

Design Criteria for Span Tables:

Values in the maximum allowable 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: 30ft
- 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

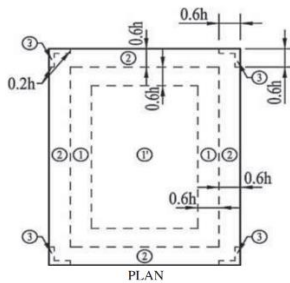
- Ground Snow Load = 0-100 psf
- Exposure Factor coefficients of Partially Exposed condition
- Thermal Factor = 1.0
- Results based on uniform snow load

Seismic Design Assumptions

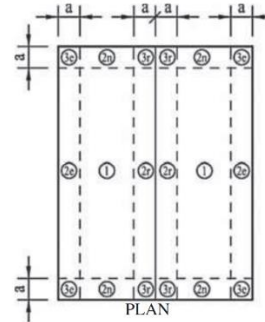
- 0.2-s Spectral Response Acceleration, $S_S \leq 3$
- $S_S = 1.25$, 3 per criteria shown on individual span tables sheets.
- $S_1 = 0.5$
- Seismic site class D-Default

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.
- '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.
- The most restrictive of all roof zone spans shall be used when any part of the module is attributed to that span.
- 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

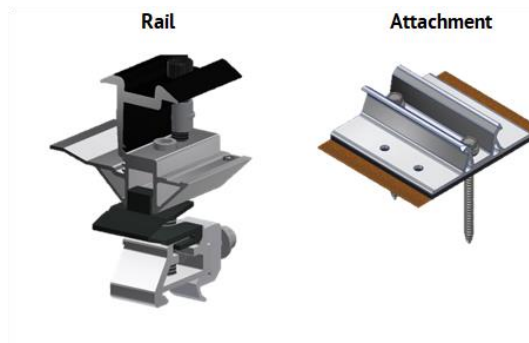
Roof Zone 3 = 3r

Roof Tilt 27° - 45°

Roof Zone 1 = 1, 2e, 2r

Roof Zone 2 = 2n, 3r

Roof Zone 3 = 3e



Micro Rail - DtD Rafter

[illegible]

[illegible]

[illegible]

[illegible]

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		
0	B	0-7	Interior	138	138	138	138	138	138	138	138	138	138	138	138	138	138	137	138	138	126	138	138	117	138	127	105	138	114	93	130	104	75	117	96	61	108	80	50	101	67	42	28				
			Exposed	138	138	138	138	138	138	123	138	138	114	138	130	107	138	120	100	138	113	92	135	107	80	118	97	62	107	78	49	98	63	40	82	53	34	69	44	30	58	38	26				
		7-20	Interior	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	126	138	138	116	138	117	103	138	105	87	138	93	67	113	73	53	101	59	43	78	48	36					
			Exposed	138	138	138	138	138	122	138	132	113	138	119	105	138	111	98	138	104	108	98	72	114	74	54	100	57	42	70	45	34	60	36	30	51	32	26	44	28	23						
		20-27	Interior	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	136	125	139	117	110	139	106	99	124	97	80	113	79	63	105	65	51				
	Exposed		139	139	139	139	139	139	139	139	139	139	139	139	139	129	139	126	116	139	116	109	139	109	102	126	98	81	112	77	61	102	60	47	90	49	37	74	40	31	63	34	27				
	C	0-7	Interior	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	129	140	140	136	114	140	120	104	135	110	94	117	101	76	108	90	63				
			Exposed	140	140	140	140	140	140	140	140	140	140	140	140	140	132	140	140	120	140	135	113	140	124	107	137	110	95	116	100	74	105	84	59	94	68	48	73	56	40	59	47	34			
		7-20	Interior	138	138	138	138	138	131	138	138	119	138	137	112	138	127	105	138	118	99	138	112	89	124	101	69	112	86	55	102	70	44	91	58	36	76	49	32	64	42	28					
			Exposed	138	127	105	138	117	97	138	109	83	127	102	71	118	97	61	111	84	54	105	74	47	93	59	37	74	48	31	60	39	27	50	33	24	42	29	21	36	26	19					
20-27		Interior	138	138	138	138	138	133	138	138	118	138	127	110	138	116	103	138	109	97	138	103	82	138	84	61	106	64	47	85	50	37	65	41	32	56	34	28	48	30	25						
	Exposed	138	116	103	138	107	93	138	100	76	138	88	63	114	74	54	105	63	46	97	54																										

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]



Risk Category

Roof Height

Seismic

Module Area

Orientation

Rail Direction

Rail Type

Clamp

Attachment

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

[illegible]

[illegible]

[illegible]

[illegible]



11

30 ft

Ss = 1.25
Seismic

23 sq.ft

Module Area

LANDSCAPE

CROSS-SLOPE
Rail Direction

Rail Type
Micro Rail

SFM

Clamp

SFM DdD-Rafter

SPAN TABLES

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

[illegible]



30 ft

 $S_s = 3.00$

19 sq.ft

PORTRAIT

CROSS-SLOPE

Micro Rail

SFM

SFM D+D-Rafter

SPAN TABLES

[illegible]

[illegible]

[illegible]

[illegible]



30 ft

$$S_s = 3.00$$

19 sq.ft

LANDSCAPE

CROSS-SLOPE

Micro Rail

SFM

SFM DtD-Rafter

SPAN TABLES

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]



Risk Category

Roof Height

Seismic

Module Area

Orientation

Rail Direction

Rail Type

Clamp

Attachment

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

[illegible]

[illegible]

[illegible]

[illegible]



Risk Category

Roof Height

Seismic

Module Area

Orientation

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

[illegible]