

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 7-10 Sec 30.4.2
- Exposure Category B, C, or D
- Basic Wind Speed = 90 – 180 mph
- Level terrain. Topographic factor, $k_{zt} = 1.0$

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

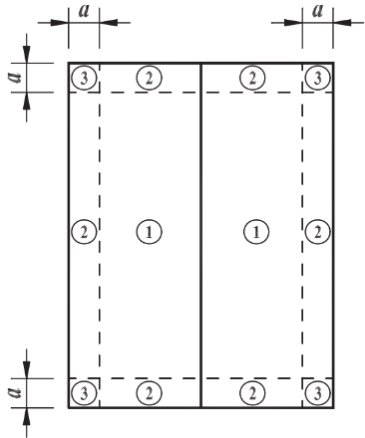
Seismic Design Assumptions

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

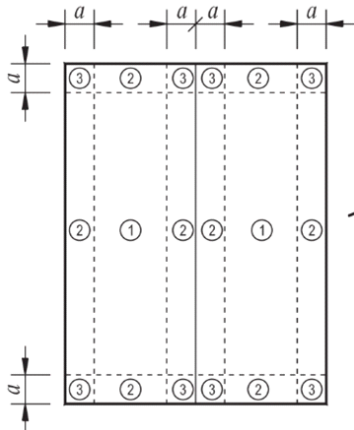
Array Assumptions

- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at least twice the module height above roof surface.
- Modules are parallel to roof surface and maximum height above roof surface is 5" to 10" depending on attachment type.
- Gaps between module rows and columns is 0.25" in to 1" depending on clamp type.
- The most restrictive of all roof zone spans shall be used when any part of the module is attributed to that span.

Zone should be considered as per ASCE 7-10, Fig. 30.4-2A to 30.4-2D



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



Gable Roofs $7^\circ < \theta \leq 45^\circ$

Rails can be installed in these possible orientations.

*CT1	
Y+	Alternate orientation not allowed
Y-	



ASCE 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

18.66 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

Solarhooks CTI
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)	Basic Wind Speed (mph)																																							
			90			95			100			105			110			115			120			130			140			150			160			170			180			
			Roof Wind Zone																																							
			1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0-7	86	86	80	86	86	76	86	85	67	86	82	58	86	79	50	86	76	44	86	70	40	84	57	34	79	47	29	75	40	25	66	35	22	58	30	19	51	27	17	
		7-27	86	86	78	86	86	75	86	85	66	86	82	59	86	79	53	86	77	47	86	73	43	86	59	36	82	49	31	78	42	27	74	37	23	64	32	21	57	29	18	
		27-45	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	84	84	78	78	78	78	68	68	68	59	59	59	52	52	46	46	46	41	41	41	37	37	37		
	C	0-7	86	81	55	86	77	47	86	73	41	86	64	37	84	56	33	81	50	30	79	45	28	72	37	24	61	32	20	52	28	17	45	24	23	40	21	20	35	19	18	
		7-27	86	81	57	86	78	50	86	75	44	86	66	40	86	59	36	84	53	33	81	48	30	77	40	25	68	34	22	58	29	19	50	26	16	44	23	22	39	20	19	
		27-45	87	87	87	86	86	86	80	80	80	74	74	68	68	68	68	63	63	63	58	58	58	50	50	50	43	43	43	38	38	38	34	34	34	30	30	30	27	27	27	
D	0-7	86	76	43	86	67	38	85	58	34	82	51	31	79	45	28	76	41	26	71	37	23	60	31	20	50	27	17	43	23	22	38	20	19	33	18	17	29	16	15		
	7-27	86	76	46	86	69	41	86	61	37	85	54	33	82	48	30	79	43	27	77	39	25	67	33	21	56	28	18	48	25	16	42	21	21	37	19	18	33	17	16		
	27-45	83	83	83	76	76	76	69	69	69	63	63	63	58	58	58	54	54	54	49	49	49	42	42	42	37	37	37	33	33	33	29	29	29	26	26	26	23	23	23		
10	B	0-7	62	62	62	62	62	62	62	62	62	62	58	62	62	50	62	62	44	62	62	40	62	57	34	62	47	29	62	40	25	62	35	22	58	30	19	51	27	17		
		7-27	63	63	63	63	63	63	63	63	63	63	59	63	63	53	63	63	47	63	63	43	63	59	36	63	49	31	63	42	27	59	37	23	55	32	21	52	29	18		
		27-45	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	83	83	83	78	78	78	68	68	68	59	59	59	52	52	46	46	46	41	41	41	37	37	37		
	C	0-7	62	62	55	62	62	47	62	62	41	62	62	37	62	56	33	62	50	30	62	45	28	62	37	24	61	32	20	52	28	17	45	24	23	40	21	20	35	19	18	
		7-27	63	63	57	63	63	50	63	63	44	63	63	40	63	59	36	63	53	33	63	48	30	61	40	25	57	34	22	53	29	19	49	26	16	44	23	22	39	20	19	
		27-45	86	86	86	85	85	85	80	80	80	74	74	68	68	68	63	63	63	58	58	58	50	50	50	43	43	43	38	38	38	34	34	34	30	30	30	27	27	27		
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D	0-7	43	43	43	43	43	38	43	34	43	43	31	43	28	43	21	43	26	43	23	43	37	23	43	31	20	43	27	17	42	23	22	38	20	19	33	18	17	29	16	15	
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		27-45	52	52	52	52	52	52	52	52	52	52	52	52	52	52	50	50	50	48	48	48	45	45	45	42	42	42	39	39	39	37	37	37	34	34	34	32	32	32		
	C	0-7	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35																				



ASCE 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

18.66 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

Solarhooks CTI
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)	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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30 ft
Roof Height

S_s = 1.25

18.66 sq.ft

LANDSCAPE

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO

Solarhooks CTI

• Cells with an asterisks 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.

16 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 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

22.78 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

Solarhooks CTI
Attachment

SPAN TABLES

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0	B	0-7	74	74	74	74	74	67	74	74	56	74	74	48	74	74	42	74	66	37	74	59	33	74	47	28	74	39	24	64	33	21	55	29	18	48	25	16	42	22	21
		7-27	74	74	72	74	74	63	74	74	55	74	74	49	74	74	44	74	68	40	74	61	36	74	50	30	74	41	26	72	35	22	62	30	20	54	27	17	47	24	23
		27-45	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	71	71	66	66	66	57	57	57	50	50	50	44	44	39	39	39	34	34	34	31	31	31		
	C	0-7	74	74	46	74	70	39	74	61	34	74	53	31	74	47	28	74	42	25	73	37	23	60	31	20	51	27	17	44	23	22	38	20	19	33	18	17	29	16	15
		7-27	74	74	47	74	72	42	74	63	37	74	56	33	74	49	30	74	44	27	74	40	25	68	33	21	57	28	18	49	24	16	42	21	21	37	19	18	33	17	16
		27-45	76	76	76	73	73	73	67	67	67	62	62	62	57	57	57	52	52	52	48	48	48	42	42	42	36	36	36	32	32	32	28	28	28	25	25	23	23	23	
10	D	0-7	74	64	36	74	56	32	74	48	29	74	43	26	73	38	23	66	34	21	60	31	19	50	26	16	42	22	21	36	19	18	31	17	16	28	23	14	25	20	19
		7-27	74	66	39	74	58	34	74	51	31	74	45	28	74	40	25	74	36	23	67	33	21	56	28	18	47	24	23	40	21	20	35	18	17	31	16	15	27	21	14
		27-45	70	70	70	63	63	63	58	58	58	53	53	53	49	49	49	45	45	45	41	41	41	35	35	35	31	31	31	27	27	27	24	24	24	21	21	21	19	19	19
	B	0-7	52	52	52	52	52	52	52	52	52	52	48	52	52	42	52	52	37	52	52	33	52	47	28	52	39	24	52	33	21	52	29	18	48	25	16	42	22	21	
		7-27	52	52	52	52	52	52	52	52	52	52	49	52	52	44	52	52	40	52	52	36	52	50	30	52	41	26	52	35	22	49	30	20	46	27	17	43	24	23	
		27-45	74	74	74	74	74	74	74	74	74	74	74	74	74	74	70	70	66	66	66	57	57	57	50	50	50	44	44	44	39	39	39	34	34	34	31	31	31		
20	C	0-7	52	52	46	52	52	39	52	52	34	52	52	31	52	47	28	52	42	25	52	37	23	52	31	20	51	27	17	44	23	22	38	20	19	33	18	17	29	16	15
		7-27	52	52	47	52	52	42	52	52	37	52	52	33	52	49	30	52	44	27	52	40	25	51	33	21	48	28	18	44	24	16	41	21	21	37	19	18	33	17	16
		27-45	74	74	74	72	72	72	67	67	67	62	62	62	57	57	57	52	52	52	48	48	48	42	42	42	36	36	36	32	32	32	28	28	28	25	25	25	23	23	23
	D	0-7	52	52	36	52	52	32	52	48	29	52	43	26	52	38	23	52	34	21	52	31	19	50	26	16	42	22	21	36	19	18	31	17	16	28	23	14	25	20	19
		7-27	52	52	39	52	52	34	52	51	31	52	45	28	52	40	25	52	36	23	51	33	21	47	28	18	43	24	23	40	21	20	35	18	17	31	16	15	27	21	14
		27-45	70	70	70	63	63	63	58	58	58	53	53	53	49	49	49	45	45	45	41	41	41	35	35	35	31	31	31	27	27	27	24	24	24	21	21	21	19	19	19
30	B	0-7	36	36	36	36	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	33	33	29	18	36	25	16	36	22	21
		7-27	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	
		27-45	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	57	57	55	55	55	50	50	46	46	46	42	42	42	38	38	38	34	34	34	31	31	31	
	C	0-7	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
		7-27	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
		27-45	60	60	60	58	58	58	55	55	55	52	52	52	50	50	50	47	47	47	45	45	45	40	40	40	36	36	36	32	32	32	28	28	28	25	25	25	23	23	23
40	D	0-7	36	36	36	36	36	32	36	36	29	36	36	26	36	36	23	36	36	21	36	31	19	36	26	16	36	22	21	35	19	18	31	17	16	28	23	14	25	20	19
		7-27	37	37	37	37	37	34	37	37	31	37	37	28	37	37	25	36	36	23	35	33	21	33	28	18	31	24	23	30	21	20	28	18	17	26	16	15	25	21	14
		27-45	59	59	59	55	55	55	52	52	49	49	49	46	46	46	44	44	44	41	41	41	35	35	35	31	31	31	27	27	27	24	24	24	21	21	21	19	19	19	
	B	0-7	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
		7-27	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
		27-45	51	51	51	51	51	51	51	51	51	51	51	51	51	50	50	50	48	48	48	47	47	47	43	43	43	40	40	40	37	37	37	34	34	34	32	32	29	29	29
50	C	0-7	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	
		7-27	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	
		27-45	51	51	51	49	49	49	47	47	47	45	45	45	43	43	43	41	41	41	39	39	39	36	36	36	33	33	33	30	30	30	27	27	27	24	24	24	21	21	21
	D	0-7	36	36	36	36	36	32	36	36	29	36	36	26	36	36	23	36	36	21	36	31	19	36	26	16	36	22	21	35	19	18	31	17	16	28	23	14	25	20	19
		7-27	37	37	37	37	37	34	37	37	31	37	37	28	37	37	25	36	36	23	35	33	21	33	28	18	31	24	23	30	21	20	28	18	17	26	16	15	25	21	14
		27-45	50	50	50	48	48	48	45	45	45	43	43	43	41	41	41	39	39	39	37	37	37	33	33	33	30	30	30	27	27	27	24	24	24	21	21	21	19	19	19
60	B	0-7	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	
		7-27	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
		27-45	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	43	43	42	42	42	41	41	41	41	38	38	38	35	35	35	33	33	33	31	31	31	29	29
	C	0-7	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	2																					



30 ft
Roof Height

S_S = 1.25
Seismic

22.78 sq.ft

ORIENTATION

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO

Solarhooks CTI

SPAN TABLES

[illegible]

• Cells with an asterisks indicates that the L-root 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 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

22.78 sq.ft
Module Area

LANDSCAPE
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

Solarhooks CTI
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)	Basic Wind Speed (mph)																																							
			90			95			100			105			110			115			120			130			140			150			160			170			180			
			Roof Wind Zone																																							
			1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0-7	101	101	95	101	101	91	101	101	86	101	98	82	101	94	79	101	90	76	101	87	66	99	81	55	94	77	47	89	65	41	85	57	36	81	50	32	78	44	28	
		7-27	102	102	92	102	102	89	102	102	85	102	98	82	102	94	79	102	91	76	102	88	72	102	82	59	98	78	51	93	70	44	88	60	39	84	53	34	81	47	30	
		27-45	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	100	100	98	98	98	94	92	92	90	87	87	85	83	83	76	76	76	68	68	68	61	61	61		
	C	0-7	101	96	81	101	92	78	101	88	70	101	84	61	99	81	55	96	78	50	93	76	46	87	62	39	83	53	33	79	46	29	75	40	38	65	35	34	58	31	30	
		7-27	102	97	81	102	92	78	102	89	74	102	85	65	102	82	59	100	79	54	96	77	49	91	65	42	86	56	36	82	48	31	78	42	41	73	37	36	64	33	32	
		27-45	103	103	103	102	102	102	99	99	99	96	96	96	93	92	92	91	89	89	89	86	86	82	81	81	71	71	71	62	62	62	55	55	49	49	44	44	44	44	44	
D	0-7	101	90	75	101	86	63	100	82	56	96	79	51	93	76	46	90	68	42	87	61	38	82	52	33	78	44	28	72	38	37	62	33	32	55	30	28	48	40	25		
	7-27	102	90	76	102	86	68	102	83	61	100	80	55	97	77	50	93	73	45	90	65	41	85	55	35	81	47	30	77	41	39	69	35	34	61	31	30	54	42	27		
	27-45	100	100	100	97	97	97	94	93	93	91	90	90	89	87	87	86	84	82	81	81	70	70	70	61	61	61	53	53	53	47	47	47	42	42	42	38	38	38			
10	B	0-7	90	90	90	90	90	90	90	90	86	90	82	90	90	79	90	90	76	90	87	66	90	81	55	90	77	47	89	65	41	85	57	36	81	50	32	78	44	28		
		7-27	91	91	91	91	91	89	91	91	85	91	91	82	91	91	79	91	91	76	91	88	72	91	82	59	91	78	51	91	70	44	88	60	39	84	53	34	81	47	30	
		27-45	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	100	100	98	98	98	94	92	92	90	87	87	85	83	83	76	76	76	68	68	68	61	61	61		
	C	0-7	90	90	81	90	90	78	90	88	70	90	84	61	90	81	55	90	78	50	90	76	46	87	62	39	83	53	33	79	46	29	75	40	38	65	35	34	58	31	30	
		7-27	91	91	81	91	91	78	91	89	74	91	85	65	91	82	59	91	79	54	91	77	49	91	65	42	86	56	36	82	48	31	78	42	41	73	37	36	64	33	32	
		27-45	101	101	101	101	101	101	99	99	99	96	96	96	93	92	92	91	89	89	89	86	86	82	81	81	71	71	71	62	62	62	55	55	49	49	44	44	44	44	44	
D	0-7	90	90	75	90	86	63	90	82	56	90	79	51	90	76	46	90	68	42	87	61	38	82	52	33	78	44	28	72	38	37	62	33	32	55	30	28	48	40	25		
	7-27	91	90	76	91	86	68	91	83	61	91	80	55	91	77	50	91	73	45	90	65	41	85	55	35	81	47	30	77	41	39	69	35	34	61	31	30	54	42	27		
	27-45	100	100	100	97	97	97	94	93	93	91	90	90	89	87	87	86	84	82	81	81	70	70	70	61	61	61	53	53	53	47	47	47	42	42	42	38	38	38			
20	B	0-7	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	66	71	71	55	71	71	47	71	65	41	71	57	36	71	50	32	71	44	28		
		7-27	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	59	71	71	51	71	71	51	71	70	44	67	60	39	64	53	34	62	47	30
		27-45	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	94	94	94	92	92	92	89	89	89	87	87	87	82	82	75	75	75	68	68	68	61	61	61		
	C	0-7	71	71	71	71	71	71	71	71	70	71	61	71	55	71	50	71	50	71	46	71	46	71	62	39	71	53	33	71	46	29	71	40	38	65	35	34	58	31	30	
		7-27	71	71	71	71	71	71	71	71	65	71	61	71	59	71	54	71	54	71	49	69	65	42	66	56	36	62	48	31	59	42	41	56	37	36	53	33	32			
		27-45	95	95	95	94	94	94	93	93	93	91	91	89	89	88	88	88	86	86	86	79	79	79	71	71	71	62	62	62	55	55	49	49	44	44	44	44	44			
D	0-7	71	71	71	71	71	63	71	61	56	71	61	51	71	46	71	68	42	71	61	38	71	52	33	71	44	28	70	38	37	62	33	32	55	30	28	48	40	25			
	7-27	71	71	71	71	71	68	71	61	61	71	55	71	71	50	71	45	69	65	41	65	55	35	62	47	30	58	41	39	55	35	34	52	31	30	49	42	27				
	27-45	94	94	94	93	93	93	91	91	89	89	89	87	87	85	84	84	81	81	81	70	70	70	61	61	61	53	53	53	47	47	47	42	42	42	38	38	38				
30	B	0-7	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	55	69	69	47	69	65	41	69	57	36	69	50	32	69	44	28		
		7-27	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	59	71	71	51	71	71	51	71	70	44	67	60	39	64	53	34	62	47	30
		27-45	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	89	89	89	87	87	87	84	84	84	78	78	78	72	72	67	67	67	62	62	57	57	57			
	C	0-7	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	46	69	62	39	69	53	33	69	46	29	68	40	38	65	35	34	58	31	30		
		7-27	71	71	71	71	71	71	71	71	71	71	65	71	59	71	54	71	54	71	49	69	65	42	66	56	36	62	48	31	59	42	41	56	37	36	53	33	32			
		27-45	90	90	90	89	89	89	88	88	88	86	86	86	84	84	84	81	81	81	77	77	77	70	70	70	64	64	64	58	58	54	54	49	49	44	44	44	44			
D	0-7	71	71	71	71	71	63	71	61	56	71	61	51	71	46	71	68	42	71	61	38	71	52	33	71	44	28	70	38	37	62	33	32	55	30	28	48	40	25			
	7-27	71	71	71	71	71	68	71	61	61	71	55	71	71	50	71	45	69	65	41	65	55	35	62	47	30	58	41	39	55	35	34	52	31	30	49	42	27				
	27-45	90	90	90	88	88	88	86	86	86	84	84	84	80	80	80	76	76	76	72	72	72	65	65	65	59	59	59	53	53	53	47	47	47	42	42	42	38	38	38		
40	B	0-7	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	55	57	57	47	57	57	41	57	57	36	57	50	32	57	44	28		
		7-27	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	59	60	51	59	59	44	57	57	39	55	53	34	53	47	30
		27-45	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85		
	C	0-7	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57																		



11

30 ft

Roof Height

$S_s = 1.25$
Seismic

22.78 sq.ft

LANDSCAPE

CROSS-SLOPE
Rail Direction

NXT

NXT COMBO

Solarhooks CTI

SPAN TABLES

[illegible]

• Cells with an asterisks 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.

16 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 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 3.00
Seismic

18.66 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

Solarhooks CTI
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)	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							
0	B	0-7	86	86	80	86	86	76	86	85	67	86	82	58	86	79	50	86	76	44	86	70	40	84	57	34	79	47	29	75	40	25	66	35	22	58	30	19	51	27	17	
		7-27	86	86	78	86	86	75	86	85	66	86	82	59	86	79	53	86	77	47	86	73	43	86	59	36	82	49	31	78	42	27	74	37	23	64	32	21	57	29	18	
		27-45	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	
	C	0-7	86	81	55	86	77	47	86	73	41	86	64	37	84	56	33	81	50	30	79	45	28	72	37	24	61	32	20	52	28	17	45	24	23	40	21	20	35	19	18	
		7-27	86	81	57	86	78	50	86	75	44	86	66	40	86	59	36	84	53	33	81	48	30	77	40	25	68	34	22	58	29	19	50	26	16	44	23	22	39	20	19	
		27-45	87	87	87	86	86	86	80	80	80	74	74	74	68	68	68	63	63	63	58	58	50	50	50	43	43	43	38	38	38	34	34	34	30	30	30	27	27	27	27	
D	0-7	86	76	43	86	67	38	85	58	34	82	51	31	79	45	28	76	41	26	71	37	23	60	31	20	50	27	17	43	23	22	38	20	19	33	18	17	29	16	15		
	7-27	86	76	46	86	69	41	86	61	37	85	54	33	82	48	30	79	43	27	77	39	25	67	33	21	56	28	18	48	25	16	42	21	21	37	19	18	33	17	16		
	27-45	83	83	83	76	76	76	69	69	69	63	63	63	58	58	58	54	54	54	49	49	49	42	42	42	37	37	37	33	33	33	29	29	29	26	26	26	23	23	23		
10	B	0-7	62	62	62	62	62	62	62	62	62	62	58	62	62	50	62	62	44	62	62	40	62	57	34	62	47	29	62	40	25	62	35	22	58	30	19	51	27	17		
		7-27	63	63	63	63	63	63	63	63	63	63	59	63	63	53	63	63	47	63	63	43	63	59	36	63	49	31	63	42	27	59	37	23	55	32	21	52	29	18		
		27-45	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
	C	0-7	62	62	55	62	62	47	62	62	41	62	62	37	62	56	33	62	50	30	62	45	28	62	37	24	61	32	20	52	28	17	45	24	23	40	21	20	35	19	18	
		7-27	63	63	57	63	63	50	63	63	44	63	63	40	63	59	36	63	53	33	63	48	30	61	40	25	57	34	22	53	29	19	49	26	16	44	23	22	39	20	19	
		27-45	86	86	86	85	85	85	80	80	80	74	74	74	68	68	68	63	63	63	58	58	50	50	50	43	43	43	38	38	38	34	34	34	30	30	30	27	27	27	27	
D	0-7	62	62	43	62	62	38	62	58	34	62	51	31	62	45	28	62	41	26	62	37	23	60	31	20	50	27	17	43	23	22	38	20	19	33	18	17	29	16	15		
	7-27	63	63	46	63	63	41	63	61	37	63	54	33	63	48	30	63	43	27	61	39	25	56	33	21	52	28	18	48	25	16	42	21	21	37	19	18	33	17	16		
	27-45	83	83	83	76	76	76	69	69	69	63	63	63	58	58	58	54	54	54	49	49	49	42	42	42	37	37	37	33	33	33	29	29	29	26	26	26	23	23	23		
20	B	0-7	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	
		7-27	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	
		27-45	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
	C	0-7	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
		7-27	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
		27-45	72	72	72	70	70	70	66	66	66	63	63	63	59	59	59	56	56	56	53	53	53	48	48	48	43	43	43	38	38	38	34	34	34	30	30	30	27	27	27	27
D	0-7	43	43	43	43	43	38	43	34	43	43	31	43	28	43	21	43	26	43	37	23	43	31	20	43	27	17	42	23	22	38	20	19	33	18	17	29	16	15			
	7-27	44	44	44	44	44	41	44	44	37	44	44	33	44	30	43	43	27	42	39	25	40	33	21	38	28	18	36	25	16	34	21	21	32	19	18	30	17	16			
	27-45	70	70	70	66	66	66	62	62	62	59	59	55	55	55	52	52	52	49	49	49	42	42	42	37	37	37	33	33	33	29	29	29	26	26	26	23	23	23			
30	B	0-7	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	
		7-27	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
		27-45	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	58	58	58	56	56	56	51	51	51	48	48	48	44	44	44	41	41	41	38	38	38	35	35	35	
	C	0-7	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
		7-27	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
		27-45	61	61	61	59	59	59	56	56	56	54	54	54	51	51	51	49	49	49	47	47	47	43	43	43	39	39	39	36	36	36	33	33	33	30	30	30	27	27	27	27
D	0-7	43	43	43	43	43	38	43	34	43	43	31	43	28	43	21	43	26	43	37	23	43	31	20	43	27	17	42	23	22	38	20	19	33	18	17	29	16	15			
	7-27	44	44	44	44	44	41	44	44	37	44	44	33	44	30	43	43	27	42	39	25	40	33	21	38	28	18	36	25	16	34	21	21	32	19	18	30	17	16			
	27-45	60	60	60	57	57	57	54	54	54	51	51	51	49	49	49	46	46	46	44	44	44	40	40	40	36	36	36	33	33	33	29	29	29	26	26	26	23	23	23		
40	B	0-7	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	
		7-27	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	
		27-45	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	50	50	50	48	48	48	45	45	45	42	42	42	39	39	39	37	37	37	34	34	34	32	32	32	
	C	0-7	35	35	35	35	35	35	35	35																																



ASCE 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 3.00
Seismic

18.66 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

Solarhooks CTI
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)	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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
60	B	0-7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	2



• Cells with an asterisk 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 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 3.00
Seismic

22.78 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

Solarhooks CTI
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)	Basic Wind Speed (mph)																																						
			90			95			100			105			110			115			120			130			140			150			160			170			180		
			Roof Wind Zone																																						
			1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
0	B	0-7	74	74	74	74	74	67	74	74	56	74	74	48	74	74	42	74	66	37	74	59	33	74	47	28	74	39	24	64	33	21	55	29	18	48	25	16	42	22	21
		7-27	74	74	72	74	74	63	74	74	55	74	74	49	74	74	44	74	68	40	74	61	36	74	50	30	74	41	26	72	35	22	62	30	20	54	27	17	47	24	23
		27-45	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	71	71	66	66	66	57	57	57	50	50	50	44	44	39	39	39	34	34	34	31	31	31		
	C	0-7	74	74	46	74	70	39	74	61	34	74	53	31	74	47	28	74	42	25	73	37	23	60	31	20	51	27	17	44	23	22	38	20	19	33	18	17	29	16	15
		7-27	74	74	47	74	72	42	74	63	37	74	56	33	74	49	30	74	44	27	74	40	25	68	33	21	57	28	18	49	24	16	42	21	21	37	19	18	33	17	16
		27-45	76	76	76	73	73	73	67	67	67	62	62	62	57	57	57	52	52	52	48	48	48	42	42	42	36	36	36	32	32	32	28	28	28	25	25	23	23	23	23
10	D	0-7	74	64	36	74	56	32	74	48	29	74	43	26	73	38	23	66	34	21	60	31	19	50	26	16	42	22	21	36	19	18	31	17	16	28	23	14	25	20	19
		7-27	74	66	39	74	58	34	74	51	31	74	45	28	74	40	25	74	36	23	67	33	21	56	28	18	47	24	23	40	21	20	35	18	17	31	16	15	27	21	14
		27-45	70	70	70	63	63	63	58	58	58	53	53	53	49	49	49	45	45	45	41	41	41	35	35	35	31	31	31	27	27	27	24	24	24	21	21	21	19	19	19
	B	0-7	52	52	52	52	52	52	52	52	52	52	48	52	52	42	52	52	37	52	52	33	52	47	28	52	39	24	52	33	21	52	29	18	48	25	16	42	22	21	
		7-27	52	52	52	52	52	52	52	52	52	52	49	52	52	44	52	52	40	52	52	36	52	50	30	52	41	26	52	35	22	49	30	20	46	27	17	43	24	23	
		27-45	74	74	74	74	74	74	74	74	74	74	74	74	74	74	70	70	66	66	66	57	57	57	50	50	50	44	44	44	39	39	39	34	34	34	31	31	31		
20	C	0-7	52	52	46	52	52	39	52	52	34	52	52	31	52	47	28	52	42	25	52	37	23	52	31	20	51	27	17	44	23	22	38	20	19	33	18	17	29	16	15
		7-27	52	52	47	52	52	42	52	52	37	52	52	33	52	49	30	52	44	27	52	40	25	51	33	21	48	28	18	44	24	16	41	21	21	37	19	18	33	17	16
		27-45	74	74	74	72	72	72	67	67	67	62	62	62	57	57	57	52	52	52	48	48	48	42	42	42	36	36	36	32	32	32	28	28	28	25	25	25	23	23	23
	D	0-7	52	52	36	52	52	32	52	48	29	52	43	26	52	38	23	52	34	21	52	31	19	50	26	16	42	22	21	36	19	18	31	17	16	28	23	14	25	20	19
		7-27	52	52	39	52	52	34	52	51	31	52	45	28	52	40	25	52	36	23	51	33	21	47	28	18	43	24	23	40	21	20	35	18	17	31	16	15	27	21	14
		27-45	70	70	70	63	63	63	58	58	58	53	53	53	49	49	49	45	45	45	41	41	41	35	35	35	31	31	31	27	27	27	24	24	24	21	21	21	19	19	19
30	B	0-7	36	36	36	36	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	33	33	29	18	36	25	16	36	22	21
		7-27	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	
		27-45	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	57	57	55	55	55	50	50	50	46	46	46	42	42	42	38	38	38	34	34	34	31	31	31
	C	0-7	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
		7-27	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
		27-45	60	60	60	58	58	58	55	55	55	52	52	52	50	50	50	47	47	47	45	45	45	40	40	40	36	36	36	32	32	32	28	28	28	25	25	25	23	23	23
40	D	0-7	36	36	36	36	36	32	36	36	29	36	26	36	36	23	36	34	21	36	31	19	36	26	16	36	22	21	35	19	18	31	17	16	28	23	14	25	20	19	
		7-27	37	37	37	37	37	34	37	37	31	37	28	37	37	25	36	36	23	35	33	21	33	28	18	31	24	23	30	21	20	28	18	17	26	16	15	25	21	14	
		27-45	59	59	59	55	55	55	52	52	49	49	49	46	46	46	44	44	44	41	41	41	35	35	35	31	31	31	27	27	27	24	24	24	21	21	21	19	19	19	
	B	0-7	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
		7-27	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
		27-45	51	51	51	51	51	51	51	51	51	51	51	51	51	50	50	50	48	48	48	47	47	47	43	43	43	40	40	40	37	37	37	34	34	34	32	32	29	29	29
50	C	0-7	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	
		7-27	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	
		27-45	51	51	51	49	49	49	47	47	47	45	45	45	43	43	43	41	41	41	39	39	39	36	36	36	33	33	33	30	30	30	27	27	27	24	24	24	21	21	21
	D	0-7	36	36	36	36	36	32	36	36	29	36	26	36	36	23	36	34	21	36	31	19	36	26	16	36	22	21	35	19	18	31	17	16	28	23	14	25	20	19	
		7-27	37	37	37	37	37	34	37	37	31	37	28	37	37	25	36	36	23	35	33	21	33	28	18	31	24	23	30	21	20	28	18	17	26	16	15	25	21	14	
		27-45	50	50	50	48	48	48	45	45	45	43	43	43	41	41	41	39	39	39	37	37	37	33	33	33	30	30	30	27	27	27	24	24	24	21	21	21	19	19	19
60	B	0-7	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	
		7-27	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
		27-45	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	43	43	42	42	42	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
	C	0-7	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	2																



Category

30 ft

Roof Height

$S_s = 3.00$
Seismic

22.78 sq.ft

ORIENTATION

CROSS-SLOP
Rail Direction

Rail Type
NXT

NXT COME

Solarhooks CTI

Attachment

SPAN TABLES

[illegible]

• Cells with an asterisk 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 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 3.00
Seismic

22.78 sq.ft
Module Area

LANDSCAPE
Orientation

CROSS-SLOPE
Rail Direction

NXT
Rail Type

NXT COMBO
Clamp

Solarhooks CTI
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)	Basic Wind Speed (mph)																																						
			90			95			100			105			110			115			120			130			140			150			160			170			180		
			Roof Wind Zone																																						
			1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
0	B	0-7	101	101	95	101	101	91	101	101	86	101	98	82	101	94	79	101	90	76	101	87	66	99	81	55	94	77	47	89	65	41	85	57	36	81	50	32	78	44	28
		7-27	102	102	92	102	102	89	102	102	85	102	98	82	102	94	79	102	91	76	102	88	72	102	82	59	98	78	51	93	70	44	88	60	39	84	53	34	81	47	30
		27-45	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	100	100	98	98	98	94	92	92	90	87	87	85	83	83	76	76	76	68	68	68	61	61	61	
	C	0-7	101	96	81	101	92	78	101	88	70	101	84	61	99	81	55	96	78	50	93	76	46	87	62	39	83	53	33	79	46	29	75	40	38	65	35	34	58	31	30
		7-27	102	97	81	102	92	78	102	89	74	102	85	65	102	82	59	100	79	54	96	77	49	91	65	42	86	56	36	82	48	31	78	42	41	73	37	36	64	33	32
		27-45	103	103	103	102	102	102	99	99	99	96	96	96	93	92	92	91	89	89	89	86	86	82	81	81	71	71	71	62	62	62	55	55	55	49	49	49	44	44	44
	D	0-7	101	90	75	101	86	63	100	82	56	96	79	51	93	76	46	90	68	42	87	61	38	82	52	33	78	44	28	72	38	37	62	33	32	55	30	28	48	40	25
		7-27	102	90	76	102	86	68	102	83	61	100	80	55	97	77	50	93	73	45	90	65	41	85	55	35	81	47	30	77	41	39	69	35	34	61	31	30	54	42	27
		27-45	100	100	100	97	97	97	94	93	93	91	90	90	89	87	87	86	84	84	82	81	81	70	70	70	61	61	61	53	53	53	47	47	47	42	42	42	38	38	38
10	B	0-7	90	90	90	90	90	90	90	90	86	90	90	82	90	90	79	90	90	76	90	87	66	90	81	55	90	77	47	89	65	41	85	57	36	81	50	32	78	44	28
		7-27	91	91	91	91	91	89	91	91	85	91	91	82	91	91	79	91	91	76	91	88	72	91	82	59	91	78	51	91	70	44	88	60	39	84	53	34	81	47	30
		27-45	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	100	100	98	98	98	94	92	92	90	87	87	85	83	83	76	76	76	68	68	68	61	61	61	
	C	0-7	90	90	81	90	90	78	90	88	70	90	84	61	90	81	55	90	78	50	90	76	46	87	62	39	83	53	33	79	46	29	75	40	38	65	35	34	58	31	30
		7-27	91	91	81	91	91	78	91	89	74	91	85	65	91	82	59	91	79	54	91	77	49	91	65	42	86	56	36	82	48	31	78	42	41	73	37	36	64	33	32
		27-45	101	101	101	101	101	99	99	99	96	96	96	93	92	92	91	89	89	89	86	86	82	81	81	71	71	71	62	62	62	55	55	55	49	49	49	44	44	44	
	D	0-7	90	90	75	90	86	63	90	82	56	90	79	51	90	76	46	90	68	42	87	61	38	82	52	33	78	44	28	72	38	37	62	33	32	55	30	28	48	40	25
		7-27	91	90	76	91	86	68	91	83	61	91	80	55	91	77	50	91	73	45	90	65	41	85	55	35	81	47	30	77	41	39	69	35	34	61	31	30	54	42	27
		27-45	100	100	100	97	97	97	94	93	93	91	90	90	89	87	87	86	84	84	82	81	81	70	70	70	61	61	61	53	53	53	47	47	47	42	42	42	38	38	38
20	B	0-7	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	66	71	71	55	71	71	47	71	65	41	71	57	36	71	50	32	71	44	28	
		7-27	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	59	71	59	71	51	71	70	44	67	60	39	64	53	34	62	47	30	
		27-45	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	94	94	94	92	92	92	89	89	89	87	87	87	82	82	75	75	75	68	68	68	61	61	61	
	C	0-7	71	71	71	71	71	71	71	71	70	71	61	71	55	71	50	71	50	71	46	71	46	39	71	53	33	71	46	29	71	40	38	65	35	34	58	31	30		
		7-27	71	71	71	71	71	71	71	71	65	71	61	71	59	71	54	71	54	71	49	69	65	42	66	56	36	62	48	31	59	42	41	56	37	36	53	33	32		
		27-45	95	95	95	94	94	94	93	93	93	91	91	89	89	88	88	88	86	86	86	86	79	79	79	71	71	71	62	62	62	55	55	55	49	49	49	44	44	44	
	D	0-7	71	71	71	71	71	63	71	61	56	71	61	51	71	46	71	68	42	71	61	38	71	52	33	71	44	28	70	38	37	62	33	32	55	30	28	48	40	25	
		7-27	71	71	71	71	71	68	71	61	61	71	55	71	71	50	71	45	69	65	41	65	55	35	62	47	30	58	41	39	55	35	34	52	31	30	49	42	27		
		27-45	94	94	94	93	93	93	91	91	89	89	89	87	87	87	85	84	84	81	81	81	81	70	70	70	61	61	61	53	53	53	47	47	47	42	42	42	38	38	38
30	B	0-7	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	55	69	69	47	69	65	41	69	57	36	69	50	32	69	44	28	
		7-27	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	59	71	59	71	51	71	70	44	67	60	39	64	53	34	62	47	30	
		27-45	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	89	89	87	87	87	84	84	78	78	78	72	72	67	67	67	62	62	62	57	57	57		
	C	0-7	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	46	69	62	39	69	53	33	69	46	29	68	40	38	65	35	34	58	31	30	
		7-27	71	71	71	71	71	71	71	71	71	71	65	71	59	71	54	71	54	71	49	69	65	42	66	56	36	62	48	31	59	42	41	56	37	36	53	33	32		
		27-45	90	90	90	89	89	89	88	88	88	86	86	86	84	84	84	81	81	81	77	77	77	70	70	70	64	64	64	58	58	58	54	54	54	49	49	49	44	44	44
	D	0-7	71	71	71	71	71	63	71	61	56	71	61	51	71	46	71	68	42	71	61	38	71	52	33	71	44	28	70	38	37	62	33	32	55	30	28	48	40	25	
		7-27	71	71	71	71	71	68	71	61	61	71	55	71	71	50	71	45	69	65	41	65	55	35	62	47	30	58	41	39	55	35	34	52	31	30	49	42	27		
		27-45	90	90	90	88	88	88	86	86	86	84	84	84	80	80	80	76	76	76	72	72	72	65	65	65	59	59	59	53	53	53	47	47	47	42	42	42	38	38	38
40	B	0-7	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	47	57	57	41	57	57	36	57	50	32	57	44	28	
		7-27	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	59	60	59	59	59	59	57	57	57	53	53	53		
		27-45	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85		
	C	0-7	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	46	57	49	57	49	57	5													



II

30 ft

Roof Height

S_S = 3.00
Seismic

22.78 sq.ft

LANDSCAPE

CROSS-SLOPE
Rail Direction

NXT

NXT COMBO

Solarhooks CTI

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