KITTY HAWK ENGINEERING
CIVIL AND STRUCTURAL

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John D. Smith
President & Inventor
Storm Stoppers® The Plywood Alternative®
Safe, Simple & Self-Installed Storm Window Protection!
In Orlando: 407-423-5959
www.plywoodalternative.com

RE: FIU Wall of Wind (WOW) Test Report for Storm Stoppers Panels

I have been retained by Storm Stoppers of Orlando, Florida to extrapolate/convert wind speeds for the FIU Wall of Wind (WOW) test on the Original 3/8" Storm Stoppers Panels. The Storm Stoppers Panels used in the test were installed and tested with an actual, measured, wind speed of 126.8 mph at 10.5 feet in elevation. The wind profile at the WOW is calibrated at 10.5 feet. The test goal was 130 mph, however, at 126.8 mph the test was stopped because the house model became detached from its foundation and rolled 50 feet away (with the Original 3/8" Storm Stoppers Panels intact).

The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained (60 second) wind speed. This wind speed is measured at an elevation of 33 feet. Due to surface drag there are wind gradients or differences in wind speeds at different elevations. These speeds decrease to near zero at the ground surface. Wind speeds on a flat, grassy surface under normal, non-turbulent wind conditions can be seen to increase logarithmically with height above the earth's surface. In flat grassy areas at standard temperatures this change in wind speed as a function of height can be approximated using the power law equation, $V = V_{ref} (H/H_{ref})^{\alpha}$. The Hellman exponent, α, depends on several factors including coastline location, topography and air stability. Examples of various values of the Hellmann exponent are given in the table below.

In Appendix A of the FIU report on the Original 3/8" Storm Stoppers Panels the WOW test mean centerline average wind speed at structure failure of 128.7 mph at 10.5 feet corresponds to 120.6 mph at 5.5 feet with an 80% fan throttle profile. Using the same 0.10 Hellman exponent value to determine the extrapolated hurricane wind speed at 33 feet yields a value of 143 mph. This 143 mph wind speed is equivalent to a major category 4 hurricane with sustained winds of 130mph-156mph.

Location	α
Open water	0.08-0.15
Flat terrain, open land cover	0.16-0.22
Complex terrain - mixed or continuous forest	0.25-0.40
Exposed ridge tops, open land cover	0.10-0.14
Sloping terrain with drainage flows	0.10-0.15

Kitty Hawk Engineering, PLLC, has at least one registered Professional Engineer in each of the following 13 states: NC (PE 27540), FL (PE 58449), SC (PE 21786), GA (PE 28039), LA (PE 32734), VA (PE 402037260), MD (PE 45737), MA (PE 45199), ND (PE 5105), CA (PE 57196), WA (PE 35889), NV (PE 22479), ID (PE P-9059).

Sincerely,
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12-12-2014