



Diamondhead Home: A Mitigation Blueprint

Full Mitigation Best Practice Story

Hancock County, Mississippi

Diamondhead, MS – Raymond J. Sheehy felt confident that mitigation measures would help keep his home safe when Hurricane Katrina hammered the Gulf Coast with 135-mile per hour (mph) winds on August 29, 2005. He was right.



An electrical engineer by trade, Mr. Sheehy is an energetic retiree from the U.S. Air Force who has also worked for 16 years as a communications officer for the Department of Homeland Security's Federal Emergency Management Agency (FEMA) and four years locally in the Hancock County Civil Defense Department. Mr. Sheehy knows firsthand the importance of enacting measures to prepare and protect lives and property before disaster strikes. "I track every storm from force of habit," he said.

After traveling the world during his career, Mr. Sheehy and his wife Pat decided to return to the Mississippi Gulf Coast area (his boyhood home), build a new house, and settle into retirement. Aware that the area is highly vulnerable to heavy flooding and severe storms, the couple decided to incorporate mitigation strategies into the construction of their home. This was crucial because their home would be only seven miles from the Gulf.

While deployed by FEMA to American Samoa in the South Pacific, Mr. Sheehy observed that only one of the 750 homes built to mitigation specifications was damaged when a 1991 storm hit the islands with 225 mph winds. The building specifications for these homes were based on an earlier edition of FEMA's publication, "Home Builder's Guide to Coastal Construction." "So I decided right then I wanted one of those books," Mr. Sheehy said. Construction of the Sheehys' mitigated home was completed in the spring of 1995. "We watched the house being built," said Raymond. "We have everything on video tape," Pat added.

The house, which sits 67-feet above sea level, has three reinforced laminated beams along the ceiling to enhance its structural integrity and to increase the roof's anchoring capability. Traditionally, ½-inch plywood is used in the construction of roofs, but the Sheehys' roof is built with ¾-inch plywood attached to trusses placed 16-inches apart, rather than the usual 20-inches. The couple also exceeded minimum building codes by utilizing the points of attachment every 24 inches on center in order to better anchor the house onto the slab-on-grade foundation.

There are several risk mitigation strategies incorporated into the couple's home. Few windows are placed on the southeast side of the house, the direction from which powerful hurricane winds usually blow. Manual wooden shutters were installed on the other windows of the house. "I can close up the house in 30 minutes," Mr. Sheehy explained. There is a pantry-like reinforced safe room in the middle of the house, which the Sheehys call their "scaredy" room. It is stocked with all the emergency essentials they could think of, and has enough space for 12 people to wait out a storm, if necessary. The attached patio area is partially enclosed to help reduce the impact of driving winds. Mr. Sheehy conducts weekly tests of his generator to ensure that it is operating properly. He keeps an ample supply of gasoline and diesel fuel stored outside his garage area.

After double-checking their emergency plan, which included fueling their cars and having extra cash on hand, the couple decided to stay in their mitigated home during the storm. Because the south side of Diamondhead is located at sea level and prone to flooding, the Sheehys insisted that two couples from the area wait out the storm with them at their mitigated home.

"The wind was blowing, trees were shaking and this house never moved. It never moved an inch," noted Mr. Sheehy.

While Hurricane Katrina wiped out all power and water to area communities for 21 days, the Sheehys' generator was up and running and their home was powered for the duration. Many of the couple's friends and neighbors stopped by regularly for warm meals and various supplies they needed during the power and water outages.

Once the storm subsided, the couple did a thorough damage assessment of their property and found that their home remained mostly untouched. The storm toppled numerous trees surrounding the house, including one that fell on the roof, causing damage to a small section of the aluminum ridge vent.

In contrast, other low-lying communities surrounding the Sheehys were demolished by Hurricane Katrina's fierce winds and surging waters. The storm left some survivors clinging to rooftops. Others retreated only moments before the rushing waters completely submerged their homes. Some people did not make it out at all.

Before the hurricane, the south side of Diamondhead had 368 homes, a marina, yacht club, airport, and a hangar. "Virtually, all that's gone," Mr. Sheehy lamented. The storm destroyed the homes and possessions of the Sheehys' neighborhood friends. "Diamondhead has 96 miles of road, we had about 5,000 homes and we lost around 2,200 homes," he added.

The Sheehys' investment in mitigation planning and construction has created a safe fortress from which they can face future hurricanes. After all, their home, built largely to FEMA mitigation recommendations, has already withstood the onslaught of Hurricane Katrina.

Activity/Project Location

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

FEMA Region: **Region IV**

State: **Mississippi**

County: **Hancock County**

City/Community: **Diamondhead**

Key Activity/Project Information

Sector: **Private**

Hazard Type: **Hurricane/Tropical Storm**

Activity/Project Type: **Building Codes; Retrofitting, Structural; Safe Rooms/Community Shelters**

Activity/Project Start Date: **08/1993**

Activity/Project End Date: **04/1995**

Funding Source: **Property Owner, Residential**

Activity/Project Economic Analysis

Cost: **Amount Not Available**

Activity/Project Disaster Information

Mitigation Resulted From Federal
Disaster? **No**

Value Tested By Disaster? **Yes**

Tested By Federal Disaster #: **No Federal Disaster specified**

Year First Tested: **2005**

Repetitive Loss Property? **No**

Reference URLs

Reference URL 1: http://www.fema.gov/rebuild/mat/mat_fema499.shtm

Reference URL 2: <http://www.msema.org>

Main Points

- Former FEMA employee followed the "Home Builder's Guide to Coastal Construction" when constructing his Mississippi Gulf Coast home.
- The house withstood Hurricane Katrina's 135 mile per hour winds on August 29, 2005, while neighboring homes were destroyed.
- The house has manual storm shutters on its windows, a generator in case of power failure, and a reinforced safe room stocked with emergency essentials.
- The roof and the way the house is anchored to its foundation exceed minimum code requirements.



Raymond and Pat Sheehy in front of their home in Diamondhead, Mississippi.



A generator powered the Sheehys' house after Hurricane Katrina.



The Sheehys' mitigated house.