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2517 LONG RD

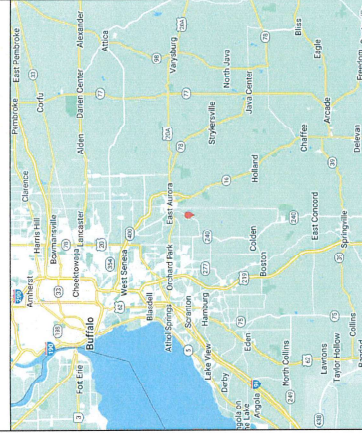
GRAND ISLAND, NY 14072, USA

David C. Hernandez

Digitally signed by David C. Hernandez
Date: 2023.10.04 18:32:33 -04:00



STATE OF NEW YORK
DAVID C. HERNANDEZ
PROFESSIONAL ENGINEER
LICENSE NO. 13003
EXPIRES 12/31/2026

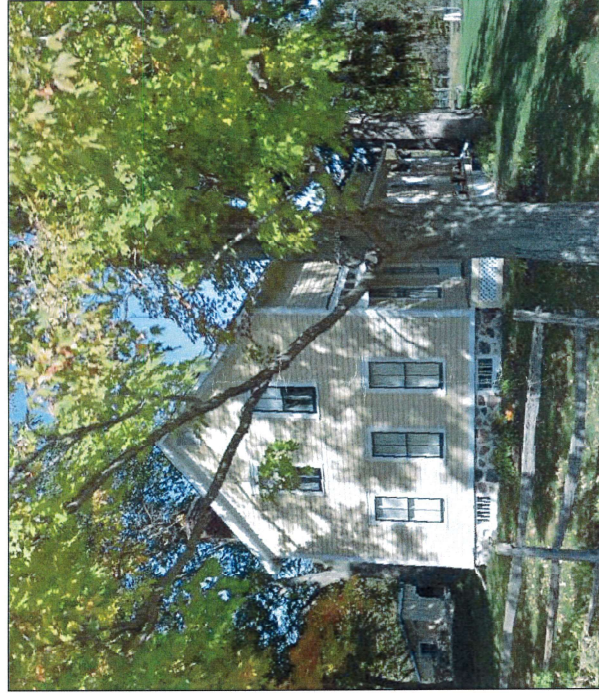


RESIDENTIAL SOLAR PHOTOVOLTAIC SYSTEM

1204 BLAKELEY RD

TOWN OF AURORA, NY 14052

7.500 kW DC-STC / 6.000 kW-AC
04/OCT/23



SYSTEM SPECIFICATIONS

SYSTEM SIZE: 7.500 KW
MODULE: SILFAB SIL-500-HM 600W
NUMBER OF PANELS: 15
INVERTER: SE6000-I-US (240V)
OPTIMIZER: P505
RACKING SYSTEM: SOLAR FOUNDATIONS

AHJ: TOWN OF AURORA, NY

UTILITY: NYSEG
GOVERNING CODE:
2020 RCNYS
2020 BCNYS
2020 FCNYS
NEC 2017



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C1

GENERAL NOTES

THE INSTALLATION OF PV SYSTEM SHALL BE IN ACCORDANCE WITH THE MOST RECENT NATIONAL ELECTRICAL AND BUILDING CODES AND STANDARDS, AS AMENDED BY JURISDICTION

- PV SYSTEMS SHALL BE PERMITTED TO SUPPLY A BUILDING OR OTHER STRUCTURE IN ADDITION TO ANY OTHER ELECTRICAL SUPPLY SYSTEM(S) [NEC 690.4(A)]
- THE INSTALLATION OF EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE PERFORMED ONLY BY QUALIFIED PERSONS [NEC 690.4(C)]
- EXISTING PLUMBING VENTS, SKYLIGHTS, EXHAUST OUTLETS, VENTILATIONS INTAKE AIR OPENINGS SHALL NOT BE COVERED BY THE SOLAR PHOTOVOLTAIC SYSTEM
- INVERTERS, MOTOR GENERATORS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AC PHOTOVOLTAIC MODULES, SOURCE-CIRCUIT COMBINERS, AND CHARGE CONTROLLERS INTENDED FOR USE IN PV SYSTEMS SHALL BE LISTED OR FIELD LABELED FOR THE PV APPLICATION [NEC 690.4(B)]
- ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED (OR BETTER), INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES.
- ALL EQUIPMENT SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH NEC ARTICLE 250.
- SYSTEM GROUNDING SHALL BE IN ACCORDANCE WITH NEC 690.41
- FOR PV MODULES, EQUIPMENT GROUNDING CONDUCTORS SMALLER THAN 6AWG SHALL COMPLY WITH NEC 250.12(C) [NEC 690.46]
- ALL PV SYSTEM DC CIRCUIT AND INVERTER OUTPUT CONDUCTORS AND EQUIPMENT SHALL BE PROTECTED AGAINST OVERCURRENT UNLESS STATED OTHERWISE IN NEC 690.9(A)
- OVERCURRENT DEVICES USED IN PV SYSTEM DC CIRCUITS SHALL BE LISTED FOR USE IN PV SYSTEMS [NEC 690.9(B)]
- PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION IN ACCORDANCE WITH NEC 690.12
- DISCONNECTING MEANS SHALL BE LOCATED IN A VISIBLE, READILY ACCESSIBLE LOCATION OR A MAXIMUM OF 10 FEET AWAY FROM THE SYSTEM [NEC 690.13(A)]
- ALL WIRING METHODS SHALL BE IN ACCORDANCE WITH NEC 690.31
- CONNECTORS SHALL REQUIRE A TOOL TO OPEN AND BE MARKED "DO NOT DISCONNECT UNDER LOAD" OR "NOT FOR CURRENT INTERRUPTING". [NEC 690.33(E)]
- ALL GROUNDED CONDUCTORS SHALL BE PROPERLY COLOR IDENTIFIED AS WHITE. [NEC 200.6]
- PV SYSTEM CONNECTOR ON THE LOAD SIDE OF THE SERVICE DISCONNECTING MEANS OF THE OTHER SOURCE(S) AT ANY DISTRIBUTION EQUIPMENT ON THE PREMISES SHALL MEET THE FOLLOWING [NEC 705.12(B)]:

 1. EACH SOURCE CONNECTION SHALL BE MADE AT A DEDICATED CIRCUIT BREAKER OF FUSIBLE DISCONNECTING MEANS. [NEC 705.12(B)(1)]
 2. 125 PERCENT OF THE POWER SOURCE OUTPUT CIRCUIT CURRENT SHALL BE USED IN AMPACITY CALCULATIONS. [NEC 705.12(B)(2)]
 3. EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUS BAR OR CONDUCTOR SHALL BE MARKED TO INDICATE THE PRESENCE OF ALL SOURCES. [NEC 705.12(B)(3)]
 4. CIRCUIT BREAKER, IF BACK FED, SHALL BE SUITABLE FOR SUCH OPERATION [NEC 705.12(B)(4)]

- WHEN A BACKFED BREAKER IS THE METHOD OF UTILITY INTERCONNECTION, THE BREAKER SHALL BE INSTALLED AT THE OPPOSITE END OF THE BUS BAR OF THE MAIN BREAKER.
- TO REDUCE FIRE HAZARDS, DC PV SYSTEMS WILL BE EQUIPPED WITH A GROUND FAULT PROTECTION SYSTEM IN ACCORDANCE WITH NEC 690.41(B)
- WHERE GROUND-FAULT PROTECTION IS USED, THE OUTPUT OF AN INTERACTIVE SYSTEM SHALL BE CONNECTED TO THE SUPPLY SIDE OF THE GROUND FAULT PROTECTION [NEC 705.32]
- ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF NATIONAL ELECTRICAL CODE, LABEL SHALL BE METALLIC OR PLASTIC, ENGRAVED OR MACHINE PRINTED IN A CONTRASTING COLOR TO THE PLAQUE. PLAQUE SHALL BE UV RESISTANT IF EXPOSED TO SUNLIGHT
- ALL THE NEC REQUIRED WARNING SIGNS, MARKINGS, AND LABELS SHALL BE POSTED ON EQUIPMENT AND DISCONNECTS PRIOR TO ANY INSPECTIONS TO BE PERFORMED BY THE BUILDING DEPARTMENT.
- CONNECTORS SHALL BE OF LATCHING OR LOCKING TYPE, CONNECTORS THAT ARE READILY ACCESSIBLE AND OPERATING AT OVER 30 VOLTS SHALL REQUIRE TOOL TO OPEN AND MARKED "DO NOT DISCONNECT UNDER LOAD" OR "NOT FOR CURRENT INTERRUPTING". [NEC 690.33(C) & (E)(2)]
- FLEXIBLE, FINE-STRANDED CABLES SHALL BE TERMINATED ONLY WITH TERMINALS, LUGS, DEVICES, OR CONNECTORS IN ACCORDANCE WITH NEC 110.14
- WORK CLEARANCES AROUND ELECTRICAL EQUIPMENT WILL BE MAINTAINED PER NEC 110.26(A)(1), 110.26(A)(2) AND 110.26(A)(3)
- ALL EXTERIOR CONDUITS, FITTINGS AND BOXES SHALL BE RAIN-TIGHT AND APPROVED FOR USE IN WET LOCATIONS PER NEC 314.15.
- ROOFTOP MOUNTED PHOTOVOLTAIC PANELS AND MODULES SHALL BE TESTED, LISTED & IDENTIFIED IN ACCORDANCE WITH UL1703
- EACH MODULE TO BE GROUNDED USING THE SUPPLIED CONNECTION POINT PER MANUFACTURER'S REQUIREMENTS. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS ARE TO BE BONDED. IF THE EXISTING GROUNDING ELECTRODE SYSTEM CAN NOT BE VERIFIED OR IS ONLY METALLIC WATER PIPING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.
- DC CONDUCTORS SHALL BE RUN IN EMT AND SHALL BE LABELED "CAUTION DC CIRCUIT" OR EQUIV. EVERY 5 FT
- CONFIRM LINE SIDE VOLTAGE AT ELECTRIC UTILITY SERVICE PRIOR TO CONNECTING INVERTER. VERIFY SERVICE VOLTAGE IS WITHIN INVERTER VOLTAGE OPERATIONAL RANGE.
- SERVING UTILITY TO BE NOTIFIED BEFORE ACTIVATION OF PV SYSTEM.
- ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.
- THE HOMEOWNER IS RESPONSIBLE FOR ENSURING ALL EQUIPMENT OUTSIDE THE SCOPE OF WORK IS NEC COMPLIANT.

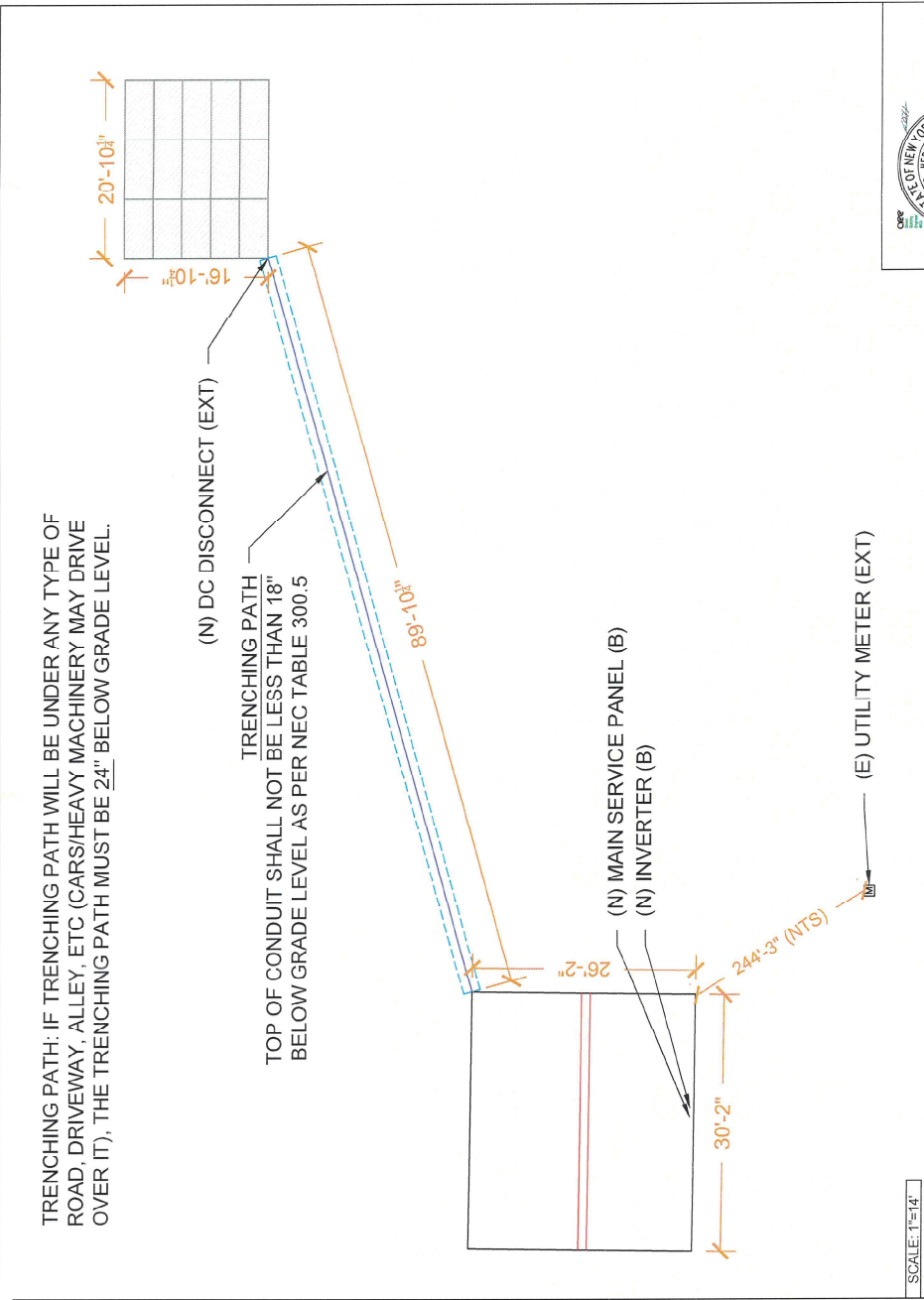
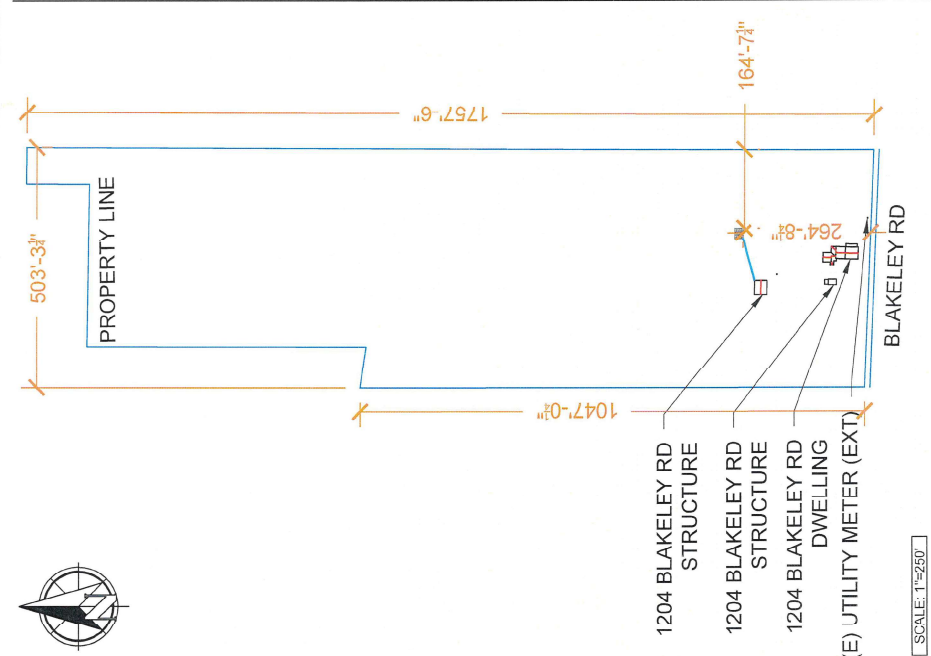


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PROJECT: 1204 BLAKELEY RD
MUNICIPALITY: TOWN OF AURORA, NY
ZIP CODE: 14052
CLIENT: JOHN HUGHES
7.500 KW DC-STC / 16.000 KW AC

AUTHOR: ---
DATE: 04/OCT/23
REV: --

GENERAL NOTES



NEAREST URGENT CARE FACILITY
 NAME:
 ADDRESS:
 PHONE NUMBER:

SAFETY PLAN:
 - INSTALLERS SHALL DRAW IN DESIGNATED SAFETY AREA AROUND HOME
 - INSTALLERS SHALL UPDATE NAME, ADDRESS, AND PHONE NUMBER OF NEAREST URGENT CARE FACILITY RELATIVE TO THE SITE BEFORE STARTING WORK

NOTES:
 - SCALE AS SHOWN
 - ALL DIMENSIONS IN FEET UNLESS OTHERWISE STATED

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SITE P-AN

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G1



ALL HARDWARE INCLUDING MOUNTING AND RACKING, TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.

GROUND-MOUNTED ARRAY
ARRAY TILT: 27°
AZM180

ARRAY MEASUREMENTS

ARRAY	LENGTH	HEIGHT	DIST. TO EAVES	DIST. TO RIDGE
ARRAY 1	20'-10.25"	18'-10.5"	N/A	N/A

TRENCHING PATH: IF TRENCHING PATH WILL BE UNDER ANY TYPE OF ROAD, DRIVEWAY, ALLEY, ETC (CARS/HEAVY MACHINERY MAY DRIVE OVER IT), THE TRENCHING PATH MUST BE 24" BELOW GRADE LEVEL.



DECIDUOUS TREES
TREETOP: 19'

DECIDUOUS TREE
TREETOP: 19'

DECIDUOUS TREES
TREETOP: 19'

DECIDUOUS TREES
TREETOP: 25'

TRENCHING REQUIRED FROM NORTHEAST CORNER OF DWELLING TO ARRAY

75° FROM NORTH

15°

89'-10"

26'-2"

30'-2"

244'-3" (NTS)

SCALE: 1"=12'

GROUND MOUNTED ARRAY
ARRAY TILT: 27°
AZIMUTHS: 180°
RACKING TYPE: SOLAR FOUNDATIONS

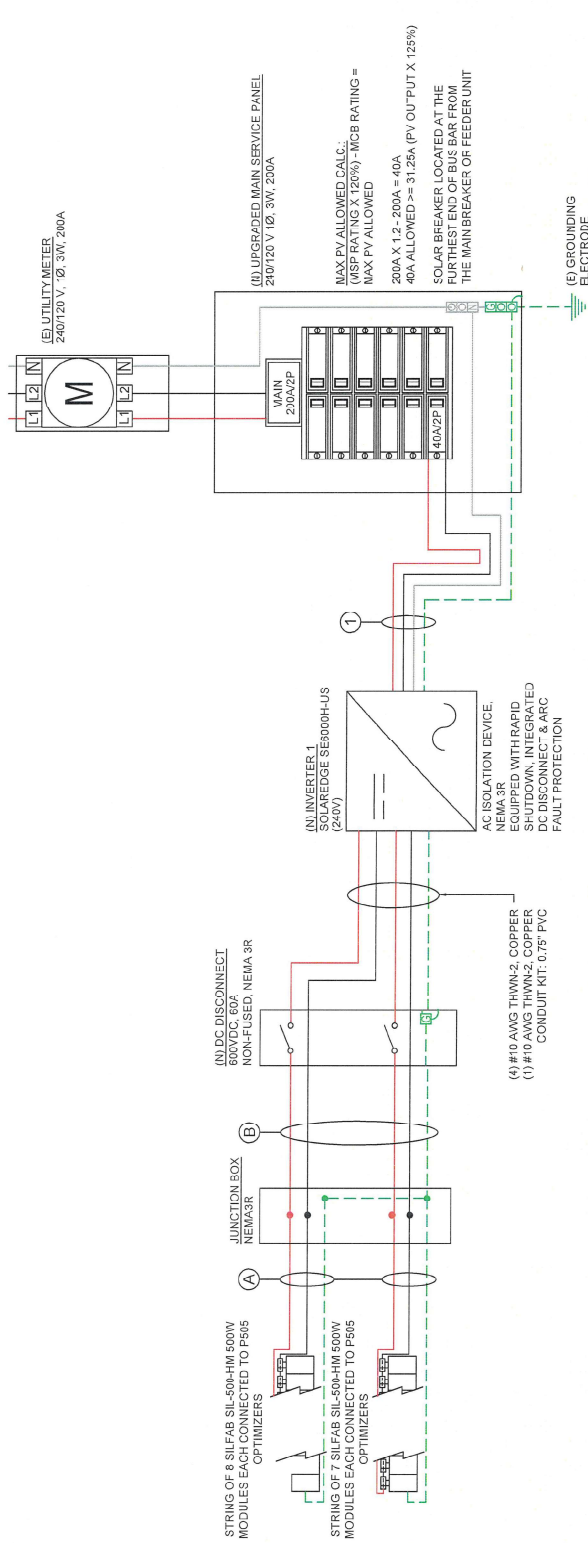
NOTES:
- SOLAR PANEL LAYOUT SUBJECT TO CHANGE ACCORDING TO EXISTING CONDITIONS
- SCALE AS SHOWN
- ALL DIMENSIONS IN FEET UNLESS OTHERWISE STATED

PANEL TYPE: SILFAB SIL-500-HM 500W
PANEL SIZE: 82.6" X 44.6"
NUMBER OF PANELS: 15
SYSTEM SIZE: 7.500 kW

PROJECT: 1204 BLAKELEY RD
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AC CONDUCTOR SCHEDULE

ID	From	To	Phase	AC Voltage	Circuit Current	80% or 100% Rated OCPD?	Circuit Current (if Present)	OCPD (if Present)	Material	Conductor Type	# of CCCs	Fill Factor	Ambient Temp.	Temp. Factor	Conductor Size @ 75°C	Conductor Ampacity	Max Ampacity @ 75°C	Derated Ampacity	# of Neutrals	Neutral Size	Ground Material	Ground Type	Ground Size	Conduit Type	Conduit Size	Conduit EMT
1	SolarEdge Inverter 1	POI	1Ø	240 V	25.0 (A)	80%	31.3 (A)	4C (A)	CU	THWN-2	2	1.00	27.6 (°C)	1.00	8 AWG	50 (A)	55 (A)	55.0 (A)	1	8 AWG	EGC	THWN-2	10 AWG			0.75 (in.)

SOLAREdge DC CONDUCTOR SCHEDULE

Number of Strings	Conductor Material	Conductor Type	Conductor Size	Fill Factor	Min. OCPD (if Required)	EGC Material	EGC Type	EGC Size	Conduit
No Limit	CU	PV Wire	10 AWG	1.00	20A	CU	BARE	EAWG	N/A - Free Air

[A] FREE AIR
*TEMPERATURE FACTOR IS BASED ON 2% DRY BULB HIGH TEMPERATURE OF 27.6°C WITH A 0°C TEMPERATURE ADDED THEREFORE RACEWAYS MUST BE AT LEAST 0.875 INCHES ABOVE ROOF AS PER NEC 310.15(B)(3)(C)
**CALCULATIONS ARE BASED ON THE LARGEST CIRCUIT CURRENT (WORST CASE SCENARIO).
***TABLE ASSUMES ONE EGC PER CONDUIT. MINIMUM ONE EGC IS REQUIRED PER INVERTER PER CONDUIT.

Number of Strings	Conductor Material	Conductor Type	Conductor Size	Fill Factor	Min. OCPD (if Required)	EGC Material	EGC Type	EGC Size	Min. EMT Size
1	CU	THWN-2	10 AWG	1.00	40.00A	CU	THWN-2	10 AWG	0.50 in.
2	CU	THWN-2	10 AWG	0.80	32.00A	CU	THWN-2	10 AWG	0.50 in.



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7.500 KW DC-STC / 16.000 KW AC

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LINE DIAGRAM



WARNING
ELECTRIC SHOCK HAZARD
TERMINALS ON BOTH THE LINE AND LOAD
SIDES MAY BE
ENERGIZED IN THE OPEN POSITION

CODE REF: NEC 690.13(B)
LOCATION: PLACE ON ALL DISCONNECTING
MEANS WHERE ENERGIZED IN AN OPEN
POSITION

WARNING
TURN OFF PHOTOVOLTAIC AC
DISCONNECT PRIOR TO
WORKING INSIDE PANEL

CODE REF: NEC 110.27(C) & OSHA 1910.147(F)
LOCATION: PLACE ON ALL COMBINER
BOX ENCLOSURES, MAIN SERVICE
DISCONNECT, BREAKER PANEL & PULL BOXES

WARNING
THIS EQUIPMENT FEED BY
MULTIPLE SOURCES

TOTAL RATING OF ALL OVERCURRENT
DEVICES EXCLUDING MAIN POWER SUPPLY
SHALL NOT EXCEED AMPACITY OF BUSBAR
CODE REF: NEC 705.12(B)(2)(3)(4)
LOCATION: PLACE THIS LABEL AT P.O.C. TO
SERVICE DISTRIBUTION EQUIPMENT
(I.E. MAIN PANEL OR SUB-PANEL) IF APPLICABLE

WARNING
THE DISCONNECTION OF THE
GROUNDED CONDUCTOR(S)
MAY RESULT IN OVERVOLTAGE
ON THE EQUIPMENT

CODE REF: NEC 690.31(I)
LOCATION: PLACE ON ALL DISCONNECTING
MEANS WHERE ENERGIZED IN AN OPEN
POSITION

WARNING
DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC
SYSTEM

CODE REF: NEC 705.12(B)(3) & 690.58
LOCATION: PLACE LABEL ON ALL EQUIPMENT
CONTAINING OVERCURRENT DEVICES IN
SERIES WITH PHOTOVOLTAIC SYSTEM
TO A BUSBAR OR CONDUCTORS SUPPLIED
FROM MULTIPLE SOURCES

WARNING
POWER SOURCE OUTPUT
CONNECTION
DO NOT RELOCATE THIS OVERCURRENT
DEVICE

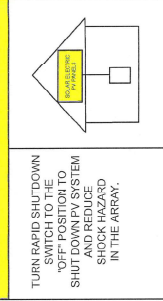
CODE REF: NEC 705.12(B)(2)(3)(4)
LOCATION: PLACE LABEL ON ALL EQUIPMENT
CONTAINING OVERCURRENT DEVICES IN
SERIES WITH PHOTOVOLTAIC SYSTEM
TO A BUSBAR OR CONDUCTORS SUPPLIED
FROM MULTIPLE SOURCES

CAUTION
PHOTOVOLTAIC SYSTEM CIRCUIT IS
BACKFEED

CODE REF: NEC 705.12(B)(4) & 690.59
LOCATION: PLACE LABEL ON ALL EQUIPMENT
CONTAINING OVERCURRENT DEVICES IN
SERIES WITH PHOTOVOLTAIC SYSTEM
TO A BUSBAR OR CONDUCTORS SUPPLIED
FROM MULTIPLE SOURCES

**RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM**

CODE REF: NEC 690.58(C)(3)
LOCATION: PLACE NO MORE THAN 1m (3FT) FROM
SHUT DOWN SWITCH



CODE REF: NEC 690.58(C)
LOCATION: PLACE AT MAIN SERVICE PANEL

**WARNING: PHOTOVOLTAIC
POWER SOURCE**

CODE REF: NEC 690.31 (C)(3) & 690.31 (C)(4)
LOCATION: PLACE ON ALL JUNCTION BOXES, EXPOSED
RACEWAYS EVERY 10'

MAXIMUM VOLTAGE
480 V
MAXIMUM CIRCUIT CURRENT
16.5 A
**MAX RATED OUTPUT
CURRENT OF DC-TO-DC
CONVERTER (IF INSTALLED)**
15 A
CODE REF: NEC 690.53
LOCATION: PLACE AT INVERTER 1

**DO NOT DISCONNECT
UNDER LOAD**

CODE REF: NEC 690.14(C) & 690.15(E)(2)
LOCATION: PLACE ON ALL DISCONNECTING MEANS
WHERE ENERGIZED IN AN OPEN POSITION

PHOTOVOLTAIC AC DISCONNECT
RATED AC OUTPUT CURRENT 20 A
NOMINAL OPERATING AC VOLTAGE 240V
CODE REF: NEC 690.54
LOCATION: PLACE AT P.O.C. TO SERVICE DISTRIBUTION
EQUIPMENT / AC DISCONNECT / PULL BOXES

**PHOTOVOLTAIC
DC DISCONNECT**

CODE REF: NEC 690.19(B)
LOCATION: PLACE ON DC DISCONNECT/COMBINER BOX

NOTES:

- 1) ALL LABELING USED OUTDOORS MUST BE ENGRAVED METAL, UV STABILIZED ENGRAVED PLASTIC OR A MATERIAL SUFFICIENTLY DURABLE TO WITHSTAND THE ENVIRONMENT INVOLVED. VALUES HAND WRITTEN OR IN WRITTEN IN MARKER ARE NOT ACCEPTABLE PER NEC 2017.
- 2) LABELS USED INDOORS MAY BE MADE OF DURABLE VINYL OR PAPER
- 3) DO NOT COVER ANY EXISTING MANUFACTURER APPLIED LABELS WITH INSTALLATION SPECIFIC LABELS
- 4) LABEL COLORS CHosen PER NFPA 70 TO 2017 DIRECTION THAT ANSI Z39-2011 BE USED
- 5) REQUIREMENTS COMPLY WITH NEC 2017
- 6) ADDITIONALLY, IT IS HIGHLY RECOMMENDED THAT THE INSTALLER ATTACH A LABEL WITH THE COMPANY NAME AND CONTACT INFORMATION AT THE INVERTER
- 7) ALL WARNING SIGNS OR LABELS SHALL COMPLY WITH NEC 110.21(B)

FORMAT:

1. WHITE LETTERING ON A RED BACKGROUND
2. MINIMUM 3/8 INCHES LETTER HEIGHT
3. ALL LETTERS SHALL BE CAPITALIZED
4. ARAL CR SIMILAR FONT (NON-FOLD)

MATERIAL:

REFLECTIVE, WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT
(USE UL-969 AS STANDARD FOR WEATHER RATING), DURABLE ADHESIVE MATERIALS



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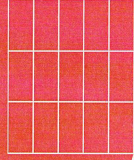
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WARNING LABELS

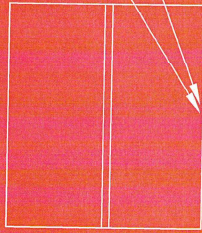


CAUTION

POWER TO THE BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



DC DISCONNECT



MAIN SERVICE PANEL
RAPID SHUTDOWN DEVICE

UTILITY METER
(DISTANCE - NTS)

[NEC 705.10] CUSTOMER SERVICE PANEL, PVI/AC DISCONNECT AND RAPID SHUTDOWN SWITCH



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PLACARD

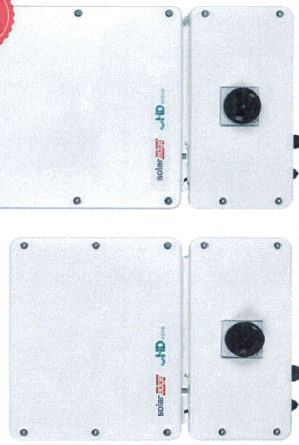
E3

INVERTERS

Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

12-25
WARRANTY



Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014, NEC 2017 and NEC 2020 per article 690.11 and 690.12
- UL1741 SA, IEC 60088, CSA C22.2, Canadian AEC1 (according to UL 1741)
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)



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INVERTER SPECIFICATIONS

Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US
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APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXHX-XXXXXXX4						
Rated AC Power Output	3000	3800	5000	6000	7600	10000	11400
Maximum AC Power Output	3000	3800	5000	6000	7600	10000	11400
AC Output @90% Min. Min-Max	✓	✓	✓	✓	✓	✓	✓
AC Output @90% Min-Max-Asia	✓	✓	✓	✓	✓	✓	✓
AC Output @80% Min-Max-Asia	✓	✓	✓	✓	✓	✓	✓
AC Frequency (Normal)	50	50	50	50	50	50	50
AC Frequency (Optional)	60	60	60	60	60	60	60
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5
Maximum Continuous Output Current @208V	-	-	-	-	-	-	-
Power Factor	1	1	1	1	1	1	1
Grid Threshold	1	1	1	1	1	1	1
UL954 Monitoring, Isolating Protection, Country, Configurable Thresholds	Yes	Yes	Yes	Yes	Yes	Yes	Yes

INPUT							
Maximum DC Power @240V	4650	5920	7750	9300	11800	15000	17050
Maximum DC Power @208V	4650	5920	7750	9300	11800	15000	17050
Transformer-less, Ungrounded	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Maximum Input Voltage	480	480	480	480	480	480	480
Maximum Inverter Current @50V	8.5	10.5	13.5	16.5	20	27	30.5
Maximum Inverter Current @208V	-	-	-	-	-	-	-
DC Input Short-Circuit Current	51	51	51	51	51	51	51
Inverter Trip Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ground Fault Detection	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Maximum Inverter Efficiency	99	99	99	99	99	99	99
CEC Weighted Efficiency	98	98	98	98	98	98	98
Negative Power Consumption	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5

ADDITIONAL FEATURES							
Supported Communication Interfaces	RS-485, Ethernet, ZigBee (optional), Cellular (optional)						
Revenue Grade Metering, ANSI C12.20	Optional						
Consumption Metering	Optional						
Inverter Commissioning	Via Smartphone using SolarEdge SetApp						
UL954 Monitoring, Isolating Protection, Country, Configurable Thresholds	Yes						
UL1741 SA, IEC 60088, CSA C22.2, Canadian AEC1 (according to UL 1741)	Yes						

STANDARD COMPLIANCE							
Safety	UL1741, UL1741 SA, IEC 60088, CSA C22.2, Canadian AEC1 (according to UL 1741)						
Grid Connection Standards	IEEE1547, IEEE1547 SA, IEEE1547 SA-2, IEEE1547 SA-3, IEEE1547 SA-4, IEEE1547 SA-5, IEEE1547 SA-6, IEEE1547 SA-7, IEEE1547 SA-8, IEEE1547 SA-9, IEEE1547 SA-10, IEEE1547 SA-11, IEEE1547 SA-12, IEEE1547 SA-13, IEEE1547 SA-14, IEEE1547 SA-15, IEEE1547 SA-16, IEEE1547 SA-17, IEEE1547 SA-18, IEEE1547 SA-19, IEEE1547 SA-20, IEEE1547 SA-21, IEEE1547 SA-22, IEEE1547 SA-23, IEEE1547 SA-24, IEEE1547 SA-25, IEEE1547 SA-26, IEEE1547 SA-27, IEEE1547 SA-28, IEEE1547 SA-29, IEEE1547 SA-30, IEEE1547 SA-31, IEEE1547 SA-32, IEEE1547 SA-33, IEEE1547 SA-34, IEEE1547 SA-35, IEEE1547 SA-36, IEEE1547 SA-37, IEEE1547 SA-38, IEEE1547 SA-39, IEEE1547 SA-40, IEEE1547 SA-41, IEEE1547 SA-42, IEEE1547 SA-43, IEEE1547 SA-44, IEEE1547 SA-45, IEEE1547 SA-46, IEEE1547 SA-47, IEEE1547 SA-48, IEEE1547 SA-49, IEEE1547 SA-50, IEEE1547 SA-51, IEEE1547 SA-52, IEEE1547 SA-53, IEEE1547 SA-54, IEEE1547 SA-55, IEEE1547 SA-56, IEEE1547 SA-57, IEEE1547 SA-58, IEEE1547 SA-59, IEEE1547 SA-60, IEEE1547 SA-61, IEEE1547 SA-62, IEEE1547 SA-63, IEEE1547 SA-64, IEEE1547 SA-65, IEEE1547 SA-66, IEEE1547 SA-67, IEEE1547 SA-68, IEEE1547 SA-69, IEEE1547 SA-70, IEEE1547 SA-71, IEEE1547 SA-72, IEEE1547 SA-73, IEEE1547 SA-74, IEEE1547 SA-75, IEEE1547 SA-76, IEEE1547 SA-77, IEEE1547 SA-78, IEEE1547 SA-79, IEEE1547 SA-80, IEEE1547 SA-81, IEEE1547 SA-82, IEEE1547 SA-83, IEEE1547 SA-84, IEEE1547 SA-85, IEEE1547 SA-86, IEEE1547 SA-87, IEEE1547 SA-88, IEEE1547 SA-89, IEEE1547 SA-90, IEEE1547 SA-91, IEEE1547 SA-92, IEEE1547 SA-93, IEEE1547 SA-94, IEEE1547 SA-95, IEEE1547 SA-96, IEEE1547 SA-97, IEEE1547 SA-98, IEEE1547 SA-99, IEEE1547 SA-100						
Emissions	FCC Part 15 Class B						

INSTALLATION SPECIFICATIONS							
AC Output/Conductor Size / AWG Range	1" Minimum / 1/2" to 2" (1" to 4" AWG)						
DC Input Conductor Size / AWG Range	1" Minimum / 1/2" to 2" (1" to 4" AWG)						
Dimensions (W x H x D) / mm	177 x 146 x 68 / 6.97 x 5.75 x 2.7						
Weight (kg) / lbs	22.7 / 50						
Installation Safety Switch (RMS)	251 / 114						
Maximum Safety Switch Rating	251 / 114						
Operating Temperature Range	-40 to 140 / -40 to 104						
Protection Rating	IP65						
Protection Class	IP65						

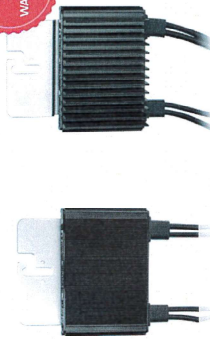
A2



POWER OPTIMIZER

Power Optimizer For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505



PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single hot protection (AFC) and Photovoltaic Rapid Shutdown System (PVRSS)
- Meets NEC requirements for arc fault protection (AFC) and Photovoltaic Rapid Shutdown System (PVRSS)
- Modular-level voltage shutdown for installer and firefighter safety

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SOLAR BY CIR
PHONE: +1 716-362-5000
WWW.SOLARBYCIR.COM

PROJECT: 1204 BLAKELEY RD
MUNICIPALITY: TOWN OF AURORA, NY
ZIP CODE: 14052
CLIENT: JOHN HUGHES
7,500 KW DC-STC / 6,000 KW AC

AUTHOR: ---
DATE: 04/0CT/23
REV: -

OPTIMIZER SPECIFICATIONS

Power Optimizer For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505

Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high-power 60 and 72-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for high-power 96-cell modules)	P401 (for high-power 96-cell modules)	P405 (for high-voltage modules)	P485 (for high-voltage modules)	P505 (for higher-current modules)
Rated Input DC Power ⁽¹⁾	330	340	370	400	400	405	485	505
Rated Maximum Input Voltage	48	60	60	60	60	125 ⁽²⁾	125 ⁽²⁾	83 ⁽²⁾
MPP Operating Range	8-48	8-60	8-60	8-60	8-60	115-105	115-105	125-83
Maximum Short-Circuit Current	11	80	80	80	80	8	8	14
Maximum Efficiency	99.5							
Operating Temperature Range	-40 to 60 °C							
Operating Humidity	5 to 95% RH							
Operating Altitude	0 to 3000 m							

INPUT

Rated Input DC Power ⁽¹⁾	330	340	370	400	400	405	485	505
Rated Maximum Input Voltage	48	60	60	60	60	125 ⁽²⁾	125 ⁽²⁾	83 ⁽²⁾
MPP Operating Range	8-48	8-60	8-60	8-60	8-60	115-105	115-105	125-83
Maximum Short-Circuit Current	11	80	80	80	80	8	8	14
Maximum Efficiency	99.5							
Operating Temperature Range	-40 to 60 °C							
Operating Humidity	5 to 95% RH							
Operating Altitude	0 to 3000 m							

OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREGE INVERTER)

Maximum Output Current	5
Maximum Output Voltage	85

OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREGE INVERTER OR SOLAREGE INVERTER OFF)

Maximum Output Current	14/31
------------------------	-------

STANDARD COMPLIANCE

EMC	FCC Part 15 Class B, ICES 005, EN 61000-6-2, EN 61000-6-3
Safety	IEC 60320-1 (Class II safety), UL 1741
Moving	UL 98 V2, UL Recognized
RoHS	Yes

INSTALLATION SPECIFICATIONS

Maximum Allowed System Configuration	1000
Compatible Inverters	All SolarEdge Single-Phase and Three-Phase Inverters
Dimensions (H x L x W)	89 x 153 x 25.5 / 89 x 153 x 25.5 / 89 x 159 x 48.5 / 51.6 x 119
Weight (including label)	7.5 / 16.6 / 17.5 / 16.6 / 16
Input Connector	MC4 ⁽⁴⁾
Input Wire Stranding	016 / 0.32
Output Wire Type / Connector	EN60320 / MC4
Output Wire Length	12 / 3.9
Operating Temperature Range ⁽⁵⁾	-40 to +85 °C (-40 to +85 °F)
Operating Humidity	5 to 95% RH
Operating Altitude	0 to 3000

(1) Rated power of the module at STC will be exceeded by a factor of 1.1 for 1000 hours per year. (2) Maximum input voltage is limited to 150VDC. (3) For 60-cell modules, the maximum input voltage is 150VDC. (4) For 72-cell modules, the maximum input voltage is 150VDC. (5) For ambient temperatures below -40°C / -40°F, power derating is applied. Refer to Inverter Operator's Manual for more details.

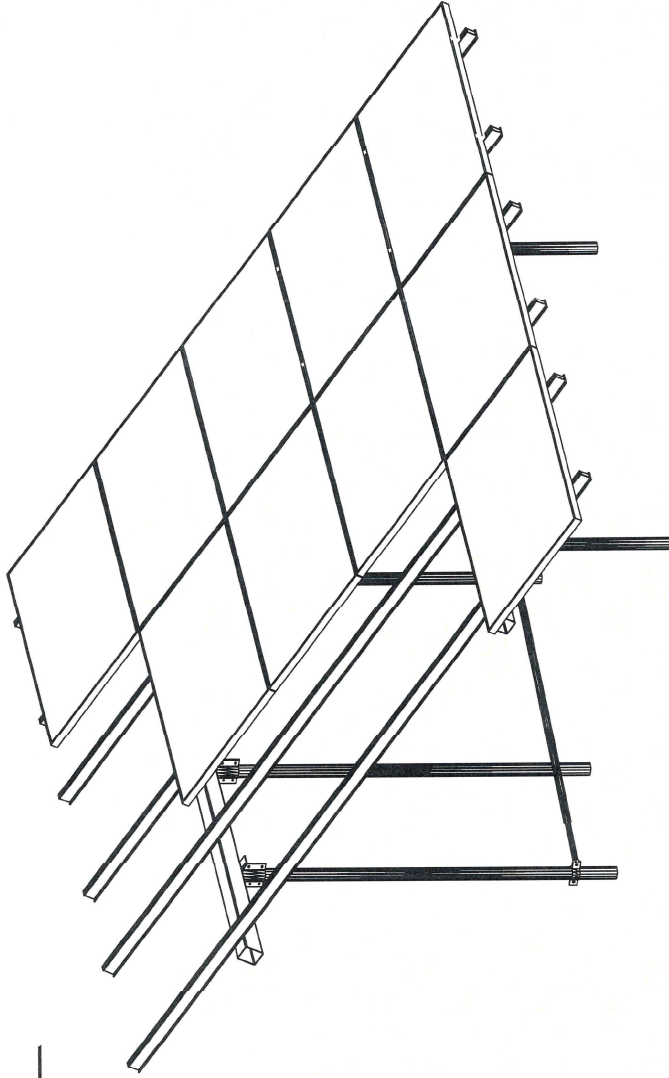
PV System Design Using a SolarEdge Inverter ⁽¹⁾	Single Phase HD-Wave	Single Phase 200V Grid	Three Phase for 200V Grid	Three Phase for 277/480V Grid
Maximum String Length (Power Optimizers)	6	8	10	18
Maximum String Length (without Connectors)	25	25	25	50 ⁽²⁾
Maximum Power per String	5700 (6000) W (US)	5700	6000 ⁽³⁾	12750 ⁽³⁾

(1) For a single string using SolarEdge inverters with the PV modules, the maximum string length is 25 modules. (2) For three-phase systems, the maximum string length is 50 modules. (3) For three-phase systems, the maximum power per string is 12750W. (4) For three-phase systems, the maximum power per string is 12750W.

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PLAN VIEW
N.T.S.



ISOMETRIC VIEW
N.T.S.

Site Design Conditions

Basic Wind Speed: 110 MPH
 (Risk Category II)
 Basic Wind Speed: 101 MPH
 (Risk Category I)
 Exposure Category: C
 Ground Snow Load: 53 PSF
 Flat Roof Snow Load: N/A
 (if applicable)
 Site Contour: <5 Degree Slope
 Max. Leg Axial Bearing: 4,160 lbs
 Max. Leg Uplift: 1,905 lbs
 Max. Lateral Resistance: 1,555 lbs
 Top Rail Max. Loading: 150.0 plf
 Helical Pile Depth: 60" Min
 Lateral Resistance Pile Size: Not Req'd
 New design has been performed in accordance with the 2020 Building Code of International Building Code with state directed modifications.
 Net design pressures were calculated in accordance with ASCE 7-16 section 27.4.2, "Open Buildings with Monoslope, Pitched, or Traighed Roofs". All load cases were evaluated in determining the limiting design conditions. The data table above provides the results for the limiting design case. The design wind direction is representative of the worst case loading on the structure. All legs in the structure are designed to meet the maximum load conditions.

51x30 Sub-Array Design Conditions

Front Leg Height: 38 1/2"
 Rear Leg Height: 97 1/4"
 North-South Leg Spacing: 120 1/2"
 West Span Leg Spacing: N/A
 East Span Leg Spacing: N/A
 Quantity Center Spans: 1
 Center Span Leg Spacing: 11'-6"
 East & West Overhang: 3'-6"
 Overall Beam Length: 18'-6"
 Horizontal Rail Material: 5" x 4" x 1/8" HSS
 Top Rail Material: SF Rails
 Qty Rails per Panel: 2
 Top Rail Length: 230"
 Top Rail Center Span: 134"
 Top Rail Overhangs: 48"
 Array Tilt Angle: 26 Degrees
 Front Edge Ground Clearance: 28"
 Overall Array East-West Dim: 20'-9"
 Number of Modules/Sub-Array: 15
 Number of Sub-Arrays: 1
 Module Columns/Sub-Array: 3
 Number of Module Rows: 5
 Module Orientation: Landscape
 Module Column Spacing: 5'
 Module Row Spacing: 3'
 Module Model: SIL-500 HM
 Module Size: 44.61' x 82.6"
 Individual Module Rating: 500 watts
 Sub Array Power Rating: 7.50 kw
 Total Power Rating: 7.56 kw

1 Additional North Column is to be installed per field operation. The column is to support equipment mounting needs. It is not required for North beam support.

James C Douglas

NY State Registered Professional Engineer
 License No. 13000
 State of New York
 12/15/2010 to 12/31/2020
 Douglas, James C
 12/15/2020 to 12/31/2021

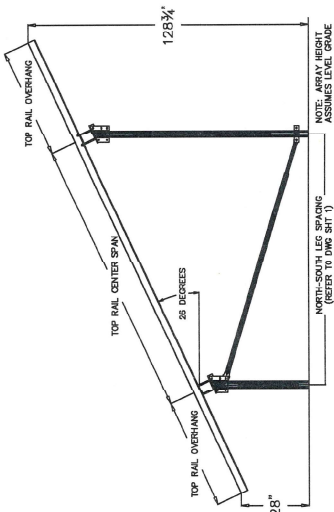


CIR ELECTRICAL CONSTRUCTION CORPORATION		-PROJECT-	
		HUGHES RESIDENCE	
		1204 BLAKELY ROAD	
		EAST AURORA, NY 14052	
DATE	REVISION	DRAWN BY	REVIEW BY
09/22/2023	ORIGINAL	JB	JD

SHEET 1 OF 3

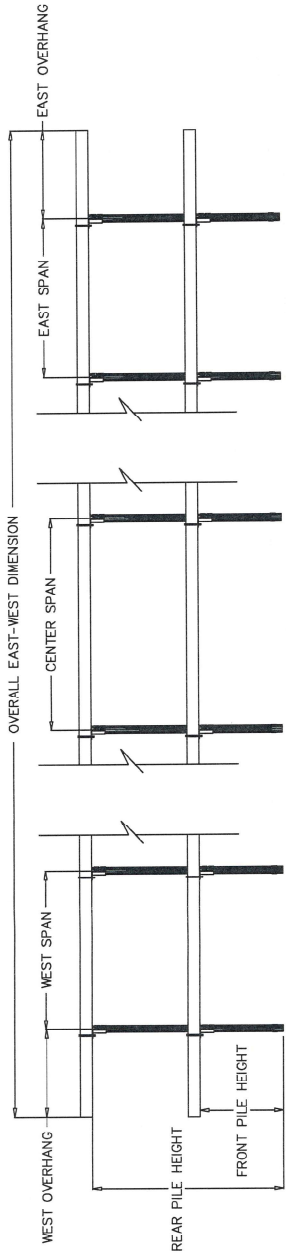
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SIDE ELEVATION

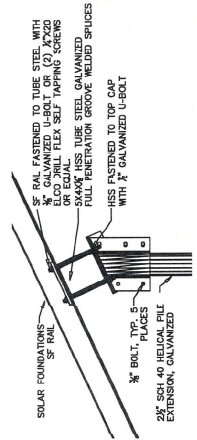
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REFER TO DWG SHEET 1 FOR EAST-WEST PILE SPANS AND FRONT AND REAR PILE HEIGHTS

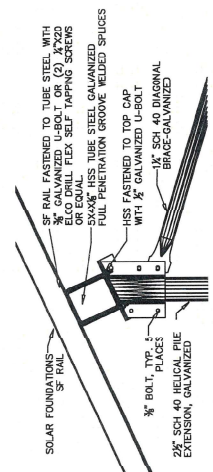
PILE SPACING ELEVATION

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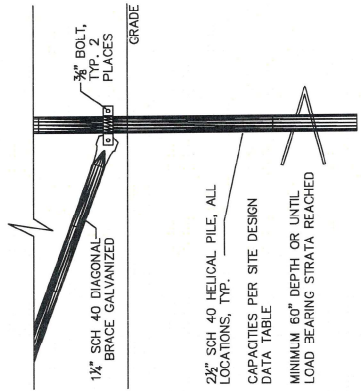
UPPER CAP DETAIL

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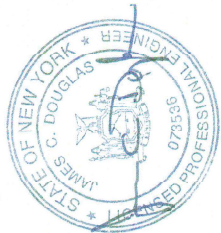
LOWER CAP DETAIL

N.T.S.



HELICAL PILE DETAIL

N.T.S.



James C
Douglas

SHEET 2 OF 3

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SPECIFICATION REQUIREMENTS:

THE FOLLOWING MATERIAL SPECIFICATION REQUIREMENTS PERTAIN TO THE FABRICATION OF THE SOLAR FOUNDATIONS USA GROUND MOUNT SOLAR SUPPORT STRUCTURE AS INDICATED ON THESE DRAWINGS.

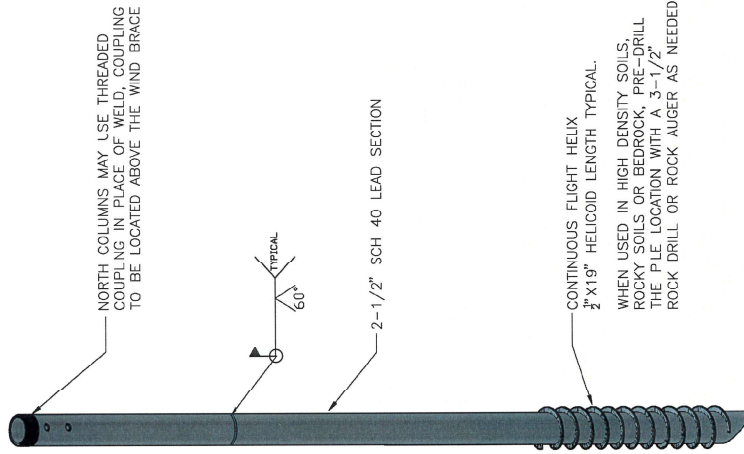
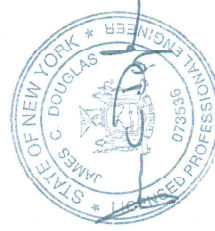
- SOLAR FOUNDATION ALUMINUM RAILS SHALL CONFORM TO ASTM B221.
- STRUCTURAL STEEL TUBING SHALL BE ASTM A500 HIGH YIELD (60 KSI).
- STEEL PIPE FOR PILES SHALL CONFORM TO ASTM A500 GRADE B.
- STEEL PIPE EXTENSIONS SHALL BE ASTM A53 GRADE B.
- STEEL PIPE FOR DIAGONAL BRACING SHALL BE ASTM A53 GRADE A.
- FABRICATED STEEL PLATE FOR COLUMN CAP ASSEMBLIES, BRACING CLAMPS, ETC. SHALL BE ASTM A36 OR A1011.
- STEEL BOLTS FOR CAP FASTENERS SHALL CONFORM TO SAE J429 GRADE 5, ALL OTHER BOLTS SHALL CONFORM TO SAE J429 GRADE 5 OR BETTER.
- STEEL U-BOLTS SHALL CONFORM TO ASTM 1018.
- USS FLAT STEEL WASHERS SHALL CONFORM TO ASTM F844 AND NUTS FOR STEEL CONNECTIONS SHALL CONFORM TO ASTM A563 GRADE A.
- ALL FIELD WELDING SHALL CONFORM TO AWS D1.1/D1.1M -STRUCTURAL WELDING CODE REQUIREMENTS.
- ALL STEEL SHALL BE HOT-DIP GALVANIZED PER ASTM A123 OR A153 AFTER ALL FABRICATION HAS BEEN COMPLETED.

INSTALLATION REQUIREMENTS:

- THE MINIMUM AVERAGE INSTALLATION TORQUE REQUIRED TO OBTAIN THE REQUIRED INDICATED CAPACITIES AND THE MINIMUM INSTALLATION DEPTH SHOWN ON THE PLANS SHALL BE SATISFIED FOR THE PERMANENT MONITORING OF INSTALLATION TORQUE. INSTALLATION TORQUE SHALL BE AN AVERAGE OF THE INSTALLATION TORQUES INDICATED DURING THE LAST 1 FOOT OF INSTALLATION.
- THE TORSIONAL STRENGTH RATING OF THE TORQUE ANCHOR SHALL NOT BE EXCEEDED DURING THE INSTALLATION. IF THE TORSIONAL STRENGTH LIMIT OF THE ANCHOR HAS BEEN REACHED, BUT THE ANCHOR HAS NOT REACHED THE TARGET DEPTH, PERFORM THE FOLLOWING:
 - IF THE TORSIONAL STRENGTH LIMIT IS ACHIEVED PRIOR TO REACHING THE TARGET DEPTH, THE INSTALLATION MAY BE ACCEPTABLE IF REVIEWED AND APPROVED BY THE ENGINEER.
 - THE INSTALLER MAY REMOVE THE TORQUE ANCHOR AND INSTALL A NEW ONE WITH SMALLER DIAMETER HELICAL PLATE.
 - IF USING A CONTINUOUS FLIGHT PILE, PRE-DRILL THE PILE LOCATION WITH A 3-1/2" ROCK AUGER OR 3-5/8" ROCK DRILL AS NEEDED.
- IF THE TARGET DEPTH IS ACHIEVED, BUT THE TORSIONAL REQUIREMENT HAS NOT BEEN MET THE INSTALLER MAY DO ONE OF THE FOLLOWING:
 - INSTALL THE TORQUE ANCHOR DEEPER TO OBTAIN THE REQUIRED CAPACITY.
 - REMOVE THE TORQUE ANCHOR AND INSTALL A NEW ONE WITH A LARGER DIAMETER HELICAL PLATE OR ONE WITH MULTIPLE HELICAL PLATES.
 - REDUCE THE LOAD CAPACITY ON THE INDIVIDUAL TORQUE ANCHOR BY PROVIDING ADDITIONAL TORQUE ANCHORS AT A REDUCED SPACING.

James C
Douglas

Professional Engineer
State of New York
No. 130334
Exp. 12/31/2024



HELICAL PILE DETAIL
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DATE	REVISION	DRAWN BY:	REVIEW BY:
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