

# FLORIDA BUILDING COMMISSION

## HURRICANE RESEARCH ADVISORY COMMITTEE

### REPORT TO THE FLORIDA BUILDING COMMISSION

AUGUST 22, 2006

*Miami Lakes, Florida*

Meeting Design & Facilitation By



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**FLORIDA BUILDING COMMISSION**  
**HURRICANE RESEARCH ADVISORY COMMITTEE REPORT**  
**AUGUST 22, 2006**

**OVERVIEW**

At the January 26, 2005 Commission meeting, Chairman Rodriguez appointed a small coordinating group consisting of Commissioners and other stakeholder representatives, charged with identifying what research is being conducted related to building failure issues resulting from the 2004 hurricanes, identifying any research gaps on key issues identified but not being researched, and finally, to ensure that the Commission is provided with all relevant research findings on each of the major issues, prior to the Commission considering code enhancements resulting from lessons learned.

Following is the chronology of events and subsequent Commission actions resulting from the 2004 hurricanes.

- Hurricane Charley hit on August 13, 2004 near Cayo Costa, Florida.
- Commission met in Miami on August 29 – 31, 2004 and staff presented early observations from the storm.
- Hurricane Francis hit on September 6, 2004 over Southern Hutchinson Island, Florida.
- Hurricane Ivan hit on September 16, 2004 between Gulf Shores, Alabama and Pensacola, Florida.
- Hurricane Jeanne hit on September 26, 2004 near Stuart, Florida.
- The Commission met on October 18 – 19, 2004, following three additional hurricanes and presented preliminary data collected from the four storms.
- The Commission met on December 6 – 8, 2004 and a hurricane researchers workshop co-sponsored by the Commission and the Institute for Business and Home Safety, was held on December 6, 2004.
- On January 12, 2005 the Florida Homebuilders Association released an assessment report concerning water intrusion during the 2004 hurricanes.
- At the Commission's January 2005 Commission meeting the Chair convened a workgroup to assist the Commission by ensuring they have all relevant research on each of the key issues identified during the hurricane assessments to assist the Commission with any needed code enhancements.
- At the Commission's January 2005 meeting, the Florida Home Builders Association presented findings and recommendations regarding water intrusion.
- On February 11 – 13, 2005, the Commission, the Department of Community Affairs, and the International Code Council jointly sponsored a Hurricane Symposium on the Impact of the 2004 Hurricanes on the Built Environment.
- On March 16, 2005 the Commission held a joint session with the Hurricane Research Advisory Committee and heard presentations and recommendations on studies related to water intrusion, building code performance, roof tiles, and the design of aluminum structures.

- At the May 10, 2005 meeting of the Hurricane Research Advisory Council the committee heard additional presentations and recommendations on water intrusion, and a window assessment failure study. In addition, at the May 10, 2005 meeting of the Hurricane Research Advisory Council, the committee was asked to make the following preliminary determinations relative to the various recommendations: First, based on the studies and related recommendations, do members support the recommendation, and second should the recommendation be recommended for early implementation (as a part of the legislative authorization for expedited code amendment implementation for hurricane related provisions) or should it be reviewed and considered through the regular Commission code amendment process. The HRAC evaluated each of the options and identified a preliminary list of options recommended for expedited code adoption as well as options that were recommended for adoption through the normal code amendment process.
- At the June 28, 2005 meeting of the Hurricane Research Advisory Council the committee was asked to further consider those options that received a consensus for the recommendations and a 50% or greater level of support for expedited code adoption. The HRAC evaluated these as well as additional options identified by members. At the conclusion of the June meeting, the HRAC reached consensus on a package of recommendations for submittal to the Commission. The recommendations were for amendments recommend for expedited code adoption.
- Hurricane Dennis hit on July 10, 2005 in the Western Florida Panhandle region of the State, between Pensacola Beach and Navarre Beach Florida.
- At the August 23, 2005 meeting the HRAC evaluated the issues for consideration during the 2006 annual code amendment process, and identified issues that needed additional information or development prior to developing recommendations and that should be deferred for future code changes.
- The Commission adopted a draft package of code amendments following public comment received during the rule development workshop conducted at the August 2005 meeting.
- Hurricane Katrina landed on August 25, 2005 near the Miami-Dade Broward County Line in Florida, and on August 29, 2005 hit Plaquemines Parish Louisiana just south of Buras La, and again at the Gulf Coast border of Louisiana and Mississippi.
- At the October 10, 2005 meeting members reviewed the results of Commission action regarding expedited code amendments, and reviewed assignments and project status.
- The Commission conducted a rule adoption hearing at the October 11, 2005 meeting, and adopted a final package of expedited Code amendments
- Hurricane Wilma landed on October 24, 2005 near Cape Romano Florida and crossed the Florida Peninsula just north of Palm Beach.
- At the December 6, 2005 meeting, members heard presentations on observations from Hurricane Wilma damage to South Florida.
- At the February 6, 2006 meeting, members reviewed the status of Committee proposed code amendments, heard an update on the Panhandle Windborne Debris Study, and voted to recommend DCA seek funding authority to support completion of a wind and water infiltration testing facility, and for conducting testing specific to building code development.

- At the March 21, 2006 meeting members heard an update on the Panhandle Windborne Debris Region Study. Members reviewed the status of the Committee’s hurricane provision recommendations, and identified additional issues that should be evaluated. The Committee offered a list of issues that need additional research and prioritized the issues based on a five-point ranking scale.
- At the July 11, 2006 meeting members reviewed the final results of ARA’s Panhandle Windborne Debris Region Study, and voted to recommend that the Commission continue with Phase II of the windborne debris study, as recommended by ARA, including post hurricane assessments of windborne debris damages resulting from any 2006 storms. The recommendation is to conduct a research study, with the results serving as the basis for a 2008 Statewide implementation of windspeed/terrain-dependent WBD criteria.
- At the August 22, 2006 meeting members received an update on several projects, and were asked to consider recommendations for developing consensus on the assumptions used in the cost-benefit analysis used for the winborne debris study.

**MEMBERS AND REPRESENTATION**

At the January 26, 2005 Commission meeting, Chairman Rodriguez appointed a small coordinating group consisting of Commissioners and other stakeholder representatives, charged with identifying what research is being conducted related to building failure issues resulting from the 2004 hurricanes, identifying any research gaps on key issues identified but not being researched, and finally, to ensure that the Commission is provided with all relevant research findings on each of the major issues, prior to the Commission considering code enhancements resulting from lessons learned.

Raul L. Rodriguez, AIA, Chair of the Florida Building Commission, has made the following appointments to the Hurricane Research Advisory Council. Members are charged with representing their stakeholder group’s interests, and working with other interest groups to develop consensus package(s) of recommendations for submittal to the Florida Building Commission.

Raul Rodriguez, AIA, Chair	Architects
Chris Schulte	Roofing contractors
Do Kim, P.E.	Insurance industry
Nick D’Andrea, CBO	Building officials
George Wiggins, CBO	Local government
Craig Parrino, P.E.	Product manufacturers (concrete products)
Tim Reinhold, PhD, P.E.	Insurance industry/Researchers
Joe Crum, CBO (President, BOAF)	Building officials
Jack Glenn, CBO	Home builders
Dave Olmstead	Product manufacturers (windows)
John Ingargiola	Federal government (FEMA)

## OVERVIEW

The Committee, over several months developed a consensus package of recommendations for proposed code amendments. The amendments were recommended for expedited adoption, glitch cycle adoption, or future adoption based on the need for additional research and development.

At the August 2005 meeting, the Commission voted on the Committee's package of recommended expedited code amendments. At the October HRAC meeting, the Committee reviewed the status of their package of recommendations, including Commission actions related to approved expedited code amendments, amendments deferred to the glitch cycle, and proposed amendments that were not approved or deferred. The Committee also heard an overview from the Panhandle Windborne Debris Region Workshop, and an update on the plan for considering the Exposure C definition issue. In addition, the Committee was asked to review assignments and to identify any additional issues and research and development needs.

At the December 6, 2005 meeting the Committee heard an update on discussions regarding the Exposure C definition, and a status report on the Panhandle Windborne Debris Study. In addition, there were presentations from DCA staff, Miami-Dad County Code Compliance, and the Palm Beach County Building Department on observations regarding the impacts and damage to South Florida from Hurricane Wilma.

At the February 2006 meeting members were provided with an update on the Panhandle Windborne Debris Region Study and the Exposure C definition issue.

The HRAC discussed research and development needs and voted to recommend that the Commission request that DCA seek additional legislative spending authority to provide financing for the wall of wind facility at FIU, and conducting testing specific to building code development. The proposed funding amount is \$500,000.00 (300K for the facility and 200K for testing). The Commission will review specific budget and contract requirements once spending authority is granted, and has no obligation to spend the money.

At the March 2006 meeting members identified and prioritized a list of issues that require additional research and/ or development prior to the HRAC evaluation options and making additional recommendations for proposed hurricane related Code amendments. In addition, the HRAC heard an update on preliminary results from the Panhandle Windborne Debris Region Study.

At the July 2006 meeting, members reviewed the final results of ARA's Panhandle Windborne Debris Region Study, and voted to recommend that the Commission continue with Phase II of the windborne debris study, as recommended by ARA, including post hurricane assessments of windborne debris damages resulting from any 2006 storms. The recommendation is to conduct a research study, with the results serving as the basis for a 2008 Statewide implementation of windspeed/terrain-dependent WBD criteria.

At the August 2006 meeting, members heard an update on FMA/AAMA and AAMA/FMA window installation and window water leakage projects, respectively. In addition members were asked to consider what assumptions should be considered for analyzing the cost-benefit data regarding Phase II of the windborne debris study project.

The Committee will meet again at the **OCTOBER 2006** Commission meeting to receive an update on related projects, and to develop consensus on the assumptions to be used in the cost-benefit analysis regarding Phase II of the windborne debris study.

## **REPORT OF THE AUGUST 22, 2006 MEETING**

### **Opening and Meeting Attendance**

The meeting started at 2:00 PM, and the following Council members were present: Raul Rodriguez (Chair), Joe Crum, Nick D'Andrea, Jack Glenn, Do Kim, Dave Olmstead, Craig Parrino, Chris Schulte, and George Wiggins.

### **DCA Staff Present**

Rick Dixon, Ila Jones, Mo Madani, and Betty Stevens.

### **Meeting Facilitation**

The meeting was facilitated by Jeff Blair from the Florida Conflict Resolution Consortium at Florida State University. Information at: <http://consensus.fsu.edu/>

### **Project Webpage**

Information on the project, including agenda packets, meeting reports, and related documents may be found in downloadable formats at the project webpage below: <http://consensus.fsu.edu/FBC/hrac.html>

### **Meeting Objectives**

- To Review and Approve Agenda and July 11, 2006 Report
- To Review Committee Process Plan
- To Review Commission Action on 2006 Code Amendments
- To Receive an Update on the FMA/AAMA Standard Practice for Window Installation
- To Receive an Update on the AAMA/FMA Project on Window Water Leakage Testing for High Wind Areas
- To Discuss Panhandle Windborne Debris Project Phase II
- To Consider Public Comment

### **Review and Approval of Agenda**

The Committee voted unanimously, 11 - 0 in favor, to approve the August 22, 2006 Agenda as presented.

### **Approval of July 11, 2006 Facilitator's Report**

The Committee voted unanimously, 11 - 0 in favor, to approve the July 11, 2006 Facilitator's Report as presented.

### **Review the Commission Action on 2006 Code Amendments**

Rick Dixon, FBC Executive Director, provided Committee members with a status update of the Commission's approved hurricane provision 'Glitch Cycle' code amendments, and answered member's questions.

### **Update on the FMA/AAMA Standard Practice for Window Installation**

Sigi Valentin, American Architectural Manufacturers Association (AAMA) Southeast Region Director, reported on the progress of a FMA/AAMA research regarding standard practice for window installation, and answered Committee member's questions.

### **Update on the AAMA/FMA on Window Water Leakage Tests for High Wind Areas**

Sigi Valentin, American Architectural Manufacturers Association (AAMA) Southeast Region Director, reported on the progress of a AAMA research project to evaluate the water performance of fenestration products subjected to severe wind driven rain events, and answered Committee member's questions.

Committee member Dave Olmstead stated that one of window leakage issues not fully addressed by the expedited and glitch amendments to the 2004 Code, was required testing of "mulled" windows for water leakage. The AAMA standard had been added to the Code but not required. He suggested this issue could be considered by the Windows Labeling Work Group. Note: the Chair concurred, and assigned the task to the Window Workgroup during the Commission's plenary session.

### **Panhandle Windborne Debris Project Phase II**

Rick Dixon explained, that the plan is for DCA to amend the ARA contract for Phase II of the windborne debris study project. The study will include assessing results from any 2006 hurricanes, with a project completion date of June 2007. In addition, ARA and DCA staff are seeking additional funding sources to expand the study to include additional issues such as tree blow-down analysis. The amount of funding secured will determine the scope of the study/project.

The Commission voted unanimously at the July 22, 2006 meeting to continue with Phase II of the windborne debris study, as recommended by ARA, including post hurricane assessments of windborne debris damages resulting from any 2006 storms. The recommendation is to conduct a research study, with the results serving as the basis for a 2008 Statewide implementation of windspeed/terrain-dependent WBD criteria.

## **Developing consensus on the economic analysis method and assumptions used for Phase II of the Windborne Debris Study at the beginning of the project.**

Members should think about the following questions and propose additional criteria/questions:

- Question #1 Should standards be set at the limits of cost effectiveness?
- Question #2 How are decisions on standards balanced to avoid undue adverse impact on low end housing owners and to establish reasonable requirements for high and moderate end housing?
- Question #3 What measure(s) of cost effectiveness should be applied?  
(E.g., first cost, present value life cycle cost over 40 years, 7 year positive cash flow, etc.)
- Question #4 What should be the assumptions used in the economic study?  
(E.g., study period, material and systems costs, maintenance and operation costs (shutter put on and take down), government/insurance incentives, etc.)
- Question #5 How is the economic study life matched to storm probability recurrence interval to allow use of ASCE 7 wind speed contours as reference points for WBD criteria?
- Question(s) Any other questions/criteria that should be considered?

A recommendation was made to solicit input on the assumptions from the ASCE-7 wind committee, as well as HRAC members.

### **Discuss Other Research Issues**

The Committee was asked to identify any additional issues that require research. No comments were offered by members.

### **Public Comments**

Members of the public were provided an opportunity to provide general comments.

A request was made to consider developing prescriptive criteria for mulled window systems, with a recommendation to assign the issue to the Window Labeling Workgroup.

### **Adjournment**

The Committee votes unanimously, 9 – 0 in favor, to adjourn at 2:45 PM.