

Let a Hurricane Huff and Puff

Coastal Builders Are Finding Eager Buyers for Their Fortified Houses

By JOSEPH B. TREASTER

On the Gulf Coast of Texas, Jim Hayes is building houses on concrete stilts that he says will shrug off winds of more than 130 miles an hour and will easily survive the worst hurricane flooding. Near Orlando, Fla., modest but striking cottages are being built with safe rooms and ballistic nylon storm shutters. In the Florida Panhandle, Jason Comer is putting up a village of gleaming white mansions with eight-inch concrete walls and heavy, ridged concrete roofs.

After two years of horrendous hurricanes, with more catastrophic weather expected, a few dozen developers and contractors along the Southern coasts, from Texas to the Carolinas, have begun to produce a new generation of houses designed to withstand just about

anything that nature can throw at them.

"We're building tanks," Mr. Comer said of his upscale development in the Florida Panhandle.

Until now, few buyers have been interested in superstrong houses. Those houses have usually cost far more and often looked more like ugly ducklings than cozy havens. Nor did officials along the Southern coasts generally require builders to fortify their construction. Florida began toughening building codes after the devastation of Hurricane Andrew in 1992, but it has been the exception. Until recently, building requirements were minimal in Mississippi and Louisiana.

But many of the new homes are proving more appealing. Demand has jumped sharply, and insurance companies are even offering policies at a discount in coastal areas

where they are otherwise cutting back on coverage.

"People have seen what has happened in Florida, Louisiana and Mississippi and they know that what has happened can happen again," said Gopal Ahluwalia, the vice president for research for the National Association of Home Builders.

The new homes are several notches stronger than even the toughest building codes require. And many are being offered at surprisingly low prices. While the villas going up in the Florida Panhandle are selling for up to \$5 million, Kristin Beall is offering her three-bedroom, 1,300-square-foot homes near Orlando for as little as \$200,000. In Texas, Mr.

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Building Homes to Withstand Storms

A few dozen developers along the southern coasts have begun to build houses intended to survive hurricanes. After two years of destructive storms, demand for the houses is strong. Here is how one developer on the Texas coast is building fortified houses for as little as \$99,000.

IN FLORIDA, ANOTHER TACK



Walls made of concrete blocks, reinforced with extra concrete and steel bars.



Concrete roofs. Heavier and more solid, they are much less prone to wind damage.



Building a community of superstrong houses helps reduce flying debris and the damage the debris causes.

HOUSE FRAME

Every piece of the wood frame is secured using metal straps. The entire structure is bolted to the columns below.

WINDOWS AND SHUTTERS

Wooden shutters provide a first line of defense. Impact resistant laminated windows, much stronger than regular windows, provide further protection against wind-blown debris.

ABOVE GROUND COLUMNS

Reinforced concrete columns, each more than a foot square, lift the house 26 feet above sea level. The mezzanine will sit at 18 feet above sea level, high enough to escape storm flooding.

GRADE BEAM

Reinforced concrete beams, 2 feet thick, and a 4-inch concrete slab link the underground support columns and distribute the weight of the house equally.

ROOF

Secured to the house frame with metal straps. For extra strength each shingle is attached using six long nails.



UNDERGROUND SUPPORT COLUMNS

Steel-reinforced concrete support columns, 18 inches in diameter, are built 10 feet into the ground.

Houses Fortified Against Hurricanes Find Eager Buyers

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Hayes is selling some of his stilt houses for \$190,000, but his tiny studio model goes for as little as \$89,000. He plans to build 140 of those houses and is clearing ground for 300 more equally strong houses that will start at \$300,000.

Sales have been brisk. Even without advertising, Ms. Beall is selling her houses faster than she can build them. Nearly 100 customers have signed up for her first 59 houses, she said. Mr. Hayes sold his first 14 houses in a month and has stopped taking orders while he gears up production.

Insurance companies love the new houses. They are offering discounts of as much as 25 percent on premiums at the same time that they are sharply increasing prices for other homes.

"These homes are very attractive to insurers," said Robert P. Hartwig, the chief economist for the Insurance Information Institute, a trade group in New York. Entire communities built to higher standards are even more appealing. "One of the biggest causes of damage is flying debris," Mr. Hartwig said. "When an entire community is built to much higher standards, there is far less debris."

Chuck Vance, a program manager at the Institute for Business and Home Safety in Tampa, said most of the reinforced houses were going up in Florida. They are also being built in Texas, the Carolinas and several other states.

Mr. Vance's organization, financed by the insurance industry, advocates stronger building codes and certifies homes as fortified — or built stronger than standard building codes. The institute would like to see stronger houses everywhere in the country. But so far, the greatest demand is in hurricane country.

In focus groups conducted in Florida this year by a company promoting the use of stronger construction materials, potential home buyers ranked safety and durability much higher on their wish list than traditional dream features like granite

countertops and cherry wood cabinets.

"They want durable roofs, storm shutters that are easy to put up and screened pool enclosures that can withstand high winds," said Ralph V. Roberts, a senior vice president of Worthington Industries in Columbus, Ohio, which sells steel bars and frames that can replace wooden materials in houses.

Pictures of the wreckage in the town of Punta Gorda, on the gulf coast of Florida, came to symbolize the devastating consequences of Hurricane Charley in 2004. Since then, contractors for miles around say, home buyers have been clamoring for reinforcing features.

Russell Garrod, an independent home builder in Punta Gorda and a former president of the local two-county building association, said about half of the nine houses he was building this year would have fortifying upgrades. On one \$700,000 home, he said, he is putting in laminated high-impact windows and a heavily anchored sheet metal roof rather than one with shingles. He is also in-

Insurance companies offer discounts on superstrong houses.

stalling a solid concrete storm room.

The extras, he said, will run about \$35,000. Mr. Garrod said he also routinely advised putting in more concrete and steel reinforcing bars at a cost of about \$300. These are inexpensive steps, he said, that can make a big difference in how well a home holds together in a storm.

Mr. Garrod is building a solid concrete home for his family on elevated land at the water's edge in Punta Gorda. He expects it to be able to handle winds of 200 miles an hour. "I always tell my customers, 'Here's what I would do for my personal house,'" he said. "You can spend a few bucks and I can upgrade, pour a



Home by Her

Kristin Beall, a third-generation home builder, is offering fortified three-bedroom, 1,300-square-foot homes near Orlando, Fla., for as little as \$200,000. There is ample space and built-in wiring for a power generator.

little more concrete, add a little more steel, and you get a stronger house."

Stronger houses, he said, are going to have higher resale value. "When people drive by after a storm and don't see anything wrong with it," he said, "I think that's a selling point."

Ms. Beall, a third-generation home builder, worked with her mother to design her new line of houses. They adapted some of the gabled features of the Craftsman-style houses that were created in California in the early 1900's. The idea, she said, was to provide safe, attractive houses for working-class families.

"We wanted the design to be architecturally pleasing," she said. "Not look like a fort, but be able to stand up to the weather."

In Ms. Beall's houses, the walk-in closet doubles as an interior storm shelter. Its walls and ceiling are solid concrete laced with steel rods. The shutters, made of ballistic nylon, offer the same protection as steel shutters or laminated high-impact windows, but cost much less. They are also lightweight and easy to take down and store. Outside, there is space for a power generator, for when the electricity is out. Built-in wiring connects the generator to two power outlets in the storm room and four in the adjacent master bed-

room.

Seventy miles southeast of Houston, Mr. Hayes starts building his houses by drilling 10-foot shafts and filling them with concrete and reinforcing rods. Then he extends the 14-by-14-inch concrete columns 20 feet in the air and stabilizes them with a steel-reinforced foundation.

The main living areas consist of rectangular boxes of superstrong laminated wood and interlocking plank floors. Mr. Hayes sets the boxes down about a foot on the concrete pilings and bolts them in place. In a practice that has become standard in South Florida, the roofs and walls are secured with metal straps.

"We're using basic materials," Mr. Hayes said. "But we're doing things in such a manner — the thickness, the heaviness, the frequency of the nailing, the blocking of 2 by 4's — that it adds an additional rigidity."

The ridged roofs of Mr. Comer's houses in the Florida Panhandle near Panama City tell the story of his building philosophy. They start with a base of three-quarter-inch plywood nailed to frames strapped to the walls. Then comes a thin sheet of rubberized, waterproof material. Next comes a coating of adhesive tiles are pressed into the adhesive. The

screws into the plywood. The tiles are then covered with a slurry of concrete that fills in all the joints and cracks. Finally, the roof, with fore-shortened eaves, gets four coats of waterproof paint to further smooth and seal the surface.

"There's no opportunity for wind to get under the tiles," Mr. Comer said.

For many people, the new houses provide a sense of security that no longer feels like a luxury. Melody Dimick and her husband, Barry, bought a perfectly nice retirement home three years ago when they moved to central Florida from Plattsburgh, N.Y. But after taking cover in their closet during Hurricane Charley and being brushed by two more of the four hurricanes that hit the state in 2004, they decided they needed a sturdier house.

"I just felt nervous," Ms. Dimick said. "I sat here watching these huge windows I have in my house thinking, 'Oh, my God, I want smaller windows and I want them covered. I want a house that's prepared for the next time.'"

The Dimicks have started talking to Ms. Beall about buying one of her houses. And Ms. Dimick said they are pretty close to making a decision.