

HISTORIC AND DESIGN REVIEW COMMISSION

November 16, 2016

Agenda Item No: 10

HDRC CASE NO: 2016-368
ADDRESS: 226 W ROSEWOOD AVE
LEGAL DESCRIPTION: NCB 6459 BLK 10 LOT 35 AND 36 & E 12.5 FT OF 37
ZONING: R5 H
CITY COUNCIL DIST.: 1
DISTRICT: Monte Vista Historic District
APPLICANT: Ecolectrics, LLC
OWNER: Lynne Puckett
TYPE OF WORK: Installation of Solar Panels
REQUEST:

The applicant is requesting a Certificate of Appropriateness for approval to install 25 solar panels on rear slopes of roof.

APPLICABLE CITATIONS:

Historic Design Guidelines, Chapter 3, Guidelines for Additions

6. Designing for Energy Efficiency

C. SOLAR COLLECTORS

i. Location—Locate solar collectors on side or rear roof pitch of the primary historic structure to the maximum extent feasible to minimize visibility from the public right-of-way while maximizing solar access. Alternatively, locate solar collectors on a garage or outbuilding or consider a ground-mount system where solar access to the primary structure is limited.

ii. Mounting (sloped roof surfaces)—Mount solar collectors flush with the surface of a sloped roof. Select collectors that are similar in color to the roof surface to reduce visibility.

FINDINGS:

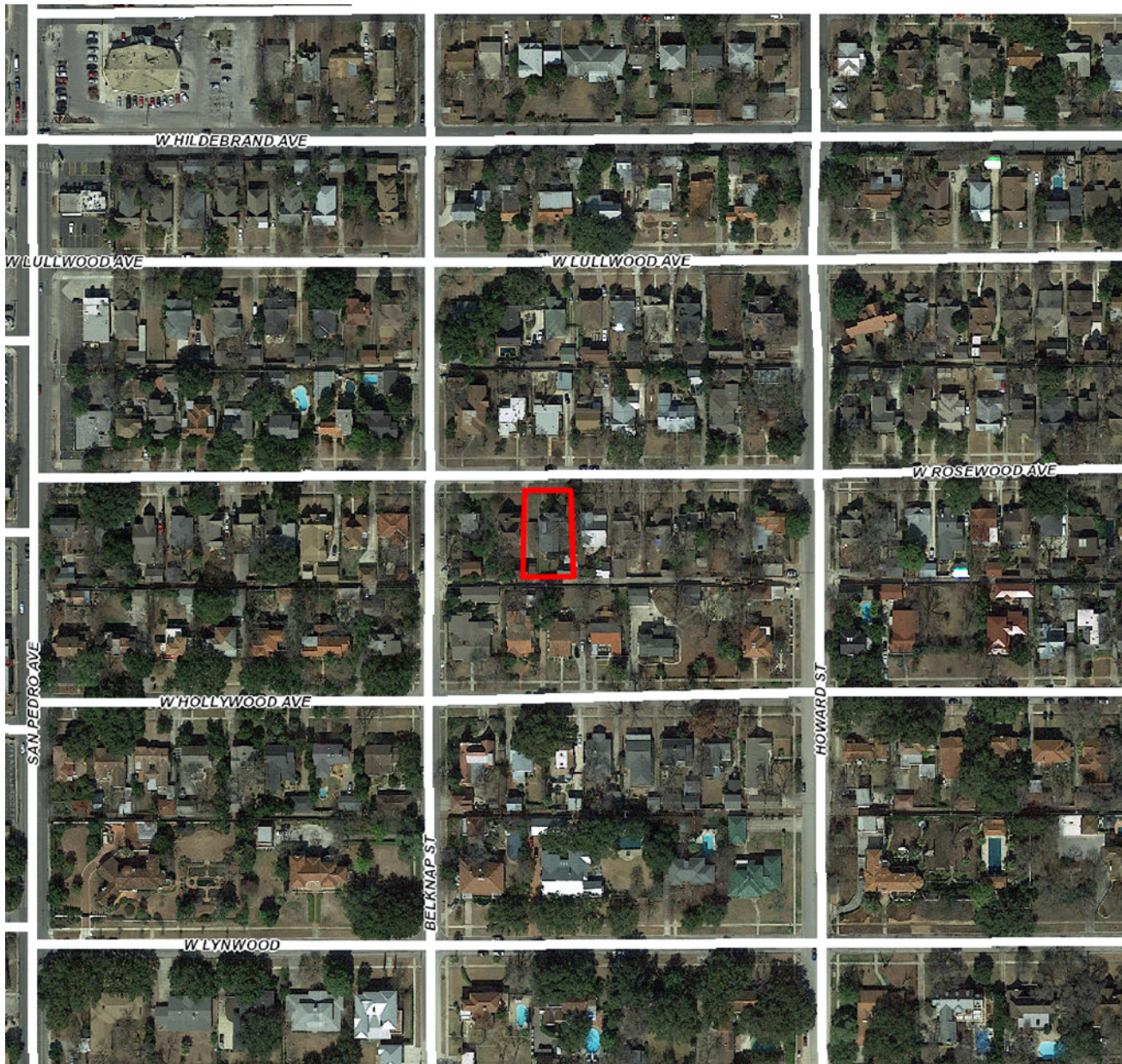
- a. The home is in the Monte Vista Historic District, which was designated in 1975.
- b. The structure at 226 W Rosewood has a front gable on hip roof. The front gable is steep and the side hip is lower. The applicant is proposing to install 26 total solar panels on composition shingles roof of the primary structure and on the rear accessory structure. 18 panels are proposed on the right slope of the shed roof behind the hipped roof form. 7 panels are proposed on the rear slope of the side facing gable of the rear accessory structure. According to the Guidelines for Additions 6.C., installations should be in locations that minimize visibility from the public right-of-way.
- c. Staff visited the site on September 9, 2016. The home is located midblock two blocks into the historic district. The pitch of the front gable is steep and the proposed location of the panels would not be visible from the public right-of-way.
- d. Staff finds the proposed locations consistent with the Guidelines. The applicant is proposing to mount the 26 panels flush with the pitched roof. According to the Guidelines for Additions 6.C.ii, solar collectors should be flush with the roof surface. Staff finds the proposal consistent with the guidelines.

RECOMMENDATION:

Staff recommends approval as submitted based on findings a through d.

CASE MANAGER:

Lauren Sage



Flex Viewer

Powered by ArcGIS Server

Printed: Sep 13, 2016

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STAFF SITE VISIT PHOTOS

FRONT





**CITY of SAN ANTONIO
NOTICE of HEARING
HISTORIC & DESIGN
REVIEW COMMISSION**



ADDRESS: 2246 W ROSEWOOD

REQUEST: INSTALLATION OF SOLAR PANELS

HEARING DATE: NOV 16

TIME: 8 AM 2016

FOR MORE INFORMATION CONTACT
(210) 215-9274

ALL HDRC MEETINGS TAKE PLACE AT 1901 S. ALAMO

FRONT GABLE



FRONT LEFT



FRONT LEFT





FRONT RIGHT



FRONT RIGHT





Narrative of Electrical/Solar Work at 226 W Rosewood Drive

Ecolectrics would like to install solar panels on the house located at the above address. We would be installing 26 panels on the (when facing the house from the street, W Rosewood) back right side of the roof as well as on the shed in the back yard. Due to the house's location in the historic district, we have made sure the panels are not visible from the street or to the general public. Please see attached site plan for exact locations. In addition to the panels, the piping and wiring will also not be visible to any onlooker.

W ROSEWOOD DRIVE

ARRAY	NO. OF PANELS	TILT	AZIMUTH
1	19	20	270
2	7	38	180

ecolectrics[®]
the power company

Ecolectrics LLC
 8930 Four Winds Drive
 Suite 217
 San Antonio, TX 78239
 210-987-2640

275 Lotus Circle
 Austin, TX 78737
 512-717-0660

TECL: 31560
 NABCEP: 031310-70

LYNN PUCKETT 7.28 KW PV SYSTEM
 226 W ROSEWOOD DRIVE, SAN ANTONIO, TX 78212

SITE PLAN

G-1

(E) CPS UTILITY METER
 (E) MAIN SERVICE PANEL
 NEW INVERTER
 NEW AC DISCONNECT
 NEW PV METER

TYP. NEW SOLAR PANELS
 & POWER OPTIMIZERS

NEW UNDERGROUND
 TRENCH



APPLICANT PHOTOS

FRONT



FRONT RIGHT



INTERIOR REAR FACADE



INTERIOR - RIGHT FACADE OF REAR ACCESSORY STRUCTURE



right neighbor's garage

rear roof slope - camera facing alley



rear slope - camera facing street/north



rear accessory structure - rear facade that
abuts alley





alley

rear accessory
structure



ecolectrics[®]
San Antonio, TX

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LYNN PUCKETT 7.28 KW PV SYSTEM
226 W ROSEWOOD DRIVE, SAN ANTONIO, TX 78212

PROPOSED PV
EQUIPMENT
ELEVATION
DIAGRAM

E-2

ENERGIZING LIFE TOGETHER



REC TWINPEAK BLK SERIES

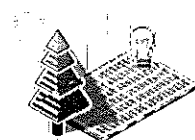
PREMIUM SOLAR PANELS WITH SUPERIOR PERFORMANCE

REC TwinPeak BLK Series solar panels feature an innovative design with high panel efficiency and power output, enabling customers to get the most out of the space used for the installation.

Combined with industry-leading product quality and the reliability of a strong and established European brand, REC TwinPeak BLK panels are ideal for residential and commercial rooftops worldwide.



**MORE POWER
OUTPUT PER M²**



**HIGHER
ENERGY YIELD**



**100%
PID FREE**



**REDUCES BALANCE OF
SYSTEM COSTS**

[illegible]

ELECTRICAL DATA @ STC	REC265TP	REC270TP	REC275TP	REC280TP
Nominal Power - P_{MPP} (Wp)	265	270	275	280
Watt Class Sorting - (W)	0/+5	0/+5	0/+5	0/+5
Nominal Power Voltage - V_{MPP} (V)	31.1	31.2	31.4	31.9
Nominal Power Current - I_{MPP} (A)	8.53	8.66	8.76	8.78
Open Circuit Voltage - V_{OC} (V)	38.3	38.6	38.8	39.2
Short Circuit Current - I_{SC} (A)	9.21	9.29	9.40	9.44
Panel Efficiency (%)	16.1	16.4	16.7	17.0

ELECTRICAL DATA @ NOCT	REC265TP	REC270TP	REC275TP	REC280TP
Nominal Power - P_{MPP} (Wp)	195	198	202	205
Nominal Power Voltage - V_{MPP} (V)	28.8	28.9	29.0	29.5
Nominal Power Current - I_{MPP} (A)	6.77	6.87	6.95	6.97
Open Circuit Voltage - V_{OC} (V)	35.2	35.5	35.7	36.1
Short Circuit Current - I_{SC} (A)	7.32	7.38	7.47	7.50






17.0% EFFICIENCY

10 YEAR PRODUCT WARRANTY

25 YEAR LINEAR POWER OUTPUT WARRANTY

DUTY FREE US IMPORT DUTY FREE

ref: 11-05-03-040-115



SolarEdge Single Phase Inverters

For North America

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



The best choice for SolarEdge enabled systems

- Integrated arc fault protection for NEC 2011 690.11 compliance
- Rapid shutdown for NEC 2014 690.12
- 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 Safety Switch for faster installation
- Optional – revenue grade data, ANSI C12.1



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	
OUTPUT								
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. ⁽¹⁾ 183 - 208 - 229 Vac	-	-	✓	-	-	✓	-	
AC Output Voltage Min.-Nom.-Max. ⁽¹⁾ 211 - 240 - 264 Vac	✓	✓	✓	✓	✓	✓	✓	
AC Frequency Min.-Nom.-Max. ⁽¹⁾	59.3 - 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 Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							Yes
INPUT								
Maximum DC Power (STC)	4050	5100	6750	8100	10250	13500	15350	W
Transformer-less, Ungrounded	Yes							
Max. Input Voltage	500							Vdc
Nom. DC Input Voltage	325 @ 208V / 350 @ 240V							Vdc
Max. Input Current ⁽²⁾	9.5	13	16.5 @ 208V 15.5 @ 240V	18	23	33 @ 208V 30.5 @ 240V	34.5	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600k Ω Sensitivity							
Maximum Inverter Efficiency	97.7	98.2	98.3	98.3	98	98	98	%
CEC Weighted Efficiency	97.5	98	97 @ 208V 98 @ 240V	97.5	97.5	97 @ 208V 97.5 @ 240V	97.5	%
Nighttime Power Consumption	< 2.5					< 4		W
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, RS232, Ethernet, ZigBee (optional)							
Revenue Grade Data, ANSI C12.1	Optional ⁽³⁾							
Rapid Shutdown – NEC 2014 690.12	Yes							
STANDARD COMPLIANCE								
Safety	UL1741, UL1699B, UL1998, CSA 22.2							
Grid Connection Standards	IEEE1547							
Emissions	FCC part15 class B							
INSTALLATION SPECIFICATIONS								
AC output conduit size / AWG range	3/4" minimum / 16-6 AWG					3/4" minimum / 8-3 AWG		
DC input conduit size / # of strings / AWG range	3/4" minimum / 1-2 strings / 16-6 AWG					3/4" minimum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	30.5 x 12.5 x 7.2 / 775 x 315 x 184					30.5 x 12.5 x 10.5 / 775 x 315 x 260		in / mm
Weight with Safety Switch	51.2 / 23.2		54.7 / 24.7		88.4 / 40.1		lb / kg	
Cooling	Natural Convection				Natural convection and internal fan (user replaceable)	Fans (user replaceable)		
Noise	< 25				< 50			dBA
Min.-Max. Operating Temperature Range	-13 to +140 / -25 to +60 (-40 to +60 version available ⁽⁴⁾)							*F / °C
Protection Rating	NEMA 3R							

⁽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: SExxxxA-US000NNR2 (for 7600W inverter:SE7600A-US002NNR2).

⁽⁴⁾ -40 version P/N: SExxxxA-US000NNU4 (for 7600W inverter:SE7600A-US002NNU4).



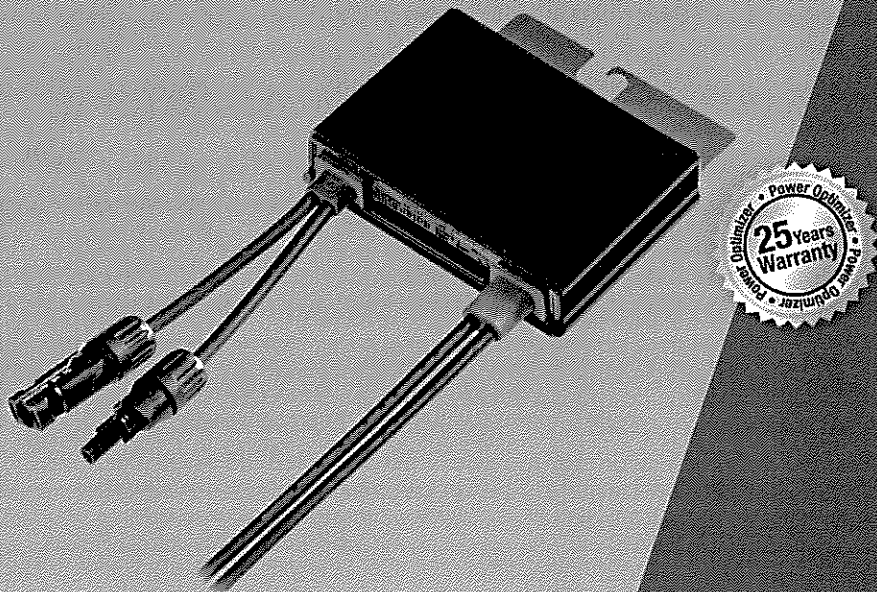
RoHS



SolarEdge Power Optimizer

Module Add-On For North America

P300 / P320 / P400 / P405



POWER OPTIMIZER

PV power optimization at the module-level

- 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 bolt
- Next generation maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety



SolarEdge Power Optimizer

Module Add-On for North America

P300 / P320 / P400 / P405

	P300 (for 60-cell modules)	P320 (for high-power 60-cell modules)	P400 (for 72 & 96-cell modules)	P405 (for thin film modules)	
INPUT					
Rated Input DC Power ⁽¹⁾	300	320	400	405	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		80	125	Vdc
MPPT Operating Range	8 - 48		8 - 80	12.5 - 105	Vdc
Maximum Short Circuit Current (Isc)	10	11	10.1		Adc
Maximum DC Input Current	12.5	13.75	12.63		Adc
Maximum Efficiency		99.5			%
Weighted Efficiency		98.8			%
Overvoltage Category		II			
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)					
Maximum Output Current		15			Adc
Maximum Output Voltage		60		85	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)					
Safety Output Voltage per Power Optimizer		1			Vdc
STANDARD COMPLIANCE					
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3				
Safety	IEC62109-1 (class II safety), UL1741				
RoHS	Yes				
INSTALLATION SPECIFICATIONS					
Maximum Allowed System Voltage	1000				Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters				
Dimensions (W x L x H)	128 x 152 x 27.5 / 5 x 5.97 x 1.08	128 x 152 x 35 / 5 x 5.97 x 1.37	128 x 152 x 48 / 5 x 5.97 x 1.89		mm / in
Weight (including cables)	760 / 1.7	830 / 1.8	1064 / 2.3		gr / lb
Input Connector	MC4 Compatible				
Output Wire Type / Connector	Double Insulated; MC4 Compatible				
Output Wire Length	0.95 / 3.0		1.2 / 3.9		m / ft
Operating Temperature Range	-40 - +85 / -40 - +185				°C / °F
Protection Rating	IP68 / NEMA6P				
Relative Humidity	0 - 100				%

⁽¹⁾ Rated STC power of the module. Module of up to +5% power tolerance allowed.

PV SYSTEM DESIGN USING A SOLAREEDGE INVERTER ⁽²⁾	SINGLE PHASE	THREE PHASE 208V	THREE PHASE 480V	
Minimum String Length (Power Optimizers)	8	10	18	
Maximum String Length (Power Optimizers)	25	25	50	
Maximum Power per String	5250	6000	12750	W
Parallel Strings of Different Lengths or Orientations	Yes			

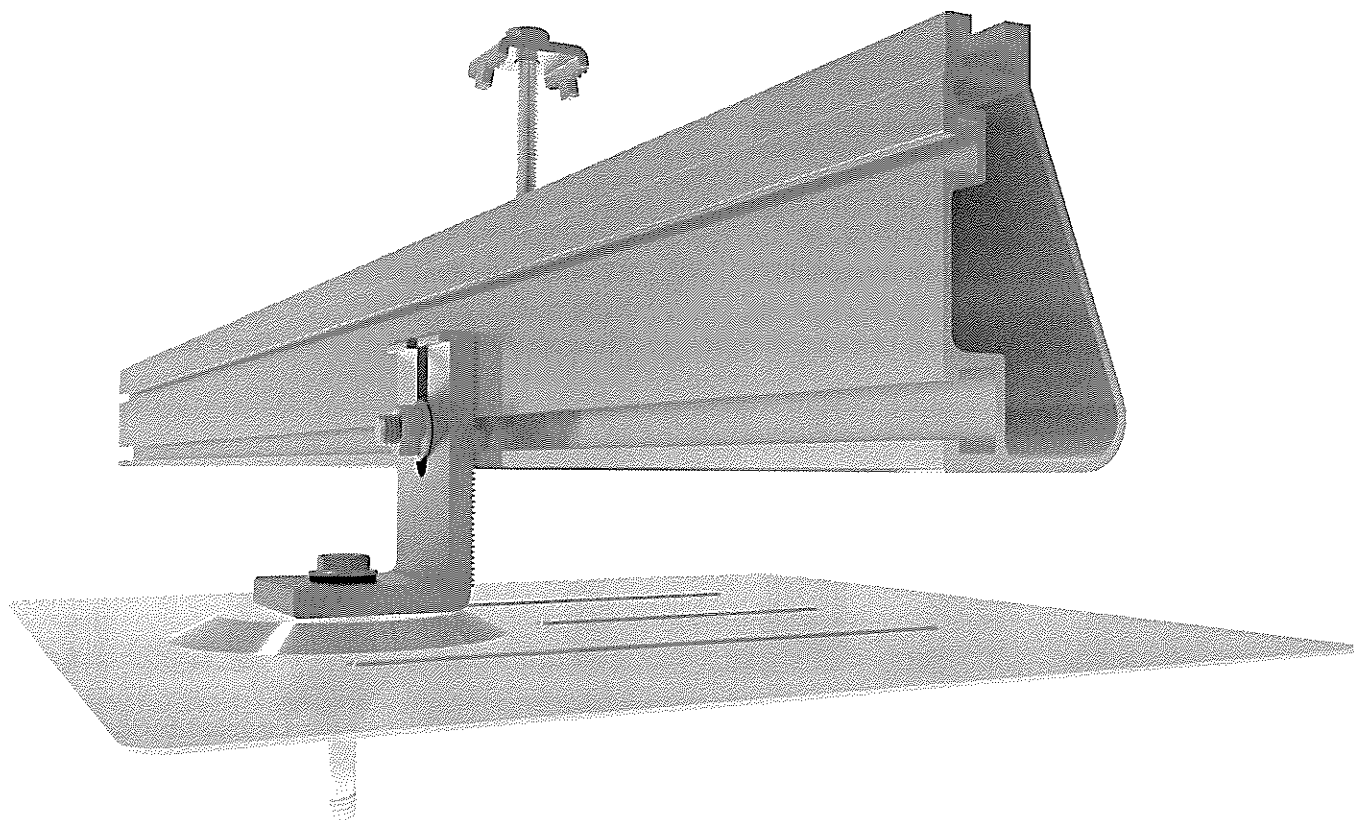
⁽²⁾ It is not allowed to mix P405 with P300/P400/P600/P700 in one string.



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Roof Mount System



Built for solar's toughest roofs.

IronRidge builds the strongest roof mounting system in solar. Every component has been tested to the limit and proven in extreme environments.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 20-year warranty.



Strength Tested

All components evaluated for superior structural performance.



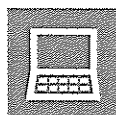
PE Certified

Pre-stamped engineering letters available in most states.



Class A Fire Rating

Certified to maintain the fire resistance rating of the existing roof.



Design Software

Online tool generates a complete bill of materials in minutes.



Integrated Grounding

UL 2703 system eliminates separate module grounding components.

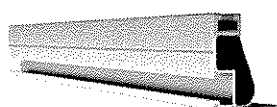


20 Year Warranty

Twice the protection offered by competitors.

XR Rails

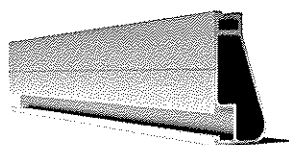
XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6' spanning capability
- Moderate load capability
- Clear & black anod. finish

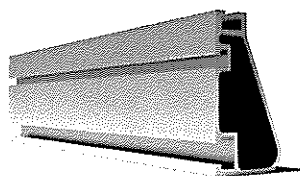
XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear & black anod. finish

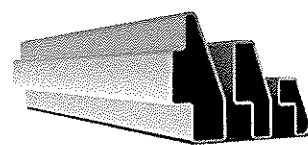
XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish

Internal Splices ⊕

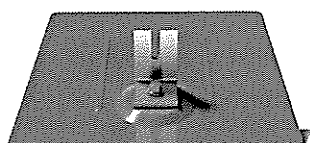


All rails use internal splices for seamless connections.

- Self-tapping screws
- Varying versions for rails
- Grounding Straps offered

Attachments

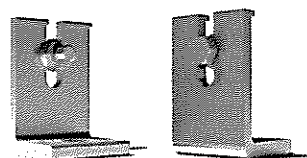
FlashFoot



Anchor, flash, and mount with all-in-one attachments.

- Ships with all hardware
- IBC & IRC compliant
- Certified with XR Rails

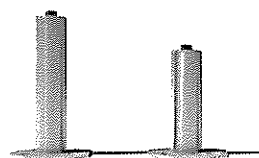
Slotted L-Feet



Drop-in design for rapid rail attachment.

- High-friction serrated face
- Heavy-duty profile shape
- Clear & black anod. finish

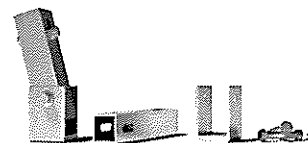
Standoffs



Raise flush or tilted systems to various heights.

- Works with vent flashing
- Ships pre-assembled
- 4" and 7" Lengths

Tilt Legs

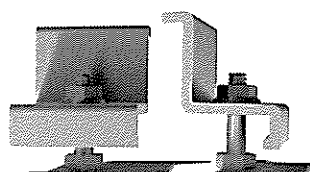


Tilt assembly to desired angle, up to 45 degrees.

- Attaches directly to rail
- Ships with all hardware
- Fixed and adjustable

Clamps & Grounding

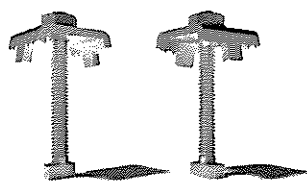
End Clamps



Slide in clamps and secure modules at ends of rails.

- Mill finish & black anod.
- Sizes from 1.22" to 2.3"
- Optional Under Clamps

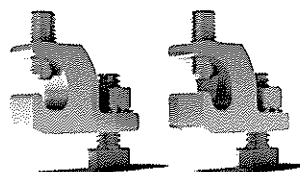
Grounding Mid Clamps ⊕



Attach and ground modules in the middle of the rail.

- Parallel bonding T-bolt
- Reusable up to 10 times
- Mill & black stainless

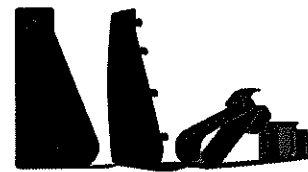
T-Bolt Grounding Lugs ⊕



Ground system using the rail's top slot.

- Easy top-slot mounting
- Eliminates pre-drilling
- Swivels in any direction

Accessories



Provide a finished and organized look for rails.

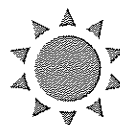
- Snap-in Wire Clips
- Perfected End Caps
- UV-protected polymer

Free Resources



Design Assistant

Go from rough layout to fully engineered system. For free. Go to IronRidge.com/rm



NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems. Go to IronRidge.com/training

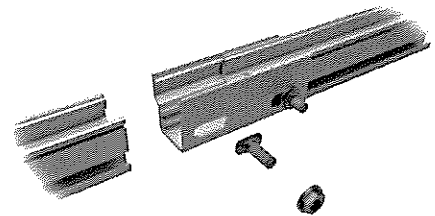
Everest Solar Systems

CrossRail 48-S

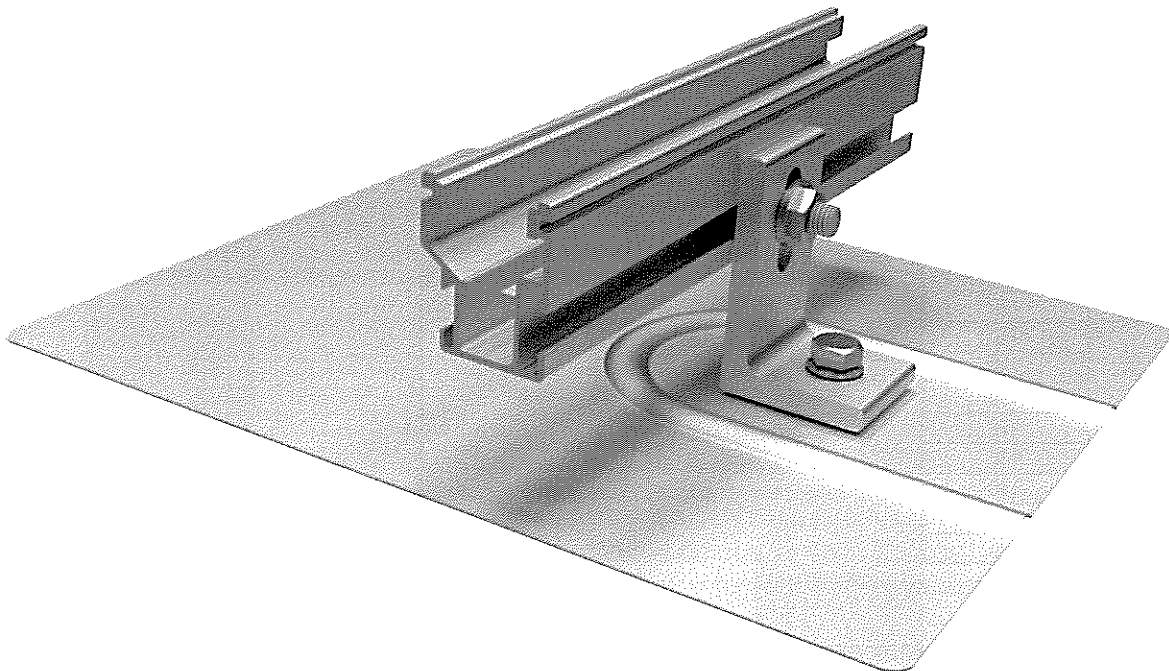


CrossRail 48-S is the latest addition to our residential product line. It has been optimized for installations with low to moderate snow loads, and can be used as a more economical solution for these markets.

- Cost effective solution for areas with snow loads under 40 psf
- 6' spans achieved under 10 psf snow load
- UL 2703 Listed System
- Available in mill or dark anodized finish
- Compatible with existing CrossRail hardware



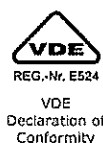
New rail connector uses only two bolts!



CrossRail 48-S shown with EverFlash roof attachment

CrossRail 48-S | US1 | 0615

Product images are for illustrative purposes only. Specifications are subject to change without notice. All sales of our products shall be subject to Everest Solar Systems terms and conditions, including the exclusive limited warranty set forth therein.



Everest Solar Systems

CrossRail 48-S



Technical data:

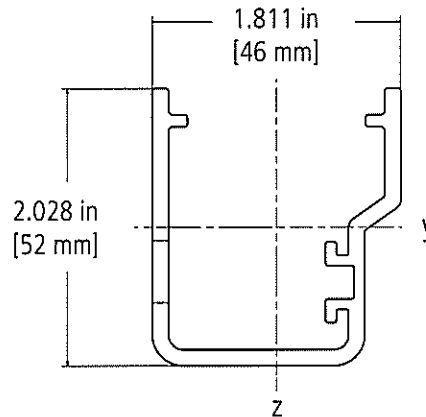
Material: corrosion resistant aluminum and stainless steel

Engineering: stamped engineering letters available for all solar states

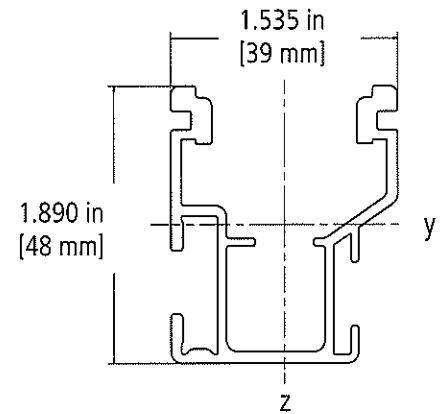
Warranty: 12 years

Certification: UL 2703 Listed System for bonding and fire

48-S Rail Connector



48-S Rail Profile



Load		Roof Slope 7 - 27 Degrees Rail Spans - Zone 1, Exp B			Roof Slope 27 - 45 Degrees Rail Spans - Zone 1, Exp B		
		4'	6'	8'	4'	6'	8'
0	110	CR 48-S		CR 80	CR 48-S	CR 48	CR 80
	130						
	150						
	170						
10	110	CR 48-S		CR 80	CR 48-S	CR 48	CR 80
	130						
	150						
	170						
20	110	CR 48-S	CR 48	CR 80	CR 48-S	CR 48	CR 80
	130						
	150						
	170						
30	110	CR 48-S	CR 48	CR 80	CR 48-S	CR 48	CR 80
	130						
	150						
	170						
40	110	CR 48-S	CR 48	CR 80	CR 48-S	CR 48	CR 80
	130						
	150						
	170						
50	110	CR 48-S	CR 48	CR 80	CR 48-S	CR 48	CR 80
	130						
	150						
	170						

Note: Spans based on Exposure Category B. Consult CrossRail Engineering Letters for detailed span charts and information.

Table 1: Rail Selection Chart

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



20150618-03

(26) REC Solar 280 Watt PV Modules, Model #: REC280TP
 (26) SolarEdge 300 Watt Power Optimizers, Model #: P300
 (1) SolarEdge 6000 Watt Inverter, Model # SE6000A-US

ecolectrics[®]
Low Voltage Electrical

Ecolectrics LLC
 8930 Four Winds Drive
 Suite 217
 San Antonio, TX 78239
 210-987-2640

275 Lotus Circle
 Austin, TX 78737
 512-717-0660

TECL: 31560
 NABCEP: 031310-70

LYNN PUCKETT 7.28 KW PV SYSTEM
 226 W ROSEWOOD DRIVE, SAN ANTONIO, TX 78212

ONE LINE
 DRAWING

E-1

