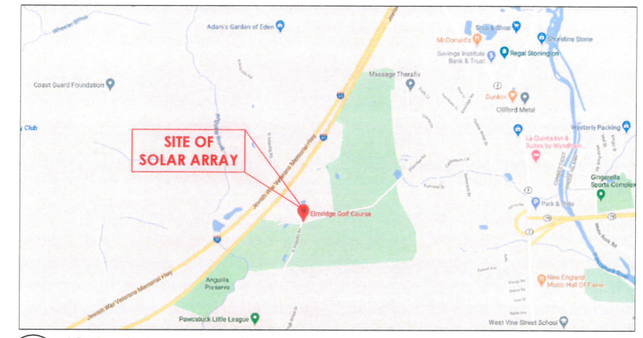
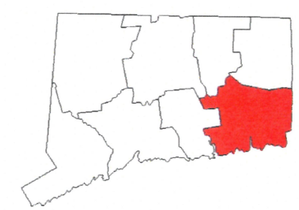
1 **SITE PLAN**
SCALE: 1:60

0 60' 120
(GRAPHIC SCALE: SHOWN IN FEET)

SOLAR PHOTOVOLTAIC TOTAL SYSTEM SIZE:
TOTAL RATED POWER= 1,264 kW DC (1000 kW AC)
(3200) CANADIAN BIHIKU 395W MODULES
(128) PARALLEL STRINGS OF (25) MODULES PER STRING
(8) SOLECTRIA XGI 1500-125/125
POST DRIVEN MOUNTING SYSTEM (2-HIGH PORTRAIT) @ 25° TILT



2 **SITE LOCATION MAP**
SCALE: N.T.S.



3 **STATE COUNTY MAP**
NEW LONDON COUNTY, CT

4 **SAMPLE GROUND MOUNT IMAGE**
SCALE:N.T.S

FOR PERMITTING

STATE OF CONNECTICUT
LYLE K. RAWLINGS
No. 29423
REGISTERED PROFESSIONAL ENGINEER
LYLE K. RAWLINGS, P.E.
CT PROFESSIONAL ENGINEER LIC #29423

REVISIONS

NO.	DESCRIPTION	BY	DATE
2	FOR PERMIT	AR	05/18/20
1	CLIENT COMMENTS	AR	05/01/20

PROJECT TITLE:
ELMRIDGE GOLF COURSE
SOLAR PHOTOVOLTAIC SYSTEM

SITE:
ELMRIDGE GOLF COURSE
EAST ARRAY - SYSTEM B1
INT #33846
229 ELMRIDGE ROAD
PAWCATUCK, CT 06379

OWNER:

ADVANCED SOLAR PRODUCTS
Dedicated to Building a Sustainable Future

270 SOUTH MAIN STREET
FLEMINGTON, NJ 08822
908-751-5818 (PHONE)
908-751-5819 (FAX)
lyle@advancedsolarproducts.com

NJ CERTIFICATE OF AUTHORIZATION LICENSE
NO.: 24GA28102500

DRAWN: RES	DATE: 04/09/2020
CHECKED:	DATE:
SCALE: NONE	DWG. NO.: E-2

DRAWING TITLE: SITE PLAN

NOTES:

A) CODES AND STANDARDS:
ALL EQUIPMENT, MATERIALS, AND METHODS SHALL MEET
THE FOLLOWING CODES AND STANDARDS:
- NATIONAL ELECTRICAL CODE, 2017 ED.
- UL 1741
- UL 1703
- UL 1699B
- IEEE 929-2000
- ALL OTHER APPLICABLE NATIONAL, STATE AND LOCAL CODES

B) SIGNAGE NOTES:
1. WARNING. THIS FACILITY IS SERVED BY A PHOTOVOLTAIC GENERATING SOURCE. THE PHOTOVOLTAIC AC DISCONNECT MEANS ARE LOCATED WITHIN THIS PANEL. THE PHOTOVOLTAIC DC DISCONNECT MEANS ARE LOCATED WITHIN THE INVERTERS.
2. ALL AC & DC FUSES & DISCONNECTS TO BE LABELED:
WARNING. ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.
3. WARNING. IF A GROUND FAULT IS DETECTED, THE NORMALLY GROUNDED CONDUCTORS MAY BE ENERGIZED AND UNGROUNDED.
4. CAUTION - HIGH VOLTAGE - KEEP OUT
DANGER - HIGH VOLTAGE - QUALIFIED PERSONS ONLY

C) INVERTER PROTECTIVE FUNCTIONS:
1. OVER VOLTAGE, UNDER VOLTAGE, OVER FREQUENCY & UNDER FREQUENCY PROTECTIONS BUILT INTO INVERTER PER UL 1741

D) DESIGN HIGH AMBIENT TEMPERATURE = 32°C
& DESIGN LOW AMBIENT TEMPERATURE = -19°C

SOLAR PHOTOVOLTAIC TOTAL SYSTEM SIZE:
TOTAL RATED POWER= 1,264 kW DC (1000 kW AC)
(3200) CANADIAN BIHIKU 395W MODULES
(128) PARALLEL STRINGS OF (25) MODULES PER STRING
(8) SOLECTRIA XGI 1500-125/125
STRING VALUES: Vmp = 962.5 VDC; Voc = 1175 VDC; Vmax = 1325 VDC

EQUIPMENT SPECIFICATIONS

CANADIAN SOLAR CS3W-395PB-AG BIFACIAL HALF-CELL MODULE:			
PEAK POWER (+3W/-0W)	Pmax	395	W
OPERATING VOLTAGE	Vmp	38.50	V
OPERATING CURRENT	Imp	10.26	A
OPEN CIRCUIT VOLTAGE	Voc	47.00	V
SHORT CIRCUIT CURRENT (RATED)	Isc	10.82	A
SHORT CIRCUIT CURRENT (5% BOOST)	Isc+	11.36	A

SOLECTRIA XGI 1500-125/125:		
AC MAXIMUM OUTPUT POWER	125 kW / 125	kVA
AC OUTPUT VOLTAGE (3ϕ)	600	VAC
AC MAXIMUM OUTPUT CURRENT	120	A
DC MAXIMUM VOLTAGE	1500	VDC
DC MAXIMUM CURRENT	320	A
MPPT VOLTAGE RANGE	860-1450	VDC

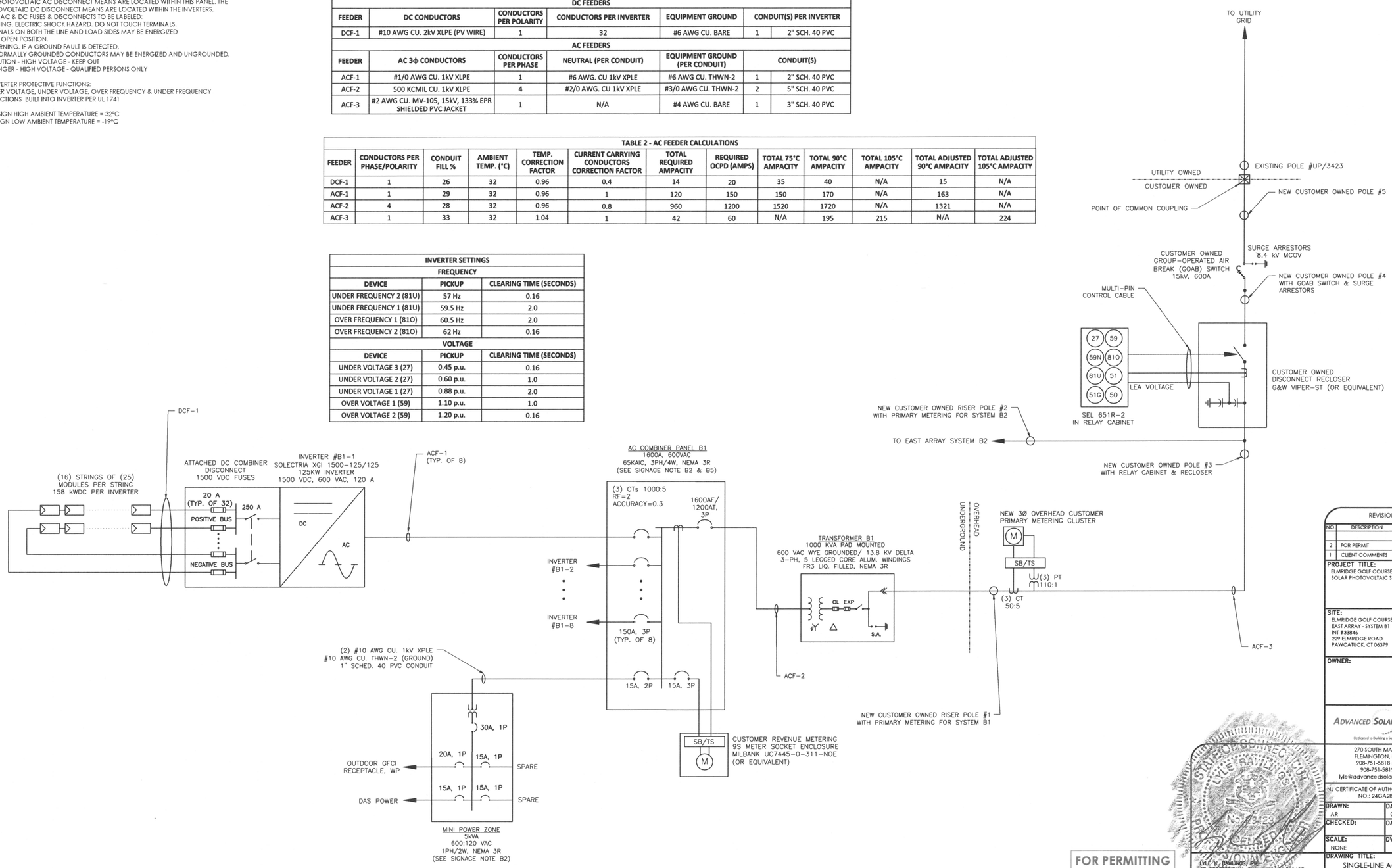
TABLE 1 - FEEDER SCHEDULE

DC FEEDERS						
FEEDER	DC CONDUCTORS	CONDUCTORS PER POLARITY	CONDUCTORS PER INVERTER	EQUIPMENT GROUND	CONDUIT(S) PER INVERTER	
DCF-1	#10 AWG CU. 2kV XLPE (PV WIRE)	1	32	#6 AWG CU. BARE	1	2" SCH. 40 PVC
AC FEEDERS						
FEEDER	AC 3ϕ CONDUCTORS	CONDUCTORS PER PHASE	NEUTRAL (PER CONDUIT)	EQUIPMENT GROUND (PER CONDUIT)	CONDUIT(S)	
ACF-1	#1/0 AWG CU. 1kV XLPE	1	#6 AWG. CU 1kV XPLE	#6 AWG CU. THWN-2	1	2" SCH. 40 PVC
ACF-2	500 KCMIL CU. 1kV XLPE	4	#2/0 AWG. CU 1kV XPLE	#3/0 AWG CU. THWN-2	2	5" SCH. 40 PVC
ACF-3	#2 AWG CU. MV-105, 15kV, 133% EPR SHIELDED PVC JACKET	1	N/A	#4 AWG CU. BARE	1	3" SCH. 40 PVC

TABLE 2 - AC FEEDER CALCULATIONS

FEEDER	CONDUCTORS PER PHASE/POLARITY	CONDUIT FILL %	AMBIENT TEMP. (°C)	TEMP. CORRECTION FACTOR	CURRENT CARRYING CONDUCTORS CORRECTION FACTOR	TOTAL REQUIRED AMPACITY	REQUIRED OCPD (AMPS)	TOTAL 75°C AMPACITY	TOTAL 90°C AMPACITY	TOTAL 105°C AMPACITY	TOTAL ADJUSTED 90°C AMPACITY	TOTAL ADJUSTED 105°C AMPACITY
DCF-1	1	26	32	0.96	0.4	14	20	35	40	N/A	15	N/A
ACF-1	1	29	32	0.96	1	120	150	150	170	N/A	163	N/A
ACF-2	4	28	32	0.96	0.8	960	1200	1520	1720	N/A	1321	N/A
ACF-3	1	33	32	1.04	1	42	60	N/A	195	215	N/A	224

INVERTER SETTINGS		
FREQUENCY		
DEVICE	PICKUP	CLEARING TIME (SECONDS)
UNDER FREQUENCY 2 (81U)	57 Hz	0.16
UNDER FREQUENCY 1 (81U)	59.5 Hz	2.0
OVER FREQUENCY 1 (81O)	60.5 Hz	2.0
OVER FREQUENCY 2 (81O)	62 Hz	0.16
VOLTAGE		
DEVICE	PICKUP	CLEARING TIME (SECONDS)
UNDER VOLTAGE 3 (27)	0.45 p.u.	0.16
UNDER VOLTAGE 2 (27)	0.60 p.u.	1.0
UNDER VOLTAGE 1 (27)	0.88 p.u.	2.0
OVER VOLTAGE 1 (59)	1.10 p.u.	1.0
OVER VOLTAGE 2 (59)	1.20 p.u.	0.16



FOR PERMITTING

STATE OF CONNECTICUT LYLE RAMLINOS 29423 PROFESSIONAL ENGINEER
LYLE N. RAMLINOS, PE
CT PROFESSIONAL ENGINEER LIC. #29423

REVISIONS

NO.	DESCRIPTION	BY	DATE
2	FOR PERMIT	AR	05/18/20
1	CLIENT COMMENTS	AR	05/11/20

PROJECT TITLE:
ELMRIDGE GOLF COURSE
SOLAR PHOTOVOLTAIC SYSTEM

SITE:
ELMRIDGE GOLF COURSE
EAST ARRAY - SYSTEM B1
INT #33846
229 ELMRIDGE ROAD
PAWCATUCK, CT 06379

OWNER:

ADVANCED SOLAR PRODUCTS
Dedicated to Building a Sustainable Future

270 SOUTH MAIN STREET
FLEMINGTON, NJ 08822
908-751-5818 (PHONE)
908-751-5819 (FAX)
lyle@advancedsolarproducts.com

NJ CERTIFICATE OF AUTHORIZATION LICENSE NO.: 24GA28102500

DRAWN: AR	DATE: 04/06/2020
CHECKED:	DATE:
SCALE: NONE	DWG. NO.: E-3-1
DRAWING TITLE: SINGLE-LINE AC CIRCUIT	

NOTES:

A) CODES AND STANDARDS:
ALL EQUIPMENT, MATERIALS, AND METHODS SHALL MEET THE FOLLOWING CODES AND STANDARDS:
- NATIONAL ELECTRICAL CODE, 2017 ED.
- UL 1741
- UL 1703
- UL 1699B
- IEEE 929-2000
- ALL OTHER APPLICABLE NATIONAL, STATE AND LOCAL CODES

B) SIGNAGE NOTES:
1. WARNING. THIS FACILITY IS SERVED BY A PHOTOVOLTAIC GENERATING SOURCE. THE PHOTOVOLTAIC AC DISCONNECT MEANS ARE LOCATED WITHIN THIS PANEL. THE PHOTOVOLTAIC DC DISCONNECT MEANS ARE LOCATED WITHIN THE INVERTERS.
2. ALL AC & DC FUSES & DISCONNECTS TO BE LABELED:
WARNING. ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.
3. WARNING. IF A GROUND FAULT IS DETECTED, THE NORMALLY GROUNDED CONDUCTORS MAY BE ENERGIZED AND UNGROUNDED.
4. CAUTION - HIGH VOLTAGE - KEEP OUT
DANGER - HIGH VOLTAGE - QUALIFIED PERSONS ONLY

C) INVERTER PROTECTIVE FUNCTIONS:
1. OVER VOLTAGE, UNDER VOLTAGE, OVER FREQUENCY & UNDER FREQUENCY PROTECTIONS BUILT INTO INVERTER PER UL 1741

D) DESIGN HIGH AMBIENT TEMPERATURE = 33°C
& DESIGN LOW AMBIENT TEMPERATURE = -16°C

SOLAR PHOTOVOLTAIC TOTAL SYSTEM SIZE:
TOTAL RATED POWER= 1,264 kW DC (1000 kW AC)
(3200) CANADIAN BIHIKU 395W MODULES
(128) PARALLEL STRINGS OF (25) MODULES PER STRING
(8) SOLECTRIA XGI 1500-125/125
STRING VALUES: Vmp = 962.5 VDC; Voc = 1175 VDC; Vmax = 1325 VDC

EQUIPMENT SPECIFICATIONS

CANADIAN SOLAR CS3W-395PB-AG BIFACIAL HALF-CELL MODULE:			
PEAK POWER (+3W/-0W)	Pmax	395	W
OPERATING VOLTAGE	Vmp	38.50	V
OPERATING CURRENT	Imp	10.26	A
OPEN CIRCUIT VOLTAGE	Voc	47.00	V
SHORT CIRCUIT CURRENT (RATED)	Isc	10.82	A
SHORT CIRCUIT CURRENT (5% BOOST)	Isc+	11.36	A

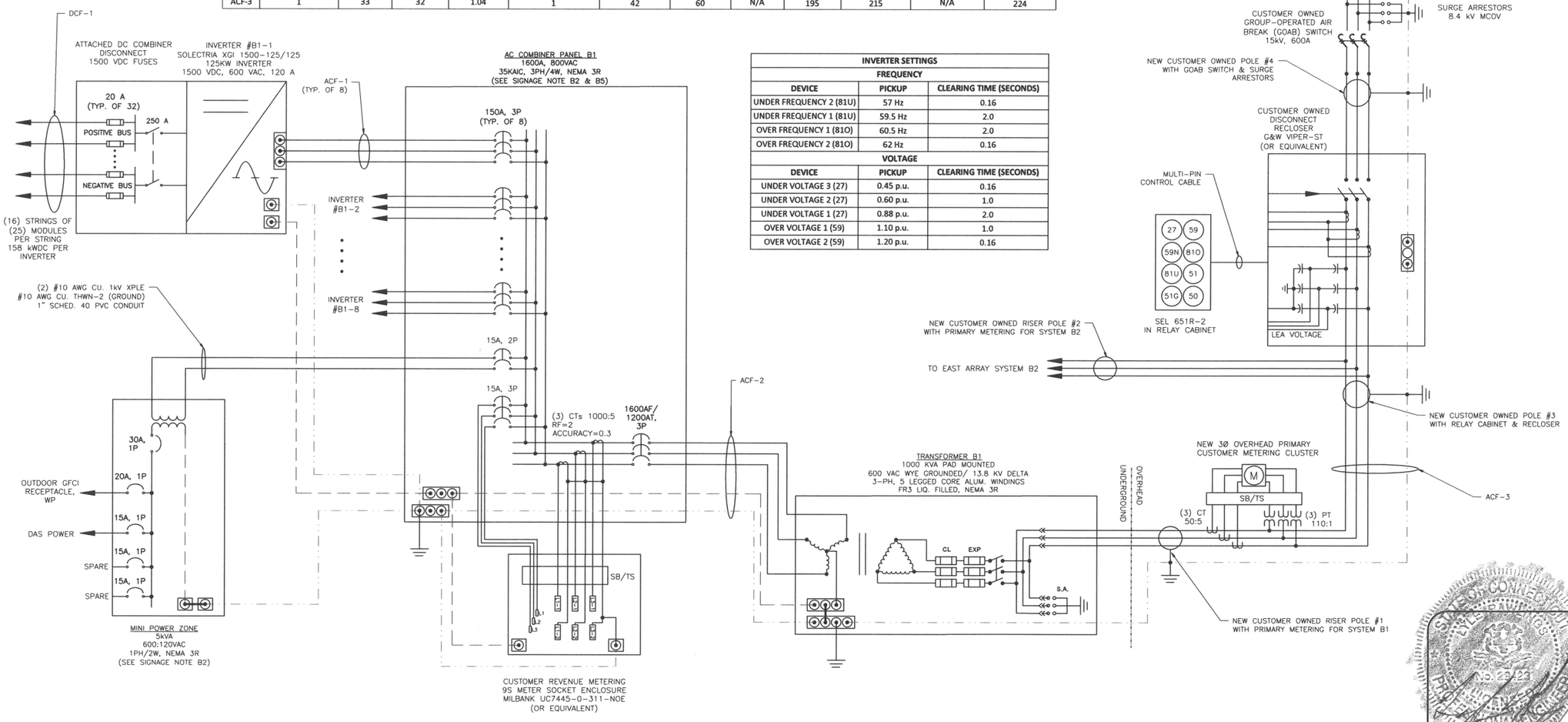
SOLECTRIA XGI 1500-125/125:		
AC MAXIMUM OUTPUT POWER	125 kW / 125	kVA
AC OUTPUT VOLTAGE (3ϕ)	600	VAC
AC MAXIMUM OUTPUT CURRENT	120	A
DC MAXIMUM VOLTAGE	1500	VDC
DC MAXIMUM CURRENT	320	A
MPPT VOLTAGE RANGE	860-1450	VDC

TABLE 1 - FEEDER SCHEDULE

DC FEEDERS						
FEEDER	DC CONDUCTORS	CONDUCTORS PER POLARITY	CONDUCTORS PER INVERTER	EQUIPMENT GROUND	CONDUIT(S) PER INVERTER	
DCF-1	#10 AWG CU. 2kV XLPE (PV WIRE)	1	32	#6 AWG CU. BARE	1	2" SCH. 40 PVC
AC FEEDERS						
FEEDER	AC 3ϕ CONDUCTORS	CONDUCTORS PER PHASE	NEUTRAL (PER CONDUIT)	EQUIPMENT GROUND (PER CONDUIT)	CONDUIT(S)	
ACF-1	#1/0 AWG CU. 1kV XLPE	1	#6 AWG. CU 1kV XPLE	#6 AWG CU. THWN-2	1	2" SCH. 40 PVC
ACF-2	500 KCMIL CU. 1kV XLPE	4	#2/0 AWG. CU 1kV XPLE	#3/0 AWG CU. THWN-2	2	5" SCH. 40 PVC
ACF-3	#2 AWG CU. MV-105, 15kV, 133% EPR SHIELDED PVC JACKET	1	N/A	#4 AWG CU. BARE	1	3" SCH. 40 PVC

TABLE 2 - AC FEEDER CALCULATIONS

FEEDER	CONDUCTORS PER PHASE/POLARITY	CONDUIT FILL %	AMBIENT TEMP. (°C)	TEMP. CORRECTION FACTOR	CURRENT CARRYING CONDUCTORS CORRECTION FACTOR	TOTAL REQUIRED AMPACITY	REQUIRED OCPD (AMPS)	TOTAL 75°C AMPACITY	TOTAL 90°C AMPACITY	TOTAL 105°C AMPACITY	TOTAL ADJUSTED 90°C AMPACITY	TOTAL ADJUSTED 105°C AMPACITY
DCF-1	1	26	32	0.96	0.4	14	20	35	40	N/A	15	N/A
ACF-1	1	29	32	0.96	1	120	150	150	170	N/A	163	N/A
ACF-2	4	28	32	0.96	0.8	960	1200	1520	1720	N/A	1321	N/A
ACF-3	1	33	32	1.04	1	42	60	N/A	195	215	N/A	224



INVERTER SETTINGS

FREQUENCY		
DEVICE	PICKUP	CLEARING TIME (SECONDS)
UNDER FREQUENCY 2 (81U)	57 Hz	0.16
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OVER FREQUENCY 2 (81O)	62 Hz	0.16
VOLTAGE		
DEVICE	PICKUP	CLEARING TIME (SECONDS)
UNDER VOLTAGE 3 (27)	0.45 p.u.	0.16
UNDER VOLTAGE 2 (27)	0.60 p.u.	1.0
UNDER VOLTAGE 1 (27)	0.88 p.u.	2.0
OVER VOLTAGE 1 (59)	1.10 p.u.	1.0
OVER VOLTAGE 2 (59)	1.20 p.u.	0.16

KEY

NEUTRAL: — — — —

GROUND: — · — · —

REVISIONS

NO.	DESCRIPTION	BY	DATE
2	FOR PERMIT	AR	05/18/20
1	CLIENT COMMENTS	AR	05/11/20

PROJECT TITLE:
ELMRIDGE GOLF COURSE
SOLAR PHOTOVOLTAIC SYSTEM

SITE:
ELMRIDGE GOLF COURSE
EAST ARRAY - SYSTEM B1
INT #33846
229 ELMRIDGE ROAD
PAWCATUCK, CT 06379

OWNER:

ADVANCED SOLAR PRODUCTS
Dedicated to Building a Sustainable Future
270 SOUTH MAIN STREET
FLEMINGTON, NJ 08822
908-751-5818 (PHONE)
908-751-5819 (FAX)
lyle@advancedsolarproducts.com

NJ CERTIFICATE OF AUTHORIZATION LICENSE NO.: 24GA28102500

DRAWN: AR	DATE: 04/06/2020
CHECKED:	DATE:
SCALE: NONE	DWG. NO.: E-3-2

DRAWING TITLE: THREE-LINE AC CIRCUIT

LYLE K. RAWLINGS, P.E.
CT PROFESSIONAL ENGINEER LIC #29423

FOR PERMITTING

NOTES:

A) CODES AND STANDARDS:
ALL EQUIPMENT, MATERIALS, AND METHODS SHALL MEET
THE FOLLOWING CODES AND STANDARDS:
- NATIONAL ELECTRICAL CODE, 2017 ED.
- UL 1741
- UL 1703
- UL 1699B
- IEEE 929-2000
- ALL OTHER APPLICABLE NATIONAL, STATE AND LOCAL CODES

B) SIGNAGE NOTES:
1. WARNING. THIS FACILITY IS SERVED BY A PHOTOVOLTAIC GENERATING SOURCE. THE PHOTOVOLTAIC AC DISCONNECT MEANS ARE LOCATED WITHIN THIS PANEL. THE PHOTOVOLTAIC DC DISCONNECT MEANS ARE LOCATED WITHIN THE INVERTERS.
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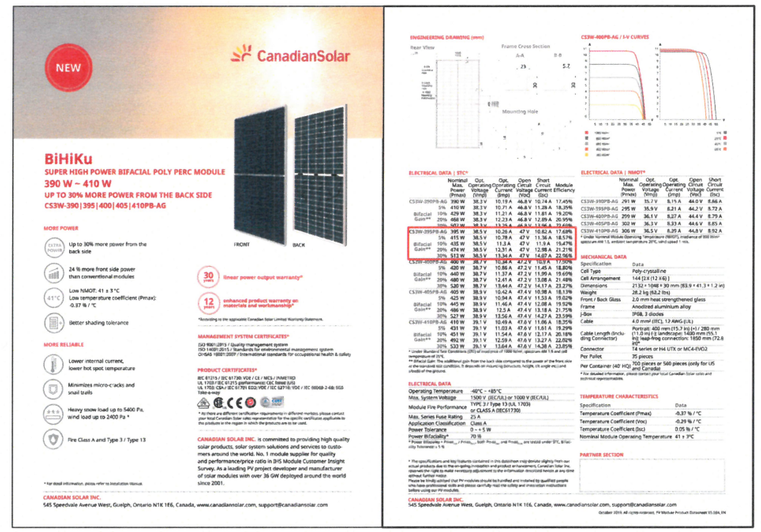
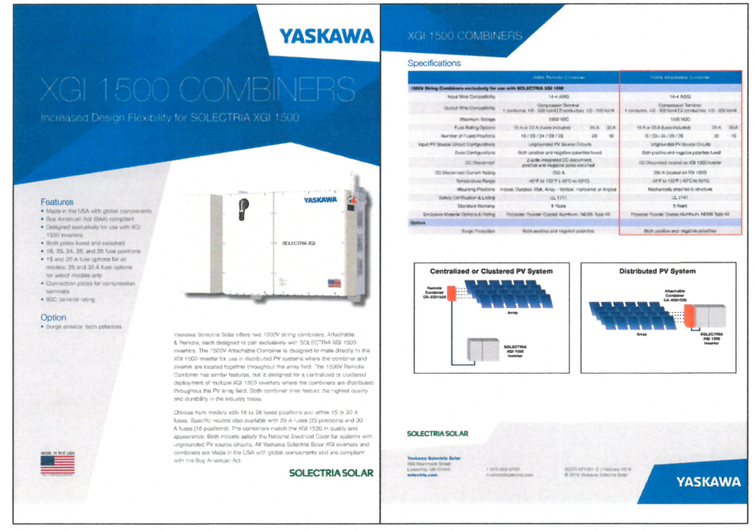
WARNING. ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.
3. WARNING. IF A GROUND FAULT IS DETECTED, THE NORMALLY GROUNDED CONDUCTORS MAY BE ENERGIZED AND UNGROUNDED.
4. CAUTION - HIGH VOLTAGE - KEEP OUT
DANGER - HIGH VOLTAGE - QUALIFIED PERSONS ONLY

C) INVERTER PROTECTIVE FUNCTIONS:
1. OVER VOLTAGE, UNDER VOLTAGE, OVER FREQUENCY & UNDER FREQUENCY PROTECTIONS BUILT INTO INVERTER PER UL 1741

D) DESIGN HIGH AMBIENT TEMPERATURE = 33°C
& DESIGN LOW AMBIENT TEMPERATURE = -16°C

SOLAR PHOTOVOLTAIC TOTAL SYSTEM SIZE:
TOTAL RATED POWER= 1,264 kW DC (1000 kW AC)
(3200) CANADIAN BIHIKU 395W MODULES
(128) PARALLEL STRINGS OF (25) MODULES PER STRING
(8) SOLECTRIA XGI 1500-125/125
STRING VALUES: Vmp = 962.5 VDC; Voc = 1175 VDC; Vmax = 1325 VDC





FOR PERMITTING

REVISIONS			
NO.	DESCRIPTION	BY	DATE
2	FOR PERMIT	AR	05/18/20
1	CLIENT COMMENTS	AR	05/11/20

PROJECT TITLE:
ELMRIDGE GOLF COURSE
SOLAR PHOTOVOLTAIC SYSTEM

SITE:
ELMRIDGE GOLF COURSE
EAST ARRAY - SYSTEM B1
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OWNER:

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270 SOUTH MAIN STREET
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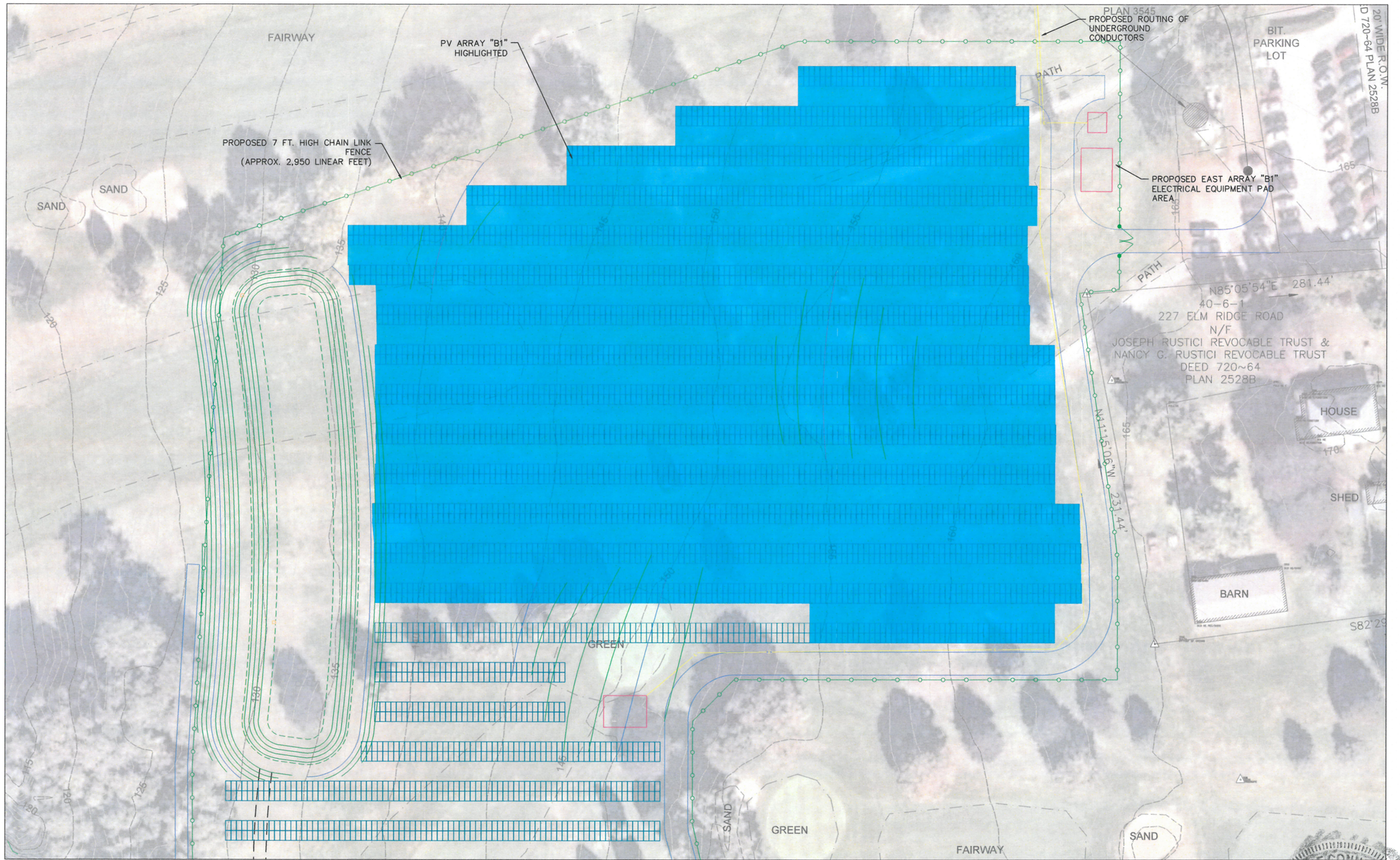
908-751-5819 (FAX)
kyle@advancedsolarproducts.com

NJ CERTIFICATE OF AUTHORIZATION LICENSE NO.: 24GA28102500

DRAWN: AR	DATE: 04/06/2020
CHECKED:	DATE:
SCALE: NONE	DWG. NO.: E-3-3

DRAWING TITLE: EQUIPMENT SPEC. SHEETS

LYLE K. RAWLINGS, P.E.
CT PROFESSIONAL ENGINEER LIC #29423



N

PV ARRAY AZIMUTH = 180°

1 **SITE PLAN**
SCALE: 1:60

0 30' 60'
(GRAPHIC SCALE: SHOWN IN FEET)

SOLAR PHOTOVOLTAIC TOTAL SYSTEM SIZE:
TOTAL RATED POWER= 1,264 kW DC (1000 kW AC)
(3200) CANADIAN BIHIKU 395W MODULES
(128) PARALLEL STRINGS OF (25) MODULES PER STRING
(8) SOLECTRIA XGI 1500-125/125
POST DRIVEN MOUNTING SYSTEM (2-HIGH PORTRAIT) @ 25° TILT

FOR PERMITTING

REVISIONS

NO.	DESCRIPTION	BY	DATE
2	FOR PERMIT	AR	05/18/20
1	CLIENT COMMENTS	AR	05/01/20

PROJECT TITLE:
ELMRIDGE GOLF COURSE
SOLAR PHOTOVOLTAIC SYSTEM

SITE:
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EAST ARRAY - SYSTEM B1
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NJ CERTIFICATE OF AUTHORIZATION LICENSE NO.: 24GA28102500

STATE OF CONNECTICUT
LYLE K. RAWLINGS
No. 29423
PROFESSIONAL ENGINEER

LYLE K. RAWLINGS, P.E.
CT PROFESSIONAL ENGINEER LIC. #29423

DRAWN: RES	DATE: 04/09/2020
CHECKED:	DATE:
SCALE: NONE	DWG. NO.: E-4

DRAWING TITLE:
ARRAY LAYOUT (ENLARGED)