State Treasurer and Insurance Commissioner Bill Nelson recently announced the construction of a series of Regional Windstorm Damage Mitigation Training and Demonstration Centers. These Centers represent a piece of a broader Residential Construction Mitigation Program launched in 1997 as a joint effort between the Florida Department of Community Affairs and Department of Insurance. The Shimberg Center for Affordable Housing has worked under contract from the Department of Insurance to develop the design for the buildings and continues to coordinate their construction. Presented below is a description of the Training and Demonstration Centers.

GUIDELINES

The design for the Training and Demonstration Centers reflects the desire of the Department of Insurance and the Shimberg Center to produce a building plan that is on the scale and mass of a house. The logic for this choice is that the training that would take place in the structure would focus on the mitigation of windstorm damage to Florida’s housing inventory.

In order to control costs, the Department of Insurance requested that the Shimberg Center locate potential sites for constructing the buildings where: the land would be provided at no cost, the continuing operational costs and maintenance would be provided, and there would be assurance that the primary use of the facility would remain that of training and demonstration related to windstorm damage mitigation in new and existing homes in Florida.

The locations of the centers should be in coastal counties dispersed throughout the state. They also should be accessible from an interstate highway to facilitate access by attendees that drive to the training classes. The ideal situation would be to have the centers located in such a way that they can be reached from any point in Florida in no more than a two-hour drive.

THE BUILDING

The building contains 3,126 square feet. The interior of the one-story building is divided roughly in half between a display area and a training area.

The front entrance leads into the display area housing a reception desk and administrative office. Around the perimeter of the area are rest rooms, a small galley, a maintenance closet, and the mechanical room.
The central portion of the display area contains a series of large-scale wall section models. These models demonstrate alternative building systems. Each wall section has cut-away sections to illustrate the internal construction. Attachment of the roof system to the top of the wall section is also illustrated. The alternative construction systems used to construct the models may include structural insulated panels, insulating concrete forms, steel framing, and aerated autoclaved concrete as well as walls constructed of wood framing and concrete block illustrating the recommended procedures for high-wind areas.

The training room occupies the remaining half of the building and has a capacity for classes ranging up to forty attendees. The training room is equipped with appropriate audio-visual equipment. Important parts of the training room are the wood-framed wall section, the concrete block wall section, the garage door, and the cut-away sections of the wall and ceiling. The purpose for the wood-framed and concrete block wall sections is to demonstrate the reinforcing and wall-roof connections that are appropriate for the existing housing inventory, most of which is built with either wood framing or concrete block. Similarly, the garage door installed in the exterior wall of the training area is used to demonstrate a reinforcing system that will improve the wind resistance of existing garage doors. The transparent panels covering cut-away sections of the wall and ceiling reveal internal structure, utility placement, and structural connections.

DEMONSTRATION FEATURES

Many items used in the construction of the Center serve as demonstrations of wind-resistant products or materials.

The walls are built of an insulating concrete form (ICF) system. Polystyrene blocks with hollow cores are stacked and reinforcing rods are inserted both horizontally and vertically in the hollow cores of the blocks. The cores are then filled with concrete. The result is an insulated, reinforced concrete wall system that meets wind load and impact resistance requirements of the South Florida Building Code.

The windows installed in the building are constructed in such a way that the frames and glazing are wind resistant.

All window openings are equipped with impact resistant shutters. Three different shuttering systems are displayed. The roll-up shutter design operates much like a window shade mounted on the exterior wall surface over the window or recessed in the soffit above the window. The accordion-style shutter design opens and closes horizontally. The third shutter system consists of panel sections that are manually installed in a track mounted above and below the window opening. Although no sliding glass door is installed in the building, the accordion-style shuttering system is one option for glass door protection.

The double entry door installed at the main entrance to the center is made of impact-resistant glass.

The skylights installed over the display area of the center are a two-layer polycarbonate that is impact resistant and meet the South Florida Building Code requirements.
Installed in the wall of the training room is a garage door. This door will serve to demonstrate a reinforcing device for that door that meets impact and pressure requirements for winds in excess of 150 miles per hour.

Trusses form the roof structure of the centers and are connected to the wall system to resist uplift. When engineered wood trusses are installed, the roof sheathing is fastened to the top chords of the trusses with conventional connectors as well as a spray adhesive. The adhesive also is applied to the seams between the sheathing panels as a means of minimizing leakage in the event that the roof covering is damaged or lost. When steel trusses are used for the building, the spray adhesive will not adhere to the trusses. As a result, the adhesive is applied only to the seams between the panels and the panels are attached to the trusses with screws.

The roof covering applied over the sheathing will be fiberglass shingles that are rated to withstand 110 mile per hour wind speeds when installed according to manufacturer specifications. In those centers where a tile roof covering is employed, the tiles will be seated in a bed of spray polyurethane adhesive foam. This adhesive foam has been approved for use by South Florida Building Code.

The gable-end attic vents are an impact-resistant louver.

TRAINING MODELS

In addition to the wall sections in the display area and the various elements of the building itself, the Training & Demonstration Centers will be equipped with models that support the training task. As the building was being designed it became evident that some products and materials that influence the structural integrity of the building are either impossible or very difficult to demonstrate once they are installed in place. Accordingly, a number of desktop models are available in the training room that are used by classroom instructors to illustrate proper use of a product or material.

BUILDING LOCATIONS

The plan is to construct five of the Training and Demonstration Centers across the state. Each facility will serve as a regional training center. The locations have been chosen in coastal counties near interstate highways for easy access. Once completed the buildings will be turned over to the county government with the stipulation that the county provide maintenance and operating costs and that the county utilize the facility primarily for demonstrating and teaching about materials and methods for mitigating windstorm damage in new and existing housing. As shown in the following map, the centers are located in Dade County, Escambia County, Pinellas County, St. Johns County, and St. Lucie County.
ADDITIONAL INFORMATION

For additional information about the regional Windstorm Damage Mitigation Training and Demonstration Centers please contact Robert C. Stroh at 352-273-1192 or by e-mail at stroh@ufl.edu.