

PHOTOVOLTAIC PROJECT INFORMATION:

1,279.80 KW (DC) / 1,000.00 KW (AC)
PV UTILITY INTERACTIVE SYSTEM

STONINGTON - A1 PROJECT
35 TAUGWONK SPUR RD.
STONINGTON, CT 06378
AHJ: STONINGTON
UTILITY: EVERSOURCE

LAT/LONG: 41° 23' 18.33" N / 71° 53' 30.74"
ELEVATION: ±195 FT
IRRADIANCE: ±4.77 KWH / M² / DAY

ASHRAE AVG LOW TEMP: -9.4°F / -23°C
ASHRAE AVG HIGH TEMP: 89.6°F / 32°C

PROJECT NUMBER:
446-14

PROJECT SHEET:

L-1A

SHEET TITLE:

SITE PLAN &
ARRAY LAYOUT



PROJECT DEVELOPER:
GREEN SKIES
(A CLEAN FOCUS COMPANY)
180 JOHNSON ST
MIDDLETOWN, CT 06457
PHONE: 860.398.5408
EMAIL: INFO@GREENSKIES.COM



SOLAR PV CONSULTANT:
RENEWABLE DESIGN SOLUTIONS
10945 ESTATE LANE
SUITE E-105
DALLAS, TX 75238
PHONE: 214.564.9535
WWW.RENEWABLEDESIGNSOLUTIONS.COM

ELECTRICAL ENGINEER:
JOE GIGANTIELLO PE (ELECTRICAL)
PHONE: 267.882.5393
EMAIL: JGIGANTIELLO@RDSSOLAR.COM



10/04/19

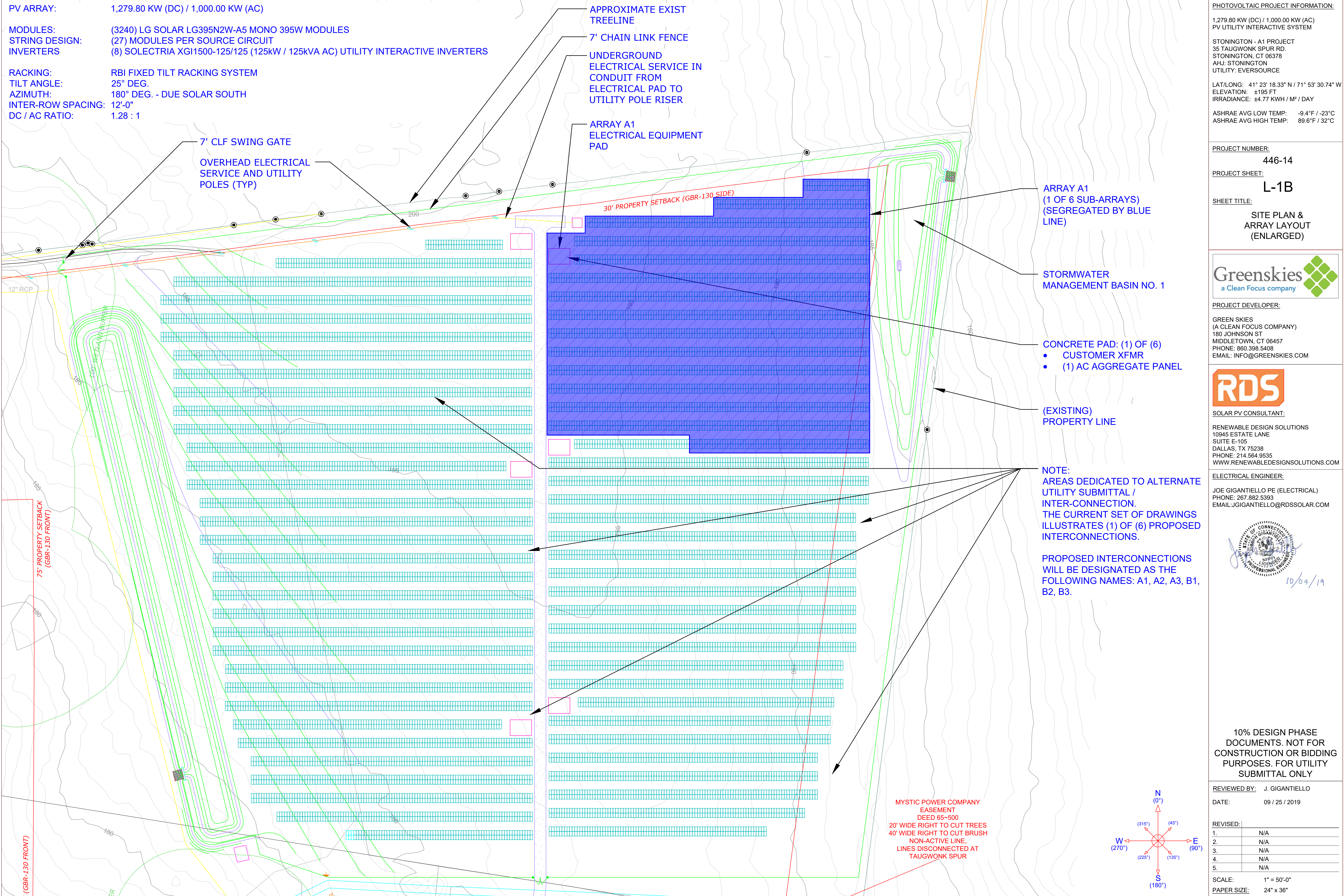
10% DESIGN PHASE
DOCUMENTS. NOT FOR
CONSTRUCTION OR BIDDING
PURPOSES. FOR UTILITY
SUBMITTAL ONLY

REVIEWED BY: J. GIGANTIELLO
DATE: 09 / 25 / 2019

REVISED:	
1.	N/A
2.	N/A
3.	N/A
4.	N/A
5.	N/A

SCALE: 1" = 100'-0"

PAPER SIZE: 24" x 36"



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ASHRAE AVG LOW TEMP: -9.4°F / -23°C
ASHRAE AVG HIGH TEMP: 89.6°F / 32°C

PROJECT NUMBER: 446-14

PROJECT SHEET: L-1B

SHEET TITLE: SITE PLAN & ARRAY LAYOUT (ENLARGED)

Greenskies
a Clean Focus company

PROJECT DEVELOPER:

GREEN SKIES
(A CLEAN FOCUS COMPANY)
180 JOHNSON ST
MIDDLETOWN, CT 06457
PHONE: 860.398.5408
EMAIL: INFO@GREENSKIES.COM

RDS

SOLAR PV CONSULTANT:

RENEWABLE DESIGN SOLUTIONS
10945 ESTATE LANE
SUITE E-105
DALLAS, TX 75238
PHONE: 214.564.9535
WWW.RENEWABLEDESIGNSOLUTIONS.COM

ELECTRICAL ENGINEER:

JOE GIGANTIello PE (ELECTRICAL)
PHONE: 267.882.5393
EMAIL: JGIGANTIello@RDSOLAR.COM

10/04/19

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REVIEWED BY:	J. GIGANTIello
DATE:	09 / 25 / 2019
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5.	N/A
SCALE:	1" = 50'-0"
PAPER SIZE:	24" x 36"

PV ARRAY: 1,279.80 KW (DC) / 1,000.00 KW (AC)

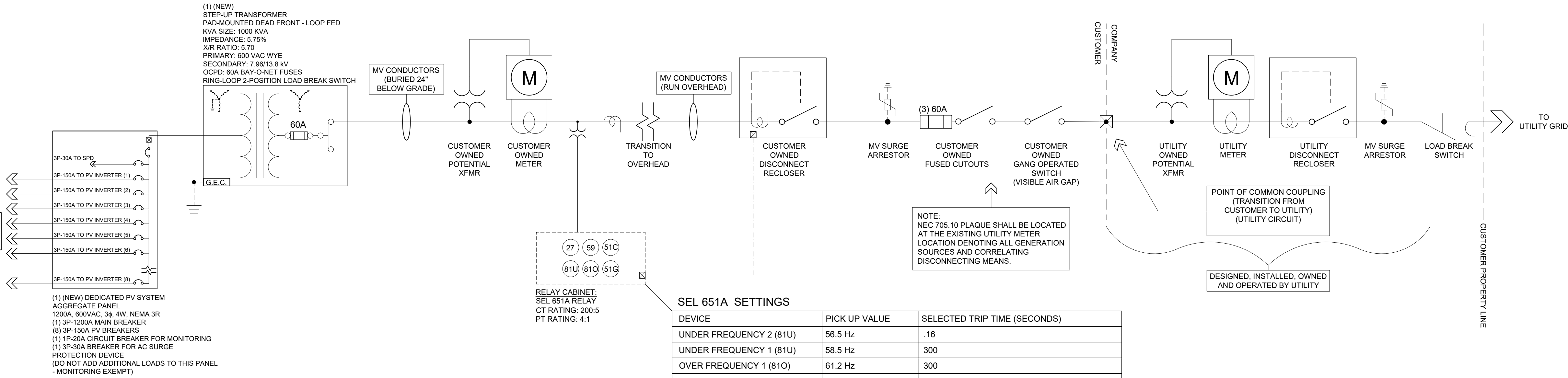
MODULES: (3240) LG SOLAR LG395N2W-A5 MONO 395W MODULES
STRING DESIGN: (27) MODULES PER SOURCE CIRCUIT
INVERTERS (8) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS

RACKING: RBI FIXED TILT RACKING SYSTEM
TILT ANGLE: 25° DEG.
AZIMUTH: 180° DEG. - DUE SOLAR SOUTH
INTER-ROW SPACING: 12'-0"
DC / AC RATIO: 1.28 : 1

(NEW) PHOTOVOLTAIC DC COLLECTION SYSTEM

PV ARRAY: 1,279.80 KW (DC) / 1,000.00 KW (AC)

MODULES: (3240) LG SOLAR LG395N2W-A5 MONO 395W MODULES
INVERTERS: (8) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS



SEL 651A SETTINGS

DEVICE	PICK UP VALUE	SELECTED TRIP TIME (SECONDS)
UNDER FREQUENCY 2 (81U)	56.5 Hz	.16
UNDER FREQUENCY 1 (81U)	58.5 Hz	300
OVER FREQUENCY 1 (81O)	61.2 Hz	300
OVER FREQUENCY 2 (81O)	62 Hz	.16
UNDER VOLTAGE (27)	50% OF NOMINAL	.16
UNDER VOLTAGE (27)	88% OF NOMINAL	2
OVER VOLTAGE (59)	110% OF NOMINAL	1
OVER VOLTAGE (59)	120% OF NOMINAL	.16
OVERCURRENT (51G)	20A	PER IEC CURVE
OVERCURRENT (51C)	60A	PER IEC CURVE

ANTI-ISLANDING LETTER:

June 25, 2018

XGI 1500 – National Grid Anti-Islanding Information

Identify the manufacturer:	Yaskawa – Solectria Solar
Identify the model:	XGI 1500-166, XGI 1500-125
Contact information for manufacturer contact:	Eric Every Product Manager Solectria Renewables, LLC 978-683-9700 x137 eric.every@solectria.com
Identify if the inverter is 3-phase or 1-phase:	3 Phase
Provide brief description of island detection method proposed:	Perturbation is applied by injecting a small amount of reactive power (or phase angle) into its output current during every cycle. The magnitude of the perturbation increases if the inverter detects an island condition.
Does the inverter employ active or passive islanding detection? Provide documentation confirming that the islanding detection is "turned on" in the proposed inverter:	Active. The anti-islanding detection algorithm is hardcoded into the inverter operating firmware and cannot be disabled or "turned off" by the user.
For active islanding detection, various methods are available in the market. Identify the type of detection proposed. Is the method based on Sandia Frequency Shift, Sandia Voltage Shift, Sandia Impedance Detection, or Other? If Others, specify:	The active islanding detection algorithm is based on the Sandia Frequency Shift Detection methodology.
Does the active islanding detection utilize positive feedback?	Yes
If utilizing positive feedback, does the island detection employ a uni-directional or bi-directional perturbation?	Bi-directional
Does the inverter use an isolation transformer?	No
If yes, what is the low voltage phase to neutral voltage?	N/A
How is the AC output voltage limited? Specifically, how do the inverter controls limit the AC output voltage when generation exceeds available load?	The inverter detects the AC voltage and converts available DC power to AC when the AC voltage is in normal range. Inverters do not limit the AC output voltage. Instead, if the AC voltage is higher than threshold, inverters stop operation (cease to energize) according to IEEE1547 standards.

SOLECTRIA SOLAR

Yaskawa Solectria Solar
360 Merrimack Street
Lawrence, MA 01843
solectria.com

1-978-683-9700
Email: inverters@solectria.com

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YASKAWA

INVERTER SETTINGS:

January 16, 2019

RE: Voltage and Frequency Setpoints for XGI 1500-125/125-UL, XGI 1500-125/150-UL, XGI 1500-150/166-UL and XGI 1500-166/166-UL

To Whom It May Concern:

Solectria XGI 1500-125/125-UL, XGI 1500-125/150-UL, XGI 1500-150/166-UL and XGI 1500-166/166-UL utility interactive inverters will cease power production in the event of abnormal grid conditions. These voltage and frequency setpoints adhere to IEEE1547a-2014, which has the default setpoints and range of adjustability specified below:

Voltage Range (p.u.)	Default Clearing Time (s)	Clearing Time: adjustable up to and including (s)
$V < 0.45$	0.16	0.16
$0.45 \leq V < 0.60$	1	11
$0.60 \leq V < 0.88$	2	21
$1.1 < V \leq 1.2$	1	13
$V \geq 1.2$	0.16	0.16

Response to Abnormal AC Voltage

Protective Function	Default Settings		Ranges of Adjustability Frequency (Hz) Clearing Time: adjustable up to and including (s)
	Frequency (Hz)	Clearing Time (s)	
81U-1	$f < 57.0$	0.16	56 – 60 10
81U-2	$f < 59.5$	2	56 – 60 300
81O-1	$f > 60.5$	2	60 – 64 300
81O-2	$f > 62$	0.16	60 – 64 10

Response to Abnormal Frequency

At the request of the utility the adjustable settings specified can be changed through a password-protected menu on the user interface. Upon grid disturbances the inverter will wait 5 minutes after the grid voltage and frequency return to nominal values before attempting to reconnect. Please refer to the XGI 1500 Installation and Operations Manual for additional information.

Sincerely,

Emily Hwang | Applications Engineering Manager
+1 978.638.9700 | emily.hwang@solectria.com

SOLECTRIA SOLAR

Yaskawa Solectria Solar
360 Merrimack Street
Lawrence, MA 01843
solectria.com

1-978-683-9700
Email: inverters@solectria.com

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YASKAWA

UL1741SA LISTING:

intertek
Total Quality. Assured.

AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant: Solectria Renewables LLC
360 Merrimack Street
Bldg 9, Floor 2
LAWRENCE, MA 01843
USA
Contact: Wei Zhou (primary)
Jihua Ma (alternate)
Phone: (978) 883-9700
FAX: (978) 883-9702
Email: wei.zhou@solectria.com
jihua.ma@solectria.com

Manufacturer: Yaskawa America Inc
1067 Johnson Drive
Buffalo Grove, IL 60089
USA
Contact: Arthur Foltz (primary)
Joe Kloczkowski (alternate)
Phone: 847-887-7555 (primary)
414-856-2501
FAX: arthur.foltz@yaskawa.com
joe_kloczkowski@yaskawa.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Cortland NY 13045
Control Number: 5010838 Authorized by: [Signature] for Dean Davidson, Certification Manager

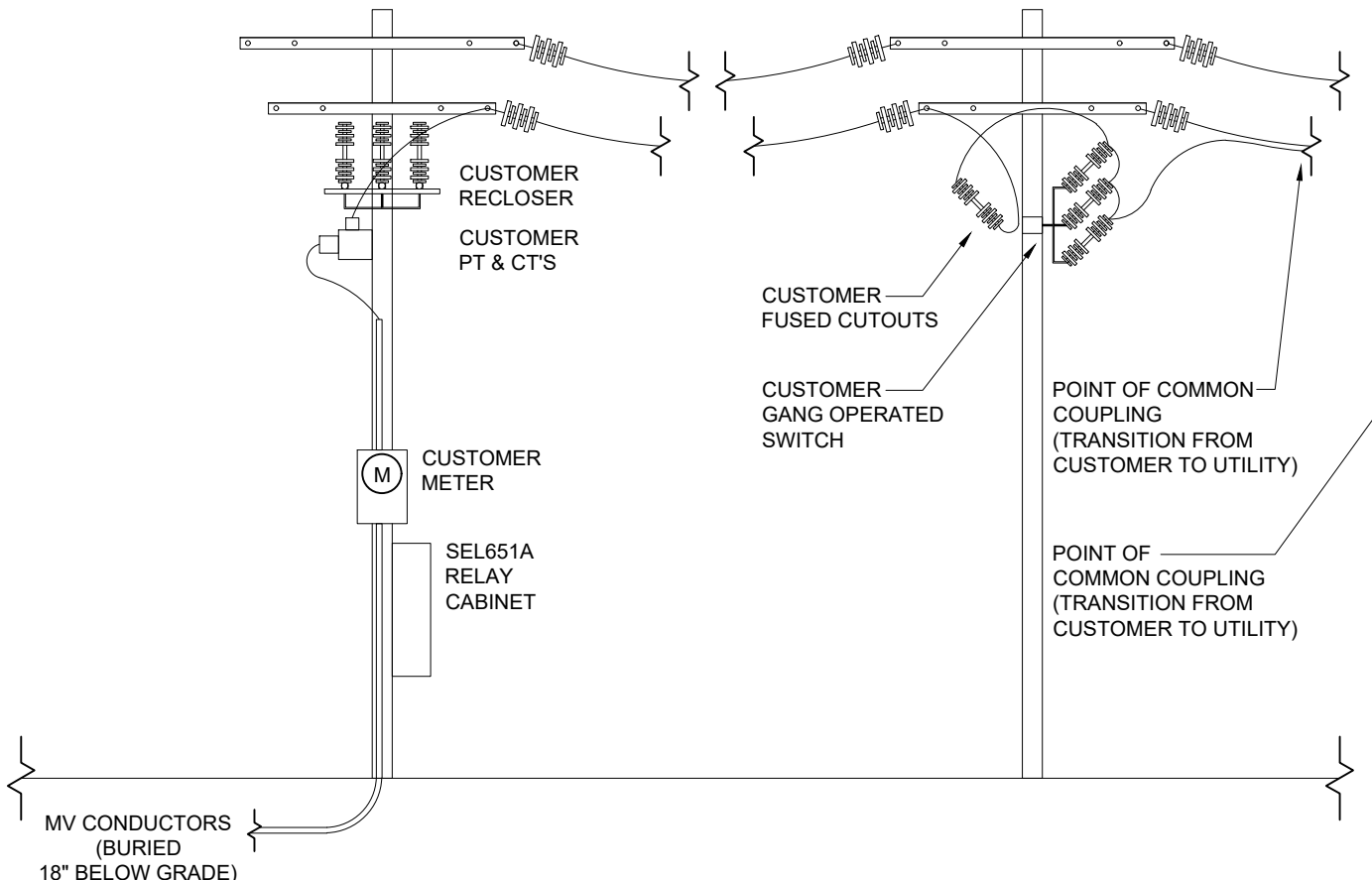
Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3551 or 847-439-5667 Fax 312-293-1672

Standard(s): Inverters, Converters, Controllers and Interconnection System Equipment For Use With Distributed Energy Resources (UL 1741.2010 Ed 2+R:15Feb2018)
Product: Grid Interactive PV Inverter
Brand Name: Yaskawa Solectria Solar
Models: XGI 1500-125/125, XGI 1500-125/150, XGI 1500-150/166, XGI 1500-166/166

ATM for Report 103561512CRT-001c

ATM Issued: 31-Aug-2018
ED 16.3.15 (20-Apr-17) Mandatory

HYPOTHETICAL INTER-CONNECTION ELEVATION DETAIL:
SCALE: N/A



10% DESIGN PHASE
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PURPOSES. FOR UTILITY
SUBMITTAL ONLY

REVIEWED BY: J. GIGANTIELLO

DATE: 09 / 25 / 2019

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4.	N/A
5.	N/A

SCALE: N/A

PAPER SIZE: 24" x 36"

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ASHRAE AVG LOW TEMP: -9.4°F / -23°C
ASHRAE AVG HIGH TEMP: 89.6°F / 32°C

PROJECT NUMBER:

446-14

PROJECT SHEET:

E-3

SHEET TITLE:

AC COLLECTION SYSTEM
(1-LINE DIAGRAM)



PROJECT DEVELOPER:

GREEN SKIES
(A CLEAN FOCUS COMPANY)
180 JOHNSON ST
MIDDLETOWN, CT 06457
PHONE: 860.398.5408
EMAIL: INFO@GREENSKIES.COM



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10945 ESTATE LANE
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ELECTRICAL ENGINEER:

JOE GIGANTIELLO PE (ELECTRICAL)
PHONE: 267.882.5393
EMAIL: JGIGANTIELLO@RDSSOLAR.COM



10/04/19

PV ARRAY: 1,279.80 KW (DC) / 1,000.00 KW (AC)

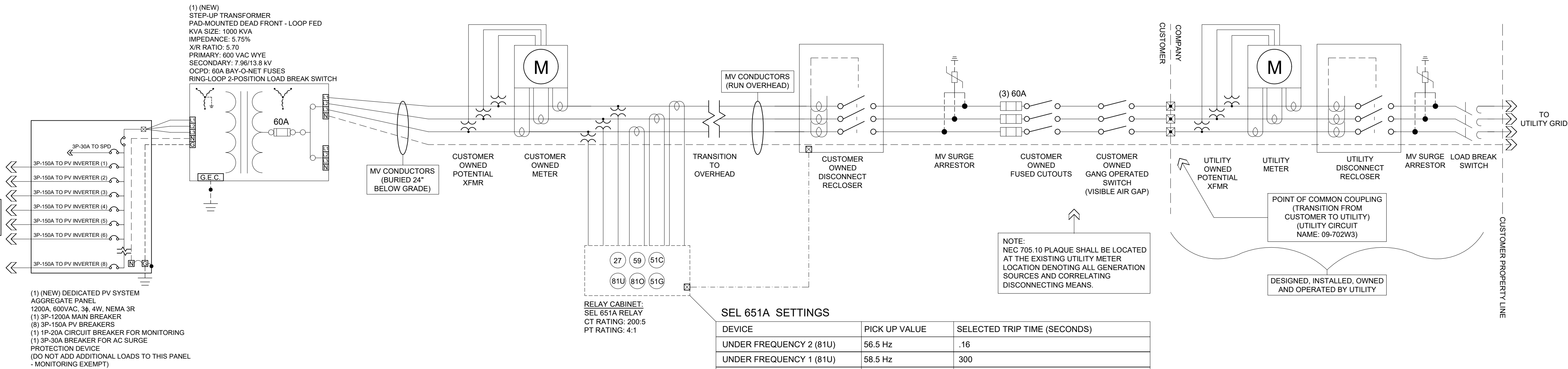
MODULES: (3240) LG SOLAR LG395N2W-A5 MONO 395W MODULES
STRING DESIGN: (27) MODULES PER SOURCE CIRCUIT
INVERTERS (8) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS

RACKING: RBI FIXED TILT RACKING SYSTEM
TILT ANGLE: 25° DEG.
AZIMUTH: 180° DEG. - DUE SOLAR SOUTH
INTER-ROW SPACING: 12'-0"
DC / AC RATIO: 1.28 : 1

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PV ARRAY: 1,279.80 KW (DC) / 1,000.00 KW (AC)

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June 25, 2018

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Identify if the inverter is 3-phase or 1-phase:	3 Phase
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If yes, what is the low voltage phase to neutral voltage?	N/A
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INVERTER SETTINGS:

January 16, 2019

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$0.45 \leq V < 0.50$	1	11
$0.50 \leq V < 0.58$	2	21
$0.58 \leq V < 1.2$	1	13
$V \geq 1.2$	0.16	0.16

Response to Abnormal AC Voltage

Protective Function	Default Settings		Ranges of Adjustability	
	Frequency (Hz)	Clearing Time (s)	Frequency (Hz)	Clearing Time: adjustable up to and including (s)
81U-1	$f < 57.0$	0.16	56 – 60	10
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Response to Abnormal Frequency

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Sincerely,

Emily Hwang | Applications Engineering Manager
+1 978.638.9700 | emily.hwang@solectria.com

UL1741SA LISTING:

intertek
Total Quality Assurance.

AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listed model(s) identified on the correlation page of the Listing Report.

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Applicant: Solectria Renewables LLC
360 Merrimack Street
Bldg 9, Floor 2
LAWRENCE, MA 01843
Country: USA
Contact: Wei Zhou (primary)
Jihua Ma (alternate)
Phone: (978) 683-9700
FAX: (978) 933-9702
Email: wei.zhou@solectria.com
jihua.ma@solectria.com

Manufacturer: Yaskawa America Inc
1067 Johnson Drive
Buffalo Grove, IL 60089
Country: USA
Contact: Arthur Foltz (primary)
Joe Kleczkowski (alternate)
Phone: 847-587-7555 (primary)
414-856-2501
FAX: arthur_foltz@yaskawa.com
joe_kleczkowski@yaskawa.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Cortland NY 13045
Control Number: 5010838
Authorized by: [Signature] for Dean Davidson, Certification Manager

ETL US
Intertek

This document supersedes all previous Authorizations to Mark for the noted Report Number.

This Authorization to Mark is for the exclusive use of Intertek's Client and is provided pursuant to the Certification agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability, and the Client is responsible for the agreement. For any loss, expense or damage occasioned by the use of this Authorization to Mark, the Client is authorized to permit copying or distribution of this Authorization to Mark and then only in its entirety. Use of Intertek's Certification mark is restricted to the conditions set out in the agreement and in the Authorization to Mark. Any further use of the Intertek name for the sale or advertisement of the listed product, product or service must first be approved in writing by Intertek. Initial Factory Assessments and Follow-up Services are for the purpose of ensuring appropriate usage of the Certification mark in accordance with the agreement; they are not for the purpose of providing quality control and do not relieve the Client of their obligations in this regard.

Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667 Fax 312-293-1672

Standard(s): Inverters, Converters, Controllers And Interconnection System Equipment For Use With Distributed Energy Resources (UL 1741-2010 Ed.2-R.15F-a62018)
Product: Grid Interactive PV Inverter
Brand Name: Yaskawa Solectria Solar
Models: XGI 1500-125/125, XGI 1500-125/150, XGI 1500-150/166, XGI 1500-166/166

ATM for Report 103561512CRT-001c

ATM Issued: 31-Aug-2018
ED 16.3.18 (20-Apr-17) Mandatory

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PROJECT SHEET:

E-4

SHEET TITLE:

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(3-LINE DIAGRAM)



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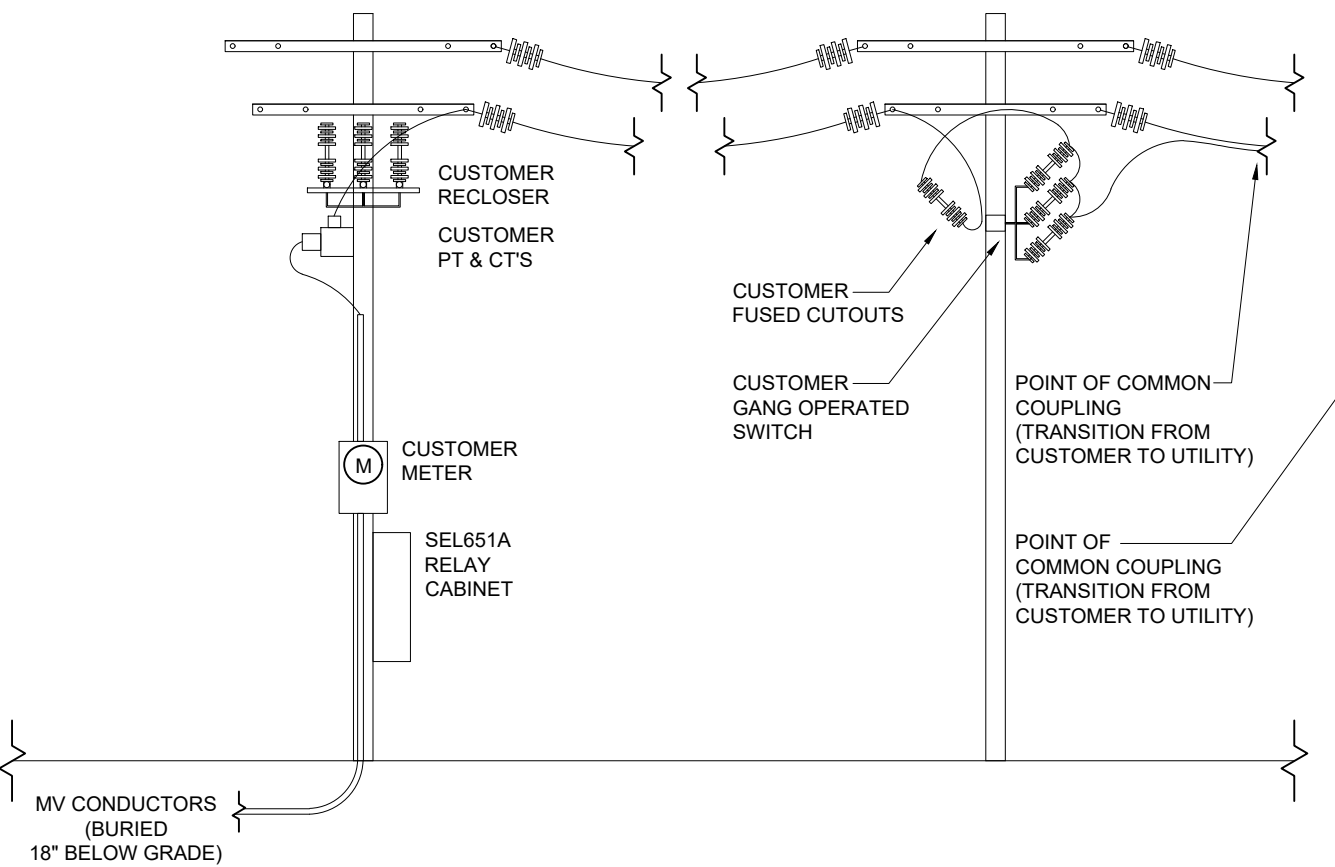
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10/04/19

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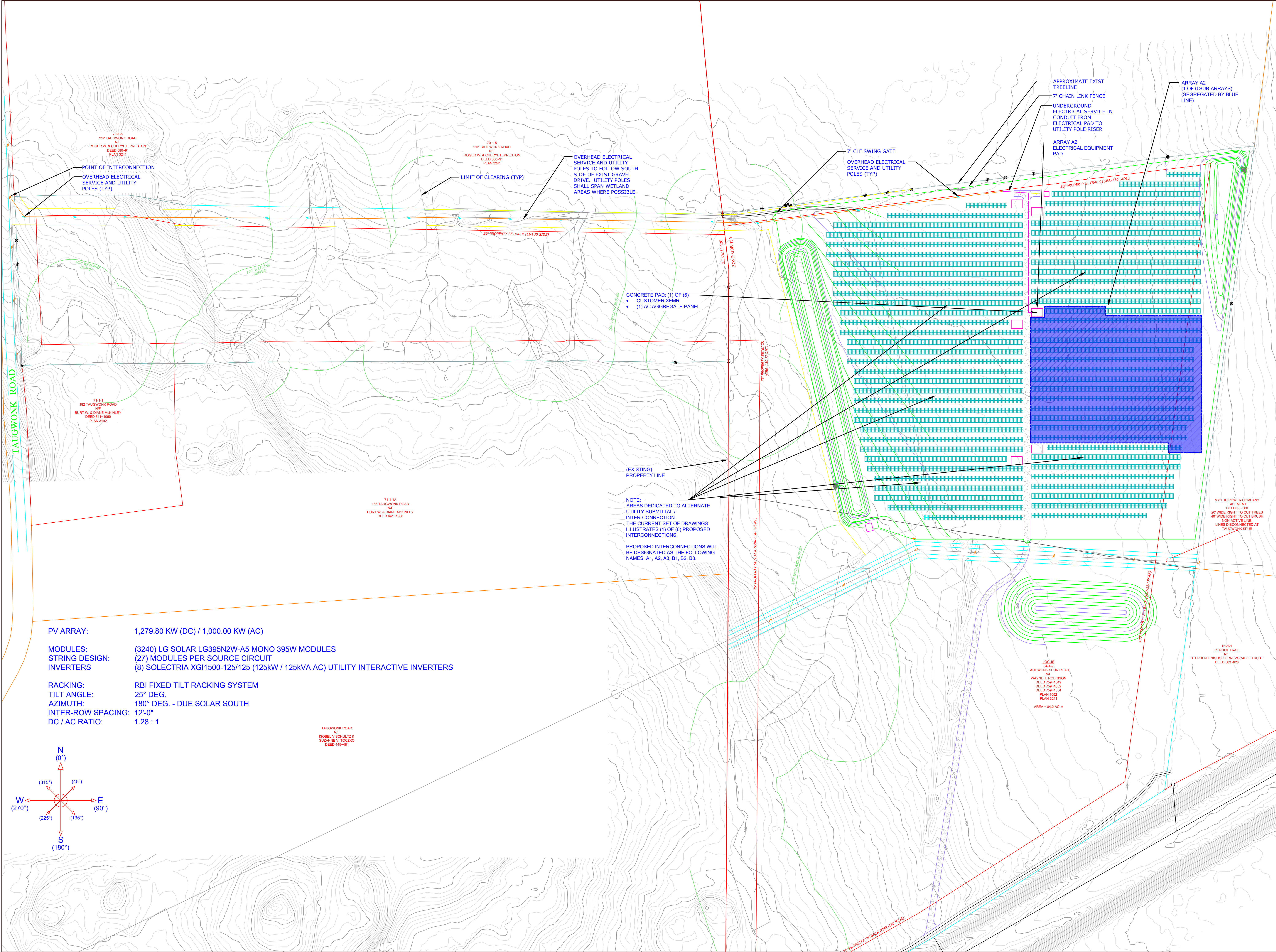
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SCALE: N/A

PAPER SIZE: 24" x 36"



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AHJ: STONINGTON
UTILITY: EVERSOURCE

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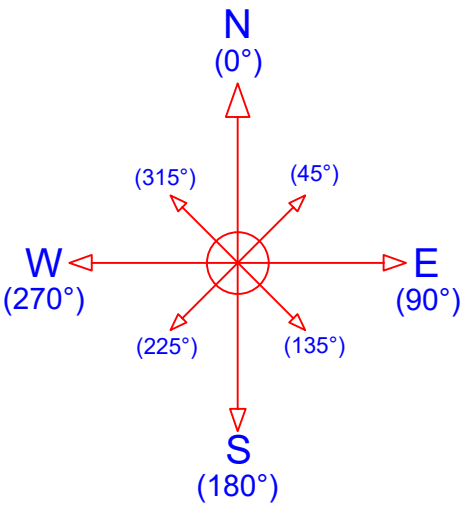
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10/04/19

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STRING DESIGN: (27) MODULES PER SOURCE CIRCUIT
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RACKING: RBI FIXED TILT RACKING SYSTEM
TILT ANGLE: 25° DEG.
AZIMUTH: 180° DEG. - DUE SOLAR SOUTH
INTER-ROW SPACING: 12'-0"
DC / AC RATIO: 1.28 : 1

TAUGWONK HURD
NF
ISOBEL V. SCHULTZ &
SUZANNE V. TOCZKO
DEED 445-481



PV ARRAY:	1,279.80 KW (DC) / 1,000.00 KW (AC)
MODULES:	(3240) LG SOLAR LG395N2W-A5 MONO 395W MODULES
STRING DESIGN:	(27) MODULES PER SOURCE CIRCUIT
INVERTERS	(8) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS
RACKING:	RBI FIXED TILT RACKING SYSTEM
TILT ANGLE:	25° DEG.
AZIMUTH:	180° DEG. - DUE SOLAR SOUTH
INTER-ROW SPACING:	12'-0"
DC / AC RATIO:	1.28 : 1

7' CLF SWING GATE

OVERHEAD ELECTRICAL
SERVICE AND UTILITY
POLES (TYP)

- APPROXIMATE EXIST TREELINE
- 7' CHAIN LINK FENCE
- UNDERGROUND ELECTRICAL SERVICE IN CONDUIT FROM ELECTRICAL PAD TO UTILITY POLE RISER
- ARRAY A2 ELECTRICAL EQUIPMENT PAD

STORMWATER
MANAGEMENT BASIN NO. 1

- CONCRETE PAD: (1) OF (6)
- CUSTOMER XFMR
- (1) AC AGGREGATE PANEL

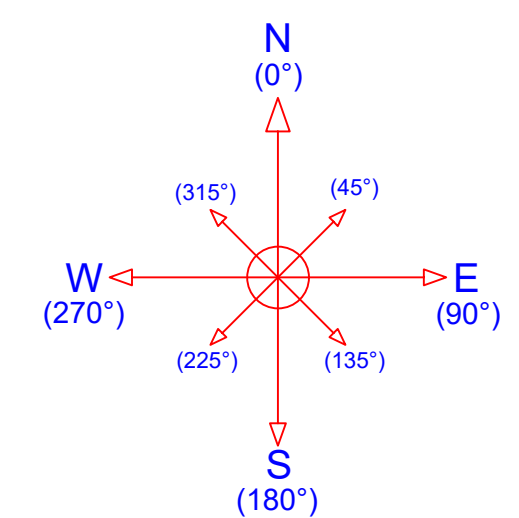
— (EXISTING)
PROPERTY LINE

NOTE:
AREAS DEDICATED TO ALTERNATE
UTILITY SUBMITTAL /
INTER-CONNECTION.
THE CURRENT SET OF DRAWINGS
ILLUSTRATES (1) OF (6) PROPOSED
INTERCONNECTIONS.

PROPOSED INTERCONNECTIONS
WILL BE DESIGNATED AS THE
FOLLOWING NAMES: A1, A2, A3, B1,
B2, B3.

ARRAY A2
(1 OF 6 SUB-ARRAYS)
(SEGREGATED BY BLUE
LINE)

MYSTIC POWER COMPANY
EASEMENT
DEED 65~500
20' WIDE RIGHT TO CUT TREES
40' WIDE RIGHT TO CUT BRUSH
NON-ACTIVE LINE,
LINES DISCONNECTED AT
TAUGWONK SPUR



PHOTOVOLTAIC PROJECT INFORMATION:

1,279.80 KW (DC) / 1,000.00 KW (AC)
PV UTILITY INTERACTIVE SYSTEM

STONINGTON - A2 PROJECT
35 TAUGWONK SPUR RD.
STONINGTON, CT 06378
AHJ: STONINGTON
UTILITY: EVERSOURCE

LAT/LONG: 41° 23' 18.33" N / 71° 53' 30.74" W
ELEVATION: ±195 FT
IRRADIANCE: ±4.77 KWH / M² / DAY

ASHRAE AVG LOW TEMP: -9.4°F / -23°C
ASHRAE AVG HIGH TEMP: 89.6°F / 32°C

PROJECT NUMBER:
446-14

PROJECT SHEET:

L-1B

SHEET TITLE:

SITE PLAN &
ARRAY LAYOUT
(ENLARGED)



PROJECT DEVELOPER:

GREEN SKIES
(A CLEAN FOCUS COMPANY)
180 JOHNSON ST
MIDDLETOWN, CT 06457
PHONE: 860.398.5408
EMAIL: INFO@GREENSKIES.COM



SOLAR PV CONSULTANT:

RENEWABLE DESIGN SOLUTIONS
10945 ESTATE LANE
SUITE E-105
DALLAS, TX 75238
PHONE: 214.564.9535
WWW.RENEWABLEDESIGNSOLUTIONS.COM

ELECTRICAL ENGINEER:

JOE GIGANTIello PE (ELECTRICAL)
PHONE: 267.882.5393
EMAIL: JGIGANTIello@RDSSOLAR.COM



0/04/19

10% DESIGN PHASE
DOCUMENTS. NOT FOR
CONSTRUCTION OR BIDDING
PURPOSES. FOR UTILITY
SUBMITTAL ONLY

REVIEWED BY: J. GIGANTIELLO

DATE: 09 / 25 / 2019

REVISED:	
1.	N/A
2.	N/A
3.	N/A
4.	N/A
5.	N/A

SCALE: 1" = 50'-0"

PAPER SIZE: 24" x 36"

PV ARRAY: 1,279.80 KW (DC) / 1,000.00 KW (AC)

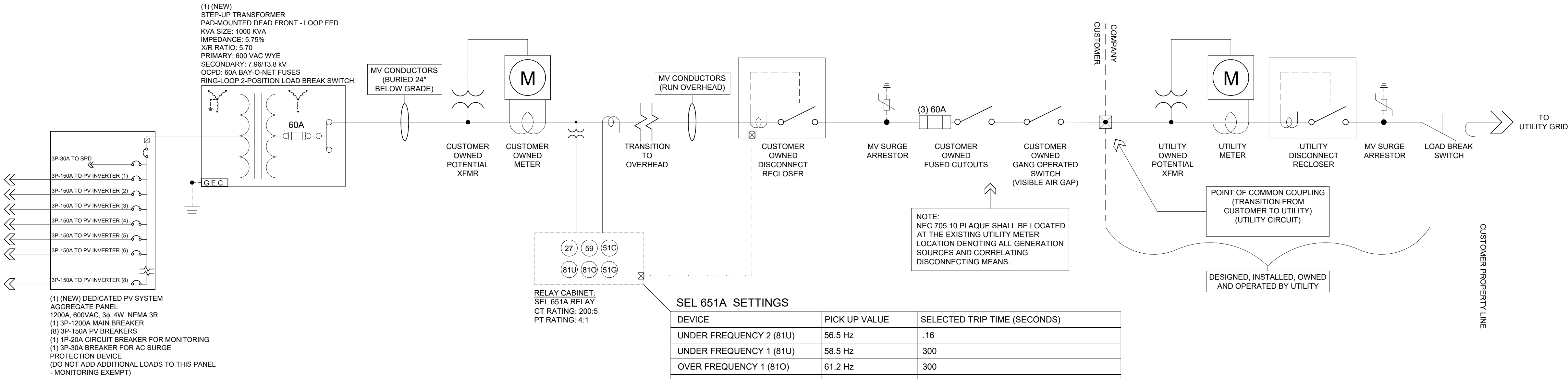
MODULES: (3240) LG SOLAR LG395N2W-A5 MONO 395W MODULES
STRING DESIGN: (27) MODULES PER SOURCE CIRCUIT
INVERTERS (8) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS

RACKING: RBI FIXED TILT RACKING SYSTEM
TILT ANGLE: 25° DEG.
AZIMUTH: 180° DEG. - DUE SOLAR SOUTH
INTER-ROW SPACING: 12'-0"
DC / AC RATIO: 1.28 : 1

(NEW) PHOTOVOLTAIC DC COLLECTION SYSTEM

PV ARRAY: 1,279.80 KW (DC) / 1,000.00 KW (AC)

MODULES: (3240) LG SOLAR LG395N2W-A5 MONO 395W MODULES
INVERTERS: (8) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS



SEL 651A SETTINGS

DEVICE	PICK UP VALUE	SELECTED TRIP TIME (SECONDS)
UNDER FREQUENCY 2 (81U)	56.5 Hz	.16
UNDER FREQUENCY 1 (81U)	58.5 Hz	300
OVER FREQUENCY 1 (81O)	61.2 Hz	300
OVER FREQUENCY 2 (81O)	62 Hz	.16
UNDER VOLTAGE (27)	50% OF NOMINAL	.16
UNDER VOLTAGE (27)	88% OF NOMINAL	2
OVER VOLTAGE (59)	110% OF NOMINAL	1
OVER VOLTAGE (59)	120% OF NOMINAL	.16
OVERCURRENT (51G)	20A	PER IEC CURVE
OVERCURRENT (51C)	60A	PER IEC CURVE

ANTI-ISLANDING LETTER:

June 25, 2018

XGI 1500 – National Grid Anti-Islanding Information

Identify the manufacturer:	Yaskawa – Solectria Solar
Identify the model:	XGI 1500-166, XGI 1500-125
Contact information for manufacturer contact:	Eric Every Product Manager Solectria Renewables, LLC 978-683-9700 x137 eric.every@solectria.com
Identify if the inverter is 3-phase or 1-phase:	3 Phase
Provide brief description of island detection method proposed:	Perturbation is applied by injecting a small amount of reactive power (or phase angle) into its output current during every cycle. The magnitude of the perturbation increases if the inverter detects an island condition.
Does the inverter employ active or passive islanding detection? Provide documentation confirming that the islanding detection is "turned on" in the proposed inverter:	Active. The anti-islanding detection algorithm is hardcoded into the inverter operating firmware and cannot be disabled or "turned off" by the user.
For active islanding detection, various methods are available in the market. Identify the type of detection proposed. Is the method based on Sandia Frequency Shift, Sandia Voltage Shift, Sandia Impedance Detection, or Other? If Others, specify:	The active islanding detection algorithm is based on the Sandia Frequency Shift Detection methodology.
Does the active islanding detection utilize positive feedback?	Yes
If utilizing positive feedback, does the island detection employ a uni-directional or bi-directional perturbation?	Bi-directional
Does the inverter use an isolation transformer?	No
If yes, what is the low voltage phase to neutral voltage?	N/A
How is the AC output voltage limited? Specifically, how do the inverter controls limit the AC output voltage when generation exceeds available load?	The inverter detects the AC voltage and converts available DC power to AC when the AC voltage is in normal range. Inverters do not limit the AC output voltage. Instead, if the AC voltage is higher than threshold, inverters stop operation (cease to energize) according to IEEE1547 standards.

SOLECTRIA SOLAR

Yaskawa Solectria Solar
360 Merrimack Street
Lawrence, MA 01843
solectria.com

1-978-683-9700
Email: inverters@solectria.com

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YASKAWA

INVERTER SETTINGS:

January 16, 2019

RE: Voltage and Frequency Setpoints for XGI 1500-125/125-UL, XGI 1500-125/150-UL, XGI 1500-150/166-UL and XGI 1500-166/166-UL

To Whom It May Concern:

Solectria XGI 1500-125/125-UL, XGI 1500-125/150-UL, XGI 1500-150/166-UL and XGI 1500-166/166-UL utility interactive inverters will cease power production in the event of abnormal grid conditions. These voltage and frequency setpoints adhere to IEEE1547a-2014, which has the default setpoints and range of adjustability specified below:

Voltage Range (p.u.)	Default Clearing Time (s)	Clearing Time: adjustable up to and including (s)
$V < 0.45$	0.16	0.16
$0.45 \leq V < 0.60$	1	11
$0.60 \leq V < 0.88$	2	21
$1.1 < V \leq 1.2$	1	13
$V \geq 1.2$	0.16	0.16

Response to Abnormal AC Voltage

Protective Function	Default Settings		Ranges of Adjustability	
	Frequency (Hz)	Clearing Time (s)	Frequency (Hz)	Clearing Time: adjustable up to and including (s)
81U-1	$f < 57.0$	0.16	56 – 60	10
81U-2	$f < 59.5$	2	56 – 60	300
81O-1	$f > 60.5$	2	60 – 64	300
81O-2	$f > 62$	0.16	60 – 64	10

Response to Abnormal Frequency

At the request of the utility the adjustable settings specified can be changed through a password-protected menu on the user interface. Upon grid disturbances the inverter will wait 5 minutes after the grid voltage and frequency return to nominal values before attempting to reconnect. Please refer to the XGI 1500 Installation and Operations Manual for additional information.

Sincerely,

Emily Hwang | Applications Engineering Manager
+1 978.638.9700 | emily.hwang@solectria.com

SOLECTRIA SOLAR

Yaskawa Solectria Solar
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solectria.com

1-978-683-9700
Email: inverters@solectria.com

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YASKAWA

UL1741SA LISTING:

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Total Quality Assured.

AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant: Solectria Renewables LLC
360 Merrimack Street
Bldg 9, Floor 2
LAWRENCE, MA 01843
USA
Contact: Wei Zhou (primary)
Jihua Ma (alternate)
Phone: (978) 883-9700
FAX: (978) 883-9702
Email: wei.zhou@solectria.com
jihua.ma@solectria.com

Manufacturer: Yaskawa America Inc
1067 Johnson Drive
Buffalo Grove, IL 60089
USA
Contact: Arthur Foltz (primary)
Joe Kloczkowski (alternate)
Phone: 847-887-7555 (primary)
414-856-2501
FAX: arthur.foltz@yaskawa.com
joe_kloczkowski@yaskawa.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Cortland NY 13045
Control Number: 5010838 Authorized by: [Signature] for Dean Davidson, Certification Manager

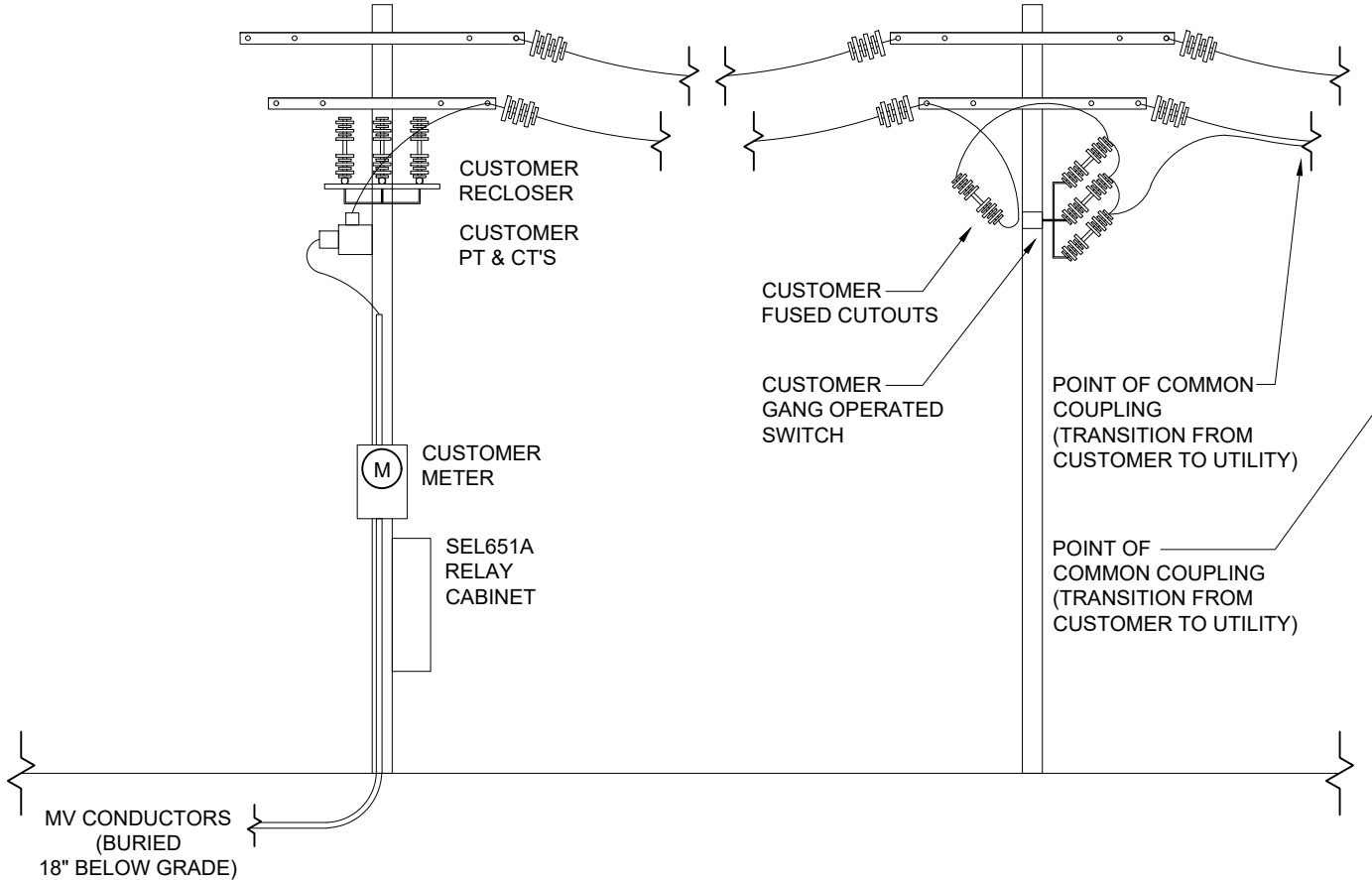
Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3551 or 847-439-5667 Fax 312-293-1672

Standard(s): Inverters, Converters, Controllers and Interconnection System Equipment For Use With Distributed Energy Resources (UL 1741-2010 Ed 2+R:15Feb2018)
Product: Grid Interactive PV Inverter
Brand Name: Yaskawa Solectria Solar
Models: XGI 1500-125/125, XGI 1500-125/150, XGI 1500-150/166, XGI 1500-166/166

ATM for Report 103561512CRT-001c

ATM Issued: 31-Aug-2018
ED 16.3.15 (20-Apr-17) Mandatory

HYPOTHETICAL INTER-CONNECTION ELEVATION DETAIL:
SCALE: N/A



10% DESIGN PHASE
DOCUMENTS. NOT FOR
CONSTRUCTION OR BIDDING
PURPOSES. FOR UTILITY
SUBMITTAL ONLY

REVIEWED BY: J. GIGANTIELLO

DATE: 09 / 25 / 2019

REVISED:	
1.	N/A
2.	N/A
3.	N/A
4.	N/A
5.	N/A

SCALE: N/A

PAPER SIZE: 24" x 36"

PHOTOVOLTAIC PROJECT INFORMATION:

1,279.80 KW (DC) / 1,000.00 KW (AC)
PV UTILITY INTERACTIVE SYSTEM

STONINGTON - A2 PROJECT
35 TAUGWONK SPUR RD.
STONINGTON, CT 06378
AHJ: STONINGTON
UTILITY: EVERSOURCE

LAT/LONG: 41° 23' 18.33" N / 71° 53' 30.74" W
ELEVATION: ±195 FT
IRRADIANCE: ±4.77 KWH / M² / DAY

ASHRAE AVG LOW TEMP: -9.4°F / -23°C
ASHRAE AVG HIGH TEMP: 89.6°F / 32°C

PROJECT NUMBER:

446-14

PROJECT SHEET:

E-3

SHEET TITLE:

AC COLLECTION SYSTEM
(1-LINE DIAGRAM)



PROJECT DEVELOPER:

GREEN SKIES
(A CLEAN FOCUS COMPANY)
180 JOHNSON ST
MIDDLETOWN, CT 06457
PHONE: 860.398.5408
EMAIL: INFO@GREENSKIES.COM



SOLAR PV CONSULTANT:

RENEWABLE DESIGN SOLUTIONS
10945 ESTATE LANE
SUITE E-105
DALLAS, TX 75238
PHONE: 214.564.9535
WWW.RENEWABLEDESIGNSOLUTIONS.COM

ELECTRICAL ENGINEER:

JOE GIGANTIELLO PE (ELECTRICAL)
PHONE: 267.882.5393
EMAIL: JGIGANTIELLO@RDSSOLAR.COM



10/04/19

PV ARRAY: 1,279.80 KW (DC) / 1,000.00 KW (AC)

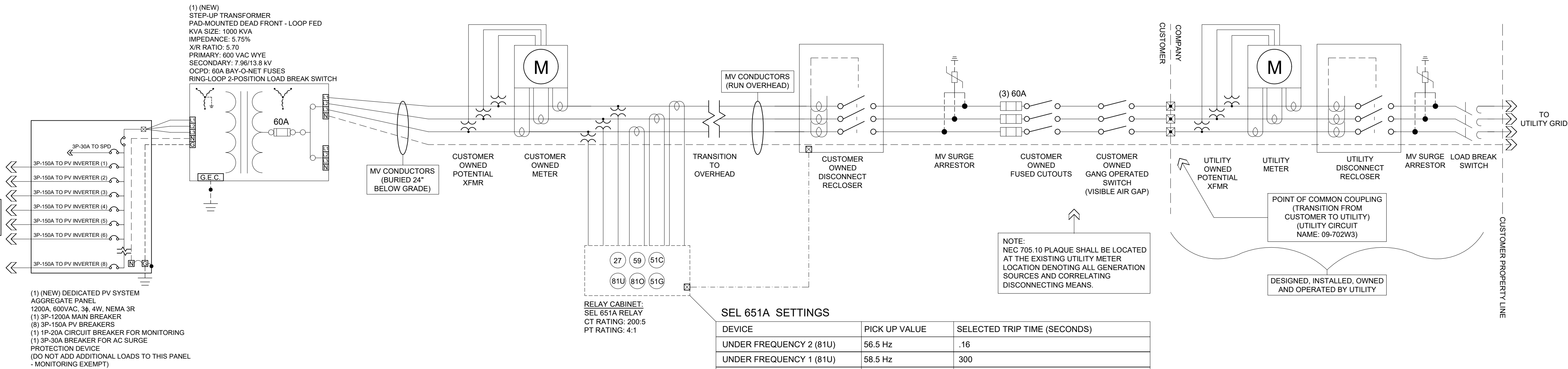
MODULES: (3240) LG SOLAR LG395N2W-A5 MONO 395W MODULES
STRING DESIGN: (27) MODULES PER SOURCE CIRCUIT
INVERTERS: (8) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS

RACKING: RBI FIXED TILT RACKING SYSTEM
TILT ANGLE: 25° DEG.
AZIMUTH: 180° DEG. - DUE SOLAR SOUTH
INTER-ROW SPACING: 12'-0"
DC / AC RATIO: 1.28 : 1

(NEW) PHOTOVOLTAIC DC COLLECTION SYSTEM

PV ARRAY: 1,279.80 KW (DC) / 1,000.00 KW (AC)

MODULES: (3240) LG SOLAR LG395N2W-A5 MONO 395W MODULES
INVERTERS: (8) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS



PHOTOVOLTAIC PROJECT INFORMATION:

1,279.80 KW (DC) / 1,000.00 KW (AC)
PV UTILITY INTERACTIVE SYSTEM

STONINGTON - A2 PROJECT
35 TAUGWONK SPUR RD.
STONINGTON, CT 06378
AHJ: STONINGTON
UTILITY: EVERSOURCE

LAT/LONG: 41° 23' 18.33" N / 71° 53' 30.74" W
ELEVATION: ±195 FT
IRRADIANCE: ±4.77 KWH / M² / DAY

ASHRAE AVG LOW TEMP: -9.4°F / -23°C
ASHRAE AVG HIGH TEMP: 89.6°F / 32°C

PROJECT NUMBER:

446-14

PROJECT SHEET:

E-4

SHEET TITLE:

AC COLLECTION SYSTEM
(3-LINE DIAGRAM)



PROJECT DEVELOPER:

GREEN SKIES
(A CLEAN FOCUS COMPANY)
180 JOHNSON ST
MIDDLETOWN, CT 06457
PHONE: 860.398.5408
EMAIL: INFO@GREENSKIES.COM



SOLAR PV CONSULTANT:

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10945 ESTATE LANE
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DALLAS, TX 75238
PHONE: 214.564.9535
WWW.RENEWABLEDESIGNSOLUTIONS.COM

ELECTRICAL ENGINEER:

JOE GIGANTIello PE (ELECTRICAL)
PHONE: 267.882.5393
EMAIL: JGIGANTIello@RDSOLAR.COM



10/04/19

ANTI-ISLANDING LETTER:

June 25, 2018

XGI 1500 – National Grid Anti-Islanding Information

Identify the manufacturer:	Yaskawa – Solectria Solar
Identify the model:	XGI 1500-166, XGI 1500-125
Contact information for manufacturer contact:	Eric Every Product Manager Solectria Renewables, LLC 978-683-9700 x137 eric.every@solectria.com
Identify if the inverter is 3-phase or 1-phase:	3 Phase
Provide brief description of island detection method proposed:	Perturbation is applied by injecting a small amount of reactive power (or phase angle) into its output current during every cycle. The magnitude of the perturbation increases if the inverter detects an island condition.
Does the inverter employ active or passive islanding detection? Provide documentation confirming that the islanding detection is "turned on" in the proposed inverter:	Active. The anti-islanding detection algorithm is hardcoded into the inverter operating firmware and cannot be disabled or "turned off" by the user.
For active islanding detection, various methods are available in the market. Identify the type of detection proposed. Is the method based on Sandia Frequency Shift, Sandia Voltage Shift, Sandia Impedance Detection, or Other? If Other, specify:	The active islanding detection algorithm is based on the Sandia Frequency Shift Detection methodology.
Does the active islanding detection utilize positive feedback?	Yes
If utilizing positive feedback, does the island detection employ a uni-directional or bi-directional perturbation?	Bi-directional
Does the inverter use an isolation transformer?	No
If yes, what is the low voltage phase to neutral voltage?	N/A
How is the AC output voltage limited? Specifically, how do the inverter controls limit the AC output voltage when generation exceeds available load?	The inverter detects the AC voltage and converts available DC power to AC when the AC voltage is in normal range. Inverters do not limit the AC output voltage. Instead, if the AC voltage is higher than threshold, inverters stop operation (cease to energize) according to IEEE1547 standards.

SOLECTRIA SOLAR

Yaskawa Solectria Solar
360 Merrimack Street
Lawrence, MA 01843
www.solectria.com

1-978-683-9700
Email: inverters@solectria.com

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YASKAWA

INVERTER SETTINGS:

January 16, 2019

RE: Voltage and Frequency Setpoints for XGI 1500-125/125-UL, XGI 1500-125/150-UL, XGI 1500-150/166-UL and XGI 1500-166/166-UL

To Whom It May Concern:

Solectria XGI 1500-125/125-UL, XGI 1500-125/150-UL, XGI 1500-150/166-UL and XGI 1500-166/166-UL utility interactive inverters will cease power production in the event of abnormal grid conditions. These voltage and frequency setpoints adhere to IEEE1547a-2014, which has the default setpoints and range of adjustability specified below:

Voltage Range (p.u.)	Default Clearing Time (s)	Clearing Time: adjustable up to and including (s)
$V < 0.45$	0.16	0.16
$0.45 \leq V < 0.50$	1	11
$0.50 \leq V < 0.58$	2	21
$0.58 \leq V < 1.2$	1	13
$V \geq 1.2$	0.16	0.16

Response to Abnormal AC Voltage

Protective Function	Default Settings		Ranges of Adjustability	
	Frequency (Hz)	Clearing Time (s)	Frequency (Hz)	Clearing Time: adjustable up to and including (s)
81U-1	$f < 57.0$	0.16	56 – 60	10
81U-2	$f < 59.5$	2	56 – 60	300
81O-1	$f > 60.5$	2	60 – 64	300
81O-2	$f > 62$	0.16	60 – 64	10

Response to Abnormal Frequency

At the request of the utility the adjustable settings specified can be changed through a password-protected menu on the user interface. Upon grid disturbances the inverter will wait 5 minutes after the grid voltage and frequency return to nominal values before attempting to reconnect. Please refer to the XGI 1500 installation and Operations Manual for additional information.

Sincerely,

Emily Hwang | Applications Engineering Manager
+1 978.638.9700 | emily.hwang@solectria.com

SOLECTRIA SOLAR

Yaskawa Solectria Solar
360 Merrimack Street
Lawrence, MA 01843
www.solectria.com

1-978-683-9700
Email: inverters@solectria.com

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YASKAWA

UL1741SA LISTING:

intertek
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AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listed model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant: Solectria Renewables LLC
360 Merrimack Street
Bldg 9, Floor 2
LAWRENCE, MA 01843
Country: USA
Contact: Wei Zhou (primary)
Jihua Ma (alternate)
Phone: (978) 683-9700
FAX: (978) 933-9702
Email: wei.zhou@solectria.com
jihua.ma@solectria.com

Manufacturer: Yaskawa America Inc
1067 Johnson Drive
Buffalo Grove, IL 60089
Country: USA
Contact: Arthur Foltz (primary)
Joe Kleczkowski (alternate)
Phone: 847-587-7555 (primary)
414-856-2501
FAX: arthur_foltz@yaskawa.com
joe_kleczkowski@yaskawa.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Cortland NY 13045
Control Number: 5010838
Authorized by: [Signature] for Dean Davidson, Certification Manager

ETL US
Intertek

This document supersedes all previous Authorizations to Mark for the noted Report Number.

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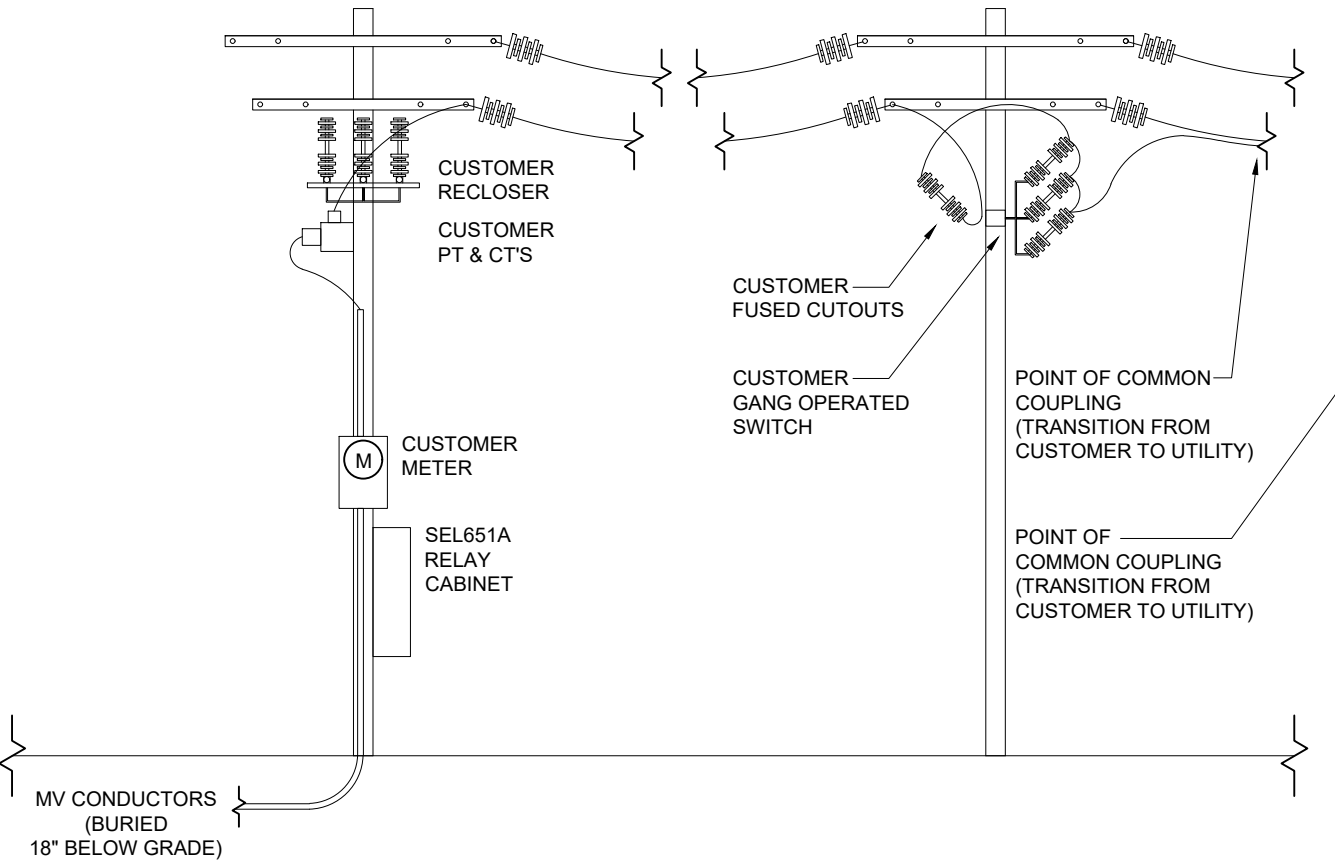
Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667 Fax 312-293-1672

Standard(s): Inverters, Converters, Controllers And Interconnection System Equipment For Use With Distributed Energy Resources (UL 1741:2010 Ed.2-R.15F-a62018)
Product: Grid Interactive PV Inverter
Brand Name: Yaskawa Solectria Solar
Models: XGI 1500-125/125, XGI 1500-125/150, XGI 1500-150/166, XGI 1500-166/166

ATM for Report 103561512CORT-001c

ATM Issued: 31-Aug-2018
ED 16.3.18 (20-Apr-17) Mandatory

HYPOTHETICAL INTER-CONNECTION ELEVATION DETAIL:
SCALE: N/A



10% DESIGN PHASE
DOCUMENTS. NOT FOR
CONSTRUCTION OR BIDDING
PURPOSES. FOR UTILITY
SUBMITTAL ONLY

REVIEWED BY: J. GIGANTIello

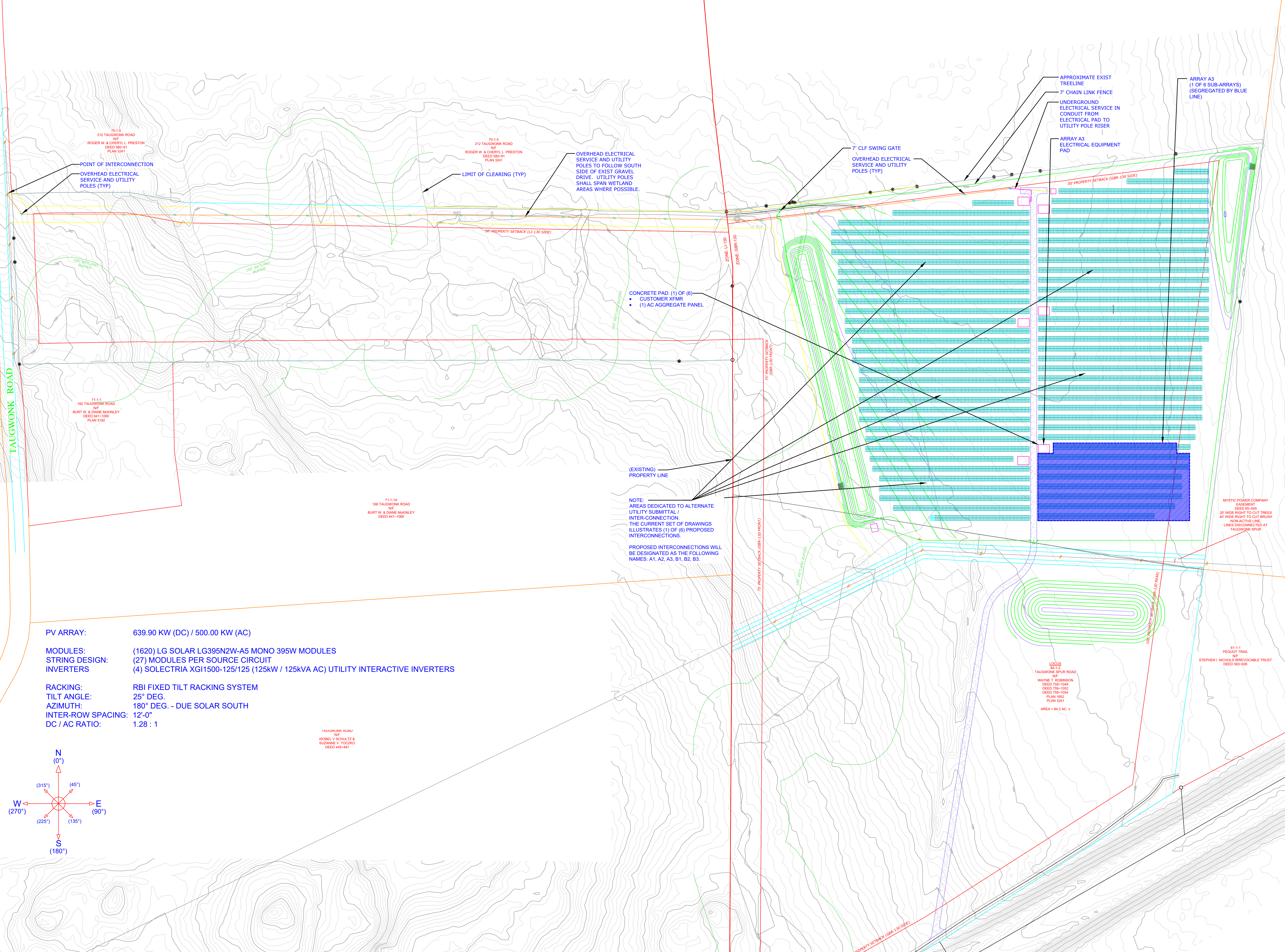
DATE: 09 / 25 / 2019

REVISED:

1.	N/A
2.	N/A
3.	N/A
4.	N/A
5.	N/A

SCALE: N/A

PAPER SIZE: 24" x 36"



PHOTOVOLTAIC PROJECT INFORMATION:

639.90 KW (DC) / 500.00 KW (AC)
PV UTILITY INTERACTIVE SYSTEM

STONINGTON - A3 PROJECT
35 TAUGWONK SPUR RD.
STONINGTON, CT 06378
AHJ: STONINGTON
UTILITY: EVERSOURCE

LAT/LONG: 41° 23' 18.33" N / 71° 53' 30.74" W
ELEVATION: ±195 FT
IRRADIANCE: ±4.77 KWH / M² / DAY

ASHRAE AVG LOW TEMP: -9.4°F / -23°C
ASHRAE AVG HIGH TEMP: 89.6°F / 32°C

PROJECT NUMBER:
446-14

PROJECT SHEET:
L-1A

SHEET TITLE:
SITE PLAN &
ARRAY LAYOUT



PROJECT DEVELOPER:
GREEN SKIES
(A CLEAN FOCUS COMPANY)
180 JOHNSON ST
MIDDLETOWN, CT 06457
PHONE: 860.398.5408
EMAIL: INFO@GREENSKIES.COM



SOLAR PV CONSULTANT:
RENEWABLE DESIGN SOLUTIONS
10945 ESTATE LANE
SUITE E-105
DALLAS, TX 75238
PHONE: 214.564.9535
WWW.RENEWABLEDESIGNSOLUTIONS.COM

ELECTRICAL ENGINEER:
JOE GIGANTIello PE (ELECTRICAL)
PHONE: 267.882.5393
EMAIL: JGIGANTIello@RDSSOLAR.COM



10% DESIGN PHASE
DOCUMENTS. NOT FOR
CONSTRUCTION OR BIDDING
PURPOSES. FOR UTILITY
SUBMITTAL ONLY

REVIEWED BY: J. GIGANTIello
DATE: 09 / 25 / 2019

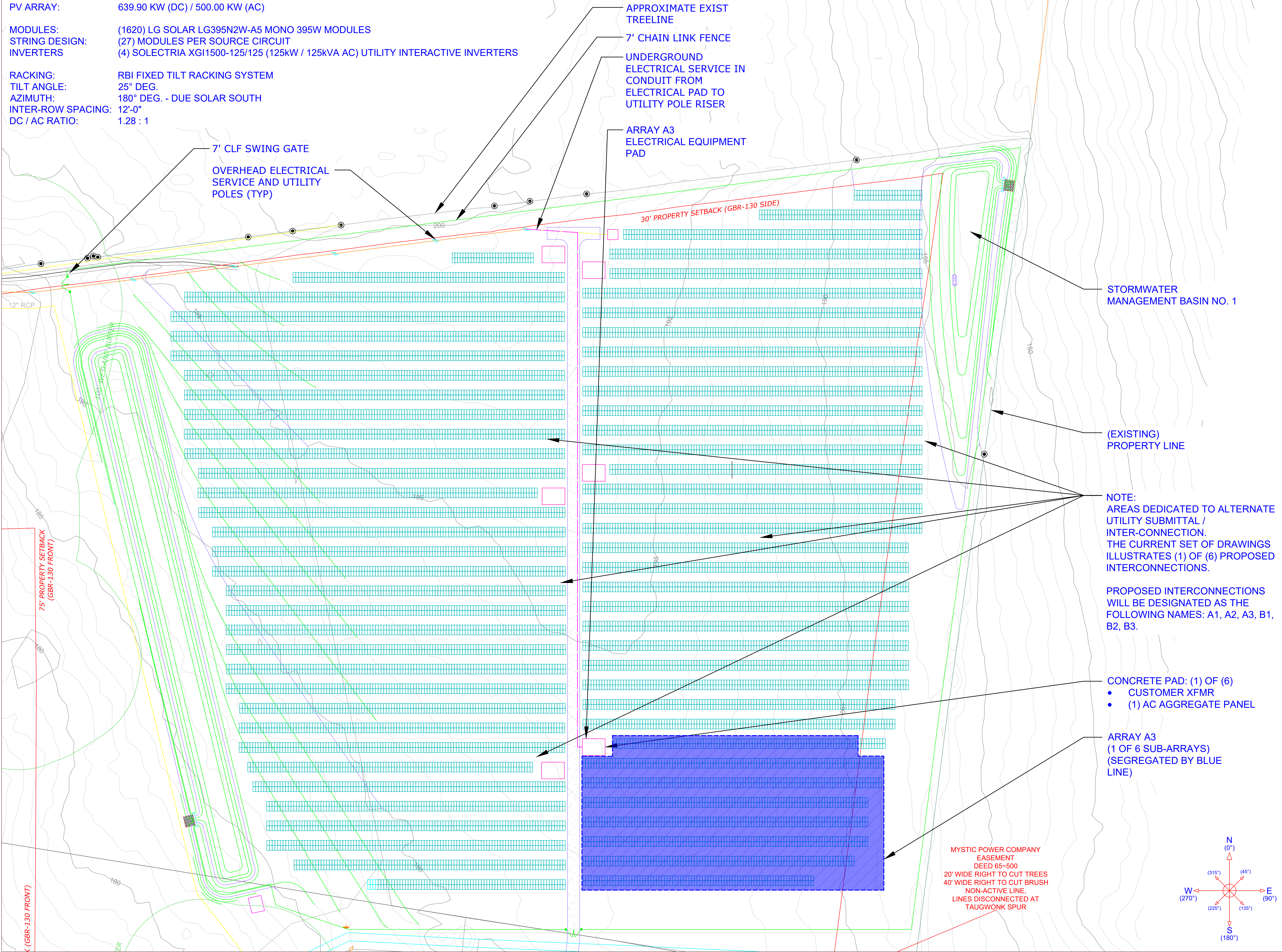
REVISED:	
1.	N/A
2.	N/A
3.	N/A
4.	N/A
5.	N/A

SCALE: 1" = 100'-0"
PAPER SIZE: 24" x 36"

PV ARRAY: 639.90 KW (DC) / 500.00 KW (AC)

MODULES: (1620) LG SOLAR LG395N2W-A5 MONO 395W MODULES
STRING DESIGN: (27) MODULES PER SOURCE CIRCUIT
INVERTERS (4) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS

RACKING: RBI FIXED TILT RACKING SYSTEM
TILT ANGLE: 25° DEG.
AZIMUTH: 180° DEG. - DUE SOLAR SOUTH
INTER-ROW SPACING: 12'-0"
DC / AC RATIO: 1.28 : 1



PHOTOVOLTAIC PROJECT INFORMATION:

639.90 KW (DC) / 500.00 KW (AC)
PV UTILITY INTERACTIVE SYSTEM

STONINGTON - A3 PROJECT
35 TAUGWONK SPUR RD.
STONINGTON, CT 06378
AHJ: STONINGTON
UTILITY: EVERSOURCE

LAT/LONG: 41° 23' 18.33" N / 71° 53' 30.74" W
ELEVATION: ±195 FT
IRRADIANCE: ±4.77 KWH / M² / DAY

ASHRAE AVG LOW TEMP: -9.4°F / -23°C
ASHRAE AVG HIGH TEMP: 89.6°F / 32°C

PROJECT NUMBER: 446-14

PROJECT SHEET: L-1B

SHEET TITLE: SITE PLAN & ARRAY LAYOUT (ENLARGED)

Greenskies
a Clean Focus company

PROJECT DEVELOPER:

GREEN SKIES
(A CLEAN FOCUS COMPANY)
180 JOHNSON ST
MIDDLETOWN, CT 06457
PHONE: 860.398.5408
EMAIL: INFO@GREENSKIES.COM

RDS

SOLAR PV CONSULTANT:

RENEWABLE DESIGN SOLUTIONS
10945 ESTATE LANE
SUITE E-105
DALLAS, TX 75238
PHONE: 214.564.9535
WWW.RENEWABLEDESIGNSOLUTIONS.COM

ELECTRICAL ENGINEER:

JOE GIGANTIello PE (ELECTRICAL)
PHONE: 267.882.5393
EMAIL: JGIGANTIello@RDSsOLAR.COM

10/04/19

10% DESIGN PHASE DOCUMENTS. NOT FOR CONSTRUCTION OR BIDDING PURPOSES. FOR UTILITY SUBMITTAL ONLY

REVIEWED BY: J. GIGANTIello

DATE: 09 / 25 / 2019

REVISED:

1.	N/A
2.	N/A
3.	N/A
4.	N/A
5.	N/A

SCALE: 1" = 50'-0"

PAPER SIZE: 24" x 36"

PV ARRAY: 639.90 KW (DC) / 500.00 KW (AC)

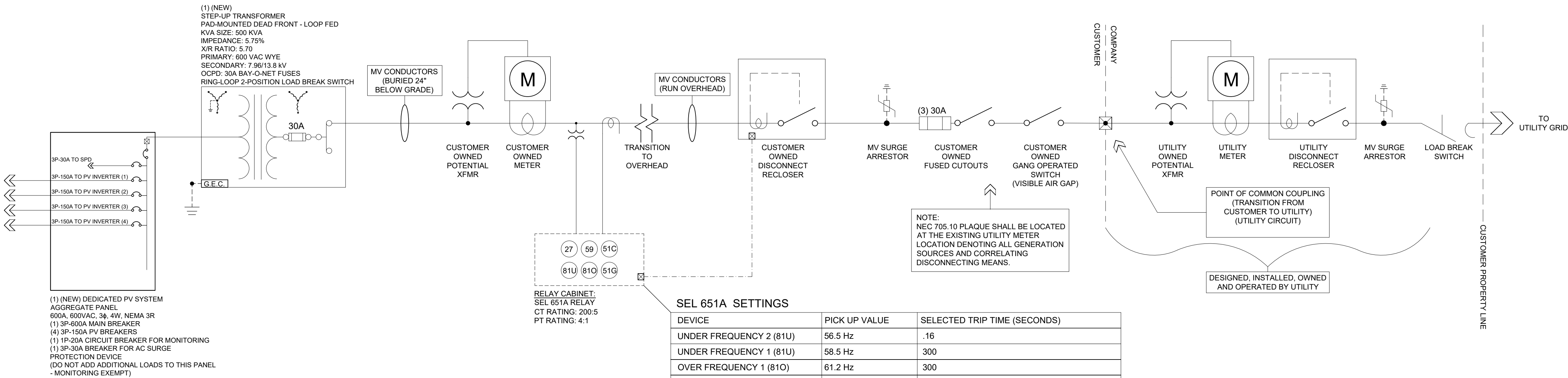
MODULES: (1620) LG SOLAR LG395N2W-A5 MONO 395W MODULES
STRING DESIGN: (27) MODULES PER SOURCE CIRCUIT
INVERTERS (4) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS

RACKING: RBI FIXED TILT RACKING SYSTEM
TILT ANGLE: 25° DEG.
AZIMUTH: 180° DEG. - DUE SOLAR SOUTH
INTER-ROW SPACING: 12'-0"
DC / AC RATIO: 1.28 : 1

(NEW) PHOTOVOLTAIC DC COLLECTION SYSTEM

PV ARRAY: 639.90 KW (DC) / 500.00 KW (AC)

MODULES: (1620) LG SOLAR LG395N2W-A5 MONO 395W MODULES
INVERTERS: (4) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS



SEL 651A SETTINGS

DEVICE	PICK UP VALUE	SELECTED TRIP TIME (SECONDS)
UNDER FREQUENCY 2 (81U)	56.5 Hz	.16
UNDER FREQUENCY 1 (81U)	58.5 Hz	300
OVER FREQUENCY 1 (81O)	61.2 Hz	300
OVER FREQUENCY 2 (81O)	62 Hz	.16
UNDER VOLTAGE (27)	50% OF NOMINAL	.16
UNDER VOLTAGE (27)	88% OF NOMINAL	2
OVER VOLTAGE (59)	110% OF NOMINAL	1
OVER VOLTAGE (59)	120% OF NOMINAL	.16
OVERCURRENT (51G)	10A	PER IEC CURVE
OVERCURRENT (51C)	30A	PER IEC CURVE

ANTI-ISLANDING LETTER:

June 25, 2018

XGI 1500 – National Grid Anti-Islanding Information

Identify the manufacturer:	Yaskawa – Solectria Solar
Identify the model:	XGI 1500-166, XGI 1500-125
Contact information for manufacturer contact:	Eric Every Product Manager Solectria Renewables, LLC 978-683-9700 x137 eric.every@solectria.com
Identify if the inverter is 3-phase or 1-phase:	3 Phase
Provide brief description of island detection method proposed:	Perturbation is applied by injecting a small amount of reactive power (or phase angle) into its output current during every cycle. The magnitude of the perturbation increases if the inverter detects an island condition.
Does the inverter employ active or passive islanding detection? Provide documentation confirming that the islanding detection is "turned on" in the proposed inverter:	Active. The anti-islanding detection algorithm is hardcoded into the inverter operating firmware and cannot be disabled or "turned off" by the user.
For active islanding detection, various methods are available in the market. Identify the type of detection proposed. Is the method based on Sandia Frequency Shift, Sandia Voltage Shift, Sandia Impedance Detection, or Other? If Other, specify:	The active islanding detection algorithm is based on the Sandia Frequency Shift Detection methodology.
Does the active islanding detection utilize positive feedback?	Yes
If utilizing positive feedback, does the island detection employ a uni-directional or bi-directional perturbation?	Bi-directional
Does the inverter use an isolation transformer?	No
If yes, what is the low voltage phase to neutral voltage?	N/A
How is the AC output voltage limited? Specifically, how do the inverter controls limit the AC output voltage when generation exceeds available load?	The inverter detects the AC voltage and converts available DC power to AC when the AC voltage is in normal range. Inverters do not limit the AC output voltage. Instead, if the AC voltage is higher than threshold, inverters stop operation (cease to energize) according to IEEE1547 standards.

SOLECTRIA SOLAR

Yaskawa Solectria Solar
360 Merrimack Street
Lawrence, MA 01843
solectria.com

1-978-683-9700
Email: inverters@solectria.com

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YASKAWA

INVERTER SETTINGS:

January 16, 2019

RE: Voltage and Frequency Setpoints for XGI 1500-125/125-UL, XGI 1500-125/150-UL, XGI 1500-150/166-UL and XGI 1500-166/166-UL

To Whom It May Concern:

Solectria XGI 1500-125/125-UL, XGI 1500-125/150-UL, XGI 1500-150/166-UL and XGI 1500-166/166-UL utility interactive inverters will cease power production in the event of abnormal grid conditions. These voltage and frequency setpoints adhere to IEEE1547a-2014, which has the default setpoints and range of adjustability specified below:

Voltage Range (p.u.)	Default Clearing Time (s)	Clearing Time: adjustable up to and including (s)
V < 0.45	0.16	0.16
0.45 <= V < 0.60	1	11
0.60 <= V < 0.88	2	21
1.1 < V < 1.2	1	13
V >= 1.2	0.16	0.16

Response to Abnormal AC Voltage

Protective Function	Default Settings		Ranges of Adjustability	
	Frequency (Hz)	Clearing Time (s)	Frequency (Hz)	Clearing Time: adjustable up to and including (s)
81U-1	f < 57.0	0.16	56 – 60	10
81U-2	f < 59.5	2	56 – 60	300
81O-1	f > 60.5	2	60 – 64	300
81O-2	f > 62	0.16	60 – 64	10

Response to Abnormal Frequency

At the request of the utility the adjustable settings specified can be changed through a password-protected menu on the user interface. Upon grid disturbances the inverter will wait 5 minutes after the grid voltage and frequency return to nominal values before attempting to reconnect. Please refer to the XGI 1500 Installation and Operations Manual for additional information.

Sincerely,

Emily Hwang | Applications Engineering Manager
+1 978.638.9700 | emily.hwang@solectria.com

SOLECTRIA SOLAR

Yaskawa Solectria Solar
360 Merrimack Street
Lawrence, MA 01843
solectria.com

1-978-683-9700
Email: inverters@solectria.com

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YASKAWA

UL1741SA LISTING:

intertek
Total Quality. Assured.

AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant: Solectria Renewables LLC
360 Merrimack Street
Bldg 9, Floor 2
LAWRENCE, MA 01843
USA
Contact: Wei Zhou (primary)
Jihua Ma (alternate)
Phone: (978) 883-9700
FAX: (978) 883-9702
Email: wei.zhou@solectria.com
jihua.ma@solectria.com

Manufacturer: Yaskawa America Inc
1067 Johnson Drive
Buffalo Grove, IL 60089
USA
Contact: Arthur Foltz (primary)
Joe Kloczkowski (alternate)
Phone: 847-887-7555 (primary)
414-856-2501
FAX: arthur.foltz@yaskawa.com
joe.kloczkowski@yaskawa.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Cortland NY 13045
Control Number: 5010838 Authorized by: [Signature] for Dean Davidson, Certification Manager

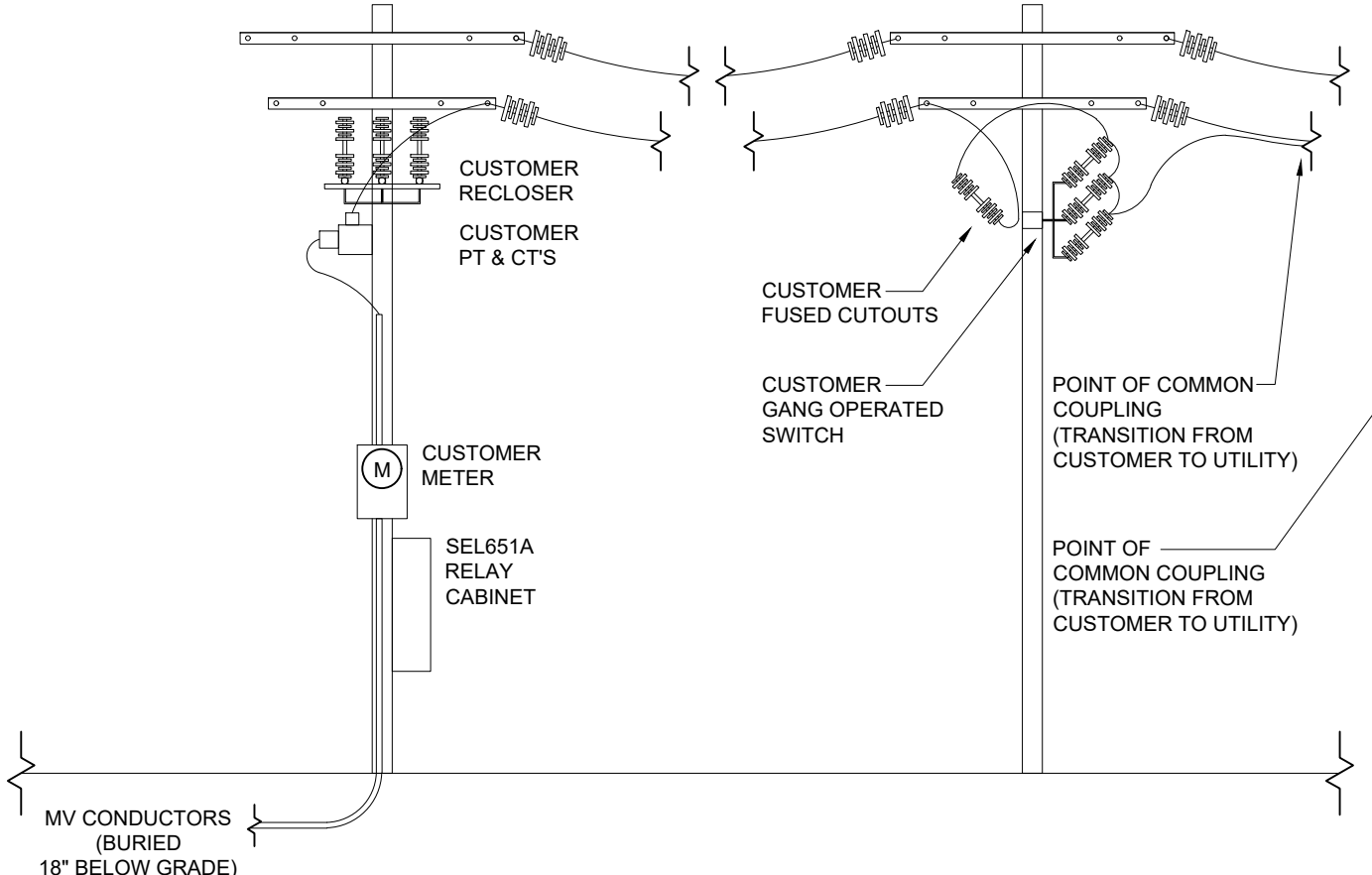
Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3551 or 847-439-5667 Fax 312-293-1672

Standard(s): Inverters, Converters, Controllers and Interconnection System Equipment For Use With Distributed Energy Resources (UL 1741.2010 Ed 2+R.15Feb2018)
Product: Grid Interactive PV Inverter
Brand Name: Yaskawa Solectria Solar
Models: XGI 1500-125/125, XGI 1500-125/150, XGI 1500-150/166, XGI 1500-166/166

ATM for Report 103561512CRT-001c

ATM Issued: 31-Aug-2018
ED 16.3.15 (20-Apr-17) Mandatory

HYPOTHETICAL INTER-CONNECTION ELEVATION DETAIL:
SCALE: N/A



PHOTOVOLTAIC PROJECT INFORMATION:

639.90 KW (DC) / 500.00 KW (AC)
PV UTILITY INTERACTIVE SYSTEM

STONINGTON - A3 PROJECT
35 TAUGWONK SPUR RD.
STONINGTON, CT 06378
AHJ: STONINGTON
UTILITY: EVERSOURCE

LAT/LONG: 41° 23' 18.33" N / 71° 53' 30.74" W
ELEVATION: ±195 FT
IRRADIANCE: ±4.77 KWH / M² / DAY

ASHRAE AVG LOW TEMP: -9.4°F / -23°C
ASHRAE AVG HIGH TEMP: 89.6°F / 32°C

PROJECT NUMBER:

446-14

PROJECT SHEET:

E-3

SHEET TITLE:

AC COLLECTION SYSTEM
(1-LINE DIAGRAM)



PROJECT DEVELOPER:

GREEN SKIES
(A CLEAN FOCUS COMPANY)
180 JOHNSON ST
MIDDLETOWN, CT 06457
PHONE: 860.398.5408
EMAIL: INFO@GREENSKIES.COM



SOLAR PV CONSULTANT:

RENEWABLE DESIGN SOLUTIONS
10945 ESTATE LANE
SUITE E-105
DALLAS, TX 75238
PHONE: 214.564.9535
WWW.RENEWABLEDESIGNSOLUTIONS.COM

ELECTRICAL ENGINEER:

JOE GIGANTIello PE (ELECTRICAL)
PHONE: 267.882.5393
EMAIL: JGIGANTIello@RDSSOLAR.COM



10/04/19

10% DESIGN PHASE
DOCUMENTS. NOT FOR
CONSTRUCTION OR BIDDING
PURPOSES. FOR UTILITY
SUBMITTAL ONLY

REVIEWED BY: J. GIGANTIello

DATE: 09 / 25 / 2019

REVISED:

1.	N/A
2.	N/A
3.	N/A
4.	N/A
5.	N/A

SCALE: N/A

PAPER SIZE: 24" x 36"

PV ARRAY: 639.90 KW (DC) / 500.00 KW (AC)

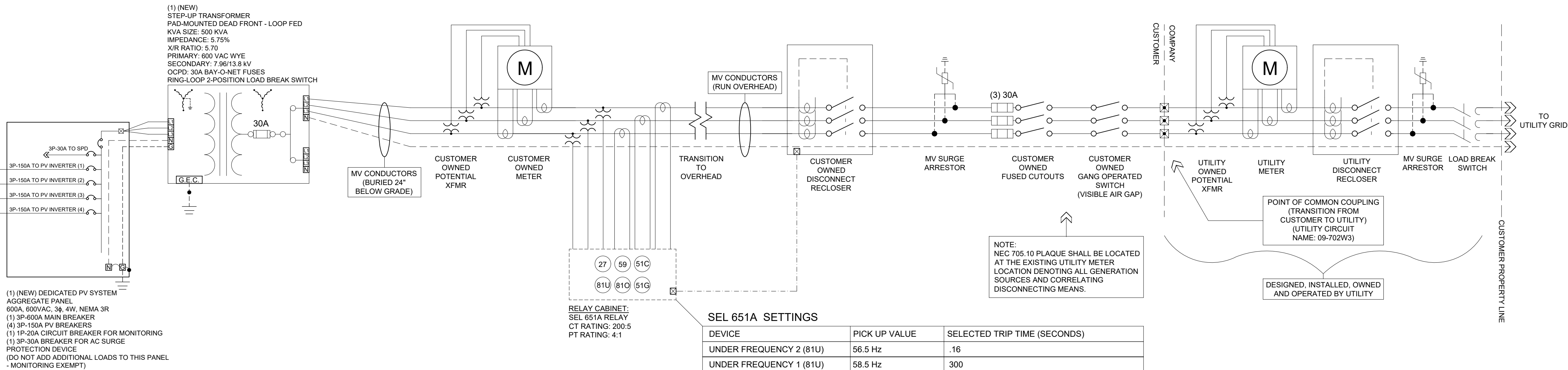
MODULES: (1620) LG SOLAR LG395N2W-A5 MONO 395W MODULES
STRING DESIGN: (27) MODULES PER SOURCE CIRCUIT
INVERTERS: (4) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS

RACKING: RBI FIXED TILT RACKING SYSTEM
TILT ANGLE: 25° DEG.
AZIMUTH: 180° DEG. - DUE SOLAR SOUTH
INTER-ROW SPACING: 12'-0"
DC / AC RATIO: 1.28 : 1

(NEW) PHOTOVOLTAIC DC COLLECTION SYSTEM

PV ARRAY: 639.90 KW (DC) / 500.00 KW (AC)

MODULES: (1620) LG SOLAR LG395N2W-A5 MONO 395W MODULES
INVERTERS: (4) SOLECTRIA XGI1500-125/125 (125kW / 125kVA AC) UTILITY INTERACTIVE INVERTERS



RELAY CABINET:
SEL 651A RELAY
CT RATING: 200.5
PT RATING: 4:1

SEL 651A SETTINGS

DEVICE	PICK UP VALUE	SELECTED TRIP TIME (SECONDS)
UNDER FREQUENCY 2 (81U)	56.5 Hz	.16
UNDER FREQUENCY 1 (81U)	58.5 Hz	300
OVER FREQUENCY 1 (81O)	61.2 Hz	300
OVER FREQUENCY 2 (81O)	62 Hz	.16
UNDER VOLTAGE (27)	50% OF NOMINAL	.16
UNDER VOLTAGE (27)	88% OF NOMINAL	2
OVER VOLTAGE (59)	110% OF NOMINAL	1
OVER VOLTAGE (59)	120% OF NOMINAL	.16
OVERCURRENT (51G)	10A	PER IEC CURVE
OVERCURRENT (51C)	30A	PER IEC CURVE

ANTI-ISLANDING LETTER:

June 25, 2018

XGI 1500 – National Grid Anti-Islanding Information

Identify the manufacturer:	Yaskawa – Solectria Solar
Identify the model:	XGI 1500-166, XGI 1500-125
Contact information for manufacturer contact:	Eric Every Product Manager Solectria Renewables, LLC 978-683-9700 x137 eric.every@solectria.com
Identify if the inverter is 3-phase or 1-phase:	3 Phase
Provide brief description of island detection method proposed:	Perturbation is applied by injecting a small amount of reactive power (or phase angle) into its output current during every cycle. The magnitude of the perturbation increases if the inverter detects an island condition.
Does the inverter employ active or passive islanding detection? Provide documentation confirming that the islanding detection is "turned on" in the proposed inverter:	Active. The anti-islanding detection algorithm is hardcoded into the inverter operating firmware and cannot be disabled or "turned off" by the user.
For active islanding detection, various methods are available in the market. Identify the type of detection proposed. Is the method based on Sandia Frequency Shift, Sandia Voltage Shift, Sandia Impedance Detection, or Other? If Other, specify:	The active islanding detection algorithm is based on the Sandia Frequency Shift Detection methodology.
Does the active islanding detection utilize positive feedback?	Yes
If utilizing positive feedback, does the island detection employ uni-directional or bi-directional perturbation?	Bi-directional
Does the inverter use an isolation transformer?	No
If yes, what is the low voltage phase to neutral voltage?	N/A
How is the AC output voltage limited? Specifically, how do the inverter controls limit the AC output voltage when generation exceeds available load?	The inverter detects the AC voltage and converts available DC power to AC when the AC voltage is in normal range. Inverters do not limit the AC output voltage. Instead, if the AC voltage is higher than threshold, inverters stop operation (cease to energize) according to IEEE1547 standards.

INVERTER SETTINGS:

January 16, 2019

RE: Voltage and Frequency Setpoints for XGI 1500-125/125-UL, XGI 1500-125/150-UL, XGI 1500-150/166-UL and XGI 1500-166/166-UL

To Whom It May Concern:

Solectria XGI 1500-125/125-UL, XGI 1500-125/150-UL, XGI 1500-150/166-UL and XGI 1500-166/166-UL utility interactive inverters will cease power production in the event of abnormal grid conditions. These voltage and frequency setpoints adhere to IEEE1547a-2014, which has the default setpoints and range of adjustability specified below:

Voltage Range (p.u.)	Default Clearing Time (s)	Clearing Time: adjustable up to and including (s)
$V < 0.45$	0.16	0.16
$0.45 \leq V < 0.50$	1	11
$0.50 \leq V < 0.58$	2	21
$0.58 \leq V < 1.2$	1	13
$V \geq 1.2$	0.16	0.16

Response to Abnormal AC Voltage

Protective Function	Default Settings		Ranges of Adjustability	
	Frequency (Hz)	Clearing Time (s)	Frequency (Hz)	Clearing Time: adjustable up to and including (s)
81U-1	$f < 57.0$	0.16	56 – 60	10
81U-2	$f < 59.5$	2	56 – 60	300
81O-1	$f > 60.5$	2	60 – 64	300
81O-2	$f > 62$	0.16	60 – 64	10

Response to Abnormal Frequency

At the request of the utility the adjustable settings specified can be changed through a password-protected menu on the user interface. Upon grid disturbances the inverter will wait 5 minutes after the grid voltage and frequency return to nominal values before attempting to reconnect. Please refer to the XGI 1500 Installation and Operations Manual for additional information.

Sincerely,

Emily Hwang | Applications Engineering Manager
+1 978.638.9700 | emily.hwang@solectria.com

UL1741SA LISTING:

intertek
Total Quality Assurance.

AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listed model(s) identified on the correlation page of the Listing Report.

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Applicant: Solectria Renewables LLC
360 Merrimack Street
Bldg 9, Floor 2
LAWRENCE, MA 01843
Country: USA
Contact: Wei Zhou (primary)
Jihua Ma (alternate)
Phone: (978) 683-9700
FAX: (978) 933-9702
Email: wei.zhou@solectria.com
jihua.ma@solectria.com

Manufacturer: Yaskawa America Inc
1067 Johnson Drive
Buffalo Grove, IL 60089
Country: USA
Contact: Arthur Foltz (primary)
Joe Kleczkowski (alternate)
Phone: 847-587-7555 (primary)
414-856-2501
FAX: arthur_foltz@yaskawa.com
joe_kleczkowski@yaskawa.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Cortland NY 13045
Control Number: 5010838
Authorized by: [Signature] for Dean Davidson, Certification Manager

ETL US
Intertek

This document supersedes all previous Authorizations to Mark for the noted Report Number.

This Authorization to Mark is for the exclusive use of Intertek's Client and is provided pursuant to the Certification agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability, and the Client is responsible for the accuracy of the information provided to Intertek. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability, and the Client is responsible for the accuracy of the information provided to Intertek. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability, and the Client is responsible for the accuracy of the information provided to Intertek.

Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667 Fax 312-293-1672

Standard(s): Inverters, Converters, Controllers And Interconnection System Equipment For Use With Distributed Energy Resources (UL 1741:2010 Ed.2-R.15F-a62018)
Product: Grid Interactive PV Inverter
Brand Name: Yaskawa Solectria Solar
Models: XGI 1500-125/125, XGI 1500-125/150, XGI 1500-150/166, XGI 1500-166/166

ATM for Report 103561512CRT-001c

ATM Issued: 31-Aug-2018
ED 16.3.18 (20-Apr-17) Mandatory

PHOTOVOLTAIC PROJECT INFORMATION:

639.90 KW (DC) / 500.00 KW (AC)
PV UTILITY INTERACTIVE SYSTEM

STONINGTON - A3 PROJECT
35 TAUGWONK SPUR RD.
STONINGTON, CT 06378
AHJ: STONINGTON
UTILITY: EVERSOURCE

LAT/LONG: 41° 23' 18.33" N / 71° 53' 30.74" W
ELEVATION: ±195 FT
IRRADIANCE: ±4.77 KWH / M² / DAY

ASHRAE AVG LOW TEMP: -9.4°F / -23°C
ASHRAE AVG HIGH TEMP: 89.6°F / 32°C

PROJECT NUMBER:

446-14

PROJECT SHEET:

E-4

SHEET TITLE:

AC COLLECTION SYSTEM
(3-LINE DIAGRAM)



PROJECT DEVELOPER:

GREEN SKIES
(A CLEAN FOCUS COMPANY)
180 JOHNSON ST
MIDDLETOWN, CT 06457
PHONE: 860.398.5408
EMAIL: INFO@GREENSKIES.COM



SOLAR PV CONSULTANT:

RENEWABLE DESIGN SOLUTIONS
10945 ESTATE LANE
SUITE E-105
DALLAS, TX 75238
PHONE: 214.564.9535
WWW.RENEWABLEDESIGNSOLUTIONS.COM

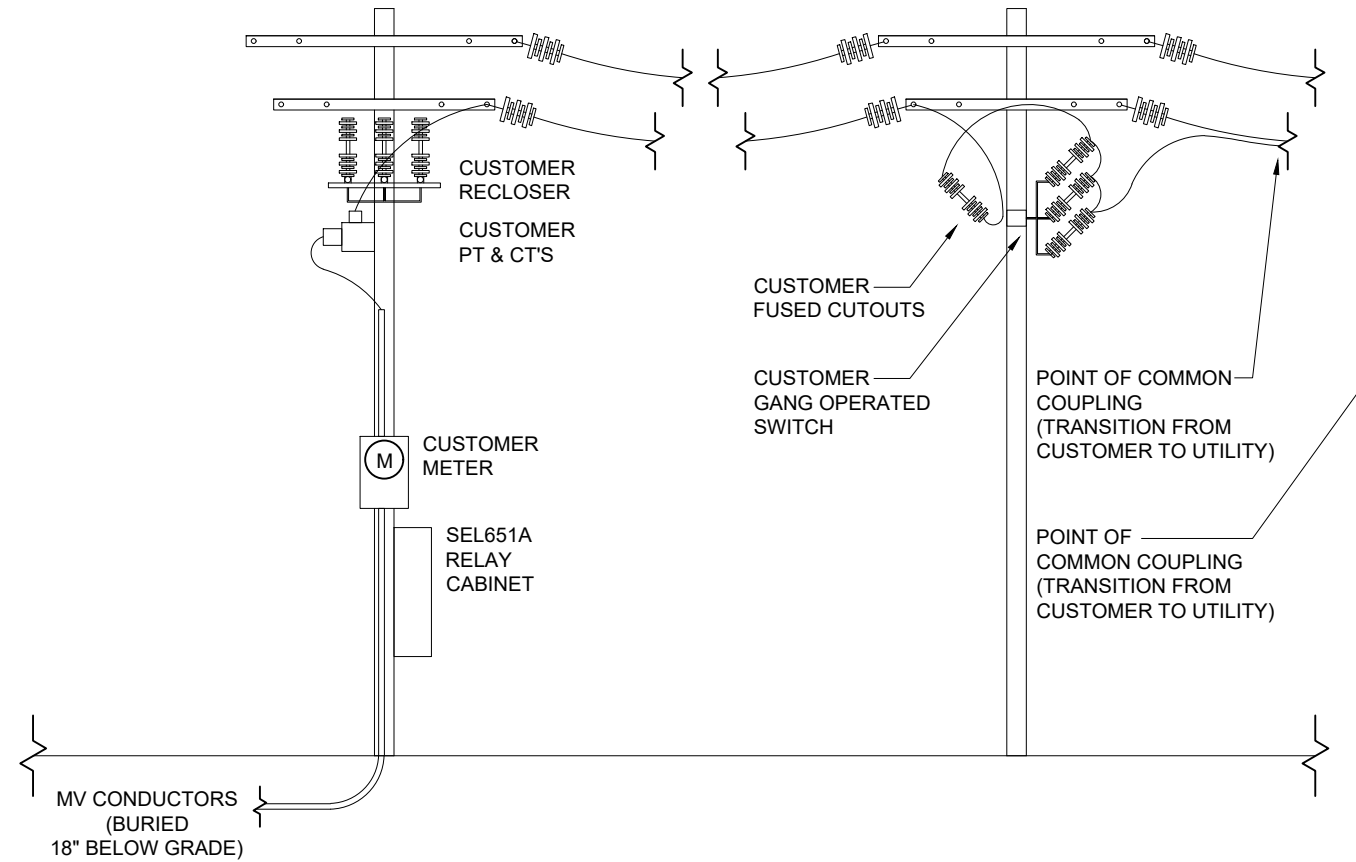
ELECTRICAL ENGINEER:

JOE GIGANTIello PE (ELECTRICAL)
PHONE: 267.882.5393
EMAIL: JGIGANTIello@RDSOLAR.COM



10/04/19

HYPOTHETICAL INTER-CONNECTION ELEVATION DETAIL:
SCALE: N/A



10% DESIGN PHASE
DOCUMENTS. NOT FOR
CONSTRUCTION OR BIDDING
PURPOSES. FOR UTILITY
SUBMITTAL ONLY

REVIEWED BY: J. GIGANTIello

DATE: 09 / 25 / 2019

REVISED:

1.	N/A
2.	N/A
3.	N/A
4.	N/A
5.	N/A

SCALE: N/A

PAPER SIZE: 24" x 36"