

## **Wind, Wave, and Surge-Induced Damage to Woodframe Structures During Hurricane Katrina**

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**Abstract.** One of the worst natural disasters in U.S. history was hurricane Katrina, which made landfall on August 29, 2005 at 7:10 a.m. in Plaquemines Parish, LA. Tragically, Katrina caused widespread damage and loss of life in several states but also provided an opportunity to collect data on woodframe construction which may be useful for design engineers and building code officials in order to design safe and strong buildings in the future. This study consisted of three days of data acquisition of wind damage to woodframe structures along the U.S. Gulf Coast. A total of 27 case studies ranging from entire subdivisions to individual woodframe structures were examined in detail. A significant number of woodframe structures were examined in and around the city of Gulfport, MS. Structures were also examined in and around Biloxi, MS as well as several rural areas of Mississippi. The majority of structures investigated in this study are within five miles of Interstate 10 along the Mississippi Gulf Coast and a brief summary will be presented in terms of (1) structural observations, (2) non-structural observations, and (3) general observations.

Surge and wave damage to woodframe structures, although quite prevalent along much of the coastal areas, was often difficult to quantify since little remained of many structures. Calculations for the wave loading on a hypothetical woodframe house were estimated and the wave loading as a result of a 12 ft breaking wave resulted in structural base shear loads somewhere between 5 and 15 times the base shear design load for the hypothetical structure. It is the authors understanding that the waves were significantly larger than 12 ft.