



DEPARTMENT OF DEVELOPMENT BUILDING DIVISION MEMORANDUM NO. 16-008

TO: All Building Department Staff

FROM: John Kuntzman, Deputy Building Official

DATE: January 6, 2021

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

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. Window or door buck, and mull bar inspections are not required for retrofit openings. The buck shall comply with Section FBC 1710.10 specifically, unless otherwise tested; the buck shall extend beyond the interior face of the window or door frame such that full support of the frame is provided.

Except: Projects other than detached one and two family dwellings, and multiple single family dwellings (townhouses). A Licensed Contractor, Registered Architect, or Professional Engineer shall provide a Window and Door buck and Mull Tube Installation Affidavit at Final Inspection. All Window, Sliding Glass Door and Door Inspections are required to have inspections performed prior to the concealment of the attachments.

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 Boynton Beach Fenestration Voluntary Wind Load Chart for **detached one and two family dwellings, and multiple single family dwellings (townhouses)** with common roof height < 30 feet. (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.

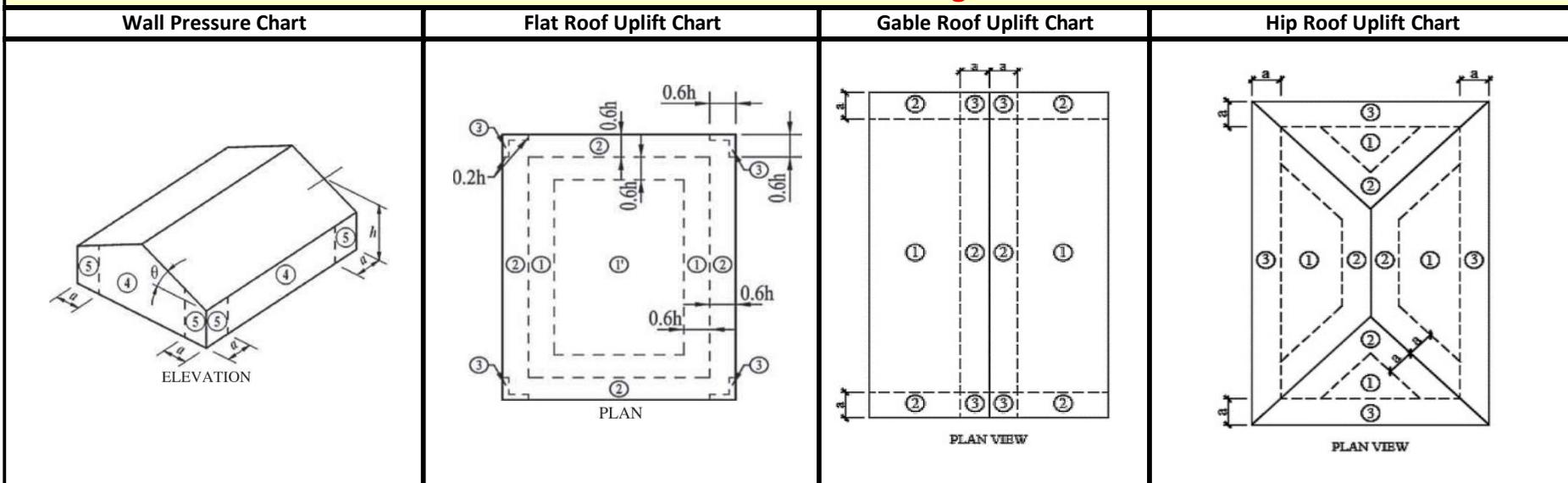
NOTE: Generic charts, graphs alone, etc. are not acceptable for buildings above 30 feet.

If you have any questions or need any further information please contact the Building Division at 561.742.6352. Thank you.

XC: Michael Rumpf, Director of Development
Adam Temple, Deputy Director of Development
John Kuntzman, Deputy Building Official
Patsy Grissom, Development Services Coordinator

Per ASCE 7-22 Part 1 and FBC (2023) For Detached One-and-Two family dwellings and Multiple Single-Family Dwellings (Townhouses) with Mean Roof Height < 30 feet. Wind Vult 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 ($O = 0.6w$) / **Exposure Category C or D shall be determined according to Chapter 16 Florida Building Code or Chapter 3 Florida Residential Code.

Roof and Wall Zone Chart Diagrams



Instructions on how to use these Charts: Determine Mean Roof Height, h , which is top of roof for flat roofs or the mean roof height for pitched roofs. Find your least horizontal dimension for your building, not including an overhang if it occurs. Calculate the value of, $a = 10\% \text{ of least horizontal dimension or } 0.4 \times h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 feet. If your roof height is less than 30 feet, but not exactly 15, 20, or 25 feet, you will need to go to the next higher roof height. If your Mean Roof Height is higher than 30 feet, these charts do not apply. Review the diagram which illustrate the wall and roof zones and determine the wind zone in which the component is located. Determine the tributary area of the component. If the tributary area falls in between values, use the value of the smaller tributary area. Select the positive and negative wind pressures corresponding to the wall or roof zone where your component is located. Door pressures shown are for the most common door sizes and are worst case for heights ≤ 30 Feet.

Wall Pressure For All Roof Types						Garage/Door Pressures				<= 30 Ft						
Mean Roof Height	15 Ft					20 Ft					<= 30 Ft					
Tributary Area	10	20	35	50	100	500	10	20	35	50	100	500	Effective Wind Area	Positive	Negative	
Wall Positive Pressure	38.1	36.3	35.0	34.1	32.4	28.4	40.4	38.5	37.1	36.1	34.3	30.1	Width	Height		
Zone 4 Negative Pressure	-41.4	-39.6	-38.2	-37.3	-35.6	-31.6	-43.8	-42.0	-40.5	-39.6	-37.7	-33.5	8	8	38.6	-48.2
Zone 5 Negative Pressure	-51.0	-47.5	-44.8	-43.0	-39.6	-31.6	-54.0	-50.4	-47.5	-45.6	-42.0	-33.5	10	10	37.4	-45.7
Mean Roof Height	25 Ft					30 Ft					14	14	35.4	-41.8		
Tributary Area	10	20	35	50	100	500	10	20	35	50	100	500	9	7	38.7	-48.3
Wall Positive Pressure	42.2	40.3	38.8	37.8	35.9	31.5	43.9	41.9	40.3	39.3	37.3	32.8	16	7	37.0	-45.0
Zone 4 Negative Pressure	-45.8	-43.9	-42.4	-41.4	-39.5	-35.1	-47.6	-45.7	-44.1	-43.1	-41.1	-36.5	3	7	41.8	-54.6
Zone 5 Negative Pressure	-56.6	-52.8	-49.7	-47.8	-43.9	-35.1	-58.8	-54.7	-51.7	-49.6	-45.7	-36.5	6	7	39.8	-50.6

SIMPLIFIED ROOF UPLIFT CHART FOR ROOFING APPLICATIONS

This simplified chart represents the worse-case wind pressures for the various roof slopes and heights. This chart is based on a Tributary Area = 10 SF which is required for roofing applications. If the roof height is less than 30 feet, but not exactly 15, 20, or 25 feet, you will need to go to the next higher roof height. If your roof is higher than 30 feet, these charts do not apply. Refer to Roof Chart Diagrams on Page 1 for Roof Zone Locations.

MEAN ROOF HEIGHT = 15 FEET

Flat Roof		Gable Roof			Hip Roof		
		1.51 to 4:12	4.1 to 6:12	6.1 to 12:12	1.51 to 4:12	4.1 to 6:12	
Positive*	15.4/38.0	Positive 23.2	Positive 23.2	Positive 34.7	Positive 28.3	Positive 28.3	
Zone		Zone	Roof	Roof	Zone	Roof	Roof
1	-60.5	1, 2e	-70.1	-54	-63.7	1	-63.7
1'	-34.8	2n & 2r	-102	-86.2	-70.1	2e	-89.4
2	-79.8	3e	-102	-86.2	-86.7	2r	-83
3*	-109	3r	-102	-102	-70.1	3	-89.4
							-70.1

MEAN ROOF HEIGHT = 20 FEET

Flat Roof		Gable Roof			Hip Roof		
		1.51 to 4:12	4.1 to 6:12	6.1 to 12:12	1.51 to 4:12	4.1 to 6:12	
Positive*	16.4/40.3	Positive 24.6	Positive 24.6	Positive 36.9	Positive 30.1	Positive 30.1	
Zone		Zone	Roof	Roof	Zone	Roof	Roof
1	-64.2	1, 2e	-74.5	-57.4	-67.7	1	-67.6
1'	-36.9	2n & 2r	-109	-91.5	-74.5	2e	-95
2	-84.8	3e	-109	-91.5	-92.1	2r	-88.1
3*	-116	3r	-129	-108	-74.5	3	-95
							-74.5

MEAN ROOF HEIGHT = 25 FEET

Flat Roof		Gable Roof			Hip Roof		
		1.51 to 4:12	4.1 to 6:12	6.1 to 12:12	1.51 to 4:12	4.1 to 6:12	
Positive*	17.2/42.3	Positive 25.8	Positive 25.8	Positive 38.7	Positive 31.5	Positive 31.5	
Zone		Zone	Roof	Roof	Zone	Roof	Roof
1	-67.3	1, 2e	-78.1	-60.2	-70.9	1	-70.9
1'	-38.7	2n & 2r	-114	-96	-78.1	2e	-99.6
2	-88.8	3e	-114	-96	-96.6	2r	-92.4
3*	-121	3r	-135	-113	-78.1	3	-99.6
							-78.1

MEAN ROOF HEIGHT = 30 FEET

Flat Roof		Gable Roof			Hip Roof		
		1.51 to 4:12	4.1 to 6:12	6.1 to 12:12	1.51 to 4:12	4.1 to 6:12	
Positive*	17.9/43.9	Positive 26.8	Positive 26.8	Positive 40.2	Positive 32.8	Positive 32.8	
Zone		Zone	Roof	Roof	Zone	Roof	Roof
1	-70	1, 2e	-81.1	-62.6	-73.7	1	-73.7
1'	-40.2	2n & 2r	-118	-99.8	-81.1	2e	-103
2	-92.3	3e	-118	-99.8	-100	2r	-96
3*	-126	3r	-141	-118	-81.1	3	-103
							-81.1

*If Parapet >= 3Ft occurs around entire building use the same Zone 2 pressure for Zone 3 and use the higher positive pressure shown.