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## New Jersey Shore: Modular construction helping to rebuild homes destroyed by Sandy

By Kimberly L Jackson/The Star-Ledger on June 13, 2013



A crane places a section of a modular home being built to replace one destroyed by Hurricane Sandy in Manasquan.

The construction crew arrived on the Marcellus Avenue building site in Manasquan at 8 a.m. May 18.

By 2 p.m. that same day, a new three story house was standing. The kitchen and bathroom cabinets were in place, each sink had its faucet, all the interior trim was finished.

This house had arrived in six pieces,

with many of its interior components in place. Before its trip of more than 200 miles on five flatbed trailers, another team of builders-working in a massive Pennsylvania house making factory - constructed the modular parts that became a three-bedroom, three-bathroom house.

A crane lifted and placed each module, weighing as much as 25,000 pounds, and the New Jersey crew from Atlantic Modular Builders in Manasquan bolted the parts together, making sure the 2,400-square-foot house was tight and waterproof.

"It looks like it 's ready to move in, but there's a lot of hidden work that still needs to be done," says Terrance Hegel, owner of Atlantic Modular Builders. Over the next few weeks, the company will do the finishing work. That includes putting in utility connections and installing the exterior siding that will cover the connection points. Builders like Hegel, who work with modular, say it's the future of construction. "There's much less waste, fewer truck visits to the site, more recycling of materials,"

Hegel says, making the building efficient and cost-effective.



Modular homes, such as this model from Atlantic Modular Builders in Manasquan, are usually indistinguishable from their site-built neighbors.

But there's still resistance in more than a few quarters to having a house arrive in sections on a tractor-trailer when the norm is to watch it go up gradually,

hammered together on the spot. And while there are numerous modular models from which to pick, the building style does have its design constraints.

"Anything you build in a factory and transport on a trailer has limits on height and width," says Urs Gauchat, dean of architecture and design at New Jersey Institute of Technology. "You are limited to whatever you can transport across the road." Even when the modules are stacked to create multiple levels, there is a finite number of options, with most of the variation relying on exterior embellishment.

"Modular depends on repetition," Gauchat says. "So, the design can be repetitive and it can be monotonous." However, the fact that the modules have to be made for transport -and lifting by cranes - also gives them a unique advantage, Hegel and other modular builders say. "They have to withstand the transportation, so they are engineered to much higher specifications. The result is a lot of steel in these houses- up to 20 percent more framing," Hegel says.

Modular systems are often compared to building toy structures with variously sized Lego blocks." All the modules are in standard sizes," Hegel says. "Imagine four shoe boxes," he says, calling to mind

a vision of the average modular house. "It's like a four-box house." Generally, the modules are 14 to 16 feet wide and 40 or so feet long, he says.

The design options are expanded when standard modules are cut to make shorter sections, Hegel adds.



A shot from the designer-outfitted interior of Country Living magazine's 2010 House of the Year. The modular cottage, designed by New World Home, was previously open to the public in New York City and then at Crystal Springs Resort Hardystown.

Despite somewhat predictable designs, Gauchat also sees certain advantages in modular construction.

"One is speed," he says. Most houses can be factory-built

in less than a week. "You build these things under controlled conditions, and you get a predictable end product."

Within a given factory, the structures will have the same kind of finish, the same level of quality. And because they are built indoors, construction will never be delayed by weather. "There are no unknowns," Gauchat says. All of these factors make modular construction an invaluable option for those rebuilding homes ravaged by Hurricane Sandy, Gauchat says. In effect, it allows home construction to be outsourced to modular builders in Pennsylvania, New York and other neighboring states that are home to modular factories.

"If you have a house lot at the Shore, you would have a terrible time getting a builder who has time to build on site. At the moment, you have a finite number of builders; they cannot cope with the amount of work that needs to be done," Gauchat says.

"Modular increases the capacity to build enormously. You are importing labor. You can build more houses in a shorter period of time because you are not limited to the local skill and labor pool."

Eileen Raulli, who, with her husband, Eustace, owns the Manasquan house, says they were unaware of modular construction before severe damage from Sandy's high floodwaters required their previous home to



Country Living magazine's House of the Year in 2010 was this 1,607-square-foot modular cottage designed by New World Home. It was first shown in New York City and then moved to Crystal Springs Resort Hardystown.

be torn down in January. The speed and efficiency of modular appealed to them. "We always thought in terms of stick-built, but time is of the essence," she says. "Because of the weather conditions, it would have been a long and drawn-out process to have a house stick built."

So they picked their home, the South model, from the website of Atlantic Modular Builders. "It's not the cookie-cutter house," Eileen Raulli says. "It has huge oval windows put in four different places to bring in more light." And while it might be like many other modular houses in terms of its architecture, inside, it will have high-end features with mass appeal: granite countertops, hardwood floors, hand-tiled surfaces. "On site, you give them a lot of custom features," she says. Their house, like other rebuilt Shore homes, was raised on 5 1/2 foot piles under a new requirement that aims to protect area structures from future flooding.

While modular homes may be thought of as a bargain option, erroneously linked with manufactured or "trailer homes" in other parts of the country, Hegel says that's not the case in New Jersey. The Jersey Shore was a bright spot for modular building pre-Sandy, Hegel says. He was doing brisk business and building million-dollar modular homes among the more modest models long before the storm hit the area, he says. Even in upscale communities in New Jersey, there has been a wider acceptance of modular, Hegel says. "There are people who built modular 20 years ago," he says. "I moved here 10 years ago from California, and I've seen people become more and more accepting of it."

In western New Jersey, there's a high-profile supporter of modular building in former Gov. Christine Todd Whitman. On the family's Tewksbury farmstead, Whitman's daughter Kate lives in a traditionally styled modular home with her husband, Craig Annis, and their four children. For Whitman, who also headed the U.S. Environmental Protection, the dwelling exemplifies how modular

Construction can produce highly energy-efficient "green" dwellings designed to mesh with historic areas.

The Whitman-Annis house, with its steel roof, conforms to requirements of the Oldwick Historic District in which it is located, says Tyler Schmetterer, a founding partner of New World Home, which built the house. "The architecture is equally important as the green attributes," he says.

Behind the facade of a traditional farmhouse, builders installed bamboo floors, a claimed-wood kitchen island, water-conserving kitchen and bathroom fixtures, energy-efficient appliances and other features. "When we design something, we want it to look like it's been there 150 years," Schmetterer says.

On a verdant lot in Sussex County, another New



A modular Farmhouse, traditionally designed by New World Home on Agency, the dwelling the farm owned by former New Jersey Gov. Christine Todd Whitman.

World Home design had been a model house at Crystal Springs Resort, an example of what could be built in the area. Created in partnership with Crystal Springs and in collaboration

with Country Living to produce the magazine's annual House of the Year in 2010, the 1,607-square-foot cottage spent two weeks as an exhibition at Manhattan's World Financial Center that year. Then it was disassembled and trucked to its present location in Hardystown.

The model cottage, which sold last year, stands as an example of the sturdiness of modular houses,

Schmetterer says. "The modules are independently strong and reinforced by the rest of the house." The sturdiness of a well-engineered modular structure also makes it a good solution for those building in hurricane-prone areas, he says.

"Our stock home is built to withstand 120-miles-per-hour wind. In the Hamptons, that's code. New Jersey is going to have to do the same thing," Schmetterer says. "Look what Sandy did at 70 miles per hour. The homes have to be able to withstand these storms."

### More on modular



"Prefabulous: Almost off the Grid" by Sheri Koonen

For those interested in learning more about modular construction, author Sheri Koonen has written four books on the topic, the latest of which is "Prefabulous: Almost Off the Grid." (Abrams, \$24.95) The book profiles more than 30 American modular homes in various styles, detailing the green building techniques and eco-friendly features used for each.

The book includes floor plans and several photographs of each house. Koonen aims to dispel negative perceptions about prefabricated construction and to highlight the options beyond modular, including panelized systems in which prefabricated walls are used in various configurations (a technique preferred by NJIT's Urs Gauchat).

Visit a house-building factory: Excel Homes, the nation's largest modular builder, opens its Liverpool, Pa., factory to the public for tours from 9 a.m. to 1 p.m. the second Saturday of each month. Learn more at [ExcelHomes.com](http://ExcelHomes.com).

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