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, kzt = 1.0
- γE = 1.0 for 'Interior' spans, γE = 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

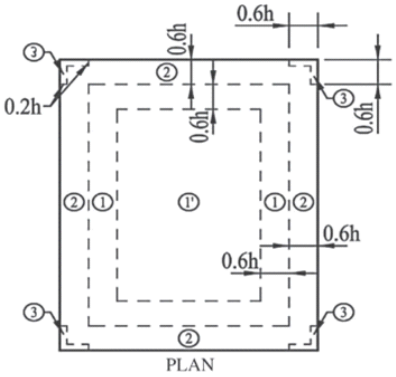
- 0.2-s Spectral Response Acceleration
- S_S = 1.25 and 3 with Sds = 1, 2.4 respectively per criteria shown on individual span tables sheets.
- S_1 = 0.5 & Sd1 = 0.6
- Seismic site class D

Array Assumptions

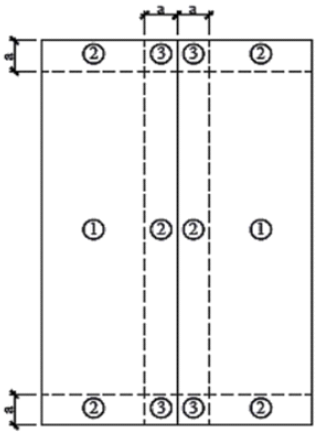
- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at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

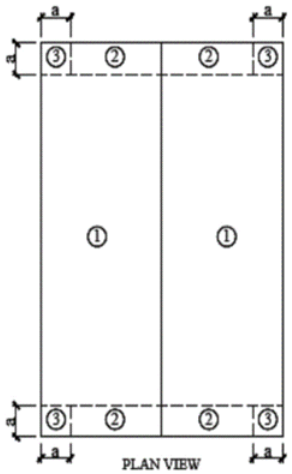
Zone should be considered as per ASCE 7-22, Fig. 30.3-2A to 30.3-2D



Gable Roofs θ ≤ 7°

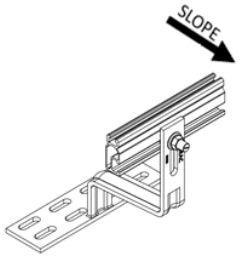


Gable Roofs 7°< θ ≤ 27°



Gable Roofs 27°< θ ≤ 45°

Rails can be installed in these possible orientations.

	*CT1
Y+	Alternate orientation not allowed
Y-	

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ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	83	83	83	83	83	83	83	83	80	83	83	76	83	83	73	83	80	68	83	78	65	82	71	57	77	65	44	72	59	38	66	49	33	61	41	29	54	36	26
			Exposed	83	83	72	83	80	67	83	76	63	83	72	59	80	68	50	77	64	44	74	61	40	67	49	33	61	40	29	51	35	25	42	31	33	37	27	29	33	24	26
		7-20	Interior	83	83	83	83	83	81	83	83	77	83	83	73	83	80	69	83	77	65	83	74	61	79	66	47	74	60	39	67	47	33	61	39	29	52	35	26	42	31	34
			Exposed	83	80	69	83	76	64	83	72	59	80	67	49	77	63	42	74	59	38	69	51	35	62	40	29	50	34	25	40	30	33	35	26	29	31	34	25	28	30	23
		20-27	Interior	84	84	84	84	84	84	84	84	84	84	84	80	84	83	77	84	80	74	84	77	69	84	70	62	82	63	50	78	54	40	73	43	35	67	38	31	62	33	28
			Exposed	84	83	77	84	79	72	84	76	67	84	71	63	84	67	58	82	63	49	79	59	42	73	44	36	67	37	30	61	32	26	51	28	35	42	25	31	37	33	27
		27-45	Interior	84	84	84	84	84	84	84	84	84	84	84	84	84	84	82	84	84	79	84	83	76	83	77	69	78	72	62	72	65	53	66	60	42	60	50	37	50	42	33
			Exposed	84	84	82	84	84	78	84	81	75	84	78	70	80	75	66	77	71	62	74	67	57	66	60	43	60	48	37	46	40	32	39	35	28	34	31	24	31	27	33
	C	0-7	Interior	83	83	75	83	81	70	83	78	65	83	75	61	82	70	55	79	67	47	76	63	42	69	54	35	63	43	30	55	37	26	45	32	35	39	28	30	35	25	27
			Exposed	82	70	54	78	66	46	75	61	40	70	55	36	66	48	33	62	42	30	59	39	27	46	33	35	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	83	82	71	83	78	66	83	75	61	82	70	54	79	65	46	76	62	40	72	56	37	64	42	31	55	36	27	43	31	35	37	27	31	33	24	27	29	32	24
			Exposed	79	65	45	75	61	39	70	52	35	65	44	32	61	39	29	54	36	26	46	33	24	38	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	84	84	79	84	81	75	84	78	70	84	74	65	84	69	61	84	65	54	81	61	46	76	48	38	69	39	32	63	34	28	55	29	24	45	26	32	39	35	29
			Exposed	84	69	61	83	64	52	80	60	43	76	50	38	73	42	35	68	39	32	65	35	29	56	30	25	44	26	32	38	33	28	33	29	24	29	26	21	26	23	19
		27-45	Interior	84	84	84	84	84	80	84	83	76	84	80	72	82	77	68	79	74	64	76	69	60	69	63	47	62	53	39	51	42	34	41	37	29	36	33	26	32	29	35
			Exposed	82	77	68	78	72	63	75	68	58	70	63	49	65	60	42	61	52	38	55	45	35	42	37	30	36	32	25	31	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	83	79	67	83	76	62	82	71	56	79	67	48	76	63	42	72	60	38	68	52	35	62	42	29	52	36	25	42	31	33	37	27	29	32	36	25	29	32	23
			Exposed	76	63	42	71	58	37	67	49	33	63	43	30	59	39	27	51	35	25	45	32	34	37	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	83	76	63	83	71	57	79	66	47	76	62	41	72	56	37	67	47	34	64	41	31	53	35	26	41	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	72	55	37	66	46	33	62	40	29	55	36	27	46	33	24	41	30	33	37	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	84	79	72	84	75	66	84	70	62	84	65	55	81	61	46	78	55	41	75	47	37	68	38	31	61	32	27	51	28	35	42	25	31	37	33	27	33	29	24
			Exposed	81	61	46	77	52	40	73	43	35	69	39	32	65	35	29	61	32	27	55	29	24	42	25	31	36	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	84	84	78	84	81	74	83	77	69	79	74	64	76	69	60	72	65	53	68	62	46	61	51	38	48	41	32	39	35	28	34	31	24	30	27	33	27	24	29
			Exposed	76	69	60	71	64	51	66	60	43	62	52	39	55	45	35	47	40	32	41	37	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
10	B	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	71	71	65	71	71	57	71	65	44	71	59	38	66	49	33	61	41	29	54	36	26
			Exposed	71	71	71	71	71	67	71	71	63	71	71	59	71	68	50	71	64	44	71	61	40	67	49	33	61	40	29	51	35	25	42	31	33	37	27	29	33	24	26
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	72	65	72	72	61	72	66	47	72	60	39	67	47	33	61	39	29	52	35	26	42	31	34
			Exposed	72	72	69	72	72	64	72	72	59	72	67	49	72	63	42	72	59	38	69	51	35	62	40	29	50	34	25	40	30	33	35	26	29	31	34	25	28	30	23
		20-27	Interior	81	81	81	81	81	81	81	81	81	81	81	80	81	81	77	81	80	74	81	77	69	81	70	62	81	63	50	78	54	40	73	43	35	67	38	31	62	33	28
			Exposed	81	81	77	81	79	72	81	76	67	81	71	63	81	67	58	81	63	49	79	59	42	73	44	36	67	37	30	61	32	26	51	28	35	42	25	31	37	33	27
		27-45	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	82	83	83	79	83	83	76	83	77	69	78	72	62	72	65	53	66	60	42	60	50	37	50	42	33
			Exposed	83	83	82	83	83	78	83	81	75	83	78	70	80	75	66	77	71	62	74	67	57	66	60	43	60	48	37	46	40	32	39	35	28	34	31	24	31	27	33
	C	0-7	Interior	71	71	71	71	71	70	71	71	65	71	71	61	71	70	55	71	67	47	71	63	42	69	54	35	63	43	30	55	37	26	45	32	35	39	28	30	35	25	27
			Exposed	71	70	54	71	66	46	71	61	40	70	55	36	66	48	33	62	42	30	59	39	27	46	33	35	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	72	72	71	72	72	66	72	72	61	72	70	54	72	65	46	72	62	40	72	56	37	64	42	31	55	36	27	43	31	35	37	27	31	33	24	27	29	32	24
			Exposed	72	65	45	72	61	39	70	52	35	65	44	32	61	39	29	54	36	26	46	33	24	38	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	81	81	79	81	81	75	81	78	70	81	74	65	81	69	61	81	65	54	81	61	46	76	48	38	69	39	32	63	34	28	55	29	24	45	26	32	39	35	29
			Exposed	81	69	61	81	64	52	80	60	43	76	50	38	73	42	35	68	39	32	65	35	29	56	30	25	44	26	32	38	33	28	33	29	24	29	26	21	26	23	19
		27-45	Interior	83	83	83	83	83	80	83	83	76	83	80	72	82	77	68	79	74	64	76	69	60	69	63	47	62	53	39	51	42	34	41	37	29	36	33	26	32	29	35
			Exposed	82	77	68	78	72	63	75	68	58	70	63	49	65	60	42	61	52	38	55	45	35	42	37	30	36	32	25	31	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	71	71	67	71	71	62	71	71	56	71	67	48	71	63	42	71	60	38	68	52	35	62	42	29	52	36	25	42	31	33	37	27	29	32	36	25	29	32	23
			Exposed	71	63	42	71	58	37	67	49	33	63	43	30	59	39	27	51	35	25	45	32	34	37	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	72	72	63	72	71	57	72	66	47	72	62	41	72	56	37	67	47	34	64	41	31	53	35	26	41	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	72	55	37	66	46	33	62	40	29	55	36	27	46	33	24	41	30	33	37	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	82	79	72	82	75	66	82	70	62	82	65	55	81	61	46	78	55	41	75	47	37	68	38	31	61	32	27	51	28	35	42	25	31	37	33	27	33	29	24
			Exposed	81	61	46	77	52	40	73	43	35	69	39	32	65	35	29	61	32	27	55	29	24	42	25	31	36	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	84	84	78	84	81	74	83	77	69	79	74	64	76	69	60	72	65	53	68	62	46	61	51	38	48	41	32	39	35	28	34	31	24	30	27	33	27	24	29
			Exposed	76	69	60	71	64	51	66	60	43	62	52	39	55	45	35	47	40	32	41	37	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
20	B	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	44	53	53	38	53	49	33	53	41	29	53	36	26
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	53	44	53	53	40	53	49	33	53	40	29	51	35	25	42	31	33	37	27	29	33	24	26
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	47	53	53	39	53	47	33	53	39	29	52	35	26	42	31	34
			Exposed	53	53	53	53	53	53	53	53	53	53	53	49	53	53	42	53	53	38	53	51	35	53	40	29	50	34	25	40	30	33	35	26	29	31	34	25	28	30	23
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	63	50	65	54	40	65	43	35	65	38	31	62	33	28
			Exposed	65	65	65	65	65	65	65	65	65	65	65	63	65	65	58	65	63	49	65	59	42	65	44	36	65	37	30	61	32	26	51	28	35	42	25	31	37	33	27
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	53	63	60	42	58	50	37	50	42	33
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	57	63	60	43	60	48	37	46	40	32	39	35	28	34	31	24	31	27	33
	C	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	47	53	53	42	53	53	35	53	43	30	53	37	26	45	32	35	39	28	30	35	25	27
			Exposed	53	53	53	53	53	46	53	53	40	53	53	36	53	48	33	53	42	30	53	39	27	46	33	35	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	46	53	53	40	53	53	37	53	42	31	53	36	27	43	31	35	37	27	31	33	24	27	29	32	24
			Exposed	53	53	45	53	53	39	53	52	35	53	44	32	53	39	29	53	36	26	46	33	24	38	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	61	65	65	54	65	61	46	65	48	38	65	39	32	63	34	28	55	29	24	45	26	32	39	35	29
			Exposed	65	65	61	65	64	52	65	60	43	65	50	38	65	42	35	65	39	32	65	35	29	56	30	25	44	26	32	38	33	28	33	29	24	29	26	21	26	23	19
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	63	47	60	53	39	51	42	34	41	37	29	36	33	26	32	29	35
			Exposed	63	63	63	63	63	63	63	63	58	63	63	49	63	60	42	61	52	38	55	45	35	42	37	30	36	32	25	31	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	48	53	53	42	53	53	38	53	52	35	53	42	29	52	36	25	42	31	33	37	27	29	32	36	25	29	32	23
			Exposed	53	53	42	53	53	37	53	49	33	53	43	30	53	39	27	51	35	25	45	32	34	37	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	53	53	53	53	53	53	53	53	47	53	53	41	53	53	37	53	47	34	53	41	31	53	35	26	41	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	53	53	37	53	46	33	53	40	29	53	36	27	46	33	24	41	30	33	37	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	67	67	67	67	67	66	67	67	62	67	65	55	67	61	46	67	55	41	67	47	37	67	38	31	61	32	27	51	28	35	42	25	31	37	33	27	33	29	24
			Exposed	67	61	46	67	52	40	67	43	35	67	39	32	65	35	29	61	32	27	55	29	24	42	25	31	36	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	64	67	67	60	67	65	53	67	62	46	61	51	38	48	41	32	39	35	28	34	31	24	30	27	33	27	24	29
			Exposed	67	67	60	67	64	51	66	60	43	62	52	39	55	45	35	47	40	32	41	37	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	33	42	41	29	42	36	26
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	33	42	40	29	42	35	25	42	31	33	37	27	29	33	24	26
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	33	42	39	29	41	35	26	40	31	34
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	35	42	40	29	42	34	25	40	30	33	35	26	29	31	34	25	28	30	23
		20-27	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	40	49	43	35	49	38	31	49	33	28
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	42	49	44	36	49	37	30	49	32	26	49	28	35	42	25	31	37	33	27
		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	42	46	46	37	46	42	33
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	46	46	37	46	40	32	39	35	28	34	31	24	31	27	33
	C	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	42	42	30	42	37	26	42	32	35	39	28	30	35	25	27
			Exposed	42	42	42	42	42	42	42	42	40	42	42	36	42	42	33	42	42	30	42	39	27	42	33	35	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	37	42	42	31	42	36	27	40	31	35	37	27	31	33	24	27	29	32	24
			Exposed	42	42	42	42	42	39	42	42	35	42	42	32	42	39	29	42	36	26	42	33	24	38	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	48	38	49	39	32	49	34	28	48	29	24	45	26	32	39	35	29
			Exposed	49	49	49	49	49	49	49	49	43	49	49	38	49	42	35	49	39	32	49	35	29	49	30	25	44	26	32	38	33	28	33	29	24	29	26	21	26	23	19
		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	39	46	42	34	41	37	29	36	33	26	32	29	35
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	46	46	38	46	45	35	42	37	30	36	32	25	31	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	35	42	42	29	42	36	25	42	31	33	37	27	29	32	36	25	29	32	23
			Exposed	42	42	42	42	42	37	42	42	33	42	42	30	42	39	27	42	35	25	42	32	34	37	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	42	34	42	41	31	41	35	26	39	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	42	42	37	42	42	33	42	40	29	42	36	27	42	33	24	41	30	33	37	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	46	54	54	41	54	47	37	54	38	31	53	32	27	49	28	35	42	25	31	37	33	27	33	29	24
			Exposed	54	54	46	54	52	40	54	43	35	54	39	32	54	35	29	54	32	27	54	29	24	42	25	31	36	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	46	50	50	38	47	41	32	39	35	28	34	31	24	30	27	33	27	24	29
			Exposed	50	50	50	50	50	50	50	50	43	50	50	39	50	45	35	47	40	32	41	37	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
40	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	33	39	39	29	39	36	26
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	39	29	39	35	25	39	31	33	37	27	29	33	24	26
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	39	29	38	35	26	37	31	34
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	35	39	39	29	39	34	25	39	30	33	35	26	29	31	34	25	28	30	23
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	31	38	33	28
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	37	30	38	32	26	38	28	35	38	25	31	37	33	27
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	35	28	34	31	24	31	27	33
	C	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	30	39	37	26	39	32	35	39	28	30	35	25	27
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	39	30	39	39	27	39	33	35	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	31	39	36	27	37	31	35	36	27	31	33	24	27	29	32	24
			Exposed	39	39	39	39	39	39	39	39	35	39	39	32	39	39	29	39	36	26	39	33	24	38	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	32	38	34	28	38	29	24	38	26	32	37	35	29
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	32	38	35	29	38	30	25	38	26	32	38	33	28	33	29	24	29	26	21	26	23	19
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	29	36	33	26	32	29	35
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	30	36	32	25	31	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	35	42	42	29	42	36	25	42	31	33	37	27	29	32	36	25	29	32	23
			Exposed	42	42	42	42	42	37	42	42	33	42	42	30	42	39	27	42	35	25	42	32	34	37	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	42	34	42	41	31	41	35	26	39	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	42	42	37	42	42	33	42	40	29	42	36	27	42	33	24	41	30	33	37	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	38	31	42	32	27	42	28	35	40	25	31	37	33	27	33	29	24
			Exposed	42	42	42	42	42	40	42	42	35	42	39	32	42	35	29	42	32	27	42	29	24	42	25	31	36	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	32	39	35	28	34	31	24	30	27	33	27	24	29
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	32	39	37	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
50	B	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	33	26
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	33	25	33	31	33	33	27	29	33	24	26
		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	29	33	33	26	32	31	34
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	29	34	34	25	34	30	33	34	26	29	31	34	25	28	30	23
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	26	31	28	35	31	25	31	31	33	27
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	24	30	27	33
	C	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	26	33	32	35	33	28	30	33	25	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	27	33	33	35	33	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	27	32	31	35	31	27	31	30	24	27	29	32	24
			Exposed	34	34	34	34	34	34	34	34	34	34	34	32	34	34	29	34	34	26	34	33	24	34	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	31	29	24	31	26	32	31	35	29
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	30	25	31	26	32	31	33	28	31	29	24	29	26	21	26	23	19
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26	30	29	35
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	25	30	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	29	36	36	25	36	31	33	36	27	29	32	36	25	29	32	23
			Exposed	36	36	36	36	36	36	36	36	33	36	36	30	36	36	27	36	35	25	36	32	34	36	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	31	36	35	26	34	30	34	33	26	29	31	34	25	27	30	22	24	27	20
			Exposed	36	36	36	36	36	33	36	36	29	36	36	27	36	33	24	36	30	33	36	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	32	27	35	28	35	35	25	31	34	33	27	32	29	24
			Exposed	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	32	27	35	29	24	35	25	31	35	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	31	24	30	27	33	27	24	29
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19

* 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.

~~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.

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	33	28	27	29	28	24	26
		7-20	Interior	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	26	28	28	34
			Exposed	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	25	29	29	33	29	26	29	29	34	25	28	30	~~23~~
		20-27	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	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	26	27	27	35	27	25	31	27	33	27
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	33
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	35	28	28	30	28	25	27
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	35	28	28	30	28	24	26	28	32	~~23~~	26	28	~~20~~	34	25	~~18~~
		7-20	Interior	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	27	29	29	35	28	27	31	27	24	27	26	32	24
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	24	29	28	31	29	36	26	28	31	~~23~~	24	27	~~20~~	33	24	~~18~~	29	~~21~~	~~16~~
		20-27	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	24	27	26	32	27	35	29
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	26	32	27	33	28	27	29	24	27	26	~~21~~	26	~~23~~	~~19~~
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	37	29	36	32	26	32	29	~~23~~
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	25	31	31	33	31	27	29	31	36	25	29	32	~~23~~
			Exposed	31	31	31	31	31	31	31	31	31	31	31	30	31	31	27	31	31	25	31	31	34	31	27	29	31	35	25	28	30	~~22~~	24	27	~~19~~	32	~~23~~	~~17~~	29	~~21~~	~~15~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	26	30	30	34	29	26	29	28	34	25	27	30	~~22~~	24	27	~~20~~
			Exposed	32	32	32	32	32	32	32	32	29	32	32	27	32	32	24	32	30	33	32	27	30	31	35	26	27	30	~~22~~	35	26	~~19~~	31	~~23~~	~~17~~	27	~~20~~	~~15~~	24	~~18~~	~~13~~
		20-27	Interior	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	27	29	28	35	29	25	31	29	33	27	29	29	24
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	25	31	29	32	27	29	28	~~23~~	27	24	~~20~~	24	~~21~~	~~18~~	32	~~19~~	~~16~~
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	27	33	27	24	29
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	27	32	26	35	28	34	31	24	30	27	~~21~~	27	24	~~19~~
70	B	0-7	Interior	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	24	24	24	24	24	24
			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	33	24	24	29	24	24	26
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	34
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	33	25	25	29	25	34	25	25	30	~~23~~
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	33	27
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
	C	0-7	Interior	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	35	24	24	30	24	24	27
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	35	24	24	30	24	24	26	24	32	~~23~~	24	28	~~20~~	34	25	~~18~~
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	35	25	25	31	24	24	27	23	32	24
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	31	25	36	26	25	31	~~23~~	24	27	~~20~~	33	24	~~18~~	29	~~21~~	~~16~~
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	33	28	35	29	24	35	26	~~21~~	35	~~23~~	~~19~~
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	32	26	32	29	~~23~~
	D	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	25	27	27	33	27	27	29	27	36	25	27	32	~~23~~
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	34	27	27	29	27	35	25	27	30	~~22~~	24	27	~~19~~	32	~~23~~	~~17~~	29	~~21~~	~~15~~
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	34	26	26	29	26	34	25	25	30	~~22~~	24	27	~~20~~
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	33	27	27	30	27	35	26	27	30	~~22~~	35	26	~~19~~	31	~~23~~	~~17~~	27	~~20~~	~~15~~	24	~~18~~	~~13~~
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	37	31	38	33	27	38	29	24
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	31	38	32	27	38	28	~~23~~	38	24	~~20~~	37	~~22~~	~~18~~	32	~~19~~	~~16~~
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	29
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	35	28	34	31	24	30	27	~~21~~	27	24	~~19~~
80	B	0-7	Interior	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
			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	32	21	21	29	21	21	26
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	29	36	33	25	36	30	~~23~~
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	27
		27-45	Interior	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
			Exposed	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
	C	0-7	Interior	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	32	21	21	30	21	21	27
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	32	21	21	30	21	21	26	21	32	~~23~~	21	28	~~20~~	32	25	~~18~~
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	31	36	36	27	35	32	24
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	33	26	36	31	~~23~~	36	27	~~20~~	33	24	~~18~~	29	~~21~~	~~16~~
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	31	29	24	31	26	~~21~~	31	~~23~~	~~19~~
		27-45	Interior	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
			Exposed	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	26	29	29	~~23~~
	D	0-7	Interior	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	33	24	24	29	24	36	25	24	32	~~23~~
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	34	24	24	29	24	35	25	24	30	~~22~~	24	27	~~19~~	32	~~23~~	~~17~~	29	~~21~~	~~15~~
		7-20	Interior	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	34	24	24	29	23	34	25	23	30	~~22~~	22	27	~~20~~
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	33	24	24	30	24	35	26	24	30	~~22~~	35	26	~~19~~	31	~~23~~	~~17~~	27	~~20~~	~~15~~	24	~~18~~	~~13~~
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	33	27	34	29	24
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	32	27	34	28	~~23~~	34	24	~~20~~	34	~~22~~	~~18~~	32	~~19~~	~~16~~
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	28	32	31	24	30	27	~~21~~	27	24	~~19~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	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	19	19	19	19	19	19	19
			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	29	19	19	29	19	19	26
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	29	32	29	25	32	29	23
		20-27	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	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	27	27	27	27	27
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
	C	0-7	Interior	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	29	19	19	29	19	19	27
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	29	19	19	29	19	19	26	19	29	23	19	28	20	29	25	18
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	29	32	32	27	32	29	24
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	29	26	32	29	23	32	27	20	29	24	18	29	21	16
		20-27	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	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	24	27	26	21	27	23	19
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23
	D	0-7	Interior	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	32	21	21	29	21	32	25	21	32	23
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	32	21	21	29	21	32	25	21	30	22	21	27	19	32	23	17	29	21	15
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	29	35	32	25	34	30	22	33	27	20
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	30	36	32	26	36	30	22	32	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	29	24
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	28	23	30	24	20	30	22	18	30	19	16			
		27-45	Interior	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
			Exposed	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	28	29	29	24	29	27	21	27	24	19			
100	B	0-7	Interior	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	17	17	17	17	17	17	17
			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	26	17	17	26	17	17	26	17	17	26
		7-20	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	27	27	27	27	26
			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	26	27	27	26	27	26	25	27	26	23
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
		27-45	Interior	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	24	24	24	24	24	24
			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	24	24	24	24	24	24
	C	0-7	Interior	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	26	17	17	26	17	17	26
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	26	17	17	26	17	26	23	17	26	20	26	25	18			
		7-20	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	26	27	27	26	27	27	26	27	27	26	27	26	24
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	26	26	27	26	23	27	26	20	26	24	18	26	21	16
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	21	25	23	19			
		27-45	Interior	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	24	24	24	24	24	24
			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	24	24	24	24	24	23
	D	0-7	Interior	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	29	19	19	29	19	29	25	19	29	23
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	29	19	19	29	19	29	25	19	29	22	19	27	19	29	23	17	29	21	15
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	29	32	29	25	31	29	22	30	27	20
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	29	32	29	26	32	29	22	29	26	19	29	23	17	27	20	15	24	18	13
		20-27	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	27	27	27	27	24
			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	23	27	24	20	27	22	18	27	19	16			
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	26	21	26	24	19			

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	98	98	98	98	98	98	98	98	97	98	98	92	98	98	88	98	97	84	98	93	81	98	87	75	93	81	67	87	76	61	82	70	56	78	64	49	73	60	44
			Exposed	98	98	88	98	96	83	98	92	79	98	87	76	97	84	71	93	80	66	89	77	63	83	70	56	77	64	48	71	59	42	65	51	55	61	45	49	55	40	43
		7-20	Interior	99	99	99	99	99	99	99	99	94	99	99	89	99	99	85	99	94	81	99	90	77	97	82	68	90	76	62	83	69	56	78	63	49	72	58	43	65	52	58
			Exposed	99	99	84	99	93	80	99	88	76	99	83	70	94	79	65	89	76	62	85	71	59	78	63	50	71	57	43	64	50	56	59	43	49	52	58	43	46	51	38
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	94	99	99	89	99	94	85	99	86	78	99	79	71	94	74	63	88	65	59	83	61	52	79	56	46
			Exposed	99	99	93	99	97	88	99	92	83	99	87	79	99	83	75	99	79	70	96	76	65	89	66	60	82	61	51	77	54	44	71	47	59	65	41	52	61	55	46
		27-45	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	96	100	100	92	100	94	85	95	87	79	88	81	72	82	76	65	77	70	61	71	65	56
			Exposed	100	100	100	100	100	95	100	99	90	100	95	85	99	90	82	94	86	78	90	83	75	82	77	65	76	69	60	68	63	53	62	59	47	58	52	41	51	46	55
	C	0-7	Interior	98	98	90	98	98	85	98	94	81	98	90	78	98	86	74	95	82	69	91	79	65	85	73	59	79	65	51	74	61	44	67	54	58	62	48	51	58	43	46
			Exposed	98	86	74	94	82	68	90	78	63	86	74	60	82	69	55	79	65	50	76	62	46	68	55	59	62	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	99	99	87	99	95	82	99	90	78	99	86	73	96	82	67	92	78	63	87	75	61	80	65	52	74	60	45	65	53	59	61	46	51	55	40	45	49	54	40
			Exposed	96	81	67	90	77	63	86	72	59	81	66	54	77	62	49	73	60	44	68	55	41	61	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	99	99	96	99	99	91	99	95	86	99	90	81	99	85	77	99	81	73	99	78	68	91	69	61	85	62	54	79	57	47	74	50	41	67	44	55	63	59	49
			Exposed	99	85	77	99	80	72	97	76	65	92	71	62	88	65	59	84	62	54	81	59	49	75	50	42	66	43	54	61	56	47	55	49	41	49	43	36	43	39	32
		27-45	Interior	100	100	100	100	100	98	100	100	92	100	97	88	100	93	84	97	89	80	92	85	77	85	79	68	78	73	62	71	65	56	64	61	49	60	55	44	54	49	58
			Exposed	100	92	84	96	88	79	90	83	75	86	80	70	81	76	65	78	72	62	74	67	59	64	61	50	60	54	43	52	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	98	96	83	98	91	78	98	86	75	96	83	69	91	79	65	88	76	62	84	72	59	78	64	49	72	60	42	65	52	55	61	45	48	55	40	43	49	53	38
			Exposed	91	79	64	87	75	61	83	70	56	79	65	51	76	62	46	71	59	42	67	54	58	61	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	99	92	79	99	87	75	97	82	68	92	78	64	87	75	61	83	69	56	80	64	52	72	59	44	64	51	56	60	44	49	52	58	43	46	51	38	41	45	34
			Exposed	87	74	61	82	67	55	78	63	49	74	60	45	68	55	41	64	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	99	97	87	99	91	82	99	86	78	99	81	74	99	78	68	94	74	64	90	68	61	83	62	53	78	55	45	72	47	59	65	41	52	61	55	46	55	49	41
			Exposed	99	77	67	93	72	63	89	66	60	84	62	54	81	59	49	77	54	45	74	49	41	65	42	52	60	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	100	100	94	100	98	89	100	93	84	97	89	80	92	85	77	88	81	73	84	78	68	77	71	61	69	64	54	63	59	47	58	52	41	51	46	55	45	41	49
			Exposed	92	85	77	87	81	71	82	77	65	78	72	62	74	67	59	68	63	54	64	61	49	58	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32
10	B	0-7	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	88	92	92	84	92	92	81	92	87	75	92	81	67	87	76	61	82	70	56	78	64	49	73	60	44
			Exposed	92	92	88	92	92	83	92	92	79	92	87	76	92	84	71	92	80	66	89	77	63	83	70	56	77	64	48	71	59	42	65	51	55	61	45	49	55	40	43
		7-20	Interior	92	92	92	92	92	92	92	92	92	92	92	89	92	92	85	92	92	81	92	90	77	92	82	68	90	76	62	83	69	56	78	63	49	72	58	43	65	52	58
			Exposed	92	92	84	92	92	80	92	88	76	92	83	70	92	79	65	89	76	62	85	71	59	78	63	50	71	57	43	64	50	56	59	43	49	52	58	43	46	51	38
		20-27	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	94	96	96	89	96	94	85	96	86	78	96	79	71	94	74	63	88	65	59	83	61	52	79	56	46
			Exposed	96	96	93	96	96	88	96	92	83	96	87	79	96	83	75	96	79	70	96	76	65	89	66	60	82	61	51	77	54	44	71	47	59	65	41	52	61	55	46
		27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	96	99	99	92	99	94	85	95	87	79	88	81	72	82	76	65	77	70	61	71	65	56
			Exposed	99	99	99	99	99	95	99	99	90	99	95	85	99	90	82	94	86	78	90	83	75	82	77	65	76	69	60	68	63	53	62	59	47	58	52	41	51	46	55
	C	0-7	Interior	92	92	90	92	92	85	92	92	81	92	90	78	92	86	74	92	82	69	91	79	65	85	73	59	79	65	51	74	61	44	67	54	58	62	48	51	58	43	46
			Exposed	92	86	74	92	82	68	90	78	63	86	74	60	82	69	55	79	65	50	76	62	46	68	55	59	62	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	92	92	87	92	92	82	92	90	78	92	86	73	92	82	67	92	78	63	87	75	61	80	65	52	74	60	45	65	53	59	61	46	51	55	40	45	49	54	40
			Exposed	92	81	67	90	77	63	86	72	59	81	66	54	77	62	49	73	60	44	68	55	41	61	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	96	96	96	96	96	91	96	95	86	96	90	81	96	85	77	96	81	73	96	78	68	91	69	61	85	62	54	79	57	47	74	50	41	67	44	55	63	59	49
			Exposed	96	85	77	96	80	72	96	76	65	92	71	62	88	65	59	84	62	54	81	59	49	75	50	42	66	43	54	61	56	47	55	49	41	49	43	36	43	39	32
		27-45	Interior	99	99	99	99	99	98	99	99	92	99	97	88	99	93	84	97	89	80	92	85	77	85	79	68	78	73	62	71	65	56	64	61	49	60	55	44	54	49	58
			Exposed	99	92	84	96	88	79	90	83	75	86	80	70	81	76	65	78	72	62	74	67	59	64	61	50	60	54	43	52	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	92	92	83	92	91	78	92	86	75	92	83	69	91	79	65	88	76	62	84	72	59	78	64	49	72	60	42	65	52	55	61	45	48	55	40	43	49	53	38
			Exposed	91	79	64	87	75	61	83	70	56	79	65	51	76	62	46	71	59	42	67	54	58	61	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	92	92	79	92	87	75	92	82	68	92	78	64	87	75	61	83	69	56	80	64	52	72	59	44	64	51	56	60	44	49	52	58	43	46	51	38	41	45	34
			Exposed	87	74	61	82	67	55	78	63	49	74	60	45	68	55	41	64	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	97	97	87	97	91	82	97	86	78	97	81	74	97	78	68	94	74	64	90	68	61	83	62	53	78	55	45	72	47	59	65	41	52	61	55	46	55	49	41
			Exposed	97	77	67	93	72	63	89	66	60	84	62	54	81	59	49	77	54	45	74	49	41	65	42	52	60	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	99	99	94	99	98	89	99	93	84	97	89	80	92	85	77	88	81	73	84	78	68	77	71	61	69	64	54	63	59	47	58	52	41	51	46	55	45	41	49
			Exposed	92	85	77	87	81	71	82	77	65	78	72	62	74	67	59	68	63	54	64	61	49	58	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32
20	B	0-7	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	83	83	75	83	81	67	83	76	61	82	70	56	78	64	49	73	60	44
			Exposed	83	83	83	83	83	83	83	83	79	83	83	76	83	83	71	83	80	66	83	77	63	83	70	56	77	64	48	71	59	42	65	51	55	61	45	49	55	40	43
		7-20	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	83	83	77	83	82	68	83	76	62	83	69	56	78	63	49	72	58	43	65	52	58
			Exposed	83	83	83	83	83	80	83	83	76	83	83	70	83	79	65	83	76	62	83	71	59	78	63	50	71	57	43	64	50	56	59	43	49	52	58	43	46	51	38
		20-27	Interior	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	85	89	86	78	89	79	71	89	74	63	88	65	59	83	61	52	79	56	46
			Exposed	89	89	89	89	89	88	89	89	83	89	87	79	89	83	75	89	79	70	89	76	65	89	66	60	82	61	51	77	54	44	71	47	59	65	41	52	61	55	46
		27-45	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	85	92	87	79	88	81	72	82	76	65	77	70	61	71	65	56
			Exposed	92	92	92	92	92	92	92	92	90	92	92	85	92	90	82	92	86	78	90	83	75	82	77	65	76	69	60	68	63	53	62	59	47	58	52	41	51	46	55
	C	0-7	Interior	83	83	83	83	83	83	83	83	81	83	83	78	83	83	74	83	82	69	83	79	65	83	73	59	79	65	51	74	61	44	67	54	58	62	48	51	58	43	46
			Exposed	83	83	74	83	82	68	83	78	63	83	74	60	82	69	55	79	65	50	76	62	46	68	55	59	62	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	83	83	83	83	83	82	83	83	78	83	83	73	83	82	67	83	78	63	83	75	61	80	65	52	74	60	45	65	53	59	61	46	51	55	40	45	49	54	40
			Exposed	83	81	67	83	77	63	83	72	59	81	66	54	77	62	49	73	60	44	68	55	41	61	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	89	89	89	89	89	89	89	89	86	89	89	81	89	85	77	89	81	73	89	78	68	89	69	61	85	62	54	79	57	47	74	50	41	67	44	55	63	59	49
			Exposed	89	85	77	89	80	72	89	76	65	89	71	62	88	65	59	84	62	54	81	59	49	75	50	42	66	43	54	61	56	47	55	49	41	49	43	36	43	39	32
		27-45	Interior	92	92	92	92	92	92	92	92	92	92	92	88	92	92	84	92	89	80	92	85	77	85	79	68	78	73	62	71	65	56	64	61	49	60	55	44	54	49	58
			Exposed	92	92	84	92	88	79	90	83	75	86	80	70	81	76	65	78	72	62	74	67	59	64	61	50	60	54	43	52	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	83	83	83	83	83	78	83	83	75	83	83	69	83	79	65	83	76	62	83	72	59	78	64	49	72	60	42	65	52	55	61	45	48	55	40	43	49	53	38
			Exposed	83	79	64	83	75	61	83	70	56	79	65	51	76	62	46	71	59	42	67	54	58	61	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	83	83	79	83	83	75	83	82	68	83	78	64	83	75	61	83	69	56	80	64	52	72	59	44	64	51	56	60	44	49	52	58	43	46	51	38	41	45	34
			Exposed	83	74	61	82	67	55	78	63	49	74	60	45	68	55	41	64	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	90	90	87	90	90	82	90	86	78	90	81	74	90	78	68	90	74	64	90	68	61	83	62	53	78	55	45	72	47	59	65	41	52	61	55	46	55	49	41
			Exposed	90	77	67	90	72	63	89	66	60	84	62	54	81	59	49	77	54	45	74	49	41	65	42	52	60	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	93	93	93	93	93	89	93	93	84	93	89	80	92	85	77	88	81	73	84	78	68	77	71	61	69	64	54	63	59	47	58	52	41	51	46	55	45	41	49
			Exposed	92	85	77	87	81	71	82	77	65	78	72	62	74	67	59	68	63	54	64	61	49	58	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32

* 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.

~~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.

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ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	70	61	70	70	56	70	64	49	70	60	44
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	66	70	70	63	70	70	56	70	64	48	70	59	42	65	51	55	61	45	49	55	40	43
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	71	71	62	71	69	56	71	63	49	70	58	43	65	52	58
			Exposed	71	71	71	71	71	71	71	71	71	71	71	70	71	71	65	71	71	62	71	71	59	71	63	50	71	57	43	64	50	56	59	43	49	52	58	43	46	51	38
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	78	82	79	71	82	74	63	82	65	59	82	61	52	79	56	46
			Exposed	82	82	82	82	82	82	82	82	82	82	82	79	82	82	75	82	79	70	82	76	65	82	66	60	82	61	51	77	54	44	71	47	59	65	41	52	61	55	46
		27-45	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	72	76	76	65	76	70	61	71	65	56
			Exposed	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	75	76	76	65	76	69	60	68	63	53	62	59	47	58	52	41	51	46	55
	C	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	69	70	70	65	70	70	59	70	65	51	70	61	44	67	54	58	62	48	51	58	43	46
			Exposed	70	70	70	70	70	68	70	70	63	70	70	60	70	69	55	70	65	50	70	62	46	68	55	59	62	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	67	71	71	63	71	71	61	71	65	52	71	60	45	65	53	59	61	46	51	55	40	45	49	54	40
			Exposed	71	71	67	71	71	63	71	71	59	71	66	54	71	62	49	71	60	44	68	55	41	61	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	81	82	82	77	82	81	73	82	78	68	82	69	61	82	62	54	79	57	47	74	50	41	67	44	55	63	59	49
			Exposed	82	82	77	82	80	72	82	76	65	82	71	62	82	65	59	82	62	54	81	59	49	75	50	42	66	43	54	61	56	47	55	49	41	49	43	36	43	39	32
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	68	76	73	62	71	65	56	64	61	49	60	55	44	54	49	58
			Exposed	76	76	76	76	76	76	76	76	75	76	76	70	76	76	65	76	72	62	74	67	59	64	61	50	60	54	43	52	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	69	70	70	65	70	70	62	70	70	59	70	64	49	70	60	42	65	52	55	61	45	48	55	40	43	49	53	38
			Exposed	70	70	64	70	70	61	70	70	56	70	65	51	70	62	46	70	59	42	67	54	58	61	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	71	71	71	71	71	71	71	71	68	71	71	64	71	71	61	71	69	56	71	64	52	70	59	44	64	51	56	60	44	49	52	58	43	46	51	38	41	45	34
			Exposed	71	71	61	71	67	55	71	63	49	71	60	45	68	55	41	64	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	85	85	85	85	85	82	85	85	78	85	81	74	85	78	68	85	74	64	85	68	61	83	62	53	78	55	45	72	47	59	65	41	52	61	55	46	55	49	41
			Exposed	85	77	67	85	72	63	85	66	60	84	62	54	81	59	49	77	54	45	74	49	41	65	42	52	60	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	83	83	83	83	83	83	83	83	83	83	83	80	83	83	77	83	81	73	83	78	68	77	71	61	69	64	54	63	59	47	58	52	41	51	46	55	45	41	49
			Exposed	83	83	77	83	81	71	82	77	65	78	72	62	74	67	59	68	63	54	64	61	49	58	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32
40	B	0-7	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	61	65	65	56	65	64	49	65	60	44
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	65	56	65	64	48	65	59	42	65	51	55	61	45	49	55	40	43
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	62	66	66	56	66	63	49	64	58	43	62	52	58
			Exposed	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	66	66	62	66	66	59	66	63	50	66	57	43	64	50	56	59	43	49	52	58	43	46	51	38
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	59	64	61	52	64	56	46
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	64	61	51	64	54	44	64	47	59	64	41	52	61	55	46
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	53	60	59	47	58	52	41	51	46	55
	C	0-7	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	59	65	65	51	65	61	44	65	54	58	62	48	51	58	43	46
			Exposed	65	65	65	65	65	65	65	65	63	65	65	60	65	65	55	65	65	50	65	62	46	65	55	59	62	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	63	66	66	61	66	65	52	65	60	45	62	53	59	60	46	51	55	40	45	49	54	40
			Exposed	66	66	66	66	66	63	66	66	59	66	66	54	66	62	49	66	60	44	66	55	41	61	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	62	54	64	57	47	64	50	41	64	44	55	62	59	49
			Exposed	64	64	64	64	64	64	64	64	64	64	64	62	64	64	59	64	62	54	64	59	49	64	50	42	64	43	54	61	56	47	55	49	41	49	43	36	43	39	32
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	49	60	55	44	54	49	58
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	50	60	54	43	52	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	69	70	70	65	70	70	62	70	70	59	70	64	49	70	60	42	65	52	55	61	45	48	55	40	43	49	53	38
			Exposed	70	70	64	70	70	61	70	70	56	70	65	51	70	62	46	70	59	42	67	54	58	61	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	70	70	70	70	70	70	70	70	68	70	70	64	70	70	61	70	69	56	70	64	52	70	59	44	64	51	56	60	44	49	52	58	43	46	51	38	41	45	34
			Exposed	70	70	61	70	67	55	70	63	49	70	60	45	68	55	41	64	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	68	70	70	64	70	68	61	70	62	53	70	55	45	70	47	59	65	41	52	61	55	46	55	49	41
			Exposed	70	70	67	70	70	63	70	66	60	70	62	54	70	59	49	70	54	45	70	49	41	65	42	52	60	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	61	66	64	54	63	59	47	58	52	41	51	46	55	45	41	49
			Exposed	66	66	66	66	66	66	66	66	65	66	66	62	66	66	59	66	63	54	64	61	49	58	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32
50	B	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	49	56	56	44
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	48	56	56	42	56	51	55	56	45	49	55	40	43
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	49	56	56	43	54	52	58
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	50	57	57	43	57	50	56	57	43	49	52	58	43	46	51	38
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	46
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	51	53	53	44	53	47	59	53	41	52	53	55	46
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	47	50	50	41	50	46	55
	C	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	51	56	56	44	56	54	58	56	48	51	56	43	46
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	50	56	56	46	56	55	59	56	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	56	56	45	54	53	59	52	46	51	50	40	45	49	54	40
			Exposed	57	57	57	57	57	57	57	57	57	57	57	54	57	57	49	57	57	44	57	55	41	57	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	47	53	50	41	53	44	55	53	59	49
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	50	42	53	43	54	53	56	47	53	49	41	49	43	36	43	39	32
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	49	50	50	44	50	49	58
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	43	50	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	49	60	60	42	60	52	55	60	45	48	55	40	43	49	53	38
			Exposed	60	60	60	60	60	60	60	60	56	60	60	51	60	60	46	60	59	42	60	54	58	60	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	56	61	61	52	60	59	44	57	51	56	55	44	49	52	58	43	46	51	38	41	45	34
			Exposed	61	61	61	61	61	55	61	61	49	61	60	45	61	55	41	61	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	53	58	55	45	58	47	59	58	41	52	57	55	46	54	49	41
			Exposed	58	58	58	58	58	58	58	58	58	58	58	54	58	58	49	58	54	45	58	49	41	58	42	52	58	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	47	55	52	41	51	46	55	45	41	49
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	49	55	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32

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~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	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	47	47	47	44
			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	42	47	47	55	47	45	49	47	40	43
		7-20	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	43	48	48	58
			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	43	48	48	56	48	43	49	48	58	43	46	51	~~38~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	59	45	41	52	45	55	46
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	63	55
	C	0-7	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	44	47	47	58	47	47	51	47	43	46
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	47	47	59	47	47	50	47	41	44	47	54	~~38~~	43	47	~~34~~	58	42	~~30~~
		7-20	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	45	48	48	59	46	46	51	45	40	45	43	54	40
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	44	48	48	41	48	46	52	48	40	45	47	52	~~39~~	41	45	~~34~~	55	40	~~30~~	49	~~36~~	~~27~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	44	55	45	59	49
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	45	43	54	45	56	47	45	49	41	45	43	~~36~~	43	~~39~~	~~32~~
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	63	58
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	56	63	61	49	60	54	43	54	48	~~38~~
	D	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	42	52	52	55	52	45	48	52	40	43	49	53	~~38~~
			Exposed	52	52	52	52	52	52	52	52	52	52	52	51	52	52	46	52	52	42	52	52	58	52	46	49	52	59	42	47	51	~~36~~	41	45	~~32~~	54	~~40~~	~~28~~	48	~~35~~	~~25~~
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	44	51	51	56	49	44	49	47	58	43	45	51	~~38~~	41	45	~~34~~
			Exposed	53	53	53	53	53	53	53	53	49	53	53	45	53	53	41	53	50	56	53	46	51	53	58	43	45	50	~~37~~	59	43	~~32~~	52	~~38~~	~~28~~	46	~~34~~	~~25~~	41	~~30~~	~~22~~
		20-27	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	45	49	47	59	49	41	52	49	55	46	49	49	41
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	45	49	49	41	49	42	52	49	54	45	49	47	~~39~~	46	41	~~34~~	41	~~36~~	~~30~~	55	~~32~~	~~27~~
		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	41	46	46	55	45	41	49
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	46	45	54	43	59	47	57	51	41	51	45	~~36~~	45	40	~~32~~
70	B	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	55	41	41	49	41	40	43
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	58
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	56	41	41	49	41	58	43	41	51	~~38~~
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	52	58	56	46
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
	C	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	58	41	41	51	41	41	46
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	59	41	41	50	41	41	44	41	54	~~38~~	41	47	~~34~~	58	42	~~30~~
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	59	41	41	51	40	40	45	39	54	40
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	52	41	40	45	41	52	~~39~~	41	45	~~34~~	55	40	~~30~~	49	~~36~~	~~27~~
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	55	58	58	49
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	54	58	56	47	58	49	41	58	43	~~36~~	58	~~39~~	~~32~~
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	49	55	54	43	54	48	~~39~~
	D	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55	45	45	48	45	40	43	45	53	~~38~~
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	45	45	58	45	45	49	45	59	42	45	51	~~36~~	41	45	~~32~~	54	~~40~~	~~28~~	48	~~35~~	~~25~~
		7-20	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	44	46	46	56	44	44	49	43	58	43	41	51	~~38~~	40	45	~~34~~
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	41	46	46	56	46	46	51	46	58	43	45	50	~~37~~	59	43	~~32~~	52	~~38~~	~~28~~	46	~~34~~	~~25~~	41	~~30~~	~~22~~
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	59	64	61	52	64	55	46	64	49	41
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	61	64	61	52	64	54	45	64	47	~~39~~	64	41	~~34~~	60	~~36~~	~~30~~	55	~~32~~	~~27~~
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	55	61	60	49
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	54	61	59	47	57	52	41	51	45	~~36~~	45	40	~~32~~
80	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	54	36	36	49	36	36	43
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	55
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	55	61	61	49	61	55	43	61	51	~~38~~
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	46
		27-45	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	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	49	49	49	49	49
	C	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	54	36	36	51	36	36	46
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	54	36	36	50	36	36	44	36	54	~~38~~	36	47	~~34~~	54	42	~~30~~
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	55	61	61	51	60	60	45	58	54	40
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	52	61	60	45	61	52	~~39~~	61	46	~~34~~	55	40	~~30~~	49	~~36~~	~~27~~
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	49
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	51	49	41	51	43	~~36~~	51	~~39~~	~~32~~
		27-45	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	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	49	43	49	48	~~39~~
	D	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	55	40	40	48	40	40	43	40	53	~~38~~
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	58	40	40	49	40	59	42	40	51	~~36~~	40	45	~~32~~	54	~~40~~	~~28~~	48	~~35~~	~~25~~
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	56	40	40	49	39	58	43	38	51	~~38~~	37	45	~~34~~
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	56	40	40	51	40	58	43	40	50	~~37~~	59	43	~~32~~	52	~~38~~	~~28~~	46	~~34~~	~~25~~	41	~~30~~	~~22~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	57	55	46	57	49	41
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	57	54	45	57	47	~~39~~	57	41	~~34~~	57	~~36~~	~~30~~	55	~~32~~	~~27~~
		27-45	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	47	54	52	41	51	45	~~36~~	45	40	~~32~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	32	32	48	32	32	43
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	49	54	49	43	54	49	38
		20-27	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	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	46	46	46	46	46
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
	C	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	32	32	48	32	32	46
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	32	32	48	32	32	44	32	48	38	32	47	34	48	42	30
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	49	54	54	45	53	49	40
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	45	54	49	39	54	46	34	49	40	30	49	36	27
		20-27	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	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	41	46	43	36	46	39	32
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	44	44	39
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	54	36	36	48	36	36	43	36	53	38
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	54	36	36	49	36	54	42	36	51	36	36	45	32	54	40	28	48	35	25
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	54	60	60	49	58	54	43	56	51	38	55	45	34
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	54	60	60	51	60	54	43	60	50	37	54	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	46	51	49	41
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	45	51	47	39	51	41	34	51	36	30	51	32	27
		27-45	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
			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	47	48	48	41	48	45	36	45	40	32
100	B	0-7	Interior	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
			Exposed	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	44	29	29	44	29	29	43
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	44	45	44	43	45	44	38
		20-27	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
		27-45	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
	C	0-7	Interior	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	44	29	29	44	29	29	44
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	44	29	29	44	29	29	44	29	44	38	29	44	34	44	42	30
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	44	45	45	44	45	44	40
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	44	45	44	39	45	44	34	44	40	30	44	36	27
		20-27	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	36	42	39	32
		27-45	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39
	D	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	32	32	48	32	32	43	32	48	38
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	32	32	48	32	48	42	32	48	36	32	45	32	48	40	28	48	35	25
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	49	54	49	43	53	49	38	51	45	34
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	49	54	49	43	54	49	37	49	43	32	49	38	28	46	34	25	41	30	22
		20-27	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	46	46	46	41
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	45	46	46	39	46	41	34	46	36	30	46	32	27	46	32	27
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	36	44	41	32

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	74	74	74	74	74	74	74	74	74	74	74	72	74	74	68	74	74	64	74	74	60	74	66	47	74	60	37	67	50	32	62	41	28	54	34	24	45	30	33
			Exposed	74	74	68	74	74	63	74	72	58	74	67	49	74	63	42	73	60	36	69	53	33	62	41	28	52	34	24	42	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	74	74	74	74	74	74	74	74	74	74	74	69	74	74	65	74	74	61	74	70	53	74	62	39	70	51	32	63	39	28	55	33	24	43	29	32	35	26	29
			Exposed	74	74	64	74	73	60	74	68	49	74	63	41	74	59	35	69	50	32	65	42	29	56	33	25	42	28	32	34	25	28	29	33	24	26	29	21	23	25	19
		20-27	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	74	75	75	69	75	74	65	75	66	56	75	59	42	75	45	34	68	36	29	63	31	26	56	28	23
			Exposed	75	75	74	75	75	68	75	72	63	75	67	59	75	63	49	75	58	41	75	49	35	69	36	30	62	31	25	53	27	33	42	23	29	35	31	26	31	28	23
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	72	76	74	65	75	67	57	68	61	44	62	51	35	52	42	31	42	35	28
			Exposed	76	76	76	76	76	75	76	76	70	76	75	66	76	70	62	75	66	55	70	63	47	62	52	36	51	40	31	39	33	26	33	29	23	29	26	31	26	35	27
	C	0-7	Interior	74	74	70	74	74	65	74	74	61	74	70	54	74	66	46	74	62	40	72	57	35	64	45	29	57	36	25	46	31	33	38	27	29	33	24	25	29	32	23
			Exposed	74	65	46	74	61	38	70	54	33	65	46	30	61	40	27	56	35	25	49	32	34	38	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	74	74	67	74	74	62	74	70	54	74	66	45	74	61	38	72	55	34	68	47	31	60	35	26	46	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	74	61	38	71	53	33	66	43	29	61	36	27	54	33	24	45	30	33	39	27	30	31	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	75	75	75	75	75	71	75	75	66	75	70	61	75	65	54	75	61	45	75	55	39	71	40	31	64	33	27	58	28	23	46	25	31	38	33	27	33	29	24
			Exposed	75	65	53	75	60	43	75	50	36	72	42	32	68	35	29	64	32	27	60	29	24	47	25	31	37	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	76	76	76	76	76	76	76	76	73	76	76	68	76	73	64	76	69	60	73	65	52	65	57	39	56	44	32	43	35	28	34	31	24	30	27	33	27	24	29
			Exposed	76	73	64	76	68	59	71	63	48	66	59	41	62	50	35	55	43	32	46	38	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	74	74	62	74	71	56	74	66	47	74	62	40	72	57	35	67	50	32	64	44	29	55	35	25	43	30	32	35	26	27	31	34	24	27	30	21	24	27	19
			Exposed	71	57	35	66	48	31	62	41	28	57	36	25	49	32	34	43	29	31	37	27	29	31	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	74	72	59	74	67	47	74	62	39	72	56	34	68	47	31	63	40	28	60	35	26	44	29	33	34	25	28	30	33	24	26	29	21	35	25	19	31	22	17
			Exposed	67	46	31	62	38	27	55	33	25	46	30	33	39	27	30	34	25	28	31	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	75	75	68	75	71	62	75	66	56	75	62	46	75	54	38	75	46	34	71	39	31	63	32	26	54	27	34	43	23	29	35	31	26	31	27	23	27	24	20
			Exposed	75	54	38	74	44	33	69	36	30	64	32	27	60	29	24	53	27	33	46	24	31	35	31	26	30	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	76	76	75	76	76	69	76	74	64	76	69	60	73	65	52	68	61	44	64	55	38	53	42	31	40	34	27	33	29	23	29	26	31	25	34	27	34	30	24
			Exposed	73	65	52	67	60	43	62	52	36	56	44	32	46	38	29	39	34	27	34	31	24	29	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16
10	B	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	47	60	60	37	60	50	32	60	41	28	54	34	24	45	30	33
			Exposed	60	60	60	60	60	60	60	60	58	60	60	49	60	60	42	60	60	36	60	53	33	60	41	28	52	34	24	42	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	53	60	60	39	60	51	32	60	39	28	55	33	24	43	29	32	35	26	29
			Exposed	60	60	60	60	60	60	60	60	49	60	60	41	60	59	35	60	50	32	60	42	29	56	33	25	42	28	32	34	25	28	29	33	24	26	29	21	23	25	19
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	65	69	66	56	69	59	42	69	45	34	68	36	29	63	31	26	56	28	23
			Exposed	69	69	69	69	69	68	69	69	63	69	67	59	69	63	49	69	58	41	69	49	35	69	36	30	62	31	25	53	27	33	42	23	29	35	31	26	31	28	23
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	72	74	74	65	74	67	57	68	61	44	62	51	35	52	42	31	42	35	28
			Exposed	74	74	74	74	74	74	74	74	70	74	74	66	74	70	62	74	66	55	70	63	47	62	52	36	51	40	31	39	33	26	33	29	23	29	26	31	26	35	27
	C	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	54	60	60	46	60	60	40	60	57	35	60	45	29	57	36	25	46	31	33	38	27	29	33	24	25	29	32	23
			Exposed	60	60	46	60	60	38	60	54	33	60	46	30	60	40	27	56	35	25	49	32	34	38	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	60	60	60	60	60	60	60	60	54	60	60	45	60	60	38	60	55	34	60	47	31	60	35	26	46	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	60	60	38	60	53	33	60	43	29	60	36	27	54	33	24	45	30	33	39	27	30	31	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	65	69	66	56	69	59	42	69	45	34	68	36	29	63	31	26	56	28	23
			Exposed	69	65	53	69	60	43	69	50	36	69	42	32	68	35	29	64	32	27	60	29	24	47	25	31	37	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	74	74	74	74	74	74	74	74	73	74	74	68	74	73	64	74	69	60	73	65	52	65	57	39	56	44	32	43	35	28	34	31	24	30	27	33	27	24	29
			Exposed	74	73	64	74	68	59	71	63	48	66	59	41	62	50	35	55	43	32	46	38	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	60	60	60	60	60	56	60	60	47	60	60	40	60	57	35	60	50	32	60	44	29	55	35	25	43	30	32	35	26	27	31	34	24	27	30	21	24	27	19
			Exposed	60	57	35	60	48	31	60	41	28	57	36	25	49	32	34	43	29	31	37	27	29	31	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	60	60	59	60	60	47	60	60	39	60	56	34	60	47	31	60	40	28	60	35	26	44	29	33	34	25	28	30	33	24	26	29	21	35	25	19	31	22	17
			Exposed	60	46	31	60	38	27	55	33	25	46	30	33	39	27	30	34	25	28	31	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	70	70	68	70	70	62	70	66	56	70	62	46	70	54	38	70	46	34	70	39	31	63	32	26	54	27	34	43	23	29	35	31	26	31	27	23	27	24	20
			Exposed	70	54	38	70	44	33	69	36	30	64	32	27	60	29	24	53	27	33	46	24	31	35	31	26	30	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	75	75	75	75	75	69	75	74	64	75	69	60	73	65	52	68	61	44	64	55	38	53	42	31	40	34	27	33	29	23	29	26	31	25	34	27	34	30	24
			Exposed	73	65	52	67	60	43	62	52	36	56	44	32	46	38	29	39	34	27	34	31	24	29	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16
20	B	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	37	44	44	32	44	41	28	44	41	28	44	34	24	44	30	33
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	36	44	44	33	44	41	28	44	34	24	42	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	32	45	39	28	45	33	24	43	29	32	35	26	29	35	26	29
			Exposed	45	45	45	45	45	45	45	45	45	45	45	41	45	45	35	45	45	32	45	42	29	45	33	25	42	28	32	34	25	28	29	33	24	26	29	21	23	25	19
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	42	54	54	42	54	45	34	54	36	29	54	31	26	53	28	23
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	41	54	49	35	54	36	30	54	31	25	53	27	33	42	23	29	35	31	26	31	28	23
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	44	52	51	35	49	42	31	42	35	28
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	47	52	52	36	51	40	31	39	33	26	33	29	23	29	26	31	26	35	27
	C	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	44	44	35	44	44	29	44	36	25	44	31	33	38	27	29	33	24	25	29	32	23
			Exposed	44	44	44	44	44	38	44	44	33	44	44	30	44	40	27	44	35	25	44	32	34	38	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	45	45	34	45	45	31	45	35	26	45	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	45	45	38	45	45	33	45	43	29	45	36	27	45	33	24	45	30	33	39	27	30	31	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	45	54	54	39	54	40	31	54	33	27	53	28	23	46	25	31	38	33	27	33	29	24
			Exposed	54	54	53	54	54	43	54	50	36	54	42	32	54	35	29	54	32	27	54	29	24	47	25	31	37	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	39	50	44	32	43	35	28	34	31	24	30	27	33	27	24	29
			Exposed	52	52	52	52	52	52	52	52	48	52	52	41	52	50	35	52	43	32	46	38	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	40	44	44	35	44	44	32	44	44	29	44	35	25	43	30	32	35	26	27	31	34	24	27	30	21	24	27	19
			Exposed	44	44	35	44	44	31	44	41	28	44	36	25	44	32	34	43	29	31	37	27	29	31	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	45	45	45	45	45	45	45	45	39	45	45	34	45	45	31	45	40	28	45	35	26	44	29	33	34	25	28	30	33	24	26	29	21	35	25	19	31	22	17
			Exposed	45	45	31	45	38	27	45	33	25	45	30	33	39	27	30	34	25	28	31	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	46	56	54	38	56	46	34	56	39	31	56	32	26	54	27	34	43	23	29	35	31	26	31	27	23	27	24	20
			Exposed	56	54	38	56	44	33	56	36	30	56	32	27	56	29	24	53	27	33	46	24	31	35	31	26	30	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	44	56	55	38	51	42	31	40	34	27	33	29	23	29	26	31	25	34	27	34	30	24
			Exposed	56	56	52	56	56	43	56	52	36	56	44	32	46	38	29	39	34	27	34	31	24	29	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16

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UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	28	35	34	24	35	30	33
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	28	35	34	24	35	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	28	35	33	24	34	29	32	33	26	29	32	29	21	33	26	29
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	33	25	35	28	32	34	25	28	29	33	24	26	29	21	23	25	19
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	34	41	36	29	41	31	26	41	28	23
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	35	41	36	30	41	31	25	41	27	33	41	23	29	35	31	26	31	28	23
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	31	38	35	28
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	31	38	33	26	33	29	23	29	26	31	26	35	27
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	29	35	35	25	35	31	33	35	27	29	33	24	25	29	32	23
			Exposed	35	35	35	35	35	35	35	35	33	35	35	30	35	35	27	35	35	25	35	32	34	35	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	26	35	30	34	33	26	29	31	34	25	27	30	22	24	27	20
			Exposed	35	35	35	35	35	33	35	35	29	35	35	27	35	33	24	35	30	33	35	27	30	31	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	40	31	41	33	27	41	28	23	40	25	31	38	33	27	33	29	24
			Exposed	41	41	41	41	41	41	41	41	36	41	41	32	41	35	29	41	32	27	41	29	24	41	25	31	37	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	32	38	35	28	34	31	24	30	27	32	30	27	27	27	24	29
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	32	38	38	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	35	25	35	30	32	35	26	27	31	34	24	27	30	21	24	27	19
			Exposed	35	35	35	35	35	31	35	35	28	35	35	25	35	32	34	35	29	31	35	27	29	31	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	28	35	35	26	35	29	33	33	25	28	30	33	24	26	29	21	35	25	19	31	22	17
			Exposed	35	35	31	35	35	27	35	33	25	35	30	33	35	27	30	34	25	28	31	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	45	45	34	45	39	31	45	32	26	44	27	34	41	23	29	35	31	26	31	27	23	27	24	20
			Exposed	45	45	38	45	44	33	45	36	30	45	32	27	45	29	24	45	27	33	45	24	31	35	31	26	30	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	31	39	34	27	33	29	23	29	26	31	25	34	27	34	30	24
			Exposed	42	42	42	42	42	42	42	42	36	42	42	32	42	38	29	39	34	27	34	31	24	29	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16
40	B	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	33	24	33	30	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	28	33	33	24	33	29	31	33	25	27	31	34	24	27	30	21
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	33	24	32	29	32	31	26	29
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	33	25	33	28	32	33	25	28	29	33	24	26	29	21	23	25	19
		20-27	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	31	26	32	28	23
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	31	25	32	27	33	32	23	29	32	31	26	31	28	23
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	29	23	29	26	31	26	35	27
	C	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	33	25	33	31	33	33	27	29	33	24	25	29	32	23
			Exposed	33	33	33	33	33	33	33	33	33	33	33	30	33	33	27	33	33	25	33	32	34	33	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	26	32	30	34	31	26	29	30	34	25	27	30	22	24	27	20
			Exposed	33	33	33	33	33	33	33	33	29	33	33	27	33	33	24	33	30	33	33	27	30	31	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	27	32	28	23	32	25	31	32	33	27	31	29	24	31	29	24
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	27	32	29	24	32	25	31	32	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	24	30	27	27	27	24	29
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	35	25	35	30	32	35	26	27	31	34	24	27	30	21	24	27	19
			Exposed	35	35	35	35	35	31	35	35	28	35	35	25	35	32	34	35	29	31	35	27	29	31	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	28	35	35	26	34	29	33	33	25	28	30	33	24	26	29	21	35	25	19	31	22	17
			Exposed	35	35	31	35	35	27	35	33	25	35	30	33	35	27	30	34	25	28	31	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	32	26	35	27	34	35	23	29	33	31	26	31	27	23	27	24	20
			Exposed	35	35	35	35	35	33	35	35	30	35	32	27	35	29	24	35	27	33	35	24	31	35	31	26	30	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	32	29	23	29	26	31	25	34	27	34	30	24
			Exposed	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	33	27	33	31	24	29	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16
50	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	33
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	31	28	25	27	28	34	24	27	30	21
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	32	27	26	29
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	32	28	25	28	28	33	24	26	29	21	23	25	19
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	35
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	33	40	35	29	40	31	26	40	28	23	40	28	23
		27-45	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	37	37	37	37	37	37	37	37	37	37	37	37	37	37
			Exposed	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	37	37	37	37	35	37	37	31	37	37	31	37	35	27
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	33	28	27	29	28	24	25	28	32	23
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	25	28	28	34	28	27	29	28	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	34	27	26	29	26	34	25	25	30	22	24	27	20
			Exposed	28	28	28	28	28	28	28	28	28	28	28	27	28	28	24	28	28	33	28	27	30	28	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	37	31	40	33	27	40	29	24
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	38	31	40	32	27	40	28	23	40	24	20	37	22	18	32	19	16
		27-45	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	37	37	37	37	37	37	37	37	37	37	37	37	36	29
			Exposed	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	37	32	37	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	32	30	26	27	30	34	24	27	30	21	24	27	19
			Exposed	30	30	30	30	30	30	30	30	28	30	30	25	30	30	34	30	29	31	30	27	29	30	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	26	30	29	33	29	25	28	27	33	24	26	29	21	35	25	19	31	22	17
			Exposed	30	30	30	30	30	27	30	30	25	30	30	33	30	27	30	30	25	28	30	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	27	34	29	23	29	29	31	26	28	27	23	27	24	20
			Exposed	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	27	33	29	24	31	29	31	26	29	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	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	23	27	26	31	25	34	27	34	30	24
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16

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SPAN TABLES

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				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
60	B	0-7	Interior	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	24	24	24	24	24	33
			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	31	24	24	27	24	34	24	24	30	21
		7-20	Interior	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	24	24	32	24	24	29
			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	32	24	24	28	24	33	24	24	29	21	23	25	19
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	29	34	31	26	34	28	23
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	27
	C	0-7	Interior	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	33	24	24	29	24	24	25	24	32	23
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	34	24	24	29	24	35	25	24	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	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	34	24	24	29	23	34	25	22	30	22	22	27	20
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	33	24	24	30	24	35	26	24	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	33	27	34	29	24
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	32	27	34	28	23	34	24	20	34	22	18	32	19	16
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	27	32	32	32	29
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	28	32	31	24	30	27	21	27	24	19
	D	0-7	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	32	26	26	27	26	34	24	26	30	21	24	27	19
			Exposed	26	26	26	26	26	26	26	26	26	25	26	26	34	26	26	31	26	26	26	26	29	26	34	24	26	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	33	25	25	28	24	33	24	24	29	21	34	25	19	31	22	17
			Exposed	26	26	26	26	26	26	26	25	26	26	33	26	26	30	26	25	28	26	34	25	26	29	21	18	29	21	16	26	19	14	23	17	12	20	15	11			
		20-27	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	37	34	37	35	29	37	31	26	37	27	23	37	24	20
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	33	37	37	31	37	31	26	37	27	22	37	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	34	27	34	30	24
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	34	27	33	29	23	28	26	20	25	23	18	22	20	16
70	B	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	31
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	31	20	20	27	20	31	24	20	30	21
		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	29
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	28	34	31	24	34	29	21	34	25	19
		20-27	Interior	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
			Exposed	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	26	29	28	23
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27
	C	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	31	20	20	29	20	20	25	20	31	23
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	31	20	20	29	20	31	25	20	30	22	20	27	19	31	23	17	29	21	15
		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	29	34	31	25	33	30	22	32	27	20
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	30	34	31	26	34	30	22	34	26	19	31	23	17	27	20	15	24	18	13		
		20-27	Interior	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	27	29	29	24
			Exposed	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	27	29	28	23	29	24	20	29	22	18	29	19	16
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	27	21	27	24	19
	D	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	32	22	22	27	22	34	24	22	30	21	22	27	19
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	34	22	22	31	22	22	29	22	34	24	22	29	21	34	25	18	30	22	16	27	20	14	24	17	12		
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	37	37	28	36	33	24	34	29	21	31	25	19	30	22	17
			Exposed	38	38	38	38	38	38	38	38	37	38	38	33	38	38	30	38	37	28	38	34	25	38	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	31	26	32	27	23	32	24	20
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	31	26	32	27	22	32	23	19	32	20	17	30	18	15	27	16	13
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	29	23	28	26	20	25	23	18	22	20	16
80	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	27	18	27	24	18	27	21
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	27	28	27	24	28	27	21	28	25	19
		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23
		27-45	Interior	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	24	24	24	24	24	24
			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	24	24	21	24	24	19
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	27	18	18	25	18	27	23
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	27	18	27	25	18	27	22	18	27	19	27	23	17	27	21	15
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	27	28	27	25	28	27	22	27	27	20
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	27	28	27	26	28	27	22	28	26	19	27	23	17	27	20	15	24	18	13		
		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	24	20	26	22	18	26	19	16
		27-45	Interior	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	24	24	24	24	24	24
			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	24	24	21	24	24	19
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	30	20	20	27	20	30	24	20	30	21	20	27	19
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	30	20	20	30	20	20	29	20	30	24	20	29	21	30	25	18	30	22	16	27	20	14	24	17	12		
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	28	33	30	24	32	29	21	28	25	19	27	22	17
			Exposed	33	33	33	33	33	33	33	33	33	30	33	33	30	33	33	28	33	30	25	33	29	21	30	25	18	29	21	16	26	19	14	23	17	12	20	15	11		
		20-27	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	27	23	28	24	20
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	27	22	28	23	19	28	20	17	28	18	15	27	16	13
		27-45	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	27	27	27	27	24
			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	23	27	26	20	25	23	18	22	20	16

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	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	16	16	16	16	16	16	24
			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	24	16	16	24	16	24	24	16	24	21
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	24
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	24	25	24	24	25	24	21	25	24	19
		20-27	Interior	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
			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	23	23	23	23	23	23	23
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	C	0-7	Interior	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	24	16	16	24	16	16	24	16	24	23
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	24	16	24	24	16	24	22	16	24	19	24	23	17	24	21	15
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	24	25	24	24	25	24	22	25	24	20
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	24	25	24	24	25	24	22	25	24	19	24	23	17	24	20	15	24	18	13
		20-27	Interior	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
			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	20	23	22	18	23	19	16
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19
	D	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	27	18	27	24	18	27	21	18	27	19
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	27	18	18	27	18	27	24	18	27	21	27	25	18	27	22	16	27	20	14	24	17	12
		7-20	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	24	27	27	21	26	25	19	25	22	17
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	21	27	25	18	27	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	24	20
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	23	19	25	20	17	25	18	15	25	16	13			
		27-45	Interior	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	24	24	24	24	24	24
			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	23	24	24	20	24	23	18	22	20	16			
100	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	14	14	14	14	14	22
			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	22	14	14	22	14	22	22	14	22	21			
		7-20	Interior	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	24	24	24	24	24	24
			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	22	24	24	21	24	24	19			
		20-27	Interior	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
			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	21	21	21	21	21	21
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	C	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	22	14	14	22	14	14	22	14	22	22
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	22	14	14	22	14	22	22	14	22	22	14	22	19	22	22	17	22	21	15
		7-20	Interior	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	24	24	22	24	24	20
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	19	24	22	17	24	20	15	22	18	13			
		20-27	Interior	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
			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	20	21	21	18	21	19	16			
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19
	D	0-7	Interior	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	24	16	16	24	16	24	24	16	24	21	16	24	19
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	24	16	16	24	16	24	21	24	24	18	24	22	16	24	20	14	24	17	12			
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	24	25	24	24	25	24	21	24	24	19	24	22	17
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	25	25	24	25	24	24	25	24	21	24	24	18	24	21	16	24	19	14	23	17	12	20	15	11
		20-27	Interior	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	20
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	23	23	19	23	20	17	23	18	15	23	16	13			
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	20	16			

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	98	98	98	98	98	98	98	98	96	98	98	91	98	98	87	98	97	83	98	93	80	98	86	74	93	80	65	87	75	61	81	69	54	77	63	48	72	60	43
			Exposed	98	98	87	98	95	82	98	91	78	98	87	75	96	83	70	92	80	65	88	77	62	82	69	55	76	63	47	70	58	60	64	50	54	60	44	47	54	59	42
		7-20	Interior	98	98	98	98	98	98	98	98	93	98	98	88	98	98	84	98	93	80	98	89	76	96	81	67	89	76	61	82	67	55	77	62	48	70	57	42	64	51	57
			Exposed	98	97	83	98	92	79	98	87	75	98	82	69	92	79	64	88	75	61	84	70	57	77	62	49	69	56	42	63	49	54	58	42	48	51	56	42	45	50	~~37~~
		20-27	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	93	98	98	88	98	93	84	98	85	77	98	79	69	93	72	63	87	65	58	82	61	51	78	55	45
			Exposed	98	98	92	98	96	87	98	91	82	98	86	78	98	82	75	98	78	68	95	75	64	88	65	59	82	60	50	76	53	43	70	46	57	64	41	51	60	54	45
		27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	95	99	99	91	99	93	84	94	86	78	87	80	71	81	76	64	76	69	60	69	64	54
			Exposed	99	99	99	99	99	94	99	98	89	99	94	85	98	89	81	93	86	77	89	82	74	81	76	65	75	68	60	67	63	52	62	58	46	57	51	60	50	45	54
	C	0-7	Interior	98	98	89	98	98	85	98	93	80	98	89	77	98	85	73	94	82	68	91	79	64	84	72	58	78	65	50	73	60	43	66	53	57	62	47	50	57	61	45
			Exposed	98	85	72	93	81	66	89	77	63	85	73	59	81	68	54	78	64	49	75	61	45	67	54	57	61	46	49	55	60	43	48	53	~~37~~	61	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	98	98	86	98	94	81	98	89	77	98	85	72	95	81	66	91	77	63	86	73	60	79	64	51	73	59	44	65	51	57	60	45	50	54	60	44	48	53	~~39~~
			Exposed	95	81	66	89	76	62	85	71	58	80	65	52	77	62	48	72	59	43	67	54	60	61	45	51	53	59	44	46	51	~~38~~	60	44	~~33~~	53	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	98	98	95	98	98	90	98	93	85	98	89	80	98	84	77	98	80	72	98	77	66	90	68	61	84	62	53	78	56	46	73	49	60	66	43	53	62	57	47
			Exposed	98	84	76	98	79	70	96	75	65	91	69	61	87	64	57	83	61	52	80	58	48	74	49	41	65	42	52	61	55	46	54	48	~~40~~	48	42	~~35~~	42	~~38~~	~~31~~
		27-45	Interior	99	99	99	99	99	97	99	99	91	99	96	87	99	92	83	96	88	79	91	84	76	84	78	67	77	71	61	70	64	55	63	60	48	60	54	43	53	48	57
			Exposed	99	92	83	94	87	78	89	83	75	85	79	68	81	75	64	77	71	61	73	66	58	64	60	49	59	53	42	51	46	55	45	60	48	59	53	42	53	47	~~38~~
	D	0-7	Interior	98	95	82	98	90	78	98	86	74	95	82	68	91	78	64	87	75	61	83	71	57	77	64	48	71	59	61	64	51	54	60	44	47	54	59	~~42~~	47	52	~~37~~
			Exposed	90	78	64	86	75	60	82	69	55	78	64	50	75	61	45	70	58	61	66	53	56	60	45	48	53	58	~~41~~	46	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	98	91	78	98	86	74	96	81	67	91	77	63	86	73	60	82	68	55	79	64	51	71	58	43	63	49	55	59	43	48	51	56	42	45	50	~~37~~	60	44	~~33~~
			Exposed	86	73	60	81	66	54	77	62	48	73	59	44	67	54	60	63	49	55	60	45	50	52	57	42	44	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	98	95	86	98	90	82	98	85	77	98	81	72	98	77	66	93	72	63	89	67	60	83	61	52	77	53	44	70	46	58	64	41	51	60	54	45	54	48	~~40~~
			Exposed	98	77	66	92	71	62	88	65	58	84	62	53	80	58	48	77	53	44	73	48	60	64	41	51	60	53	44	52	46	~~38~~	45	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	99	99	93	99	97	88	99	92	84	96	88	80	91	84	76	87	81	71	83	77	66	76	70	61	68	63	53	62	58	46	57	51	60	50	45	54	44	60	48
			Exposed	91	84	76	86	80	70	81	76	65	77	71	61	73	66	58	67	63	52	63	60	48	57	51	60	49	44	53	43	57	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	87	91	91	83	91	91	80	91	86	74	91	80	65	87	75	61	81	69	54	77	63	48	72	60	43
			Exposed	91	91	87	91	91	82	91	91	78	91	87	75	91	83	70	91	80	65	88	77	62	82	69	55	76	63	47	70	58	60	64	50	54	60	44	47	54	59	42
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	91	80	91	89	76	91	81	67	89	76	61	82	67	55	77	62	48	70	57	42	64	51	57
			Exposed	91	91	83	91	91	79	91	87	75	91	82	69	91	79	64	88	75	61	84	70	57	77	62	49	69	56	42	63	49	54	58	42	48	51	56	42	45	50	~~37~~
		20-27	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	93	95	95	88	95	93	84	95	85	77	95	79	69	93	72	63	87	65	58	82	61	51	78	55	45
			Exposed	95	95	92	95	95	87	95	91	82	95	86	78	95	82	75	95	78	68	95	75	64	88	65	59	82	60	50	76	53	43	70	46	57	64	41	51	60	54	45
		27-45	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	95	98	98	91	98	93	84	94	86	78	87	80	71	81	76	64	76	69	60	69	64	54
			Exposed	98	98	98	98	98	94	98	98	89	98	94	85	98	89	81	93	86	77	89	82	74	81	76	65	75	68	60	67	63	52	62	58	46	57	51	60	50	45	54
	C	0-7	Interior	91	91	89	91	91	85	91	91	80	91	89	77	91	85	73	91	82	68	91	79	64	84	72	58	78	65	50	73	60	43	66	53	57	62	47	50	57	61	45
			Exposed	91	85	72	91	81	66	89	77	63	85	73	59	81	68	54	78	64	49	75	61	45	67	54	57	61	46	49	55	60	43	48	53	~~37~~	61	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	91	91	86	91	91	81	91	89	77	91	85	72	91	81	66	91	77	63	86	73	60	79	64	51	73	59	44	65	51	57	60	45	50	54	60	44	48	53	~~39~~
			Exposed	91	81	66	89	76	62	85	71	58	80	65	52	77	62	48	72	59	43	67	54	60	61	45	51	53	59	44	46	51	~~38~~	60	44	~~33~~	53	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	95	95	95	95	95	90	95	93	85	95	89	80	95	84	77	95	80	72	95	77	66	90	68	61	84	62	53	78	56	46	73	49	60	66	43	53	62	57	47
			Exposed	95	84	76	95	79	70	95	75	65	91	69	61	87	64	57	83	61	52	80	58	48	74	49	41	65	42	52	61	55	46	54	48	~~40~~	48	42	~~35~~	42	~~38~~	~~31~~
		27-45	Interior	98	98	98	98	98	97	98	98	91	98	96	87	98	92	83	96	88	79	91	84	76	84	78	67	77	71	61	70	64	55	63	60	48	60	54	43	53	48	57
			Exposed	98	92	83	94	87	78	89	83	75	85	79	68	81	75	64	77	71	61	73	66	58	64	60	49	59	53	42	51	46	55	45	60	48	59	53	42	53	47	~~38~~
	D	0-7	Interior	91	91	82	91	90	78	91	86	74	91	82	68	91	78	64	87	75	61	83	71	57	77	64	48	71	59	61	64	51	54	60	44	47	54	59	~~42~~	47	52	~~37~~
			Exposed	90	78	64	86	75	60	82	69	55	78	64	50	75	61	45	70	58	61	66	53	56	60	45	48	53	58	~~41~~	46	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	91	91	78	91	86	74	91	81	67	91	77	63	86	73	60	82	68	55	79	64	51	71	58	43	63	49	55	59	43	48	51	56	42	45	50	~~37~~	60	44	~~33~~
			Exposed	86	73	60	81	66	54	77	62	48	73	59	44	67	54	60	63	49	55	60	45	50	52	57	42	44	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	96	95	86	96	90	82	96	85	77	96	81	72	96	77	66	93	72	63	89	67	60	83	61	52	77	53	44	70	46	58	64	41	51	60	54	45	54	48	~~40~~
			Exposed	96	77	66	92	71	62	88	65	58	84	62	53	80	58	48	77	53	44	73	48	60	64	41	51	60	53	44	52	46	~~38~~	45	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	99	99	93	99	97	88	99	92	84	96	88	80	91	84	76	87	81	71	83	77	66	76	70	61	68	63	53	62	58	46	57	51	60	50	45	54	44	60	48
			Exposed	91	84	76	86	80	70	81	76	65	77	71	61	73	66	58	67	63	52	63	60	48	57	51	60	49	44	53	43	57	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~
20	B	0-7	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	80	83	83	74	83	80	65	83	75	61	81	69	54	77	63	48	72	60	43
			Exposed	83	83	83	83	83	82	83	83	78	83	83	75	83	83	70	83	80	65	83	77	62	82	69	55	76	63	47	70	58	60	64	50	54	60	44	47	54	59	42
		7-20	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	80	83	83	76	83	81	67	83	76	61	82	67	55	77	62	48	70	57	42	64	51	57
			Exposed	83	83	83	83	83	79	83	83	75	83	82	69	83	79	64	83	75	61	83	70	57	77	62	49	69	56	42	63	49	54	58	42	48	51	56	42	45	50	~~37~~
		20-27	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	84	88	85	77	88	79	69	88	72	63	87	65	58	82	61	51	78	55	45
			Exposed	88	88	88	88	88	87	88	88	82	88	86	78	88	82	75	88	78	68	88	75	64	88	65	59	82	60	50	76	53	43	70	46	57	64	41	51	60	54	45
		27-45	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	84	91	86	78	87	80	71	81	76	64	76	69	60	69	64	54
			Exposed	91	91	91	91	91	91	91	91	89	91	91	85	91	89	81	91	86	77	89	82	74	81	76	65	75	68	60	67	63	52	62	58	46	57	51	60	50	45	54
	C	0-7	Interior	83	83	83	83	83	83	83	83	80	83	83	77	83	83	73	83	82	68	83	79	64	83	72	58	78	65	50	73	60	43	66	53	57	62	47	50	57	61	45
			Exposed	83	83	72	83	81	66	83	77	63	83	73	59	81	68	54	78	64	49	75	61	45	67	54	57	61	46	49	55	60	43	48	53	~~37~~	61	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	83	83	83	83	83	81	83	83	77	83	83	72	83	81	66	83	77	63	83	73	60	79	64	51	73	59	44	65	51	57	60	45	50	54	60	44	48	53	~~39~~
			Exposed	83	81	66	83	76	62	83	71	58	80	65	52	77	62	48	72	59	43	67	54	60	61	45	51	53	59	44	46	51	~~38~~	60	44	~~33~~	53	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	88	88	88	88	88	88	88	88	85	88	88	80	88	84	77	88	80	72	88	77	66	88	68	61	84	62	53	78	56	46	73	49	60	66	43	53	62	57	47
			Exposed	88	84	76	88	79	70	88	75	65	88	69	61	87	64	57	83	61	52	80	58	48	74	49	41	65	42	52	61	55	46	54	48	~~40~~	48	42	~~35~~	42	~~38~~	~~31~~
		27-45	Interior	91	91	91	91	91	91	91	91	91	91	91	87	91	91	83	91	88	79	91	84	76	84	78	67	77	71	61	70	64	55	63	60	48	60	54	43	53	48	57
			Exposed	91	91	83	91	87	78	89	83	75	85	79	68	81	75	64	77	71	61	73	66	58	64	60	49	59	53	42	51	46	55	45	60	48	59	53	42	53	47	~~38~~
	D	0-7	Interior	83	83	82	83	83	78	83	83	74	83	82	68	83	78	64	83	75	61	83	71	57	77	64	48	71	59	61	64	51	54	60	44	47	54	59	~~42~~	47	52	~~37~~
			Exposed	83	78	64	83	75	60	82	69	55	78	64	50	75	61	45	70	58	61	66	53	56	60	45	48	53	58	~~41~~	46	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	83	83	78	83	83	74	83	81	67	83	77	63	83	73	60	82	68	55	79	64	51	71	58	43	63	49	55	59	43	48	51	56	42	45	50	~~37~~	60	44	~~33~~
			Exposed	83	73	60	81	66	54	77	62	48	73	59	44	67	54	60	63	49	55	60	45	50	52	57	42	44	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	90	90	86	90	90	82	90	85	77	90	81	72	90	77	66	90	72	63	89	67	60	83	61	52	77	53	44	70	46	58	64	41	51	60	54	45	54	48	~~40~~
			Exposed	90	77	66	90	71	62	88	65	58	84	62	53	80	58	48	77	53	44	73	48	60	64	41	51	60	53	44	52	46	~~38~~	45	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	93	93	93	93	93	88	93	92	84	93	88	80	91	84	76	87	81	71	83	77	66	76	70	61	68	63	53	62	58	46	57	51	60	50	45	54	44	60	48
			Exposed	91	84	76	86	80	70	81	76	65	77	71	61	73	66	58	67	63	52	63	60	48	57	51	60	49	44	53	43	57	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	65	68	68	61	68	68	54	68	63	48	68	60	43
			Exposed	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	65	68	68	62	68	68	55	68	63	47	68	58	60	64	50	54	60	44	47	54	59	42
		7-20	Interior	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	69	61	69	67	55	69	62	48	68	57	42	64	51	57
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	64	69	69	61	69	69	57	69	62	49	69	56	42	63	49	54	58	42	48	51	56	42	45	50	~~37~~
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	77	80	79	69	80	72	63	80	65	58	80	61	51	78	55	45
			Exposed	80	80	80	80	80	80	80	80	80	80	80	78	80	80	75	80	78	68	80	75	64	80	65	59	80	60	50	76	53	43	70	46	57	64	41	51	60	54	45
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	71	74	74	64	74	69	60	69	64	54
			Exposed	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	65	74	68	60	67	63	52	62	58	46	57	51	60	50	45	54
	C	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	68	68	58	68	65	50	68	60	43	66	53	57	62	47	50	57	61	45
			Exposed	68	68	68	68	68	66	68	68	63	68	68	59	68	68	54	68	64	49	68	61	45	67	54	57	61	46	49	55	60	43	48	53	~~37~~	61	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	63	69	69	60	69	64	51	69	59	44	65	51	57	60	45	50	54	60	44	48	53	~~39~~
			Exposed	69	69	66	69	69	62	69	69	58	69	65	52	69	62	48	69	59	43	67	54	60	61	45	51	53	59	44	46	51	~~38~~	60	44	~~33~~	53	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	77	80	80	72	80	77	66	80	68	61	80	62	53	78	56	46	73	49	60	66	43	53	62	57	47
			Exposed	80	80	76	80	79	70	80	75	65	80	69	61	80	64	57	80	61	52	80	58	48	74	49	41	65	42	52	61	55	46	54	48	~~40~~	48	42	~~35~~	42	~~38~~	~~31~~
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	67	74	71	61	70	64	55	63	60	48	60	54	43	53	48	57
			Exposed	74	74	74	74	74	74	74	74	74	74	74	68	74	74	64	74	71	61	73	66	58	64	60	49	59	53	42	51	46	55	45	60	48	59	53	42	53	47	~~38~~
	D	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	68	68	61	68	68	57	68	64	48	68	59	61	64	51	54	60	44	47	54	59	~~42~~	47	52	~~37~~
			Exposed	68	68	64	68	68	60	68	68	55	68	64	50	68	61	45	68	58	61	66	53	56	60	45	48	53	58	~~41~~	46	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	69	69	69	69	69	69	69	69	67	69	69	63	69	69	60	69	68	55	69	64	51	68	58	43	63	49	55	59	43	48	51	56	42	45	50	~~37~~	60	44	~~33~~
			Exposed	69	69	60	69	66	54	69	62	48	69	59	44	67	54	60	63	49	55	60	45	50	52	57	42	44	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	84	84	84	84	84	82	84	84	77	84	81	72	84	77	66	84	72	63	84	67	60	83	61	52	77	53	44	70	46	58	64	41	51	60	54	45	54	48	~~40~~
			Exposed	84	77	66	84	71	62	84	65	58	84	62	53	80	58	48	77	53	44	73	48	60	64	41	51	60	53	44	52	46	~~38~~	45	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	81	81	81	81	81	81	81	81	81	81	81	80	81	81	76	81	81	71	81	77	66	76	70	61	68	63	53	62	58	46	57	51	60	50	45	54	44	60	48
			Exposed	81	81	76	81	80	70	81	76	65	77	71	61	73	66	58	67	63	52	63	60	48	57	51	60	49	44	53	43	57	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~
40	B	0-7	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	64	54	64	63	48	64	60	43
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	55	64	63	47	64	58	60	64	50	54	60	44	47	54	59	42
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	64	55	64	62	48	63	57	42	61	51	57
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	64	57	64	62	49	64	56	42	63	49	54	58	42	48	51	56	42	45	50	~~37~~
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	58	63	61	51	63	55	45
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	59	63	60	50	63	53	43	63	46	57	63	41	51	60	54	45
		27-45	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	54
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	52	59	58	46	57	51	60	50	45	54
	C	0-7	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	58	64	64	50	64	60	43	64	53	57	62	47	50	57	61	45
			Exposed	64	64	64	64	64	64	64	64	63	64	64	59	64	64	54	64	64	49	64	61	45	64	54	57	61	46	49	55	60	43	48	53	~~37~~	61	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	60	64	64	51	64	59	44	61	51	57	59	45	50	54	60	44	48	53	~~39~~
			Exposed	64	64	64	64	64	62	64	64	58	64	64	52	64	62	48	64	59	43	64	54	60	61	45	51	53	59	44	46	51	~~38~~	60	44	~~33~~	53	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	62	53	63	56	46	63	49	60	63	43	53	60	57	47
			Exposed	63	63	63	63	63	63	63	63	63	63	63	61	63	63	57	63	61	52	63	58	48	63	49	41	63	42	52	61	55	46	54	48	~~40~~	48	42	~~35~~	42	~~38~~	~~31~~
		27-45	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	55	59	59	48	58	54	43	53	48	57
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	58	59	59	49	59	53	42	51	46	55	45	60	48	59	53	42	53	47	~~38~~
	D	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	68	68	61	68	68	57	68	64	48	68	59	61	64	51	54	60	44	47	54	59	~~42~~	47	52	~~37~~
			Exposed	68	68	64	68	68	60	68	68	55	68	64	50	68	61	45	68	58	61	66	53	56	60	45	48	53	58	~~41~~	46	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	69	69	69	69	69	69	69	69	67	69	69	63	69	69	60	69	68	55	69	64	51	68	58	43	63	49	55	59	43	48	51	56	42	45	50	~~37~~	60	44	~~33~~
			Exposed	69	69	60	69	66	54	69	62	48	69	59	44	67	54	60	63	49	55	60	45	50	52	57	42	44	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	63	69	67	60	69	61	52	69	53	44	69	46	58	64	41	51	60	54	45	54	48	~~40~~
			Exposed	69	69	66	69	69	62	69	65	58	69	62	53	69	58	48	69	53	44	69	48	60	64	41	51	60	53	44	52	46	~~38~~	45	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	63	53	62	58	46	57	51	60	50	45	54	44	60	48
			Exposed	64	64	64	64	64	64	64	64	64	64	64	61	64	64	58	64	63	52	63	60	48	57	51	60	49	44	53	43	57	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~
50	B	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	48	55	55	43
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	47	55	55	60	55	50	54	55	44	47	54	59	42
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	48	54	54	42	53	51	57
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	49	55	55	42	55	49	54	55	42	48	51	56	42	45	50	~~37~~
		20-27	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	76	77	77	69	77	74	64
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	68	77	71	62	77	64	57	77	60	51	77	54	45
		27-45	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73
			Exposed	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	70	73	73	64	73	69	60	69	64	54
	C	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	50	55	55	43	55	53	57	55	47	50	55	61	45
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	49	55	55	45	55	54	57	55	46	49	55	60	43	48	53	~~37~~	61	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	44	53	51	57	51	45	50	49	60	44	47	53	~~39~~
			Exposed	55	55	55	55	55	55	55	55	55	55	55	52	55	55	48	55	55	43	55	54	60	55	45	51	53	59	44	46	51	~~38~~	60	44	~~33~~	53	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	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	72	77	75	64	77	66	60	77	62	53	77	57	48
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	76	77	77	71	77	76	66	77	67	60	77	61	53	77	55	46	72	48	~~40~~	65	42	~~35~~	62	~~38~~	~~31~~
		27-45	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	66	73	72	62	72	65	57
			Exposed	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	67	73	71	61	69	64	55	63	60	48	59	53	42	53	47	~~38~~
	D	0-7	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	57	59	59	48	59	59	61	59	51	54	59	44	47	54	59	~~42~~	47	52	~~37~~
			Exposed	59	59	59	59	59	59	59	59	55	59	59	50	59	59	45	59	58	61	59	53	56	59	45	48	53	58	~~41~~	46	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	55	60	60	51	59	58	43	56	49	55	54	43	48	51	56	42	45	50	~~37~~	60	44	~~33~~
			Exposed	60	60	60	60	60	54	60	60	48	60	59	44	60	54	60	60	49	55	60	45	50	52	57	42	44	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	57	53	44	57	46	58	57	41	51	56	54	45	53	48	~~40~~
			Exposed	57	57	57	57	57	57	57	57	57	57	57	53	57	57	48	57	53	44	57	48	60	57	41	51	57	53	44	52	46	~~38~~	45	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	46	53	51	60	50	45	54	44	60	48
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	48	53	51	60	49	44	53	43	57	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	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	46	46	46	43
			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	60	46	46	54	46	44	47	46	59	42
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	74	78	78	66	78	76	62	78	69	57
			Exposed	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	76	78	78	66	78	75	61	78	66	54	76	62	48	69	56	42	64	50	37
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	64	57	65	60	51	65	54	45
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	60	62	62	54
	C	0-7	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	43	46	46	57	46	46	50	46	61	45
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	45	46	46	57	46	46	49	46	60	43	46	53	37	61	46	33	56	41	29
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	70	78	77	63	78	70	57	75	63	50	72	60	44	66	53	39
			Exposed	78	78	78	78	78	78	78	78	76	78	78	71	78	78	65	78	76	62	78	72	60	78	64	51	72	59	44	64	51	38	60	44	33	54	39	29	48	35	26
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	60	65	62	53	65	57	48
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	60	65	61	53	65	55	46	65	48	40	65	42	35	62	38	31
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	57
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	61	62	62	55	62	60	48	59	53	42	53	47	38
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	51	61	51	51	54	51	44	47	51	59	42	47	52	37
			Exposed	51	51	51	51	51	51	51	51	51	51	51	50	51	51	45	51	51	61	51	51	56	51	45	48	51	58	41	46	50	36	60	44	31	53	39	28	47	34	24
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	51	52	52	43	50	49	55	48	43	48	46	56	42	44	50	37	60	44	33
			Exposed	52	52	52	52	52	52	52	42	48	52	52	44	52	52	60	52	49	55	52	45	50	52	57	42	44	49	36	58	42	32	51	37	28	45	33	24	40	29	22
		20-27	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	70	72	72	63	72	64	58	72	60	51	72	54	45	72	48	40
			Exposed	72	72	72	72	72	72	72	72	72	72	71	71	72	72	66	72	71	63	72	66	60	72	61	51	72	53	44	70	46	38	64	40	33	60	35	29	53	32	26
		27-45	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	68	68	60	68	63	54	63	60	48
			Exposed	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	66	68	68	60	67	63	53	62	58	46	56	50	40	50	44	35	44	40	31
70	B	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	60	40	40	54	40	40	47	40	59	42
		7-20	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	67	62	67	67	57
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	67	61	67	66	54	67	62	48	67	56	42	64	50	37
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	51	57	54	45
		27-45	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	C	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	57	40	40	50	40	60	45
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	57	40	40	49	40	60	43	40	53	37	60	46	33	56	41	29
		7-20	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	63	67	67	57	66	63	50	64	60	44	62	53	39
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	67	62	67	67	60	67	64	51	67	59	44	64	51	38	60	44	33	54	39	29	48	35	26
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	48
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	55	46	57	48	40	57	42	35	57	38	31
		27-45	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	48	54	53	42	53	47	38
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	61	44	44	54	44	44	47	44	59	42	44	52	37
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	61	44	44	56	44	44	48	44	58	41	44	50	36	60	44	31	53	39	28	47	34	24
		7-20	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	69	74	74	62	74	67	55	71	62	48	68	56	42	64	50	37	58	44	33
			Exposed	74	74	74	74	74	73	74	74	66	74	74	63	74	72	60	74	67	55	74	63	50	70	57	42	63	49	36	58	42	32	51	37	28	45	33	24	40	29	22
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	58	63	60	51	63	54	45	63	48	40
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	61	51	63	53	44	63	46	38	63	40	33	60	35	29	53	32	26
		27-45	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	54	59	59	48
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	53	59	58	46	56	50	40	50	44	35	44	40	31
80	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	53	35	35	53	35	35	47	35	53	42
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	48	55	54	42	55	50	37
		20-27	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	45
		27-45	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
			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
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	53	35	35	50	35	53	45
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	49	35	53	43	35	53	37	53	46	33	53	41	29	53	41	29
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	50	55	54	44	53	53	39
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	51	55	54	44	55	51	38	54	45	33	54	39	29	48	35	26
		20-27	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	48
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	46	50	48	40	50	42	35	50	38	31
		27-45	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
			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	42	48	47	38
	D	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	59	39	39	54	39	39	47	39	59	42	39	52	37
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	59	39	39	56	39	39	48	39	58	41	39	50	36	59	44	31	53	39	28	47	34	24
		7-20	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	65	55	64	62	48	62	56	42	60	50	37	54	44	33
			Exposed	65	65	65	65	65	65	65	65	65	65	65	63	65	65	59	65	65	55	65	63	50	65	57	42	63	49	36	58	42	32	51	37	28	45	33	24	40	29	22
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	54	45	55	48	40
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	53	44	55	46	38	55	40	33	55	35	29	53	32	26
		27-45	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	48
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	46	53	50	40	50	45	35	44	40	31

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	47	31	31	47	31	47	42
		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	49	49	49	48
			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	48	49	49	48	49	48	42	49	48	~~37~~
		20-27	Interior	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~
			Exposed	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~
		27-45	Interior	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~
			Exposed	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~
	C	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	47	31	47	45
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	47	31	47	43	31	47	~~37~~	47	46	~~33~~	47	~~41~~	~~29~~
		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	48	49	49	48	49	48	44	49	48	~~39~~
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	48	49	48	44	49	48	~~38~~	48	45	~~33~~	48	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~
			Exposed	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~40~~	~~45~~	~~42~~	~~35~~	~~45~~	~~38~~	~~31~~
		27-45	Interior	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~
			Exposed	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~42~~	~~43~~	~~43~~	~~38~~
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	52	35	35	52	35	35	47	35	52	~~42~~	35	52	~~37~~
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	52	35	35	52	35	35	48	35	52	~~41~~	35	50	~~36~~	52	44	~~31~~	52	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	53	54	54	48	54	53	42	52	50	~~37~~	50	44	~~33~~
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	53	54	54	53	54	54	50	54	53	42	54	49	~~36~~	53	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~45~~	~~50~~	~~48~~	~~40~~
			Exposed	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~44~~	~~50~~	~~46~~	~~38~~	~~50~~	~~40~~	~~33~~	~~50~~	~~35~~	~~29~~	~~50~~	~~32~~	~~26~~
		27-45	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~~	~~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~~	~~46~~	~~47~~	~~47~~	~~40~~	~~47~~	~~44~~	~~35~~	~~44~~	~~40~~	~~31~~
100	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	43	28	28	43	28	43	42
		7-20	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~~
			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~~	~~42~~	~~48~~	~~48~~	~~37~~
		20-27	Interior	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~
			Exposed	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~
		27-45	Interior	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~
			Exposed	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	43	28	43	43
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	43	28	43	43	28	43	~~37~~	43	43	~~33~~	43	~~41~~	~~29~~
		7-20	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~~	~~44~~	~~48~~	~~48~~	~~39~~
			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~~	~~44~~	~~48~~	~~48~~	~~38~~	~~48~~	~~45~~	~~33~~	~~48~~	~~39~~	~~29~~	~~48~~	~~35~~	~~26~~
		20-27	Interior	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~
			Exposed	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~40~~	~~41~~	~~41~~	~~35~~	~~41~~	~~38~~	~~31~~
		27-45	Interior	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~
			Exposed	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~38~~
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	47	31	31	47	31	47	~~42~~	31	47	~~37~~
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	47	31	31	47	31	47	~~41~~	31	47	~~36~~	47	44	~~31~~	47	~~39~~	~~28~~	47	~~34~~	~~24~~
		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	48	49	49	48	49	48	42	48	48	~~37~~	46	44	~~33~~
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	48	49	49	48	49	48	42	49	48	~~36~~	48	42	~~32~~	48	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~40~~
			Exposed	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~44~~	~~45~~	~~45~~	~~38~~	~~45~~	~~40~~	~~33~~	~~45~~	~~35~~	~~29~~	~~45~~	~~32~~	~~26~~
		27-45	Interior	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~
			Exposed	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~40~~	~~43~~	~~43~~	~~35~~	~~43~~	~~40~~	~~31~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	83	83	83	83	83	83	83	83	80	83	83	76	83	83	73	83	80	68	83	78	65	82	71	57	77	65	44	72	59	38	66	49	33	61	41	29	54	36	26
			Exposed	83	83	72	83	80	67	83	76	63	83	72	59	80	68	50	77	64	44	74	61	40	67	49	33	61	40	29	51	35	25	42	31	33	37	27	29	33	24	26
		7-20	Interior	83	83	83	83	83	81	83	83	77	83	83	73	83	80	69	83	77	65	83	74	61	79	66	47	74	60	39	67	47	33	61	39	29	52	35	26	42	31	34
			Exposed	83	80	69	83	76	64	83	72	59	80	67	49	77	63	42	74	59	38	69	51	35	62	40	29	50	34	25	40	30	33	35	26	29	31	34	25	28	30	23
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	77	80	80	74	80	77	69	80	70	62	80	63	50	78	54	40	73	43	35	67	38	31	62	33	28
			Exposed	80	80	77	80	79	72	80	76	67	80	71	63	80	67	58	80	63	49	79	59	42	73	44	36	67	37	30	61	32	26	51	28	35	42	25	31	37	33	27
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	69	75	72	62	72	65	53	66	60	42	60	50	37	50	42	33
			Exposed	75	75	75	75	75	75	75	75	75	75	75	70	75	75	66	75	71	62	74	67	57	66	60	43	60	48	37	46	40	32	39	35	28	34	31	24	31	27	33
	C	0-7	Interior	83	83	75	83	81	70	83	78	65	83	75	61	82	70	55	79	67	47	76	63	42	69	54	35	63	43	30	55	37	26	45	32	35	39	28	30	35	25	27
			Exposed	82	70	54	78	66	46	75	61	40	70	55	36	66	48	33	62	42	30	59	39	27	46	33	35	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	83	82	71	83	78	66	83	75	61	82	70	54	79	65	46	76	62	40	72	56	37	64	42	31	55	36	27	43	31	35	37	27	31	33	24	27	29	32	24
			Exposed	79	65	45	75	61	39	70	52	35	65	44	32	61	39	29	54	36	26	46	33	24	38	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	80	80	79	80	80	75	80	78	70	80	74	65	80	69	61	80	65	54	80	61	46	76	48	38	69	39	32	63	34	28	55	29	24	45	26	32	39	35	29
			Exposed	80	69	61	80	64	52	80	60	43	76	50	38	73	42	35	68	39	32	65	35	29	56	30	25	44	26	32	38	33	28	33	29	24	29	26	21	26	23	19
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	72	75	75	68	75	74	64	75	69	60	69	63	47	62	53	39	51	42	34	41	37	29	36	33	26	32	29	35
			Exposed	75	75	68	75	72	63	75	68	58	70	63	49	65	60	42	61	52	38	55	45	35	42	37	30	36	32	25	31	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	83	79	67	83	76	62	82	71	56	79	67	48	76	63	42	72	60	38	68	52	35	62	42	29	52	36	25	42	31	33	37	27	29	32	36	25	29	32	23
			Exposed	76	63	42	71	58	37	67	49	33	63	43	30	59	39	27	51	35	25	45	32	34	37	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	83	76	63	83	71	57	79	66	47	76	62	41	72	56	37	67	47	34	64	41	31	53	35	26	41	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	72	55	37	66	46	33	62	40	29	55	36	27	46	33	24	41	30	33	37	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	80	79	72	80	75	66	80	70	62	80	65	55	80	61	46	78	55	41	75	47	37	68	38	31	61	32	27	51	28	35	42	25	31	37	33	27	33	29	24
			Exposed	80	61	46	77	52	40	73	43	35	69	39	32	65	35	29	61	32	27	55	29	24	42	25	31	36	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	75	75	75	75	75	74	75	75	69	75	74	64	75	69	60	72	65	53	68	62	46	61	51	38	48	41	32	39	35	28	34	31	24	30	27	33	27	24	29
			Exposed	75	69	60	71	64	51	66	60	43	62	52	39	55	45	35	47	40	32	41	37	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
10	B	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	71	71	65	71	71	57	71	65	44	71	59	38	66	49	33	61	41	29	54	36	26
			Exposed	71	71	71	71	71	67	71	71	63	71	71	59	71	68	50	71	64	44	71	61	40	67	49	33	61	40	29	51	35	25	42	31	33	37	27	29	33	24	26
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	72	65	72	72	61	72	66	47	72	60	39	67	47	33	61	39	29	52	35	26	42	31	34
			Exposed	72	72	69	72	72	64	72	72	59	72	67	49	72	63	42	72	59	38	69	51	35	62	40	29	50	34	25	40	30	33	35	26	29	31	34	25	28	30	23
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	77	80	80	74	80	77	69	80	70	62	80	63	50	78	54	40	73	43	35	67	38	31	62	33	28
			Exposed	80	80	77	80	79	72	80	76	67	80	71	63	80	67	58	80	63	49	79	59	42	73	44	36	67	37	30	61	32	26	51	28	35	42	25	31	37	33	27
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	69	75	72	62	72	65	53	66	60	42	60	50	37	50	42	33
			Exposed	75	75	75	75	75	75	75	75	75	75	75	70	75	75	66	75	71	62	74	67	57	66	60	43	60	48	37	46	40	32	39	35	28	34	31	24	31	27	33
	C	0-7	Interior	71	71	71	71	71	70	71	71	65	71	71	61	71	70	55	71	67	47	71	63	42	69	54	35	63	43	30	55	37	26	45	32	35	39	28	30	35	25	27
			Exposed	71	70	54	71	66	46	71	61	40	70	55	36	66	48	33	62	42	30	59	39	27	46	33	35	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	72	72	71	72	72	66	72	72	61	72	70	54	72	65	46	72	62	40	72	56	37	64	42	31	55	36	27	43	31	35	37	27	31	33	24	27	29	32	24
			Exposed	72	65	45	72	61	39	70	52	35	65	44	32	61	39	29	54	36	26	46	33	24	38	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	80	80	79	80	80	75	80	78	70	80	74	65	80	69	61	80	65	54	80	61	46	76	48	38	69	39	32	63	34	28	55	29	24	45	26	32	39	35	29
			Exposed	80	69	61	80	64	52	80	60	43	76	50	38	73	42	35	68	39	32	65	35	29	56	30	25	44	26	32	38	33	28	33	29	24	29	26	21	26	23	19
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	72	75	75	68	75	74	64	75	69	60	69	63	47	62	53	39	51	42	34	41	37	29	36	33	26	32	29	35
			Exposed	75	75	68	75	72	63	75	68	58	70	63	49	65	60	42	61	52	38	55	45	35	42	37	30	36	32	25	31	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	71	71	67	71	71	62	71	71	56	71	67	48	71	63	42	71	60	38	68	52	35	62	42	29	52	36	25	42	31	33	37	27	29	32	36	25	29	32	23
			Exposed	71	63	42	71	58	37	67	49	33	63	43	30	59	39	27	51	35	25	45	32	34	37	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	72	72	63	72	71	57	72	66	47	72	62	41	72	56	37	67	47	34	64	41	31	53	35	26	41	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	72	55	37	66	46	33	62	40	29	55	36	27	46	33	24	41	30	33	37	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	80	79	72	80	75	66	80	70	62	80	65	55	80	61	46	78	55	41	75	47	37	68	38	31	61	32	27	51	28	35	42	25	31	37	33	27	33	29	24
			Exposed	80	61	46	77	52	40	73	43	35	69	39	32	65	35	29	61	32	27	55	29	24	42	25	31	36	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	75	75	75	75	75	74	75	75	69	75	74	64	75	69	60	72	65	53	68	62	46	61	51	38	48	41	32	39	35	28	34	31	24	30	27	33	27	24	29
			Exposed	75	69	60	71	64	51	66	60	43	62	52	39	55	45	35	47	40	32	41	37	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
20	B	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	44	53	53	38	53	49	33	53	41	29	53	36	26
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	53	44	53	53	40	53	49	33	53	40	29	51	35	25	42	31	33	37	27	29	33	24	26
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	47	53	53	39	53	47	33	53	39	29	52	35	26	42	31	34
			Exposed	53	53	53	53	53	53	53	53	53	53	53	49	53	53	42	53	53	38	53	51	35	53	40	29	50	34	25	40	30	33	35	26	29	31	34	25	28	30	23
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	63	50	65	54	40	65	43	35	65	38	31	62	33	28
			Exposed	65	65	65	65	65	65	65	65	65	65	65	63	65	65	58	65	63	49	65	59	42	65	44	36	65	37	30	61	32	26	51	28	35	42	25	31	37	33	27
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	53	63	60	42	58	50	37	50	42	33
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	57	63	60	43	60	48	37	46	40	32	39	35	28	34	31	24	31	27	33
	C	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	47	53	53	42	53	53	35	53	43	30	53	37	26	45	32	35	39	28	30	35	25	27
			Exposed	53	53	53	53	53	46	53	53	40	53	53	36	53	48	33	53	42	30	53	39	27	46	33	35	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	46	53	53	40	53	53	37	53	42	31	53	36	27	43	31	35	37	27	31	33	24	27	29	32	24
			Exposed	53	53	45	53	53	39	53	52	35	53	44	32	53	39	29	53	36	26	46	33	24	38	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	61	65	65	54	65	61	46	65	48	38	65	39	32	63	34	28	55	29	24	45	26	32	39	35	29
			Exposed	65	65	61	65	64	52	65	60	43	65	50	38	65	42	35	65	39	32	65	35	29	56	30	25	44	26	32	38	33	28	33	29	24	29	26	21	26	23	19
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	63	47	60	53	39	51	42	34	41	37	29	36	33	26	32	29	35
			Exposed	63	63	63	63	63	63	63	63	58	63	63	49	63	60	42	61	52	38	55	45	35	42	37	30	36	32	25	31	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	48	53	53	42	53	53	38	53	52	35	53	42	29	52	36	25	42	31	33	37	27	29	32	36	25	29	32	23
			Exposed	53	53	42	53	53	37	53	49	33	53	43	30	53	39	27	51	35	25	45	32	34	37	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	53	53	53	53	53	53	53	53	47	53	53	41	53	53	37	53	47	34	53	41	31	53	35	26	41	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	53	53	37	53	46	33	53	40	29	53	36	27	46	33	24	41	30	33	37	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	67	67	67	67	67	66	67	67	62	67	65	55	67	61	46	67	55	41	67	47	37	67	38	31	61	32	27	51	28	35	42	25	31	37	33	27	33	29	24
			Exposed	67	61	46	67	52	40	67	43	35	67	39	32	65	35	29	61	32	27	55	29	24	42	25	31	36	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	64	67	67	60	67	65	53	67	62	46	61	51	38	48	41	32	39	35	28	34	31	24	30	27	33	27	24	29
			Exposed	67	67	60	67	64	51	66	60	43	62	52	39	55	45	35	47	40	32	41	37	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	33	42	41	29	42	36	26
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	33	42	40	29	42	35	25	42	31	33	37	27	29	33	24	26
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	33	42	39	29	41	35	26	40	31	34
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	35	42	40	29	42	34	25	40	30	33	35	26	29	31	34	25	28	30	23
		20-27	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	40	49	43	35	49	38	31	49	33	28
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	42	49	44	36	49	37	30	49	32	26	49	28	35	42	25	31	37	33	27
		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	42	46	46	37	46	42	33
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	46	46	37	46	40	32	39	35	28	34	31	24	31	27	33
	C	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	42	42	30	42	37	26	42	32	35	39	28	30	35	25	27
			Exposed	42	42	42	42	42	42	42	42	40	42	42	36	42	42	33	42	42	30	42	39	27	42	33	35	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	37	42	42	31	42	36	27	40	31	35	37	27	31	33	24	27	29	32	24
			Exposed	42	42	42	42	42	39	42	42	35	42	42	32	42	39	29	42	36	26	42	33	24	38	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	48	38	49	39	32	49	34	28	48	29	24	45	26	32	39	35	29
			Exposed	49	49	49	49	49	49	49	49	43	49	49	38	49	42	35	49	39	32	49	35	29	49	30	25	44	26	32	38	33	28	33	29	24	29	26	21	26	23	19
		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	39	46	42	34	41	37	29	36	33	26	32	29	35
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	46	46	38	46	45	35	42	37	30	36	32	25	31	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	35	42	42	29	42	36	25	42	31	33	37	27	29	32	36	25	29	32	23
			Exposed	42	42	42	42	42	37	42	42	33	42	42	30	42	39	27	42	35	25	42	32	34	37	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	42	34	42	41	31	41	35	26	39	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	42	42	37	42	42	33	42	40	29	42	36	27	42	33	24	41	30	33	37	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	46	54	54	41	54	47	37	54	38	31	53	32	27	49	28	35	42	25	31	37	33	27	33	29	24
			Exposed	54	54	46	54	52	40	54	43	35	54	39	32	54	35	29	54	32	27	54	29	24	42	25	31	36	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	46	50	50	38	47	41	32	39	35	28	34	31	24	30	27	33	27	24	29
			Exposed	50	50	50	50	50	50	50	50	43	50	50	39	50	45	35	47	40	32	41	37	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
40	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	33	39	39	29	39	36	26
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	39	29	39	35	25	39	31	33	37	27	29	33	24	26
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	39	29	38	35	26	37	31	34
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	35	39	39	29	39	34	25	39	30	33	35	26	29	31	34	25	28	30	23
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	31	38	33	28
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	37	30	38	32	26	38	28	35	38	25	31	37	33	27
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	35	28	34	31	24	31	27	33
	C	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	30	39	37	26	39	32	35	39	28	30	35	25	27
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	39	30	39	39	27	39	33	35	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	31	39	36	27	37	31	35	36	27	31	33	24	27	29	32	24
			Exposed	39	39	39	39	39	39	39	39	35	39	39	32	39	39	29	39	36	26	39	33	24	38	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	32	38	34	28	38	29	24	38	26	32	37	35	29
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	32	38	35	29	38	30	25	38	26	32	38	33	28	33	29	24	29	26	21	26	23	19
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	29	36	33	26	32	29	35
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	30	36	32	25	31	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	35	42	42	29	42	36	25	42	31	33	37	27	29	32	36	25	29	32	23
			Exposed	42	42	42	42	42	37	42	42	33	42	42	30	42	39	27	42	35	25	42	32	34	37	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	42	34	42	41	31	41	35	26	39	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	42	42	37	42	42	33	42	40	29	42	36	27	42	33	24	41	30	33	37	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	38	31	42	32	27	42	28	35	40	25	31	37	33	27	33	29	24
			Exposed	42	42	42	42	42	40	42	42	35	42	39	32	42	35	29	42	32	27	42	29	24	42	25	31	36	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	32	39	35	28	34	31	24	30	27	33	27	24	29
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	32	39	37	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
50	B	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	33	26
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	33	25	33	31	33	33	27	29	33	24	26
		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	29	33	33	26	32	31	34
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	29	34	34	25	34	30	33	34	26	29	31	34	25	28	30	23
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	26	31	28	35	31	25	31	31	33	27
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	24	30	27	33
	C	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	26	33	32	35	33	28	30	33	25	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	27	33	33	35	33	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	27	32	31	35	31	27	31	30	24	27	29	32	24
			Exposed	34	34	34	34	34	34	34	34	34	34	34	32	34	34	29	34	34	26	34	33	24	34	28	31	32	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	31	29	24	31	26	32	31	35	29
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	30	25	31	26	32	31	33	28	31	29	24	29	26	21	26	23	19
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26	30	29	35
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	25	30	28	33	27	24	29	24	32	26	32	29	23
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	29	36	36	25	36	31	33	36	27	29	32	36	25	29	32	23
			Exposed	36	36	36	36	36	36	36	36	33	36	36	30	36	36	27	36	35	25	36	32	34	36	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	31	36	35	26	34	30	34	33	26	29	31	34	25	27	30	22	24	27	20
			Exposed	36	36	36	36	36	33	36	36	29	36	36	27	36	33	24	36	30	33	36	27	30	31	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	32	27	35	28	35	35	25	31	34	33	27	32	29	24
			Exposed	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	32	27	35	29	24	35	25	31	35	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	31	24	30	27	33	27	24	29
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	33	28	27	29	28	24	26
		7-20	Interior	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	26	28	28	34
			Exposed	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	25	29	29	33	29	26	29	29	34	25	28	30	23
		20-27	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	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	26	27	27	35	27	25	31	27	33	27
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	33
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	35	28	28	30	28	25	27
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	35	28	28	30	28	24	26	28	32	23	26	28	20	34	25	18
		7-20	Interior	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	27	29	29	35	28	27	31	27	24	27	26	32	24
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	24	29	28	31	29	36	26	28	31	23	24	27	20	33	24	18	29	21	16
		20-27	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	24	27	26	32	27	35	29
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	26	32	27	33	28	27	29	24	27	26	21	26	23	19
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	37	29	36	32	26	32	29	23
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	25	31	31	33	31	27	29	31	36	25	29	32	23
			Exposed	31	31	31	31	31	31	31	31	31	30	31	31	27	31	31	25	31	31	34	31	27	29	31	35	25	28	30	22	24	27	19	32	23	17	29	21	29	21	15
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	26	30	30	34	29	26	29	28	34	25	27	30	22	24	27	20	24	20
			Exposed	32	32	32	32	32	32	32	32	29	32	32	27	32	32	24	32	30	33	32	27	30	31	35	26	22	35	26	19	31	23	17	27	20	15	24	18	13	24	18
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	28	35	29	25	31	29	33	27	29	29	24	29	24
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	25	31	29	32	27	29	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	27	33	27	24	29
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	27	32	26	35	28	34	31	24	30	27	21	27	24	19
70	B	0-7	Interior	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	24	24	24	24	24	24
			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	33	24	24	29	24	24	26
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	34
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	33	25	25	29	25	34	25	25	30	23
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	33	27
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
	C	0-7	Interior	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	35	24	24	30	24	24	27
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	35	24	24	30	24	24	26	24	32	23	24	28	20	34	25	18
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	35	25	25	31	24	24	27	23	32	24
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	31	25	36	26	25	31	23	24	27	20	33	24	18	29	21	16
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	33	28	35	29	24	35	26	21	35	23	19
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	32	26	32	29	23
	D	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	33	27	27	29	27	36	25	27	32	23
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	34	27	27	29	27	35	25	27	30	22	24	27	19	32	23	17	29	21	29	21	15
		7-20	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	34	26	26	29	26	34	25	25	30	22	24	27	20	24	20
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	33	27	27	30	27	35	26	27	30	22	35	26	19	31	23	17	27	20	15	24	18	13	24	18
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	37	31	38	33	27	38	29	24	29	24
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	31	38	32	27	38	28	23	38	24	20	37	22	18	32	19	16	24	18
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	29
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	35	28	34	31	24	30	27	21	27	24	19	24	19
80	B	0-7	Interior	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
			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	32	21	21	29	21	21	26
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	29	36	33	25	36	30	23
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	27
		27-45	Interior	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
			Exposed	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
	C	0-7	Interior	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	32	21	21	30	21	21	27
			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	30	21	21	26	21	32	23	21	28	20	32	25	18	32	18
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	31	36	36	27	35	32	24
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	33	26	36	31	23	36	27	20	33	24	18	29	21	16
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	31	29	24	31	26	21	31	23	19	24	19
		27-45	Interior	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
			Exposed	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	26	29	29	23
	D	0-7	Interior	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	33	24	24	29	24	36	25	24	32	23
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	34	24	24	29	24	35	25	24	30	22	24	27	19	32	23	17	29	21	15	29	15
		7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	34	24	24	29	23	34	25	23	30	22	22	27	20	22	20
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	33	24	24	30	24	35	26	24	30	22	35	26	19	31	23	17	27	20	15	24	18	13	24	18
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	33	27	34	29	24
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	32	27	34	28	23	34	24	20	34	22	18	32	19	16	24	18
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	28	32	31	24	30	27	21	27	24	19	24	19

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	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	19	19	19	19	19	19	19
			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	29	19	19	29	19	19	26
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	29	32	29	25	32	29	23
		20-27	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	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	27	27	27	27	27
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
	C	0-7	Interior	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	29	19	19	29	19	19	27
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	29	19	19	29	19	19	26	19	29	23	19	28	20	29	25	18
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	29	32	32	27	32	29	24
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	29	26	32	29	23	32	27	20	29	24	18	29	21	16
		20-27	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	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	24	27	26	21	27	23	19
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23
	D	0-7	Interior	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	32	21	21	29	21	32	25	21	32	23
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	32	21	21	29	21	32	25	21	30	22	21	27	19	32	23	17	29	21	15
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	29	35	32	25	34	30	22	33	27	20
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	30	36	32	26	36	30	22	32	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	29	24
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	28	23	30	24	20	30	22	18	30	19	16
		27-45	Interior	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
			Exposed	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	28	29	29	24	29	27	21	27	24	19	27	24	19
100	B	0-7	Interior	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	17	17	17	17	17	17	17
			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	26	17	17	26	17	17	26	17	17	26
		7-20	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	27	27	27	27	26
			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	26	27	27	26	27	26	25	27	26	23
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
		27-45	Interior	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	24	24	24	24	24	24
			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	24	24	24	24	24	24
	C	0-7	Interior	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	26	17	17	26	17	17	26
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	26	17	17	26	17	17	26	17	26	23	17	26	20	26	25	18
		7-20	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	26	27	27	26	27	27	26	27	26	24
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	26	26	27	26	23	27	26	20	26	24	18	26	21	16
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	21	25	23	19
		27-45	Interior	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	24	24	24	24	24	24
			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	24	24	24	24	24	23
	D	0-7	Interior	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	29	19	19	29	19	29	25	19	29	23
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	29	19	19	29	19	29	25	19	29	22	19	27	19	29	23	17	29	21	15
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	29	32	29	25	31	29	22	30	27	20
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	29	32	29	26	32	29	22	29	26	19	29	23	17	27	20	15	24	18	13
		20-27	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	27	27	27	27	24
			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	23	27	24	20	27	22	18	27	19	16
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	26	21	26	24	19

*	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.
~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	98	98	98	98	98	98	98	98	97	98	98	92	98	98	88	98	97	84	98	93	81	98	87	75	93	81	67	87	76	61	82	70	56	78	64	49	73	60	44
			Exposed	98	98	88	98	96	83	98	92	79	98	87	76	97	84	71	93	80	66	89	77	63	83	70	56	77	64	48	71	59	42	65	51	55	61	45	49	55	40	43
		7-20	Interior	99	99	99	99	99	99	99	99	94	99	99	89	99	99	85	99	94	81	99	90	77	97	82	68	90	76	62	83	69	56	78	63	49	72	58	43	65	52	58
			Exposed	99	99	84	99	93	80	99	88	76	99	83	70	94	79	65	89	76	62	85	71	59	78	63	50	71	57	43	64	50	56	59	43	49	52	58	43	46	51	38
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	94	99	99	89	99	94	85	99	86	78	99	79	71	94	74	63	88	65	59	83	61	52	79	56	46
			Exposed	99	99	93	99	97	88	99	92	83	99	87	79	99	83	75	99	79	70	96	76	65	89	66	60	82	61	51	77	54	44	71	47	59	65	41	52	61	55	46
		27-45	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	96	100	100	92	100	94	85	95	87	79	88	81	72	82	76	65	77	70	61	71	65	56
			Exposed	100	100	100	100	100	95	100	99	90	100	95	85	99	90	82	94	86	78	90	83	75	82	77	65	76	69	60	68	63	53	62	59	47	58	52	41	51	46	55
	C	0-7	Interior	98	98	90	98	98	85	98	94	81	98	90	78	98	86	74	95	82	69	91	79	65	85	73	59	79	65	51	74	61	44	67	54	58	62	48	51	58	43	46
			Exposed	98	86	74	94	82	68	90	78	63	86	74	60	82	69	55	79	65	50	76	62	46	68	55	59	62	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	99	99	87	99	95	82	99	90	78	99	86	73	96	82	67	92	78	63	87	75	61	80	65	52	74	60	45	65	53	59	61	46	51	55	40	45	49	54	40
			Exposed	96	81	67	90	77	63	86	72	59	81	66	54	77	62	49	73	60	44	68	55	41	61	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	99	99	96	99	99	91	99	95	86	99	90	81	99	85	77	99	81	73	99	78	68	91	69	61	85	62	54	79	57	47	74	50	41	67	44	55	63	59	49
			Exposed	99	85	77	99	80	72	97	76	65	92	71	62	88	65	59	84	62	54	81	59	49	75	50	42	66	43	54	61	56	47	55	49	41	49	43	36	43	39	32
		27-45	Interior	100	100	100	100	100	98	100	100	92	100	97	88	100	93	84	97	89	80	92	85	77	85	79	68	78	73	62	71	65	56	64	61	49	60	55	44	54	49	58
			Exposed	100	92	84	96	88	79	90	83	75	86	80	70	81	76	65	78	72	62	74	67	59	64	61	50	60	54	43	52	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	98	96	83	98	91	78	98	86	75	96	83	69	91	79	65	88	76	62	84	72	59	78	64	49	72	60	42	65	52	55	61	45	48	55	40	43	49	53	38
			Exposed	91	79	64	87	75	61	83	70	56	79	65	51	76	62	46	71	59	42	67	54	58	61	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	99	92	79	99	87	75	97	82	68	92	78	64	87	75	61	83	69	56	80	64	52	72	59	44	64	51	56	60	44	49	52	58	43	46	51	38	41	45	34
			Exposed	87	74	61	82	67	55	78	63	49	74	60	45	68	55	41	64	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	99	97	87	99	91	82	99	86	78	99	81	74	99	78	68	94	74	64	90	68	61	83	62	53	78	55	45	72	47	59	65	41	52	61	55	46	55	49	41
			Exposed	99	77	67	93	72	63	89	66	60	84	62	54	81	59	49	77	54	45	74	49	41	65	42	52	60	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	100	100	94	100	98	89	100	93	84	97	89	80	92	85	77	88	81	73	84	78	68	77	71	61	69	64	54	63	59	47	58	52	41	51	46	55	45	41	49
			Exposed	92	85	77	87	81	71	82	77	65	78	72	62	74	67	59	68	63	54	64	61	49	58	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32
10	B	0-7	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	88	92	92	84	92	92	81	92	87	75	92	81	67	87	76	61	82	70	56	78	64	49	73	60	44
			Exposed	92	92	88	92	92	83	92	92	79	92	87	76	92	84	71	92	80	66	89	77	63	83	70	56	77	64	48	71	59	42	65	51	55	61	45	49	55	40	43
		7-20	Interior	92	92	92	92	92	92	92	92	92	92	92	89	92	92	85	92	92	81	92	90	77	92	82	68	90	76	62	83	69	56	78	63	49	72	58	43	65	52	58
			Exposed	92	92	84	92	92	80	92	88	76	92	83	70	92	79	65	89	76	62	85	71	59	78	63	50	71	57	43	64	50	56	59	43	49	52	58	43	46	51	38
		20-27	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	94	96	96	89	96	94	85	96	86	78	96	79	71	94	74	63	88	65	59	83	61	52	79	56	46
			Exposed	96	96	93	96	96	88	96	92	83	96	87	79	96	83	75	96	79	70	96	76	65	89	66	60	82	61	51	77	54	44	71	47	59	65	41	52	61	55	46
		27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	96	99	99	92	99	94	85	95	87	79	88	81	72	82	76	65	77	70	61	71	65	56
			Exposed	99	99	99	99	99	95	99	99	90	99	95	85	99	90	82	94	86	78	90	83	75	82	77	65	76	69	60	68	63	53	62	59	47	58	52	41	51	46	55
	C	0-7	Interior	92	92	90	92	92	85	92	92	81	92	90	78	92	86	74	92	82	69	91	79	65	85	73	59	79	65	51	74	61	44	67	54	58	62	48	51	58	43	46
			Exposed	92	86	74	92	82	68	90	78	63	86	74	60	82	69	55	79	65	50	76	62	46	68	55	59	62	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	92	92	87	92	92	82	92	90	78	92	86	73	92	82	67	92	78	63	87	75	61	80	65	52	74	60	45	65	53	59	61	46	51	55	40	45	49	54	40
			Exposed	92	81	67	90	77	63	86	72	59	81	66	54	77	62	49	73	60	44	68	55	41	61	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	96	96	96	96	96	91	96	95	86	96	90	81	96	85	77	96	81	73	96	78	68	91	69	61	85	62	54	79	57	47	74	50	41	67	44	55	63	59	49
			Exposed	96	85	77	96	80	72	96	76	65	92	71	62	88	65	59	84	62	54	81	59	49	75	50	42	66	43	54	61	56	47	55	49	41	49	43	36	43	39	32
		27-45	Interior	99	99	99	99	99	98	99	99	92	99	97	88	99	93	84	97	89	80	92	85	77	85	79	68	78	73	62	71	65	56	64	61	49	60	55	44	54	49	58
			Exposed	99	92	84	96	88	79	90	83	75	86	80	70	81	76	65	78	72	62	74	67	59	64	61	50	60	54	43	52	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	92	92	83	92	91	78	92	86	75	92	83	69	91	79	65	88	76	62	84	72	59	78	64	49	72	60	42	65	52	55	61	45	48	55	40	43	49	53	38
			Exposed	91	79	64	87	75	61	83	70	56	79	65	51	76	62	46	71	59	42	67	54	58	61	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	92	92	79	92	87	75	92	82	68	92	78	64	87	75	61	83	69	56	80	64	52	72	59	44	64	51	56	60	44	49	52	58	43	46	51	38	41	45	34
			Exposed	87	74	61	82	67	55	78	63	49	74	60	45	68	55	41	64	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	97	97	87	97	91	82	97	86	78	97	81	74	97	78	68	94	74	64	90	68	61	83	62	53	78	55	45	72	47	59	65	41	52	61	55	46	55	49	41
			Exposed	97	77	67	93	72	63	89	66	60	84	62	54	81	59	49	77	54	45	74	49	41	65	42	52	60	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	99	99	94	99	98	89	99	93	84	97	89	80	92	85	77	88	81	73	84	78	68	77	71	61	69	64	54	63	59	47	58	52	41	51	46	55	45	41	49
			Exposed	92	85	77	87	81	71	82	77	65	78	72	62	74	67	59	68	63	54	64	61	49	58	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32
20	B	0-7	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	83	83	75	83	81	67	83	76	61	82	70	56	78	64	49	73	60	44
			Exposed	83	83	83	83	83	83	83	83	79	83	83	76	83	83	71	83	80	66	83	77	63	83	70	56	77	64	48	71	59	42	65	51	55	61	45	49	55	40	43
		7-20	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	83	83	77	83	82	68	83	76	62	83	69	56	78	63	49	72	58	43	65	52	58
			Exposed	83	83	83	83	83	80	83	83	76	83	83	70	83	79	65	83	76	62	83	71	59	78	63	50	71	57	43	64	50	56	59	43	49	52	58	43	46	51	38
		20-27	Interior	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	85	89	86	78	89	79	71	89	74	63	88	65	59	83	61	52	79	56	46
			Exposed	89	89	89	89	89	88	89	89	83	89	87	79	89	83	75	89	79	70	89	76	65	89	66	60	82	61	51	77	54	44	71	47	59	65	41	52	61	55	46
		27-45	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	85	92	87	79	88	81	72	82	76	65	77	70	61	71	65	56
			Exposed	92	92	92	92	92	92	92	92	90	92	92	85	92	90	82	92	86	78	90	83	75	82	77	65	76	69	60	68	63	53	62	59	47	58	52	41	51	46	55
	C	0-7	Interior	83	83	83	83	83	83	83	83	81	83	83	78	83	83	74	83	82	69	83	79	65	83	73	59	79	65	51	74	61	44	67	54	58	62	48	51	58	43	46
			Exposed	83	83	74	83	82	68	83	78	63	83	74	60	82	69	55	79	65	50	76	62	46	68	55	59	62	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	83	83	83	83	83	82	83	83	78	83	83	73	83	82	67	83	78	63	83	75	61	80	65	52	74	60	45	65	53	59	61	46	51	55	40	45	49	54	40
			Exposed	83	81	67	83	77	63	83	72	59	81	66	54	77	62	49	73	60	44	68	55	41	61	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	89	89	89	89	89	89	89	89	86	89	89	81	89	85	77	89	81	73	89	78	68	89	69	61	85	62	54	79	57	47	74	50	41	67	44	55	63	59	49
			Exposed	89	85	77	89	80	72	89	76	65	89	71	62	88	65	59	84	62	54	81	59	49	75	50	42	66	43	54	61	56	47	55	49	41	49	43	36	43	39	32
		27-45	Interior	92	92	92	92	92	92	92	92	92	92	92	88	92	92	84	92	89	80	92	85	77	85	79	68	78	73	62	71	65	56	64	61	49	60	55	44	54	49	58
			Exposed	92	92	84	92	88	79	90	83	75	86	80	70	81	76	65	78	72	62	74	67	59	64	61	50	60	54	43	52	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	83	83	83	83	83	78	83	83	75	83	83	69	83	79	65	83	76	62	83	72	59	78	64	49	72	60	42	65	52	55	61	45	48	55	40	43	49	53	38
			Exposed	83	79	64	83	75	61	83	70	56	79	65	51	76	62	46	71	59	42	67	54	58	61	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	83	83	79	83	83	75	83	82	68	83	78	64	83	75	61	83	69	56	80	64	52	72	59	44	64	51	56	60	44	49	52	58	43	46	51	38	41	45	34
			Exposed	83	74	61	82	67	55	78	63	49	74	60	45	68	55	41	64	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	90	90	87	90	90	82	90	86	78	90	81	74	90	78	68	90	74	64	90	68	61	83	62	53	78	55	45	72	47	59	65	41	52	61	55	46	55	49	41
			Exposed	90	77	67	90	72	63	89	66	60	84	62	54	81	59	49	77	54	45	74	49	41	65	42	52	60	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	93	93	93	93	93	89	93	93	84	93	89	80	92	85	77	88	81	73	84	78	68	77	71	61	69	64	54	63	59	47	58	52	41	51	46	55	45	41	49
			Exposed	92	85	77	87	81	71	82	77	65	78	72	62	74	67	59	68	63	54	64	61	49	58	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	70	61	70	70	56	70	64	49	70	60	44
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	66	70	70	63	70	70	56	70	64	48	70	59	42	65	51	55	61	45	49	55	40	43
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	71	71	62	71	69	56	71	63	49	70	58	43	65	52	58
			Exposed	71	71	71	71	71	71	71	71	71	71	71	70	71	71	65	71	71	62	71	71	59	71	63	50	71	57	43	64	50	56	59	43	49	52	58	43	46	51	38
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	78	82	79	71	82	74	63	82	65	59	82	61	52	79	56	46
			Exposed	82	82	82	82	82	82	82	82	82	82	82	79	82	82	75	82	79	70	82	76	65	82	66	60	82	61	51	77	54	44	71	47	59	65	41	52	61	55	46
		27-45	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	72	76	76	65	76	70	61	71	65	56
			Exposed	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	75	76	76	65	76	69	60	68	63	53	62	59	47	58	52	41	51	46	55
	C	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	69	70	70	65	70	70	59	70	65	51	70	61	44	67	54	58	62	48	51	58	43	46
			Exposed	70	70	70	70	70	68	70	70	63	70	70	60	70	69	55	70	65	50	70	62	46	68	55	59	62	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	67	71	71	63	71	71	61	71	65	52	71	60	45	65	53	59	61	46	51	55	40	45	49	54	40
			Exposed	71	71	67	71	71	63	71	71	59	71	66	54	71	62	49	71	60	44	68	55	41	61	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	81	82	82	77	82	81	73	82	78	68	82	69	61	82	62	54	79	57	47	74	50	41	67	44	55	63	59	49
			Exposed	82	82	77	82	80	72	82	76	65	82	71	62	82	65	59	82	62	54	81	59	49	75	50	42	66	43	54	61	56	47	55	49	41	49	43	36	43	39	32
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	68	76	73	62	71	65	56	64	61	49	60	55	44	54	49	58
			Exposed	76	76	76	76	76	76	76	76	75	76	76	70	76	76	65	76	72	62	74	67	59	64	61	50	60	54	43	52	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	69	70	70	65	70	70	62	70	70	59	70	64	49	70	60	42	65	52	55	61	45	48	55	40	43	49	53	38
			Exposed	70	70	64	70	70	61	70	70	56	70	65	51	70	62	46	70	59	42	67	54	58	61	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	71	71	71	71	71	71	71	71	68	71	71	64	71	71	61	71	69	56	71	64	52	70	59	44	64	51	56	60	44	49	52	58	43	46	51	38	41	45	34
			Exposed	71	71	61	71	67	55	71	63	49	71	60	45	68	55	41	64	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	85	85	85	85	85	82	85	85	78	85	81	74	85	78	68	85	74	64	85	68	61	83	62	53	78	55	45	72	47	59	65	41	52	61	55	46	55	49	41
			Exposed	85	77	67	85	72	63	85	66	60	84	62	54	81	59	49	77	54	45	74	49	41	65	42	52	60	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	83	83	83	83	83	83	83	83	83	83	83	80	83	83	77	83	81	73	83	78	68	77	71	61	69	64	54	63	59	47	58	52	41	51	46	55	45	41	49
			Exposed	83	83	77	83	81	71	82	77	65	78	72	62	74	67	59	68	63	54	64	61	49	58	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32
40	B	0-7	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	61	65	65	56	65	64	49	65	60	44
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	65	56	65	64	48	65	59	42	65	51	55	61	45	49	55	40	43
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	62	64	66	56	66	63	49	64	58	43	62	52	58
			Exposed	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	66	66	62	66	66	59	66	63	50	66	57	43	64	50	56	59	43	49	52	58	43	46	51	38
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	59	64	61	52	64	56	46
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	64	61	51	64	54	44	64	47	59	64	41	52	61	55	46
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	53	60	59	47	58	52	41	51	46	55
	C	0-7	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	59	65	65	51	65	61	44	65	54	58	62	48	51	58	43	46
			Exposed	65	65	65	65	65	65	65	65	63	65	65	60	65	65	55	65	65	50	65	62	46	65	55	59	62	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	63	66	66	61	66	65	52	65	60	45	62	53	59	60	46	51	55	40	45	49	54	40
			Exposed	66	66	66	66	66	63	66	66	59	66	66	54	66	62	49	66	60	44	66	55	41	61	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	62	54	64	57	47	64	50	41	64	44	55	62	59	49
			Exposed	64	64	64	64	64	64	64	64	64	64	64	62	64	64	59	64	62	54	64	59	49	64	50	42	64	43	54	61	56	47	55	49	41	49	43	36	43	39	32
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	49	60	55	44	54	49	58
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	50	60	54	43	52	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	69	70	70	65	70	70	62	70	70	59	70	64	49	70	60	42	65	52	55	61	45	48	55	40	43	49	53	38
			Exposed	70	70	64	70	70	61	70	70	56	70	65	51	70	62	46	70	59	42	67	54	58	61	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	70	70	70	70	70	70	70	70	68	70	70	64	70	70	61	70	69	56	70	64	52	70	59	44	64	51	56	60	44	49	52	58	43	46	51	38	41	45	34
			Exposed	70	70	61	70	67	55	70	63	49	70	60	45	68	55	41	64	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	68	70	70	64	70	68	61	70	62	53	70	55	45	70	47	59	65	41	52	61	55	46	55	49	41
			Exposed	70	70	67	70	70	63	70	66	60	70	62	54	70	59	49	70	54	45	70	49	41	65	42	52	60	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	61	66	64	54	63	59	47	58	52	41	51	46	55	45	41	49
			Exposed	66	66	66	66	66	66	66	66	65	66	66	62	66	66	59	66	63	54	64	61	49	58	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32
50	B	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	49	56	56	44
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	48	56	56	42	56	51	55	56	45	49	55	40	43
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	49	56	56	43	54	52	58
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	50	57	57	43	57	50	56	57	43	49	52	58	43	46	51	38
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	46
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	51	53	53	44	53	47	59	53	41	52	53	55	46
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	47	50	50	41	50	46	55
	C	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	51	56	56	44	56	54	58	56	48	51	56	43	46
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	50	56	56	46	56	55	59	56	47	50	56	41	44	49	54	38	43	47	34	58	42	30
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	56	56	45	54	53	59	52	46	51	50	40	45	49	54	40
			Exposed	57	57	57	57	57	57	57	57	57	57	57	54	57	57	49	57	57	44	57	55	41	57	46	52	54	40	45	47	52	39	41	45	34	55	40	30	49	36	27
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	47	53	50	41	53	44	55	53	59	49
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	50	42	53	43	54	53	56	47	53	49	41	49	43	36	43	39	32
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	49	50	50	44	50	49	58
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	43	50	47	56	46	41	49	40	54	43	54	48	38
	D	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	49	60	60	42	60	52	55	60	45	48	55	40	43	49	53	38
			Exposed	60	60	60	60	60	60	60	60	56	60	60	51	60	60	46	60	59	42	60	54	58	60	46	49	54	59	42	47	51	36	41	45	32	54	40	28	48	35	25
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	56	61	61	52	60	59	44	57	51	56	55	44	49	52	58	43	46	51	38	41	45	34
			Exposed	61	61	61	61	61	55	61	61	49	61	60	45	61	55	41	61	50	56	61	46	51	53	58	43	45	50	37	59	43	32	52	38	28	46	34	25	41	30	22
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	53	58	55	45	58	47	59	58	41	52	57	55	46	54	49	41
			Exposed	58	58	58	58	58	58	58	58	58	58	58	54	58	58	49	58	54	45	58	49	41	58	42	52	58	54	45	53	47	39	46	41	34	41	36	30	55	32	27
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	47	55	52	41	51	46	55	45	41	49
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	49	55	52	42	50	45	54	43	59	47	57	51	41	51	45	36	45	40	32

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	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	47	47	47	47	47	44
			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	42	47	47	55	47	45	49	47	40	43
		7-20	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	43	48	48	58
			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	43	48	48	56	48	43	49	48	58	43	46	51	~~38~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	59	45	41	52	45	55	46			
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	63	55
	C	0-7	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	44	47	47	58	47	47	51	47	43	46
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	47	47	59	47	47	50	47	41	44	47	54	~~38~~	43	47	~~34~~	58	42	~~30~~
		7-20	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	45	48	48	59	46	46	51	45	40	45	43	54	40
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	44	48	48	41	48	46	52	48	40	45	47	52	~~39~~	41	45	~~34~~	55	40	~~30~~	49	~~36~~	~~27~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	44	55	45	59	49
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	45	43	54	45	56	47	45	49	41	45	43	~~36~~	43	~~39~~	~~32~~
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	63	58
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	56	63	61	49	60	54	43	54	48	~~38~~
	D	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	42	52	52	55	52	45	48	52	40	43	49	53	~~38~~
			Exposed	52	52	52	52	52	52	52	52	52	52	52	51	52	52	46	52	52	42	52	52	58	52	46	49	52	59	42	47	51	~~36~~	41	45	~~32~~	54	~~40~~	~~28~~	48	~~35~~	~~25~~
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	44	51	51	56	49	44	49	47	58	43	45	51	~~38~~	41	45	~~34~~
			Exposed	53	53	53	53	53	53	53	53	49	53	53	45	53	53	41	53	50	56	53	46	51	53	58	43	45	50	~~37~~	59	43	~~32~~	52	~~38~~	~~28~~	46	~~34~~	~~25~~	41	~~30~~	~~22~~
		20-27	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	45	49	47	59	49	41	52	49	55	46	49	49	41
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	45	49	49	41	49	42	52	49	54	45	49	47	~~39~~	46	41	~~34~~	41	~~36~~	~~30~~	55	~~32~~	~~27~~
		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	41	46	46	55	45	41	49
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	46	45	54	43	59	47	57	51	41	51	45	~~36~~	45	40	~~32~~
70	B	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	55	41	41	49	41	40	43
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	58
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	56	41	41	49	41	58	43	41	51	~~38~~
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	52	58	56	46
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
	C	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	58	41	41	51	41	41	46
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	50	41	41	44	41	54	~~38~~	41	47	~~34~~	58	42	~~30~~			
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	59	41	41	51	40	40	45	39	54	40
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	52	41	40	45	41	52	~~39~~	41	45	~~34~~	55	40	~~30~~	49	~~36~~	~~27~~
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	55	58	58	49
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	54	58	56	47	58	49	41	58	43	~~36~~	58	~~39~~	~~32~~
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	49	55	54	43	54	48	~~39~~
	D	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55	45	45	48	45	40	43	45	53	~~38~~
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	45	45	58	45	45	49	45	59	42	45	51	~~36~~	41	45	~~32~~	54	~~40~~	~~28~~	48	~~35~~	~~25~~
		7-20	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	44	46	46	56	44	44	49	43	58	43	41	51	~~38~~	40	45	~~34~~
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	41	46	46	56	46	46	51	46	58	43	45	50	~~37~~	59	43	~~32~~	52	~~38~~	~~28~~	46	~~34~~	~~25~~	41	~~30~~	~~22~~		
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	59	64	61	52	64	55	46	64	49	41
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	61	64	61	52	64	54	45	64	47	~~39~~	64	41	~~34~~	60	~~36~~	~~30~~	55	~~32~~	~~27~~
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	55	61	60	49
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	54	61	59	47	57	52	41	51	45	~~36~~	45	40	~~32~~
80	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	54	36	36	49	36	36	43
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	55
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	55	61	61	49	61	55	43	61	51	~~38~~
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	46
		27-45	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	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	49	49	49	49	49
	C	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	54	36	36	51	36	36	46
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	50	36	36	44	36	54	~~38~~	36	47	~~34~~	54	42	~~30~~			
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	55	61	61	51	60	60	45	58	54	40
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	52	61	60	45	61	52	~~39~~	61	46	~~34~~	55	40	~~30~~	49	~~36~~	~~27~~
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	49
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	51	49	41	51	43	~~36~~	51	~~39~~	~~32~~
		27-45	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	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	49	43	49	48	~~39~~
	D	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	55	40	40	48	40	40	43	40	53	~~38~~
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	58	40	40	49	40	59	42	40	51	~~36~~	40	45	~~32~~	54	~~40~~	~~28~~	48	~~35~~	~~25~~
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	56	40	40	49	39	58	43	38	51	~~38~~	37	45	~~34~~
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	56	40	40	51	40	58	43	40	50	~~37~~	59	43	~~32~~	52	~~38~~	~~28~~	46	~~34~~	~~25~~	41	~~30~~	~~22~~		
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	57	55	46	57	49	41
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	57	54	45	57	47	~~39~~	57	41	~~34~~	57	~~36~~	~~30~~	55	~~32~~	~~27~~
		27-45	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	47	54	52	41	51	45	~~36~~	45	40	~~32~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	32	32	48	32	32	43
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	49	54	49	43	54	49	~~38~~
		20-27	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	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	46	46	46	46	46
		27-45	Interior	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~
			Exposed	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~
	C	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	32	32	48	32	32	46
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	32	32	48	32	32	44	32	48	~~38~~	32	47	~~34~~	48	42	~~30~~
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	49	54	54	45	53	49	40
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	45	54	49	~~39~~	54	46	~~34~~	49	40	~~30~~	49	~~36~~	~~27~~
		20-27	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	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	41	46	43	~~36~~	46	~~39~~	~~32~~
		27-45	Interior	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~
			Exposed	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~43~~	~~44~~	~~44~~	~~39~~
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	54	36	36	48	36	36	43	36	53	~~38~~
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	54	36	36	49	36	54	42	36	51	~~36~~	36	45	~~32~~	54	~~40~~	~~28~~	48	~~35~~	~~25~~
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	54	60	60	49	58	54	43	56	51	~~38~~	55	45	~~34~~
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	54	60	60	51	60	54	43	60	50	~~37~~	54	43	~~32~~	52	~~38~~	~~28~~	46	~~34~~	~~25~~	41	~~30~~	~~22~~
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	46	51	49	41
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	45	51	47	~~39~~	51	41	~~34~~	51	~~36~~	~~30~~	51	~~32~~	~~27~~			
		27-45	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
			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	47	48	48	41	48	45	~~36~~	45	40	~~32~~			
100	B	0-7	Interior	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
			Exposed	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	44	29	29	44	29	29	43
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	44	45	45	44	45	44	43	45	44	~~38~~
		20-27	Interior	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~
			Exposed	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~
		27-45	Interior	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~
			Exposed	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~
	C	0-7	Interior	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	44	29	29	44	29	29	44
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	44	29	29	44	29	29	44	29	44	~~38~~	29	44	~~34~~	44	42	~~30~~
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	44	45	45	44	45	44	40
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	44	45	44	~~39~~	45	44	~~34~~	44	40	~~30~~	44	~~36~~	~~27~~
		20-27	Interior	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~
			Exposed	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~42~~	~~41~~	~~42~~	~~42~~	~~36~~	~~42~~	~~39~~	~~32~~
		27-45	Interior	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~
			Exposed	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~40~~	~~39~~
	D	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	32	32	48	32	32	43	32	48	~~38~~
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	32	32	48	32	48	42	32	48	~~36~~	32	45	~~32~~	48	~~40~~	~~28~~	48	~~35~~	~~25~~
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	49	54	49	43	53	49	~~38~~	51	45	~~34~~
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	49	54	49	43	54	49	~~37~~	49	43	~~32~~	49	~~38~~	~~28~~	46	~~34~~	~~25~~	41	~~30~~	~~22~~
		20-27	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	46	46	46	41
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	45	46	46	~~39~~	46	41	~~34~~	46	~~36~~	~~30~~	46	~~32~~	~~27~~			
		27-45	Interior	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~
			Exposed	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~44~~	~~41~~	~~44~~	~~44~~	~~36~~	~~44~~	~~41~~	~~32~~			

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	74	74	74	74	74	74	74	74	74	74	74	72	74	74	68	74	74	64	74	74	60	74	66	47	74	60	37	67	50	32	62	41	28	54	34	24	45	30	33
			Exposed	74	74	68	74	74	63	74	72	58	74	67	49	74	63	42	73	60	36	69	53	33	62	41	28	52	34	24	42	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	69	72	72	65	72	72	61	72	70	53	72	62	39	70	51	32	63	39	28	55	33	24	43	29	32	35	26	29
			Exposed	72	72	64	72	72	60	72	68	49	72	63	41	72	59	35	69	50	32	65	42	29	56	33	25	42	28	32	34	25	28	29	33	24	26	29	21	23	25	19
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	66	56	67	59	42	67	45	34	67	36	29	63	31	26	56	28	23
			Exposed	67	67	67	67	67	67	67	67	63	67	67	59	67	63	49	67	58	41	67	49	35	67	36	30	62	31	25	53	27	33	42	23	29	35	31	26	31	28	23
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	57	63	61	44	62	51	35	52	42	31	42	35	28
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	55	63	63	47	62	52	36	51	40	31	39	33	26	33	29	23	29	26	31	26	35	27
	C	0-7	Interior	74	74	70	74	74	65	74	74	61	74	70	54	74	66	46	74	62	40	72	57	35	64	45	29	57	36	25	46	31	33	38	27	29	33	24	25	29	32	23
			Exposed	74	65	46	74	61	38	70	54	33	65	46	30	61	40	27	56	35	25	49	32	34	38	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	72	72	67	72	72	62	72	70	54	72	66	45	72	61	38	72	55	34	68	47	31	60	35	26	46	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	72	61	38	71	53	33	66	43	29	61	36	27	54	33	24	45	30	33	39	27	30	31	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	67	67	67	67	67	67	67	67	66	67	67	61	67	65	54	67	61	45	67	55	39	67	40	31	64	33	27	58	28	23	46	25	31	38	33	27	33	29	24
			Exposed	67	65	53	67	60	43	67	50	36	67	42	32	67	35	29	64	32	27	60	29	24	47	25	31	37	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	63	52	63	57	39	56	44	32	43	35	28	34	31	24	30	27	33	27	24	29
			Exposed	63	63	63	63	63	59	63	63	48	63	59	41	62	50	35	55	43	32	46	38	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	74	74	62	74	71	56	74	66	47	74	62	40	72	57	35	67	50	32	64	44	29	55	35	25	43	30	32	35	26	27	31	34	24	27	30	21	24	27	19
			Exposed	71	57	35	66	48	31	62	41	28	57	36	25	49	32	34	43	29	31	37	27	29	31	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	72	72	59	72	67	47	72	62	39	72	56	34	68	47	31	63	40	28	60	35	26	44	29	33	34	25	28	30	33	24	26	29	21	35	25	19	31	22	17
			Exposed	67	46	31	62	38	27	55	33	25	46	30	33	39	27	30	34	25	28	31	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	67	67	67	67	67	62	67	66	56	67	62	46	67	54	38	67	46	34	67	39	31	63	32	26	54	27	34	43	23	29	35	31	26	31	27	23	27	24	20
			Exposed	67	54	38	67	44	33	67	36	30	64	32	27	60	29	24	53	27	33	46	24	31	35	31	26	30	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	60	63	63	52	63	61	44	63	55	38	53	42	31	40	34	27	33	29	23	29	26	31	25	34	27	34	30	24
			Exposed	63	63	52	63	60	43	62	52	36	56	44	32	46	38	29	39	34	27	34	31	24	29	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16
10	B	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	47	60	60	37	60	50	32	60	41	28	54	34	24	45	30	33
			Exposed	60	60	60	60	60	60	60	60	58	60	60	49	60	60	42	60	60	36	60	53	33	60	41	28	52	34	24	42	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	53	60	60	39	60	51	32	60	39	28	55	33	24	43	29	32	35	26	29
			Exposed	60	60	60	60	60	60	60	60	49	60	60	41	60	59	35	60	50	32	60	42	29	56	33	25	42	28	32	34	25	28	29	33	24	26	29	21	23	25	19
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	66	56	67	59	42	67	45	34	67	36	29	63	31	26	56	28	23
			Exposed	67	67	67	67	67	67	67	67	63	67	67	59	67	63	49	67	58	41	67	49	35	67	36	30	62	31	25	53	27	33	42	23	29	35	31	26	31	28	23
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	57	63	61	44	62	51	35	52	42	31	42	35	28
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	55	63	63	47	62	52	36	51	40	31	39	33	26	33	29	23	29	26	31	26	35	27
	C	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	54	60	60	46	60	60	40	60	57	35	60	45	29	57	36	25	46	31	33	38	27	29	33	24	25	29	32	23
			Exposed	60	60	46	60	60	38	60	54	33	60	46	30	60	40	27	56	35	25	49	32	34	38	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	60	60	60	60	60	60	60	60	54	60	60	45	60	60	38	60	55	34	60	47	31	60	35	26	46	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	60	60	38	60	53	33	60	43	29	60	36	27	54	33	24	45	30	33	39	27	30	31	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	67	67	67	67	67	67	67	67	66	67	67	61	67	65	54	67	61	45	67	55	39	67	40	31	64	33	27	58	28	23	46	25	31	38	33	27	33	29	24
			Exposed	67	65	53	67	60	43	67	50	36	67	42	32	67	35	29	64	32	27	60	29	24	47	25	31	37	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	63	52	63	57	39	56	44	32	43	35	28	34	31	24	30	27	33	27	24	29
			Exposed	63	63	63	63	63	59	63	63	48	63	59	41	62	50	35	55	43	32	46	38	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	60	60	60	60	60	56	60	60	47	60	60	40	60	57	35	60	50	32	60	44	29	55	35	25	43	30	32	35	26	27	31	34	24	27	30	21	24	27	19
			Exposed	60	57	35	60	48	31	60	41	28	57	36	25	49	32	34	43	29	31	37	27	29	31	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	60	60	59	60	60	47	60	60	39	60	56	34	60	47	31	60	40	28	60	35	26	44	29	33	34	25	28	30	33	24	26	29	21	35	25	19	31	22	17
			Exposed	60	46	31	60	38	27	55	33	25	46	30	33	39	27	30	34	25	28	31	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	67	67	67	67	67	62	67	66	56	67	62	46	67	54	38	67	46	34	67	39	31	63	32	26	54	27	34	43	23	29	35	31	26	31	27	23	27	24	20
			Exposed	67	54	38	67	44	33	67	36	30	64	32	27	60	29	24	53	27	33	46	24	31	35	31	26	30	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	60	63	63	52	63	61	44	63	55	38	53	42	31	40	34	27	33	29	23	29	26	31	25	34	27	34	30	24
			Exposed	63	63	52	63	60	43	62	52	36	56	44	32	46	38	29	39	34	27	34	31	24	29	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16
20	B	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	37	44	44	32	44	41	28	44	41	28	44	34	24	44	30	33
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	36	44	44	33	44	41	28	44	34	24	42	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	39	45	45	32	45	39	28	45	33	24	43	29	32	35	26	29
			Exposed	45	45	45	45	45	45	45	45	45	45	45	41	45	45	35	45	45	32	45	42	29	45	33	25	42	28	32	34	25	28	29	33	24	26	29	21	23	25	19
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	42	54	45	34	54	36	29	54	31	26	53	28	23			
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	41	54	49	35	54	36	30	54	31	25	53	27	33	42	23	29	35	31	26	31	28	23
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	44	52	51	35	49	42	31	42	35	28
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	47	52	52	36	51	40	31	39	33	26	33	29	23	29	26	31	26	35	27
	C	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	44	44	35	44	44	29	44	36	25	44	31	33	38	27	29	33	24	25	29	32	23
			Exposed	44	44	44	44	44	38	44	44	33	44	44	30	44	40	27	44	35	25	44	32	34	38	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	45	45	34	45	45	31	45	35	26	45	30	34	36	26	29	31	34	25	27	30	22	24	27	20
			Exposed	45	45	38	45	45	33	45	43	29	45	36	27	45	33	24	45	30	33	39	27	30	31	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	45	54	54	39	54	40	31	54	33	27	53	28	23	46	25	31	38	33	27	33	29	24
			Exposed	54	54	53	54	54	43	54	50	36	54	42	32	54	35	29	54	32	27	54	29	24	47	25	31	37	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	39	50	44	32	43	35	28	34	31	24	30	27	33	27	24	29
			Exposed	52	52	52	52	52	52	52	52	48	52	52	41	52	50	35	52	43	32	46	38	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	40	44	44	35	44	44	32	44	44	29	44	35	25	43	30	32	35	26	27	31	34	24	27	30	21	24	27	19
			Exposed	44	44	35	44	44	31	44	41	28	44	36	25	44	32	34	43	29	31	37	27	29	31	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	45	45	45	45	45	45	45	45	39	45	45	34	45	45	31	45	40	28	45	35	26	44	29	33	34	25	28	30	33	24	26	29	21	35	25	19	31	22	17
			Exposed	45	45	31	45	38	27	45	33	25	45	30	33	39	27	30	34	25	28	31	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	46	56	54	38	56	46	34	56	39	31	56	32	26	54	27	34	43	23	29	35	31	26	31	27	23	27	24	20
			Exposed	56	54	38	56	44	33	56	36	30	56	32	27	56	29	24	53	27	33	46	24	31	35	31	26	30	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	44	56	55	38	51	42	31	40	34	27	33	29	23	29	26	31	25	34	27	34	30	24
			Exposed	56	56	52	56	56	43	56	52	36	56	44	32	46	38	29	39	34	27	34	31	24	29	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	28	35	34	24	35	30	33
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	28	35	34	24	35	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	28	35	33	24	34	29	32	33	26	29
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	33	25	35	28	32	34	25	28	29	33	24	26	29	21	23	25	19
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	34	41	36	29	41	31	26	41	28	23
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	35	41	36	30	41	31	25	41	27	33	41	23	29	35	31	26	31	28	23
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	31	38	35	28
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	31	38	33	26	33	29	23	29	26	31	26	35	27
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	29	35	35	25	35	31	33	35	27	29	33	24	25	29	32	23
			Exposed	35	35	35	35	35	35	35	35	33	35	35	30	35	35	27	35	35	25	35	32	34	35	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	26	35	30	34	33	26	29	31	34	25	27	30	22	24	27	20
			Exposed	35	35	35	35	35	33	35	35	29	35	35	27	35	33	24	35	30	33	35	27	30	31	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	40	31	41	33	27	41	28	23	40	25	31	38	33	27	33	29	24
			Exposed	41	41	41	41	41	41	41	41	36	41	41	32	41	35	29	41	32	27	41	29	24	41	25	31	37	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	32	38	35	28	34	31	24	30	27	32	30	27	27	27	24	29
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	32	38	38	29	35	31	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	35	25	35	30	32	35	26	27	31	34	24	27	30	21	24	27	19
			Exposed	35	35	35	35	35	31	35	35	28	35	35	25	35	32	34	35	29	31	35	27	29	31	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	28	35	35	26	35	29	33	33	25	28	30	33	24	26	29	21	35	25	19	31	22	17
			Exposed	35	35	31	35	35	27	35	33	25	35	30	33	35	27	30	34	25	28	31	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	45	45	34	45	39	31	45	32	26	44	27	34	41	23	29	35	31	26	31	27	23	27	24	20
			Exposed	45	45	38	45	44	33	45	36	30	45	32	27	45	29	24	45	27	33	45	24	31	35	31	26	30	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	31	39	34	27	33	29	23	29	26	31	25	34	27	34	30	24
			Exposed	42	42	42	42	42	42	42	42	36	42	42	32	42	38	29	39	34	27	34	31	24	29	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16
40	B	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	33	24	33	30	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	28	33	33	24	33	29	31	33	25	27	31	34	24	27	30	21
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	33	24	32	29	32	31	26	29
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	33	25	33	28	32	33	25	28	29	33	24	26	29	21	23	25	19
		20-27	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	31	26	32	28	23
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	31	25	32	27	33	32	23	29	32	31	26	31	28	23
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	29	23	29	26	31	26	35	27
	C	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	33	25	33	31	33	33	27	29	33	24	25	29	32	23
			Exposed	33	33	33	33	33	33	33	33	33	33	33	30	33	33	27	33	33	25	33	32	34	33	27	29	32	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	26	32	30	34	31	26	29	30	34	25	27	30	22	24	27	20
			Exposed	33	33	33	33	33	33	33	33	29	33	33	27	33	33	24	33	30	33	33	27	30	31	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	27	32	28	23	32	25	31	32	33	27	31	29	24	31	29	24
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	27	32	29	24	32	25	31	32	32	27	31	28	23	27	24	20	24	21	18	32	19	16
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	24	30	27	27	27	24	29
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	27	32	26	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	35	25	35	30	32	35	26	27	31	34	24	27	30	21	24	27	19
			Exposed	35	35	35	35	35	31	35	35	28	35	35	25	35	32	34	35	29	31	35	27	29	31	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	28	35	35	26	34	29	33	33	25	28	30	33	24	26	29	21	35	25	19	31	22	17
			Exposed	35	35	31	35	35	27	35	33	25	35	30	33	35	27	30	34	25	28	31	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	32	26	35	27	34	35	23	29	33	31	26	31	27	23	27	24	20
			Exposed	35	35	35	35	35	33	35	35	30	35	32	27	35	29	24	35	27	33	35	24	31	35	31	26	30	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	32	29	23	29	26	31	25	34	27	34	30	24
			Exposed	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	33	27	33	31	24	29	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16
50	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	33
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	31	28	25	27	28	34	24	27	30	21
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	32	27	26	29
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	32	28	25	28	28	33	24	26	29	21	23	25	19
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	35
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	33	40	35	29	40	31	26	40	28	23	40	28	23
		27-45	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	37	37	37	37	37	37	37	37	37	37	37	37	37	37
			Exposed	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	37	37	37	37	37	37	37	35	37	37	31	37	35	27
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	33	28	27	29	28	24	25	28	32	23
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	25	28	28	34	28	27	29	28	35	25	28	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	34	27	26	29	26	34	25	25	30	22	24	27	20
			Exposed	28	28	28	28	28	28	28	28	28	28	28	27	28	28	24	28	28	33	28	27	30	28	35	26	27	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	37	31	40	33	27	40	29	24
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	38	31	40	32	27	40	28	23	40	24	20	37	22	18	32	19	16
		27-45	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	37	37	37	37	37	37	37	37	37	37	37	37	36	29
			Exposed	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	37	32	37	35	28	34	31	24	30	27	21	27	24	19
	D	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	32	30	26	27	30	34	24	27	30	21	24	27	19
			Exposed	30	30	30	30	30	30	30	30	28	30	30	25	30	30	34	30	29	31	30	27	29	30	34	24	27	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	26	30	29	33	29	25	28	27	33	24	26	29	21	35	25	19	31	22	17
			Exposed	30	30	30	30	30	27	30	30	25	30	30	33	30	27	30	30	25	28	30	34	25	26	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	27	34	29	23	29	29	31	26	28	27	23	27	24	20
			Exposed	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	27	33	29	24	31	29	31	26	29	27	22	26	23	19	35	20	17	30	18	15	27	16	13
		27-45	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	23	27	26	31	25	34	27	34	30	24
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	26	31	25	34	27	33	29	23	28	26	20	25	23	18	22	20	16

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	Interior	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	24	24	24	24	24	33
			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	31	24	24	27	24	34	24	24	30	21
		7-20	Interior	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	24	24	32	24	24	29
			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	32	24	24	28	24	33	24	24	29	21	23	25	19
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	29	34	31	26	34	28	23
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	27
	C	0-7	Interior	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	33	24	24	29	24	24	25	24	32	23
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	34	24	24	29	24	35	25	24	30	22	24	27	19	32	23	17	29	21	15
		7-20	Interior	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	34	24	24	29	23	34	25	22	30	22	22	27	20
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	33	24	24	30	24	35	26	24	30	22	23	26	19	31	23	17	27	20	15	24	18	13
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	33	27	34	29	24
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	32	27	34	28	23	34	24	20	34	22	18	32	19	16
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	28	32	31	24	30	27	21	27	24	19
	D	0-7	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	32	26	26	27	26	34	24	26	30	21	24	27	19
			Exposed	26	26	26	26	26	26	26	26	26	25	26	26	34	26	26	31	26	26	26	26	29	26	34	24	26	29	21	35	25	18	30	22	16	27	20	14	24	17	12
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	33	25	25	28	24	33	24	24	29	21	34	25	19	31	22	17
			Exposed	26	26	26	26	26	26	26	25	26	26	33	26	26	30	26	25	28	26	34	25	26	29	21	18	29	21	16	26	19	14	23	17	12	20	15	11			
		20-27	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	37	34	37	35	29	37	31	26	37	27	23	37	24	20
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	33	37	37	31	37	31	26	37	27	22	37	23	19	35	20	17	30	18	15	27	16	13
		27-45	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	34	27	34	30	24
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	34	27	33	29	23	28	26	20	25	23	18	22	20	16
70	B	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	31
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		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	29
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	28	34	31	24	34	29	21	34	25	19
		20-27	Interior	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
			Exposed	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	26	29	28	23
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27
	C	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	31	20	20	29	20	20	25	20	31	23
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	31	20	20	29	20	31	25	20	30	22	20	27	19	31	23	17	29	21	15
		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	29	34	31	25	33	30	22	32	27	20
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	30	34	31	26	34	30	22	34	26	19	31	23	17	27	20	15	24	18	13		
		20-27	Interior	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	27	29	29	24
			Exposed	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	27	29	28	23	29	24	20	29	22	18	29	19	16
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
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	D	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	32	22	22	27	22	34	24	22	30	21	22	27	19
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		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	37	37	28	36	33	24	34	29	21	31	25	19	30	22	17
			Exposed	38	38	38	38	38	38	38	38	37	38	38	33	38	38	30	38	37	28	38	34	25	38	29	21	34	25	18	29	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	31	26	32	27	23	32	24	20
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	31	26	32	27	22	32	23	19	32	20	17	30	18	15	27	16	13
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	29	23	28	26	20	25	23	18	22	20	16
80	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	27	18	27	24	18	27	21
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	27	28	27	24	28	27	21	28	25	19
		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23
		27-45	Interior	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	24	24	24	24	24	24
			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	24	24	24	24	24	19
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	27	18	18	25	18	27	23
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	27	18	27	25	18	27	22	18	27	19	27	23	17	27	21	15
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	27	28	27	25	28	27	22	27	27	20
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	27	28	27	26	28	27	22	28	26	19	27	23	17	27	20	15	24	18	13		
		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	24	20	26	22	18	26	19	16
		27-45	Interior	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	24	24	24	24	24	24
			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	24	24	21	24	24	19
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	30	20	20	27	20	30	24	20	30	21	20	27	19
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	30	20	20	30	20	20	29	20	30	24	20	29	21	30	25	18	30	22	16	27	20	14	24	17	12		
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	28	33	30	24	32	29	21	28	25	19	27	22	17		
			Exposed	33	33	33	33	33	33	33	33	33	30	33	33	30	33	33	28	33	30	25	33	29	21	30	25	18	29	21	16	26	19	14	23	17	12	20	15	11		
		20-27	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	27	23	28	24	20
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	22	28	23	19	28	20	17	28	18	15	27	16	13		
		27-45	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	27	27	27	27	24
			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	23	27	26	20	25	23	18	22	20	16

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	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	16	16	16	16	16	16	24
			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	24	16	16	24	16	24	24	16	24	21
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	24
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	24	25	24	24	25	24	21	25	24	19
		20-27	Interior	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
			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	23	23	23	23	23	23	23
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	C	0-7	Interior	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	24	16	16	24	16	16	24	16	24	23
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	24	16	24	24	16	24	22	16	24	19	24	23	17	24	21	15
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	24	25	24	24	25	24	22	25	24	20
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	24	25	24	24	25	24	22	25	24	19	24	23	17	24	20	15	24	18	13
		20-27	Interior	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
			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	20	23	22	18	23	19	16
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19
	D	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	27	18	27	24	18	27	21	18	27	19
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	27	18	18	27	18	27	24	18	27	21	27	25	18	27	22	16	27	20	14	24	17	12
		7-20	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	24	27	27	21	26	25	19	25	22	17
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	21	27	25	18	27	21	16	26	19	14	23	17	12	20	15	11
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	24	20
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	23	19	25	20	17	25	18	15	25	16	13			
		27-45	Interior	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	24	24	24	24	24	24
			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	23	24	24	20	24	23	18	22	20	16			
100	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	14	14	14	14	14	22
			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	22	14	14	22	14	22	22	14	22	21			
		7-20	Interior	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	24	24	24	24	24	24
			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	22	24	24	21	24	24	19			
		20-27	Interior	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
			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	21	21	21	21	21	21
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	C	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	22	14	14	22	14	14	22	14	22	22
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	22	14	14	22	14	22	22	14	22	22	14	22	19	22	22	17	22	21	15
		7-20	Interior	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	24	24	22	24	24	20
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	19	24	22	17	24	20	15	22	18	13			
		20-27	Interior	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
			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	20	21	21	18	21	19	16			
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19
	D	0-7	Interior	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	24	16	16	24	16	24	24	16	24	21	16	24	19
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	24	16	16	24	16	24	21	24	24	18	24	22	16	24	20	14	24	17	12			
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	24	25	24	24	25	24	21	24	24	19	24	22	17
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	25	25	24	25	24	24	25	24	21	24	24	18	24	21	16	24	19	14	23	17	12	20	15	11
		20-27	Interior	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	20
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	23	23	19	23	20	17	23	18	15	23	16	13			
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	20	16			

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	98	98	98	98	98	98	98	98	96	98	98	91	98	98	87	98	97	83	98	93	80	98	86	74	93	80	65	87	75	61	81	69	54	77	63	48	72	60	43
			Exposed	98	98	87	98	95	82	98	91	78	98	87	75	96	83	70	92	80	65	88	77	62	82	69	55	76	63	47	70	58	60	64	50	54	60	44	47	54	59	42
		7-20	Interior	98	98	98	98	98	98	98	98	93	98	98	88	98	98	84	98	93	80	98	89	76	96	81	67	89	76	61	82	67	55	77	62	48	70	57	42	64	51	57
			Exposed	98	97	83	98	92	79	98	87	75	98	82	69	92	79	64	88	75	61	84	70	57	77	62	49	69	56	42	63	49	54	58	42	48	51	56	42	45	50	37
		20-27	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	93	98	98	88	98	93	84	98	85	77	98	79	69	93	72	63	87	65	58	82	61	51	78	55	45
			Exposed	98	98	92	98	96	87	98	91	82	98	86	78	98	82	75	98	78	68	95	75	64	88	65	59	82	60	50	76	53	43	70	46	57	64	41	51	60	54	45
		27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	95	99	99	91	99	93	84	94	86	78	87	80	71	81	76	64	76	69	60	69	64	54
			Exposed	99	99	99	99	99	94	99	98	89	99	94	85	98	89	81	93	86	77	89	82	74	81	76	65	75	68	60	67	63	52	62	58	46	57	51	60	50	45	54
	C	0-7	Interior	98	98	89	98	98	85	98	93	80	98	89	77	98	85	73	94	82	68	91	79	64	84	72	58	78	65	50	73	60	43	66	53	57	62	47	50	57	61	45
			Exposed	98	85	72	93	81	66	89	77	63	85	73	59	81	68	54	78	64	49	75	61	45	67	54	57	61	46	49	55	60	43	48	53	37	61	46	33	56	41	29
		7-20	Interior	98	98	86	98	94	81	98	89	77	98	85	72	95	81	66	91	77	63	86	73	60	79	64	51	73	59	44	65	51	57	60	45	50	54	60	44	48	53	39
			Exposed	95	81	66	89	76	62	85	71	58	80	65	52	77	62	48	72	59	43	67	54	60	61	45	51	53	59	44	46	51	38	60	44	33	53	39	29	48	35	26
		20-27	Interior	98	98	95	98	98	90	98	93	85	98	89	80	98	84	77	98	80	72	98	77	66	90	68	61	84	62	53	78	56	46	73	49	60	66	43	53	62	57	47
			Exposed	98	84	76	98	79	70	96	75	65	91	69	61	87	64	57	83	61	52	80	58	48	74	49	41	65	42	52	61	55	46	54	48	40	48	42	35	42	38	31
		27-45	Interior	99	99	99	99	99	97	99	99	91	99	96	87	99	92	83	96	88	79	91	84	76	84	78	67	77	71	61	70	64	55	63	60	48	60	54	43	53	48	57
			Exposed	99	92	83	94	87	78	89	83	75	85	79	68	81	75	64	77	71	61	73	66	58	64	60	49	59	53	42	51	46	55	45	60	48	59	53	42	53	47	38
	D	0-7	Interior	98	95	82	98	90	78	98	86	74	95	82	68	91	78	64	87	75	61	83	71	57	77	64	48	71	59	61	64	51	54	60	44	47	54	59	42	47	52	37
			Exposed	90	78	64	86	75	60	82	69	55	78	64	50	75	61	45	70	58	61	66	53	56	60	45	48	53	58	41	46	50	36	60	44	31	53	39	28	47	34	24
		7-20	Interior	98	91	78	98	86	74	96	81	67	91	77	63	86	73	60	82	68	55	79	64	51	71	58	43	63	49	55	59	43	48	51	56	42	45	50	37	60	44	33
			Exposed	86	73	60	81	66	54	77	62	48	73	59	44	67	54	60	63	49	55	60	45	50	52	57	42	44	49	36	58	42	32	51	37	28	45	33	24	40	29	22
		20-27	Interior	98	95	86	98	90	82	98	85	77	98	81	72	98	77	66	93	72	63	89	67	60	83	61	52	77	53	44	70	46	58	64	41	51	60	54	45	54	48	40
			Exposed	98	77	66	92	71	62	88	65	58	84	62	53	80	58	48	77	53	44	73	48	60	64	41	51	60	53	44	52	46	38	45	40	33	60	35	29	53	32	26
		27-45	Interior	99	99	93	99	97	88	99	92	84	96	88	80	91	84	76	87	81	71	83	77	66	76	70	61	68	63	53	62	58	46	57	51	60	50	45	54	44	60	48
			Exposed	91	84	76	86	80	70	81	76	65	77	71	61	73	66	58	67	63	52	63	60	48	57	51	60	49	44	53	43	57	46	56	50	40	50	44	35	44	40	31
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	87	91	91	83	91	91	80	91	86	74	91	80	65	87	75	61	81	69	54	77	63	48	72	60	43
			Exposed	91	91	87	91	91	82	91	91	78	91	87	75	91	83	70	91	80	65	88	77	62	82	69	55	76	63	47	70	58	60	64	50	54	60	44	47	54	59	42
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	91	80	91	89	76	91	81	67	89	76	61	82	67	55	77	62	48	70	57	42	64	51	57
			Exposed	91	91	83	91	91	79	91	87	75	91	82	69	91	79	64	88	75	61	84	70	57	77	62	49	69	56	42	63	49	54	58	42	48	51	56	42	45	50	37
		20-27	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	93	95	95	88	95	93	84	95	85	77	95	79	69	93	72	63	87	65	58	82	61	51	78	55	45
			Exposed	95	95	92	95	95	87	95	91	82	95	86	78	95	82	75	95	78	68	95	75	64	88	65	59	82	60	50	76	53	43	70	46	57	64	41	51	60	54	45
		27-45	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	95	98	98	91	98	93	84	94	86	78	87	80	71	81	76	64	76	69	60	69	64	54
			Exposed	98	98	98	98	98	94	98	98	89	98	94	85	98	89	81	93	86	77	89	82	74	81	76	65	75	68	60	67	63	52	62	58	46	57	51	60	50	45	54
	C	0-7	Interior	91	91	89	91	91	85	91	91	80	91	89	77	91	85	73	91	82	68	91	79	64	84	72	58	78	65	50	73	60	43	66	53	57	62	47	50	57	61	45
			Exposed	91	85	72	91	81	66	89	77	63	85	73	59	81	68	54	78	64	49	75	61	45	67	54	57	61	46	49	55	60	43	48	53	37	61	46	33	56	41	29
		7-20	Interior	91	91	86	91	91	81	91	89	77	91	85	72	91	81	66	91	77	63	86	73	60	79	64	51	73	59	44	65	51	57	60	45	50	54	60	44	48	53	39
			Exposed	91	81	66	89	76	62	85	71	58	80	65	52	77	62	48	72	59	43	67	54	60	61	45	51	53	59	44	46	51	38	60	44	33	53	39	29	48	35	26
		20-27	Interior	95	95	95	95	95	90	95	93	85	95	89	80	95	84	77	95	80	72	95	77	66	90	68	61	84	62	53	78	56	46	73	49	60	66	43	53	62	57	47
			Exposed	95	84	76	95	79	70	95	75	65	91	69	61	87	64	57	83	61	52	80	58	48	74	49	41	65	42	52	61	55	46	54	48	40	48	42	35	42	38	31
		27-45	Interior	98	98	98	98	98	97	98	98	91	98	96	87	98	92	83	96	88	79	91	84	76	84	78	67	77	71	61	70	64	55	63	60	48	60	54	43	53	48	57
			Exposed	98	92	83	94	87	78	89	83	75	85	79	68	81	75	64	77	71	61	73	66	58	64	60	49	59	53	42	51	46	55	45	60	48	59	53	42	53	47	38
	D	0-7	Interior	91	91	82	91	90	78	91	86	74	91	82	68	91	78	64	87	75	61	83	71	57	77	64	48	71	59	61	64	51	54	60	44	47	54	59	42	47	52	37
			Exposed	90	78	64	86	75	60	82	69	55	78	64	50	75	61	45	70	58	61	66	53	56	60	45	48	53	58	41	46	50	36	60	44	31	53	39	28	47	34	24
		7-20	Interior	91	91	78	91	86	74	91	81	67	91	77	63	86	73	60	82	68	55	79	64	51	71	58	43	63	49	55	59	43	48	51	56	42	45	50	37	60	44	33
			Exposed	86	73	60	81	66	54	77	62	48	73	59	44	67	54	60	63	49	55	60	45	50	52	57	42	44	49	36	58	42	32	51	37	28	45	33	24	40	29	22
		20-27	Interior	96	95	86	96	90	82	96	85	77	96	81	72	96	77	66	93	72	63	89	67	60	83	61	52	77	53	44	70	46	58	64	41	51	60	54	45	54	48	40
			Exposed	96	77	66	92	71	62	88	65	58	84	62	53	80	58	48	77	53	44	73	48	60	64	41	51	60	53	44	52	46	38	45	40	33	60	35	29	53	32	26
		27-45	Interior	99	99	93	99	97	88	99	92	84	96	88	80	91	84	76	87	81	71	83	77	66	76	70	61	68	63	53	62	58	46	57	51	60	50	45	54	44	60	48
			Exposed	91	84	76	86	80	70	81	76	65	77	71	61	73	66	58	67	63	52	63	60	48	57	51	60	49	44	53	43	57	46	56	50	40	50	44	35	44	40	31
20	B	0-7	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	80	83	83	74	83	80	65	83	75	61	81	69	54	77	63	48	72	60	43
			Exposed	83	83	83	83	83	82	83	83	78	83	83	75	83	83	70	83	80	65	83	77	62	82	69	55	76	63	47	70	58	60	64	50	54	60	44	47	54	59	42
		7-20	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	80	83	83	76	83	81	67	83	76	61	82	67	55	77	62	48	70	57	42	64	51	57
			Exposed	83	83	83	83	83	79	83	83	75	83	82	69	83	79	64	83	75	61	83	70	57	77	62	49	69	56	42	63	49	54	58	42	48	51	56	42	45	50	37
		20-27	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	84	88	85	77	88	79	69	88	72	63	87	65	58	82	61	51	78	55	45
			Exposed	88	88	88	88	88	87	88	88	82	88	86	78	88	82	75	88	78	68	88	75	64	88	65	59	82	60	50	76	53	43	70	46	57	64	41	51	60	54	45
		27-45	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	84	91	86	78	87	80	71	81	76	64	76	69	60	69	64	54
			Exposed	91	91	91	91	91	91	91	91	89	91	91	85	91	89	81	91	86	77	89	82	74	81	76	65	75	68	60	67	63	52	62	58	46	57	51	60	50	45	54
	C	0-7	Interior	83	83	83	83	83	83	83	83	80	83	83	77	83	83	73	83	82	68	83	79	64	83	72	58	78	65	50	73	60	43	66	53	57	62	47	50	57	61	45
			Exposed	83	83	72	83	81	66	83	77	63	83	73	59	81	68	54	78	64	49	75	61	45	67	54	57	61	46	49	55	60	43	48	53	37	61	46	33	56	41	29
		7-20	Interior	83	83	83	83	83	81	83	83	77	83	83	72	83	81	66	83	77	63	83	73	60	79	64	51	73	59	44	65	51	57	60	45	50	54	60	44	48	53	39
			Exposed	83	81	66	83	76	62	83	71	58	80	65	52	77	62	48	72	59	43	67	54	60	61	45	51	53	59	44	46	51	38	60	44	33	53	39	29	48	35	26
		20-27	Interior	88	88	88	88	88	88	88	88	85	88	88	80	88	84	77	88	80	72	88	77	66	88	68	61	84	62	53	78	56	46	73	49	60	66	43	53	62	57	47
			Exposed	88	84	76	88	79	70	88	75	65	88	69	61	87	64	57	83	61	52	80	58	48	74	49	41	65	42	52	61	55	46	54	48	40	48	42	35	42	38	31
		27-45	Interior	91	91	91	91	91	91	91	91	91	91	91	87	91	91	83	91	88	79	91	84	76	84	78	67	77	71	61	70	64	55	63	60	48	60	54	43	53	48	57
			Exposed	91	91	83	91	87	78	89	83	75	85	79	68	81	75	64	77	71	61	73	66	58	64	60	49	59	53	42	51	46	55	45	60	48	59	53	42	53	47	38
	D	0-7	Interior	83	83	82	83	83	78	83	83	74	83	82	68	83	78	64	83	75	61	83	71	57	77	64	48	71	59	61	64	51	54	60	44	47	54	59	42	47	52	37
			Exposed	83	78	64	83	75	60	82	69	55	78	64	50	75	61	45	70	58	61	66	53	56	60	45	48	53	58	41	46	50	36	60	44	31	53	39	28	47	34	24
		7-20	Interior	83	83	78	83	83	74	83	81	67	83	77	63	83	73	60	82	68	55	79	64	51	71	58	43	63	49	55	59	43	48	51	56	42	45	50	37	60	44	33
			Exposed	83	73	60	81	66	54	77	62	48	73	59	44	67	54	60	63	49	55	60	45	50	52	57	42	44	49	36	58	42	32	51	37	28	45	33	24	40	29	22
		20-27	Interior	90	90	86	90	90	82	90	85	77	90	81	72	90	77	66	90	72	63	89	67	60	83	61	52	77	53	44	70	46	58	64	41	51	60	54	45	54	48	40
			Exposed	90	77	66	90	71	62	88	65	58	84	62	53	80	58	48	77	53	44	73	48	60	64	41	51	60	53	44	52	46	38	45	40	33	60	35	29	53	32	26
		27-45	Interior	93	93	93	93	93	88	93	92	84	93	88	80	91	84	76	87	81	71	83	77	66	76	70	61	68	63	53	62	58	46	57	51	60	50	45	54	44	60	48
			Exposed	91	84	76	86	80	70	81	76	65	77	71	61	73	66	58	67	63	52	63	60	48	57	51	60	49	44	53	43	57	46	56	50	40	50	44	35	44	40	31

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	65	68	68	61	68	68	54	68	63	48	68	60	43
			Exposed	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	65	68	68	62	68	68	55	68	63	47	68	58	60	64	50	54	60	44	47	54	59	42
		7-20	Interior	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	69	61	69	67	55	69	62	48	68	57	42	64	51	57
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	64	69	69	61	69	69	57	69	62	49	69	56	42	63	49	54	58	42	48	51	56	42	45	50	~~37~~
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	77	80	79	69	80	72	63	80	65	58	80	61	51	78	55	45
			Exposed	80	80	80	80	80	80	80	80	80	80	80	78	80	80	75	80	78	68	80	75	64	80	65	59	80	60	50	76	53	43	70	46	57	64	41	51	60	54	45
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	71	74	74	64	74	69	60	69	64	54
			Exposed	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	65	74	68	60	67	63	52	62	58	46	57	51	60	50	45	54
	C	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	68	68	58	68	65	50	68	60	43	66	53	57	62	47	50	57	61	45
			Exposed	68	68	68	68	68	66	68	68	63	68	68	59	68	68	54	68	64	49	68	61	45	67	54	57	61	46	49	55	60	43	48	53	~~37~~	61	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	63	69	69	60	69	64	51	69	59	44	65	51	57	60	45	50	54	60	44	48	53	~~39~~
			Exposed	69	69	66	69	69	62	69	69	58	69	65	52	69	62	48	69	59	43	67	54	60	61	45	51	53	59	44	46	51	~~38~~	60	44	~~33~~	53	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	77	80	80	72	80	77	66	80	68	61	80	62	53	78	56	46	73	49	60	66	43	53	62	57	47
			Exposed	80	80	76	80	79	70	80	75	65	80	69	61	80	64	57	80	61	52	80	58	48	74	49	41	65	42	52	61	55	46	54	48	~~40~~	48	42	~~35~~	42	~~38~~	~~31~~
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	67	74	71	61	70	64	55	63	60	48	60	54	43	53	48	57
			Exposed	74	74	74	74	74	74	74	74	74	74	74	68	74	74	64	74	71	61	73	66	58	64	60	49	59	53	42	51	46	55	45	60	48	59	53	42	53	47	~~38~~
	D	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	68	68	61	68	68	57	68	64	48	68	59	61	64	51	54	60	44	47	54	59	~~42~~	47	52	~~37~~
			Exposed	68	68	64	68	68	60	68	68	55	68	64	50	68	61	45	68	58	61	66	53	56	60	45	48	53	58	~~41~~	46	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	69	69	69	69	69	69	69	69	67	69	69	63	69	69	60	69	68	55	69	64	51	68	58	43	63	49	55	59	43	48	51	56	42	45	50	~~37~~	60	44	~~33~~
			Exposed	69	69	60	69	66	54	69	62	48	69	59	44	67	54	60	63	49	55	60	45	50	52	57	42	44	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	84	84	84	84	84	82	84	84	77	84	81	72	84	77	66	84	72	63	84	67	60	83	61	52	77	53	44	70	46	58	64	41	51	60	54	45	54	48	~~40~~
			Exposed	84	77	66	84	71	62	84	65	58	84	62	53	80	58	48	77	53	44	73	48	60	64	41	51	60	53	44	52	46	~~38~~	45	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	81	81	81	81	81	81	81	81	81	81	81	80	81	81	76	81	81	71	81	77	66	76	70	61	68	63	53	62	58	46	57	51	60	50	45	54	44	60	48
			Exposed	81	81	76	81	80	70	81	76	65	77	71	61	73	66	58	67	63	52	63	60	48	57	51	60	49	44	53	43	57	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~
40	B	0-7	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	64	54	64	63	48	64	60	43
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	55	64	63	47	64	58	60	64	50	54	60	44	47	54	59	42
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	64	55	64	62	48	63	57	42	61	51	57
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	64	57	64	62	49	64	56	42	63	49	54	58	42	48	51	56	42	45	50	~~37~~
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	58	63	61	51	63	55	45
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	59	63	60	50	63	53	43	63	46	57	63	41	51	60	54	45
		27-45	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	54
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	52	59	58	46	57	51	60	50	45	54
	C	0-7	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	58	64	64	50	64	60	43	64	53	57	62	47	50	57	61	45
			Exposed	64	64	64	64	64	64	64	64	63	64	64	59	64	64	54	64	64	49	64	61	45	64	54	57	61	46	49	55	60	43	48	53	~~37~~	61	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	60	64	64	51	64	59	44	61	51	57	59	45	50	54	60	44	48	53	~~39~~
			Exposed	64	64	64	64	64	62	64	64	58	64	64	52	64	62	48	64	59	43	64	54	60	61	45	51	53	59	44	46	51	~~38~~	60	44	~~33~~	53	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	62	53	63	56	46	63	49	60	63	43	53	60	57	47
			Exposed	63	63	63	63	63	63	63	63	63	63	63	61	63	63	57	63	61	52	63	58	48	63	49	41	63	42	52	61	55	46	54	48	~~40~~	48	42	~~35~~	42	~~38~~	~~31~~
		27-45	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	55	59	59	48	58	54	43	53	48	57
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	58	59	59	49	59	53	42	51	46	55	45	60	48	59	53	42	53	47	~~38~~
	D	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	68	68	61	68	68	57	68	64	48	68	59	61	64	51	54	60	44	47	54	59	~~42~~	47	52	~~37~~
			Exposed	68	68	64	68	68	60	68	68	55	68	64	50	68	61	45	68	58	61	66	53	56	60	45	48	53	58	~~41~~	46	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	69	69	69	69	69	69	69	69	67	69	69	63	69	69	60	69	68	55	69	64	51	68	58	43	63	49	55	59	43	48	51	56	42	45	50	~~37~~	60	44	~~33~~
			Exposed	69	69	60	69	66	54	69	62	48	69	59	44	67	54	60	63	49	55	60	45	50	52	57	42	44	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	63	69	67	60	69	61	52	69	53	44	69	46	58	64	41	51	60	54	45	54	48	~~40~~
			Exposed	69	69	66	69	69	62	69	65	58	69	62	53	69	58	48	69	53	44	69	48	60	64	41	51	60	53	44	52	46	~~38~~	45	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	63	53	62	58	46	57	51	60	50	45	54	44	60	48
			Exposed	64	64	64	64	64	64	64	64	64	64	64	61	64	64	58	64	63	52	63	60	48	57	51	60	49	44	53	43	57	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~
50	B	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	48	55	55	43
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	47	55	55	60	55	50	54	55	44	47	54	59	42
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	48	54	54	42	53	51	57
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	49	55	55	42	55	49	54	55	42	48	51	56	42	45	50	~~37~~
		20-27	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	76	77	77	69	77	74	64
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	68	77	71	62	77	64	57	77	60	51	77	54	45
		27-45	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73
			Exposed	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	70	73	73	64	73	69	60	69	64	54
	C	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	50	55	55	43	55	53	57	55	47	50	55	61	45
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	49	55	55	45	55	54	57	55	46	49	55	60	43	48	53	~~37~~	61	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	44	53	51	57	51	45	50	49	60	44	47	53	~~39~~
			Exposed	55	55	55	55	55	55	55	55	55	55	55	52	55	55	48	55	55	43	55	54	60	55	45	51	53	59	44	46	51	~~38~~	60	44	~~33~~	53	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	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	72	77	75	64	77	66	60	77	62	53	77	57	48
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	76	77	77	71	77	76	66	77	67	60	77	61	53	77	55	46	72	48	~~40~~	65	42	~~35~~	62	~~38~~	~~31~~
		27-45	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	66	73	72	62	72	65	57
			Exposed	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	67	73	71	61	69	64	55	63	60	48	59	53	42	53	47	~~38~~
	D	0-7	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	57	59	59	48	59	59	61	59	51	54	59	44	47	54	59	~~42~~	47	52	~~37~~
			Exposed	59	59	59	59	59	59	59	59	55	59	59	50	59	59	45	59	58	61	59	53	56	59	45	48	53	58	~~41~~	46	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	55	60	60	51	59	58	43	56	49	55	54	43	48	51	56	42	45	50	~~37~~	60	44	~~33~~
			Exposed	60	60	60	60	60	54	60	60	48	60	59	44	60	54	60	60	49	55	60	45	50	52	57	42	44	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	57	53	44	57	46	58	57	41	51	56	54	45	53	48	~~40~~
			Exposed	57	57	57	57	57	57	57	57	57	57	57	53	57	57	48	57	53	44	57	48	60	57	41	51	57	53	44	52	46	~~38~~	45	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	46	53	51	60	50	45	54	44	60	48
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	48	53	51	60	49	44	53	43	57	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	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	46	46	46	43
			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	60	46	46	54	46	44	47	46	59	42
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	74	78	78	66	78	76	62	78	69	57
			Exposed	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	76	78	78	66	78	75	61	78	66	54	76	62	48	69	56	42	64	50	~~37~~
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	64	57	65	60	51	65	54	45
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	60	62	62	54
	C	0-7	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	43	46	46	57	46	46	50	46	61	45
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	45	46	46	57	46	46	49	46	60	43	46	53	~~37~~	61	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	70	78	77	63	78	70	57	75	63	50	72	60	44	66	53	~~39~~
			Exposed	78	78	78	78	78	78	78	78	76	78	78	71	78	78	65	78	76	62	78	72	60	78	64	51	72	59	44	64	51	~~38~~	60	44	~~33~~	54	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	60	65	62	53	65	57	48
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	60	65	61	53	65	55	46	65	48	~~40~~	65	42	~~35~~	62	~~38~~	~~31~~
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	57
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	61	62	62	55	62	60	48	59	53	42	53	47	~~38~~
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	51	61	51	51	54	51	44	47	51	59	~~42~~	47	52	~~37~~
			Exposed	51	51	51	51	51	51	51	51	51	51	50	51	51	45	51	51	61	51	51	51	56	51	45	48	51	58	~~41~~	46	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	51	52	52	43	50	49	55	48	43	48	46	56	42	44	50	~~37~~	60	44	~~33~~
			Exposed	52	52	52	52	52	52	52	42	48	52	52	44	52	52	60	52	49	55	52	45	50	52	57	42	44	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	70	72	72	63	72	64	58	72	60	51	72	54	45	72	48	~~40~~
			Exposed	72	72	72	72	72	72	72	72	72	72	71	72	72	66	72	71	63	72	66	60	72	61	51	72	53	44	70	46	~~38~~	64	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	68	68	60	68	63	54	63	60	48
			Exposed	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	66	68	68	60	67	63	53	62	58	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~
70	B	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	60	40	40	54	40	40	47	40	59	42
		7-20	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	67	62	67	67	57
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	67	61	67	66	54	67	62	48	67	56	42	64	50	~~37~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	51	57	54	45
		27-45	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	C	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	57	40	40	50	40	60	45
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	57	40	40	49	40	60	43	40	53	~~37~~	60	46	~~33~~	56	~~41~~	~~29~~
		7-20	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	63	67	67	57	66	63	50	64	60	44	62	53	~~39~~
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	67	62	67	67	60	67	64	51	67	59	44	64	51	~~38~~	60	44	~~33~~	54	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	48
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	55	46	57	48	~~40~~	57	42	~~35~~	57	~~38~~	~~31~~
		27-45	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	48	54	53	42	53	47	~~38~~
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	61	44	44	54	44	44	47	44	59	~~42~~	44	52	~~37~~
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	61	44	44	56	44	44	48	44	58	~~41~~	44	50	~~36~~	60	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	69	74	74	62	74	67	55	71	62	48	68	56	42	64	50	~~37~~	58	44	~~33~~
			Exposed	74	74	74	74	74	73	74	74	66	74	74	63	74	72	60	74	67	55	74	63	50	70	57	42	63	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	58	63	60	51	63	54	45	63	48	~~40~~
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	61	51	63	53	44	63	46	~~38~~	63	~~40~~	~~33~~	60	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	54	59	59	48
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	53	59	58	46	56	50	~~40~~	50	44	~~35~~	44	~~40~~	~~31~~
80	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	53	35	35	53	35	35	47	35	53	42
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	48	55	54	42	55	50	~~37~~
		20-27	Interior	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~
			Exposed	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~45~~
		27-45	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~~
			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~~
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	53	35	35	50	35	53	45
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	49	35	53	43	35	53	~~37~~	53	46	~~33~~	53	~~41~~	~~29~~	53	~~41~~	~~29~~
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	50	55	54	44	53	53	~~39~~
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	51	55	54	44	55	51	~~38~~	54	45	~~33~~	54	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~48~~
			Exposed	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~46~~	~~50~~	~~48~~	~~40~~	~~50~~	~~42~~	~~35~~	~~50~~	~~38~~	~~31~~
		27-45	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~~
			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~~	~~42~~	~~48~~	~~47~~	~~38~~
	D	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	59	39	39	54	39	39	47	39	59	~~42~~	39	52	~~37~~
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	59	39	39	56	39	39	48	39	58	~~41~~	39	50	~~36~~	59	44	~~31~~	53	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	65	55	64	62	48	62	56	42	60	50	~~37~~	54	44	~~33~~
			Exposed	65	65	65	65	65	65	65	65	65	65	63	65	65	59	65	65	55	65	63	50	65	57	42	63	49	~~36~~	58	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	54	45	55	48	~~40~~
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	53	44	55	46	~~38~~	55	~~40~~	~~33~~	55	~~35~~	~~29~~	53	~~32~~	~~26~~
		27-45	Interior	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~48~~
			Exposed	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~53~~	~~46~~	~~53~~	~~50~~	~~40~~	~~50~~	~~45~~	~~35~~	~~44~~	~~40~~	~~31~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	PRO SERIES	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	47	31	31	47	31	47	42
		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	49	49	49	48
			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	48	49	49	48	49	48	42	49	48	~~37~~
		20-27	Interior	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~
			Exposed	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~
		27-45	Interior	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~
			Exposed	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~
	C	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	47	31	47	45
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	47	31	47	43	31	47	~~37~~	47	46	~~33~~	47	~~41~~	~~29~~
		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	48	49	49	48	49	48	44	49	48	~~39~~
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	48	49	48	44	49	48	~~38~~	48	45	~~33~~	48	~~39~~	~~29~~	48	~~35~~	~~26~~
		20-27	Interior	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~
			Exposed	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~40~~	~~45~~	~~42~~	~~35~~	~~45~~	~~38~~	~~31~~
		27-45	Interior	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~
			Exposed	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~42~~	~~43~~	~~43~~	~~38~~
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	52	35	35	52	35	35	47	35	52	~~42~~	35	52	~~37~~
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	52	35	35	52	35	35	48	35	52	~~41~~	35	50	~~36~~	52	44	~~31~~	52	~~39~~	~~28~~	47	~~34~~	~~24~~
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	53	54	54	48	54	53	42	52	50	~~37~~	50	44	~~33~~
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	53	54	54	53	54	54	50	54	53	42	54	49	~~36~~	53	42	~~32~~	51	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~45~~	~~50~~	~~48~~	~~40~~
			Exposed	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~50~~	~~44~~	~~50~~	~~46~~	~~38~~	~~50~~	~~40~~	~~33~~	~~50~~	~~35~~	~~29~~	~~50~~	~~32~~	~~26~~
		27-45	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~~	~~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~~	~~46~~	~~47~~	~~47~~	~~40~~	~~47~~	~~44~~	~~35~~	~~44~~	~~40~~	~~31~~
100	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	43	28	28	43	28	43	42
		7-20	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~~
			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~~	~~42~~	~~48~~	~~48~~	~~37~~
		20-27	Interior	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~
			Exposed	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~
		27-45	Interior	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~
			Exposed	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	43	28	43	43
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	43	28	43	43	28	43	~~37~~	43	43	~~33~~	43	~~41~~	~~29~~
		7-20	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~~	~~44~~	~~48~~	~~48~~	~~39~~
			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~~	~~44~~	~~48~~	~~48~~	~~38~~	~~48~~	~~45~~	~~33~~	~~48~~	~~39~~	~~29~~	~~48~~	~~35~~	~~26~~
		20-27	Interior	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~
			Exposed	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~41~~	~~40~~	~~41~~	~~41~~	~~35~~	~~41~~	~~38~~	~~31~~
		27-45	Interior	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~
			Exposed	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~39~~	~~38~~
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	47	31	31	47	31	47	~~42~~	31	47	~~37~~
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	47	31	31	47	31	47	~~41~~	31	47	~~36~~	47	44	~~31~~	47	~~39~~	~~28~~	47	~~34~~	~~24~~
		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	48	49	49	48	49	48	42	48	48	~~37~~	46	44	~~33~~
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	48	49	49	48	49	48	42	49	48	~~36~~	48	42	~~32~~	48	~~37~~	~~28~~	45	~~33~~	~~24~~	~~40~~	~~29~~	~~22~~
		20-27	Interior	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~40~~
			Exposed	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~45~~	~~44~~	~~45~~	~~45~~	~~38~~	~~45~~	~~40~~	~~33~~	~~45~~	~~35~~	~~29~~	~~45~~	~~32~~	~~26~~
		27-45	Interior	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~
			Exposed	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~43~~	~~40~~	~~43~~	~~43~~	~~35~~	~~43~~	~~40~~	~~31~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	83	83	83	83	83	81	83	83	78	83	83	74	83	81	70	83	78	66	83	76	62	80	68	51	75	62	41	69	53	35	64	44	31	58	38	27	49	34	24
			Exposed	83	81	69	83	78	65	83	74	60	81	69	52	78	65	45	75	62	40	71	57	37	64	44	31	57	37	27	46	32	23	39	28	20	34	25	27	30	22	24
		7-20	Interior	83	83	83	83	83	79	83	83	75	83	82	70	83	78	66	83	75	62	83	71	56	77	63	42	71	54	36	64	42	31	57	37	27	45	32	24	39	29	21
			Exposed	83	78	66	83	74	61	82	69	52	78	64	43	75	60	39	70	52	35	66	45	32	59	37	27	44	32	23	37	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	84	84	84	84	84	84	84	84	82	84	84	78	84	81	75	84	78	70	84	75	66	84	67	59	80	60	44	76	48	37	70	40	33	64	35	29	60	31	26
			Exposed	84	81	75	84	77	69	84	73	64	84	68	60	83	64	51	80	60	43	77	52	39	70	40	33	64	34	28	56	30	24	45	26	21	39	23	19	35	20	25
		27-45	Interior	84	84	84	84	84	84	84	84	84	84	84	83	84	84	80	84	84	77	84	81	74	81	75	66	76	69	60	69	63	47	63	54	39	55	44	35	44	39	31
			Exposed	84	84	80	84	83	76	84	79	72	81	76	67	78	72	63	75	68	59	71	64	50	63	55	40	53	43	34	41	37	29	36	32	26	32	29	23	28	25	20
	C	0-7	Interior	83	83	72	83	79	67	83	76	62	83	72	57	80	68	49	77	64	42	74	60	39	66	48	33	60	40	28	49	34	24	41	30	21	36	26	28	32	23	25
			Exposed	80	67	49	76	63	41	72	58	37	67	50	33	63	43	30	60	39	28	53	36	25	42	30	21	36	26	28	31	22	24	27	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	83	80	68	83	76	63	83	72	57	80	67	47	77	63	41	73	58	37	69	49	34	61	39	29	49	33	25	40	29	21	35	25	28	30	22	25	27	20	22
			Exposed	77	62	41	72	55	36	67	46	33	62	40	30	57	36	27	48	33	24	41	30	22	35	26	19	30	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	84	83	77	84	79	72	84	76	67	84	71	62	84	66	57	82	62	47	79	57	41	73	42	35	66	36	30	60	31	26	49	27	23	41	24	20	36	21	27
			Exposed	84	66	56	81	61	45	78	53	40	74	44	36	70	39	32	66	36	30	62	33	27	50	28	23	40	24	20	35	20	26	31	27	22	27	24	20	24	21	~~18~~
		27-45	Interior	84	84	82	84	84	78	84	81	74	83	78	69	80	75	65	77	71	61	74	67	55	66	60	42	59	47	36	45	39	31	38	34	27	34	30	24	30	27	21
			Exposed	80	75	65	76	69	60	72	65	51	67	61	43	63	54	39	58	46	35	49	41	32	39	35	27	33	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	83	77	64	83	73	60	80	68	50	77	64	43	74	60	39	70	54	35	66	47	32	59	39	27	47	33	23	39	29	20	34	25	27	30	22	24	27	19	21
			Exposed	74	60	39	68	52	34	64	44	31	60	39	28	53	36	25	46	33	23	41	30	21	35	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	83	74	60	81	68	50	77	63	42	74	59	38	69	49	34	64	42	31	61	38	28	46	33	24	38	28	21	33	24	27	29	21	24	25	28	21	23	25	~~19~~
			Exposed	69	49	34	63	41	30	58	37	27	48	33	25	41	30	22	38	27	20	34	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	84	77	69	84	72	63	84	67	58	82	63	48	79	57	41	76	48	38	72	42	34	65	35	29	58	30	25	46	26	22	39	23	19	34	20	25	30	27	22
			Exposed	79	57	41	75	46	37	70	40	33	66	36	30	62	33	27	57	30	25	49	27	22	39	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	84	82	76	84	79	71	81	75	66	77	71	62	74	67	55	69	63	47	65	59	41	56	45	35	42	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	74	66	55	68	62	45	63	55	40	58	47	36	49	41	32	42	37	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~
10	B	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	71	71	66	71	71	62	71	68	51	71	62	41	69	53	35	64	44	31	58	38	27	49	34	24
			Exposed	71	71	69	71	71	65	71	71	60	71	69	52	71	65	45	71	62	40	71	57	37	64	44	31	57	37	27	46	32	23	39	28	20	34	25	27	30	22	24
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	70	72	72	66	72	72	62	72	71	56	72	63	42	71	54	36	64	42	31	57	37	27	45	32	24	39	29	21
			Exposed	72	72	66	72	72	61	72	69	52	72	64	43	72	60	39	70	52	35	66	45	32	59	37	27	44	32	23	37	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	81	81	81	81	81	81	81	81	81	81	81	78	81	81	75	81	78	70	81	75	66	81	67	59	80	60	44	76	48	37	70	40	33	64	35	29	60	31	26
			Exposed	81	81	75	81	77	69	81	73	64	81	68	60	81	64	51	80	60	43	77	52	39	70	40	33	64	34	28	56	30	24	45	26	21	39	23	19	35	20	25
		27-45	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	80	83	83	77	83	81	74	81	75	66	76	69	60	69	63	47	63	54	39	55	44	35	44	39	31
			Exposed	83	83	80	83	83	76	83	79	72	81	76	67	78	72	63	75	68	59	71	64	50	63	55	40	53	43	34	41	37	29	36	32	26	32	29	23	28	25	20
	C	0-7	Interior	71	71	71	71	71	67	71	71	62	71	71	57	71	68	49	71	64	42	71	60	39	66	48	33	60	40	28	49	34	24	41	30	21	36	26	28	32	23	25
			Exposed	71	67	49	71	63	41	71	58	37	67	50	33	63	43	30	60	39	28	53	36	25	42	30	21	36	26	28	31	22	24	27	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	72	72	68	72	72	63	72	72	57	72	67	47	72	63	41	72	58	37	69	49	34	61	39	29	49	33	25	40	29	21	35	25	28	30	22	25	27	20	22
			Exposed	72	62	41	72	55	36	67	46	33	62	40	30	57	36	27	48	33	24	41	30	22	35	26	19	30	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	81	81	77	81	79	72	81	76	67	81	71	62	81	66	57	81	62	47	79	57	41	73	42	35	66	36	30	60	31	26	49	27	23	41	24	20	36	21	27
			Exposed	81	66	56	81	61	45	78	53	40	74	44	36	70	39	32	66	36	30	62	33	27	50	28	23	40	24	20	35	20	26	31	27	22	27	24	20	24	21	~~18~~
		27-45	Interior	83	83	82	83	83	78	83	81	74	83	78	69	80	75	65	77	71	61	74	67	55	66	60	42	59	47	36	45	39	31	38	34	27	34	30	24	30	27	21
			Exposed	80	75	65	76	69	60	72	65	51	67	61	43	63	54	39	58	46	35	49	41	32	39	35	27	33	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	71	71	64	71	71	60	71	68	50	71	64	43	71	60	39	70	54	35	66	47	32	59	39	27	47	33	23	39	29	20	34	25	27	30	22	24	27	19	21
			Exposed	71	60	39	68	52	34	64	44	31	60	39	28	53	36	25	46	33	23	41	30	21	35	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	72	72	60	72	68	50	72	63	42	72	59	38	69	49	34	64	42	31	61	38	28	46	33	24	38	28	21	33	24	27	29	21	24	25	28	21	23	25	~~19~~
			Exposed	69	49	34	63	41	30	58	37	27	48	33	25	41	30	22	38	27	20	34	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	82	77	69	82	72	63	82	67	58	82	63	48	79	57	41	76	48	38	72	42	34	65	35	29	58	30	25	46	26	22	39	23	19	34	20	25	30	27	22
			Exposed	79	57	41	75	46	37	70	40	33	66	36	30	62	33	27	57	30	25	49	27	22	39	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	84	82	76	84	79	71	81	75	66	77	71	62	74	67	55	69	63	47	65	59	41	56	45	35	42	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	74	66	55	68	62	45	63	55	40	58	47	36	49	41	32	42	37	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~
20	B	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	51	53	53	41	53	53	35	53	44	31	53	38	27	49	34	24
			Exposed	53	53	53	53	53	53	53	53	53	53	53	52	53	53	45	53	53	40	53	53	37	53	44	31	53	37	27	46	32	23	39	28	20	34	25	27	30	22	24
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	42	53	53	36	53	42	31	53	37	27	45	32	24	39	29	21
			Exposed	53	53	53	53	53	53	53	53	52	53	53	43	53	53	39	53	52	35	53	45	32	53	37	27	44	32	23	37	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	59	65	60	44	65	48	37	65	40	33	64	35	29	60	31	26
			Exposed	65	65	65	65	65	65	65	65	64	65	65	60	65	64	51	65	60	43	65	52	39	65	40	33	64	34	28	56	30	24	45	26	21	39	23	19	35	20	25
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	63	47	61	54	39	55	44	35	44	39	31
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	59	63	63	50	63	55	40	53	43	34	41	37	29	36	32	26	32	29	23	28	25	20
	C	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	53	42	53	53	39	53	48	33	53	40	28	49	34	24	41	30	21	36	26	28	32	23	25
			Exposed	53	53	49	53	53	41	53	53	37	53	50	33	53	43	30	53	39	28	53	36	25	42	30	21	36	26	28	31	22	24	27	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	47	53	53	41	53	53	37	53	49	34	53	39	29	49	33	25	40	29	21	35	25	28	30	22	25	27	20	22
			Exposed	53	53	41	53	53	36	53	46	33	53	40	30	53	36	27	48	33	24	41	30	22	35	26	19	30	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	62	65	65	57	65	62	47	65	57	41	65	42	35	65	36	30	60	31	26	49	27	23	41	24	20	36	21	27
			Exposed	65	65	56	65	61	45	65	53	40	65	44	36	65	39	32	65	36	30	62	33	27	50	28	23	40	24	20	35	20	26	31	27	22	27	24	20	24	21	~~18~~
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	63	55	63	60	42	57	47	36	45	39	31	38	34	27	34	30	24	30	27	21
			Exposed	63	63	63	63	63	60	63	63	51	63	61	43	63	54	39	58	46	35	49	41	32	39	35	27	33	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	53	53	53	53	53	53	53	53	50	53	53	43	53	53	39	53	53	35	53	47	32	53	39	27	47	33	23	39	29	20	34	25	27	30	22	24	27	19	21
			Exposed	53	53	39	53	52	34	53	44	31	53	39	28	53	36	25	46	33	23	41	30	21	35	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	53	53	53	53	53	50	53	53	42	53	53	38	53	49	34	53	42	31	53	38	28	46	33	24	38	28	21	33	24	27	29	21	24	25	28	21	23	25	~~19~~
			Exposed	53	49	34	53	41	30	53	37	27	48	33	25	41	30	22	38	27	20	34	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	67	67	67	67	67	63	67	67	58	67	63	48	67	57	41	67	48	38	67	42	34	65	35	29	58	30	25	46	26	22	39	23	19	34	20	25	30	27	22
			Exposed	67	57	41	67	46	37	67	40	33	66	36	30	62	33	27	57	30	25	49	27	22	39	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	67	67	67	67	67	67	67	67	66	67	67	62	67	67	55	67	63	47	65	59	41	56	45	35	42	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	67	66	55	67	62	45	63	55	40	58	47	36	49	41	32	42	37	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	35	42	42	31	42	38	27	42	34	24
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	37	42	42	31	42	37	27	42	32	23	39	28	20	34	25	27	30	22	24
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	36	42	42	31	42	37	27	40	32	24	39	29	21
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	35	42	42	32	42	37	27	42	32	23	37	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	44	49	48	37	49	40	33	49	35	29	49	31	26	49	31	26
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	43	49	49	39	49	40	33	49	34	28	49	30	24	45	26	21	39	23	19	35	20	25
		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	39	46	44	35	44	39	31
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	40	46	43	34	41	37	29	36	32	26	32	29	23	28	25	20
	C	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	33	42	40	28	42	34	24	41	30	21	36	26	28	32	23	25
			Exposed	42	42	42	42	42	41	42	42	37	42	42	33	42	42	30	42	39	28	42	36	25	42	30	21	36	26	28	31	22	24	27	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	42	34	42	39	29	41	33	25	39	29	21	35	25	28	30	22	25	27	20	22
			Exposed	42	42	41	42	42	36	42	42	33	42	40	30	42	36	27	42	33	24	41	30	22	35	26	19	30	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	41	49	42	35	49	36	30	49	31	26	46	27	23	41	24	20	36	21	27
			Exposed	49	49	49	49	49	45	49	49	40	49	44	36	49	39	32	49	36	30	49	33	27	49	28	23	40	24	20	35	20	26	31	27	22	27	24	20	24	21	~~18~~
		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	42	46	46	36	44	39	31	38	34	27	34	30	24	30	27	21
			Exposed	46	46	46	46	46	46	46	46	46	46	46	43	46	46	39	46	46	35	46	41	32	39	35	27	33	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	35	42	42	32	42	39	27	42	33	23	39	29	20	34	25	27	30	22	24	27	19	21
			Exposed	42	42	39	42	42	34	42	42	31	42	39	28	42	36	25	42	33	23	41	30	21	35	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	38	42	42	34	42	42	31	42	38	28	40	33	24	38	28	21	33	24	27	29	21	24	25	28	21	23	25	~~19~~
			Exposed	42	42	34	42	41	30	42	37	27	42	33	25	41	30	22	38	27	20	34	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	48	54	54	41	54	48	38	54	42	34	54	35	29	51	30	25	46	26	22	39	23	19	34	20	25	30	27	22
			Exposed	54	54	41	54	46	37	54	40	33	54	36	30	54	33	27	54	30	25	49	27	22	39	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	47	50	50	41	50	45	35	42	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	50	50	50	50	50	45	50	50	40	50	47	36	49	41	32	42	37	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~
40	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	31	39	38	27	39	34	24
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	31	39	37	27	39	32	23	39	28	20	34	25	27	30	22	24
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	31	39	37	27	38	32	24	36	29	21
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	32	39	37	27	39	32	23	37	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	33	38	35	29	38	31	26
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	34	28	38	30	24	38	26	21	38	23	19	35	20	25
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	31
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	34	36	36	29	36	32	26	32	29	23	28	25	20
	C	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	39	28	39	34	24	39	30	21	36	26	28	32	23	25
			Exposed	39	39	39	39	39	39	39	39	37	39	39	33	39	39	30	39	39	28	39	36	25	39	30	21	36	26	28	31	22	24	27	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	34	39	39	29	38	33	25	37	29	21	35	25	28	30	22	25	27	20	22
			Exposed	39	39	39	39	39	36	39	39	33	39	39	30	39	36	27	39	33	24	39	30	22	35	26	19	30	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	36	30	38	31	26	38	27	23	38	24	20	36	21	27
			Exposed	38	38	38	38	38	38	38	38	38	38	38	36	38	38	32	38	36	30	38	33	27	38	28	23	38	24	20	35	20	26	31	27	22	27	24	20	24	21	~~18~~
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	34	27	34	30	24	30	27	21
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	32	36	35	27	33	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	35	42	42	32	42	39	27	42	33	23	39	29	20	34	25	27	30	22	24	27	19	21
			Exposed	42	42	39	42	42	34	42	42	31	42	39	28	42	36	25	42	33	23	41	30	21	35	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	38	42	42	34	42	42	31	42	38	28	40	33	24	38	28	21	33	24	27	29	21	24	25	28	21	23	25	~~19~~
			Exposed	42	42	34	42	41	30	42	37	27	42	33	25	41	30	22	38	27	20	34	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	38	42	42	34	42	35	29	42	30	25	41	26	22	39	23	19	34	20	25	30	27	22
			Exposed	42	42	41	42	42	37	42	40	33	42	36	30	42	33	27	42	30	25	42	27	22	39	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	39	39	39	39	39	39	39	39	39	39	39	36	39	39	32	39	37	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~
50	B	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	33	33	24
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	33	32	23	33	28	20	33	25	27	30	22	24
		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	27	33	32	24	32	29	21
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	27	34	32	23	34	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	26
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	31	30	24	31	26	21	31	23	19	31	20	25
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26	30	29	23	28	25	20
	C	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	28	33	33	24	33	30	21	33	26	28	32	23	25
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	28	33	33	25	33	30	21	33	26	28	31	22	24	27	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	29	33	33	25	32	29	21	31	25	28	29	22	25	27	20	22
			Exposed	34	34	34	34	34	34	34	34	33	34	34	30	34	34	27	34	33	24	34	30	22	34	26	19	30	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	30	31	31	26	31	27	23	31	24	20	31	21	27
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	27	31	28	23	31	24	20	31	20	26	31	27	22	27	24	20	24	21	~~18~~
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	30	27	21
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	32	36	36	27	36	33	23	36	29	20	34	25	27	30	22	24	27	19	21
			Exposed	36	36	36	36	36	34	36	36	31	36	36	28	36	36	25	36	33	23	36	30	21	35	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	31	36	36	28	35	33	24	34	28	21	32	24	27	29	21	24	25	28	21	23	25	~~19~~
			Exposed	36	36	34	36	36	30	36	36	27	36	33	25	36	30	22	36	27	20	34	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	29	35	30	25	35	26	22	35	23	19	33	20	25	30	27	22
			Exposed	35	35	35	35	35	35	35	35	33	35	35	30	35	33	27	35	30	25	35	27	22	35	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	26	32	29	23	28	25	20	25	22	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	30	33	33	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	24
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	23	28	28	20	28	25	27	28	22	24
		7-20	Interior	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	27	29	29	24	28	28	21
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	23	29	27	20	29	24	27	29	21	24	26	28	21
		20-27	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	27	27	27	27	26
			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	24	27	26	21	27	23	19	27	20	25
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	21	28	26	28	28	23	25
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	21	28	26	28	28	22	24	27	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	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	25	28	28	21	27	25	28	26	22	25	25	20	22
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	29	22	29	26	19	29	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	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	26	27	27	23	27	24	20	27	21	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	23	27	24	20	27	20	26	27	27	22	27	24	20	24	21	~~18~~
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	21
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	27	31	31	23	31	29	20	31	25	27	30	22	24	27	19	21
			Exposed	31	31	31	31	31	31	31	31	31	31	31	28	31	31	25	31	31	23	31	30	21	31	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	28	31	31	24	30	28	21	29	24	27	28	21	24	25	28	21	23	25	~~19~~
			Exposed	32	32	32	32	32	30	32	32	27	32	32	25	32	30	22	32	27	20	32	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	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	25	29	26	22	29	23	19	29	20	25	29	27	22
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	25	29	27	22	29	23	19	29	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	25	20	25	22	27
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~
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		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	21
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20	25	24	27	25	21	24	25	28	21	23	23	23
		20-27	Interior	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	19	23	20	25
			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	21	23	23	19	23	20	20
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20
	C	0-7	Interior	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	21	24	24	28	24	23	25
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		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	24	24	28	24	22	25	23	20	22
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	22	25	25	19	25	22	25	25	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	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	20	23	21	27
			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	20	23	20	26	23	27	22	23	24	20	23	21	~~18~~
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21
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	D	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	23	27	27	23	27	27	20	27	25	27	27	22	24	27	19	21
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	23	27	27	21	27	25	27	27	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	21	26	24	27	25	21	24	24	28	21	23	25	~~19~~
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	22	27	27	20	27	25	28	27	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	23	19	25	20	25	25	27	22
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	23	19	25	20	25	25	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	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	23	24	24	20	24	22	27
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~
80	B	0-7	Interior	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
			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	20	21	21	27	21	21	24
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	27	22	21	24	22	28	21
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
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		27-45	Interior	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	19	19	19	19	19	19	19
			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	19	19	19	19	19	19	19
	C	0-7	Interior	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	28	21	21	25
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	28	21	21	24	21	20	21	21	26	~~19~~	21	23	~~16~~	21	23	~~16~~
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	28	22	22	25	21	20	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	22	25	22	19	21	22	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	27
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	26	20	27	22	20	24	20	20	21	~~18~~
		27-45	Interior	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	19	19	19	19	19	19	19
			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	27	19	19	24	19	27	21
	D	0-7	Interior	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	23	24	24	20	24	24	27	24	22	24	24	19	21
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	27	24	22	23	24	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	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	21	24	24	27	23	21	24	22	28	21	21	25	~~19~~
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	28	24	21	24	24	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	25	22	27	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	25	22	26	21	22	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	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	20	21	21	27
			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	20	21	21	26	21	19	23	28	25	20	25	22	~~18~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	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	19	19	19	19	19	19	19
			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	19	19	19	27	19	19	24
		7-20	Interior	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	19	19	19	19	19	19	19
			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	27	19	19	24	19	28	21
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25
		27-45	Interior	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	17	17	17	17	17	17	17
			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	17	17	17	17	17	17	17
	C	0-7	Interior	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	19	19	19	28	19	19	25
			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	28	19	19	24	19	19	21	19	26	~~19~~	19	23	~~16~~
		7-20	Interior	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	28	19	19	25	19	19	22
			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	25	19	19	21	19	25	~~19~~	19	22	~~16~~	27	20	~~15~~
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	26	18	27	22	18	24	20	18	21	~~18~~
		27-45	Interior	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	17	17	17	17	17	17	17
			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	26	17	17	24	17	26	21
	D	0-7	Interior	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	20	21	21	27	21	21	24	21	19	21
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	27	21	21	23	21	28	20	21	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	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	27	21	21	24	20	28	21	20	25	~~19~~
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	28	21	21	24	21	28	20	21	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	25	20	27	22
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	25	20	26	21	20	23	~~19~~	20	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	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	19	19	19	19	19	19	27
			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	26	19	19	23	28	25	20	25	22	~~18~~
100	B	0-7	Interior	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	17	17	17	17	17	17	17
			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	17	17	17	26	17	17	24
		7-20	Interior	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	17	17	17	17	17	17	17
			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	26	17	17	24	17	26	21
		20-27	Interior	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	16	16	16	16	16	16	16
			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	16	16	16	16	16	16	25
		27-45	Interior	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	16	16	16	16	16	16	16
			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	16	16	16	16	16	16	16
	C	0-7	Interior	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	17	17	17	26	17	17	25
			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	26	17	17	24	17	17	21	17	26	~~19~~	17	23	~~16~~
		7-20	Interior	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	26	17	17	25	17	17	22
			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	25	17	17	21	17	25	~~19~~	17	22	~~16~~	26	20	~~15~~
		20-27	Interior	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	16	16	16	16	16	16	25
			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	25	16	25	22	16	24	20	16	21	~~18~~
		27-45	Interior	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	16	16	16	16	16	16	16
			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	24	16	16	24	16	24	21
	D	0-7	Interior	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	27	19	19	24	19	19	21
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	27	19	19	23	19	28	20	19	25	~~18~~	19	22	~~15~~	26	19	~~14~~
		7-20	Interior	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	27	19	19	24	19	28	21	18	25	~~19~~
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	28	19	19	24	19	28	20	19	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	18	27	22
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	18	26	21	18	23	~~19~~	18	20	~~17~~	18	~~18~~	~~15~~
		27-45	Interior	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	17	17	17	17	17	17	26
			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	26	17	17	23	26	25	20	25	22	~~18~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	98	98	98	98	98	98	98	98	94	98	98	89	98	98	85	98	95	82	98	91	78	98	84	71	91	78	64	85	73	59	80	66	52	76	62	45	70	57	40
			Exposed	98	98	85	98	94	81	98	89	77	98	85	72	94	81	67	90	78	63	87	75	60	80	67	52	75	61	45	67	55	39	62	48	34	58	42	45	51	37	40
		7-20	Interior	99	99	99	99	99	96	99	99	91	99	99	86	99	96	82	99	91	78	99	87	75	94	80	65	87	73	60	80	65	52	75	60	46	67	54	40	63	48	36
			Exposed	99	95	82	99	90	77	99	85	72	96	81	65	90	77	62	86	72	59	82	67	54	76	61	46	66	53	39	61	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	96	99	99	91	99	95	86	99	91	82	99	83	76	98	77	66	91	69	61	86	63	55	81	59	48	76	52	43
			Exposed	99	99	90	99	94	85	99	89	80	99	84	76	99	80	71	98	76	65	93	72	62	86	63	56	80	58	48	75	50	41	67	44	36	62	38	32	58	34	43
		27-45	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	98	100	100	93	100	99	89	100	91	82	92	84	76	85	79	68	79	74	63	74	66	58	66	62	52
			Exposed	100	100	98	100	100	92	100	97	87	100	92	83	96	88	79	91	84	76	87	80	71	80	74	63	73	66	57	64	61	50	60	55	43	54	48	38	48	43	34
	C	0-7	Interior	98	98	87	98	96	83	98	91	79	98	87	75	97	83	70	93	80	65	89	77	62	82	69	55	77	63	47	70	58	41	64	50	36	60	44	32	54	39	42
			Exposed	97	83	70	92	79	64	87	75	61	83	71	56	80	66	51	76	63	47	73	60	43	64	51	36	60	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	99	98	84	99	92	79	99	87	75	99	83	69	93	79	64	89	75	61	85	70	57	78	62	49	70	56	42	63	49	36	58	43	32	51	38	42	46	33	37
			Exposed	93	79	64	88	74	60	83	67	55	79	63	50	75	60	45	69	56	41	64	51	38	59	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	99	99	93	99	97	88	99	91	83	99	87	79	99	82	75	99	79	69	96	75	64	88	65	59	82	60	50	77	53	44	70	46	38	64	41	34	60	36	45
			Exposed	99	82	75	99	78	67	94	73	63	89	66	60	85	63	55	82	60	50	78	55	45	71	47	39	64	40	33	59	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	100	100	100	100	100	95	100	99	90	100	94	85	99	90	81	94	86	78	89	83	74	82	76	65	76	68	60	67	63	52	62	58	46	57	51	40	50	45	36
			Exposed	99	90	81	92	85	77	87	81	71	83	77	66	79	73	62	75	68	60	70	64	55	62	58	46	56	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	98	93	80	98	88	76	98	84	71	93	80	65	89	77	62	85	73	59	82	69	54	76	62	46	68	56	39	63	48	34	58	42	45	51	37	40	45	33	35
			Exposed	89	77	62	84	72	58	80	66	52	77	63	47	73	60	43	68	55	39	64	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	99	89	77	99	84	70	94	80	65	89	76	61	85	70	57	81	65	52	77	62	48	68	55	41	62	47	35	56	41	46	49	36	40	43	31	35	38	42	31
			Exposed	84	70	57	80	64	51	75	61	46	69	56	42	64	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	99	93	84	99	88	80	99	83	75	99	79	69	96	75	64	92	69	61	88	64	58	81	59	49	75	51	42	68	44	36	62	38	32	58	34	42	51	45	38
			Exposed	96	75	64	91	68	61	86	63	55	82	60	50	78	55	45	75	50	41	70	46	38	63	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	100	100	91	100	96	86	100	91	82	94	86	78	89	82	74	85	79	68	81	76	64	75	67	59	65	61	50	60	55	44	54	48	38	47	43	34	42	38	45
			Exposed	89	82	74	84	78	67	79	74	63	75	68	60	69	64	55	64	61	50	62	57	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30
10	B	0-7	Interior	92	92	92	92	92	92	92	92	92	92	92	89	92	92	85	92	92	82	92	91	78	92	84	71	91	78	64	85	73	59	80	66	52	76	62	45	70	57	40
			Exposed	92	92	85	92	92	81	92	89	77	92	85	72	92	81	67	90	78	63	87	75	60	80	67	52	75	61	45	67	55	39	62	48	34	58	42	45	51	37	40
		7-20	Interior	92	92	92	92	92	92	92	92	91	92	92	86	92	92	82	92	91	78	92	87	75	92	80	65	87	73	60	80	65	52	75	60	46	67	54	40	63	48	36
			Exposed	92	92	82	92	90	77	92	85	72	92	81	65	90	77	62	86	72	59	82	67	54	76	61	46	66	53	39	61	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	91	96	95	86	96	91	82	96	83	76	96	77	66	91	69	61	86	63	55	81	59	48	76	52	43
			Exposed	96	96	90	96	94	85	96	89	80	96	84	76	96	80	71	96	76	65	93	72	62	86	63	56	80	58	48	75	50	41	67	44	36	62	38	32	58	34	43
		27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	98	99	99	93	99	99	89	99	91	82	92	84	76	85	79	68	79	74	63	74	66	58	66	62	52
			Exposed	99	99	98	99	99	92	99	97	87	99	92	83	96	88	79	91	84	76	87	80	71	80	74	63	73	66	57	64	61	50	60	55	43	54	48	38	48	43	34
	C	0-7	Interior	92	92	87	92	92	83	92	91	79	92	87	75	92	83	70	92	80	65	89	77	62	82	69	55	77	63	47	70	58	41	64	50	36	60	44	32	54	39	42
			Exposed	92	83	70	92	79	64	87	75	61	83	71	56	80	66	51	76	63	47	73	60	43	64	51	36	60	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	92	92	84	92	92	79	92	87	75	92	83	69	92	79	64	89	75	61	85	70	57	78	62	49	70	56	42	63	49	36	58	43	32	51	38	42	46	33	37
			Exposed	92	79	64	88	74	60	83	67	55	79	63	50	75	60	45	69	56	41	64	51	38	59	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	96	96	93	96	96	88	96	91	83	96	87	79	96	82	75	96	79	69	96	75	64	88	65	59	82	60	50	77	53	44	70	46	38	64	41	34	60	36	45
			Exposed	96	82	75	96	78	67	94	73	63	89	66	60	85	63	55	82	60	50	78	55	45	71	47	39	64	40	33	59	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	99	99	99	99	99	95	99	99	90	99	94	85	99	90	81	94	86	78	89	83	74	82	76	65	76	68	60	67	63	52	62	58	46	57	51	40	50	45	36
			Exposed	99	90	81	92	85	77	87	81	71	83	77	66	79	73	62	75	68	60	70	64	55	62	58	46	56	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	92	92	80	92	88	76	92	84	71	92	80	65	89	77	62	85	73	59	82	69	54	76	62	46	68	56	39	63	48	34	58	42	45	51	37	40	45	33	35
			Exposed	89	77	62	84	72	58	80	66	52	77	63	47	73	60	43	68	55	39	64	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	92	89	77	92	84	70	92	80	65	89	76	61	85	70	57	81	65	52	77	62	48	68	55	41	62	47	35	56	41	46	49	36	40	43	31	35	38	42	31
			Exposed	84	70	57	80	64	51	75	61	46	69	56	42	64	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	97	93	84	97	88	80	97	83	75	97	79	69	96	75	64	92	69	61	88	64	58	81	59	49	75	51	42	68	44	36	62	38	32	58	34	42	51	45	38
			Exposed	96	75	64	91	68	61	86	63	55	82	60	50	78	55	45	75	50	41	70	46	38	63	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	99	99	91	99	96	86	99	91	82	94	86	78	89	82	74	85	79	68	81	76	64	75	67	59	65	61	50	60	55	44	54	48	38	47	43	34	42	38	45
			Exposed	89	82	74	84	78	67	79	74	63	75	68	60	69	64	55	64	61	50	62	57	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30
20	B	0-7	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	82	83	83	78	83	83	71	83	78	64	83	73	59	80	66	52	76	62	45	70	57	40
			Exposed	83	83	83	83	83	81	83	83	77	83	83	72	83	81	67	83	78	63	83	75	60	80	67	52	75	61	45	67	55	39	62	48	34	58	42	45	51	37	40
		7-20	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	82	83	83	78	83	83	75	83	80	65	83	73	60	80	65	52	75	60	46	67	54	40	63	48	36
			Exposed	83	83	82	83	83	77	83	83	72	83	81	65	83	77	62	83	72	59	82	67	54	76	61	46	66	53	39	61	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	86	89	89	82	89	83	76	89	77	66	89	69	61	86	63	55	81	59	48	76	52	43
			Exposed	89	89	89	89	89	85	89	89	80	89	84	76	89	80	71	89	76	65	89	72	62	86	63	56	80	58	48	75	50	41	67	44	36	62	38	32	58	34	43
		27-45	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	89	92	91	82	92	84	76	85	79	68	79	74	63	74	66	58	66	62	52
			Exposed	92	92	92	92	92	92	92	92	87	92	92	83	92	88	79	91	84	76	87	80	71	80	74	63	73	66	57	64	61	50	60	55	43	54	48	38	48	43	34
	C	0-7	Interior	83	83	83	83	83	83	83	83	79	83	83	75	83	83	70	83	80	65	83	77	62	82	69	55	77	63	47	70	58	41	64	50	36	60	44	32	54	39	42
			Exposed	83	83	70	83	79	64	83	75	61	83	71	56	80	66	51	76	63	47	73	60	43	64	51	36	60	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	83	83	83	83	83	79	83	83	75	83	83	69	83	79	64	83	75	61	83	70	57	78	62	49	70	56	42	63	49	36	58	43	32	51	38	42	46	33	37
			Exposed	83	79	64	83	74	60	83	67	55	79	63	50	75	60	45	69	56	41	64	51	38	59	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	89	89	89	89	89	88	89	89	83	89	87	79	89	82	75	89	79	69	89	75	64	88	65	59	82	60	50	77	53	44	70	46	38	64	41	34	60	36	45
			Exposed	89	82	75	89	78	67	89	73	63	89	66	60	85	63	55	82	60	50	78	55	45	71	47	39	64	40	33	59	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	92	92	92	92	92	92	92	92	90	92	92	85	92	90	81	92	86	78	89	83	74	82	76	65	76	68	60	67	63	52	62	58	46	57	51	40	50	45	36
			Exposed	92	90	81	92	85	77	87	81	71	83	77	66	79	73	62	75	68	60	70	64	55	62	58	46	56	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	83	83	80	83	83	76	83	83	71	83	80	65	83	77	62	83	73	59	82	69	54	76	62	46	68	56	39	63	48	34	58	42	45	51	37	40	45	33	35
			Exposed	83	77	62	83	72	58	80	66	52	77	63	47	73	60	43	68	55	39	64	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	83	83	77	83	83	70	83	80	65	83	76	61	83	70	57	81	65	52	77	62	48	68	55	41	62	47	35	56	41	46	49	36	40	43	31	35	38	42	31
			Exposed	83	70	57	80	64	51	75	61	46	69	56	42	64	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	90	90	84	90	88	80	90	83	75	90	79	69	90	75	64	90	69	61	88	64	58	81	59	49	75	51	42	68	44	36	62	38	32	58	34	42	51	45	38
			Exposed	90	75	64	90	68	61	86	63	55	82	60	50	78	55	45	75	50	41	70	46	38	63	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	93	93	91	93	93	86	93	91	82	93	86	78	89	82	74	85	79	68	81	76	64	75	67	59	65	61	50	60	55	44	54	48	38	47	43	34	42	38	45
			Exposed	89	82	74	84	78	67	79	74	63	75	68	60	69	64	55	64	61	50	62	57	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	64	70	70	59	70	66	52	70	62	45	70	57	40
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	70	63	70	70	60	70	67	52	70	61	45	67	55	39	62	48	34	58	42	45	51	37	40
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	65	71	71	60	71	65	52	71	60	46	67	54	40	63	48	36
			Exposed	71	71	71	71	71	71	71	71	71	71	71	65	71	71	62	71	71	59	71	67	54	71	61	46	66	53	39	61	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	76	82	77	66	82	69	61	82	63	55	81	59	48	76	52	43
			Exposed	82	82	82	82	82	82	82	82	80	82	82	76	82	80	71	82	76	65	82	72	62	82	63	56	80	58	48	75	50	41	67	44	36	62	38	32	58	34	43
		27-45	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	68	76	74	63	74	66	58	66	62	52
			Exposed	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	71	76	74	63	73	66	57	64	61	50	60	55	43	54	48	38	48	43	34
	C	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	65	70	70	62	70	69	55	70	63	47	70	58	41	64	50	36	60	44	32	54	39	42
			Exposed	70	70	70	70	70	64	70	70	61	70	70	56	70	66	51	70	63	47	70	60	43	64	51	36	60	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	69	71	71	64	71	71	61	71	70	57	71	62	49	69	56	42	63	49	36	58	43	32	51	38	42	46	33	37
			Exposed	71	71	64	71	71	60	71	67	55	71	63	50	71	60	45	69	56	41	64	51	38	59	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	79	82	82	75	82	79	69	82	75	64	82	65	59	82	60	50	77	53	44	70	46	38	64	41	34	60	36	45
			Exposed	82	82	75	82	78	67	82	73	63	82	66	60	82	63	55	82	60	50	78	55	45	71	47	39	64	40	33	59	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	74	76	76	65	76	68	60	67	63	52	62	58	46	57	51	40	50	45	36
			Exposed	76	76	76	76	76	76	76	76	71	76	76	66	76	73	62	75	68	60	70	64	55	62	58	46	56	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	70	70	70	70	70	70	70	70	70	70	65	70	70	70	62	70	70	59	70	69	54	70	62	46	68	56	39	63	48	34	58	42	45	51	37	40	45	33	35
			Exposed	70	70	62	70	70	58	70	66	52	70	63	47	70	60	43	68	55	39	64	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	71	71	71	71	71	70	71	71	65	71	71	61	71	70	57	71	65	52	71	62	48	68	55	41	62	47	35	56	41	46	49	36	40	43	31	35	38	42	31
			Exposed	71	70	57	71	64	51	71	61	46	69	56	42	64	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	85	85	84	85	85	80	85	83	75	85	79	69	85	75	64	85	69	61	85	64	58	81	59	49	75	51	42	68	44	36	62	38	32	58	34	42	51	45	38
			Exposed	85	75	64	85	68	61	85	63	55	82	60	50	78	55	45	75	50	41	70	46	38	63	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	83	83	83	83	83	83	83	83	82	83	83	78	83	82	74	83	79	68	81	76	64	75	67	59	65	61	50	60	55	44	54	48	38	47	43	34	42	38	45
			Exposed	83	82	74	83	78	67	79	74	63	75	68	60	69	64	55	64	61	50	62	57	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30
40	B	0-7	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	59	65	65	52	65	62	45	65	57	40			
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	65	60	65	65	52	65	61	45	65	55	39	62	48	34	58	42	45	51	37	40
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	66	66	60	66	65	52	65	60	46	63	54	40	61	48	36
			Exposed	66	66	66	66	66	66	66	66	66	66	66	65	66	66	62	66	66	59	66	66	54	66	61	46	66	53	39	61	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	63	55	64	59	48	64	52	43
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	63	56	64	58	48	64	50	41	64	44	36	62	38	32	58	34	43
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	58	60	60	52
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	60	50	60	55	43	54	48	38	48	43	34			
	C	0-7	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	65	55	65	63	47	65	58	41	64	50	36	60	44	32	54	39	42
			Exposed	65	65	65	65	65	64	65	65	61	65	65	56	65	65	51	65	63	47	65	60	43	64	51	36	60	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	64	66	66	61	66	66	57	66	62	49	64	56	42	61	49	36	58	43	32	51	38	42	46	33	37
			Exposed	66	66	64	66	66	60	66	66	55	66	63	50	66	60	45	66	56	41	64	51	38	59	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	59	64	60	50	64	53	44	64	46	38	63	41	34	60	36	45
			Exposed	64	64	64	64	64	64	64	64	63	64	64	60	64	63	55	64	60	50	64	55	45	64	47	39	64	40	33	59	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	52	60	58	46	57	51	40	50	45	36
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	55	60	58	46	56	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	70	70	70	70	70	70	70	70	70	70	65	70	70	70	62	70	70	59	70	69	54	70	62	46	68	56	39	63	48	34	58	42	45	51	37	40	45	33	35
			Exposed	70	70	62	70	70	58	70	66	52	70	63	47	70	60	43	68	55	39	64	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	70	70	70	70	70	70	70	70	65	70	70	61	70	70	57	70	65	52	70	62	48	68	55	41	62	47	35	56	41	46	49	36	40	43	31	35	38	42	31
			Exposed	70	70	57	70	64	51	70	61	46	69	56	42	64	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	70	70	70	70	70	70	70	70	70	70	70	69	70	70	64	70	69	61	70	64	58	70	59	49	70	51	42	68	44	36	62	38	32	58	34	42	51	45	38
			Exposed	70	70	64	70	68	61	70	63	55	70	60	50	70	55	45	70	50	41	70	46	38	63	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	64	66	66	59	65	61	50	60	55	44	54	48	38	47	43	34	42	38	45
			Exposed	66	66	66	66	66	66	66	66	63	66	66	60	66	64	55	64	61	50	62	57	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30
50	B	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	45	56	56	40
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	45	56	55	39	56	48	34	56	42	45	51	37	40
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	56	56	46	55	54	40	53	48	36
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	54	57	57	46	57	53	39	57	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	48	53	52	43
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	48	53	50	41	53	44	36	53	38	32	53	34	43
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	43	50	48	38	48	43	34
	C	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	47	56	56	41	56	50	36	56	44	32	54	39	42
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	51	56	56	47	56	56	43	56	51	36	56	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	49	55	55	42	53	49	36	51	43	32	49	38	42	46	33	37
			Exposed	57	57	57	57	57	57	57	57	55	57	57	50	57	57	45	57	56	41	57	51	38	57	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	53	44	53	46	38	53	41	34	53	36	45
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	53	45	53	47	39	53	40	33	53	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	46	50	50	40	49	45	36
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	46	50	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	54	60	60	46	60	56	39	60	48	34	58	42	45	51	37	40	45	33	35
			Exposed	60	60	60	60	60	58	60	60	52	60	60	47	60	60	43	60	55	39	60	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	57	61	61	52	61	61	48	59	55	41	56	47	35	54	41	46	49	36	40	43	31	35	38	42	31
			Exposed	61	61	57	61	61	51	61	61	46	61	56	42	61	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	49	58	51	42	58	44	36	58	38	32	55	34	42	51	45	38
			Exposed	58	58	58	58	58	58	58	58	55	58	58	50	58	55	45	58	50	41	58	46	38	58	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	50	55	55	44	53	48	38	47	43	34	42	38	45
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	50	55	55	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	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	45	47	47	40
			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	45	47	47	39	47	47	34	47	42	45	47	37	40
		7-20	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	46	48	48	40	47	47	36
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	39	48	46	34	48	40	45	48	36	40	43	32	35
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	44	36	45	38	32	45	34	43
		27-45	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	34
	C	0-7	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	41	47	47	36	47	44	32	47	39	42
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	43	47	47	36	47	44	47	47	38	41	45	33	35	40	44	31	35	39	28
		7-20	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	42	47	47	36	46	43	32	44	38	42	42	33	37
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	45	48	48	41	48	48	38	48	43	32	48	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	38	45	41	34	45	36	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	39	45	40	33	45	35	43	45	46	38	45	40	33	40	36	30
		27-45	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	36
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	46	52	52	39	52	48	34	52	42	45	51	37	40	45	33	35
			Exposed	52	52	52	52	52	52	52	52	52	52	52	47	52	52	43	52	52	39	52	50	36	52	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	48	52	52	41	50	47	35	48	41	46	46	36	40	43	31	35	38	42	31
			Exposed	53	53	53	53	53	51	53	53	46	53	53	42	53	51	38	53	46	34	53	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	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	42	49	44	36	49	38	32	49	34	42	48	45	38
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	45	49	49	41	49	46	38	49	39	32	49	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		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	44	46	46	38	46	43	34	42	38	45
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	39	46	42	33	40	36	43	35	32	38	31	42	34	42	38	30
70	B	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	34	41	41	45	41	37	40
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	36
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	34	41	40	45	41	36	40	41	32	35
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	38	32	39	34	43
		27-45	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	37	37	37	37	37	37	37	37	37	37	37	37	37	37
			Exposed	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	37	37	37	37	37	37	37	37	37	37	37	37	37	34
	C	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	32	41	39	42
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	47	41	38	41	41	33	35	40	44	31	35	39	28
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	32	40	38	42	38	33	37
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	38	41	41	32	41	37	41	41	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	34	39	39	36	45
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	35	43	39	46	38	39	40	33	39	36	30
		27-45	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	37	37	37	37	37	37	37	37	37	37	37	37	37	36
			Exposed	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	37	37	37	37	34	37	37	46	37	34	40	33	45	36
	D	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	39	45	45	34	45	42	45	45	42	45	45	37	40	45	33	35
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	45	39	45	45	36	45	42	45	45	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	41	45	45	35	44	41	46	42	36	40	40	31	35	38	42	31
			Exposed	46	46	46	46	46	46	46	46	46	46	42	46	46	38	46	46	34	46	42	31	46	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	36	43	38	32	43	34	42	43	45	38
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	38	43	39	32	43	33	42	43	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	34	40	38	45
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	33	40	36	43	35	32	38	31	42	34	42	38	30
80	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	45	36	36	40
		7-20	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	37	37	37	37	37	37	37	37	37	37	37	37	37	36
			Exposed	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	37	37	37	37	34	37	37	45	37	36	40	37	32	35
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	43
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
	C	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	42
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	47	36	36	41	36	33	35	36	44	31	35	39	28
		7-20	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	37	37	37	37	36	37	37	32	36	36	42	35	33	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	32	37	37	41	37	32	36	37	42	31	34	37	28	45	33	25
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	45
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	43	34	46	38	34	40	33	34	36	30
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	46	32	32	40	32	45	36
	D	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	34	40	40	45	40	40	45	40	37	40	40	33	35
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	36	40	40	45	40	40	36	39	40	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	40	46	38	36	40	37	31	35	36	42	31
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	34	40	40	31	40	36	40	40	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	32	38	34	42	38	45	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	42	38	44	36	38	38	32	38	38	32	38	34	28	34	30	25
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	45
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	43	35	32	38	31	42	34	42	38	30			

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	45	32	32	40
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	45	33	33	40	33	32	35
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	43
		27-45	Interior	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
			Exposed	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
	C	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	42
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	47	32	32	41	32	32	35	32	44	31	32	39	~~28~~
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	42	32	32	37
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	41	33	32	36	33	42	31	33	37	~~28~~	45	33	~~25~~
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	45
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	43	31	46	38	31	40	33	31	36	~~30~~
		27-45	Interior	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
			Exposed	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	44	29	29	40	29	44	36
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	45	36	36	40	36	33	35
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	45	36	36	39	36	32	34	36	42	~~30~~	33	37	~~26~~	45	33	~~23~~
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	46	35	35	40	34	31	35	33	42	31
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	31	36	36	40	36	46	35	36	40	~~30~~	32	35	~~26~~	42	31	~~23~~	38	~~28~~	~~21~~
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	42	34	45	38
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	33	42	34	44	36	34	38	32	34	34	~~28~~	34	~~30~~	~~25~~
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	45
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	43	32	32	38	31	42	34	42	38	~~30~~
100	B	0-7	Interior	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
			Exposed	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	44	29	29	40
		7-20	Interior	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
			Exposed	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	44	29	29	40	29	29	35
		20-27	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	42
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
	C	0-7	Interior	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	42
			Exposed	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	44	29	29	41	29	29	35	29	44	31	29	39	~~28~~
		7-20	Interior	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	42	29	29	37
			Exposed	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	41	29	29	36	29	42	31	29	37	~~28~~	44	33	~~25~~
		20-27	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	42
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	42	28	42	38	28	40	33	28	36	~~30~~
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	40	26	26	40	26	40	36
	D	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	45	32	32	40	32	32	35
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	45	32	32	39	32	32	34	32	42	~~30~~	32	37	~~26~~	45	33	~~23~~
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	46	33	33	40	32	31	35	31	42	31
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	40	33	46	35	33	40	~~30~~	32	35	~~26~~	42	31	~~23~~	38	~~28~~	~~21~~
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	42	31	45	38
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	42	31	44	36	31	38	32	31	34	34	34	~~28~~	31	~~30~~	~~25~~
		27-45	Interior	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	44
			Exposed	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	43	29	29	38	29	42	34	42	38	~~30~~

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

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UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	74	74	74	74	74	74	74	74	74	74	74	70	74	74	65	74	74	61	74	71	56	74	64	42	71	56	34	65	45	29	59	37	26	49	32	23	41	28	20
			Exposed	74	74	65	74	74	60	74	69	52	74	65	44	74	61	37	70	55	33	66	48	31	60	37	26	47	31	22	38	27	19	32	24	25	29	21	22	25	18	20
		7-20	Interior	74	74	74	74	74	74	74	74	71	74	74	66	74	74	62	74	71	56	74	67	47	74	60	35	67	45	30	61	35	26	48	31	23	38	27	20	33	24	27
			Exposed	74	74	62	74	70	53	74	65	43	74	61	36	71	52	32	66	44	30	62	37	27	49	31	23	37	26	20	31	23	26	27	20	22	24	27	20	21	24	18
		20-27	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	71	75	75	66	75	71	62	75	63	49	75	52	37	72	40	31	66	33	27	60	29	24	51	26	21
			Exposed	75	75	71	75	75	65	75	69	61	75	64	51	75	60	43	75	51	36	74	43	33	66	33	28	60	29	24	47	25	20	38	22	27	32	19	24	29	26	21
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	74	76	76	69	76	71	62	72	64	50	65	57	39	59	46	33	46	37	29	37	32	26
			Exposed	76	76	76	76	76	72	76	76	67	76	72	63	76	68	58	71	64	49	67	60	42	60	46	33	44	36	28	35	31	25	30	27	21	27	24	19	24	21	25
	C	0-7	Interior	74	74	67	74	74	63	74	72	57	74	67	48	74	63	41	73	59	35	69	52	32	62	40	27	52	33	23	41	29	20	34	25	27	30	22	24	27	20	21
			Exposed	74	63	41	72	57	35	67	49	31	63	42	28	58	36	25	51	33	23	44	30	21	35	25	27	30	22	23	26	19	20	22	25	18	20	22	15	27	19	14
		7-20	Interior	74	74	64	74	73	59	74	68	48	74	63	40	74	58	34	69	48	31	65	41	29	55	33	24	41	28	21	33	24	27	29	21	24	25	19	21	23	25	18
			Exposed	74	57	34	68	46	30	63	38	27	57	33	25	47	30	22	40	28	20	35	25	19	29	21	24	25	18	20	22	24	18	19	21	15	25	18	14	22	16	12
		20-27	Interior	75	75	74	75	75	68	75	72	63	75	67	57	75	62	47	75	57	40	75	48	34	68	35	29	62	30	25	52	26	22	41	23	19	34	20	25	30	27	22
			Exposed	75	62	47	75	54	38	74	44	33	69	37	30	65	33	27	61	30	25	55	27	23	42	23	19	34	20	25	29	26	21	25	23	19	22	20	16	20	18	15
		27-45	Interior	76	76	76	76	76	75	76	76	70	76	75	65	76	70	61	74	66	54	70	62	46	62	51	35	49	39	30	38	33	26	32	29	23	28	25	20	25	22	27
			Exposed	76	70	61	73	65	52	68	61	43	63	53	36	58	45	32	48	39	30	41	34	27	32	29	23	28	25	20	24	21	26	21	19	23	18	25	20	25	22	18
	D	0-7	Interior	74	73	60	74	68	50	74	64	42	73	60	36	69	52	32	65	45	29	61	39	27	49	32	23	39	28	19	33	24	26	29	21	22	25	28	20	22	25	17
			Exposed	69	51	32	64	43	29	60	37	26	51	33	23	44	30	21	38	27	19	34	25	27	29	21	23	25	27	19	21	24	17	19	21	15	25	18	13	22	16	11
		7-20	Interior	74	69	51	74	64	42	74	60	35	69	49	31	65	41	29	61	35	26	53	32	24	39	27	20	32	23	26	28	20	23	24	27	20	21	23	17	19	21	15
			Exposed	65	41	28	60	34	25	49	31	23	40	28	21	35	25	19	31	23	26	29	21	24	24	27	20	21	23	17	27	20	15	24	17	13	21	15	11	19	14	10
		20-27	Interior	75	74	65	75	68	60	75	63	49	75	58	40	75	48	34	72	40	31	68	35	29	61	29	24	48	25	21	38	22	27	32	19	24	29	25	21	25	23	19
			Exposed	75	47	34	71	38	31	66	33	27	62	30	25	55	27	23	47	25	21	41	23	19	33	19	24	28	25	21	24	22	18	21	19	16	19	17	14	25	15	12
		27-45	Interior	76	76	72	76	76	66	76	71	62	75	66	55	70	62	46	65	58	39	61	50	34	47	38	29	35	32	25	30	27	22	27	24	19	23	21	25	21	19	22
			Exposed	69	62	46	64	55	38	60	46	33	49	39	30	41	34	27	35	31	25	32	29	23	27	24	19	23	21	25	20	27	22	26	24	19	23	21	17	21	19	15
10	B	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	42	60	56	34	60	45	29	59	37	26	49	32	23	41	28	20
			Exposed	60	60	60	60	60	60	60	60	52	60	60	44	60	60	37	60	55	33	60	48	31	60	37	26	47	31	22	38	27	19	32	24	25	29	21	22	25	18	20
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	47	60	60	35	60	45	30	60	35	26	48	31	23	38	27	20	33	24	27
			Exposed	60	60	60	60	60	53	60	60	43	60	60	36	60	52	32	60	44	30	60	37	27	49	31	23	37	26	20	31	23	26	27	20	22	24	27	20	21	24	18
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	62	69	63	49	69	52	37	69	40	31	66	33	27	60	29	24	51	26	21
			Exposed	69	69	69	69	69	65	69	69	61	69	64	51	69	60	43	69	51	36	69	43	33	66	33	28	60	29	24	47	25	20	38	22	27	32	19	24	29	26	21
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	69	74	71	62	72	64	50	65	57	39	59	46	33	46	37	29	37	32	26
			Exposed	74	74	74	74	74	72	74	74	67	74	72	63	74	68	58	71	64	49	67	60	42	60	46	33	44	36	28	35	31	25	30	27	21	27	24	19	24	21	25
	C	0-7	Interior	60	60	60	60	60	60	60	60	57	60	60	48	60	60	41	60	59	35	60	52	32	60	40	27	52	33	23	41	29	20	34	25	27	30	22	24	27	20	21
			Exposed	60	60	41	60	57	35	60	49	31	60	42	28	58	36	25	51	33	23	44	30	21	35	25	27	30	22	23	26	19	20	22	25	18	20	22	15	27	19	14
		7-20	Interior	60	60	60	60	60	59	60	60	48	60	60	40	60	58	34	60	48	31	60	41	29	55	33	24	41	28	21	33	24	27	29	21	24	25	19	21	23	25	18
			Exposed	60	57	34	60	46	30	60	38	27	57	33	25	47	30	22	40	28	20	35	25	19	29	21	24	25	18	20	22	24	18	19	21	15	25	18	14	22	16	12
		20-27	Interior	69	69	69	69	69	68	69	69	63	69	67	57	69	62	47	69	57	40	69	48	34	68	35	29	62	30	25	52	26	22	41	23	19	34	20	25	30	27	22
			Exposed	69	62	47	69	54	38	69	44	33	69	37	30	65	33	27	61	30	25	55	27	23	42	23	19	34	20	25	29	26	21	25	23	19	22	20	16	20	18	15
		27-45	Interior	74	74	74	74	74	74	74	74	70	74	74	65	74	70	61	74	66	54	70	62	46	62	51	35	49	39	30	38	33	26	32	29	23	28	25	20	25	22	27
			Exposed	74	70	61	73	65	52	68	61	43	63	53	36	58	45	32	48	39	30	41	34	27	32	29	23	28	25	20	24	21	26	21	19	23	18	25	20	25	22	18
	D	0-7	Interior	60	60	60	60	60	50	60	60	42	60	60	36	60	52	32	60	45	29	60	39	27	49	32	23	39	28	19	33	24	26	29	21	22	25	28	20	22	25	17
			Exposed	60	51	32	60	43	29	60	37	26	51	33	23	44	30	21	38	27	19	34	25	27	29	21	23	25	27	19	21	24	17	19	21	15	25	18	13	22	16	11
		7-20	Interior	60	60	51	60	60	42	60	60	35	60	49	31	60	41	29	60	35	26	53	32	24	39	27	20	32	23	26	28	20	23	24	27	20	21	23	17	19	21	15
			Exposed	60	41	28	60	34	25	49	31	23	40	28	21	35	25	19	31	23	26	29	21	24	24	27	20	21	23	17	27	20	15	24	17	13	21	15	11	19	14	10
		20-27	Interior	70	70	65	70	68	60	70	63	49	70	58	40	70	48	34	70	40	31	68	35	29	61	29	24	48	25	21	38	22	27	32	19	24	29	25	21	25	23	19
			Exposed	70	47	34	70	38	31	66	33	27	62	30	25	55	27	23	47	25	21	41	23	19	33	19	24	28	25	21	24	22	18	21	19	16	19	17	14	25	15	12
		27-45	Interior	75	75	72	75	75	66	75	71	62	75	66	55	70	62	46	65	58	39	61	50	34	47	38	29	35	32	25	30	27	22	27	24	19	23	21	25	21	19	22
			Exposed	69	62	46	64	55	38	60	46	33	49	39	30	41	34	27	35	31	25	32	29	23	27	24	19	23	21	25	20	27	22	26	24	19	23	21	17	21	19	15
20	B	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	34	44	44	29	44	37	26	44	32	23	41	28	20
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	37	44	44	33	44	44	31	44	37	26	44	31	22	38	27	19	32	24	25	29	21	22	25	18	20
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	35	45	45	30	45	35	26	45	31	23	38	27	20	33	24	27
			Exposed	45	45	45	45	45	45	45	45	43	45	45	36	45	45	32	45	44	30	45	37	27	45	31	23	37	26	20	31	23	26	27	20	22	24	27	20	21	24	18
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	52	37	54	40	31	54	33	27	54	29	24	51	26	21
			Exposed	54	54	54	54	54	54	54	54	54	54	54	51	54	54	43	54	51	36	54	43	33	54	33	28	54	29	24	47	25	20	38	22	27	32	19	24	29	26	21
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	50	52	52	39	51	46	33	46	37	29	37	32	26
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	42	52	46	33	44	36	28	35	31	25	30	27	21	27	24	19	24	21	25
	C	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	35	44	44	32	44	40	27	44	33	23	41	29	20	34	25	27	30	22	24	27	20	21
			Exposed	44	44	41	44	44	35	44	44	31	44	42	28	44	36	25	44	33	23	44	30	21	35	25	27	30	22	23	26	19	20	22	25	18	20	22	15	27	19	14
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	40	45	45	34	45	45	31	45	41	29	45	33	24	41	28	21	33	24	27	29	21	24	25	19	21	23	25	18
			Exposed	45	45	34	45	45	30	45	38	27	45	33	25	45	30	22	40	28	20	35	25	19	29	21	24	25	18	20	22	24	18	19	21	15	25	18	14	22	16	12
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	47	54	54	40	54	48	34	54	35	29	54	30	25	51	26	22	41	23	19	34	20	25	30	27	22
			Exposed	54	54	47	54	54	38	54	44	33	54	37	30	54	33	27	54	30	25	54	27	23	42	23	19	34	20	25	29	26	21	25	23	19	22	20	16	20	18	15
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	46	52	51	35	48	39	30	38	33	26	32	29	23	28	25	20	25	22	27
			Exposed	52	52	52	52	52	52	52	52	43	52	52	36	52	45	32	48	39	30	41	34	27	32	29	23	28	25	20	24	21	26	21	19	23	18	25	20	25	22	18
	D	0-7	Interior	44	44	44	44	44	44	44	44	42	44	44	36	44	44	32	44	44	29	44	39	27	44	32	23	39	28	19	33	24	26	29	21	22	25	28	20	22	25	17
			Exposed	44	44	32	44	43	29	44	37	26	44	33	23	44	30	21	38	27	19	34	25	27	29	21	23	25	27	19	21	24	17	19	21	15	25	18	13	22	16	11
		7-20	Interior	45	45	45	45	45	42	45	45	35	45	45	31	45	41	29	45	35	26	45	32	24	39	27	20	32	23	26	28	20	23	24	27	20	21	23	17	19	21	15
			Exposed	45	41	28	45	34	25	45	31	23	40	28	21	35	25	19	31	23	26	29	21	24	24	27	20	21	23	17	27	20	15	24	17	13	21	15	11	19	14	10
		20-27	Interior	56	56	56	56	56	56	56	56	49	56	56	40	56	48	34	56	40	31	56	35	29	56	29	24	48	25	21	38	22	27	32	19	24	29	25	21	25	23	19
			Exposed	56	47	34	56	38	31	56	33	27	56	30	25	55	27	23	47	25	21	41	23	19	33	19	24	28	25	21	24	22	18	21	19	16	19	17	14	25	15	12
		27-45	Interior	56	56	56	56	56	56	56	56	56	56	56	55	56	56	46	56	56	39	55	50	34	47	38	29	35	32	25	30	27	22	27	24	19	23	21	25	21	19	22
			Exposed	56	56	46	56	55	38	56	46	33	49	39	30	41	34	27	35	31	25	32	29	23	27	24	19	23	21	25	20	27	22	26	24	19	23	21	17	21	19	15

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	29	35	35	26	35	32	23	35	28	20
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	31	35	35	26	35	31	22	35	27	19	32	24	25	29	21	22	25	18	20
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	30	35	35	26	35	31	23	34	27	20	32	24	27
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	30	35	35	27	35	31	23	35	26	20	31	23	26	27	20	22	24	27	20	21	24	~~18~~
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	40	31	41	33	27	41	29	24	41	26	21
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	33	41	33	28	41	29	24	41	25	20	38	22	27	32	19	24	29	26	21
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	37	29	36	32	26
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	36	28	35	31	25	30	27	21	27	24	19	24	21	25
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	27	35	33	23	35	29	20	34	25	27	30	22	24	27	20	21
			Exposed	35	35	35	35	35	35	35	35	31	35	35	28	35	35	25	35	33	23	35	30	21	35	25	27	30	22	23	26	19	20	22	25	~~18~~	20	22	~~15~~	27	19	~~14~~
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	29	35	33	24	34	28	21	33	24	27	29	21	24	25	19	21	23	25	~~18~~
			Exposed	35	35	34	35	35	30	35	35	27	35	33	25	35	30	22	35	28	20	35	25	19	29	21	24	25	18	20	22	24	~~18~~	19	21	~~15~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	34	41	35	29	41	30	25	41	26	22	39	23	19	34	20	25	30	27	22
			Exposed	41	41	41	41	41	38	41	41	33	41	37	30	41	33	27	41	30	25	41	27	23	41	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~16~~	20	~~18~~	~~15~~
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	38	38	38	38	38	38	38	38	38	38	38	36	38	38	32	38	38	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	18	25	20	25	22	~~18~~
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	35	27	35	32	23	35	28	19	33	24	26	29	21	22	25	28	20	22	25	~~17~~
			Exposed	35	35	32	35	35	29	35	35	26	35	33	23	35	30	21	35	27	19	34	25	27	29	21	23	25	27	19	21	24	~~17~~	19	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	31	35	35	29	35	35	26	35	32	24	34	27	20	32	23	26	28	20	23	24	27	20	21	23	~~17~~	19	21	~~15~~
			Exposed	35	35	28	35	34	25	35	31	23	35	28	21	35	25	19	31	23	26	29	21	24	24	27	20	21	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	40	45	45	34	45	40	31	45	35	29	45	29	24	43	25	21	38	22	27	32	19	24	29	25	21	25	23	~~19~~
			Exposed	45	45	34	45	38	31	45	33	27	45	30	25	45	27	23	45	25	21	41	23	19	33	19	24	28	25	21	24	22	~~18~~	21	~~19~~	~~16~~	19	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	34	42	38	29	35	32	25	30	27	22	27	24	19	23	21	25	21	19	22
			Exposed	42	42	42	42	42	38	42	42	33	42	39	30	41	34	27	35	31	25	32	29	23	27	24	19	23	21	25	20	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~
40	B	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	33	26	33	32	23	33	28	20
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	26	33	31	22	33	27	19	32	24	25	29	21	22	25	18	20
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	26	33	31	23	31	27	20	30	24	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	30	33	33	27	33	31	23	33	26	20	31	23	26	27	20	22	24	27	20	21	24	~~18~~
		20-27	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	27	32	29	24	32	26	21
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	28	32	29	24	32	25	20	32	22	27	32	19	24	29	26	21
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	25	30	27	21	27	24	19	24	21	25			
	C	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	27	33	33	23	33	29	20	33	25	27	30	22	24	27	20	21
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		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	27	27	20	26	24	27
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		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
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		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	22	26	23	19	26	20	25	26	27	22
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		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20	25	22	27
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20	24	21	26	21	19	23	18	25	20	25	22	~~18~~
	D	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	27	30	30	23	30	28	19	30	24	26	29	21	22	25	28	20	22	25	~~17~~
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		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26	30	30	24	29	27	20	28	23	26	27	20	23	24	27	20	21	23	~~17~~	19	21	~~15~~
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		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	24	29	25	21	29	22	27	29	19	24	27	25	21	25	23	~~19~~
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			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	23	27	24	19	23	21	25	20	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	Interior	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	24	24	23	24	24	20
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		7-20	Interior	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	23	24	24	20	23	23	27
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	23	26	24	20	22	24	27	20	21	24	~~18~~
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	27	22	19	24	22	26	21
		27-45	Interior	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
			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	21	21	19	21	21	25
	C	0-7	Interior	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	23	24	24	20	24	24	27	24	22	24	24	20	21
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	27	24	22	23	24	19	20	22	25	~~18~~	20	22	~~15~~	27	19	~~14~~
		7-20	Interior	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	21	23	23	27	23	21	24	22	19	21	21	25	~~18~~
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	19	24	21	24	24	18	20	22	24	~~18~~	19	21	~~15~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
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			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	25	22	26	21	22	23	~~19~~	22	20	~~16~~	20	~~18~~	~~15~~
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			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	20	21	21	26	21	19	23	18	25	20	25	22	~~18~~
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		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	21	25	22	27	25	19	24	25	25	21	24	23	~~19~~
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		27-45	Interior	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	22	23	23	19	23	21	25	21	19	22
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			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	20	21	21	26	21	20	22	21	27	20	21	24	~~18~~
		20-27	Interior	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	19	19	19	19	19	19	19
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		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
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		7-20	Interior	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	27	20	20	24	20	19	21	19	25	~~18~~
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	D	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	22	26	22	21	22	22	28	20	22	25	~~17~~
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		7-20	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	20	22	22	26	22	20	23	21	27	20	20	23	~~17~~	19	21	~~15~~
			Exposed	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	23	26	23	21	24	23	27	20	21	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	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	27	21	19	24	21	25	21	21	23	~~19~~
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	19	24	21	25	21	21	22	~~18~~	21	~~19~~	~~16~~	19	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	25	20	19	22
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	25	20	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~
80	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	18	18	22	18	18	20
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	26	18	18	22	18	27	20	18	24	~~18~~
		20-27	Interior	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	17	17	17	17	17	17	17
			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	26	17	17	24	17	26	21
		27-45	Interior	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	16	16	16	16	16	16	16
			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	16	16	16	16	16	16	24
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	24	18	18	21
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	23	18	18	20	18	25	~~18~~	18	22	~~15~~	27	19	~~14~~
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	24	18	18	21	17	25	~~18~~
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	24	18	18	20	18	24	~~18~~	18	21	~~15~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	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	17	17	17	25	17	26	22
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	25	17	26	21	17	23	~~19~~	17	20	~~16~~	17	~~18~~	~~15~~
		27-45	Interior	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	16	16	16	16	16	16	24
			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	24	16	16	23	16	24	20	24	22	~~18~~
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	26	20	20	22	20	28	20	20	25	~~17~~
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	27	20	20	23	20	27	19	20	24	~~17~~	19	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	26	20	20	23	19	27	20	18	23	~~17~~	18	21	~~15~~
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	26	20	20	24	20	27	20	15	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		20-27	Interior	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	27	19	19	24	19	25	21	19	23	~~19~~	19	23	~~19~~
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	24	19	25	21	19	22	~~18~~	19	~~19~~	~~16~~	19	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	18	18	22
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	18	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	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	16	16	16	16	16	16	16
			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	24	16	16	22	16	16	20
		7-20	Interior	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	16	16	16	16	16	16	24
			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	24	16	16	22	16	24	20	16	24	~~18~~
		20-27	Interior	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
			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	23	23	23	23	23	23	21
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	C	0-7	Interior	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	24	16	16	24	16	16	21
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	23	16	16	20	16	24	~~18~~	16	22	~~15~~	24	19	~~14~~
		7-20	Interior	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	24	16	16	24	16	16	21	16	24	~~18~~
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	20	16	24	~~18~~	16	21	~~15~~	24	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	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	22
			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	21	23	23	~~19~~	23	20	~~17~~	23	~~18~~	~~15~~
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	~~18~~
	D	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	26	18	18	22	18	27	20	18	25	~~17~~
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	23	18	27	19	18	24	~~17~~	18	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	26	18	18	23	18	27	20	17	23	~~17~~	16	21	~~15~~
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	26	18	18	24	18	27	20	18	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	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	25	17	17	24	17	25	21	17	23	~~19~~
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	24	17	25	21	17	22	~~18~~	17	~~19~~	~~16~~	17	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	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	16	16	16	24	16	16	22
			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	24	16	24	22	24	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~
100	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	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	22	14	14	22	14	14	20
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	22
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	22	15	15	22	15	22	20	15	22	~~18~~
		20-27	Interior	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
			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	21	21	21	21	21	21
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	C	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	22	14	14	22	14	14	21
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	22	14	14	22	14	14	20	14	22	~~18~~	14	22	~~15~~	22	19	~~14~~
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	22	15	15	22	15	15	21	15	22	~~18~~
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	22	15	15	20	15	22	~~18~~	15	21	~~15~~	22	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	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
			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	~~19~~	21	20	~~17~~	21	~~18~~	~~15~~
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	~~18~~
	D	0-7	Interior	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	24	16	16	22	16	24	20	16	24	~~17~~
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	23	16	24	19	16	24	~~17~~	16	21	~~15~~	24	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	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	24	16	16	23	16	24	20	16	23	~~17~~	15	21	~~15~~
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	24	16	24	20	16	23	~~17~~	24	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	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	21	23	23	~~19~~
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	22	~~18~~	23	~~19~~	~~16~~	23	~~17~~	~~14~~	23	~~15~~	~~12~~	23	~~15~~	~~12~~
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	~~19~~	22	21	~~17~~	21	~~19~~	~~15~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	98	98	98	98	98	98	98	98	93	98	98	89	98	98	84	98	94	81	98	90	78	97	83	70	90	78	63	84	72	58	79	65	50	75	61	44	68	56	39
			Exposed	98	98	84	98	93	80	98	88	76	98	84	71	93	81	66	89	77	63	86	74	60	79	66	51	74	61	44	66	53	38	62	47	33	56	41	44	50	37	39
		7-20	Interior	98	98	98	98	98	95	98	98	90	98	98	85	98	95	81	98	90	77	98	86	73	93	79	64	86	72	59	80	64	51	74	60	45	66	53	39	62	47	35
			Exposed	98	94	81	98	89	76	98	84	70	94	80	65	89	76	62	85	71	58	81	65	53	75	60	45	65	52	39	61	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	98	98	98	98	98	98	98	98	98	98	98	95	98	98	90	98	94	85	98	90	81	98	82	75	97	76	65	90	68	60	85	62	54	80	57	47	75	51	42
			Exposed	98	98	89	98	93	84	98	88	80	98	83	76	98	79	70	97	76	65	92	70	62	85	62	54	79	56	47	74	49	40	66	43	35	62	38	47	57	33	42
		27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	97	99	99	92	99	98	88	99	90	81	91	83	75	84	78	67	78	72	62	72	65	57	65	62	51
			Exposed	99	99	97	99	99	91	99	96	86	99	91	82	95	87	78	90	83	75	86	80	69	79	73	62	71	65	56	64	60	48	59	53	42	53	47	37	47	42	33
	C	0-7	Interior	98	98	87	98	95	82	98	91	78	98	86	74	96	83	69	92	79	64	88	76	62	81	68	54	76	62	46	69	56	40	63	49	35	59	43	47	53	39	41
			Exposed	96	82	68	91	78	64	86	75	60	82	69	55	79	65	50	76	62	46	71	59	42	64	50	35	59	43	46	51	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	98	97	83	98	91	78	98	86	74	97	82	67	92	78	63	88	74	60	84	69	56	77	62	48	68	55	41	62	48	35	57	42	47	50	37	41	45	33	37
			Exposed	92	78	63	87	73	60	82	66	54	78	62	49	74	60	44	67	54	40	64	50	37	58	42	47	49	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	98	98	92	98	96	87	98	90	82	98	86	78	98	81	73	98	78	67	95	74	63	87	64	57	81	59	49	76	52	43	69	45	37	63	40	33	60	35	44
			Exposed	98	81	73	98	77	66	93	71	62	88	65	59	84	62	53	81	59	49	77	54	44	70	46	38	63	39	32	58	34	42	50	45	37	44	39	33	39	35	~~29~~
		27-45	Interior	99	99	99	99	99	94	99	98	89	99	93	84	98	89	80	93	85	77	88	82	73	81	76	64	75	67	59	66	62	51	61	56	45	56	50	40	49	44	35
			Exposed	97	89	80	91	84	76	86	80	70	82	76	65	78	72	62	74	67	58	68	63	53	61	57	45	55	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	98	92	79	98	87	75	97	83	70	92	80	65	88	76	61	84	72	58	81	67	53	75	61	45	67	54	38	62	47	33	56	41	44	50	36	39	44	49	35
			Exposed	88	76	61	83	71	57	79	65	51	76	62	46	71	59	42	67	54	38	63	49	35	57	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	98	88	76	98	83	69	93	79	64	88	75	61	84	69	56	80	64	51	76	61	47	67	54	40	61	46	34	54	40	44	47	35	39	42	46	34	37	41	~~31~~
			Exposed	83	68	56	79	63	50	75	60	45	68	55	41	64	50	37	61	45	34	57	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	98	92	84	98	87	79	98	82	75	98	78	68	95	74	63	91	68	61	87	64	57	80	58	48	75	50	41	66	43	36	62	38	47	56	33	41	50	44	37
			Exposed	95	74	63	90	66	60	85	62	54	81	59	49	77	54	44	74	49	41	69	45	37	62	38	47	55	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	99	99	90	99	95	85	99	90	81	93	85	77	88	82	73	84	78	67	80	75	63	73	66	57	64	61	49	60	54	43	53	47	37	46	42	33	41	37	44
			Exposed	88	81	72	83	77	66	79	73	62	75	67	59	68	63	53	64	60	49	61	56	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	89	91	91	84	91	91	81	91	90	78	91	83	70	90	78	63	84	72	58	79	65	50	75	61	44	68	56	39
			Exposed	91	91	84	91	91	80	91	88	76	91	84	71	91	81	66	89	77	63	86	74	60	79	66	51	74	61	44	66	53	38	62	47	33	56	41	44	50	37	39
		7-20	Interior	91	91	91	91	91	91	91	91	90	91	91	85	91	91	81	91	90	77	91	86	73	91	79	64	86	72	59	80	64	51	74	60	45	66	53	39	62	47	35
			Exposed	91	91	81	91	89	76	91	84	70	91	80	65	89	76	62	85	71	58	81	65	53	75	60	45	65	52	39	61	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	90	95	94	85	95	90	81	95	82	75	95	76	65	90	68	60	85	62	54	80	57	47	75	51	42
			Exposed	95	95	89	95	93	84	95	88	80	95	83	76	95	79	70	95	76	65	92	70	62	85	62	54	79	56	47	74	49	40	66	43	35	62	38	47	57	33	42
		27-45	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	97	98	98	92	98	98	88	98	90	81	91	83	75	84	78	67	78	72	62	72	65	57	65	62	51
			Exposed	98	98	97	98	98	91	98	96	86	98	91	82	95	87	78	90	83	75	86	80	69	79	73	62	71	65	56	64	60	48	59	53	42	53	47	37	47	42	33
	C	0-7	Interior	91	91	87	91	91	82	91	91	78	91	86	74	91	83	69	91	79	64	88	76	62	81	68	54	76	62	46	69	56	40	63	49	35	59	43	47	53	39	41
			Exposed	91	82	68	91	78	64	86	75	60	82	69	55	79	65	50	76	62	46	71	59	42	64	50	35	59	43	46	51	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	91	91	83	91	91	78	91	86	74	91	82	67	91	78	63	88	74	60	84	69	56	77	62	48	68	55	41	62	48	35	57	42	47	50	37	41	45	33	37
			Exposed	91	78	63	87	73	60	82	66	54	78	62	49	74	60	44	67	54	40	64	50	37	58	42	47	49	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	95	95	92	95	95	87	95	90	82	95	86	78	95	81	73	95	78	67	95	74	63	87	64	57	81	59	49	76	52	43	69	45	37	63	40	33	60	35	44
			Exposed	95	81	73	95	77	66	93	71	62	88	65	59	84	62	53	81	59	49	77	54	44	70	46	38	63	39	32	58	34	42	50	45	37	44	39	33	39	35	~~29~~
		27-45	Interior	98	98	98	98	98	94	98	98	89	98	93	84	98	89	80	93	85	77	88	82	73	81	76	64	75	67	59	66	62	51	61	56	45	56	50	40	49	44	35
			Exposed	97	89	80	91	84	76	86	80	70	82	76	65	78	72	62	74	67	58	68	63	53	61	57	45	55	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	91	91	79	91	87	75	91	83	70	91	80	65	88	76	61	84	72	58	81	67	53	75	61	45	67	54	38	62	47	33	56	41	44	50	36	39	44	49	35
			Exposed	88	76	61	83	71	57	79	65	51	76	62	46	71	59	42	67	54	38	63	49	35	57	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	91	88	76	91	83	69	91	79	64	88	75	61	84	69	56	80	64	51	76	61	47	67	54	40	61	46	34	54	40	44	47	35	39	42	46	34	37	41	~~31~~
			Exposed	83	68	56	79	63	50	75	60	45	68	55	41	64	50	37	61	45	34	57	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	96	92	84	96	87	79	96	82	75	96	78	68	95	74	63	91	68	61	87	64	57	80	58	48	75	50	41	66	43	36	62	38	47	56	33	41	50	44	37
			Exposed	95	74	63	90	66	60	85	62	54	81	59	49	77	54	44	74	49	41	69	45	37	62	38	47	55	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	99	99	90	99	95	85	99	90	81	93	85	77	88	82	73	84	78	67	80	75	63	73	66	57	64	61	49	60	54	43	53	47	37	46	42	33	41	37	44
			Exposed	88	81	72	83	77	66	79	73	62	75	67	59	68	63	53	64	60	49	61	56	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~
20	B	0-7	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	83	83	78	83	83	70	83	78	63	83	72	58	79	65	50	75	61	44	68	56	39
			Exposed	83	83	83	83	83	80	83	83	76	83	83	71	83	81	66	83	77	63	83	74	60	79	66	51	74	61	44	66	53	38	62	47	33	56	41	44	50	37	39
		7-20	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	83	83	77	83	83	73	83	79	64	83	72	59	80	64	51	74	60	45	66	53	39	62	47	35
			Exposed	83	83	81	83	83	76	83	83	70	83	80	65	83	76	62	83	71	58	81	65	53	75	60	45	65	52	39	61	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	85	88	88	81	88	82	75	88	76	65	88	68	60	85	62	54	80	57	47	75	51	42
			Exposed	88	88	88	88	88	84	88	88	80	88	83	76	88	79	70	88	76	65	88	70	62	85	62	54	79	56	47	74	49	40	66	43	35	62	38	47	57	33	42
		27-45	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	90	81	91	83	75	84	78	67	78	72	62	72	65	57	65	62	51
			Exposed	91	91	91	91	91	91	91	91	86	91	91	82	91	87	78	90	83	75	86	80	69	79	73	62	71	65	56	64	60	48	59	53	42	53	47	37	47	42	33
	C	0-7	Interior	83	83	83	83	83	82	83	83	78	83	83	74	83	83	69	83	79	64	83	76	62	81	68	54	76	62	46	69	56	40	63	49	35	59	43	47	53	39	41
			Exposed	83	82	68	83	78	64	83	75	60	82	69	55	79	65	50	76	62	46	71	59	42	64	50	35	59	43	46	51	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	83	83	83	83	83	78	83	83	74	83	82	67	83	78	63	83	74	60	83	69	56	77	62	48	68	55	41	62	48	35	57	42	47	50	37	41	45	33	37
			Exposed	83	78	63	83	73	60	82	66	54	78	62	49	74	60	44	67	54	40	64	50	37	58	42	47	49	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	88	88	88	88	88	87	88	88	82	88	86	78	88	81	73	88	78	67	88	74	63	87	64	57	81	59	49	76	52	43	69	45	37	63	40	33	60	35	44
			Exposed	88	81	73	88	77	66	88	71	62	88	65	59	84	62	53	81	59	49	77	54	44	70	46	38	63	39	32	58	34	42	50	45	37	44	39	33	39	35	~~29~~
		27-45	Interior	91	91	91	91	91	91	91	91	89	91	91	84	91	89	80	91	85	77	88	82	73	81	76	64	75	67	59	66	62	51	61	56	45	56	50	40	49	44	35
			Exposed	91	89	80	91	84	76	86	80	70	82	76	65	78	72	62	74	67	58	68	63	53	61	57	45	55	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	83	83	79	83	83	75	83	83	70	83	80	65	83	76	61	83	72	58	81	67	53	75	61	45	67	54	38	62	47	33	56	41	44	50	36	39	44	49	35
			Exposed	83	76	61	83	71	57	79	65	51	76	62	46	71	59	42	67	54	38	63	49	35	57	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	83	83	76	83	83	69	83	79	64	83	75	61	83	69	56	80	64	51	76	61	47	67	54	40	61	46	34	54	40	44	47	35	39	42	46	34	37	41	~~31~~
			Exposed	83	68	56	79	63	50	75	60	45	68	55	41	64	50	37	61	45	34	57	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	90	90	84	90	87	79	90	82	75	90	78	68	90	74	63	90	68	61	87	64	57	80	58	48	75	50	41	66	43	36	62	38	47	56	33	41	50	44	37
			Exposed	90	74	63	90	66	60	85	62	54	81	59	49	77	54	44	74	49	41	69	45	37	62	38	47	55	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	93	93	90	93	93	85	93	90	81	93	85	77	88	82	73	84	78	67	80	75	63	73	66	57	64	61	49	60	54	43	53	47	37	46	42	33	41	37	44
			Exposed	88	81	72	83	77	66	79	73	62	75	67	59	68	63	53	64	60	49	61	56	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	63	68	68	58	68	65	50	68	61	44	68	56	39
			Exposed	68	68	68	68	68	68	68	68	68	68	68	68	68	68	66	68	68	63	68	68	60	68	66	51	68	61	44	66	53	38	62	47	33	56	41	44	50	37	39
		7-20	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	64	69	69	59	69	64	51	69	60	45	66	53	39	62	47	35
			Exposed	69	69	69	69	69	69	69	69	69	69	69	65	69	69	62	69	69	58	69	65	53	69	60	45	65	52	39	61	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	75	80	76	65	80	68	60	80	62	54	80	57	47	75	51	42
			Exposed	80	80	80	80	80	80	80	80	80	80	80	76	80	79	70	80	76	65	80	70	62	80	62	54	79	56	47	74	49	40	66	43	35	62	38	47	57	33	42
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	67	74	72	62	72	65	57	65	62	51
			Exposed	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	69	74	73	62	71	65	56	64	60	48	59	53	42	53	47	37	47	42	33
	C	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	68	68	62	68	68	54	68	62	46	68	56	40	63	49	35	59	43	47	53	39	41
			Exposed	68	68	68	68	68	64	68	68	60	68	68	55	68	65	50	68	62	46	68	59	42	64	50	35	59	43	46	51	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	69	69	69	69	69	69	69	69	69	69	69	67	69	69	63	69	69	60	69	69	56	69	62	48	67	55	41	62	48	35	57	42	47	50	37	41	45	33	37
			Exposed	69	69	63	69	69	60	69	66	54	69	62	49	69	60	44	67	54	40	64	50	37	58	42	47	49	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	78	80	80	73	80	78	67	80	74	63	80	64	57	80	59	49	76	52	43	69	45	37	63	40	33	60	35	44
			Exposed	80	80	73	80	77	66	80	71	62	80	65	59	80	62	53	80	59	49	77	54	44	70	46	38	63	39	32	58	34	42	50	45	37	44	39	33	39	35	~~29~~
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	73	74	74	64	74	67	59	66	62	51	61	56	45	56	50	40	49	44	35
			Exposed	74	74	74	74	74	74	74	74	70	74	74	65	74	72	62	74	67	58	68	63	53	61	57	45	55	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	65	68	68	61	68	68	58	68	67	53	68	61	45	67	54	38	62	47	33	56	41	44	50	36	39	44	49	35
			Exposed	68	68	61	68	68	57	68	65	51	68	62	46	68	59	42	67	54	38	63	49	35	57	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	69	69	69	69	69	69	69	69	64	69	69	61	69	69	56	69	64	51	69	61	47	66	54	40	61	46	34	54	40	44	47	35	39	42	46	34	37	41	~~31~~
			Exposed	69	68	56	69	63	50	69	60	45	68	55	41	64	50	37	61	45	34	57	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	84	84	84	84	84	79	84	82	75	84	78	68	84	74	63	84	68	61	84	64	57	80	58	48	75	50	41	66	43	36	62	38	47	56	33	41	50	44	37
			Exposed	84	74	63	84	66	60	84	62	54	81	59	49	77	54	44	74	49	41	69	45	37	62	38	47	55	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	81	81	81	81	81	81	81	81	81	81	81	77	81	81	73	81	78	67	80	75	63	73	66	57	64	61	49	60	54	43	53	47	37	46	42	33	41	37	44
			Exposed	81	81	72	81	77	66	79	73	62	75	67	59	68	63	53	64	60	49	61	56	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~
40	B	0-7	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	58	64	64	50	64	61	44	64	56	39
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	60	64	64	51	64	61	44	64	53	38	62	47	33	56	41	44	50	37	39
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	59	64	64	51	64	60	45	62	53	39	59	47	35
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	58	64	64	53	64	60	45	64	52	39	61	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	62	54	63	57	47	63	51	42
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	62	54	63	56	47	63	49	40	63	43	35	62	38	47	57	33	42
		27-45	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	57	59	59	51
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	56	59	59	48	59	53	42	53	47	37	47	42	33
	C	0-7	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	54	64	62	46	64	56	40	63	49	35	59	43	47	53	39	41
			Exposed	64	64	64	64	64	64	64	64	60	64	64	55	64	64	50	64	62	46	64	59	42	64	50	35	59	43	46	51	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	60	64	64	56	64	62	48	62	55	41	60	48	35	57	42	47	50	37	41	45	33	37
			Exposed	64	64	63	64	64	60	64	64	54	64	62	49	64	60	44	64	54	40	64	50	37	58	42	47	49	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	57	63	59	49	63	52	43	63	45	37	62	40	33	59	35	44
			Exposed	63	63	63	63	63	63	63	63	62	63	63	59	63	62	53	63	59	49	63	54	44	63	46	38	63	39	32	58	34	42	50	45	37	44	39	33	39	35	~~29~~
		27-45	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	51	59	56	45	56	50	40	49	44	35
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	58	59	59	53	59	57	45	55	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	65	68	68	61	68	68	58	68	67	53	68	61	45	67	54	38	62	47	33	56	41	44	50	36	39	44	49	35
			Exposed	68	68	61	68	68	57	68	65	51	68	62	46	68	59	42	67	54	38	63	49	35	57	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	69	69	69	69	69	69	69	69	64	69	69	61	69	69	56	69	64	51	69	61	47	66	54	40	61	46	34	54	40	44	47	35	39	42	46	34	37	41	~~31~~
			Exposed	69	68	56	69	63	50	69	60	45	68	55	41	64	50	37	61	45	34	57	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	68	69	69	63	69	68	61	69	64	57	69	58	48	69	50	41	66	43	36	62	38	47	56	33	41	50	44	37
			Exposed	69	69	63	69	66	60	69	62	54	69	59	49	69	54	44	69	49	41	69	45	37	62	38	47	55	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	57	64	61	49	60	54	43	53	47	37	46	42	33	41	37	44
			Exposed	64	64	64	64	64	64	64	64	62	64	64	59	64	63	53	64	60	49	61	56	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~
50	B	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	50	55	55	44	55	55	39
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	44	55	53	38	55	47	33	55	41	44	50	37	39
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	45	53	53	39	52	47	35
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	45	55	52	39	55	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	47	52	51	42
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	47	52	49	40	52	43	35	52	38	47	52	33	42
		27-45	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	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	48	49	49	42	49	47	37	47	42	33
	C	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	46	55	55	40	55	49	35	55	43	47	53	39	41
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	50	55	55	46	55	55	42	55	50	35	55	43	46	51	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	48	54	54	41	52	48	35	50	42	47	48	37	41	45	33	37
			Exposed	55	55	55	55	55	55	55	55	54	55	55	49	55	55	44	55	54	40	55	50	37	55	42	47	49	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	43	52	45	37	52	40	33	52	35	44
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	44	52	46	38	52	39	32	52	34	42	50	45	37	44	39	33	39	35	~~29~~
		27-45	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	45	49	49	40	48	44	35
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	45	49	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	58	59	59	53	59	59	45	59	54	38	59	47	33	56	41	44	50	36	39	44	49	35
			Exposed	59	59	59	59	59	57	59	59	51	59	59	46	59	59	42	59	54	38	59	49	35	57	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	51	60	60	47	57	54	40	55	46	34	53	40	44	47	35	39	42	46	34	37	41	~~31~~
			Exposed	60	60	56	60	60	50	60	60	45	60	55	41	60	50	37	60	45	34	57	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	48	57	50	41	57	43	36	57	38	47	54	33	41	50	44	37
			Exposed	57	57	57	57	57	57	57	57	54	57	57	49	57	54	44	57	49	41	57	45	37	57	38	47	55	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	53	43	52	47	37	46	42	33	41	37	44
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	53	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	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	44	46	46	39
			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	44	46	46	38	46	46	33	46	41	44	46	37	39
		7-20	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	45	47	47	39	46	46	35
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	45	47	47	39	47	45	33	47	39	44	47	35	39	42	47	35
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	44	43	35	44	38	47	44	33	42
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	41	33
	C	0-7	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	40	46	46	35	46	43	47	46	39	41
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	46	46	35	46	43	46	46	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	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	41	46	46	35	45	42	47	43	37	41	42	33	37
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	44	47	47	40	47	47	37	47	42	47	47	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	44	44	37	44	40	33	44	35	44
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	38	44	39	32	44	34	42	44	45	37	44	39	33	39	35	~~29~~
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	35
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	45	51	51	38	51	47	33	51	41	44	50	36	39	44	49	35
			Exposed	51	51	51	51	51	51	51	51	51	51	46	51	51	42	51	51	38	51	49	35	51	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	51	52	52	47	51	51	40	49	46	34	47	40	44	45	35	39	42	46	34	37	41	~~31~~
			Exposed	52	52	52	52	52	50	52	52	45	52	52	41	52	50	37	52	45	34	52	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	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	41	48	43	36	48	38	47	48	33	41	47	44	37
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	44	48	48	41	48	45	37	48	38	47	48	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	45	37	45	42	33	41	37	44
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	45	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~
70	B	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	33	40	40	44	40	37	39
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	35
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	33	41	39	44	41	35	39	41	47	35
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	47	38	33	42
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33
	C	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	40	47	40	39	41
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	40	46	40	37	40	40	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	35	40	40	47	39	37	41	38	33	37
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	37	41	41	47	41	36	40	41	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	33	38	35	44
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	32	38	34	42	38	45	37	38	39	33	38	35	~~29~~
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	45	36	33	39	32	44	35
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	38	44	44	33	44	41	44	44	36	39	44	49	35
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	38	44	44	35	44	42	44	44	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	44	44	34	43	40	44	41	35	39	39	46	34	37	41	~~31~~
			Exposed	45	45	45	45	45	45	45	45	45	45	45	41	45	37	45	45	34	45	41	46	45	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	36	42	38	47	42	33	41	42	44	37
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	38	47	42	33	41	42	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	40	33	40	37	44
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~
80	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	44	35	35	39
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	44	36	35	39	36	47	35
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	47	33	33	42
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	47	35	35	41
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	46	35	35	40	35	49	35	35	43	~~31~~	35	38	~~27~~
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	47	35	35	41	34	33	37
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	47	36	36	40	36	47	35	36	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	44
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	42	33	45	37	33	39	33	33	35	~~29~~
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	45	32	32	39	32	44	35
	D	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	33	39	39	44	39	36	39	39	49	35
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	35	39	39	44	39	36	38	39	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	34	39	39	44	38	35	39	36	46	34	35	41	~~31~~
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	34	39	39	46	39	35	39	39	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	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	37	37	37	37	36	37	37	47	37	33	41	37	44	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	47	37	33	41	37	43	35	37	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	44
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	42	35	47	37	46	41	33	41	37	~~29~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	44	31	31	39
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	44	32	32	39	32	47	35
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42
		27-45	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
	C	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	41
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	46	31	31	40	31	47	35	31	43	~~31~~	31	38	~~27~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	47	32	32	41	32	32	37
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	47	32	32	40	32	47	35	32	41	~~31~~	32	36	~~27~~	44	32	~~24~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	45	45	37	45	39	33	45	35	~~29~~
		27-45	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	39	43	43	35
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	44	35	35	39	35	49	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	44	35	35	38	35	47	33	35	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	44	35	35	39	34	46	34	32	41	~~31~~
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	46	35	35	39	35	45	34	35	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	47	33	33	41	33	44	37
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	47	33	33	41	33	43	35	33	37	~~31~~	33	33	~~27~~	33	~~29~~	~~24~~
		27-45	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	47	47	47	44
			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	42	47	47	37	46	41	33	41	37	~~29~~
100	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	39
		7-20	Interior	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
			Exposed	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	43	29	29	39	29	43	35
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	41
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	40	28	43	35	28	43	~~31~~	28	38	~~27~~	28	38	~~27~~
		7-20	Interior	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	43	29	29	41	29	29	37
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	43	29	29	40	29	43	35	29	41	~~31~~	29	36	~~27~~	43	32	~~24~~
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	39	33	41	35	~~29~~
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	44	31	31	39	31	47	35
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	44	31	31	38	31	47	33	31	41	~~29~~	47	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	44	32	32	39	31	46	34	30	41	~~31~~
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	46	32	32	39	32	45	34	32	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	44	37
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	43	35	45	37	~~31~~	45	33	~~27~~	45	~~29~~	~~24~~
		27-45	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	37	43	41	33	41	37	~~29~~

* 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.

~~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.

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ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	83	83	83	83	83	81	83	83	78	83	83	74	83	81	70	83	78	66	83	76	62	80	68	51	75	62	41	69	53	35	64	44	31	58	38	27	49	34	24
			Exposed	83	81	69	83	78	65	83	74	60	81	69	52	78	65	45	75	62	40	71	57	37	64	44	31	57	37	27	46	32	23	39	28	20	34	25	27	30	22	24
		7-20	Interior	83	83	83	83	83	79	83	83	75	83	82	70	83	78	66	83	75	62	83	71	56	77	63	42	71	54	36	64	42	31	57	37	27	45	32	24	39	29	21
			Exposed	83	78	66	83	74	61	82	69	52	78	64	43	75	60	39	70	52	35	66	45	32	59	37	27	44	32	23	37	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	78	80	80	75	80	78	70	80	75	66	80	67	59	80	60	44	76	48	37	70	40	33	64	35	29	60	31	26
			Exposed	80	80	75	80	77	69	80	73	64	80	68	60	80	64	51	80	60	43	77	52	39	70	40	33	64	34	28	56	30	24	45	26	21	39	23	19	35	20	25
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	74	75	75	66	75	69	60	69	63	47	63	54	39	55	44	35	44	39	31
			Exposed	75	75	75	75	75	75	75	75	72	75	75	67	75	72	63	75	68	59	71	64	50	63	55	40	53	43	34	41	37	29	36	32	26	32	29	23	28	25	20
	C	0-7	Interior	83	83	72	83	79	67	83	76	62	83	72	57	80	68	49	77	64	42	74	60	39	66	48	33	60	40	28	49	34	24	41	30	21	36	26	28	32	23	25
			Exposed	80	67	49	76	63	41	72	58	37	67	50	33	63	43	30	60	39	28	53	36	25	42	30	21	36	26	28	31	22	24	27	20	21	24	26	19	21	23	16
		7-20	Interior	83	80	68	83	76	63	83	72	57	80	67	47	77	63	41	73	58	37	69	49	34	61	39	29	49	33	25	40	29	21	35	25	28	30	22	25	27	20	22
			Exposed	77	62	41	72	55	36	67	46	33	62	40	30	57	36	27	48	33	24	41	30	22	35	26	19	30	22	25	26	19	21	23	25	19	20	22	16	27	20	15
		20-27	Interior	80	80	77	80	79	72	80	76	67	80	71	62	80	66	57	80	62	47	79	57	41	73	42	35	66	36	30	60	31	26	49	27	23	41	24	20	36	21	27
			Exposed	80	66	56	80	61	45	78	53	40	74	44	36	70	39	32	66	36	30	62	33	27	50	28	23	40	24	20	35	20	26	31	27	22	27	24	20	24	21	18
		27-45	Interior	75	75	75	75	75	75	75	75	74	75	75	69	75	75	65	75	71	61	74	67	55	66	60	42	59	47	36	45	39	31	38	34	27	34	30	24	30	27	21
			Exposed	75	75	65	75	69	60	72	65	51	67	61	43	63	54	39	58	46	35	49	41	32	39	35	27	33	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	83	77	64	83	73	60	80	68	50	77	64	43	74	60	39	70	54	35	66	47	32	59	39	27	47	33	23	39	29	20	34	25	27	30	22	24	27	19	21
			Exposed	74	60	39	68	52	34	64	44	31	60	39	28	53	36	25	46	33	23	41	30	21	35	25	27	30	22	23	26	28	20	22	25	18	20	22	15	26	19	14
		7-20	Interior	83	74	60	81	68	50	77	63	42	74	59	38	69	49	34	64	42	31	61	38	28	46	33	24	38	28	21	33	24	27	29	21	24	25	28	21	23	25	19
			Exposed	69	49	34	63	41	30	58	37	27	48	33	25	41	30	22	38	27	20	34	25	28	29	21	24	25	28	20	22	24	18	19	21	16	25	18	14	22	16	12
		20-27	Interior	80	77	69	80	72	63	80	67	58	80	63	48	79	57	41	76	48	38	72	42	34	65	35	29	58	30	25	46	26	22	39	23	19	34	20	25	30	27	22
			Exposed	79	57	41	75	46	37	70	40	33	66	36	30	62	33	27	57	30	25	49	27	22	39	23	19	34	20	25	29	26	21	25	23	19	22	20	17	20	18	15
		27-45	Interior	75	75	75	75	75	71	75	75	66	75	71	62	74	67	55	69	63	47	65	59	41	56	45	35	42	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	74	66	55	68	62	45	63	55	40	58	47	36	49	41	32	42	37	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	18
10	B	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	71	71	66	71	71	62	71	68	51	71	62	41	69	53	35	64	44	31	58	38	27	49	34	24
			Exposed	71	71	69	71	71	65	71	71	60	71	69	52	71	65	45	71	62	40	71	57	37	64	44	31	57	37	27	46	32	23	39	28	20	34	25	27	30	22	24
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	70	72	72	66	72	72	62	72	71	56	72	63	42	71	54	36	64	42	31	57	37	27	45	32	24	39	29	21
			Exposed	72	72	66	72	72	61	72	69	52	72	64	43	72	60	39	70	52	35	66	45	32	59	37	27	44	32	23	37	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	78	80	80	75	80	78	70	80	75	66	80	67	59	80	60	44	76	48	37	70	40	33	64	35	29	60	31	26
			Exposed	80	80	75	80	77	69	80	73	64	80	68	60	80	64	51	80	60	43	77	52	39	70	40	33	64	34	28	56	30	24	45	26	21	39	23	19	35	20	25
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	74	75	75	66	75	69	60	69	63	47	63	54	39	55	44	35	44	39	31
			Exposed	75	75	75	75	75	75	75	75	72	75	75	67	75	72	63	75	68	59	71	64	50	63	55	40	53	43	34	41	37	29	36	32	26	32	29	23	28	25	20
	C	0-7	Interior	71	71	71	71	71	67	71	71	62	71	71	57	71	68	49	71	64	42	71	60	39	66	48	33	60	40	28	49	34	24	41	30	21	36	26	28	32	23	25
			Exposed	71	67	49	71	63	41	71	58	37	67	50	33	63	43	30	60	39	28	53	36	25	42	30	21	36	26	28	31	22	24	27	20	21	24	26	19	21	23	16
		7-20	Interior	72	72	68	72	72	63	72	72	57	72	67	47	72	63	41	72	58	37	69	49	34	61	39	29	49	33	25	40	29	21	35	25	28	30	22	25	27	20	22
			Exposed	72	62	41	72	55	36	67	46	33	62	40	30	57	36	27	48	33	24	41	30	22	35	26	19	30	22	25	26	19	21	23	25	19	20	22	16	27	20	15
		20-27	Interior	80	80	77	80	79	72	80	76	67	80	71	62	80	66	57	80	62	47	79	57	41	73	42	35	66	36	30	60	31	26	49	27	23	41	24	20	36	21	27
			Exposed	80	66	56	80	61	45	78	53	40	74	44	36	70	39	32	66	36	30	62	33	27	50	28	23	40	24	20	35	20	26	31	27	22	27	24	20	24	21	18
		27-45	Interior	75	75	75	75	75	75	75	75	74	75	75	69	75	75	65	75	71	61	74	67	55	66	60	42	59	47	36	45	39	31	38	34	27	34	30	24	30	27	21
			Exposed	75	75	65	75	69	60	72	65	51	67	61	43	63	54	39	58	46	35	49	41	32	39	35	27	33	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	71	71	64	71	71	60	71	68	50	71	64	43	71	60	39	70	54	35	66	47	32	59	39	27	47	33	23	39	29	20	34	25	27	30	22	24	27	19	21
			Exposed	71	60	39	68	52	34	64	44	31	60	39	28	53	36	25	46	33	23	41	30	21	35	25	27	30	22	23	26	28	20	22	25	18	20	22	15	26	19	14
		7-20	Interior	72	72	60	72	68	50	72	63	42	72	59	38	69	49	34	64	42	31	61	38	28	46	33	24	38	28	21	33	24	27	29	21	24	25	28	21	23	25	19
			Exposed	69	49	34	63	41	30	58	37	27	48	33	25	41	30	22	38	27	20	34	25	28	29	21	24	25	28	20	22	24	18	19	21	16	25	18	14	22	16	12
		20-27	Interior	80	77	69	80	72	63	80	67	58	80	63	48	79	57	41	76	48	38	72	42	34	65	35	29	58	30	25	46	26	22	39	23	19	34	20	25	30	27	22
			Exposed	79	57	41	75	46	37	70	40	33	66	36	30	62	33	27	57	30	25	49	27	22	39	23	19	34	20	25	29	26	21	25	23	19	22	20	17	20	18	15
		27-45	Interior	75	75	75	75	75	71	75	75	66	75	71	62	74	67	55	69	63	47	65	59	41	56	45	35	42	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	74	66	55	68	62	45	63	55	40	58	47	36	49	41	32	42	37	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	18
20	B	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	51	53	53	41	53	53	35	53	44	31	53	38	27	49	34	24
			Exposed	53	53	53	53	53	53	53	53	53	53	53	52	53	53	45	53	53	40	53	53	37	53	44	31	53	37	27	46	32	23	39	28	20	34	25	27	30	22	24
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	42	53	53	36	53	42	31	53	37	27	45	32	24	39	29	21
			Exposed	53	53	53	53	53	53	53	53	52	53	53	43	53	53	39	53	52	35	53	45	32	53	37	27	44	32	23	37	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	59	65	60	44	65	48	37	65	40	33	64	35	29	60	31	26
			Exposed	65	65	65	65	65	65	65	65	64	65	65	60	65	64	51	65	60	43	65	52	39	65	40	33	64	34	28	56	30	24	45	26	21	39	23	19	35	20	25
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	63	47	61	54	39	55	44	35	44	39	31
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	59	63	63	50	63	55	40	53	43	34	41	37	29	36	32	26	32	29	23	28	25	20
	C	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	53	42	53	53	39	53	48	33	53	40	28	49	34	24	41	30	21	36	26	28	32	23	25
			Exposed	53	53	49	53	53	41	53	53	37	53	50	33	53	43	30	53	39	28	53	36	25	42	30	21	36	26	28	31	22	24	27	20	21	24	26	19	21	23	16
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	47	53	53	41	53	53	37	53	49	34	53	39	29	49	33	25	40	29	21	35	25	28	30	22	25	27	20	22
			Exposed	53	53	41	53	53	36	53	46	33	53	40	30	53	36	27	48	33	24	41	30	22	35	26	19	30	22	25	26	19	21	23	25	19	20	22	16	27	20	15
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	62	65	65	57	65	62	47	65	57	41	65	42	35	65	36	30	60	31	26	49	27	23	41	24	20	36	21	27
			Exposed	65	65	56	65	61	45	65	53	40	65	44	36	65	39	32	65	36	30	62	33	27	50	28	23	40	24	20	35	20	26	31	27	22	27	24	20	24	21	18
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	63	55	63	60	42	57	47	36	45	39	31	38	34	27	34	30	24	30	27	21
			Exposed	63	63	63	63	63	60	63	63	51	63	61	43	63	54	39	58	46	35	49	41	32	39	35	27	33	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	53	53	53	53	53	53	53	53	50	53	53	43	53	53	39	53	53	35	53	47	32	53	39	27	47	33	23	39	29	20	34	25	27	30	22	24	27	19	21
			Exposed	53	53	39	53	52	34	53	44	31	53	39	28	53	36	25	46	33	23	41	30	21	35	25	27	30	22	23	26	28	20	22	25	18	20	22	15	26	19	14
		7-20	Interior	53	53	53	53	53	50	53	53	42	53	53	38	53	49	34	53	42	31	53	38	28	46	33	24	38	28	21	33	24	27	29	21	24	25	28	21	23	25	19
			Exposed	53	49	34	53	41	30	53	37	27	48	33	25	41	30	22	38	27	20	34	25	28	29	21	24	25	28	20	22	24	18	19	21	16	25	18	14	22	16	12
		20-27	Interior	67	67	67	67	67	63	67	67	58	67	63	48	67	57	41	67	48	38	67	42	34	65	35	29	58	30	25	46	26	22	39	23	19	34	20	25	30	27	22
			Exposed	67	57	41	67	46	37	67	40	33	66	36	30	62	33	27	57	30	25	49	27	22	39	23	19	34	20	25	29	26	21	25	23	19	22	20	17	20	18	15
		27-45	Interior	67	67	67	67	67	67	67	67	66	67	67	62	67	67	55	67	63	47	65	59	41	56	45	35	42	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	67	66	55	67	62	45	63	55	40	58	47	36	49	41	32	42	37	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	18

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~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	35	42	42	31	42	38	27	42	34	24
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	37	42	42	31	42	37	27	42	32	23	39	28	20	34	25	27	30	22	24
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	36	42	42	31	42	37	27	40	32	24	39	29	21
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	35	42	42	32	42	37	27	42	32	23	37	27	20	33	24	27	29	21	24	26	28	21
		20-27	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	44	49	48	37	49	40	33	49	35	29	49	31	26
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	43	49	49	39	49	40	33	49	34	28	49	30	24	45	26	21	39	23	19	35	20	25
		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	39	46	44	35	44	39	31
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	40	46	43	34	41	37	29	36	32	26	32	29	23	28	25	20
	C	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	33	42	40	28	42	34	24	41	30	21	36	26	28	32	23	25
			Exposed	42	42	42	42	42	41	42	42	37	42	42	33	42	42	30	42	39	28	42	36	25	42	30	21	36	26	28	31	22	24	27	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	42	34	42	39	29	41	33	25	39	29	21	35	25	28	30	22	25	27	20	22
			Exposed	42	42	41	42	42	36	42	42	33	42	40	30	42	36	27	42	33	24	41	30	22	35	26	19	30	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	41	49	42	35	49	36	30	49	31	26	46	27	23	41	24	20	36	21	27
			Exposed	49	49	49	49	49	45	49	49	40	49	44	36	49	39	32	49	36	30	49	33	27	49	28	23	40	24	20	35	20	26	31	27	22	27	24	20	24	21	~~18~~
		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	42	46	46	36	44	39	31	38	34	27	34	30	24	30	27	21
			Exposed	46	46	46	46	46	46	46	46	46	46	46	43	46	46	39	46	46	35	46	41	32	39	35	27	33	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	35	42	42	32	42	39	27	42	33	23	39	29	20	34	25	27	30	22	24	27	19	21
			Exposed	42	42	39	42	42	34	42	42	31	42	39	28	42	36	25	42	33	23	41	30	21	35	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	38	42	42	34	42	42	31	42	38	28	40	33	24	38	28	21	33	24	27	29	21	24	25	28	21	23	25	~~19~~
			Exposed	42	42	34	42	41	30	42	37	27	42	33	25	41	30	22	38	27	20	34	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	48	54	54	41	54	48	38	54	42	34	54	35	29	51	30	25	46	26	22	39	23	19	34	20	25	30	27	22
			Exposed	54	54	41	54	46	37	54	40	33	54	36	30	54	33	27	54	30	25	49	27	22	39	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	47	50	50	41	50	45	35	42	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	50	50	50	50	50	45	50	50	40	50	47	36	49	41	32	42	37	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~
40	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	31	39	38	27	39	34	24
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	31	39	37	27	39	32	23	39	28	20	34	25	27	30	22	24
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	31	39	37	27	38	32	24	36	29	21
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	32	39	37	27	39	32	23	37	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	33	38	35	29	38	31	26
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	34	28	38	30	24	38	26	21	38	23	19	35	20	25
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	31
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	29	36	32	26	32	29	23	28	25	20
	C	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	39	28	39	34	24	39	30	21	36	26	28	32	23	25
			Exposed	39	39	39	39	39	39	39	39	37	39	39	33	39	39	30	39	39	28	39	36	25	39	30	21	36	26	28	31	22	24	27	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	34	39	39	29	38	33	25	37	29	21	35	25	28	30	22	25	27	20	22
			Exposed	39	39	39	39	39	36	39	39	33	39	39	30	39	36	27	39	33	24	39	30	22	35	26	19	30	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	36	30	38	31	26	38	27	23	38	24	20	36	21	27
			Exposed	38	38	38	38	38	38	38	38	38	38	38	36	38	38	32	38	36	30	38	33	27	38	28	23	38	24	20	35	20	26	31	27	22	27	24	20	24	21	~~18~~
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	34	27	34	30	24	30	27	21
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	32	36	35	27	33	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	35	42	42	32	42	39	27	42	33	23	39	29	20	34	25	27	30	22	24	27	19	21
			Exposed	42	42	39	42	42	34	42	42	31	42	39	28	42	36	25	42	33	23	41	30	21	35	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	38	42	42	34	42	42	31	42	38	28	40	33	24	38	28	21	33	24	27	29	21	24	25	28	21	23	25	~~19~~
			Exposed	42	42	34	42	41	30	42	37	27	42	33	25	41	30	22	38	27	20	34	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	38	42	42	34	42	35	29	42	30	25	41	26	22	39	23	19	34	20	25	30	27	22
			Exposed	42	42	41	42	42	37	42	40	33	42	36	30	42	33	27	42	30	25	42	27	22	39	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	39	39	39	39	39	39	39	39	39	39	39	36	39	39	32	39	37	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~
50	B	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	33	33	24
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	33	32	23	33	28	20	33	25	27	30	22	24
		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	27	33	32	24	32	29	21
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	27	34	32	23	34	27	20	33	24	27	29	21	24	26	28	21
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	26
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	31	30	24	31	26	21	31	23	19	31	20	25
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26	30	29	23	28	25	20
	C	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	28	33	33	24	33	30	21	33	26	28	32	23	25
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		7-20	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	29	33	33	25	32	29	21	31	25	28	29	22	25	27	20	22
			Exposed	34	34	34	34	34	34	34	34	33	34	34	30	34	34	27	34	33	24	34	30	22	34	26	19	30	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	30	31	31	26	31	27	23	31	24	20	31	21	27
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	27	31	28	23	31	24	20	31	20	26	31	27	22	27	24	20	24	21	~~18~~
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	30	27	21
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	29	26	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	32	36	36	27	36	33	23	36	29	20	34	25	27	30	22	24	27	19	21
			Exposed	36	36	36	36	36	34	36	36	31	36	36	28	36	36	25	36	33	23	36	30	21	35	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	31	36	36	28	35	33	24	34	28	21	32	24	27	29	21	24	25	28	21	23	25	~~19~~
			Exposed	36	36	34	36	36	30	36	36	27	36	33	25	36	30	22	36	27	20	34	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	29	35	30	25	35	26	22	35	23	19	33	20	25	30	27	22
			Exposed	35	35	35	35	35	35	35	35	33	35	35	30	35	33	27	35	30	25	35	27	22	35	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	26	32	29	23	28	25	20	25	22	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	30	33	33	27	32	29	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	24
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	23	28	28	20	28	25	27	28	22	24
		7-20	Interior	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	27	29	29	24	28	28	21
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	23	29	27	20	29	24	27	29	21	24	26	28	21
		20-27	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	27	27	27	27	26
			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	24	27	26	21	27	23	19	27	20	25
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	21	28	26	28	28	23	25
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	21	28	26	28	28	22	24	27	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	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	25	28	28	21	27	25	28	26	22	25	25	20	22
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	29	22	29	26	19	29	22	25	26	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	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	26	27	27	23	27	24	20	27	21	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	23	27	24	20	27	20	26	27	27	22	27	24	20	24	21	~~18~~
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	21
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	20	25	23	27	22	20	24	20	27	21
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	27	31	31	23	31	29	20	31	25	27	30	22	24	27	19	21
			Exposed	31	31	31	31	31	31	31	31	31	31	31	28	31	31	25	31	31	23	31	30	21	31	25	27	30	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	28	31	31	24	30	28	21	29	24	27	28	21	24	25	28	21	23	25	~~19~~
			Exposed	32	32	32	32	32	30	32	32	27	32	32	25	32	30	22	32	27	20	32	25	28	29	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	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	25	29	26	22	29	23	19	29	20	25	29	27	22
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	25	29	27	22	29	23	19	29	20	25	29	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	25	20	25	22	27
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	23	28	25	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~
70	B	0-7	Interior	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	24	24	24	24	24	24
			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	23	24	24	20	24	24	27	24	22	24
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	21
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20	25	24	27	25	21	24	25	28	21	25	28	21
		20-27	Interior	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
			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	21	23	23	19	23	20	25
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
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	C	0-7	Interior	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	21	24	24	28	24	23	25
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	28	24	22	24	24	20	21	24	26	~~19~~	21	23	~~16~~
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	24	24	28	24	22	25	23	20	22
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	22	25	25	19	25	22	25	25	19	21	23	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	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	21	27
			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	20	23	20	26	23	27	22	23	24	20	23	21	~~18~~
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	27	22	20	24	20	27	21
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			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	23	27	27	21	27	25	27	27	22	23	26	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	21	26	24	27	25	21	24	24	28	21	23	25	~~19~~
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	22	27	27	20	27	25	28	27	21	24	25	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	23	19	25	20	25	25	27	22
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	23	19	25	20	25	25	26	21	25	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	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	23	24	24	20	24	22	27
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	21	26	21	19	23	28	25	20	25	22	~~18~~
80	B	0-7	Interior	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
			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	20	21	21	27	21	21	24
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	27	22	21	24	22	28	21
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	25
		27-45	Interior	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	19	19	19	19	19	19	19
			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	19	19	19	19	19	19	19
	C	0-7	Interior	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	28	21	21	25
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	24	21	21	21	21	21	24	21	20	21	21	26	~~19~~	21	23	~~16~~
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	28	22	22	25	21	20	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	22	25	22	19	21	22	25	~~19~~	20	22	~~16~~	27	20	~~15~~
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	27
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		27-45	Interior	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	19	19	19	19	19	19	19
			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	27	19	19	24	19	27	21
	D	0-7	Interior	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	23	24	24	20	24	24	27	24	22	24	24	19	21
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	27	24	22	23	24	28	20	22	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	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	21	24	24	27	23	21	24	22	28	21	21	25	~~19~~
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	28	24	21	24	24	28	20	22	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	25	22	27	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	25	22	26	21	22	23	~~19~~	22	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	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	20	21	21	27
			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	20	21	21	26	21	19	23	28	25	20	25	22	~~18~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CT1
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	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	19	19	19	19	19	19	19
			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	19	19	19	27	19	19	24
		7-20	Interior	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	19	19	19	19	19	19	19
			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	27	19	19	24	19	28	21
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25
		27-45	Interior	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	17	17	17	17	17	17	17
			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	17	17	17	17	17	17	17
	C	0-7	Interior	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	19	19	19	28	19	19	25
			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	24	19	19	21	19	26	~~19~~	19	23	~~16~~
		7-20	Interior	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	28	19	19	25	19	19	22
			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	25	19	19	21	19	25	~~19~~	19	22	~~16~~	27	20	~~15~~
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	26	18	27	22	18	24	20	18	21	~~18~~
		27-45	Interior	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	17	17	17	17	17	17	17
			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	26	17	17	24	17	26	21
	D	0-7	Interior	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	20	21	21	27	21	21	24	21	19	21
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	27	21	21	23	21	28	20	21	25	~~18~~	20	22	~~15~~	26	19	~~14~~
		7-20	Interior	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	27	21	21	24	20	28	21	20	25	~~19~~
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	28	21	21	24	21	28	20	21	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	25	20	27	22
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	25	20	26	21	20	23	~~19~~	20	20	~~17~~	20	~~18~~	~~15~~
		27-45	Interior	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	19	19	19	19	19	19	27
			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	26	19	19	23	28	25	20	25	22	~~18~~
100	B	0-7	Interior	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	17	17	17	17	17	17	17
			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	17	17	17	26	17	17	24
		7-20	Interior	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	17	17	17	17	17	17	17
			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	26	17	17	24	17	26	21
		20-27	Interior	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	16	16	16	16	16	16	16
			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	16	16	16	16	16	16	25
		27-45	Interior	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	16	16	16	16	16	16	16
			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	16	16	16	16	16	16	16
	C	0-7	Interior	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	17	17	17	26	17	17	25
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	26	17	17	24	17	17	21	17	26	~~19~~	17	23	~~16~~	17	17	22
		7-20	Interior	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	26	17	17	25	17	17	22
			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	25	17	17	21	17	25	~~19~~	17	22	~~16~~	26	20	~~15~~
		20-27	Interior	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	16	16	16	16	16	16	25
			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	25	16	25	22	16	24	20	16	21	~~18~~
		27-45	Interior	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	16	16	16	16	16	16	16
			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	24	16	16	24	16	24	21
	D	0-7	Interior	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	27	19	19	24	19	19	21
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	27	19	19	23	19	28	20	19	25	~~18~~	19	22	~~15~~	26	19	~~14~~
		7-20	Interior	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	27	19	19	24	19	28	21	18	25	~~19~~
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	28	19	19	24	19	28	20	19	24	~~18~~	19	21	~~16~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	18	27	22
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	18	26	21	18	23	~~19~~	18	20	~~17~~	18	~~18~~	~~15~~
		27-45	Interior	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	17	17	17	17	17	17	26
			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	26	17	17	23	26	25	20	25	22	~~18~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	98	98	98	98	98	98	98	98	94	98	98	89	98	98	85	98	95	82	98	91	78	98	84	71	91	78	64	85	73	59	80	66	52	76	62	45	70	57	40
			Exposed	98	98	85	98	94	81	98	89	77	98	85	72	94	81	67	90	78	63	87	75	60	80	67	52	75	61	45	67	55	39	62	48	34	58	42	45	51	37	40
		7-20	Interior	99	99	99	99	99	96	99	99	91	99	99	86	99	96	82	99	91	78	99	87	75	94	80	65	87	73	60	80	65	52	75	60	46	67	54	40	63	48	36
			Exposed	99	95	82	99	90	77	99	85	72	96	81	65	90	77	62	86	72	59	82	67	54	76	61	46	66	53	39	61	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	96	99	99	91	99	95	86	99	91	82	99	83	76	98	77	66	91	69	61	86	63	55	81	59	48	76	52	43
			Exposed	99	99	90	99	94	85	99	89	80	99	84	76	99	80	71	98	76	65	93	72	62	86	63	56	80	58	48	75	50	41	67	44	36	62	38	32	58	34	43
		27-45	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	98	100	100	93	100	99	89	100	91	82	92	84	76	85	79	68	79	74	63	74	66	58	66	62	52
			Exposed	100	100	98	100	100	92	100	97	87	100	92	83	96	88	79	91	84	76	87	80	71	80	74	63	73	66	57	64	61	50	60	55	43	54	48	38	48	43	34
	C	0-7	Interior	98	98	87	98	96	83	98	91	79	98	87	75	97	83	70	93	80	65	89	77	62	82	69	55	77	63	47	70	58	41	64	50	36	60	44	32	54	39	42
			Exposed	97	83	70	92	79	64	87	75	61	83	71	56	80	66	51	76	63	47	73	60	43	64	51	36	60	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	99	98	84	99	92	79	99	87	75	99	83	69	93	79	64	89	75	61	85	70	57	78	62	49	70	56	42	63	49	36	58	43	32	51	38	42	46	33	37
			Exposed	93	79	64	88	74	60	83	67	55	79	63	50	75	60	45	69	56	41	64	51	38	59	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	99	99	93	99	97	88	99	91	83	99	87	79	99	82	75	99	79	69	96	75	64	88	65	59	82	60	50	77	53	44	70	46	38	64	41	34	60	36	45
			Exposed	99	82	75	99	78	67	94	73	63	89	66	60	85	63	55	82	60	50	78	55	45	71	47	39	64	40	33	59	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	100	100	100	100	100	95	100	99	90	100	94	85	99	90	81	94	86	78	89	83	74	82	76	65	76	68	60	67	63	52	62	58	46	57	51	40	50	45	36
			Exposed	99	90	81	92	85	77	87	81	71	83	77	66	79	73	62	75	68	60	70	64	55	62	58	46	56	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	98	93	80	98	88	76	98	84	71	93	80	65	89	77	62	85	73	59	82	69	54	76	62	46	68	56	39	63	48	34	58	42	45	51	37	40	45	33	35
			Exposed	89	77	62	84	72	58	80	66	52	77	63	47	73	60	43	68	55	39	64	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	99	89	77	99	84	70	94	80	65	89	76	61	85	70	57	81	65	52	77	62	48	68	55	41	62	47	35	56	41	46	49	36	40	43	31	35	38	42	31
			Exposed	84	70	57	80	64	51	75	61	46	69	56	42	64	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	99	93	84	99	88	80	99	83	75	99	79	69	96	75	64	92	69	61	88	64	58	81	59	49	75	51	42	68	44	36	62	38	32	58	34	42	51	45	38
			Exposed	96	75	64	91	68	61	86	63	55	82	60	50	78	55	45	75	50	41	70	46	38	63	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	100	100	91	100	96	86	100	91	82	94	86	78	89	82	74	85	79	68	81	76	64	75	67	59	65	61	50	60	55	44	54	48	38	47	43	34	42	38	45
			Exposed	89	82	74	84	78	67	79	74	63	75	68	60	69	64	55	64	61	50	62	57	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30
10	B	0-7	Interior	92	92	92	92	92	92	92	92	92	92	92	89	92	92	85	92	92	82	92	91	78	92	84	71	91	78	64	85	73	59	80	66	52	76	62	45	70	57	40
			Exposed	92	92	85	92	92	81	92	89	77	92	85	72	92	81	67	90	78	63	87	75	60	80	67	52	75	61	45	67	55	39	62	48	34	58	42	45	51	37	40
		7-20	Interior	92	92	92	92	92	92	92	92	91	92	92	86	92	92	82	92	91	78	92	87	75	92	80	65	87	73	60	80	65	52	75	60	46	67	54	40	63	48	36
			Exposed	92	92	82	92	90	77	92	85	72	92	81	65	90	77	62	86	72	59	82	67	54	76	61	46	66	53	39	61	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	91	96	95	86	96	91	82	96	83	76	96	77	66	91	69	61	86	63	55	81	59	48	76	52	43
			Exposed	96	96	90	96	94	85	96	89	80	96	84	76	96	80	71	96	76	65	93	72	62	86	63	56	80	58	48	75	50	41	67	44	36	62	38	32	58	34	43
		27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	98	99	99	93	99	99	89	99	91	82	92	84	76	85	79	68	79	74	63	74	66	58	66	62	52
			Exposed	99	99	98	99	99	92	99	97	87	99	92	83	96	88	79	91	84	76	87	80	71	80	74	63	73	66	57	64	61	50	60	55	43	54	48	38	48	43	34
	C	0-7	Interior	92	92	87	92	92	83	92	91	79	92	87	75	92	83	70	92	80	65	89	77	62	82	69	55	77	63	47	70	58	41	64	50	36	60	44	32	54	39	42
			Exposed	92	83	70	92	79	64	87	75	61	83	71	56	80	66	51	76	63	47	73	60	43	64	51	36	60	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	92	92	84	92	92	79	92	87	75	92	83	69	92	79	64	89	75	61	85	70	57	78	62	49	70	56	42	63	49	36	58	43	32	51	38	42	46	33	37
			Exposed	92	79	64	88	74	60	83	67	55	79	63	50	75	60	45	69	56	41	64	51	38	59	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	96	96	93	96	96	88	96	91	83	96	87	79	96	82	75	96	79	69	96	75	64	88	65	59	82	60	50	77	53	44	70	46	38	64	41	34	60	36	45
			Exposed	96	82	75	96	78	67	94	73	63	89	66	60	85	63	55	82	60	50	78	55	45	71	47	39	64	40	33	59	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	99	99	99	99	99	95	99	99	90	99	94	85	99	90	81	94	86	78	89	83	74	82	76	65	76	68	60	67	63	52	62	58	46	57	51	40	50	45	36
			Exposed	99	90	81	92	85	77	87	81	71	83	77	66	79	73	62	75	68	60	70	64	55	62	58	46	56	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	92	92	80	92	88	76	92	84	71	92	80	65	89	77	62	85	73	59	82	69	54	76	62	46	68	56	39	63	48	34	58	42	45	51	37	40	45	33	35
			Exposed	89	77	62	84	72	58	80	66	52	77	63	47	73	60	43	68	55	39	64	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	92	89	77	92	84	70	92	80	65	89	76	61	85	70	57	81	65	52	77	62	48	68	55	41	62	47	35	56	41	46	49	36	40	43	31	35	38	42	31
			Exposed	84	70	57	80	64	51	75	61	46	69	56	42	64	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	97	93	84	97	88	80	97	83	75	97	79	69	96	75	64	92	69	61	88	64	58	81	59	49	75	51	42	68	44	36	62	38	32	58	34	42	51	45	38
			Exposed	96	75	64	91	68	61	86	63	55	82	60	50	78	55	45	75	50	41	70	46	38	63	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	99	99	91	99	96	86	99	91	82	94	86	78	89	82	74	85	79	68	81	76	64	75	67	59	65	61	50	60	55	44	54	48	38	47	43	34	42	38	45
			Exposed	89	82	74	84	78	67	79	74	63	75	68	60	69	64	55	64	61	50	62	57	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30
20	B	0-7	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	82	83	83	78	83	83	71	83	78	64	83	73	59	80	66	52	76	62	45	70	57	40
			Exposed	83	83	83	83	83	81	83	83	77	83	83	72	83	81	67	83	78	63	83	75	60	80	67	52	75	61	45	67	55	39	62	48	34	58	42	45	51	37	40
		7-20	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	82	83	83	78	83	83	75	83	80	65	83	73	60	80	65	52	75	60	46	67	54	40	63	48	36
			Exposed	83	83	82	83	83	77	83	83	72	83	81	65	83	77	62	83	72	59	82	67	54	76	61	46	66	53	39	61	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	86	89	89	82	89	83	76	89	77	66	89	69	61	86	63	55	81	59	48	76	52	43
			Exposed	89	89	89	89	89	85	89	89	80	89	84	76	89	80	71	89	76	65	89	72	62	86	63	56	80	58	48	75	50	41	67	44	36	62	38	32	58	34	43
		27-45	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	89	92	91	82	92	84	76	85	79	68	79	74	63	74	66	58	66	62	52
			Exposed	92	92	92	92	92	92	92	92	87	92	92	83	92	88	79	91	84	76	87	80	71	80	74	63	73	66	57	64	61	50	60	55	43	54	48	38	48	43	34
	C	0-7	Interior	83	83	83	83	83	83	83	83	79	83	83	75	83	83	70	83	80	65	83	77	62	82	69	55	77	63	47	70	58	41	64	50	36	60	44	32	54	39	42
			Exposed	83	83	70	83	79	64	83	75	61	83	71	56	80	66	51	76	63	47	73	60	43	64	51	36	60	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	83	83	83	83	83	79	83	83	75	83	83	69	83	79	64	83	75	61	83	70	57	78	62	49	70	56	42	63	49	36	58	43	32	51	38	42	46	33	37
			Exposed	83	79	64	83	74	60	83	67	55	79	63	50	75	60	45	69	56	41	64	51	38	59	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	89	89	89	89	89	88	89	89	83	89	87	79	89	82	75	89	79	69	89	75	64	88	65	59	82	60	50	77	53	44	70	46	38	64	41	34	60	36	45
			Exposed	89	82	75	89	78	67	89	73	63	89	66	60	85	63	55	82	60	50	78	55	45	71	47	39	64	40	33	59	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	92	92	92	92	92	92	92	92	90	92	92	85	92	90	81	92	86	78	89	83	74	82	76	65	76	68	60	67	63	52	62	58	46	57	51	40	50	45	36
			Exposed	92	90	81	92	85	77	87	81	71	83	77	66	79	73	62	75	68	60	70	64	55	62	58	46	56	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	83	83	80	83	83	76	83	83	71	83	80	65	83	77	62	83	73	59	82	69	54	76	62	46	68	56	39	63	48	34	58	42	45	51	37	40	45	33	35
			Exposed	83	77	62	83	72	58	80	66	52	77	63	47	73	60	43	68	55	39	64	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	83	83	77	83	83	70	83	80	65	83	76	61	83	70	57	81	65	52	77	62	48	68	55	41	62	47	35	56	41	46	49	36	40	43	31	35	38	42	31
			Exposed	83	70	57	80	64	51	75	61	46	69	56	42	64	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	90	90	84	90	88	80	90	83	75	90	79	69	90	75	64	90	69	61	88	64	58	81	59	49	75	51	42	68	44	36	62	38	32	58	34	42	51	45	38
			Exposed	90	75	64	90	68	61	86	63	55	82	60	50	78	55	45	75	50	41	70	46	38	63	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	93	93	91	93	93	86	93	91	82	93	86	78	89	82	74	85	79	68	81	76	64	75	67	59	65	61	50	60	55	44	54	48	38	47	43	34	42	38	45
			Exposed	89	82	74	84	78	67	79	74	63	75	68	60	69	64	55	64	61	50	62	57	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	64	70	70	59	70	66	52	70	62	45	70	57	40
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	70	63	70	70	60	70	67	52	70	61	45	67	55	39	62	48	34	58	42	45	51	37	40
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	65	71	71	60	71	65	52	71	60	46	67	54	40	63	48	36
			Exposed	71	71	71	71	71	71	71	71	71	71	71	65	71	71	62	71	71	59	71	67	54	71	61	46	66	53	39	61	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	76	82	77	66	82	69	61	82	63	55	81	59	48	76	52	43
			Exposed	82	82	82	82	82	82	82	82	80	82	82	76	82	80	71	82	76	65	82	72	62	82	63	56	80	58	48	75	50	41	67	44	36	62	38	32	58	34	43
		27-45	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	68	76	74	63	74	66	58	66	62	52
			Exposed	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	71	76	74	63	73	66	57	64	61	50	60	55	43	54	48	38	48	43	34
	C	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	65	70	70	62	70	69	55	70	63	47	70	58	41	64	50	36	60	44	32	54	39	42
			Exposed	70	70	70	70	70	64	70	70	61	70	70	56	70	66	51	70	63	47	70	60	43	64	51	36	60	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	69	71	71	64	71	71	61	71	70	57	71	62	49	69	56	42	63	49	36	58	43	32	51	38	42	46	33	37
			Exposed	71	71	64	71	71	60	71	67	55	71	63	50	71	60	45	69	56	41	64	51	38	59	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	79	82	82	75	82	79	69	82	75	64	82	65	59	82	60	50	77	53	44	70	46	38	64	41	34	60	36	45
			Exposed	82	82	75	82	78	67	82	73	63	82	66	60	82	63	55	82	60	50	78	55	45	71	47	39	64	40	33	59	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	74	76	76	65	76	68	60	67	63	52	62	58	46	57	51	40	50	45	36
			Exposed	76	76	76	76	76	76	76	76	71	76	76	66	76	73	62	75	68	60	70	64	55	62	58	46	56	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	70	70	70	70	70	70	70	70	70	70	65	70	70	62	70	70	59	70	69	54	70	62	46	68	56	39	63	48	34	58	42	45	51	37	40	45	33	35
			Exposed	70	70	62	70	70	58	70	66	52	70	63	47	70	60	43	68	55	39	64	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	71	71	71	71	71	70	71	71	65	71	71	61	71	70	57	71	65	52	71	62	48	68	55	41	62	47	35	56	41	46	49	36	40	43	31	35	38	42	31
			Exposed	71	70	57	71	64	51	71	61	46	69	56	42	64	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	85	85	84	85	85	80	85	83	75	85	79	69	85	75	64	85	69	61	85	64	58	81	59	49	75	51	42	68	44	36	62	38	32	58	34	42	51	45	38
			Exposed	85	75	64	85	68	61	85	63	55	82	60	50	78	55	45	75	50	41	70	46	38	63	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	83	83	83	83	83	83	83	83	82	83	83	78	83	82	74	83	79	68	81	76	64	75	67	59	65	61	50	60	55	44	54	48	38	47	43	34	42	38	45
			Exposed	83	82	74	83	78	67	79	74	63	75	68	60	69	64	55	64	61	50	62	57	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30
40	B	0-7	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	59	65	65	52	65	62	45	65	57	40
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	65	60	65	65	52	65	61	45	65	55	39	62	48	34	58	42	45	51	37	40
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	52	66	66	60	66	65	52	65	60	46	63	54	40	61	48	36
			Exposed	66	66	66	66	66	66	66	66	66	66	66	65	66	66	62	66	66	59	66	66	54	66	61	46	66	53	39	61	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	61	64	63	55	64	59	48	64	52	43
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	63	56	64	58	48	64	50	41	64	44	36	62	38	32	58	34	43
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	58	60	60	52
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	60	50	60	55	43	54	48	38	48	43	34	48	43	34
	C	0-7	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	65	55	65	63	47	65	58	41	64	50	36	60	44	32	54	39	42
			Exposed	65	65	65	65	65	64	65	65	61	65	65	56	65	65	51	65	63	47	65	60	43	64	51	36	60	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	64	66	66	61	66	66	57	66	62	49	64	56	42	61	49	36	58	43	32	51	38	42	46	33	37
			Exposed	66	66	64	66	66	60	66	66	55	66	63	50	66	60	45	66	56	41	64	51	38	59	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	59	64	60	50	64	53	44	64	46	38	63	41	34	60	36	45
			Exposed	64	64	64	64	64	64	64	64	63	64	64	60	64	63	55	64	60	50	64	55	45	64	47	39	64	40	33	59	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	52	60	58	46	57	51	40	50	45	36
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	55	60	58	46	56	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	70	70	70	70	70	70	70	70	70	70	65	70	70	62	70	70	59	70	69	54	70	62	46	68	56	39	63	48	34	58	42	45	51	37	40	45	33	35
			Exposed	70	70	62	70	70	58	70	66	52	70	63	47	70	60	43	68	55	39	64	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	70	70	70	70	70	70	70	70	65	70	70	61	70	70	57	70	65	52	70	62	48	68	55	41	62	47	35	56	41	46	49	36	40	43	31	35	38	42	31
			Exposed	70	70	57	70	64	51	70	61	46	69	56	42	64	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	70	70	70	70	70	70	70	70	70	70	70	69	70	70	64	70	69	61	70	64	58	70	59	49	70	51	42	68	44	36	62	38	32	58	34	42	51	45	38
			Exposed	70	70	64	70	68	61	70	63	55	70	60	50	70	55	45	70	50	41	70	46	38	63	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	64	66	66	59	65	61	50	60	55	44	54	48	38	47	43	34	42	38	45
			Exposed	66	66	66	66	66	66	66	66	63	66	66	60	66	64	55	64	61	50	62	57	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30
50	B	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	45	56	56	40
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	45	56	55	39	56	48	34	56	42	45	51	37	40
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	56	56	46	55	54	40	53	48	36
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	54	57	57	46	57	53	39	57	46	34	55	40	45	49	36	40	43	32	35
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	48	53	52	43
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	48	53	50	41	53	44	36	53	38	32	53	34	43
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	43	50	48	38	48	43	34
	C	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	47	56	56	41	56	50	36	56	44	32	54	39	42
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	51	56	56	47	56	56	43	56	51	36	56	44	47	52	38	41	45	33	35	40	44	31	35	39	28
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	49	55	55	42	53	49	36	51	43	32	49	38	42	46	33	37
			Exposed	57	57	57	57	57	57	57	57	55	57	57	50	57	57	45	57	56	41	57	51	38	57	43	32	50	37	41	44	32	36	38	42	31	34	37	28	45	33	25
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	53	44	53	46	38	53	41	34	53	36	45
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	53	45	53	47	39	53	40	33	53	35	43	51	46	38	45	40	33	40	36	30
		27-45	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	46	50	50	40	49	45	36
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	46	50	50	40	48	43	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	54	60	60	46	60	56	39	60	48	34	58	42	45	51	37	40	45	33	35
			Exposed	60	60	60	60	60	58	60	60	52	60	60	47	60	60	43	60	55	39	60	50	36	58	42	45	50	36	39	43	32	34	38	42	30	33	37	26	45	33	23
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	57	61	61	52	61	61	48	59	55	41	56	47	35	54	41	46	49	36	40	43	31	35	38	42	31
			Exposed	61	61	57	61	61	51	61	61	46	61	56	42	61	51	38	61	46	34	58	42	31	49	36	40	42	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	49	58	51	42	58	44	36	58	38	32	55	34	42	51	45	38
			Exposed	58	58	58	58	58	58	58	58	55	58	58	50	58	55	45	58	50	41	58	46	38	58	39	32	57	33	42	49	44	36	43	38	32	38	34	28	34	30	25
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	50	55	55	44	53	48	38	47	43	34	42	38	45
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	50	55	55	46	54	49	39	47	42	33	40	36	43	35	32	38	31	42	34	42	38	30

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	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	45	47	47	40
			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	45	47	47	39	47	47	34	47	42	45	47	37	40
		7-20	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	46	48	48	40	47	47	36
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	39	48	46	34	48	40	45	48	36	40	43	32	35
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	44	36	45	38	32	45	34	43
		27-45	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	34
	C	0-7	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	41	47	47	36	47	44	32	47	39	42
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	43	47	47	36	47	44	47	47	38	41	45	33	35	40	44	31	35	39	~~28~~
		7-20	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	42	47	47	36	46	43	32	44	38	42	42	33	37
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	45	48	48	41	48	48	38	48	43	32	48	37	41	44	32	36	38	42	31	34	37	~~28~~	45	33	~~25~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	38	45	41	34	45	36	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	39	45	40	33	45	35	43	45	46	38	45	40	33	40	36	~~30~~
		27-45	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	36
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	34	42	38	46	37	34	40	33	45	36
	D	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	46	52	52	39	52	48	34	52	42	45	51	37	40	45	33	35
			Exposed	52	52	52	52	52	52	52	52	52	52	52	47	52	52	43	52	52	39	52	50	36	52	42	45	50	36	39	43	32	34	38	42	~~30~~	33	37	~~26~~	45	33	~~23~~
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	48	52	52	41	50	47	35	48	41	46	46	36	40	43	31	35	38	42	31
			Exposed	53	53	53	53	53	51	53	53	46	53	53	42	53	51	38	53	46	34	53	42	31	49	36	40	42	46	35	36	40	~~30~~	32	35	~~26~~	42	31	~~23~~	38	~~28~~	~~21~~
		20-27	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	42	49	44	36	49	38	32	49	34	42	48	45	38
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	45	49	49	41	49	46	38	49	39	32	49	33	42	49	44	36	43	38	32	38	34	~~28~~	34	~~30~~	~~25~~
		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	44	46	46	38	46	43	34	42	38	45
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	39	46	42	33	40	36	43	35	32	38	31	42	34	42	38	~~30~~
70	B	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	34	41	41	45	41	37	40
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	36
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	34	41	40	45	41	36	40	41	32	35
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	38	32	39	34	43
		27-45	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	37	37	37	37	37	37	37	37	37	37	37	37	37	37
			Exposed	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	37	37	37	37	37	37	37	37	37	37	37	37	37	34
	C	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	32	41	39	42
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	47	41	38	41	41	33	35	40	44	31	35	39	~~28~~
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	32	40	38	42	38	33	37
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	38	41	41	32	41	37	41	41	32	36	38	42	31	34	37	~~28~~	45	33	~~25~~
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	34	39	36	45
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	35	43	39	46	38	39	40	33	39	36	~~30~~
		27-45	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	37	37	37	37	37	37	37	37	37	37	37	37	37	36
			Exposed	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	37	37	37	37	34	37	37	46	37	34	40	33	45	36
	D	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	39	45	45	34	45	42	45	45	42	45	45	37	40	45	33	35
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	45	39	45	45	36	45	42	45	45	36	39	43	32	34	38	42	~~30~~	33	37	~~26~~	45	33	~~23~~
		7-20	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	41	45	45	35	44	41	46	42	36	40	40	31	35	38	42	31
			Exposed	46	46	46	46	46	46	46	46	46	46	46	42	46	46	38	46	46	34	46	42	31	46	36	40	42	46	35	36	40	~~30~~	32	35	~~26~~	42	31	~~23~~	38	~~28~~	~~21~~
		20-27	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	36	43	38	32	43	34	42	43	45	38
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	38	43	39	32	43	33	42	43	44	36	43	38	32	38	34	~~28~~	34	~~30~~	~~25~~
		27-45	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	34	40	38	45
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	33	40	36	43	35	32	38	31	42	34	42	38	~~30~~
80	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	45	36	36	40
		7-20	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	37	37	37	37	37	37	37	37	37	37	37	37	37	36
			Exposed	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	37	37	37	37	34	37	37	45	37	36	40	37	32	35
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	43
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
	C	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	42
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	47	36	36	41	36	33	35	36	44	31	35	39	~~28~~
		7-20	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	37	37	37	37	36	37	37	32	36	36	42	35	33	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	32	37	37	41	37	32	36	37	42	31	34	37	~~28~~	45	33	~~25~~
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	45
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	43	34	46	38	34	40	33	34	36	~~30~~
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	46	32	32	40	32	45	36
	D	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	34	40	40	45	40	37	40	40	33	35
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	36	40	40	45	40	36	39	40	32	34	38	42	~~30~~	33	37	~~26~~	45	33	~~23~~
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	40	46	38	36	40	37	31	35	36	42	31
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	34	40	40	31	40	36	40	40	46	35	36	40	~~30~~	32	35	~~26~~	42	31	~~23~~	38	~~28~~	~~21~~
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	32	38	34	42	38	45	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	32	38	33	42	38	44	36	38	38	32	38	34	~~28~~	34	~~30~~	~~25~~
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	45
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	43	35	32	38	31	42	34	42	38	~~30~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CT1
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	45	32	32	40
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	45	33	33	40	33	32	35
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	43
		27-45	Interior	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
			Exposed	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
	C	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	42
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	47	32	32	41	32	32	35	32	44	31	32	39	28
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	42	32	32	37
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	41	33	32	36	33	42	31	33	37	28	45	33	25
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	45
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	43	31	46	38	31	40	33	31	36	30
		27-45	Interior	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
			Exposed	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	44	29	29	40	29	44	36
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	45	36	36	40	36	33	35
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	45	36	36	39	36	32	34	36	42	30	33	37	26	45	33	23
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	46	35	35	40	34	31	35	33	42	31
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	31	36	36	40	36	46	35	36	40	30	32	35	26	42	31	23	38	28	21
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	42	34	45	38
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	33	42	34	44	36	34	38	32	34	34	28	34	30	25
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	45
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	43	32	32	38	31	42	34	42	38	30
100	B	0-7	Interior	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
			Exposed	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	44	29	29	40
		7-20	Interior	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
			Exposed	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	44	29	29	40	29	29	35
		20-27	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	42
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
	C	0-7	Interior	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	42
			Exposed	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	44	29	29	41	29	29	35	29	44	31	29	39	28
		7-20	Interior	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	42	29	29	37
			Exposed	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	41	29	29	36	29	42	31	29	37	28	44	33	25
		20-27	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	42
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	42	28	42	38	28	40	33	28	36	30
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	40	26	26	40	26	40	36
	D	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	45	32	32	40	32	32	35
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	45	32	32	39	32	32	34	32	42	30	32	37	26	45	33	23
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	46	33	33	40	32	31	35	31	42	31
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	46	35	33	40	30	32	35	26	42	31	23	38	28	21			
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	42	31	45	38
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	42	31	44	36	31	38	32	31	34	28	31	30	25			
		27-45	Interior	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	44
			Exposed	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	43	29	29	38	29	42	34	42	38	30			

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	74	74	74	74	74	74	74	74	74	74	74	70	74	74	65	74	74	61	74	71	56	74	64	42	71	56	34	65	45	29	59	37	26	49	32	23	41	28	20
			Exposed	74	74	65	74	74	60	74	69	52	74	65	44	74	61	37	70	55	33	66	48	31	60	37	26	47	31	22	38	27	19	32	24	25	29	21	22	25	18	20
		7-20	Interior	72	72	72	72	72	72	72	72	71	72	72	66	72	72	62	72	71	56	72	67	47	72	60	35	67	45	30	61	35	26	48	31	23	38	27	20	33	24	27
			Exposed	72	72	62	72	70	53	72	65	43	72	61	36	71	52	32	66	44	30	62	37	27	49	31	23	37	26	20	31	23	26	27	20	22	24	27	20	21	24	~~18~~
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	67	62	67	63	49	67	52	37	67	40	31	66	33	27	60	29	24	51	26	21
			Exposed	67	67	67	67	67	65	67	67	61	67	64	51	67	60	43	67	51	36	67	43	33	66	33	28	60	29	24	47	25	20	38	22	27	32	19	24	29	26	21
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	50	63	57	39	59	46	33	46	37	29	37	32	26
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	58	63	63	49	63	60	42	60	46	33	44	36	28	35	31	25	30	27	21	27	24	19	24	21	25
	C	0-7	Interior	74	74	67	74	74	63	74	72	57	74	67	48	74	63	41	73	59	35	69	52	32	62	40	27	52	33	23	41	29	20	34	25	27	30	22	24	27	20	21
			Exposed	74	63	41	72	57	35	67	49	31	63	42	28	58	36	25	51	33	23	44	30	21	35	25	27	30	22	23	26	19	20	22	25	~~18~~	20	22	~~15~~	27	19	~~14~~
		7-20	Interior	72	72	64	72	72	59	72	68	48	72	63	40	72	58	34	69	48	31	65	41	29	55	33	24	41	28	21	33	24	27	29	21	24	25	19	21	23	25	~~18~~
			Exposed	72	57	34	68	46	30	63	38	27	57	33	25	47	30	22	40	28	20	35	25	19	29	21	24	25	18	20	22	24	~~18~~	19	21	~~15~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	67	67	67	67	67	67	67	67	63	67	67	57	67	62	47	67	57	40	67	48	34	67	35	29	62	30	25	52	26	22	41	23	19	34	20	25	30	27	22
			Exposed	67	62	47	67	54	38	67	44	33	67	37	30	65	33	27	61	30	25	55	27	23	42	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~16~~	20	~~18~~	~~15~~
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	63	54	63	62	46	62	51	35	49	39	30	38	33	26	32	29	23	28	25	20	25	22	27
			Exposed	63	63	61	63	63	52	63	61	43	63	53	36	58	45	32	48	39	30	41	34	27	32	29	23	28	25	20	24	21	26	21	19	23	18	25	20	25	22	~~18~~
	D	0-7	Interior	74	73	60	74	68	50	74	64	42	73	60	36	69	52	32	65	45	29	61	39	27	49	32	23	39	28	19	33	24	26	29	21	22	25	28	20	22	25	~~17~~
			Exposed	69	51	32	64	43	29	60	37	26	51	33	23	44	30	21	38	27	19	34	25	27	29	21	23	25	27	19	21	24	~~17~~	19	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	72	69	51	72	64	42	72	60	35	69	49	31	65	41	29	61	35	26	53	32	24	39	27	20	32	23	26	28	20	23	24	27	20	21	23	~~17~~	19	21	~~15~~
			Exposed	65	41	28	60	34	25	49	31	23	40	28	21	35	25	19	31	23	26	29	21	24	24	27	20	21	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	67	67	65	67	67	60	67	63	49	67	58	40	67	48	34	67	40	31	67	35	29	61	29	24	48	25	21	38	22	27	32	19	24	29	25	21	25	23	~~19~~
			Exposed	67	47	34	67	38	31	66	33	27	62	30	25	55	27	23	47	25	21	41	23	19	33	19	24	28	25	21	24	22	~~18~~	21	~~19~~	~~16~~	19	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	63	63	63	63	63	63	63	63	62	63	63	55	63	62	46	63	58	39	61	50	34	47	38	29	35	32	25	30	27	22	27	24	19	23	21	25	21	19	22
			Exposed	63	62	46	63	55	38	60	46	33	49	39	30	41	34	27	35	31	25	32	29	23	27	24	19	23	21	25	20	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~
10	B	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	42	60	56	34	60	45	29	59	37	26	49	32	23	41	28	20
			Exposed	60	60	60	60	60	60	60	60	52	60	60	44	60	60	37	60	55	33	60	48	31	60	37	26	47	31	22	38	27	19	32	24	25	29	21	22	25	18	20
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	47	60	60	35	60	45	30	60	35	26	48	31	23	38	27	20	33	24	27
			Exposed	60	60	60	60	60	53	60	60	43	60	60	36	60	52	32	60	44	30	60	37	27	49	31	23	37	26	20	31	23	26	27	20	22	24	27	20	21	24	~~18~~
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	67	62	67	63	49	67	52	37	67	40	31	66	33	27	60	29	24	51	26	21
			Exposed	67	67	67	67	67	65	67	67	61	67	64	51	67	60	43	67	51	36	67	43	33	66	33	28	60	29	24	47	25	20	38	22	27	32	19	24	29	26	21
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	50	63	57	39	59	46	33	46	37	29	37	32	26
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	58	63	63	49	63	60	42	60	46	33	44	36	28	35	31	25	30	27	21	27	24	19	24	21	25
	C	0-7	Interior	60	60	60	60	60	60	60	60	57	60	60	48	60	60	41	60	59	35	60	52	32	60	40	27	52	33	23	41	29	20	34	25	27	30	22	24	27	20	21
			Exposed	60	60	41	60	57	35	60	49	31	60	42	28	58	36	25	51	33	23	44	30	21	35	25	27	30	22	23	26	19	20	22	25	~~18~~	20	22	~~15~~	27	19	~~14~~
		7-20	Interior	60	60	60	60	60	59	60	60	48	60	60	40	60	58	34	60	48	31	60	41	29	55	33	24	41	28	21	33	24	27	29	21	24	25	19	21	23	25	~~18~~
			Exposed	60	57	34	60	46	30	60	38	27	57	33	25	47	30	22	40	28	20	35	25	19	29	21	24	25	18	20	22	24	~~18~~	19	21	~~15~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	67	67	67	67	67	67	67	67	63	67	67	57	67	62	47	67	57	40	67	48	34	67	35	29	62	30	25	52	26	22	41	23	19	34	20	25	30	27	22
			Exposed	67	62	47	67	54	38	67	44	33	67	37	30	65	33	27	61	30	25	55	27	23	42	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~16~~	20	~~18~~	~~15~~
		27-45	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	63	54	63	62	46	62	51	35	49	39	30	38	33	26	32	29	23	28	25	20	25	22	27
			Exposed	63	63	61	63	63	52	63	61	43	63	53	36	58	45	32	48	39	30	41	34	27	32	29	23	28	25	20	24	21	26	21	19	23	18	25	20	25	22	~~18~~
	D	0-7	Interior	60	60	60	60	60	50	60	60	42	60	60	36	60	52	32	60	45	29	60	39	27	49	32	23	39	28	19	33	24	26	29	21	22	25	28	20	22	25	~~17~~
			Exposed	60	51	32	60	43	29	60	37	26	51	33	23	44	30	21	38	27	19	34	25	27	29	21	23	25	27	19	21	24	~~17~~	19	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	60	60	51	60	60	42	60	60	35	60	49	31	60	41	29	60	35	26	53	32	24	39	27	20	32	23	26	28	20	23	24	27	20	21	23	~~17~~	19	21	~~15~~
			Exposed	60	41	28	60	34	25	49	31	23	40	28	21	35	25	19	31	23	26	29	21	24	24	27	20	21	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	67	67	65	67	67	60	67	63	49	67	58	40	67	48	34	67	40	31	67	35	29	61	29	24	48	25	21	38	22	27	32	19	24	29	25	21	25	23	~~19~~
			Exposed	67	47	34	67	38	31	66	33	27	62	30	25	55	27	23	47	25	21	41	23	19	33	19	24	28	25	21	24	22	~~18~~	21	~~19~~	~~16~~	19	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	63	63	63	63	63	63	63	63	62	63	63	55	63	62	46	63	58	39	61	50	34	47	38	29	35	32	25	30	27	22	27	24	19	23	21	25	21	19	22
			Exposed	63	62	46	63	55	38	60	46	33	49	39	30	41	34	27	35	31	25	32	29	23	27	24	19	23	21	25	20	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~
20	B	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	34	44	44	29	44	37	26	44	32	23	41	28	20
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	37	44	44	33	44	44	31	44	37	26	44	31	22	38	27	19	32	24	25	29	21	22	25	18	20
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	35	45	45	30	45	35	26	45	31	23	38	27	20	33	24	27
			Exposed	45	45	45	45	45	45	45	45	43	45	45	36	45	45	32	45	44	30	45	37	27	45	31	23	37	26	20	31	23	26	27	20	22	24	27	20	21	24	~~18~~
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	52	37	54	40	31	54	33	27	54	29	24	51	26	21
			Exposed	54	54	54	54	54	54	54	54	54	54	54	51	54	54	43	54	51	36	54	43	33	54	33	28	54	29	24	47	25	20	38	22	27	32	19	24	29	26	21
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	50	52	52	39	51	46	33	46	37	29	37	32	26
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	42	52	46	33	44	36	28	35	31	25	30	27	21	27	24	19	24	21	25
	C	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	35	44	44	32	44	40	27	44	33	23	41	29	20	34	25	27	30	22	24	27	20	21
			Exposed	44	44	41	44	44	35	44	44	31	44	42	28	44	36	25	44	33	23	44	30	21	35	25	27	30	22	23	26	19	20	22	25	~~18~~	20	22	~~15~~	27	19	~~14~~
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	40	45	45	34	45	45	31	45	41	29	45	33	24	41	28	21	33	24	27	29	21	24	25	19	21	23	25	~~18~~
			Exposed	45	45	34	45	45	30	45	38	27	45	33	25	45	30	22	40	28	20	35	25	19	29	21	24	25	18	20	22	24	~~18~~	19	21	~~15~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	47	54	54	40	54	48	34	54	35	29	54	30	25	51	26	22	41	23	19	34	20	25	30	27	22
			Exposed	54	54	47	54	54	38	54	44	33	54	37	30	54	33	27	54	30	25	54	27	23	42	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~16~~	20	~~18~~	~~15~~
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	46	52	51	35	48	39	30	38	33	26	32	29	23	28	25	20	25	22	27
			Exposed	52	52	52	52	52	52	52	52	43	52	52	36	52	45	32	48	39	30	41	34	27	32	29	23	28	25	20	24	21	26	21	19	23	18	25	20	25	22	~~18~~
	D	0-7	Interior	44	44	44	44	44	44	44	44	42	44	44	36	44	44	32	44	44	29	44	39	27	44	32	23	39	28	19	33	24	26	29	21	22	25	28	20	22	25	~~17~~
			Exposed	44	44	32	44	43	29	44	37	26	44	33	23	44	30	21	38	27	19	34	25	27	29	21	23	25	27	19	21	24	~~17~~	19	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	45	45	45	45	45	42	45	45	35	45	45	31	45	41	29	45	35	26	45	32	24	39	27	20	32	23	26	28	20	23	24	27	20	21	23	~~17~~	19	21	~~15~~
			Exposed	45	41	28	45	34	25	45	31	23	40	28	21	35	25	19	31	23	26	29	21	24	24	27	20	21	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	56	56	56	56	56	56	56	56	49	56	56	40	56	48	34	56	40	31	56	35	29	56	29	24	48	25	21	38	22	27	32	19	24	29	25	21	25	23	~~19~~
			Exposed	56	47	34	56	38	31	56	33	27	56	30	25	55	27	23	47	25	21	41	23	19	33	19	24	28	25	21	24	22	~~18~~	21	~~19~~	~~16~~	19	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	56	56	56	56	56	56	56	56	56	56	56	55	56	56	46	56	56	39	55	50	34	47	38	29	35	32	25	30	27	22	27	24	19	23	21	25	21	19	22
			Exposed	56	56	46	56	55	38	56	46	33	49	39	30	41	34	27	35	31	25	32	29	23	27	24	19	23	21	25	20	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	29	35	35	26	35	32	23	35	28	20
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	31	35	35	26	35	31	22	35	27	19	32	24	25	29	21	22	25	18	20
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	30	35	35	26	35	31	23	34	27	20	32	24	27
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	30	35	35	27	35	31	23	35	26	20	31	23	26	27	20	22	24	27	20	21	24	~~18~~
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	40	31	41	33	27	41	29	24	41	26	21
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	33	41	33	28	41	29	24	41	25	20	38	22	27	32	19	24	29	26	21
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	37	29	36	32	26
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	36	28	35	31	25	30	27	21	27	24	19	24	21	25
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	27	35	33	23	35	29	20	34	25	27	30	22	24	27	20	21
			Exposed	35	35	35	35	35	35	35	35	31	35	35	28	35	35	25	35	33	23	35	30	21	35	25	27	30	22	23	26	19	20	22	25	~~18~~	20	22	~~15~~	27	19	~~14~~
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	29	35	33	24	34	28	21	33	24	27	29	21	24	25	19	21	23	25	~~18~~
			Exposed	35	35	34	35	35	30	35	35	27	35	33	25	35	30	22	35	28	20	35	25	19	29	21	24	25	18	20	22	24	~~18~~	19	21	~~15~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	34	41	35	29	41	30	25	41	26	22	39	23	19	34	20	25	30	27	22
			Exposed	41	41	41	41	41	38	41	41	33	41	37	30	41	33	27	41	30	25	41	27	23	41	23	19	34	20	25	29	26	21	25	23	~~19~~	22	20	~~16~~	20	~~18~~	~~15~~
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	30	37	33	26	32	29	23	28	25	20	25	22	27
			Exposed	38	38	38	38	38	38	38	38	38	38	38	36	38	38	32	38	38	30	38	34	27	32	29	23	28	25	20	24	21	26	21	19	23	18	25	20	25	22	~~18~~
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	35	27	35	32	23	35	28	19	33	24	26	29	21	22	25	28	20	22	25	~~17~~
			Exposed	35	35	32	35	35	29	35	35	26	35	33	23	35	30	21	35	27	19	34	25	27	29	21	23	25	27	19	21	24	~~17~~	19	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	31	35	35	29	35	35	26	35	32	24	34	27	20	32	23	26	28	20	23	24	27	20	21	23	~~17~~	19	21	~~15~~
			Exposed	35	35	28	35	34	25	35	31	23	35	28	21	35	25	19	31	23	26	29	21	24	24	27	20	21	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	40	45	45	34	45	40	31	45	35	29	45	29	24	43	25	21	38	22	27	32	19	24	29	25	21	25	23	~~19~~
			Exposed	45	45	34	45	38	31	45	33	27	45	30	25	45	27	23	45	25	21	41	23	19	33	19	24	28	25	21	24	22	~~18~~	21	~~19~~	~~16~~	19	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	42	34	42	38	29	35	32	25	30	27	22	27	24	19	23	21	25	21	19	22
			Exposed	42	42	42	42	42	38	42	42	33	42	39	30	41	34	27	35	31	25	32	29	23	27	24	19	23	21	25	20	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~
40	B	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	33	26	33	32	23	33	28	20
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	26	33	31	22	33	27	19	32	24	25	29	21	22	25	18	20
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	26	33	31	23	31	27	20	30	24	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	30	33	33	27	33	31	23	33	26	20	31	23	26	27	20	22	24	27	20	21	24	~~18~~
		20-27	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	27	32	29	24	32	26	21
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	28	32	29	24	32	25	20	32	22	27	32	19	24	29	26	21
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	25	30	27	21	27	24	19	24	21	25			
	C	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	27	33	33	23	33	29	20	33	25	27	30	22	24	27	20	21
			Exposed	33	33	33	33	33	33	33	33	31	33	33	28	33	33	25	33	33	23	33	30	21	33	25	27	30	22	23	26	19	20	22	25	~~18~~	20	22	~~15~~	27	19	~~14~~
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	29	33	33	24	32	28	21	31	24	27	29	21	24	25	19	21	23	25	~~18~~
			Exposed	33	33	33	33	33	30	33	33	27	33	33	25	33	30	22	33	28	20	33	25	19	29	21	24	25	18	20	22	24	~~18~~	19	21	~~15~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	30	25	32	26	22	32	23	19	31	20	25	30	27	22
			Exposed	32	32	32	32	32	32	32	32	32	32	32	30	32	32	27	32	30	25	32	27	23	32	23	19	32	20	25	29	26	21	25	23	~~19~~	22	20	~~16~~	20	~~18~~	~~15~~
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	29	23	28	25	20	25	22	27
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	29	23	28	25	20	24	21	26	21	19	23	18	25	20	25	22	~~18~~
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	29	35	35	27	35	32	23	35	28	19	33	24	26	29	21	22	25	28	20	22	25	~~17~~
			Exposed	35	35	32	35	35	29	35	35	26	35	33	23	35	30	21	35	27	19	34	25	27	29	21	23	25	27	19	21	24	~~17~~	19	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	31	35	35	29	35	35	26	35	32	24	34	27	20	32	23	26	28	20	23	24	27	20	21	23	~~17~~	19	21	~~15~~
			Exposed	35	35	28	35	34	25	35	31	23	35	28	21	35	25	19	31	23	26	29	21	24	24	27	20	21	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	29	35	29	24	35	25	21	34	22	27	32	19	24	29	25	21	25	23	~~19~~
			Exposed	35	35	34	35	35	31	35	33	27	35	30	25	35	27	23	35	25	21	35	23	19	33	19	24	28	25	21	24	22	~~18~~	21	~~19~~	~~16~~	19	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	32	25	30	27	22	27	24	19	23	21	25	21	19	22
			Exposed	33	33	33	33	33	33	33	33	33	33	33	30	33	33	27	33	31	25	32	29	23	27	24	19	23	21	25	20	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~
50	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	28	20
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	22	28	27	19	28	24	25	28	21	22	25	18	20
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	27	27	20	26	24	27
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	23	28	26	20	28	23	26	27	20	22	24	27	20	21	24	~~18~~
		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	21
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	25	20	26	22	27	26	19	24	26	26	21			
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	25	24	19	24	21	25			
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	23	28	28	20	28	25	27	28	22	24	27	20	21
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	23	28	28	21	28	25	27	28	22	23	26	19	20	22	25	~~18~~	20	22	~~15~~	27	19	~~14~~
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	21	27	24	27	26	21	24	25	19	21	23	25	~~18~~
			Exposed	28	28	28	28	28	28	28	28	27	28	28	25	28	28	22	28	28	20	28	25	19	28	21	24	25	18	20	22	24	~~18~~	19	21	~~15~~	25	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	22	26	23	19	26	20	25	26	27	22
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	23	26	23	19	26	20	25	26	26	21	25	23	~~19~~	22	20	~~16~~	20	~~18~~	~~15~~
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20	25	22	27
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20	24	21	26	21	19	23	18	25	20	25	22	~~18~~
	D	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	27	30	30	23	30	28	19	30	24	26	29	21	22	25	28	20	22	25	~~17~~
			Exposed	30	30	30	30	30	29	30	30	26	30	30	23	30	30	21	30	27	19	30	25	27	29	21	23	25	27	19	21	24	~~17~~	19	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26	30	30	24	29	27	20	28	23	26	27	20	23	24	27	20	21	23	~~17~~	19	21	~~15~~
			Exposed	30	30	28	30	30	25	30	30	23	30	28	21	30	25	19	30	23	26	29	21	24	24	27	20	21	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	24	29	25	21	29	22	27	29	19	24	27	25	21	25	23	~~19~~
			Exposed	29	29	29	29	29	29	29	29	27	29	29	25	29	27	23	29	25	21	29	23	19	29	19	24	28	25	21	24	22	~~18~~	21	~~19~~	~~16~~	19	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	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	25	27	27	22	27	24	19	23	21	25	21	19	22
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	23	27	24	19	23	21	25	20	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~

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ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
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SPAN TABLES

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				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
60	B	0-7	Interior	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	24	24	23	24	24	20
			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	22	24	24	19	24	24	25	24	21	22	24	18	20
		7-20	Interior	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	23	24	24	20	23	23	27
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	23	26	24	20	22	24	27	20	21	24	~~18~~
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	27	22	19	24	22	26	21
		27-45	Interior	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
			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	21	21	19	21	21	25
	C	0-7	Interior	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	23	24	24	20	24	24	27	24	22	24	24	20	21
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	27	24	22	23	24	19	20	22	25	~~18~~	20	22	~~15~~	27	19	~~14~~
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		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	25	22	27	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	25	22	26	21	22	23	~~19~~	22	20	~~16~~	20	~~18~~	~~15~~
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		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	21	25	22	27	25	19	24	25	25	21	24	23	~~19~~
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			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	19	23	21	25	20	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~
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			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	25	20	20	22	20	18	20
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			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	20	21	21	26	21	20	22	21	27	20	21	24	~~18~~
		20-27	Interior	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	19	19	19	19	19	19	19
			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	27	19	19	24	19	26	21
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25
	C	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	27	20	20	24	20	20	21
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	27	20	20	23	20	19	20	20	25	~~18~~	20	22	~~15~~	27	19	~~14~~
		7-20	Interior	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	27	20	20	24	20	19	21	19	25	~~18~~
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			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	25	19	26	21	19	23	~~19~~	19	20	~~16~~	19	~~18~~	~~15~~
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			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25
	D	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	22	26	22	21	22	22	28	20	22	25	~~17~~
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	27	22	21	23	22	27	19	21	24	~~17~~	19	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	20	22	22	26	22	20	23	21	27	20	20	23	~~17~~	19	21	~~15~~
			Exposed	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	23	26	23	21	24	23	27	20	21	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	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	27	21	19	24	21	25	21	21	23	~~19~~
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		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	25	20	19	22
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80	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	18	18	22	18	18	20
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	26	18	18	22	18	27	20	18	24	~~18~~
		20-27	Interior	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	17	17	17	17	17	17	17
			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	26	17	17	24	17	26	21
		27-45	Interior	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	16	16	16	16	16	16	16
			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	16	16	16	16	16	16	24
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	24	18	18	21
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		20-27	Interior	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	17	17	17	25	17	26	22
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	25	17	26	21	17	23	~~19~~	17	20	~~16~~	17	~~18~~	~~15~~
		27-45	Interior	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	16	16	16	16	16	16	24
			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	24	16	16	23	16	24	20	24	22	~~18~~
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	26	20	20	22	20	28	20	20	25	~~17~~
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	27	20	20	23	20	27	19	20	24	~~17~~	19	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	26	20	20	23	19	27	20	18	23	~~17~~	18	21	~~15~~
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	26	20	20	24	20	27	20	18	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	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	27	19	19	24	19	25	21	19	23	~~19~~
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	24	19	25	21	19	22	~~18~~	19	~~19~~	~~16~~	19	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	18	18	22
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	18	27	22	26	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
90	B	0-7	Interior	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	16	16	16	16	16	16	16
			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	24	16	16	22	16	16	20
		7-20	Interior	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	16	16	16	16	16	16	24
			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	24	16	16	22	16	24	20	16	24	~~18~~
		20-27	Interior	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
			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	23	23	23	23	23	23	21
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	C	0-7	Interior	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	24	16	16	24	16	16	21
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	23	16	16	20	16	24	~~18~~	16	22	~~15~~	24	19	~~14~~
		7-20	Interior	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	24	16	16	24	16	16	21	16	24	~~18~~
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	20	16	24	~~18~~	16	21	~~15~~	24	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	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	22
			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	21	23	23	~~19~~	23	20	~~17~~	23	~~18~~	~~15~~
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	~~18~~
	D	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	26	18	18	22	18	27	20	18	25	~~17~~
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	27	18	18	23	18	27	19	18	24	~~17~~	18	21	~~15~~	25	~~18~~	~~13~~	22	~~16~~	~~11~~
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	26	18	18	23	18	27	20	17	23	~~17~~	16	21	~~15~~
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	26	18	18	24	18	27	20	18	23	~~17~~	27	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	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	25	17	17	24	17	25	21	17	23	~~19~~
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	24	17	25	21	17	22	~~18~~	17	~~19~~	~~16~~	17	~~17~~	~~14~~	25	~~15~~	~~12~~
		27-45	Interior	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	16	16	16	24	16	16	22
			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	24	16	24	22	24	24	~~19~~	23	21	~~17~~	21	~~19~~	~~15~~
100	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	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	22	14	14	22	14	14	20
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	22
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	22	15	15	22	15	22	20	15	22	~~18~~
		20-27	Interior	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
			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	21	21	21	21	21	21
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	C	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	22	14	14	22	14	14	21
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	22	14	14	22	14	14	20	14	22	~~18~~	14	22	~~15~~	22	19	~~14~~
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	22	15	15	22	15	15	21	15	22	~~18~~
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	22	15	15	20	15	22	~~18~~	15	21	~~15~~	22	~~18~~	~~14~~	22	~~16~~	~~12~~
		20-27	Interior	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
			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	~~19~~	21	20	~~17~~	21	~~18~~	~~15~~
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	~~18~~
	D	0-7	Interior	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	24	16	16	22	16	24	20	16	24	~~17~~
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	24	19	16	24	~~17~~	16	21	~~15~~	24	~~18~~	~~13~~	22	~~16~~	~~11~~	22	~~16~~	~~11~~
		7-20	Interior	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	24	16	16	23	16	24	20	16	23	~~17~~	15	21	~~15~~
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	24	16	16	24	16	24	20	16	23	~~17~~	24	20	~~15~~	24	~~17~~	~~13~~	21	~~15~~	~~11~~	~~19~~	~~14~~	~~10~~
		20-27	Interior	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	21	23	23	~~19~~
			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	21	23	22	~~18~~	23	~~19~~	~~16~~	23	~~17~~	~~14~~	23	~~15~~	~~12~~
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	~~19~~	22	21	~~17~~	21	~~19~~	~~15~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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	98	98	98	98	98	98	98	98	93	98	98	89	98	98	84	98	94	81	98	90	78	97	83	70	90	78	63	84	72	58	79	65	50	75	61	44	68	56	39
			Exposed	98	98	84	98	93	80	98	88	76	98	84	71	93	81	66	89	77	63	86	74	60	79	66	51	74	61	44	66	53	38	62	47	33	56	41	44	50	37	39
		7-20	Interior	98	98	98	98	98	95	98	98	90	98	98	85	98	95	81	98	90	77	98	86	73	93	79	64	86	72	59	80	64	51	74	60	45	66	53	39	62	47	35
			Exposed	98	94	81	98	89	76	98	84	70	94	80	65	89	76	62	85	71	58	81	65	53	75	60	45	65	52	39	61	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	98	98	98	98	98	98	98	98	98	98	98	95	98	98	90	98	94	85	98	90	81	98	82	75	97	76	65	90	68	60	85	62	54	80	57	47	75	51	42
			Exposed	98	98	89	98	93	84	98	88	80	98	83	76	98	79	70	97	76	65	92	70	62	85	62	54	79	56	47	74	49	40	66	43	35	62	38	47	57	33	42
		27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	97	99	99	92	99	98	88	99	90	81	91	83	75	84	78	67	78	72	62	72	65	57	65	62	51
			Exposed	99	99	97	99	99	91	99	96	86	99	91	82	95	87	78	90	83	75	86	80	69	79	73	62	71	65	56	64	60	48	59	53	42	53	47	37	47	42	33
	C	0-7	Interior	98	98	87	98	95	82	98	91	78	98	86	74	96	83	69	92	79	64	88	76	62	81	68	54	76	62	46	69	56	40	63	49	35	59	43	47	53	39	41
			Exposed	96	82	68	91	78	64	86	75	60	82	69	55	79	65	50	76	62	46	71	59	42	64	50	35	59	43	46	51	37	40	44	49	35	39	43	31	35	38	27
		7-20	Interior	98	97	83	98	91	78	98	86	74	97	82	67	92	78	63	88	74	60	84	69	56	77	62	48	68	55	41	62	48	35	57	42	47	50	37	41	45	33	37
			Exposed	92	78	63	87	73	60	82	66	54	78	62	49	74	60	44	67	54	40	64	50	37	58	42	47	49	36	40	43	47	35	37	41	31	33	36	27	44	32	24
		20-27	Interior	98	98	92	98	96	87	98	90	82	98	86	78	98	81	73	98	78	67	95	74	63	87	64	57	81	59	49	76	52	43	69	45	37	63	40	33	60	35	44
			Exposed	98	81	73	98	77	66	93	71	62	88	65	59	84	62	53	81	59	49	77	54	44	70	46	38	63	39	32	58	34	42	50	45	37	44	39	33	39	35	29
		27-45	Interior	99	99	99	99	99	94	99	98	89	99	93	84	98	89	80	93	85	77	88	82	73	81	76	64	75	67	59	66	62	51	61	56	45	56	50	40	49	44	35
			Exposed	97	89	80	91	84	76	86	80	70	82	76	65	78	72	62	74	67	58	68	63	53	61	57	45	55	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	98	92	79	98	87	75	97	83	70	92	80	65	88	76	61	84	72	58	81	67	53	75	61	45	67	54	38	62	47	33	56	41	44	50	36	39	44	49	35
			Exposed	88	76	61	83	71	57	79	65	51	76	62	46	71	59	42	67	54	38	63	49	35	57	42	44	49	36	38	42	47	33	37	41	29	49	36	26	44	32	23
		7-20	Interior	98	88	76	98	83	69	93	79	64	88	75	61	84	69	56	80	64	51	76	61	47	67	54	40	61	46	34	54	40	44	47	35	39	42	46	34	37	41	31
			Exposed	83	68	56	79	63	50	75	60	45	68	55	41	64	50	37	61	45	34	57	41	46	48	35	39	41	45	34	36	39	29	47	35	26	41	30	23	37	27	20
		20-27	Interior	98	92	84	98	87	79	98	82	75	98	78	68	95	74	63	91	68	61	87	64	57	80	58	48	75	50	41	66	43	36	62	38	47	56	33	41	50	44	37
			Exposed	95	74	63	90	66	60	85	62	54	81	59	49	77	54	44	74	49	41	69	45	37	62	38	47	55	33	41	48	43	35	42	37	31	37	33	27	33	29	24
		27-45	Interior	99	99	90	99	95	85	99	90	81	93	85	77	88	82	73	84	78	67	80	75	63	73	66	57	64	61	49	60	54	43	53	47	37	46	42	33	41	37	44
			Exposed	88	81	72	83	77	66	79	73	62	75	67	59	68	63	53	64	60	49	61	56	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	29
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	89	91	91	84	91	91	81	91	90	78	91	83	70	90	78	63	84	72	58	79	65	50	75	61	44	68	56	39
			Exposed	91	91	84	91	91	80	91	88	76	91	84	71	91	81	66	89	77	63	86	74	60	79	66	51	74	61	44	66	53	38	62	47	33	56	41	44	50	37	39
		7-20	Interior	91	91	91	91	91	91	91	91	90	91	91	85	91	91	81	91	90	77	91	86	73	91	79	64	86	72	59	80	64	51	74	60	45	66	53	39	62	47	35
			Exposed	91	91	81	91	89	76	91	84	70	91	80	65	89	76	62	85	71	58	81	65	53	75	60	45	65	52	39	61	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	90	95	94	85	95	90	81	95	82	75	95	76	65	90	68	60	85	62	54	80	57	47	75	51	42
			Exposed	95	95	89	95	93	84	95	88	80	95	83	76	95	79	70	95	76	65	92	70	62	85	62	54	79	56	47	74	49	40	66	43	35	62	38	47	57	33	42
		27-45	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	97	98	98	92	98	98	88	98	90	81	91	83	75	84	78	67	78	72	62	72	65	57	65	62	51
			Exposed	98	98	97	98	98	91	98	96	86	98	91	82	95	87	78	90	83	75	86	80	69	79	73	62	71	65	56	64	60	48	59	53	42	53	47	37	47	42	33
	C	0-7	Interior	91	91	87	91	91	82	91	91	78	91	86	74	91	83	69	91	79	64	88	76	62	81	68	54	76	62	46	69	56	40	63	49	35	59	43	47	53	39	41
			Exposed	91	82	68	91	78	64	86	75	60	82	69	55	79	65	50	76	62	46	71	59	42	64	50	35	59	43	46	51	37	40	44	49	35	39	43	31	35	38	27
		7-20	Interior	91	91	83	91	91	78	91	86	74	91	82	67	91	78	63	88	74	60	84	69	56	77	62	48	68	55	41	62	48	35	57	42	47	50	37	41	45	33	37
			Exposed	91	78	63	87	73	60	82	66	54	78	62	49	74	60	44	67	54	40	64	50	37	58	42	47	49	36	40	43	47	35	37	41	31	33	36	27	44	32	24
		20-27	Interior	95	95	92	95	95	87	95	90	82	95	86	78	95	81	73	95	78	67	95	74	63	87	64	57	81	59	49	76	52	43	69	45	37	63	40	33	60	35	44
			Exposed	95	81	73	95	77	66	93	71	62	88	65	59	84	62	53	81	59	49	77	54	44	70	46	38	63	39	32	58	34	42	50	45	37	44	39	33	39	35	29
		27-45	Interior	98	98	98	98	98	94	98	98	89	98	93	84	98	89	80	93	85	77	88	82	73	81	76	64	75	67	59	66	62	51	61	56	45	56	50	40	49	44	35
			Exposed	97	89	80	91	84	76	86	80	70	82	76	65	78	72	62	74	67	58	68	63	53	61	57	45	55	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	91	91	79	91	87	75	91	83	70	91	80	65	88	76	61	84	72	58	81	67	53	75	61	45	67	54	38	62	47	33	56	41	44	50	36	39	44	49	35
			Exposed	88	76	61	83	71	57	79	65	51	76	62	46	71	59	42	67	54	38	63	49	35	57	42	44	49	36	38	42	47	33	37	41	29	49	36	26	44	32	23
		7-20	Interior	91	88	76	91	83	69	91	79	64	88	75	61	84	69	56	80	64	51	76	61	47	67	54	40	61	46	34	54	40	44	47	35	39	42	46	34	37	41	31
			Exposed	83	68	56	79	63	50	75	60	45	68	55	41	64	50	37	61	45	34	57	41	46	48	35	39	41	45	34	36	39	29	47	35	26	41	30	23	37	27	20
		20-27	Interior	96	92	84	96	87	79	96	82	75	96	78	68	95	74	63	91	68	61	87	64	57	80	58	48	75	50	41	66	43	36	62	38	47	56	33	41	50	44	37
			Exposed	95	74	63	90	66	60	85	62	54	81	59	49	77	54	44	74	49	41	69	45	37	62	38	47	55	33	41	48	43	35	42	37	31	37	33	27	33	29	24
		27-45	Interior	99	99	90	99	95	85	99	90	81	93	85	77	88	82	73	84	78	67	80	75	63	73	66	57	64	61	49	60	54	43	53	47	37	46	42	33	41	37	44
			Exposed	88	81	72	83	77	66	79	73	62	75	67	59	68	63	53	64	60	49	61	56	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	29
20	B	0-7	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	83	83	78	83	83	70	83	78	63	83	72	58	79	65	50	75	61	44	68	56	39
			Exposed	83	83	83	83	83	80	83	83	76	83	83	71	83	81	66	83	77	63	83	74	60	79	66	51	74	61	44	66	53	38	62	47	33	56	41	44	50	37	39
		7-20	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	83	83	77	83	83	73	83	79	64	83	72	59	80	64	51	74	60	45	66	53	39	62	47	35
			Exposed	83	83	81	83	83	76	83	83	70	83	80	65	83	76	62	83	71	58	81	65	53	75	60	45	65	52	39	61	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	85	88	88	81	88	82	75	88	76	65	88	68	60	85	62	54	80	57	47	75	51	42
			Exposed	88	88	88	88	88	84	88	88	80	88	83	76	88	79	70	88	76	65	88	70	62	85	62	54	79	56	47	74	49	40	66	43	35	62	38	47	57	33	42
		27-45	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	90	81	91	83	75	84	78	67	78	72	62	72	65	57	65	62	51
			Exposed	91	91	91	91	91	91	91	91	86	91	91	82	91	87	78	90	83	75	86	80	69	79	73	62	71	65	56	64	60	48	59	53	42	53	47	37	47	42	33
	C	0-7	Interior	83	83	83	83	83	82	83	83	78	83	83	74	83	83	69	83	79	64	83	76	62	81	68	54	76	62	46	69	56	40	63	49	35	59	43	47	53	39	41
			Exposed	83	82	68	83	78	64	83	75	60	82	69	55	79	65	50	76	62	46	71	59	42	64	50	35	59	43	46	51	37	40	44	49	35	39	43	31	35	38	27
		7-20	Interior	83	83	83	83	83	78	83	83	74	83	82	67	83	78	63	83	74	60	83	69	56	77	62	48	68	55	41	62	48	35	57	42	47	50	37	41	45	33	37
			Exposed	83	78	63	83	73	60	82	66	54	78	62	49	74	60	44	67	54	40	64	50	37	58	42	47	49	36	40	43	47	35	37	41	31	33	36	27	44	32	24
		20-27	Interior	88	88	88	88	88	87	88	88	82	88	86	78	88	81	73	88	78	67	88	74	63	87	64	57	81	59	49	76	52	43	69	45	37	63	40	33	60	35	44
			Exposed	88	81	73	88	77	66	88	71	62	88	65	59	84	62	53	81	59	49	77	54	44	70	46	38	63	39	32	58	34	42	50	45	37	44	39	33	39	35	29
		27-45	Interior	91	91	91	91	91	91	91	91	89	91	91	84	91	89	80	91	85	77	88	82	73	81	76	64	75	67	59	66	62	51	61	56	45	56	50	40	49	44	35
			Exposed	91	89	80	91	84	76	86	80	70	82	76	65	78	72	62	74	67	58	68	63	53	61	57	45	55	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	83	83	79	83	83	75	83	83	70	83	80	65	83	76	61	83	72	58	81	67	53	75	61	45	67	54	38	62	47	33	56	41	44	50	36	39	44	49	35
			Exposed	83	76	61	83	71	57	79	65	51	76	62	46	71	59	42	67	54	38	63	49	35	57	42	44	49	36	38	42	47	33	37	41	29	49	36	26	44	32	23
		7-20	Interior	83	83	76	83	83	69	83	79	64	83	75	61	83	69	56	80	64	51	76	61	47	67	54	40	61	46	34	54	40	44	47	35	39	42	46	34	37	41	31
			Exposed	83	68	56	79	63	50	75	60	45	68	55	41	64	50	37	61	45	34	57	41	46	48	35	39	41	45	34	36	39	29	47	35	26	41	30	23	37	27	20
		20-27	Interior	90	90	84	90	87	79	90	82	75	90	78	68	90	74	63	90	68	61	87	64	57	80	58	48	75	50	41	66	43	36	62	38	47	56	33	41	50	44	37
			Exposed	90	74	63	90	66	60	85	62	54	81	59	49	77	54	44	74	49	41	69	45	37	62	38	47	55	33	41	48	43	35	42	37	31	37	33	27	33	29	24
		27-45	Interior	93	93	90	93	93	85	93	90	81	93	85	77	88	82	73	84	78	67	80	75	63	73	66	57	64	61	49	60	54	43	53	47	37	46	42	33	41	37	44
			Exposed	88	81	72	83	77	66	79	73	62	75	67	59	68	63	53	64	60	49	61	56	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	29

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
30	B	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	63	68	68	58	68	65	50	68	61	44	68	56	39
			Exposed	68	68	68	68	68	68	68	68	68	68	68	68	68	68	66	68	68	63	68	68	60	68	66	51	68	61	44	66	53	38	62	47	33	56	41	44	50	37	39
		7-20	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	64	69	69	59	69	64	51	69	60	45	66	53	39	62	47	35
			Exposed	69	69	69	69	69	69	69	69	69	69	69	65	69	69	62	69	69	58	69	65	53	69	60	45	65	52	39	61	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	75	80	76	65	80	68	60	80	62	54	80	57	47	75	51	42
			Exposed	80	80	80	80	80	80	80	80	80	80	80	76	80	79	70	80	76	65	80	70	62	80	62	54	79	56	47	74	49	40	66	43	35	62	38	47	57	33	42
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	67	74	72	62	72	65	57	65	62	51
			Exposed	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	69	74	73	62	71	65	56	64	60	48	59	53	42	53	47	37	47	42	33
	C	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	68	68	62	68	68	54	68	62	46	68	56	40	63	49	35	59	43	47	53	39	41
			Exposed	68	68	68	68	68	64	68	68	60	68	68	55	68	65	50	68	62	46	68	59	42	64	50	35	59	43	46	51	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	69	69	69	69	69	69	69	69	69	69	69	67	69	69	63	69	69	60	69	69	56	69	62	48	67	55	41	62	48	35	57	42	47	50	37	41	45	33	37
			Exposed	69	69	63	69	69	60	69	66	54	69	62	49	69	60	44	67	54	40	64	50	37	58	42	47	49	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	78	80	80	73	80	78	67	80	74	63	80	64	57	80	59	49	76	52	43	69	45	37	63	40	33	60	35	44
			Exposed	80	80	73	80	77	66	80	71	62	80	65	59	80	62	53	80	59	49	77	54	44	70	46	38	63	39	32	58	34	42	50	45	37	44	39	33	39	35	~~29~~
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	73	74	74	64	74	67	59	66	62	51	61	56	45	56	50	40	49	44	35
			Exposed	74	74	74	74	74	74	74	74	70	74	74	65	74	72	62	74	67	58	68	63	53	61	57	45	55	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	65	68	68	61	68	68	58	68	67	53	68	61	45	67	54	38	62	47	33	56	41	44	50	36	39	44	49	35
			Exposed	68	68	61	68	68	57	68	65	51	68	62	46	68	59	42	67	54	38	63	49	35	57	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	69	69	69	69	69	69	69	69	64	69	69	61	69	69	56	69	64	51	69	61	47	66	54	40	61	46	34	54	40	44	47	35	39	42	46	34	37	41	~~31~~
			Exposed	69	68	56	69	63	50	69	60	45	68	55	41	64	50	37	61	45	34	57	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	84	84	84	84	84	79	84	82	75	84	78	68	84	74	63	84	68	61	84	64	57	80	58	48	75	50	41	66	43	36	62	38	47	56	33	41	50	44	37
			Exposed	84	74	63	84	66	60	84	62	54	81	59	49	77	54	44	74	49	41	69	45	37	62	38	47	55	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	81	81	81	81	81	81	81	81	81	81	81	77	81	81	73	81	78	67	80	75	63	73	66	57	64	61	49	60	54	43	53	47	37	46	42	33	41	37	44
			Exposed	81	81	72	81	77	66	79	73	62	75	67	59	68	63	53	64	60	49	61	56	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~
40	B	0-7	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	58	64	64	50	64	61	44	64	56	39
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	60	64	64	51	64	61	44	64	53	38	62	47	33	56	41	44	50	37	39
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	59	64	64	51	64	60	45	62	53	39	59	47	35
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	58	64	64	53	64	60	45	64	52	39	61	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	62	54	63	57	47	63	51	42
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	62	54	63	56	47	63	49	40	63	43	35	62	38	47	57	33	42
		27-45	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	57	59	59	51
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	56	59	59	48	59	53	42	53	47	37	47	47	37	47	42	33
	C	0-7	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	54	64	62	46	64	56	40	63	49	35	59	43	47	53	39	41
			Exposed	64	64	64	64	64	64	64	64	60	64	64	55	64	64	50	64	62	46	64	59	42	64	50	35	59	43	46	51	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	60	64	64	56	64	62	48	62	55	41	60	48	35	57	42	47	50	37	41	45	33	37
			Exposed	64	64	63	64	64	60	64	64	54	64	62	49	64	60	44	64	54	40	64	50	37	58	42	47	49	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	59	63	52	43	63	45	37	62	40	33	59	35	44
			Exposed	63	63	63	63	63	63	63	63	62	63	63	59	63	62	53	63	59	49	63	54	44	63	46	38	63	39	32	58	34	42	50	45	37	44	39	33	39	35	~~29~~
		27-45	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	51	59	56	45	56	50	40	49	44	35
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	58	59	59	53	59	57	45	55	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	68	68	68	68	68	68	68	68	68	68	68	65	68	68	61	68	68	58	68	67	53	68	61	45	67	54	38	62	47	33	56	41	44	50	36	39	44	49	35
			Exposed	68	68	61	68	68	57	68	65	51	68	62	46	68	59	42	67	54	38	63	49	35	57	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	69	69	69	69	69	69	69	69	64	69	69	61	69	69	56	69	64	51	69	61	47	66	54	40	61	46	34	54	40	44	47	35	39	42	46	34	37	41	~~31~~
			Exposed	69	68	56	69	63	50	69	60	45	68	55	41	64	50	37	61	45	34	57	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	68	69	69	63	69	68	61	69	64	57	69	58	48	69	50	41	66	43	36	62	38	47	56	33	41	50	44	37
			Exposed	69	69	63	69	66	60	69	62	54	69	59	49	69	54	44	69	49	41	69	45	37	62	38	47	55	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	57	64	61	49	60	54	43	53	47	37	46	42	33	41	37	44
			Exposed	64	64	64	64	64	64	64	64	62	64	64	59	64	63	53	64	60	49	61	56	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~
50	B	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	50	55	55	44	55	55	39
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	44	55	53	38	55	47	33	55	41	44	50	37	39
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	45	53	53	39	52	47	35
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	45	55	52	39	55	45	33	54	39	44	48	35	39	42	47	35
		20-27	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	51	42
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	47	52	49	40	52	43	35	52	38	47	52	33	42			
		27-45	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	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	48	49	49	42	49	47	37	47	42	33
	C	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	46	55	55	40	55	49	35	55	43	47	53	39	41
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	50	55	55	46	55	55	42	55	50	35	55	43	46	51	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	48	54	54	41	52	48	35	50	42	47	48	37	41	45	33	37
			Exposed	55	55	55	55	55	55	55	55	54	55	55	49	55	55	44	55	54	40	55	50	37	55	42	47	49	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	43	52	45	37	52	40	33	52	35	44
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	44	52	46	38	52	39	32	52	34	42	50	45	37	44	39	33	39	35	~~29~~
		27-45	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	45	49	49	40	48	44	35
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	45	49	49	39	47	42	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	58	59	59	53	59	59	45	59	54	38	59	47	33	56	41	44	50	36	39	44	49	35
			Exposed	59	59	59	59	59	57	59	59	51	59	59	46	59	59	42	59	54	38	59	49	35	57	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	51	60	60	47	57	54	40	55	46	34	53	40	44	47	35	39	42	46	34	37	41	~~31~~
			Exposed	60	60	56	60	60	50	60	60	45	60	55	41	60	50	37	60	45	34	57	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	48	57	50	41	57	43	36	57	38	47	54	33	41	50	44	37
			Exposed	57	57	57	57	57	57	57	57	54	57	57	49	57	54	44	57	49	41	57	45	37	57	38	47	55	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	53	43	52	47	37	46	42	33	41	37	44
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	53	45	53	48	38	46	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~

* 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.

~~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.

UNIRAC

ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	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
60	B	0-7	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	44	46	46	39
			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	44	46	46	38	46	46	33	46	41	44	46	37	39
		7-20	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	45	47	47	39	46	46	35
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	45	47	47	39	47	45	33	47	39	44	47	35	39	42	47	35
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	44	43	35	44	38	47	44	33	42
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	41	33
	C	0-7	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	40	46	46	35	46	43	47	46	39	41
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	46	46	35	46	43	46	46	37	40	44	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	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	41	46	46	35	45	42	47	43	37	41	42	33	37
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	44	47	47	40	47	47	37	47	42	47	47	36	40	43	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	44	44	37	44	40	33	44	35	44
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	38	44	39	32	44	34	42	44	45	37	44	39	33	39	35	~~29~~
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	35
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	34	41	37	45	37	33	39	32	44	35
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	45	51	51	38	51	47	33	51	41	44	50	36	39	44	49	35
			Exposed	51	51	51	51	51	51	51	51	51	51	46	51	51	42	51	51	38	51	49	35	51	42	44	49	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	51	52	52	47	51	51	40	49	46	34	47	40	44	45	35	39	42	46	34	37	41	~~31~~
			Exposed	52	52	52	52	52	50	52	52	45	52	52	41	52	50	37	52	45	34	52	41	46	48	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	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	41	48	43	36	48	38	47	48	33	41	47	44	37
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	44	48	48	41	48	45	37	48	38	47	48	33	41	48	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	45	37	45	42	33	41	37	44
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	45	41	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~
70	B	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	33	40	40	44	40	37	39
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	35
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	33	41	39	44	41	35	39	41	47	35
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	47	38	33	42
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33
	C	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	40	47	40	39	41
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	40	46	40	37	40	40	49	35	39	43	~~31~~	35	38	~~27~~
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	35	40	40	47	39	37	41	38	33	37
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	37	41	41	47	41	36	40	41	47	35	37	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	33	38	35	44
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	32	38	34	42	38	45	37	38	39	33	38	35	~~29~~
		27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	45	36	33	39	32	44	35
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	38	44	44	33	44	41	44	44	36	39	44	49	35
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	38	44	44	35	44	42	44	44	36	38	42	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	44	44	34	43	40	44	41	35	39	39	46	34	37	41	~~31~~
			Exposed	45	45	45	45	45	45	45	45	45	45	45	41	45	45	37	45	45	34	45	41	46	45	35	39	41	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	36	42	38	47	42	33	41	42	44	37
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	38	47	42	33	41	42	43	35	42	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	40	33	40	37	44
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	32	39	35	42	35	47	37	46	41	33	41	37	~~29~~
80	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	44	35	35	39
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	44	36	35	39	36	47	35
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	47	33	33	42
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	47	35	35	41
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	46	35	35	40	35	49	35	35	43	~~31~~	35	38	~~27~~
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	47	35	35	41	34	33	37
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	47	36	36	40	36	47	35	36	41	~~31~~	33	36	~~27~~	44	32	~~24~~
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	44
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	42	33	45	37	33	39	33	33	35	~~29~~
		27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	45	32	32	39	32	44	35
	D	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	33	39	39	44	39	36	39	39	49	35
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	35	39	39	44	39	36	38	39	47	33	37	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	34	39	39	44	38	35	39	36	46	34	35	41	~~31~~	
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	34	39	39	46	39	35	39	39	45	34	36	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	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	37	37	37	37	36	37	37	47	37	33	41	37	44	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	47	37	33	41	37	43	35	37	37	~~31~~	37	33	~~27~~	33	~~29~~	~~24~~
		27-45	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	44
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	42	35	47	37	46	41	33	41	37	~~29~~

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ASCE 7-22	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	SML	UAF	Solarhooks CTI
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SPAN TABLES

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

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				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
90	B	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	44	31	31	39
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	44	32	32	39	32	47	35
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42
		27-45	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
	C	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	47	31	31	41
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	46	31	31	40	31	47	35	31	43	~~31~~	31	38	~~27~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	47	32	32	41	32	32	37
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	47	32	32	40	32	47	35	32	41	~~31~~	32	36	~~27~~	44	32	~~24~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	45	45	37	45	39	33	45	35	~~29~~
		27-45	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	39	43	43	35
	D	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	44	35	35	39	35	49	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	44	35	35	38	35	47	33	35	41	~~29~~	49	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	44	35	35	39	34	46	34	32	41	~~31~~
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	46	35	35	39	35	45	34	35	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	47	33	33	41	33	44	37
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	47	33	33	41	33	43	35	33	37	~~31~~	33	33	~~27~~	33	~~29~~	~~24~~
		27-45	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	47	47	47	44
			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	42	47	47	37	46	41	33	41	37	~~29~~
100	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	39
		7-20	Interior	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
			Exposed	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	43	29	29	39	29	43	35
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	41
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	43	28	28	40	28	43	35	28	43	~~31~~	28	38	~~27~~	28	38	~~27~~
		7-20	Interior	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	43	29	29	41	29	29	37
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	43	29	29	40	29	43	35	29	41	~~31~~	29	36	~~27~~	43	32	~~24~~
		20-27	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	39	33	41	35	~~29~~
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	44	31	31	39	31	47	35
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	44	31	31	38	31	47	33	31	41	~~29~~	47	36	~~26~~	44	~~32~~	~~23~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	44	32	32	39	31	46	34	30	41	~~31~~
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	46	32	32	39	32	45	34	32	39	~~29~~	47	35	~~26~~	41	~~30~~	~~23~~	37	~~27~~	~~20~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	44	37
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	43	35	45	37	~~31~~	45	33	~~27~~	45	~~29~~	~~24~~
		27-45	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	37	43	41	33	41	37	~~29~~

* 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.

~~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.