

**Task 1 Final Report
Windborne Debris Study
Contract Number 12-00005-00**

Presented to the

Florida Building Commission
State of Florida Department of Business and Professional Regulation

by

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1.1. Deliverables

The Contractor is authorized to spend \$29,016 to complete the following tasks:

- (a) The Contractor will maintain data collection and transport equipment as necessary for measuring intensity of land-falling hurricanes and documenting damage.
- (b) The Contractor will perform field data collection preparation. Preparation shall include: update the existing database of Florida residential buildings inventory by year of construction to allow targeting of damage assessment teams; training of personnel on data collection protocols and tools; purchase and organize data collection and recording equipment including cameras, documenting equipment and software for database construction; and other essential items approved by the Department project manager.
- (c) If a Category III, IV or V hurricane occurs, the Contractor will document damage and prepare an interim report and presentation to the Florida Building Commission at a time agreed to by the Contractor and Department and a final report by June 15, 2012. These funds may be used with other funding sources (e.g. NSF CMMI 1055744) to carry out this work. This support may also be used as matching funds for future grant proposals directed at carrying out post-storm damage assessments.

2. Summary of Activities

Task 1-a: The Contractor will maintain data collection and transport equipment as necessary for measuring intensity of land-falling hurricanes and documenting damage.

Status:

Data collection and transport equipment includes the portable wind towers, instrumentation, data collection computers and the vehicles to transport the towers. In 2012 - 2013 the fleet of four towers and five vehicles were subjected to standard maintenance procedures to ensure safe and reliable operation. The cost of maintenance is shared among several projects that utilize these wind field datasets. In 2012 – 2013 these include an NSF project, a University of Florida Foundation account, and a Division of Emergency Management project. The specific maintenance activities in 2012 – 2013 include:

Trucks

- replaced tires
- new HID headlights
- new LED off-road lights
- replaced DC/AC converters
- computer desk
- replaced auxiliary fuel hoses and filters

Towers

- Added tower section to T3 to increase to 15 m height upon deployment
- Installed 5 sonic anemometers on T3
- installed security cameras at the top of T3
- installed rain measurement turret on a scissor lift at the front of T3
- new modems for all 4 towers

The vehicles also serve as the means of transportation for crews engaged in post event damage documentation. These vehicles are suitable for operation in difficult ground conditions (debris, etc.) and have an extended range due to a fuel capacity in excess of 100 gallons per vehicle. Their availability for post storm damage investigations is a critical component of Task 1.

Task 1-b: The Contractor will perform field data collection preparation. Preparation shall include: update the existing database of Florida residential buildings inventory by year of construction to allow targeting of damage assessment teams; training of personnel on data collection protocols and tools; purchase and organize data collection and recording equipment including cameras, documenting equipment and software for database construction; and other essential items approved by the Department project manager.

Status:

An interactive GIS database tool was developed during the 2010-2011 contract cycle. This tool allows the P.I.s and project manager to identify residential structures suitable for damage assessment. Suitability is defined by a stratification of building properties and peak wind speeds that can be determined prior to or immediately after an event. This tool will be combined with ground observations from teams deploying/retrieving wind field measurement equipment to isolate the specific structures or regions that should be targeted for assessment. In this manner a

detailed assessment plan, conducted by UF personnel already in the field for wind field monitoring activities, can be executed prior to the initiation of major clean-up activities that can mask critical damage data. The flexibility of this tool allows for an easily adjustable strategy as ground conditions warrant. For example, an initial target of post 2002 construction in the impact zone may be re-focused to pre-Andrew structures if damage to new construction is found to be minimal.

The primary information available for all Florida counties is effective age of construction. More detailed county specific databases have been acquired from many of the coastal counties in Florida. Some of these databases provide additional construction information such as wall type, roof cover type, etc. Such counties may be targeted for damage assessment based upon more detailed knowledge than effective year of construction. Updating the available database is an ongoing task.

Staff periodically check available databases for updates and incorporation. An update was performed in 2012, and an additional update is scheduled to be completed in the summer of 2013 when the information becomes available from the Department of Urban and Regional Planning at UF.

Cameras have not been purchased for damage documentation to date. The purchase of cameras is best done just prior to the next land falling event. Given the rate of improved performance and features (such as resolution and GPS stamp), and reduced cost of digital cameras, this strategy will optimize the capabilities of the damage assessment project for the associated cost.

Task 1-c: If a Category III, IV or V hurricane occurs, the Contractor will document damage and prepare an interim report and presentation to the Florida Building Commission at a time agreed to by the Contractor and Department and a final report by June 15, 2012. These funds may be used with other funding sources (e.g. NSF CMMI 1055744) to carry out this work. This support may also be used as matching funds for future grant proposals directed at carrying out post-storm damage assessments.

Status:

No damage assessments to report.

Deployment strategy

A two phase deployment strategy is proposed. The first phase uses UF personnel (only), already in the field for wind field monitoring, to provide an immediate assessment of the condition of the residential infrastructure in the regions experiencing the highest winds at landfall (time frame is within 48 hours of landfall). The outcomes of this triage activity will be used to determine whether a more extensive ground survey of damage is necessary (phase two), possibly using outside personnel from stakeholder groups to expand the regions covered and breadth of field expertise (timeframe is several weeks). Release of funding for this activity is contingent upon the wind event meeting or exceeding a Category three rating (as per contract).

The products from these activities will consist of: 1) verbal and/or brief written triage report

(provided within 48 hours of landfall) to facilitate decision regarding release of funding for larger scale multi-day damage assessment; 2) Preliminary report and accompanying powerpoint presentation (provided within two weeks of landfall) to provide an overview of findings, conditional upon decision for extensive assessment; 3) Detailed report and accompanying powerpoint presentation (prepared for a FBC commission meeting that follows the event), conditional upon decision for extensive assessment.

A complicating factor is the existence of several other damage assessment efforts that are currently updating their planned activities and participant lists. This includes the FDEM¹ and the FEMA mitigation assessment teams.

¹ Relevant documents for FDEM damage assessment activities

Handbook for Disaster Assistance

<http://floridadisaster.org/documents/disasterhandbook.pdf>

Preliminary Damage Assessment Team: Pocket Guide for Individual Assistance (SERT)

Preliminary Damage Assessment Team: Field Sheet

<http://floridadisaster.org/Recovery/IndividualAssistance/IAPDamageAssessment/Index.htm>