

powered by

Q.ANTUM DUO Z

PRELIMINARY

Q.PEAK DUO BLK-G10+ 350-370

ENDURING HIGH
PERFORMANCE



Quality
Controlled PV

www.tuv.com
ID 1111232615



BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.



THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

High-tech aluminium alloy frame, certified for high snow (5400Pa) and wind loads (4000Pa).



A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty².

¹ APT test conditions according to IEC / TS 62804-1:2015, method A (~1500 V, 96h)

² See data sheet on rear for further information.



THE IDEAL SOLUTION FOR:



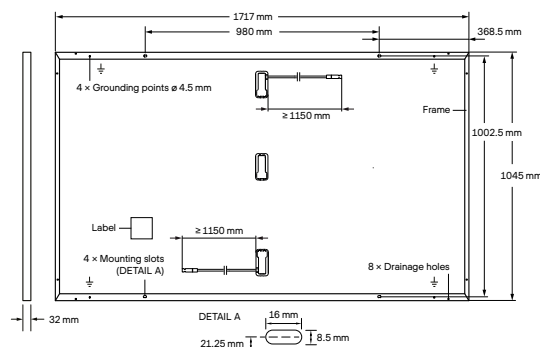
Rooftop arrays on
residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	1717 mm × 1045 mm × 32 mm (including frame)
Weight	19.9 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 20 monocrystalline Q.ANTUM solar half cells
Junction box	53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 1150 mm, (-) ≥ 1150 mm
Connector	Stäubli MC4; IP68

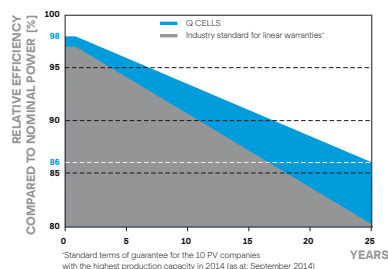


ELECTRICAL CHARACTERISTICS

POWER CLASS		350	355	360	365	370
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W / -0 W)						
Minimum	Power at MPP ¹	P _{MPP} [W]	350	355	360	370
	Short Circuit Current ¹	I _{SC} [A]	10.97	11.00	11.04	11.10
	Open Circuit Voltage ¹	V _{OC} [V]	41.11	41.14	41.18	41.24
	Current at MPP	I _{MPP} [A]	10.37	10.43	10.49	10.62
	Voltage at MPP	V _{MPP} [V]	33.76	34.03	34.31	34.84
	Efficiency ¹	η [%]	≥ 19.5	≥ 19.8	≥ 20.1	≥ 20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ²						
Minimum	Power at MPP	P _{MPP} [W]	262.6	266.3	270.1	273.8
	Short Circuit Current	I _{SC} [A]	8.84	8.87	8.89	8.95
	Open Circuit Voltage	V _{OC} [V]	38.77	38.80	38.83	38.90
	Current at MPP	I _{MPP} [A]	8.14	8.20	8.26	8.31
	Voltage at MPP	V _{MPP} [V]	32.24	32.48	32.71	32.94

¹Measurement tolerances P_{MPP} ± 3%; I_{SC}; V_{OC} ± 5% at STC: 1000 W/m², 25 ± 2°C, AM 1.5 according to IEC 60904-3 • 2800 W/m², NMOT, spectrum AM 1.5

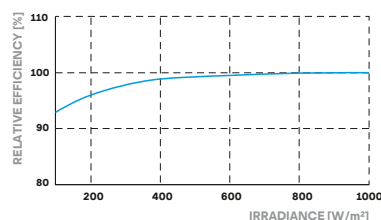
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α	[%/K]	+0.04	Temperature Coefficient of V _{OC}	β	[%/K]	-0.27
Temperature Coefficient of P _{MPP}	γ	[%/K]	-0.34	Nominal Module Operating Temperature	NMOT	[°C]	43 ± 3

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	V _{SYS}	[V]	1000	PV module classification	Class II
Maximum Reverse Current	I _R	[A]	20	Fire Rating based on ANSI / UL 61730	C / TYPE 2
Max. Design Load, Push / Pull		[Pa]	3600 / 2660	Permitted Module Temperature on Continuous Duty	-40°C - +85°C
Max. Test Load, Push / Pull		[Pa]	5400 / 4000		

QUALIFICATIONS AND CERTIFICATES

Quality Controlled PV - TÜV Rheinland;
IEC 61215:2016; IEC 61730:2016.
This data sheet complies
with DIN EN 50380.
QCPV Certification ongoing.



Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS GmbH

Sonnenallee 17-21, 06766 Bitterfeld-Wolfen, Germany | **TEL** +49 (0)3494 66 99-23444 | **FAX** +49 (0)3494 66 99-23000 | **EMAIL** sales@q-cells.com | **WEB** www.q-cells.com



IQ8 Series Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

IQ8 Series Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US	IQ8M-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US ¹
Commonly used module pairings ²	W	235 – 350	235 – 440	260 – 460	295 – 500	320 – 540+	295 – 500+
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell				
MPPT voltage range	V	27 – 37	29 – 45	33 – 45	36 – 45	38 – 45	38 – 45
Operating range	V	25 – 48	25 – 58				
Min/max start voltage	V	30 / 48	30 / 58				
Max input DC voltage	V	50	60				
Max DC current ³ [module Isc]	A	15					
Overvoltage class DC port		II					
DC port backfeed current	mA	0					
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit					
OUTPUT DATA (AC)		IQ8-60-2-US	IQ8PLUS-72-2-US	IQ8M-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US ¹
Peak output power	VA	245	300	330	366	384	366
Max continuous output power	VA	240	290	325	349	380	360
Nominal (L-L) voltage/range ⁴	V	240 / 211 – 264					208 / 183 – 250
Max continuous output current	A	1.0	1.21	1.35	1.45	1.58	1.73
Nominal frequency	Hz	60					
Extended frequency range	Hz	50 – 68					
AC short circuit fault current over 3 cycles	Arms	2					4.4
Max units per 20 A (L-L) branch circuit ⁵		16	13	11	11	10	9
Total harmonic distortion		<5%					
Overvoltage class AC port		III					
AC port backfeed current	mA	30					
Power factor setting		1.0					
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging					
Peak efficiency	%	97.5	97.6	97.6	97.6	97.6	97.4
CEC weighted efficiency	%	97	97	97	97.5	97	97
Night-time power consumption	mW	60					
MECHANICAL DATA							
Ambient temperature range		–40°C to +60°C (–40°F to +140°F)					
Relative humidity range		4% to 100% (condensing)					
DC Connector type		MC4					
Dimensions (HxWxD)		212 mm (8.3”) x 175 mm (6.9”) x 30.2 mm (1.2”)					
Weight		1.08 kg (2.38 lbs)					
Cooling		Natural convection – no fans					
Approved for wet locations		Yes					
Pollution degree		PD3					
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure					
Environ. category / UV exposure rating		NEMA Type 6 / outdoor					
COMPLIANCE							
		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES–0003 Class B, CAN/CSA-C22.2 NO. 107.1-01					
Certifications		This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer’s instructions.					

(1) The IQ8H-208 variant will be operating in grid-tied mode only at 208V AC. (2) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility> (3) Maximum continuous input DC current is 10.6A (4) Nominal voltage range can be extended beyond nominal if required by the utility. (5) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

RT-MINI

Self-flashing base for asphalt & metal roof-top PV mounting systems

RT-MINI is suitable for mounting any rail system with a conventional L-Foot.

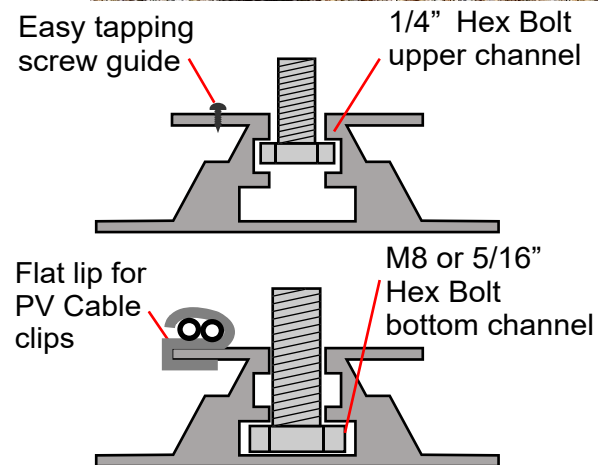


Dual bolt design: M8 or 5/16" for L-Foot & 1/4" for EMC



ICC ESR 3575

Call Now for more details
858-935-6064



Roof Tech

Smarter PV mounting solutions from top of roof to bottom line®
www.roof-tech.us info@roof-tech.us

RT-MINI

Flexible Flashing certified by the International Code Council (ICC)

Engineered to ASTM D 1761 (Standard Test Methods for Mechanical Fasteners in Wood)

Components

RT2-00-MINIBK

PAT : PENDING



MINI base : 20 ea.

Screw : 40 ea.

Extra RT-Butyl : 10 ea.

Optional item

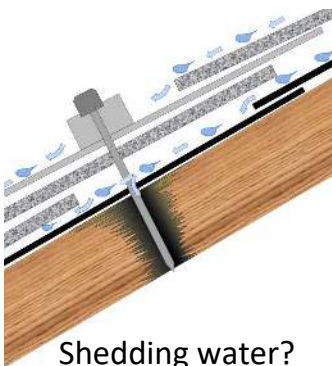
5 x 60mm Mounting screw (RT2-04-SD5-60) : 100 ea./Bag

5/16" Hex bolt, washer & nut set (RT-04-BN30SL-US) : 100 ea./Bag

RT-Butyl (RT2-04-BUTYLT) : 10 ea./Box

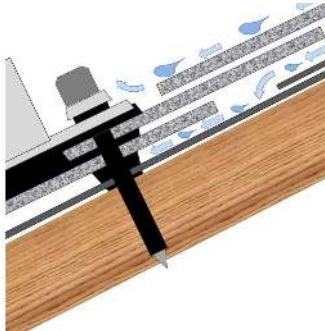
RT-Butyl is Roof Tech's flexible flashing used in 700,000 residential PV systems for the last 24 years. It is the first PV mounting system with Flexible Flashing certified by the ICC.

Metal Flashing Retrofit



Shedding water?

Flexible Flashing



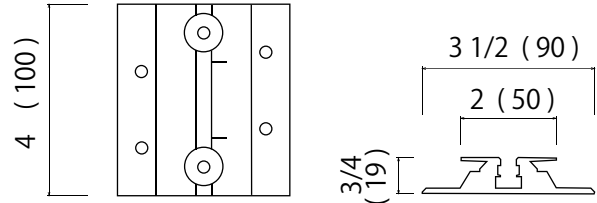
100% Waterproof

ICC ESR-3575

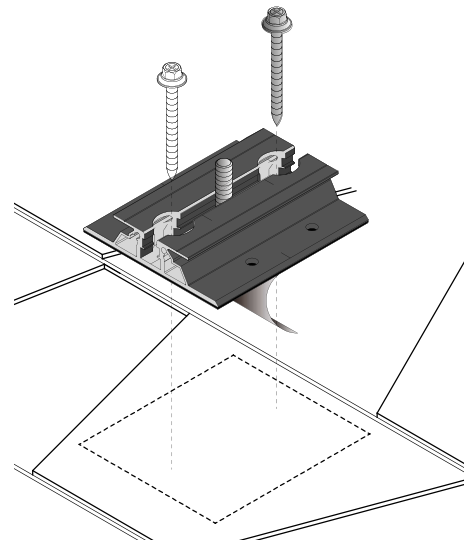
ASTM2140 testing UV testing (7500 hrs.)



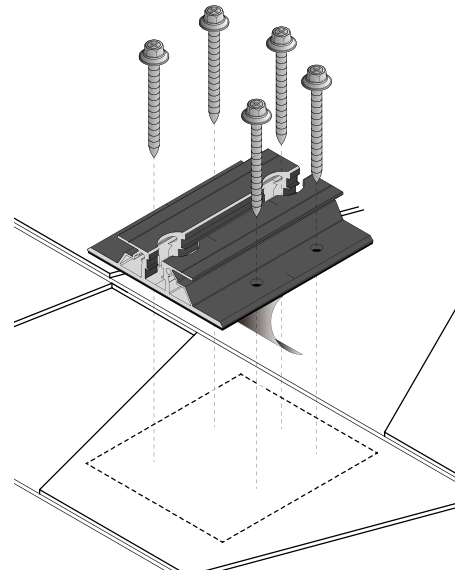
Dimensions in (mm)



Rafter installation



Deck installation



P.E. Stamped Letters available at www.roof-tech.us/support

Roof Tech Inc.

www.roof-tech.us

info@roof-tech.us

10620 Trenea Street, Suite 230, San Diego, CA 92131

858.935.6064



Rev. 03-2020



FLORIDA BUILDING CODE COMPLIANCE

FLORIDA BUILDING CODE 2020 REQUIREMENTS

Questions often arise in the solar industry as to the requirements for installing solar mounting systems in Dade and Broward counties and throughout the rest of the Florida. Outlined below are the four requirements to comply with the 2020 Florida Building Code. The first three requirements are necessary for solar racking systems, while the fourth is specific to solar roof attachments. The fifth item, Florida-specific testing, is optional for installation.

1 - UL CERTIFICATIONS

- ▶ Racking UL 2703 (Supplied by EcoFasten)
- ▶ Modules UL 1703 or UL 61730 (See module manufacturer website)
- ▶ Inverters UL 1741 (See inverter manufacturer website)

2 - MODULE LOAD RATING

- ▶ UL 1703 / UL 61730 load rating to meet site conditions pressure for project (see module manufacturer installation manual or data sheet)
- ▶ Or alternately, Module Mechanical Load Test Report to show that the module meets or exceed the site conditions load rating

3 - RACKING STRUCTURAL CAPACITY

- ▶ Florida PE stamped system capacity and span tables that meet site conditions and roof zones for the project (Supplied by EcoFasten)

4 - ROOF ATTACHMENTS

- ▶ Structural Capacity certification letters that meets or exceeds site conditions (Supplied by EcoFasten)
- ▶ Waterproofing/Flashing per NRCA & FRSA/TRI (Florida) guidelines (Supplied by EcoFasten, when applicable)

5 - OPTIONAL FLORIDA SPECIFIC TESTING OR CERTIFICATIONS

- ▶ Florida Product Approval
- ▶ Miami Dade NOA
- ▶ Water Seal Testing: TAS100(A) (required for HVHZ Florida Product Approval or Miami Dade NOA)

ECOFASTEN ROOF ATTACHMENTS – FLORIDA COMPLIANT

EcoFasten offers two roof attachments that meet the specifications for installation in the State of Florida, which are GF-1® and QB-1 as shown below.

GF-1®

GF-1® is a versatile solution for use on composition shingle roofs. The 8" x 12" flashing installs with a single fastener and when combined with an EcoFasten compression bracket, a watertight seal is created, maintaining the integrity of the roof.

Available GF-1® SKUs:

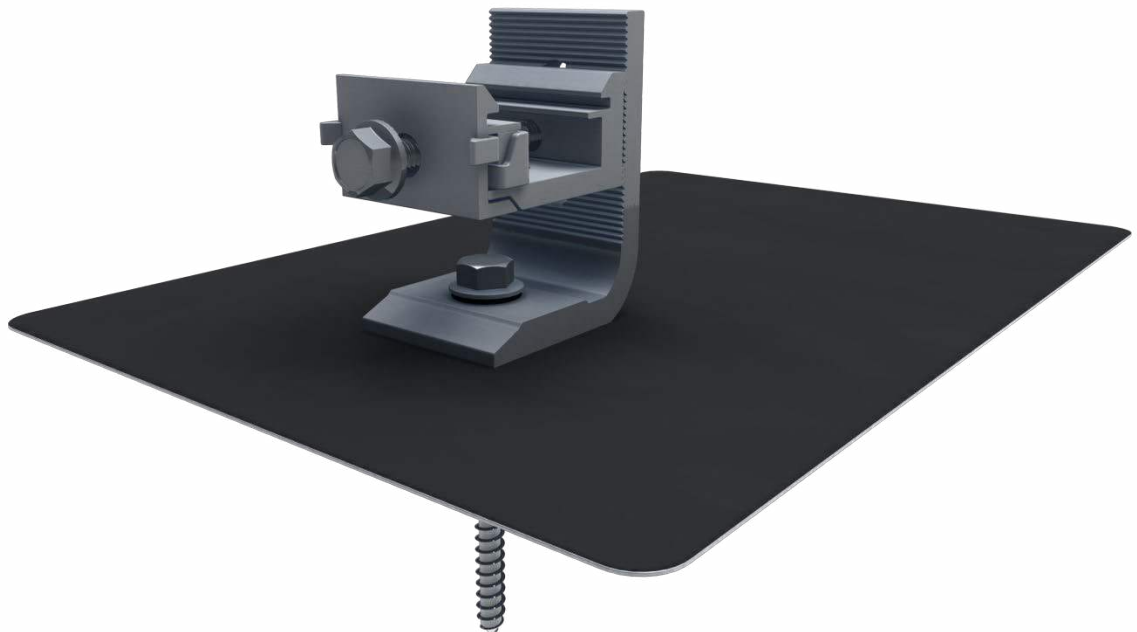
- 3012010 - GF-1 FLASHING GLV BLK 8x12"
- 3012011 - GF-1 FLASHING GLV MLL 8X12"

Available Compression Brackets:

- 2012022 - CF UNIV L-FOOT MLL 3"

GF-1® Structural Capacity Documentation for Permit Packets

- ▶ [ClickFit L-Foot Capacity Report 07.29.2021](#)
- ▶ [GF-1 Installation Manual Florida 08.11.2021 v2.0](#)



QB-1

QB-1 uses a super strong base that can be used on composition shingle, tile, shake, slate, metal shingle, and low slope rooftops. This is a rail-based solution is ideal for new residential construction projects. The base can be installed prior to the roofing material, allowing for the roof to be shingled or tiled around the posts.

Available QB-1 SKUs:

- 3017010 - QB-1 BASE AL
- 3017011 - QB-1 POST AL MLL 4.5"
- 3017012 - QB-1 POST AL MLL 6.5"
- 3017013 - QB-1 FLASHING AL MLL 12X12"
- 3017014 - QB-1 FLASHING AL MLL 18X18"
- 3017015 - QB-1 EPDM COLLAR BLK 1.25"

QB-1 Structural Capacity Documentation for Permit Packets

- ▶ [QB-1 State of Florida Certification Letter 07.29.2021](#)
- ▶ [QB-1 Installation Manual 04.09.2021 v1.0](#)



CLICKFIT®

ClickFit® is one of the fastest installing rail-based systems in the industry. With its click-in rail assembly, the rails can be connected to any of EcoFasten's composition shingle, tile, and metal roof mounts in seconds without the need for fasteners or tools. The ClickFit system is made of robust, anti-corrosive materials, such as aluminum and cold formed coated steel, to ensure the strength, corrosion resistance, and longevity.

Available ClickFit Rail SKUs:

- 2012021 - CF STD RAIL MLL AL 14FT
- 2012025 - CF STD RAIL AL MLL 171.5"

ClickFit UL 2703 Certification for Permit Packets

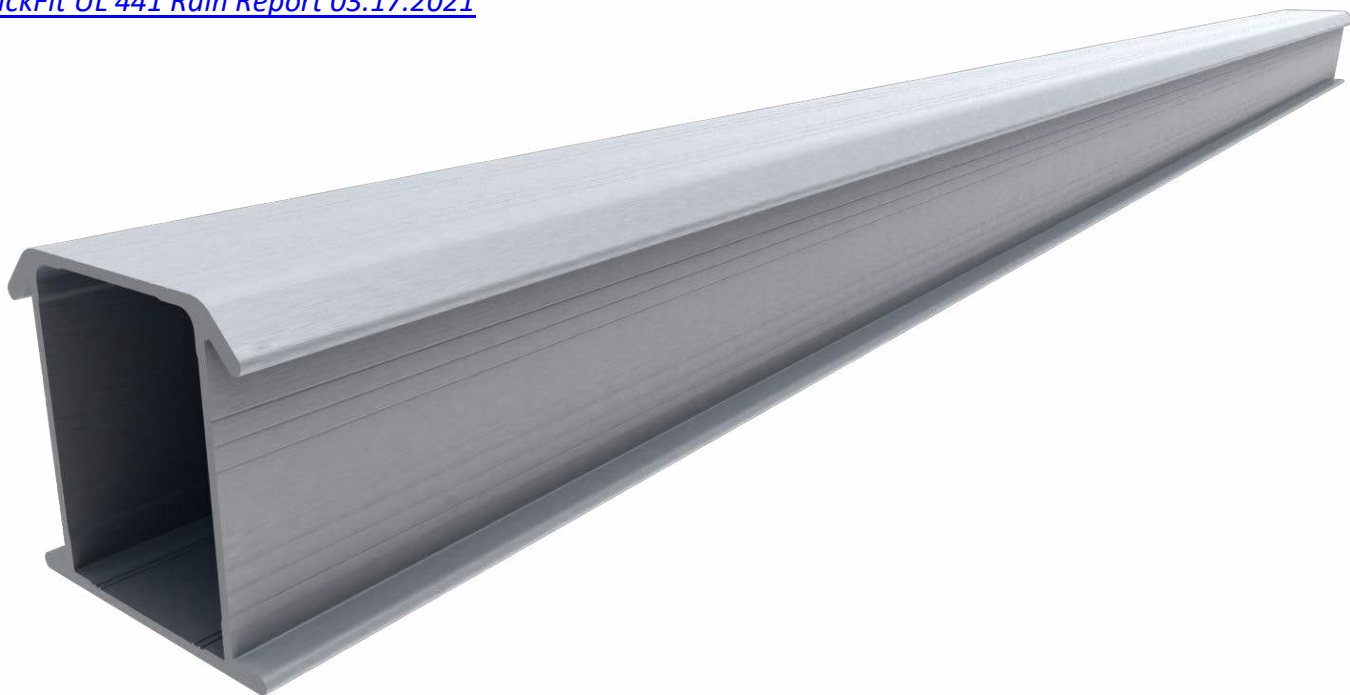
- ▶ [*ClickFit UL 2703 Approved Installation Manual Version 07.06.2021 v2.5*](#)
- ▶ [*ClickFit UL 2703 Approved Addendum 06.07.2021 v1.1*](#)

ClickFit Module Load Rating/Span Tables for Permit Packets

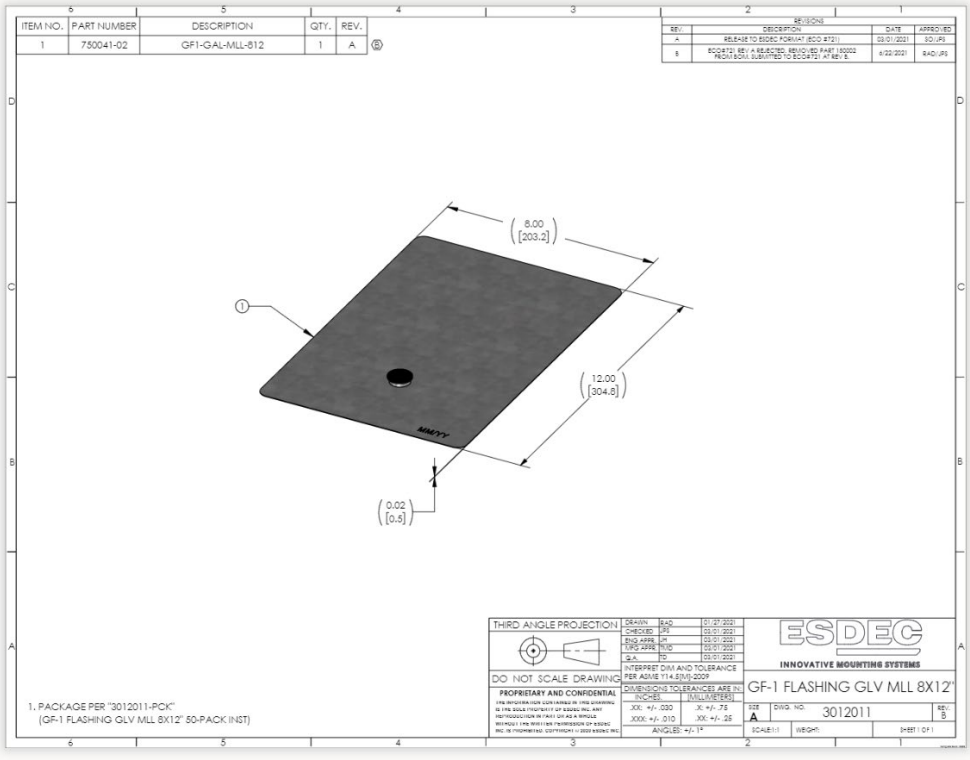
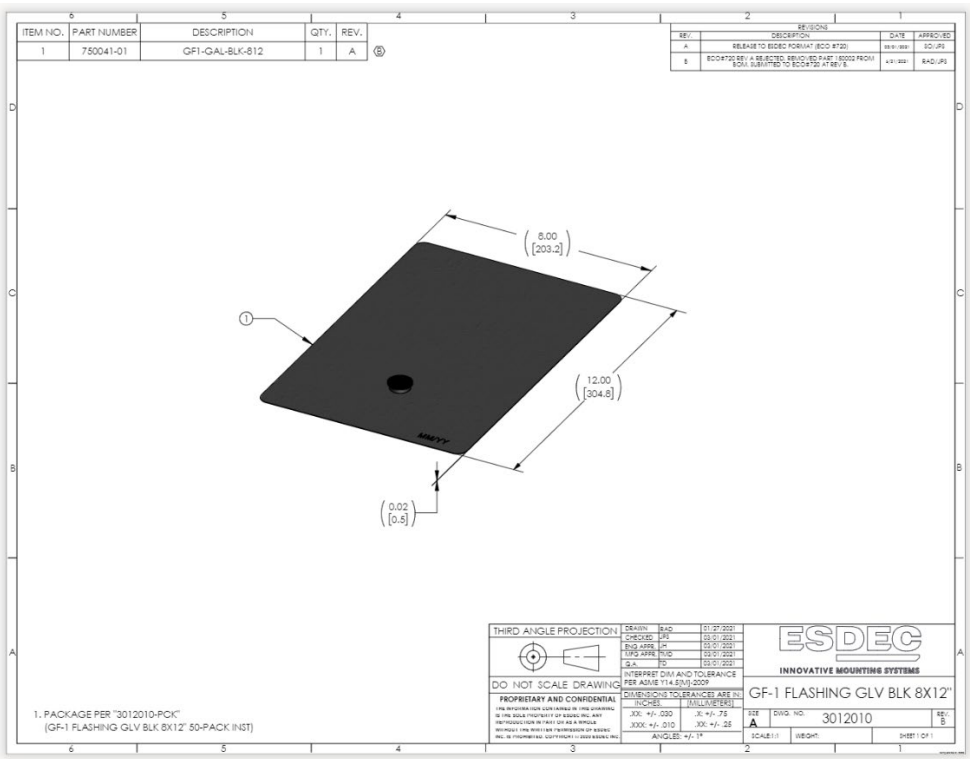
- ▶ [*ClickFit Master Letter Certification 04.15.2021*](#)

ClickFit Waterproofing for Permit Packets

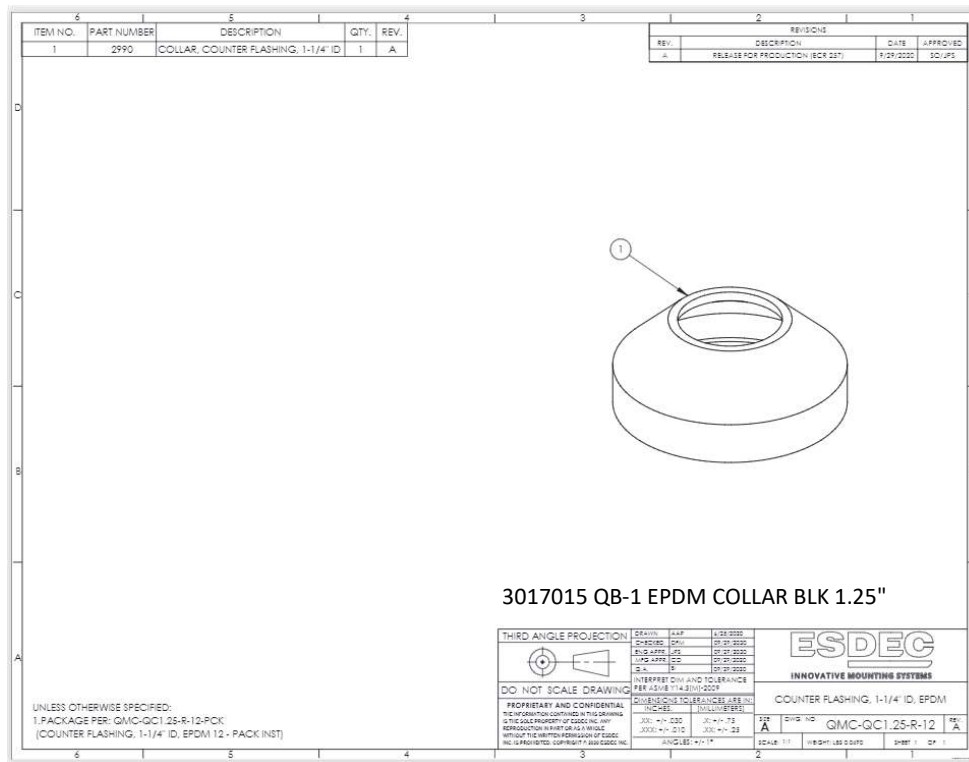
- ▶ [*ClickFit UL 441 Rain Report 03.17.2021*](#)



GF-1 CUT SHEETS

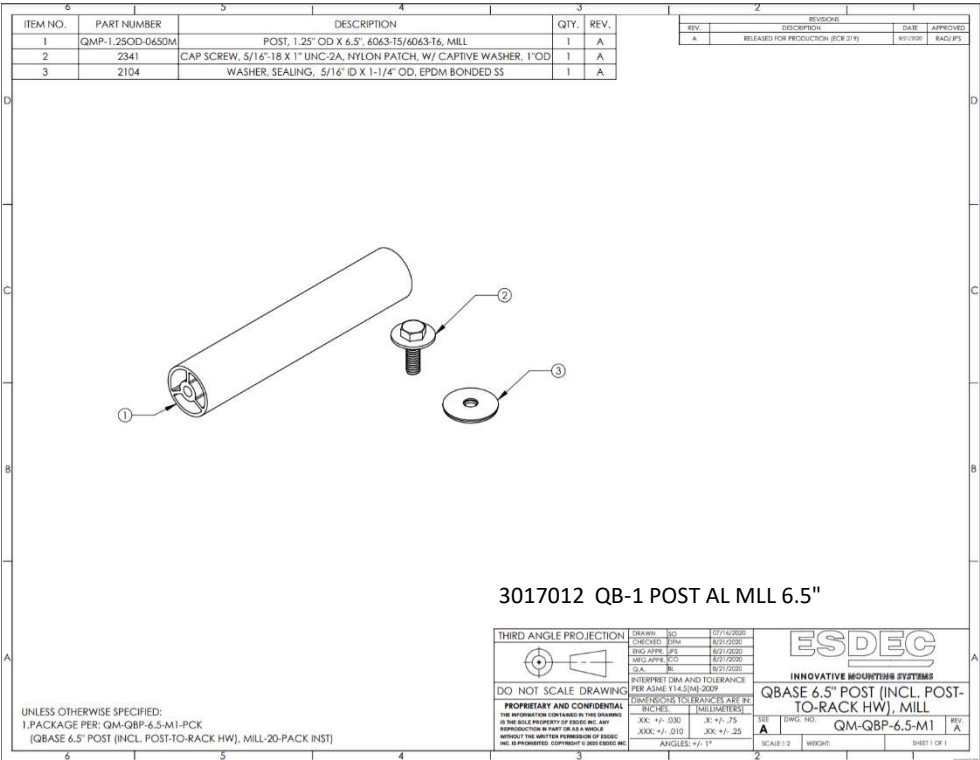
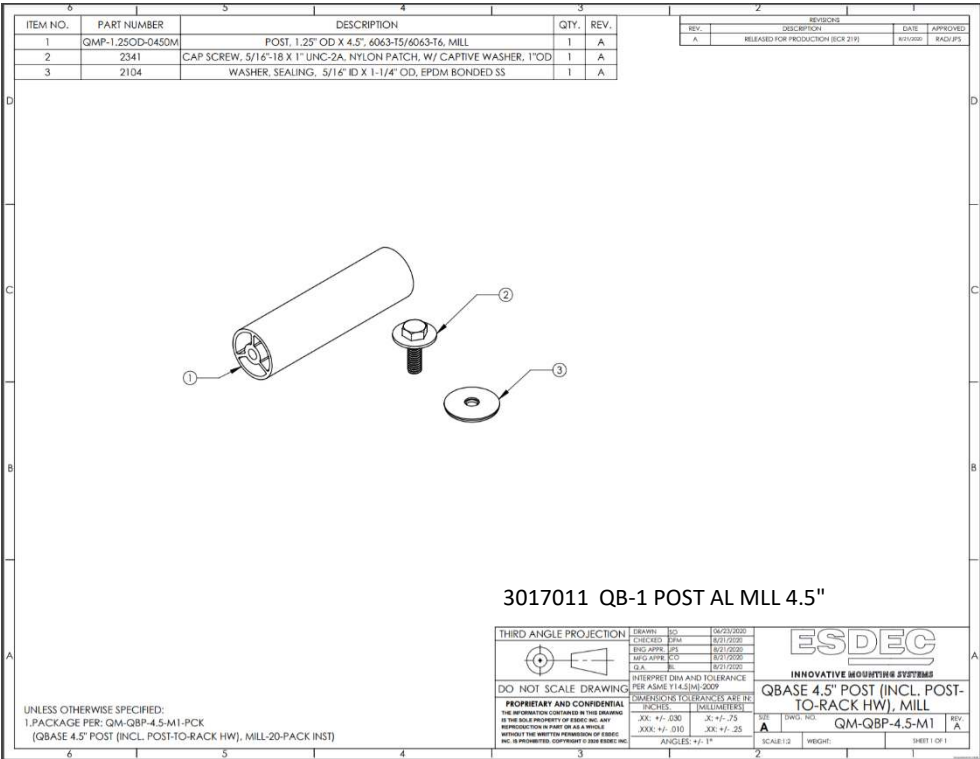


WATERPROOFING PER NRCA GUIDELINES
Designed and Certified for Compliance with the Florida Building Code & ASCE/SEI-7



Designed and Certified for Compliance with the Florida Building Code & ASCE/SEI-7

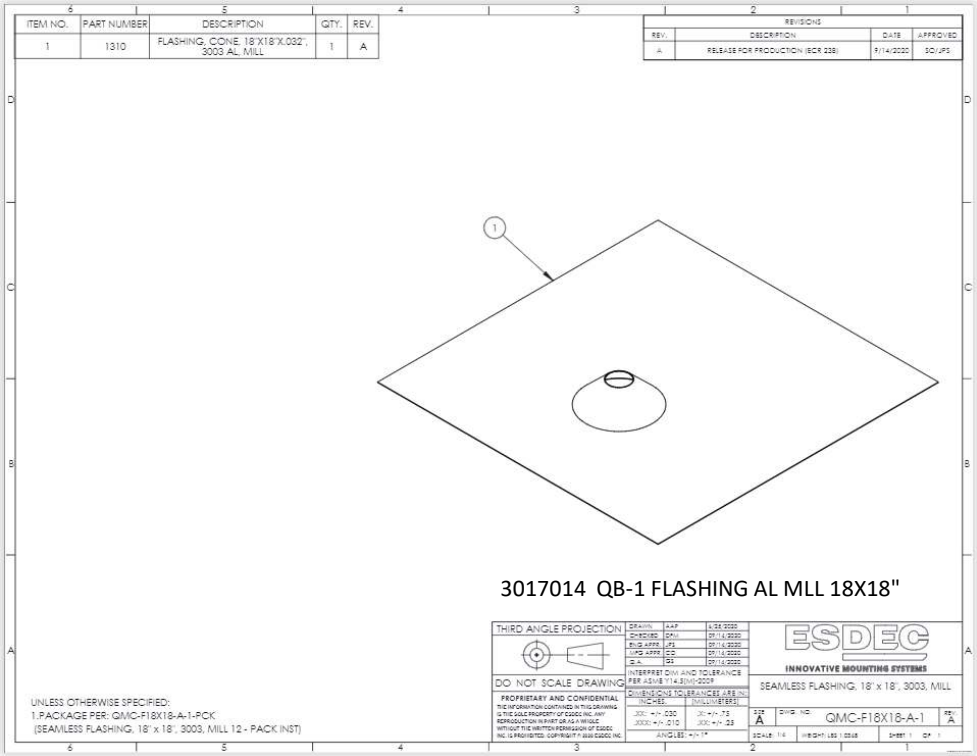
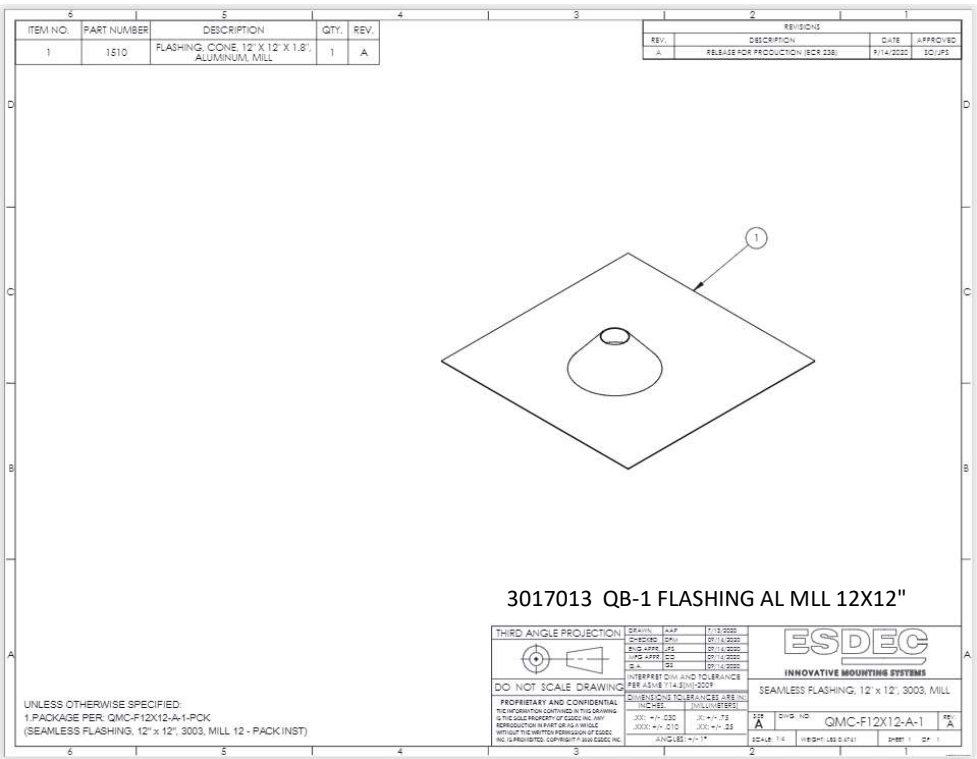
QB-1 CUT SHEETS



STRUCTURAL CERTIFICATION

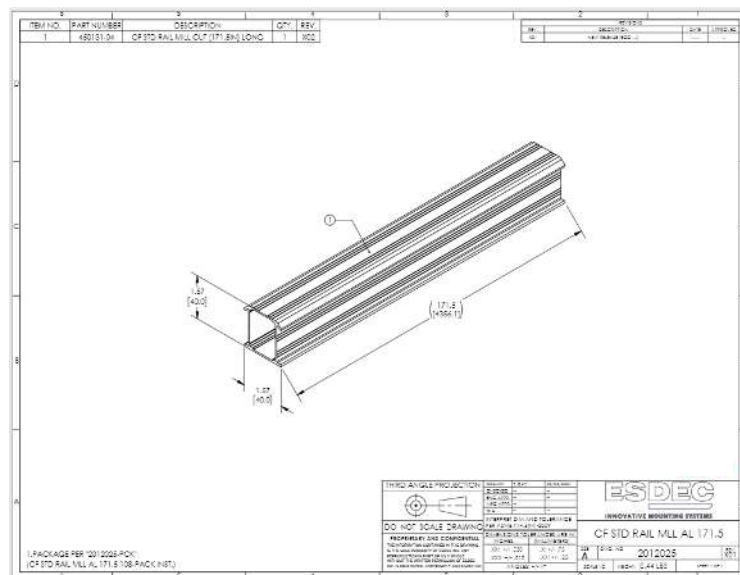
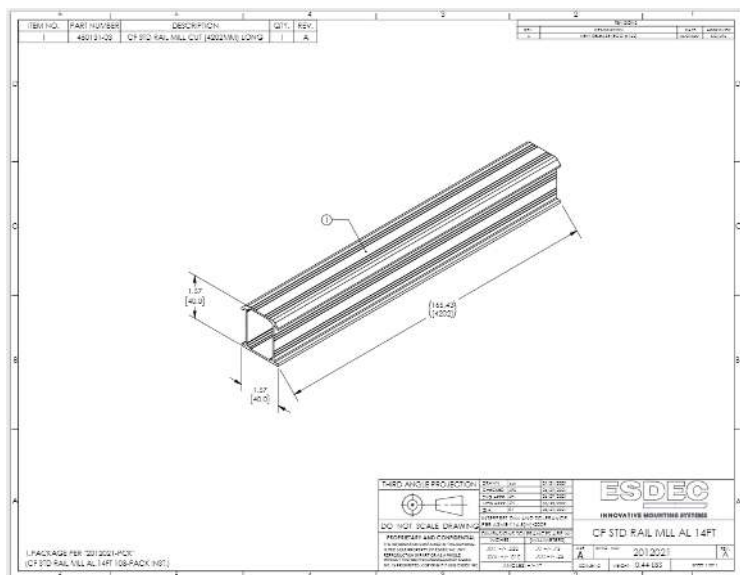
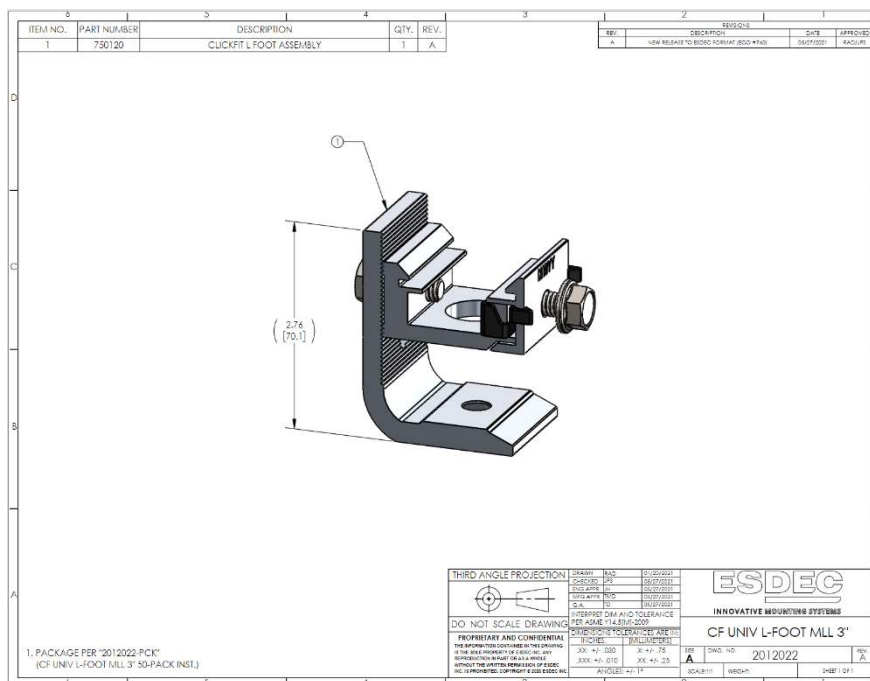
Designed and Certified for Compliance with the Florida Building Code & ASCE/SEI-7

QB-1 CUT SHEETS



WATERPROOFING PER NRCA GUIDELINES
Designed and Certified for Compliance with the Florida Building Code & ASCE/SEI-7

CLICKFIT CUT SHEETS



STRUCTURAL CERTIFICATION

Designed and Certified for Compliance with the Florida Building Code & ASCE/SEI-7

UL 2703

Conforms to UL 2703 Mechanical & Bonding requirements. See EcoFasten ClickFit Installation Manual for full ratings.

PERMITTING PACKETS

Listed below is the documentation you will need to provide to your AHJ for permitting approval. Click on the link to download file.

UL 2703 CERTIFICATIONS:

- ▶ [ClickFit UL 2703 Approved Installation Manual Version 07.06.2021 v2.5](#)
- ▶ [ClickFit UL 2703 Approved Addendum 06.07.2021 v1.1](#)

STRUCTURAL CERTIFICATIONS:

- ▶ [ClickFit L-Foot Capacity Report 07.29.2021](#)
- ▶ [ClickFit Master Letter Certification 04.15.2021](#)
- ▶ [GF-1 Installation Manual Florida 08.11.2021 v2.0](#)
- ▶ [QB-1 State of Florida Certification Letter 07.29.2021](#)

WATERPROOFING:

- ▶ [ClickFit UL 441 Rain Report 03.17.2021](#)

INSTALLATION MANUALS:

- ▶ [GF-1 Installation Manual Florida 08.11.2021 v2.0](#)
- ▶ [QB-1 Installation Manual 04.09.2021 v1.0](#)

OPTIONAL CUT SHEETS:

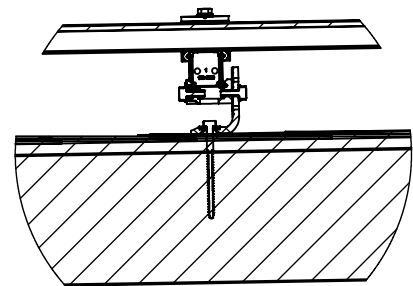
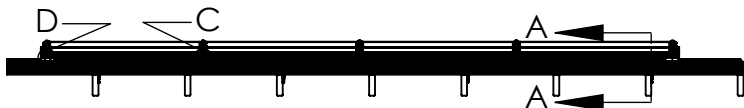
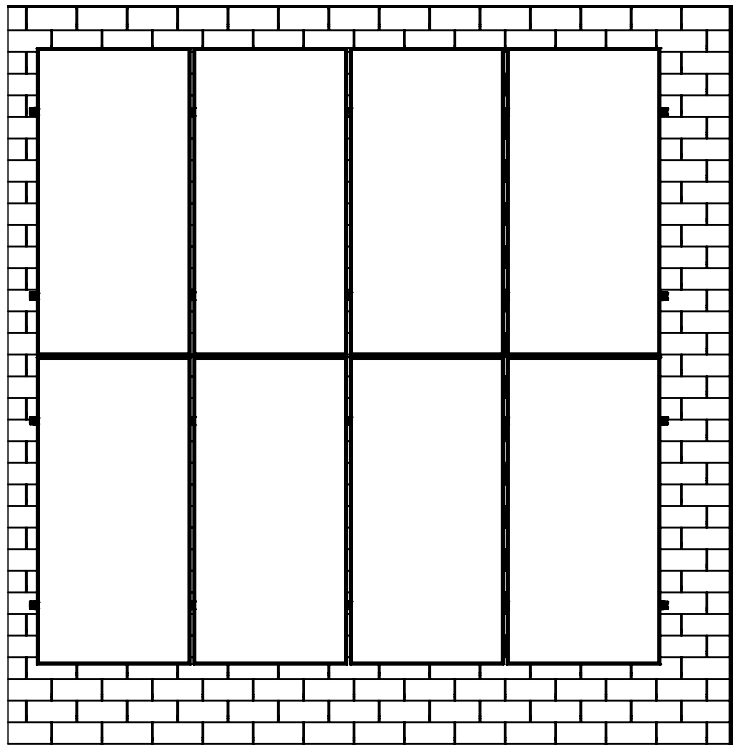
- ▶ [2012021 - CF STD RAIL MLL AL 14FT Cut Sheet](#)
- ▶ [2012022 - CF UNIV L-FOOT MLL 3" Cut Sheet](#)
- ▶ [2012025 - CF STD RAIL AL MLL 171.5" Cut Sheet](#)
- ▶ [3012010 - GF-1 FLASHING GLV BLK 8x12" Cut Sheet](#)
- ▶ [3012011 - GF-1 FLASHING GLV MLL 8X12" Cut Sheet](#)
- ▶ [3017010 - QB-1 BASE AL Cut Sheet](#)
- ▶ [3017011 - QB-1 POST AL MLL 4.5" Cut Sheet](#)
- ▶ [3017012 - QB-1 POST AL MLL 6.5" Cut Sheet](#)
- ▶ [3017013 - QB-1 FLASHING AL MLL 12X12" Cut Sheet](#)
- ▶ [3017014 - QB-1 FLASHING AL MLL 18X18" Cut Sheet](#)
- ▶ [3017015 - QB-1 EPDM COLLAR BLK 1.25" Cut Sheet](#)

CONTACT ECOFASTEN

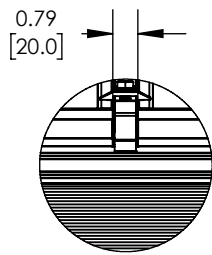
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877.859.3947 | ecofastensolar.com

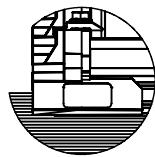




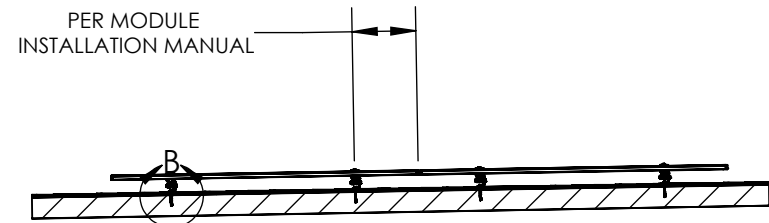
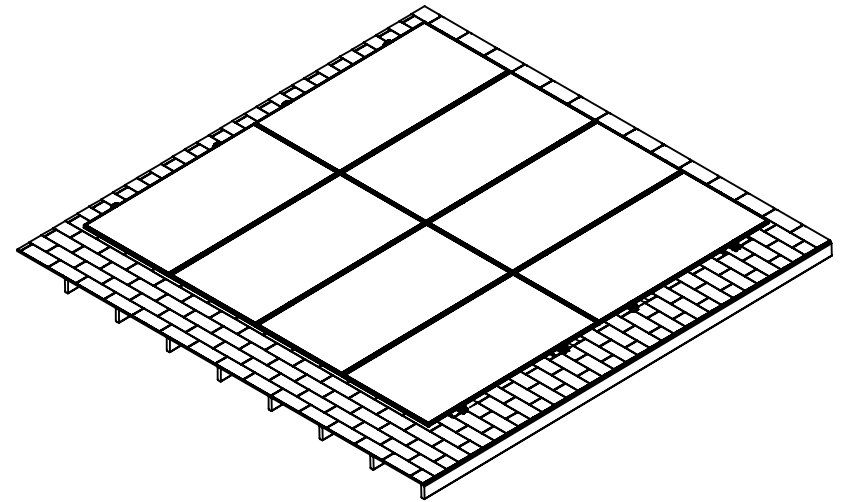
DETAIL B
SCALE 1 : 8



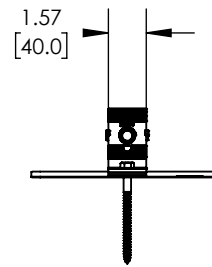
DETAIL C
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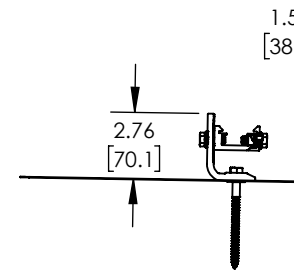
DETAIL D
SCALE 1 : 6



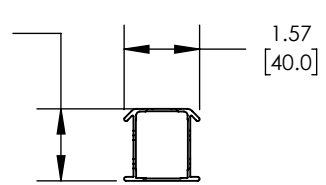
SECTION A-A



FRONT VIEW
L-FOOT

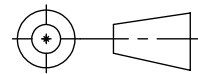


SIDE VIEW
L-FOOT



FRONT VIEW RAIL

THIRD ANGLE PROJECTION



DO NOT SCALE DRAWING

PROPRIETARY AND CONFIDENTIAL

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DRAWN	T. RAY	06/23/2021
CHECKED	-	-
ENG APPR.	-	-
MFG APPR.	-	-
Q.A.	-	-

INTERPRET DIM AND TOLERANCE PER ASME Y14.5[M]-2009

DIMENSIONS TOLERANCES ARE IN:

INCHES.	MILLIMETERS
.XX: +/- .030	.X: +/- .75
.XXX: +/- .010	.XX: +/- .25

ANGLES: +/- 1°

ESDEC

INNOVATIVE MOUNTING SYSTEMS

CLICKFIT COMP SHINGLE

SIZE A	DWG. NO. XX-XXXX-XXX	REV. X01
------------------	-------------------------	-------------

SCALE: 1:50

WEIGHT:

SHEET 1 OF 2



April 22, 2021

EcoFasten Solar LLC
4141 W Van Buren St, Ste 2
Phoenix, AZ 85009
TEL: (877) 859-3947

Attn.: Eco Fasten Solar - Engineering Department

Re: Report # 2019-11325HG.05.01 – EcoFasten - ClickFit System for Gable and Hip Roofs
Subject: Engineering Certification for the State of Florida

PZSE, Inc. – Structural Engineers has provided engineering and span tables for the EcoFasten - ClickFit System, as presented in PZSE Report # 2019-11325HG.05.01, "Engineering Certification for the EcoFasten - ClickFit System for Gable and Hip Roofs". All information, data, and analysis therein are based on, and comply with, the following building codes and typical specifications:

- Building Codes:
1. 2020 Florida Building Code, by Florida Building Commission
 2. ASCE/SEI 7-16, Minimum Design Loads for Buildings and Other Structures, by American Society of Civil Engineers
 3. 2018 International Building Code, by International Code Council, Inc.
 4. 2018 International Residential Code, by International Code Council, Inc.
 5. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES
 6. Aluminum Design Manual 2015, by The Aluminum Association, Inc.
 7. ANSI/AWC NDS-2018, National Design Specification for Wood Construction, by the American Wood Council

Design Criteria:

Risk Category II
Seismic Design Category = A - E
Exposure Category = B, C & D
Basic Wind Speed (ultimate) per ASCE 7-16 = 90 mph to 180 mph
Ground Snow Load = 0 to 60 (psf)

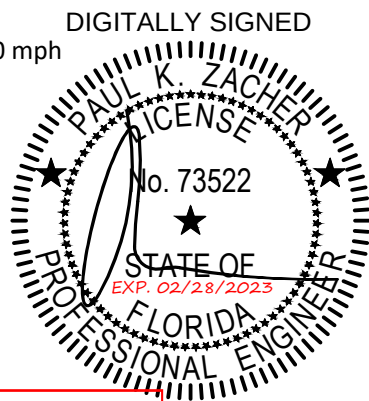
This letter certifies that the loading criteria and design basis for the EcoFasten - ClickFit System Span Tables are in compliance with the above codes.

If you have any questions on the above, do not hesitate to call.

Prepared by:
PZSE, Inc. – Structural Engineers
Roseville, CA

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY PAUL K. ZACHER, PE ON 04/22/2021 USING A SHA-1 AUTHENTICATION CODE.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA-1 AUTHENTICATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.





April 15, 2021

EcoFasten Solar LLC
4141 W Van Buren St, Ste 2
Phoenix, AZ 85009
TEL: (877) 859-3947

Attn.: EcoFasten Solar LLC - Engineering Department

Re: Report # 2019-11325HG5.01 Engineering Certification for the EcoFasten Solar LLC ClickFit - Rail System for Gable and Hip Roof.

PZSE, Inc. - Structural Engineers have reviewed EcoFasten Solar LLC ClickFit System. All information, data, and analysis contained within the EcoFasten Solar LLC ClickFit System Rail span tables are based on and comply with the following codes:

1. Minimum Design Loads for Buildings and Other Structures, ASCE/SEI 7-16
2. 2018 International Building Code, by the International Code Council, Inc.
3. 2018 International Residential Code, by the International Code Council, Inc.
4. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012, by ICC-ES
5. Aluminum Design Manual 2015, by The Aluminum Association, Inc.

Following are typical specifications to meet the above code requirements:

Design Criteria:	Ground Snow Load = 0 - 60 (psf) Basic Wind Speed = 90 - 180 (mph) Roof Mean Height = 0 - 30 (ft) Enclosed and Partially Enclosed Gable and Hip Roof Pitch = 0° - 60° (degrees) Exposure Category = B, C & D
Attachment Devices:	The evaluation of the ClickFit System considers the ClickFit L-Foot.
Rail:	The evaluation of the ClickFit System Rail p/n 2012021 (450124, REV X03), made with an aluminum alloy, 6000 series, with a minimum yield strength of 35 ksi.
Cantilever:	Maximum cantilever length is L/3, where "L" is the span noted in the Span Tables, provided at least 1 module length between maximum cantilevers.

- Clearance:** 2" to 10" clear from the top of the roof to the top of the PV panel.
- Tolerance(s):** 1.0" tolerance for any specified dimension in this report is allowed for installation.
- PV Module Size:** 60-Cell PV Panel max dimension is 68.5".
72-Cell PV Panel max dimension is 80.4".
- Installation Orientation:** Landscape (L) - PV Panel long dimension is parallel to the ridge/eave line of the roof, and the PV panel is mounted on the short side.
Portrait (P) - PV Panel short dimension is parallel to the ridge/eave line of the roof, and the PV panel is mounted on the long side.

Components and Cladding Roof Zones:

Roof Zones – Enclosed and Partially Enclosed Gable Roofs, $\theta \leq 7^\circ$:

The zones shall be determined using figure 30.3-2A of ASCE 7-16. See Figure 1.

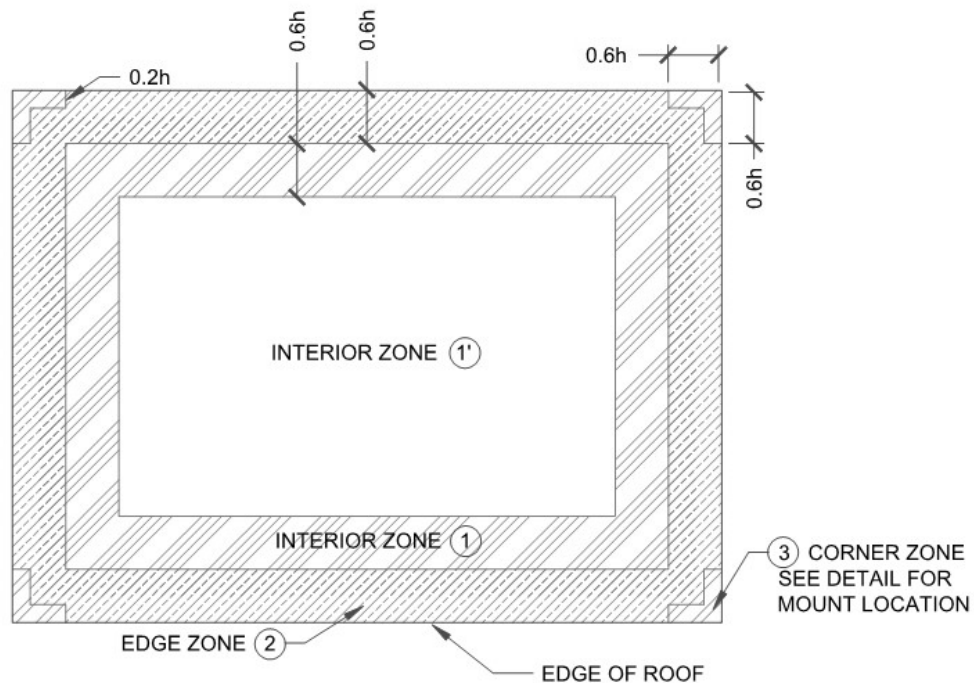


Figure 1: Roof Edge and Corner Zones, Gable Roofs, $\theta \leq 7^\circ$

Roof Zones – Enclosed and Partially Enclosed Gable and Hip Roofs, $7^\circ < \theta \leq 60^\circ$:

The Edge Zone, “a,” shall be determined using figure 30.3-2B to figure 30.3-2D of ASCE 7-16, for Gable roofs. The Edge Zone, “a,” shall be determined using figure 30.3-2E to figure 30.3-2I of ASCE 7-16, for Hip roofs. Interior Zone 1 span shall be the minimum of 1 and 1’ (See ClickFit System Rail Span Chart). Corner Zone 3 spans shall be the shortest of 3e and 3r (See ClickFit System Rail Span Chart). See Figure 2.

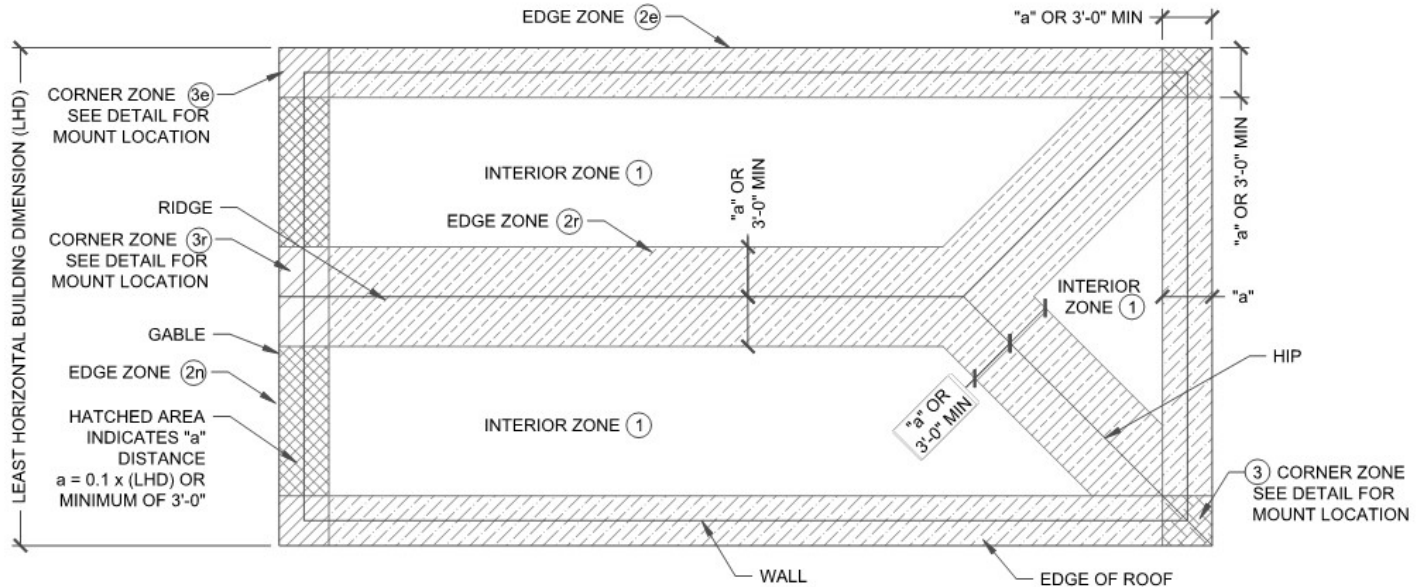


Figure 2: Roof Zones, Gable and Hip Roofs, $7^\circ < \theta \leq 45^\circ$

Panel with Support Mounts in Multiple Roof Zones:

Edge and Corner Zone spacings (Zone 2 & 3, respectively) apply only to mounts located in those Zones, not to all the mounts supporting the module.

- Notes:
- 1) Tables are determined for Rail and L-foot only and does not include roof capacity check.
 - 2) Risk Category II per ASCE 7-16.
 - 3) Topographic factor, k_{zt} is 1.0.
 - 4) Average parapet height is 0.0 ft.
 - 5) Wind speeds are LRFD values.
 - 6) Attachment spacing(s) apply to a seismic design category E or less.

Panel Array Edge:

Panels exposed at array edge shall use figure 29.4-7 of ASCE 7-16 to determine “ d_1 ” and “ d_2 ” to apply “Array Edge” spans that apply to an array layout. See figure 3.

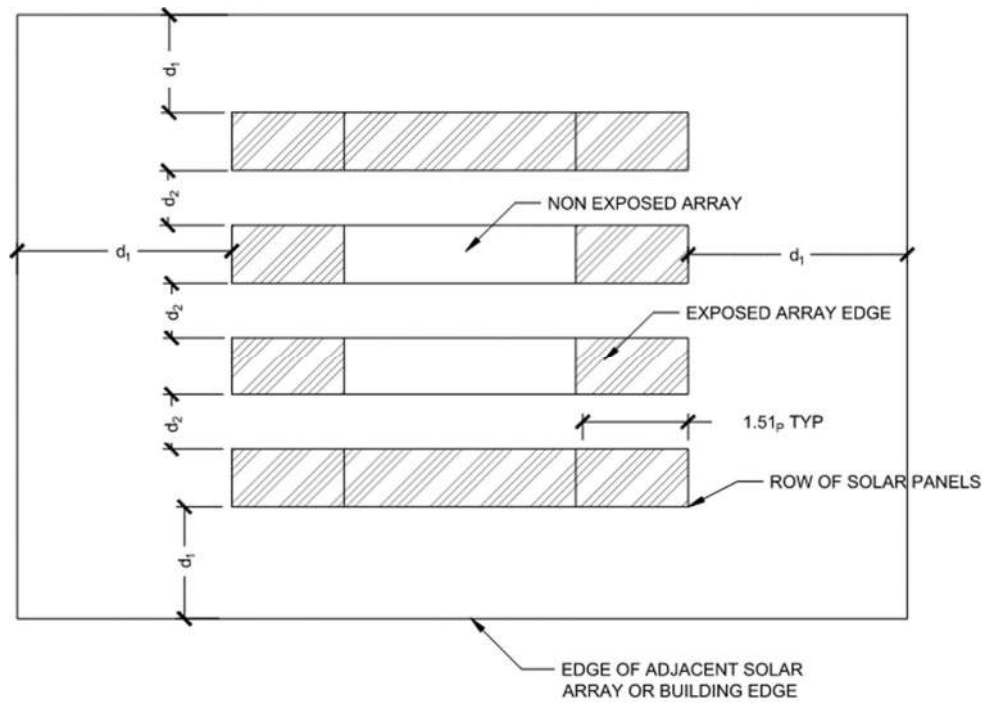


Figure 3: Array Edge

Design Responsibility:

These tables are intended to be used under the responsible charge of a registered design professional where required by the authority having jurisdiction. In all cases, these tables should be used under the direction of a design professional with sufficient structural engineering knowledge and experience to be able to:

- Evaluate whether these tables apply to the project, and
- Understand and determine the appropriate values for all input parameters of these tables.

This letter certifies that the EcoFasten Solar LLC ClickFit Railed System, when installed according to the limitations of this letter and the attached span tables, complies with the above codes and loading criteria. This certification excludes evaluation of the building structure to support the loads imposed on the building by the array; including, but not limited to strength and deflection of structural framing members, fastening and/or strength of roofing materials, and/or the effects of snow accumulation on the roof. Structures will require additional knowledge of the building and are outside the scope of the certification of this racking system.

If you have any questions on the above, do not hesitate to call.

Prepared by:

PZSE, Inc. – Structural Engineers
Roseville



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Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- 60-Cell																																																																																																			
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed-->	90 mph						95 mph						100 mph						105 mph						110 mph						115 mph						120 mph																																																															
			Roof Zone-->	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r																																																			
0 psf	B	0 to 7	Array Interior	86	86	86	86	86	82	82		86	86	86	86	86	78	78		86	86	85	85	85	76	76		86	86	82	82	82	73	73		86	86	80	80	80	70	70		86	86	77	77	77	68	68		86	83	75	75	75	66	66																																													
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		7 to 20	Array Interior	87	87	87	83	83	83	78		87	87	87	80	80	80	75		87	87	87	77	77	77	72		87	87	87	74	74	74	70		84	84	84	72	72	72	67		81	81	81	70	70	70	65		78	78	78	68	68	68	63																																													
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		27 to 45	Array Interior	88	88	88	88	88	88	88		88	88	88	88	88	85	88		88	88	88	88	88	82	88		88	88	88	88	86	79	86		86	86	86	86	76	83		83	83	83	83	80	74	80		81	81	81	81	78	72	78																																														
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Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- 60-Cell																																																			
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed-->	130 mph						140 mph						150 mph						160 mph						170 mph						180 mph																					
			Roof Zone-->	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r										
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	C	0 to 7	Array Interior	86	69	62	62	62	54	54	83	66	59	59	59	50	50	79	63	55	55	55	46	46	75	60	51	51	51	43	43	72	56	48	48	48	41	69	53	45	45	45	38	38	38	34	34	34	34	34	34	34	34	34	
			Array Edge	76	60	51	51	51	43	43	72	56	48	48	48	40	40	68	52	44	44	44	37	37	65	49	41	41	41	34	34	62	46	39	39	39	30	60	43	37	37	37	30	43	37	37	37	37	37	37	37	37			
		7 to 20	Array Interior	65	65	65	55	55	55	50	62	62	62	51	51	51	47	59	59	59	48	48	48	43	43	55	55	55	45	45	45	52	52	52	42	42	42	38	49	49	49	39	39	39	39	39	39	39	39	39	39	39	39	39	
			Array Edge	55	55	55	45	45	45	41	51	51	51	41	41	41	38	48	48	48	39	39	39	35	35	45	45	45	36	36	36	42	42	42	32	32	32	27	39	39	39	29	29	29	29	29	29	29	29	29	29	29	29		
		20 to 27	Array Interior	72	72	72	60	60	60	58	69	69	69	56	56	56	54	65	65	65	52	52	52	50	63	63	63	49	49	49	47	60	60	60	46	46	46	44	57	57	57	43	43	43	43	43	43	43	43	43	43	43	43	43	
			Array Edge	63	63	63	49	49	49	47	59	59	59	46	46	46	44	55	55	55	42	42	42	41	52	52	52	40	40	40	38	49	49	49	37	37	37	36	46	46	46	35	35	35	35	35	35	35	35	35	35	35	35		
		27 to 45	Array Interior	68	68	68	68	65	60	65	64	64	64	64	62	56	62	61	61	61	61	59	52	59	58	58	58	55	49	55	54	54	54	51	46	51	51	51	48	43	48	43	43	43	43	43	43	43	43	43	43	43	43	43	43
			Array Edge	58	58	58	58	55	49	55	54	54	54	54	51	45	51	50	50	50	50	47	42	47	47	47	47	44	40	44	44	44	44	44	42	37	42	42	42	39	34	39	34	34	34	34	34	34	34	34	34	34	34	34	
		45 to 60	Array Interior	79	79	73	73	73	73	73	75	75	70	70	70	70	70	72	72	66	66	66	66	66	66	69	69	64	64	64	64	66	66	66	61	61	61	61	64	64	58	58	58	58	58	58	58	58	58	58	58	58	58		
			Array Edge	69	69	64	64	64	64	64	66	66	61	61	61	61	61	63	63	57	57	57	57	57	60	60	53	53	53	53	53	57	57	50	50	50	50	53	53	47	47	47	47	47	47	47	47	47	47	47	47	47	47		
	D	0 to 7	Array Interior	83	65	58	58	58	49	49	78	62	54	54	54	45	45	74	59	50	50	50	42	42	71	55	47	47	47	40	68	52	44	44	44	37	65	49	42	42	42	34	34	34	34	34	34	34	34	34	34	34	34	34	
			Array Edge	71	55	47	47	47	40	40	67	51	44	44	44	37	37	64	48	41	41	41	33	33	61	44	38	38	38	29	58	42	36	36	36	25	55	39	32	32	32	23	23	23	23	23	23	23	23	23	23	23	23	23	
		7 to 20	Array Interior	62	62	62	51	51	51	46	58	58	58	47	47	47	43	54	54	54	44	44	40	50	50	50	41	41	41	37	47	47	47	38	38	38	34	45	45	45	36	36	36	36	36	36	36	36	36	36	36	36	36		
			Array Edge	51	51	51	41	41	41	37	47	47	47	38	38	38	34	44	44	44	35	35	29	41	41	41	31	31	31	25	38	38	27	27	27	22	36	36	36	24	24	24	24	24	24	24	24	24	24	24	24	24			
		20 to 27	Array Interior	68	68	68	56	56	56	53	65	65	65	52	52	52	50	62	62	62	48	48	46	59	59	59	45	45	45	43	55	55	55	42	42	42	40	52	52	52	40	40	40	40	40	40	40	40	40	40	40	40	40		
			Array Edge	59	59	59	45	45	45	43	54	54	54	42	42	42	40	51	51	51	39	39	39	37	47	47	47	36	36	36	34	44	44	44	33	33	33	30	42	42	42	29	29	29	29	29	29	29	29	29	29	29	29	29	
		27 to 45	Array Interior	64	64	64	64	61	55	61	61	61	61	58	51	58	57	57	57	57	54	48	54	53	53	53	50	45	50	50	50	50	50	50	47	47	47	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44			
			Array Edge	53	53	53	50	45	50	49	49	49	49	49	47	42	47	46	46	46	46	44	39	44	43	43	43	40	40	40	40	40	40	40	38	38	38	38	38	38	38	36	36	36	36	36	36	36	36	36					
45 to 60	Array Interior	75	75	69	69	69	69	69	71	71	66	66	66	66	66	68	68	63	63	63	63	63	65	65	60	60	60	60	60	63	63	56	56	56	56	56	60	60	53	53	53	53	53	53	53	53									

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Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- 60-Cell																																															
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed-> Roof Zone->	130 mph						140 mph						150 mph						160 mph						170 mph						180 mph																	
				1'	2'	2e	2r	2n	3e	3r	1'	2'	2e	2r	2n	3e	3r	1'	2'	2e	2r	2n	3e	3r	1'	2'	2e	2r	2n	3e	3r	1'	2'	2e	2r	2n	3e	3r	1'	2'	2e	2r	2n	3e	3r						
B	0 to 7	Array Interior	72	72	70	70	70	63	63	72	72	67	67	67	59	59	72	71	63	63	63	55	55	72	68	61	61	61	51	51	72	65	57	57	57	48	48	72	62	54	54	54	45	45	45	45	45	45			
		Array Edge	72	68	61	61	61	52	52	72	64	57	57	57	48	48	72	61	53	53	53	44	44	72	58	49	49	49	42	42	70	54	46	46	46	39	39	67	51	44	44	44	37	37	37	37	37	37			
		7 to 20	Array Interior	74	74	74	64	64	64	60	70	70	70	61	61	61	56	67	67	67	57	57	57	52	64	64	53	53	53	48	61	61	61	50	50	50	45	58	58	47	47	47	47	47	47	47	47	47	47		
		Array Edge	64	64	64	53	53	53	49	61	61	61	49	49	49	45	57	57	57	46	46	46	42	53	53	53	43	43	39	50	50	50	40	40	37	47	47	47	38	38	38	34	34	34	34						
		20 to 27	Array Interior	79	79	79	68	68	68	66	78	78	78	65	65	63	74	74	74	62	62	62	60	70	70	58	58	58	56	67	67	67	55	55	55	53	65	65	65	52	52	52	52	52	52	52	52	52			
		Array Edge	71	71	71	59	59	59	56	67	67	67	54	54	54	52	64	64	64	51	51	51	49	61	61	61	47	47	47	45	58	58	58	44	44	44	37	45	45	45	42	42	42	42	42	42	42				
	27 to 45	Array Interior	76	76	76	76	73	68	73	72	72	72	70	64	70	69	69	69	66	61	66	66	66	66	66	66	66	58	63	63	63	61	55	61	61	61	61	61	58	51	51	51	48	48	48	48	48	48			
		Array Edge	66	66	66	66	64	58	64	63	63	63	63	60	54	60	60	60	60	57	50	57	50	57	56	56	53	47	53	52	52	52	50	44	50	49	49	49	47	42	42	42	42	42	42	42	42	42			
		45 to 60	Array Interior	87	87	83	83	83	83	83	83	83	78	78	78	78	78	80	80	75	75	75	75	75	77	77	71	71	71	71	74	74	69	69	69	69	69	71	71	66	66	66	66	66	66	66	66	66			
		Array Edge	77	77	72	72	72	72	73	73	68	68	68	68	68	68	70	70	65	65	65	65	65	67	67	62	62	62	62	65	65	59	59	59	59	59	62	62	56	56	56	56	56	56	56	56	56				
		15 psf	0 to 7	Array Interior	72	69	62	62	62	54	54	72	66	59	59	59	50	50	72	63	55	55	55	46	46	72	60	51	51	51	43	43	72	65	57	57	57	48	48	72	62	54	54	54	45	45	45	45	45	45	
			Array Edge	72	60	51	51	51	43	43	72	56	48	48	48	40	40	72	58	44	44	44	37	37	72	58	49	49	49	42	42	70	54	46	46	46	39	39	67	51	44	44	44	37	37	37	37	37	37		
7 to 20	Array Interior		74	74	74	64	64	64	60	70	70	70	61	61	61	56	67	67	67	57	57	57	52	64	64	53	53	53	48	61	61	61	50	50	50	45	58	58	47	47	47	47	47	47	47	47	47	47			
Array Edge	64		64	64	53	53	53	49	61	61	61	49	49	49	45	57	57	57	46	46	46	42	53	53	53	43	43	39	50	50	50	40	40	37	47	47	47	38	38	38	34	34	34	34							
20 to 27	Array Interior		79	79	79	68	68	68	66	78	78	78	65	65	63	74	74	74	62	62	62	60	70	70	58	58	58	56	67	67	67	55	55	55	53	65	65	65	52	52	52	52	52	52	52	52	52				
Array Edge	71		71	71	59	59	59	56	67	67	67	54	54	54	52	64	64	64	51	51	51	49	61	61	61	47	47	47	45	58	58	58	44	44	44	37	45	45	45	42	42	42	42	42	42	42					
20 psf	0 to 7	Array Interior	72	69	62	62	62	54	54	72	66	59	59	59	50	50	72	63	55	55	55	46	46	72	60	51	51	51	43	43	72	65	57	57	57	48	48	72	62	54	54	54	45	45	45	45	45	45			
	Array Edge	69	68	61	61	61	52	52	69	64	57	57	57	48	48	69	61	53	53	53	44	44	69	58	49	49	49	42	42	69	54	46	46	46	39	39	67	51	44	44	44	37	37	37	37	37	37				
	7 to 20	Array Interior	74	74	74	64	64	64	60	70	70	70	61	61	61	56	67	67	67	57	57	57	52	64	64	53	53	53	48	61	61	61	50	50	50	45	58	58	47	47	47	47	47	47	47	47	47	47			
	Array Edge	64	64	64	53	53	53	49	61	61	61	49	49	49	45	57	57	57	46	46	46	42	53	53	53	43	43	39	50	50	50	40	40	37	47	47	47	38	38	38	34	34	34	34							
	20 to 27	Array Interior	79	79	79	68	68	68	66	78	78	78	65	65	63	74	74	74	62	62	62	60	70	70	58	58	58	56	67	67	67	55	55	55	53	65	65	65	52	52	52	52	52	52	52	52	52				
	Array Edge	71	71	71	59	59	59	56	67	67	67	54	54	54	52	64	64	64	51	51	51	49	61	61	61	47	47	47	45	58	58	58	44	44	44	37	45	45	45	42	42	42	42	42	42	42					
27 to 45	Array Interior	76	76	76	76	73	68	73	72	72	72	70	64	70	69	69	69	66	61	66	66	66	66	66	66	66	58	63	63	63	61	55	61	61	61	61	61	58	51	51	51	48	48	48	48	48	48				
	Array Edge	66	66	66	66	64	58	64	63	63	63	63	60	54	60	60	60	60	57	50	57	50	57	56	56	53	47	53	52	52	52	50	44	50	49	49	49	47	42	42	42	42	42	42	42	42	42				
	45 to 60	Array Interior	87	87	83	83	83	83	83	83	83	78	78	78	78	78	80	80	75	75	75	75	75	77	77	71	71	71	71	74	74	69	69	69	69	69	71	71	66	66	66	66	66	66	66	66	66				
	Array Edge	77	77	72	72	72	72	73	73	68	68	68	68	68	68	70	70	65	65	65	65	65	67	67	62	62	62	62	65	65	59	59	59	59	59	62	62	56	56	56	56	56	56	56	56	56					
	20 psf	0 to 7	Array Interior	72	69	62	62	62	54	54	72	66	59	59	59	50	50	72	63	55	55	55	46	46	72	60	51	51	51	43	43	72	65	57	57	57	48	48	72	62	54	54	54	45	45	45	45	45	45		
		Array Edge	69	60	51	51	51	43	43	69	56	48	48	48	40	40	69	52	44	44	44	37	37	69	54	41	41	41	34	34	69	56	48	48	48	41	41	60	53	43	43	43	43	43	43	43	43				
7 to 20		Array Interior	74	74	74	64	64	64	60	70	70	70	61	61	61	56	67	67	67	57	57	57	52	64	64	53	53	53	48	61	61	61	50	50	50	45	58	58	47	47	47	47	47	47	47	47	47	47			
Array Edge		64	64	64	53	53	53	49	61	61	61	49	49	49	45	57	57	57	46	46	46	42	53	53	53	43	43	39	50	50	50	40	40	37	47	47	47	38	38	38	34	34	34	34							
20 to 27		Array Interior	79	79	79	68	68	68	66	78	78	78	65	65	63	74	74	74	62	62	62	60	70	70	58	58	58	56	67	67	67	55	55	55	53	65	65	65	52	52	52	52	52	52	52	52	52				
Array Edge		71	71	71	59	59	59	56	67	67	67	54	54	54	52	64	64	64	51	51	51	49	61	61	61	47	47	47	45	58	58	58	44	44	44	37	45	45	45	42	42	42	42	42	42	42					
27 to 45	Array Interior	76	76	76	76	73	68	73	72	72	72	70	64	70	69	69	69	66	61	66	66	66	66	66	66	66	58	63	63	63	61	55	61	61	61	61	61	58	51	51	51	48	48	48	48	48	48				
	Array Edge	66	66	66	66	64	58	64	63	63	63	63	60	54	60	60	60	60	57	50	57	50	57	56	56	53	47	53	52	52	52	50	44	50	49	49	49	47	42	42	42	42	42	42	42	42					
	45 to 60	Array Interior	87	87	83	83	83	83	83	83	83	78	78	78	78	78	80	80	75	75	75	75	75	77	77	71	71	71	71	74	74	69	69	69	69	69	71	71	66	66	66	66	66	66	66	66	66				
	Array Edge	77	77	72	72	72	72	73	73	68	68	68	68	68	68	70	70	65	65	65	65	65	67	67	62	62	62																								

[illegible]

Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- 60-Cell																																															
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed-> Roof Zone->	130 mph						140 mph						150 mph						160 mph						170 mph						180 mph																	
				1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r						
30 psf	B	0 to 7	Array Interior	68	68	68	68	68	63	63	68	68	67	67	67	59	59		68	68	63	63	63	55	55	68	68	61	61	61	51	51		68	65	57	57	57	48	48		68	62	54	54	54	45	45			
			Array Edge	68	68	61	61	61	52	52		68	64	57	57	57	48	48		68	61	53	53	53	44	44		68	58	49	49	49	42	42		68	54	46	46	46	39	39		67	51	44	44	44	37	37	
		7 to 20	Array Interior	70	70	70	64	64	64	60		70	70	70	61	61	61	56		67	67	67	57	57	57	52		64	64	64	53	53	53		64	61	61	50	50	50		58	58	58	47	47	47				
			Array Edge	64	64	64	53	53	53	49		61	61	61	49	49	49	45		57	57	57	46	46	46	42		53	53	53	43	43	43		50	50	50	40	40	40		47	47	47	38	38	38				
		20 to 27	Array Interior	71	71	71	68	68	68	66		71	71	71	65	65	65	63		71	71	71	62	62	62	60		70	70	70	58	58	58		67	67	67	55	55	55		63	65	65	52	52	52				
			Array Edge	71	71	71	59	59	59	56		67	67	67	54	54	54	52		64	64	64	51	51	51	49		61	61	61	47	47	47		58	58	58	44	44	44		53	55	55	42	42	42				
		27 to 45	Array Interior	76	76	76	76	73	68	73		72	72	72	72	70	70	64		69	69	69	66	66	66	66		68	68	66	66	63	58	63		63	63	63	63	61	55	61		61	61	61	51	51	58		
			Array Edge	66	66	66	66	64	58	64		63	63	63	63	60	54	60		60	60	60	60	57	50	57		56	56	56	56	53	47	53		52	52	52	52	50	44	50		49	49	49	47	47	47		
		45 to 60	Array Interior	87	87	83	83	83	83	83		83	83	78	78	78	78	78		80	80	75	75	75	75		77	77	71	71	71	71	71		74	74	69	69	69	69		71	71	66	66	66	66				
			Array Edge	77	77	72	72	72	72	72		73	73	68	68	68	68	68		70	70	65	65	65	65		67	67	62	62	62	62	62		65	65	59	59	59	59		62	62	56	56	56	56				
	C	0 to 7	Array Interior	68	68	62	62	62	54	54		68	66	59	59	59	50	50		68	63	55	55	55	46	46		68	60	51	51	51	43	43		68	56	48	48	48	41	41		68	53	45	45	45	38	38	
			Array Edge	68	60	51	51	51	43	43		68	56	48	48	48	40	40		68	52	44	44	44	37	37		65	49	41	41	41	34	34		62	46	39	39	39	30	30		60	43	37	37	37	27	27	
		7 to 20	Array Interior	65	65	65	55	55	55	50		62	62	62	51	51	51	47		59	59	59	48	48	48		55	55	55	45	45	45		52	52	52	42	42	42		38	49	49	49	39	39	36				
			Array Edge	55	55	55	45	45	45	41		51	51	51	41	41	41	38		48	48	48	39	39	39		45	45	45	36	36	36		42	42	42	32	32	32		27	39	39	39	29	29	24				
		20 to 27	Array Interior	71	71	71	60	60	60	58		69	69	69	56	56	56	54		65	65	65	52	52	52		63	63	63	49	49	49		60	60	60	46	46	46		57	57	57	43	43	43					
			Array Edge	63	63	63	49	49	49	47		59	59	59	46	46	46	44		55	55	55	42	42	42		51	52	52	40	40	40		48	49	49	37	37	37		36	46	46	35	35	35					
		27 to 45	Array Interior	68	68	68	65	60	65		64	64	64	64	62	56	62		61	61	61	61	59	52		58	58	58	55	49	55		54	54	54	51	46	51		51	51	51	48	43	48						
			Array Edge	58	58	58	58	55	49	55		54	54	54	54	51	45	51		50	50	50	50	47	42		47	47	47	44	40	44		44	44	44	44	42	37	42		42	42	42	39	34	48				
		45 to 60	Array Interior	79	79	73	73	73	73	73		75	75	70	70	70	70	70		72	72	66	66	66	66		69	69	64	64	64	64		66	66	61	61	61	61		64	64	58	58	58	58					
			Array Edge	69	69	64	64	64	64	64		66	66	61	61	61	61	61		63	63	57	57	57	57		60	60	53	53	53	53		57	57	50	50	50	50		53	53	47	47	47	47					
	D	0 to 7	Array Interior	67	65	58	58	58	49	49		67	62	54	54	54	45	45		67	59	50	50	50	42		67	55	47	47	47	40		67	52	44	44	44	37		65	49	42	42	42	34	34				
			Array Edge	67	55	47	47	47	40	40		67	51	44	44	44	44	37		64	48	41	41	41	33		61	44	38	38	38	29	29		58	42	36	36	36	25		55	39	32	32	32	23	23			
		7 to 20	Array Interior	62	62	62	51	51	51	46		58	58	58	47	47	47	43		54	54	54	44	44	44		50	50	50	41	41	41		47	47	47	38	38	38		45	45	45	36	36	36					
			Array Edge	51	51	51	41	41	41	37		47	47	47	38	38	38	34		44	44	44	35	35	35		41	41	41	31	31	31		38	38	38	27	27	27		36	36	36	24	24	24					
20 to 27		Array Interior	68	68	68	56	56	56	53		65	65	65	52	52	52	50		62	62	62	48	48	48		59	59	59	45	45	45		55	55	55	42	42	42		52	52	52	40	40	40						
		Array Edge	59	59	59	45	45	45	43		54	54	54	42	42	42	40		51	51	51	39	39	39		47	47	47	36	36	36		44	44	44	33	33	33		42	42	42	29	29	29						
27 to 45		Array Interior	64	64	64	64	61	55	61		61	61	61	61	58	51	58	57		57	57	57	57	54	48		54	53	53	50	45	50		50	50	50	47	42	47		47	47	47	44	40	44					
		Array Edge	53	53	53	50	45	50	49		49	49	49	49	47	42	47	46		46	46	46	46	44	39		43	43	43	43	41	36		40	40	40	40	38	33		38	38	38	36	29	36					
B	0 to 7	Array Interior	75	75	69	69	69	69	69		71	71	66	66	66	66	66		68	68	63	63	63	63		65	65	60	60	60	60		63	63	56	56	56	56		60	60	53	53	53	53						
		Array Edge	65	65	60	60	60	60	60		62	62	56	56	56	56	56		59	59	52	52	52	52		55	55	49	49	49	49		52	52	46	46	46	46		46	49	43	43	43	43						
	7 to 20	Array Interior	66	66	66	64	64	64	60		66	66	66	61	61	61	56		66	66	66	57	57	57	52		64	64	64	53	53	53		64	61	61	50	50	50		58	58	58	47	47	47					
		Array Edge	64	64	64	53	53	53	49		61	61	61	49	49	49	45		57	57	57	46	46	46	42		53	53	53	43	43	43		50	50	50	40	40	40		47	47	47	38	38	38					
	C	20 to 27	Array Interior	67	67	67	67	67	66		67	67	67	65	65	65	63		67	67	67	62	62	62	60		67	67	67	58	58	58		67	67	67	55	55	55		65	65	65	52	52	52					
Array Edge			67	67	67	59	59	59	56		67	67	67	54	54	54	52		64	64	64	51	51	51	49		61	61	61	47	47	47		58	58	58	44	44	44		55	55	55	42	42	42					
27 to 45		Array Interior	76	76	76	76	73	68	73		72	72	72	72	70	70	64	</																																	

[illegible]

[illegible]

[illegible]

Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- 72-Cell (P)																																																
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed --> Roof Zone -->	130 mph						140 mph						150 mph						160 mph						170 mph						180 mph																		
				1'	1'	2e	2r	2n	3e	3r	1'	1'	2e	2r	2n	3e	3r	1'	1'	2e	2r	2n	3e	3r	1'	1'	2e	2r	2n	3e	3r	1'	1'	2e	2r	2n	3e	3r	1'	1'	2e	2r	2n	3e	3r							
0 psf	B	0 to 7	Array Interior	82	74	67	67	67	59	59	82	71	63	63	63	55	55	82	67	60	60	60	51	51	81	64	56	56	56	47	47	77	61	53	53	53	44	44	74	58	50	50	50	42	42	74	58	50	50	42	42	
			Array Edge	81	64	57	57	57	48	48	77	61	52	52	52	44	44	73	57	49	49	49	41	41	70	53	46	46	46	38	38	67	50	43	43	43	36	36	64	47	40	40	40	32	32	64	47	40	40	32	32	
		7 to 20	Array Interior	70	70	70	61	61	61	55	66	66	66	56	56	56	51	51	63	63	52	52	52	48	48	60	60	49	49	49	45	57	57	57	46	46	46	42	42	54	54	54	43	43	43	35	35	43	39			
			Array Edge	61	61	61	49	49	49	45	56	56	56	46	46	46	41	41	52	52	52	42	42	39	49	49	49	40	40	40	36	46	46	46	37	37	32	43	43	43	35	35	35	29	29	43	35	35	29	29		
		20 to 27	Array Interior	78	78	78	65	65	65	63	74	74	74	61	61	61	59	70	70	58	58	58	45	45	67	67	57	57	54	54	54	52	64	64	51	51	51	49	61	61	61	48	48	48	46	46	46	39	39	37	37	
			Array Edge	67	67	67	54	54	54	52	64	64	64	50	50	50	48	61	61	61	47	47	47	45	57	57	57	44	44	44	42	53	53	53	41	41	41	39	50	50	50	39	39	39	37	37	37	37	37	37	37	
		27 to 45	Array Interior	72	72	72	72	72	70	64	70	70	70	68	68	68	66	61	65	65	65	63	57	63	62	62	62	60	54	60	60	60	60	60	57	50	57	56	56	56	53	47	53	47	53	47	53	47	53	47	53	
			Array Edge	63	63	63	63	60	54	60	59	59	59	56	50	56	55	55	55	55	52	52	46	52	51	51	51	49	43	49	48	48	48	48	46	41	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	
		45 to 60	Array Interior	82	82	78	78	78	78	78	79	79	74	74	74	74	76	76	73	71	71	71	71	73	73	68	68	68	68	68	70	70	65	65	65	65	65	68	68	62	62	62	62	62	62	62	62	62	62	62	62	
			Array Edge	73	73	68	68	68	68	68	70	70	65	65	65	65	65	67	67	62	62	62	62	62	64	64	58	58	58	58	58	61	61	55	55	55	55	55	59	59	52	52	52	52	52	52	52	52	52	52	52	52
	C	0 to 7	Array Interior	82	66	59	59	59	49	49	79	62	54	54	54	46	46	75	59	51	51	51	43	43	71	55	47	47	47	40	68	52	44	44	44	37	37	65	49	42	42	42	42	35	35	35	35	35	35	35	35	35
			Array Edge	72	56	47	47	47	40	40	68	51	44	44	44	37	37	65	48	41	41	41	33	33	62	45	38	38	38	29	59	42	36	36	36	26	26	55	40	32	32	32	32	23	23	23	23	23	23	23	23	23
		7 to 20	Array Interior	62	62	62	51	51	51	46	58	58	58	47	47	47	43	54	54	54	44	44	40	51	51	51	41	41	41	37	48	48	48	39	39	39	35	45	45	45	36	36	36	36	36	36	36	36	36	36	36	36
			Array Edge	51	51	51	41	41	41	38	47	47	47	38	38	38	34	44	44	44	36	36	29	41	41	41	31	31	31	26	39	39	39	27	27	27	23	36	36	36	24	24	24	24	24	24	24	24	24	24		
		20 to 27	Array Interior	69	69	69	56	56	56	54	65	65	65	52	52	52	50	62	62	62	48	48	46	59	59	59	45	45	45	43	55	55	55	42	42	42	41	52	52	52	40	40	40	40	40	40	40	40	40	40	40	
			Array Edge	59	59	59	45	45	45	44	55	55	55	42	42	42	42	60	51	51	51	39	39	38	48	48	48	37	37	37	35	45	45	45	33	33	33	31	42	42	42	29	29	29	29	29	29	29	29	29		
		27 to 45	Array Interior	64	64	64	64	62	56	62	61	61	61	61	58	52	58	57	57	57	57	54	48	54	53	53	53	51	45	51	50	50	50	47	42	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	
			Array Edge	54	54	54	54	51	45	51	50	50	50	47	42	47	46	46	46	46	46	39	44	43	43	43	41	37	41	41	41	41	41	41	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38			
		45 to 60	Array Interior	74	74	70	70	70	70	70	71	71	66	66	66	66	66	68	68	63	63	63	63	65	65	60	60	60	60	60	63	63	57	57	57	57	57	60	60	54	54	54	54	54	54	54	54	54	54	54	54	
			Array Edge	66	66	60	60	60	60	60	62	62	56	56	56	56	56	59	59	52	52	52	52	56	56	49	49	49	49	49	52	52	46	46	46	46	46	49	49	43	43	43	43	43	43	43	43	43	43	43	43	
	D	0 to 7	Array Interior	78	62	54	54	54	45	45	74	58	50	50	50	42	42	70	54	46	46	46	39	39	67	51	43	43	43	36	64	48	41	41	41	33	62	45	38	38	38	29	29	29	29	29	29	29	29	29	29	29
			Array Edge	67	51	43	43	43	37	37	64	47	40	40	40	32	32	61	44	37	37	37	28	28	57	41	34	34	34	24	54	38	30	30	30	22	51	36	27	27	27	27	27	27	27	27	27	27	27			
		7 to 20	Array Interior	58	58	58	47	47	47	42	53	53	53	43	43	43	39	50	50	50	40	40	40	37	46	46	46	38	38	38	33	44	44	44	35	35	29	41	41	41	31	31	31	31	31	31	31	31	31	31	31	
			Array Edge	47	47	47	38	38	38	33	43	43	43	34	34	34	29	40	40	40	30	30	30	25	38	38	38	26	26	26	22	35	35	23	23	23	19	31	31	31	20	20	20	20	20	20	20	20	20			
		20 to 27	Array Interior	65	65	65	51	51	51	49	61	61	61	48	48	48	46	58	58	58	44	44	44	42	54	54	54	41	41	41	40	51	51	51	39	39	39	37	48	48	48	37	37	37	37	37	37	37	37	37		
			Array Edge	54	54	54	42	42	42	40	50	50	50	39	39	39	37	47	47	47	36	36	33	44	44	44	32	32	32	29	41	41	41	28	28	28	26	39	39	39	25	25	25	25	25	25	25	25	25			
		27 to 45	Array Interior	60	60	60	57	57	57	51	56	56	56	53	47	53	52	57	57	57	57	54	48	54	53	53	53	51	45	51	50	50	50	47	42	47	47	47	47	47	47	47	47	47	47	47	47	47	47			
			Array Edge	49	49	49	47	47	47	41	47	47	46	46	46	46	46	46	46	46	46	46	39	44	43	43	43	41	37	41	41	41	41	41	41	38	38	38	38	38	38	38	38	38	38	38	38	38	38			
		45 to 60	Array Interior	71	71	66	66	66	66	66	67	67	62	62	62	62	62	65	65	59	59	59	59	62	62	55	55	55	55	55	59	59	52	52	52	52	52	56	56	49	49	49	49	49	49	49	49	49	49	49	49	
Array Edge	62		62	56	56	56	56	56	58	58	52	52	52	52	52	54	54	48	48	48	48	48	51	51	45	45	45	45	45	48	48	42	42	42	42	42	45	45	40	40	40	40	40	40	40	40	40					
B	0 to 7	Array Interior	73	73	67	67	67	59	59	73	71	63	63	63	55	55	73	67	60	60	60	51	51	73	64	56	56	56	47	47	73	61	53																			

[illegible]

Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- 72-Cell (P)																																															
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed--> Roof Zone-->	130 mph						140 mph						150 mph						160 mph						170 mph						180 mph																	
				1'	2'	2e	2r	2n	3e	3r	1'	2'	2e	2r	2n	3e	3r	1'	2'	2e	2r	2n	3e	3r	1'	2'	2e	2r	2n	3e	3r	1'	2'	2e	2r	2n	3e	3r	1'	2'	2e	2r	2n	3e	3r						
15 psf	B	0 to 7	Array Interior	69	69	67	67	67	59	59	69	69	63	63	63	55	55	69	67	60	60	60	51	51	69	64	56	56	56	47	47	69	61	53	53	53	44	44	69	58	50	50	50	42	42						
			Array Edge	69	64	57	57	57	48	48	69	61	52	52	52	44	44	69	57	49	49	49	41	41	69	53	46	46	46	38	38	67	50	43	43	43	36	36	64	47	40	40	40	32	32						
		7 to 20	Array Interior	70	70	70	61	61	61	55	55	66	66	66	56	56	56	51	63	63	52	52	52	48	48	60	60	60	49	49	49	49	57	57	57	46	46	46	42	42	54	54	54	43	43	43	39	39			
			Array Edge	61	61	61	49	49	49	45	45	56	56	56	46	46	46	41	52	52	42	42	42	39	49	49	49	40	40	40	36	46	46	46	37	37	37	32	43	43	43	35	35	29	29						
		20 to 27	Array Interior	75	75	75	65	65	65	63	74	74	74	61	61	61	59	70	70	58	58	58	55	55	67	67	54	54	54	52	64	64	51	51	51	49	61	61	61	48	48	48	46	46	46	39	39				
			Array Edge	67	67	67	54	54	54	52	64	64	64	50	50	50	48	61	61	61	47	47	47	45	57	57	57	44	44	44	42	53	53	53	41	41	41	39	50	50	50	39	39	39	37	37					
		27 to 45	Array Interior	72	72	72	72	70	70	64	70	68	68	68	66	61	66	65	65	65	63	57	63	62	62	62	60	54	60	60	60	57	50	60	60	60	57	50	56	56	56	53	47	53	43	43	43	38	38		
			Array Edge	63	63	63	63	60	60	54	60	59	59	59	59	56	50	55	55	55	52	46	52	51	51	51	49	43	49	48	48	48	46	41	46	48	48	48	46	41	46	46	46	46	43	38	43	38	43		
	45 to 60	Array Interior	82	82	78	78	78	78	78	79	79	74	74	74	74	74	76	76	71	71	71	71	71	73	73	68	68	68	68	70	70	65	65	65	65	65	68	68	62	62	62	62	62	62	62	62	62				
		Array Edge	73	73	68	68	68	68	68	70	70	65	65	65	65	65	67	67	62	62	62	62	62	64	64	58	58	58	58	61	61	55	55	55	55	55	59	59	52	52	52	52	52	52	52	52					
	C	0 to 7	Array Interior	69	66	59	59	59	49	49	69	62	54	54	54	46	46	69	59	51	51	51	43	43	69	55	47	47	47	40	68	52	44	44	44	37	37	65	49	42	42	42	42	35	35	35	35				
			Array Edge	69	66	47	47	47	40	40	68	51	44	44	44	37	37	65	48	41	41	41	33	33	62	45	38	38	38	29	59	42	36	36	36	26	26	55	40	32	32	32	23	23	23	23					
		7 to 20	Array Interior	62	62	62	51	51	51	46	58	58	47	47	47	43	54	54	54	44	44	44	40	40	51	51	51	41	41	41	37	48	48	48	41	41	41	37	48	48	48	41	41	41	31	31	26	26			
			Array Edge	51	51	51	41	41	41	38	47	47	47	38	38	34	44	44	44	36	36	36	29	41	41	41	31	31	31	26	48	48	48	37	37	37	35	48	48	48	37	37	35	35							
		20 to 27	Array Interior	69	69	69	56	56	56	54	65	65	65	52	52	52	50	62	62	62	48	48	48	46	59	59	59	45	45	45	43	55	55	55	42	42	42	42	52	52	52	40	40	40	38	38					
			Array Edge	59	59	59	45	45	45	44	55	55	55	42	42	42	40	51	51	51	39	39	39	38	48	48	48	37	37	37	35	45	45	45	33	33	33	31	42	42	42	29	29	29	29						
27 to 45		Array Interior	64	64	64	64	62	56	62	61	61	61	61	58	52	58	57	57	57	57	54	48	54	53	53	53	51	45	51	50	50	50	47	42	47	47	47	47	47	47	45	40	40	40	36	36					
		Array Edge	54	54	54	54	51	45	51	50	50	50	50	47	42	47	46	46	46	46	44	39	44	43	43	43	41	37	41	41	41	41	41	41	38	38	38	38	38	38	36	29	29								
45 to 60	Array Interior	74	74	70	70	70	70	70	71	71	66	66	66	66	66	68	68	63	63	63	63	63	65	65	60	60	60	60	60	63	63	57	57	57	57	60	60	54	54	54	54	54	54								
	Array Edge	66	66	60	60	60	60	60	62	62	62	56	56	56	56	56	59	59	52	52	52	52	56	56	49	49	49	49	52	52	46	46	46	46	46	49	49	43	43	43	43	43	43								
20 psf	B	0 to 7	Array Interior	69	69	67	67	67	59	59	69	69	63	63	63	55	55	69	67	60	60	60	51	51	69	64	56	56	56	47	47	69	61	53	53	53	44	44	69	58	50	50	50	42	42						
			Array Edge	69	64	57	57	57	48	48	69	61	52	52	52	44	44	69	57	49	49	49	41	41	69	53	46	46	46	38	38	67	50	43	43	43	36	36	64	47	40	40	40	32	32						
		7 to 20	Array Interior	70	70	70	61	61	61	55	55	66	66	66	56	56	56	51	63	63	52	52	52	48	48	60	60	60	49	49	49	49	57	57	57	46	46	46	42	42	54	54	54	43	43	43	39	39			
			Array Edge	61	61	61	49	49	49	45	45	56	56	56	46	46	46	41	52	52	42	42	42	39	49	49	49	40	40	40	36	46	46	46	37	37	37	32	43	43	43	35	35	29	29						
		20 to 27	Array Interior	72	72	72	65	65	65	63	72	72	72	61	61	61	59	70	70	58	58	58	55	55	67	67	54	54	54	52	64	64	51	51	51	49	61	61	61	48	48	48	46	46	46	39	39				
			Array Edge	67	67	67	54	54	54	52	64	64	64	50	50	50	48	61	61	61	47	47	47	45	57	57	57	44	44	44	42	53	53	53	41	41	41	39	50	50	50	39	39	39	37	37					
		27 to 45	Array Interior	72	72	72	72	70	70	64	70	68	68	68	66	61	66	65	65	65	63	57	63	62	62	62	60	54	60	60	60	57	50	60	60	60	57	50	56	56	56	53	47	53	43	43	43	38	38		
			Array Edge	63	63	63	63	60	60	54	60	59	59	59	59	56	50	55	55	55	52	46	52	51	51	51	49	43	49	48	48	48	46	41	46	48	48	48	46	41	46	46	46	46	43	38	43	38	43		
	45 to 60	Array Interior	82	82	78	78	78	78	78	79	79	74	74	74	74	74	76	76	71	71	71	71	71	73	73	68	68	68	68	70	70	65	65	65	65	65	68	68	62	62	62	62	62	62	62						
		Array Edge	73	73	68	68	68	68	68	70	70	65	65	65	65	65	67	67	62	62	62	62	62	64	64	58	58	58	58	61	61	55	55	55	55	55	59	59	52	52	52	52	52	52	52						
	C	0 to 7	Array Interior	65	65	59	59	59	49	49	65	62	54	54	54	46	46	65	59	51	51	51	43	43	65	55	47	47	47	40	65	52	44	44	44	37	37	65	49	42	42	42	42	35	35	35	35				
			Array Edge	65	66	47	47	47	40	40	65	51	44	44	44	37	37	65	48	41	41	41	33	33	62	45	38	38	38	29	59	42	36	36	36	26	26	55	40	32	32	32	23	23	23	23					
		7 to 20	Array Interior	62	62	62	51	51	51	46	58	58	47	47	47	43	54	54	54	44	44	44	40	40	51	51	51	41	41	41	37	48	48	48	41	41	41	37	48	48	48	41	41	41	31	31	26	26			
			Array Edge	51	51	51	41	41	41	38	47	47	47	38	38	34	44	44	44	36	36	36	29	41	41	41	31	31	31	26	48	48	48	37	37	37	35	48	48	48	37	37	35	35							
		20 to 27	Array Interior	69	69	69	56	56	56	54	65	65	65	52	52	52	50	62	62	62	48	48	48	46	59	59	59	45	45	45	43	55	55	55	42	42	42	42	52	52	52	40	40	40	38	38					
			Array Edge	59	59	59	45	45	45	44	55	55	55	42	42	42	40	51	51	51	39	39	39	38	48	48	48	37	37	37	35	45	45	45	33	33	33	31	42	42	42	29	29	29	29						
27 to 45		Array Interior	64	64	64	64	62	56	62	61	61	61	61	58	52	58	57	57	57	57	54	48	54	53	53	53	51	45	51	50	50	50	47	42	47	47	47	47	47</												

[illegible]

Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- 72-Cell (P)																																															
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed --> Roof Zone -->	130 mph						140 mph						150 mph						160 mph						170 mph						180 mph																	
				1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r	1'	1	2e	2r	2n	3e	3r						
30 psf	B	0 to 7	Array Interior	64	64	64	64	64	59	59	64	64	63	63	63	55	55		64	64	60	60	60	51	51		64	64	56	56	56	47	47		64	61	53	53	53	44	44		64	58	50	50	50	42	42		
			Array Edge	64	64	57	57	57	48	48		64	61	52	52	52	44	44		64	57	49	49	49	41	41		64	53	46	46	46	38	38		64	50	43	43	43	36	36		64	47	40	40	40	32	32	
		7 to 20	Array Interior	66	66	66	61	61	61	55		66	66	66	56	56	56	51		63	63	63	52	52	52	48		60	60	60	49	49	49	45		57	57	57	46	46	46	42		54	54	54	43	43	43	39	
			Array Edge	61	61	61	49	49	49	45		56	56	56	46	46	46	41		52	52	52	42	42	42	39		49	49	49	40	40	40	36		46	46	46	37	37	37	32		43	43	43	35	35	35	29	
		20 to 27	Array Interior	67	67	67	65	65	65	63		67	67	67	61	61	61	59		67	67	67	58	58	55		67	67	67	54	54	54	52		64	64	64	51	51	51	49		61	61	61	48	48	48	46		
			Array Edge	67	67	67	54	54	54	52		64	64	64	50	50	50	48		61	61	61	47	47	47	45		57	57	57	44	44	44	42		53	53	53	41	41	41	39		50	50	50	39	39	39	37	
		27 to 45	Array Interior	72	72	72	72	70	70	64		68	68	68	66	66	61	66		65	65	65	63	63	63		62	62	62	62	60	60	54		60	60	60	60	57	50	57		56	56	56	53	47	53			
			Array Edge	63	63	63	63	60	60	54	60		59	59	59	56	50	56		55	55	55	55	52	56	52		51	51	51	51	49	43	49		48	48	48	48	46	41	46		46	46	46	43	38	43		
		45 to 60	Array Interior	82	82	78	78	78	78	78		79	79	74	74	74	74	74		76	76	71	71	71	71		73	73	68	68	68	68	68		70	70	65	65	65	65		68	68	62	62	62	62				
			Array Edge	73	73	68	68	68	68	68		70	70	65	65	65	65	65		67	67	62	62	62	62		64	64	58	58	58	58	58		61	61	55	55	55	55		59	59	52	52	52	52				
	C	0 to 7	Array Interior	64	64	59	59	59	49	49		64	62	54	54	54	46	46		64	59	51	51	51	43		64	55	47	47	47	40	40		64	52	44	44	44	37	37		64	49	42	42	42	35	35		
			Array Edge	64	56	47	47	47	40	40		64	51	44	44	44	37	37		64	48	41	41	41	33		62	45	38	38	38	29	29		59	42	36	36	36	26	26		55	40	32	32	32	23	23		
		7 to 20	Array Interior	62	62	62	51	51	51	46		58	58	58	47	47	47	43		54	54	54	44	44	44		51	51	41	41	41	41	37		48	48	48	39	39	39	35		45	45	45	36	36	36	31		
			Array Edge	51	51	51	41	41	41	38		47	47	47	38	38	38	34		44	44	44	36	36	36	29		41	41	31	31	31	31	26		39	39	39	27	27	27	23		36	36	36	24	24	24	20	
		20 to 27	Array Interior	67	67	67	56	56	56	54		65	65	65	52	52	52	50		62	62	62	48	48	48		59	59	59	45	45	45	43		55	55	55	42	42	42	41		52	52	52	40	40	40	38		
			Array Edge	59	59	59	45	45	45	44		55	55	55	42	42	42	40		51	51	51	39	39	39	38		48	48	48	37	37	37	35		45	45	45	33	33	33	31		42	42	42	29	29	29	27	
		27 to 45	Array Interior	64	64	64	64	62	56	62		61	61	61	61	58	52	58		57	57	57	57	54	48		54	53	53	53	51	45	51		50	50	50	50	47	42	47		47	47	47	45	40	45			
			Array Edge	54	54	54	54	51	45	51		50	50	50	50	47	42	47		46	46	46	46	44	39	44		43	43	43	43	41	37	41		41	41	41	41	38	33	38		38	38	38	36	29	36		
		45 to 60	Array Interior	74	74	70	70	70	70	70		71	71	66	66	66	66	66		68	68	63	63	63	63		65	65	60	60	60	60	60		63	63	57	57	57	57		60	60	54	54	54	54				
			Array Edge	66	66	60	60	60	60	60		62	62	56	56	56	56	56		59	59	52	52	52	52		56	56	49	49	49	49	49		52	52	46	46	46	46		46	46	43	43	43	43				
	D	0 to 7	Array Interior	64	62	54	54	54	45	45		64	58	50	50	50	42	42		64	54	46	46	46	39		64	51	43	43	43	36	36		64	48	41	41	41	33	33		62	45	38	38	38	29	29		
			Array Edge	64	51	43	43	43	37	37		64	47	40	40	40	32	32		61	44	37	37	37	28	28		57	41	34	34	34	24	24		54	38	30	30	30	22	22		51	36	27	27	27	19	19	
		7 to 20	Array Interior	58	58	58	47	47	47	42		53	53	53	43	43	43	39		50	50	50	40	40	40	37		46	46	46	38	38	38	33		44	44	44	35	35	35	29		41	41	41	31	31	31	26	
			Array Edge	47	47	47	38	38	38	33		43	43	43	34	34	34	29		40	40	40	30	30	30	25		38	38	38	26	26	26	22		35	35	35	23	23	23	19		31	31	31	20	20	20	17	
		20 to 27	Array Interior	65	65	65	51	51	51	49		61	61	61	48	48	48	46		58	58	58	44	44	44		54	54	54	41	41	41	41		51	51	51	39	39	39	37		48	48	48	37	37	37	35		
			Array Edge	54	54	54	42	42	42	40		50	50	50	39	39	39	37		47	47	47	36	36	36	33		44	44	44	32	32	32	29		41	41	41	28	28	28	26		39	39	39	25	25	25	23	
		27 to 45	Array Interior	60	60	60	57	51	57		56	56	56	56	53	47	53		52	52	52	52	50	44	50		49	49	49	46	41	46		46	46	46	46	43	39	43		43	43	43	41	37	41				
			Array Edge	49	49	49	47	41	47		46	46	46	46	43	38	43		42	42	42	42	40	36	40		40	40	40	38	31	38		37	37	37	37	35	35	35	31		31	31	31	25	25	25	21		
		45 to 60	Array Interior	71	71	66	66	66	66	66		67	67	62	62	62	62	62		65	65	59	59	59	59		62	62	55	55	55	55		59	59	52	52	52	52		56	56	49	49	49	49					
			Array Edge	62	62	56	56	56	56	56		58	58	52	52	52	52	52		54	54	48	48	48	48		51	51	45	45	45	45		48	48	42	42	42	42		45	45	40	40	40	40					
B	0 to 7	Array Interior	61	61	61	61	61	59	59		61	61	61	61	55	55		61	61	60	60	60	51	51		61	61	56	56	56	47	47		61	61	53	53	53	44	44		61	58	50	50	50	42	42			
		Array Edge	61	61	57	57	57	48	48		61	61	52	52	52	44	44		61	57	49	49	49	41	41		61	53	46	46	46	38	38		61	50	43	43	43	36	36		61	47	40	40	40	32	32		
	7 to 20	Array Interior	62	62	62	61	61	61	55		62	62	62	56	56	56	51		62	62	62	52	52	52	48		60	60	60	49	49	49	45		57	57	57	46	46	46	42		54	54	54	43	43	43	39		
		Array Edge																																																	

[illegible]

[illegible]

[illegible]

Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- Landscape																																																																							
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed-->	130 mph												140 mph												150 mph												160 mph												170 mph												180 mph											
				Roof Zone-->			1'	1'	2e	2e	2n	3e	3r	1'	1'	2e	2e	2n	3e	3r	1'	1'	2e	2e	2n	3e	3r	1'	1'	2e	2e	2n	3e	3r	1'	1'	2e	2e	2n	3e	3r	1'	1'	2e	2e	2n	3e	3r																											
0 psf	B	0 to 7	Array Interior	103	89	80	80	80	71	71	103	85	76	76	76	68	68	102	80	72	72	72	64	64	97	77	69	69	69	62	62	93	74	66	66	66	55	55	89	71	64	64	64	55	55																														
			Array Edge	97	77	69	69	69	62	62	92	73	66	66	66	58	58	87	70	63	63	63	54	54	83	67	60	60	60	63	51	80	64	56	56	56	48	48	77	61	53	53	53	45	45																														
		7 to 20	Array Interior	84	84	84	73	73	73	68	80	80	80	69	69	69	65	65	76	76	76	66	66	66	62	62	72	72	72	63	63	63	59	69	69	69	60	60	60	55	67	67	67	57	57	57	52	52																											
			Array Edge	73	73	73	63	63	63	59	69	69	69	60	60	60	55	55	66	66	66	56	56	56	51	51	63	63	63	52	52	52	48	60	60	60	49	49	49	45	57	57	57	46	46	46	42	42																											
		20 to 27	Array Interior	93	93	93	77	77	77	77	77	88	88	88	74	74	74	72	84	84	84	70	70	70	68	80	80	80	67	67	67	65	77	77	77	64	64	64	63	74	74	74	62	62	62	60	60	60	51	51																									
			Array Edge	80	80	80	67	67	67	67	65	76	76	76	64	64	64	62	73	73	73	61	61	61	59	75	69	69	57	57	57	55	67	67	67	54	54	54	52	64	64	64	51	51	51	49	49																												
		27 to 45	Array Interior	87	87	87	87	83	77	77	77	83	82	82	82	79	73	79	78	78	78	75	70	75	75	69	75	75	75	72	67	72	72	72	69	64	69	69	69	69	69	69	69	69	69	69	69	69	69	69																									
			Array Edge	75	75	75	75	72	67	72	71	71	71	71	69	64	69	68	68	68	68	66	61	66	65	65	65	65	65	65	63	57	63	62	62	62	60	54	60	60	60	57	51	51	51	51	51	51	51	51																									
	45 to 60	Array Interior	100	100	94	94	94	94	94	94	95	95	95	89	89	89	89	91	91	85	85	85	85	85	88	88	81	81	81	81	81	84	84	78	78	78	78	78	81	81	75	75	75	75	75	75	75	75	75																										
		Array Edge	88	88	82	82	82	82	82	84	84	84	78	78	78	78	78	80	80	74	74	74	74	74	77	77	71	71	71	71	71	74	74	68	68	68	68	68	71	71	65	65	65	65	65	65	65	65	65																										
	C	0 to 7	Array Interior	100	79	71	71	71	71	63	63	94	75	67	67	67	60	60	90	71	64	64	64	56	56	86	68	68	62	62	62	53	53	71	55	47	47	47	40	40	59	59	59	48	48	48	39	39																											
			Array Edge	86	68	62	62	62	53	53	81	65	58	58	58	49	49	77	62	54	54	54	46	46	74	59	50	50	50	43	43	74	59	50	50	43	43	71	55	47	47	47	40	40	59	59	59	48	48	48	39	39																							
		7 to 20	Array Interior	74	74	74	65	65	65	61	61	71	71	71	61	61	61	57	67	67	58	58	58	53	53	64	64	64	54	54	54	49	62	62	62	51	51	51	46	59	59	59	48	48	48	39	39																												
			Array Edge	65	65	65	55	55	55	50	50	61	61	61	51	51	51	46	58	58	47	47	47	42	42	53	53	53	43	43	43	39	50	50	50	40	40	40	37	47	47	47	38	38	38	33	33																												
		20 to 27	Array Interior	82	82	82	69	69	69	67	67	78	78	78	65	65	65	64	74	74	74	62	62	62	60	70	70	70	58	58	58	56	67	67	67	55	55	52	44	64	64	64	51	51	51	49	49																												
			Array Edge	71	71	71	60	60	60	58	58	68	68	68	55	55	55	53	65	65	65	52	52	52	50	62	62	62	62	62	62	62	50	62	62	62	48	48	48	46	59	59	59	45	45	45	44	44																											
27 to 45		Array Interior	77	77	77	77	74	69	74	73	73	73	70	65	70	70	70	70	70	70	67	62	67	67	67	67	67	67	67	64	59	64	64	64	59	64	64	64	59	64	64	64	59	64	64	64	59	64																											
		Array Edge	67	67	67	67	64	60	64	64	64	64	64	61	55	61	61	61	61	61	58	52	58	52	58	57	57	57	54	48	54	54	54	48	54	54	54	48	54	54	54	48	54	54	54	48	54																												
D	45 to 60	Array Interior	90	90	84	84	84	84	84	84	86	86	79	79	79	79	79	82	82	76	76	76	76	76	79	79	72	72	72	72	72	75	75	69	69	69	69	69	73	73	67	67	67	67	67																														
		Array Edge	79	79	73	73	73	73	73	75	75	69	69	69	69	69	72	72	66	66	66	66	66	66	68	68	63	63	63	63	63	66	66	60	60	60	60	60	63	63	57	57	57	57	57																														
	0 to 7	Array Interior	94	74	67	67	67	60	60	89	71	64	64	64	55	55	84	67	61	61	61	51	51	80	64	57	57	57	48	48	77	62	54	54	54	45	74	59	51	41	41	64	48	41	41	34	34																												
		Array Edge	81	65	57	57	57	48	48	77	61	53	53	53	45	45	73	58	49	49	49	42	42	70	54	46	46	46	39	39	67	62	54	54	45	45	74	59	51	41	41	64	48	41	41	34	34																												
	7 to 20	Array Interior	70	70	70	61	61	61	56	56	67	67	67	57	57	52	64	64	64	53	53	53	48	48	61	61	61	50	50	40	37	47	47	47	38	38	33	44	44	44	36	36	30	30	30	30	30																												
		Array Edge	61	61	61	50	50	50	46	46	57	57	57	46	46	46	42	53	53	53	43	43	43	39	50	50	50	40	40	37	47	47	47	38	38	33	44	44	44	36	36	30	30	30	30	30																													
	20 to 27	Array Interior	78	78	78	65	65	65	63	63	74	74	74	62	62	62	60	70	70	70	58	58	58	56	67	67	67	55	55	52	44	64	64	64	51	51	51	49	49	49	49	49	49	49	49	49	49																												
		Array Edge	67	67	67	55	55	55	53	53	64	64	64	51	51	51	49	61	61	61	47	47	47	46	58	58	58	44	44	44	43	54	54	54	42	42	42	40	51	51	51	39	39	39	38	38																													
27 to 45	Array Interior	73	73	73	73	70	65	70	69	69	69	69	66	62	66	66	66	66	66	63	58	63	63	63	63	63	63	63	61	54	61	60	60	60	57	51	57	57	57	54	54	54	54	54	54																														
	Array Edge	63	63	63	61	55	61	60	60	60	60	60	57	51	57	56	56	56	56	53	47	53	52	52	52	50	44	50	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49																													
45 to 60	Array Interior	85	85	79	79	79	79	79	79	81	81	75	75	75	75	75	78	78	71	71	71	71	71	74	74	68	68	68	68	68	71	71	66	66	66	66	66	68	68	63	63	63	63	63																															
	Array Edge	75	75	69	69	69	69	69	71	71	71	65	65	65	65	65	68	68	62	62	62	62	62	65	65	65	65	65	65	65	62	62	62	62	62	62	60	60	60	53	53	53	53	53																															
5 psf	B	0 to 7	Array Interior	100	89	80	80	80	71	71	100	85	76	76	76	68	68	100	80	72	72	72	64	64	97	77	69	69	69	62	62	93	74	66	66	66	55	55	89	71	64	64	64	55	55																														
			Array Edge	97	77	69	69	69	62	62	92	73	66	66	66	58	58	87	70	63	63	63	54	54	83	67	60	60	60	63	51	80	64	56	56	56	48	48	77	61	53	53	53	45	45																														
		7 to 20	Array Interior	84	84	84	73	73	73	68	80	80	80	69	69	69	65	65	76	76	76	66	66	66	62	62	72	72	72	63	63	63	59	69	69	69	60	60	60	55	67	67	67	57	57	57	52	52																											
			Array Edge	73	73	73	63	63	63	59	69	69	69	60	60	60	55	55	66	66	66	56	56	56	51	51	63	63	63	52	52	52	48	60	60	60	49	49	49	45	57	57	57	46	46	46	42	42																											
		20 to 27	Array Interior	93	93	93	77	77	77	77	77	88	88	88	74	74	74	72	84	84	84	70	70	70	68	80	80	80	67	67	67	65	77	77	77	64	64	64	63	74	74	74	62	62	62	60	60	60	51	51																									
			Array Edge	80	80	80	67	67	67	65	76	76	76	64	64	64	62	73	73	73	61	61	61	59	75	69	69	57	57	57	55	67	67	67	54	54	54																																						

[illegible]

Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- Landscape																																																	
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed-->	130 mph						140 mph						150 mph						160 mph						170 mph						180 mph																			
				1'	1' 2e	2r	2n	3e	3r	1'	1' 2e	2r	2n	3e	3r	1'	1' 2e	2r	2n	3e	3r	1'	1' 2e	2r	2n	3e	3r	1'	1' 2e	2r	2n	3e	3r	1'	1' 2e	2r	2n	3e	3r														
15 psf	B	0 to 7	Array Interior	86	86	80	80	80	71	71	86	85	76	76	76	68	68	86	80	72	72	72	64	64	86	77	69	69	69	62	62	86	74	66	66	66	55	55	86	71	64	64	64	55	55								
			Array Edge	86	77	69	69	69	62	62	86	73	66	66	66	58	58	86	70	63	63	63	54	54	83	67	60	60	60	51	51	80	64	56	56	56	48	48	77	61	53	53	53	45	45								
		7 to 20	Array Interior	84	84	84	73	73	73	68	80	80	80	69	69	69	65	65	76	76	76	66	66	66	62	62	72	72	72	63	63	63	51	51	69	69	69	60	60	60	55	55	67	67	67	57	57	57	52	52			
			Array Edge	73	73	73	63	63	63	59	69	69	69	60	60	60	55	55	66	66	66	56	56	56	51	51	63	63	63	52	52	52	48	48	60	60	60	49	49	49	45	45	57	57	57	46	46	46	42	42			
		20 to 27	Array Interior	93	93	93	77	77	77	75	88	88	88	74	74	74	72	72	84	84	84	70	70	70	68	80	80	80	67	67	67	65	65	77	77	77	64	64	64	63	74	74	74	62	62	62	60	60	60	51	51	49	49
			Array Edge	80	80	80	67	67	67	65	76	76	76	64	64	64	62	62	73	73	73	61	61	61	59	69	69	69	57	57	57	55	55	67	67	67	54	54	54	52	64	64	64	51	51	51	49	49					
		27 to 45	Array Interior	87	87	87	87	83	77	77	83	82	82	82	79	73	73	79	78	78	78	75	75	75	70	75	75	75	75	72	72	72	67	67	72	72	72	72	69	64	69	69	69	67	62	67	62	67	62	67			
			Array Edge	75	75	75	75	72	67	72	71	71	71	71	69	64	69	68	68	68	68	66	61	66	65	65	65	65	65	63	63	63	57	57	62	62	62	60	54	60	60	60	57	51	57	51	57	51	57				
	45 to 60	Array Interior	100	100	94	94	94	94	94	95	95	89	89	89	89	89	91	91	85	85	85	85	85	88	88	81	81	81	81	81	84	84	78	78	78	78	78	81	81	75	75	75	75	75	75	75	75	75					
		Array Edge	88	88	82	82	82	82	82	84	84	78	78	78	78	78	80	80	74	74	74	74	74	77	77	71	71	71	71	71	74	74	68	68	68	68	68	71	71	65	65	65	65	65	65	65	65	65					
	C	0 to 7	Array Interior	86	79	71	71	71	63	63	86	75	67	67	67	60	60	86	71	64	64	64	56	56	86	68	61	61	61			82	65	58	58	58	49	49	79	63	55	55	55	47	47	79	63	55	55	55	47	47	
			Array Edge	86	68	62	62	62	53	53	81	65	58	58	58	49	49	77	62	54	54	54	46	46	74	59	50	50	50	43	43	71	55	47	47	47	40	40	68	52	45	45	45	38	38	68	52	45	45	45	38	38	
		7 to 20	Array Interior	74	74	74	65	65	65	61	71	71	71	61	61	61	57	57	67	67	67	58	58	58	53	64	64	64	54	54	54	49	49	62	62	62	51	51	51	46	46	59	59	59	48	48	48	44	44	44	44	44	
			Array Edge	65	65	65	55	55	55	50	61	61	61	51	51	51	46	46	58	58	58	47	47	47	43	54	54	54	44	44	44	40	40	51	51	51	41	41	41	38	38	48	48	48	39	39	39	35	35				
		20 to 27	Array Interior	82	82	82	69	69	69	67	78	78	78	65	65	65	64	64	74	74	74	62	62	62	61	71	71	71	60	60	60	57	57	68	68	68	56	56	56	54	66	66	66	53	53	53	51	51	49	49			
			Array Edge	71	71	71	60	60	60	58	68	68	68	55	55	55	53	53	65	65	65	52	52	52	50	62	62	62	48	48	48	46	46	59	59	59	45	45	45	44	56	56	56	43	43	43	41	41	41				
27 to 45		Array Interior	77	77	77	77	74	69	74	73	73	73	70	65	70	70	70	70	70	70	67	62	67	67	67	67	67	67	67	64	64	64	59	64	64	64	62	56	62	61	61	61	61	59	53	59	53	59	53	59			
		Array Edge	67	67	67	67	64	60	64	64	64	64	64	61	55	61	61	61	61	61	58	52	58	58	57	57	57	57	57	54	54	54	48	54	54	54	51	51	51	51	48	48	48	43	43	43	41	41					
D	45 to 60	Array Interior	90	90	84	84	84	84	84	86	86	79	79	79	79	79	82	82	76	76	76	76	76	79	79	72	72	72	72	72	75	75	69	69	69	69	69	73	73	67	67	67	67	67	67	67	67	67					
		Array Edge	79	79	73	73	73	73	73	75	75	69	69	69	69	69	72	72	66	66	66	66	66	68	68	63	63	63	63	63	66	66	60	60	60	60	60	63	63	57	57	57	57	57	57	57	57	57					
	0 to 7	Array Interior	86	81	65	57	57	57	48	48	77	61	53	53	45	45	73	58	49	49	42	42	70	54	46	46	46	39	39	67	51	44	44	44	37	37	64	48	41	41	41	34	34	64	48	41	41	41	34	34			
		Array Edge	70	70	70	61	61	61	56	67	67	67	57	57	52	52	64	64	64	53	53	53	48	61	61	61	50	50	50	40	40	58	58	58	47	47	47	47	47	47	47	47	47	47	47	47	47	47					
	7 to 20	Array Interior	61	61	61	50	50	50	46	57	57	57	46	46	46	42	42	53	53	53	43	43	43	39	50	50	50	40	40	40	37	37	47	47	47	38	38	33	44	44	44	36	36	36	30	30	36	30	36				
		Array Edge	78	78	78	65	65	65	63	74	74	74	62	62	62	60	60	70	70	70	58	58	58	56	67	67	67	55	55	55	52	52	64	64	64	51	51	51	49	49	62	62	62	48	48	48	44	44	44				
	20 to 27	Array Interior	67	67	67	55	55	55	53	64	64	64	51	51	51	49	49	61	61	61	47	47	47	46	58	58	58	44	44	44	43	43	54	54	54	42	42	42	40	51	51	51	39	39	39	38	38	39	38				
		Array Edge	73	73	73	73	70	65	70	69	69	69	66	62	66	66	66	66	66	66	66	63	58	63	63	63	63	63	61	54	61	60	60	60	57	51	57	57	57	57	57	57	57	57	57	57	57	57					
27 to 45	Array Interior	85	85	79	79	79	79	79	81	81	75	75	75	75	75	78	78	71	71	71	71	71	71	74	74	68	68	68	68	68	71	71	66	66	66	66	66	68	68	63	63	63	63	63	63	63	63	63					
	Array Edge	75	75	69	69	69	69	69	71	71	65	65	65	65	65	68	68	62	62	62	62	62	62	65	65	59	59	59	59	59	62	62	62	56	56	56	56	60	60	53	53	53	53	53	53	53	53						
20 psf	B	0 to 7	Array Interior	82	82	80	80	80	71	71	82	82	76	76	76	68	68	82	80	72	72	72	64	64	82	77	69	69	69	62	62	82	74	66	66	66	59	59	82	71	64	64	64	55	55	82	71	64	64	64	55	55	
			Array Edge	82	77	69	69	69	62	62	82	73	66	66	66	58	58	82	70	63	63	63	54	54	82	67	60	60	60	51	51	80	64	56	56	56	48	48	77	61	53	53	53	45	45	77	61	53	53	53	45	45	
		7 to 20	Array Interior	84	84	84	73	73	73	68	80	80	80	69	69	69	65	65	76	76	76	66	66	66	62	62	72	72	72	63	63	63	51	51	69	69	69	60	60	60	55	55	67	67	67	57	57	57	52	52			
			Array Edge	73	73	73	63	63	63	59	69	69	69	60	60	60	55	55	66	66	66	56	56	56	51	51	63	63	63	52	52	52	48	48	60	60	60	49	49	49	45	45	57	57	57	46	46	46	42	42			
		20 to 27	Array Interior	91	91	91	77	77	77	77	75	88	88	74	74	74	72	72	84	84	84	70	70	70	68	80	80	80	67	67	67	65	65	77	77	77	64	64	64	63	74	74	74	62	62	62	60	60	60	51	51	49	49
			Array Edge	80	80	80	67	67	67	65	76	76	76	64	64	64	62	62	73	73	73	61	61	61	59	69	69	69	57	57	57	55	55	67	67	67	54	54	54	52	64	64	64	51	51	51	49	49					
		27 to 45	Array Interior	87	87	87	87	83	77	77	83	82	82	82	79	73	73	79	78																																		

[illegible]

Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- Landscape																																															
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed-->	130 mph						140 mph						150 mph						160 mph						170 mph						180 mph																	
				1'	2'	2e	2r	3e	3r	1'	2'	2e	2r	3e	3r	1'	2'	2e	2r	3e	3r	1'	2'	2e	2r	3e	3r	1'	2'	2e	2r	3e	3r	1'	2'	2e	2r	3e	3r												
30 psf	B	0 to 7	Array Interior	81	81	80	80	71	71	81	81	76	76	68	68	81	80	72	72	72	64	64	81	77	69	69	62	62	81	74	66	66	59	59	81	71	64	64	64	55	55										
			Array Edge	81	77	69	69	62	62	81	73	66	66	58	58	81	70	63	63	63	54	54	81	67	60	60	60	51	51	80	64	56	56	48	48	77	61	53	53	45	45										
		7 to 20	Array Interior	83	83	83	73	73	68	80	80	80	69	69	65	65	76	76	76	66	66	66	62	72	72	63	63	59	69	69	60	60	60	55	67	67	57	57	57	52											
			Array Edge	73	73	73	63	63	59	69	69	60	60	60	55	66	66	66	56	56	56	51	51	63	63	52	52	52	60	60	60	49	49	45	57	57	46	46	46	42											
		20 to 27	Array Interior	85	85	85	77	77	77	75	85	85	85	74	74	74	84	84	84	70	70	70	68	80	80	80	67	67	65	77	77	77	64	64	64	63	74	74	62	62	62	60									
			Array Edge	80	80	80	67	67	67	65	76	76	76	64	64	62	73	73	73	61	61	61	59	69	69	57	57	55	67	67	67	54	54	54	52	64	64	64	51	51	49										
		27 to 45	Array Interior	87	87	87	87	83	77	83	82	82	82	79	73	79	78	78	78	75	70	75	75	75	75	72	67	75	75	75	72	72	72	69	64	69	69	69	69	67	62	67									
			Array Edge	75	75	75	75	72	67	72	71	71	71	69	64	69	68	68	68	66	61	66	65	65	65	63	57	62	62	62	62	60	54	60	60	60	57	51	51	51	57										
		45 to 60	Array Interior	100	100	94	94	94	94	94	95	95	89	89	89	89	91	91	85	85	85	85	88	88	81	81	81	81	84	84	78	78	78	78	78	81	81	75	75	75	75										
			Array Edge	88	88	82	82	82	82	82	84	84	78	78	78	78	80	80	74	74	74	74	77	77	71	71	71	71	74	74	68	68	68	68	68	71	71	65	65	65	65										
	C	0 to 7	Array Interior	81	79	71	71	71	63	63	81	75	67	67	60	60	81	71	64	64	54	56	81	68	61	61	61	52	52	61	61	58	58	49	49	49	49	49	49	49	49										
			Array Edge	81	68	62	62	62	53	53	81	65	58	58	49	49	77	62	54	54	46	46	74	59	50	50	43	43	71	55	47	47	47	40	40	38	38	39	35												
		7 to 20	Array Interior	74	74	74	65	65	65	61	71	71	71	61	61	57	67	67	58	58	58	53	64	64	54	54	54	49	62	62	62	51	51	51	46	46	48	48	48	44											
			Array Edge	65	65	65	55	55	55	50	61	61	61	51	51	46	58	58	58	47	47	47	43	54	54	44	44	44	51	51	51	41	41	41	38	48	48	48	39	39	35										
		20 to 27	Array Interior	82	82	82	69	69	69	67	78	78	78	65	65	64	74	74	74	62	62	62	60	70	70	60	60	57	68	68	56	56	56	54	66	66	53	53	53	51											
			Array Edge	71	71	71	60	60	60	58	68	68	68	55	55	53	65	65	65	52	52	52	50	62	62	62	48	48	46	59	59	45	45	45	44	56	56	43	43	43	41										
		27 to 45	Array Interior	77	77	77	77	74	69	74	73	73	73	70	65	70	70	70	70	67	62	67	67	67	67	67	64	59	64	64	64	59	64	64	62	56	62	61	61	61	59										
			Array Edge	67	67	67	67	64	60	64	64	64	64	61	55	61	61	61	61	58	52	58	57	57	57	54	48	54	54	54	48	54	54	51	45	51	51	48	43	48	43										
		45 to 60	Array Interior	90	90	84	84	84	84	84	86	86	79	79	79	79	82	82	76	76	76	76	76	79	79	72	72	72	72	75	75	69	69	69	69	73	73	67	67	67	67										
			Array Edge	79	79	73	73	73	73	73	75	75	69	69	69	69	72	72	66	66	66	66	66	68	68	63	63	63	63	66	66	60	60	60	60	63	63	57	57	57	57										
D	0 to 7	Array Interior	81	81	80	80	71	71	81	81	76	76	68	68	81	80	72	72	72	64	64	81	77	69	69	62	62	81	74	66	66	59	59	81	71	64	64	64	55	55											
		Array Edge	81	77	69	69	62	62	81	73	66	66	58	58	81	70	63	63	63	54	54	81	67	60	60	60	51	51	80	64	56	56	48	48	77	61	53	53	45	45											
	7 to 20	Array Interior	83	83	83	73	73	68	80	80	80	69	69	65	65	76	76	76	66	66	66	62	72	72	63	63	59	69	69	60	60	60	55	67	67	57	57	57	52												
		Array Edge	73	73	73	63	63	59	69	69	60	60	60	55	66	66	66	56	56	56	51	51	63	63	52	52	52	60	60	60	49	49	45	57	57	46	46	46	42												
	20 to 27	Array Interior	85	85	85	77	77	77	75	85	85	85	74	74	74	84	84	84	70	70	70	68	80	80	80	67	67	65	77	77	77	64	64	64	63	74	74	62	62	62	60										
		Array Edge	80	80	80	67	67	67	65	76	76	76	64	64	62	73	73	73	61	61	61	59	69	69	57	57	55	67	67	67	54	54	54	52	64	64	64	51	51	49											
	27 to 45	Array Interior	87	87	87	87	83	77	83	82	82	82	79	73	79	78	78	78	75	70	75	75	75	75	72	67	75	75	75	72	72	72	69	64	69	69	69	69	67	62	67										
		Array Edge	75	75	75	75	72	67	72	71	71	71	69	64	69	68	68	68	66	61	66	65	65	65	63	57	62	62	62	62	60	54	60	60	60	57	51	51	51	57											
	45 to 60	Array Interior	100	100	94	94	94	94	94	95	95	89	89	89	89	91	91	85	85	85	85	88	88	81	81	81	81	84	84	78	78	78	78	78	81	81	75	75	75	75											
		Array Edge	88	88	82	82	82	82	82	84	84	78	78	78	78	80	80	74	74	74	74	77	77	71	71	71	71	74	74	68	68	68	68	68	71	71	65	65	65	65											
35 psf	C	0 to 7	Array Interior	79	79	79	79	79	71	71	79	79	76	76	68	68	79	79	72	72	72	64	64	79	77	69	69	62	62	79	74	66	66	59	59	79	71	64	64	55	55										
			Array Edge	79	77	69	69	62	62	79	73	66	66	58	58	79	70	63	63	63	54	54	79	67	60	60	60	51	51	79	64	56	56	48	48	77	61	53	53	45	45										
		7 to 20	Array Interior	81	81	81	73	73	73	68	80	80	80	69	69	65	65	76	76	76	66	66	66	62	72	72	63	63	59	69	69	60	60	60	55	67	67	57	57	57	52										
			Array Edge	73	73	73	63	63	59	69	69	60	60	60	55	66	66	66	56	56	56	51	51	63	63	52	52	52	60	60	60	49	49	45	57	57	46	46	46	42											
		20 to 27	Array Interior	82	82	82	77	77	77	75	82	82	82	74	74	74	82	82	82	70	70	70	68	80	80	80	67	67	65	77	77	77	64	64	64	63	74	74	62	62	62	60									
			Array Edge	80	80	80	67	67	67	65	76	76	76	64	64	62	73	73	73	61	61	61	59	69	69	57	57	55	67	67	67	54	54	54	52	64	64	64	51	51	49										
		27 to 45	Array Interior	87	87	87	87	83	77	83	82	82	82	79	73	79	78	78	78	75	70	75	75	75	75	72	67	75	75	75	72	72	72	69	64	69	69	69	69	67	62	67									
			Array Edge	75	75	75	75	72	67	72	71	71	71	69	64	69	68	68	68	66	61	66	65	65	65	63	57	62	62	62	62	60	54	60	60	60	57	51	51	51	57										
		45 to 60	Array Interior	100	100	94	94	94	94	94	95	95	89	89	89	89	91	91	85	85	85	85	88	88	81	81	81	81	84	84	78	78	78	78	78	81	81	75	75	75	75										
			Array Edge	88	88	82	82	82	82	82	84	84	78	78	78	78	80	80	74	74	74	74	77	77	71	71	71	71	74	74	68	68	68	68	68	71	71	65	65	65	65										
40 psf	C	0 to 7	Array Interior	79	79	71	71	71	63	63	79	75	67	67	60	60	79	71	64	64	54	56	79	68	61	61	61	52	52	79	65	58	58	49	49	78	63	55	55	47	47										
			Array Edge	79	68	62	62	62	53	53	79	65	58	58	49	49	77	62	54	54	46	46	74	59	50	50	43	43	71	55	47	47	47	40	40	38	38														

[illegible]

Maximum Rail Spans (Inches)				ClickFit Rail 450124 (REVX03) Flush-Mount on 0 to 30 Foot Roof -- L-Foot -- Landscape																																								
Ground Snow Load	Exposure Category	Panel Angle	Wind Speed->	130 mph						140 mph						150 mph						160 mph						170 mph						180 mph										
				Roof Zone->	1'	1'	2e	2r	3e	3r	1'	1'	2e	2r	3e	3r	1'	1'	2e	2r	3e	3r	1'	1'	2e	2r	3e	3r	1'	1'	2e	2r	3e	3r										
45 psf	B	0 to 7	Array Interior	74	74	74	74	74	71	71	74	74	74	74	74	68	58	74	74	72	72	72	64	64	74	74	69	69	69	62	62	74	74	66	66	66	55	55						
			Array Edge	74	74	69	69	69	62	62	74	73	73	66	66	66	58	58	74	70	63	63	63	54	54	74	67	60	60	63	51	51	74	64	56	56	48	45	45					
		7 to 20	Array Interior	76	76	76	76	73	73	68	76	76	76	69	69	69	65	65	76	76	76	66	66	66	62	72	72	72	63	63	63	59	69	69	60	60	55	67	67	57	57	52		
			Array Edge	73	73	73	63	63	63	59	69	69	69	60	60	60	55	55	66	66	66	56	56	56	51	63	63	63	52	52	52	48	60	60	49	49	45	57	57	46	46	42		
		20 to 27	Array Interior	78	78	78	77	77	77	75	78	78	78	74	74	74	72	72	78	78	78	67	67	67	65	77	77	77	64	64	64	63	74	74	74	62	62	62	60	60	51	51	49	
			Array Edge	78	78	78	67	67	67	65	76	76	76	64	64	64	62	73	73	73	61	61	61	59	75	69	69	57	57	57	55	67	67	67	54	54	52	64	64	64	51	51	49	
		27 to 45	Array Interior	87	87	87	87	83	77	83	82	82	82	79	73	73	79	78	78	78	75	75	75	70	75	75	75	75	72	67	72	72	69	64	69	69	69	67	62	67	62	67		
			Array Edge	75	75	75	75	72	67	72	71	71	71	71	69	64	69	68	68	68	66	61	66	65	65	65	65	65	63	57	63	62	62	60	54	60	60	60	57	51	57			
	45 to 60	Array Interior	100	100	94	94	94	94	94	95	95	89	89	89	89	89	91	91	85	85	85	85	85	88	88	81	81	81	81	81	84	84	78	78	78	78	81	81	75	75	75	75		
		Array Edge	88	88	82	82	82	82	82	84	84	78	78	78	78	78	80	80	74	74	74	74	74	77	77	71	71	71	71	71	74	74	68	68	68	68	71	71	65	65	65	65		
	C	0 to 7	Array Interior	74	74	74	71	71	63	63	74	74	67	67	67	60	60	74	71	64	64	64	56	74	68	61	61	61	61	52	74	65	58	58	49	49	74	63	55	55	47			
			Array Edge	74	68	62	62	62	53	53	74	65	58	58	58	49	49	74	62	54	54	54	46	73	59	50	50	50	43	43	71	55	47	47	40	40	58	52	45	45	38	38		
		7 to 20	Array Interior	74	74	74	65	65	65	61	71	71	71	61	61	57	57	67	67	58	58	58	53	64	64	64	54	54	49	62	62	62	51	51	51	46								
			Array Edge	65	65	65	55	55	55	50	61	61	61	51	51	51	46	58	58	58	47	47	47	43	54	54	54	44	44	40	51	51	51	41	41	41	38	48	48	48	39	39	35	
		20 to 27	Array Interior	78	78	78	69	69	69	67	78	78	78	65	65	65	64	74	74	74	62	62	62	61	71	71	71	60	60	60	57	68	68	56	56	56	54	66	66	66	53	53	51	
			Array Edge	71	71	71	60	60	60	58	68	68	68	55	55	55	53	65	65	65	52	52	52	50	62	62	62	48	48	48	46	59	59	45	45	45	44	56	56	56	43	43	41	
27 to 45		Array Interior	77	77	77	77	74	69	74	73	73	73	70	65	70	70	70	70	70	67	62	67	67	67	67	67	67	67	64	64	64	59	64	64	64	56	62	56	62	56	62	56	62	56
		Array Edge	67	67	67	67	64	60	64	64	64	64	61	55	61	61	61	61	61	58	52	58	52	58	57	57	57	57	54	54	54	48	54	54	54	51	51	51	48	48	48	45		
45 to 60	Array Interior	90	90	84	84	84	84	84	86	86	79	79	79	79	79	82	82	76	76	76	66	79	79	72	72	72	72	72	72	75	75	69	69	69	69	73	73	67	67	67	67			
	Array Edge	79	79	73	73	73	73	73	75	75	69	69	69	69	69	72	72	66	66	66	66	66	68	68	63	63	63	63	63	66	66	60	60	60	60	63	63	57	57	57	57			
D	0 to 7	Array Interior	76	76	57	57	57	48	48	76	65	53	53	45	45	76	61	53	53	45	45	76	54	57	57	48	42	42	70	54	57	57	48	48	67	51	41	41	34	34				
		Array Edge	74	65	57	57	57	48	48	74	61	53	53	45	45	74	53	49	49	49	42	42	70	54	46	46	46	39	39	67	51	44	44	37	37	64	48	41	41	34	34			
	7 to 20	Array Interior	70	70	70	61	61	56	67	76	76	67	67	57	52	64	64	64	53	53	48	43	39	50	50	50	40	40	37	47	47	47	38	38	33	44	44	44	36	36	30			
		Array Edge	61	61	61	50	50	50	46	57	57	57	46	46	46	42	53	53	53	43	43	43	39	50	50	50	40	40	37	47	47	47	38	38	33	44	44	44	36	36	30			
	20 to 27	Array Interior	78	78	78	65	65	65	63	74	74	74	62	62	60	70	70	70	58	58	58	56	67	67	67	55	55	52	64	64	64	51	51	51	49	62	62	62	48	48	48	46		
		Array Edge	67	67	67	55	55	55	53	64	64	64	51	51	51	49	61	61	61	47	47	47	46	58	58	58	44	44	44	54	54	54	42	42	42	40	51	51	39	39	38			
	27 to 45	Array Interior	73	73	73	73	70	65	70	69	69	69	66	62	66	66	66	66	66	63	58	63	63	63	61	54	61	60	60	60	57	51	57	57	57	54	54	54	48	48	48	46		
		Array Edge	63	63	63	63	61	55	61	60	60	60	60	57	51	57	56	56	56	53	47	53	52	52	52	50	44	50	49	49	49	49	47	42	47	46	46	46	46	39	39	44		
45 to 60	Array Interior	85	85	79	79	79	79	79	81	81	75	75	75	75	75	78	78	71	71	71	71	71	74	74	68	68	68	68	71	71	66	66	66	66	68	68	63	63	63	63				
	Array Edge	75	75	69	69	69	69	69	71	71	65	65	65	65	65	68	68	62	62	62	62	62	65	65	59	59	59	59	62	62	56	56	56	56	60	60	53	53	53	53				
50 psf	B	0 to 7	Array Interior	72	72	72	72	72	71	71	72	72	72	72	68	58	72	72	72	72	72	64	64	72	72	69	69	69	62	62	72	72	66	66	66	59	59	72	71	64	64	55	55	
			Array Edge	72	72	69	69	69	62	62	72	72	72	66	66	66	58	58	72	70	63	63	63	54	54	72	67	60	60	60	51	51	72	64	56	56	48	48	72	61	53	53	45	45
		7 to 20	Array Interior	74	74	74	73	73	73	68	74	74	74	69	69	69	65	65	74	74	74	66	66	66	62	72	72	72	63	63	63	59	69	69	60	60	55	67	67	57	57	52		
			Array Edge	73	73	73	63	63	63	59	69	69	69	60	60	60	55	55	66	66	66	56	56	56	51	63	63	63	52	52	52	48	60	60	49	49	45	57	57	46	46	42		
		20 to 27	Array Interior	76	76	76	76	76	76	75	76	76	76	74	74	74	72	72	76	76	76	70	70	70	68	76	76	76	67	67	65	76	76	76	64	64	64	63	74	74	74	62	62	60
			Array Edge	76	76	76	67	67	67	65	76	76	76	64	64	64	62	73	73	73	61	61	61	59	75	69	69	57	57	57	55	67	67	67	54	54	52	64	64	64	51	51	49	
		27 to 45	Array Interior	87	87	87	87	83	77	83	82	82	82	79	73	73	79	78	78	78	75	75	75	70	75	75	75	75	72	67	72	72	69	64	69	69	69	67	62	67	62	67		
			Array Edge	75	75	75	75	72	67	72	71	71	71	71	69	64	69	68	68	68	66	61	66	65	65	65	65	65	63	57	63	62	62	60	54	60	60	60	57	51	57			
	45 to 60	Array Interior	100	100	94	94	94	94	94	95	95	89	89	89	89	89	91	91	85	85	85	85	85	88	88	81	81	81	81	81	84	84	78	78	78	78	81	81	75	75	75	75		
		Array Edge	88	88	82	82	82	82	82	84	84	78	78	78	78	78	80	80	74	74	74	74	74	77	77	71	71	71	71	71	74	74	68	68	68	68	71	71	65	65	65	65		
	C	0 to 7	Array Interior	72	72	71	71	71	63	63	72	72	67	67	67	60	60	72	71	64	64	64	56	72	68	61	61	61	61	52	72	65	58											

Company :
 Designer :
 Job Number:

Feb 19, 2021
 06:43 AM
 Checked By: _____

Section Properties: Section1_450124 (REV X03).DXF

Section Information:

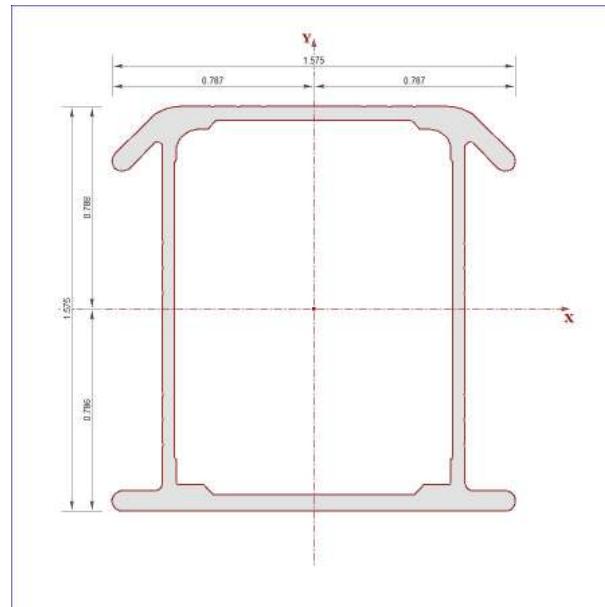
Material Type	=	General
Shape Type	=	Arbitrary
Number of Shapes	=	1

Basic Properties:

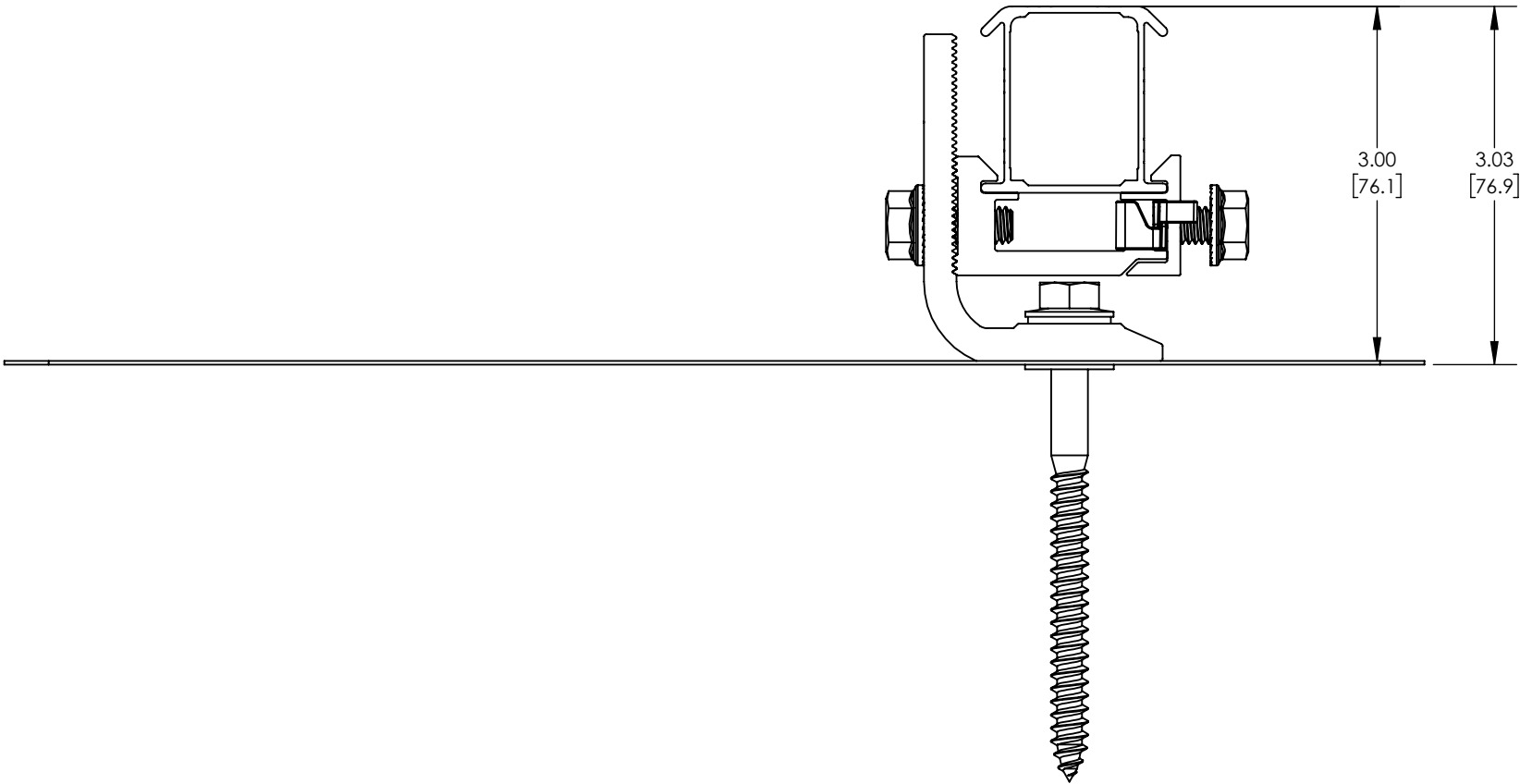
Total Width	=	1.575	in
Total Height	=	1.575	in
Centroid, X _o	=	0.000	in
Centroid, Y _o	=	0.786	in
X-Bar (Right)	=	0.787	in
X-Bar (Left)	=	0.787	in
Y-Bar (Top)	=	0.788	in
Y-Bar (Bot)	=	0.786	in
Max Thick	=	1.575	in

Equivalent Properties:

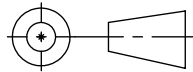
Area, A _x	=	0.373	in ²
Inertia, I _{xx}	=	0.151	in ⁴
Inertia, I _{yy}	=	0.100	in ⁴
Inertia, I _{xy}	=	-0.000	in ⁴
S _x (Top)	=	0.191	in ³
S _x (Bot)	=	0.191	in ³
S _y (Left)	=	0.126	in ³
S _y (Right)	=	0.126	in ³
r _x	=	0.635	in
r _y	=	0.516	in
Plastic Z _x	=	0.222	in ³
Plastic Z _y	=	0.180	in ³
Torsional J	=	<No Calc.>	
As-xx Def	=	1.000	
As-yy Def	=	1.000	
As-xx Stress	=	1.000	
As-yy Stress	=	1.000	



Section Diagram



THIRD ANGLE PROJECTION



DO NOT SCALE DRAWING

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CHECKED	-	-
ENG APPR.	-	-
MFG APPR.	-	-
Q.A.	-	-

INTERPRET DIM AND TOLERANCE
PER ASME Y14.5[M]-2009

DIMENSIONS TOLERANCES ARE IN:

INCHES.	[MILLIMETERS]
.XX: +/- .030	.X: +/- .75
.XXX: +/- .010	.XX: +/- .25

ANGLES: +/- 1°

ESDEC

INNOVATIVE MOUNTING SYSTEMS

**MINIMUM MODULE HEIGHT
EXAMPLE**

SIZE A	DWG. NO. XX-XXXX-XXX	REV. X01
------------------	-------------------------	-------------

SCALE: 1:1.5 WEIGHT: 31 of 31 SHEET 1 OF 1