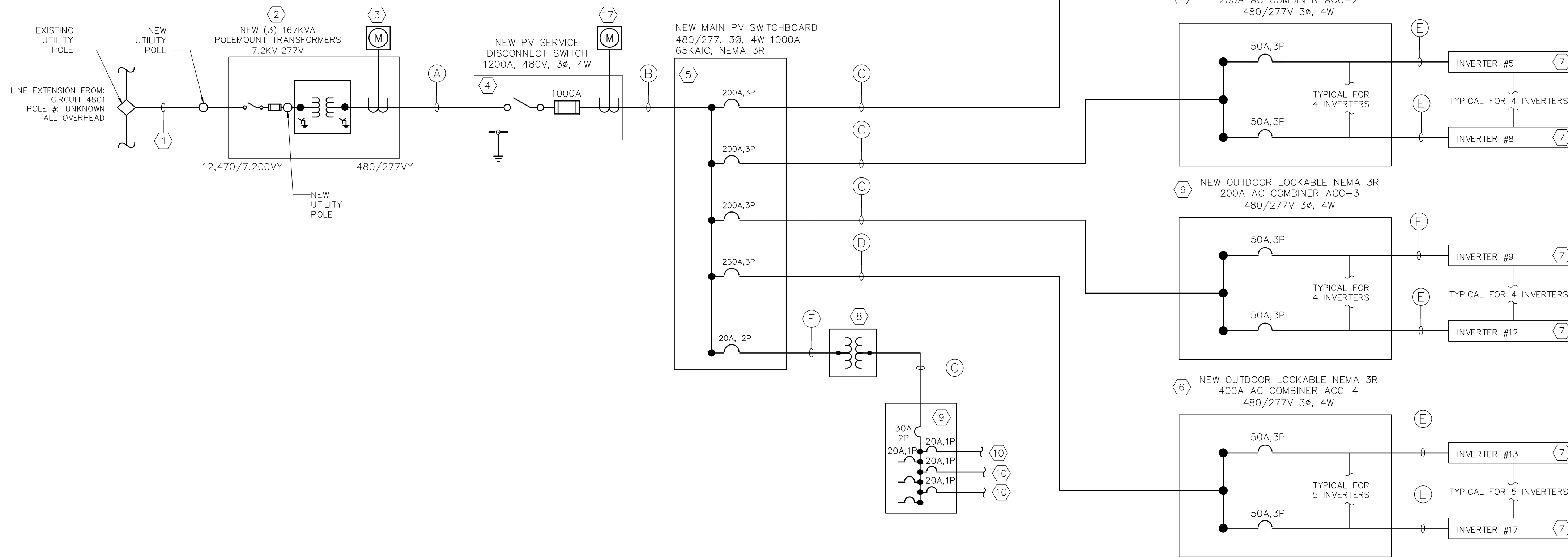


OWNERSHIP OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS INSTRUMENT OF PROFESSIONAL SERVICE, ARE THE PROPERTY OF KMB DESIGN GROUP, LLC AND ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR OTHER PROJECTS WITHOUT THE WRITTEN AUTHORIZATION OF KMB DESIGN GROUP, LLC. IT IS UNLAWFUL FOR ANY PERSON TO REPRODUCE OR TRANSMIT THESE DRAWINGS UNLESS THEY HAVE THE APPROVAL OF THE LICENSED PROFESSIONAL IN WRITING.



**AC WIRE AND CONDUIT SCHEDULE:**

AC WIRE AND CONDUIT SCHEDULE			
CONDUIT ID	MINIMUM VOLTAGE	WIRE SIZE & TYPE	MINIMUM CONDUIT
(A)	480V 3PH	3 SETS OF: (4) 600 KCMIL AL THWN-2	(3) 4"
(B)	480V 3PH	3 SETS OF: (3) 600 KCMIL AL THWN-2 + #4/0 AWG N + #4/0 AWG GND	(3) 4"
(C)	480V 3PH	(3) 250 KCMIL AL THWN-2 + #4 AWG N + #4 AWG GND	(1) 2-1/2"
(D)	480V 3PH	(3) 350 KCMIL AL THWN-2 + #2 AWG N + #2 AWG GND	(1) 3"
(E)	480V 3PH	(3) #8 AWG CU THWN-2 + #8 AWG N + #8 AWG GND	(1) 3/4"
(F)	480V 1PH	(2) #10 AWG CU THWN-2 + #10 AWG CU GND	(1) 3/4"
(G)	240V 1PH	(2) #10 AWG CU THWN-2 + #10 AWG CU GND	(1) 3/4"

**SYSTEM SUMMARY AND INVERTER SCHEDULE**

INVERTER #	INVERTER MODEL	PANEL TYPE	PANEL WATTS	NO. OF PANELS PER INVERTER	NO. OF PANELS PER STRING	NO. OF STRINGS PER INVERTER	TILT	AZIMUTH	KWDC
INVERTER #1	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #2	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #3	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #4	SUNGROW SG30KU	SOLARWORLD SW260	260	176	22	8	20	180	45.76
INVERTER #5	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #6	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #7	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #8	SUNGROW SG30KU	SOLARWORLD SW260	260	176	22	8	20	180	45.76
INVERTER #9	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #10	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #11	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #12	SUNGROW SG30KU	SOLARWORLD SW260	260	176	22	8	20	180	45.76
INVERTER #13	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #14	SUNGROW SG30KU	SOLARWORLD SW260	260	154	22	7	20	180	40.04
INVERTER #15	SUNGROW SG30KU	SOLARWORLD SW260	260	176	22	8	20	180	45.76
INVERTER #16	SUNGROW SG30KU	SOLARWORLD SW260	260	176	22	8	20	180	45.76
INVERTER #17 **	SUNGROW SG30KU	SOLARWORLD SW260	260	110	22	5	20	180	28.6
<b>TOTAL</b>	<b>500 KW AC</b>			<b>2684</b>		<b>122</b>			<b>697.84</b>

**EQUIPMENT SPECIFICATIONS**

PV MODULE INFORMATION	
<b>SOLARWORLD SW260</b>	
MAX POWER (W)	260.00
MAX POWER VOLTAGE (Vmp)	31.40
OPEN CIRCUIT VOLTAGE (Voc)	38.40
MAX POWER CURRENT (Imp)	8.37
SHORT CIRCUIT CURRENT (Isc)	8.94

STRING SIZING CALCULATIONS		
# PANELS PER STRING		22.00
MIN TEMPERATURE (°C)		-20
TEMP. COEFF. OF VOLT(%/°C)		-.31
TEMPERATURE CORR. FAC.		13.95%
MAX SYSTEM VOLTAGE (NEC 690.7)		962.6
PV SOURCE CIRCUIT CURRENT (NEC 690.8 (A)(A))		11.18

INVERTER SPECIFICATIONS		
<b>SUNGROW SG30KU</b>		
RATED OUTPUT (KW)		30.0
AC RATED OUTPUT (VOLTS)		480
AC RATED CURRENT (AMPS)		40.00
POWER FACTOR		>0.99
PEAK EFFICIENCY EFF%		98.2%

**GENERAL NOTES:**

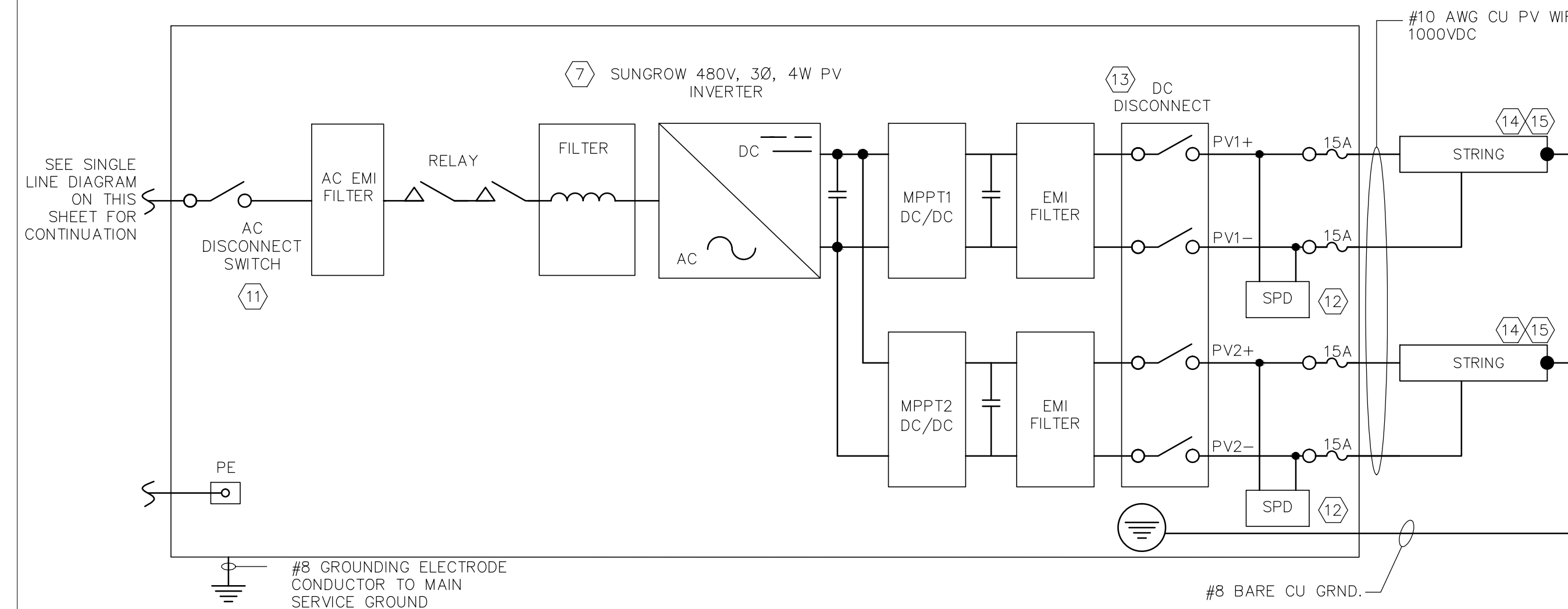
- THE INSTALLATION CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF THE NEMA 4 INVERTER ENCLOSURES. ALL CONDUIT MUST ENTER THE COMBINER BOXES AND BE PROPERLY GASKETED.
- ELECTRICAL CONTRACTOR SHALL IDENTIFY SOURCE WIRING WITH MARKING TAPE OR OTHER APPROVED METHOD. POSITIVE SHALL BE MARKED RED AND NEGATIVE MARKED BLACK. CONDUCTORS 4 AWG AND LARGER SHALL BE IDENTIFIED AT ALL TERMINATIONS, AS PER NEC 200.6 (A)(6) A SINGLE CONDUCTOR, SUNLIGHT RESISTANT, OUTDOOR RATED CABLE SMALLER THAN 6AWG SHALL BE PERMITTED TO BE IDENTIFIED AT TIME OF INSTALLATION BY DISTINCTIVE WHITE MARKING
- PROVIDE COMPRESSION LUGS AT BUS TERMINATIONS.
- ALL EQUIPMENT AND PANELS SHALL BE MARKED IN ACCORDANCE WITH ARTICLE 690 OF THE NEC.

**KEY NOTES:**

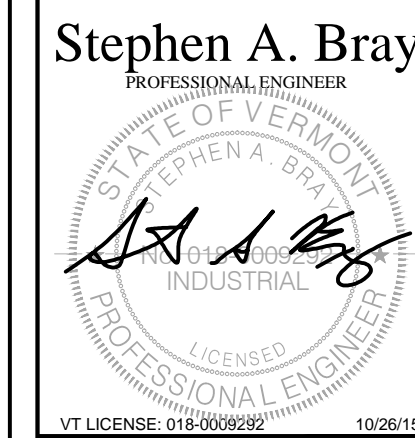
- NEW UTILITY OVERHEAD 12.47KV FEEDER BY GMP. E.C. TO INSTALL CONDUIT, GMP TO INSTALL AND TERMINATE CONDUCTORS.
- NEW (3) POLE MOUNTED, OVERHEAD, 167KVA, 7200V/277V UTILITY TRANSFORMERS. TRANSFORMERS TO BE PROVIDED AND INSTALLED BY GMP.
- NEW UTILITY METER FOR THE PV SYSTEM. CT'S TO BE INSTALLED WITHIN OR NEXT TO THE TRANSFORMER ENCLOSURE. METER TO BE MOUNTED ADJACENT TO THE TRANSFORMER ON THE SAME POLE.
- NEW 1200AF, 1000AT, FUSED PV SERVICE DISCONNECT SWITCH, 480/277V, 3Ø, 4W, HEAVY DUTY, NEMA 3R, SERVICE ENTRANCE RATED. DISCONNECT SWITCH TO BE LABELED AS PV AC DISCONNECT.
- NEW PV SERVICE AC COMBINER SWITCHBOARD 1000A, 480/277V, 3Ø, 4W, 65KAIC HEAVY DUTY, NEMA 3R, MAIN LUGS, AND DISTRIBUTION BREAKERS (SIZES AS PER SINGLE LINE) FOR INTERCONNECTION OF PV AC COMBINER PANELS.
- NEW PV SERVICE AC PANELBOARD, SIZE AS INDICATED, 480/277V, 3Ø, 4W, HEAVY DUTY, NEMA 3R, WITH 60A 3Ø BREAKERS FOR INTERCONNECTION OF PV INVERTERS. BREAKERS SHALL BE LABELED AS PV DISCONNECTS.
- SUNGROW SG-30KU INVERTER, 30KW, 480V, 3Ø INVERTER. INVERTER INCLUDES (2) MPPT TRACKER CONNECTING UP TO (8) 15A FUSED INPUTS. SEE TYPICAL AC/DC INVERTER SCHEMATIC ON THIS SHEET.
- PROVIDE 5KVA TRANSFORMER WITH 480V PRIMARY AND 120/240V SECONDARY.
- PROVIDE NEW 60A, 120/240V, 1Ø, MCB NEMA 3R LOAD CENTER WITH 30A/2P MAIN BREAKER.
- POWER TO PV SYSTEM AUXILIARY LOADS.

**TYPICAL AC/DC INVERTER SCHEMATIC:**

- AC DISCONNECT SWITCH, SUPPLIED INTEGRAL WITH THE INVERTER, 480VAC
- DC SURGE PROTECTION DEVICE, SUPPLIED INTEGRAL WITH THE INVERTER CABINET, 1000 VDC.
- DC DISCONNECT SWITCH, SUPPLIED INTEGRAL WITH THE INVERTER CABINET, 1000 VDC.
- 22 SOLARWORLD 260W SOLAR PANELS WIRED IN SERIES. EACH MODULE INCLUDES 1 #10 AWG OUTDOOR RATED QUICK CONNECTS FOR MODULE INTERCONNECTION. DO NOT REMOVE THE QUICK CONNECTS, OTHERWISE THE MODULE WARRANTY AND THE UL LISTING MAY BE INVALIDATED. QUICK CONNECTS SHALL COMPLY WITH NEC 690.33(C).
- INDIVIDUAL MODULES SHALL BE BONDED TO THE RACKING SYSTEM USING APPROVED RACKING GROUNDING LUG.
- INVERTER #17 SHALL BE DERATED TO 20KW.
- NEW REVENUE GRADE METER FOR THE PV SYSTEM. CT'S TO BE INSTALLED WITHIN THE MAIN SOLAR AC DISCONNECT. METER TO BE MOUNTED ADJACENT TO THE MAIN SOLAR AC DISCONNECT.



REV.	DATE	REVISION DESCRIPTION	DRAWN CHG'D BY	REV.



**BDE EAST MONTPELIER LAZAR SOLAR, LLC**  
 500KW AC PHOTOVOLTAIC SYSTEM  
 2537 ROUTE 2  
 EAST MONTPELIER, VT 05651

PROJECT NO: **732.0341.003**

DRAWING TITLE: **PHOTOVOLTAIC ONE-LINE DIAGRAM**

DRAWING SCALE: NONE  
 DRAWN BY: MLWJR  
 CHECKED BY: ADK  
 DATE: 10/07/15

**PV-200**