Columbia County Remodel Permit Application

For Office Use Only Application # 1903-111 Date Received 3-29-19 By LH Permit # 37975

Zoning Official JH Date 3-29-19 Flood Zone AE Land Use ESA Zoning ESA-2

FEMA Map # N/A Elevation N/A MFE N/A River N/A Plans Examiner TC Date 4-4-19

Comments Roof Mounted Array - NO effect on flood zone Needed to be Signed

☑ NOC ☑ Deed or PA ☐ Dev Permit # ☐ In Floodway ☑ Letter of Auth. from Contractor

☐ F W Comp. letter ☐ Owner Builder Disclosure Statement ☐ Land Owner Affidavit ☐ Ellisville Water ☑ App Fee Paid

NA Site Plan ☐ Env. Health Approval ☐ NA Sub VF Form

Fax

Applicant (Who will sign/pickup the permit) ~~Glenn Hnilica~~ DALE ROSS Phone 727-657-8798

Address 1390 Gulf to Bay BLVD Clearwater fl 33755

Owners Name James Greene Phone 386-288-7766

911 Address 1021 NW Everett Ter White Springs fl 32096

Contractors Name Dale Jarosz Phone 727-657-8798

Address 1390 Gulf To Bay Blvd, Clearwater, FL. 33755

Contractor Email celeste@solartechelec.com ***Include to get updates on this job.

Fee Simple Owner Name & Address

Bonding Co. Name & Address

Architect/Engineer Name & Address ALLEN GENZELMAN, PE 15502 HANNA RD LUTZ, FL 33549

Mortgage Lenders Name & Address

Circle the correct power company ☐ FL Power & Light ☐ Clay Elec. ☒ Suwannee Valley Elec. ☐ Duke Energy

Property ID Number 20-2S-16-01657-011 Estimated Construction Cost $33,210

Subdivision Name ~~Old~~ Davis S/D Lot 11 Block Unit Phase

Driving Directions from a Major Road 41 N, (L) Suwannee Valley Rd, (R) Everett Ter, after "S" Curve on (R) before 3rd 90° curve

Construction of Solar PV - Roof Mounted Commercial OR X Residential

Type of Structure (House; Mobile Home; Garage; Exxon) Mobile Home

Use/Occupancy of the building now Occupancy Is this changing No

If Yes, Explain, Proposed Use/Occupancy

Is the building Fire Sprinkled? NO If Yes, blueprints included Or Explain

Entrance Changes (Ingress/Egress) NO If Yes, Explain

Zoning Applications applied for (Site & Development Plan, Special Exception, etc.)

Assmb Called 4.1.19. Not ready !!

Columbia County Building Permit Application

CODE: Florida Building Code 2017 6th Edition and the 2014 National Electrical Code.

Application is hereby made to obtain a permit to do work and installations as indicated. I certify that no work or installation has commenced prior to the issuance of a permit and that all work be performed to meet the standards of all laws regulating construction in this jurisdiction.

TIME LIMITATIONS OF APPLICATION : An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing, unless pursued in good faith or a permit has been issued.

TIME LIMITATIONS OF PERMITS: Every permit issued shall become invalid unless the work authorized by such permit is commenced within **180** days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time work is commenced. A valid permit receives an approved inspection every 180 days. Work shall be considered not suspended, abandoned or invalid when the permit has received an approved inspection within 180 days of the previous approved inspection.

FLORIDA'S CONSTRUCTION LIEN LAW: Protect Yourself and Your Investment: According to Florida Law, those who work on your property or provide materials, and are not paid-in-full, have a right to enforce their claim for payment against your property. This claim is known as a construction lien. If your contractor fails to pay subcontractors or material suppliers or neglects to make other legally required payments, the people who are owed money may look to your property for payment, even if you have paid your contractor in full. This means if a lien is filed against your property, it could be sold against your will to pay for labor, materials or other services which your contractor may have failed to pay.

NOTICE OF RESPONSIBILITY TO CONTRACTOR AND AGENT: ***YOU ARE HEREBY NOTIFIED*** as the recipient of a building permit from Columbia County, Florida, you will be held responsible to the County for any damage to sidewalks and/or road curbs and gutters, concrete features and structures, together with damage to drainage facilities, removal of sod, major changes to lot grades that result in ponding of water, or other damage to roadway and other public infrastructure facilities caused by you or your contractor, subcontractors, agents or representatives in the construction and/or improvement of the building and lot for which this permit is issued. No certificate of occupancy will be issued until all corrective work to these public infrastructures and facilities has been corrected.

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOU PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

OWNERS CERTIFICATION: I CERTIFY THAT ALL THE FOREGOING INFORMATION IS ACCURATE AND THAT ALL WORK WILL BE DONE IN COMPLIANCE WITH ALL APPLICABLE LAWS REGULATING CONSTRUCTION AND ZONING.

NOTICE TO OWNER: There are some properties that may have deed restrictions recorded upon them. These restrictions may limit or prohibit the work applied for in your building permit. You must verify if your property is encumbered by any restrictions or face possible litigation and or fines.

JAMES A GREENE
Print Owners Name

Owners Signature

****Property owners must sign here before any permit will be issued.**

****If this is an Owner Builder Permit Application then, ONLY the owner can sign the building permit when it is issued.**

CONTRACTORS AFFIDAVIT: By my signature I understand and agree that I have informed and provided this written statement to the owner of all the above written responsibilities in Columbia County for obtaining this Building Permit including all application and permit time limitations.

Contractor's Signature

Contractor's License Number EC13007901
Columbia County Competency Card Number 2094

Affirmed under penalty of perjury to by the Contractor and subscribed before me this 13th **day of** March **20**19.

Personally known ✓ **or Produced Identification**

State of Florida Notary Signature (For the Contractor)

SEAL:

DIA M. PRESTON
MY COMMISSION # FF 241539
EXPIRES: July 5, 2019
Bonded Thru Notary Public Underwriters

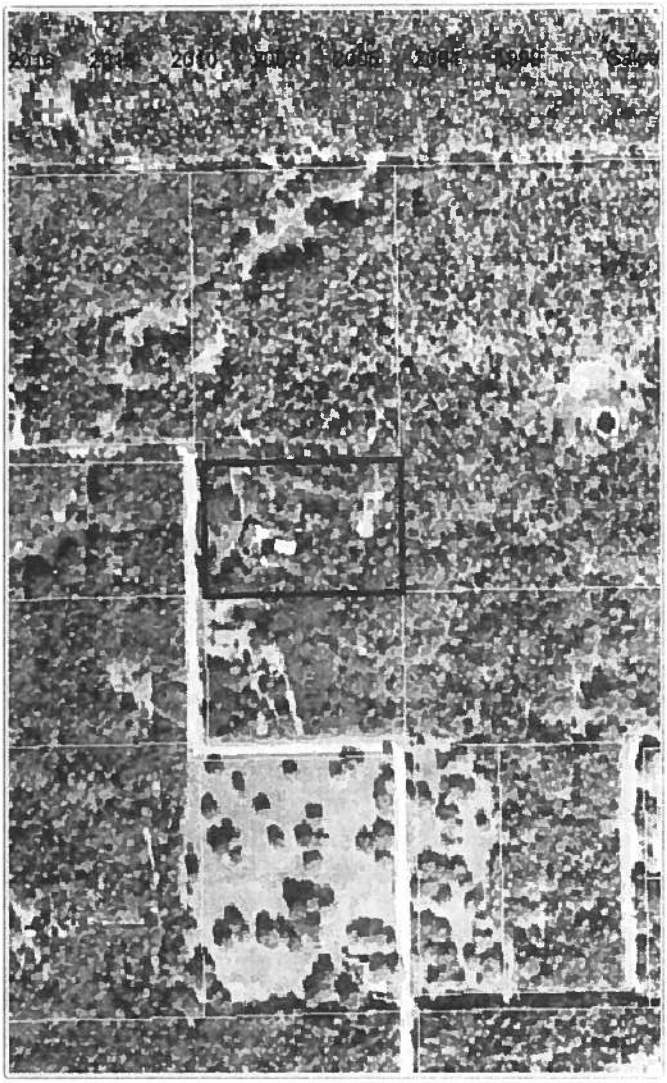
Columbia County Property Appraiser

Jeff Hampton

2018 Tax Roll Year
updated: 3/5/2019

Parcel: << 20-2S-16-01657-011 >>

Aerial Viewer Pictometery Google Maps



Owner & Property Info

Result: 1 of 1

Owner	GREENE JAMES A & CHERYL J 1021 NW EVERETT TERR WHITE SPRINGS, FL 32096		
Site	1021 EVERETT TER, WHITE SPRINGS		
Description*	LOT 11 DAVIS S/D. ORB 826-872, DC 950-1596, 950-1599, WD 1025-159.		
Area	6.22 AC	S/T/R	20-2S-16E
Use Code**	MOBILE HOM (000200)	Tax District	3

*The Description above is not to be used as the Legal Description for this parcel in any legal transaction
**The Use Code is a FL Dept of Revenue (DOR) code and is not maintained by the Property Appraiser's office Please contact your city or county Planning & Zoning office for specific zoning information

Property & Assessment Values

2018 Certified Values		2019 Working Values	
Mkt Land (2)	$17,263	Mkt Land (2)	$18,513
Ag Land (0)	$0	Ag Land (0)	$0
Building (1)	$78,790	Building (1)	$79,435
XFOB (6)	$11,300	XFOB (6)	$11,300
Just	$107,353	Just	$109,248
Class	$0	Class	$0
Appraised	$107,353	Appraised	$109,248
SOH Cap [?]	$2,909	SOH Cap [?]	$0
Assessed	$107,353	Assessed	$109,248
Exempt	HX H3 OTHER $55,000	Exempt	HX H3 OTHER $55,000
Total Taxable	county:$52,353 city:$52,353 other:$52,353 school:$77,353	Total Taxable	county:$54,248 city:$54,248 other:$54,248 school:$79,248

Sales History

Sale Date	Sale Price	Book/Page	Deed	V/I	Quality (Codes)	RCode
8/27/2004	$14,000	1025/0159	WD	V	Q	
4/2/2002	$100	950/1599	WD	V	U	06
8/6/1996	$7,500	826/0872	WD	V	Q	

Building Characteristics

Bldg Sketch	Bldg Item	Bldg Desc*	Year Blt	Base SF	Actual SF	Bldg Value
Sketch	1	SFR MANUF (000200)	2009	2280	3904	$79,435

*Bldg Desc determinations are used by the Property Appraisers office solely for the purpose of determining a property's Just Value for ad valorem tax purposes and should not be used for any other purpose.

Extra Features & Out Buildings (Codes)

Code	Desc	Year Blt	Value	Units	Dims	Condition (% Good)
0060	CARPORT F	2005	$900.00	360.000	18 x 20 x 0	(000.00)
0296	SHED METAL	2005	$500.00	1.000	0 x 0 x 0	(000.00)
0040	BARN,POLE	2009	$1,500.00	1.000	0 x 0 x 0	AP (025.00)
0070	CARPORT UF	2013	$200.00	1.000	0 x 0 x 0	(000.00)
0070	CARPORT UF	2017	$400.00	1.000	0 x 0 x 0	(000.00)

NOTICE OF COMMENCEMENT

Tax Parcel Identification Number:

20-2S-16-01657-011

Clerk's Office Stamp

Inst: 201912006832 Date: 03/21/2019 Time: 11:56AM
Page 1 of 1 B: 1380 P: 2401, P.DeWitt Cason, Clerk of Court
Columbia, County, By: KV
Deputy Clerk

THE UNDERSIGNED hereby gives notice that improvements will be made to certain real property, and in accordance with Section 713.13 of the Florida Statutes, the following information is provided in this **NOTICE OF COMMENCEMENT**.

1. Description of property *(legal description)*: LOT 11 DAVIS S/D. ORB826-872, DC 950-1596, 950-1599, WD 1025-159
   a) Street *(job)* Address: 1021 NW EVERETT TERR, WHITE SPRINGS, FL. 32096
2. General description of improvements: SOLAR PV
3. Owner Information or Lessee information if the Lessee contracted for the improvements:
   a) Name and address: JAMES A GREENE & CHERYL J
   b) Name and address of fee simple titleholder (if other than owner) _____
   c) Interest in property _____
4. Contractor Information
   a) Name and address: SOLAR TECH ELEC LLC 1390 GULF TO BAY BLVD, FL. 33755
   b) Telephone No.: 727-657-8798
5. Surety Information (if applicable, a copy of the payment bond is attached):
   a) Name and address: _____
   b) Amount of Bond: _____
   c) Telephone No.: _____
6. Lender
   a) Name and address: _____
   b) Phone No. _____
7. Person within the State of Florida designated by Owner upon whom notices or other documents may be served as provided by Section 713.13(1)(a)7., Florida Statutes:
   a) Name and address: _____
   b) Telephone No.: _____
8. In addition to himself or herself, Owner designates the following person to receive a copy of the Lienor's Notice as provided in Section 713.13(l)(b), Florida Statutes:
   a) Name: _____ OF _____
   b) Telephone No.: _____
9. Expiration date of Notice of Commencement **(the expiration date will be 1 year from the date of recording unless a different date is specified)**: _____

WARNING TO OWNER: ANY PAYMENTS MADE BY THE OWNER AFTER THE EXPIRATION OF THE NOTICE OF COMMENCEMENT ARE CONSIDERED IMPROPER PAYMENTS UNDER CHAPTER 713, PART I, SECTION 713.13, FLORIDA STATUTES, AND CAN RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY; A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT YOUR LENDER OR AN ATTORNEY BEFORE COMMENCING WORK OR RECORDING YOUR NOTICE OF COMMENCEMENT.

STATE OF FLORIDA
COUNTY OF COLUMBIA

10 _____
Signature of Owner or Lessee, or Owner's or Lessee's Authorized Office/Director/Partner/Manager

James Andrew Greene
Printed Name and Signatory's Title/Office

The foregoing Instrument was acknowledged before me, a Florida Notary, this 21 day of March 2019 by:

James A. Greene as Owner for _____.
(Name of Person) (Type of Authority) (name of party on behalf of whom Instrument was executed)

Personally Known ____ OR Produced Identification ✓ Type FL DL

Notary Signature _____ Notary Stamp or Seal

KATRINA M VERCHER
Commission # GG 181020
Expires March 5, 2022
Bonded Thru Budget Notary Services

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 YEAR WARRANTY

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Extremely small
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

Single Phase Inverter with HD-Wave Technology for North America

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

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5[1]							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V[2]	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V[2]	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600kΩ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Data, ANSI C12.20	Optional[3]							
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
STANDARD COMPLIANCE								
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07							
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	3/4" minimum / 14-6 AWG					3/4" minimum /14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	3/4" minimum / 1-2 strings / 14-6 AWG					3/4" minimum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174					21.3 x 14.6 x 7.3 / 540 x 370 x 185		in / mm
Weight with Safety Switch	22 / 10		25.1 / 11.4	26.2 / 11.9		38.8 / 17.6		lb / kg
Noise	< 25					<50		dBA
Cooling	Natural Convection							
Operating Temperature Range	-40 to +140 / -25 to +60[4] (-40°F / -40°C option)[5]							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

[1] For other regional settings please contact SolarEdge support
[2] A higher current source may be used, the inverter will limit its input current to the values stated
[3] Revenue grade inverter P/N: SExxxxH-US000NNC2
[4] For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf
[5] -40 version P/N: SExxxxH-US000NNU4

RoHS

Silfab SOLAR

SLA-M
Monocrystalline

BAA ARRA · 25 25-YEAR GUARANTEE · AUTOMATED MANUFACTURING · JUST-IN-TIME · DNV TOP PERFORMER · TIER 1 BANKABLE $$$ · HIGH EFFICIENCY

300 Wp 60 Cell

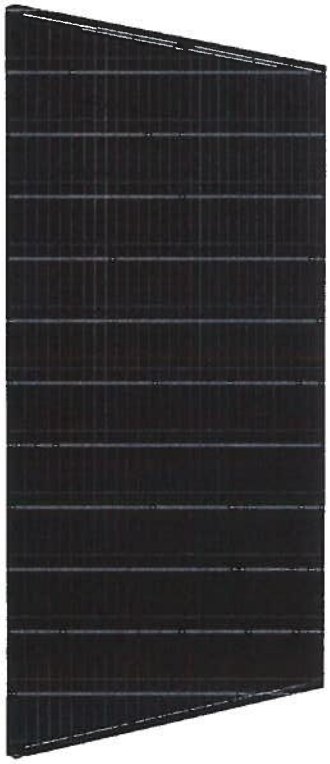
Monocrystalline PV Module

CE IEC TÜV ETL Fraunhofer ISE

100% MAXIMUM POWER DENSITY
Silfab's SLA-M 300 ultra-high-efficiency modules are optimized for both Residential and Commercial projects where maximum power density is preferred.

100% NORTH AMERICAN QUALITY MATTERS
Silfab's fully-automated manufacturing facility ensures precision engineering is applied at every stage. Superior reliability and performance combine to produce one of the highest quality modules with the lowest defect rate in the industry.

NORTH AMERICAN CUSTOMIZED SERVICE
Silfab's 100% North American based team leverages just-in-time manufacturing to deliver unparalleled service, on-time delivery and flexible project solutions.



ENSURES MAXIMUM EFFICIENCY
60 of the highest efficiency, premium quality monocrystalline cells result in a maximum power rating of 300Wp.

ADVANCED PERFORMANCE WARRANTY
25-year linear power performance guarantee to 82%

ENHANCED PRODUCT WARRANTY
12-year product/workmanship warranty

BUILT BY INDUSTRY EXPERTS
With over 35 years of industry experience, Silfab's technical team are pioneers in PV technology and are dedicated to an innovative approach that provides superior manufacturing processes including: infra-red cell sorting, glass washing, automated soldering and meticulous cell alignment.

POSITIVE TOLERANCE
(-0/+5W) All positive module sorting ensures maximum performance

44 PPM DEFECT RATE*
Total automation ensures strict quality control during each step of the process at our certified ISO manufacturing facility.
*As of December 31, 2016

LIGHT AND DURABLE
Over-engineered to weather low load bearing structures up to 5400 Pa. Light-weight frame exclusively designed with wide-ranging racking compatibility and durability.

PID RESISTANT
Proven in accordance to IEC 62804-1

AVAILABLE IN
All Black

MADE IN NORTH AMERICA

Electrical Specifications		SILFAB SLA Monocrystalline	
Test Conditions		STC	NOCT
Module Power (Pmax)	Wp	300	227
Maximum power voltage (Vpmax)	V	32.8	29.5
Maximum power current (Ipmax)	A	9.16	7.69
Open circuit voltage (Voc)	V	39.85	36.9
Short circuit current (Isc)	A	9.71	7.96
Module efficiency	%	18.4	17.3
Maximum system voltage (VDC)	V	1000	
Series fuse rating	A	15	
Power Tolerance	Wp	-0/+5	

Measurement conditions: STC 1000 W/m2 • AM 1.5 • Temperature 25 °C • NOCT 800 W/m² • AM 1.5 • Measurement uncertainty ≤ 3%
• Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by -0/+5.

Temperature Ratings		SILFAB SLA Monocrystalline
Temperature Coefficient Isc	%/K	0.03
Temperature Coefficient Voc	%/K	-0.30
Temperature Coefficient Pmax	%/K	-0.38
NOCT (± 2°C)	°C	45
Operating temperature	°C	-40/+85

Mechanical Properties and Components		SILFAB SLA Monocrystalline
Module weight (± 1 kg)	kg	19
Dimensions (H x L x D; ± 1mm)	mm	1650 x 990 x 38
Maximum surface load (wind/snow)*	N/m²	5400
Hail impact resistance		ø 25 mm at 83 km/h
Cells		60 - Si monocrystalline - 4 or 5 busbar - 156.75 x 156.75 mm
Glass		3.2 mm high transmittance, tempered, antireflective coating
Backsheet		Multilayer polyester-based
Frame		Anodized Al
Bypass diodes		3 diodes-45V/12A, IP67/IP68
Cables and connectors (See installation manual)		1200 mm ø 5.7 mm (4 mm2), MC4 compatible

Warranties	SILFAB SLA Monocrystalline
Module product warranty	12 years
	25 years
Linear power performance guarantee	≥ 97% end of 1st year
	≥ 90% end of 12th year
	≥ 82% end of 25th year

Certifications	SILFAB SLA Monocrystalline
Product	ULC ORD C1703, UL 1703, IEC 61215, IEC 61730, IEC 61701, CEC listed
	UL Fire Rating: Type 2 (Type 1 on request)
Factory	ISO 9001:2008

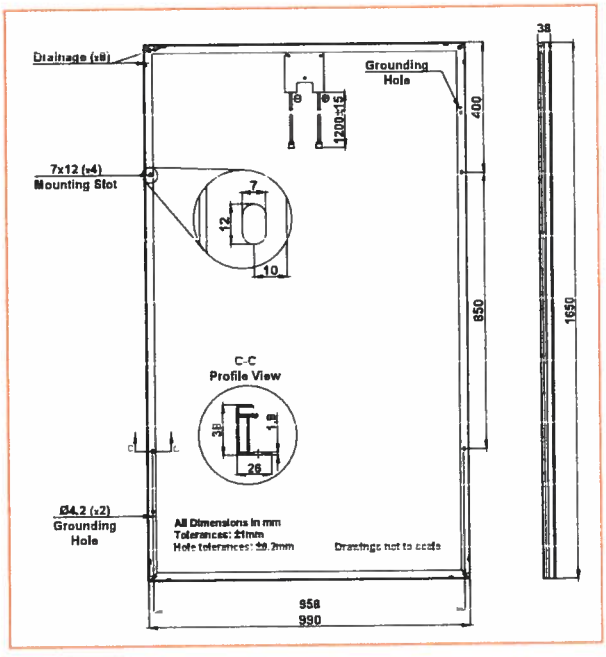
Warning: Read the installation and User Manual before handling, installing and operating modules.

Third-party generated pan files from PV Evolution Labs available for download at: www.silfab.ca/downloads

TOP PERFORMER 2017 DNV·GL PV MODULE RELIABILITY SCORECARD

Pallet Count: 26

Container Count: 936



Silfab Solar Inc.
240 Courtneypark Drive East • Mississauga,
Ontario Canada L5T 2S5
Tel +1 905-255-2501 • Fax +1 905-696-0267
info@silfab.ca • www.silfab.ca

CERTIFICATE OF COMPLIANCE

Certificate Number	20150626-E467724
Report Reference	E467724-20150108
Issue Date	2015-JUNE-26

Issued to: Everest Solar Systems
Ste 111
3809 Ocean Ranch Blvd
Oceanside CA 92056

This is to certify that representative samples of MOUNTING SYSTEMS, MOUNTING DEVICES, CLAMPING DEVICES AND GROUND LUGS FOR USE WITH PHOTOVOLTAIC MODULES AND PANELS

Everest Crossrail System, utilizing Crossrail 48 and 48-S rails for System Fire Classification and Bonding.
Everest CrossRail System, utilizing CrossRail 80 for Bonding.

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 2703, Outline of Investigation for Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

February 9, 2018

Everest Solar Systems, LLC
3809 Ocean Ranch Blvd, Suite 111
Oceanside, CA 92056
Attn: Andy Neshat

moment
ENGINEERING + DESIGN
WWW.MSEGLLC.COM

RE: ***CrossRail PV Panel Mounting System Evaluation***

To whom it may concern:

Per your request, Moment Engineering + Design has performed a comprehensive structural analysis of the Everest Solar CrossRail Solar PV Mounting System for typical installations in the State of Florida. When installed per the conditions and design criteria described herein, the CrossRail Solar PV Mounting System is compliant with the sections of the design reference documents noted below.

Design Reference Documents

- *2017 Florida Building Code*
- *2017 Florida Residential Code*
- ASCE/SEI 7-10 – *Minimum Design Loads for Buildings and Other Structures*
- *2010 Aluminum Design* Manual, by the Aluminum Association
- Section and materials data provided by Everest Solar Systems
  - Rail section properties appear in the appendix to this report

Overview

The CrossRail PV-panel roof mounting system consists of extruded aluminum support rails spanning between points of attachment on an existing roof structure. This analysis is limited to capacity of the CrossRail only. Attachment of the CrossRail Mounting System to the existing roof structure shall be the responsibility of the installer, and should be analyzed by a registered design professional where required by the local authority having jurisdiction.

Methods & Design Parameters

Applicable combinations of dead, wind, snow, and seismic loads were evaluated in accordance with current code requirements to determine allowable rail span lengths, based on assumptions of single-span conditions and allowable deflection of L/60.

Design wind pressures were determined using Components and Cladding calculations in Chapter 26-30 of ASCE 7-10, using the loading parameters listed below. Configurations not conforming to these parameters will require additional analysis. Calculation of applicable roof snow load should be based upon ground snow load maps and equations and factors of ASCE 7-10, Chapter 7 and applicable sections of the 2017 FBC. For designated Case Study areas noted in the 2017 Florida Building Code, refer to local jurisdiction requirements for snow and wind load determination.

Seismic criteria were considered per provisions of ASCE 7-10 Chapter 13 with parameters specified below. While seismic effects did not appear to govern the capacity of this system, applicable seismic detailing requirements should be satisfied when installed per the manufacturer instructions and additional installation notes specified herein.

Loading Parameters:

- Ground snow load: Varies
- Ultimate 3-second gust wind speed (V): 110-200 mph
- Building roof mean height: 30 ft. or less
- Roof wind pressure region: Zone 1 - Zone 3
- Structural risk category: II
- Wind exposure: B, C, D
- Seismic site class: D
- Seismic design category: A through E
- 0.2s MCE_R ground motion parameter (S_S): Not to exceed 2.000
- 1s MCE_R ground motion parameter (S_1): Not to exceed 1.250
- Component importance factor (I_p): 1.0
- Component acceleration factor, (a_p): 1.0
- Component response modification factor (R_p): 1.5
- Panel orientation: Portrait or Landscape
- Panel installation angle: Flush with roof slope
- Roof slope (θ): 0-7°, >7-27°, >27-45°

Design Results

The allowable span lengths of the system are principally controlled by applicable wind and snow loads to the structure. Refer to the CrossRail span tables in the appendix to this document for recommended rail configurations based on combinations of these loading parameters. Note that reaction loads provided in the attached tables are only applicable when used with the corresponding span length recommendations provided therein. These reactions may be scaled linearly when shorter spans are used.

Installation Notes

The following guidelines apply to all installations using the CrossRail product line:

- Tables assume two independent support rails per row with either panel orientation.
- Maximum end cantilever of aluminum support rail shall not exceed one-third (1/3) of allowable span in the roof wind pressure zone of the cantilever.
- Rails shall be continuous (not spliced) over a minimum of two supports unless using an approved Everest Solar structural splice.
- Installation over roof overhangs or within 10" of any roof edge is not advised.
- Observe all local jurisdictional requirements regarding roof setback requirements.
- Ensure that actual span length does not exceed capacity of roof attachment.

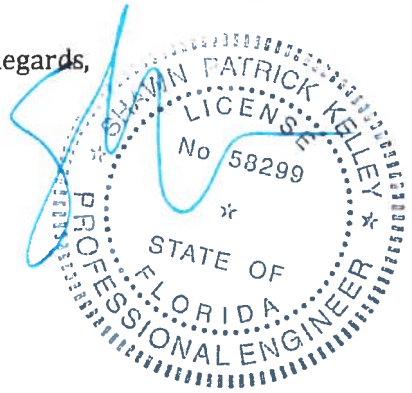
Summary

This assessment has provided design validation for code-compliant installations of the CrossRail PV Mounting System in the State of Florida. For the configurations and design loadings noted previously, the attached span tables represent maximum span lengths based on allowable stresses and deflection criteria. For all other configurations, refer to Everest Solar Systems for engineering support.

This report does not provide analysis of roof attachment hardware, nor of any existing structures, as may be required by the local authority having jurisdiction.

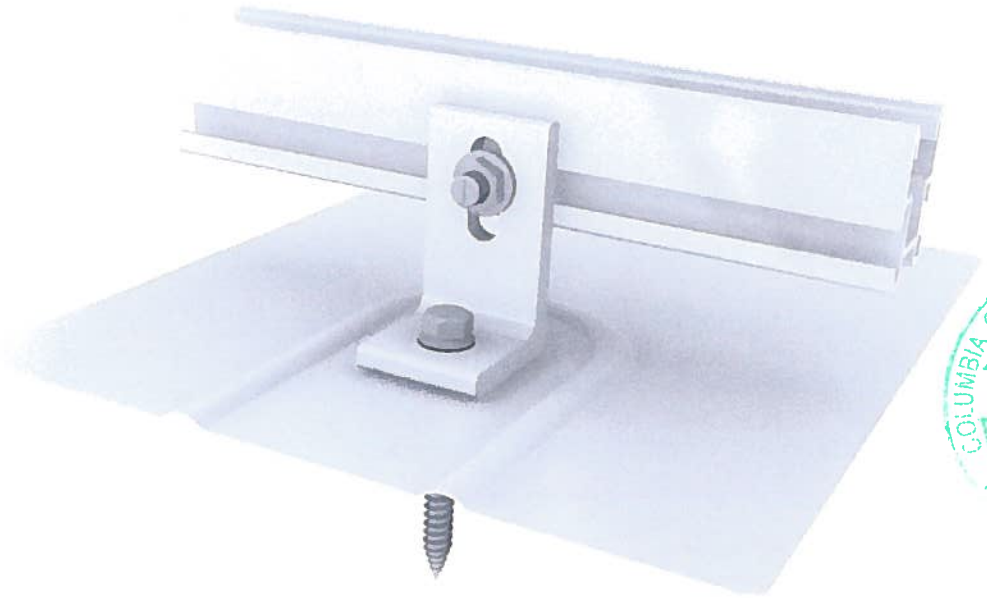
We appreciate the opportunity to have assisted you with this project. Should you have any further questions regarding this analysis, please feel free to contact us by phone or email.

Best Regards,



Shawn P. Kelley, P.E.
Principal
moment ENGINEERING + DESIGN
spkelley@msegllc.com

Mounting systems for solar technology



EVEREST SOLAR SYSTEMS

EverFlash

COMP SHINGLE ROOF ATTACHMENT

4000367 | EverFlash Comp Kit, 10X12" Mil
4000366 | EverFlash Comp Kit, 10X12" Black

EverFlash Flashing, 10" x 12"

Material: aluminum
Finish: mill, dark

5/16" Sealing Washer

Material: stainless steel, EPDM insert

EverFlash L-Foot and Hardware

Material: aluminum
Finish: mill, dark

5/16" Lag Bolt

Material: stainless steel

GENERAL GUIDELINES

¬ Always refer to roofing manufacturer's instructions prior to starting work.
¬ Refer to the American Wood Council's guidelines for Lag pull-out capacities (NDS 2005, Table 11.2A).
¬ Everest Solar recommends consulting a professional roofer prior to beginning work.
¬ Installer is responsible for verifying the structural integrity of the roof prior to installation.

ASSEMBLY: STEP BY STEP

1 of 5

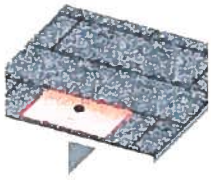
Locate the rafters and snap horizontal and vertical lines to mark the installation position for each EverFlash flashing.

Materials required: Tape measure, string line

2 of 5

Drill a pilot hole (1/4" diameter) for the lag bolt. Remove any saw dust and fill the hole with the roofing manufacturer's recommended sealant.

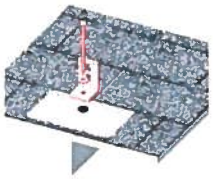
Materials required: Drill



3 of 5

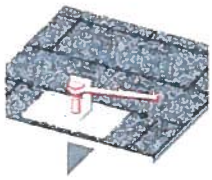
Insert the flashing so the top part is under the next row of shingles and pushed far enough up slope to prevent water infiltration through vertical joint in shingles. The leading edge of flashing must butt against upper row of nails to prevent turning when tourqued.

Materials required: EverFlash flashing



4 of 5

Line up pilot hole with EverFlash flashing hole. Insert the lag bolt through the EPDM bonded washer, the L-Foot, the gasketed hole in the flashing and into the rafter.



5 of 5

Torque: The range is between 8.3 - 11.6 lb-ft depending on the type of wood and time of year. The visual indicator for proper torque is when the EPDM on the underside of the bonded washer begins to push out the sides as the washer compresses. If using an impact wrench to install the fasteners be careful not to over torque the fastener. You may need to stop and use a ratchet to finish the install.

Ready!

Install Everest Mounting System (refer to CrossRail 48/80 installation manual)

The EverFlash is simple and fast to install. Please contact us for further assistance:

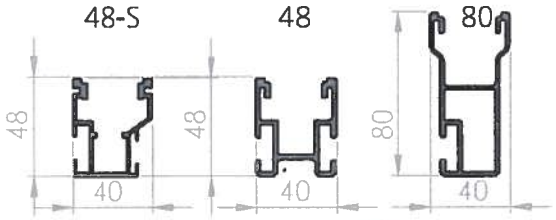
SERVICE-HOTLINE + 1 760.301.5300

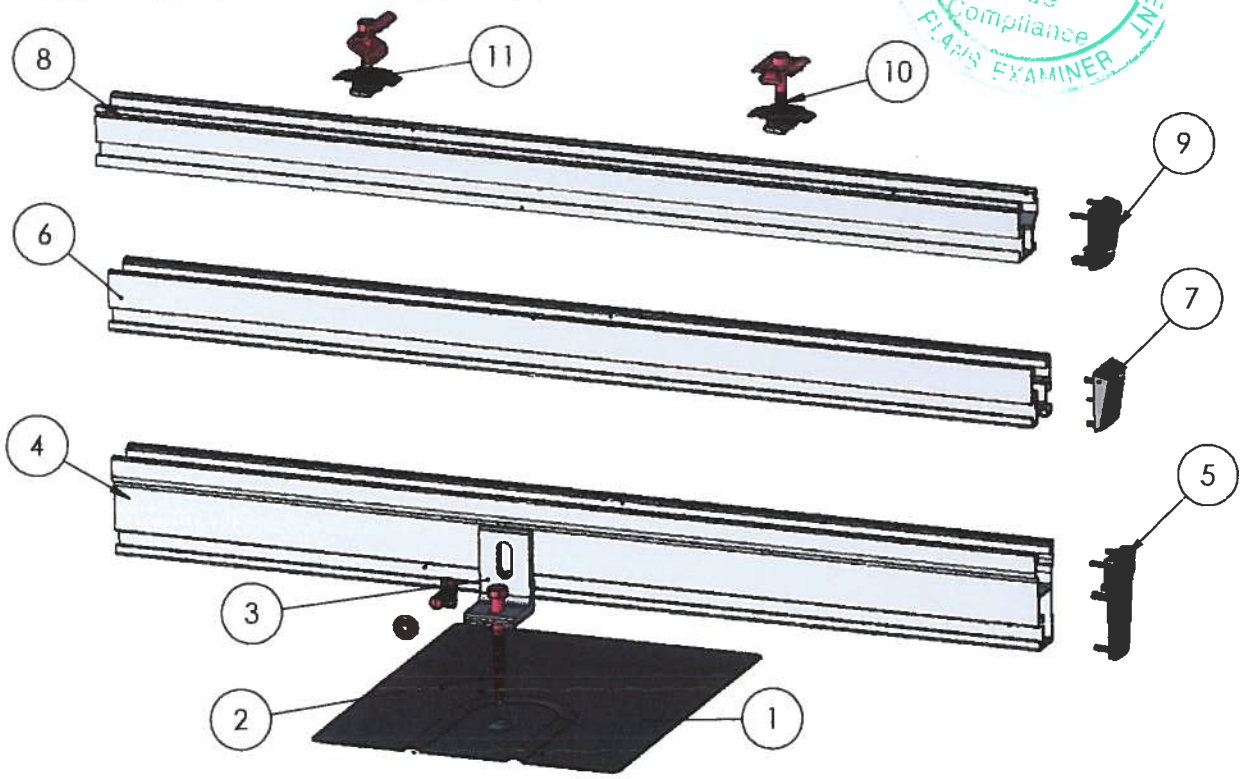
Everest Solar Systems, LLC
3809 Ocean Ranch Blvd., Suite 111
Oceanside, CA 92056
Service-Hotline +1.760.301.5300
info@everest-solarsystems.com
www.everest-solarsystems.com

CrossRail

Technical Sheet

Mounting systems for solar technology

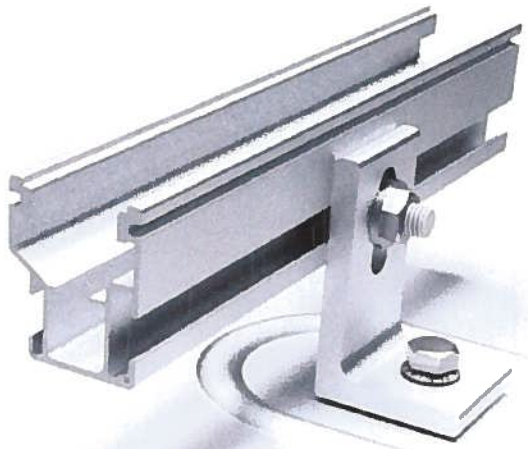


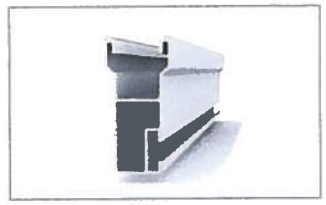


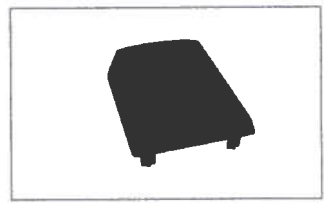
**All dimensions are in mm unless otherwise specified

ITEM NO.	DESCRIPTION
1	EverFlash Comp Kit, 10X12"
2	Lag Screw 5/16"X3" 18-8 SS
3	L-Foot UL 2703 Set, CR48-S/48/80
4	CrossRail 48-S, Mill, Dark Anodized
5	CrossRail 48-S End Cap
6	CrossRail 48, Mill, Dark Anodized
7	CrossRail 48 End Cap
8	CrossRail 80, Mill, Dark Anodized
9	CrossRail 80 End Cap
10	Mid Clamp UL 2703, SS, Silver Set 30-50mm CR
11	End Clamp UL 2703, SS, Silver Set CR

Mounting systems for solar technology







EVEREST SOLAR SYSTEMS

RESIDENTIAL ROOF SOLUTIONS
CROSSRAIL SYSTEM

Everest Solar Systems, LLC
3809 Ocean Ranch Blvd., Suite 111
Oceanside, CA 92056
Service-Hotline +1.760.301.5300
info@everest-solarsystems.com
www.everest-solarsystems.com

Product Sheet CrossRailSystem | US4 | 0216

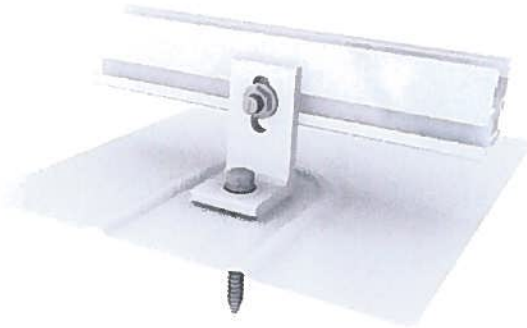
CROSSRAIL SYSTEM

- High quality, German engineered system optimized for residential installation
- Everest M K2 mounting hardware simplifies module installation – fast, easy, and secure
- Easily integrates with third party roof attachment products, such as QuickMountPV
- L-foot provides adjustability and compatibility with common roof interfaces (Comp, Tile & Metal)
- No shingle cutting, won't void roof manufacturer's warranty
- 100% code-compliant, structural validation for all solar states
- Three rail sizes available to suit all structural conditions
- All components also available in dark
- Fast installation, minimal component count result in low total installed cost
- Simple to design using code compliant Everest Online Design Tool

Technical data

Applicable Roof Types	Composition shingle, tile, flat tile
Flexibility	Modular construction, suitable for any system size, height adjustable
PV modules	For all common module types
Module orientation	Portait and landscape
Material	High corrosion resistance, stainless steel and high grade aluminum
Roof attachment	Screw connection into rafter
Structural validity	IBC compliant, stamped engineering letters available for all solar states
Warranty	12 years
System components	CrossRail 48, 48-S or 80, L-Foot, Mid and End Clamp Sets, Universal Mid and End Clamps, third-party roof attachment products such as QuickMountPV

CrossRail for Pitched Roofs



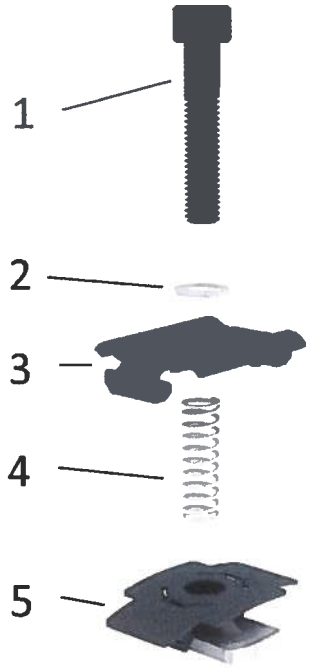
CrossRail with EverFlash

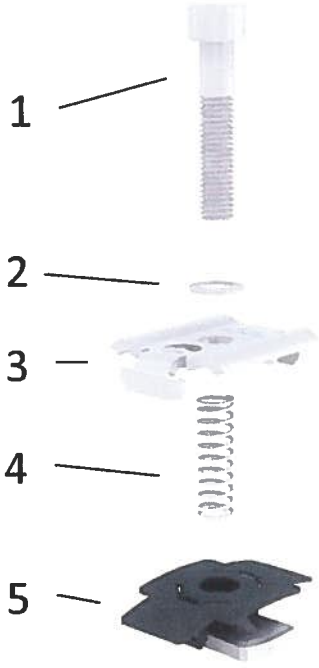
Bonding Mid and End Clamps

Everest Solar Systems
Bonding Mid Clamp Spec Sheet

Mounting systems for solar technology

- Integrated bonding
- UL 2703 component
- Fast, simple installation
- Rugged design complies with most module manufacturer's requirements
- Secured in place with MK3 for single-hand installation
- High strength, corrosion resistant stainless steel construction
- 21 mm (.827 inch) module gap





Dark Mid Clamp Sets

US00_4000349 Mid Clamp UL 2703 Set, Black, 30– 40mm

1. Allen Bolt, Black
2. Lock Washer
3. Universal Mid Clamp, Black
4. Clamp Spring
5. MK3 Slot Nut

US00_4000351 Mid Clamp UL 2703,SS,Black,Set 41– 50mm

1. Allen Bolt, Black
2. Lock Washer
3. Universal Mid Clamp, Black
4. Clamp Spring
5. MK3 Slot Nut

Silver Mid Clamp Sets

US00_4000347 Mid Clamp UL 2703,SS Set 30– 40mm

1. Allen Bolt
2. Lock Washer
3. Universal Mid Clamp
4. Clamp Spring
5. MK3 Slot Nut

US00_4000348 Mid Clamp UL 2703,SS Set 41– 50mm

1. Allen Bolt
2. Lock Washer
3. Universal Mid Clamp
4. Clamp Spring
5. MK3 Slot Nut

VDE REG-Nr. E524 — VDE Declaration of Conformity

CSTB — CEIAB (fr)

CSTB — Pass'Innovation 2011-128 (fr)

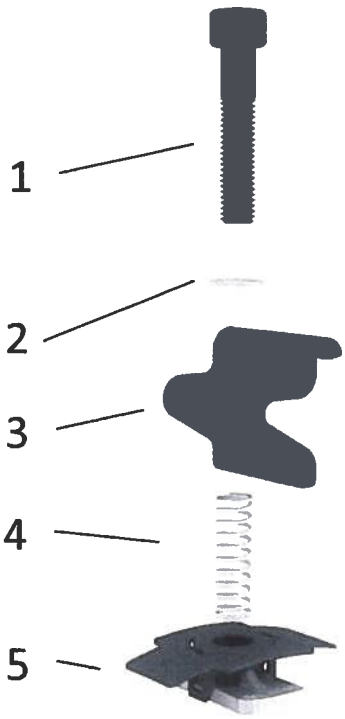
CERT ISO 9001 — TUV Rheinland - ISO 9001:2008

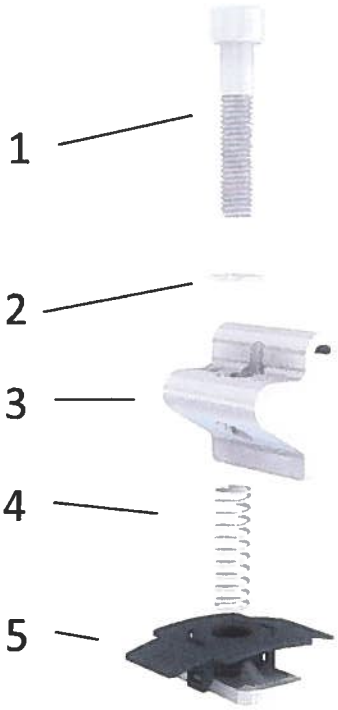
VDE REG-Nr. E524 — VDE Certificate (de)

Everest Solar Systems
Bonding End Clamp Spec Sheet

Mounting systems for solar technology

- Integrated bonding
- UL 2703 component
- Universal design features only two part numbers for all module sizes
- Fast, simple installation
- Rugged design complies with a wide variety of module manufacturer's requirements
- Secured in place with MK3 for single-hand installation
- High strength, corrosion resistant stainless steel construction





Dark End Clamp Set

US00_4000430 End Clamp UL 2703,SS, Black, Set 30– 50mm CR

1. Allen Bolt, Black
2. Lock Washer
3. Universal End Clamp, Black
4. Clamp Spring
5. MK3 Slot Nut

Silver End Clamp Set

US00_4000429 End Clamp UL 2703,SS, Set 30– 50mm CR

1. Allen Bolt
2. Lock Washer
3. Universal End Clamp
4. Clamp Spring
5. MK3 Slot Nut

VDE Declaration of Conformity

CEIAB (fr)

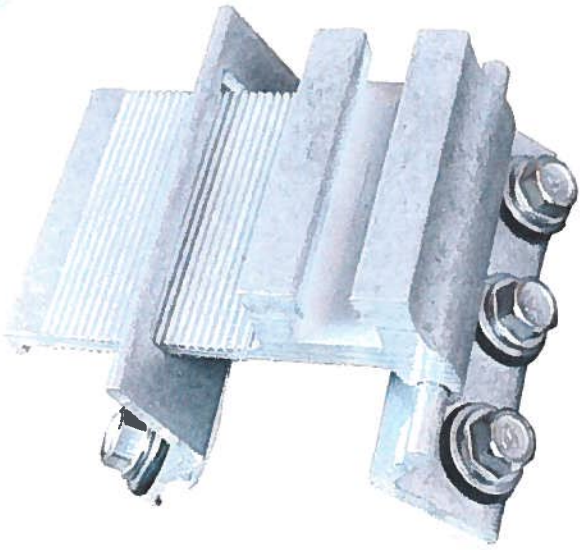
Pass'Innovation 2011-128 (fr)

TUV Rheinland - ISO 9001:2008

VDE Certificate (de)

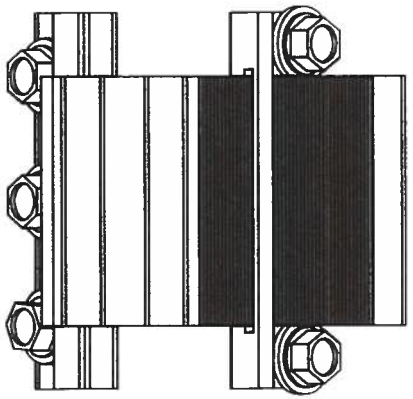
STEEP-SLOPE APPLICATIONS

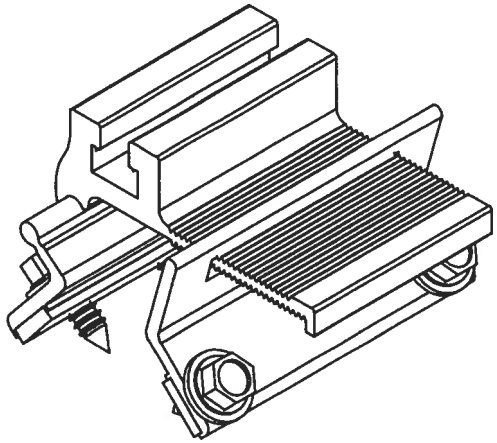
CorruSlide PRODUCT GUIDE

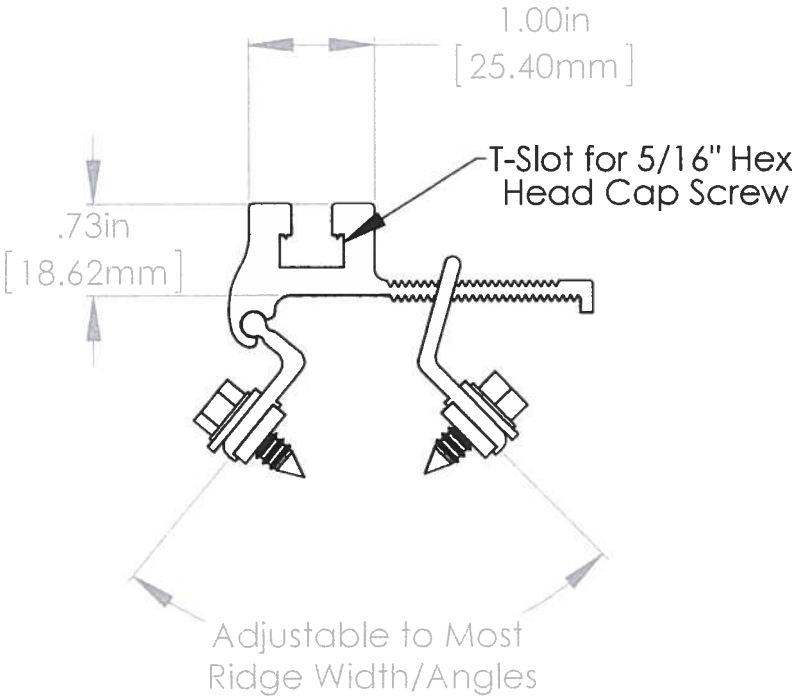


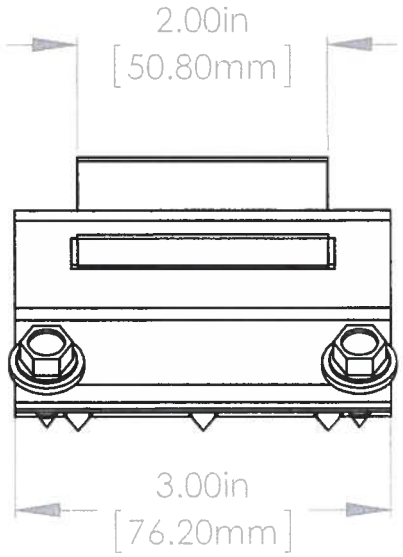
EcoFasten Solar®

EcoFasten Solar®

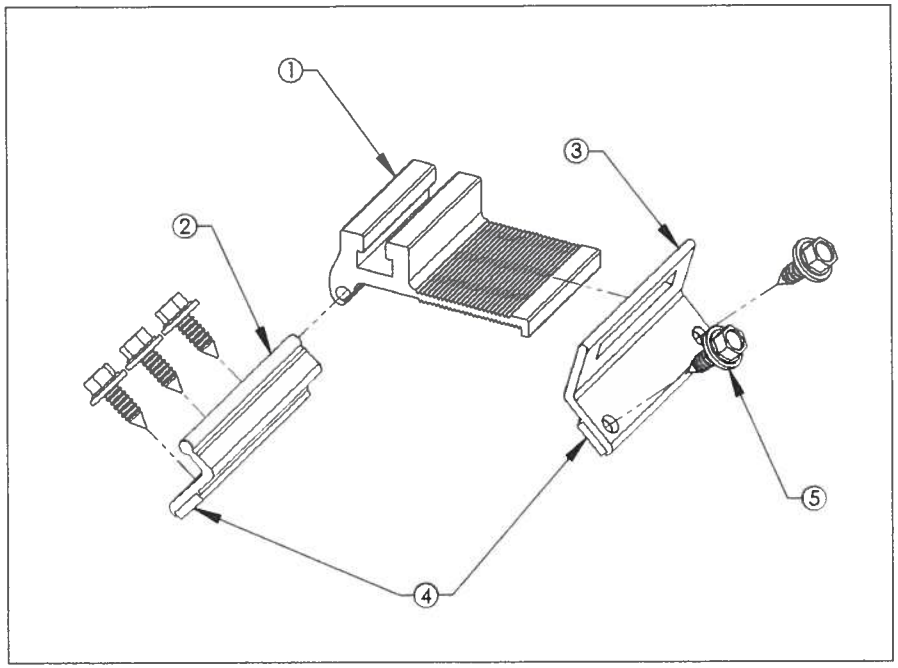








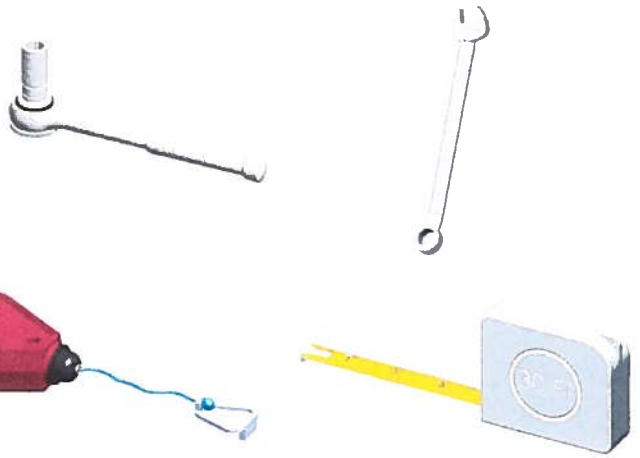
EcoFasten Solar®



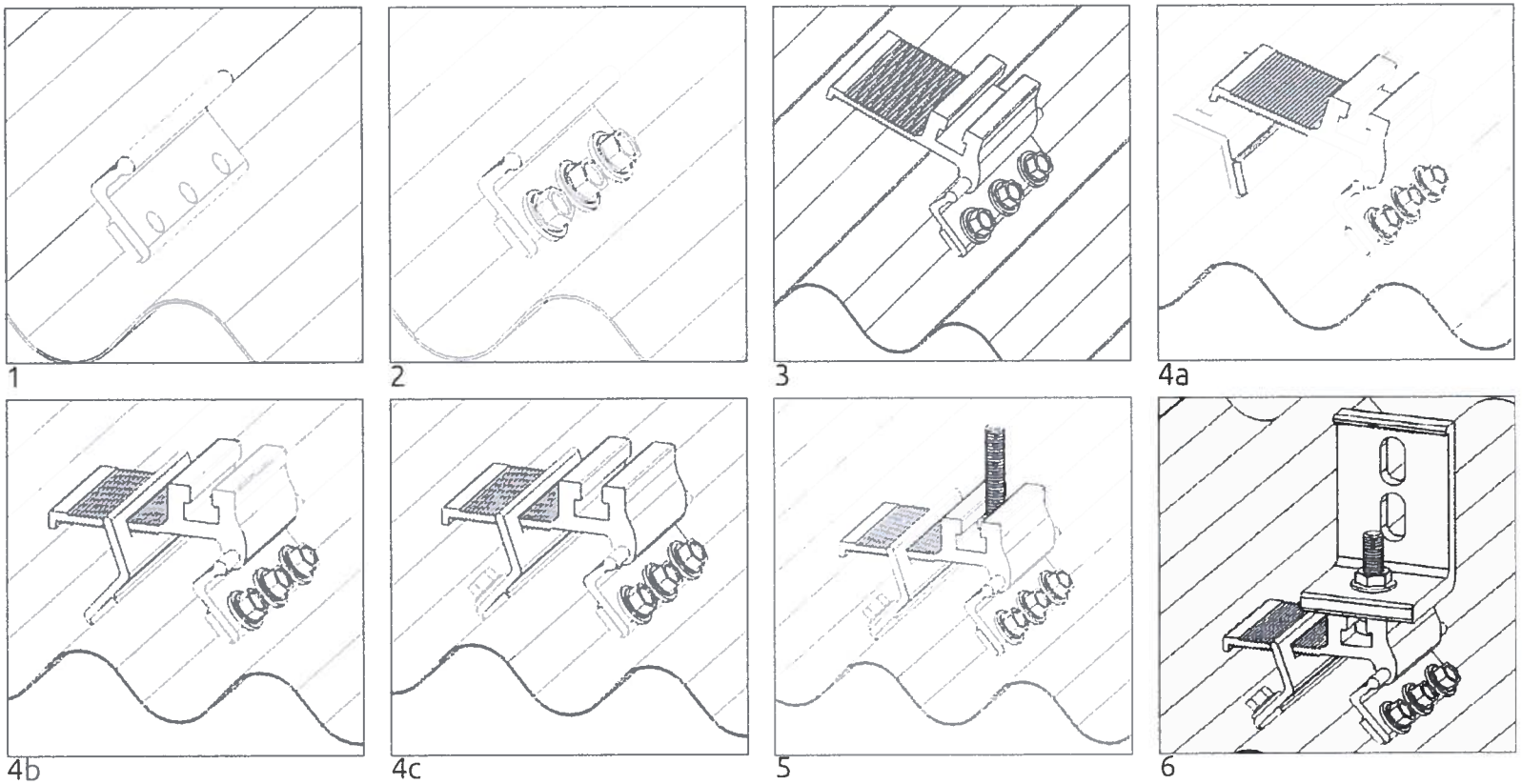
Materials Needed for Assembly

ITEM NO.	DESCRIPTION	QTY
1	CorruSlide - Slide	1
2	CorruSlide - Flipper	1
3	CorruSlide - Slot Bracket	1
4	PreInstalled Gasket Tape	2
5	Self-Tapping & Sealing Sheet Metal Screws	5

Required Tools



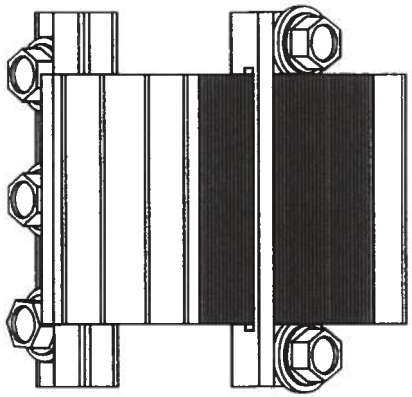
EcoFasten Solar®

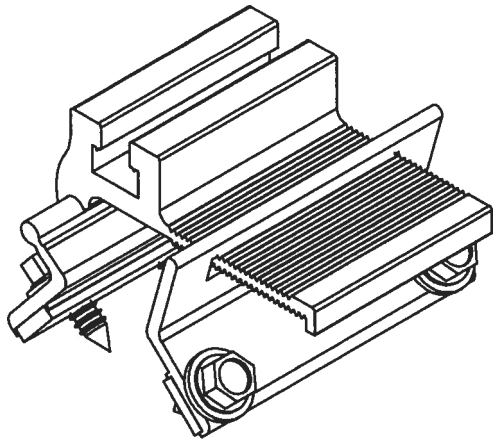


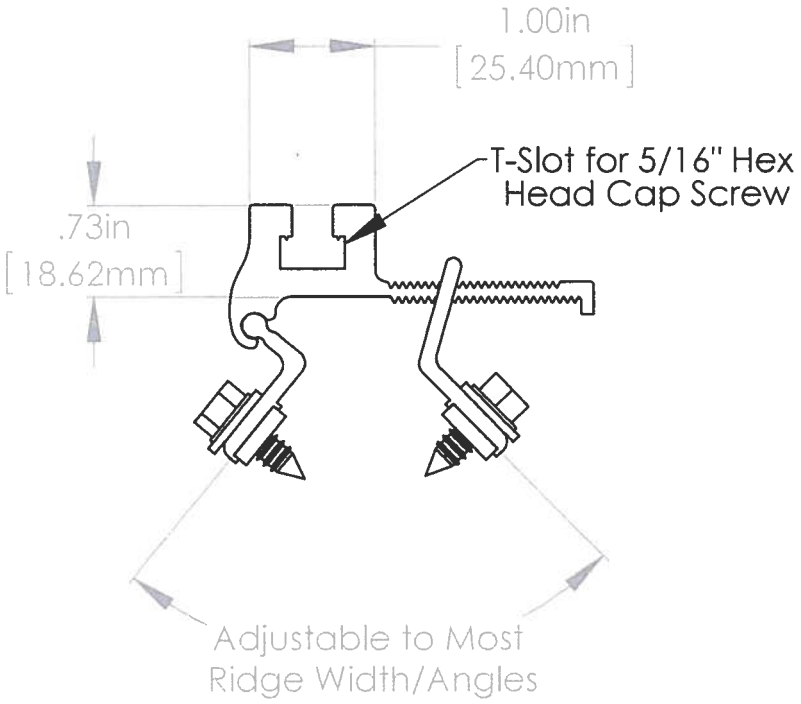
***Note- It is recommended that the installer assemble and check one complete CorruSlide assembly on the roof panel for fit prior to removing release paper or installing screws. This will provide an indication of approximate fit ***

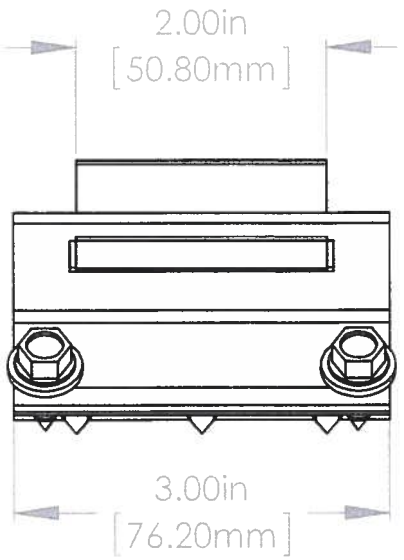
1. Clean roof area that will come in contact with CorruSlide bracket. Remove release paper from tape on the CorruSlide-Flipper (hinged component with three fastener holes).
2. Install screws through the CorruSlide-Flipper into the roof panel.
3. Tilt the CorruSlide-Slide ("T" Slotted component) upward and slide into place over the Corruslide-Flipper that was installed in step 2.
4. a. Slide the CorruSlide-Slot Bracket (this part has a long rectangular hole and two fastener holes) over the serrated leg of the CorruSlide-Slide from step 3.
   b. It is important to adjust the CorruSlide-Slot Bracket such that the CorruSlide-Slide of step 3 is level and locked in place. Note that depending upon the roof profile it may be necessary to skip a ridge/valley. Remove release paper.
   c. Install Screws in CorruSlide-Slot Bracket component.
5. Slide the 5/16" diameter bolt (provided with each CorruSlide) into the CorruSlide-Slide.
6. Attach the desired rail attachment bracket (may be provided by other manufacturer).

EcoFasten Solar®









EcoFasten Solar®

PART 1 – GENERAL

1.1 SUMMARY

A. WORK INCLUDES
   1. EcoFasten Solar CorruSlide Bracket that attaches to the corrugated panel ridge using provided sheet metal fasteners and watertight seal.

1.2 SYSTEM DESCRIPTION

A. COMPONENTS:
CorruSlide Bracket consists of the following
- (1) Slide Bracket
- (1) Flipper Bracket
- (1) Slot Bracket
- (5) #14x3/4" Self Tapping Sheet Metal Screws
- (1) 5/16"-18 Hex Head Fully Threaded Bolt 18.8 SS
- (1) 5/16"-18 Serrated Hex Flange Nut 18.8 SS

B. DESIGN REQUIREMENTS:
   1. Bracket spacing to be recommended by project engineer.

1.3 SUBMITTAL

A. Submit manufacturer's written specifications.
B. Submit standard product cut sheets.
C. Submit installation instructions.

1.4 QUALITY ASSURANCE

Installer to be experienced in the installation of specified roofing material for no less than 5 years in the area of the project.

1.5 DELIVERY / STORAGE / HANDLING

Inspect material upon delivery. Notify manufacturer within 24 hours of any missing or defective items. Keep material dry, covered, and off the ground until installed.

PART 2 - PRODUCTS

2.1 MANUFACTURER

EcoFasten Solar
289 Harrel Street, Morrisville, VT 05661
(877) 859-3947
www.ecofastensolar.com

2.2 MATERIALS

A. CorruSlide Slide, Flipper, and Slot Bracket – 6000 Series Aluminum
B. 5/16"-18 x 1.5"Fully Threaded Hex Bolt – 18.8 SS
C. 5/16"-18 Serrated Flange Nut – 18.8 SS
D. #14 x 3/4" Self Tapping Sheet Metal Screws – 18.8 SS

2.3 FINISH

A. Mill Finish

PART 3 - EXECUTION

3.1 EXAMINATION

A. Substrate: Inspect structure on which brackets are to be installed and verify that it will withstand any additional loading that may be incurred.

B. Notify General Contractor of any deficiencies before installing EcoFasten Solar brackets.

C. Verify that roofing material has been installed correctly prior to installing solar attachment brackets.

3.2 INSTALLATION

A. Comply with architectural drawings and project engineer's recommendations for location of system. Comply with Manufacturer's written installation instructions for installation and layout.

COMPANY EcoFasten Solar		
PART NUMBER CorruSlide		**DATE** 7-25-2014
DESCRIPTION Uplift on 28Ga. Steel with 1/4"-14 X 7/8" Blazer Flange VRT Screws		
PRODUCT MATERIAL Assembly		**SUBSTRATE**
TEST TYPE X UPLIFT ☐ SHEAR ☐ LEAK TEST ☐ CLAMP TO SEAM		

TEST NUMBER	LOAD (lb)	REASON For FAILURE
1	836	Bracket Failure
2	741	Bracket Failure
3	816	Bracket Failure
Average	797	

COMMENTS: Images available upon request.

Internal test data provided at the request and direction of Brian Stearns.