



20° < Roof Pitch ≤ 27°															
Interior Wind Zone															
Exposure	Basic Wind Speed	0 psf Snow		10 psf Snow		20 psf Snow		30 psf Snow		40 psf Snow		50 psf Snow		60 psf Snow	
		Span	Cantilever	Span	Cantilever	Span	Cantilever	Span	Cantilever	Span	Cantilever	Span	Cantilever	Span	Cantilever
B (urban / suburban)	85 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	90 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	100 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	110 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	120 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	130 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	140 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	150 mph	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
C (rural)	85 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	90 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	100 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	110 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	120 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	130 mph	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	140 mph	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 8"	1' - 11"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	150 mph	6' - 8"	1' - 10"	6' - 8"	1' - 10"	6' - 8"	1' - 9"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
D (flat, unobstructed areas / shoreline)	85 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	90 mph	7' - 0"	3' - 2"	7' - 0"	2' - 10"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	100 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	110 mph	7' - 0"	2' - 5"	7' - 0"	2' - 5"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	120 mph	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	130 mph	6' - 8"	2' - 0"	6' - 8"	1' - 11"	6' - 8"	1' - 11"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	140 mph	6' - 8"	1' - 9"	6' - 8"	1' - 9"	6' - 8"	1' - 9"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	150 mph	6' - 8"	1' - 7"	6' - 8"	1' - 7"	6' - 0"	1' - 7"	6' - 0"	1' - 7"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"

Tabulated values are based upon the following:

- a. Building height is less than or equal to 30 feet.
- b. Residential gable roofs with roof slope less than or equal to 45 degrees.
- c. Maximum photovoltaic module size is 66 inches long by 40 inches wide.
- d. Photovoltaic modules are supported by two rails with the rails perpendicular to the module's length.
- e. Photovoltaic modules are parallel with the roof slope.
- f. Design governed by either flexural stress or deflection requirement of L/60.
- g. Loads per ASCE 7-05 Minimum Design Loads for Buildings and Other Structures.
- h. ASCE 7-05 Wind Exposure Categories:
  - i. Exposure B = Urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger.
  - ii. Exposure C = Open terrain with scattered obstructions having heights generally less than 30 ft. Includes flat open country, grasslands, and all water surfaces in hurricane prone regions.
  - iii. Exposure D = Flat, unobstructed areas and water surfaces outside hurricane prone regions. Includes smooth mud flats, salt flats, and unbroken ice.
- i. ASCE 7-05 Wind Load Parameters:
  - i. Occupancy Category II
  - ii. Importance Factor = 1.0
  - iii. Topographic Factor ( $K_{zt}$ ) = 1.0 [\*Note: This value has been set to 1.0 under the assumption that the system is NOT located on the upper half of a hill or ridge or near the crest of an escarpment.]
  - iv. Directionality Factor ( $K_d$ ) = 0.85
- j. The snow load indicated in the tables is the snow load applied to the modules.
- k. Edge Wind Zone is defined by ASCE 7-05 as **2a** with **a** being equal to: 10 percent of least horizontal dimension or 0.4h (h = height of building), whichever is smaller, but not less than either 4 percent of least horizontal dimension or 3 feet.
- l. Rail analysis per the Aluminum Design Manual, ADM 2005 Edition.

For installations that do not conform to the assumptions listed above contact Zilla for a more complete engineering analysis.



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Edge Wind Zone <sup>(k)</sup>															
Exposure	Basic Wind Speed	0 psf Snow		10 psf Snow		20 psf Snow		30 psf Snow		40 psf Snow		50 psf Snow		60 psf Snow	
		Span	Cantilever	Span	Cantilever	Span	Cantilever	Span	Cantilever	Span	Cantilever	Span	Cantilever	Span	Cantilever
B (urban / suburban)	85 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	90 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	100 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	110 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	120 mph	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	130 mph	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	140 mph	6' - 8"	1' - 10"	6' - 8"	1' - 10"	6' - 8"	1' - 10"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	150 mph	6' - 8"	1' - 8"	6' - 8"	1' - 8"	6' - 0"	1' - 8"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
C (rural)	85 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	90 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	100 mph	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	110 mph	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	120 mph	6' - 8"	1' - 10"	6' - 8"	1' - 10"	6' - 8"	1' - 9"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	130 mph	6' - 8"	1' - 7"	6' - 8"	1' - 7"	6' - 0"	1' - 7"	6' - 0"	1' - 7"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	140 mph	6' - 0"	1' - 5"	6' - 0"	1' - 5"	6' - 0"	1' - 6"	5' - 4"	1' - 6"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	150 mph	6' - 0"	1' - 4"	5' - 4"	1' - 4"	5' - 4"	1' - 4"	5' - 4"	1' - 4"	4' - 0"	1' - 4"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
D (flat, unobstructed areas / shoreline)	85 mph	7' - 0"	2' - 0"	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	90 mph	7' - 0"	2' - 0"	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	100 mph	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 8"	2' - 0"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	110 mph	6' - 8"	1' - 10"	6' - 8"	1' - 10"	6' - 8"	1' - 9"	6' - 0"	1' - 8"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	120 mph	6' - 8"	1' - 7"	6' - 8"	1' - 7"	6' - 0"	1' - 7"	6' - 0"	1' - 7"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	130 mph	6' - 0"	1' - 5"	6' - 0"	1' - 5"	5' - 4"	1' - 5"	5' - 4"	1' - 5"	5' - 4"	1' - 5"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	140 mph	6' - 0"	1' - 3"	5' - 4"	1' - 4"	5' - 4"	1' - 4"	5' - 4"	1' - 4"	4' - 0"	1' - 4"	4' - 0"	1' - 3"	4' - 0"	1' - 2"
	150 mph	5' - 4"	1' - 2"	5' - 4"	1' - 3"	4' - 0"	1' - 3"	4' - 0"	1' - 3"	4' - 0"	1' - 3"	4' - 0"	1' - 3"	4' - 0"	1' - 2"

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