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Perspectives on Wind Codes in the Outer Banks

A variety of homes dating back from the turn of the previous century to the modern large rental homes line the shores of the Outer Banks. Everyone who owns a home or is considering owning property on the Outer Banks has pondered at least for a moment what affect a hurricane would have on their home and how their structure would hold up to storm force winds. Unless an owner was onsite during construction or has a background in architecture, engineering or construction, it may take a bit of faith and trust to believe that their home will withstand the stresses that severe weather can create.

Luckily for all of us invested in the beach, building codes are in place to help ensure that homes are properly built to withstand the elements and special circumstances that are natural to the barrier island. Over the years, significant improvements have been made to the building code. Understanding how the building code has changed and how modern houses are designed can help us to understand how our homes will weather storms that may come to our shores in the future.

Bo Taylor of Bo Taylor Fine Homes has been building homes on the Outer Banks since 1984. He feels that the biggest code change he has seen in his career is the shift to the high wind codes. Today's code requires more tie-downs and strapping of the home to prevent structural damage. Taylor commented that "Today's building code works and is good business. We could certainly build cheaper, but at some point we would pay the price." Taylor was part of the damage assessment team in Nags Head after Hurricane Isabel. "I noticed that the recently built houses fared well during the storm. The older homes in known flood areas suffered most. I feel that as an industry we are doing a good job with new construction and the stricter codes."

Duke Geraghty, president of Starco Realty and Construction has worked extensively with the North Carolina Home Builders Association and the North Carolina Building Code Council to advise and shape the code that we currently have today. He agrees that protection from wind damage is the most important change that has occurred in the building code. He stated "Up north they worry about snow loads on the roof. Our codes here are designed to prevent roof uplift." Roof tie downs are required to connect the roof to the walls. The walls and floor systems are then required to be bolted to the foundation of a newly constructed home. "Most of the changes to the wind codes went into effect in the late '90's. Hurricane Andrew in Florida sparked many of the changes." Andrew was a Category 5 hurricane that struck southern Florida in 1992.

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Ralph Calfee of Calfee Engineering felt that the changes to the wind code in the 90's were fundamental, substantial and generally sufficient to protect new structures and their occupants. He stated that "We rely on the code to establish minimum standards because often people shop for other features. For example, when the auto industry markets safety, sales decline. When they market speed and horsepower, sales increase. 25 years ago, the houses built then are not as hurricane resistant as those built today."

A house built on the Outer Banks today is rated to withstand sustained winds of 120 mph. With winds up to 120 mph, some minor damage is likely. Mike Costin of Costin Custom Homes felt that "You might see things like like shingle loss, water penetration through soffit vents, and leakage around window sashes. In swing doors are likely to let in water too." He also stated that "Some homes may withstand more wind if they are single story or if they are designed with wind impact in mind."

Calfee feels that the materials we are using greatly improve the quality of construction. Siding is more durable, sheathing is better and most windows going into new homes today should withstand 120 mph wind. He points out that "The question is whether or not a window is hit by flying debris. Plywood will provide reasonable protection (from flying debris)… the issue becomes whether or not the plywood is in place over the windows or under the house or in the garage."

The issue of flying debris and window protection is the most controversial issue of current debates regarding the future of the code requirments. Calfee sees the role of the building code as 2 fold: the first role is to protect lives and the second role of the code is to protect the structure.

In addition, Calfee states that "Insurance companies want loss protection." The difference between protecting the structure and loss protection can be seen in the following examples. If a few shingles blow off the roof of a house, the structural integrity of the roof will be fine, but the water damage to the interior may result in an expensive claim. If a window breaks during a storm, the structure is likely to remain but the cosmetic damage from water could be costly.

To the insurance company, requiring window protection may seem reasonable. For someone who needs affordable housing, the cost could prevent them from being able to buy a home. According to Geraghty, "The cost to protect windows on a starter home could double the window budget. On a larger rental home window protection could add $30,000 or more to the cost depending on the type of protection used." He continues, "The controversy is at what point is window protection cost effective. Wind-born debris is the issue."

Geraghty explains that insurance companies imply that a broken window could lead to the roof blowing off. He states with a laugh, "I'm just a carpenter with a title….I have not seen a broken window cause a roof to blow off." Calfee confirms that with today's strapping and tie down requirements the roof should not fail because of a broken window in most cases.

Currently the code requires some form of window protection—plywood, tempered glass, or storm shutters—for new construction within 1500 feet of the ocean. Changes that are being considered are requiring window protection for all new construction. Geraghty states that "This would have a significant impact on affordable housing." He also notes that this change would only impact new construction and would do nothing to prevent losses on all of the existing homes.

So, what's a homeowner to do? If you have an older home take comfort in the fact that many homes have been standing on the beach for over 100 years. When asked why some of the older homes are still standing in Nags Head, Taylor jokes "Its that salt that holds them together." He also points out that many of those structures have been rebuilt on numerous occasions. "Some of those structures have a synergy—if the porch roof fell, it may have protected the windows." Costin adds that "Those homes were built when a 2x4 was a 2x4 and the old pine lumber was so solid it was difficult to drive a nail into it. Calfee feels that the design of the older homes with smaller rooms, lower ceilings and fewer walls of windows enable the older homes to endure.

If you have a recently constructed home, rest easy because your home is built to codes that are designed to ensure that your home can withstand coastal weather. Taylor states that "Day in and day out we are not that different from spots farther inland. Raleigh has suffered more that we have in many of the storms we've seen." Costin sums it up well, "The current wind codes should give our homeowners peace of mind."

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