

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

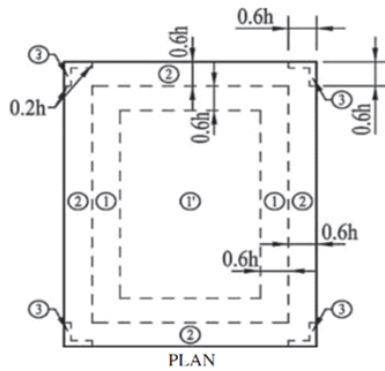
- 0.2-s Spectral Response Acceleration, $S_S \leq 3$
- $S_S = 1.25$ and 3 per criteria shown on individual span tables sheets.
- $S_1 = 0.5$
- Seismic site class D

Array Assumptions

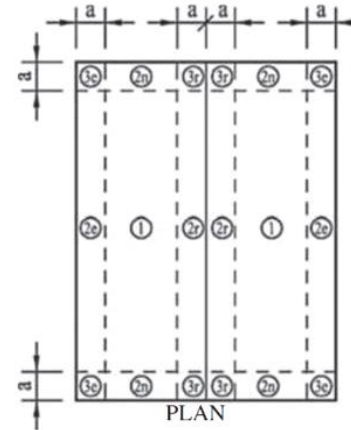
- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at 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.

*Flashloc DUO for Plywood	
Y+	
Y-	Alternate orientation not allowed



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

Flashloc DUO Plywood
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																																				
0	B	0-7	Interior	47	47	39	47	47	34	47	45	31	47	40	27	47	36	25	47	32	22	41	29	20	34	25	17	29	21	15	25	18	13	22	16	11	19	14	10	17	12	9																																							
			Exposed	47	35	25	45	31	22	39	28	20	35	25	18	32	23	16	29	21	14	26	19	13	22	16	11	19	14	9	16	12	8	14	10	7	12	9	6	11	8	12	9																																						
		7-20	Interior	47	41	34	47	37	30	47	33	27	47	29	24	41	26	22	38	24	20	34	22	18	29	18	15	24	16	13	21	14	11	18	12	10	16	10	8	14	9	7																																							
			Exposed	41	26	22	37	23	19	33	21	17	29	19	15	26	17	14	24	15	13	22	14	12	18	12	10	16	10	8	14	9	7	12	8	6	10	7	8	9	6	7																																							
		20-27	Interior	48	48	42	48	46	35	48	40	30	48	36	26	48	32	23	48	29	21	48	27	18	39	22	15	33	19	13	29	16	11	25	14	10	22	13	8	19	11	7																																							
			Exposed	48	32	23	48	28	20	45	25	17	40	23	15	36	21	14	33	19	13	30	17	12	25	14	10	21	12	8	18	11	7	16	9	6	14	8	5	12	7	5																																							
	27-45	Interior	48	48	48	48	48	44	48	48	38	48	46	34	48	40	30	41	37	26	37	33	24	31	28	19	27	24	16	23	21	13	20	18	11	18	16	10	16	14	9																																								
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			Exposed	34	24	17	30	22	15	27	19	14	24	17	12	22	16	11	20	14	10	18	13	9	15	11	8	13	9	7	11	8	9	15	9	8	13	8	7	6	10	6	8																																						
		7-20	Interior	45	28	23	39	25	21	35	23	18	32	20	17	28	18	15	26	17	14	24	15	12	20	13	11	17	11	9	15	9	8	13	8	7	11	7	6	10	6	8																																							
			Exposed	28	18	15	25	16	13	23	15	12	20	13	11	18	12	10	17	11	9	15	10	8	13	8	7	11	7	9	9	6	8	8	6	10	7	7	6	6	6	5																																							
20-27		Interior	48	34	25	48	31	22	48	27	19	43	25	17	39	22	15	35	20	14	32	18	12	27	16	10	23	13	9	20	11	8	17	10	7	15	9	6	13	8	5																																								
		Exposed	39	22	15	34	20	13	31	18	12	28	16	11	25	14	10	23	13	9	21	12	8	17	10	7	15	9	6	13	7	5	11	6	7	10	9	6	9	8	5																																								
D	0-7	Interior	48	44	32	44	38	28	38	34	25	35	31	22	31	28	19	28	25	17	26	23	15	22	20	13	19	17	10	16	14	9	14	13	8	12	11	7	11	10	6																																								
		Exposed	31	28	19	28	25	17	25	22	15	22	20	13	20	18	12	18	16	10	17	15	9	14	13	8	12	11	7	10	9	5	8	7	7	7	7	6	6	5																																									
	7-20	Interior	46	32	22	39	28	20	35	25	18	31	23	16	28	20	14	26	19	13	23	17	12	20	14	10	17	12	8	14	10	7	13	9	6	11	8	9	10	7	8																																								
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	20-27	Interior	37	24	19	33	21	17	29	19	15	26	17	14	24	15	13	22	14	11	20	13	10	17	11	9	14	9	7	12	8	6	11	7	9	9	6	8	8	8	7																																								
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10	B	0-7	Interior	33	33	33	33	33	33	33	33	31	33	33	27	33	25	33	22	33	22	33	23	20	14	24	17	12	20	15	10	17	13	9	15	11	8	13	10	7	12	9																																							
			Exposed	33	33	33	33	33	33	33	33	33	33	27	33	25	33	22	33	23	20	14	24	17	12	20	15	10	17	13	9	15	11	8	13																																														
		7-20	Interior	33	33	33	33	33	30	33	33	27	33	29	24	33	26	22	33	24	20	33	22	18	29	18	15	24	16	13	21	14	11	18	12	10	16	10	8	14	9	7																																							
			Exposed	33	26	22	33	23	19	33	21	17	29	19	15	26	17	14	24	15	13	22	14	12	18	12	10	16	10	8	14	9	7	12	8	6	10	7	8	9	6	7																																							
		20-27	Interior	44	44	42	44	44	35	44	40	30	44	36	26	44	32	23	44	29	21	44	27	18	39	22	15	33	19	13	29	16	11	25	14	10	22	13	8	19	11	7																																							
			Exposed	44	32	23	44	28	20	44	25	17	40	23	15	36	21	14	33	19	13	30	17	12	25	14	10	21	12	8	18	11	7	16	9	6	14	8	5	12	7	5																																							
	27-45	Interior	47	47	47	47	44	47	47	38	47	46	34	47	40	30	41	37	26	37	33	24	31	28	19	27	24	16	23	21	13	20	18	11	18	16	10	16	14	9																																									
		Exposed	47	40	30	40	36	26	36	32	22	32	29	20	29	26	18	26	24	16	24	22	14	20	18	12	17	16	10	15	13	8	13	12	7	11	10	6	10	9	5																																								
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			Exposed																																																																														

* 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.

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.



ASCE 7-16
Design Standard

II
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

Flashloc DUO Plywood
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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3	9	9	27-45	Interior	78	78	54	78	65	47	65	58	41	58	52	37	53	47	32	48	43	29	44	39	26	37	33	21	32	28	18	27	24	15	24	21	13	21	19	11	19	17	10	10	Exposed	52	47	32	47	42	28	42	37	25	38	34	22	34	31	20	31	28	18	28	25	16	24	22	13	21	18	11	18	16	10	16	14	8	14	12	11	12	11	10	10

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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* 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.



ASCE 7-16
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

23 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

Flashloc DUO Plywood
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	39	39	32	39	29	29	39	38	25	39	33	23	39	30	21	39	27	19	34	25	17	29	21	14	24	17	12	21	15	11	18	13	9	16	11	8	10	7	8	14	10	7	7	6	7																																	
			Exposed	39	30	21	38	26	18	33	23	16	29	21	15	27	19	13	24	17	12	22	16	11	18	13	9	16	11	8	13	10	7	12	8	6	10	7	8	9	6	7	8	14	10	7	7	6	7																																
		7-20	Interior	39	34	28	39	31	25	39	27	22	39	24	20	35	22	18	31	20	16	28	18	15	24	15	13	20	13	11	17	11	9	15	10	8	13	9	7	12	8	7	12	8	6	7	6	6																																	
			Exposed	34	22	18	31	20	16	27	17	14	24	16	13	22	14	12	20	13	11	18	12	10	15	10	8	13	8	7	11	7	6	10	6	8	9	8	7	8	7	8	7	6	7	6	6																																		
		20-27	Interior	40	40	35	40	39	30	40	33	25	40	30	22	40	27	19	40	24	17	40	22	15	33	19	13	28	16	11	24	14	9	21	12	8	18	10	7	16	9	6	7	16	9	6	6																																		
			Exposed	40	27	19	40	24	17	38	21	14	33	19	13	30	17	12	27	16	11	25	14	10	21	12	8	18	10	7	15	9	6	13	8	5	12	7	7	10	6	7	10	6	6	6																																			
	27-45	Interior	41	41	41	41	37	41	41	32	41	38	28	40	34	25	34	31	22	31	28	20	26	23	16	22	20	13	19	17	11	17	15	9	15	13	8	13	12	7	8	13	12	7	7	6	7																																		
		Exposed	40	33	25	33	30	21	30	27	19	27	24	17	24	22	15	22	20	13	20	18	12	17	15	10	14	13	8	12	11	7	11	10	6	10	8	5	8	8	8	8	8	8	8	8																																			
	C	0-7	Interior	39	32	22	39	28	20	35	25	18	32	23	16	29	20	14	26	19	13	24	17	12	20	14	10	17	12	8	14	10	7	13	9	6	11	8	9	10	6	7	8	9	10	7	8	9	8																																
			Exposed	28	20	14	25	18	13	23	16	11	20	15	10	18	13	9	17	12	8	15	11	8	13	9	6	11	8	7	12	8	6	11	7	9	9	6	7	8	6	7	8	8	7	7	5	6																																	
		7-20	Interior	38	24	19	33	21	17	29	19	15	26	17	14	24	15	13	22	14	11	20	13	10	16	11	9	14	9	7	12	8	6	11	7	9	9	6	7	8	6	7	8	8	7	8	7																																		
			Exposed	24	15	12	21	14	11	19	12	10	17	11	9	15	10	8	14	9	7	13	8	7	11	7	9	9	6	7	8	6	10	6	8	9	6	7	8	5	8	5	8	5	8	5	8																																		
20-27		Interior	40	29	21	40	26	18	40	23	16	36	21	14	33	19	12	29	17	11	27	15	10	22	13	9	19	11	7	16	9	6	14	8	5	10	6	6	9	8	5	11	6	7	10	6	7																																		
		Exposed	32	18	12	29	16	11	26	15	10	23	13	9	21	12	8	19	11	7	17	10	7	14	8	6	12	7	5	11	6	6	9	8	5	8	7	5	7	6	4	6	5	8	5	8																																			
27-45	Interior	41	36	27	36	32	23	32	29	20	29	26	18	26	23	16	24	21	14	22	19	13	18	16	10	16	14	9	13	12	7	12	10	6	10	9	5	9	8	5	9	8	5	9	8	5																																			
	Exposed	26	23	16	23	21	14	21	18	12	19	17	11	17	15	10	15	14	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	6	7	6	5	8	8	5	8	6	8	5	8																																				
D	0-7	Interior	38	26	18	33	23	16	29	21	15	26	19	13	24	17	12	22	15	11	20	14	10	16	12	8	14	10	7	12	9	6	10	8	5	9	7	7	8	6	7	8	6	6	6	6																																			
		Exposed	24	17	12	21	15	11	19	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	8	9	6	7	8	6	10	6	8	9	6	7	8	5	6	7	5	8	6	4	6	4																																		
	7-20	Interior	31	20	16	27	17	14	24	16	13	22	14	12	20	13	10	18	12	9	16	11	9	14	9	7	12	8	6	10	6	8	9	7	8	8	6	7	8	6	7	7	8	6	7	7	5																																		
		Exposed	20	13	10	17	11	9	16	10	8	14	9	7	13	8	7	12	7	6	11	7	9	9	6	7	8	7	6	10	6	6	9	6	6	8	5	4	7	4	6	3	4	3	4	3																																			
	20-27	Interior	40	24	17	38	21	14	33	19	13	30	17	12	27	15	10	24	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	6	9	8	5	11	6	7	10	6	7																																		
		Exposed	27	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	6	9	8	5	8	7	5	7	6	4	6	5	8	5	8	5	8																																				
27-45	Interior	34	30	22	30	27	19	27	24	16	24	21	15	22	19	13	20	18	12	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	5	8	5	8	5	8	5	8																																			
	Exposed	22	19	13	19	17	11	17	15	10	16	14	9	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	6	6	9	5	8	8	5	7	7	4	6	7	4	6	7																																				
10	B	0-7	Interior	28	28	28	28	28	28	28	28	25	28	28	23	28	28	21	28	27	19	28	25	17	28	21	14	24	17	12	21	15	11	18	13	9	16	11	8	10	7	8	14	10	7	7	6	7																																	
			Exposed	28	28	21	28	26	18	28	23	16	28	21	15	27	19	13	24	17	12	22	16	11	18	13	9	16	11	8	13	10	7	12	8	6	10	7	8	9	6	7	8	9	6	7																																			
		7-20	Interior	28	28	28	28	28	25	28	27	22	28	24	20	28	22	18	28	20	16	28	18	15	24	15	13	20	13	11	17	11	9	15	10	8	13	9	7	12	8	6	7	12	8	6	6																																		
			Exposed	28	22	18	28	20	16	27	17	14	24	16	13	22	14	12	20	13	11	18	12	10	15	10	8	13	8	7	11	7	6	10	6	8	9	8	7	8	6	7	8	7	6	7																																			
		20-27	Interior	37	37	35	37	37	30	37	33	25	37	30	22	37	27	19	37	24	17	37	22	15	33	19	13	28	16	11	24	14	9	21	12	8	18	10	7	16	9	6	7	16	9	6	6																																		
			Exposed	37	27	19	37	24	17	37	21	14	33	19	13	30	17	12	27	16	11	25	14	10	21	12	8	18	10	7	15	9	6	13	8	5	12	7	7	10	6	7	10	6	6	6																																			
	27-45	Interior	39	39	39	39	39	37	39	39	32	39	38	28	39	34	25	34	31	22	31	28	20	26	23	16	22	20	13	19	17	11	17	15	9	15	13	8	13	12	7	8	13	12	7	7																																			
		Exposed	39	33	25	33	30	21	30	27	19	27	24	17	24	22	15	22	20	13	20	18	12	17	15	10	14	13	8	12	11	7	11	10	6	10	8	5	8	8	5	8	8	8	8																																				
	C	0-7	Interior	28	28	22	28	28	20	28	25	18	28	23	16	28	20	14	26	19	13	24	17	12	20	14	10	17	12	8	14	10	7	13	9	6	11	8	9	10	6	7	8	9	10	7	8																																		
			Exposed	28	20	14	25	18	13	23	16	11	20	15	10	18	13	9	17	12	8	15	11	8	13	9	6	11	8	7	12	8	6	11	7	9	9	6	7	8	6	7	8	8	7	5	6																																		
		7-20	Interior	28	24	19	28	21	17	28	19	15	26	17	14	24	15	13	22	14	11	20	13	10	16	11	9	14	9	7	12	8	6	11	7	9	9	6	7	8	6	7	8	8	7	8	7																																		
			Exposed	24	15	12	21	14	11	19	12	10	17	11	9	15	10	8	14	9	7	13	8	7	11	7	9	9	6	7	8	6	10	6	8	9	6	7	8	5	8	5	8	5	8	5	8																																		
20-27		Interior	37	29	21	37	26	18	37	23	16	36	21	14	33	19	12	29	17	11	27	15	10	22	13	9	19	11	7	16	9	6	14	8	5	10	6	6	9	8	5	11	6	7	10	6	7																																		
		Exposed	32	18	12	29	16	11	26	15	10	23	13	9	21	12	8	19	11	7	17	10	7	14	8	6	12	7	5	11	6	6	9	8	5	8	7	5	7	6	4	6	5	8	5	8																																			
27-45	Interior	39	36	27	36	32	23	32	29	20	29	26	18	26</																																																																			

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

10 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.

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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]

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

[illegible]

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11

30 ft

Roof Height

S_s = 3.00
Seismic

19 sq.ft
Module Area

ORIENTATION

CROSS-SLOPE
Rail Direction

Rail Type
NXT

NXT COMBO
Clamp

Flashloc DUO Plywood
Attachment

SPAN TABLES

[illegible]

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11

30 ft

Roof Height

S_s = 3.00

19 sq.ft

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
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
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82	82
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84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

NXT COMBO
Clamp

Flashloc DUO Plywood

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

[illegible]

* 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

Flashloc DUO Plywood
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			
90	B	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14						
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14						
		Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16								
		Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21							
		Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27							
		Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14								
	Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16									
	Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21								
	Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27								
	Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16									
	Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17									
	Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23									
Exposed	30	30	26	30	30	30	30	30	30	20	29	28	18	29	26	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	11	10							
Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13										
Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14										
Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19										
Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24									
Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13										
Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14										
Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19										
Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24									

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[illegible]

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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	76	76	64	76	76	56	76	76	50	76	65	45	76	59	41	76	53	37	73	48	34	57	41	29	48	35	24	41	30	21	36	26	18	32	23	16	28	20	14									
			Exposed	76	59	41	76	52	36	65	46	32	58	42	29	52	38	26	48	34	24	43	31	22	36	26	19	31	22	24	19	14	23	17	12	20	15	16	18	13	14										
		Exposed	70	43	36	60	39	32	54	35	28	48	31	26	44	28	23	40	26	21	36	23	19	30	20	16	26	17	14	22	15	12	20	13	10	17	11	14	15	12											
		Exposed	78	53	38	78	47	33	78	42	29	67	38	26	60	34	23	54	31	21	49	28	19	41	24	16	35	20	14	30	18	12	27	15	10	23	14	9	21	12	12										
		Exposed	79	69	49	79	59	42	59	53	37	53	47	33	48	43	29	44	39	26	40	36	23	34	30	19	29	26	17	25	22	14	22	19	12	19	17	10	17	15	9										
		Exposed	56	40	28	50	36	25	45	32	23	40	29	20	36	26	18	33	24	17	30	22	15	25	18	13	22	16	11	19	14	15	16	12	13	14	16	11	13	14	10										
	Exposed	47	30	25	42	27	22	37	24	20	34	22	18	30	20	16	28	18	15	25	16	13	21	14	11	18	12	15	16	16	13	14	14	11	12	12	12	10	16	11	9										

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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	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	24	37	30	21	36	26	18	32	23	16	28	20	14		
			Exposed	37	37	37	37	37	36	37	37	32	37	37	29	37	26	37	34	24	37	31	22	36	26	19	31	22	16	27	19	14	23	17	12	20	15	16	18	13	14			
		Exposed	38	38	36	38	38	38	32	38	35	28	38	31	26	38	28	23	38	26	21	36	23	19	30	20	16	26	17	14	22	15	12	20	13	10	17	11	14	15	15	12		
		Exposed	46	46	38	46	46	46	33	46	42	29	46	38	26	46	34	23	46	31	21	46	28	19	41	24	16	35	20	14	30	18	12	27	15	10	23	14	9	21	12	12		
		Exposed	53	53	49	53	53	42	53	53	37	53	47	33	48	43	29	44	39	26	40	36	23	34	30	19	29	26	18	25	22	14	22	19	12	29	17	10	17	15				
		Exposed	37	37	28	37	36	25	37	32	23	37	29	20	36	26	18	33	24	17	30	22	15	25	18	13	22	16	11	19	14	15	16	12	13	14	16	11	13	11	14	10		
	Exposed	38	30	25	38	27	22	37	24	20	34	22	18	30	20	16	28	18	15	25	16	13	21	14	11	18	12	15	16	16	13	14	14	11	12	12	14	16	11	9	11	9		

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.

[illegible]

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