

RE: Evaluation of ASTM Large Missile 2 x 4' and Wall of Wind Testing for the Original 3/8" Storm Stoppers Panel System.

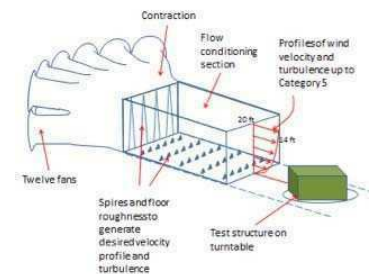
We have been hired by Storm Stoppers of Orlando, Florida to evaluate **FIU Wall of Wind Test Report #WOW12-2014-38** and National Certified Testing Laboratories **NCTL Test Report #210-3128-1**, as they relate to the Enhanced Fujita Scale.

The Enhanced Fujita Scale rates the strength of tornadoes by evaluating the damage from increasing wind speeds. It is measured from a three second gust wind speed, at an elevation of 33 feet above the ground. According to FEMA, 97% of tornadoes recorded over the last 45 years have been categorized as EF0, EF1 or EF2 in strength.

Scale	Wind Speed
EF0	65-85 mph
EF1	86-110 mph
EF2	111-135 mph
EF3	136-165 mph
EF4	166-200 mph
EF5	Over 200 mph

On December 21, 2005, National Certified Testing Laboratories (NCTL) performed Large Missile 2 x 4' Tests on the 3/8" Translucent Storm Stoppers Panel System. This was for compliance with ASTM E1886 & ASTM E1996 in winds up to 130 mph. Please see NCTL Report #210-3128-1. The test specimen was a 3/8" thick translucent Storm Stoppers corrugated plastic panel mounted to a 65 x 108" aluminum window. The Storm Stoppers panel was mounted to the window frame with 1 x 1.5" adhesive backed 3M Dual Lock matable fastener pairs, spaced 4.5" apart. The Storm Stoppers specimen was tested with glass behind the panel. There was no glass breakage after any of the three impacts to the center and corners.

The Wall of Wind (WOW) is a subsonic wind tunnel located at Florida International University (FIU) in Miami, Florida. This wind testing facility replicates Tornado and Hurricane-Force Winds. WOW uses 12- 700 horsepower electric fans in an arc-focal arrangement. These fans push air into a contraction chamber that increases the wind speed and smooths out the speed variations. Water jets mix with the wind to simulate wind-driven rain. Window and door protection products are mounted to a testing structure. This is positioned on a turntable at the front of the wind tunnel. The wind profile at the WOW is calibrated at 10.5 feet above the ground, whereas the Enhanced Fujita Scale is measured at an elevation of 33 feet.



On July 29, 2014 the 3/8" Translucent Storm Stoppers Panel System was wind tested at FIU's Wall of Wind Tornado Simulator. Storm Stoppers Panels were installed with adhesive backed 3M Dual Lock matable fastener pairs on four windows and one door of a specially-constructed testing structure provided and anchored by FIU Engineering Staff. The sustained wind test started at a low speed (10 mph) and was held constant at each wind speed interval for 20 seconds, after which the wind speed was sequentially increased in increments of 10 mph. In Appendix A of the FIU report, at 126.8 mph at 10.5 feet height, the house model became detached from its foundation and rolled 50 feet away with the Storm Stoppers panels still securely attached. Using a .10 Hellman exponent value to determine the extrapolated Tornado wind speed at 33 feet yields a value of 143 mph. Therefore, the foundation failure of the Wall of Wind test structure at 126.8 mph at 10.5 feet corresponds to 143 mph at the 33 feet height that the Enhanced Fujita Scale's wind speeds are calibrated at.

Based on my research and knowledge of ASTM E1996-06, "Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Storm Shutters Impacted by Windborne Debris in Windstorms," the 3/8" Translucent Storm Stoppers Panel System has been tested to repel windborne debris in winds up to 130 mph, as shown in NCTL Report #210-3128-1. Based on my research and knowledge of FIU's Wall of Wind Test Report #WOW12-2014-38, the 3/8" Translucent Storm Stoppers Panel System has been tested to sustained winds and rain of 143 mph. This is at the lower end of an EF3 Tornado, which has wind speeds of 136 mph to 165 mph.

Sincerely,

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