Haas Door®
A Nofziger Company

Florida Wind Load Garage Doors

Florida Building & Miami-Dade Code Approved

How can I determine my garage door requirements?

Step 1:
Determine your Risk Category based on the descripiton given below. Risk Categories are defined based on the nature of occupancy:

Category I: Buildings such as agricultural and storage facilities representing low hazard to human life.

Category II: All buildings not listed in Categories I, III and IV. This is the default for "typical" buildings.

Category III: Buildings such as schools, nursing homes, public facilities, power generating and water supply installations that represent substantial hazard to human life.

Category IV: Essential facilities, such as hospitals, fire and police stations, shelters, airport control towers and defense installations.

Step 2:
Using the appropriate map below, determine the Minimum Wind Speed (MPH) required for your location. If you are unsure, contact a county or local municipality building official for the specific requirement.

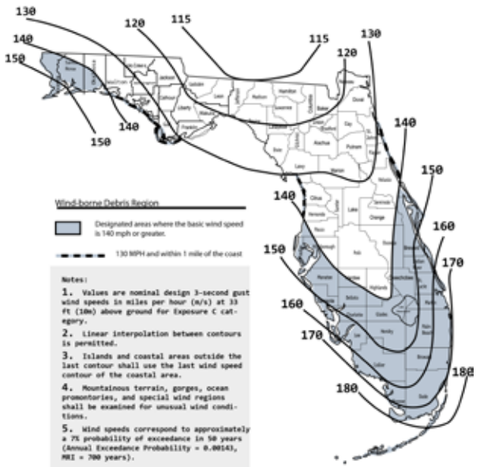


Figure 1609A Wind-Borne Debris, Category II and III Buildings and Structures except healthcare facilities

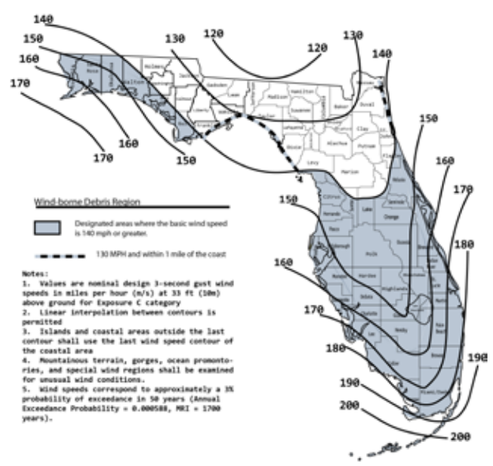


Figure 1609B Risk Category IV Buildings and Structures and Category III healthcare facilities

Step 3:
Determine the Exposure Category based on the building location.

Exposure B: Urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions.

Exposure C: Open terrain with scattered obstructions, including flat open ground and grasslands. All of Miami-Dade and Broward Counties are Exposure C, unless it meets the Exposure D definition.

Exposure D: Within 600 ft. of ocean front or other large body of water, measuring at least 5,000 ft. across.

See Page 5 for further explanations of Exposure Categories.

Step 4:
Determine the Mean Roof Height (MRH) (single or double story) of the building.

Step 5:
Find the required Design Pressure based on the previous information gathered from Steps 1,2,3 and 4 by using the charts on the following page.

What design pressure do I need?

After reviewing the steps on the previous page, use the information gathered to find the correct design pressure.

Garage Door Wind Load Guide - Values in PSF

Mean Roof Height	Door Size	Based on the 2010/2014/2017 Florida Building Code Exposure B, 115-200 MPH Ultimate Design Wind Speed (V_ult)										
Ultimate Wind Speed →		115 MPH	120 MPH	130 MPH	140 MPH	150 MPH	160 MPH	170 MPH	180 MPH	186 MPH	190 MPH	200 MPH
Less than 30 Feet	Single 9′ x 7′	12.5 -14.2	13.7 -15.5	16.1 -18.2	18.5 -20.9	21.3 -24.1	24.3 -27.5	27.6 -31.2	30.6 -34.6	32.7 -37.0	34.2 -38.6	38.0 -43.0
	Double 16′ x 7′	12.0 -13.4	13.1 -14.6	15.5 -17.2	17.7 -19.7	20.4 -22.7	23.3 -26.0	26.4 -29.4	29.3 -32.6	31.3 -34.9	32.7 -36.5	36.4 -40.6
Equivalent Nominal Wind Speed → (from 2007 Florida Building Code)		89 MPH	93 MPH	101 MPH	108 MPH	116 MPH	124 MPH	132 MPH	139 MPH	144 MPH	147 MPH	155 MPH

Mean Roof Height	Door Size	Based on the 2010/2014/2017 Florida Building Code Exposure C, 115-200 MPH Ultimate Design Wind Speed (V_ult)													
Ultimate Wind Speed →		115 MPH	120 MPH	130 MPH	140 MPH	150 MPH	156 MPH	160 MPH	165 MPH	170 MPH	175 MPH	180 MPH	186 MPH	190 MPH	200 MPH
15 Feet Single Story	Single 9′ x 7′	15.2 -17.2	16.6 -18.8	19.6 -22.2	22.4 -25.3	25.9 -29.2	28.0 -31.7	29.5 -33.4	31.5 -35.6	33.5 -37.8	35.3 -39.9	37.1 -42.0	39.7 -44.9	41.5 -46.9	46.2 -52.2
	Double 16′ x 7′	14.6 -16.2	15.9 -17.7	18.8 -20.9	21.5 -23.9	24.8 -27.6	26.8 -29.9	28.3 -31.5	30.1 -33.6	32.1 -35.7	33.8 -37.7	35.5 -39.6	38.0 -42.4	39.8 -44.3	44.2 -49.3
25 Feet Double Story	Single 9′ x 7′	16.8 -19.0	18.4 -20.8	21.7 -24.5	24.8 -28.0	28.6 -32.3	31.0 -35.0	32.7 -36.9	34.8 -39.3	37.0 -41.8	39.0 -44.1	41.1 -46.4	43.9 -49.7	45.9 -51.9	51.1 -57.7
	Double 16′ x 7′	16.1 -18.0	17.6 -19.6	20.8 -23.1	23.7 -26.5	27.4 -30.5	29.7 -33.1	31.3 -34.9	33.3 -37.2	35.5 -39.5	37.4 -41.7	39.3 -43.8	42.1 -46.9	44.0 -49.0	48.9 -54.5
Equivalent Nominal Wind Speed → (from 2007 Florida Building Code)		89 MPH	93 MPH	101 MPH	108 MPH	116 MPH	121 MPH	124 MPH	128 MPH	132 MPH	136 MPH	139 MPH	144 MPH	147 MPH	155 MPH

Mean Roof Height	Door Size	Based on the 2010/2014/2017 Florida Building Code Exposure D, 115-200 MPH Ultimate Design Wind Speed (V_ult)													
Ultimate Wind Speed →		115 MPH	120 MPH	130 MPH	140 MPH	150 MPH	156 MPH	160 MPH	165 MPH	170 MPH	175 MPH	180 MPH	186 MPH	190 MPH	200 MPH
15 Feet Single Story	Single 9′ x 7′	18.4 -20.8	20.1 -22.8	23.8 -26.8	27.2 -30.7	31.3 -35.4	34.0 -38.4	35.8 -40.5	38.1 -43.1	40.6 -45.9	42.7 -48.3	45.0 -50.8	48.1 -54.4	50.3 -56.9	55.9 -63.2
	Double 16′ x 7′	17.7 -19.7	19.3 -21.5	22.7 -25.4	26.0 -29.0	30.0 -33.4	32.5 -36.3	34.3 -38.2	36.5 -40.7	38.8 -43.3	40.9 -45.6	43.1 -48.0	46.1 -51.4	48.2 -53.7	53.6 -59.7
25 Feet Double Story	Single 9′ x 7′	20.1 -22.7	21.9 -24.7	25.8 -29.2	29.5 -33.4	34.1 -38.5	36.9 -41.8	38.9 -44.0	41.5 -46.9	44.1 -49.9	46.5 -52.5	48.9 -55.3	52.4 -59.2	54.7 -61.8	60.8 -68.7
	Double 16′ x 7′	19.2 -21.4	21.0 -23.4	24.7 -27.6	28.3 -31.5	32.6 -36.4	35.4 -39.4	37.3 -41.6	39.7 -44.3	42.2 -47.1	44.5 -49.6	46.8 -52.2	50.1 -55.9	52.4 -58.4	58.2 -64.9
Equivalent Nominal Wind Speed → (from 2007 Florida Building Code)		89 MPH	93 MPH	101 MPH	108 MPH	116 MPH	121 MPH	124 MPH	128 MPH	132 MPH	136 MPH	139 MPH	144 MPH	147 MPH	155 MPH

For the Commercial Door Wind Load Guide, see Technical Data Sheet #155t on the DASMA website or contact your local municipality building official for specific requirements and building codes.

What's available from Haas Door?

Find the width of your door, then find the design pressure requirement. If the option desired is unavailable at that required design pressure, go to a higher pressure with the desired options available.

FLORIDA WIND LOAD (Excluding Miami-Dade)

NOTE: Door heights available up to 16' high

DESIGN PRESSURE (PSF)	DOOR WIDTH Up to 8'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 8'-3" to 9'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 9'-3" to 10'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 10'-3" to 12'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 12'-3" to 14'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 14'-3" to 16'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 16'-3" to 18'-2"
+23.9 -27.0	L L	+21.3 -24.1	L L	+17.3 -19.6	L L	+12.1 -13.6	L L	+10.9 -12.4	L L L	+18.3 -20.4	L	+14.4 -16.1	L
+26.5 -30.0	L L L	+23.6 -26.7	L L L	+20.1 -22.7	L L L	+14.1 -15.9	L L L	+20.8 -23.2	L	+20.4/ -22.7	L	+16.1 -17.9	L
+26.7 -30.2	*	+24.8 -28.0	L L L	+21.3 -24.1	L L L	+14.8 -16.8	L L L	+23.2 -25.9	L	+21.8 -24.3	L L L	+17.2 -19.2	L L L
+27.8 -31.4	L L L	+26.7 -30.2	*	+21.7 -24.6		+15.2 -17.2		+24.7 -26.7		+22.9 -25.5	L L L	+18.9 -21.1	L L
+30.0 -33.9		+33.2 -37.0	*	+25.6 -28.5	*	+18.8 -21.0		+24.8 -27.7	L L	+23.9 -26.7	L L	+19.6 -21.8	L
+33.2 -37.0	*	+35.0 -39.0	L*	+27.0 -30.1		+19.8 -22.1		+25.6 -28.5	*	+24.8 -27.6	L	+20.3 -22.6	
+35.0 -39.0	L*	+37.0 -41.8	L*	+28.4 -31.7		+22.7 -25.5		+26.1 -29.1	L L L	+25.6 -28.5	*	+20.4 -22.7	L L L
+37.0 -41.8	L*	+40.0 -45.0	L*	+29.1 -32.4	L	+23.3 -26.3		+27.2 -30.4	L L	+26.8 -30.0	L L	+23.8 -26.8	
+37.3 -41.5		+41.1 -46.4	L* * *	+30.0 -33.9	*	+24.3 -27.1	L	+28.3 -31.5	L	+30.0 -33.1	*	+23.9 -26.7	L L
+39.2 -43.7		+48.0 -52.0	L* FV* L* L* L*	+31.3 -34.9	L* L* L* L*	+25.6 -28.5	*	+29.2 -32.5		+30.0 -33.9	L* *	+24.7 -27.6	
+40.0 -45.0	L*	+53.2 -57.6		+32.4 -36.1	L	+27.1 -30.1	L	+30.0 -33.1	*	+31.3 -34.9	L* L* L* L* L* FV*	+29.6 -33.0	
+41.1 -46.4	L* *	+65.0 -65.0	H* H*	+32.5 -36.5		+28.9 -32.2	L L	+30.0 -33.9	L* L* *	+33.7 -37.2		+30.0 -33.1	*
+44.9 -50.5		+65.0 -73.5	H*	+33.4 -37.7		+30.0 -33.9	* *	+30.6 -34.2	L L	+33.7 -38.1	L	+30.0 -33.9	L* FV* L* *
+46.1 -52.0				+34.6 -38.6	L L	+31.3 -34.9	L* L* L* L* L* FV*	+31.3 -34.9	L* L* L* L* L* FV*	+37.4 -41.7	* * *	+45.0 -50.0	H* H* H* H*
+48.0 -52.0	L* FV* L* L* L*			+35.0 -39.0	L* *	+31.7 -35.4	L L	+34.2 -38.7		+38.0 -42.0	L*		
+59.7 -64.7				+37.0 -41.8	L*	+33.5 -36.3		+35.7 -39.8		+48.0 -52.0	H* H* H* H*		
+65.0 -65.0	H* H*			+37.4 -41.7	* *	+34.0 -37.9		+37.4 -41.7	* * *				
+65.0 -73.5	H* H*			+38.0 -42.0	L*	+37.4 -41.7	* *	+38.0 -42.0	L*				
				+38.0 -42.4	L L	+38.0 -42.0	L*	+38.4 -43.4	L				
				+40.7 -45.3		+39.9 -45.0		+42.6 -47.6					
				+47.7 -53.9		+41.5 -46.3		+48.0 -52.0	H* H* H* H*				
				+48.0 -52.0	H* H* L* H* H* L* L* FV* L*	+44.7 -50.6 +48.0 -52.0	H* H* H* H*						
				+49.7 -55.5		+49.7 -55.4							
				+59.4 -66.3									

= 600, 700, & 2000 Series
= 5700 & 5200 Series
= 2000, 2400 & 2500 Series
= 900 Series
= Residential Aluminum 360 Series & Commercial Aluminum 320 Series

FV = With Full-View
H = HVHZ (High Velocity Hurricane Zone)
L = Lites Available
* = Impact Resistant

The following Haas Door products have received NOAs, issued by Miami-Dade County. This approval certifies the products have passed required testing and are approved for use in the High Velocity Hurricane Zone.

MIAMI-DADE COUNTY APPROVED

MIAMI-DADE WIND LOAD

NOTE: Door heights available up to 16' high

DESIGN PRESSURE (PSF)	DOOR WIDTH Up to 8'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 8'-3" to 9'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 9'-3" to 10'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 10'-3" to 12'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 12'-3" to 14'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 14'-3" to 16'-2"	DESIGN PRESSURE (PSF)	DOOR WIDTH 16'-3" to 18'-2"
+65.0 -65.0	H* H*	+65.0 -65.0	H* H*	+48.0 -52.0	H* H* H*	+48.0 -52.0	H* H* H*	+48.0 -52.0	H* H* H*	+48.0 -52.0	H* H* H*	+45.0 -50.0	H* H* H*
+65.0 -73.5	H* H*	+65.0 -73.5	H* H*										

= 600, 700, & 2000 Series
= 5700 & 5200 Series
= 2000, 2400 & 2500 Series

H = HVHZ (High Velocity Hurricane Zone)
* = Impact Resistant

663 American Walnut

High Velocity Hurricane Zone (HVHZ)

Miam-Dade County	
Risk Category I Buildings and Structures	165 mph
Risk Category II Buildings and Structures	175 mph
Risk Category III and IV Buildings and Structures	186 mph
Broward County	
Risk Category I Buildings and Structures	156 mph
Risk Category II Buildings and Structures	170 mph
Risk Category III and IV Buildings and Structures	180 mph

Frequently asked questions and definitions

What is the difference between wind speed and wind pressure?
Wind pressure represents the force exerted by wind. It is calculated starting with wind speed, but is greatly dependent on a number of factors related to the structural configuration and site location. It is not enough to say a product will meet a given wind speed alone. Basic wind speed, exposure categories, importance factor, mean roof height, door area, door location on the building and wind directionality factor are all used to calculate wind pressures on garage doors.
NOTE: See DASMA Technical Data Sheet #194 - PSF versus MPH in Door Specifications for more information.

Why are wind pressures better than wind speeds when specifying doors?
Wind pressure equates to the amount of work or energy that the wind expends due to its velocity or speed. This energy or work can be either calculated or tested. It is not enough to only say a product will meet a given wind speed which is measured in miles per hour.
NOTE: See DASMA Technical Data Sheet #194 - PSF versus MPH in Door Specifications for more information.

921 Embossed Ash

What does impact rated mean?
Impact rated (or impact resistant) refers to the ability of the garage door and garage door glazing to resist penetration from flying debris during a high wind event.

What is the differece between Exposure B, Exposure C, and Exposure D?
An exposure category (B, C, or D) is a condition that adequately reflects the characteristics of ground surface irregularities for the site where a structure is located. Exposure category is used in calculating the required design wind pressures for a structure with exposure B yielding the lowest wind pressures and exposure D yielding the highest wind pressures.

Exposure B applies to urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger. Exposure B is typically associated with site locations in a residential subdivision. Most site locations are assumed to be Exposure B unless the site meets the definition of another type of exposure.

Exposure C applies to open terrain with scattered obstructions having heights generally less than 30 feet extending more than 1,500 feet from the building site. Exposure C includes flat open country, grasslands, and shorelines in hurricane-prone regions.

Exposure D applies to flat, unobstructed areas exposed to wind flowing over open water (excluding shorelines in hurricane-prone regions) for a distance of at least 1 mile. Exposure D includes shorelines in inland waterways, the Great Lakes, and coastal areas of California, Oregon, Washington, and Alaska. Exposure D extends inland from the shoreline a distance of 1,500 feet or 10 times the height of the building or structure, whichever is greater.

Exposure conditions C and D were redefined with the publication of ASCE 7-98. In that document, shorelines in hurricane-prone areas became classified as "Exposure C", and shorelines qualifying as Exposure D were more clearly described (inland waterways, the Great Lakes and coastal areas of California, Oregon, Washington, and Alaska.) ASCE 7-10 once again included the Gulf and ocean shorelines as Exposure D.

Why are positive and negative wind load values required?
In a high wind event, both positive and negative pressures are generated on the garage door. Positive pressures are loads that try to push your garage door into the building, and negative pressures try to pull the door out of the building. Whether push or suction occurs on a garage door is dependent on wind direction and the direction the garage door faces.

How do I know what the wind pressure requirements are for my garage door?
DASMA has a helpful Technical Data Sheet (#155t), and the DASMA web site has a wind load calculator that can estimate the wind load requirements on your garage door. However, the building department having authority in your area is the sole and final determiner of the wind load requirements for your garage door. Always check with either a county or a local municipality building official for specific requirements.

Definitions:

Design Pressure: The measurement of resistance in both positive and negative directions that a door system must withstand. Design pressures are expressed in pounds per square foot (psf) and are expressed in both positive and negative values. Also known as design load.

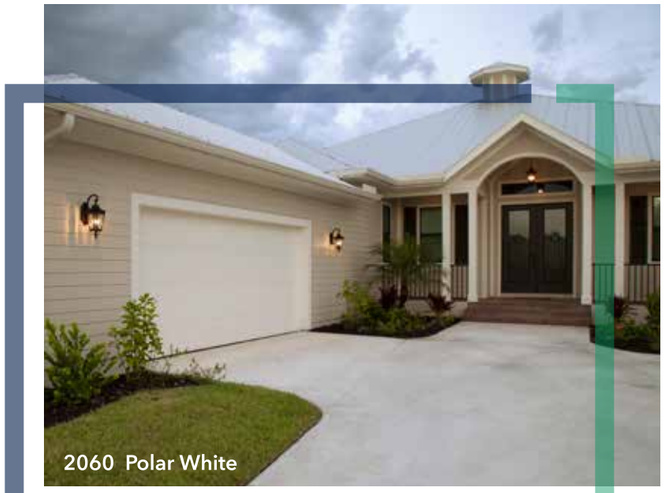
Test Pressure: The actual tested wind pressure resistance that a door system will withstand during laboratory testing. Most building officials usually require that the test pressure be equal to 150% of the design pressure. Also known as the test load or ultimate load.

Wind Velocity: The actual measured speed of airflow during a wind event; usually expressed in MPH. Wind velocity is typically measured at 33 feet (10 meters) above ground level at airports and similar open country locations. Also known as Basic Wind Speed and is used in the design pressure calculation.

Acronyms:

DASMA: Door & Access Systems Manufacturers Association is North America's trade association for manufacturers of garage doors, rolling doors, high performance doors, garage door operators, vehicular gate operators, and access control products. DASMA members' products represent more than 95 percent of the U.S. market for the industry. It is also a standards development organization accredited by the American National Standards Institute (ANSI) which has developed many standards for the industry, several of which have been approved by ANSI.

NOA: Notice Of Acceptance, Issued by Miami-Dade County and given to products that have been tested and approved for use in the High Velocity Hurricane Zone.


2060 Polar White

HVHZ: High Velocity Hurricane Zone, defined by the Florida Building Code as Dade and Broward counties in south Florida.

ASCE 7: American Society of Civil Engineers, Minimum Design Loads and Associated Criteria for Buildings and Other Structures which is the basis for wind load calculations used in most building codes.

ANSI: American National Standards Institute. A private, non-profit organization that administers and coordinates the U.S. voluntary standards and conformity assessment system.

MRH: Mean Roof Height. The height above grade level of the midpoint of the roof. Mean roof height is calculated be averaging the eave and ridge heights, and is used in the design pressure calculations.

Need more info?

DASMA:
www.dasma.com

DASMA Standards:
www.dasma.com/dasma-pages/D-AS-standards.asp

ANSI/DASMA 108:
Test standard for testing garage door to loads generated by the wind. This test is known as the Determination Of Structural Performance Under Uniform Static Air Pressure Difference.
www.dasma.com/PDF/Publications/Standards/DASMA-108-Web.pdf

ANSI/DASMA 115:
Test standard for testing garage doors to load generated by flying debris typically found in high wind events. This test is known as the Determination Of Structural Performance Under Missile Impact and Cyclic Wind Pressure.
www.dasma.com/PDF/Publications/Standards/DASMA-115-Web.pdf

DASMA Technical Data Sheets (TDS):
www.dasma.com/dasma-pages/DASMA-tehnical-data-sheets.asp

TDS #155 Residential and Commercial Wind Load Guides:
www.dasma.com/PDF/Publications/TechDataSheets/CommercialResidential/TDS155.pdf

Garage Door/Rolling Door Wind Load Calculator:
based on ASCE 7-98 / 7-02 / 7-05 (in Excel Format) or
based on ASCE 7-10 (in Excel Format)
www.dasma.com/dasma-pages/DASMA-tehnical-data-sheets.asp

Determine wind speed based on location:
www.windspeed.atcouncil.org

FLORIDA - Miami-Dade

Miami-Dade NOA File Search:
www.miamidade.gov/building/pc-search_app.asp

Florida Product Approval Search:
www.floridabuilding.org/pr/pr_app_srch.aspx

Florida Wind Speed Maps:
www.floridabuilding.org/fbc/Wind_2014/2014_Wind_Maps.htm

Who do I talk to?

Always check with either a county or a local municipality building official for specific requirements and building codes. It is important to also contact your homeowner's insurance company. Many insurance companies may require or encourage doors that are different than those required by building code. Any Haas Door dealer in your area can also answer wind load and garage door related questions. To find a dealer in your area please visit: **haasdoor.com/locator**

Ver. 1.7 – 2/20

320 Sycamore
Wauseon, OH 43567

haasdoor.com

Family Owned & Manufactured in the USA

open the door to endless possibilities