RICOWI in Miami Beach

Hurricanes Spawn Investigations and Interest in Training

By Phil Dregger, PE, RRC

Meeting in Miami in conjunction with the RCI Annual Convention, the Roofing Industry Committee on Weather Issues (RICOWI) presented preliminary results of its Wind Investigation Program (WIP) investigations of 2004 hurricanes Charley and Ivan. It also conducted a one-day training workshop for individuals interested in participating in future RICOWI hurricane investigations.

Training Workshop

On March 31, 2005, 72 individuals attended the WIP Training Workshop. The Cooperative Research Development Agreement between RICOWI, the Department of Energy, and Oak Ridge National Laboratory was renewed for another year. Teams will be set up, drawing from the pool of workshop attendees who expressed interest in participating in future RICOWI hurricane investigations. Maintaining a diverse group of trained individuals is central to achieving RICOWI's goal of fielding investigation teams balanced among manufacturing, contractor, consulting, and academic interests. Workshop presenters and topics included:

- "Cooperative Research Development Agreement," by André Desjarlais, Oak Ridge National Laboratory.
- "Wind Effects on Roofs & Structures," by Dr. Jim McDonald, McDonald, Mehta and Yin, LLP.
- "Roof Wind Investigations – How Damage Begins and Progresses," by Phil Dregger, PE, Technical Roof Services, Inc.
- "Team Structure and Program Details," by David Roodvoets, DLR Consultants.
- "Field Reports – Electronic Data Entry," by Jeff Burton, Institute for Business and Home Safety.
- "Photo Documentation," by Phil Dregger, PE, Technical Roof Services.

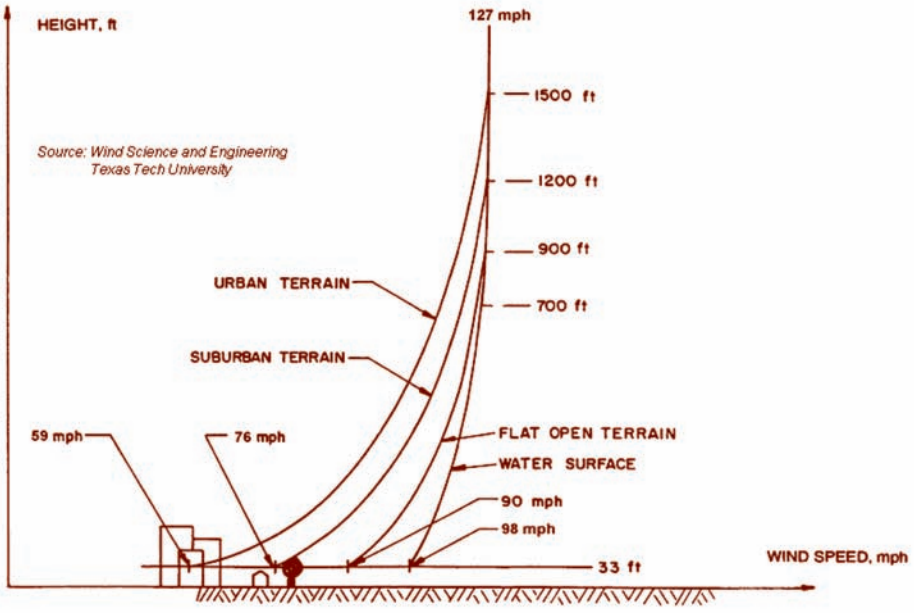

Figure 1: The Power Law ($V_z = V_g [z/z_g]^{1/\alpha}$) can be used to convert wind speed data from one height to another and from one exposure to another (excerpt from Dr. Jim McDonald presentation).

Figure 2: Deformation of light gauge cleats in strong winds can allow roof edge metal to bend upward and begin peel of fully adhered roof membranes (excerpt from Phil Dregger presentation).

- Equipment and Logistics" by Robb Smith, Amtech Roofing Consultants, Inc.

WIP Reports

RICOWI mobilized WIP teams for hurricanes Charley and Ivan in 2004. On April 1, 2005, captains of seven of these teams presented preliminary reports to a gathering of more than 100 in Miami Beach. WIP team reports graphically illustrated wind damage that resulted from detachment of roof edge metal, from wind-blown debris, and from unexpected air infiltration and internal pressurization below roof coverings. A preliminary report of the RICOWI Hail Investigation Program was also presented. Presentations included:

- "Steep-slope Roofing – Tile," by Jerry Vandewater, MonierLifetile/TRI.
- "Steep-slope Roofing – Metal, Wood, and Asphalt Shingles," by Joe Wilson, Metro Roof Products/MCA.
- "Metal Roofing," by Lee Shoemaker, Metal Building Manufacturers Association.
- "Low-slope Roofing," by Bas Baskaran, National Research Council of Canada.
- "Oklahoma City Hailstorm," by Vickie Crenshaw, Crenshaw Consulting Group.
- "Low-slope Roofing – Hurricane Ivan," by Phil Dregger, Technical Roof Services/RCI.
- "Low-slope Roofing – SPF Roofs," by Robb Smith, Amtech Roofing Consultants.
- "Low-slope Roofing," by David Roodvoets, DLR Consultants/SPRI.

Final WIP reports – including findings, photo documentation, and spreadsheet summaries of field data – will be published by ORNL after the report has completed the mandated peer review and the approval process.

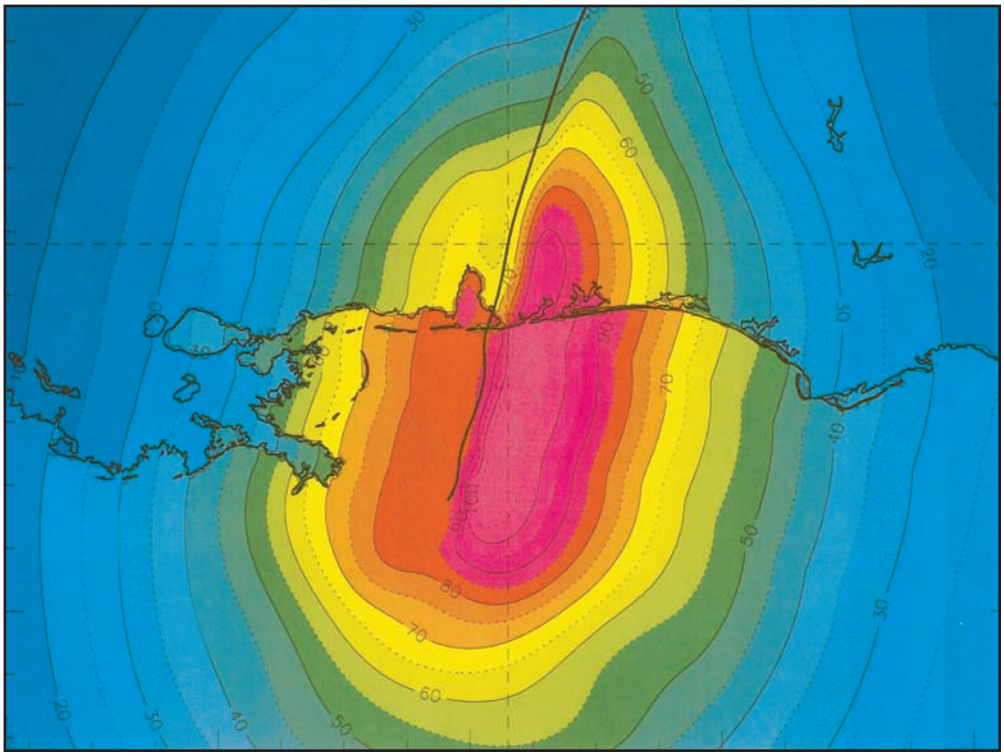

Figure 3: Preliminary wind swath information (1-minute sustained), suggests winds for Hurricane Ivan were below current ASCE 7 design levels (excerpt from Phil Dregger presentation). Map Source - NOAA H*Wind (www.aoml.noaa.gov/hrd/data_sub/wind2004.html).

RICOWI Meetings and Membership

Patty Wood-Shields announced that the EPDM Roofing Association (ERA) recently joined RICOWI as a Sponsor member. New Affiliate members are: David Bell, Bell Roofing Company; Robert Brownlee, Metal Tech Services; Peter Garrigus, TRUFAST Corporation; Eric Haefli, State Farm Insurance; Butch Kenney, Carlisle SynTec; Jim Koontz, Jim D. Koontz & Associates, Inc.; Paul Riesebieter, Soprema, Inc.; and Joe Russo, RGM Products, Inc.

The next RICOWI meeting will be held in Norman, OK in early October (date to be determined). The results of the Oklahoma City hailstorm will be the focus of this seminar and will include tours of the National Storm Prediction Center and the National Weather Service Forecast Office.

For information about meetings, seminars, and membership, visit RICOWI's new website: **www.ricowi.com** or contact RICOWI Executive Director Patty Wood-Shields: Phone: 770-914-7235, Fax: 770-915-7102 or by e-mail: paws01@charter.net.

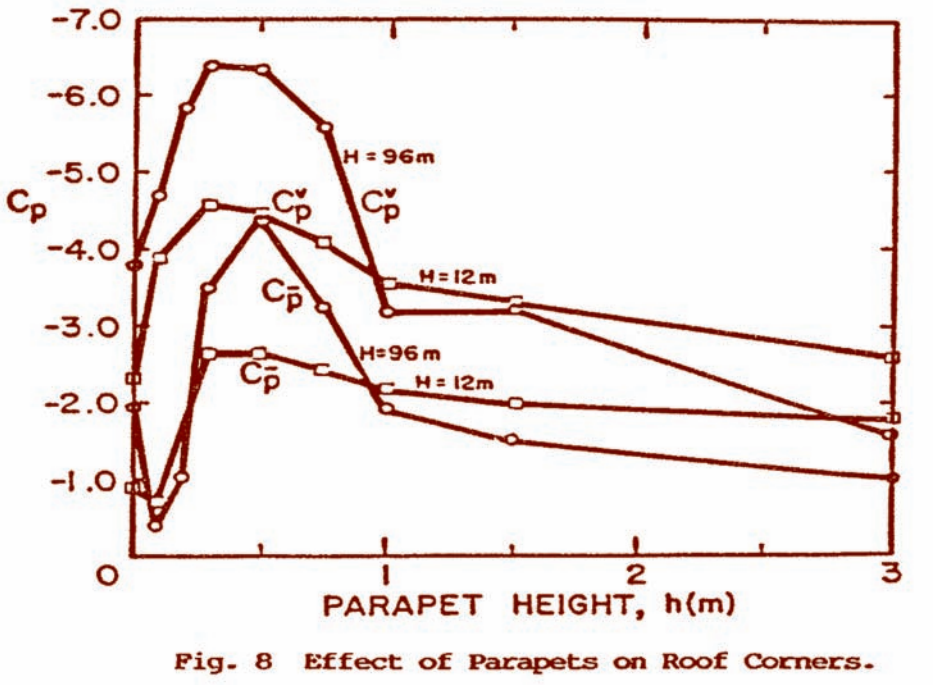

Figure 4: Except for very low parapets, coefficients of roof wind uplift near corners decrease with parapet height (excerpt from Bas Baskaran presentation). Source: Baskaran, B.A., Stathopoulos, T., "Roof Corner Wind Loads and Parapet Configurations," Journal of Wind Engineering and Industrial Aerodynamics, 29, pp. 79-88, August 1988.