


Open
for Business

2010 Florida Building Code

Wind Speed and Exposure



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Agenda

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Short History of Building Codes

2010 Florida Building Code changes relating to Wind Speed and Exposure

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Short History of Building Codes

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**1796 BC
Code of Hammurabi**



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**Rome
64AD**




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**Building Code History
Great Fire of London, 1666**




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**Tenement Housing Act
New York, 1867**

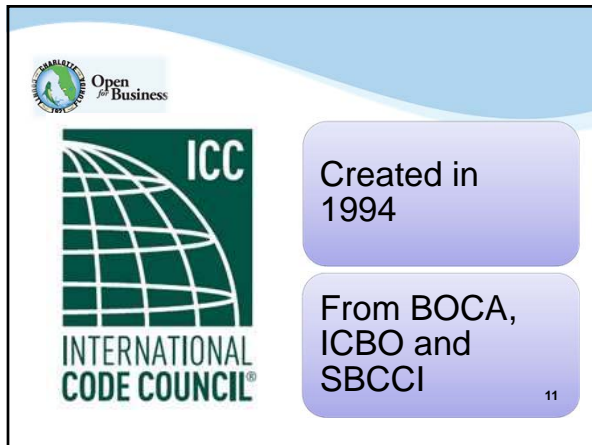


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**Great Chicago Fire
1871**












Why Building Codes?

Study by the Institute for Business and Home Safety (IBHS) concluded that the frequency of claims for homes constructed to the new codes following Hurricane Charley in 2004 was reduced by 60% and the claim was 42% less severe when a loss did occur.

<http://bcove.me/z4dobl00>

 **Charlotte County Government**
"To exceed expectations in the delivery of public services."
www.CharlotteCountyFL.com

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2010 Florida Building Code

Significant Updates Related to
Wind loads




Today's program

- ✓ Wind-loads and map changes
- ✓ Wind-loads and permit applications
- ✓ NOAs and Florida Product Approvals
- ✓ Exposures
- ✓ Wind-borne Debris Requirements




Windloads and map changes


2010 Florida Building Code



ASCE 7-10


Minimum Design Loads for Buildings and Other Structures





ASCE 7-10

- Existing wind speed map replaced with three new maps (one for each building occupancy “risk” category)
- Wind-borne Debris Region has been modified and divided into two maps based on building occupancy “risk” category)
- New wind speed maps based on ultimate wind events which correspond to higher wind speeds



Wind Speed Lines

- Where are they?

The exact location of wind-speed lines was adopted by local ordinance, using the information provided by the Building Commission and consistent to the ones adopted in Sarasota and Lee Counties.

- Interpolation between lines is allowed
- If no interpolation is made then the highest wind-speed prevails back to the next line



Risk Category I Wind Speed Map

Risk Category I
Defined as “buildings that represent a low hazard to human life in the event of failure” and includes agricultural structures, storage sheds, screen rooms, etc.



FIGURE 1609C
ULTIMATE DESIGN WIND SPEEDS, V_{ult} FOR RISK
CATEGORY I BUILDINGS AND OTHER STRUCTURES

2010 FBC



Risk Category I Charlotte County Map



FIGURE 1609C
ULTIMATE DESIGN WIND SPEEDS, V_{ult} FOR RISK
CATEGORY I BUILDINGS AND OTHER STRUCTURES

2010 FBC



Risk Category II Wind Speed Map

Risk Category II
defined as “All buildings and other structures except those listed in Risk Categories I, III, and IV” and includes residential and most commercial and industrial structures



FIGURE 1609A
ULTIMATE DESIGN WIND SPEEDS, V_{ult} FOR RISK
CATEGORY II BUILDINGS AND OTHER STRUCTURES

2010 FBC



Risk Category II Charlotte County Speed Map



FIGURE 1609A
ULTIMATE DESIGN WIND SPEEDS, V_{ult} FOR RISK
CATEGORY II BUILDINGS AND OTHER STRUCTURES 2010 FBC



Risk Category III and IV Wind Speed Map

Risk Category III is defined as "Buildings and other structures, the failure of which could pose substantial risk to human life" and includes houses of worship, schools, small healthcare facilities, etc.



FIGURE 1609B
ULTIMATE DESIGN WIND SPEEDS, V_{ult} FOR RISK CATEGORY III
AND IV BUILDINGS AND OTHER STRUCTURES 2010 FBC



Risk Category III and IV Wind Speed Map

Risk Category IV is defined as "Buildings and other structures designed as essential facilities" and includes hospitals, police and fire stations, etc.

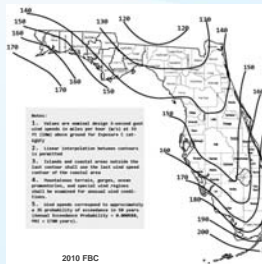
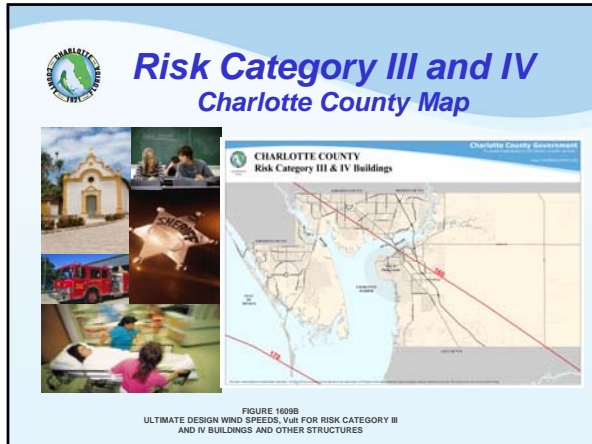
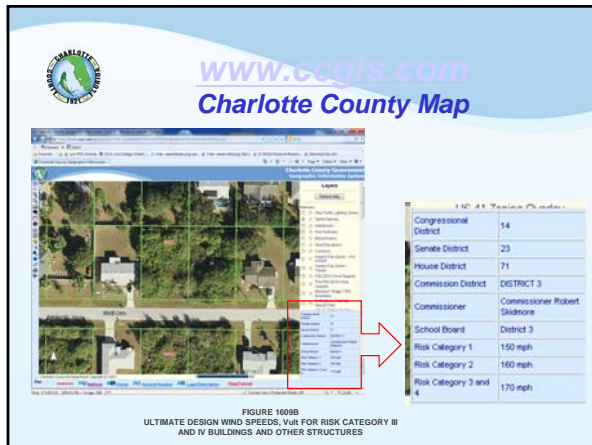


FIGURE 1609B
ULTIMATE DESIGN WIND SPEEDS, V_{ult} FOR RISK CATEGORY III
AND IV BUILDINGS AND OTHER STRUCTURES 2010 FBC





ASCE 7-05 VS. ASCE 7-10

When comparing the old and new loads on wind strength design, in most areas it results in a net decrease in design wind loads in Hurricane-Prone regions (about a 20% less), except where there is Exposure D (coastal areas) where they are approximately the same.



Ultimate_(ULT) VS. Allowable Strength_(ASD)

Since product approval test design pressures are based on allowable strength design, we have to convert the Ultimate (Vult) to the Allowable Strength (Vasd) by multiplying by a factor of .6



Verify Design Pressures

ASCE 7-10

$$DP_{ULT} = + 40.5 \text{ psf}$$

$$\downarrow$$
$$\times 0.6$$

$$DP_{ASD} = + 24.3 \text{ psf}$$

$$DP_{ULT} = - 54.2 \text{ psf}$$

$$\downarrow$$
$$\times 0.6$$

$$DP_{ASD} = - 32.5 \text{ psf}$$



Verify Design Pressures

Product Approval

$$DP_{ASD} = +/- 50 \text{ psf}$$

ASCE 7-10

$$DP_{ULT} = - 54.2 \text{ psf}$$

$$\downarrow$$
$$\times 0.6$$

$$DP_{ASD} = - 32.5 \text{ psf}$$

✓ Product Approval DP exceeds ASCE 7-10 DP



Roof permit application

See: www.ccgis.com for job site windspeed and exposure information. Please specify the windspeed zone and the exposure.

WINDSPEED	Mean Roof Height 15'	Low slope (less than 2:12)		Mid slope (2:12 to 7:12)		Steep slope (more than 7:12)	
		EXPOSURE	MIN. PRESSURES	EXPOSURE	MIN. PRESSURES	EXPOSURE	MIN. PRESSURES
150 Vvlt	Mean Roof Height 15'	B	+16/-61	B	+16/-57	B	+22/-28
		C	+16/-74	C	+17/-69	C	+27/-34
		D	+16/-90	D	+20/-84	D	+32/-42
30'	Mean Roof Height 30'	B	+16/-61	B	+16/-57	B	+22/-28
		C	+16/-86	C	+20/-80	C	+31/-40
		D	+16/-102	D	+23/-95	D	+37/-47

2010 Florida Building Code



Doors/Windows/Shutters permit application

Replacement windows, doors, garage doors and WBDP must meet the minimum design pressure as outlined below when using prescriptive method and worst case.

See: www.ccgis.com for job site windspeed and exposure information. Please specify the windspeed zone and the exposure.

WINDSPEED	Mean Roof Height 15'	EXPOSURE	MIN. PRESSURES	WINDSPEED	Mean Roof Height 15'	EXPOSURE	MIN. PRESSURES	WINDSPEED	Mean Roof Height 15'	EXPOSURE	MIN. PRESSURES	WINDSPEED	Mean Roof Height 15'	EXPOSURE	MIN. PRESSURES
C	+26/-34	C	+30/-40	C	+33/-45	C	+42/-57								
D	+31/-42	D	+35/-48	D	+40/-54	D	+51/-69								
30'	Mean Roof Height 30'	B	+21/-28	150 Vvlt	Mean Roof Height 30'	B	+24/-33	165 Vvlt	Mean Roof Height 30'	B	+28/-37	170 Vvlt	Mean Roof Height 30'	B	+35/-47
		C	+30/-40			C	+34/-46			C	+39/-52			C	+49/-66
		D	+35/-47			D	+40/-54			D	+46/-62			D	+58/-78

2010 Florida Building Code



NOA's & Florida Product Approvals

2010 Florida Building Code



Code Cycle Change

2007 Florida Building Code

- Build to until March 14, 2012

2010 Florida Building Code

- Effective date March 15, 2012



Installation Instructions

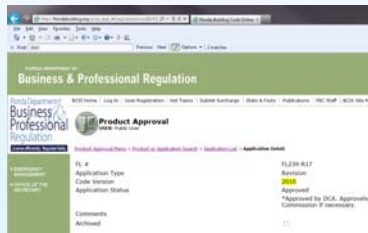
Section R612.1 General

Windows shall be installed in accordance with the fenestration manufacturer's written installation instructions. Window and door opening shall be flashed in accordance with Section 703.8. Written installation instructions shall be provided by the manufacturer.



Florida Product Approval Compliance

- www.floridabuilding.org
- Find product or application under 2010 dropdown
- Ensure that application detail Code **Version is 2010**
- Products not shown under 2010 version are not in compliance





Miami Dade NOA Compliance

•NOA Number Example:

09-1014.01
← Year of submittal (2009)

- If the fenestration NOA begins with 10- or earlier product may not in compliance the 2010 building code. Must be checked!
- If NOA begins with 11- or 12- proceed to check the NOA Evidence Submitted Page (typically page 2 of NOA) to ensure that compliance is stated to FBC 2010



Exposures


The exposure reflects the characteristics of ground surface irregularities of the site. The exposure resulting from the highest wind loads shall be used to represent the winds.


- Exposure B
- Exposure C
- Exposure D




Exposure B


- Surface Roughness B: Urban and suburban areas, wooded areas with numerous closely spaced obstructions having a size of a single family dwelling or larger
- Exposure B: For buildings of mean roof height of 30' or less where as defined in Surface Roughness B prevails for a distance of 1,500 feet. Otherwise for 2,600 feet

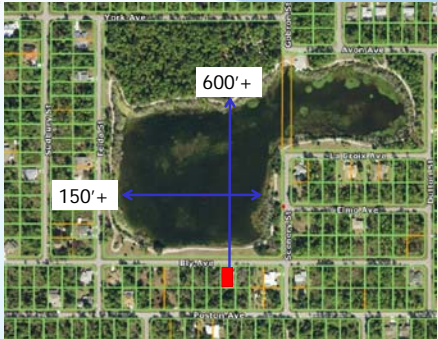
 **Exposure B**



 **Exposure C**

- Surface Roughness C: Open flat terrain. Any building located within surface roughness B where the building is within 100' of any direction of open area of open area that extends more than 600' and with greater than 150'
- Exposure C: Shall apply for all cases where Exposure B or D do not apply.

 **Exposure C**





Exposure "D" returns

Exposure D which was omitted from the 2007 Florida Building Code has been added back into the 2010 Florida Building Code.

- Surface Roughness D: Flat, unobstructed area.
- Exposure D: Applies where surface roughness D prevails for a distance of at least of 5,000' or 20 times the height of the building, whichever is greater. Also within B or C and the site is within 600 feet or 20 times the building height, whichever is greater, from a exposure D.



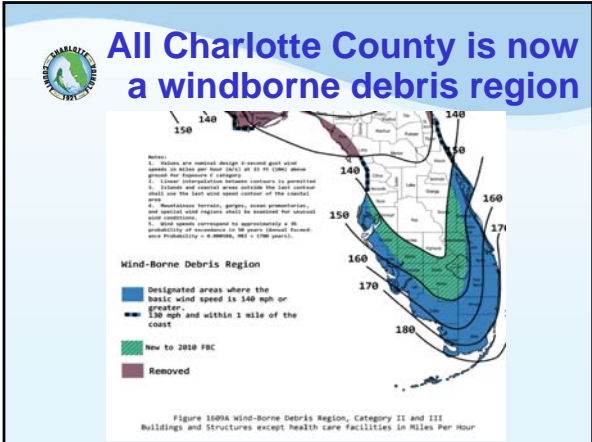
Exposure D

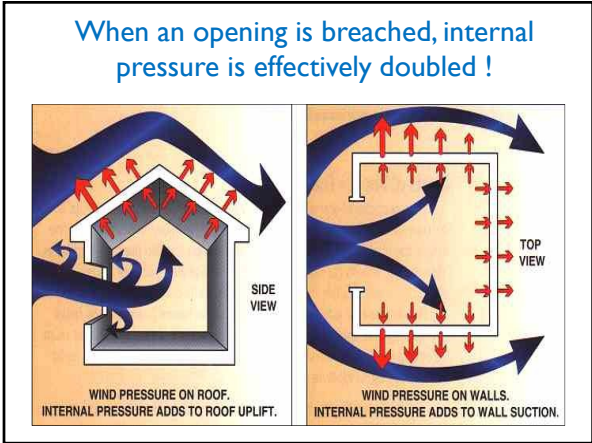




Wind-borne Debris Protection Requirements

2010 Florida Building Code





Residential Code

Section R301.2.1.2 Protection of openings.
Windows in buildings located in windborne debris regions shall have glazed openings protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of an approved impact resisting standard or ASTM E1996 and ASTM E1886, SSTD 12. ANSI/DASMA 115 (for garage doors) or TAS 201, 202 and 203 or AAMA 506 referenced therein.



Building Code

Section 1609.1.2 Protection of openings.

Glazed openings in buildings located in wind-borne debris regions shall have glazed openings be protected from wind-borne debris. Glazed opening protection for wind-borne debris shall meet the requirements SSTD 12, ASTM E 1886 and ASTM E 1996, ANSI/DASMA 115 (for garage doors and rolling doors) or TAS 201, 202 and 203 or AAMA 506 referenced therein.

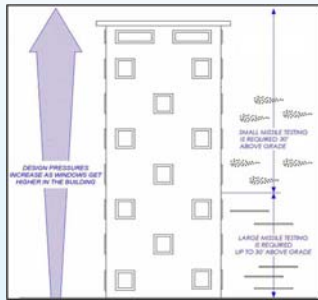
1. Glazed openings located within 30 feet (9144mm) of grade shall meet the requirements of the Large Missile Test.
2. Glazed opening located more than 30 feet (9144mm) above grade shall meet the provisions of the Small Missile Test.

Exceptions:

3. Glazing in Occupancy Category II, III or IV buildings located over 60 feet above the ground and over 30 feet above aggregate surface roofs located within 1,500 feet of the building shall be permitted to be unprotected.



Opening Protection & Design Pressure





Florida House Bill 849

“A product may not be advertised, sold, offered, provided, distributed, or marketed as hurricane, wind storm, or impact protection from wind-borne debris during a hurricane or wind storm unless it is approved pursuant to s. 553.842 or s. 553.8425. Any person who advertises, sells, offers, provides, distributes, or markets a product as hurricane, windstorm, or impact protection from windborne debris without such approval is subject to the Florida Deceptive and Unfair Trade Practices Act under part II of chapter 501 brought by the enforcing authority as defined in s.501.203.”

Effective Date July 1, 2011



Questions?

Feel free to contact us at:

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