

CHANGES COMING TO WIND CODE IN FLORIDA



By Mark Westerfield, Clopay

Changes are coming to garage door wind-load calculations. Florida is expected to adopt the changes by the end of 2011; other states are likely to follow.

The Florida Building Code and the rest of the U.S. use the wind-load provisions of the American Society of Civil Engineers (ASCE). ASCE publishes its engineering standard #7 titled “Minimum Design Loads for Buildings and Other Structures,” more commonly called ASCE7. Currently, the Florida Building Code uses the provisions found in the 2005 edition of ASCE7, also designated as ASCE7-05.

The wind-load calculations found in ASCE7 have been the same since 1998. However, this will change with the 2010 edition of ASCE7, called ASCE7-10. ASCE7 is updated every three to five years, and this latest version includes major changes to how wind loads are calculated.

These changes can be categorized into four main topics:

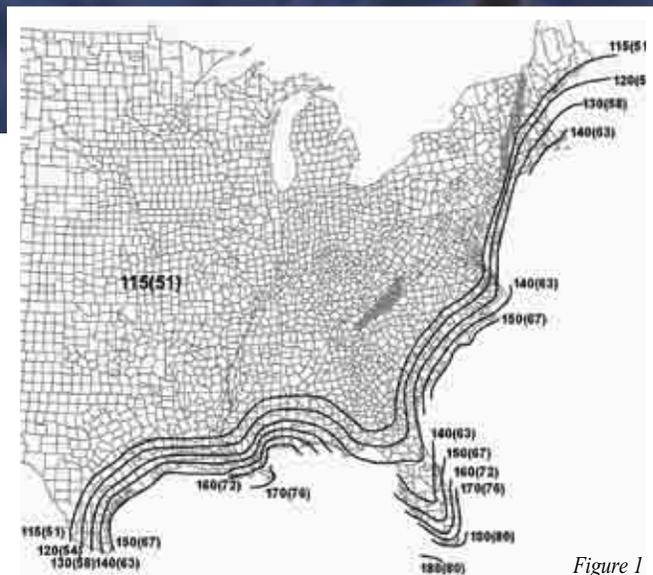
- New Ultimate Wind Speed Maps
- Allowable Stress Design and Load Combinations
- Exposure D
- Wind-Borne Debris (Impact) Changes

Florida has begun the process of incorporating this standard (ASCE7-10) into the Florida Building Code, with a scheduled implementation date of Dec. 31, 2011.

New Wind-Speed Maps

Until now, there has only been one wind-speed map for the U.S. The wind-speed map used since 1998 ranges from 90 mph for the inland U.S. to 150 mph in the Florida Keys. The ASCE7-10 changes are:

- Where there used to be one wind-speed map, there are now three.
 - Each wind-speed map corresponds to a building “Risk Category.”
- Each category corresponds to a different probability time period—300 years (Risk Category I), 700 years (Risk Category II), and 1,700 years



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Figure 1

(Risk Category III/IV). These new wind-speed maps are termed by ASCE as “ultimate” wind speeds.

The wind-speed map for Risk Category I applies to uninhabited spaces such as farm buildings or storage facilities. Risk Category II is for residential construction and has its own map, and Risk Category III and IV (for essential facilities like hospitals, fire stations, power stations, etc.) likewise has a unique wind-speed map.

The wind speeds now range from 105 mph (inland, Risk Category I) to 200 mph (Florida Keys, Risk Category III/IV). Figure 1 is the new map of the Eastern U.S. for Risk Category II (residential construction). The revised wind-speed maps eliminate the “Importance Factor” found in older ASCE7 editions.

Allowable Stress Design and Load Combinations

A conversion process in ASCE7-10 uses these higher “ultimate” wind speeds and modifies the resulting wind-load pressures (PSF).

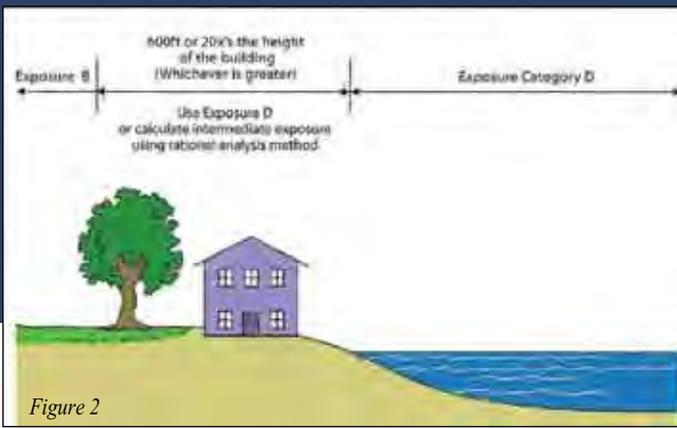


Figure 2

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Figure 3

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The ultimate wind speeds are changed in the calculations using “Allowable Stress Design” and “Load Combinations.” This lowers the final values to wind-load pressures that are approximately equal to the wind-load pressures in the older editions of ASCE7.

In other words, the overall wind-load pressures will stay approximately the same as today. However, this is not true in all instances. Some wind-load pressures might increase by a small amount, and some might decrease slightly. It all depends on the geographic location, how a local jurisdiction interprets the new wind-speed maps, and building details.

Exposure D

In ASCE7 there are different defined “exposure” levels, depending on the type of topography and the building’s proximity to a water surface. Exposure levels reflect the effect of the local terrain to break up or accelerate the wind.

Today, there are two main exposure levels. Exposure B is the typical suburban setting with homes and trees to break up the wind. Exposure C is flat, open terrain and grasslands or areas along a hurricane-prone coastline where the wind is not slowed down by any land features. In the current Florida Building Code, all of Miami-Dade and Broward counties are considered Exposure C.

However, ASCE has done additional research and has reinstated Exposure D along hurricane coastlines. Exposure D relates to increased wind-load pressures over Exposure C. In Figure 2, the area where Exposure D prevails is limited in ASCE7-10 to no more than 600 feet of a coastline.

Wind-Borne Debris (Impact) Changes

The new wind-speed maps also bring changes in the wind-borne debris regions. These regions require the large missile-impact-rated windows.

As seen in Figure 3, more regions of Florida will fall in the wind-borne debris areas. This is especially true in areas immediately south of Orlando.

Some areas in the Florida panhandle will lose their impact-rating requirements based on this new map. However, the Florida Building Commission could change these wind-borne debris maps and maintain the impact requirements in the panhandle that would otherwise go away with ASCE7-10.

What’s Next?

The Florida Building Commission is now making changes to the Florida Building Code and could modify the provisions of ASCE7-10 as they see fit. For example, the Florida Building Code could expand the areas defined as Exposure D or change where impact windows are required. Clopay and DASMA will continue to monitor Florida Building Commission activities throughout 2011.

DASMA is also developing wind-load guides for ASCE7-10, which should be ready soon. In Part II of this report, we will provide the new wind-load guides and any changes to the new Florida Building Code. ■

Mark Westerfield is director of product development and engineering at Clopay. He has 20 years of experience in testing and engineering garage door systems, holds a B.S. degree in engineering and an M.B.A., and is licensed as a Professional Engineer (P.E.) in four states.

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