MULTIWAY+

Better Choice For Higher Efficiency!

1000/1500V module HT72-166M

435W/440W/445W/450W/455W

Engineering Drawing

Electrical Characteristics

Module	HT72-166M	435W	440W	445W	450W	455W
Maximum Power at STC (Pmax)	435W	440W	445W	450W	455W	
Open-Circuit Voltage (Voc)	49.6V	49.8V	49.9V	50.0V	50.1V	
Short-Circuit Current (Isc)	11.63A	11.63A	11.63A	11.63A	11.63A	
Optimum Operating Voltage (Vmp)	40.7V	40.8V	41.0V	41.1V	41.2V	
Optimum Operating Current (Imp)	10.77A	10.77A	10.85A	10.96A	11.06A	
Module Efficiency	20.0%	20.2%	20.3%	20.5%	20.6%	
Power Tolerance	±0.5%					
Maximum System Voltage	1000V / 1500V (DC/IEC)					
Maximum Series Fuse Rating	20A					
Operating Temperature	-40 °C to +85 °C					

NOCT

Module	HT72-166M	327W	329W	330W	332W	337W
Maximum Power	327W	329W	330W	332W	337W	
Open-Circuit Voltage (Voc)	48.9V	47.1V	47.2V	47.2V	47.2V	
Short-Circuit Current (Isc)	9.31A	9.37A	9.48A	9.55A	9.56A	
Maximum Power Voltage (Vmp)	38.5V	38.6V	38.7V	38.8V	38.9V	
Maximum Power Current (Imp)	8.36A	8.36A	8.38A	8.38A	8.38A	
NOCT	45 ± 2 °C					

BIFACIAL REARSIDE POWER GAIN

Electrical characteristics with different rear side power gain (reference: 450W front)

Module	HT72-166M-400
Maximum Power	470W
Power Gain	10%
500W	10%
600W	10%
700W	10%
800W	10%
900W	10%

Mechanical Characteristics

Solar Cells: Monocrystalline 180-80mm

Cell Configuration: 144 [2X (12 X 6)]

Dimensions: 2094 mm x 1038 mm x 35 mm

Weight: 23.5 kg

Front Glass: High transmission tempered glass

Frame: Anodized aluminum alloy

Junction Box: IP68

Cable Length: 4m (UL/IEC) Length: 1200mm

Connectors: MC4, MC-Compatible

Fastening Configuration: 3066 (30 x 7) 60pcs / 40HQ Container

Temperature Characteristics

Temperature Coefficient of Voc: -0.39%/°C

Temperature Coefficient of Pmax: -0.29%/°C

Temperature Coefficient of Isc: 0.04%/°C

Warranty

12-year product warranty
30-year warranty on power output
Specific information is referred to the product quality guarantee

The module recycling should be carried out by the professional institutions at the end of the module life cycle

SYSTEM/TECHNICAL DATA

MODEL NAME	CSI-125KTL-GS-E
DC INPUT	
Max. PV Power	187.5 kW
Max. DC Input Voltage	1500 V _{DC}
Operating DC Input Voltage Range	860-1450 V _{DC}
Start-up DC Input Voltage/Power	900 V _{DC}
Number of MPPT Trackers	1
MPPT Voltage Range	860-1450 V _{DC}
Operating Current (Imp)	150 A
Max. Input Current (Isc)	300 A
Number of DC Inputs	20
DC Disconnection Type	Load rated DC switch
AC OUTPUT	
Rated AC Output Power	125 kW
Max. AC Output Power	125 kW
Rated Output Voltage	600 V _{AC}
Operating Voltage Range*	528-660 V _{AC}
Grid Connection Type	3 φ WYE
Nominal AC Output Current @ 600 VAC	120 A
Rated Output Frequency	60 Hz
Output Frequency Range*	55-65 Hz
Power Factor	1 (default cosφ adjustable)
Current THD	< 3%
AC Disconnection Type	Load rated AC switch
SYSTEM	
Topology	Transformerless
Max. Efficiency	99.1%
CEC Efficiency	98.6%
Night Consumption	< 2 W
ENVIRONMENT	
Protection Degree	NEMA 4X (IP65)
Cooling	Intelligent Redundant Cooling
Operating Temperature Range	-13 °F to +140 °F / -25 °C to +60 °C
Storage Temperature Range	-40 °F to +158 °F / -40 °C to +70 °C
Operating Humidity	0-100%
Operating Altitude	13,123 ft / 4000 m
Audible Noise	< 55 dBA @ 1 m
DISPLAY AND COMMUNICATION	
Display	LED
Communication	Standard: RS485 (Modbus RTU) AND either MODBUS over ETHERNET
MECHANICAL DATA	
Dimensions (W / H / D)	46.3 x 28.1 x 12.4 in / 1176 x 713.5 x 315mm
Weight	185lbs (84kg)
Installation Angle	Back tilt up to 15 degrees
DC Fuse Rating	20 A standard
SAFETY	
Safety and EMC Standard	UL1741 SA, UL1978, CSA C22.2 No. 1071-01, IEEE1547, FCC PART 15
Grid Standard	IEEE1547, Rule 21, ISO-NE
Smart-Grid Features	Voltage-Ride Thru, Frequency-Ride Thru, Soft Start, Volt-Vari, Frequency-Watt, Volt-Watt

*The "Output Voltage Range" and "Output Frequency Range" may differ according to specific grid standard.

The specification and key features described in this datasheet may deviate slightly and are not guaranteed. Due to on-going innovation, research and product enhancement, Canadian Solar Inc. reserves the right to make any adjustment to the information described herein at any time without notice. Please always obtain the most recent version of the datasheet which shall be duly incorporated into the binding contract made by the parties governing all transactions related to the purchase and sale of the products described herein.

Caution: For professional use only. The installation and handling of PV equipment requires professional skills and should only be performed by qualified professionals. Please read the safety and installation instructions before using the product.

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