

Arch 464  
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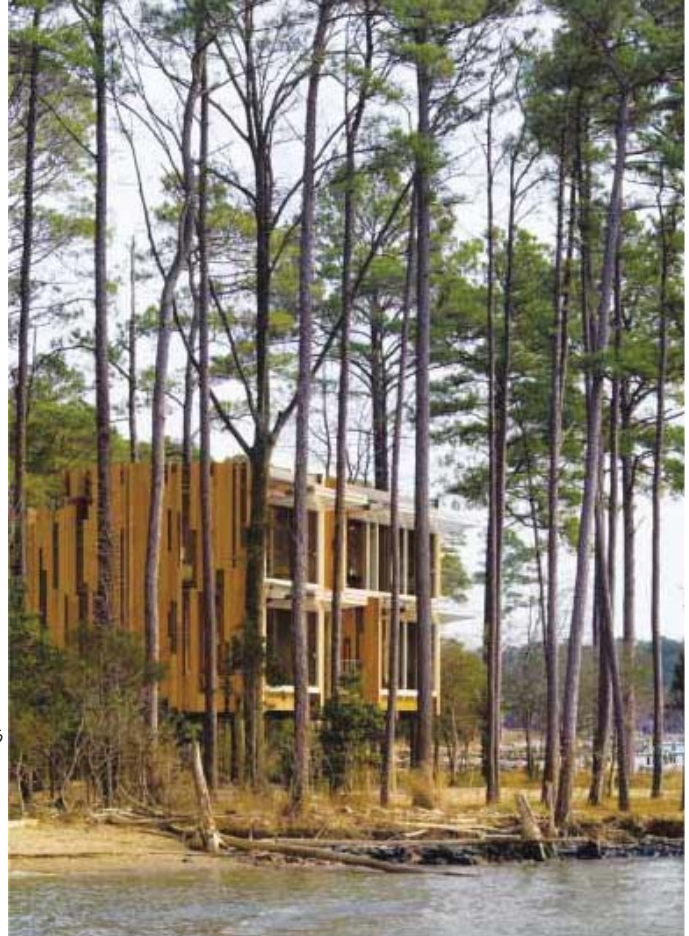
Name \_\_\_\_\_

### Quiz #3

## "Evaluating Loblolly House"

For this problem you are a green architecture critic reporting on Stephen Kieran's newly constructed Loblolly House, which was featured in the 2007 annual **Architectural Record** "Record Houses" edition.

The house is situated on a wooded Chesapeake Bay site among loblolly pines and affords spectacular views to the bay. It also employs innovative materials and methods of construction, perhaps serving as a prototype for factory-built custom homes of the future. The elephant in the livingroom is the question of the building's sustainability—does it aspire to meet the challenges of the carbon-neutral future we need to slow, halt, and eventually reverse global warming? Your job is to address these concerns. Carefully read the **Architectural Record** write-up and analyze the illustrations and notions presented.



Context—house among loblolly pines and view from kitchen to Chesapeake Bay.



Illustrations from Architectural Record 04:07.



**S**tephen Kieran, FAIA, likens his family's new weekend house on Taylors Island in Maryland to a duck blind, one of those three-sided shelters that hunters build to make themselves disappear in the woods or a marsh. Barklike vertical strips of red cedar clad three elevations of Kieran's 2,200-square-foot house, camouflaging it on a 4-acre Chesapeake Bay site thick with loblolly pines. While those mostly opaque sides face the surrounding forest, the fourth elevation literally opens to the water—thanks to retractable translucent hangar doors and accordion-folding glass walls that the owners can move to eliminate all separation between indoors and out.

And like a duck blind, the building—which the architect calls the Loblolly House—can be disassembled. Most of its pieces are then recyclable. Concern for the environment has long been essential to the work of KieranTimberlake Associates, Kieran's Philadelphia-based firm. But in the past few years, the practice has also investigated modular and prefabricated construction with the aim of developing faster, cheaper, and smarter ways of building. "Forty percent of the material in landfills is building debris," notes Kieran. "If you could take apart a building and sell elements from it on eBay, you could make a difference."

But most attempts at prefabrication in building construction have failed, he says, due to economics, market perceptions, and peculiarities of the home-building industry. Traditional construction methods have long been less expensive than prefab experiments, and perceived by the public as being of higher quality. In the past few years, though, the costs of on-site construction have soared, while the industry has faced serious quality concerns, says Kieran. At the same time, the quality of factory-built components and consumer interest in prefab have risen. "We're close to a tipping point," he suggests. "I think we can flip the gen-

eral perception, so that houses largely made from factory-built components are seen by the public as cheaper and better."

The one earlier example of successful industrialization in American home building—manufactured houses delivered by truck to sites all over the country—holds no appeal for Kieran and his partner, James Timberlake, FAIA. "You're stuck with dimensions and limitations determined by highway transportation rules. That's the death of architecture," Kieran maintains. "No matter what you do, you always read the single- or double-wide trailer in those homes."

KieranTimberlake saw the three-story Loblolly House as a system made entirely of off-the-shelf elements and components fabricated off-site to be assembled atop a platform (or "foundation") of wooden piles sunk into the sandy soil. Key components included so-called "smart cartridges" used to create floors, ceilings, and roof; "dumb cartridges" for the building's skin; and "blocks" that house bathrooms or mechanical rooms. All of the cartridges are 12-inch-deep sandwiches made of plywood or cement-board layers with wood studs in between. By installing radiant-heating elements, insulated microducts for air-conditioning, and wiring for power, lighting, and data, the off-site fabricator makes the floor and ceiling cartridges

**Project:** *Loblolly House, Taylors Island, Maryland*  
**Owners:** *Barbara DeGrange and Stephen Kieran*  
**Architect:** *KieranTimberlake Associates—Stephen Kieran, FAIA, James Timberlake, FAIA, design partners: Marilia Rodrigues, project architect*

**Engineers:** *CVM (structural); Bruce Brooks & Associates (m/e/p)*  
**Consultants:** *Marguerite Rodgers (interiors); Barbara Seymour Landscapes (landscape)*  
**Fabricator:** *Bensonwood*  
**General contractor:** *Arena Program Management*



**A clear glass bridge (right) connects the two halves of the house, spanning a garden landscaped with bamboo and gray stones.**

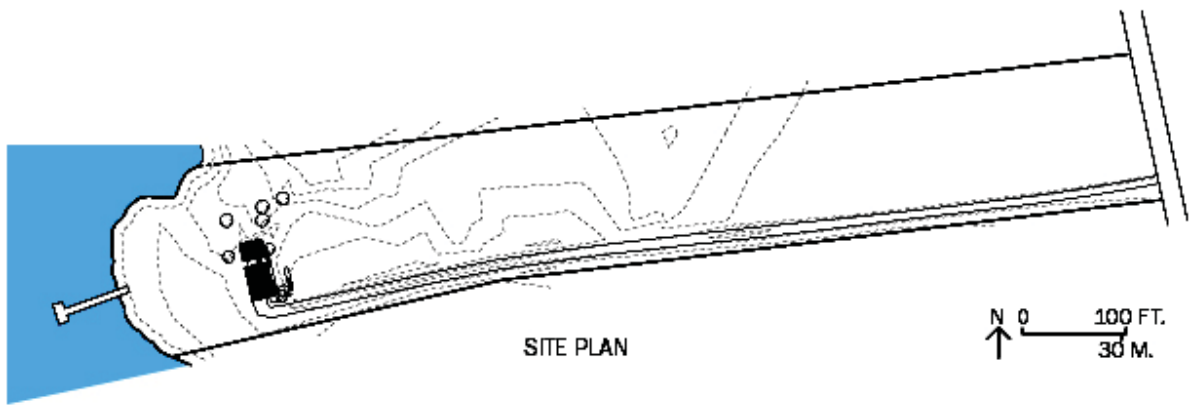
"smart." Wall cartridges, on the other hand, are "dumb" because they contain only insulation, vapor barrier, sheathing, and windows. Blocks embody the most complex elements of the house: complete rooms—with ceilings, walls, glazing, finishes, plumbing, power, and lighting—that can be lifted into place, then quickly plugged into utility connections already threaded through the building's frame.

Once the builder had sunk the piles and installed beam collars, the house's on-site construction took just six weeks, starting at the end of September 2006. To minimize damage to the fragile ecosystem (which is home to large populations of bald eagles, hawks, and water fowl), the architects arranged for the factory-built components to be delivered on an on-demand basis.

Kieran supplemented those components with off-the-shelf items, such as a German-made aluminum frame, an interior steel spiral stair, and kitchen cabinets and counters. The few elements actually built on-site included the wood piles with beam collars, an outdoor stair on the east elevation, stained-bamboo flooring indoors, and the cedar-plank siding on the three land sides of the house. After assembling the house so quickly, Kieran found the weeks it took to install just the bamboo flooring excruciatingly long.

With his project architect Marilia Rodrigues, he developed the irregular pattern of cedar siding by pasting strips representing the planks on

*continued next page*



a photograph of the site. “We designed the house as an abstraction of the key elements found there: loblolly pines, tall grasses, water, and the western sun,” says Kieran. So the cedar boards’ varying widths and spacing echo the dappled rhythm of the forest; the green-stained bamboo flooring recalls local grasses; a two-story-high expanse of orange-coated glass set between the main volume of the house and its guest wing provides a visual jolt suggesting a sunset when light shines through it; and the two floors of living and sleeping spaces, raised one story above the ground, allow flood waters to flow underneath.

Instead of placing living and dining rooms on the lower floor, the architects put them on the upper one to capture the best views of the water. Inside, the house orients every space (except bathrooms and mechanical rooms) to the sun setting over the bay. To protect this western elevation from solar heat and glare, KieranTimberlake treated it as a piece of equipment that can open and close in three independent layers—starting on the inside with simple roll-up shades; then a glass wall that folds up in 2.5-to-3-foot-wide sections, which slide on floor and ceiling channels; and finally, the translucent polycarbonate airplane hangar doors that fold out and up at the touch of button. A 16-inch air gap between the glass wall and the hangar doors provides insulation when this “equipment” closes shut in cold weather. On a visit to the house on a sunny day in February, the 35-foot-long living room was

**Stained bamboo floors and the colors of material used on furnishings in the master bedroom allude to the site’s cordgrass.**

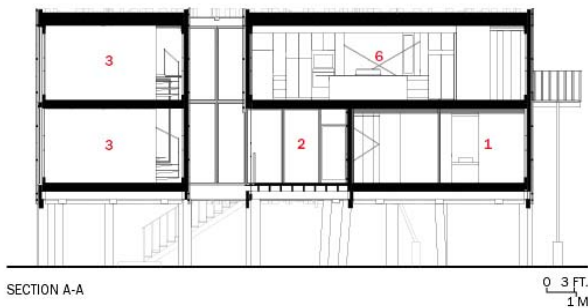
getting plenty warm by 2 P.M., so Kieran opened the glass wall and let in a cool bay breeze. When asked if he had considered a porch for this elevation, he replied, “The living room *is* the porch.”

The outdoors makes its presence felt in other ways, too. For example, a small court just 8 feet wide and planted with bamboo separates the living room/master bedroom block from a smaller volume containing guest rooms (one on each floor for the Kierans’ two grown children). A clear-glass indoor bridge spans the court, providing a light-filled connection between the house’s two halves. And on the lower floor, a small deck serves as an outdoor room.

Kieran is now talking with an unusual company that sells LEED-certified, factory-built houses about creating a version of the Loblolly House that could be purchased and built in different places. (The company is currently offering houses designed by Ray Kappe, FAIA, and David Hertz, AIA.) “The idea is to develop the house as a product,” says Kieran. “We’ll use the Loblolly House as a prototype for a more generic system.” He estimates that around 60 to 70 percent of the Loblolly House’s components were built in a factory. For a commercially available iteration, he would like to push that figure to 80 or 85 percent, which would help reduce costs to around \$250 per square foot (about half the cost of most custom homes). All of a sudden, an architect-designed house falls within reach of a lot of middle-class Americans. ■

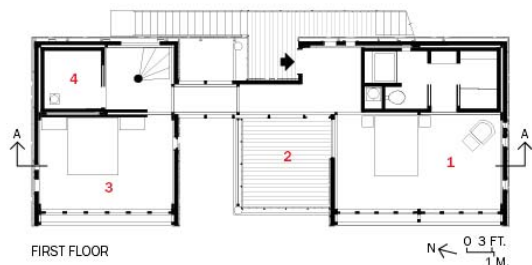
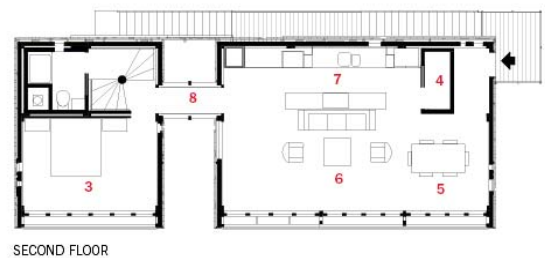
For Sources, go to page 148, and Projects at [archrecord.construction.com](http://archrecord.construction.com).

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A small court separates the house into two volumes (above): a smaller one serving the Kierans’ two children, and a larger one with the main living spaces and master bedroom.

1. Master bedroom
2. Deck
3. Guest bedroom
4. Mechanical
5. Dining
6. Living
7. Kitchen
8. Glass bridge







Irregularly placed cedar cladding and angled wood piles serve as abstract metaphors for the house's forested site.

Operable hangar door shades on west facade (left), vertical cedar boards filter light on east (south & north too) facade (above), and all west window walls are fully operable (below).



## Critique

1. Point out **two** features of the design at the site and/or community scale that work toward sustainability. **Explain** why they are effective for this Chesapeake Bay site or for other sites nationwide.

2 points

1

2

2. Illuminate **four** features of the design at the building scale that address sustainability. **Explain** why they are effective for this particular Chesapeake Bay site residence.

4 points  
**1**

**2**

**3**

**4**

## Improvements

3. **Propose four** appropriate improvements that would reduce the building's contribution to greenhouse gas emission and/or lead toward more regenerative architecture. **Show** how these can be integrated into the site and building design scheme with sketches or diagrams.

4 points

1

2

3

4