



March 6, 2019

Attn: Mr. Marshall Green  
Quick Mount PV  
2700 Mitchell Dr.  
Walnut Creek, CA, 94598

RE: Quick Mount PV – QRail Standard  
PV Panel Racking System  
State of South Dakota Certification Letter

SEI Project No.: 17549.04

Dear Mr. Green:

Structural Enginuity Inc. (SEI) has completed its review of the Quick Mount PV – QRail Standard PV Panel Racking System (QMR-RS) for typical installations in the state of South Dakota. The QRail Standard is compliant with the sections of the following design references and codes when installed per the conditions and design criteria delineated herein.

**Design References and Codes:**

- ASCE/7-10 – Minimum Design Loads for Buildings and Other Structures
- 2015 Aluminum Design Manual, by the Aluminum Association
- Materials information and section and details provided by Quick Mount PV as appendages to this letter
- 2015 International Building Code and 2015 International Residential Code
- AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Modules, November 2012 by ICC-ES

**General Mounting System and Analysis Overview:**

The QRail Standard consists of 6005-T5 (acceptable alternative materials include 6005A-T61 and 6061-T6) extruded aluminum per ASTM B221-08. The rails are used in pairs to support photovoltaic solar panels in order to span between points of attachment to the existing roof structure. The following tables and information summarize the structural analysis performed by SEI in order to certify the QRail Standard for the state noted above.

The analysis for certification included the following parameters for each rail system.

**QRail Standard:**

- Risk Category II
- Roof Slopes up to 45 degrees
- Portrait & Landscape orientation of photovoltaic panels
- Max Module Dimensions = Varies, see tables
- Max Mean Roof Height = Varies, see tables (If roof slope < 10°, use eave height)

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- Wind Analysis:
  - o Wind Category: B, C, and D
  - o Roof Zones 1, 2, and 3
  - o Wind Directionality Factor ( $K_d$ ) = 0.85
  - o Topographic Factor ( $K_{zt}$ ) = 1
- Snow Analysis:
  - o Snow Exposure Factor ( $C_e$ ) = 1.0
  - o Thermal Factor ( $C_t$ ) = 1.2
  - o Slope Factor ( $C_s$ ) per ASCE 7-10, Figure 7-2a
  - o Importance Factor ( $I_s$ ) = 1
- Seismic Analysis:
  - o Seismic Design Category E or less ( $S_d$  = 2.0 max)
  - o Importance Factor ( $I_p$ ) = 1
  - o Amplification Factor ( $a_p$ ) = 1.0 per ICC-AC428
  - o Component Response Modification Factor ( $R_p$ ) = 1.5 per ICC-AC 428

Applicable loading combinations consisting of dead, wind, snow, and seismic loads in accordance with the governing code requirements were used to determine allowable rail span lengths, based on bending stress capacity, shear capacity, axial capacity, and an assumption of a single-span condition with an allowable deflection of  $L/60$ . Design wind pressures were determined using Components and Cladding calculations per ASCE 7-10, Chapters 26-30 in conjunction with the loading parameters noted above. Applicable roof snow load shall be based on ground snow load maps, equations, and factors of ASCE 7-10, Chapter 7 and applicable sections of the 2015 International Building Code for the location of the project in combination with the loading parameters noted above.

It should be noted that the analysis was limited to the capacity of the QRail Standard. Attachments of the rail to the roof structure and analysis of the roof structure itself shall be the responsibility of the installer, and should be reviewed and approved by a registered design professional where required by the local authority having jurisdiction.

### **Installation Notes:**

The QRail Standard shall be installed with the following guidelines to be in compliance with attached span tables:

- Tables noted below assume two support rails are being used per each row of photovoltaic modules in a roof solar array.
- Rails shall be continuous and not spliced over a minimum of 2 supports except for span lengths shaded with  In these cases it is acceptable to use a minimum of 1 support per rail section as long as all supports are located at a maximum of 48" on center and the first and last rail sections have a minimum of 2 supports.
- System shall be mounted parallel to roof surface with a 2" to 10" gap between roof surface and bottom of module.
- Installation over roof overhangs or within 10" of any roof edge is not recommended
- Maximum end cantilever of aluminum support rail shall not exceed 1/3 of allowable span in the roof wind pressure zone of the cantilever.
- Tables attached are limited to structural capability of the support rails only; therefore, observe all local jurisdiction requirements regarding roof setback requirements when laying out support rails and solar array.

- Actual span lengths used must be within capacity of roof attachment and structural capacity of roof member supporting solar array.

**Conclusion and Certification Summary:**

Based on the structural analysis performed by SEI in regards to the loading parameters specified above for QRail Standard, the following C1 through C57 QRail Span tables for the Quick Mount PV QRail Standard System were determined. The various span information is controlled by the applicable wind and snow loads to the structure to which the array is being mounted on the roof and based on the roof zone to which the array is installed on the roof. The tables allow for multiple panel sizes and orientations as follows:

Tables 1-6: 15 ft max mean roof height, panels in portrait orientation with a maximum length of 67.5"

Tables 7-12: 15 ft max mean roof height, panels in landscape orientation with a maximum width of 42"

Tables 13-21: 30 ft max mean roof height, panels in portrait orientation with a maximum length of 67.5"

Tables 22-30: 30 ft max mean roof height, panels in landscape orientation with a maximum width of 42"

Tables 31-39: 60 ft max mean roof height, panels in portrait orientation with a maximum length of 67.5"

Tables 40-48: 60 ft max mean roof height, panels in landscape orientation with a maximum width of 42"

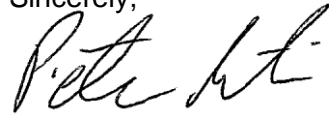
Tables 49-57: 60 ft max mean roof height, panels in portrait orientation with a maximum length of 82"

Tables 58-66: 30 ft max mean roof height, panels in portrait orientation with a maximum length of 80"

This letter is to certify that the loading criteria and design basis used for the structural analysis of the QRail Standard PV Panel Racking System for the span tables attached is validated and performed in compliance with the governing building codes for the state of South Dakota.

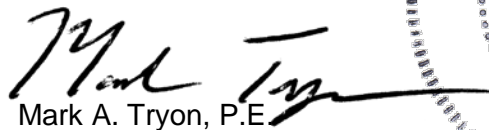
Please contact our office if you have any further questions relating to this matter.

Sincerely,



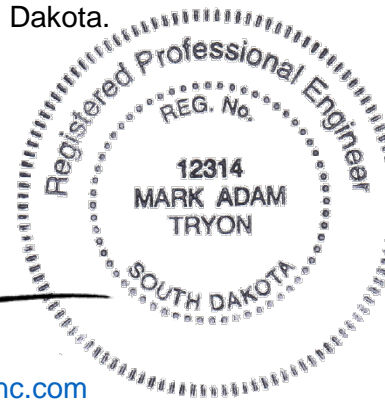
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3/7/2019

**Structural Engenuity Inc.**

**Rail Spans for Quick Mount PV QRail Standard System**

<b>Table 1</b>		Mean Roof Height: $0 < h \leq 15$ ft						Panel Orientation: Portrait						
		Roof Angle: $0 < \theta \leq 7$ degrees												
		Exposure Category: C												
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	116	116	116	114	104	95	89	82	77	75	73	69	
	10	102	102	102	101	100	95	89	82	77	75	73	69	
	20	86	86	86	86	86	86	86	82	77	75	73	69	
	30	74	74	74	74	74	74	74	74	74	73	73	69	
	40	65	65	65	65	65	65	65	65	65	65	65	65	
	50	59	59	59	59	59	59	59	59	59	59	59	59	59
	60	54	54	54	54	54	54	54	54	54	54	54	54	54
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
90	44	44	44	44	44	44	44	44	44	44	44	44	44	
Zone 2	0	100	90	86	82	75	69	65	60	57	55	53	50	
	10	100	90	86	82	75	69	65	60	57	55	53	50	
	20	86	86	86	82	75	69	65	60	57	55	53	50	
	30	74	74	74	74	74	69	65	60	57	55	53	50	
	40	65	65	65	65	65	65	65	60	57	55	53	50	
	50	59	59	59	59	59	59	59	59	57	55	53	50	
	60	54	54	54	54	54	54	54	54	54	54	53	50	
	70	50	50	50	50	50	50	50	50	50	50	50	50	
	80	48	48	48	48	48	48	48	48	48	48	48	48	
90	44	44	44	44	44	44	44	44	44	44	44	44		
Zone 3	0	79	71	68	65	59	55	51	48	45	44	42	40	
	10	79	71	68	65	59	55	51	48	45	44	42	40	
	20	79	71	68	65	59	55	51	48	45	44	42	40	
	30	74	71	68	65	59	55	51	48	45	44	42	40	
	40	65	65	65	65	59	55	51	48	45	44	42	40	
	50	59	59	59	59	59	55	51	48	45	44	42	40	
	60	54	54	54	54	54	54	51	48	45	44	42	40	
	70	50	50	50	50	50	50	50	48	45	44	42	40	
	80	48	48	48	48	48	48	48	48	45	44	42	40	
90	44	44	44	44	44	44	44	44	44	44	42	40		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

<b>Table 2</b>		Mean Roof Height: $0 < h \leq 15$ ft						Panel Orientation: Portrait						
		Roof Angle: $0 < \theta \leq 7$ degrees												
		Exposure Category: D												
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	116	112	107	102	93	86	80	74	70	68	66	62	
	10	102	101	101	100	93	86	80	74	70	68	66	62	
	20	86	86	86	86	86	85	80	74	70	68	66	62	
	30	74	74	74	74	74	74	74	73	70	68	66	62	
	40	65	65	65	65	65	65	65	65	65	65	65	62	
	50	59	59	59	59	59	59	59	59	59	59	59	59	59
	60	54	54	54	54	54	54	54	54	54	54	54	54	54
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
90	44	44	44	44	44	44	44	44	44	44	44	44	44	
Zone 2	0	90	81	77	74	68	63	58	55	51	50	48	46	
	10	90	81	77	74	68	63	58	55	51	50	48	46	
	20	86	81	77	74	68	63	58	55	51	50	48	46	
	30	74	74	74	74	68	63	58	55	51	50	48	46	
	40	65	65	65	65	65	63	58	55	51	50	48	46	
	50	59	59	59	59	59	59	58	55	51	50	48	46	
	60	54	54	54	54	54	54	54	54	51	50	48	46	
	70	50	50	50	50	50	50	50	50	50	50	48	46	
	80	48	48	48	48	48	48	48	48	48	48	48	46	
90	44	44	44	44	44	44	44	44	44	44	44	44		
Zone 3	0	71	64	61	58	54	50	46	43	41	40	38	36	
	10	71	64	61	58	54	50	46	43	41	40	38	36	
	20	71	64	61	58	54	50	46	43	41	40	38	36	
	30	71	64	61	58	54	50	46	43	41	40	38	36	
	40	65	64	61	58	54	50	46	43	41	40	38	36	
	50	59	59	59	58	54	50	46	43	41	40	38	36	
	60	54	54	54	54	54	50	46	43	41	40	38	36	
	70	50	50	50	50	50	50	46	43	41	40	38	36	
	80	48	48	48	48	48	48	46	43	41	40	38	36	
90	44	44	44	44	44	44	44	43	41	40	38	36		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

<b>Table 3</b>		Mean Roof Height: $0 < h \leq 15$ ft						Panel Orientation: Portrait						
		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: C						
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	116	116	114	112	106	98	91	85	80	78	75	71	
	10	99	97	96	95	92	90	87	85	80	78	75	71	
	20	80	80	80	79	78	76	75	73	72	71	71	69	
	30	67	67	67	67	67	67	67	67	66	64	64	63	62
	40	59	59	59	59	59	59	59	59	59	58	58	57	
	50	54	54	54	54	54	54	54	54	54	54	54	54	53
	60	49	49	49	49	49	49	49	49	49	49	49	49	49
	70	46	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 2	0	100	90	86	83	76	70	66	61	58	56	54	51	
	10	99	90	86	83	76	70	66	61	58	56	54	51	
	20	80	80	80	79	76	70	66	61	58	56	54	51	
	30	67	67	67	67	67	67	66	61	58	56	54	51	
	40	59	59	59	59	59	59	59	59	58	56	54	51	
	50	54	54	54	54	54	54	54	54	54	54	54	51	
	60	49	49	49	49	49	49	49	49	49	49	49	49	
	70	46	46	46	46	46	46	46	46	46	46	46	46	
	80	43	43	43	43	43	43	43	43	43	43	43	43	
90	41	41	41	41	41	41	41	41	41	41	41	41		
Zone 3	0	80	73	69	66	61	57	53	49	46	45	44	41	
	10	80	73	69	66	61	57	53	49	46	45	44	41	
	20	80	73	69	66	61	57	53	49	46	45	44	41	
	30	67	67	67	66	61	57	53	49	46	45	44	41	
	40	59	59	59	59	59	57	53	49	46	45	44	41	
	50	54	54	54	54	54	54	53	49	46	45	44	41	
	60	49	49	49	49	49	49	49	49	46	45	44	41	
	70	46	46	46	46	46	46	46	46	46	45	44	41	
	80	43	43	43	43	43	43	43	43	43	43	43	41	
90	41	41	41	41	41	41	41	41	41	41	41	41		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"



**Rail Spans for Quick Mount PV QRail Standard System**

<b>Table 4</b>		Mean Roof Height: $0 < h \leq 15$ ft						Panel Orientation: Portrait						
		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: D						
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	116	111	109	104	96	89	83	77	72	70	68	65	
	10	97	94	93	92	89	87	83	77	72	70	68	65	
	20	80	79	78	78	76	74	73	71	69	69	68	65	
	30	67	67	67	67	67	66	65	64	63	62	61	60	
	40	59	59	59	59	59	59	59	58	57	57	57	56	
	50	54	54	54	54	54	54	54	54	54	53	53	53	52
	60	49	49	49	49	49	49	49	49	49	49	49	49	49
	70	46	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 2	0	90	82	78	75	69	64	59	56	52	51	49	48	
	10	90	82	78	75	69	64	59	56	52	51	49	48	
	20	80	79	78	75	69	64	59	56	52	51	49	48	
	30	67	67	67	67	67	64	59	56	52	51	49	48	
	40	59	59	59	59	59	59	59	56	52	51	49	48	
	50	54	54	54	54	54	54	54	54	52	51	49	48	
	60	49	49	49	49	49	49	49	49	49	49	49	48	
	70	46	46	46	46	46	46	46	46	46	46	46	46	
	80	43	43	43	43	43	43	43	43	43	43	43	43	
90	41	41	41	41	41	41	41	41	41	41	41	41		
Zone 3	0	73	66	63	60	55	51	48	45	42	41	40	38	
	10	73	66	63	60	55	51	48	45	42	41	40	38	
	20	73	66	63	60	55	51	48	45	42	41	40	38	
	30	67	66	63	60	55	51	48	45	42	41	40	38	
	40	59	59	59	59	55	51	48	45	42	41	40	38	
	50	54	54	54	54	54	51	48	45	42	41	40	38	
	60	49	49	49	49	49	49	48	45	42	41	40	38	
	70	46	46	46	46	46	46	46	45	42	41	40	38	
	80	43	43	43	43	43	43	43	43	42	41	40	38	
90	41	41	41	41	41	41	41	41	41	41	40	38		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

<b>Table 5</b>		Mean Roof Height: $0 < h \leq 15$ ft						Panel Orientation: Portrait					
		Roof Angle: $27 < \theta \leq 45$ degrees											
		Exposure Category: C											
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	106	100	97	94	88	84	79	75	72	70	68	65
	10	94	91	89	87	84	81	78	75	72	70	68	65
	20	82	79	78	77	75	72	70	68	66	65	64	62
	30	73	71	70	70	68	66	64	63	61	60	60	58
	40	65	65	65	64	63	61	60	59	57	57	56	55
	50	59	59	59	59	58	57	56	55	54	53	53	52
	60	55	55	55	55	55	54	53	52	51	51	50	49
	70	51	51	51	51	51	51	51	50	49	48	48	48
	80	48	48	48	48	48	48	48	48	48	46	46	45
	90	45	45	45	45	45	45	45	45	45	45	44	44
Zone 2	0	106	100	97	94	88	83	77	72	68	66	64	61
	10	94	91	89	87	84	81	77	72	68	66	64	61
	20	82	79	78	77	75	72	70	68	66	65	64	61
	30	73	71	70	70	68	66	64	63	61	60	60	58
	40	65	65	65	64	63	61	60	59	57	57	56	55
	50	59	59	59	59	58	57	56	55	54	53	53	52
	60	55	55	55	55	55	54	53	52	51	51	50	49
	70	51	51	51	51	51	51	51	50	49	48	48	48
	80	48	48	48	48	48	48	48	48	48	46	46	45
	90	45	45	45	45	45	45	45	45	45	45	44	44
Zone 3	0	106	100	97	94	88	83	77	72	68	66	64	61
	10	94	91	89	87	84	81	77	72	68	66	64	61
	20	82	79	78	77	75	72	70	68	66	65	64	61
	30	73	71	70	70	68	66	64	63	61	60	60	58
	40	65	65	65	64	63	61	60	59	57	57	56	55
	50	59	59	59	59	58	57	56	55	54	53	53	52
	60	55	55	55	55	55	54	53	52	51	51	50	49
	70	51	51	51	51	51	51	51	50	49	48	48	48
	80	48	48	48	48	48	48	48	48	48	46	46	45
	90	45	45	45	45	45	45	45	45	45	45	44	44

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"



**Rail Spans for Quick Mount PV QRail Standard System**

<b>Table 6</b>		Mean Roof Height: $0 < h \leq 15$ ft						Panel Orientation: Portrait					
		Roof Angle: $27 < \theta \leq 45$ degrees											
		Exposure Category: D											
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	99	93	90	87	82	78	73	70	66	64	63	60
	10	91	87	85	83	80	77	73	70	66	64	63	60
	20	79	77	75	74	72	69	67	65	63	61	60	58
	30	71	69	68	68	66	64	62	60	58	58	57	55
	40	65	64	63	62	61	59	58	56	55	54	54	52
	50	59	59	59	58	57	56	55	53	52	51	51	50
	60	55	55	55	55	54	53	52	51	50	49	49	48
	70	51	51	51	51	51	50	49	48	48	48	46	46
	80	48	48	48	48	48	48	48	46	45	45	45	44
	90	45	45	45	45	45	45	45	45	44	43	43	42
Zone 2	0	99	93	90	87	81	75	70	66	62	60	58	55
	10	91	87	85	83	80	75	70	66	62	60	58	55
	20	79	77	75	74	72	69	67	65	62	60	58	55
	30	71	69	68	68	66	64	62	60	58	58	57	55
	40	65	64	63	62	61	59	58	56	55	54	54	52
	50	59	59	59	58	57	56	55	53	52	51	51	50
	60	55	55	55	55	54	53	52	51	50	49	49	48
	70	51	51	51	51	51	50	49	48	48	48	46	46
	80	48	48	48	48	48	48	48	46	45	45	45	44
	90	45	45	45	45	45	45	45	45	44	43	43	42
Zone 3	0	99	93	90	87	81	75	70	66	62	60	58	55
	10	91	87	85	83	80	75	70	66	62	60	58	55
	20	79	77	75	74	72	69	67	65	62	60	58	55
	30	71	69	68	68	66	64	62	60	58	58	57	55
	40	65	64	63	62	61	59	58	56	55	54	54	52
	50	59	59	59	58	57	56	55	53	52	51	51	50
	60	55	55	55	55	54	53	52	51	50	49	49	48
	70	51	51	51	51	51	50	49	48	48	48	46	46
	80	48	48	48	48	48	48	48	46	45	45	45	44
	90	45	45	45	45	45	45	45	45	44	43	43	42

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

<b>Table 7</b>		Mean Roof Height: $0 < h \leq 15$ ft						Panel Orientation: Landscape					
		Roof Angle: $0 < \theta \leq 7$ degrees											
		Exposure Category: C											
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	121	121	121	121	121	112	105	98	95	92	87
	10	120	120	119	119	117	116	112	105	98	95	92	87
	20	101	101	101	101	101	101	101	101	98	95	92	87
	30	90	90	90	90	90	90	90	90	90	90	90	87
	40	82	82	82	82	82	82	82	82	82	82	82	82
	50	74	74	74	74	74	74	74	74	74	74	74	74
	60	68	68	68	68	68	68	68	68	68	68	68	68
	70	64	64	64	64	64	64	64	64	64	64	64	64
	80	60	60	60	60	60	60	60	60	60	60	60	60
90	56	56	56	56	56	56	56	56	56	56	56	56	
Zone 2	0	121	114	109	104	95	88	82	77	72	70	68	64
	10	120	114	109	104	95	88	82	77	72	70	68	64
	20	101	101	101	101	95	88	82	77	72	70	68	64
	30	90	90	90	90	90	88	82	77	72	70	68	64
	40	82	82	82	82	82	82	82	77	72	70	68	64
	50	74	74	74	74	74	74	74	74	72	70	68	64
	60	68	68	68	68	68	68	68	68	68	68	68	64
	70	64	64	64	64	64	64	64	64	64	64	64	64
	80	60	60	60	60	60	60	60	60	60	60	60	60
90	56	56	56	56	56	56	56	56	56	56	56	56	
Zone 3	0	100	90	86	82	76	70	65	61	57	55	54	51
	10	100	90	86	82	76	70	65	61	57	55	54	51
	20	100	90	86	82	76	70	65	61	57	55	54	51
	30	90	90	86	82	76	70	65	61	57	55	54	51
	40	82	82	82	82	76	70	65	61	57	55	54	51
	50	74	74	74	74	74	70	65	61	57	55	54	51
	60	68	68	68	68	68	68	65	61	57	55	54	51
	70	64	64	64	64	64	64	64	61	57	55	54	51
	80	60	60	60	60	60	60	60	60	57	55	54	51
90	56	56	56	56	56	56	56	56	56	55	54	51	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

<b>Table 8</b>		Mean Roof Height: $0 < h \leq 15$ ft					Panel Orientation: Landscape							
		Roof Angle: $0 < \theta \leq 7$ degrees												
		Exposure Category: D												
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	121	121	121	121	118	109	101	94	89	86	83	79	
	10	120	119	118	117	116	109	101	94	89	86	83	79	
	20	101	101	101	101	101	101	100	94	89	86	83	79	
	30	90	90	90	90	90	90	90	90	89	86	83	79	
	40	82	82	82	82	82	82	82	82	82	82	82	79	
	50	74	74	74	74	74	74	74	74	74	74	74	74	74
	60	68	68	68	68	68	68	68	68	68	68	68	68	68
	70	64	64	64	64	64	64	64	64	64	64	64	64	64
	80	60	60	60	60	60	60	60	60	60	60	60	60	60
90	56	56	56	56	56	56	56	56	56	56	56	56	56	
Zone 2	0	114	103	98	94	86	80	74	69	65	63	61	58	
	10	114	103	98	94	86	80	74	69	65	63	61	58	
	20	101	101	98	94	86	80	74	69	65	63	61	58	
	30	90	90	90	90	86	80	74	69	65	63	61	58	
	40	82	82	82	82	82	80	74	69	65	63	61	58	
	50	74	74	74	74	74	74	74	69	65	63	61	58	
	60	68	68	68	68	68	68	68	68	65	63	61	58	
	70	64	64	64	64	64	64	64	64	64	63	61	58	
	80	60	60	60	60	60	60	60	60	60	60	60	58	
90	56	56	56	56	56	56	56	56	56	56	56	56		
Zone 3	0	90	81	78	74	68	63	59	55	52	50	49	46	
	10	90	81	78	74	68	63	59	55	52	50	49	46	
	20	90	81	78	74	68	63	59	55	52	50	49	46	
	30	90	81	78	74	68	63	59	55	52	50	49	46	
	40	82	81	78	74	68	63	59	55	52	50	49	46	
	50	74	74	74	74	68	63	59	55	52	50	49	46	
	60	68	68	68	68	68	63	59	55	52	50	49	46	
	70	64	64	64	64	64	63	59	55	52	50	49	46	
	80	60	60	60	60	60	60	59	55	52	50	49	46	
90	56	56	56	56	56	56	56	55	52	50	49	46		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

<b>Table 9</b>		Mean Roof Height: $0 < h \leq 15$ ft						Panel Orientation: Landscape					
		Roof Angle: $7 < \theta \leq 27$ degrees											
		Exposure Category: C											
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	121	121	121	121	121	116	108	102	99	96	91
	10	119	117	116	115	113	111	109	107	102	99	96	91
	20	101	101	101	101	99	97	95	93	91	90	90	88
	30	86	86	86	86	86	86	85	83	82	81	81	79
	40	75	75	75	75	75	75	75	75	75	74	74	73
	50	68	68	68	68	68	68	68	68	68	68	68	68
	60	63	63	63	63	63	63	63	63	63	63	63	63
	70	58	58	58	58	58	58	58	58	58	58	58	58
	80	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	
Zone 2	0	121	115	110	105	97	89	83	78	73	71	69	65
	10	119	115	110	105	97	89	83	78	73	71	69	65
	20	101	101	101	101	97	89	83	78	73	71	69	65
	30	86	86	86	86	86	86	83	78	73	71	69	65
	40	75	75	75	75	75	75	75	75	73	71	69	65
	50	68	68	68	68	68	68	68	68	68	68	68	65
	60	63	63	63	63	63	63	63	63	63	63	63	63
	70	58	58	58	58	58	58	58	58	58	58	58	58
	80	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	
Zone 3	0	102	92	88	84	78	72	67	63	59	57	56	53
	10	102	92	88	84	78	72	67	63	59	57	56	53
	20	101	92	88	84	78	72	67	63	59	57	56	53
	30	86	86	86	84	78	72	67	63	59	57	56	53
	40	75	75	75	75	75	72	67	63	59	57	56	53
	50	68	68	68	68	68	68	67	63	59	57	56	53
	60	63	63	63	63	63	63	63	63	59	57	56	53
	70	58	58	58	58	58	58	58	58	58	57	56	53
	80	55	55	55	55	55	55	55	55	55	55	55	53
90	52	52	52	52	52	52	52	52	52	52	52	52	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 15$ ft					Panel Orientation: Landscape							
<b>Table 10</b>		Roof Angle: $7 < \theta \leq 27$ degrees					Exposure Category: D							
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	121	121	121	121	121	113	105	98	92	89	87	82	
	10	117	115	114	113	111	108	105	98	92	89	87	82	
	20	101	100	99	98	96	94	92	90	88	87	86	82	
	30	86	86	86	86	85	84	83	81	80	79	78	77	
	40	75	75	75	75	75	75	75	74	73	72	72	71	
	50	68	68	68	68	68	68	68	68	68	68	67	67	66
	60	63	63	63	63	63	63	63	63	63	63	63	63	62
	70	58	58	58	58	58	58	58	58	58	58	58	58	58
	80	55	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	52	
Zone 2	0	115	104	99	95	87	81	75	71	66	64	63	59	
	10	115	104	99	95	87	81	75	71	66	64	63	59	
	20	101	100	99	95	87	81	75	71	66	64	63	59	
	30	86	86	86	86	85	81	75	71	66	64	63	59	
	40	75	75	75	75	75	75	75	71	66	64	63	59	
	50	68	68	68	68	68	68	68	68	66	64	63	59	
	60	63	63	63	63	63	63	63	63	63	63	63	59	
	70	58	58	58	58	58	58	58	58	58	58	58	58	
	80	55	55	55	55	55	55	55	55	55	55	55	55	
90	52	52	52	52	52	52	52	52	52	52	52	52		
Zone 3	0	92	83	80	76	70	65	61	57	53	52	50	48	
	10	92	83	80	76	70	65	61	57	53	52	50	48	
	20	92	83	80	76	70	65	61	57	53	52	50	48	
	30	86	83	80	76	70	65	61	57	53	52	50	48	
	40	75	75	75	75	70	65	61	57	53	52	50	48	
	50	68	68	68	68	68	65	61	57	53	52	50	48	
	60	63	63	63	63	63	63	61	57	53	52	50	48	
	70	58	58	58	58	58	58	58	57	53	52	50	48	
	80	55	55	55	55	55	55	55	55	53	52	50	48	
90	52	52	52	52	52	52	52	52	52	52	50	48		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 15$ ft						Panel Orientation: Landscape					
<b>Table 11</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: C					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	121	119	116	112	106	101	96	91	89	87	83
	10	119	115	113	111	107	103	99	95	91	89	87	83
	20	104	101	99	98	95	92	89	86	84	82	81	79
	30	93	91	89	88	86	84	82	80	78	77	76	74
	40	83	83	82	81	80	78	76	74	73	72	71	69
	50	75	75	75	75	74	73	71	70	69	68	67	66
	60	69	69	69	69	69	69	68	66	65	64	64	63
	70	65	65	65	65	65	65	64	63	62	62	61	60
	80	61	61	61	61	61	61	61	60	59	59	58	58
90	58	58	58	58	58	58	58	58	57	57	56	55	
Zone 2	0	121	121	119	116	112	105	98	92	86	84	82	77
	10	119	115	113	111	107	103	98	92	86	84	82	77
	20	104	101	99	98	95	92	89	86	84	82	81	77
	30	93	91	89	88	86	84	82	80	78	77	76	74
	40	83	83	82	81	80	78	76	74	73	72	71	69
	50	75	75	75	75	74	73	71	70	69	68	67	66
	60	69	69	69	69	69	69	68	66	65	64	64	63
	70	65	65	65	65	65	65	64	63	62	62	61	60
	80	61	61	61	61	61	61	61	60	59	59	58	58
90	58	58	58	58	58	58	58	58	57	57	56	55	
Zone 3	0	121	121	119	116	112	105	98	92	86	84	82	77
	10	119	115	113	111	107	103	98	92	86	84	82	77
	20	104	101	99	98	95	92	89	86	84	82	81	77
	30	93	91	89	88	86	84	82	80	78	77	76	74
	40	83	83	82	81	80	78	76	74	73	72	71	69
	50	75	75	75	75	74	73	71	70	69	68	67	66
	60	69	69	69	69	69	69	68	66	65	64	64	63
	70	65	65	65	65	65	65	64	63	62	62	61	60
	80	61	61	61	61	61	61	61	60	59	59	58	58
90	58	58	58	58	58	58	58	58	57	57	56	55	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"



**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 15$ ft						Panel Orientation: Landscape					
		Roof Angle: $27 < \theta \leq 45$ degrees											
		Exposure Category: D											
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	116	113	111	104	98	93	88	84	82	80	76
	10	115	110	108	106	101	97	93	88	84	82	80	76
	20	101	97	96	94	91	88	85	82	79	78	77	74
	30	91	88	87	86	83	81	79	76	74	73	72	70
	40	83	81	80	79	77	75	74	72	70	69	68	66
	50	75	75	75	74	72	71	69	68	66	65	65	63
	60	69	69	69	69	68	67	66	64	63	62	62	60
	70	65	65	65	65	65	64	63	61	60	60	59	58
	80	61	61	61	61	61	61	60	59	58	57	57	56
	90	58	58	58	58	58	58	58	57	56	55	55	54
Zone 2	0	121	116	113	111	102	95	89	83	78	76	74	70
	10	115	110	108	106	101	95	89	83	78	76	74	70
	20	101	97	96	94	91	88	85	82	78	76	74	70
	30	91	88	87	86	83	81	79	76	74	73	72	70
	40	83	81	80	79	77	75	74	72	70	69	68	66
	50	75	75	75	74	72	71	69	68	66	65	65	63
	60	69	69	69	69	68	67	66	64	63	62	62	60
	70	65	65	65	65	65	64	63	61	60	60	59	58
	80	61	61	61	61	61	61	60	59	58	57	57	56
	90	58	58	58	58	58	58	58	57	56	55	55	54
Zone 3	0	121	116	113	111	102	95	89	83	78	76	74	70
	10	115	110	108	106	101	95	89	83	78	76	74	70
	20	101	97	96	94	91	88	85	82	78	76	74	70
	30	91	88	87	86	83	81	79	76	74	73	72	70
	40	83	81	80	79	77	75	74	72	70	69	68	66
	50	75	75	75	74	72	71	69	68	66	65	65	63
	60	69	69	69	69	68	67	66	64	63	62	62	60
	70	65	65	65	65	65	64	63	61	60	60	59	58
	80	61	61	61	61	61	61	60	59	58	57	57	56
	90	58	58	58	58	58	58	58	57	56	55	55	54

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)													
			100	110	115	120	130	140	150	160	170	175	180	190		
Zone 1		0	116	116	116	116	116	106	99	92	86	83	81	76		
		10	102	102	102	102	102	101	99	92	86	83	81	76		
		20	86	86	86	86	86	86	86	86	86	85	83	81	76	
		30	74	74	74	74	74	74	74	74	74	74	74	74	73	
		40	65	65	65	65	65	65	65	65	65	65	65	65	65	
		50	59	59	59	59	59	59	59	59	59	59	59	59	59	59
		60	54	54	54	54	54	54	54	54	54	54	54	54	54	54
		70	50	50	50	50	50	50	50	50	50	50	50	50	50	50
		80	48	48	48	48	48	48	48	48	48	48	48	48	48	48
		90	44	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 2		0	112	100	95	91	83	77	72	67	63	61	59	56		
		10	102	100	95	91	83	77	72	67	63	61	59	56		
		20	86	86	86	86	83	77	72	67	63	61	59	56		
		30	74	74	74	74	74	74	72	67	63	61	59	56		
		40	65	65	65	65	65	65	65	65	63	61	59	56		
		50	59	59	59	59	59	59	59	59	59	59	59	59	56	
		60	54	54	54	54	54	54	54	54	54	54	54	54	54	
		70	50	50	50	50	50	50	50	50	50	50	50	50	50	
		80	48	48	48	48	48	48	48	48	48	48	48	48	48	
		90	44	44	44	44	44	44	44	44	44	44	44	44	44	
Zone 3		0	87	79	75	72	66	61	57	53	50	48	48	44		
		10	87	79	75	72	66	61	57	53	50	48	48	44		
		20	86	79	75	72	66	61	57	53	50	48	48	44		
		30	74	74	74	72	66	61	57	53	50	48	48	44		
		40	65	65	65	65	65	61	57	53	50	48	48	44		
		50	59	59	59	59	59	59	57	53	50	48	48	44		
		60	54	54	54	54	54	54	54	53	50	48	48	44		
		70	50	50	50	50	50	50	50	50	50	48	48	44		
		80	48	48	48	48	48	48	48	48	48	48	48	48	44	
		90	44	44	44	44	44	44	44	44	44	44	44	44	44	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft						Panel Orientation: Portrait					
<b>Table 14</b>		Roof Angle: $0 < \theta \leq 7$ degrees						Exposure Category: C					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	116	116	110	105	96	88	82	76	72	69	67	64
	10	102	102	101	100	96	88	82	76	72	69	67	64
	20	86	86	86	86	86	86	82	76	72	69	67	64
	30	74	74	74	74	74	74	74	73	72	69	67	64
	40	65	65	65	65	65	65	65	65	65	65	65	64
	50	59	59	59	59	59	59	59	59	59	59	59	59
	60	54	54	54	54	54	54	54	54	54	54	54	54
	70	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48
90	44	44	44	44	44	44	44	44	44	44	44	44	
Zone 2	0	93	83	79	76	70	64	60	56	53	51	50	48
	10	93	83	79	76	70	64	60	56	53	51	50	48
	20	86	83	79	76	70	64	60	56	53	51	50	48
	30	74	74	74	74	70	64	60	56	53	51	50	48
	40	65	65	65	65	65	64	60	56	53	51	50	48
	50	59	59	59	59	59	59	59	56	53	51	50	48
	60	54	54	54	54	54	54	54	54	53	51	50	48
	70	50	50	50	50	50	50	50	50	50	50	50	48
	80	48	48	48	48	48	48	48	48	48	48	48	48
90	44	44	44	44	44	44	44	44	44	44	44	44	
Zone 3	0	73	66	63	60	55	51	48	45	42	41	39	37
	10	73	66	63	60	55	51	48	45	42	41	39	37
	20	73	66	63	60	55	51	48	45	42	41	39	37
	30	73	66	63	60	55	51	48	45	42	41	39	37
	40	65	65	63	60	55	51	48	45	42	41	39	37
	50	59	59	59	59	55	51	48	45	42	41	39	37
	60	54	54	54	54	54	51	48	45	42	41	39	37
	70	50	50	50	50	50	50	48	45	42	41	39	37
	80	48	48	48	48	48	48	48	45	42	41	39	37
90	44	44	44	44	44	44	44	44	42	41	39	37	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft						Panel Orientation: Portrait						
<b>Table 15</b>		Roof Angle: $0 < \theta \leq 7$ degrees						Exposure Category: D						
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	116	105	100	95	87	81	75	70	65	63	62	58	
	10	102	100	100	95	87	81	75	70	65	63	62	58	
	20	86	86	86	86	85	81	75	70	65	63	62	58	
	30	74	74	74	74	74	74	73	70	65	63	62	58	
	40	65	65	65	65	65	65	65	65	65	63	62	58	
	50	59	59	59	59	59	59	59	59	59	59	59	59	58
	60	54	54	54	54	54	54	54	54	54	54	54	54	54
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
90	44	44	44	44	44	44	44	44	44	44	44	44	44	
Zone 2	0	84	76	73	69	64	59	55	51	48	48	45	43	
	10	84	76	73	69	64	59	55	51	48	48	45	43	
	20	84	76	73	69	64	59	55	51	48	48	45	43	
	30	74	74	73	69	64	59	55	51	48	48	45	43	
	40	65	65	65	65	64	59	55	51	48	48	45	43	
	50	59	59	59	59	59	59	55	51	48	48	45	43	
	60	54	54	54	54	54	54	54	51	48	48	45	43	
	70	50	50	50	50	50	50	50	50	48	48	45	43	
	80	48	48	48	48	48	48	48	48	48	48	45	43	
90	44	44	44	44	44	44	44	44	44	44	44	43		
Zone 3	0	67	60	57	55	51	48	44	41	38	37	36	34	
	10	67	60	57	55	51	48	44	41	38	37	36	34	
	20	67	60	57	55	51	48	44	41	38	37	36	34	
	30	67	60	57	55	51	48	44	41	38	37	36	34	
	40	65	60	57	55	51	48	44	41	38	37	36	34	
	50	59	59	57	55	51	48	44	41	38	37	36	34	
	60	54	54	54	54	51	48	44	41	38	37	36	34	
	70	50	50	50	50	50	48	44	41	38	37	36	34	
	80	48	48	48	48	48	48	44	41	38	37	36	34	
90	44	44	44	44	44	44	44	41	38	37	36	34		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 30$ ft						Panel Orientation: Portrait					
		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: B					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	116	116	116	116	113	109	101	94	89	86	83	79
	10	101	99	98	97	95	93	91	89	86	85	83	79
	20	80	80	80	80	80	78	77	76	74	74	73	72
	30	67	67	67	67	67	67	67	67	66	66	65	64
	40	59	59	59	59	59	59	59	59	59	59	59	59
	50	54	54	54	54	54	54	54	54	54	54	54	54
	60	49	49	49	49	49	49	49	49	49	49	49	49
	70	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 2	0	111	100	96	91	84	78	73	68	64	62	60	57
	10	101	99	96	91	84	78	73	68	64	62	60	57
	20	80	80	80	80	80	78	73	68	64	62	60	57
	30	67	67	67	67	67	67	67	67	64	62	60	57
	40	59	59	59	59	59	59	59	59	59	59	59	57
	50	54	54	54	54	54	54	54	54	54	54	54	54
	60	49	49	49	49	49	49	49	49	49	49	49	49
	70	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 3	0	89	80	77	73	68	63	58	55	51	50	48	46
	10	89	80	77	73	68	63	58	55	51	50	48	46
	20	80	80	77	73	68	63	58	55	51	50	48	46
	30	67	67	67	67	67	63	58	55	51	50	48	46
	40	59	59	59	59	59	59	58	55	51	50	48	46
	50	54	54	54	54	54	54	54	54	51	50	48	46
	60	49	49	49	49	49	49	49	49	49	49	48	46
	70	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft						Panel Orientation: Portrait						
<b>Table 17</b>		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: C						
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	116	113	111	107	98	91	85	79	74	72	70	66	
	10	98	95	94	92	90	87	85	79	74	72	70	66	
	20	80	80	79	78	76	75	73	72	70	69	69	66	
	30	67	67	67	67	67	67	65	64	63	63	62	61	
	40	59	59	59	59	59	59	59	59	58	57	57	56	
	50	54	54	54	54	54	54	54	54	54	54	53	53	52
	60	49	49	49	49	49	49	49	49	49	49	49	49	49
	70	46	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 2	0	93	84	80	77	71	65	61	57	54	52	51	48	
	10	93	84	80	77	71	65	61	57	54	52	51	48	
	20	80	80	79	77	71	65	61	57	54	52	51	48	
	30	67	67	67	67	67	65	61	57	54	52	51	48	
	40	59	59	59	59	59	59	59	57	54	52	51	48	
	50	54	54	54	54	54	54	54	54	54	52	51	48	
	60	49	49	49	49	49	49	49	49	49	49	49	48	
	70	46	46	46	46	46	46	46	46	46	46	46	46	
	80	43	43	43	43	43	43	43	43	43	43	43	43	
90	41	41	41	41	41	41	41	41	41	41	41	41		
Zone 3	0	74	67	64	62	57	53	49	46	43	42	41	39	
	10	74	67	64	62	57	53	49	46	43	42	41	39	
	20	74	67	64	62	57	53	49	46	43	42	41	39	
	30	67	67	64	62	57	53	49	46	43	42	41	39	
	40	59	59	59	59	57	53	49	46	43	42	41	39	
	50	54	54	54	54	54	53	49	46	43	42	41	39	
	60	49	49	49	49	49	49	49	46	43	42	41	39	
	70	46	46	46	46	46	46	46	46	43	42	41	39	
	80	43	43	43	43	43	43	43	43	43	42	41	39	
90	41	41	41	41	41	41	41	41	41	41	41	39		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"



**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft						Panel Orientation: Portrait						
<b>Table 18</b>		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: D						
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	113	107	102	98	90	83	78	73	68	66	64	61	
	10	95	93	91	90	87	83	78	73	68	66	64	61	
	20	80	78	77	76	75	73	71	69	68	66	64	61	
	30	67	67	67	67	66	65	64	63	61	61	60	59	
	40	59	59	59	59	59	59	58	58	57	56	56	55	
	50	54	54	54	54	54	54	54	54	53	53	52	52	51
	60	49	49	49	49	49	49	49	49	49	49	49	49	48
	70	46	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 2	0	85	77	74	70	65	60	56	52	49	48	46	44	
	10	85	77	74	70	65	60	56	52	49	48	46	44	
	20	80	77	74	70	65	60	56	52	49	48	46	44	
	30	67	67	67	67	65	60	56	52	49	48	46	44	
	40	59	59	59	59	59	59	56	52	49	48	46	44	
	50	54	54	54	54	54	54	54	52	49	48	46	44	
	60	49	49	49	49	49	49	49	49	49	48	46	44	
	70	46	46	46	46	46	46	46	46	46	46	46	44	
	80	43	43	43	43	43	43	43	43	43	43	43	43	
90	41	41	41	41	41	41	41	41	41	41	41	41		
Zone 3	0	68	62	59	57	52	48	45	42	40	38	37	35	
	10	68	62	59	57	52	48	45	42	40	38	37	35	
	20	68	62	59	57	52	48	45	42	40	38	37	35	
	30	67	62	59	57	52	48	45	42	40	38	37	35	
	40	59	59	59	57	52	48	45	42	40	38	37	35	
	50	54	54	54	54	52	48	45	42	40	38	37	35	
	60	49	49	49	49	49	48	45	42	40	38	37	35	
	70	46	46	46	46	46	46	45	42	40	38	37	35	
	80	43	43	43	43	43	43	43	42	40	38	37	35	
90	41	41	41	41	41	41	41	41	40	38	37	35		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 30$ ft						Panel Orientation: Portrait					
<b>Table 19</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: B					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	112	106	103	100	95	90	85	81	78	76	74	71
	10	97	94	93	91	88	85	82	79	77	75	74	71
	20	84	82	81	80	77	75	73	71	69	68	67	65
	30	74	73	72	72	70	68	67	65	64	63	62	61
	40	65	65	65	65	64	63	62	61	59	59	58	57
	50	59	59	59	59	59	59	58	57	56	55	55	54
	60	55	55	55	55	55	55	54	54	53	52	52	51
	70	51	51	51	51	51	51	51	51	50	50	49	49
	80	48	48	48	48	48	48	48	48	48	48	48	48
90	45	45	45	45	45	45	45	45	45	45	45	45	
Zone 2	0	112	106	103	100	95	90	85	80	75	73	71	67
	10	97	94	93	91	88	85	82	79	75	73	71	67
	20	84	82	81	80	77	75	73	71	69	68	67	65
	30	74	73	72	72	70	68	67	65	64	63	62	61
	40	65	65	65	65	64	63	62	61	59	59	58	57
	50	59	59	59	59	59	59	58	57	56	55	55	54
	60	55	55	55	55	55	55	54	54	53	52	52	51
	70	51	51	51	51	51	51	51	51	50	50	49	49
	80	48	48	48	48	48	48	48	48	48	48	48	48
90	45	45	45	45	45	45	45	45	45	45	45	45	
Zone 3	0	112	106	103	100	95	90	85	80	75	73	71	67
	10	97	94	93	91	88	85	82	79	75	73	71	67
	20	84	82	81	80	77	75	73	71	69	68	67	65
	30	74	73	72	72	70	68	67	65	64	63	62	61
	40	65	65	65	65	64	63	62	61	59	59	58	57
	50	59	59	59	59	59	59	58	57	56	55	55	54
	60	55	55	55	55	55	55	54	54	53	52	52	51
	70	51	51	51	51	51	51	51	51	50	50	49	49
	80	48	48	48	48	48	48	48	48	48	48	48	48
90	45	45	45	45	45	45	45	45	45	45	45	45	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft						Panel Orientation: Portrait					
<b>Table 20</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: C					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	101	95	92	89	84	79	75	71	67	66	64	61
	10	92	88	86	84	81	78	75	71	67	66	64	61
	20	80	77	76	75	73	70	68	66	63	62	61	59
	30	72	70	69	68	66	64	63	61	59	58	57	56
	40	65	64	64	63	61	60	58	57	56	55	54	53
	50	59	59	59	59	57	56	55	54	53	52	51	50
	60	55	55	55	55	54	53	52	51	50	49	49	48
	70	51	51	51	51	51	50	50	49	48	48	48	46
	80	48	48	48	48	48	48	48	48	46	45	45	44
90	45	45	45	45	45	45	45	45	44	44	43	43	
Zone 2	0	101	95	92	89	83	77	72	67	63	61	60	57
	10	92	88	86	84	81	77	72	67	63	61	60	57
	20	80	77	76	75	73	70	68	66	63	61	60	57
	30	72	70	69	68	66	64	63	61	59	58	57	56
	40	65	64	64	63	61	60	58	57	56	55	54	53
	50	59	59	59	59	57	56	55	54	53	52	51	50
	60	55	55	55	55	54	53	52	51	50	49	49	48
	70	51	51	51	51	51	50	50	49	48	48	48	46
	80	48	48	48	48	48	48	48	48	46	45	45	44
90	45	45	45	45	45	45	45	45	44	44	43	43	
Zone 3	0	101	95	92	89	83	77	72	67	63	61	60	57
	10	92	88	86	84	81	77	72	67	63	61	60	57
	20	80	77	76	75	73	70	68	66	63	61	60	57
	30	72	70	69	68	66	64	63	61	59	58	57	56
	40	65	64	64	63	61	60	58	57	56	55	54	53
	50	59	59	59	59	57	56	55	54	53	52	51	50
	60	55	55	55	55	54	53	52	51	50	49	49	48
	70	51	51	51	51	51	50	50	49	48	48	48	46
	80	48	48	48	48	48	48	48	48	46	45	45	44
90	45	45	45	45	45	45	45	45	44	44	43	43	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft						Panel Orientation: Portrait					
<b>Table 21</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: D					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	96	89	86	84	78	74	70	66	63	61	60	57
	10	88	85	83	81	77	74	70	66	63	61	60	57
	20	78	75	74	72	70	67	65	63	60	59	58	56
	30	70	68	67	66	64	62	60	58	57	56	55	53
	40	64	63	62	61	60	58	57	55	53	53	52	51
	50	59	59	58	57	56	55	53	52	51	50	49	48
	60	55	55	55	54	53	52	51	50	48	48	48	46
	70	51	51	51	51	50	49	48	48	46	46	45	44
	80	48	48	48	48	48	48	46	46	45	44	44	43
90	45	45	45	45	45	45	45	44	43	43	42	41	
Zone 2	0	96	89	86	82	76	71	66	62	58	56	55	52
	10	88	85	83	81	76	71	66	62	58	56	55	52
	20	78	75	74	72	70	67	65	62	58	56	55	52
	30	70	68	67	66	64	62	60	58	57	56	55	52
	40	64	63	62	61	60	58	57	55	53	53	52	51
	50	59	59	58	57	56	55	53	52	51	50	49	48
	60	55	55	55	54	53	52	51	50	48	48	48	46
	70	51	51	51	51	50	49	48	48	46	46	45	44
	80	48	48	48	48	48	48	46	46	45	44	44	43
90	45	45	45	45	45	45	45	44	43	43	42	41	
Zone 3	0	96	89	86	82	76	71	66	62	58	56	55	52
	10	88	85	83	81	76	71	66	62	58	56	55	52
	20	78	75	74	72	70	67	65	62	58	56	55	52
	30	70	68	67	66	64	62	60	58	57	56	55	52
	40	64	63	62	61	60	58	57	55	53	53	52	51
	50	59	59	58	57	56	55	53	52	51	50	49	48
	60	55	55	55	54	53	52	51	50	48	48	48	46
	70	51	51	51	51	50	49	48	48	46	46	45	44
	80	48	48	48	48	48	48	46	46	45	44	44	43
90	45	45	45	45	45	45	45	44	43	43	42	41	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)												
			100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1		0	121	121	121	121	121	121	121	116	109	106	102	97	
		10	120	120	120	120	119	118	117	115	109	106	102	97	
		20	101	101	101	101	101	101	101	101	101	101	101	100	97
		30	90	90	90	90	90	90	90	90	90	90	90	90	90
		40	82	82	82	82	82	82	82	82	82	82	82	82	82
		50	74	74	74	74	74	74	74	74	74	74	74	74	74
		60	68	68	68	68	68	68	68	68	68	68	68	68	68
		70	64	64	64	64	64	64	64	64	64	64	64	64	64
		80	60	60	60	60	60	60	60	60	60	60	60	60	60
		90	56	56	56	56	56	56	56	56	56	56	56	56	56
Zone 2		0	121	121	121	116	106	98	91	85	80	77	75	71	
		10	120	120	120	116	106	98	91	85	80	77	75	71	
		20	101	101	101	101	101	98	91	85	80	77	75	71	
		30	90	90	90	90	90	90	90	85	80	77	75	71	
		40	82	82	82	82	82	82	82	82	80	77	75	71	
		50	74	74	74	74	74	74	74	74	74	74	74	74	71
		60	68	68	68	68	68	68	68	68	68	68	68	68	68
		70	64	64	64	64	64	64	64	64	64	64	64	64	64
		80	60	60	60	60	60	60	60	60	60	60	60	60	60
		90	56	56	56	56	56	56	56	56	56	56	56	56	56
Zone 3		0	111	100	95	91	84	77	72	67	63	61	60	56	
		10	111	100	95	91	84	77	72	67	63	61	60	56	
		20	101	100	95	91	84	77	72	67	63	61	60	56	
		30	90	90	90	90	84	77	72	67	63	61	60	56	
		40	82	82	82	82	82	77	72	67	63	61	60	56	
		50	74	74	74	74	74	74	72	67	63	61	60	56	
		60	68	68	68	68	68	68	68	67	63	61	60	56	
		70	64	64	64	64	64	64	64	64	63	61	60	56	
		80	60	60	60	60	60	60	60	60	60	60	60	56	
		90	56	56	56	56	56	56	56	56	56	56	56	56	56

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft						Panel Orientation: Landscape					
<b>Table 23</b>		Roof Angle: $0 < \theta \leq 7$ degrees						Exposure Category: C					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	121	121	121	121	112	104	97	91	88	86	81
	10	120	119	118	118	116	112	104	97	91	88	86	81
	20	101	101	101	101	101	101	100	97	91	88	86	81
	30	90	90	90	90	90	90	90	90	90	88	86	81
	40	82	82	82	82	82	82	82	82	82	82	82	81
	50	74	74	74	74	74	74	74	74	74	74	74	74
	60	68	68	68	68	68	68	68	68	68	68	68	68
	70	64	64	64	64	64	64	64	64	64	64	64	64
	80	60	60	60	60	60	60	60	60	60	60	60	60
90	56	56	56	56	56	56	56	56	56	56	56	56	
Zone 2	0	117	106	101	96	88	82	76	71	67	65	63	59
	10	117	106	101	96	88	82	76	71	67	65	63	59
	20	101	101	101	96	88	82	76	71	67	65	63	59
	30	90	90	90	90	88	82	76	71	67	65	63	59
	40	82	82	82	82	82	82	76	71	67	65	63	59
	50	74	74	74	74	74	74	74	71	67	65	63	59
	60	68	68	68	68	68	68	68	68	67	65	63	59
	70	64	64	64	64	64	64	64	64	64	64	63	59
	80	60	60	60	60	60	60	60	60	60	60	60	59
90	56	56	56	56	56	56	56	56	56	56	56	56	
Zone 3	0	92	84	80	76	70	65	60	57	53	52	50	48
	10	92	84	80	76	70	65	60	57	53	52	50	48
	20	92	84	80	76	70	65	60	57	53	52	50	48
	30	90	84	80	76	70	65	60	57	53	52	50	48
	40	82	82	80	76	70	65	60	57	53	52	50	48
	50	74	74	74	74	70	65	60	57	53	52	50	48
	60	68	68	68	68	68	65	60	57	53	52	50	48
	70	64	64	64	64	64	64	60	57	53	52	50	48
	80	60	60	60	60	60	60	60	57	53	52	50	48
90	56	56	56	56	56	56	56	56	53	52	50	48	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"



**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)												
			100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1		0	121	121	121	121	111	102	95	89	83	81	78	74	
		10	119	118	117	116	111	102	95	89	83	81	78	74	
		20	101	101	101	101	101	100	95	89	83	81	78	74	
		30	90	90	90	90	90	90	90	89	83	81	78	74	
		40	82	82	82	82	82	82	82	82	82	81	78	74	
		50	74	74	74	74	74	74	74	74	74	74	74	74	74
		60	68	68	68	68	68	68	68	68	68	68	68	68	68
		70	64	64	64	64	64	64	64	64	64	64	64	64	64
		80	60	60	60	60	60	60	60	60	60	60	60	60	60
		90	56	56	56	56	56	56	56	56	56	56	56	56	56
Zone 2		0	107	97	92	88	81	75	70	65	61	59	58	55	
		10	107	97	92	88	81	75	70	65	61	59	58	55	
		20	101	97	92	88	81	75	70	65	61	59	58	55	
		30	90	90	90	88	81	75	70	65	61	59	58	55	
		40	82	82	82	82	81	75	70	65	61	59	58	55	
		50	74	74	74	74	74	74	70	65	61	59	58	55	
		60	68	68	68	68	68	68	68	65	61	59	58	55	
		70	64	64	64	64	64	64	64	64	61	59	58	55	
		80	60	60	60	60	60	60	60	60	60	59	58	55	
90	56	56	56	56	56	56	56	56	56	56	56	56	55		
Zone 3		0	85	76	73	70	64	59	55	52	49	48	46	43	
		10	85	76	73	70	64	59	55	52	49	48	46	43	
		20	85	76	73	70	64	59	55	52	49	48	46	43	
		30	85	76	73	70	64	59	55	52	49	48	46	43	
		40	82	76	73	70	64	59	55	52	49	48	46	43	
		50	74	74	73	70	64	59	55	52	49	48	46	43	
		60	68	68	68	68	64	59	55	52	49	48	46	43	
		70	64	64	64	64	64	59	55	52	49	48	46	43	
		80	60	60	60	60	60	59	55	52	49	48	46	43	
90	56	56	56	56	56	56	55	52	49	48	46	43			

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 30$ ft						Panel Orientation: Landscape					
<b>Table 25</b>		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: B					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	121	121	121	121	121	121	120	112	109	106	100
	10	120	119	118	117	115	114	112	110	108	108	106	100
	20	101	101	101	101	101	99	98	96	94	93	93	91
	30	86	86	86	86	86	86	86	85	84	83	83	82
	40	75	75	75	75	75	75	75	75	75	75	75	75
	50	68	68	68	68	68	68	68	68	68	68	68	68
	60	63	63	63	63	63	63	63	63	63	63	63	63
	70	58	58	58	58	58	58	58	58	58	58	58	58
	80	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	
Zone 2	0	121	121	121	116	107	99	92	86	81	79	76	72
	10	120	119	118	116	107	99	92	86	81	79	76	72
	20	101	101	101	101	101	99	92	86	81	79	76	72
	30	86	86	86	86	86	86	86	85	81	79	76	72
	40	75	75	75	75	75	75	75	75	75	75	75	72
	50	68	68	68	68	68	68	68	68	68	68	68	68
	60	63	63	63	63	63	63	63	63	63	63	63	63
	70	58	58	58	58	58	58	58	58	58	58	58	58
	80	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	
Zone 3	0	112	102	97	93	86	79	74	69	65	63	61	58
	10	112	102	97	93	86	79	74	69	65	63	61	58
	20	101	101	97	93	86	79	74	69	65	63	61	58
	30	86	86	86	86	86	79	74	69	65	63	61	58
	40	75	75	75	75	75	75	74	69	65	63	61	58
	50	68	68	68	68	68	68	68	68	65	63	61	58
	60	63	63	63	63	63	63	63	63	63	63	61	58
	70	58	58	58	58	58	58	58	58	58	58	58	58
	80	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft					Panel Orientation: Landscape							
		Roof Angle: $7 < \theta \leq 27$ degrees												
		Exposure Category: C												
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	121	121	121	121	121	116	108	101	94	92	89	84	
	10	117	115	114	113	111	109	107	101	94	92	89	84	
	20	101	101	100	99	97	95	93	91	89	88	87	84	
	30	86	86	86	86	86	85	83	82	80	79	79	77	
	40	75	75	75	75	75	75	75	75	74	73	72	71	
	50	68	68	68	68	68	68	68	68	68	68	68	67	66
	60	63	63	63	63	63	63	63	63	63	63	63	63	62
	70	58	58	58	58	58	58	58	58	58	58	58	58	58
	80	55	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	52	
Zone 2	0	118	107	102	97	90	83	77	72	68	66	64	61	
	10	117	107	102	97	90	83	77	72	68	66	64	61	
	20	101	101	100	97	90	83	77	72	68	66	64	61	
	30	86	86	86	86	86	83	77	72	68	66	64	61	
	40	75	75	75	75	75	75	75	72	68	66	64	61	
	50	68	68	68	68	68	68	68	68	68	66	64	61	
	60	63	63	63	63	63	63	63	63	63	63	63	61	
	70	58	58	58	58	58	58	58	58	58	58	58	58	
	80	55	55	55	55	55	55	55	55	55	55	55	55	
90	52	52	52	52	52	52	52	52	52	52	52	52		
Zone 3	0	94	86	82	78	72	67	62	58	55	53	52	49	
	10	94	86	82	78	72	67	62	58	55	53	52	49	
	20	94	86	82	78	72	67	62	58	55	53	52	49	
	30	86	86	82	78	72	67	62	58	55	53	52	49	
	40	75	75	75	75	72	67	62	58	55	53	52	49	
	50	68	68	68	68	68	67	62	58	55	53	52	49	
	60	63	63	63	63	63	63	62	58	55	53	52	49	
	70	58	58	58	58	58	58	58	58	55	53	52	49	
	80	55	55	55	55	55	55	55	55	55	53	52	49	
90	52	52	52	52	52	52	52	52	52	52	52	49		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft					Panel Orientation: Landscape							
<b>Table 27</b>		Roof Angle: $7 < \theta \leq 27$ degrees					Exposure Category: D							
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	121	121	121	121	114	106	98	92	87	84	82	77	
	10	116	113	112	111	109	106	98	92	87	84	82	77	
	20	101	99	98	97	95	93	90	88	86	84	82	77	
	30	86	86	86	86	84	83	81	80	78	77	76	75	
	40	75	75	75	75	75	75	74	73	72	71	71	69	
	50	68	68	68	68	68	68	68	68	67	66	66	65	
	60	63	63	63	63	63	63	63	63	63	62	62	61	
	70	58	58	58	58	58	58	58	58	58	58	58	58	
	80	55	55	55	55	55	55	55	55	55	55	55	55	
90	52	52	52	52	52	52	52	52	52	52	52	52		
Zone 2	0	108	98	93	89	82	76	71	66	63	61	59	56	
	10	108	98	93	89	82	76	71	66	63	61	59	56	
	20	101	98	93	89	82	76	71	66	63	61	59	56	
	30	86	86	86	86	82	76	71	66	63	61	59	56	
	40	75	75	75	75	75	75	71	66	63	61	59	56	
	50	68	68	68	68	68	68	68	66	63	61	59	56	
	60	63	63	63	63	63	63	63	63	63	61	59	56	
	70	58	58	58	58	58	58	58	58	58	58	58	56	
	80	55	55	55	55	55	55	55	55	55	55	55	55	
90	52	52	52	52	52	52	52	52	52	52	52	52		
Zone 3	0	87	79	75	72	66	61	57	54	50	49	48	45	
	10	87	79	75	72	66	61	57	54	50	49	48	45	
	20	87	79	75	72	66	61	57	54	50	49	48	45	
	30	86	79	75	72	66	61	57	54	50	49	48	45	
	40	75	75	75	72	66	61	57	54	50	49	48	45	
	50	68	68	68	68	66	61	57	54	50	49	48	45	
	60	63	63	63	63	63	61	57	54	50	49	48	45	
	70	58	58	58	58	58	58	57	54	50	49	48	45	
	80	55	55	55	55	55	55	55	54	50	49	48	45	
90	52	52	52	52	52	52	52	52	50	49	48	45		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 30$ ft						Panel Orientation: Landscape					
		Roof Angle: $27 < \theta \leq 45$ degrees											
		Exposure Category: B											
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	121	121	121	117	113	108	103	98	96	94	90
	10	121	119	118	116	112	108	104	101	97	96	94	90
	20	106	104	102	101	98	96	93	91	88	87	86	83
	30	94	93	92	91	89	87	85	83	81	80	79	77
	40	83	83	83	83	82	80	79	77	75	75	74	72
	50	75	75	75	75	75	75	73	72	71	70	70	68
	60	69	69	69	69	69	69	69	68	67	66	66	65
	70	65	65	65	65	65	65	65	65	64	63	63	62
	80	61	61	61	61	61	61	61	61	61	60	60	59
90	58	58	58	58	58	58	58	58	58	58	58	57	
Zone 2	0	121	121	121	121	117	113	108	101	95	92	90	85
	10	121	119	118	116	112	108	104	101	95	92	90	85
	20	106	104	102	101	98	96	93	91	88	87	86	83
	30	94	93	92	91	89	87	85	83	81	80	79	77
	40	83	83	83	83	82	80	79	77	75	75	74	72
	50	75	75	75	75	75	75	73	72	71	70	70	68
	60	69	69	69	69	69	69	69	68	67	66	66	65
	70	65	65	65	65	65	65	65	65	64	63	63	62
	80	61	61	61	61	61	61	61	61	61	60	60	59
90	58	58	58	58	58	58	58	58	58	58	58	57	
Zone 3	0	121	121	121	121	117	113	108	101	95	92	90	85
	10	121	119	118	116	112	108	104	101	95	92	90	85
	20	106	104	102	101	98	96	93	91	88	87	86	83
	30	94	93	92	91	89	87	85	83	81	80	79	77
	40	83	83	83	83	82	80	79	77	75	75	74	72
	50	75	75	75	75	75	75	73	72	71	70	70	68
	60	69	69	69	69	69	69	69	68	67	66	66	65
	70	65	65	65	65	65	65	65	65	64	63	63	62
	80	61	61	61	61	61	61	61	61	61	60	60	59
90	58	58	58	58	58	58	58	58	58	58	58	57	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft						Panel Orientation: Landscape					
<b>Table 29</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: C					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	117	115	112	106	100	95	90	86	84	82	78
	10	116	112	109	107	103	99	95	90	86	84	82	78
	20	101	98	97	95	92	89	86	83	81	79	78	75
	30	91	89	88	86	84	82	80	77	75	74	73	71
	40	83	82	81	80	78	76	74	72	71	70	69	67
	50	75	75	75	74	73	71	70	68	67	66	65	64
	60	69	69	69	69	69	67	66	65	64	63	62	61
	70	65	65	65	65	65	64	63	62	61	60	60	58
	80	61	61	61	61	61	61	60	59	58	58	57	56
90	58	58	58	58	58	58	58	57	56	56	55	54	
Zone 2	0	121	117	115	112	105	98	91	85	80	78	76	72
	10	116	112	109	107	103	98	91	85	80	78	76	72
	20	101	98	97	95	92	89	86	83	80	78	76	72
	30	91	89	88	86	84	82	80	77	75	74	73	71
	40	83	82	81	80	78	76	74	72	71	70	69	67
	50	75	75	75	74	73	71	70	68	67	66	65	64
	60	69	69	69	69	69	67	66	65	64	63	62	61
	70	65	65	65	65	65	64	63	62	61	60	60	58
	80	61	61	61	61	61	61	60	59	58	58	57	56
90	58	58	58	58	58	58	58	57	56	56	55	54	
Zone 3	0	121	117	115	112	105	98	91	85	80	78	76	72
	10	116	112	109	107	103	98	91	85	80	78	76	72
	20	101	98	97	95	92	89	86	83	80	78	76	72
	30	91	89	88	86	84	82	80	77	75	74	73	71
	40	83	82	81	80	78	76	74	72	71	70	69	67
	50	75	75	75	74	73	71	70	68	67	66	65	64
	60	69	69	69	69	69	67	66	65	64	63	62	61
	70	65	65	65	65	65	64	63	62	61	60	60	58
	80	61	61	61	61	61	61	60	59	58	58	57	56
90	58	58	58	58	58	58	58	57	56	56	55	54	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"



**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $15 < h \leq 30$ ft						Panel Orientation: Landscape					
<b>Table 30</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: D					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	118	112	110	106	100	94	89	84	80	78	76	72
	10	112	107	105	103	98	94	89	84	80	78	76	72
	20	99	95	94	92	89	85	82	79	77	75	74	71
	30	89	87	85	84	81	79	77	74	72	71	70	68
	40	82	80	79	78	76	74	72	70	68	67	66	64
	50	75	74	74	73	71	70	68	66	65	64	63	61
	60	69	69	69	69	67	66	64	63	62	61	60	59
	70	65	65	65	65	64	63	62	60	59	58	58	57
	80	61	61	61	61	61	60	59	58	57	56	56	54
90	58	58	58	58	58	58	57	56	55	54	54	53	
Zone 2	0	118	112	109	105	97	90	84	78	74	72	70	66
	10	112	107	105	103	97	90	84	78	74	72	70	66
	20	99	95	94	92	89	85	82	78	74	72	70	66
	30	89	87	85	84	81	79	77	74	72	71	70	66
	40	82	80	79	78	76	74	72	70	68	67	66	64
	50	75	74	74	73	71	70	68	66	65	64	63	61
	60	69	69	69	69	67	66	64	63	62	61	60	59
	70	65	65	65	65	64	63	62	60	59	58	58	57
	80	61	61	61	61	61	60	59	58	57	56	56	54
90	58	58	58	58	58	58	57	56	55	54	54	53	
Zone 3	0	118	112	109	105	97	90	84	78	74	72	70	66
	10	112	107	105	103	97	90	84	78	74	72	70	66
	20	99	95	94	92	89	85	82	78	74	72	70	66
	30	89	87	85	84	81	79	77	74	72	71	70	66
	40	82	80	79	78	76	74	72	70	68	67	66	64
	50	75	74	74	73	71	70	68	66	65	64	63	61
	60	69	69	69	69	67	66	64	63	62	61	60	59
	70	65	65	65	65	64	63	62	60	59	58	58	57
	80	61	61	61	61	61	60	59	58	57	56	56	54
90	58	58	58	58	58	58	57	56	55	54	54	53	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft						Panel Orientation: Portrait					
<b>Table 31</b>		Roof Angle: $0 < \theta \leq 7$ degrees						Exposure Category: B					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	116	116	116	114	104	95	89	82	77	75	73	69
	10	102	102	102	101	100	95	89	82	77	75	73	69
	20	86	86	86	86	86	86	86	82	77	75	73	69
	30	74	74	74	74	74	74	74	74	74	73	73	69
	40	65	65	65	65	65	65	65	65	65	65	65	65
	50	59	59	59	59	59	59	59	59	59	59	59	59
	60	54	54	54	54	54	54	54	54	54	54	54	54
	70	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48
90	44	44	44	44	44	44	44	44	44	44	44	44	
Zone 2	0	100	90	86	82	75	69	65	60	57	55	53	50
	10	100	90	86	82	75	69	65	60	57	55	53	50
	20	86	86	86	82	75	69	65	60	57	55	53	50
	30	74	74	74	74	74	69	65	60	57	55	53	50
	40	65	65	65	65	65	65	65	60	57	55	53	50
	50	59	59	59	59	59	59	59	59	57	55	53	50
	60	54	54	54	54	54	54	54	54	54	54	53	50
	70	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48
90	44	44	44	44	44	44	44	44	44	44	44	44	
Zone 3	0	79	71	68	65	59	55	51	48	45	44	42	40
	10	79	71	68	65	59	55	51	48	45	44	42	40
	20	79	71	68	65	59	55	51	48	45	44	42	40
	30	74	71	68	65	59	55	51	48	45	44	42	40
	40	65	65	65	65	59	55	51	48	45	44	42	40
	50	59	59	59	59	59	55	51	48	45	44	42	40
	60	54	54	54	54	54	54	51	48	45	44	42	40
	70	50	50	50	50	50	50	50	48	45	44	42	40
	80	48	48	48	48	48	48	48	48	45	44	42	40
90	44	44	44	44	44	44	44	44	44	44	42	40	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft						Panel Orientation: Portrait						
<b>Table 32</b>		Roof Angle: $0 < \theta \leq 7$ degrees						Exposure Category: C						
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	116	107	101	97	89	82	76	71	66	64	62	59	
	10	102	101	100	97	89	82	76	71	66	64	62	59	
	20	86	86	86	86	86	82	76	71	66	64	62	59	
	30	74	74	74	74	74	74	73	71	66	64	62	59	
	40	65	65	65	65	65	65	65	65	65	64	62	59	
	50	59	59	59	59	59	59	59	59	59	59	59	59	58
	60	54	54	54	54	54	54	54	54	54	54	54	54	54
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
90	44	44	44	44	44	44	44	44	44	44	44	44	44	
Zone 2	0	86	77	74	70	65	60	56	52	49	48	46	43	
	10	86	77	74	70	65	60	56	52	49	48	46	43	
	20	86	77	74	70	65	60	56	52	49	48	46	43	
	30	74	74	74	70	65	60	56	52	49	48	46	43	
	40	65	65	65	65	65	60	56	52	49	48	46	43	
	50	59	59	59	59	59	59	56	52	49	48	46	43	
	60	54	54	54	54	54	54	54	52	49	48	46	43	
	70	50	50	50	50	50	50	50	50	49	48	46	43	
	80	48	48	48	48	48	48	48	48	48	48	48	46	43
90	44	44	44	44	44	44	44	44	44	44	44	44	43	
Zone 3	0	68	61	58	56	51	48	44	41	39	38	37	35	
	10	68	61	58	56	51	48	44	41	39	38	37	35	
	20	68	61	58	56	51	48	44	41	39	38	37	35	
	30	68	61	58	56	51	48	44	41	39	38	37	35	
	40	65	61	58	56	51	48	44	41	39	38	37	35	
	50	59	59	58	56	51	48	44	41	39	38	37	35	
	60	54	54	54	54	51	48	44	41	39	38	37	35	
	70	50	50	50	50	50	48	44	41	39	38	37	35	
	80	48	48	48	48	48	48	44	41	39	38	37	35	
90	44	44	44	44	44	44	44	44	41	39	38	37	35	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)												
			100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1		0	109	98	93	89	82	75	70	65	61	60	58	55	
		10	101	98	93	89	82	75	70	65	61	60	58	55	
		20	86	86	86	86	82	75	70	65	61	60	58	55	
		30	74	74	74	74	74	73	70	65	61	60	58	55	
		40	65	65	65	65	65	65	65	65	61	60	58	55	
		50	59	59	59	59	59	59	59	59	59	59	59	58	55
		60	54	54	54	54	54	54	54	54	54	54	54	54	54
		70	50	50	50	50	50	50	50	50	50	50	50	50	50
		80	48	48	48	48	48	48	48	48	48	48	48	48	48
90	44	44	44	44	44	44	44	44	44	44	44	44	44		
Zone 2		0	79	71	68	65	60	55	51	48	45	44	43	40	
		10	79	71	68	65	60	55	51	48	45	44	43	40	
		20	79	71	68	65	60	55	51	48	45	44	43	40	
		30	74	71	68	65	60	55	51	48	45	44	43	40	
		40	65	65	65	65	60	55	51	48	45	44	43	40	
		50	59	59	59	59	59	55	51	48	45	44	43	40	
		60	54	54	54	54	54	54	51	48	45	44	43	40	
		70	50	50	50	50	50	50	50	48	45	44	43	40	
		80	48	48	48	48	48	48	48	48	45	44	43	40	
90	44	44	44	44	44	44	44	44	44	44	43	40			
Zone 3		0	62	56	54	52	48	44	41	38	36	35	34	32	
		10	62	56	54	52	48	44	41	38	36	35	34	32	
		20	62	56	54	52	48	44	41	38	36	35	34	32	
		30	62	56	54	52	48	44	41	38	36	35	34	32	
		40	62	56	54	52	48	44	41	38	36	35	34	32	
		50	59	56	54	52	48	44	41	38	36	35	34	32	
		60	54	54	54	52	48	44	41	38	36	35	34	32	
		70	50	50	50	50	48	44	41	38	36	35	34	32	
		80	48	48	48	48	48	44	41	38	36	35	34	32	
90	44	44	44	44	44	44	44	41	38	36	35	34	32		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft						Panel Orientation: Portrait						
<b>Table 34</b>		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: B						
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	116	116	114	112	106	98	91	85	80	78	75	71	
	10	99	97	96	95	92	90	87	85	80	78	75	71	
	20	80	80	80	79	78	76	75	73	72	71	71	69	
	30	67	67	67	67	67	67	67	67	66	64	64	63	62
	40	59	59	59	59	59	59	59	59	59	58	58	57	
	50	54	54	54	54	54	54	54	54	54	54	54	54	53
	60	49	49	49	49	49	49	49	49	49	49	49	49	49
	70	46	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 2	0	100	90	86	83	76	70	66	61	58	56	54	51	
	10	99	90	86	83	76	70	66	61	58	56	54	51	
	20	80	80	80	79	76	70	66	61	58	56	54	51	
	30	67	67	67	67	67	67	66	61	58	56	54	51	
	40	59	59	59	59	59	59	59	59	58	56	54	51	
	50	54	54	54	54	54	54	54	54	54	54	54	54	51
	60	49	49	49	49	49	49	49	49	49	49	49	49	49
	70	46	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 3	0	80	73	69	66	61	57	53	49	46	45	44	41	
	10	80	73	69	66	61	57	53	49	46	45	44	41	
	20	80	73	69	66	61	57	53	49	46	45	44	41	
	30	67	67	67	66	61	57	53	49	46	45	44	41	
	40	59	59	59	59	59	57	53	49	46	45	44	41	
	50	54	54	54	54	54	54	53	49	46	45	44	41	
	60	49	49	49	49	49	49	49	49	46	45	44	41	
	70	46	46	46	46	46	46	46	46	46	45	44	41	
	80	43	43	43	43	43	43	43	43	43	43	43	41	
90	41	41	41	41	41	41	41	41	41	41	41	41		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft						Panel Orientation: Portrait						
<b>Table 35</b>		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: C						
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	114	109	104	99	91	84	79	74	69	67	65	62	
	10	96	93	92	90	88	84	79	74	69	67	65	62	
	20	80	78	77	77	75	73	72	70	68	67	65	62	
	30	67	67	67	67	67	65	64	63	62	61	60	59	
	40	59	59	59	59	59	59	59	58	57	56	56	55	
	50	54	54	54	54	54	54	54	54	54	53	52	52	51
	60	49	49	49	49	49	49	49	49	49	49	49	49	48
	70	46	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 2	0	86	78	75	71	66	61	57	53	50	48	48	45	
	10	86	78	75	71	66	61	57	53	50	48	48	45	
	20	80	78	75	71	66	61	57	53	50	48	48	45	
	30	67	67	67	67	66	61	57	53	50	48	48	45	
	40	59	59	59	59	59	59	57	53	50	48	48	45	
	50	54	54	54	54	54	54	54	54	53	50	48	48	45
	60	49	49	49	49	49	49	49	49	49	48	48	45	
	70	46	46	46	46	46	46	46	46	46	46	46	46	45
	80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 3	0	69	63	60	57	53	49	46	43	40	39	38	36	
	10	69	63	60	57	53	49	46	43	40	39	38	36	
	20	69	63	60	57	53	49	46	43	40	39	38	36	
	30	67	63	60	57	53	49	46	43	40	39	38	36	
	40	59	59	59	57	53	49	46	43	40	39	38	36	
	50	54	54	54	54	53	49	46	43	40	39	38	36	
	60	49	49	49	49	49	49	46	43	40	39	38	36	
	70	46	46	46	46	46	46	46	43	40	39	38	36	
	80	43	43	43	43	43	43	43	43	40	39	38	36	
90	41	41	41	41	41	41	41	41	40	39	38	36		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"



**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft						Panel Orientation: Portrait						
		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: D						
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	110	101	96	92	85	78	73	68	64	62	60	57	
	10	94	91	89	88	85	78	73	68	64	62	60	57	
	20	79	77	76	75	73	71	70	68	64	62	60	57	
	30	67	67	67	67	65	64	63	61	60	59	59	57	
	40	59	59	59	59	59	59	58	57	55	55	54	53	
	50	54	54	54	54	54	54	53	53	52	51	51	50	
	60	49	49	49	49	49	49	49	49	49	48	48	48	
	70	46	46	46	46	46	46	46	46	46	46	46	46	45
	80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 2	0	80	72	69	66	61	56	53	49	46	45	44	41	
	10	80	72	69	66	61	56	53	49	46	45	44	41	
	20	79	72	69	66	61	56	53	49	46	45	44	41	
	30	67	67	67	66	61	56	53	49	46	45	44	41	
	40	59	59	59	59	59	56	53	49	46	45	44	41	
	50	54	54	54	54	54	54	53	49	46	45	44	41	
	60	49	49	49	49	49	49	49	49	46	45	44	41	
	70	46	46	46	46	46	46	46	46	46	45	44	41	
	80	43	43	43	43	43	43	43	43	43	43	43	41	
90	41	41	41	41	41	41	41	41	41	41	41	41		
Zone 3	0	64	58	55	53	49	45	42	40	37	36	35	33	
	10	64	58	55	53	49	45	42	40	37	36	35	33	
	20	64	58	55	53	49	45	42	40	37	36	35	33	
	30	64	58	55	53	49	45	42	40	37	36	35	33	
	40	59	58	55	53	49	45	42	40	37	36	35	33	
	50	54	54	54	53	49	45	42	40	37	36	35	33	
	60	49	49	49	49	49	45	42	40	37	36	35	33	
	70	46	46	46	46	46	45	42	40	37	36	35	33	
	80	43	43	43	43	43	43	42	40	37	36	35	33	
90	41	41	41	41	41	41	41	41	40	37	36	35	33	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft						Panel Orientation: Portrait					
<b>Table 37</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: B					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	106	100	97	94	88	84	79	75	72	70	68	65
	10	94	91	89	87	84	81	78	75	72	70	68	65
	20	82	79	78	77	75	72	70	68	66	65	64	62
	30	73	71	70	70	68	66	64	63	61	60	60	58
	40	65	65	65	64	63	61	60	59	57	57	56	55
	50	59	59	59	59	58	57	56	55	54	53	53	52
	60	55	55	55	55	55	54	53	52	51	51	50	49
	70	51	51	51	51	51	51	51	50	49	48	48	48
	80	48	48	48	48	48	48	48	48	48	46	46	45
90	45	45	45	45	45	45	45	45	45	45	44	44	
Zone 2	0	106	100	97	94	88	83	77	72	68	66	64	61
	10	94	91	89	87	84	81	77	72	68	66	64	61
	20	82	79	78	77	75	72	70	68	66	65	64	61
	30	73	71	70	70	68	66	64	63	61	60	60	58
	40	65	65	65	64	63	61	60	59	57	57	56	55
	50	59	59	59	59	58	57	56	55	54	53	53	52
	60	55	55	55	55	55	54	53	52	51	51	50	49
	70	51	51	51	51	51	51	51	50	49	48	48	48
	80	48	48	48	48	48	48	48	48	48	46	46	45
90	45	45	45	45	45	45	45	45	45	45	44	44	
Zone 3	0	106	100	97	94	88	83	77	72	68	66	64	61
	10	94	91	89	87	84	81	77	72	68	66	64	61
	20	82	79	78	77	75	72	70	68	66	65	64	61
	30	73	71	70	70	68	66	64	63	61	60	60	58
	40	65	65	65	64	63	61	60	59	57	57	56	55
	50	59	59	59	59	58	57	56	55	54	53	53	52
	60	55	55	55	55	55	54	53	52	51	51	50	49
	70	51	51	51	51	51	51	51	50	49	48	48	48
	80	48	48	48	48	48	48	48	48	48	46	46	45
90	45	45	45	45	45	45	45	45	45	45	44	44	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft						Panel Orientation: Portrait					
<b>Table 38</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: C					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	96	90	87	84	79	75	71	67	63	62	60	57
	10	89	85	83	81	78	75	71	67	63	62	60	57
	20	78	75	74	73	70	68	65	63	61	60	59	57
	30	70	68	67	66	65	63	61	59	57	56	55	54
	40	65	63	62	62	60	58	57	55	54	53	52	51
	50	59	59	58	58	56	55	54	52	51	50	50	49
	60	55	55	55	54	53	52	51	50	49	48	48	48
	70	51	51	51	51	51	50	49	48	48	46	46	45
	80	48	48	48	48	48	48	48	46	45	44	44	43
90	45	45	45	45	45	45	45	44	43	43	42	42	
Zone 2	0	96	90	87	83	77	72	67	63	59	57	56	53
	10	89	85	83	81	77	72	67	63	59	57	56	53
	20	78	75	74	73	70	68	65	63	59	57	56	53
	30	70	68	67	66	65	63	61	59	57	56	55	53
	40	65	63	62	62	60	58	57	55	54	53	52	51
	50	59	59	58	58	56	55	54	52	51	50	50	49
	60	55	55	55	54	53	52	51	50	49	48	48	48
	70	51	51	51	51	51	50	49	48	48	46	46	45
	80	48	48	48	48	48	48	48	46	45	44	44	43
90	45	45	45	45	45	45	45	44	43	43	42	42	
Zone 3	0	96	90	87	83	77	72	67	63	59	57	56	53
	10	89	85	83	81	77	72	67	63	59	57	56	53
	20	78	75	74	73	70	68	65	63	59	57	56	53
	30	70	68	67	66	65	63	61	59	57	56	55	53
	40	65	63	62	62	60	58	57	55	54	53	52	51
	50	59	59	58	58	56	55	54	52	51	50	50	49
	60	55	55	55	54	53	52	51	50	49	48	48	48
	70	51	51	51	51	51	50	49	48	48	46	46	45
	80	48	48	48	48	48	48	48	46	45	44	44	43
90	45	45	45	45	45	45	45	44	43	43	42	42	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft						Panel Orientation: Portrait					
<b>Table 39</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: D					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	91	85	82	80	75	70	66	63	59	58	56	54
	10	86	82	80	78	75	70	66	63	59	58	56	54
	20	76	73	72	70	68	65	63	60	58	57	56	54
	30	69	67	66	65	63	61	59	57	55	54	53	51
	40	63	62	61	60	58	57	55	53	52	51	50	49
	50	59	58	57	56	55	54	52	51	49	49	48	48
	60	55	54	54	53	52	51	50	48	48	48	46	45
	70	51	51	51	51	50	49	48	46	45	45	44	43
	80	48	48	48	48	48	46	46	45	44	43	43	42
90	45	45	45	45	45	45	44	43	42	42	41	41	
Zone 2	0	91	85	81	78	72	66	62	58	55	53	52	49
	10	86	82	80	78	72	66	62	58	55	53	52	49
	20	76	73	72	70	68	65	62	58	55	53	52	49
	30	69	67	66	65	63	61	59	57	55	53	52	49
	40	63	62	61	60	58	57	55	53	52	51	50	49
	50	59	58	57	56	55	54	52	51	49	49	48	48
	60	55	54	54	53	52	51	50	48	48	48	46	45
	70	51	51	51	51	50	49	48	46	45	45	44	43
	80	48	48	48	48	48	46	46	45	44	43	43	42
90	45	45	45	45	45	45	44	43	42	42	41	41	
Zone 3	0	91	85	81	78	72	66	62	58	55	53	52	49
	10	86	82	80	78	72	66	62	58	55	53	52	49
	20	76	73	72	70	68	65	62	58	55	53	52	49
	30	69	67	66	65	63	61	59	57	55	53	52	49
	40	63	62	61	60	58	57	55	53	52	51	50	49
	50	59	58	57	56	55	54	52	51	49	49	48	48
	60	55	54	54	53	52	51	50	48	48	48	46	45
	70	51	51	51	51	50	49	48	46	45	45	44	43
	80	48	48	48	48	48	46	46	45	44	43	43	42
90	45	45	45	45	45	45	44	43	42	42	41	41	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft						Panel Orientation: Landscape					
<b>Table 40</b>		Roof Angle: $0 < \theta \leq 7$ degrees						Exposure Category: B					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	121	121	121	121	121	112	105	98	95	92	87
	10	120	120	119	119	117	116	112	105	98	95	92	87
	20	101	101	101	101	101	101	101	101	98	95	92	87
	30	90	90	90	90	90	90	90	90	90	90	90	87
	40	82	82	82	82	82	82	82	82	82	82	82	82
	50	74	74	74	74	74	74	74	74	74	74	74	74
	60	68	68	68	68	68	68	68	68	68	68	68	68
	70	64	64	64	64	64	64	64	64	64	64	64	64
	80	60	60	60	60	60	60	60	60	60	60	60	60
90	56	56	56	56	56	56	56	56	56	56	56	56	
Zone 2	0	121	114	109	104	95	88	82	77	72	70	68	64
	10	120	114	109	104	95	88	82	77	72	70	68	64
	20	101	101	101	101	95	88	82	77	72	70	68	64
	30	90	90	90	90	90	88	82	77	72	70	68	64
	40	82	82	82	82	82	82	82	77	72	70	68	64
	50	74	74	74	74	74	74	74	74	72	70	68	64
	60	68	68	68	68	68	68	68	68	68	68	68	64
	70	64	64	64	64	64	64	64	64	64	64	64	64
	80	60	60	60	60	60	60	60	60	60	60	60	60
90	56	56	56	56	56	56	56	56	56	56	56	56	
Zone 3	0	100	90	86	82	76	70	65	61	57	55	54	51
	10	100	90	86	82	76	70	65	61	57	55	54	51
	20	100	90	86	82	76	70	65	61	57	55	54	51
	30	90	90	86	82	76	70	65	61	57	55	54	51
	40	82	82	82	82	76	70	65	61	57	55	54	51
	50	74	74	74	74	74	70	65	61	57	55	54	51
	60	68	68	68	68	68	68	65	61	57	55	54	51
	70	64	64	64	64	64	64	64	61	57	55	54	51
	80	60	60	60	60	60	60	60	60	57	55	54	51
90	56	56	56	56	56	56	56	56	56	55	54	51	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft					Panel Orientation: Landscape							
<b>Table 41</b>		Roof Angle: $0 < \theta \leq 7$ degrees					Exposure Category: C							
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	121	121	121	121	112	104	96	90	84	82	79	75	
	10	119	118	117	116	112	104	96	90	84	82	79	75	
	20	101	101	101	101	101	100	96	90	84	82	79	75	
	30	90	90	90	90	90	90	90	90	84	82	79	75	
	40	82	82	82	82	82	82	82	82	82	82	79	75	
	50	74	74	74	74	74	74	74	74	74	74	74	74	74
	60	68	68	68	68	68	68	68	68	68	68	68	68	68
	70	64	64	64	64	64	64	64	64	64	64	64	64	64
	80	60	60	60	60	60	60	60	60	60	60	60	60	60
90	56	56	56	56	56	56	56	56	56	56	56	56	56	
Zone 2	0	109	98	93	89	82	76	71	66	62	60	58	55	
	10	109	98	93	89	82	76	71	66	62	60	58	55	
	20	101	98	93	89	82	76	71	66	62	60	58	55	
	30	90	90	90	89	82	76	71	66	62	60	58	55	
	40	82	82	82	82	82	76	71	66	62	60	58	55	
	50	74	74	74	74	74	74	71	66	62	60	58	55	
	60	68	68	68	68	68	68	68	66	62	60	58	55	
	70	64	64	64	64	64	64	64	64	62	60	58	55	
	80	60	60	60	60	60	60	60	60	60	60	58	55	
90	56	56	56	56	56	56	56	56	56	56	56	55		
Zone 3	0	86	78	74	71	65	60	56	53	49	48	48	44	
	10	86	78	74	71	65	60	56	53	49	48	48	44	
	20	86	78	74	71	65	60	56	53	49	48	48	44	
	30	86	78	74	71	65	60	56	53	49	48	48	44	
	40	82	78	74	71	65	60	56	53	49	48	48	44	
	50	74	74	74	71	65	60	56	53	49	48	48	44	
	60	68	68	68	68	65	60	56	53	49	48	48	44	
	70	64	64	64	64	64	60	56	53	49	48	48	44	
	80	60	60	60	60	60	60	56	53	49	48	48	44	
90	56	56	56	56	56	56	56	53	49	48	48	44		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"



**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)											
			100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	121	119	113	104	96	89	83	78	76	73	69	
	10	118	117	116	113	104	96	89	83	78	76	73	69	
	20	101	101	101	101	100	96	89	83	78	76	73	69	
	30	90	90	90	90	90	90	89	83	78	76	73	69	
	40	82	82	82	82	82	82	82	82	78	76	73	69	
	50	74	74	74	74	74	74	74	74	74	74	74	73	69
	60	68	68	68	68	68	68	68	68	68	68	68	68	68
	70	64	64	64	64	64	64	64	64	64	64	64	64	64
	80	60	60	60	60	60	60	60	60	60	60	60	60	60
90	56	56	56	56	56	56	56	56	56	56	56	56	56	
Zone 2	0	100	91	86	83	76	70	65	61	57	56	54	51	
	10	100	91	86	83	76	70	65	61	57	56	54	51	
	20	100	91	86	83	76	70	65	61	57	56	54	51	
	30	90	90	86	83	76	70	65	61	57	56	54	51	
	40	82	82	82	82	76	70	65	61	57	56	54	51	
	50	74	74	74	74	74	70	65	61	57	56	54	51	
	60	68	68	68	68	68	68	65	61	57	56	54	51	
	70	64	64	64	64	64	64	64	61	57	56	54	51	
	80	60	60	60	60	60	60	60	60	57	56	54	51	
90	56	56	56	56	56	56	56	56	56	56	54	51		
Zone 3	0	79	72	69	66	60	56	52	49	46	44	43	41	
	10	79	72	69	66	60	56	52	49	46	44	43	41	
	20	79	72	69	66	60	56	52	49	46	44	43	41	
	30	79	72	69	66	60	56	52	49	46	44	43	41	
	40	79	72	69	66	60	56	52	49	46	44	43	41	
	50	74	72	69	66	60	56	52	49	46	44	43	41	
	60	68	68	68	66	60	56	52	49	46	44	43	41	
	70	64	64	64	64	60	56	52	49	46	44	43	41	
	80	60	60	60	60	60	56	52	49	46	44	43	41	
90	56	56	56	56	56	56	56	52	49	46	44	43	41	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft						Panel Orientation: Landscape					
		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: B					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	121	121	121	121	121	121	116	108	102	99	96	91
	10	119	117	116	115	113	111	109	107	102	99	96	91
	20	101	101	101	101	99	97	95	93	91	90	90	88
	30	86	86	86	86	86	86	85	83	82	81	81	79
	40	75	75	75	75	75	75	75	75	75	74	74	73
	50	68	68	68	68	68	68	68	68	68	68	68	68
	60	63	63	63	63	63	63	63	63	63	63	63	63
	70	58	58	58	58	58	58	58	58	58	58	58	58
	80	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	
Zone 2	0	121	115	110	105	97	89	83	78	73	71	69	65
	10	119	115	110	105	97	89	83	78	73	71	69	65
	20	101	101	101	101	97	89	83	78	73	71	69	65
	30	86	86	86	86	86	86	83	78	73	71	69	65
	40	75	75	75	75	75	75	75	75	73	71	69	65
	50	68	68	68	68	68	68	68	68	68	68	68	65
	60	63	63	63	63	63	63	63	63	63	63	63	63
	70	58	58	58	58	58	58	58	58	58	58	58	58
	80	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	
Zone 3	0	102	92	88	84	78	72	67	63	59	57	56	53
	10	102	92	88	84	78	72	67	63	59	57	56	53
	20	101	92	88	84	78	72	67	63	59	57	56	53
	30	86	86	86	84	78	72	67	63	59	57	56	53
	40	75	75	75	75	75	72	67	63	59	57	56	53
	50	68	68	68	68	68	68	67	63	59	57	56	53
	60	63	63	63	63	63	63	63	63	59	57	56	53
	70	58	58	58	58	58	58	58	58	58	57	56	53
	80	55	55	55	55	55	55	55	55	55	55	55	53
90	52	52	52	52	52	52	52	52	52	52	52	52	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $30 < h \leq 60$ ft					Panel Orientation: Landscape							
<b>Table 44</b>		Roof Angle: $7 < \theta \leq 27$ degrees					Exposure Category: C							
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	121	121	121	121	116	107	100	93	88	85	83	78	
	10	116	114	113	112	109	107	100	93	88	85	83	78	
	20	101	99	98	97	95	93	91	89	87	85	83	78	
	30	86	86	86	86	85	83	81	80	78	78	77	75	
	40	75	75	75	75	75	75	75	73	72	71	71	70	
	50	68	68	68	68	68	68	68	68	67	67	66	65	
	60	63	63	63	63	63	63	63	63	63	63	63	62	61
	70	58	58	58	58	58	58	58	58	58	58	58	58	58
	80	55	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	52	
Zone 2	0	109	99	95	91	83	77	72	67	63	62	60	57	
	10	109	99	95	91	83	77	72	67	63	62	60	57	
	20	101	99	95	91	83	77	72	67	63	62	60	57	
	30	86	86	86	86	83	77	72	67	63	62	60	57	
	40	75	75	75	75	75	75	72	67	63	62	60	57	
	50	68	68	68	68	68	68	68	67	63	62	60	57	
	60	63	63	63	63	63	63	63	63	63	62	60	57	
	70	58	58	58	58	58	58	58	58	58	58	58	57	
	80	55	55	55	55	55	55	55	55	55	55	55	55	
90	52	52	52	52	52	52	52	52	52	52	52	52		
Zone 3	0	88	80	76	73	67	62	58	54	51	50	48	46	
	10	88	80	76	73	67	62	58	54	51	50	48	46	
	20	88	80	76	73	67	62	58	54	51	50	48	46	
	30	86	80	76	73	67	62	58	54	51	50	48	46	
	40	75	75	75	73	67	62	58	54	51	50	48	46	
	50	68	68	68	68	67	62	58	54	51	50	48	46	
	60	63	63	63	63	63	62	58	54	51	50	48	46	
	70	58	58	58	58	58	58	58	54	51	50	48	46	
	80	55	55	55	55	55	55	55	54	51	50	48	46	
90	52	52	52	52	52	52	52	52	51	50	48	46		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)												
			100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1		0	121	121	121	117	107	99	92	87	81	79	77	73	
		10	114	112	111	109	107	99	92	87	81	79	77	73	
		20	100	98	97	95	93	91	88	86	81	79	77	73	
		30	86	86	85	85	83	81	80	78	76	75	75	73	
		40	75	75	75	75	75	74	73	72	70	70	69	68	
		50	68	68	68	68	68	68	68	68	67	66	65	65	64
		60	63	63	63	63	63	63	63	63	63	62	61	61	60
		70	58	58	58	58	58	58	58	58	58	58	58	58	57
		80	55	55	55	55	55	55	55	55	55	55	55	55	55
90	52	52	52	52	52	52	52	52	52	52	52	52	52		
Zone 2		0	101	92	88	84	77	72	67	62	59	57	55	52	
		10	101	92	88	84	77	72	67	62	59	57	55	52	
		20	100	92	88	84	77	72	67	62	59	57	55	52	
		30	86	86	85	84	77	72	67	62	59	57	55	52	
		40	75	75	75	75	75	72	67	62	59	57	55	52	
		50	68	68	68	68	68	68	67	62	59	57	55	52	
		60	63	63	63	63	63	63	63	62	59	57	55	52	
		70	58	58	58	58	58	58	58	58	58	57	55	52	
		80	55	55	55	55	55	55	55	55	55	55	55	52	
90	52	52	52	52	52	52	52	52	52	52	52	52			
Zone 3		0	81	74	70	67	62	58	54	50	48	46	45	42	
		10	81	74	70	67	62	58	54	50	48	46	45	42	
		20	81	74	70	67	62	58	54	50	48	46	45	42	
		30	81	74	70	67	62	58	54	50	48	46	45	42	
		40	75	74	70	67	62	58	54	50	48	46	45	42	
		50	68	68	68	67	62	58	54	50	48	46	45	42	
		60	63	63	63	63	62	58	54	50	48	46	45	42	
		70	58	58	58	58	58	58	54	50	48	46	45	42	
		80	55	55	55	55	55	55	54	50	48	46	45	42	
90	52	52	52	52	52	52	52	50	48	46	45	42			

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)										
			100	110	115	120	130	140	150	160	170	175	180
Zone 1	0	121	121	119	116	112	106	101	96	91	89	87	83
	10	119	115	113	111	107	103	99	95	91	89	87	83
	20	104	101	99	98	95	92	89	86	84	82	81	79
	30	93	91	89	88	86	84	82	80	78	77	76	74
	40	83	83	82	81	80	78	76	74	73	72	71	69
	50	75	75	75	75	74	73	71	70	69	68	67	66
	60	69	69	69	69	69	69	68	66	65	64	64	63
	70	65	65	65	65	65	65	64	63	62	62	61	60
	80	61	61	61	61	61	61	61	60	59	59	58	58
90	58	58	58	58	58	58	58	58	57	57	56	55	
Zone 2	0	121	121	119	116	112	105	98	92	86	84	82	77
	10	119	115	113	111	107	103	98	92	86	84	82	77
	20	104	101	99	98	95	92	89	86	84	82	81	77
	30	93	91	89	88	86	84	82	80	78	77	76	74
	40	83	83	82	81	80	78	76	74	73	72	71	69
	50	75	75	75	75	74	73	71	70	69	68	67	66
	60	69	69	69	69	69	69	68	66	65	64	64	63
	70	65	65	65	65	65	65	64	63	62	62	61	60
	80	61	61	61	61	61	61	61	60	59	59	58	58
90	58	58	58	58	58	58	58	58	57	57	56	55	
Zone 3	0	121	121	119	116	112	105	98	92	86	84	82	77
	10	119	115	113	111	107	103	98	92	86	84	82	77
	20	104	101	99	98	95	92	89	86	84	82	81	77
	30	93	91	89	88	86	84	82	80	78	77	76	74
	40	83	83	82	81	80	78	76	74	73	72	71	69
	50	75	75	75	75	74	73	71	70	69	68	67	66
	60	69	69	69	69	69	69	68	66	65	64	64	63
	70	65	65	65	65	65	65	64	63	62	62	61	60
	80	61	61	61	61	61	61	61	60	59	59	58	58
90	58	58	58	58	58	58	58	58	57	57	56	55	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)											
			100	110	115	120	130	140	150	160	170	175	180	190
Zone 1		0	119	113	111	107	101	95	90	85	81	79	77	73
		10	113	108	106	103	99	95	90	85	81	79	77	73
		20	99	96	94	92	89	86	83	80	77	76	75	72
		30	89	87	86	84	82	79	77	75	72	71	70	68
		40	82	80	79	78	76	74	72	70	68	67	66	65
		50	75	75	74	73	71	70	68	66	65	64	63	62
		60	69	69	69	69	68	66	65	63	62	61	60	59
		70	65	65	65	65	64	63	62	61	59	59	58	57
		80	61	61	61	61	61	60	59	58	57	56	56	55
		90	58	58	58	58	58	58	57	56	55	54	54	53
Zone 2		0	119	113	111	106	98	91	85	80	75	73	71	67
		10	113	108	106	103	98	91	85	80	75	73	71	67
		20	99	96	94	92	89	86	83	80	75	73	71	67
		30	89	87	86	84	82	79	77	75	72	71	70	67
		40	82	80	79	78	76	74	72	70	68	67	66	65
		50	75	75	74	73	71	70	68	66	65	64	63	62
		60	69	69	69	69	68	66	65	63	62	61	60	59
		70	65	65	65	65	64	63	62	61	59	59	58	57
		80	61	61	61	61	61	60	59	58	57	56	56	55
		90	58	58	58	58	58	58	57	56	55	54	54	53
Zone 3		0	119	113	111	106	98	91	85	80	75	73	71	67
		10	113	108	106	103	98	91	85	80	75	73	71	67
		20	99	96	94	92	89	86	83	80	75	73	71	67
		30	89	87	86	84	82	79	77	75	72	71	70	67
		40	82	80	79	78	76	74	72	70	68	67	66	65
		50	75	75	74	73	71	70	68	66	65	64	63	62
		60	69	69	69	69	68	66	65	63	62	61	60	59
		70	65	65	65	65	64	63	62	61	59	59	58	57
		80	61	61	61	61	61	60	59	58	57	56	56	55
		90	58	58	58	58	58	58	57	56	55	54	54	53

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"



**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)											
			100	110	115	120	130	140	150	160	170	175	180	190
Zone 1		0	114	108	105	101	95	89	84	80	75	74	72	68
		10	109	104	102	99	95	89	84	80	75	74	72	68
		20	97	93	91	89	86	83	80	77	74	72	71	68
		30	88	85	83	82	79	77	74	72	70	68	67	65
		40	81	78	77	76	74	72	70	68	66	65	64	62
		50	75	73	72	72	70	68	66	64	63	62	61	59
		60	69	69	68	68	66	65	63	62	60	59	59	57
		70	65	65	65	64	63	62	60	59	58	57	56	55
		80	61	61	61	61	60	59	58	57	56	55	54	53
		90	58	58	58	58	58	57	56	55	54	53	53	51
Zone 2		0	114	107	103	98	91	84	79	74	69	68	66	62
		10	109	104	102	98	91	84	79	74	69	68	66	62
		20	97	93	91	89	86	83	79	74	69	68	66	62
		30	88	85	83	82	79	77	74	72	69	68	66	62
		40	81	78	77	76	74	72	70	68	66	65	64	62
		50	75	73	72	72	70	68	66	64	63	62	61	59
		60	69	69	68	68	66	65	63	62	60	59	59	57
		70	65	65	65	64	63	62	60	59	58	57	56	55
		80	61	61	61	61	60	59	58	57	56	55	54	53
		90	58	58	58	58	58	57	56	55	54	53	53	51
Zone 3		0	114	107	103	98	91	84	79	74	69	68	66	62
		10	109	104	102	98	91	84	79	74	69	68	66	62
		20	97	93	91	89	86	83	79	74	69	68	66	62
		30	88	85	83	82	79	77	74	72	69	68	66	62
		40	81	78	77	76	74	72	70	68	66	65	64	62
		50	75	73	72	72	70	68	66	64	63	62	61	59
		60	69	69	68	68	66	65	63	62	60	59	59	57
		70	65	65	65	64	63	62	60	59	58	57	56	55
		80	61	61	61	61	60	59	58	57	56	55	54	53
		90	58	58	58	58	58	57	56	55	54	53	53	51

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)												
			100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1		0	114	114	108	103	94	87	80	75	70	68	66	62	
		10	96	96	95	95	94	87	80	75	70	68	66	62	
		20	79	79	79	79	79	79	79	78	75	70	68	66	62
		30	67	67	67	67	67	67	67	67	67	67	66	66	62
		40	59	59	59	59	59	59	59	59	59	59	59	59	59
		50	53	53	53	53	53	53	53	53	53	53	53	53	53
		60	49	49	49	49	49	49	49	49	49	49	49	49	49
		70	45	45	45	45	45	45	45	45	45	45	45	45	45
		80	43	43	43	43	43	43	43	43	43	43	43	43	43
		90	40	40	40	40	40	40	40	40	40	40	40	40	40
Zone 2		0	91	82	78	74	68	63	59	55	51	50	48	46	
		10	91	82	78	74	68	63	59	55	51	50	48	46	
		20	79	79	78	74	68	63	59	55	51	50	48	46	
		30	67	67	67	67	67	63	59	55	51	50	48	46	
		40	59	59	59	59	59	59	59	55	51	50	48	46	
		50	53	53	53	53	53	53	53	53	51	50	48	46	
		60	49	49	49	49	49	49	49	49	49	49	48	46	
		70	45	45	45	45	45	45	45	45	45	45	45	45	
		80	43	43	43	43	43	43	43	43	43	43	43	43	
90	40	40	40	40	40	40	40	40	40	40	40	40			
Zone 3		0	71	64	61	59	54	50	46	43	41	40	38	36	
		10	71	64	61	59	54	50	46	43	41	40	38	36	
		20	71	64	61	59	54	50	46	43	41	40	38	36	
		30	67	64	61	59	54	50	46	43	41	40	38	36	
		40	59	59	59	59	54	50	46	43	41	40	38	36	
		50	53	53	53	53	53	50	46	43	41	40	38	36	
		60	49	49	49	49	49	49	46	43	41	40	38	36	
		70	45	45	45	45	45	45	45	43	41	40	38	36	
		80	43	43	43	43	43	43	43	43	41	40	38	36	
90	40	40	40	40	40	40	40	40	40	40	38	36			

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)												
			100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1		0	108	97	92	88	80	74	69	64	60	58	57	54	
		10	95	94	92	88	80	74	69	64	60	58	57	54	
		20	79	79	79	79	78	74	69	64	60	58	57	54	
		30	67	67	67	67	67	67	67	66	64	60	58	57	54
		40	59	59	59	59	59	59	59	59	59	59	58	57	54
		50	53	53	53	53	53	53	53	53	53	53	53	53	53
		60	49	49	49	49	49	49	49	49	49	49	49	49	49
		70	45	45	45	45	45	45	45	45	45	45	45	45	45
		80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	40	40	40	40	40	40	40	40	40	40	40	40	40		
Zone 2		0	78	70	67	64	59	54	50	48	44	43	42	39	
		10	78	70	67	64	59	54	50	48	44	43	42	39	
		20	78	70	67	64	59	54	50	48	44	43	42	39	
		30	67	67	67	64	59	54	50	48	44	43	42	39	
		40	59	59	59	59	59	54	50	48	44	43	42	39	
		50	53	53	53	53	53	53	50	48	44	43	42	39	
		60	49	49	49	49	49	49	49	48	44	43	42	39	
		70	45	45	45	45	45	45	45	45	44	43	42	39	
		80	43	43	43	43	43	43	43	43	43	43	42	39	
90	40	40	40	40	40	40	40	40	40	40	40	40	39		
Zone 3		0	61	55	53	51	46	43	40	37	35	34	33	31	
		10	61	55	53	51	46	43	40	37	35	34	33	31	
		20	61	55	53	51	46	43	40	37	35	34	33	31	
		30	61	55	53	51	46	43	40	37	35	34	33	31	
		40	59	55	53	51	46	43	40	37	35	34	33	31	
		50	53	53	53	51	46	43	40	37	35	34	33	31	
		60	49	49	49	49	46	43	40	37	35	34	33	31	
		70	45	45	45	45	45	43	40	37	35	34	33	31	
		80	43	43	43	43	43	43	40	37	35	34	33	31	
90	40	40	40	40	40	40	40	40	37	35	34	33	31		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 60$ ft						Panel Orientation: Portrait						
		Roof Angle: $0 < \theta \leq 7$ degrees												
		Exposure Category: D												
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	99	89	85	81	74	68	64	59	56	54	52	50	
	10	95	89	85	81	74	68	64	59	56	54	52	50	
	20	79	79	79	78	74	68	64	59	56	54	52	50	
	30	67	67	67	67	67	66	64	59	56	54	52	50	
	40	59	59	59	59	59	59	59	59	56	54	52	50	
	50	53	53	53	53	53	53	53	53	53	53	53	52	50
	60	49	49	49	49	49	49	49	49	49	49	49	49	49
	70	45	45	45	45	45	45	45	45	45	45	45	45	45
	80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	40	40	40	40	40	40	40	40	40	40	40	40	40	
Zone 2	0	72	65	62	59	54	50	48	44	41	40	39	37	
	10	72	65	62	59	54	50	48	44	41	40	39	37	
	20	72	65	62	59	54	50	48	44	41	40	39	37	
	30	67	65	62	59	54	50	48	44	41	40	39	37	
	40	59	59	59	59	54	50	48	44	41	40	39	37	
	50	53	53	53	53	53	50	48	44	41	40	39	37	
	60	49	49	49	49	49	49	48	44	41	40	39	37	
	70	45	45	45	45	45	45	45	44	41	40	39	37	
	80	43	43	43	43	43	43	43	43	41	40	39	37	
90	40	40	40	40	40	40	40	40	40	40	39	37		
Zone 3	0	57	51	49	48	43	40	37	35	33	32	31	29	
	10	57	51	49	48	43	40	37	35	33	32	31	29	
	20	57	51	49	48	43	40	37	35	33	32	31	29	
	30	57	51	49	48	43	40	37	35	33	32	31	29	
	40	57	51	49	48	43	40	37	35	33	32	31	29	
	50	53	51	49	48	43	40	37	35	33	32	31	29	
	60	49	49	49	48	43	40	37	35	33	32	31	29	
	70	45	45	45	45	43	40	37	35	33	32	31	29	
	80	43	43	43	43	43	40	37	35	33	32	31	29	
90	40	40	40	40	40	40	37	35	33	32	31	29		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 60$ ft						Panel Orientation: Portrait						
		Roof Angle: $7 < \theta \leq 27$ degrees												
		Exposure Category: B												
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	112	108	106	104	96	89	83	77	73	70	68	65	
	10	90	88	87	86	84	81	79	77	73	70	68	65	
	20	72	72	72	72	71	69	68	67	65	65	64	63	
	30	61	61	61	61	61	61	61	60	59	58	58	57	57
	40	54	54	54	54	54	54	54	54	54	53	53	53	52
	50	49	49	49	49	49	49	49	49	49	49	49	49	48
	60	45	45	45	45	45	45	45	45	45	45	45	45	45
	70	42	42	42	42	42	42	42	42	42	42	42	42	42
	80	39	39	39	39	39	39	39	39	39	39	39	39	39
90	37	37	37	37	37	37	37	37	37	37	37	37	37	
Zone 2	0	91	82	78	75	69	64	59	56	52	51	49	48	
	10	90	82	78	75	69	64	59	56	52	51	49	48	
	20	72	72	72	72	69	64	59	56	52	51	49	48	
	30	61	61	61	61	61	61	59	56	52	51	49	48	
	40	54	54	54	54	54	54	54	54	52	51	49	48	
	50	49	49	49	49	49	49	49	49	49	49	49	48	
	60	45	45	45	45	45	45	45	45	45	45	45	45	45
	70	42	42	42	42	42	42	42	42	42	42	42	42	42
	80	39	39	39	39	39	39	39	39	39	39	39	39	39
90	37	37	37	37	37	37	37	37	37	37	37	37	37	
Zone 3	0	73	66	63	60	55	51	48	45	42	41	40	38	
	10	73	66	63	60	55	51	48	45	42	41	40	38	
	20	72	66	63	60	55	51	48	45	42	41	40	38	
	30	61	61	61	60	55	51	48	45	42	41	40	38	
	40	54	54	54	54	54	51	48	45	42	41	40	38	
	50	49	49	49	49	49	49	48	45	42	41	40	38	
	60	45	45	45	45	45	45	45	45	42	41	40	38	
	70	42	42	42	42	42	42	42	42	42	41	40	38	
	80	39	39	39	39	39	39	39	39	39	39	39	38	
90	37	37	37	37	37	37	37	37	37	37	37	37		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 60$ ft						Panel Orientation: Portrait						
		Roof Angle: $7 < \theta \leq 27$ degrees						Exposure Category: C						
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	106	99	94	90	83	77	71	67	63	61	59	56	
	10	87	84	83	82	79	77	71	67	63	61	59	56	
	20	72	71	70	70	68	66	65	63	62	61	59	56	
	30	61	61	61	61	60	59	58	57	56	55	55	54	
	40	54	54	54	54	54	54	53	52	51	51	51	50	
	50	49	49	49	49	49	49	49	49	48	48	48	46	
	60	45	45	45	45	45	45	45	45	45	45	45	44	44
	70	42	42	42	42	42	42	42	42	42	42	42	42	42
	80	39	39	39	39	39	39	39	39	39	39	39	39	39
90	37	37	37	37	37	37	37	37	37	37	37	37	37	
Zone 2	0	78	71	68	65	60	55	51	48	45	44	43	40	
	10	78	71	68	65	60	55	51	48	45	44	43	40	
	20	72	71	68	65	60	55	51	48	45	44	43	40	
	30	61	61	61	61	60	55	51	48	45	44	43	40	
	40	54	54	54	54	54	54	51	48	45	44	43	40	
	50	49	49	49	49	49	49	49	48	45	44	43	40	
	60	45	45	45	45	45	45	45	45	45	44	43	40	
	70	42	42	42	42	42	42	42	42	42	42	42	40	
	80	39	39	39	39	39	39	39	39	39	39	39	39	
90	37	37	37	37	37	37	37	37	37	37	37	37		
Zone 3	0	63	57	54	52	48	44	41	39	36	35	34	32	
	10	63	57	54	52	48	44	41	39	36	35	34	32	
	20	63	57	54	52	48	44	41	39	36	35	34	32	
	30	61	57	54	52	48	44	41	39	36	35	34	32	
	40	54	54	54	52	48	44	41	39	36	35	34	32	
	50	49	49	49	49	48	44	41	39	36	35	34	32	
	60	45	45	45	45	45	44	41	39	36	35	34	32	
	70	42	42	42	42	42	42	41	39	36	35	34	32	
	80	39	39	39	39	39	39	39	39	36	35	34	32	
90	37	37	37	37	37	37	37	37	36	35	34	32		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"



**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)										
			100	110	115	120	130	140	150	160	170	175	180
Zone 1	0	101	91	87	83	77	71	66	62	58	56	55	52
	10	85	82	81	80	77	71	66	62	58	56	55	52
	20	71	70	69	68	66	65	63	61	58	56	55	52
	30	61	61	61	60	59	58	57	56	54	54	53	52
	40	54	54	54	54	54	53	52	51	50	50	49	48
	50	49	49	49	49	49	49	48	48	48	48	46	45
	60	45	45	45	45	45	45	45	45	44	44	44	43
	70	42	42	42	42	42	42	42	42	42	42	41	41
	80	39	39	39	39	39	39	39	39	39	39	39	39
90	37	37	37	37	37	37	37	37	37	37	37	37	
Zone 2	0	72	66	63	60	55	51	48	45	42	41	40	37
	10	72	66	63	60	55	51	48	45	42	41	40	37
	20	71	66	63	60	55	51	48	45	42	41	40	37
	30	61	61	61	60	55	51	48	45	42	41	40	37
	40	54	54	54	54	54	51	48	45	42	41	40	37
	50	49	49	49	49	49	49	48	45	42	41	40	37
	60	45	45	45	45	45	45	45	45	42	41	40	37
	70	42	42	42	42	42	42	42	42	42	41	40	37
	80	39	39	39	39	39	39	39	39	39	39	39	37
90	37	37	37	37	37	37	37	37	37	37	37	37	
Zone 3	0	58	53	50	48	44	41	38	36	34	33	32	30
	10	58	53	50	48	44	41	38	36	34	33	32	30
	20	58	53	50	48	44	41	38	36	34	33	32	30
	30	58	53	50	48	44	41	38	36	34	33	32	30
	40	54	53	50	48	44	41	38	36	34	33	32	30
	50	49	49	49	48	44	41	38	36	34	33	32	30
	60	45	45	45	45	44	41	38	36	34	33	32	30
	70	42	42	42	42	42	41	38	36	34	33	32	30
	80	39	39	39	39	39	39	38	36	34	33	32	30
90	37	37	37	37	37	37	37	37	36	34	33	32	30

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 60$ ft						Panel Orientation: Portrait					
<b>Table 55</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: B					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	97	91	88	86	81	76	72	69	65	63	62	59
	10	87	84	81	81	78	75	72	69	65	63	62	59
	20	76	74	71	71	69	67	65	63	61	59	59	57
	30	68	66	65	65	63	61	60	58	57	55	55	53
	40	62	61	60	60	58	57	56	54	53	52	52	50
	50	56	56	56	56	54	53	52	51	50	49	49	48
	60	51	51	51	51	51	50	49	49	48	48	48	46
	70	48	48	48	48	48	48	48	46	45	45	45	44
	80	45	45	45	45	45	45	45	44	44	43	43	42
90	43	43	43	43	43	43	43	43	42	41	41	41	
Zone 2	0	97	91	88	86	81	76	71	67	63	60	59	56
	10	87	84	81	81	78	75	71	67	63	60	59	56
	20	76	74	71	71	69	67	65	63	61	59	59	56
	30	68	66	65	65	63	61	60	58	57	55	55	53
	40	62	61	60	60	58	57	56	54	53	52	52	50
	50	56	56	56	56	54	53	52	51	50	49	49	48
	60	51	51	51	51	51	50	49	49	48	48	48	46
	70	48	48	48	48	48	48	48	46	45	45	45	44
	80	45	45	45	45	45	45	45	44	44	43	43	42
90	43	43	43	43	43	43	43	43	42	41	41	41	
Zone 3	0	97	91	88	86	81	76	71	67	63	60	59	56
	10	87	84	81	81	78	75	71	67	63	60	59	56
	20	76	74	71	71	69	67	65	63	61	59	59	56
	30	68	66	65	65	63	61	60	58	57	55	55	53
	40	62	61	60	60	58	57	56	54	53	52	52	50
	50	56	56	56	56	54	53	52	51	50	49	49	48
	60	51	51	51	51	51	50	49	49	48	48	48	46
	70	48	48	48	48	48	48	48	46	45	45	45	44
	80	45	45	45	45	45	45	45	44	44	43	43	42
90	43	43	43	43	43	43	43	43	42	41	41	41	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)											
			100	110	115	120	130	140	150	160	170	175	180	190
Zone 1		0	88	82	79	77	72	68	64	61	58	56	55	52
		10	82	79	75	75	72	68	64	61	58	56	55	52
		20	73	70	67	67	65	63	60	58	56	54	54	52
		30	66	64	62	62	60	58	56	54	53	51	51	49
		40	60	59	57	57	56	54	53	51	50	48	48	48
		50	56	55	54	54	52	51	50	49	48	46	46	45
		60	51	51	51	51	49	48	48	46	45	44	44	43
		70	48	48	48	48	48	46	45	44	43	42	42	41
		80	45	45	45	45	45	44	43	42	42	41	41	40
90	43	43	43	43	43	42	42	41	40	39	39	39		
Zone 2		0	88	82	79	77	71	66	61	58	54	52	51	48
		10	82	79	75	75	71	66	61	58	54	52	51	48
		20	73	70	67	67	65	63	60	58	54	52	51	48
		30	66	64	62	62	60	58	56	54	53	51	51	48
		40	60	59	57	57	56	54	53	51	50	48	48	48
		50	56	55	54	54	52	51	50	49	48	46	46	45
		60	51	51	51	51	49	48	48	46	45	44	44	43
		70	48	48	48	48	48	46	45	44	43	42	42	41
		80	45	45	45	45	45	44	43	42	42	41	41	40
90	43	43	43	43	43	42	42	41	40	39	39	39		
Zone 3		0	88	82	79	77	71	66	61	58	54	52	51	48
		10	82	79	75	75	71	66	61	58	54	52	51	48
		20	73	70	67	67	65	63	60	58	54	52	51	48
		30	66	64	62	62	60	58	56	54	53	51	51	48
		40	60	59	57	57	56	54	53	51	50	48	48	48
		50	56	55	54	54	52	51	50	49	48	46	46	45
		60	51	51	51	51	49	48	48	46	45	44	44	43
		70	48	48	48	48	48	46	45	44	43	42	42	41
		80	45	45	45	45	45	44	43	42	42	41	41	40
90	43	43	43	43	43	42	42	41	40	39	39	39		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 60$ ft						Panel Orientation: Portrait					
<b>Table 57</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: D					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	84	78	75	73	68	64	60	57	54	53	51	49
	10	79	76	73	72	68	64	60	57	54	53	51	49
	20	71	68	65	65	63	60	58	56	53	52	51	49
	30	64	62	60	60	58	56	54	52	50	49	49	48
	40	59	57	56	56	54	53	51	49	48	46	46	45
	50	55	54	52	52	51	50	48	48	46	44	44	43
	60	51	51	50	50	48	48	46	45	44	43	43	42
	70	48	48	48	48	46	45	44	43	42	41	41	40
	80	45	45	45	45	44	43	42	41	41	40	40	39
90	43	43	43	43	42	42	41	40	39	38	38	38	
Zone 2	0	84	78	73	72	66	61	57	53	50	48	48	45
	10	79	76	73	72	66	61	57	53	50	48	48	45
	20	71	68	65	65	63	60	57	53	50	48	48	45
	30	64	62	60	60	58	56	54	52	50	48	48	45
	40	59	57	56	56	54	53	51	49	48	46	46	45
	50	55	54	52	52	51	50	48	48	46	44	44	43
	60	51	51	50	50	48	48	46	45	44	43	43	42
	70	48	48	48	48	46	45	44	43	42	41	41	40
	80	45	45	45	45	44	43	42	41	41	40	40	39
90	43	43	43	43	42	42	41	40	39	38	38	38	
Zone 3	0	84	78	73	72	66	61	57	53	50	48	48	45
	10	79	76	73	72	66	61	57	53	50	48	48	45
	20	71	68	65	65	63	60	57	53	50	48	48	45
	30	64	62	60	60	58	56	54	52	50	48	48	45
	40	59	57	56	56	54	53	51	49	48	46	46	45
	50	55	54	52	52	51	50	48	48	46	44	44	43
	60	51	51	50	50	48	48	46	45	44	43	43	42
	70	48	48	48	48	46	45	44	43	42	41	41	40
	80	45	45	45	45	44	43	42	41	41	40	40	39
90	43	43	43	43	42	42	41	40	39	38	38	38	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)										
			100	110	115	120	130	140	150	160	170	175	180
Zone 1	0	98	98	98	98	98	98	90	84	79	76	74	70
	10	97	97	97	97	96	95	90	84	79	76	74	70
	20	80	80	80	80	80	80	80	79	78	76	74	70
	30	68	68	68	68	68	68	68	68	68	68	68	67
	40	59	59	59	59	59	59	59	59	59	59	59	59
	50	54	54	54	54	54	54	54	54	54	54	54	54
	60	49	49	49	49	49	49	49	49	49	49	49	49
	70	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 2	0	98	92	88	84	77	71	66	61	58	56	54	51
	10	97	92	88	84	77	71	66	61	58	56	54	51
	20	80	80	80	80	77	71	66	61	58	56	54	51
	30	68	68	68	68	68	68	66	61	58	56	54	51
	40	59	59	59	59	59	59	59	59	58	56	54	51
	50	54	54	54	54	54	54	54	54	54	54	54	51
	60	49	49	49	49	49	49	49	49	49	49	49	49
	70	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 3	0	80	72	69	66	60	56	52	49	46	44	43	41
	10	80	72	69	66	60	56	52	49	46	44	43	41
	20	80	72	69	66	60	56	52	49	46	44	43	41
	30	68	68	68	66	60	56	52	49	46	44	43	41
	40	59	59	59	59	59	56	52	49	46	44	43	41
	50	54	54	54	54	54	54	52	49	46	44	43	41
	60	49	49	49	49	49	49	49	49	46	44	43	41
	70	46	46	46	46	46	46	46	46	46	44	43	41
	80	43	43	43	43	43	43	43	43	43	43	43	41
90	41	41	41	41	41	41	41	41	41	41	41	41	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 80"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 30$ ft						Panel Orientation: Portrait					
		Roof Angle: $0 < \theta \leq 7$ degrees											
		Exposure Category: C											
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	98	98	98	96	88	81	75	70	66	64	62	58
	10	97	96	95	95	88	81	75	70	66	64	62	58
	20	80	80	80	80	80	79	75	70	66	64	62	58
	30	68	68	68	68	68	68	68	67	66	64	62	58
	40	59	59	59	59	59	59	59	59	59	59	59	58
	50	54	54	54	54	54	54	54	54	54	54	54	54
	60	49	49	49	49	49	49	49	49	49	49	49	49
	70	46	46	46	46	46	46	46	46	46	46	46	46
	80	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 2	0	85	77	73	70	64	59	55	51	48	48	45	43
	10	85	77	73	70	64	59	55	51	48	48	45	43
	20	80	77	73	70	64	59	55	51	48	48	45	43
	30	68	68	68	68	64	59	55	51	48	48	45	43
	40	59	59	59	59	59	59	55	51	48	48	45	43
	50	54	54	54	54	54	54	54	51	48	48	45	43
	60	49	49	49	49	49	49	49	49	48	48	45	43
	70	46	46	46	46	46	46	46	46	46	46	45	43
	80	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	
Zone 3	0	67	60	58	55	51	48	44	41	38	37	36	34
	10	67	60	58	55	51	48	44	41	38	37	36	34
	20	67	60	58	55	51	48	44	41	38	37	36	34
	30	67	60	58	55	51	48	44	41	38	37	36	34
	40	59	59	58	55	51	48	44	41	38	37	36	34
	50	54	54	54	54	51	48	44	41	38	37	36	34
	60	49	49	49	49	49	48	44	41	38	37	36	34
	70	46	46	46	46	46	46	44	41	38	37	36	34
	80	43	43	43	43	43	43	43	41	38	37	36	34
90	41	41	41	41	41	41	41	41	38	37	36	34	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 80"



**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)												
			100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1		0	98	97	92	88	80	74	69	64	60	58	57	53	
		10	96	95	92	88	80	74	69	64	60	58	57	53	
		20	80	80	80	80	78	74	69	64	60	58	57	53	
		30	68	68	68	68	68	68	67	64	60	58	57	53	
		40	59	59	59	59	59	59	59	59	59	58	57	53	
		50	54	54	54	54	54	54	54	54	54	54	54	54	53
		60	49	49	49	49	49	49	49	49	49	49	49	49	49
		70	46	46	46	46	46	46	46	46	46	46	46	46	46
		80	43	43	43	43	43	43	43	43	43	43	43	43	43
90	41	41	41	41	41	41	41	41	41	41	41	41	41		
Zone 2		0	77	70	67	64	58	54	50	48	44	43	42	39	
		10	77	70	67	64	58	54	50	48	44	43	42	39	
		20	77	70	67	64	58	54	50	48	44	43	42	39	
		30	68	68	67	64	58	54	50	48	44	43	42	39	
		40	59	59	59	59	58	54	50	48	44	43	42	39	
		50	54	54	54	54	54	54	50	48	44	43	42	39	
		60	49	49	49	49	49	49	49	48	44	43	42	39	
		70	46	46	46	46	46	46	46	46	44	43	42	39	
		80	43	43	43	43	43	43	43	43	43	43	42	39	
90	41	41	41	41	41	41	41	41	41	41	41	41	39		
Zone 3		0	61	55	53	50	46	43	40	37	35	34	33	31	
		10	61	55	53	50	46	43	40	37	35	34	33	31	
		20	61	55	53	50	46	43	40	37	35	34	33	31	
		30	61	55	53	50	46	43	40	37	35	34	33	31	
		40	59	55	53	50	46	43	40	37	35	34	33	31	
		50	54	54	53	50	46	43	40	37	35	34	33	31	
		60	49	49	49	49	46	43	40	37	35	34	33	31	
		70	46	46	46	46	46	43	40	37	35	34	33	31	
		80	43	43	43	43	43	43	40	37	35	34	33	31	
90	41	41	41	41	41	41	40	37	35	34	33	31			

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 80"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 30$ ft						Panel Orientation: Portrait					
		Roof Angle: $7 < \theta \leq 27$ degrees											
		Exposure Category: B											
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	98	98	98	98	98	98	93	87	81	79	77	72
	10	93	91	90	89	87	85	83	81	79	78	77	72
	20	73	73	73	73	73	72	71	69	68	68	67	66
	30	62	62	62	62	62	62	62	62	61	60	60	59
	40	54	54	54	54	54	54	54	54	54	54	54	54
	50	49	49	49	49	49	49	49	49	49	49	49	49
	60	45	45	45	45	45	45	45	45	45	45	45	45
	70	42	42	42	42	42	42	42	42	42	42	42	42
	80	40	40	40	40	40	40	40	40	40	40	40	40
90	37	37	37	37	37	37	37	37	37	37	37	37	
Zone 2	0	98	92	88	84	77	71	67	62	59	57	55	52
	10	93	91	88	84	77	71	67	62	59	57	55	52
	20	73	73	73	73	73	71	67	62	59	57	55	52
	30	62	62	62	62	62	62	62	62	59	57	55	52
	40	54	54	54	54	54	54	54	54	54	54	54	52
	50	49	49	49	49	49	49	49	49	49	49	49	49
	60	45	45	45	45	45	45	45	45	45	45	45	45
	70	42	42	42	42	42	42	42	42	42	42	42	42
	80	40	40	40	40	40	40	40	40	40	40	40	40
90	37	37	37	37	37	37	37	37	37	37	37	37	
Zone 3	0	81	74	70	67	62	57	53	50	48	46	44	42
	10	81	74	70	67	62	57	53	50	48	46	44	42
	20	73	73	70	67	62	57	53	50	48	46	44	42
	30	62	62	62	62	62	57	53	50	48	46	44	42
	40	54	54	54	54	54	54	53	50	48	46	44	42
	50	49	49	49	49	49	49	49	49	48	46	44	42
	60	45	45	45	45	45	45	45	45	45	45	44	42
	70	42	42	42	42	42	42	42	42	42	42	42	42
	80	40	40	40	40	40	40	40	40	40	40	40	40
90	37	37	37	37	37	37	37	37	37	37	37	37	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 80"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 30$ ft					Panel Orientation: Portrait							
<b>Table 62</b>		Roof Angle: $7 < \theta \leq 27$ degrees					Exposure Category: C							
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)												
		100	110	115	120	130	140	150	160	170	175	180	190	
Zone 1	0	98	98	98	98	90	84	78	73	68	66	64	61	
	10	90	87	86	85	83	80	78	73	68	66	64	61	
	20	73	73	72	72	70	69	67	66	64	64	63	61	
	30	62	62	62	62	62	61	60	59	58	57	57	56	
	40	54	54	54	54	54	54	54	54	53	53	52	51	
	50	49	49	49	49	49	49	49	49	49	49	49	48	
	60	45	45	45	45	45	45	45	45	45	45	45	45	
	70	42	42	42	42	42	42	42	42	42	42	42	42	
	80	40	40	40	40	40	40	40	40	40	40	40	40	
90	37	37	37	37	37	37	37	37	37	37	37	37		
Zone 2	0	85	77	74	70	65	60	56	52	49	48	46	44	
	10	85	77	74	70	65	60	56	52	49	48	46	44	
	20	73	73	72	70	65	60	56	52	49	48	46	44	
	30	62	62	62	62	62	60	56	52	49	48	46	44	
	40	54	54	54	54	54	54	54	52	49	48	46	44	
	50	49	49	49	49	49	49	49	49	49	48	46	44	
	60	45	45	45	45	45	45	45	45	45	45	45	44	
	70	42	42	42	42	42	42	42	42	42	42	42	42	
	80	40	40	40	40	40	40	40	40	40	40	40	40	
90	37	37	37	37	37	37	37	37	37	37	37	37		
Zone 3	0	68	62	59	57	52	48	45	42	40	38	37	35	
	10	68	62	59	57	52	48	45	42	40	38	37	35	
	20	68	62	59	57	52	48	45	42	40	38	37	35	
	30	62	62	59	57	52	48	45	42	40	38	37	35	
	40	54	54	54	54	52	48	45	42	40	38	37	35	
	50	49	49	49	49	49	48	45	42	40	38	37	35	
	60	45	45	45	45	45	45	45	42	40	38	37	35	
	70	42	42	42	42	42	42	42	42	40	38	37	35	
	80	40	40	40	40	40	40	40	40	40	38	37	35	
90	37	37	37	37	37	37	37	37	37	37	37	35		

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 80"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 30$ ft						Panel Orientation: Portrait					
		Roof Angle: $7 < \theta \leq 27$ degrees											
		Exposure Category: D											
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	98	98	94	90	83	77	71	67	63	61	59	56
	10	88	85	84	82	80	77	71	67	63	61	59	56
	20	73	72	71	70	69	67	65	64	62	61	59	56
	30	62	62	62	62	61	60	59	58	56	56	55	54
	40	54	54	54	54	54	54	54	53	52	51	51	50
	50	49	49	49	49	49	49	49	49	48	48	48	48
	60	45	45	45	45	45	45	45	45	45	45	45	44
	70	42	42	42	42	42	42	42	42	42	42	42	42
	80	40	40	40	40	40	40	40	40	40	40	40	40
90	37	37	37	37	37	37	37	37	37	37	37	37	
Zone 2	0	78	71	67	65	59	55	51	48	45	44	43	40
	10	78	71	67	65	59	55	51	48	45	44	43	40
	20	73	71	67	65	59	55	51	48	45	44	43	40
	30	62	62	62	62	59	55	51	48	45	44	43	40
	40	54	54	54	54	54	54	51	48	45	44	43	40
	50	49	49	49	49	49	49	49	48	45	44	43	40
	60	45	45	45	45	45	45	45	45	45	44	43	40
	70	42	42	42	42	42	42	42	42	42	42	42	40
	80	40	40	40	40	40	40	40	40	40	40	40	40
90	37	37	37	37	37	37	37	37	37	37	37	37	
Zone 3	0	63	57	54	52	48	44	41	39	36	35	34	32
	10	63	57	54	52	48	44	41	39	36	35	34	32
	20	63	57	54	52	48	44	41	39	36	35	34	32
	30	62	57	54	52	48	44	41	39	36	35	34	32
	40	54	54	54	52	48	44	41	39	36	35	34	32
	50	49	49	49	49	48	44	41	39	36	35	34	32
	60	45	45	45	45	45	44	41	39	36	35	34	32
	70	42	42	42	42	42	42	41	39	36	35	34	32
	80	40	40	40	40	40	40	40	39	36	35	34	32
90	37	37	37	37	37	37	37	37	36	35	34	32	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 80"

**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 30$ ft						Panel Orientation: Portrait					
<b>Table 64</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: B					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	98	97	95	92	87	83	78	75	71	70	68	65
	10	89	87	85	84	81	78	75	73	70	69	68	65
	20	77	75	74	73	71	69	67	65	64	63	62	60
	30	68	67	66	66	64	63	61	60	59	58	57	56
	40	60	60	60	60	59	58	57	56	54	54	53	52
	50	54	54	54	54	54	54	53	52	51	51	50	49
	60	50	50	50	50	50	50	50	49	48	48	48	48
	70	48	48	48	48	48	48	48	48	46	46	45	45
	80	44	44	44	44	44	44	44	44	44	44	43	43
90	42	42	42	42	42	42	42	42	42	42	42	41	
Zone 2	0	98	97	95	92	87	83	78	73	69	67	65	62
	10	89	87	85	84	81	78	75	73	69	67	65	62
	20	77	75	74	73	71	69	67	65	64	63	62	60
	30	68	67	66	66	64	63	61	60	59	58	57	56
	40	60	60	60	60	59	58	57	56	54	54	53	52
	50	54	54	54	54	54	54	53	52	51	51	50	49
	60	50	50	50	50	50	50	50	49	48	48	48	48
	70	48	48	48	48	48	48	48	48	46	46	45	45
	80	44	44	44	44	44	44	44	44	44	44	43	43
90	42	42	42	42	42	42	42	42	42	42	42	41	
Zone 3	0	98	97	95	92	87	83	78	73	69	67	65	62
	10	89	87	85	84	81	78	75	73	69	67	65	62
	20	77	75	74	73	71	69	67	65	64	63	62	60
	30	68	67	66	66	64	63	61	60	59	58	57	56
	40	60	60	60	60	59	58	57	56	54	54	53	52
	50	54	54	54	54	54	54	53	52	51	51	50	49
	60	50	50	50	50	50	50	50	49	48	48	48	48
	70	48	48	48	48	48	48	48	48	46	46	45	45
	80	44	44	44	44	44	44	44	44	44	44	43	43
90	42	42	42	42	42	42	42	42	42	42	42	41	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 80"

**Rail Spans for Quick Mount PV QRail Standard System**

Roof Wind Zone		Ground Snow Load	Wind Speed (mph)										
			100	110	115	120	130	140	150	160	170	175	180
Zone 1	0	93	87	84	82	77	73	69	65	62	60	59	56
	10	84	81	79	77	74	71	68	65	62	60	59	56
	20	73	71	70	69	67	64	62	60	58	57	56	55
	30	66	64	63	63	61	59	57	56	54	53	53	51
	40	60	59	58	58	56	55	54	52	51	50	50	48
	50	54	54	54	54	53	52	50	49	48	48	48	46
	60	50	50	50	50	50	49	48	48	46	45	45	44
	70	48	48	48	48	48	46	46	45	44	43	43	42
	80	44	44	44	44	44	44	44	43	42	42	41	41
90	42	42	42	42	42	42	42	41	40	40	40	39	
Zone 2	0	93	87	84	82	76	71	66	62	58	56	55	52
	10	84	81	79	77	74	71	66	62	58	56	55	52
	20	73	71	70	69	67	64	62	60	58	56	55	52
	30	66	64	63	63	61	59	57	56	54	53	53	51
	40	60	59	58	58	56	55	54	52	51	50	50	48
	50	54	54	54	54	53	52	50	49	48	48	48	46
	60	50	50	50	50	50	49	48	48	46	45	45	44
	70	48	48	48	48	48	46	46	45	44	43	43	42
	80	44	44	44	44	44	44	44	43	42	42	41	41
90	42	42	42	42	42	42	42	41	40	40	40	39	
Zone 3	0	93	87	84	82	76	71	66	62	58	56	55	52
	10	84	81	79	77	74	71	66	62	58	56	55	52
	20	73	71	70	69	67	64	62	60	58	56	55	52
	30	66	64	63	63	61	59	57	56	54	53	53	51
	40	60	59	58	58	56	55	54	52	51	50	50	48
	50	54	54	54	54	53	52	50	49	48	48	48	46
	60	50	50	50	50	50	49	48	48	46	45	45	44
	70	48	48	48	48	48	46	46	45	44	43	43	42
	80	44	44	44	44	44	44	44	43	42	42	41	41
90	42	42	42	42	42	42	42	41	40	40	40	39	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 80"



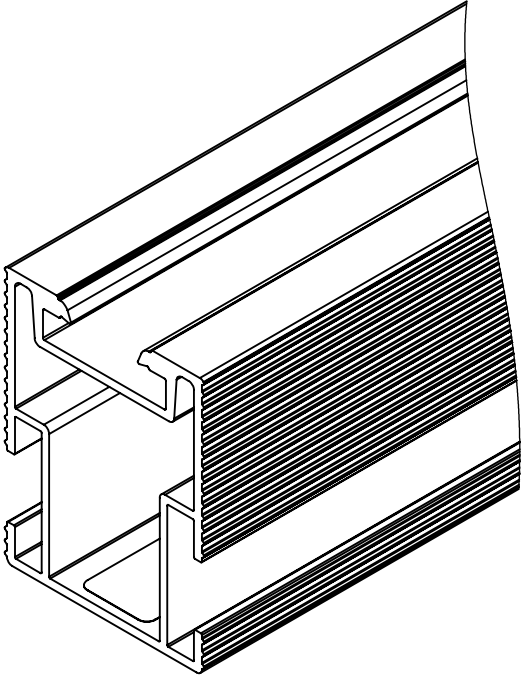
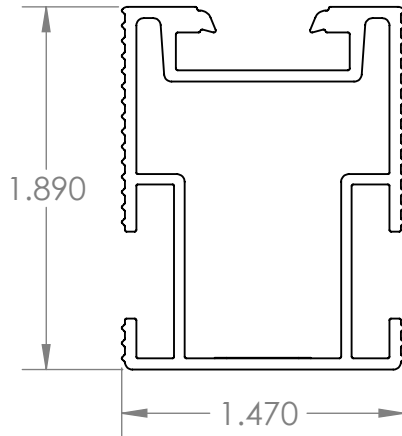
**Rail Spans for Quick Mount PV QRail Standard System**

		Mean Roof Height: $0 < h \leq 30$ ft						Panel Orientation: Portrait					
<b>Table 66</b>		Roof Angle: $27 < \theta \leq 45$ degrees						Exposure Category: D					
Roof Wind Zone	Ground Snow Load	Wind Speed (mph)											
		100	110	115	120	130	140	150	160	170	175	180	190
Zone 1	0	88	82	79	77	72	68	64	61	58	56	55	52
	10	81	78	76	74	71	68	64	61	58	56	55	52
	20	71	69	68	66	64	62	60	57	55	54	53	52
	30	64	63	62	61	59	57	55	54	52	51	50	49
	40	59	58	57	56	55	53	52	50	49	48	48	46
	50	54	54	53	53	51	50	49	48	48	46	45	44
	60	50	50	50	50	49	48	48	46	44	44	43	42
	70	48	48	48	48	46	45	44	44	43	42	42	41
	80	44	44	44	44	44	43	43	42	41	41	40	39
90	42	42	42	42	42	42	41	40	39	39	39	38	
Zone 2	0	88	82	79	76	70	65	61	57	53	52	50	48
	10	81	78	76	74	70	65	61	57	53	52	50	48
	20	71	69	68	66	64	62	60	57	53	52	50	48
	30	64	63	62	61	59	57	55	54	52	51	50	48
	40	59	58	57	56	55	53	52	50	49	48	48	46
	50	54	54	53	53	51	50	49	48	48	46	45	44
	60	50	50	50	50	49	48	48	46	44	44	43	42
	70	48	48	48	48	46	45	44	44	43	42	42	41
	80	44	44	44	44	44	43	43	42	41	41	40	39
90	42	42	42	42	42	42	41	40	39	39	39	38	
Zone 3	0	88	82	79	76	70	65	61	57	53	52	50	48
	10	81	78	76	74	70	65	61	57	53	52	50	48
	20	71	69	68	66	64	62	60	57	53	52	50	48
	30	64	63	62	61	59	57	55	54	52	51	50	48
	40	59	58	57	56	55	53	52	50	49	48	48	46
	50	54	54	53	53	51	50	49	48	48	46	45	44
	60	50	50	50	50	49	48	48	46	44	44	43	42
	70	48	48	48	48	46	45	44	44	43	42	42	41
	80	44	44	44	44	44	43	43	42	41	41	40	39
90	42	42	42	42	42	42	41	40	39	39	39	38	

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 80"

ITEM NO.	DESCRIPTION	QTY.
1	QRAIL, STANDARD, AL, MILL	1



- NOTES:  
 1. AVAILABLE IN 14' AND 17' - 4" LENGTHS  
 2. AVAILABLE IN MILL FINISH AND BLACK FINISH

**Quick Mount PV<sup>®</sup>**

TITLE:  
**QMR-RS: QRAIL STANDARD**

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/8$ TWO PLACE DECIMAL $\pm .19$ THREE PLACE DECIMAL $\pm .094$	SIZE <b>A</b>	DRAWN BY: DFM	REV <b>1</b>
	SCALE: 1:1	DATE: 12/22/2017	WEIGHT: 0.65

SHEET 1 OF 1