



WINDOW / DOOR REPLACEMENT or SHUTTER INSTALLATION

1. Provide 2 copies of an outline of your building exterior walls showing the locations and the size (width x length) of all doors and windows in the structure. Mark each opening that is to be replaced with a new door/window or the installation of a new shutter; mark the quantity of the windows at each opening and the type of window or door to be installed i.e. single hung, horizontal slider, fixed glass, glass door, etc.
2. Provide design pressures for each opening as prescribed in Chapter 16 of the Florida Building Code or if a single family or duplex residence, design pressures can be obtained from the current Broward County Fenestration Wind Load Chart. Show the mean roof height of the building on the plan.
3. Provide a current Product Approval for each type of shutter, window and door, which you intend to install. Please contact the store/supplier where you purchased your products to obtain the required Product Approval documents.
4. The Product Approvals contain charts and tables, which provide component and fastener options including window size, glass thickness, mounting details, etc. Highlight or mark-up site specific conditions.
5. Impact resistance is required on all the openings being replaced if more than 25% of the openings of the building are being replaced on a single family or duplex residence; and you must provide shutters or the window and doors must be impact resistant for the High Velocity Hurricane Zone. Please note impact resistance is required on all commercial retrofits regardless of size or amount.
6. Two or more windows located within one opening require a mullion. A Product Approval must be submitted for the mullion with installation options highlighted.
7. If using shutters to protect all the openings in single family or duplex resistance, please note, you must mention at least one safe exit doorway, means of egress, out of the residence that either can be able to open the shutter from within or it is through an impact resistant door.

Broward County Fenestration Voluntary Wind Load Chart*

Per ASCE 7-10 Method 1, Part 1 and FBC (2017) for Retrofitting in Accordance with Formal Interpretation #5
 For Detached One- and Two family dwellings and Multiple Single-Family Dwellings (Townhouses) with Mean Roof Height ≤ 30 feet

Wind 170 mph (3-second gust) / Exposure C** / $K_d = 0.85 / K_{zt} = 1.0$ / Pressures are in PSF / Not for use in Coastal (Exposure 'D' areas)
 * Using Allowable Stress Design methodology ($P = 0.6w$) / ** Exposure shall be determined according to ASCE 7-10 Section 26.7.3 (Exposure Categories)

Effective Wind Area (ft ²)	Location: Gable or Hip Roof	Mean Roof Height of 15 feet						Mean Roof Height of 20 feet						Mean Roof Height of 25 feet						Mean Roof Height of 30 feet					
		Zone 1		Zone 2		Zone 3		Zone 1		Zone 2		Zone 3		Zone 1		Zone 2		Zone 3		Zone 1		Zone 2		Zone 3	
		+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
10	Gable/Hip	16.0	-37.8	16.0	-63.4	16.0	-95.4	16.3	-40.2	16.3	-67.4	16.3	-101.4	17.1	-42.1	17.1	-70.6	17.1	-106.3	17.8	-43.7	17.8	-73.4	17.8	-110.4
20	Roof	16.0	-36.8	16.0	-56.7	16.0	-79.1	16.0	-39.1	16.0	-60.2	16.0	-84.0	16.0	-41.0	16.0	-63.1	16.0	-88.0	16.7	-42.6	16.7	-65.6	16.7	-91.5
50	$\theta \leq 7^\circ$	16.0	-35.6	16.0	-47.7	16.0	-57.4	16.0	-37.8	16.0	-50.7	16.0	-61.0	16.0	-39.6	16.0	-53.2	16.0	-63.9	16.0	-41.1	16.0	-55.2	16.0	-66.4
100	(0 to 1.5:12)	16.0	-34.6	16.0	-41.0	16.0	-41.0	16.0	-36.8	16.0	-43.6	16.0	-43.6	16.0	-38.5	16.0	-45.7	16.0	-45.7	16.0	-40.0	16.0	-47.4	16.0	-47.4
10	Gable/Hip	21.8	-34.6	21.8	-60.2	21.8	-89.0	23.1	-36.8	23.1	-64.0	23.1	-94.6	24.3	-38.5	24.3	-67.1	24.3	-99.2	25.2	-40.0	25.2	-69.7	25.2	-103.0
20	Roof***	19.9	-33.6	19.9	-55.4	19.9	-83.3	21.1	-35.7	21.1	-58.9	21.1	-88.5	22.1	-37.4	22.1	-61.7	22.1	-92.7	23.0	-38.9	23.0	-64.1	23.0	-96.3
50	$7^\circ < \theta \leq 27^\circ$	17.3	-32.4	17.3	-49.0	17.3	-75.6	18.4	-34.4	18.4	-52.1	18.4	-80.3	19.3	-36.0	19.3	-54.6	19.3	-84.2	20.0	-37.4	20.0	-56.7	20.0	-87.5
100	(1.5 to 6:12)	16.0	-31.4	16.0	-44.2	16.0	-69.8	16.3	-33.3	16.3	-47.0	16.3	-74.2	17.1	-35.0	17.1	-49.2	17.1	-77.8	17.8	-36.3	17.8	-51.1	17.8	-80.8
10	Gable Roof	34.6	-37.8	34.6	-44.2	34.6	-44.2	36.8	-40.2	36.8	-47.0	36.8	-47.0	36.8	-42.1	38.5	-49.2	38.5	-49.2	40.0	-43.7	40.0	-43.7	40.0	-51.1
20	$27^\circ < \theta \leq 45^\circ$	33.6	-35.9	33.6	-42.3	33.6	-42.3	35.7	-38.1	35.7	-44.9	35.7	-44.9	35.7	-39.9	37.4	-47.1	37.4	-47.1	38.9	-41.5	38.9	-41.5	38.9	-48.9
50	(6 to 12:12)	32.4	-33.3	32.4	-39.7	32.4	-39.7	34.4	-35.4	34.4	-42.2	34.4	-42.2	34.4	-37.1	36.0	-44.2	36.0	-44.2	37.4	-38.6	37.4	-38.6	37.4	-46.0
100		31.4	-31.4	31.4	-37.8	31.4	-37.8	33.3	-33.3	33.3	-40.2	33.3	-40.2	33.3	-35.0	35.0	-42.1	35.0	-42.1	36.3	-36.3	36.3	-36.3	36.3	-43.7

*** For Hip Roofs with angle > 7 degrees (1.5:12) and ≤ 25 degrees (5:5:12), Zone 3 shall be treated as Zone 2 (Figure 30.4-2 B, Note 7, p. 337)

Garage Door Wind Loads

for a Building with 30-foot Mean Roof Height Exposure C

Tables 1609.7(1) & (2), and Section 1609.3.1

Effective Wind Area	Roof Angle	Wind Load	
		Width	Height
8	0 - 10 degrees	35.2	-39.8
10		34.1	-38.2
14	> 10 degrees	32.3	-36.1
9		38.4	-43.4
16		36.8	-41.0

Design is based on the 3-second gust (wind velocity) for Risk Category II (general residential & commercial construction) per FBC 1620.2 Broward. These tables not for use with essential facilities or assembly occupancies.

Gable Roof

Hip Roof

For Effective Wind Areas between those given, values may be interpolated. Otherwise use the value associated with the lower Effective Wind Area. End Zone (a) shall be the smaller of 10% of Least Hor. Dist. or 40% of Mean Roof Height ('h'), but not less than 4% of Least Hor. Dist. or 3 ft. Identify the zone per the figure or information by others. Any questionable zone is to be considered the more critical zone.