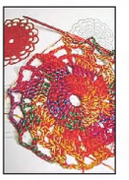
Home&Garden



NOTIONS
Marcy Smith finds comfort in crocheting doilies, much to her dismay.
Page 3D.

home of the month

July's profile of a well-designed living space

Take a look at a photo gallery at **www.newsobserver.com**, search **home&garden**.

the kitchen

The Broken China Farmhouse near Trenton, designed by Tina Govan Architect. The interior features simple, off-the-shelf materials, a design strategy that helps to reduce costs. Where possible, the structure is also the finish, including exposed concrete floors with embedded radiant tubing.

PHOTOS BY TINA GOVAN

The Home of the Month series is a collaborative effort with the N.C. State University College of Design through its Home Environments Design Initiative. Featured homes, selected by an expert panel, highlight the benefits of good home design and represent the diversity of homes and home renovations designed by North Carolina architects. The stories, written by faculty, graduate students and alumni of the School of Architecutre, bring to light the exemplary attributes of each home. Our goal is to offer inspiration and knowledge that can be applied to your living space.

Farmhouse is simple and smart

BY PATRICK RAND
CORRESPONDENT

A farmhouse should not be hard to understand. This one has a meditative quality throughout the quiet, honest interior. It is sited ideally relative to solar orientation, tree stands and open farmland. The building is the color of the drying crop of grains in the surrounding field.

Like any good home, it has a biographical quality. The owner's talents and interests are obvious. Living and working are seamlessly fused: gourmet cooking, winemaking, entertaining guests, painting and scholarly reading. Though used now as a retreat from the owner's professional life in the nation's capital, someday the farmhouse will become his permanent home. As time goes on, terraces and plantings will extend into the nearby landscape, while the 50-acre working farm will be maintained.

In early conversations with architect Tina Govan, the owner was emphatic about capturing the qualities of the thick stone walls of French farmhouses he had seen during his travels. He was especially fond of the comforting feeling such thick walls imparted to the spaces and the stable presence of the buildings on their landscapes.

The owner and architect first discussed rammed earth construction, in which soils are densely compacted into temporary formwork, but were concerned that the soils might not be suitable and that the necessary construction skills might not be locally available.

Govan suggested using autoclaved aerated concrete, or AAC, to make walls, which would offer the desired robustness

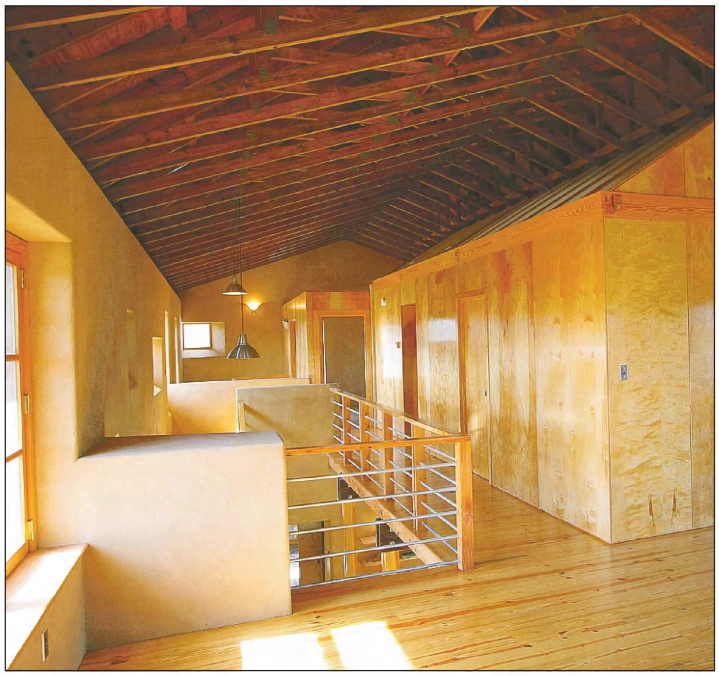
SEE **FARMHOUSE**, PAGE 4D

Broken China Farmhouse looks similar to other farm buildings that dot the landscape in this rural area of North Carolina.

the project

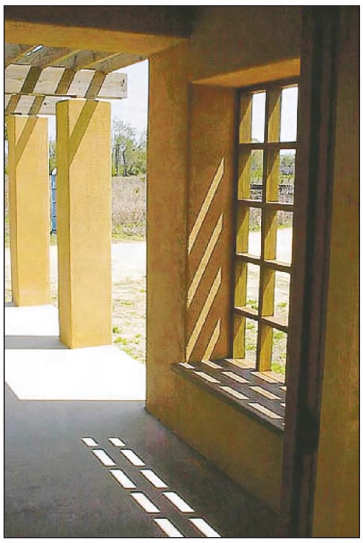
broken china farm house

architect
Tina Govan Architect, 513 Holden St., Raleigh NC 27604, 890-4124, tina@tinagovan.com
consultant engineer
Tim Martin, Raleigh
General Contractor: Scott Construction, Beaufort, NC, 252-241-1613
AAC subcontractor
Kelly Finch, 252-714-8981
project location
Near Trenton, in Jones County, about 120 miles east of Raleigh
square footage
2,825 house, heated; 700, attached barn
key attributes
Archetypal forms, uncomplicated materials, green components

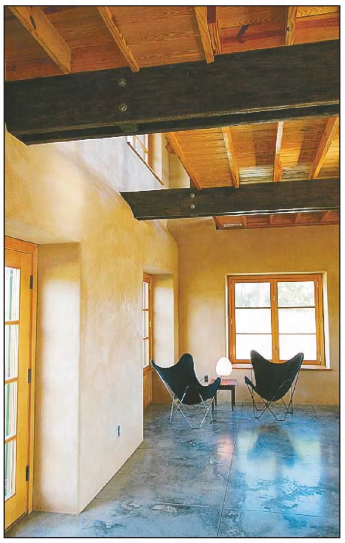


Wooden boxes, rather than drywall, house the bedrooms and bath, as 'houses within a house.'

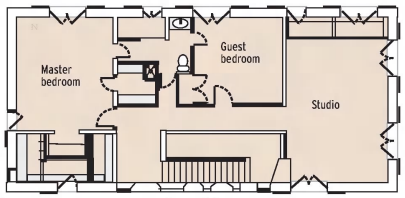
PHOTOS BY TINA GOVAN



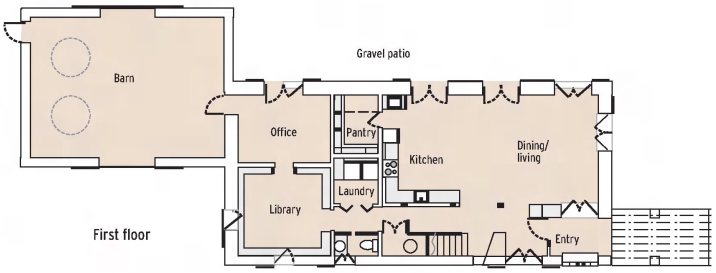
A wood trellis leads from the outside to the shelter of the cool, thick-walled interior.



Within the exterior walls is infill of wood columns, beams, joists, floor planks and walls.



Second floor



First floor

FARMHOUSE

CONTINUED FROM PAGE 1D

and would provide excellent technical performance. AAC is very nearly the ideal material for constructing a wall, especially when "green" materials are a priority.

This single material provides structure, thermal mass and insulation. It is chemically inert and is resistant to fire, termites, mold and fungus. It gives off no harmful gases. AAC is soft enough to be altered using hand tools and readily receives finishes, which it needs to protect it from abrasion on the inside and weather on the outside.

AAC was developed in the 1920s in Sweden and has been used extensively in Europe. For more than two decades it has been manufactured in several locations in the southeastern United States. The units in this farmhouse were made near Atlanta. Skills necessary to install and finish AAC are not common but are easily learned.

AAC is basically a mineral foam. A chunk of it would float in a tub of water; it is about half as dense as water. AAC differs from normal concrete in several important ways. It's made of fine sand, not crushed rock. It is full of tiny cellular voids caused by adding aluminum powder to the concrete mix, producing countless tiny hydrogen bubbles as the concrete expands in volume. It is cured under pressure and steam, then is cut into blocks and panels of many sizes. AAC units manufactured with integral steel reinforcement span the window and door openings in this house.

Architect Tina Govan

Thick walls presented a challenge to the architect as she tried to visually link interior spaces with the beautiful views and useful daylight. Govan exploited the potential to sculpt the soft AAC into shapes that permit daylight to penetrate, then finished it with layers of gritty plaster. The resulting shapes and textures are so simple that they don't distract the eye from views of the landscape. Seeing the wall adjoining the stair is like being in a tall art gallery, with perfect renderings of earth, plants, horizon and sky arranged on the wall.

Monolithic materials may seem to have no discipline, no rules to guide the designer's countless decisions about form. In fact, AAC does have a discipline: the sizes of its modular blocks should be respected; it is laid like other masonry materials in courses, setting an unseen rhythm to all dimensions. The wall is thicker on the lower floor than on the upper floor, expressing the accumulated loads that it carries. Kelly Finch, the AAC installer, crafted this transition beautifully using hand tools to subtract unwanted portions of the AAC blocks and some deftly applied plaster to produce a nice sine-curve.

The thickness of these AAC walls also results in better thermal resistance, or R-value. These walls have a "mass-enhanced" R-value equivalent to R 20 where 16 inches thick, and R 30 where 24 inches thick. Unlike wood-frame construction, AAC walls have no framing members taking the place of insulation. AAC walls are nearly airtight. All of these features make the walls outperform standard wood-framed walls.

Radiant heating tubes are incorporated into the concrete floor slab and air conditioning is available, but neither is in much demand. The owner reports that actual energy costs have not exceeded $30 a month over the course of a year. Several months they were less than $10. More than 15 percent of this house's square footage is invested in its thick outer walls, but this investment will return benefits in comfort and energy efficiencies for the long life of the building.

In contrast to the solid masonry outer walls, spaces within are lightly defined using skeletal wood frames of high-strength paralam beams and lumber, with crisp plywood-clad partitions and plank flooring upstairs. Not one piece of gypsum board is in the whole house. Textures are varied and coexist nicely to amuse the eye and hand. Even the doors and shutters are custom-made in a vernacular style.

This farmhouse uses simple, common materials, honored through their careful installation. For example, a column in the living/dining area is a simple 4x4 wood post, but is placed on an elevated concrete pedestal, clad with pine using oversized nails that become ornaments by their arrangement in a zigzag pattern. No trim is needed in this house to apologize for lack of basic skill.

This new farmhouse combines the local and the global, the immediate and the eternal.

Patrick Rand is a professor in the School of Architecture at the College of Design at N.C. State University.