

Design Criteria for Span Tables:

Values in the maximum allowable span tables provided herein are subject to the following general criteria and additional criteria shown on individual span tables sheets. Values in span tables are based on the same engineering methodology and calculation algorithms used for U-Builder and are provided here for reference.

Building Assumptions

- Building Risk Category: II
- Mean Roof Height: 30ft
- Roof Pitch: 0°-45°
- Site Elevation: 0 ft

Wind Design Assumptions

- Wind loads used are based on ASCE 7-22 Sec. 29.4.4
- Exposure Category B, C, or D
- Basic Wind Speed = 90 – 180 mph
- Level terrain. Topographic factor, $k_{zt} = 1.0$
- $\gamma_E = 1.0$ for 'Interior' spans, $\gamma_E = 1.5$ for 'Exposed' spans (ASCE 7-22, Fig. 29.4-7)

Snow Design Assumptions

- Ground Snow Load = 0-100 psf
- Exposure Factor coefficients of Partially Exposed condition
- Thermal Factor = 1.2
- Results based on uniform snow load

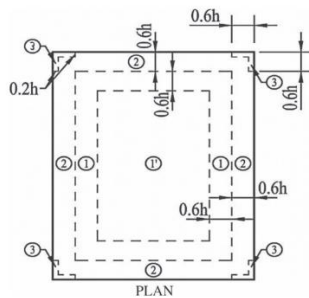
Seismic Design Assumptions

- 0.2-s Spectral Response Acceleration
- $S_s = 1.25$ and 3 with $S_{D5} = 1, 2.4$ respectively per criteria shown on individual span tables sheets.
- $S_1 = 0.5, S_{D1} = 0.6$
- Seismic site class D

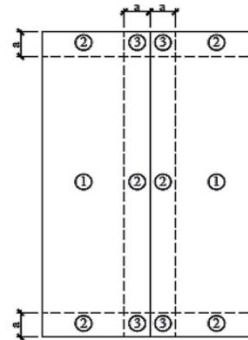
Span Tables

Array Assumptions

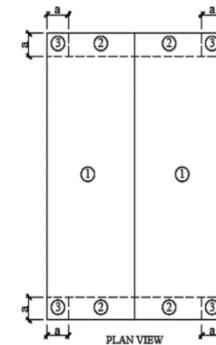
- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at least twice the module height above roof surface.
- Modules are parallel to roof surface and maximum height above roof surface is 5" to 10" depending on attachment type.
- Gaps between module rows and columns is 0.25" in to 1" depending on clamp type.
- 'Exposed' spans as defined in ASCE 7-22 sec. 29.4.4 shall be used when any part of an exposed module or panel is attributed to that span.
- The most restrictive of all roof zone spans shall be used when any part of the module is attributed to that span.
- Zone should be considered as per ASCE 7-22 Fig. 30.3-2A to 30.3-2D



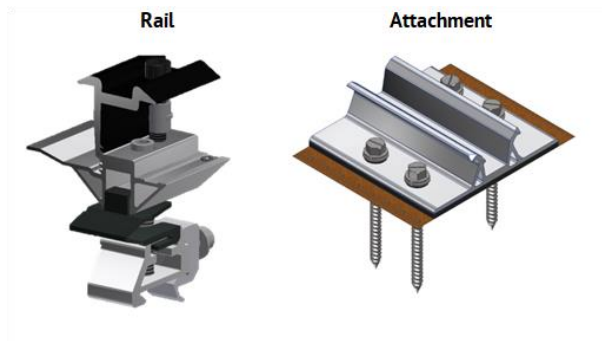
Gable Roofs $\theta \leq 7^\circ$



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



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



Micro Rail - DtD OSB



30 ft

$$S_s = 1.25$$

19 sq.ft

PORTRAIT

CROSS-SLOPE

Micro Rail

SFM

SFM DtD-OSB

SPAN TABLES

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																							
				90			95			100			105			110			115			120			130			140			150			160			170			180			
				Roof Wind Zone																																							
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0-7	Interior	14	14	14	14	14	14	14	14	12	14	14	11	14	14	10	14	13	9	14	12	8	14	10	7	12	8	6	10	7	5	9	6	4	7	5	4	7	5	3	2
			Exposed	14	14	10	14	13	9	14	11	8	14	10	7	13	9	6	11	8	6	10	7	5	9	6	4	7	5	4	6	4	3	5	4	3	2	4	3	2	3		
		7-20	Interior	14	14	13	14	14	12	14	14	11	14	13	9	14	12	9	14	11	8	14	10	7	11	8	6	10	7	5	8	6	4	7	5	4	6	4	3	5	4	3	
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			Exposed	14	13	10	14	11	9	14	10	8	14	9	7	14	8	7	13	7	6	12	7	5	10	6	5	8	5	4	7	4	3	6	3	3	2	5	3	2	5		
	C	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	11	14	13	10	12	11	9	11	9	7	9	8	6	8	7	5	7	6	5	4	
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		7-20	Interior	13	9	7	12	8	6	11	7	5	9	7	5	8	6	4	8	5	4	7	5	3	6	4	3	5	3	2	4	3	2	4	3	2	1	3	2	1			
			Exposed	14	12	9	14	11	8	14	10	7	12	9	6	11	8	6	10	7	5	9	7	5	8	6	4	3	5	3	6	4	3	5	3	2	4	3	2	2			
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			Exposed	14	9	7	13	8	6	12	7	5	11	6	5	10	5	4	9	5	4	8	4	4	7	4	3	6	3	2	2	5	3	2	2	4	2	3	2	1			
10	B	0-7	Interior	14	14	13	14	14	12	14	13	10	14	12	9	12	11	8	11	10	8	10	9	7	10	9	7	8	6	7	6	5	4	5	4	3	4	3	4	3			
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		7-20	Interior	14																																							

[illegible]

[illegible]

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Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																							
				90			95			100			105			110			115			120			130			140			150			160			170			180			
				Roof Wind Zone																																							
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0-7	Interior	24	24	24	24	24	23	24	24	21	24	24	18	24	24	17	24	22	15	24	20	14	23	17	12	20	14	10	17	12	8	15	10	7	13	9	6	11	8	6	
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		7-20	Interior	24	24	23	24	24	20	24	24	18	24	22	16	24	20	15	24	18	13	23	17	12	19	14	10	16	12	9	14	10	7	12	9	6	11	8	6	9	7	5	4
			Exposed	24	20	15	24	24	18	13	22	16	12	20	14	10	18	13	9	16	12	8	15	11	8	12	9	6	10	8	5	9	6	5	8	6	4	7	5	4	6	4	3
		20-27	Interior	24	24	24	24	24	24	24	24	22	24	24	20	24	22	18	24	20	16	24	18	15	24	15	12	22	13	10	19	11	9	17	10	8	15	8	7	13	7	6	
			Exposed	24	22	18	24	24	19	16	24	17	14	24	15	13	24	14	11	22	13	10	20	11	9	17	10	8	14	8	7	12	7	6	11	6	5	9	5	4	8	5	4
	27-45	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	19	24	22	18	21	19	15	18	16	13	16	14	11	13	12	9	12	11	8	10	9	7		
		Exposed	24	24	21	24	24	19	24	22	17	22	19	15	20	17	14	18	16	12	16	14	11	14	12	10	12	10	8	10	9	7	9	8	6	8	7	5	7	6	5		
	Exposed	23	16	11	20	14	10	18	13	9	16	12	8	15	10	7	13	9	7	12	9	6	10	7	5	9	6	4	7	5	4	6	5	3	6	4	3	5	3	2			
	7-20	Interior	24	21	15	24	19	14	23	17	12	21	15	11	19	14	10	17	12	9	16	11	8	13	9	7	11	8	6	10	7	5	8	6	4	7	5	4	6	5	3		
		Exposed	19	14	10	17	12	9	15	11	8	13	10	7	12	9	6	11	8	6	10	7	5	8	6	4	7	5	4	6	4	3	5	4	3	5	3	2	4	3	2		
	20-27	Interior	24	23	19	24	20	17	24	18	15	24	16	13	24	15	12	23	13	11	21	12	10	18	10	8	15	9	7	13	7	6	11	6	5	10	6	5	9	5	4		
Exposed																																											

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Risk Category

Roof Height

Seismic

Module Area

Orientation

Rail Direction

Rail Type

Clamp

Attachment

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

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ASCE 7-22
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

23 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

Micro Rail
Rail Type

SFM
Clamp

SFM DID-05B
Attachment

SPAN TABLES

Maximum Allowable 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	1	2	3																																																														
0	B	0-7	Interior	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8	12	11	7	12	10	7	11	8	6	10	7	5	8	6	10	7	5	8	6	4	3	2	2	2	2	2	2	2	2	2	2	2	2																																																								
			Exposed	12	12	8	12	10	7	12	9	6	12	8	6	11	7	5	10	7	5	9	6	4	7	5	3	6	4	3	5	6	4	3	5	6	4	3	5	6	4	3	2	3	2	2	2	2	2																																																										
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		7-20	Interior	12	10	7	12	9	7	11	8	6	10	7	5	9	7	5	8	6	4	8	5	4	6	4	3	5	4	2	4	3	2	4	3	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2																																																									
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	27-45	Interior	12	12	11	12	12	10	12	11	9	11	10	8	10	9	7	9	8	6	8	7	5	7	6	5	6	5	4	5	6	5	4	5	4	3	4	4	3	4	3	3	3	3	2	3	2	2																																																											
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27-45	Interior	12	12	9	12	10	8	10	9	7	9	8	6	8	7	5	7	6	5	6	5	4	5	4	3	4	3	2	4	3	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2																																																													
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		20-27	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11																																																											
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	27-45	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12																																																												
		Exposed	12	12	10	12	12	9	12	11	8	11	9	7	10	9	7	9	8	6	8	7	5	7	6	5	6	5	4	5	6	5	4	5	4	3	4	4	3	4	3	3	3	2	3	2	2																																																												
	C	0-7	Interior	9	9	9	9	9	8	9	9	7	9	9	6	9	8	5	9	7	5	9	6	4	8	5	4	6	5	3	5	4	6	5	3	5	3	2	4	3	2	4	3	2	4	2	2	2																																																											
			Exposed	9	8	5	9	7	5	9	6	4	8	6	4	7	5	3	6	4	3	6	4	3	5	4	3	2	4	3	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2																																																											
		7-20	Interior	9	9	7	9	9	7	9	8	6	9	7	5	9	6	4	8	6	4	7	5	4	6	4	3	5	4	2	4	3	2	4	3	2	3	2	2	2	2	2	2	2	2	2	2	2																																																											
			Exposed	9	7	5	8	6	4	7	5	4	6	5	3	6	4	3	5	4	3	5	3	2	4	3	2	4	3	2	3	2	1	2	2	1	2	1	2	1	2	1	2	1	1	1																																																													
		20-27	Interior	11	11	9	11	10	8	11	9	7	11	8	6	11	7	6	11	6	5	10	6	5	9	5	4	7	4	3	6	3	3	5	3	2	5	3	2	4	2	2	3	2	2	2	2	2																																																											
			Exposed	11	7	6	11	6	5	10	6	5	9	5	4	8	4	4	7	4	3	7	4	3	6	3	3	5	3	2	4	2	2	3	2	1	3	2	1	3	2	1	3	1	1	1																																																													
	27-45	Interior	12	12	11	12	12	10	12	11	9	11	10	8	10	9	7	9	8	6	8	7	5	7	6	5	6	5	4	5	6	5	4	5	4	3	4	4	3	4	3	3	3	3	2	3	2																																																												
		Exposed	10	9	7	9	8	6	8	7	6	7	6	5	6	6	4	5	5	4	5	4	3	4	4	3	4	3	2	4	3	3	2	3	2	2	2	2	2	2	2	2	2	2	2	2																																																													
	D	0-7	Interior	9	9	7	9	9																																																																																																			

[illegible]



30 ft

$$S_s = 1.25$$

23 sq.ft

PORTRAIT

CROSS-SLOPE

Micro Rail

SFM

SFM DtD-OSB

SPAN TABLES

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						
60	B	0-7	Interior	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3					
			Exposed	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3					
		7-20	Interior	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3				
			Exposed	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3					
		20-27	Interior	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4				
			Exposed	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					
	C	0-7	Interior	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3					
			Exposed	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3						
		7-20	Interior	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3					
			Exposed	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3					
		20-27	Interior	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4				
			Exposed	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					
D	0-7	Interior	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					
		Exposed	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4						
	7-20	Interior	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					
		Exposed	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					
	20-27	Interior	5	5	5	5																																				

[illegible]



ASCE 7-22
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

23 sq.ft
Module Area

LANDSCAPE
Orientation

CROSS-SLOPE
Rail Direction

Micro Rail
Rail Type

SFM
Clamp

SFM DID-05B
Attachment

SPAN TABLES

Maximum Allowable 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	23	23	23	23	23	23	23	23	20	23	23	18	23	23	16	23	21	15	23	19	13	23	16	11	19	14	10	17	12	8	14	10	7	13	9	6	11	8	5																																							
			Exposed	23	23	16	23	21	14	23	19	13	23	17	12	21	15	10	19	14	9	17	12	9	14	10	7	12	9	6	11	8	5	9	7	5	8	6	4	7	5	3																																							
		7-20	Interior	23	23	22	23	23	20	23	20	23	18	23	22	16	23	20	14	23	18	13	23	16	12	19	14	10	16	12	8	14	10	7	12	9	6	10	8	5	9	7	5																																						
			Exposed	23	20	14	23	17	13	22	15	11	19	14	10	17	13	9	16	11	8	14	10	8	12	9	6	10	7	5	9	6	5	8	5	4	7	5	3	6	4	3																																							
		20-27	Interior	23	23	23	23	23	23	23	23	23	21	23	23	19	23	21	17	23	19	16	23	18	14	23	15	12	22	12	10	19	11	9	16	9	8	14	8	7	13	7	6																																						
			Exposed	23	21	17	23	19	15	23	17	14	23	15	12	23	14	11	22	12	10	20	11	9	16	9	8	14	8	7	12	7	6	10	6	5	9	5	4	8	5	4																																							
	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	24																																							
		Exposed	24	24	21	24	24	18	24	21	16	21	19	15	19	17	13	17	16	12	16	14	11	13	12	9	11	10	8	10	9	7	8	8	6	7	7	5	7	6	5																																								
	C	0-7	Interior	22	23	17	23	22	15	23	20	14	23	18	12	22	16	11	20	14	10	18	13	9	15	11	8	13	9	6	11	8	6	10	7	5	8	6	4	7	5	4																																							
			Exposed	22	16	11	20	14	10	18	13	9	16	11	8	14	10	7	13	9	6	12	8	6	10	7	5	8	6	4	7	5	3	6	4	3	5	4	3	5	3	2																																							
		7-20	Interior	23	21	15	23	18	13	23	16	12	21	15	11	18	13	10	17	12	9	15	11	8	13	9	7	11	8	6	9	7	5	8	6	4	7	5	4	6	4	3																																							
			Exposed	18	13	10	16	12	9	15	10	8	13	9	7	12	8	6	11	7	12	8	6	10	7	5	8	6	4	7	5	4	6	4	3	5	4	3	2	4	3	2																																							
		20-27	Interior	23	22	18	23	20	16	23	18	15	23	16	13	23	14	12	23	13	11	21	12	10	18	14	8	15	8	7	13	7	6	11	6	5	10	6	4	9	5	4																																							
			Exposed	23	14	12	22	13	10	20	11	9	18	10	8	16	9	8	15	8	7	13	8	6	12	7	6	11	6	5	10	5	4	8	5	4	7	4	3	6	3	5																																							
	27-45	Interior	24	24	22	24	24	20	24	22	17	22	20	16	20	18	14	18	16	13	17	15	12	14	13	10	12	11	8	10	9	7	9	8	6	8	7	5	7	6	5																																								
		Exposed	20	18	14	18	16	13	16	14	11	14	13	10	13	12	9	12	11	8	11	10	8	10	9	7	9	8	6	8	7	5	6	6	4	5	4	3	4	3	2																																								
	D	0-7	Interior	23	20	14	23	18	13	23	16	11	20	15	10	18	13	9	17	12	8	15	11	8	13	9	6	11	8	5	9	6	11	8	5	9	7	5	3	6	4	3																																							
			Exposed	18	13	9	16	12	8	14	10	7	13	9	6	12	8	6	11	8	5	10	7	5	8	6	4	7	5	3	6	4	3	5	4	2	4	3	2	4	3	2																																							
7-20		Interior	23	17	12	21	15	11	19	14	10	17	12	9	15	11	8	14	10	7	13	9	7	11	8	6	9	6	5	8	6	4	7	5	3	6	4	3	5	4	3																																								
		Exposed	15	11	8	13	10	7	12	9	6	11	8	6	10	7	5	9	6	5	8	6	4	7	5	3	6	4	3	5	3	2	4	3	2	4	3	2	2	4	3																																								
20-27		Interior	23	18	15	23	16	13	23	15	12	23	13	11	21	12	10	19	11	9	17	10	8	14	8	7	12	7	6	11	6	5	9	5	4	8	5	4	7	4	3																																								
		Exposed	21	12	10	18	10	9	16	9	8	15	8	7	13	8	6	12	7	6	11	6	5	9	5	4	8	4	7	4	3	6	3	3	5	3	2	4	2	2																																									
27-45	Interior	24	23	18	23	21	16	21	18	14	19	17	13	17	15	12	15	14	11	14	12	10	12	10	8	10	9	7	9	8	6	7	7	5	6	6	5	6	5	4																																									
	Exposed	17	15	12	15	13	10	13	12	9	12	11	8	11	10	8	10	9	7	9	8	6	8	7	5	6	6	4	5	5	4	5	4	3	4	3	4	3	2																																										
10	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	16	19	19	14	19	19	13	19	17	12	19	15	10	19	14	9	17	12	9	14	10	7	12	9	6	11	8	5	9	7	5	8	6	4	7	5	3																																							
		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	19																																						
			Exposed	19	19	14	19	17	13	19	15	11	19	14	10	17	13	9	16	11	8	14	10	8	12	9	6	10	7	5	9	6	5	8	5	4	7	5	3	6	4	3																																							
		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	17	21	19	15	21	17	14	21	15	12	21	14	11	21	12	10	20	11	9	16	9	8	14	8	7	12	7	6	10	6	5	9	5	4	8	5	4																																							
	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	23	23	23	23	23	23	23	23	23	23																																								
		Exposed	23	23	21	23	23	18	23	21	16	21	19	15	19	17	13	17	16	12	16	14	11	13	12	9	11	10	8	10	9	7	8	8	6	7	7	5	7	6	5																																								
	C	0-7	Interior	19	19	17	19	19	15	19	19	14	19	18	12	19	16	11	19	14	10	18	13	9	15	11	8	13	9	6	11	8	6	10	7	5	8	6	4	7	5	4																																							
			Exposed	19	16	11	19	14	10	18	13	9	16	11	8	14	10	7	13	9	6	12	8	6	10	7	5	8	6	4	7	5	3	6	4	3	5	4	3	5	3	2																																							
		7-20	Interior	19	19	15	19	18	13	19	16	12	19	15	11	18	13	10	17	12	9	15	11	8	13	9	7	11	8	6	9	7	5	8	6	4	7	5	4	6	4	3																																							
			Exposed	18	13	10	16	12	9	15	10	8	13	9	7	12	8	6	11	7	12	8	6	10	7	5	8	6	4	7	5	4	6	4	3	5	4	3	2	4	3	2																																							
		20-27	Interior	21	21	18	21	20	16	21	18	15	21	16	13	21	14	12	21	13	11	21	12	10	18	14	8	15	8	7	13	7	6	11	6	5	10	6	4	9	5	4																																							
			Exposed	21	14	12	21	13	10	20	11	9	18	10	8	16	9	8	15	8	7	13	8	6	11																																																								

[illegible]

[illegible]



II

30 ft
Roof Height

S_S = 1.25
Seismic

23 sq.ft

Module Area

LANDSCAPE

CROSS-SLOPE
Rail Direction

Micro Rail

SFM
Clamp

SFM DtD-OSB

SPAN TABLES

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

[illegible]



30 ft

$$S_s = 3.00$$

19 sq.ft

PORTRAIT

CROSS-SLOPE

Micro Rail

SFM

SFM Dtd-OSB

SPAN TABLES

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																							
				90			95			100			105			110			115			120			130			140			150			160			170			180			
				Roof Wind Zone																																							
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0-7	Interior	14	14	14	14	14	14	14	14	12	14	14	11	14	14	10	14	13	9	14	12	8	14	10	7	12	8	6	10	7	5	9	6	4	7	5	4	7	5	3	2
			Exposed	14	14	10	14	13	9	14	11	8	14	10	7	13	9	6	11	8	6	10	7	5	9	6	4	7	5	4	6	4	3	5	4	3	2	4	3	2	3		
		7-20	Interior	14	14	13	14	14	12	14	14	11	14	13	9	14	12	9	14	11	8	14	10	7	11	8	6	10	7	5	8	6	4	7	5	4	6	4	3	5	4	3	
			Exposed	14	12	8	14	10	8	13	9	7	12	8	6	10	7	5	9	7	5	9	6	4	7	5	4	6	4	3	5	4	3	2	4	3	2	4	3	2	2		
		20-27	Interior	14	14	14	14	14	14	14	14	13	14	14	12	14	14	13	10	14	12	9	14	11	9	14	9	7	13	7	6	11	6	5	4	9	5	4	8	4	3		
			Exposed	14	13	10	14	11	9	14	10	8	14	9	7	14	8	7	13	7	6	12	7	5	10	6	5	8	5	4	7	4	3	6	3	3	2	5	3	2	5		
	C	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	11	14	13	10	12	11	9	11	9	7	9	8	6	8	7	5	6	5	4		
			Exposed	14	14	12	14	14	11	14	13	10	13	11	9	12	10	8	10	9	7	9	8	7	6	5	4	7	6	7	6	5	4	3	4	3	4	3	3				
		7-20	Interior	13	9	7	12	8	6	11	7	5	9	7	5	8	6	4	8	5	4	7	5	3	6	4	3	5	3	2	4	3	2	4	3	2	1	3	2	1			
			Exposed	14	12	9	14	11	8	14	10	7	12	9	6	11	8	6	10	7	5	9	7	5	8	6	4	3	5	3	6	4	3	5	3	2	4	3	2				
		20-27	Interior	11	8	6	10	7	5	9	6	4	8	6	4	7	5	4	6	5	3	6	4	3	5	3	2	4	3	2	2	3	2	1	3	2	1	2	2	1			
			Exposed	14	9	7	13	8	6	12	7	5	11	6	5	10	5	4	9	5	4	8	4	4	7	4	3	6	3	2	2	5	3	2	2	4	2	3	2	1			
10	B	0-7	Interior	14	14	13	14	14	12	14	13	10	14	12	9	12	11	8	11	10	8	10	9	7	10	9	7	8	6	7	6	5	4	5	4	3	4	3	4	3			
			Exposed	12	11	8	11	10	7	10	9	7	9	8	6	8	7	5	7	6	5	6	6	4	5	5	4	4	3	4	3	3	3	2	3	2	3	2	2				
		7-20	Interior	14	12	8	14																																				



30 ft

 $S_S = 3.00$

19 sq.ft

PORTRAIT

CROSS-SLOPE

Micro Rail

SFM

SFM Dtd-05B

SPAN TABLES

[illegible]

[illegible]

[illegible]

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	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	24	24	24	24	24	23	24	24	21	24	24	18	24	24	17	24	22	15	24	20	14	23	17	12	20	14	10	17	12	8	15	10	7	13	9	6	11	8	6
			Exposed	24	24	17	24	21	15	24	19	13	24	17	12	21	15	11	19	14	10	18	13	9	15	11	7	13	9	6	11	8	5	9	7	5	8	6	4	7	5	4
		7-20	Interior	24	24	23	24	24	20	24	18	24	22	16	24	20	15	24	18	13	23	17	12	19	14	10	16	12	9	14	10	7	12	9	6	11	8	6	9	7	5	4
			Exposed	24	20	15	24	18	13	22	16	12	20	14	10	18	13	9	16	12	8	15	11	8	12	9	6	10	8	5	9	6	5	8	6	4	7	5	4	6	4	3
		20-27	Interior	24	24	24	24	24	24	24	24	22	24	24	20	24	22	18	24	20	16	24	18	15	24	15	12	22	13	10	19	11	9	17	10	8	15	8	7	13	7	6
			Exposed	24	22	18	24	19	16	24	17	14	24	15	13	24	14	11	22	13	20	10	20	11	9	17	10	8	14	8	7	12	7	6	11	6	5	9	5	4	8	5
	27-45	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	19	24	19	24	19	15	19	15	18	16	13	16	14	11	13	12	9	12	11	8	10	9	7	
		Exposed	24	24	21	24	24	19	24	22	17	22	19	15	20	17	14	18	16	12	16	14	11	14	12	10	12	10	8	10	9	7	9	8	6	8	7	5	7	6	5	
	C	0-7	Interior	24	24	18	24	23	16	24	20	14	24	18	13	23	16	11	21	15	10	19	13	9	16	11	8	13	10	7	11	8	6	10	7	5	9	6	4	8	5	4
			Exposed	23	16	11	20	14	10	18	13	9	16	12	8	15	10	7	13	9	7	12	9	6	10	7	5	9	6	4	7	5	4	6	5	3	6	4	3	5	3	2
		7-20	Interior	24	21	15	24	19	14	23	17	12	21	15	11	19	14	10	17	12	9	16	11	8	13	9	7	11	8	6	10	7	5	8	6	4	7	5	4	6	5	3
			Exposed	19	14	10	17	12	9	15	11	8	13	10	7	12	9	6	11	8	6	10	7	5	8	6	4	7	5	4	6	4	3	5	4	3	2	4	3	3	2	
20-27		Interior	24	23	19	24	20	17	24	18	15	24	16	13	24	15	12	23	13	11	21	12	10	18	10	8	15	9	7	13	7	6	11	6	5	10	6	5	9	5	4	
		Exposed	24	15	12	23	13	11	20	12	10	18	10	9	17	9	8	15	9	7	14	8	6	11	7	5	10	6	5	8	5	4	7	4	3	6	4	3	6	3	3	
27-45	Interior	24	24	22	24	24	20	24	23	18	23	10	16	21	19	15	19	17	13	17	15	12	14	13	10	12	11	9	11	9	7	9	8	6	8	7	6	7	6	5	4	
	Exposed	21	18	14	18	16	13	16	15	11	15	13	10	13	12	9	12	11	8	11	10	8	9	8	6	8	7	6	7	6	5	6	5	4	5	5	4	5	4	3		
D	0-7	Interior	24	21	14	24	19	13	23	17	11	21	15	10	19	13	9	17	12	8	15	11	8	13	9	6	11	8	5	9	7	5	8	6	4	7	5	4	6	4	3	
		Exposed	19	13	9	17	12	8	15	11	7	13	9	7	12	9	6	11	8	5	10	7	5	8	6	4	7	5	3	6	4	3	5	4	3	2	4	3	2			
	7-20	Interior	24	17	13	22	15	11	19	14	10	17	12	9	16	11	8	14	10	7	13	9	7	11	8	6	9	7	5	8	6	4	7	5	4	6	4	3	5	4	3	
		Exposed	16	11	8	14	10	7	12	9	6	11	8	6	10	7	5	9	6	5	8	6	4	7	5	4	6	4	3	5	4	3	2	4	3	2	3	2	2			
	20-27	Interior	24	19	15	24	17	14	24	15	12	24	13	11	21	12	10	19	11	9	18	10	8	15	8	7	13	7	6	11	6	5	9	5	4	8	5	4	7	4	3	
		Exposed	21	12	10	19	11	9	17	10	8	15	9	7	14	8	6	12	7	6	11	6	5	9	5	4	8	5	4	7	4	3	6	3	3	2	5	3	2			
27-45	Interior	24	24	19	24	21	17	21	19	15	19	17	13	17	15	12	16	14	11	14	13	10	12	11	8	10	9	7	9	8	6	8	7	5	7	6	5	6	5	4		
	Exposed	17	15	12	15	14	11	14	12	10	12	11	9	11	10	8	10	9	7	9	8	6	8	7	5	7	6	5	7	6	5	4	3	4	4	3	4	3	3			
10	B	0-7	Interior	19	19	19	19	19	19	19	19	19	19	18	19	19	17	19	19	15	19	19	14	19	17	12	19	14	10	17	12	8	15	10	7	13	9	6	11	8	6	
			Exposed	19	19	17	19	19	15	19	19	13	19	17	12	19	15	11	19	14	10	18	13	9	15	11	7	13	9	6	11	8	5	9	7	5	8	6	4	7	5	4
		7-20	Interior	19	19	19	19	19	19	19	19	18	19	19	16	19	19	15	19	18	13	19	17	12	19	14	10	16	12	9	14	10	7	12	9	6	11	8	6	9	7	5
			Exposed	19	19	15	19	18	13	19	16	12	19	14	10	18	13	9	16	12	8	15	11	8	12	9	6	10	8	5	9	6	5	8	6	4	7	5	4	6	4	3
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	20	16	22	18	15	22	15	12	22	13	10	19	11	9	17	10	8	15	8	7	13	7	6
			Exposed	22	22	18	22	19	16	22	17	14	22	15	13	22	14	11	22	13	20	10	21	11	9	17	10	8	14	8	7	12	7	6	11	6	5	9	5	4	8	5
	27-45	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	19	24	22	18	21	19	15	18	16	13	16	14	11	13	12	9	12	11	8	10	9	7	
		Exposed	24	24	21	24	24	19	24	22	17	22	19	15	20	17	14	18	16	12	16	14	11	14	12	10	12	10	8	10	9	7	9	8	6	8	7	5	7	6	5	
	C	0-7	Interior	19	19	18	19	19	16	19	14	19	18	13	19	16	11	19	15	10	19	13	9	16	11	8	13	10	7	11	8	6	10	7	5	9	6	4	8	5	4	
			Exposed	19	16	11	19	14	10	18	13	9	16	12	8	15	10	7	13	9	7	12	9	6	10	7	5	9	6	4	7	5	4	6	5	3	6	4	3	5	3	2
		7-20	Interior	19	19	15	19	19	14	19	17	12	19	15	11	19	14	10	17	12	9	16	11	8	13	9	7	11	8	6	10	7	5	8	6	4	7	5	4	6	5	3
			Exposed	19	14	10	17	12	9	15	11	8	13	10	7	12	9	6	11	8	6	10	7	5	8	6	4	7	5	4	6	4	3	5	4	3	2	4	3	3	2	
20-27		Interior	22	22	19	22	20	17	22	18	15	22	16	13	22	15	12	22	13	11	21	12	10	18	10	8	15	9	7	13	7	6	11	6	5	10	6	5	9	5	4	
		Exposed	22	15	12	22	13	11	20	12	10	18	10	9	17	9	8	15	9	7	14	8	6	11	7	5	10	6	5	8	5	4	7	4	3	6	4	3	6	3	3	
27-45	Interior	24	24	22	24	24	20	24	23	18	23	10	16	21	19	15	19	17	13	17	15	12	14	13	10	12	11	9	11	9	7	9	8	6	8	7	6	7	6	5		
	Exposed	21	18	14	18	16	13	16	15	11	15	13	10	13	12	9	12	11	8	11	10	8	9	8	6	8	7	6	7	6	5	6	5	4	5	5	4	5	4	3		
D	0-7	Interior	19	19	14	19	19	13	19	17	11	19	15	10	19	13	9	17	12	8	15	11	8	13	9	6	11	8	5	9	7	5	8	6	4	7	5	4	6	4	3	
		Exposed	19	13	9	17	12	8	15	11	7	13	9	7	12	9	6	11	8	5	10	7	5	8	6	4	7	5	3	6	4	3	5	4	3	2	4	3	2			
	7-20	Interior	19	17	13	19	15	11	19	14	10	17	12	9	16	11	8	14	10	7	13	9	7	11	8	6	9	7	5	8	6	4	7	5	4	6	4	3	5	4	3	
		Exposed	16	11	8	14	10	7	12	9	6	11	8	6	10	7	5	9	6	5																						



30 ft

$$S_s = 3.00$$

19 sq.ft

LANDSCAPE

CROSS-SLOPE

Micro Rail

SFM

SFM DtD-OSB

SPAN TABLES

[illegible]

[illegible]



Risk Category	Control	Residual Risk
1. Strategic Alignment	Regular communication and reporting to the Board and senior management.	Low
2. Data Accuracy	Implementing data validation and reconciliation processes.	Medium
3. System Reliability	Regular system maintenance and testing.	Low
4. Security	Implementing robust security measures and access controls.	Medium
5. Compliance	Regular audits and adherence to regulatory requirements.	Low
6. Integration	Thorough testing and validation of integration points.	Medium
7. Scalability	Designing the system to handle future growth.	Low
8. User Acceptance	Comprehensive training and support for end-users.	Medium
9. Vendor Management	Regular communication and performance monitoring of vendors.	Low
10. Change Management	Establishing a formal change management process.	Medium

Roof Height

Seismic

Module Area

Orientation

Rail Direction

Rail Type

Clamp

Attachment

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

[illegible]

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	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8	12	11	7	12	10	7	11	8	6	10	7	5	8	6	4	7	5	3	6	4	3	5	4	3												
			Exposed	12	12	8	12	10	7	12	9	6	12	8	6	11	7	5	10	7	5	9	6	4	7	5	3	6	4	3	5	8	4	2	4	3	2	4	3	2	3	2	2											
		7-20	Interior	12	12	11	12	12	10	12	12	9	12	11	8	12	10	7	12	9	6	11	8	6	9	7	5	8	6	4	7	5	3	6	4	3	5	4	3	4	3	2	3	2										
			Exposed	12	10	7	12	9	6	11	8	6	10	7	5	9	6	4	8	6	4	7	5	4	6	4	3	5	4	2	4	3	2	4	3	2	3	2	2	3	2	1												
		20-27	Interior	12	12	12	12	12	12	12	11	12	12	10	12	11	9	12	10	8	12	9	7	12	7	6	11	6	5	9	5	4	8	5	4	7	4	3	6	3	3	3	3											
			Exposed	12	11	9	12	9	8	12	8	7	12	7	6	12	7	5	11	6	5	10	6	4	8	5	4	7	4	3	6	3	3	5	3	2	4	2	2	4	2	2												
	27-45	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	12	12	12	9	10	9	7	9	10	9	7	9	8	6	8	7	5	7	6	4	6	5	4	3	3											
		Exposed	12	12	10	12	12	9	12	11	8	11	9	7	10	9	7	9	8	6	8	7	5	7	6	5	6	5	4	5	4	3	4	4	3	4	3	2	3	3	2	3												
	C	0-7	Interior	12	12	9	12	11	8	12	10	7	12	9	6	11	8	5	10	7	5	9	6	4	8	5	4	6	5	3	5	4	3	5	3	2	4	3	2	4	2	2												
			Exposed	11	8	5	10	7	5	9	6	4	8	6	4	7	5	3	6	4	3	6	4	3	5	4	3	2	4	3	2	3	2	2	3	2	1	3	2	1	2	1												
		7-20	Interior	12	10	7	12	9	7	11	8	6	10	7	5	9	7	5	8	6	4	8	5	4	6	4	3	5	4	3	5	3	2	4	3	2	3	2	2	3	2	1												
			Exposed	9	7	5	8	6	4	7	5	4	6	5	3	6	4	3	5	4	3	5	3	2	4	3	2	4	3	2	3	2	1	2	2	1	2	1	2	1	1													
20-27		Interior	12	11	9	12	10	8	12	9	7	12	8	6	12	7	6	12	6	5	10	6	5	9	5	4	7	4	3	6	3	5	3	2	5	3	2	4	3	2	2													
		Exposed	12	7	6	11	6	5	10	6	5	9	5	4	8	4	7	4	3	7	4	3	5	3																														



ASCE 7-22
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 3.00
Seismic

23 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

Micro Rail
Rail Type

SFM
Clamp

SFM DID-05B
Attachment

SPAN TABLES

Maximum Allowable 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)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	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	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

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Ground Snow Load (psf) Wind Exposure Category Roof Tilt Angle (deg) Panel Exposure				Basic Wind Speed (mph)																																															
				Roof Wind Zone																																															
				90			95			100			105			110			115			120			130			140			150			160			170			180											
1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	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	23	23	23	23	23	23	23	23	20	23	23	18	23	23	16	23	21	15	23	19	13	23	16	11	19	14	10	17	12	8	14	10	7	13	9	6	11	8	5	3								
			Exposed	23	23	23	16	23	21	14	23	19	13	23	17	12	21	15	10	19	14	9	17	12	9	14	10	7	12	9	6	11	8	5	9	7	5	8	6	4	7	5	3								
		7-20	Interior	23	23	22	23	23	20	23	23	18	23	22	16	23	20	14	23	18	13	23	16	12	19	14	10	16	12	8	14	10	7	12	9	6	10	8	5	9	7	5	3								
			Exposed	23	20	14	23	17	13	22	15	11	19	14	10	17	13	9	16	11	8	14	10	8	12	9	6	10	7	5	9	6	5	8	5	4	7	5	3	6	4	3									
		20-27	Interior	23	23	23	23	23	23	23	23	21	23	23	19	23	21	17	23	19	16	23	18	14	23	15	12	22	12	10	19	11	9	16	9	8	14	8	7	13	7	6									
			Exposed	23	21	17	23	19	15	23	17	14	23	15	12	23	14	11	22	12	10	20	11	9	16	9	8	14	8	7	12	7	6	10	6	5	9	5	4	8	5	4									
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	17	21	18	14	18	16	12	15	14	11	13	12	9	12	10	8	10	9	7									
			Exposed	24	24	21	24	24	24	18	24	21	16	21	19	15	19	17	13	17	16	12	16	14	11	13	12	9	11	10	8	10	9	7	8	8	6	7	7	5	7	6									
		7-20	Interior	23	23	17	23	22	15	23	20	14	23	18	12	22	16	11	20	14	10	18	13	9	15	11	8	13	9	6	11	8	6	10	7	5	8	6	4	7	5	4									
			Exposed	22	16	11	20	14	10	18	13	9	16	11	8	14	10	7	13	9	6	12	8	6	10	7	5	8	6	4	7	5	3	6	4	3	5	4	3	5	3	2									
		20-27	Interior	23	21	15	23	18	13	23	16	12	21	15	11	18	13	10	17	12	9	15	11	8	13	9	7	11	8	6	9	7	5	8	6	4	7	5	4	6	4	3									
			Exposed	18	13	10	16	12	9	15	10	8	13	9	7	12	8	6	11	8	6	10	7	5	8	6	4	7	5	4	6	4	3	5	4	3	2	4	3	2											
10	B	0-7	Interior	23	23	22	18	23	20	16	23	18	15	23	16	13	23	14	12	23	13	11	21	12	10	17	10	8	15	8	7	13	7	6	11																

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Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3						
60	B	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5					
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	4	7	5	3					
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5				
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5				
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7				
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7				
	C	27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	9	9	9	7			
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	9	7	8	9	7			
		0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5			
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5			
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5		
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5		
	D	20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7		
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7		
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	9	9	9	9	9	7	
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	9	7	8	9	7		
		B	0-7	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	5	8	7	6	5	4	
				Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	5	8	7	6	5	4			
	7-20		Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	5	8	7	6	5	4			
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	5	8	7	6	5	4				
	20-27		Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	9	9	9	7		
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	9	9	9	7		
	C	27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11		
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11				
0-7		Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5				
		Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5					
7-20		Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5				
		Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6</																		

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