



# FEMA

## Precautionary Measures Save Home from Hurricane Damage

**Pensacola, FL** - Tom and Jennie Smith of Gulf Breeze, Florida, do not park their cars in an ordinary garage. The couple has to weave their cars between pilings that support the house above. The tops of the concrete pilings are 5 feet 1 inch above Florida coastal building code requirements. The extra height saved the home from costly damages when Hurricane Ivan struck the Gulf Coast in September 2004. The Smiths built their house overlooking Pensacola Bay.

Because of its proximity to the coast, the house must adhere to building codes enacted to make coastal construction more resistant to the winds and storm surge of hurricanes.

The house is located in a VE-zone, as designated by the National Flood Insurance Program. A VE-zone is one of the Special Flood Hazard Areas with a determined base flood elevation in a V-zone, which are coastal areas that include the additional hazard associated with storm-induced velocity wave action. According to Florida building code for construction in flood hazard areas subject to high-velocity wave action, the elevation of the lowest horizontal structural member must be at or above the Base Flood Elevation (BFE). The BFE is the average floodwater depth for a 100-year flood event. The Smiths chose to elevate their home more than five feet higher than the BFE.

Hurricane Ivan's 12-foot storm surge flowed just below the floor joists, damaging the elevator shaft and stairway, but it did not flood the main floor of the Smiths' home. The surge tore away the Smiths' front steps and breakaway walls surrounding the parking area under the house. Both of these elements were designed to break away from the house in order to lessen the damage to the main structure. Ivan also caused minor damage to the windward roof fascia.

Additional measures helped the Smiths' house withstand the destructive winds and waters of Ivan. Hurricane anchors add extra strength to structural connections from the roof to the wall to the concrete pilings or foundation. Every window on the Gulf-side of the house has roll-down metal shutters. In the event of a hurricane warning, the windows on the front of the house can be covered with aluminum panels and bolted in place. The windows and shutters are rated to meet coastal construction requirements. Elevating their house to more than five feet above the BFE cost the Smiths \$10,000, but they estimate the precautionary measures incorporated into the structure prevented a loss of \$350,000 from Ivan. The retrofitted house is less than five years old and has already withstood two destructive hurricanes.



Santa Rosa County,  
Florida



### Quick Facts

Year:  
**2004**

Sector:  
**Private**

Cost:  
**\$10,000.00 (Actual)**

Primary Activity/Project:  
**Building Codes**

Primary Funding:  
**Private funds**