

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 7-22 Sec. 29.4.4
- 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 7-22, 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

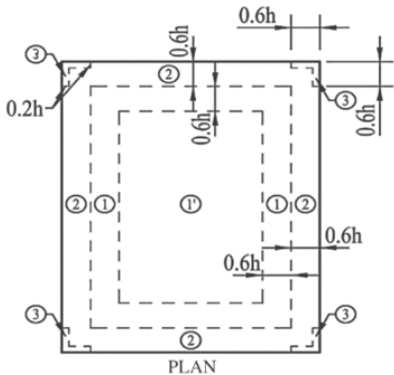
- 0.2-s Spectral Response Acceleration
- $S_s = 1.25$ and 3 with $S_{ds} = 1, 2.4$ respectively per criteria shown on individual span tables sheets.
- $S_1 = 0.5$ & $S_{d1} = 0.6$
- Seismic site class D

Array Assumptions

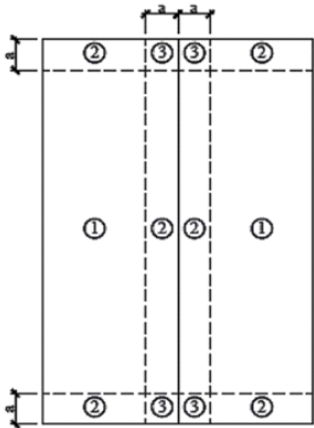
- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1” x 67” (~19 sq.ft, 47.65 lbs) and 41” x 80” (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at 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 7-22 sec. 29.4.4 shall be used when any part of an exposed module or panel as is attributed to that span.

Span Tables

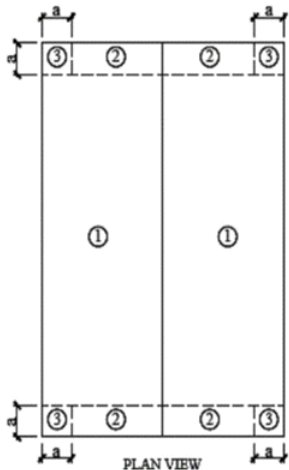
Zone should be considered as per ASCE 7-22, Fig. 30.3-2A to 30.3-2D



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



Gable Roofs $7^\circ < \theta \leq 27^\circ$



Gable Roofs $27^\circ < \theta \leq 45^\circ$

Rails can be installed in these possible orientations.

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

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[illegible]

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ASCE 7-22
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

19 sq.ft
Module Area

LANDSCAPE
Orientation

CROSS-SLOPE
Rail Direction

SML
Rail Type

PRO SERIES
Clamp

Flashloc DUO OSB
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									
				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	1	2	3					
12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12			
12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12			
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	21	21	21	21	21	21	21	21	21	21	21	21	21	21			
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	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	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			
29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29			
29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29			

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11

30 ft
Roof Height

S_s = 3.00

19 sq.ft
Module Area

ORIENTATION

CROSS-SLOPE
Rail Direction

SML
Rail Type

PRO SERIES
Clamp

Flashloc DUO OSB

SPAN TABLES

[illegible]

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Risk Category

30 ft
Roof Height

Ss = 3.00
Seismic

19 sq.ft

LANDSCAPE

CROSS-SLOPE

SML

PRO SERIES
Clamp

Flashloc DUO OSB

SPAN TABLES

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

[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			
0	B	0-7	Interior	57	57	55	57	57	49	57	57	44	57	57	39	57	51	36	57	46	32	57	42	29	49	35	25	42	30	21	36	26	18	31	23	16	27	20	14	24	18	12
			Exposed	57	51	35	57	45	31	57	40	28	51	36	25	46	33	23	41	30	21	38	27	19	32	23	16	27	19	14	23	17	12	20	15	10	18	13	9	16	11	7
		7-20	Interior	57	57	48	57	57	43	57	53	38	57	47	34	57	43	31	54	39	28	49	35	26	41	30	22	35	25	19	30	22	16	26	19	14	23	17	12	20	15	11
			Exposed	57	42	31	53	38	28	47	34	25	42	30	22	38	27	20	34	25	18	31	23	17	26	19	14	23	16	12	19	14	10	17	12	9	15	11	12	13	10	11
		20-27	Interior	58	58	58	58	58	52	58	57	47	58	51	42	58	46	38	58	42	34	58	38	31	56	32	26	48	27	22	41	24	19	36	21	17	31	18	15	28	16	13
			Exposed	58	46	38	58	41	33	58	36	30	58	33	27	52	30	24	47	27	22	43	25	20	36	21	17	31	18	15	26	15	13	23	13	11	20	12	10	18	10	13
	27-45	Interior	59	59	59	59	59	59	59	59	56	59	59	50	59	58	45	59	52	41	54	48	38	45	40	32	38	34	27	33	30	23	29	26	20	25	23	18	22	20	16	
		Exposed	59	57	45	57	51	40	51	46	36	46	41	32	42	37	29	38	34	27	35	31	24	29	26	21	25	22	18	21	19	15	19	17	13	16	15	12	15	13	10	
	C	0-7	Interior	57	54	37	57	48	33	57	43	30	54	38	27	48	35	24	44	31	22	40	29	20	33	24	17	28	21	14	25	18	12	21	15	11	19	14	10	17	12	13
			Exposed	48	35	24	43	31	21	38	27	19	34	25	17	31	22	16	28	20	14	26	19	13	22	16	11	18	13	9	16	12	12	14	10	11	12	9	9	11	12	8
		7-20	Interior	57	45	33	56	40	29	50	36	26	45	32	24	40	29	21	36	26	19	33	24	18	28	20	15	24	17	13	21	15	11	18	13	10	16	11	13	14	10	11
			Exposed	40	29	21	36	26	19	32	23	17	29	21	15	26	19	14	24	17	13	21	16	11	18	13	10	15	11	13	13	10	11	12	13	9	10	11	8	9	10	7
20-27		Interior	58	49	40	58	43	35	58	39	32	58	35	29	55	31	26	50	29	23	45	26</																				

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0	B	0-7	Interior	55	55	54	55	55	48	55	55	55	43	55	55	38	55	55	50	35	55	45	32	55	41	29	48	35	24	41	29	21	35	25	18	31	22	15	27	19	14	24	17	12																																										
			Exposed	55	50	35	55	44	31	55	39	27	50	35	28	45	32	35	40	29	20	37	26	19	31	22	16	26	19	13	23	16	12	30	14	22	10	17	13	13	15	11	12																																											
		7-20	Interior	56	56	47	56	56	42	56	52	37	56	46	34	56	42	30	53	38	28	48	34	25	40	29	21	34	25	18	29	21	16	26	19	14	22	16	12	20	14	11																																												
			Exposed	56	42	30	51	37	27	46	33	24	41	30	22	37	27	20	34	24	18	31	22	16	26	19	14	22	16	12	19	14	10	17	12	13	15	11	12	10	13	9	11																																											
		20-27	Interior	56	56	56	56	56	51	56	56	46	56	50	41	56	45	37	56	41	34	56	37	31	55	31	26	47	27	22	40	23	19	35	20	17	30	18	15	27	16	13																																												
			Exposed	56	45	37	56	40	33	56	29	56	32	26	51	29	24	46	26	22	42	24	20	35	20	17	30	17	30	17	14	26	15	12	22	13	11	20	11	9	17	10	13																																											
	27-45	Interior	57	57	57	57	57	57	57	57	55	57	57	49	57	56	44	57	51	40	52	47	37	44	39	31	38	33	26	32	29	23	28	25	20	25	22	17	22	20	16																																													
		Exposed	57	56	44	56	50	39	50	45	35	45	40	32	41	36	29	37	33	26	34	30	24	28	25	20	24	22	17	21	19	15	18	16	13	16	14	11	14	13	10																																													
	C	0-7	Interior	55	53	37	55	47	33	55	42	29	53	38	26	47	34	24	43	31	22	39	28	20	33	24	17	28	20	14	26	17	12	21	15	11	18	13	9	16	12	13																																												
			Exposed	47	34	24	42	30	21	37	27	19	34	24	17	30	22	15	28	20	14	25	18	13	21	15	11	18	13	14	16	11	12	14	10	11	12	13	9	11	12	8																																												
		7-20	Interior	56	44																																																																																	

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