

# IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT HALO ULTRAGRIP ROOF ATTACHMENTS

## GENERAL NOTES:

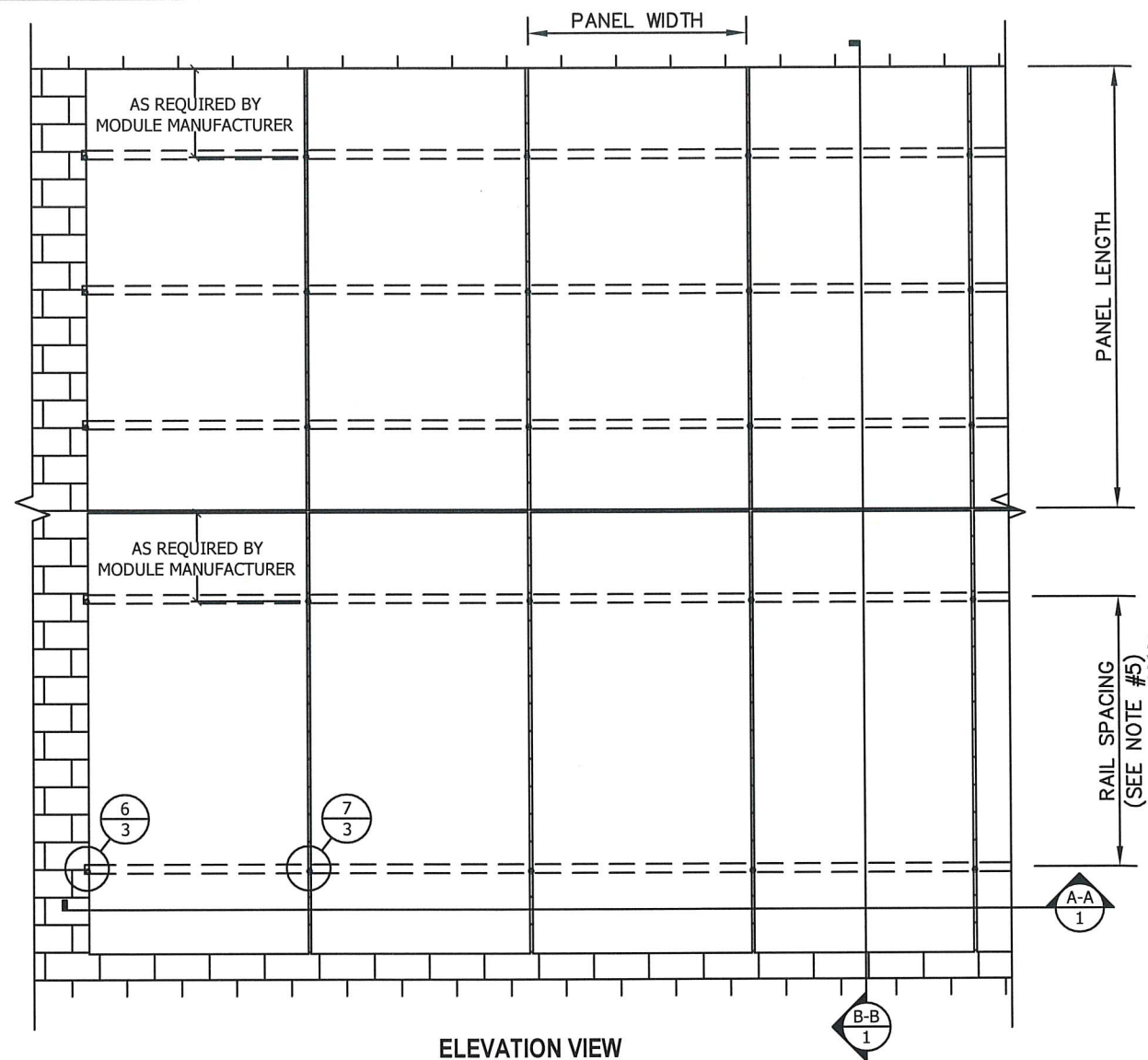
- THIS SYSTEM MEETS ALL OF THE REQUIREMENTS OF THE 7TH EDITION (2020) FLORIDA BUILDING CODE, INCLUDING THE HVHZ PROVISIONS.
- THIS SYSTEM HAS BEEN TESTED PER TAS 100(A) AND ASTM D7147. IT IS NOT A PART OF THE BUILDING ENVELOPE, AND IMPACT RESISTANCE IS NOT REQUIRED.
- THIS SYSTEM SHALL BE INSTALLED PER THE IRONRIDGE XR FLUSH MOUNT INSTALLATION MANUAL.
- THE PV PANELS ARE BY OTHERS AND ARE NOT A PART OF THIS APPROVAL.
- RAIL SPACING TO BE AS SPECIFIED BY THE PV PANEL MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- THE DESIGN OF THE ROOF SUBSTRATE IS THE RESPONSIBILITY OF THE ENGINEER OF RECORD OR OTHER SPECIALTY ENGINEER, AND IS NOT A PART OF THIS APPROVAL. THE SUBSTRATE MUST SAFELY TRANSMIT THE LOADS APPLIED TO THIS SYSTEM TO THE BUILDING STRUCTURE.
- FIRE RATINGS OR FIRE RESISTANCE IS NOT A PART OF THIS REVIEW.
- ALL ANCHORS SECURING THE SYSTEM TO PRESSURE TREATED WOOD SHALL BE CAPABLE OF RESISTING CORROSION CAUSED BY THE CHEMICALS IN THE WOOD.
- MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL BE PROTECTED PER FBC REQUIREMENTS.
- NO INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS PRODUCT. Cd=1.6 WAS USED FOR WOOD SCREWS ONLY.

## WINDLOAD NOTES:

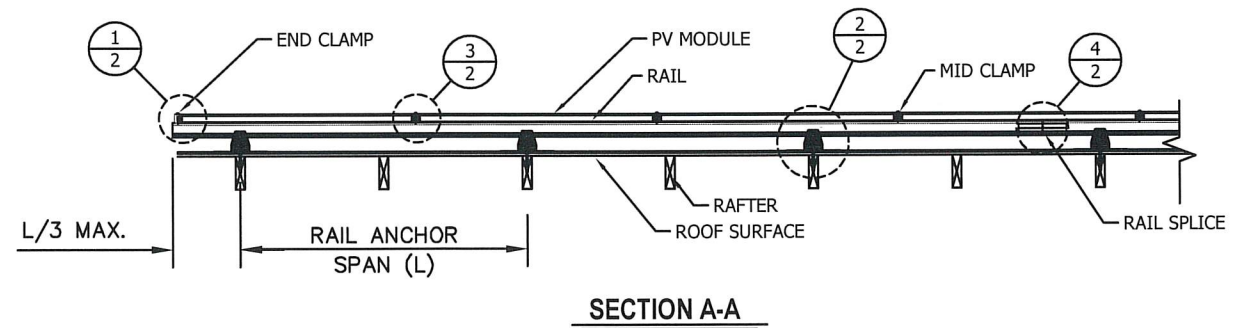
- DESIGN WINDLOADS MUST BE CALCULATED BY A LICENSED PROFESSIONAL ENGINEER OR ARCHITECT FOR EACH PROJECT, PER ASCE 7-16 SECTION 29.4.4. DESIGN WINDLOADS MAY NOT EXCEED THE ALLOWABLE WINDLOADS SHOWN IN THE CHARTS ON THIS SHEET OR SHEET 5.
- PANEL SYSTEM LOCATION, HEIGHT, AND SPACING MUST MEET THE REQUIREMENTS OF ASCE 7-16 SECTION 29.4.4. WINDLOADS ACT NORMAL TO THE SURFACE OF THE PV PANEL SYSTEM.
- OTHER CONFIGURATIONS REQUIRE PROJECT SPECIFIC ANALYSIS BY A LICENSED PROFESSIONAL ENGINEER OR ARCHITECT.
- ALLOWABLE WINDLOADS BELOW ARE FOR ANCHORS IN WOOD RAFTERS WITH S.G.=0.42 MIN. SEE SHEET 5 FOR ALLOWABLE FASTENER PATTERNS AND FOR ALLOWABLE WINDLOADS WHEN FASTENING INTO THE DECK ONLY.

THREE RAIL SYSTEM:

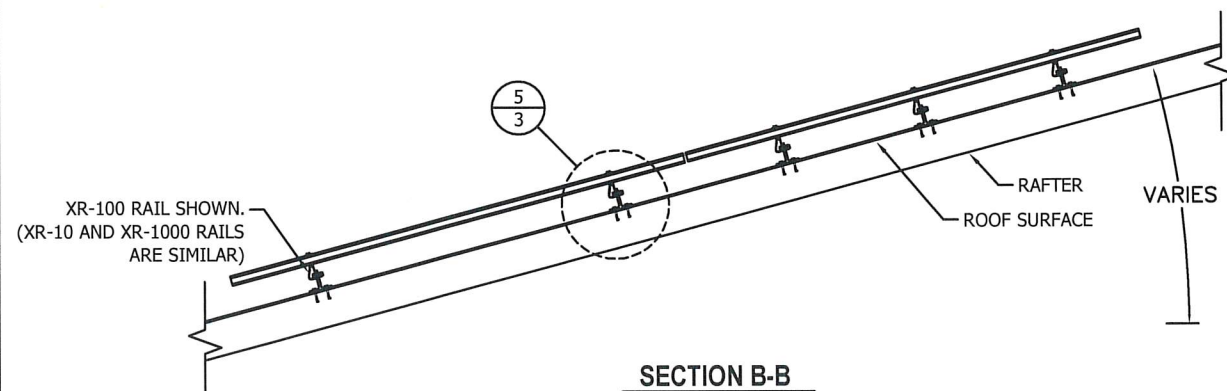
TWO RAIL SYSTEM:



ELEVATION VIEW



SECTION A-A



SECTION B-B

ALLOWABLE WINDLOADS

TWO RAIL SYSTEM						THREE RAIL SYSTEM						
PANEL WIDTH (in)	PANEL LENGTH (in)	ANCHOR SPAN (L) (in)	FASTENER PATTERN #1 OR #2			PANEL WIDTH (in)	PANEL LENGTH (in)	ANCHOR SPAN (L) (in)	FASTENER PATTERN #1 OR #2			
			XR-10 RAIL (+/- psf)	XR-100 RAIL (+/- psf)	XR-1000 RAIL (+/- psf)				XR-10 RAIL (+/- psf)	XR-100 RAIL (+/- psf)	XR-1000 RAIL (+/- psf)	
45	67 1/2	16	90	90	90	45	67 1/2	16	135.0	135.0	135.0	
		24	65.4	90	90			24	98.1	135.0	135.0	
		32	56.1	90	90			32	84.2	135.0	135.0	
		36	49.9	90	90			36	74.9	135.0	135.0	
		48	37.4	85.6	89.2			48	56.1	128.4	133.8	
		64	28.1	62.9	62.9			64	42.2	94.4	94.4	
	80	72	23.7	54	54.7	72	35.6	81.0	82.1			
		16	75.9	75.9	75.9	45	80	16	113.9	113.9	113.9	
		24	55.2	75.9	75.9			24	82.8	113.9	113.9	
		32	47.3	75.9	75.9			32	71.0	113.9	113.9	
		36	42.1	75.9	75.9			36	63.2	113.9	113.9	
		48	31.6	72.2	75.3			48	47.4	108.3	113.0	
	64	23.7	53.1	53.1	64			35.6	79.7	79.7		
	86	72	20	46.2	46.2	72	30.0	68.4	69.3			
		16	70.6	70.6	70.6	45	86	16	105.9	105.9	105.9	
		24	51.3	70.6	70.6			24	77.0	105.9	105.9	
		32	44	70.6	70.6			32	66.0	105.9	105.9	
		36	39.1	70.6	70.6			36	58.7	105.9	105.9	
		48	29.4	67.2	70			48	44.1	100.8	105.0	
	64	22	49.4	49.4	64			33.0	74.1	74.1		
	92 1/2	72	18.6	42.9	43	72	27.9	64.4	64.5			
		16	72.9	65.7	65.7	45	92 1/2	16	109.4	98.6	98.6	
		24	47.7	65.7	65.7			24	71.6	98.6	98.6	
		32	40.9	65.7	65.7			32	61.4	98.6	98.6	
36		36.4	65.7	65.7	36			54.6	98.6	98.6		
48		27.3	62.5	65.1	48			41.0	93.8	97.7		
64	20.5	45.9	45.9	64	30.8			68.9	68.9			
LANDSCAPE LAYOUT:	72	17.3	39.4	39.9	72	26.0	59.1	59.9				
	45	92 1/2	16	72.9	65.7	65.7	45	92 1/2	16	109.4	98.6	98.6
			24	52.9	65.7	65.7			24	79.4	98.6	98.6
			32	40.8	65.7	65.7			32	61.2	98.6	98.6
			36	36	65.7	65.7			36	54.0	98.6	98.6
			48	24.2	55	65.7			48	36.3	82.5	98.6
64			20.5	46.9	65.7	64			30.8	70.4	98.6	
72	18.2	41.7	65.7	72	27.3	62.6	98.6					

DATE: 12/19/22  
REV.#: 1  
PRINTS ISSUED FOR: 1ST SUBMITTAL

SCOTT WOLTERS  
FL PE# 62354

WOLTERS ENGINEERING  
(COA# 27194)  
15211 97TH ROAD N  
WEST PALM BEACH, FL 33412  
(561) 225-1982

STATE OF FLORIDA  
PROFESSIONAL ENGINEER  
DEC 19 2021

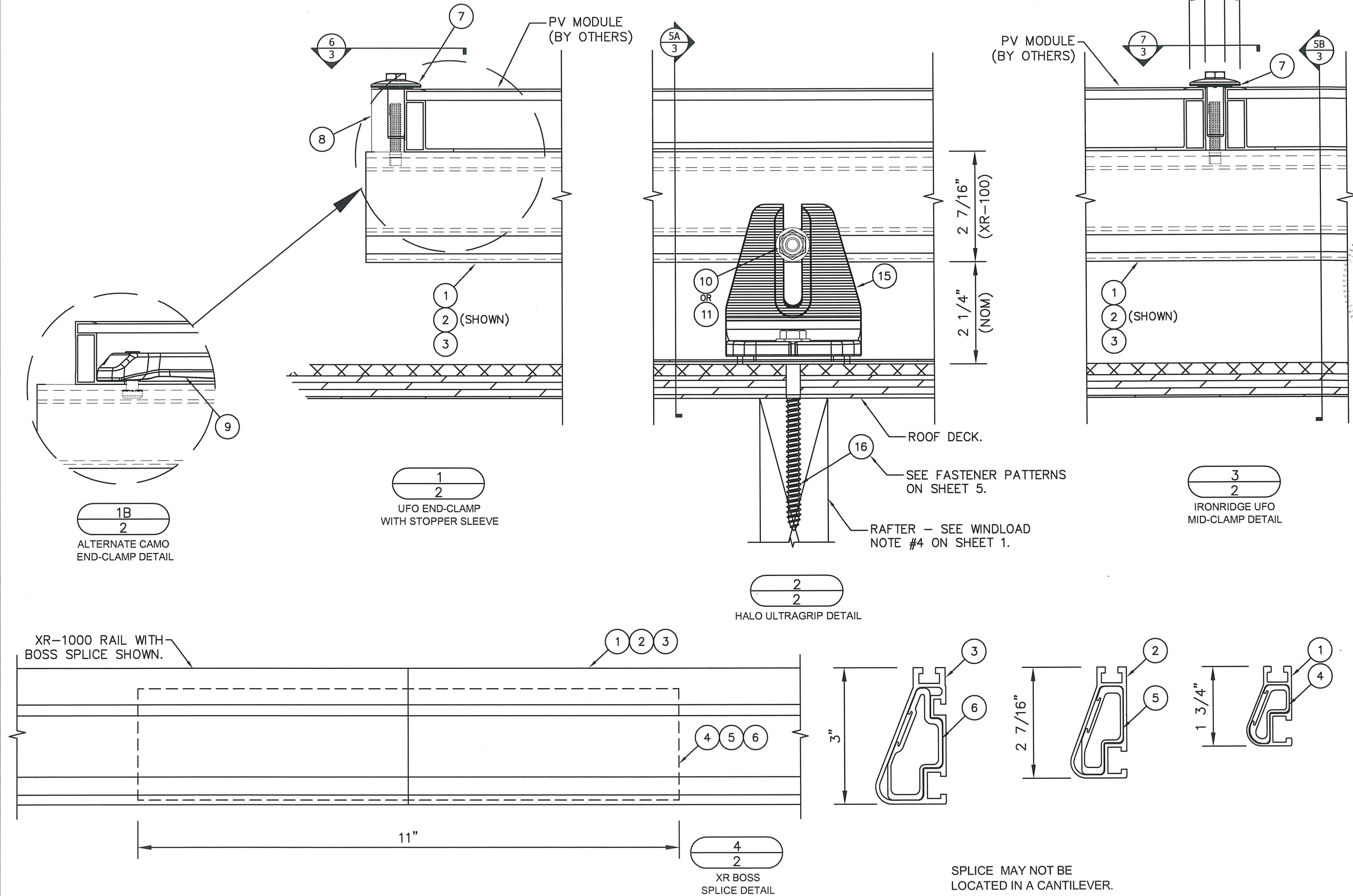
**IRONRIDGE**

PHONE: (800) 227-9523  
info@ironridge.com

28357 INDUSTRIAL BLVD.  
HAYWARD, CA 94545

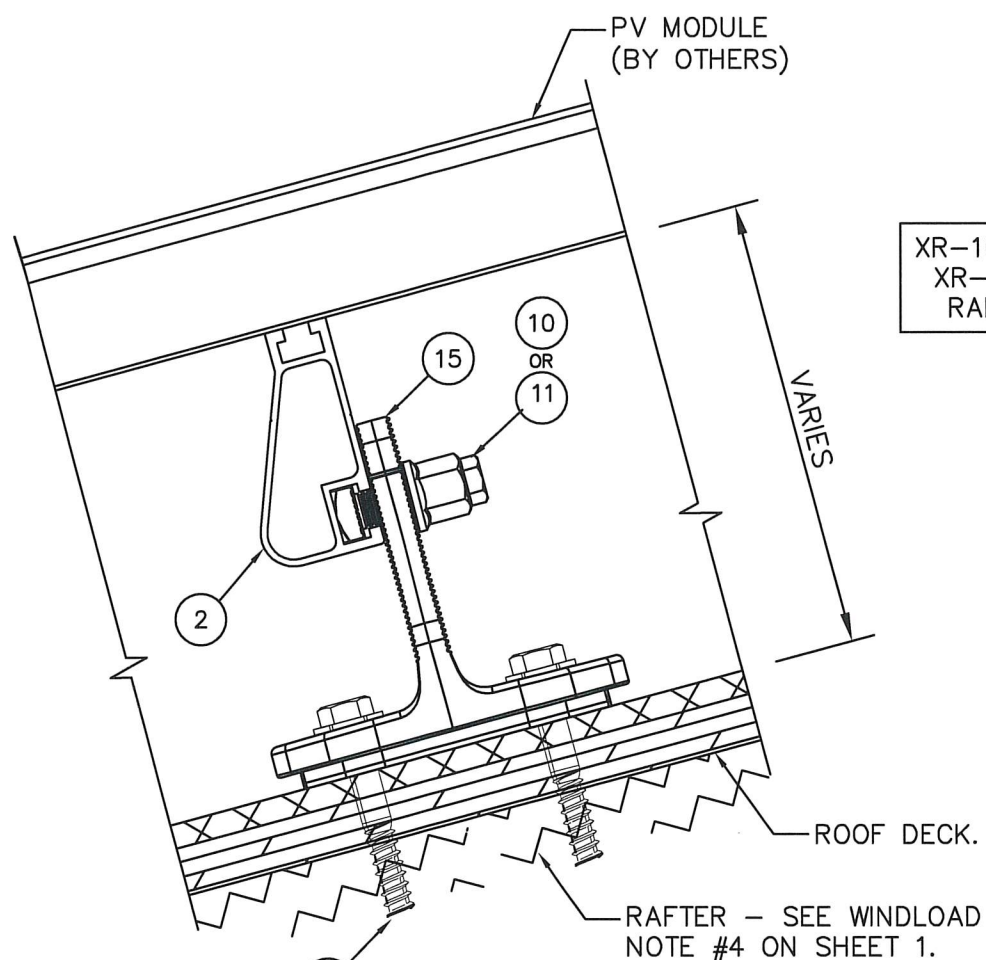
DWG: XR-HUG  
SHEET: 1/7

**IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM  
WITH QUICKMOUNT HALO ULTRAGRIP ROOF ATTACHMENTS**



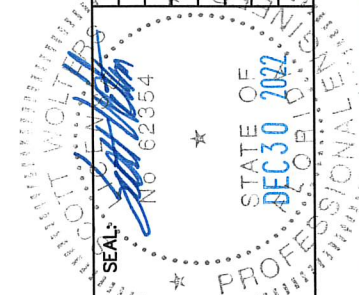
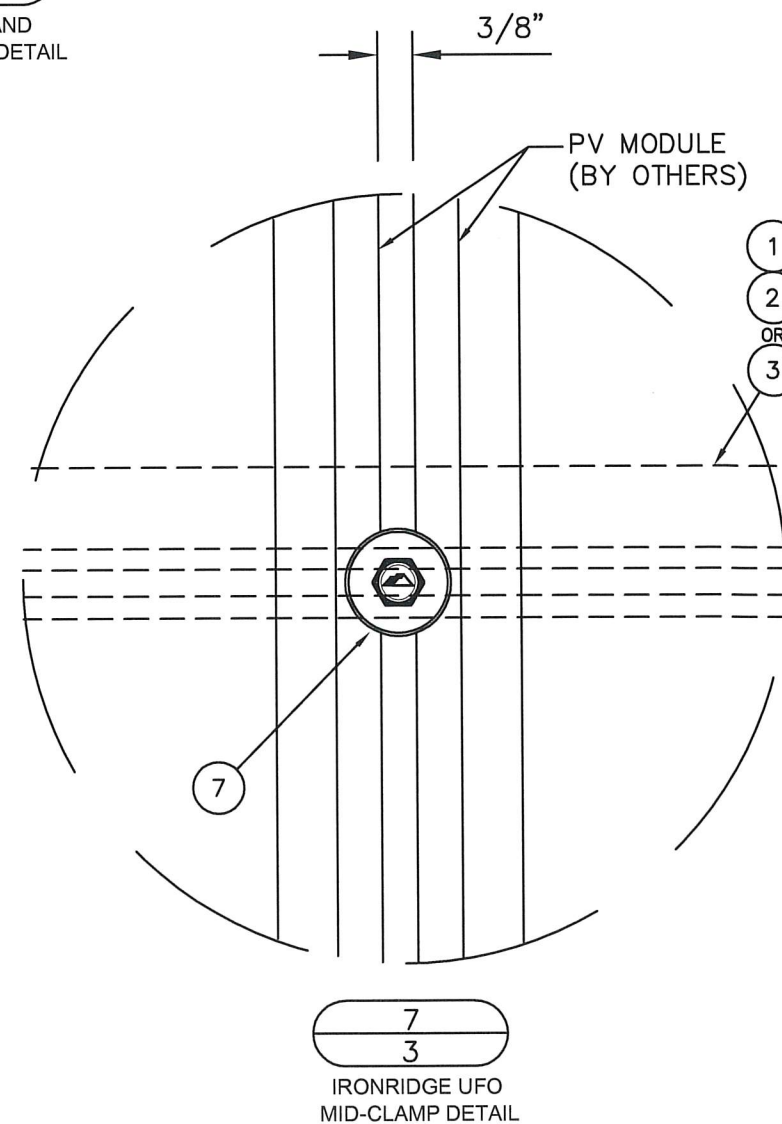
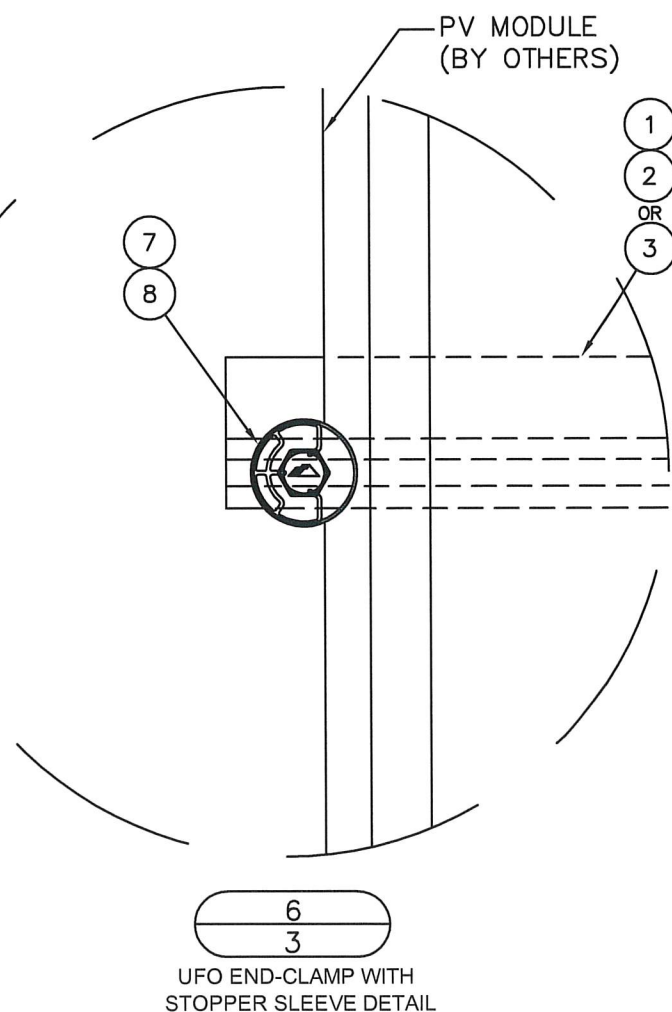
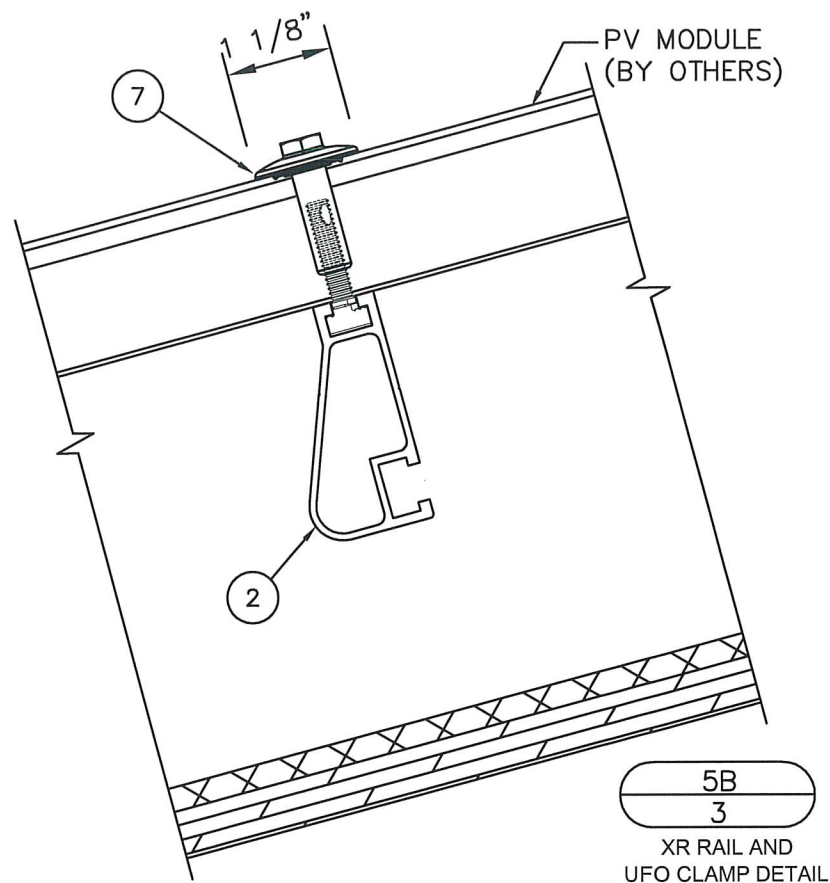
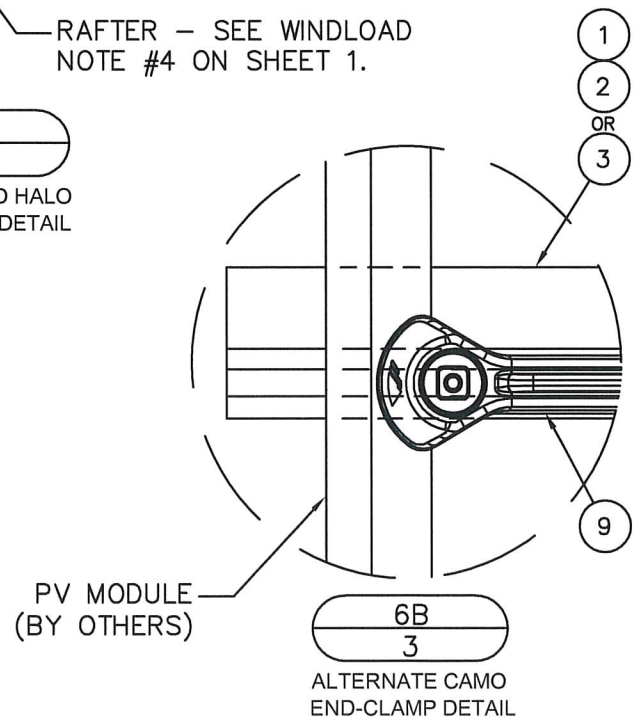
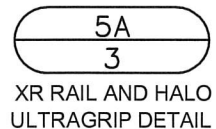
DATE	12/19/22
REV.#	
ISSUED FOR	PRINTS
DATE	DEC 30 2022
STATE OF	FLORIDA
PROFESSIONAL ENGINEER	
SEAL NO.	62354
SCOTT WOLTERS	
FL PE#	62354
WOLTERS ENGINEERING	
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28357 INDUSTRIAL BLVD.	
HAYWARD, CA 94545	
DWG:	XR-HUG
SHEET:	2/7

**IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM  
WITH QUICKMOUNT HALO ULTRAGRIP ROOF ATTACHMENTS**



XR-100 RAIL IS SHOWN.  
XR-10 AND XR-1000  
RAILS ARE SIMILAR.

SEE FASTENER  
PATTERNS ON  
SHEET 5.



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DWG: XR-HUG  
SHEET: 3/7

REV.#	DATE
1	12/19/22
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**IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM  
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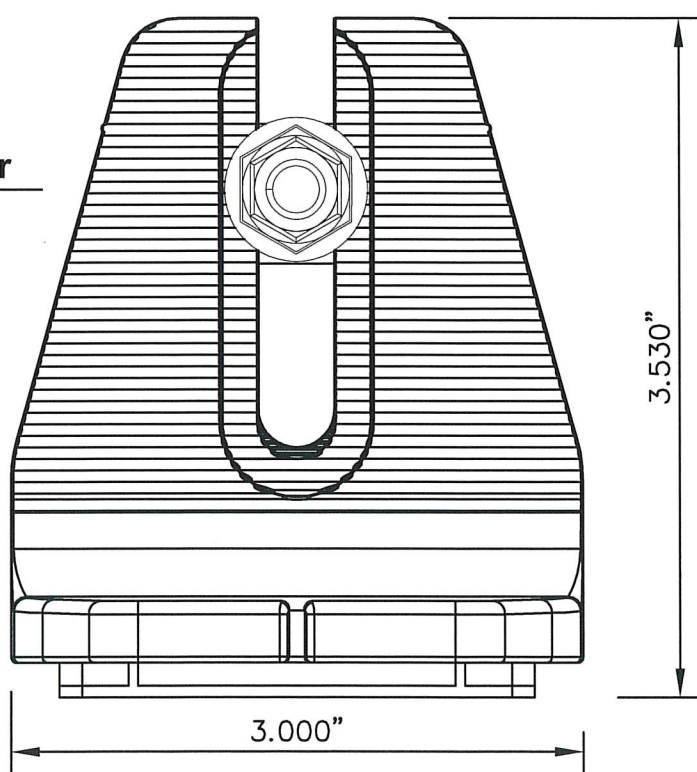
BILL OF MATERIALS- QuickMount Halo Ultra Grip (HUG)		
#	DESCRIPTION	MATERIALS/NOTES
15	HALO ULTRAGRIP BASE, MILL OR BLACK	300 SERIES ALUMINUM
16	ULTRAGRIP FLASHING SYSTEM	PRESSURE SENSITIVE ADHESIVE
17	SCREW, #14 X 3" WITH EPDM BACKED WASHER	300 SERIES SS & EPDM

LOAD DIRECTION	ALLOWABLE LOADS		
	QUICKMOUNT HALO ULTRAGRIP		
	FASTENER PATTERN #1 or #2 (lb)	FASTENER PATTERN #3	
		7/16" or 15/32" OSB (lb)	19/32" OSB (lb)
F1 - UPLIFT	1004	195	273
F2 - SHEAR	240	117	117
F3 - SHEAR	368	117	117

SEE CHARTS ON SHEETS 1 AND 5 FOR ALLOWABLE WINDLOADS BASED ON RAFTER SPECIFIC GRAVITY.

↑  
Direct Tension/Uplift  
(See Chart)

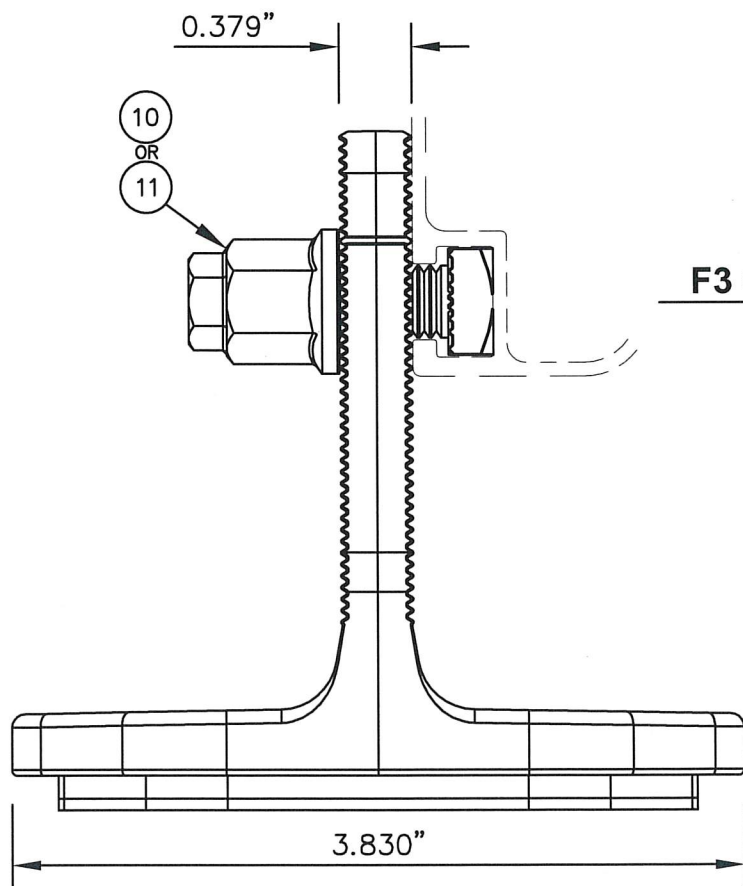
← F2 = Lateral Shear  
(See Chart)



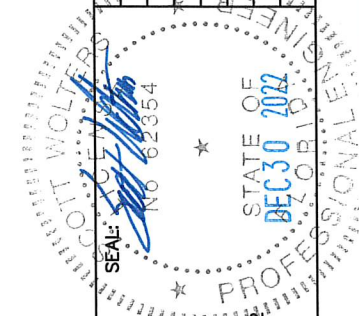
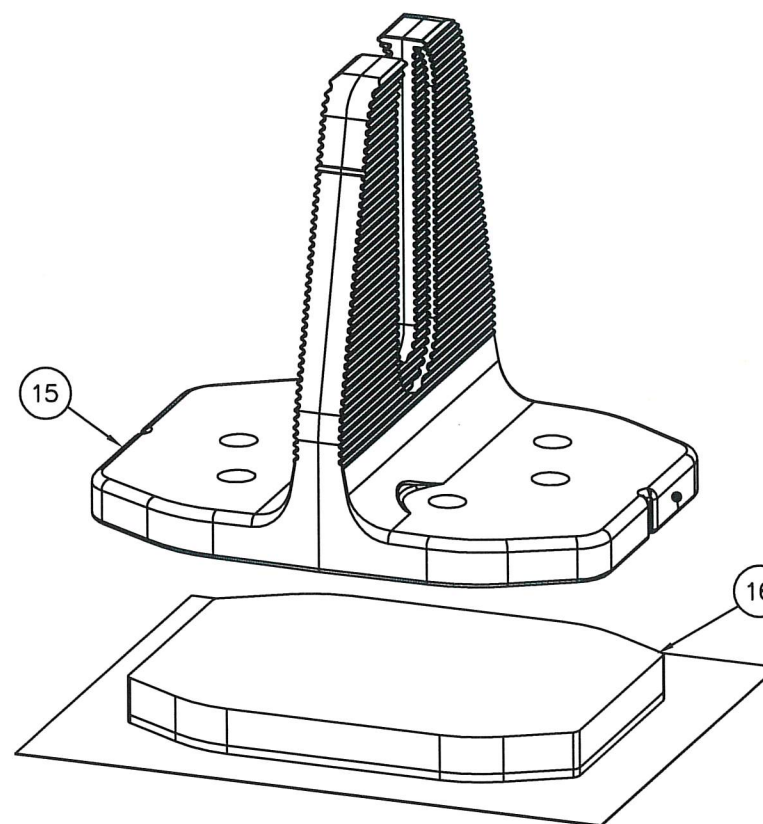
15

0.379"

10  
OR  
11



→ F3 = Lateral Shear  
(See Chart)



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DWG: XR-HUG  
SHEET: 4/7

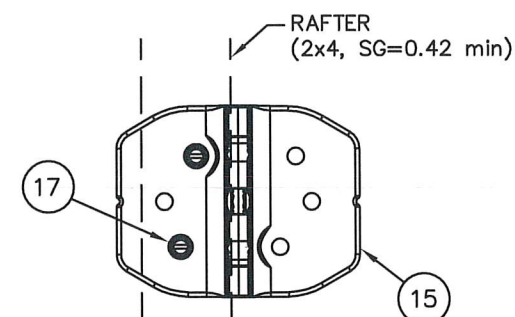
REV.# 12/19/22 DATE  
1ST SUBMITTAL  
PRINTS ISSUED FOR

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WITH QUICKMOUNT HALO ULTRAGRIP ROOF ATTACHMENTS**

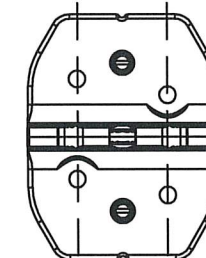
**ALLOWABLE WINDLOADS (+/- psf)**

TWO RAIL SYSTEM					THREE RAIL SYSTEM							
PANEL WIDTH (in)	PANEL LENGTH (in)	ANCHOR SPAN (L) (in)	FASTENER PATTERN #3		PANEL WIDTH (in)	PANEL LENGTH (in)	ANCHOR SPAN (L) (in)	FASTENER PATTERN #3				
			ALL RAILS					ALL RAILS				
			7/16" or 15/32" OSB (+/- psf)	19/32" OSB (+/- psf)				7/16" or 15/32" OSB (+/- psf)	19/32" OSB (+/- psf)			
45	67 1/2	16	22.2	31.1	45	67 1/2	16	33.3	46.7			
		24	21.3	29.8			24	32.0	44.7			
		32	20.3	28.5			32	30.5	42.8			
		36	18.5	25.9			36	27.8	38.9			
		48	17.3	24.3			48	26.0	36.5			
		64	12.2	17.1			64	18.3	25.7			
	80	72	10.7	14.9		72	16.1	22.4	80	16	28.1	39.3
		16	18.7	26.2		24	26.9	37.7				
		24	17.9	25.1		32	25.8	36.0				
		32	17.2	24.0		36	23.4	32.7				
		36	15.6	21.8		48	21.9	30.8				
		48	14.6	20.5		64	15.5	21.8				
	86	64	10.3	14.5		72	13.5	18.9	86	16	26.4	36.6
		72	9.0	12.6		24	25.1	35.1				
		16	17.6	24.4		32	24.0	33.5				
		24	16.7	23.4		36	21.8	30.5				
		32	16.0	22.3		48	20.4	28.5				
		36	14.5	20.3		64	14.4	20.1				
	92 1/2	48	13.6	19.0		72	12.6	17.6	92 1/2	16	24.3	34.1
		64	9.6	13.4		24	23.3	32.6				
		72	8.4	11.7		32	22.2	31.2				
		16	16.2	22.7		36	20.3	28.4				
		24	15.5	21.7		48	18.9	26.6				
		32	14.8	20.8		64	13.4	18.8				
LANDSCAPE LAYOUT:												
45	92 1/2	16	16.2	22.7	45	92 1/2	16	24.3	34.1			
		24	15.5	21.7			24	23.3	32.6			
		32	14.8	20.8			32	22.2	31.2			
		36	13.5	18.9			36	20.3	28.4			
		48	13.5	18.9			48	20.3	28.4			
		64	13.5	18.9			64	20.3	28.4			
72	13.5	18.9	72	20.3	28.4							

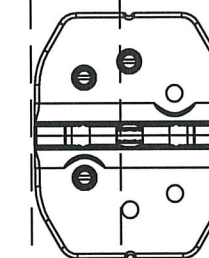
UP/DOWN SLOPE RAILS:



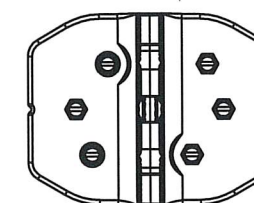
ACROSS SLOPE RAILS:



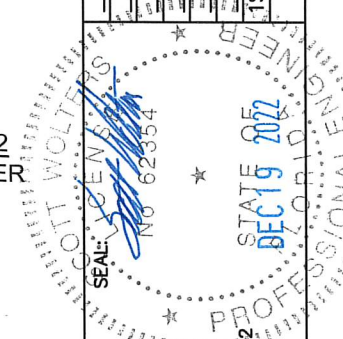
**FASTENER PATTERN #1**  
(2) FASTENERS IN RAFTER



**FASTENER PATTERN #2**  
(2) FASTENERS IN RAFTER  
AND (1) IN DECK



**FASTENER PATTERN #3**  
(6) FASTENERS IN DECK



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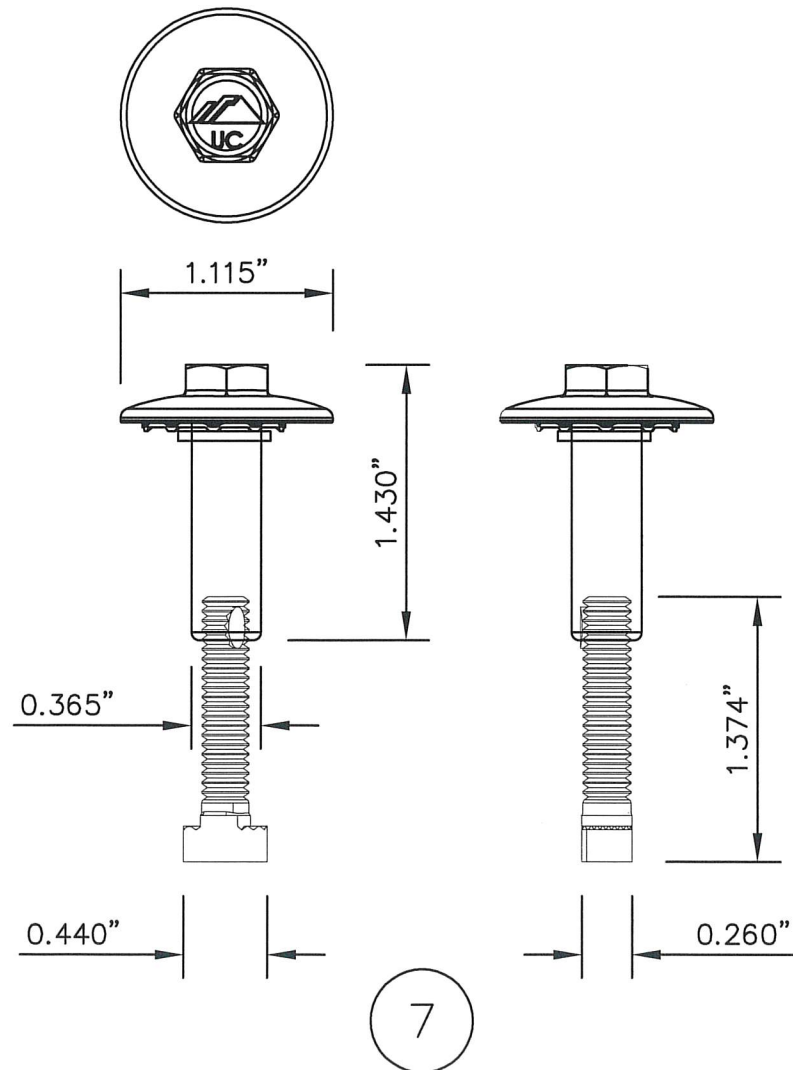
DWG: XR-HUG  
SHEET: 5/7

REV.#	DATE
1	12/19/22

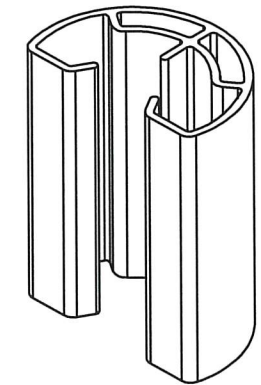
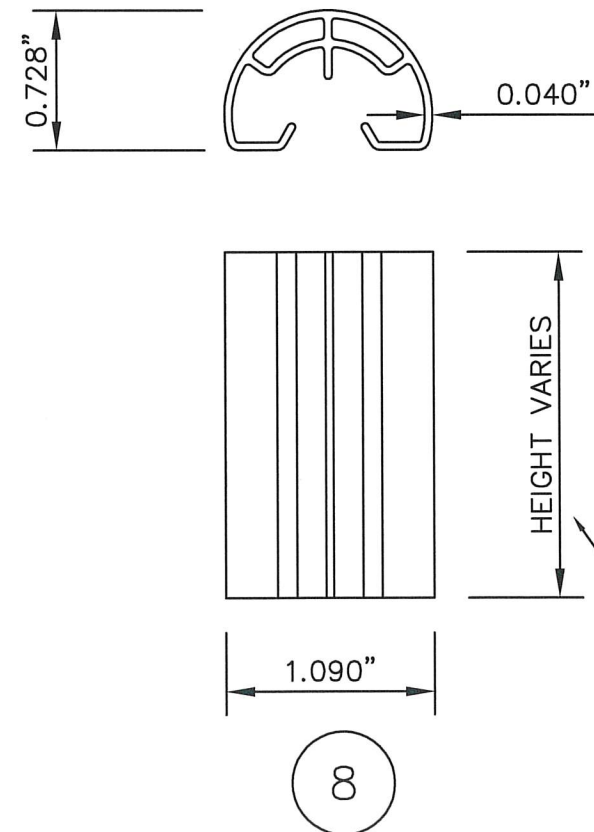
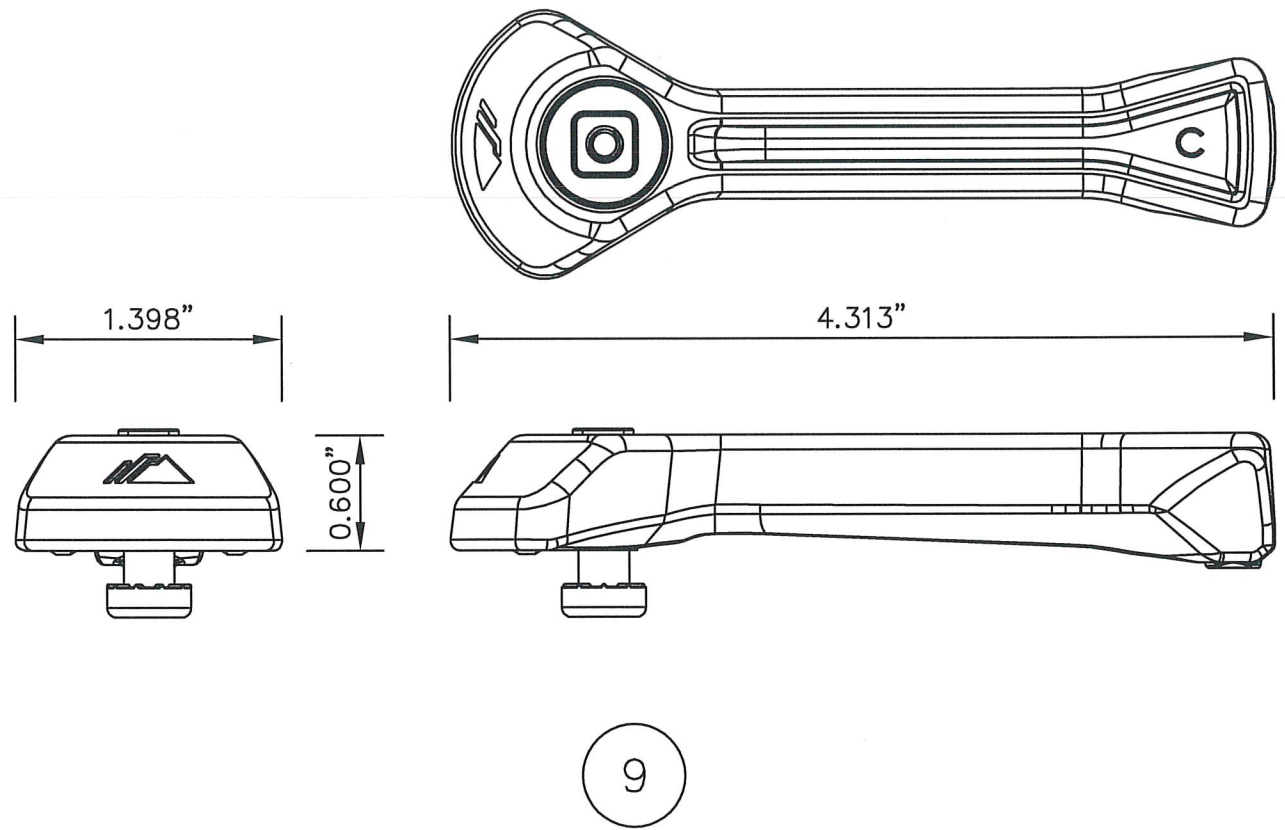
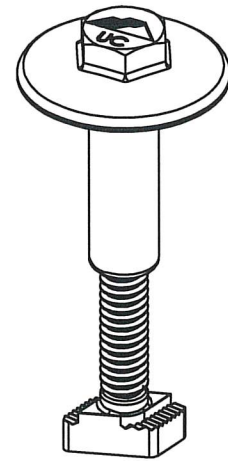
# IRONRIDGE XR FLUSH MOUNT PHOTOVOLTAIC PANEL RACKING SYSTEM WITH QUICKMOUNT HALO ULTRAGRIP ROOF ATTACHMENTS

BILL OF MATERIALS- XR System		
#	DESCRIPTION	MATERIALS/NOTES
1	XR-10 RAIL	6000 SERIES AL
2	XR-100 RAIL	6000 SERIES AL
3	XR-1000 RAIL	6000 SERIES AL
4	XR-10 BOSS SPLICE	6000 SERIES AL & 300 SERIES SS
5	XR-100 BOSS SPLICE	6000 SERIES AL & 300 SERIES SS
6	XR-1000 BOSS SPLICE	6000 SERIES AL & 300 SERIES SS
7	UFO UNIVERSAL MODULE CLAMP	300 SERIES SS
8	STOPPER SLEEVE	6000 SERIES AL
9	CAMO HIDDEN END CAM	300 SERIES AL & 300 SERIES SS
10	3/8" X 1" SQUARE BOLT BONDING HARDWARE	300 SERIES SS
11	3/8" X 1" T-BOLT BONDING HARDWARE	300 SERIES SS
12	XR-10 RAIL END CAP (OPTIONAL)	POLYMERIC
13	XR-100 RAIL END CAP (OPTIONAL)	POLYMERIC
14	XR-1000 RAIL END CAP (OPTIONAL)	POLYMERIC

FOR 6000 SERIES EXTRUSIONS  $F_{UT}=38$  ksi min,  $F_Y=34$  ksi min.  
FOR 300 SERIES STAINLESS STEEL  $F_Y=65$  ksi min.



7



HEIGHT VARIES TO MATCH PV PANEL HEIGHT.

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WOLTERS ENGINEERING  
(COA# 27194)  
15211 97TH ROAD N  
WEST PALM BEACH, FL 33412  
(561) 225-1982

12/19/22 DATE

1ST SUBMITTAL REV.#

PRINTS ISSUED FOR

28357 INDUSTRIAL BLVD.  
HAYWARD, CA 94545

PHONE: (800) 227-9523  
info@ironridge.com

DWG: XR-HUG

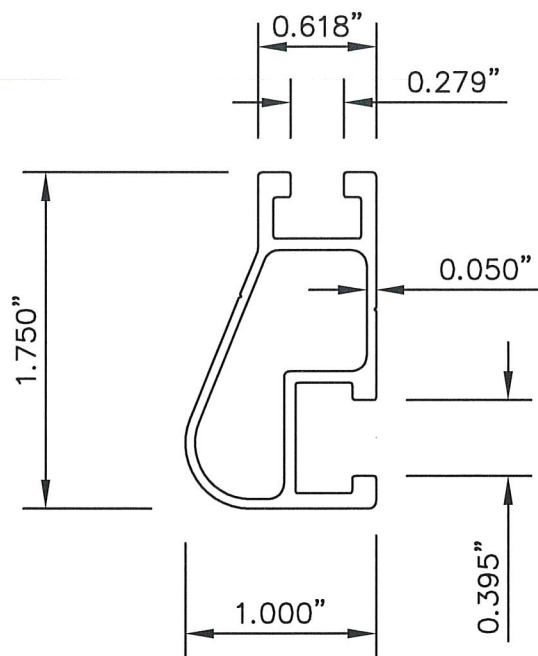
SHEET: 6/7

DATE: 12/19/22

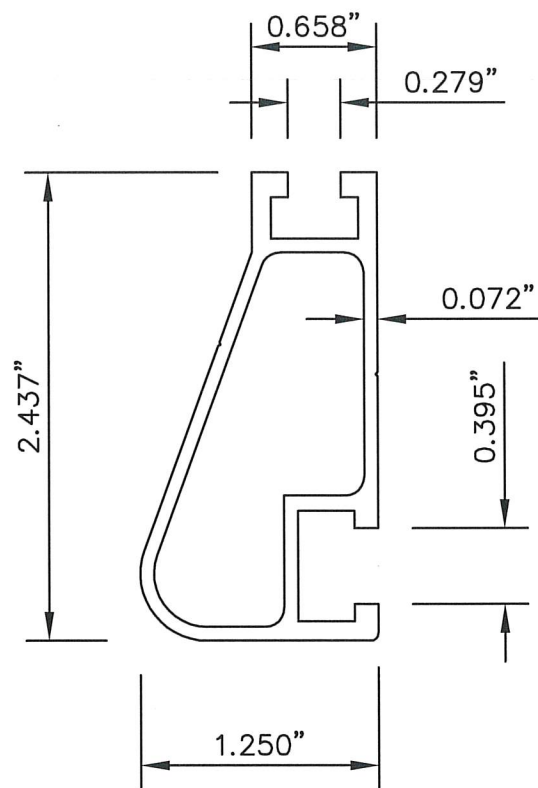
REV.#: 1

PRINTS ISSUED FOR: 1

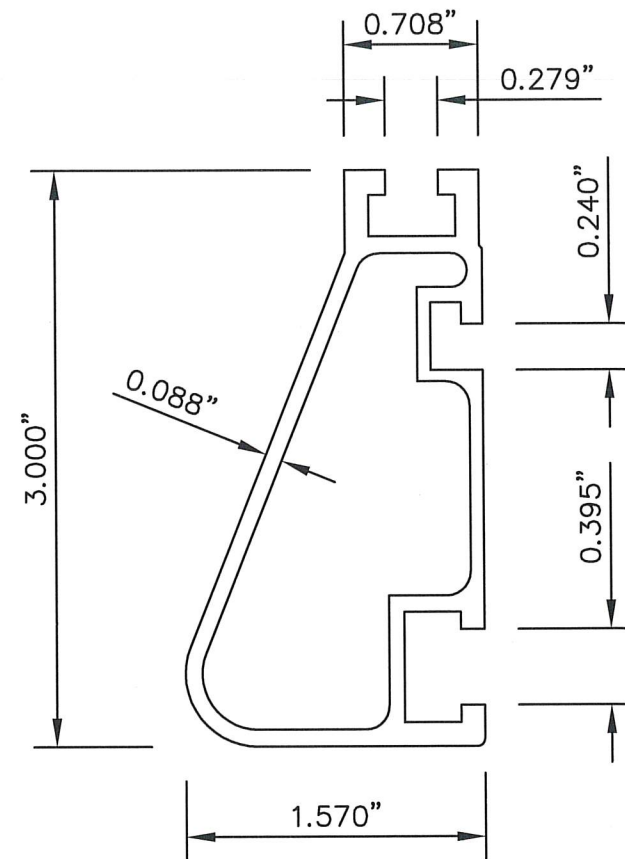
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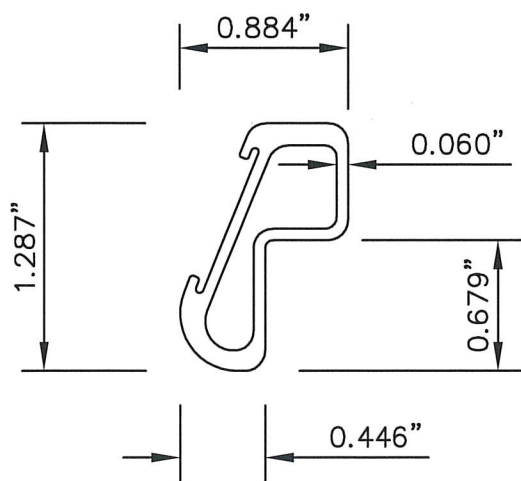
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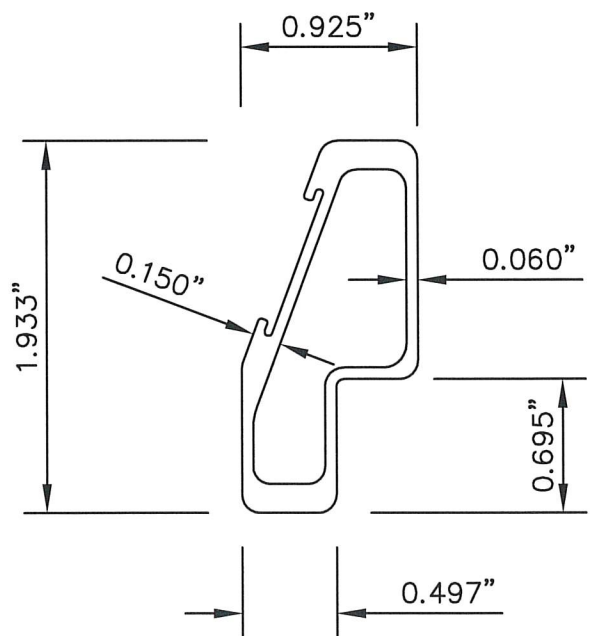
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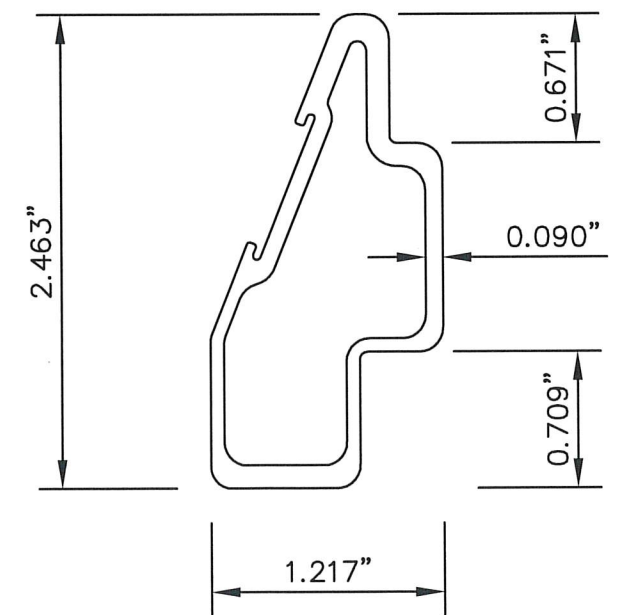
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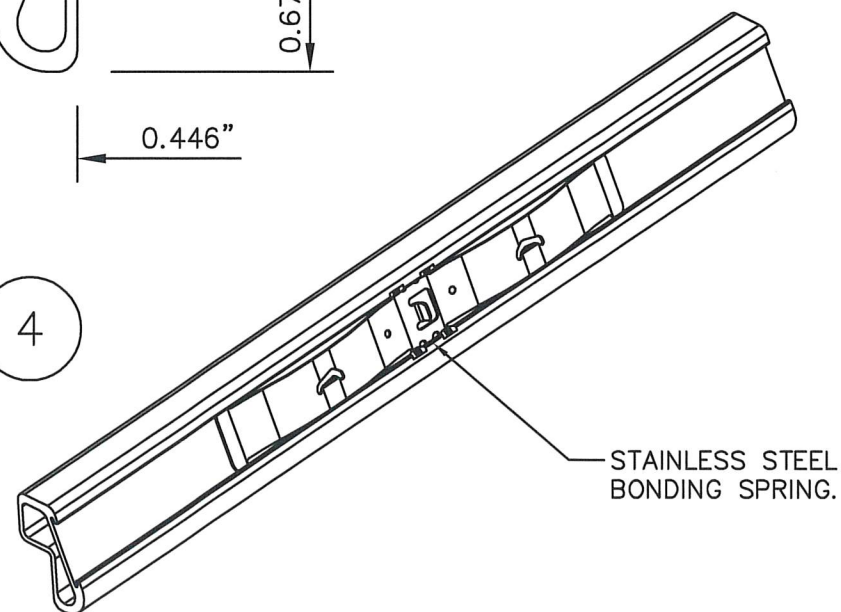
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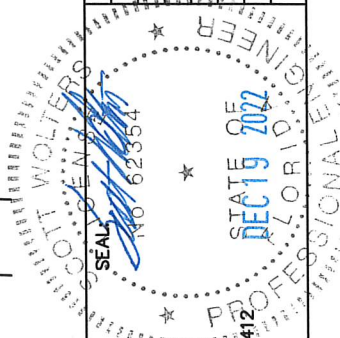
5



6



STAINLESS STEEL  
BONDING SPRING.



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