



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 # 05RC-11-13-00-05-001**

**QUARTERLY REPORT No. 4
For Quarter Ended June 30, 2005**

DUE BY July 15, 2005

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

QUARTERLY REPORT FOR THE PERIOD ENDED JUNE 30, 2005

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 # 05RC-11-13-00-05-001 executed on January 18, 2005.

This quarterly report covers activities of the IHRC research team from April 1, 2005 through June 30, 2005. This quarterly report is submitted in compliance with the reporting requirements of above referenced contract. There are no problems or circumstances currently affecting the completion date, milestones, scope of work, and cost of the project.

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

Major activities during this quarter include:

1. Subcontracts were finalized for Clemson University on May 6, 2005 and University of North Texas on April 14, 2005.
2. The Governor's Hurricane Conference, held in Tampa May 10 through 13, was attended by Stephen Leatherman, Carolyn Robertson, Forrest Masters, and Collette Blessing. In addition to the IHRC exhibit booth, Dr. Masters made several presentations concerning the Wall of Wind research.
3. The South Florida Hurricane Conference, held in Ft. Lauderdale June 22 through 23, was attended by Carolyn Robertson.
4. Permits were attained from Miami-Dade Park and Recreation Department to conduct testing at Tamiami Park. Researchers deployed the Phase I (two-fan) Wall of Wind to develop its actuation and computer control algorithms during the week of June 27 (see attached pictures). The team registered wind speeds upwards of 130 mph at the location designated for test subject.
5. Carolyn Robertson and Stephen Leatherman met with Charles McCool and Iris Stanley on June 28, 2005 in Tallahassee to discuss current and future FIU research initiatives under the HLMP project.
6. Dr. Forrest Masters met with Dr. David Prevatt, Clemson University, on June 2005 during the Baton Rouge 10ACWE conference to discuss research progress concerning the analysis of field data of wind pressures and wind tunnel studies on models of houses located in a typical Florida neighborhood.
7. Five study areas have been identified for the research involving the impact of vegetation on residential building damage using aerial photographs taken approximately 2 ½ weeks after Hurricane Andrew. The study uses a qualitative visual analysis to assess building damage. Three vegetation classes have also been defined. Single family houses within each subdivision and vegetation class were placed in 3 building damage categories based on visual inspection of roof damage using aerial photographs. Each property was independently examined by two operators. If a disagreement in the evaluation arises, a third operator will evaluate the property to decide the damage class. Researchers are in the process of the second and third evaluations of the building damage. More than 3500 homes have been evaluated. When all homes have

been assigned a damage category, statistical analyses will be implemented to evaluate the relationship between level of damage and presence/absence of vegetation.

8. Aerial photographs were obtained and two field visits in June were conducted to collect field data from the five homes used in the role of impact modifiers in neighborhood design study. Researchers have measured dimensions of the six prototype houses and are about 60% complete with model construction of the five 1:50 scale model houses. Data were also collected on dimensions and locations of the trees and surrounding buildings that may affect wind loading on the prototype houses with a 250 ft radius of each prototype house.
9. Raw data on the wind speeds, directions and data from the pressure sensors installed on the roofs of the prototype buildings were obtained. ASCE 7-02 wind design procedures (method 2) were used to calculate the external pressure coefficients ($G_c p$) for components and cladding load on the roof of the prototype structures. This is required to compare with the full-scale data.
10. Clemson University is currently working to develop a smoothing algorithm using Matlab to generate the contours from the pressure tap values. In addition, CU is in the process of producing jpeg images for wind directions at regular intervals to show pressure variation for a 360 degree coverage (there will be approximately 100 images required). CU understands the FAU team is awaiting the results to complete the scheduled animations and therefore, will issue the results in phases as they are completed in order to facilitate the work.
11. The first draft of "Barriers to the Upgrading of Existing Mobile Homes and Communities" was received on June 30, 2005 and is currently under review.
12. The first draft of "Mobile Home Replacement Program in Florida: What We Know Today and Where We Should Go in the Future" was received on June 30, 2005 and is currently under review.

ORGANIZATIONAL/ADMINISTRATIVE ACTIVITIES

During this quarter, the initial research team for 2004-2005 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
Nicole Dash	UNT	Sociology
Betty Morrow	Consultant	Sociology
Dario Moreno	FIU	Sociology
David Prevatt	Clemson	Civil Engineering
Christian Resick	FIU	Psychology
Edmund Skellings	FAU	Electronic Communication
Keqi Zhang	FIU	Environmental Studies

Research Assistants:

Collette Blessing	FIU	Civil Engineering
Pat Houle	FIU	Environmental Studies

Undergraduate Students:

Randall Blanchette	FIU	Civil Engineering
Victor Camps	FIU	Architecture
Marcio Coelho De Souza	FIU	Computer Engineering
Alex Cuesto	FIU	Computer Engineering
Janes Erwin	FIU	Civil Engineering
Patrice Warner	FIU	Architecture

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

Support Staff:

Natalie Defraene	FIU	IHRC
Kathy-Ann Declé	FIU	IHRC



Wall of Wind: Phase 1

