

Design Criteria for Span Tables:

Values in the maximum allowable rail span tables provided herein are subject to the following general criteria and additional criteria shown on individual span tables sheets. Values in span tables are based on the same engineering methodology and calculation algorithms used for U-Builder and are provided here for reference.

Building Assumptions

- Building Risk Category: II
- Mean Roof Height: 30 ft
- Roof Pitch: 0°-45°
- Site Elevation: 0 ft

Wind Design Assumptions

- Wind loads used are based on ASCE 7-16 Sec 29.4.4 with Provisions from SEAOC PV2-2017
- Exposure Category B, C, or D
- Basic Wind Speed = 90 – 180 mph
- Level terrain. Topographic factor, $k_{zt} = 1.0$
- $\gamma_E = 1.0$ for 'Interior' spans, $\gamma_E = 1.5$ for 'Exposed' spans (ASCE 7-16, Fig. 29.4-7)

Snow Design Assumptions

- Ground Snow Load = 0-100 psf
- Exposure Factor coefficients of Partially Exposed condition
- Thermal Factor = 1.0
- Results based on uniform snow load

Seismic Design Assumptions

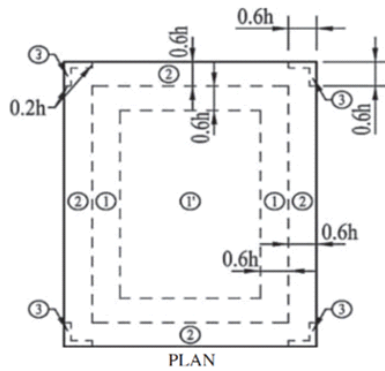
- 0.2-s Spectral Response Acceleration, $SS \leq 3$
- $S_S = 1.25$ and 3 per criteria shown on individual span tables sheets.
- $S_1 = 0.5$
- Seismic site class D

Array Assumptions

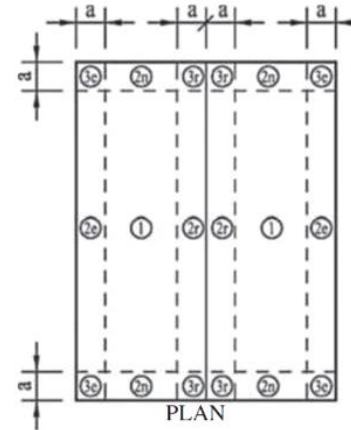
- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at least twice the module height above roof surface.
- Modules are parallel to roof surface and maximum height above roof surface is 5" to 10" depending on attachment type.
- Gaps between module rows and columns is 0.25" in to 1" depending on clamp type.
- The most restrictive of all roof zone spans shall be used when any part of the module is attributed to that span.
- 'Exposed' spans as defined in ASCE 7-16 sec. 29.4.4 shall be used when any part of an exposed module or panel as is attributed to that span.

Span Tables

Zone should be considered as per ASCE 7-16, Fig. 30.3-2A to 30.3-2D



Gable Roofs $\theta \leq 7^\circ$

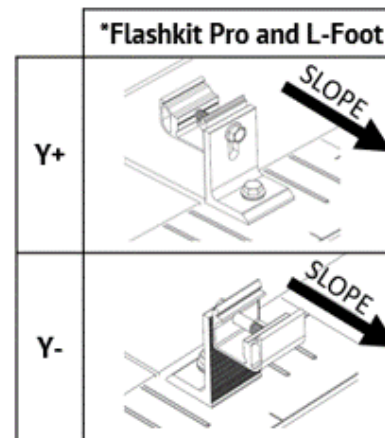


Gable Roofs $7^\circ < \theta \leq 45^\circ$

Grouping of ASCE 7-16 Roof Zones (Gable and Flat)

- **Roof Tilt 0° - 7°**
 - Roof Zone 1 = 1
 - Roof Zone 2 = 2
 - Roof Zone 3 = 3
- **Roof Tilt 7° - 27°**
 - Roof Zone 1 = 1, 2e
 - Roof Zone 2 = 2n, 2r, 3e
 - Roof Zone 3 = 3r
- **Roof Tilt 27° - 45°**
 - Roof Zone 1 = 1, 2e, 2r
 - Roof Zone 2 = 2n, 3r
 - Roof Zone 3 = 3e

Rails can be installed in these possible orientations.





ASCE 7-16
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

19 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

L-Foot
Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

19 sq.ft
Module Area

LANDSCAPE
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

L-Foot
Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																															
				90			95			100			105			110			115			120			130			140			150			160			170			180											
				Roof Wind Zone																																															
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3									
0	B	0-7	Interior	102	102	102	102	102	102	102	102	102	101	102	102	96	102	102	92	102	101	88	102	97	84	102	90	78	97	84	73	91	79	68	85	74	65	81	71	62	77	67	60								
			Exposed	102	102	91	102	100	87	102	95	82	102	91	79	101	87	75	97	84	72	93	80	70	86	75	65	80	70	62	75	66	59	71	63	55	68	60	52	64	58	59									
		7-20	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	93	102	97	88	102	93	84	102	88	81	93	81	74	87	76	69	82	71	65	78	66	62	74	63	59	71	61	57							
			Exposed	102	97	88	102	91	83	102	87	79	94	82	75	90	78	72	87	75	69	84	72	66	78	67	62	74	63	59	70	60	55	66	57	52	63	53	59	61	50	56									
		20-27	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	100	103	101	95	103	97	90	103	89	83	99	82	77	93	77	71	88	72	67	83	68	63	79	65	61									
			Exposed	103	103	100	103	100	93	103	94	88	103	90	84	103	86	80	99	82	76	95	78	73	89	73	67	83	68	63	78	64	60	74	61	56	71	59	52	68	55	49									
	27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	99	103	103	103	99	103	103	95	103	98	88	99	91	82	92	85	76	86	80	72	80	75	68	76	71	65						
		Exposed	103	103	103	103	103	98	103	103	93	103	99	89	103	94	85	98	90	81	94	86	78	86	80	72	80	75	68	74	70	64	70	66	61	66	63	58	63	61	54										
	C	0-7	Interior	102	102	94	102	102	90	102	98	85	102	94	81	102	90	78	100	86	75	96	83	72	89	77	67	83	72	63	78	68	60	73	64	57	70	62	54	66	59	51									
			Exposed	102	90	78	99	85	74	94	81	70	90	78	67	86	75	65	82	72	63	79	69	61	74	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50									
		7-20	Interior	102	101	91	102	95	86	102	90	82	99	85	78	93	81	74	89	78	71	86	74	68	80	69	64	76	64	61	72	61	57	68	59	54	65	55	50	62	52	58									
			Exposed	92	81	74	88	77	70	85	73	67	81	70	64	78	67	62	75	64	60	73	62	59	68	59	54	64	55	50	61	51	57	59	53	55	55	50	52	52	47										
		20-27	Interior	103	103	103	103	103	97	103	98	92	103	93	87	103	89	83	102	85	79	98	81	75	91	75	70	85	70	65	80	66	61	76	63	58	73	60	54	69	57	51									
			Exposed	103	88	82	101	84	78	96	79	74	91	76	70	88	72	67	85	69	64	82	67	62	77	63	58	72	60	53	68	56	49	65	53	57	62	60	53	60	57	49									
	27-45	Interior	103	103	103	103	103	102	103	103	96	103	102	92	103	97	88	102	93	84	97	89	80	89	83	75	82	77	70	77	72	65	72	68	62	68	65	59	64	62	56										
		Exposed	103	97	87	101	92	83	95	88	79	90	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	56										
	D	0-7	Interior	102	101	87	102	95	83	102	91	79	100	87	75	96	83	72	92	80	69	88	77	67	82	72	63	77	67	60	72	64	56	68	61	52	65	58	60	62	55	57									
			Exposed	96	83	72	91	79	68	87	75	65	83	72	63	79	69	61	76	67	59	73	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	46									
		7-20	Interior	102	92	84	102	87	79	94	82	75	90	78	72	86	75	68	83	71	66	80	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	54									
			Exposed	86	75	68	82	71	65	79	67	63	76	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	42									
		20-27	Interior	103	100	94	103	95	88	103	90	84	103	85	79	98	81	76	94	78	72	90	75	69	84	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	58									
			Exposed	98	81	75	93	77	71	89	73	68	85	70	65	82	67	62	79	64	60	76	63	58	72	59	63	67	55	49	64	51	56	61	59	51	59	56	48	55	52	42									
	27-45	Interior	103	103	98	103	103	93	103	98	88	103	94	84	98	90	81	93	86	77	89	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51										
		Exposed	98	89	81	92	85	76	87	81	73	83	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50										
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	90	78	91	84	73	91	79	68	85	74	65	81	71	62	77	67	60											
			Exposed	91	91	91	91	91	87	91	82	91	91	79	91	87	75	91	84	72	91	80	70	86	75	65	80	70	62	75	66	59	71	63	55	68	60	52	64	58	59										
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	88	81	91	81	74	87	76	69	82	71	65	78	66	62	74	63	59	71	61	57									
			Exposed	91	91	88	91	91	83	91	87	79	91	82	75	90	78	72	87	75	69	84	72	66	78	67	62	74	63	59	70	60	55	66	57	52	63	53	59	61	50	56									
		20-27	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	97	90	100	89	83	99	82	77	93	77	71	88	72	67	83	68	63	79	65	61										
			Exposed	100	100	100	100	100	93	100	94	88	100	90	84	100	86	80	99	82	76	95	78	73	88	73	67	83	68	63	78	64	60	74	61	56	71	59	52	68	55	49									
	27-45	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	99	102	102	102	95	102	98	88	99	91	82	92	85	76	86	80	72	80	75	68	71	65										
		Exposed	102	102	102	102	102	98	102	102	93	102	99	89	102	94	85	98	90	81	94	86	78	86	80	72	80	75	68	74	70	64	70	66	61	66	63	58	63	61	54										
	C	0-7	Interior	91	91	91	91	91	90	91	91	85	91	91	81	91	90	78	91	86	75	91	83	72	89	77	67	83	72	63	78	68	60	73	64	57	70	62	54	66	59	51									
			Exposed	91	90	78	91	85	74	91	81	70	90	78	67	86	75	65	82	72	63	79	69	61	74	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50									
		7-20	Interior	91	91	91	91	91	91	86	91	90	82	91	85	78	91	81	74	89	78	71	86	74	68	80	69	64	76	64	61	72	61	57	68	59	54	65	55	50	62	52	58								
			Exposed	91	81	74	88	77	70	85	73	67	81	70	64	78	67	62	75	64	60	73	62	59	68	59	54	64	55	50	61	51	57	59	53	55	55	50	52	52	47										
		20-27	Interior	100	100	100	100	100	97	100	98	92	100	93	87	100	89	83	100	85	79	98	81	75	91	75	70	85	70	65	80	66	61	76	63	58	73	60	54	69	57	51									
			Exposed	100	88	82	100	84	78	96	79	74	91	76	70	88	72	67	85	69	64	82	67	62	77	63	58	72	60	53	68	56	49	65	53	57	62	60	53	60	57	49									
	27-45	Interior	102	102	102																																														

[illegible]

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SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
				90						95						100						105						110						115						120						130						140						150						160						170						180																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
				Roof Wind Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
90	B	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

[illegible]

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																							
				90			95			100			105			110			115			120			130			140			150			160			170			180			
				Roof Wind Zone																																							
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0-7	Interior	101	101	101	101	101	101	101	101	101	101	101	95	101	101	91	101	100	87	101	96	83	101	89	77	96	83	72	90	78	68	85	74	64	80	70	62	76	67	59	
			Exposed	101	101	90	101	99	86	101	94	82	101	90	78	100	86	75	96	83	72	92	80	69	85	74	64	79	69	61	75	65	58	71	63	54	67	60	51	64	57	59	
		7-20	Interior	102	102	102	102	102	102	102	102	97	102	101	92	102	96	87	102	92	83	102	87	80	92	81	74	86	75	68	81	70	64	77	66	62	74	63	59	70	60	56	
			Exposed	102	96	87	102	90	82	100	86	78	93	81	74	89	78	71	86	74	68	83	71	65	78	66	62	73	63	59	69	60	55	66	56	51	63	53	59	60	60	56	
		20-27	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	99	102	100	94	102	96	89	102	88	82	98	81	76	92	76	71	87	72	66	83	68	63	79	64	60	
			Exposed	102	102	98	102	99	92	102	93	87	102	89	83	102	85	79	98	81	75	94	78	72	87	72	67	82	67	62	78	63	59	74	61	55	70	58	51	67	55	48	
	27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	98	103	103	94	103	97	87	98	90	81	91	84	76	85	79	71	79	75	67	75	71	64		
		Exposed	103	103	103	103	103	97	103	103	92	103	98	88	103	93	84	97	89	80	93	86	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53		
	C	0-7	Interior	101	101	94	101	101	89	101	98	84	101	93	80	101	89	77	99	85	74	95	82	71	88	76	66	82	72	63	77	67	60	73	64	56	69	61	53	66	59	60	
			Exposed	101	89	77	98	84	73	93	81	70	89	77	67	85	74	64	82	71	62	78	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	59	
		7-20	Interior	102	100	90	102	94	85	102	89	81	98	84	77	92	80	73	88	77	70	85	74	67	80	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58	
			Exposed	92	80	73	87	76	70	84	72	66	80	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	56	62	51	47	
20-27		Interior	102	102	102	102	102	96	102	97	91	102	92	86	102	88	82	101	84	78	97	80	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50				
		Exposed	102	87	81	100	83	77	95	79	73	91	75	70	87	72	66	84	69	64	81	66	62	76	62	58	72	59	53	68	55	49	64	52	57	62	59	52	59	56	48		
D	27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	98	103	103	94	103	97	87	98	90	81	91	84	76	85	79	71	79	75	67	75	71	64			
		Exposed	103	96	86	100	91	82	94	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55		
	0-7	Interior	101	100	86	101	94	82	101	90	78	100	86	74	95	82	71	91	79	68	87	76	66	81	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56		
		Exposed	95	82	71	90	78	68	86	75	65	82	72	63	79	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	48	51	54	46		
	7-20	Interior	102	91	83	100	86	78	93	81	74	89	77	71	85	74	68	82	71	65	79	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53		
		Exposed	85	74	68	82	70	64	78	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	49	61	60	46	58	47	44		
10	C	20-27	Interior	102	99	93	102	94	87	102	89	83	102	84	78	97	81	75	93	77	72	89	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57	
			Exposed	97	80	75	92	76	71	88	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	44	
		27-45	Interior	103	103	97	103	103	92	103	97	88	102	93	84	97	89	80	92	85	77	88	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50	
			Exposed	96	88	80	91	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49	
		0-7	Interior	90	90	90	90	89	90	90	84	90	90	80	90	89	77	90	85	74	90	82	71	88	76	66	82	72	63	77	67	60	73	64	56	69	61	53	66	59	60		
			Exposed	90	89	77	90	84	73	90	81	70	89	77	67	85	74	64	82	71	62	78	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	59	
20	B	7-20	Interior	91	91	90	91	91	85	91	89	81	91	84	77	91	80	73	88	77	70	85	74	67	80	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58	
			Exposed	91	80	73	87	76	70	84	72	66	80	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	56	62	51	47	
		20-27	Interior	99	99	99	99	99	96	99	97	91	99	92	86	99	88	82	99	84	78	97	80	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50			
			Exposed	99	87	81	99	83	77	95	79	73	91	75	70	87	72	66	84	69	64	81	66	62	76	62	58	72	59	53	68	55	49	64	52	57	62	59	52	59	56	48	
		27-45	Interior	101	101	101	101	101	101	101	95	101	101	95	101	91	101	96	87	101	92	83	96	88	80	88	82	74	82	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	101	96	86	100	91	82	94	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55	
C	0-7	Interior	90	90	86	90	90	82	90	78	90	86	74	90	82	71	90	79	68	87	76	66	81	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56			
		Exposed	90	82	71	90	78	68	86	75	65	82	72	63	79	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	48	51	54	46		
	7-20	Interior	91	91	83	91	86	78	91	81	74	89	77	71	85	74	68	82	71	65	79	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53		
		Exposed	85	74	68	82	70	64	78	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	49	61	60	46	58	47	44		
	20-27	Interior	100	99	93	100	94	87	100	89	83	100	84	78	97	81	75	93	77	72	89	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57		
		Exposed	97	80	75	92	76	71	88	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	44		
27-45	Interior	102	102	97	102	102	92	102	97	88	102	93	84	97	89	8																											



ASCE 7-16
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

23 sq.ft
Module Area

LANDSCAPE
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

L-Foot
Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
				90			95			100			105			110			115			120			130			140			150			160			170			180																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
				Roof Wind Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
30	B	0-7	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	7

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

[illegible]

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

[illegible]

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

[illegible]

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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ASCE 7-16
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 3.00
Seismic

19 sq.ft
Module Area

LANDSCAPE
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

L-Foot
Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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30	B	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	7

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.



ASCE 7-16
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 3.00
Seismic

19 sq.ft
Module Area

LANDSCAPE
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

L-Foot
Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
				90						95						100						105						110						115						120						130						140						150						160						170						180																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
				Roof Wind Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
90	B	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

[illegible]

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
0	B	0-7	Interior	101	101	101	101	101	101	101	101	101	101	101	95	101	101	91	101	100	87	101	96	83	101	89	77	96	83	72	90	78	68	85	74	64	80	70	62	76	67	59
			Exposed	101	101	90	101	99	86	101	94	82	101	90	78	100	86	75	96	83	72	92	80	69	85	74	64	79	69	61	75	65	58	71	63	54	67	60	51	64	57	59
		7-20	Interior	102	102	102	102	102	102	102	102	97	102	101	92	102	96	87	102	92	83	102	87	80	92	81	74	86	75	68	81	70	64	77	66	62	74	63	59	70	60	56
			Exposed	102	96	87	102	90	82	100	86	78	93	81	74	89	78	71	86	74	68	83	71	65	78	66	62	73	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	99	102	100	94	102	96	89	102	88	82	98	81	76	92	76	71	87	72	66	83	68	63	79	64	60
			Exposed	102	102	98	102	99	92	102	93	87	102	89	83	102	85	79	98	81	75	94	78	72	87	72	67	82	67	62	78	63	59	74	61	55	70	58	51	67	55	48
	27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	94	103	93	103	94	103	97	98	90	81	91	84	76	85	79	71	79	75	67	75	71	64	
		Exposed	103	103	103	103	103	97	103	103	92	103	98	88	103	93	84	97	89	80	93	86	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53	
	C	0-7	Interior	101	101	94	101	101	89	101	98	84	101	93	80	101	89	77	99	85	74	95	82	71	88	76	66	82	72	63	77	67	60	73	64	56	69	61	53	66	59	60
			Exposed	101	89	77	98	84	73	93	81	70	89	77	67	85	74	64	82	71	62	78	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	59
		7-20	Interior	102	100	90	102	94	85	102	89	81	98	84	77	92	80	73	88	77	70	85	74	67	80	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	92	80	73	87	76	70	84	72	66	80	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	56	62	51	47
20-27		Interior	102	102	102	102	102	96	102	97	91	102	92	86	102	88	82	101	84	78	97	80	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50			
		Exposed	102	87	81	100	83	77	95	79	73	91	75	70	87	72	66	84	69	64	81	66	62	76	62	58	72	59	53	68	55	49	64	52	57	62	59	52	59	56	48	
D	27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	94	103	93	103	94	103	97	98	90	81	91	84	76	85	79	71	79	75	67	75	71	64		
		Exposed	103	96	86	100	91	82	94	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	74	62	67	64	59	63	61	54	60	58	50	58	54	51	55	
	0-7	Interior	101	100	86	101	94	82	101	90	78	100	86	74	95	82	71	91	79	68	87	76	66	81	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56	
		Exposed	95	82	71	90	78	68	86	75	65	82	72	63	79	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	48	51	54	46	
	7-20	Interior	102	91	83	100	86	78	93	81	74	89	77	71	85	74	68	82	71	65	79	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53	
		Exposed	85	74	68	82	70	64	78	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	49	61	60	46	58	47	44	
10	C	20-27	Interior	102	99	93	102	94	87	102	89	83	102	84	78	97	81	75	93	77	72	89	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	97	80	75	92	76	71	88	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	44
		27-45	Interior	103	103	97	103	103	92	103	97	88	102	93	84	97	89	80	92	85	77	88	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	96	88	80	91	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
		0-7	Interior	90	90	90	90	89	90	90	84	90	90	80	90	89	77	90	85	74	90	82	71	88	76	66	82	72	63	77	67	60	73	64	56	69	61	53	66	59	60	
			Exposed	90	89	77	90	84	73	90	81	70	89	77	67	85	74	64	82	71	62	78	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	59
20	B	7-20	Interior	91	91	90	91	91	85	91	89	81	91	84	77	91	80	73	88	77	70	85	74	67	80	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	91	80	73	87	76	70	84	72	66	80	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	56	62	51	47
		20-27	Interior	99	99	99	99	99	96	99	97	91	99	92	86	99	88	82	99	84	78	97	80	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50		
			Exposed	99	87	81	99	83	77	95	79	73	91	75	70	87	72	66	84	69	64	81	66	62	76	62	58	72	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	101	101	101	101	101	101	101	101	95	101	101	91	101	96	87	101	92	83	96	88	80	88	82	74	82	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	101	96	86	100	91	82	94	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	74	62	67	64	59	63	61	54	60	58	50	58	54	51	55
30	D	0-7	Interior	90	90	86	90	90	82	90	90	78	90	86	74	90	82	71	90	79	68	87	76	66	81	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	90	82	71	90	78	68	86	75	65	82	72	63	79	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	48	51	54	46
		7-20	Interior	91	91	83	91	86	78	91	81	74	89	77	71	85	74	68	82	71	65	79	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	85	74	68	82	70	64	78	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	49	61	60	46	58	47	44
		20-27	Interior	100	99	93	100	94	87	100	89	83	100	84	78	97	81	75	93	77	72	89	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	97	80	75	92	76	71	88	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	44
27-45	Interior	102	102	97	102	102	92	102	97	88	102																															

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.



11

30 ft

S_s = 3.00

23 sq.ft
Module Area

LANDSCAPE

CROSS-SLOPE
Rail Direction

NXT	
Rail Typ	
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
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93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

NXT COMBO
Clamp

L-Foot
Attachment

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

[illegible]

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.