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

QUARTERLY REPORT No. 2
For Quarter Ended December 31, 2003

Reporting Requirement # 4
DUE BY January 15, 2004

PREPARED BY
THE INTERNATIONAL HURRICANE RESEARCH CENTER
FLORIDA INTERNATIONAL UNIVERSITY

HURRICANE LOSS REDUCTION FOR HOUSING IN FLORIDA

A RESEARCH PROJECT UNDERTAKEN BY
THE INTERNATIONAL HURRICANE RESEARCH CENTER
At Florida International University

QUARTERLY REPORT FOR THE PERIOD ENDED DECEMBER 31, 2003

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 # 04-RC-11-13-00-05-001 executed on November 12, 2003.

This quarterly report covers activities of the IHRC research team from October 1, 2003 through December 31, 2003. This quarterly report is submitted in compliance with Reporting Requirement #4 of the above referenced contract. The IHRC Team is concerned about the very short time left to complete a full research agenda. These extremely tight timelines are a result of the late date (11/12/2003) by which the executed grant contract was received. Said concerns notwithstanding major problems or circumstances that may affect the completion date, milestones, scope of work or cost of the project are not foreseen at this time. The Principal Investigator will monitor the progress of the research agenda and will inform the funding agency should any difficulties arise.

Ricardo A. Alvarez, Deputy Director at the IHRC, is Principal Investigator (PI) and Project Director. Carolyn Robertson, Research Associate at the IHRC, is responsible for project coordination.

Major activities during the period covered by this report include:

1. November 12, 2003: The executed contract for the 2003-2004 research year was received from DCA.

2. November 26, 2003: The first quarterly report for the Hurricane Loss Reduction Project, (also known as Reporting Requirement #2), covering activities from July 1, 2003 through September 30, 2003 was completed and delivered to DCA.

3. December 7 through December 10, 2003: Carolyn Robertson and Zuzana Hlavacova traveled to Tallahassee to compile information for the Annual Report to

the Florida Legislature in regards to the Hurricane Loss Mitigation Program. The FIU contribution towards the HLMP Annual Report to the Legislature, also known as Reporting Requirement #3, was submitted by hand to DCA upon completion of the business trip.

4. December 17, 2003: Florida International University hosted the Miami-Dade County Local Mitigation Strategy meeting. Approximately 100 participants including community leaders, researchers, policy makers, and blue-collar workers discussed the mitigation strategies implemented during 2003 in Miami-Dade County.

5. December 18, 2003: Reporting Requirement #1, also known as the Work Plan/Milestones chart, detailing all tasks to be undertaken by the Hurricane Loss Reduction Project during the 2003-2004 research year, was delivered to DCA.

6. All contracts with the various members of the IHRC Research Team for the 2003-2004 research period were fully executed. Because both FIU and UNT are state agencies, negotiations on contract language were necessary to satisfy requirements by both contractual parties. As such, a signed contract between FIU and UNT will occur towards the end of January.

7. The hiring of research assistants was finalized

ORGANIZATIONAL/ADMINISTRATIVE ACTIVITIES

During this quarter, the initial IHRC Research Team assembled for 2003-2004 includes researchers, graduate research assistants, other students and support staff from six academic institutions in addition to the IHRC. It is anticipated that other researchers and graduate students could be added to the IHRC Team in the coming weeks to meet the requirements of work under the current research agenda. The initial IHRC Research Team includes the individuals listed below:

Principal Investigator:	Ricardo Alvarez	FIU/IHRC
Project Coordinator:	Carolyn Robertson	FIU/IHRC

Principal Researchers:

Ronald Baier	FIU	Construction Management
Jamie Canaves	FIU	Architecture
Jason Chandler	FIU	Architecture
Nicole Dash	UNT	Sociology/Anthropology

Hugh Gladwin	FIU	IPOR
Francis McAfee	FAU	Electronic Communication
Betty Morrow	FIU	Sociology/Anthropology
Diane Newman	FAU	Electronic Communication
Vivek Patel	FAU	Electronic Communication
Walt Peacock	TAMU	Landscape Architecture & Urban Planning
Edgar Polo	FIU	HCET
Alfredo Ravinet	FIU	HCET
Timothy Reinhold	Clemson	Civil Engineering
James Rivers	FIU	IHRC
Stephen Schreiber	USF	Architecture
Edmund Skellings	FAU	Electronic Communication

Research Assistants:

Carlos Escuti	FIU	Architecture
Michael Figueredo	FIU	Architecture
Zusana Hlavlacova	FIU	IHRC
Dierdra Hazeley	FIU	Sociology/Anthropology
Emily Hogue	FIU	Sociology/Anthropology
Michael Olivero	FIU	Computer Science
Robert Perez	FIU	Architecture
Amy Reid	FIU	Sociology/Anthropology
Goldia Robinson-Taylor	FIU	Education
Brian Saponaro	FIU	Architecture
George Torrente	FIU	Architecture
Hsin Ju Yang	FAU	Electronic Communication

Undergraduate Students:

Victor Camps	FIU	Architecture
Jon Lamb	Clemson	Civil Engineering
Brie Losego	FIU	Architecture

Support Staff:

Maria Cano	FIU	IHRC
Scott Caput	FIU	IHRC
Regnier Jurado	FIU	IHRC

ACTIVITIES BY RESEARCH TOPIC

Eliminating State and Local Barriers to Upgrading Existing Mobile Homes and Communities

1. The research team began exploring the role rehabilitation ("rehabbing") of mobile homes may contribute to an upgrading of the mobile home park itself and to the strengthening of individual units. Research also began concerning rehabbing as an opportunity to introduce structural enhancements as a method for promoting hurricane loss mitigation. During this quarter, the team conducted literature searches including: mobile home renovation programs in Florida and other states, obstacles to renovating mobile homes, and general issues regarding mobile home renovation. The team has discovered numerous innovative programs, including some involving prisoners and vocational classes. The primary obstacles to renovation programs seem to be overarching prejudices against mobile homes in many communities and difficulties of committing public/private resources to a housing type that is often considered personal property (not real property).

2. Based on the work completed under this project last year regarding the closing of two parks, it was decided to document one, and possibly two, mobile home park closings in Miami-Dade County. In order to supplement previous work, we will study the effects of the park closing on residents from diverse ethnic groups, and lower income status. El Portal will be the first park studied and was chosen because the closing has only recently been announced and there has been considerable public outcry from residents.

Development of a Replacement Program for Existing Older Mobile Homes

1. During this past quarter a detailed study plan and project schedule were developed regarding the replacement program. Mobile home manufactures and venders were identified and contacted in order to obtain quote ranges of prices for new mobile homes. Continued research to identify and list local, state, and federal organization that would be interested in funding the replacement program for existing mobile homes is on-going.

Research and Development of Hurricane Loss Reduction Devices and Techniques for Site-built Housing

1. A project-planning meeting was held between Ricardo Alvarez, Tim Reinhold and Jason Chandler on December 17 concerning options for the wind tunnel tests to investigate the influence of community layout and planning on wind loads. It was decided that several instrumented house models would be tested in suburban settings with several different densities and heights of surrounding buildings. An initial study will be conducted for one of the house models and an emphasis will be placed on methods for data reduction and extraction of

influence factors while the broader study is being conducted. The tests will be conducted using the new pressure scanning system installed at the Clemson Boundary Layer Wind Tunnel and the data will be stored on DVDs in a format that is compatible with the database rules developed by the National Institute of Standards and Technology. Thus the data will serve the purposes of this project and will also be available for extending the NIST database that will form the basis for the next generation of building codes.

2. On December 17th Ricardo Alvarez met with Tim Reinhold and Kurtis Gurley to discuss the design and features of the portable meteorological tower that will be fabricated and deployed to provide a required and independent, open-field point of reference and source of data, for the surface-wind studies needed in conjunction with the flat-roof instrumentation deployed during the 2002-2003 research period. The tower will be based on enhancements to the design currently used for similar towers deployed under the *Coastal Monitoring Program* also funded by DCA under the Hurricane Loss Mitigation Program. Enhancements discussed included the addition of two satellite 5-meter towers to better assess the characteristics of surface-winds over the wider area, and equipping the main 10-meter tower with broad-band-capable wireless telephony and digital video cameras to capture visual images to co-relate with data acquired by the instrumentation. Based on this discussion the IHRC Team is now completing the bill of materials needed to fabricate this important equipment.

3. The initial assessment of the Iniki Hurricane video footage was analyzed to determine the speed of flying debris. After studying the footage, segments were chosen for extracting data. Selections were based upon image quality, camera angle as well as measurable objects of reference. It is hoped that this information will provide greater detail for the tile simulation research, which will begin at the end of January. Team members also developed an initial storyboard intended as a point for departure to discuss the tile simulation at the first working meeting. It is expected that the storyboard will be modified based on recommendations and suggestions during the meeting.

4. Planning for testing of retrofitted roof-to-wall connections for attaching wood frame roof systems to masonry walls has been completed. 30 roof-to-wall systems including 20 retrofitted using straps attached to the masonry and 10 retrofitted where the masonry is drilled out and straps are installed using epoxy sets will be tested. The tests will focus on fleshing out the interaction diagrams associated with combinations of shear and uplift loading. A design guide is planned that will provide engineering guidance for the design of roof-to-wall connections subjected to combined loads.

5. On December 11, 2003 the IHRC Research Team was notified by DCA that the Florida Coastal Monitoring Program would be the focus of this year's target survey. Upon an initial interview with Tim Reinhold and Kurtis Gurley, Principal

Investigators for the FCMP, it was discussed that a robust "outcomes-focused" evaluation of the FCMP must await the experience of one or more Florida hurricane landfalls. The dissemination and use of ground level wind data to stated target end users (National Weather Service, local weather forecasters, emergency management personnel) when tropical storm landfalls can be evaluated after such events occur. Unfortunately a major tropical storm has not occurred in Florida since the FCMP's inception. As a result it was decided to examine the project from the perspectives of implementation and process evaluation, with an emphasis on qualitative perceptions/ anticipations of key informants/stakeholders and with the orientation of formative evaluation, i.e., feedback to program operators with the intent to help refine and make more efficient program elements.

6. The survey instrument for the Mobile Home Owner Survey was drafted and is under-going final revisions. The goal of this survey is to get a better understanding of people who own mobile homes, and their willingness to invest in mitigation or participate in other types of programs. A survey sample was selected from the State of Florida mobile home registrations. It is expected that the first mailing of the survey will take place towards the end of January 2004. It is anticipated that 1200 citizens will participate.

7. Three IHRC/LSBR/IPOR surveys (1998, 1999, and 2003) on households residing in owner-occupied single family residences regarding their interest in various incentive programs were obtained and assessed for comparability. Upon initial review of the data, a preliminary "plan of analysis" was developed for the presentation of the findings during an April 2004 incentives workshop, to be held at Florida International University. The workshop will include key corporations and agencies that will discuss the feasibility of programs that would offer the incentives.