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DESIGNED  
— to —  
SURVIVE

Gulf Coast homes built to endure high winds, storm surge

PHOTOGRAPHY BY JENNIFER BIRGE





Gulf Coast residents are all too familiar with the capricious and destructive nature of tropical weather, especially in August and September when angry seas and ominous skies portend anxious days ahead. The region's architects, engineers and homebuilders look for ever more effective and resourceful ways to create storm-resistant homes and buildings.

The nonprofit Institute for Business & Home Safety in Tampa, Florida, provides a suite of Fortified programs dedicated to improving the quality of residential and light commercial buildings. "These programs feature practical, meaningful solutions for new as well as existing structures throughout the United States," according to the website. "Every area of North America is exposed to some type of natural hazard that puts homes and businesses in harm's way. IBHS uses applied building science solutions to reduce the risks facing these properties, and has incorporated that knowledge into (its) programs."

The Fortified for Existing Homes program is designed to strengthen homes against specific regional natural hazards through a retrofitting process, the IBHS website states: "Depending on the natural hazard, the program may involve a combination of tiers and levels to achieve varying degrees of disaster resistance. Each of the lower-level retrofit requirements must be completed before moving onto the next level, and each level builds in additional disaster protections."

Gold, Silver and Bronze designations provide evidence that a home is "built and/or retrofitted according to standards that bring critical elements and systems in your home up to, and sometimes beyond, those used in new hurricane-resistant construction," the website states. "The Fortified approach is incremental to keep costs manageable, while tackling the vulnerabilities that lead to damage in common, weaker storms such as a Category 1 hurricane.

"As the levels progress to include more extensive retrofit requirements, the hurricane resistance of the home increases to add protections against less frequent but more intense storms such as a Category 2 or greater. This approach provides a common-sense path toward making your home more resilient when a hurricane strikes."

The Eastern Shore offers many excellent examples of the changes taking place in home construction and/or retrofitting, such as the residence of Mrs. Ann Klumb in Point Clear, and the home of Steve and Connie Penry on Weeks Bay. Most issues addressed with these residences were structural except for the ice and water shield beneath the roofs in lieu of the felt that is typically used. The other is the use of impact windows and doors designed to meet the pressures for their location in the wall, and which can withstand winds that might be associated with a tropical

storm or hurricane. They also are built to withstand flying debris, and while they will break in some cases, they are designed to stay intact in the frame and keep out wind and water, according to Clay Adams of Walcott Adams Verneuille Architects in Fairhope.

Items typical of this design are hurricane straps for rafter wall connections, straps for wall connections and wall-to-foundation connections, and hold-down clips in the corners of a building's framing. Another important feature is the quantity of nails in roof and wall sheathing.

All new homes designed by Walcott Adams Verneuille receive Gold designation. The firm is working on a new remodel for Silver and completed one last year that was designated Silver. Darius H. Grimes, Fortified FFHTM Evaluator with Disaster Smart Consulting Inc., says items that are beyond code requirements are small and do not cost much, but the Fortified designation starts with a "validated," code-built structure.

"One cannot simply include the FFH requirements and achieve a Fortified designation without also engaging a certified evaluator to document the features," he says. "WAV is doing a great job of incorporating the features into the drawings and engineering, but without documentation and inspection provided by a certified evaluator, achieving a designation certificate is not possible, even on new construction."

Adams says most of the firm's residential projects involve a structural engineer. "That engineering, along with design requirements for local building codes, have created a much stronger building/envelope that can withstand many of the potential issues that were a problem with previous buildings," he says. "Not only during hurricanes but our typical strong winter and summer thunderstorms."

Adams says 75 percent of the home designs are completed to meet the new Fortified designation "because they are practically

required to by current code. The additional design and actual construction cost is minimal based upon the savings on annual insurance premiums. The construction must be observed and inspected by a third party (who) documents the construction of the standards, fills out the paperwork and provides the owner with a Bronze, Silver or Gold certification. The designation is transferable if the house is sold and equates to a savings of 30 percent to a homeowner's insurance. Again, it also makes the house more insurable."

The Fortified designation is the first grading standard recognized by insurance companies and is a start toward reducing the increasing cost of insurance and offsetting the catastrophic destruction caused by storms through better building standards, Adams says. A company such as Disaster Smart can visit with homeowners and give them a list of items that can transform their existing home. Basic items in the design include: a protected/sealed roof deck (i.e., peel-and-stick beneath the main roof in lieu of shingles, or at all plywood seams); protected fenestration such as impact windows and doors or one of the many approved fenestration protections such as hurricane shutters, fabrics and even plywood protection.

The more difficult items in existing renovations are required nails in sheathing at walls and roofs, hurricane strapping and wall sheathing. "Again, in new construction much of this is 'standard' and required by current codes," Adams says. "None of the items are extremely costly, especially when viewed in light of the insurance savings, or more importantly avoiding damage during a storm and in light of the hefty deductibles that most policies carry. Most of the items do not affect the design appearance at all, (and) are hidden within the structure."

Adams says most of the homes WAV designs receive the Bronze-level Fortified designation. "Many are using smart design practices for lowering life-cycle costs such as spray foam insulation, tankless water heaters, and even geothermal HVAC systems," he says.





"I've had the pleasure to work on three projects with Clay and Darius to receive two Gold designations and one Silver for a remodel," says contractor Tom Bierster, president of Fine Home Building and Restoration Inc. in Daphne. "I have also worked on a Fortified for a Safer Living home, the next step above the Gold, Silver or Bronze designation. That designation not only dictates structural but also safety concerns." Bierster says his experience with that designation is that "it costs quite a bit more than a Gold designation for not much more insurance discount."

"As Clay stated, most of our current code and engineering dictates the construction to meet the Fortification criteria," he says. "My job as the builder is supervising the things that could result in a rejection if not done properly or consistently. Besides following the engineering plans, and not allowing the 'old way' (of) performing tasks mainly in the framing stages, nailing and strapping become the next most important task. My job then becomes one of a photographer, taking pictures to send to the independent third party such as Darius, to provide a record of the materials, straps and nailing patterns."

Gable ends of homes seem to be the biggest stumbling blocks to getting approval from the insurance industry, according to Bierster. Having correct engineering for gable ends that will be approved seems to be the one item that catches some engineers by surprise, he says. "My recommendation would be to have your engineer speak to Darius with Disaster Smart to know exactly what is needed for the structure to ease through that portion of the approval process."

Bierster says that in remodeling projects, roof decking is one that usually has to be re-nailed properly, verified and then covered with a peel-and-stick underlay that will not blow off during most storms --- even if the shingles or metal roofing does. "Bottom line, it's paying attention to the details required by IBHS to get the client the designation that they wanted."

**FORTIFIED LEVELS AND DOCUMENTATION REQUIREMENTS**

**Bronze:**

- Roof deck thickness
- Roof deck attachment (fastener type and spacing)
- Installation of qualified sealed roof deck system on the top side of the deck
- If gables are present, verify sheathing type and thickness
- Verify framing type and dimensions of all eave and gable overhangs
- If gable overhangs are present, document framing method
- Document roof covering and roof vents

**Silver:**

- Documents anchorage of porches/carports - Provide photos of the following connections
- Verify and document window and exterior door design pressures, impact rating (if applicable), make and model(s)
- Verify and document garage door design pressure and impact rating
- If gables are over 48 in. tall, document bracing installation
- Verify and document presence of opening protection systems
- Engineer and Contractor Compliance Letters

**Gold:**

- Document load path connections
- Engineer and Contractor Compliance Letters

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