



JAN 26 2017

# Building Permit Application

LICENSES & PERMITS DIVISION

Howard County Maryland  
Department of Inspections, Licenses and Permits  
3430 Court House Drive  
Permits: 410-313-2455  
www.howardcountymd.gov

Date Received: \_\_\_\_\_

Permit No.: B17000295

Building Address: 1288 Hay Meadow Lane  
 City: Sykesville State: MD Zip Code: 21784  
 Suite/Apt. #: \_\_\_\_\_ SDP/WP/BA #: \_\_\_\_\_  
 Census Tract: \_\_\_\_\_ Subdivision: \_\_\_\_\_  
 Section: \_\_\_\_\_ Area: \_\_\_\_\_ Lot: 5  
 Tax Map: 0009 Parcel: 0335 Grid: 0011  
 Zoning: \_\_\_\_\_ Map Coordinates: \_\_\_\_\_ Lot Size: \_\_\_\_\_

Existing Use: Farm Building  
 Proposed Use: Farm Building  
 Estimated Construction Cost: \$ 179,784.00  
 Description of Work: Install (204) Roof-mounted solar panels on Agricultural Barn  
 Occupant or Tenant: See owner  
 Was tenant space previously occupied?  Yes  No  
 Contact Name: CALTON CATTLE CO  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_

Property Owner's Name: Calton Cattle Co  
 Address: 1288 Hay Meadow Lane  
 City: Sykesville State: MD Zip Code: 21784  
 Phone: 410-982-8501 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_

Applicant's Name & Mailing Address, (if other than stated herein)  
 Applicant's Name: Same as owner  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
 Phone: 410-982-8501 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_

Contractor Company: 21st Century Power Solutions, LLC  
 Contact Person: Robert Reichel  
 Address: 418 Oella Ave. Suite A  
 City: Ellicott City State: MD Zip Code: 21228  
 License No.: MHIC - 127486  
 Phone: (410) 418-5650 Fax: (410) 418-5358  
 Email: mreaver@21cps.com

Engineer/Architect Company: SEE B16004740  
 Responsible Design Prof.: FOR PHASE 1 PER APPLICANT  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_

Commercial Building Characteristics	Residential Building Characteristics	
Height:	<input checked="" type="checkbox"/> SF Dwelling <input type="checkbox"/> SF Townhouse	
No. of stories:	Depth	Width
Gross area, sq. ft./floor:	1 <sup>st</sup> floor:	
	2 <sup>nd</sup> floor:	
Area of construction (sq. ft.):	Basement:	
	<input type="checkbox"/> Finished Basement	
Use group:	<input type="checkbox"/> Unfinished Basement	
	<input type="checkbox"/> Crawl Space	
<b>Construction type:</b>	<input type="checkbox"/> Slab on Grade	
<input type="checkbox"/> Reinforced Concrete	No. of Bedrooms:	
<input type="checkbox"/> Structural Steel	<b>Multi-family Dwelling</b>	
<input type="checkbox"/> Masonry	No. of efficiency units:	
<input type="checkbox"/> Wood Frame	No. of 1 BR units:	
<input type="checkbox"/> State Certified Modular	No. of 2 BR units:	
	No. of 3 BR units:	
	Other Structure:	
	Dimensions:	
<input checked="" type="checkbox"/> Roadside Tree Project Permit	Footings:	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Roof:	
Roadside Tree Project Permit #	<input type="checkbox"/> State Certified Modular	
	<input type="checkbox"/> Manufactured Home	

Utilities	
<b>Water Supply</b>	
<input checked="" type="checkbox"/> Public	
<input type="checkbox"/> Private	
<b>Sewage Disposal</b>	
<input checked="" type="checkbox"/> Public	
<input type="checkbox"/> Private	
Electric: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Gas: <input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Heating System</b>	
<input type="checkbox"/> Electric <input type="checkbox"/> Oil	
<input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane Gas	
<input type="checkbox"/> Other:	
<b>Sprinkler System:</b>	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Grading Permit Number:	
Building Shell Permit Number:	

THE UNDERSIGNED HEREBY CERTIFIES AND AGREES AS FOLLOWS: (1) THAT HE/SHE IS AUTHORIZED TO MAKE THIS APPLICATION; (2) THAT THE INFORMATION IS CORRECT; (3) THAT HE/SHE WILL COMPLY WITH ALL REGULATIONS OF HOWARD COUNTY WHICH ARE APPLICABLE THERETO; (4) THAT HE/SHE WILL PERFORM NO WORK ON THE ABOVE REFERENCED PROPERTY NOT SPECIFICALLY DESCRIBED IN THIS APPLICATION; (5) THAT HE/SHE GRANTS COUNTY OFFICIALS THE RIGHT TO ENTER ONTO THIS PROPERTY FOR THE PURPOSE OF INSPECTING THE WORK PERMITTED AND POSTING NOTICES.

Christina Herbert  
 Applicant's Signature

Christina Herbert  
 Print Name

mreaver@21cps.com  
 Email Address

1-26-17  
 Date

21st Century Power Solutions  
 Title/Company

Checks Payable to: DIRECTOR OF FINANCE OF HOWARD COUNTY

\*\*PLEASE WRITE NEATLY & LEGIBLY\*\*

-FOR OFFICE USE ONLY-

AGENCY	DATE	SIGNATURE OF APPROVAL
State Highways		
Building Officials		
PSZA (Zoning)		
PSZA (Engineering)		
Health	<u>2-9-17</u>	<u>D. Bernard</u>

Is Sediment Control approval required for Issuance?  Yes  No  
 CONTINGENCY CONSTRUCTION START

DPZ SETBACK INFORMATION
Front:
Rear:
Side:
Side St.:
All minimum setbacks met? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is Entrance Permit Required? <input type="checkbox"/> Yes <input type="checkbox"/> No
Historic District? <input type="checkbox"/> Yes <input type="checkbox"/> No
Lot Coverage for New Town Zone:
SDP/Red-line approval date:

Filing Fee	\$
Permit Fee	\$ <u>100.00</u>
Tech Fee	\$ <u>10.00</u>
Excise Tax	\$
PSFS	\$
Guaranty Fund	\$
Add'l per Fee	\$
Total Fees	\$ <u>110.00</u>
Sub- Total Paid	\$
Balance Due	\$
Check	# <u>008554</u>

Distribution of Copies: White: Building Officials Green: PSZA,Zoning Yellow: PSZA,Engineering Pink: Health Gold: SHA

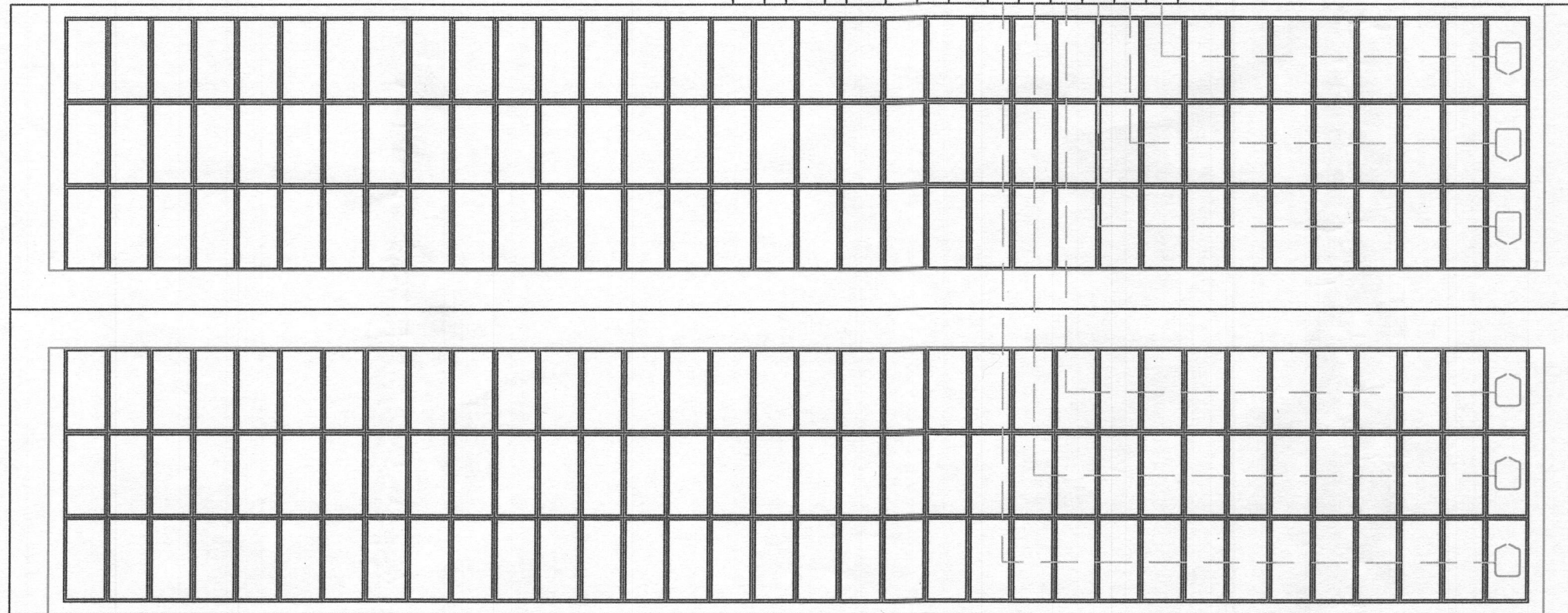
Operations\Updated Forms\Building applmp 8.2012.docx

\*OKAY TO TAKE IN PER D. MÖCK - NEED SIGNED  
 I-COMED DIALS

HOWARD COUNTY 3FT SETBACKS

Approved Septic System Plan  
 Howard County Health Department  
 29-19  
 Date  
 Signature  
 B1700295

FUSED DISCONNECT  
 ELECTRIC METER  
 CT CABINET  
 COMBINER PANELS  
 INVERTERS



1 SITE PLAN  
 SCALE: 1/16" TO 1'



THE INSTALLATION OF SOLAR ARRAYS AND PHOTOVOLTAIC POWER SYSTEMS SHALL BE IN ACCORDANCE WITH THE MOST RECENT NATIONAL ELCTRIC AND BUILDING CODES AND STANDARDS, AS AMENDED BY LOCAL JURISDICTION.


System Summary

Equipment:  
 204- SILVANTIS R-SERIES  
 335W Solar Modules  
 70.35 kW DC System Size  
 Tilt: 21 Degrees  
 Azimuth: 80 & 260 Degrees

PROFESSIONAL CERTIFICATION:  
 I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 35549, Expiration Date: 4-3-2018

SHEET NO.	SHEET TITLE
PV1.0	COVER AND SITE PLAN
PV2.0	STRUCTURAL
PV3.0	ELECTRICAL DETAIL
PV4.0	CALCULATION
PV5.0	LABELS

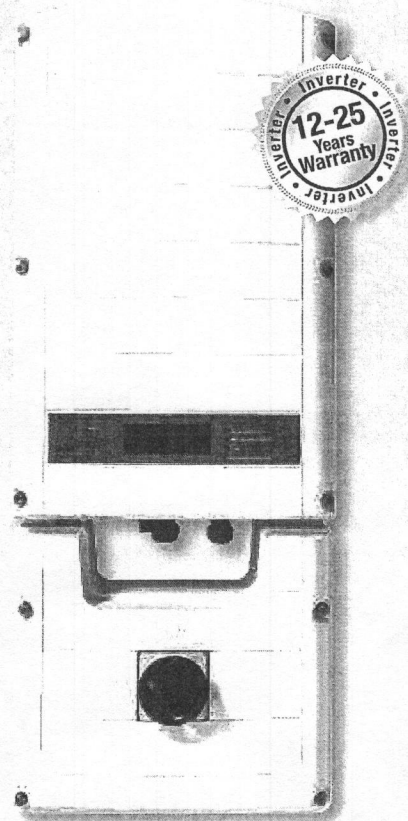
THESE DRAWINGS, SPECIFICATIONS, AND DESIGNS ARE THE PROPERTY OF 21ST CENTURY POWER SOLUTIONS,LLC. NO PART SHALL BE COPIED OR USED FOR OR WITH ANY OTHER WORK OTHER THAN THE SPECIFIC PROJECT FOR WHICH THEY HAVE BEEN DEVELOPED WITHOUT OUR SPECIFIC CONSENT

21st Century Power Solutions 418 Oella Ave Catonsville, MD 21228 410.418.5650 www.21cps.com	Date:	12/27/2016	Cover and Site Plan Calton Cattle Company 1304 Hay Meadow Lane Sykesville, MD 21784		PV 1.0
	Designed By:	Rob Reichel			
	Designer Contact:	410.418.5650			
	Revision:	1			
Jurisdiction:	Howard County				



## SolarEdge Single Phase Inverters For North America

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US /  
SE7600A-US / SE10000A-US / SE11400A-US



INVERTERS

### The best choice for SolarEdge enabled systems

- Integrated arc fault protection (Type 1) for NEC 2011 690.11 compliance
- Superior efficiency (98%)
- Small, lightweight and easy to install on provided bracket
- Built-in module-level monitoring
- Internet connection through Ethernet or Wireless
- Outdoor and indoor installation
- Fixed voltage inverter, DC/AC conversion only
- Pre-assembled AC/DC Safety Switch for faster installation
- Optional – revenue grade data, ANSI C12.1

USA - GERMANY - ITALY - FRANCE - JAPAN - CHINA - AUSTRALIA - THE NETHERLANDS - ISRAEL

www.solaredge.us



## Single Phase Inverters for North America

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US /  
SE7600A-US / SE10000A-US / SE11400A-US

	SE3000A-US	SE3800A-US	SE5000A-US	SE6000A-US	SE7600A-US	SE10000A-US	SE11400A-US		
<b>OUTPUT</b>									
Nominal AC Power Output	3000	3800	5000	6000	7600	9980 @ 208V 10000 @ 240V	11400	VA	
Max. AC Power Output	3300	4150	5400 @ 208V 5450 @ 240V	6000	8350	10800 @ 208V 10950 @ 240V	12000	VA	
AC Output Voltage Min.-Nom.-Max.* 183 - 208 - 229 Vac	-	-	✓	-	-	✓	-		
AC Output Voltage Min.-Nom.-Max.* 211 - 240 - 264 Vac	✓	✓	✓	✓	✓	✓	✓		
AC Frequency Min.-Nom.-Max.*	59.3 - 60 - 60.5 (with HI country setting 57 - 60 - 60.5)							Hz	
Max. Continuous Output Current	12.5	16	24 @ 208V 21 @ 240V	25	32	48 @ 208V 42 @ 240V	47.5	A	
GFDI	1							A	
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes								
<b>INPUT</b>									
Recommended Max. DC Power** (STC)	3750	4750	6250	7500	9500	12400	14250	W	
Transformer-less, Ungrounded	Yes								
Max. Input Voltage	500							Vdc	
Nom. DC Input Voltage	325 @ 208V / 350 @ 240V							Vdc	
Max. Input Current***	9.5	13	16.5 @ 208V 15.5 @ 240V	18	23	33 @ 208V 30.5 @ 240V	34.5	Adc	
Max. Input Short Circuit Current	30							Adc	
Reverse-Polarity Protection	Yes								
Ground-Fault Isolation Detection	600kΩ Sensitivity								
Maximum Inverter Efficiency	97.7	98.2	98.3	98.3	98	98	98	%	
CEC Weighted Efficiency	97.5	98	97.5 @ 208V 98 @ 240V	97.5	97.5	97 @ 208V 97.5 @ 240V	97.5	%	
Nighttime Power Consumption	< 2.5							W	
<b>ADDITIONAL FEATURES</b>									
Supported Communication Interfaces	RS485, RS232, Ethernet, ZigBee (optional)								
Revenue Grade Data, ANSI C12.1	Optional								
<b>STANDARD COMPLIANCE</b>									
Safety	UL1741, UL1699B, UL1998, CSA 22.2								
Grid Connection Standards	IEEE1547								
Emissions	FCC part15 class B								
<b>INSTALLATION SPECIFICATIONS</b>									
AC output conduit size / AWG range	3/4" minimum / 24-6 AWG				3/4" minimum / 8-3 AWG				
DC input conduit size / # of strings / AWG range	3/4" minimum / 1-2 strings / 24-6 AWG				3/4" minimum / 1-2 strings / 14-6 AWG				
Dimensions with AC/DC Safety Switch (HxWxD)	30.5 x 12.5 x 7 / 775 x 315 x 172		30.5 x 12.5 x 7.5 / 775 x 315 x 191		30.5 x 12.5 x 10.5 / 775 x 315 x 260			in./ mm	
Weight with AC/DC Safety Switch	51.2 / 23.2		54.7 / 24.7		88.4 / 40.1			lb / kg	
Cooling	Natural Convection				Fans (user replaceable)				
Noise	< 25				< 50				dBA
Min.-Max. Operating Temperature Range	-13 to +140 / -25 to +60 (CAN version**** -40 to +60)							°F / °C	
Protection Rating	NEMA 3R								

\* For other regional settings please contact SolarEdge support.

\*\* Limited to 125% for locations where the yearly average high temperature is above 77°F/25°C and to 135% for locations where it is below 77°F/25°C.

For detailed information, refer to [http://www.solaredge.us/files/pdfs/inverter\\_dc\\_oversizing\\_guide.pdf](http://www.solaredge.us/files/pdfs/inverter_dc_oversizing_guide.pdf)

\*\*\* A higher current source may be used; the inverter will limit its input current to the values stated.

\*\*\*\* CAN P/Ns are eligible for the Ontario FIT and microFIT (microFIT exc. SE11400A-US-CAN).



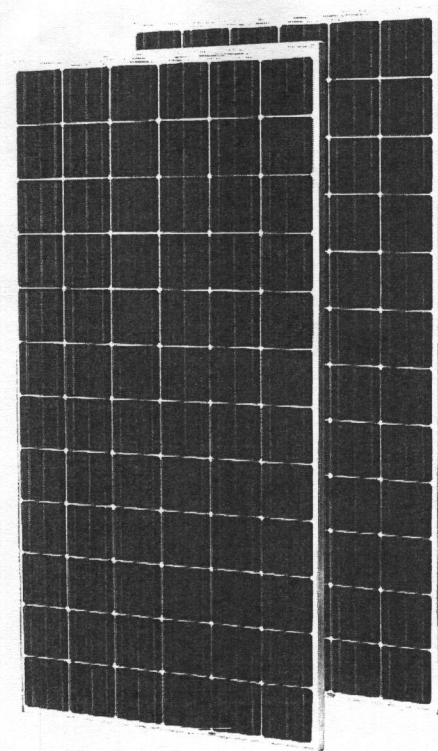
**RoHS**

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# SILVANTIS® F-SERIES: 310 W TO 335 W 72-Cell High Wattage Modules

SunEdison introduces the next generation of high performance solar modules based on innovative Continuous Cz (CCz) monocrystalline cells and industry leading PID-free technology. Best-in-class efficiency coupled with durability and superior design elements provide products with maximum long-term investment performance. At the same time the F-series minimizes cost incurred throughout the products lifecycle, such as installation expense and overall operation and maintenance.

SunEdison is a leader in utility-scale solar systems with over two and a half million Silvantis modules deployed in some of the world's harshest climates and most remote locations. This experience, coupled with over 50 years of expertise in silicon technology and innovation enables SunEdison to design and produce highly advanced solar solutions.



## SILVANTIS ADVANTAGE

- 17.1% module efficiency with positive power tolerance
- PID-free: multi-MPPT transformerless inverter compatible
- Tariff-free: not subject to U.S. countervailing or antidumping tariffs
- Based on SunEdison's proprietary CCz technology
- Higher return on investment with more watts-per-module

## QUALITY & SAFETY

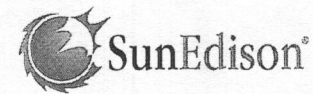
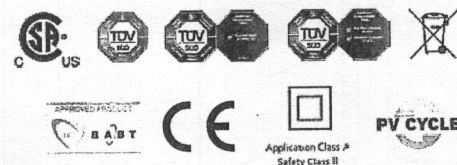
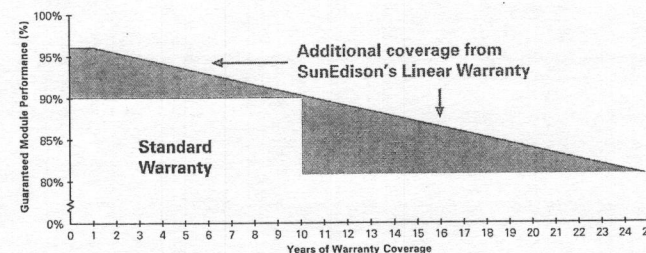
- Industry leading PID test conditions:
  - » 96 hours, 85 C, 85% relative humidity, -1 kV
- IEC certified by TÜV SÜD:
  - » 61215 long-term operation in a variety of climates including snow loading up to 5400 Pa and hail testing
  - » 61730 to ensure electrical safety
  - » 60068-2-68 dust and sand testing for desert climates
  - » 61701 salt mist corrosion resistant Level 1 for marine regions, Level 6 for desert regions
  - » 62716 ammonia testing for agricultural environments
- Manufactured to AQL 0.4 Level II quality and tested up to 3x beyond IEC standards
- CSA certified to UL 1703 for 1,000 V systems in the US and Canada
- MCS certified by BABT for the UK

## ROBUST DESIGN

- Reliability tested beyond international standards
- Proven field performance in harsh environments

## SUNEDISON WARRANTY

- 10-year limited warranty for materials and workmanship
- 25-year linear power warranty at STC:
  - » Year 1: ≤ 3.5% of rated power
  - » After year 1: ≤ 0.7% rated power degradation per year



# SILVANTIS F-SERIES: 310 W TO 335 W

## PHYSICAL PARAMETERS

Module Dimensions	1,976 mm x 990 mm x 50 mm
Module Weight	22 kg
Cell Type	CCz monocrystalline
Number of Cells	72
Frame Material	Anodized aluminum alloy
Tempered ARC Glass Thickness	3.2 mm
Connector Types (indicated in model #)	Amphenol H4 (-39); Bizlink S418 (-34, -35)

## TEMPERATURE COEFFICIENTS AND PARAMETERS<sup>1</sup>

Nominal Operating Cell Temperature (NOCT)	45 C ± 2 C
Temperature Coefficient of Pmax	-0.43 %/C
Temperature Coefficient of Voc	-0.31 %/C
Temperature Coefficient of Isc	+0.05 %/C
Operating Temperature	-40 C to +85 C
Maximum System Voltage	1000 V (UL & IEC)
Limiting Reverse Current	9.30 A
Maximum Series Fuse Rating	15 A
Pmax Production Tolerance	0 W to +5 W
Junction Box Rating	IP67
Application Class	Class A (IEC)
Module Fire Performance	Type 1 or Type 2 available <sup>2</sup>
Fire Resistance Rating	Class C
Packaging Specifications	20 modules per pallet 440 modules per 40' high-cube container

Wind and Snow Front Load	Up to 5,400 Pa
Wind Back Load	2,400 Pa
Reduction of STC efficiency from 1000 W/m <sup>2</sup> to 200 W/m <sup>2</sup> (Relative)	< 4%

## STC ELECTRICAL CHARACTERISTICS<sup>3</sup>

Model # <sup>4</sup>	F310BzD	F315BzD	F320BzD	F325BzD	F330BzD	F335BzD
Rated Maximum Power Pmax (W)	310	315	320	325	330	335
Open-Circuit Voltage Voc (V)	45.3	45.7	45.9	46.0	46.2	46.4
Short Circuit Current Isc (A)	9.16	9.23	9.26	9.27	9.28	9.29
Module Efficiency (%)	15.8	16.1	16.4	16.7	16.9	17.1
Maximum Power Point Voltage Vmpp (V)	36.2	36.6	37.0	37.3	37.7	37.9
Maximum Power Point Current Imp (A)	8.57	8.63	8.68	8.72	8.77	8.85

## NOCT ELECTRICAL CHARACTERISTICS<sup>5</sup>

Model # <sup>4</sup>	F310BzD	F315BzD	F320BzD	F325BzD	F330BzD	F335BzD
Rated Maximum Power Pmax (W)	225.1	228.7	232.4	236.0	239.6	243.3
Open-Circuit Voltage Voc (V)	41.3	41.4	41.5	41.6	41.7	41.8
Short-Circuit Current Isc (A)	7.43	7.55	7.67	7.79	7.91	8.03
Maximum Power Point Voltage Vmpp (V)	32.3	32.6	32.9	33.2	33.5	33.7
Maximum Power Point Current Imp (A)	6.96	7.01	7.06	7.11	7.16	7.21

Listed specifications are subject to change without prior notice.

<sup>1</sup> Temperature coefficients may vary by ±10%

<sup>2</sup> Refer to design package and module label for specific Fire Performance Type

<sup>3</sup> All electrical data at standard test conditions (STC): 1000 W/m<sup>2</sup>, AM 1.5, 25 C; electrical characteristics may vary by ±5% and power measurement tolerance by ±3%

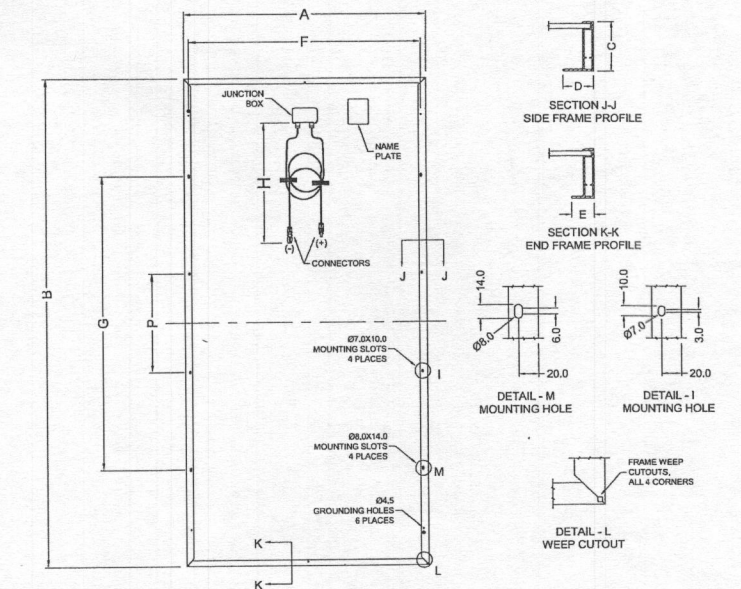
<sup>4</sup> z indicates manufacturing location: M = Malaysia, X = Mexico, K = Korea

<sup>5</sup> Electrical characteristics measured under normal operating conditions of cells: 800/m<sup>2</sup>, 20 C ambient temperature, AM 1.5, wind speed 1 m/s

For more information about SunEdison's Silvantis modules, please visit [www.sunedison.com](http://www.sunedison.com)

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## F-SERIES SOLAR MODULE DIMENSIONS mm [inch]

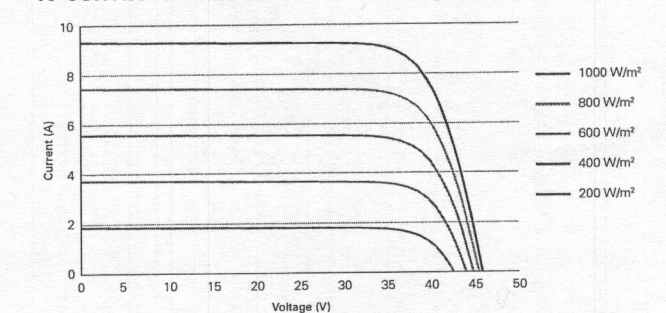


**Module Dimensions**  
A - 990 [39.0] B - 1,976 [77.8] C - 50 [2.0] D - 30 [1.2] E - 22 [0.9]

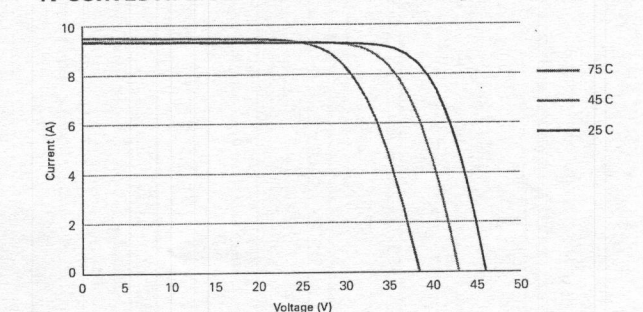
**Mounting Hole Spacing**  
F - 950 [37.4] G - 1,188 [46.8] P - 400 [15.7]

**Cable Length (indicated in model #)**  
H - 1,000 [39.4] (model -34) H - 1,300 [51.2] (model -35, -39)

## IV CURVES AT MULTIPLE IRRADIANCES [25 C]



## IV CURVES AT MULTIPLE TEMPERATURES [1000 W/m²]



**DC WIRE SIZE**

ISOURCE CIRCUIT [690.8(A)(1)](ISC): I<sub>sc</sub> \* 1.25  
 OUTPUT CIRCUIT [690.8(A)(2)](ISC): I<sub>sc</sub> \* 1.25 \* #STRINGS  
 MIN. DC WIRE AMPACITY:  
 [690.8(A), 690.8(B), 210.19 (A), 215.2(A), 110.14(C)]  
 THE MAXIMUM OF:  
 1. (I<sub>sc</sub> \* 1.25)/(CONDITIONS OF USE)  
 2. (I<sub>sc</sub> \* 1.25 \*1.25)  
 DERATE WIRES FOR TERMINALS DEPENDING ON TEMP.

**AC WIRE SIZE**

INVERTER OUTPUT [690.8(A)](ISC): INV. OUTPUT\*1.25  
 MIN. AC WIRE AMPACITY:  
 [690.8(A), 690.8(B), 210.19 (A), 215.2(A), 110.14(C)]  
 THE MAXIMUM OF:  
 1. (INV. OUTPUT \* 1.25)  
 2. (INV. OUTPUT)/ CONDITIONS OF USE  
 DERATE WIRES FOR TERMINALS DEPENDING ON TEMP.

**GROUNDING SIZE**

GEC  
 NEC 690.47  
 Sized per Table 250.66 for AC  
 Sized per Table 250.166 for DC  
 DC EGG  
 NEC 250.122  
 Use 1.56 \* I<sub>sc</sub> \* # of strings (if applicable)  
 AC EGG  
 NEC 250.122  
 Sized based on OCPD

**MAXIMUM SYSTEM VOLTAGE**

NEC2008/2011 requires to use manufacturers Coefficient if available.

METHOD A: Voc\*#of modules in series\*NEC Coefficient

METHOD B:  $\{[(T \text{ min } ^\circ\text{C} - 25^\circ\text{C}) * V / ^\circ\text{C}] + Voc\} * \# \text{ of modules in series}$

**120% RULE**

NEC 2008: 690.64(B)2  
 NEC 2011: 705.12(D)2

MINIMUM BUSBAR OR CONDUCTOR=  
 TOTAL NUMBER OF BREAKERS FEEDING/1.2

**OCPD SIZING**

MIN DC: ISC\*156  
 MIN AC: INVERTER OUTPUT\*1.25

**VOLTAGE DROP**

$(2KID/CM)/VOLTAGE*100= VOLTAGE DROP \%$   
 K=12.9 FOR COPPER  
 I= CURRENT(IMP OR OUTPUT AC)  
 D=DISTANCE IN FEET, ONEWAY  
 CM=CIRCULAR MILS

**PV MODULE RATINGS @ STC (GUIDE SECTION 5)**

MODULE MAKE	Silvantis
MODULE MODEL	R335EzC
MAX POWER-POINT CURRENT (I <sub>MP</sub> )	8.85 A
MAX POWER-POINT VOLTAGE (V <sub>MP</sub> )	37.9 V
OPEN-CIRCUIT VOLTAGE (V <sub>OC</sub> )	46.4 V
SHORT-CIRCUIT CURRENT (I <sub>SC</sub> )	9.29 A
MAX SERIES FUSE (OCPD)	15 A
MAXIMUM POWER (P <sub>MAX</sub> )	335 W
MAX VOLTAGE	1000 V
VOC TEMP COEFF	-0.30 %/°C
NUMBER OF PANELS PER STRING	12, 11, 11
STRINGS PER INVERTER	3

**INVERTER RATINGS**

INVERTER MAKE	SolarEdge
INVERTER MODEL	SE11400A-US
NUMBER OF INVERTERS	6
MAX DC VOLT RATING [V]	500 V
MAX POWER @ 40°C [W]	11400 W
NOMINAL AC VOLTAGE [V]	240 V
MAX AC CURRENT [A]	47.5 A
MAX OCPD RATING [A]	60 A

**INTERACTIVE PHOTOVOLTAIC POWER SOURCE**

AC OUTPUT CURRENT	285 A
NOMINAL AC VOLTAGE	240 V

**INVERTER MPPT DC DISCONNECT**

**PHOTOVOLTAIC SYSTEM DICONNECT**

RATED MPP CURRENT	32.5 A
RATED MPP VOLTAGE	350.0 V
MAX SYSTEM VOLTAGE	500.0 V
MAX CIRCUIT CURRENT	45.0 A

**NOTES FOR ARRAY CIRCUIT WIRING (Guide Section 6 and 8 and Appendix D):**

- 1.) LOWEST EXPECT AMBIENT TEMPERATURE BASED ON ASHRAE MINIMUM MEAN EXTREME DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. LOWEST EXPECTED AMBIENT TEMPERATURE -23 C.
- 2.) HIGHEST CONTINUOUS AMBIENT TEMPERATURE BASED ON ASHRAE HIGHEST MONTH 2% DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. HIGHEST CONTINUOUS TEMPERATURE 32 C.
- 2.) 2005 ASHRAE FUNDAMENTALS 2% DESIGN TEMPERATURES DO NOT EXCEED 470 C IN THE UNITED STATES (PALM SPRINGS, CA IS 44.1 C). FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN ROOF-MOUNTED SUNLIT CONDUIT AT LEAST 0.5" ABOVE ROOF AND USING THE OUTDOOR DESIGN TEMPERATURE OF 470 C OR LESS (ALL OF UNITED STATES),
  - a) 12 AWG, 900 C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH I<sub>sc</sub> OF 7.68 AMPS OR LESS WHEN PROTECTED BY A 12-AMP OR SMALLER FUSE.
  - b) 10 AWG, 900 C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH I<sub>sc</sub> OF 9.6 AMPS OR LESS WHEN PROTECTED BY A 15-AMP OR SMALLER FUSE.

**NOTES FOR INVERTER CIRCUITS (Guide Section 8 and 9):**

- 1) IF UTILITY REQUIRES A VISIBLE-BREAK SWITCH, DOES THIS SWITCH MEET THE REQUIREMENT? YES X NO N/A
- 2) IF GENERATION METER REQUIRED, DOES THIS METER SOCKET MEET THE REQUIREMENT? YES NO N/A X
- 3) SIZE PHOTOVOLTAIC POWER SOURCE (DC) CONDUCTORS BASED ON MAX CURRENT ON NEC 690.53 SIGN OR OCPD RATING AT DISCONNECT.
- 4) SIZE INVERTER OUTPUT CIRCUIT (AC) CONDUCTORS ACCORDING TO INVERTER OCPD AMPERE RATING. (See Guide Section 9)
- 5) ) DOES TOTAL SUPPLY BREAKERS COMPLY WITH 120% BUSBAR EXCEPTION IN 690.64(B)(2)(a)? YES X NO

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21st Century Power Solutions  
 418 Oella Ave  
 Catonsville, MD 21228  
 410.418.5650  
 www.21cps.com

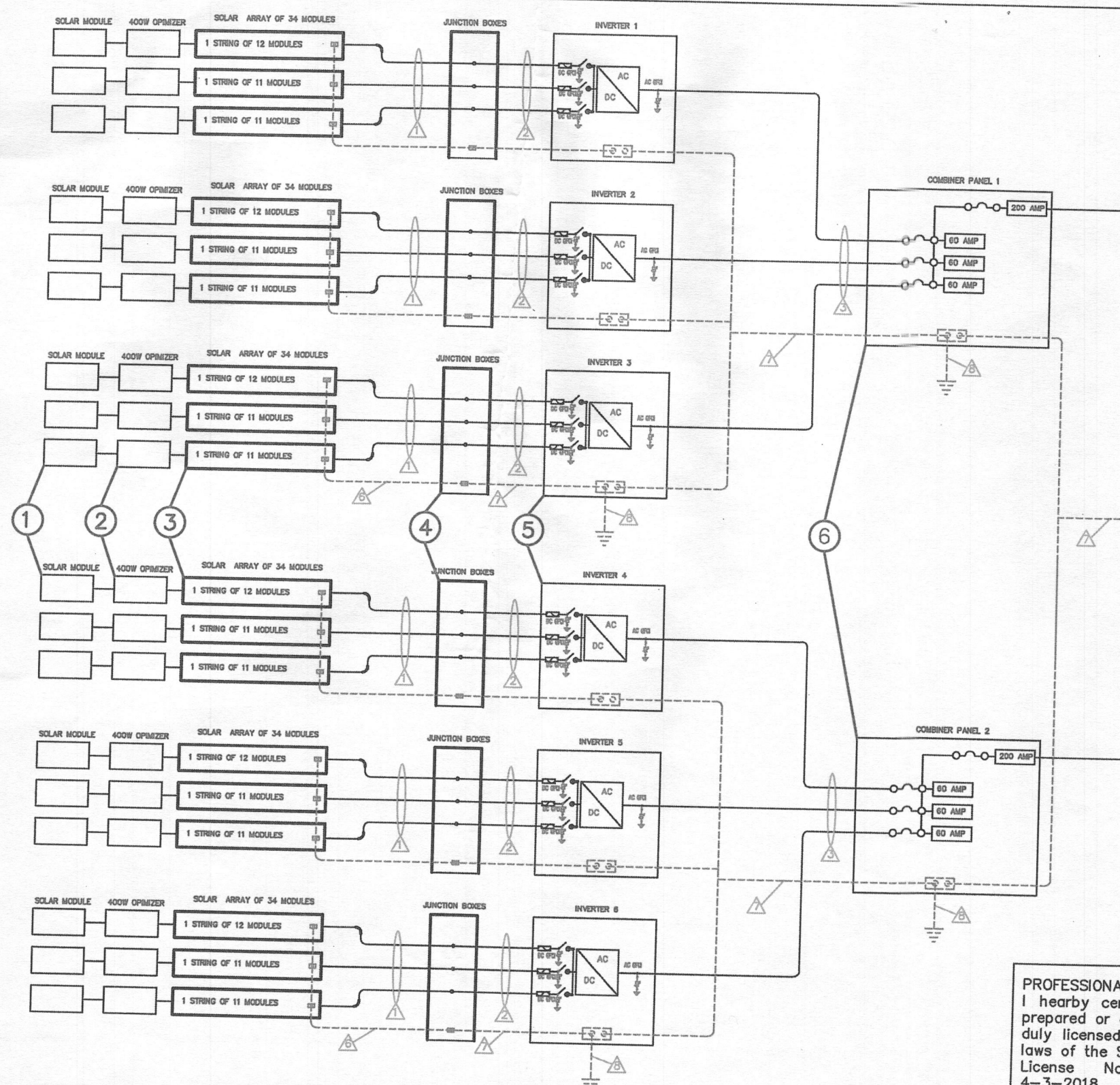
Date:	12/27/2016
Designed By:	Rob Reichel
Designer Contact:	410.418.5650
Revision:	1
Jurisdiction:	Howard County

**Calculations**

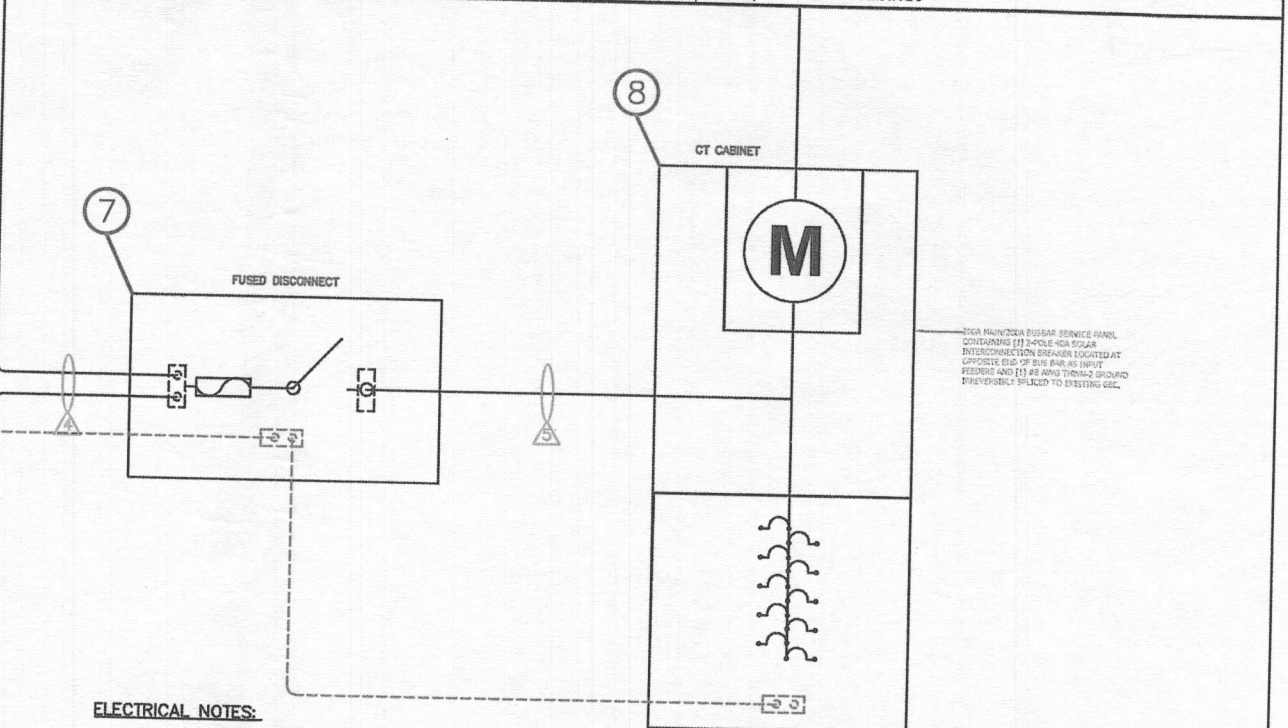
Calton Cattle Company  
 1304 Hay Meadow Lane  
 Sykesville, MD 21784



PV  
 4.0



Equipment Schedule				
TAG	Description	QTY	Part Number	Notes
1	Solar PV Module	204	R335EzC	Sylvantis R-series 335W 72-cell Solar Module
2	Optimizer	204	P400	SolarEdge 400W Power Optimizer
3	Solar Array	1		204 Solar Modules in 18 Strings
4	Junction Box	6	SolaDeck	NEMA 3R
5	Inverter	6	SE11400A-US	SolarEdge 11.4kW Single Phase Inverter
6	Combiner Panel	2		SquareD 200A Combiner Panel
7	Fused Disconnect	1		SquareD 400A Disconnect w/ (2) 400A Fuses
8	Master Cabinet	1		BGE Specified CT Cabinet



**ELECTRICAL NOTES:**

1. ALL EQUIPMENT IS LISTED FOR USE.
2. NEC AND LOCAL JURISDICTION GUIDELINES TO BE FOLLOWED.
3. ALL LABELS AND MARKING TO FOLLOW ARTICLE 690 (IV.)
4. THE POINT OF CONNECTION COMPLIES WITH CEC/NEC ARTICLE 690.64(B).
5. ALL WIRE, VOLTAGES, AMPERAGES AND EQUIPMENT IS SIZED ACCORDING TO TEMPERATURE DERATING AND LOCATIONS.
6. DISCONNECTS SHALL BE WIRED SO THAT SOLAR DC WIRES ARE ON THE LOAD SIDE AND AC UTILITY WIRE ARE ON THE LINE SIDE.
7. MAXIMUM VOLTAGE DOES NOT EXCEED 600 VDC.
8. ALL MODULES AND RACKING SHALL BE GROUNDED USING EITHER APPROVED STAINLESS STEEL WEEBS OR TIN PLATED DIRECT BURIAL RATED LUGS USING STAINLESS STEEL HARDWARE, STAR WASHERS, AND THREAD FORMING BOLTS.
9. ALL EQUIPMENT SHALL BE GROUNDED, INCLUDING BONDING JUMPERS WHERE NECESSARY ACROSS RAIL SPICE PLATES TO BOND INDIVIDUAL PIECES OF RAIL.
10. ONLY COPPER (CU) CONDUCTORS SHALL BE USED. STRANDED OR SOLID WITH PROPERLY RATED CONNECTORS.
11. INVERTER(S) CONTAIN A GROUND FAULT DETECTION AND INTERRUPTION DEVICE.
12. ALL EQUATIONS ACCOUNT FOR WORST CASE SCENARIO CONDITIONS.

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Conduit And Conductor Schedule					
TAG	Description or Conductor Type	Cond. Gauge	Number of Conductors	Conduit or Raceway Type	Conduit or Raceway Type
1	USE-2 (MFG Cables & Connectors)	10	36	N/A	
2	THHN	10	36	EMT	(6) 3/4"
3	THHN	6	18	EMT	(6) 3/4"
4	THHN	3/0	6	EMT	(2) 1-1/2"
5	THHN	500kcmil	3	EMT	3"
6	Bare Copper Equip Ground (EGC)	8	1	N/A	
7	THHN GROUND	8	1	EMT	
8	DC Grounding Electrode (Bare Copper)	6	1	N/A	

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	Revision:	1
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**Electrical Detail**

Calton Cattle Company  
1304 Hay Meadow Lane  
Sykesville, MD 21784



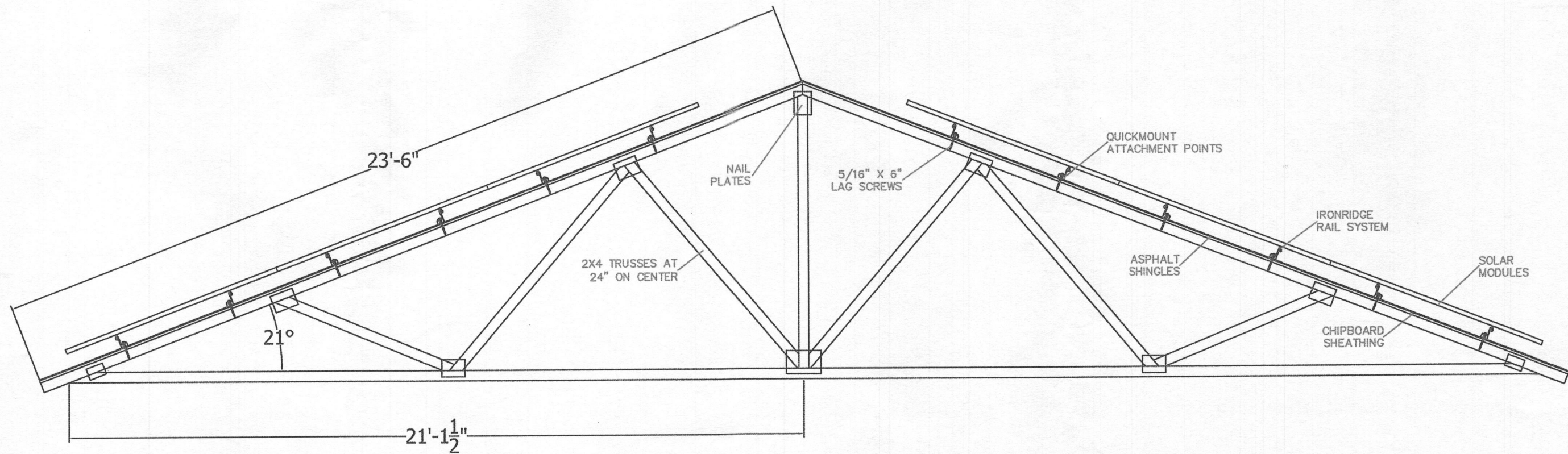
PV  
3.0

**STRUCTURAL NOTES:**


1. MOUNTS ARE APPROXIMATE LOCATION, BUT ACCURATELY SPACED.
2. MOUNTS SHOULD BE STAGGERED WHEN POSSIBLE TO EVENLY DISTRIBUTE LOAD AMONGST RAFTERS.
3. DO NOT SPLICE RAILS IN MIDDLE 50% OF SPAN BETWEEN MOUNTS.
4. ON TRUSS ROOF SYSTEMS, KEEP ATTACHMENTS 6' FROM NAIL PLATES.

1

**STRUCTURAL SECTION**  
NOT TO SCALE

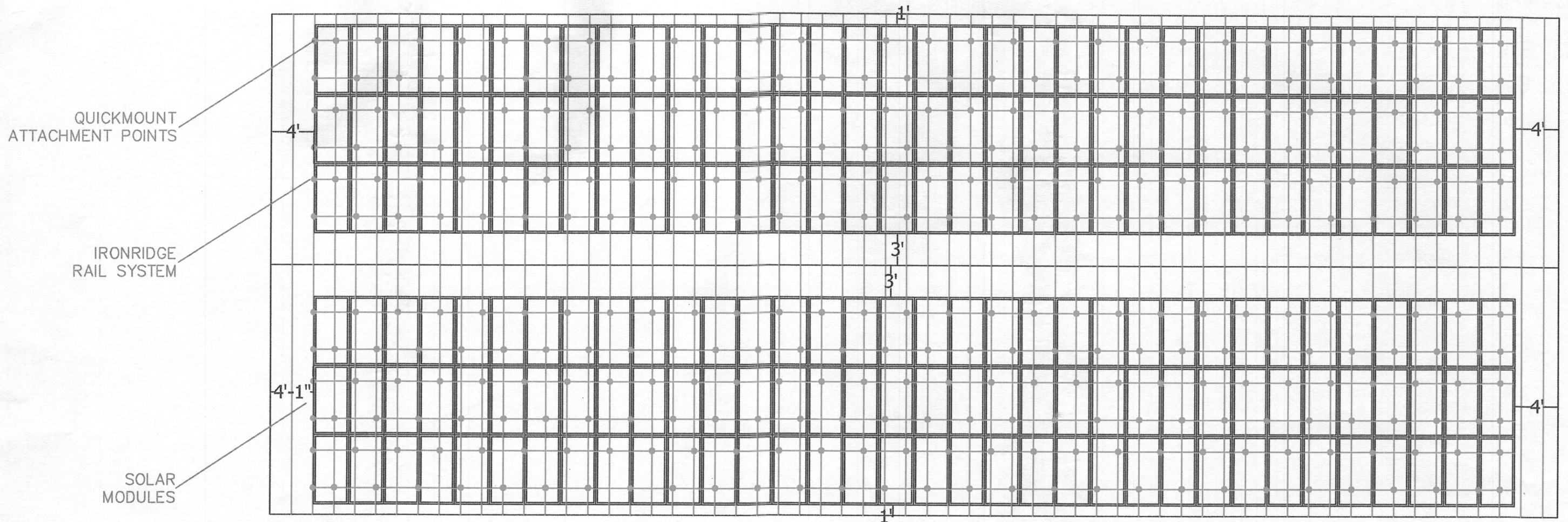


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21st Century Power Solutions 418 Oella Ave Catonsville, MD 21228 410.418.5650 www.21cps.com	Date:	12/27/2016	<b>STRUCTURAL DETAILS</b>  Calton Cattle Company 1304 Hay Meadow Lane Sykesville, MD 21784		PV 2.1
	Designed By:	Rob Reichel			
	Designer Contact:	410.418.5650			
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① **STRUCTURAL SECTION**  
SCALE: 1/8" TO 1'

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