

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

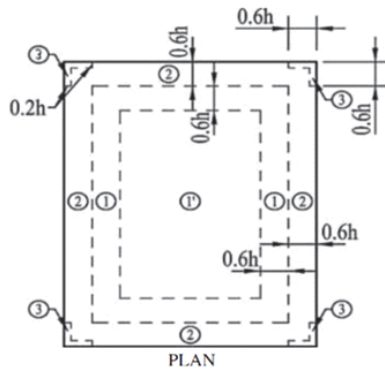
- 0.2-s Spectral Response Acceleration, $SS \leq 3$
- $S_s = 1.25$ and 3 per criteria shown on individual span tables sheets.
- $S_1 = 0.5$
- Seismic site class D

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.

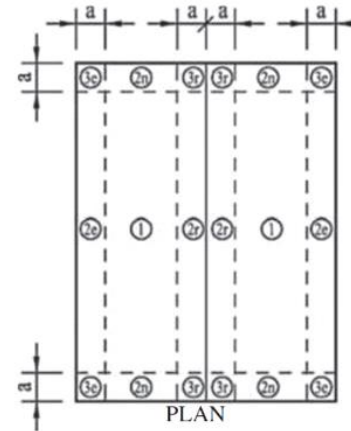
Span Tables

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



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

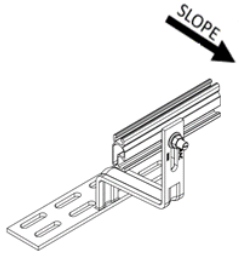
Rails can be installed in these possible orientations.



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

*CT2	
Y+	Alternate orientation not allowed
Y-	

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[illegible]

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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.



Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25

19 sq.ft

Portrait

CROSS-SLOPE

Rail Direction

SML

PRO SERIES
Clamp

Solarhooks CT2

Attachment

SPAN TABLES

[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							
90	B	0-7	Interior	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	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	27					
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49				
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49					
		20-27	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47				
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47					
	27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46					
		Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46						
	C	0-7	Interior	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	27					
			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						
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49					
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49					
		20-27	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47				
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47					
	27-45	Interior	45	45	45																																					

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ASCE 7-16
Design Standard

11

II
Risk Category

30 ft

30 ft
Roof Height

 $S_S = 3.00$

Ss = 3.00

19 sq.ft

19 sq.ft

PORTRAIT

Portrait

CROSS-SLOPE

CROSS-SLOPE

SML

SML

PRO SERIES

PRO SERIES

Solarhooks CT2

Solarhooks CT2

SPAN TABLES

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II

30 ft

S_s = 1.25

23 sq.ft

LANDSCAPE

CROSS-SLOPE
Rail Direction

SML
Rail Type

UAF
Clamp

Solarhooks CT2

SPAN TABLES

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			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	66	70	62	70	62	70	57	70	66	48	70	58	41	67	51	36	61	44	31	53	39	42	47	35	37	
		Exposed	73	73	73	73	73	73	73	73	73	71	73	65	73	60	73	65	55	73	61	50	72	52	43	65	44	37	58	38	32	51	33	42	45	30	37	40	40	33		
		Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	71	72	65	72	70	59	72	62	48	72	53	39	72	46	33	66	40	28	61	36	24	54	32	33			
		Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	67	69	59	66	51	65	60	44	29			
		Exposed	70	70	70	70	70	64	70	59	70	53	70	66	48	70	62	44	70	57	40	64	48	34	56	41	44	49	36	38	43	31	33	38	41	29	33	37	26			
	Exposed	73	73	64	73	67	58	73	63	52	73	57	47	72	51	42	68	47	39	64	43	35	55	36	30	47	31	39	41	41	34	36	36	30	32	31	26	42	28	29		

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11

30 ft

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23 sq.ft

ORIENTATION

CROSS-SLOPE
Rail Direction

SML
Rail Type

UAF
Clamp

Solarhooks CT2

SPAN TABLES

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