

**PETITION FOR DECLARATORY STATEMENT
BEFORE THE FLORIDA BUILDING COMMISSION**

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Department of Business and Professional Regulation Deputy Agency Clerk	
CLERK	Brandon Nichols
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Name: Barry A. Schneer, JD/MBA

Address: 201 S. Biscayne Blvd, 28th Floor
Miami, FL 33131

Ph: (305) 913-1371

Fax: (305) 909-7833

DS 2014-042

Petitioner's Attorney or Representative:

Chad Altieri, Esq.
Altieri & Associates, PL
Tel. 305.909.7849
Tel. 305.562.4981
Fax 305.909.7833
Email: Chad@Altieripa.com

**Statute(s), Agency Rule(s), Agency Order(s) and/or Code Section(s) on
which the Declaratory Statement is sought:**

2010 Florida Building Code, Existing Building
Section 105: Permits

Background:

Florida has had a tragic history since hurricane Andrew of homeowners making unpermitted additions, modifications and remodeling to their properties, and thereby making such structures unsafe. The result of these unsafe structures stemming from unpermitted work in violation of Section 105 (especially in high velocity windstorms zones) presents a real and present danger to the safety of the home's occupants and to adjacent homeowners as non-contiguous property owners whose homes can be hit with flying debris during high velocity storms. This concern is significantly aggrandized when the homeowner makes "remodeling" changes as opposed to "renovation" changes, especially to second floor interior spaces. Further, such unpermitted changes to the

existing structure's floor space may weaken support beams, load bearing walls, roofing tie straps, and other aspects of the structure that connect the roof to the second floor structure or provide the property its fundamental edifice. Petitioner is a concerned and directly affected party pursuant to the adherence of Florida Building Code Section 105 as supplemented by Florida's High Velocity Hurricane Zones to which Miami-Dade County requires all buildings considered to be in Exposure Category C as defined therein. Miami-Dade's history has shown past extensive property damage to strings of neighboring homes because of one homeowner's voraciously unpermitted structural additions, major roofing repairs, renovations, second floor redesigning of floor space and modification of bed rooms and bathrooms, among others.

Miami-Dade is located in High Velocity Hurricane Zone (HVHZ), and protecting human lives has become a top priority surrounding hurricane disasters, as well as ensuring that hurricane-zone structures resist failure. These issues have taken center stage within the counties designated, and this is reflected in the change of building codes and stringent product approval requirements in the State of Florida.

Moreover, these dangerous circumventive acts by non-compliant homeowners failing to obtain the proper permits before performing work to a structure in a residential neighborhood pose a great risk to Florida's citizens and small children who unknowingly reside in such structures, as well as adjacent structures during the event of such high velocity wind storms. Unsafe structures may not look obviously dangerous to the untrained eye, but that does not change the fact that they can be a major hazard to the people living within them or next to them. Moreover, the risk to occupants and neighbors of homeowners who violate Section 105 is not strictly limited to times of high velocity windstorms, but also during times after such unpermitted work has been performed and fails to meet the Florida's Building Code in an area that was specifically intended to provide a uniform level of safety to the counties' residents. It should be noted that this is a more important issue than the simple legal requirements to comply with area's building codes, but rather the real and present safety risk to unsuspecting occupants, as well as the knowing violators that think the need to have work permitted and inspected is unnecessary as a way to save a buck.

As it currently reads, the language set forth in Section 105, combined with the code on unsafe structures asserting that it "shall be presumed" that a structure is unsafe if work was performed without a permit, leaves open a pressing question in the Section as to whether a "rebuttable presumption" against the violator exists. It seems it would as to show intent and to give the Code teeth. However, if the intent is only to "presume," it arguably places no burden on the property owner to act until a more definite determination is purported at law. A "rebuttable presumption" shifts the burden of proof

to the property owner to demonstrate to the county officials that the structure is safe and satisfies the stringent HVHZ requirements; and in the alternative, that a structure is unsafe if work as described in Section 105 can be shown to have occurred upon the structure without first obtaining the proper permit(s) nor subsequently satisfying the permitting process.

General Definitions:

Permitting: For construction is documentation issued by an authority having jurisdiction which indicates approval of construction plans prepared pursuant to the requirements of Florida law. *Florida Building Code Handbook, 2009.*

Unsafe Structure: A building, or part thereof, ***shall be presumed to be unsafe*** if:
(i) The construction, installation of electrical, plumbing or other equipment therein or thereon, or the partial construction or installation of electrical, plumbing or other equipment has been commenced or completed without a permit therefor having been obtained or where the permit has expired prior to completion and the issuance of a Certificate of Occupancy or Certificate of Completion. *Florida Building Code, Section 8-5, Paragraph 3(i).*

Work Without A Permit: This code violation refers to some type of improvement or change being made to a property without a proper permit. *Building Code Violation Services, Miami-Dade County.*

Remodeling: Is the changing of existing facilities by rearrangement of space and/or change of use. Only that portion of the building being remodeled must be brought into compliance with the Florida Building Code and Uniform Fire Safety Standards as adopted by the State Fire Marshal unless the remodeling adversely impacts the existing life safety systems of the building. *Florida Building Code Handbook, 2009.*

Renovation: Is the rejuvenating or upgrading of existing facilities by installation or replacement of materials and equipment, The use and occupancy of the spaces remain the same. Only that portion of the building being renovated must be brought into compliance with the Florida Building Code and Uniform Fire Safety Standards as adopted by the State Fire Marshal unless the renovation adversely impacts the existing life safety systems of the building. *Florida Building Code Handbook, 2009.*

High Velocity Wind Zone: Please see "Exhibit A" (*Changes to the Wind Speed Maps and Wind design- 2010 Florida Building Codes*)

Florida Statutes, Agency Rules & Codes Sections:

Florida Building Code, Section 105.1 Required:

“Any owner or authorized agent who intends to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the building official and obtain the required permit.”

Florida Building Code, Section 8-5, Paragraph 3(i):

“Unsafe Structure: A building, or part thereof, ***shall be presumed to be unsafe*** if: (i) The construction, installation of electrical, plumbing or other equipment therein or thereon, or the partial construction or installation of electrical, plumbing or other equipment has been commenced or completed without a permit therefor having been obtained or where the permit has expired prior to completion and the issuance of a Certificate of Occupancy or Certificate of Completion.”

High Velocity Hurricane Zone: See attached “Exhibit A” (*Changes to the Wind Speed Maps*

and Wind Design- 2010 Florida Building Codes)

Wind Borne Debris Region: See attached “Exhibit A” (*Changes to the Wind Speed Maps and*

Wind Design- 2010 Florida Building Codes)

Question:

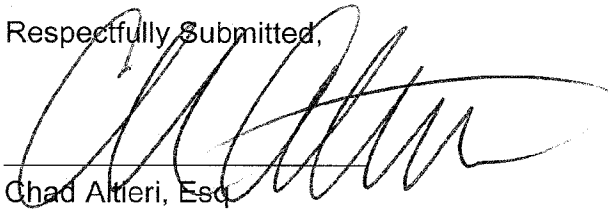
Whether the language of Section 105.1 (requiring permits for designated work) along with Section 8-5(3)(i), (stating that a “building shall be presumed unsafe” for unpermitted work) among other such provisions, creates a “rebuttable presumption” that a structure to which floor space has been remodeled or additions to floor space made (especially to a second floor home where the removal of walls has direct contact with the structures support beams and roof tie-downs, and/or including plumbing and electrical changes), located within Florida’s High Velocity Wind Zone, is accordingly defined as “unsafe,” thereby placing upon the owner the burden of refuting this rebuttable presumption by demonstrating to local Building Officials that the unpermitted work satisfies the Florida

Code by satisfying the proper permitting process before such a presumption is removed from the property.

Summary:

Petitioner respectfully believes the answer to the question outlined above is "YES." The fact that the Code states in other places that a structure "shall be presumed to be unsafe if ... construction completed without a permit ..." strongly supports this position, and seems to be the overall intent of the drafters. However, the term "presume" is a ubiquitous word that does not have a clear legal meaning in this instance, nor does it address the burden shifting requirement that is inferred and in fact practiced per the Code (i.e. once unpermitted work is identified by the Building Department it is up to the owner to show that the unpermitted work conforms to the local building code and it is the owner's responsibility to refute and/or rectify the violations.) To this extent, affirming that a "rebuttable presumption" is placed on the property that the unpermitted work to the structure is unsafe until the building department officials can determine otherwise, better encapsulates the Code to fulfill its safety objectives for structures within high velocity windstorm zones, as well as to allow and acknowledge the property's owner ability to rebut the presumption. In this instance, the burden of proof is more clearly transferred to the property owner that work done without a permit shall be deemed unsafe until such time that the property owner pulls the proper permits and the city's code compliance office signs off that the previously unpermitted work now complies with the area's special and highly stricter requirements concerning High Velocity Hurricane Zones. In practice this is how the process works, but it more so clarifies the rule, and in essence better "connects the dots" for those seeking to ensure the safety of persons living within these HVHZ from unpermitted construction, by specifically stating that such a "rebuttable presumption" exists in these instances.

Respectfully Submitted,



Chad Altieri, Esq.
Law Offices of Altieri & Associates
201 S. Biscayne Blvd.
28th Floor
Miami, FL 33131

Exhibit A



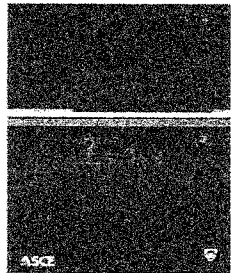
Changes to the Wind Speed Maps and Wind Design – 2010 Florida Building Codes¹

SCOPE AND ASCE 7

The determination of wind loads on buildings has changed little since the inception of the *Florida Building Code*. However, the 2010 edition of the *Florida Building Code* introduces significant changes to wind load design, in particular the presentation of the wind speed maps. The key changes will be further discussed and are summarized as follows:

- New strength design-level wind speed maps
- Changes to the Wind-borne Debris Region
- Introduction of Exposure Category D for water surfaces in Hurricane-Prone Regions

The scoping section (Section 1609.1.1) for the determination of wind loads in *Florida Building Code, Building* (FBCB) states that wind loads on every building or structure is required to be determined in accordance with Chapters 26 through 30 of ASCE 7. This reference is to the 2010 Edition of ASCE 7 (ASCE 7-10). The changes to the wind loading criteria in the *Florida Building Code* are due almost exclusively to the changes to the wind provisions in ASCE 7-10.



While ASCE 7-10 provides the methodology for determining design wind pressures and forces, the design wind speeds, Exposure Categories and requirements for wind-borne debris protection are to be as specified in the *Florida Building Code, Building* and *Florida Building Code, Residential* (FBCR) as applicable.

Section 1609.1.1 of the 2010 FBCB still maintains a list of exceptions to complying with ASCE 7 for the determination of wind loads. Many of the exceptions are for the prescriptive “high wind” standards developed for residential buildings. In the 2010 FBCB and FBCR, two new prescriptive standards are permitted to be used in lieu of designing in accordance with ASCE 7. ICC 600 replaces the *IBHS Guidelines* and provides prescriptive wind resistant design methodologies for wood-frame, concrete, steel and concrete masonry residential buildings. AISI S230 has been added for steel framed residential buildings. The 2010 FBCB permits the use of the Alternate All-Heights method provided in Section 1609.6 and discussed at the end of this document.

Wind Speed Maps - 2010 FBCB

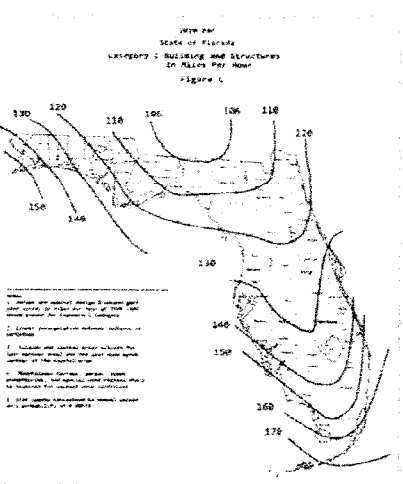
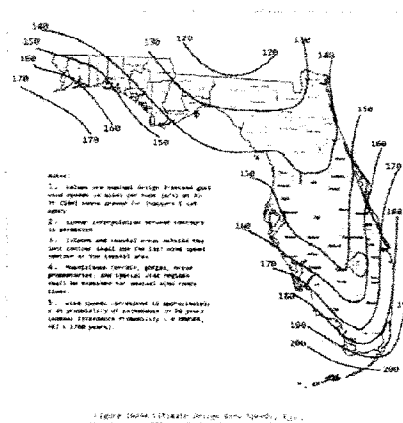
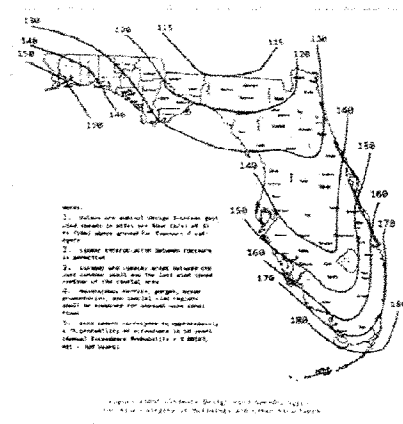
The wind speed maps in the 2010 FBCB have been revised significantly from the 2007 *Florida Building Code*. The primary changes are as follows:

- Strength design-level (Ultimate) wind speeds replace the ASD-level wind speeds in the 2007 *Florida Building Code*.
- Wind speed maps are provided for each Risk Category (formerly Occupancy Categories) instead of applying an Importance Factor to the design pressure calculations for Risk Categories III and IV. The Importance Factor for wind loads has been deleted from ASCE 7-10.

The term “Risk Category” replaces the term “Occupancy Category”. For a full description of each Risk Category, refer to Table 1604.5 in the 2010 FBCB.

¹ **DISCLAIMER** – This piece is intended to give the reader only general factual information current at the time of publication. This piece is not a substitute for professional advice and should not be used for guidance or decisions related to a specific design or construction project. This piece is not intended to reflect the opinion of any of the entities, agencies or organizations identified in the materials and, if any opinions appear, are those of the individual author and should not be relied upon in any event. Applicable to the 2010 *Florida Building Code*.

See Figures 1609A, 1609B, and 1609C below:



It is important to note the wind speed maps in the 2010 FBCB are strength design level wind speeds. While not specifically stated, the wind speed maps in the 2007

FBCB and prior editions are ASD-level or nominal wind speeds. For strength design (Load and Resistance Factor Design), the load factor on wind is now 1.0. In the 2007 FBCB and prior editions, the load factor on wind for strength design is 1.6. For example, Equation 16-6 which specifies one of the load combinations required for strength design including dead, wind and lateral earth pressure loads is as follows:

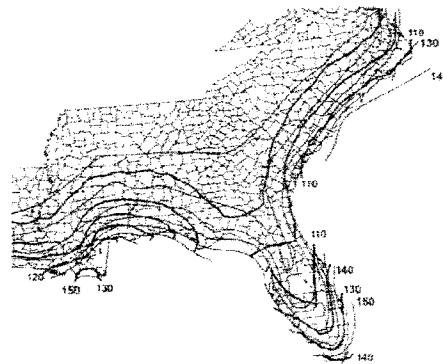
$$0.9D + 1.0W + 1.6H \quad (\text{Equation 16-6})$$

While the map values are much higher for most of the state, to appropriately compare the new map values with the 2007 wind speed maps, the new map values have to be converted to an ASD form. This can be accomplished by using Equation 16-32 in the FBCB.

$$V_{\text{asd}} = V_{\text{ult}} \sqrt{0.6} \quad (\text{Equation 16-32})$$

where V_{asd} represents the equivalent nominal or ASD-level wind speed and V_{ult} is the design wind speed from Figures 1609A, 1609B, and 1609C. The terms "ultimate design wind speed" and "nominal design wind speed" are not used in ASCE 7-10 but were incorporated in the 2010 FBCB due to the significant number of provisions and "triggers" tied to the 2007 FBCB wind speeds. This specifically draws the user's attention to the different types of wind speeds – similar to what was done with the change from the fastest-mile to 3-sec. gust wind speeds in the first editions of the *Florida Building Code*.

The following figure shows a comparison of the 2010 FBCB wind speed map values for Risk Category II buildings with the 2007 FBCB wind speed map values. To make this comparison, the 2010 FBCB wind speed map values were converted to ASD-level wind speeds by multiplying the values by $\sqrt{0.6}$ and redrawing the contours to align on whole numbers. The black contours represent the 2010 FBCB Risk Category II wind speed map values converted to ASD-level values, and the red contours represent the 2007 FBCB wind speed map values.



As shown, the equivalent wind speeds for the 2010 FBCB have actually decreased for most of the state when compared to the 2007 FBCB wind speeds. This is due to new data and better modeling techniques and represents the best scientific knowledge available.

For the specific location of a wind speed contour for a particular location, consult the local authority having jurisdiction as applicable.

High-Velocity Hurricane Zones

The High-Velocity Hurricane Zones (HVHZ) are specifically defined as Miami-Dade and Broward Counties. As in previous editions of the FBCB, a single wind speed is used for the HVHZ for each Risk Category Map. The design wind speeds in the HVHZ are as follows:

Miami-Dade County

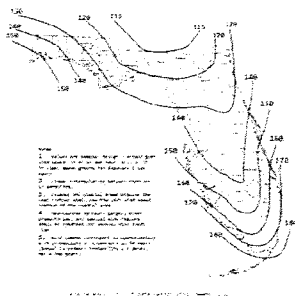
Risk Category I Buildings and Structures: 165 mph
Risk Category II Buildings and Structures: 175 mph
Risk Category III and IV Buildings & Structures: 185 mph

Broward County

Risk Category I Buildings and Structures: 156 mph
Risk Category II Buildings and Structures: 170 mph
Risk Category III and IV Buildings & Structures: 180 mph

Wind Speed Maps - 2010 FBCB

The wind speed map in the 2010 FBCB is in essence the wind speed map for Risk Category II (Figure 1609A) buildings and structures in the 2010 FBCB. Since the FBCB only applies to Risk Category II buildings (one- and two-family dwellings and townhouses not more than 3 stories in height), there is no need for additional maps. All of the information previously discussed regarding the maps in the 2010 FBCB applies equally to the wind speed map in the 2010 FBCB.



In the HVHZ, the 2010 FBCB specifies a wind speed of 175 mph in Miami-Dade County and 170 mph in Broward County.

Load Combinations

The changes to the load combinations highlight how the design pressures calculated from the new wind speed maps relate to the design pressures using the wind speed maps in the 2007 FBCB.

For strength design (or load and resistance factor design), the load factor on the wind load (W) has been changed to 1.0 reflecting the fact that the wind speed values are to be used directly with the strength design methodology. The maps in the 2007 FBCB were to be used directly with allowable stress design; hence the strength design methodology previously requiring the use of a 1.6 load factor on W. A few excerpts from the strength design load combinations in the 2010 FBCB are as follows:

$$1.2D + 1.0W + f_1L + 0.5(L_r \text{ or } R) \quad (\text{Equation 16-4})$$

$$0.9D + 1.0W + 1.6H \quad (\text{Equation 16-6})$$

For allowable stress design, design wind loads have to be factored down to an allowable stress design level because the wind speed maps are to be used directly with strength design. This is accomplished by multiplying the wind load (W) by 0.6. A few excerpts from the allowable stress design load combinations in the 2010 FBCB are as follows:

$$D + H + F + 0.6W \quad (\text{Equation 16-12})$$

$$0.6D + 0.6W + H \quad (\text{Equation 16-14})$$

Design pressure comparisons

To make appropriate comparisons of the design pressures calculated from ASCE 7-10 to those calculated from ASCE 7-05, the ASCE 7-10 design pressures have to be adjusted. This adjustment is accomplished by multiplying the ASCE 7-10 design pressures by 0.6, as specified in the allowable stress design load combinations, which will present the design pressures in a form consistent with allowable stress design. The following table uses this approach to show the differences in design pressures for Risk Category II buildings for select cities in the State of Florida. The ASCE 7-10/2010 FBCB wind speed column represents estimated wind speeds for the sites selected. The wind speeds for the county-specific maps may vary somewhat. In the percent differences column, the percentage differences represent how the design pressures calculated from ASCE 7-10 and the 2010 FBCB compare to ASCE 7-05 and the 2007 FBCB.

Comparison of Design Pressures for Risk Category II Buildings

City	V ASCE 7- 05/2007 FBCB	V ASCE 7- 10/2010 FBCB (est.)	Percent Difference in Comparable Design Pressures	
			Exp B Inland	Exp D ^{2,3,4} Coastal
Pensacola	140	155	-27%	-12%
Tampa	123	145	-17%	0%
Orlando	110	135	-10%	NA
Miami- Dade ¹	146	175	-14% ¹	+3%
Broward ¹	140	170	-12% ¹	+6%
Tallahassee	110	118	-31%	NA
Gainesville	100	125	-7%	NA
Jacksonville	120	125	-35%	-22%

Notes:

1. Miami-Dade and Broward Counties require all buildings to be considered to be in Exposure Category C.
2. ASCE 7-10 and proposed 2010 FBC requires all water surfaces, including hurricane prone regions, to be considered Surface Roughness D.
3. 2007 FBC requires roof-to-wall uplift and roof sheathing uplift loads to be increased by 20% for buildings located within 600 ft of inland bodies of water that represent a fetch of 1 mile or more.
4. The Exposure D analysis would also apply to inland bodies of water meeting the definition of Exposure Category D.

Wind-borne Debris Regions (WBDR)

The WBDR have historically been tied to a specific wind speed. The implementation of the new wind speed maps necessitates a recalibration of the WBDR triggers. In the 2010 FBCB and 2010 FBCR the new WBDR are defined as follows:

Areas located:

1. Within 1 mile (1.61 km) of the coastal mean high water line where the ultimate design wind speed, V_{ult} is **130 mph** (48 m/s) or greater; or
2. In areas where the ultimate design wind speed, V_{ult} is **140 mph** (53 m/s) or greater.

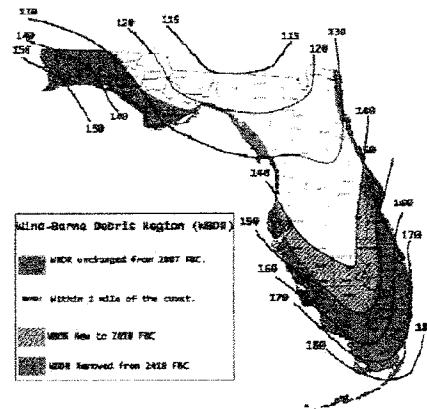
Additionally, the code adds a small wrinkle to the applicability of the maps to each Risk Category.

For Risk Category II buildings and structures, and Risk Category III buildings and structures, except health care facilities, the WBDR is to be determined using Figure 1609A (Risk Category II map).

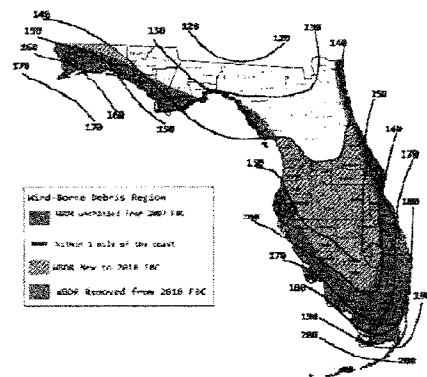
For Risk Category III health care facilities and all Risk Category IV buildings and structures, the WBDR is to be determined using Figure 1609B (Risk Category III and IV map).

So, for Risk Category III buildings excluding healthcare facilities, design wind speeds are required to be determined in accordance with Figure 1609B (Risk Category III and IV map), but the WBDR for such a structure is to be determined in accordance with Figure 1609 A (Risk Category II map).

The following maps show how the WBDR in the 2010 FBCB and 2010 FBCR has changed from the 2007 editions:



Changes to the WBDR for Risk Category II and III buildings and structures, except health care facilities, include buildings located by the FBC.



Changes to the WBDR for Risk Category III buildings and structures, except the category III healthcare facilities.

It is also worth noting the 2010 FBCR requires an additional area of a building to be protected from impact in WBDR. The 2007 FBCB and FBCR only require glazed openings (HVHZ requires the whole building envelope to be impact resistant) to be protected from impact due to wind-borne debris. The 2010 FBCR requires ventilation openings in an exterior wall into an

attic space in buildings located in WBDR have opening protection meeting the requirements of AMCA 540 or protected with an impact-resistant covering complying with ASTM E 1996 or other approved standards.

Exposure Category D

Since the first edition of the *Florida Building Code*, including ASCE 7-98, ASCE 7-02, and ASCE 7-05, in hurricane-prone regions, sites exposed to open water have been classified as Exposure Category C. This was based on research that, at the time, indicated the sea surface roughness in hurricanes increased as wind speed increased. Newer research has shown this not to be the case. The newer studies show the sea surface drag reaches a maximum when wind speeds are between 60 to 80 mph. Additionally, there was some evidence indicating the sea surface drag actually decreases as wind speed increases. In recognition of this research, the use of Surface Roughness D is now required for all water surfaces in hurricane-prone regions including coastal areas. Exposure D will apply where Surface Roughness D prevails in the upwind direction for at least 5000 ft (1524 m) or 20 times the height of the building whichever is greater. More simply put, Exposure D applies where the building or structure is exposed to wind over open water that extends 5000 ft or 20 times the height of the building in the upwind direction.

Alternate All-Heights Method

The 2010 FBCB does contain an alternative design method to designing strictly in accordance with ASCE 7-10. This method is contained in Section 1609.6 of the FBCB and requires the use of ASCE 7-10 for certain parts. It is not really a simplification, but is more of a different framework to use the equations and coefficients in ASCE 7-10. The method takes advantage of certain known variables for specific buildings and combines pressure coefficients to what is referred to as "collapsed" C_{net} values, or net pressure coefficients. Torsional effects and other variables have to be determined in accordance with ASCE 7-10. Most users will not find this method particularly more useful than using ASCE 7-10.

Prescriptive Construction Provisions of the FBCR

The FBCR has historically contained prescriptive construction provisions for nonhurricane-prone regions that are derived from the base code (IRC) in addition to prescriptive provisions for hurricane-prone regions (developed by the Florida Building Commission). The provisions were distinguished according to the basic wind speed. For clarity and to prevent someone from inadvertently applying the prescriptive provisions for nonhurricane-prone regions in the State of Florida, these prescriptive provisions have been deleted from the 2010 FBCR. Only the prescriptive provisions that apply to

structures in hurricane-prone regions remain in the 2010 FBCR.

Resources

Florida Building Commission www.floridabuilding.org

International Code Council www.iccsafe.org

American Society of Civil Engineers www.asce.org

Insurance Institute for Business and Home Safety
www.ibhs.org

Miami-Dade County Building and Neighborhood
Compliance Department, www.miamidade.gov/building

Significant Changes to the Wind Load Provisions of
ASCE 7-10, T. Eric Stafford, www.asce.org

January 2012