



A Resource of the State of Florida

**HURRICANE LOSS REDUCTION  
FOR  
HOUSING IN FLORIDA**

**A Research Project Funded by  
The State of Florida Department of Community Affairs  
Through Contract # 06RC-A%-13-00-05-261**

**PROGRESS REPORT No. 2  
For Quarter Ended March 31, 2006**

DUE BY April 19, 2006

PREPARED BY  
THE INTERNATIONAL HURRICANE RESEARCH CENTER  
FLORIDA INTERNATIONAL UNIVERSITY

**HURRICANE LOSS REDUCTION FOR FLORIDA HOUSING**  
**A RESEARCH PROJECT UNDERTAKEN BY**  
**THE INTERNATIONAL HURRICANE RESEARCH CENTER**  
**At Florida International University**

**PROGRESS REPORT FOR THE PERIOD ENDED MARCH 31, 2006**

**SUMMARY**

This report summarizes the activities of the International Hurricane Research Center (IHRC), at Florida International University (FIU), and its research team related to the project designated as *Hurricane Loss Reduction for Housing in Florida* (hereinafter Project) being funded by the Florida Department of Community Affairs (DCA) under contract # 06RC-A%-13-00-05-261 executed on December 1, 2005.

This progress report covers activities of the IHRC research team from January 1, 2006 through March 31, 2006. This progress report is submitted in compliance with the reporting requirements of above referenced contract. The IHRC has requested a 30-day no cost extension. This extension would in no way require additional funds from the FL DCA.

Stephen Leatherman, Director at the IHRC, is Principal Investigator (PI) and Project Director. Carolyn Robertson, Assistant Director at the IHRC, is responsible for project management.

**Major activities during this period include:**

1. The first Quarterly Report was written and submitted to the Department of Community Affairs on January 17, 2006.
2. FIU hosted the HLMP/RCMP Advisory Council February 6, 2006 meeting in Miami. The meeting was attended by various RCMP Board Members, RCMP principal investigators and various DCA employees. The following day Charles McCool visited the Homestead Airforce Base, a possible location for the Wall of Wind testing facility.
3. Contract Modifications 1, 2, and 3 were executed on January 10, 2006, February 16, 2006 and March 28, 2006 respectively, allowing for several budget transfers within the above referenced grant.
4. The assessment of hurricane impact on different types of roof tiles in Florida, as evidenced by Wilma and Katrina in 2005, is on-going. The objectives of the project are to identify whether there was a significant difference in performance of clay and concrete tiles, whether the current building codes provide adequate and reasonable measures for proper performance of tile roofs, and what, if any, change is necessary to improve the way tile roofs are installed. The review of literature is almost complete, and recent reports on roof tile performance have been assessed. Tile samples from different manufacturers are being obtained for water absorption and loading tests to determine the performance of various bonding mechanisms. The focus of the tests is on ridge line tiles. Testing protocols are being developed. A finite element analysis of the tile roof system is also planned for this phase of the project. This phase of the project started in late February and is scheduled for completion by June 22, 2006. Once Phase 1 is complete, recommendations will be made for improvement of roof tile systems and any additional experiments, if necessary.
5. The statewide survey instrument was finalized and approved by DCA on March 16, 2006. The telephone survey was conducted March 27 through April 12. Of those whom completed the survey 703 Florida residents met the criteria of single family home owners. The preliminary findings will be forwarded to DCA in April.
6. The subcontract for Florida Institute of Technology was executed on February 2006. After, browsing through the numerous transceivers available on the market, a list of potential transceivers best suited to fulfill the Wall of Wind wireless system was prepared. The circuits of the new remote unit and base unit were designed and built. Transceiver testing is on-going. The first transceiver tested was the ATRT-100 from Abacom

technologies. However, it turned out to be incompatible with the wireless system needs for greater speed and range. Currently, FIT is testing the TR-1000 from RF Monolithics Inc.

7. The IHRC contacted various researchers to carry out the proposed 2005-2006 research agenda to discuss specific research tracks, timelines, schedule of deliverables and budget estimates. The IHRC subcontracts with the University of Florida, University of Texas at Austin, and Clemson University are still awaiting execution.
8. The Wall of Wind Phase I unit is currently located at the University of Florida and research continues under the direction of Dr. Forrest Masters. The current focus is the investigation of water intrusion through soffit assemblies. The overarching goal of this project is establish wind and wind-driven rain (WDR) resistance design requirements for soffit performance in a design-level hurricane event including the development of design solutions for new homes and retrofitting techniques for existing homes using the most efficient combination of bracing, anchorage and modified panel shapes from common construction materials.

Additional objectives for on-going Wall of Wind testing include: 1) qualitatively model the path of WDR into the attic space, 2) measure water intrusion relative to (a) the free stream WDR intensity and (b) wetting of the building face under the eave, 3) determine the pressure loads acting on the soffit. The investigation team has convened twice since January to conduct limited tests and to gather information to improve the experimental configuration. A third series of tests is planned for May. FIU continues to create a strong industry partnership with stakeholders in engineering, homebuilding, insurance and product manufacturing to conduct open, unbiased research and propose modifications to TAS 100(A)-95, AAMA 1402 and D4756-03 if merited.

9. Education and Outreach efforts continue. The IHRC will collaborate with the Miami Children's Museum, Hurricane Disaster Survival House and Miami-Dade Parks and Recreation Department Hurricane Expo during National Hurricane Preparedness Week. In addition the IHRC will host an exhibit booth at both the National Hurricane Conference and the Governor's Hurricane Conference.

## ORGANIZATIONAL/ADMINISTRATIVE ACTIVITIES

During this quarter, the initial research team for 2005-2006 was assembled at both the IHRC and participating universities. The assembled research team is as follows:

**Principal Investigator:** Stephen Leatherman      FIU/IHRC  
**Project Manager:** Carolyn Robertson      FIU/IHRC

### Principal Researchers:

Forrest Masters	FIU	Wind Engineering
Dario Moreno	FIU	Sociology
David Prevatt	Clemson	Civil Engineering
Jean-Paul Pinelli	FIT	Civil Engineering
Edward Gilman	UF	Agricultural Sciences
Kurt Gurley	UF	Civil Engineering
Nur Yazdani	UTA	Civil Engineering
Amir Miriman	FIU	Civil Engineering

### Research Assistants:

Collette Blessing	FIU	Civil Engineering
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### Undergraduate Students:

Randall Blanchette	FIU	Civil Engineering
Marcio Coelho De Souza	FIU	Computer Science
Alex Cuesta	FIU	Computer Engineering
James Erwin	FIU	Civil Engineering

**\* Other research assistants will include a minimum of 5 graduate and under graduate students located at participating universities.**

### Support Staff:

Natalie Defraene	FIU	IHRC
Donya Bernard	FIU	IHRC
Kathy-Ann Decle	FIU	IHRC