South Padre Island: Living with Mother Nature's Wrath

Full Mitigation Best Practice Story

Cameron County, Texas

South Padre Island, TX - Jay Mitchim has weathered his job in South Padre Island's building department for more than 20 years—longer than many of the buildings in this town known as the "Tropical Tip of Texas." These buildings have survived some of Mother Nature's toughest tests.

Now the town's chief building official, Mitchim speaks of the island's buildings with personal affection, as if he were describing his children. So he watched with interest July 23, 2008 when Hurricane Dolly stormed ashore as a Category 2 storm with winds estimated at between 100 and 140 miles per hour and rain totaling 12 to15 inches.

"I have often wondered how the new buildings, built on my watch, would hold up to a storm," he said. "There's a lot of damage, but there's not a lot of structural damage to the newer buildings. They did pretty well."

A case in point is City Hall, completed just before Hurricane Dolly. It fared very well with just minor water damage from rain that came through and under a door.

City Hall is a shiny new building, colorful and very pleasant, with generous impact-resistant windows that fill the rooms with sun and light. But on closer inspection, it is also a vault. It has a concrete, monolithic-pour roof deck, and its floors and ceilings are poured concrete with concrete blocks filled between the massive columns.

"This building is equipped with an on-site generator and was built to weather a moderate storm, the kind we just had with Dolly," Mitchim said. "The entire two-story City Hall is built 10 feet above sea level. That's two feet higher than the code requirement. Why? To build in an extra measure of safety for this critical public building near the sea."

South Padre Island is, after all, just a strip of sand, a 35-mile-long barrier carved from the sea by wind and wave. No more than 25 miles from Mexico, it was named Isla Blanca by Spanish explorers who recorded their first visit in 1519. By 1521, storms had already bested the explorers, smashing their ships laden with Spanish gold and silver.

Mitchim's town of South Padre Island is five miles long and a half-dozen blocks wide. The town is home to some 5,000 permanent residents. But it can grow almost overnight to 30,000 vacationers drawn to its sunny beaches along the Gulf of Mexico.

The challenge to living in this sun-drenched paradise is, of course, the occasional stray hurricane that comes their way.

Hurricane Allen is still fresh in Mitchim's memory. "Allen hit August 8, 1980. The big problem then was storm surge that put the island under three feet of water. A 100-year storm surge here is eight feet, which puts the island under three feet of water."

"Allen was a bad storm, but not as much damage as Dolly," said Mitchim, as he hauled out an oversized wall photo of the island, taken the week before that storm, to show the landscape. "See? None of the big condos were there then, now this is all built out. There was less damage because there was less stuff."

By contrast, Hurricane Dolly was a wind and rain event. "It sat over us, grinding and grinding, for literally six hours. The [hurricane's] eye missed us. The wind came from the west and emptied out the bay on to the island." Dolly left a lot of damage, but well-built buildings held up pretty well. They offer lessons that Mitchim is eager to share.

Two critical facilities, the 20-year old island post office and the AT&T communications building, for example, held up well to time and the nature. Both buildings are elevated and sturdy. The AT&T building is critical because it contains all the switching equipment for the town. "I would consider it almost a hurricane-proof building, although there is really no such thing," he said.

Some higher-end residential homes held up well, too. Most of the 45 homes built on the island by local builder Kevin Tenison survived pretty well. The exception is his own three-story home, which was damaged in Hurricane Dolly by his neighbor's flying

roof.

“Yes,” Tenison said, “I build to the hurricane standard. I like to think everybody does the same. The information is all here in the codes, plus we have a very professional city staff as well as our engineer who certifies that the building meets the standard. It’s easy to work with people who can get you the answers you need to do things right. It’s really not that hard.”

Tension explains the difference about safe building on the barrier island from building on the mainland. “It starts below the ground,” Tenison said. “And it goes to the top of the roof. The foundation has pilings so that, if the sand underneath the house washes away, the house will still stand. The old-style pilings look like telephone poles that support the house.” His own three-story house is on 20-foot pilings.

“So beneath the ground, things you don’t see, is where the preparedness begins,” Tenison said. “Then above that, from the ground to the roof, everything is tied together with steel, metal strapping, nails, bolts – so it is continuous connections from the foundation to the tip of the roof, so that nothing pulls apart when the winds come.

“Also, the doors and windows and roofing materials are different here, because they are built to a higher standard,” Tenison said. “The goal is to withstand a 130-mile-per-hour wind load. Typically, the openings are where the water comes through, so the windows have to meet the higher standard set by the Texas Department of Insurance. It costs more to build safely here, but it’s really not that hard to do it right.”

Mitchim and Tenison are certain that smart building and hazard mitigation made a significant difference on South Padre Island during Hurricane Dolly.

Mitchim describes two ways to resist the wind: “Your building can try to be a willow or an oak. Some of those old beach houses on wooden stilts, they flex in the wind, kind of like willows. The other idea is to try to build to stand up to it. I guess either one could work, but when you think about it, I’ve seen a lot of uprooted willows and splintered oaks.”

The key, Mitchim said, is to try to learn to build and live with natural forces. “You can elevate to try to get above a flood, and you can try to anchor and armor to withstand the wind – but when you get right down to it, there’s no such thing as a storm-proof building.

“You can build smart to resist those forces, but I think it’s a great amount of hubris that we think we can overcome the forces of nature. What can happen, will. The best we can do is accommodate Mother Nature’s nasty moods, as best we can.

“Bottom line, we’ll do what we can to keep somebody’s house from landing in your living room.”

Activity/Project Location

Geographical Area:	**Single County in a State**
FEMA Region:	**Region VI**
State:	**Texas**
County:	**Cameron County**
City/Community:	**South Padre Island**

Key Activity/Project Information

Sector:	**Public**
Hazard Type:	**Hurricane/Tropical Storm**
Activity/Project Type:	**Building Codes**
Structure Type:	**Concrete, Reinforced**
Activity/Project Start Date:	**01/2007**
Activity/Project End Date:	**Ongoing**
Funding Source:	**Local Sources**

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 #:	**1780 , 07/24/2008**
Repetitive Loss Property?	**No**

Reference URLs

No URLs were submitted

Main Points

No Main Points were entered.

Jay Mitchim with his building code

City Hall, South Padre Island

South Padre Island

Tenison’s only damage was from his neighbor’s roof