

# Vertical ICFs:

Easy concrete exteriors create new opportunities for seasoned pro by Kate Fried

After 14 years in the construction industry, Deborah and Dale Arrington were sick of dealing with the challenges of traditional stick-frame building. Fed up with the labor it required and wood's tendency to twist and warp, they resolved to find a new material for constructing outer walls.

"About five years ago, I set about researching other kinds of processes," says Deborah Arrington. "We looked at a variety of materials, such as straw bale, monolithic domes, steel framing and traditional ICFs. Three years ago, we discovered vertical ICFs.

"The ICF concept was intriguing, but we had seen block ICFs used in other projects and we weren't happy with the amount of bracing, gluing and taping they required," says Arrington. "We chose vertical ICFs because we felt that they'd be easier to use. They require less bracing, no gluing and taping, and we wouldn't have to deal with the issues of blowouts."

By using vertical ICFs, Arrington was able to reduce the construction schedule by two weeks compared to stick-built.

"The walls are all there with insulation and studs," says Arrington. "You just need to brace them and pour the concrete." After starting out as a traditional stick-frame builder, Arrington and her husband now build homes exclusively with vertical ICFs. As a small production builder, Debs Construction builds three homes a year, all in the greater Richmond area.

"Because we didn't want to use one of our customer's homes to experiment with a new method of building, we decided to try vertical ICFs on the home we were building for ourselves. The manufacturer sent us a manual with our first order and we learned how to use them from reading that," she says.

"The manual and its drawings make everything very easy to comprehend. This makes everyone involved — from the engineer and the architect to the subs and inspectors — comfortable with the product because they know how it goes together and how it should look as it's going up. We also always give a copy to the county inspectors so they have it on file, and to the engineer, architects and draftspersons for their drawings and reports."

Despite the manual, Arrington still had to educate some of her subcontractors so they could adjust their practices.

"For example, the HVAC contractor had to recalculate the size of the HVAC system to account for the higher level of insulation that vertical ICFs provide. It was also necessary to plan where the exterior wall openings for the electrical and plumbing devices would be located. But thankfully, getting the subcontractors familiar and comfortable with the changeover only takes one project."

In the first project, Arrington discovered she had used too much bracing.

"We used two whalers — one on the inside and one on the outside — with walkboards above the inside whaler, all the way around the building, plus outside corner bracing. We have since adapted our method. Now, for most projects, we only use corner bracing on the outside corners. Inside, we use scaffolding to walk on as we do the pour. We also re-use the bracing to construct the interior walls of the

(See VERTICAL ICFs, page 32)



Arrington has completed five projects using vertical ICFs. The first home she built was for herself, she says, and she followed the manufacturer's manual to help her along her way.



Vertical ICFs are strong enough to withstand several tons of weight without backfill.



Arrington used excess vertical ICFs to construct a 16-by-32-foot in-ground pool.



## How they work

Vertical ICFs are stay-in-place concrete forms that serve as a functional part of the wall after the concrete is poured. While most ICFs come in blocks, vertical ICFs form the entire height of the wall.

Vertical ICFs require less bracing because their monolithic wall sections are sturdier than traditional block ICF walls. Composed of two polystyrene panels held together by plastic or steel I-beams, each vertical ICF panel is 2 1/2-inches thick, forming a 1-foot-wide wall.

Like block ICFs, concrete is poured into the space between the polystyrene. When filled with concrete, they form dimensionally straight, energy-efficient walls.

## Why use vertical ICFs

Deborah Arrington's transition to vertical ICFs was relatively smooth. "The major hurdle was getting over the mindset of having used wood for everything before and then changing over to a completely different material," she says. "But that challenge can be overcome by realizing that your new method of building is going to be easier and will create a better product. You just do it."

She notes that vertical ICFs are also much less labor-intensive than wood. "Since they are much lighter, they aren't as physically taxing so there is less wear and tear on your workforce. And because they are easy to use, you don't need to hire a lot of skilled labor. All they really require is one lead person who is familiar with the product to oversee the process and instruct the laborers."

## Vertical ICFs

(continued from page 14)

house, which we typically build out of 2-by-4 studs."

### Education is key

From previous experience, Arrington knew that educating the inspector in advance would be essential.

"We made an appointment with the inspector ahead of time and sat with him for a while to explain the technology," says Arrington. "Since he was from upstate New York where vertical ICFs are used more frequently, he was already familiar with the product. Some other inspectors have required a bit more education, but they have all come around. These days, we often approach inspectors ahead of time to educate them about the product so the inspection process will go smoothly."

Educating consumers is also key. Arrington makes sure her potential clients see the benefits of the technology firsthand. To demonstrate a house built from vertical ICFs, Arrington regularly invites potential customers to tour her own home.

"At least twice a week new customers come look at our home to talk about building their homes from vertical ICFs," says Arrington.

(Kate Fried writes about better building practices on behalf of the Partnership for Advancing Technology in Housing. PATH is administered by the U.S. Department of Housing and Urban Development. Learn more at [www.pathnet.org](http://www.pathnet.org).) **VAB**

## Window film

(continued from page 12)

windows, low-E film should be applied to a window's outside pane to keep out the sun's heat. In colder climates to keep heat inside the house, the low-E film should be applied to the inside pane.

Although low-E-coatings are usually applied during window manufacturing, low-E film can be retro-fitted and last from 10 to 15 years.

With escalating energy costs, products such as 3-M Scotchtint window films are increasingly valuable as an investment for commercial and residential owners because they reduce air conditioning/heating costs, lessen the wear and tear on HVAC equipment and provide increased indoor comfort.

According to the International Window Film Association, solar window film can reduce 99 percent of ultraviolet light thereby protecting furniture, carpet, draperies and wood.

In addition to saving homeowners money, solar film also can provide privacy and reduce glare. As the window film concept developed and improved, the demand for colored film to match architectural designs evolved. Colors such as bronze, gray, gold and amber are now available. **VAB**

(Janet Yarborough Meyer is a free-lance writer based in Virginia Beach.)

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## Advertisers' Index

Anthem.....	20
Bridgewater Wholesalers.....	back cover
Builders Insurance Association.....	27
Builders Mutual.....	2
Handcrafted Homes.....	19
Costen Floors.....	28
Demilec USA.....	12
Granitech.....	inside back cover
Handcrafted Homes.....	4
JD Miles.....	6
Meridian Construction.....	inside front cover
Norfolk Sash & Door.....	22
Norandex/Reynolds.....	22
Norbord.....	13
Potomac Valley Brick.....	25
Ram Jack.....	8
Reeb Millwork.....	16
Snavely Forest Products.....	1
Stock Building Supply.....	18
SunTrust.....	9
Superior Equipment Sales.....	15
Timber Truss.....	4

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(continued from page 23)

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