



Thrice Hit – Learning From Others’ Experience

Full Mitigation Best Practice Story

Glades County, Florida



Moore Haven, FL – When Hurricane Wilma crossed Glades County on Oct. 24, 2005, tropical winds met with cold air masses and intensified the storm. The unusual weather phenomenon caused Wilma to batter the county with winds in excess of 100 mph for a continuous 42 minutes—without the normal calm that occurs when the eye passes. With the damage incurred during previous hurricanes, officials wondered how the facilities would look when they surveyed the grounds.

“When I watched the winds from the hurricane take my barn apart board by board and shingle by shingle, I knew the damage throughout the district would be bad,” said Director of Administrative Services Scott Bass.

Fortunately for Glades County families, school district leaders had already implemented damage-reduction measures they learned from nearby schools and county neighbors. Their preemptive actions ultimately allowed students to return to class in one week, even though the roofs of 17 school district buildings sustained damage during the hurricane.

Wilma was the third major storm in two years to hit Glades County – a region that was still trying to recover from the 2004 hurricane season. The school district previously had trouble getting contractors for emergency repairs, but Bass implemented a new strategy in time for Wilma.

Prior to landfall, Bass arranged to meet with contractors once the storm had passed to assess school building damages. The day following the assessment, more than 200 construction staff began working on emergency repairs.

Bass said the new strategy achieved its goal. Glades students safely returned to class while those in a neighboring district waited another two weeks—and the neighboring district had less hurricane damage.

Further, when the Florida Division of Emergency Management offered to dispatch workers to help the Glades school district, Bass had a simple response: “Thank you for the offer, but we’re done.”

After finishing emergency work, the school district’s recovery strategy turned to permanent repairs. School leaders looked at ways to significantly decrease the time needed to complete permanent repairs. They found that having an architect create design documents on all damaged facilities expedited the rebuilding process. Contractors could use building specifications listed in the documents to develop their bids and speed up reconstruction.

With many lessons learned, school administrators, risk managers, financial officers and facility managers from districts around the region met to discuss best practices. During the meetings, Bass learned that the sports lighting installed at some Cape Coral Schools prior to Hurricane Charley in 2004 had weathered the Category 4 winds with little damage. This was an important finding, since Hurricanes Frances and Jeanne damaged or destroyed 80 percent of the light poles used for the district’s sports field in 2004.

Bass subsequently replaced the Glades district’s damaged, squared concrete poles with the round style Cape Coral used. Fiber-reinforced concrete formed the round poles, along with an added steel sheathing for increased strength. The round replacement poles endured Hurricane Wilma’s 42-minute onslaught on Glades County with almost no damage.

Another lesson Glades school administrators learned was the benefit of installing poured concrete portable classrooms instead of traditional ones. The positive feedback came from many South Florida school districts forced to use temporary classrooms after the 2004 hurricanes.

Consequently, Glades school administrators switched from the traditional, manufactured-home-type models to the concrete, portable, stand-alone classrooms. The fortified units have linked, poured concrete walls that are tied to a secured foundation.

One of Glades’ concrete portables was installed the week prior to Wilma’s landfall. Though subjected to the same winds as the rest of the facilities, the concrete portable unit sustained minor damage to only one corner of the metal roof. The rest of the

building was untouched.

Since the school district also suffered a great deal of roof damage during the last two hurricane seasons, Bass sought improvement ideas from members of an insurance consortium. The group agreed that fewer standing-seam roofs suffered damage in Charlotte County after Hurricane Charley's Category 4 winds.

"I noticed when air came under the tin roofing system it failed," Bass said. "Standing seam roofs improve the connection of the metal roof to the decking material with more frequent fastenings and an interlocked seam to seal the roof from air and water penetration," he added.

In another improvement effort, the school district designed two new schools in the western part of the county to meet Enhanced Hurricane Protection Area standards, which exceed the sustained wind load requirements for the area by 40 mph.

The many lessons learned by collaborating with neighboring school districts and organizations provided insight into how to respond to the \$6.9 million in damage sustained by the Glades County School District after Hurricane Wilma, including how to rebuild.

"Our premise in rebuilding damaged buildings and establishing new structures is to improve a facility's ability to survive severe hurricanes. We want to provide students what they need to quickly return to the classrooms to continue their educations," Bass said.

Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region IV**

State: **Florida**

County: **Glades County**

Key Activity/Project Information

Sector: **Public**

Hazard Type: **Tornado; Hurricane/Tropical Storm**

Activity/Project Type: **Retrofitting, Structural; Mitigation Planning/Disaster Resistant Universities**

Activity/Project Start Date: **11/2004**

Activity/Project End Date: **Ongoing**

Funding Source: **Local Sources; Mitigation Planning; Other FEMA funds/ US Department of Homeland Security**

Funding Recipient Name: **Glades County School District**

Activity/Project Economic Analysis

Cost: **\$6,900,000.00 (Estimated)**

Non FEMA Cost:

Activity/Project Disaster Information

Mitigation Resulted From Federal Disaster? **Unknown**

Value Tested By Disaster? **Unknown**

Repetitive Loss Property? **Unknown**

Reference URLs

Reference URL 1: <http://floridadisaster.org>

Reference URL 2: <http://www.fema.gov>

Main Points

- The preemptive actions of school district leaders ultimately allowed students to return to class in one week, even though the roofs of 17 school district buildings sustained damage.
- After finishing emergency work, the school district's recovery strategy turned to permanent repairs. School leaders looked at ways to significantly decrease the time needed to complete permanent repairs.
- The many lessons learned by collaborating with neighboring school districts and organizations provided insight into how to respond to the \$6.9 million in damage sustained by the Glades County School District after Hurricane Wilma, including how to rebuild.



Moore Haven High School



Round concrete light poles