Field Evaluation of Damage from Wind and Flooding

David Teasdale, P.E.
Haag Engineering Co.
2455 McIver Ln.
Carrollton, Texas 75006
972-247-6444
david.teasdale@verizon.net

Following Hurricane Katrina, engineers from around the country were called upon to evaluate commercial and residential structures along the Louisiana and Mississippi coasts to determine the extent of damage. Of paramount importance to many engineering clients was the separation of wind damage from flooding damage, and the engineer became a focal point for the resolution of many disputes between property owners and their insurance carriers. This paper discusses how an engineer can provide accurate engineering expertise in that exchange while maintaining their independence, objectivity, and adherence to good engineering principles. Where the subject matter permits, differences in perspective between the engineer, owner, insurance adjuster, and their lawyers are used to illustrate potential pitfalls for the engineer when offering his opinion. Discussion includes basic storm dynamics, the evaluation of physical evidence obtained from an inspection site, the significance of regional surveys, and the proper interpretation of commonly available storm data. The use of industry tools like the Enhanced Fujita scale is presented to illustrate the importance of a site examination, and suggestions are offered for steps that can be taken to reach a definitive conclusion when there is little or nothing left at the site. Consideration is given to the fact that both water and wind are fluids and can produce similar effects, and the site an engineer inspects represents the sum of all influences from when the storm approaches to when the last water recedes. The engineer is cautioned not to place too much significance on one or two observations, especially when site-specific information is scarce. Constructing timelines from partial weather records, use of aerial photography, and conducting storm surge surveys are highlighted briefly, and the importance of precise characterization of tornado warnings, stillwater heights, hurricane categories, and windspeeds is stressed. Emphasis is placed on real data and physical observations compared to computational theories and computer simulations of the storm.