**CITY OF HALLANDALE BEACH**
BUILDING INSPECTIONS DIVISION
400 South Federal Highway
Hallandale Beach, FL 33009
Office 954-457-3023 ● Fax 954-457-1312

# RETROFIT OF WINDOWS & DOORS
# (WIND LOAD PRESSURES)

**EXAMPLE FOR: WINDOWS, DOORS & SHUTTERS**

EXPOSURE C, 170 M.P.H. 3 SEC GUST

*LOCATION: ZONE 4*

Mean Roof Height = 15 feet
Existing Openings = 38” x 38” = 1444”
1444” divided by 144 = 10.02 sq. ft.

See Table Opening Pressure = 37.8 positive & 41.0 negative

*LOCATION: ZONE 5*

See Table
Opening Pressure = 37.8 positive & 50.6 negative

EXAMPLE: GARAGE DOOR

See Table

REPEAT THIS PROCEDURE FOR ALL OPENINGS

SUBMIT THE FOLLOWING IN DUPLICATE:

1. A sketch of the house (floor plan view) showing the location of all openings and identify each opening with a letter or number. Use ink only.
2. N.O.A.’s (Notice of Acceptance) Product Approvals with opening sizes and related pressures highlighted, and add the identifying letter or number at each column.
3. If any opening is to be altered, an Engineer or Architect’s signed and sealed detail is required.
4. A Building Permit Application, Owner-Builders Affidavit and recorded Warranty Deed if applicable.
5. The Wind Load Pressure must be prepared, signed and sealed by a professional engineer or architect for structures with an application date after September 1, 1994, the attached charts can only be used on homes built prior to this date.
6. Complete the product approval review form, use as many sheets as needed to list all openings.

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# PRODUCT APPROVAL SUBMITTAL FORM

Product Approval Submittals shall be treated as Structural Construction Documents. Structural Plan Reviewers will only perform cursory review when the Product Approval Review form bears the date, signature and impressed seal of the designer of record. The designer of record must also provide the following statement:

**"I have personally reviewed all of the Product Approval documents listed on this form. I certify that they are all completed and meet the design requirements for all openings on this job."**

| | |
|---|---|
| Permit #: | |
| Contractor: | |
| Contact Name: | |
| Telephone Number: | |
| Site Address: | |

PLEASE INDICATE APPROPRIATE SUBMITTAL(S):

- ☐ Bar Joist
- ☐ Garage Door
- ☐ Glass Block
- ☐ Sliding Glass Doors
- ☐ Stair Shop Drawings
- ☐ Storefront/Glazing
- ☐ Other (Describe):
- ☐ Storm Panels
- ☐ Swing Entry Doors
- ☐ Windows
- ☐ Pre-Stress Concrete Engineering
- ☐ Post-Stress Concrete Engineering
- ☐ Gutters/Downspouts

IF PRODUCT APPROVALS ARE REJECTED, THIS FORM MUST BE RESUBMITTED WITH CORRECTED PRODUCT APPROVALS. **DO NOT** FILL OUT ANOTHER FORM.

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# PRODUCT APPROVAL REVIEW FORM

**Contractor Name:** _____ **Site Address:** _____ **Permit No.:** _____

| 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Opening Location | Product Approval No. (Notice of Acceptance) | Product Approval Design Pressures Rating | | Opening design Pressures | | Opening Sizes | | Shutters Required? | | Energy Code Required? | |
| | | (+) PSF | (-) PSF | (+) PSF | (-) PSF | Width x Height | Area (SF) | Zone # | Y/N | SHGC | U/factor |
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Identify openings alphabetically on elevation sheets. Identify vertically stacked glass in the same openings from bottom to top with Sub numbers (A, A1, A2, etc.)

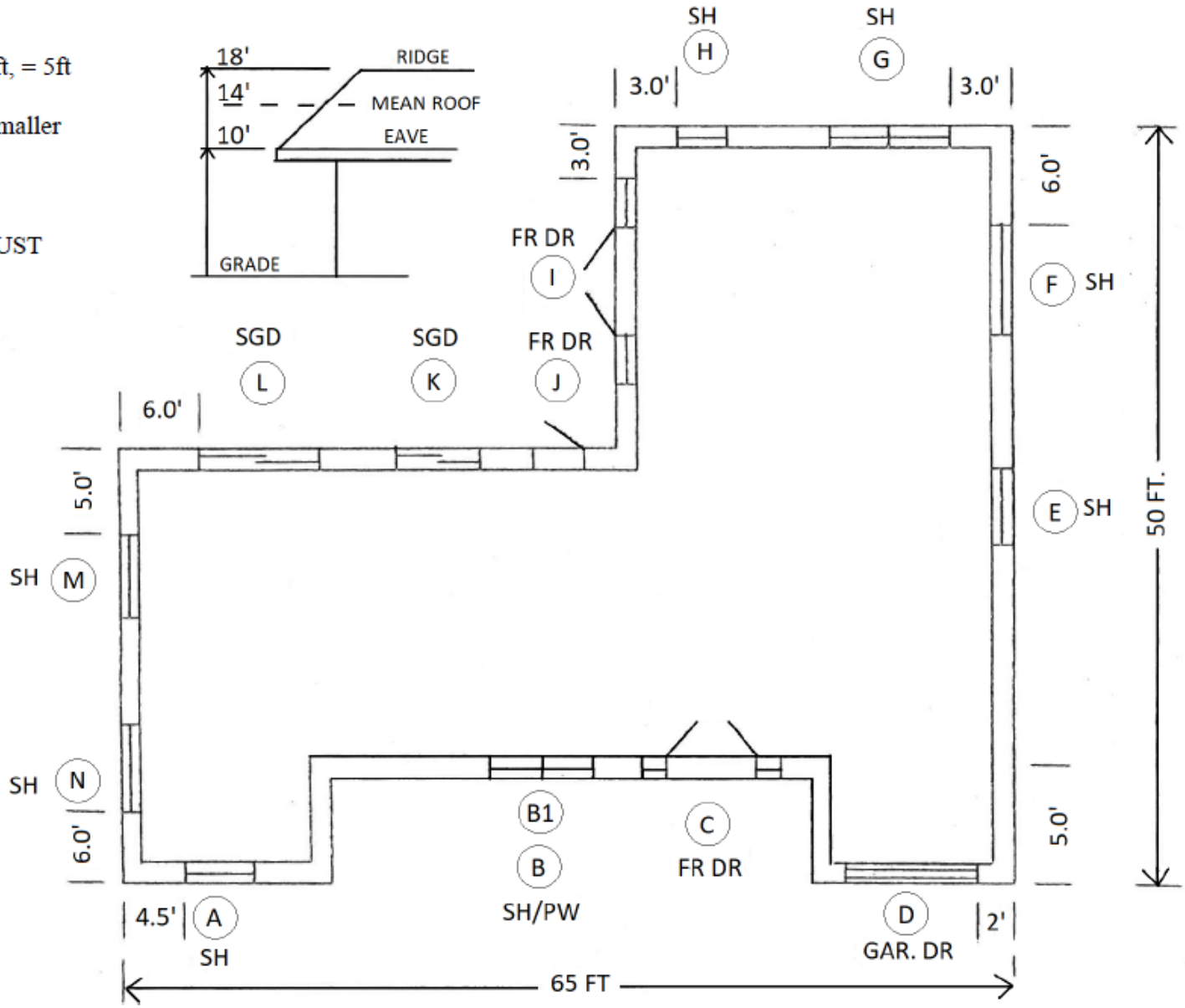
Building Dimensions:
Length = 65ft  Width = 50ft
Mean Roof Height, "h" = 14ft
Corner Zone 5 = "a"
Calculation for Zone 5:
.10 X least horizontal dimension, 50ft, = 5ft
Or
.4 X "h", 14ft, = 5.6ft whichever is smaller
Corner Zone 5 = "a" = 5ft

EXPOSURE C, 170 MPH 3 SEC. GUST

LOCATION: ZONE 4
Mean Roof Height = 14ft
Existing Openings = 38' X 38" = 1444"
1444" ÷ 144 = 10.02 sq. ft.

See Table
Opening Pressure
37.8 positive & 41.0 negative

LOCATION: ZONE 5
See Table
Opening Pressure
37.8 positive & 50.6 negative



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Fire Service Professional
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General Contractor
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Structural Engineer
Mr. Daniel Rourke
Master Plumber
Mr. Gregg D'Attile,
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James DiPietro

—ESTABLISHED 1971—

# BROWARD COUNTY
# BOARD OF RULES AND APPEALS

## FBC 6th Edition (2017)
## FORMAL INTERPRETATION (#5)

**DATE:** **October 12th, 2017**

**TO:** **All Building Officials**

**FROM:** **James DiPietro, Administrative Director**

**SUBJECT:** **Retrofit of Windows, Doors, Garage Doors, Shutters and Skylights**
**FBC Existing Building, Alteration Level I**

At its meeting of October 12th, 2017 the Board approved an interpretation of Retrofit of Windows, Doors, Garage Doors, Shutters and Skylights, for detached one and two family dwellings , and multiple single family dwellings, (townhouses) with common roof height < 30 feet.

1. A Florida Professional Engineer or Architect may modify the buck or fasteners as specified in a Notice of Acceptance. Such modification must be documented with a signed and sealed letter or drawing.

2. To obtain the required design pressure for a specific opening at a specific site, an individual must utilize one of the following and submit documentation as indicated.

a) A site-specific plan (signed and sealed) by a Florida Professional Engineer or Architect, indicating the location of all retro openings and the required design pressures.

b) A site-specific plan (not sealed) indicating the location of all retro openings accompanied by a worst case design pressure chart (signed and sealed) prepared by a Florida P.E. or Architect.

c) A site-specific plan (not sealed) indicating the location of all openings and indicating the required design pressures based on the Broward County Fenestration Voluntary Wind Load Chart. (see attached chart).

3. Buildings with a (height) > 30 feet or more shall have a site-specific design (signed and sealed) by a Florida Professional Engineer or Architect, indicating the location of all retro openings and the required design pressures for each opening.

NOTE: Generic charts, graphs alone, etc. are not acceptable for buildings above 30 feet.

ORIGINAL DATE: September 12, 2012
RE-ISSUED: October 12, 2017
EFFECTIVE DATE: January 1, 2018

******PLEASE POST AT YOUR PERMIT COUNTER*******

# Broward County Fenestration Voluntary Wind Load Chart*

**Per ASCE 7-10 Method 1, Part 1 and FBC (2017) for Retrofiting in Accordance with Formal Interpretation #p**

**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** / Kd = 0.85 / Kzt = 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 | | | | | | Zone | | | | | | Zone | | | | | | Zone | | | | | |
| | | 1 | | 2 | | 3 | | 1 | | 2 | | 3 | | 1 | | 2 | | 3 | | 1 | | 2 | | 3 | |
| | | + | – | + | – | + | – | + | – | + | – | + | – | + | – | + | – | + | – | + | – | + | – | + | – |
| 10 | Gable/Hip Roof θ ≤ 7° (0 to 1.5:12) | 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 | | 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 | | 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 | | 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 Roof*** 7° < θ ≤ 27° (1.5 to 6:12) | 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 | | 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 | | 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 | | 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 27° < θ ≤ 45° (6 to 12:12) | 34.6 | -37.8 | 34.6 | -44.2 | 34.6 | -44.2 | 36.8 | -40.2 | 36.8 | -47.0 | 36.8 | -47.0 | 38.5 | -42.1 | 38.5 | -49.2 | 38.5 | -49.2 | 40.0 | -43.7 | 40.0 | -51.1 | 40.0 | -51.1 |
| 20 | | 33.6 | -35.9 | 33.6 | -42.3 | 33.6 | -42.3 | 35.7 | -38.1 | 35.7 | -44.9 | 35.7 | -44.9 | 37.4 | -39.9 | 37.4 | -47.1 | 37.4 | -47.1 | 38.9 | -41.5 | 38.9 | -48.9 | 38.9 | -48.9 |
| 50 | | 32.4 | -33.3 | 32.4 | -39.7 | 32.4 | -39.7 | 34.4 | -35.4 | 34.4 | -42.2 | 34.4 | -42.2 | 36.0 | -37.1 | 36.0 | -44.2 | 36.0 | -44.2 | 37.4 | -38.6 | 37.4 | -46.0 | 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 | 35.0 | -35.0 | 35.0 | -42.1 | 35.0 | -42.1 | 36.3 | -36.3 | 36.3 | -43.7 | 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 30.4-2B, Note 7, p. 337)

| Effective Wind Area ($ft^2$) | Location | 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 | | | | Zone | | | | Zone | | | | Zone | | | |
| | | 4 | | 5 | | 4 | | 5 | | 4 | | 5 | | 4 | | 5 | |
| | | + | – | + | – | + | – | + | – | + | – | + | – | + | – | + | – |
| 10 | Wall | 37.8 | -41.0 | 37.8 | -50.6 | 40.2 | -43.6 | 40.2 | -53.8 | 42.1 | -45.7 | 42.1 | -56.4 | 43.7 | -47.4 | 43.7 | -58.6 |
| 20 | | 36.1 | -39.3 | 36.1 | -47.2 | 38.3 | -41.7 | 38.3 | -50.1 | 40.2 | -43.8 | 40.2 | -52.6 | 41.8 | -45.5 | 41.8 | -54.6 |
| 50 | | 33.8 | -37.0 | 33.8 | -42.7 | 36.0 | -39.4 | 36.0 | -45.4 | 37.7 | -41.3 | 37.7 | -47.5 | 39.2 | -42.9 | 39.2 | -49.4 |
| 100 | | 32.1 | -35.3 | 32.1 | -39.3 | 34.1 | -37.5 | 34.1 | -41.7 | 35.8 | -39.4 | 35.8 | -43.8 | 37.2 | -40.9 | 37.2 | -45.5 |
| 500 | | 28.2 | -31.4 | 28.2 | -31.4 | 29.9 | -33.3 | 29.9 | -33.3 | 31.4 | -35.0 | 31.4 | -35.0 | 32.6 | -36.3 | 32.6 | -36.3 |

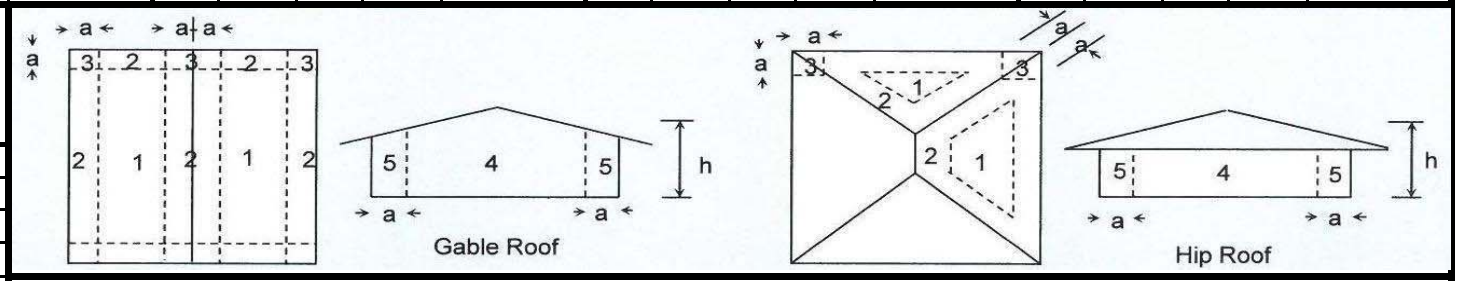
## Garage Door Wind Loads

**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 | 8 | 0 - 10 degrees | 35.2 | -39.8 |
| 10 | 10 | | 34.1 | -38.2 |
| 14 | 14 | | 32.3 | -36.1 |
| 9 | 7 | > 10 degrees | 38.4 | -43.4 |
| 16 | 7 | | 36.8 | -41.0 |




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.

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.