

871 STATE ROUTE 208

GARDINER, NY 12525 USA

PHONE: 1.877.SOLAR.95



CUSTOMER: RESIDENCE Nicole and Christopher Cagna 19 Colden Hill Rd Newburgh, NY 12550

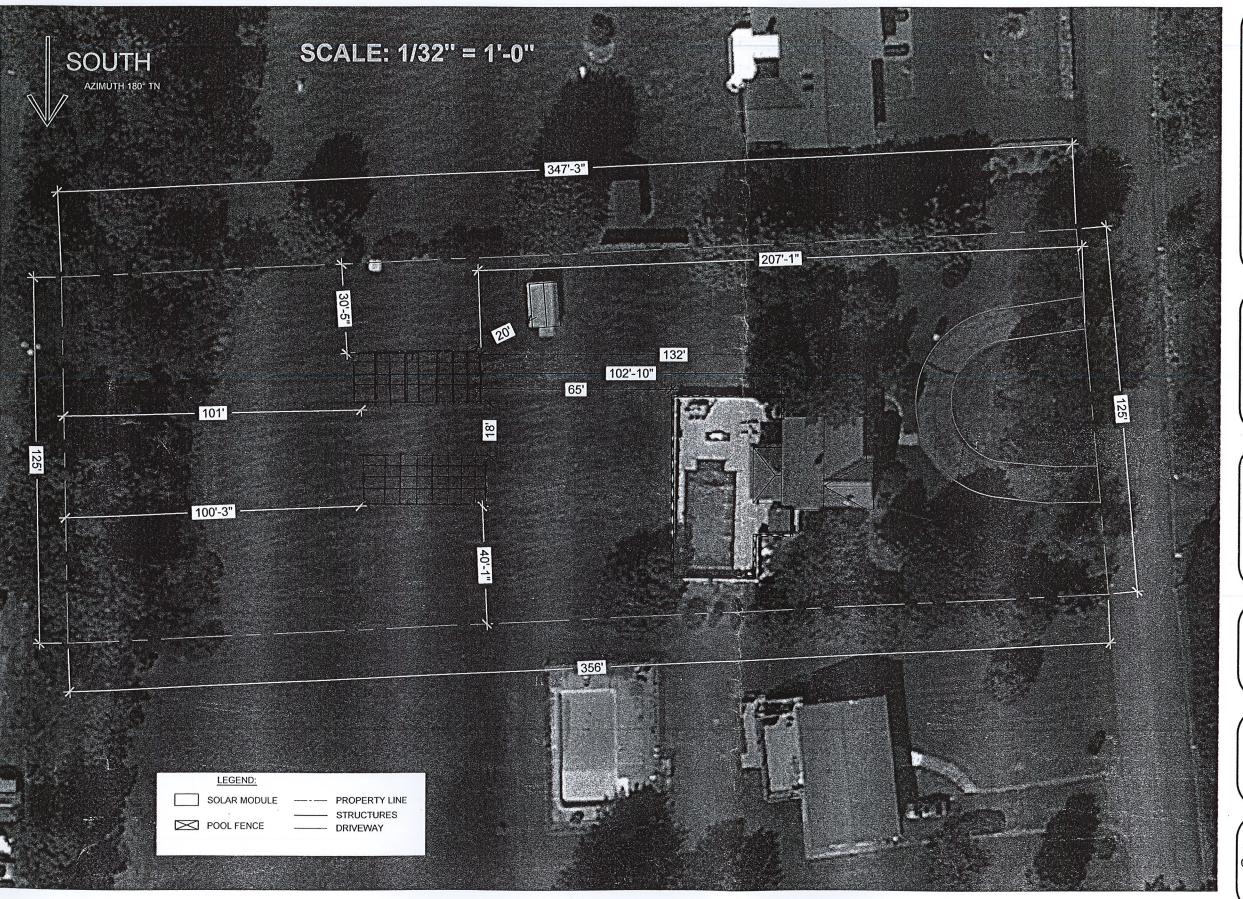
PV SYSTEM CONFIGURATION: SYSTEM SIZE: 26.16 kW PV MODULES:(80) SUNPOWER SPR-327NE-WHT-D INVERTER: ABB POWERONE (5) PVI 5000 (1X8,1X8)

DRAWN BY: NYSOLAR-AS DATE: 5-4-2015 REV: 0 INSTALLER CODE: 0

SHEET #: PV1

SHEET TITLE: PLOT PLAN 1 OF 1 SHEETS

SOLAR ARRAYS AND THEIR SYSTEM
COMPONENTS SHALL BE INSTALLED IN
CONJUNCTION WITH LOCAL CODES, NY
BUILDING CODES, AND WITH THE NEC
ACCEPTED BY AHJ.



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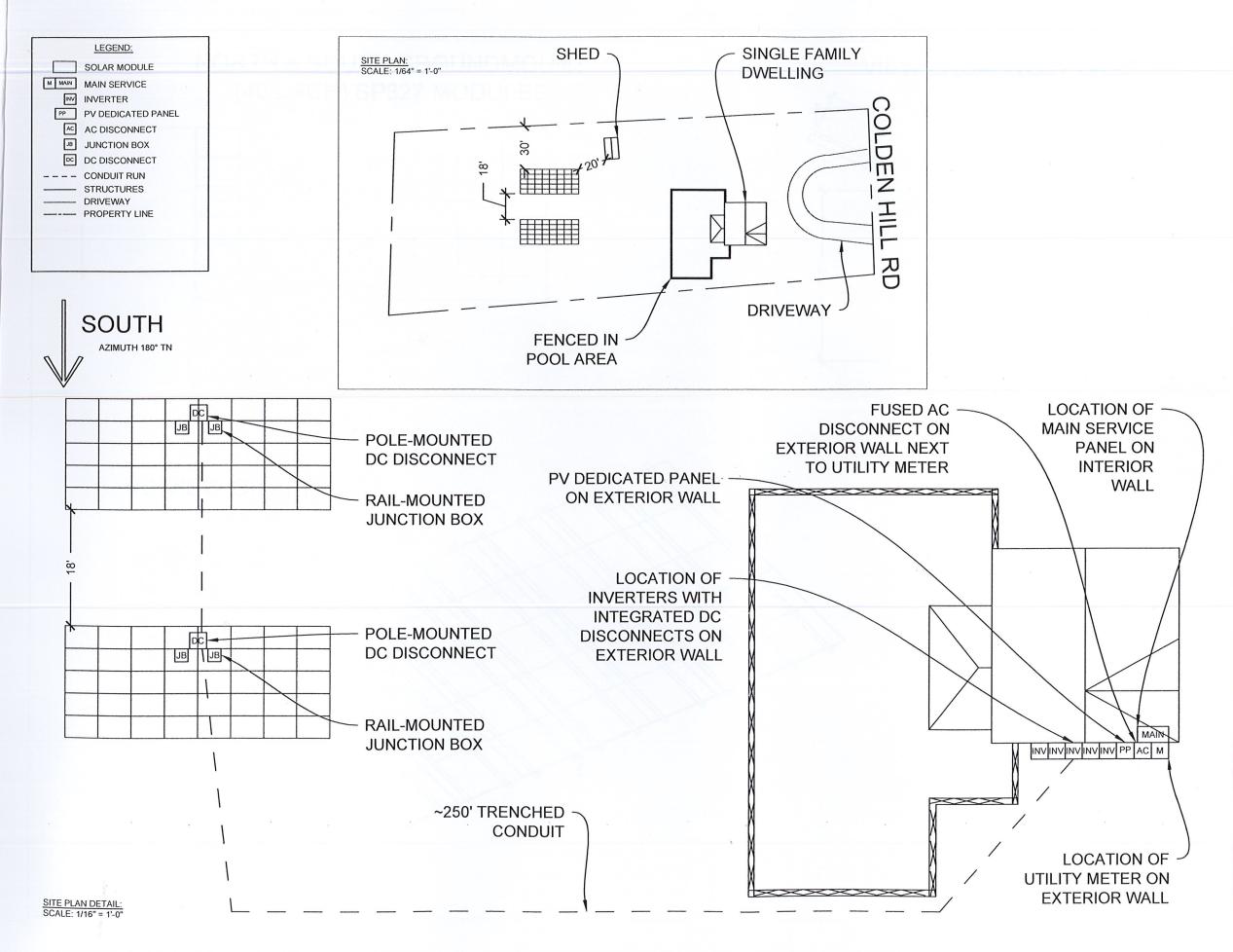
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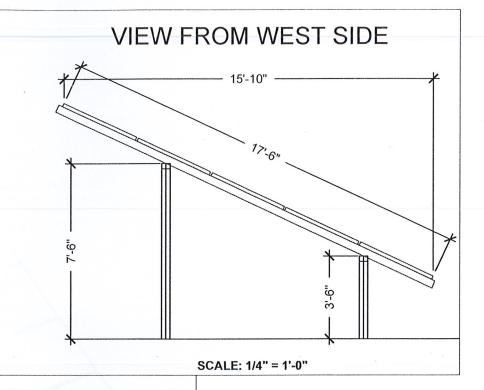
SHEET #: PV1

SHEET TITLE: SITE PLAN 1 OF 10 SHEETS

SCALE: LISTED

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NORTH & SOUTH GROUNDMOUNT (40 EACH) SP327 MODULES 41'-1" SCALE: 3/32" = 1'-0"



NEW YORK STATE SOLAR FARM INC.

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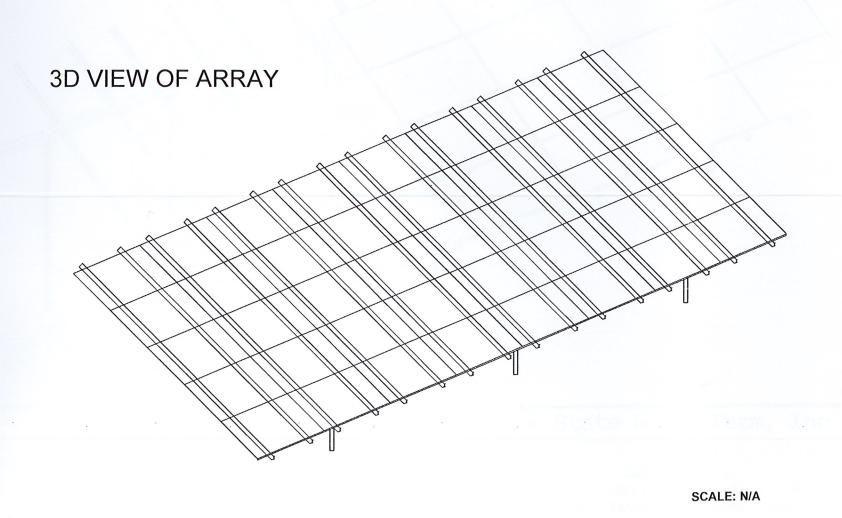
DRAWN BY: NYSOLAR-AS DATE: 5-4-2015 REV: 0 INSTALLER CODE: 0

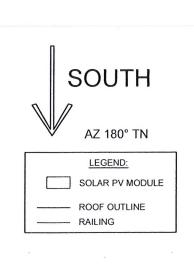
SHEET #: PV2

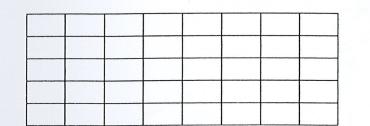
SHEET TITLE: DESIGN PROPOSAL 2 OF 1 0 SHEETS

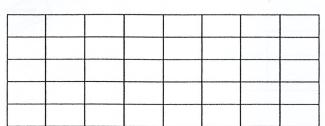
SCALE: LISTED

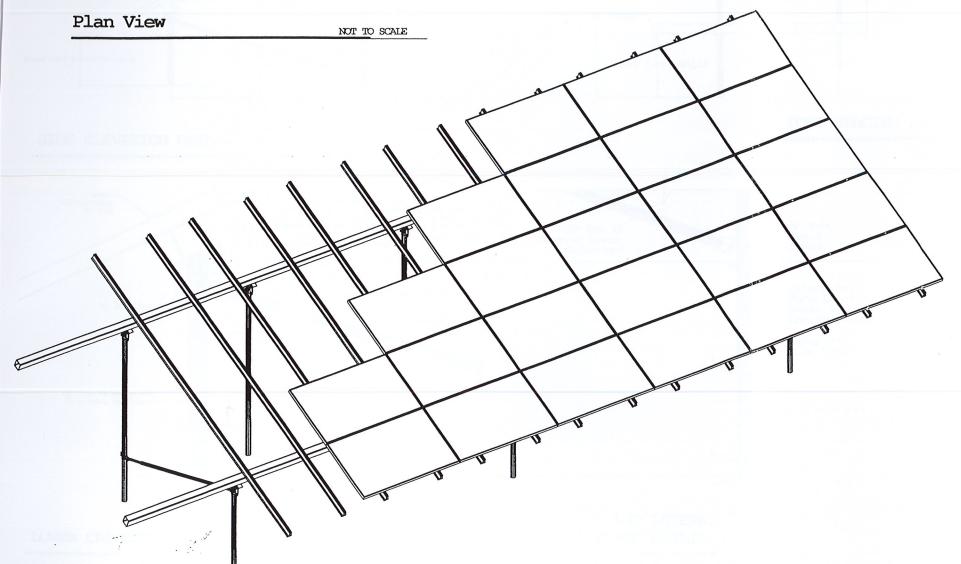
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Site Design Conditions

Basic Wind Speed: 90 MPH Max. Leg Axial Bearing: 5,300 lbs.
Ground Snow Load: 40 PSF Max. Leg Uplift: 3,175 lbs.
Exposure Category: C Max. Lateral Resistance: 2,215 lbs.
Site Contour: <5 Degree Slope
Helical Pile Depth: 66" Min Lateral Resistance Plate Size: Not Req'd

Net design pressures were calculated in accordance with ASCE 7-05 section 6.5.13, "Design Wind Loads on Open Buildings with Monoslope, Pitched, or Troughed Roofs". All load cases were evaluated in determining the limiting design conditions. The data table above provides the results for the limiting load case. Maximum leg reaction forces represent the highest load condition seen by any leg in the structure. All legs in the structure are designed to meet the maximum load conditions.

5Lx8C Sub-Array Design Conditions

Front Leg Height: 421" Array Tilt Angle: 25 Degrees Overall Array East-West Dim: 41'-1" Rear Leg Height: 893" Number of Modules/Sub-Array: 40 North-South Leg Spacing: 102" Number of Sub-Arrays: 2 West Span Leg Spacing: 14'-9" Module Columns/Sub-Array: 8 East Span Leg Spacing: 14'-9" Number of Module Rows: 5 Quantity Center Spans: 0 Module Orientation: Landscape Center Span Leg Spacing: N/A Module Column Spacing 1" East & West Overhang: 5'-3" Module Row Spacing 1" Overall Beam Length: 40'-0" Front Edge Ground Clearance: 28" Module Model: SPR-327NE Horizontal Rail Material: 5"x4"x8" HSS Module Size: 41.18" x 61.39" Individual Module Rating: 327 watt Top Rail Material: SF Rails Sub Array Power Rating: 13.08 kw Qty Rails per Panel: 2 Total Power Rating: 26.16 kw Top Rail Length: 212" Top Rail Center Span: 1121/2" Top Rail Overhangs: 493/4"

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

Sheet 1 of 3

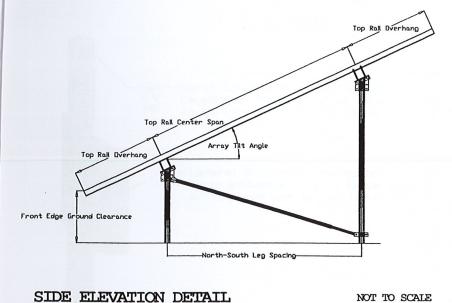
Date Revision Drawn By: Review By: 05/12/2015 Original MZ

New York State Solar Farm, Inc.

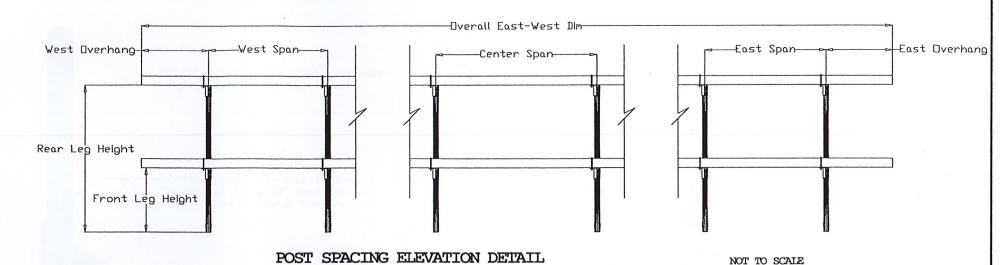
Project:
Cagna Residence
19 Colden Hill Road
Newburgh, NY 12550

Solar Foundations USA

6103 Winterhaven Drive Newark, DE 19702 Ph: (855) 738-7200 Fax: (866) 644-5665



NOT TO SCALE

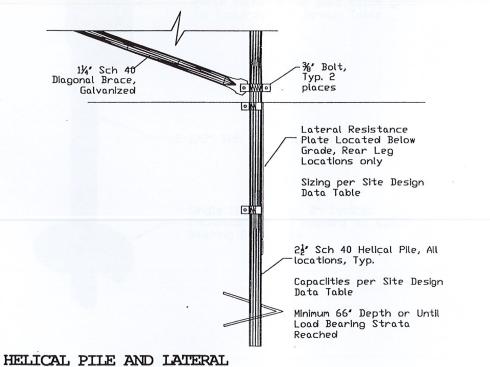


NOT TO SCALE

Solar-Foundations SF Rail SF Rall fastened to Tube steel with 3° Galvanized U-bolt or (2) ½ x20 Elco Drill Flex Self Tapping Screws or equal. For SF Rall lengths in excess of 18°-0°, use (2) U-bolts 5x4x HSS Tube Steel, Galvanized HSS Fastened to Top Cap with 1/2"
Galvanized U-Bolt 2½" Sch 40 Helical Pile Extension, Galvanized

LOWER CAP DETAIL

NOT TO SCALE



SF Rall fastened to Tube steel with & Galvanized U-boit or (2) ½ x20 Elco Drill Flex Self Tapping Screws or equal. For SF Rail lengths in excess of 18-0°, use (2) U-boits 5x4x}" HSS Tube Steel, Galvanized HSS Fastened to Top Cap with 1/2" 2½° Sch 40 Hellcal Pile Extension, Galvanized

UPPER CAP DETAIL

NOT TO SCALE

Sheet 2 of 3

Date	Revision	Drawn By:	Review By
05/12/2015	Original		MZ

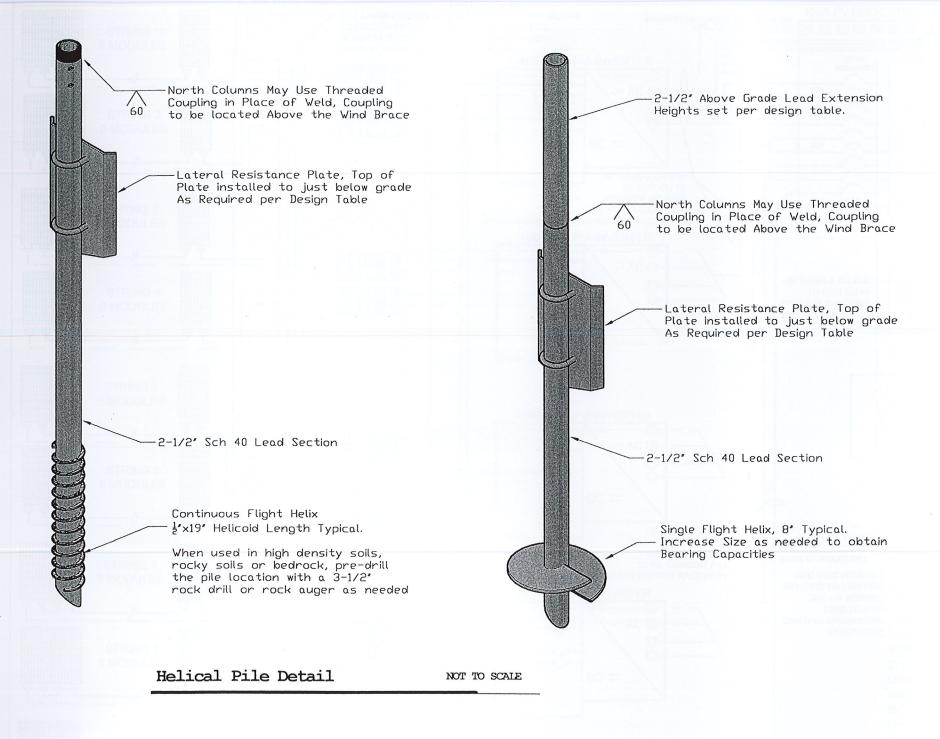
New York State Solar Farm, Inc.

RESISTANCE PLATE DETAIL

Project: Cagna Residence 19 Colden Hill Road Newburgh, NY 12550

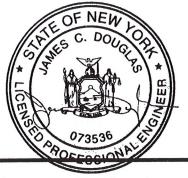
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Installation Requirements

- 1. The minimum average installation torque required to obtain the required indicated capacities and the minimum installation depth shown on the plans shall be satisfied prior to termination of the installation. The installation torque shall be an average of the installation torques indicated during the last 1 foot of installation.
- 2. 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:
- 2.1. 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 and/or owner.
- 2.2. The installer may remove the torque anchor and install a new one with smaller diameter helical plate.
- 2.3. If using a continuous flight pile, pre-drill the pile location with a 3-1/2" rock auger or 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:
- 3.1. 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.
- 3.3. Reduce the load capacity on the individual torque anchor by providing additional torque anchors at a reduced spacing.



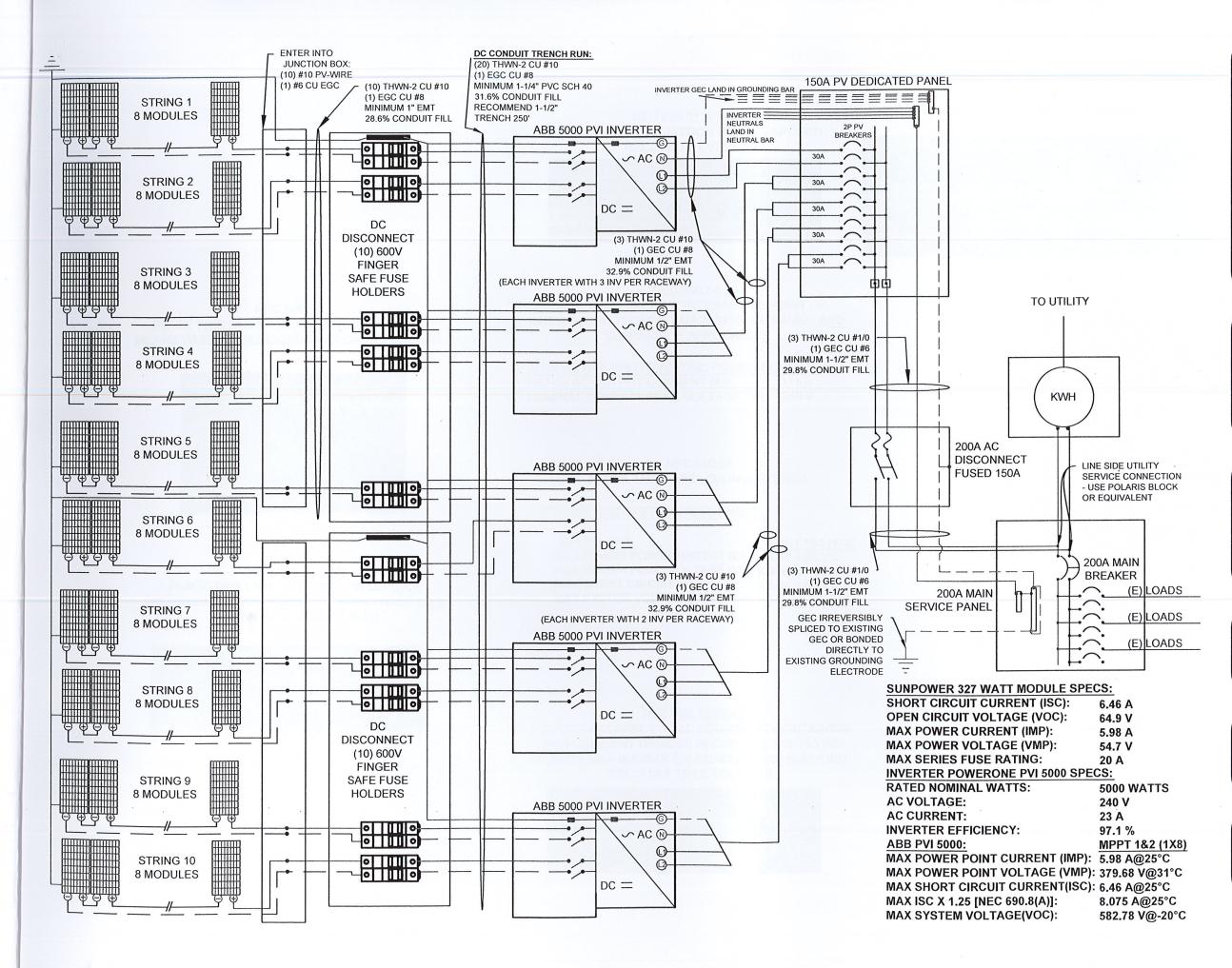
Sheet 3 of 3 New York State Solar Farm, Inc.

Date Revision Drawn By: Review By: 05/12/2015 Original MZ

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SHEET #: PV3

SHEET TITLE: ELECTRICAL 3 OF 10 SHEETS SCALE: N/A

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NEC 690.31 (E) 3 & 4
PLACE ON ALL JUNCTION BOXES EXPOSED
RACEWAYS EVERY 10'

PHOTOVOLTAIC POWER SOURCE

PLACE THIS LABEL AT EACH JUNCTION BOX, COMBINER BOX, INVERTER AND DEVICE WHERE ENERGIZED, UNGROUNDED CIRCUITS MAY BE EXPOSED DURING SERVICE.

WARNING

ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS
PHOTOVOLTAIC SYSTEM ARE UNGROUNDED

AND MAY BE ENERGIZED

NEC 690.35(F)

NEW YORK STATE SOLAR FARM INC.

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SHEET #: PV4

SHEET TITLE: LABELS 4 OF 10 SHEETS SCALE: N/A

SOLAR ARRAYS AND THEIR SYSTEM COMPONENTS SHALL BE INSTALLED IN CONJUNCTION WITH LOCAL CODES, NY BUILDING CODES, AND WITH THE NEC ACCEPTED BY AHJ.

NEC 690.17
PLACE THIS LABEL ON <u>ALL</u> DISCONNECTING
MEANS WHERE ENERGIZED IN AN OPEN POSITION

WARNING
ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH THE
LINE AND LOAD SIDE MAY
BE ENERGIZED IN THE
OPEN POSITION

NEC 705.12(D)(7)
PLACE THIS LABEL AT P.O.C. TO SERVICE
DISTRIBUTION EQUIPMENT (I.E. MAIN PANEL (AND SUBPANEL IF APPLICABLE))

WARNING
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

NEC 690.54
PLACE THIS LABEL AT "INTERACTIVE POINT OF
INTERCONNECTION" (AT MAIN SERVICE PANEL <u>AND</u>
SUBPANEL IF APPLICABLE)

INTERACTIVE PHOTOVOLTAIC POWER SOURCE
RATED AC OUTPUT CURRENT (A): 115 A
NOMINAL OPERATING AC VOLTAGE (V): 240 V

NEC 690.53
PLACE THIS LABEL ON INVERTER(S)

PHOTOVOLTAIC SYSTEM DISCONNECT:

ABB PVI 5000: MPPT 1&2 (1X8)

MAX POWER POINT CURRENT (IMP): 5.98 A@25°C

MAX POWER POINT VOLTAGE (VMP): 379.68 V@31°C

MAX SHORT CIRCUIT CURRENT(ISC): 6.46 A@25°C

MAX SYSTEM VOLTAGE(VOC): 582.78 V@-20°C

NEC 705.12(D)(4)
PLACE THIS LABEL ON ALL EQUIPMENT CONTAINING
OVERCURRENT DEVICES IN CIRCUITS SUPPLYING
POWER TO A BUSBAR OR CONDUCTORS SUPPLIED
FROM MULTIPLE SOURCES.

CAUTION
CONTAINS MULTIPLE POWER
SOURCES

SUNPOWER

E20/327 SOLAR PANEL

20% EFFICIENCY

SunPower E20 panels are the highest efficiency panels on the market today, providing more power in the same amount of space

MAXIMUM SYSTEM OUTPUT

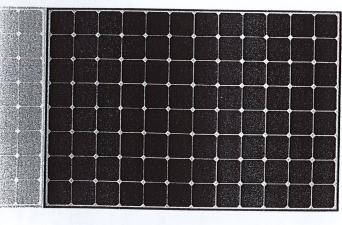
ensures that customers can pair the highest-efficiency panels with the highest-efficiency inverters, maximizing system output

REDUCED INSTALLATION COST

More power per panel means fewer panels per install. This saves both time and money.

RELIABLE AND ROBUST DESIGN

SunPower's unique MaxeonTM cell technology and advanced module design ensure industry-leading reliability

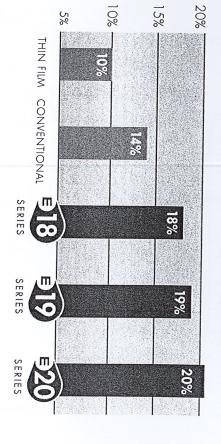


E20 SERIES

The World's Standard for Solar™

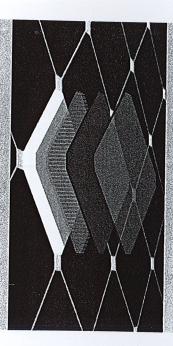
SunPower^{IM} E20 Solar Panels provide today's highest efficiency and performance. Powered by SunPower Maxeon^{IM} cell technology, the E20 series provides panel conversion efficiencies of up to 20.1%. The E20's low voltage temperature coefficient, anti-reflective glass and exceptional low-light performance attributes provide outstanding energy delivery per peak power watt.

SUNPOWER'S HIGH EFFICIENCY ADVANTAGE



sunpowercorp.com





MAXEON" CELL TECHNOLOGY

Patented all-back-contact solar cell, providing the industry's highest efficiency and reliability

SUNPOWER

E20/327 SOLAR PANEL

MODEL: SPR-327NE-WHT-D

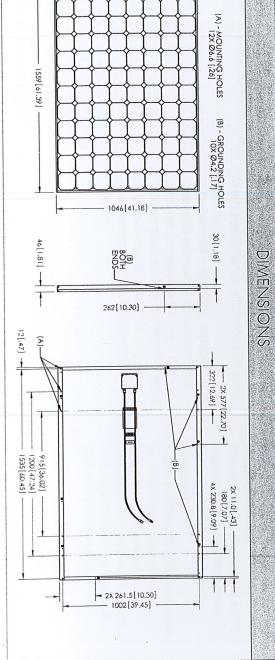
Maximum System Voltage Temperature Coefficients NOCT Series Fuse Rating Grounding
Maximum System Voltage Temperature Coefficients NOCT Series Fuse Rating
Maximum System Voltage Temperature Coefficients NOCT
Maximum System Voltage Temperature Coefficients
Maximum System Voltage Temperature Coefficients
Maximum System Voltage Temperature Coefficients
Maximum System Voltage
Short Circuit Current
Open Circuit Voltage
Rated Current
Rated Voltage
Panel Efficiency
Cell Efficiency
- day - ower (10/ 0/0)

•	
	MECHANICAL DATA
Solar Cells	96 SunPower Maxeon™ cells
	High-transmission tempered glass with
Front Glass	anti-reflective (AR) coating
Junction Box	IP-65 rated with 3 bypass diodes
	Dimensions: 32 x 155 x 128 mm
Output Cables	1000 mm cables / Multi-Contact (MC4) connectors
Frame	Anodized aluminum alloy type 6063 (black)
Weight	41.0 lbs (18.6 kg)
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	0	0		2	ω	4	<u>ъ</u>	0	7
		100	300 W /m²	700 84/111	SOO W	800 W/m²		1000 W/m ²	1000 W
	10		2			m²		/m²	1000 W/m² at 50° C
	20								0°0
Voltage (V)	30	-							
3	40	-	-	-					
	50				1			/	-
	60	7	_		_			/	
	70			1		1			

Impact Resistance		Max load	Temperature	TESTED
Hail: (25 mm) at 51 mph (23 m/s)	50 psf 245 kg/m² (2400 Pa) front and back (e.g. wind)	113 psf 550 kg/m² (5400 Pa), front (e.g. snow) w/specified mounting configurations	- 40° F to +185° F (- 40° C to + 85° C)	TESTED OPERATING CONDITIONS

WARRA	Warranties and Certifications
Warranties	25-year limited power warranty
	10-year limited product warranty
Certifications	Tested to UL 1703. Class C Fire Rating
***************************************	N. S.



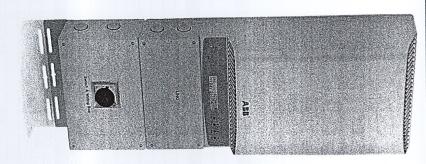
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Please read safety and installation instructions before using this product, visit sunpowercorp.com for more details.

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SUNDOWERCORD.COM
Document #001-65484 Rev*B / UR_EN
CS 11.316

ABB string inverters PVI-5000/6000-TL-OUTD 5kW to 6kW



Designed for residential and small commercial PV installations, this inverter fills a specific niche in the ABB product line to cater for those installations producing between 5kW and 20kW.

The high speed and precise MPPT algorithm offers real-time power tracking and energy harvesting. Flat efficiency curves ensure high efficiency at all output levels ensuring consistent and stable performance across the entire input voltage and output power range.

This outdoor inverter has been designed as a completely sealed unit to withstand the harshest environmental conditions. This inverter includes dual input section to process two strings with independent MPPT.

The wide input voltage range makes the inverter suitable to low power installations with reduced string size.

The transformerless operation offers high performance efficiencies of up to 97.1%.

Free remote monitoring capability available with every installation. This enables homeowners to view their energy production and offers installers a proactive and economic way of maintaining and troubleshooting the system.

Highlights:

- Single phase and split phase output grid connection.
 Wide input range for increased stringing flexibility.
 The high speed and precise MPPT algorithm offers real time power tracking and improved energy
- Outdoor NEMA 4X rated enclosure for unrestricted use under any environmental conditions.
 Integrated DC disconnect switch in compliance with international Standards (-S Version).

Power and productivity for a better world™



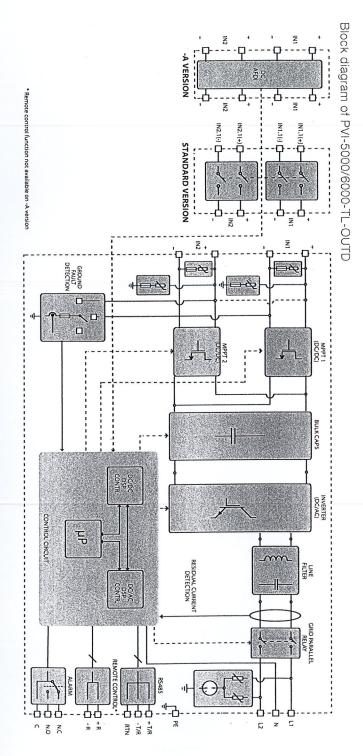
- Additional highlights:

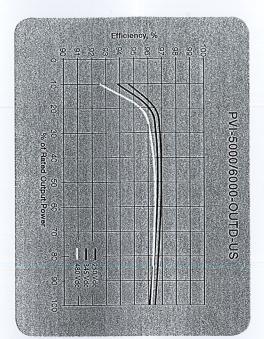
 RS-485 communication interface (for connection to laptop or data logger).

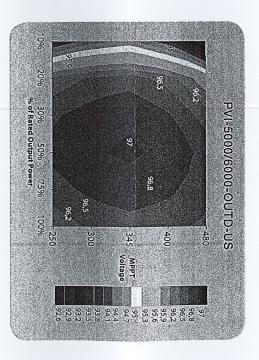
 Integrated Arc Fault Detection and Interruption (-A Version).



2 ABB Solar Inverters | Product flyer for PVI-5000/6000-TL-OUTD







Technical data and types		
Type code	PVI-5000-OUTD-US	PVI-6000-OUTD-US
Mechanical specifications		
Enclosure rating	NEM	NEMA 4X
Cooling	Natural convection	
Dimensions (H \times W \times D)	41.4x12.8x8.6 in (10	1.4x12.8x8.6 in (1052 x 325 x218 mm)
Weight	<59.5lb (27.0 kg)	27.0 kg)
Shipping weight	< 78lb (35.4 kg)	
Mounting system	Wall bracket	
Conduit connections	and (2ea y 1-1/4" 3 places side front rear	v 1-1/4" 3 places side front rear)
DC switch rating (per contact)	25A / 600V	600V
Safety		
Isolation level	Transformerless (floating array)	(floating array)
standard	UL1741, IEE1547, IEE1547.1, CSA-C22.2N. 107.1 Class B	107.1-01, UL1998 UL 1699B, FCC Part 15
Safety Approval	پ.CSA	
Warranty		
Standard warranty	10 y	10 years
Extended warranty	15 & 2	5 & 20 years
Available models		
Standard - with DC switch - floating Array	PVI-5000-OUTD-US	PVI-6000-OUTD-US
With DC switch, wiring box and arc fault detector and	PVI-5000-OUTD-US-A	PVI-6000-OUTD-US-A
*All data is subject to change without notice		
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