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## Chopping Away at Wood

Hubble Smith LAS VEGAS REVIEW-JOURNAL

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The use of insulated concrete forms represents a big step toward the environmentally conscious "green building" trend, an industry expert said.

Dave Shepherd, director of sustainable development for Portland Cement Association, said the construction industry is going through a slow educational process about the merits of building with concrete instead of wood.

"It's just a traditional momentum that's hard to overcome," Shepherd said from his Chicago office. "Ask any builder manufacturer. It takes perseverance and deep pockets to keep pounding away."

Shepherd said "engineered wood" was the rage when he got out of architectural school years ago, but builders would look at it and ask why they would want to pay 30 percent more than for regular lumber.

There were quality issues that came into play, he said. Engineered wood is man-made. It stays straight and strong and doesn't warp. Still, it took 30 years to attain the 45 percent market share it has today.

The same thing holds for insulated concrete forms, in which walls are formed by pouring concrete into stacked foam insulation. The forms, left in place, not only provide continuous insulation for significant energy savings and a sound barrier, but also a backing for drywall on the interior and stucco, lap siding or brick on the outside.

They're far superior to wood frames, Shepherd said. They won't warp or rot; they're unaffected by moisture, heat and insects. However, ICFs are used in only 4.7 percent of new home construction.

Why? Because it adds 2 percent to 5 percent construction costs to a \$200,000 home, and builders want to know what they're getting for their money, Shepherd said.

"Look at energy prices over the next 10 years. They're not going anywhere but up.

While you may spend more on construction, you save on heating and cooling. Those savings are only going to continue to add up," he said. "People don't look at that.

We're making decisions at the end of our nose. It's like buying a car. You might have to spend \$3,000 more to get 30 percent better fuel mileage."

The building method has been around for nearly 50 years, but is just starting to catch on in Las Vegas. American PolySteel Forms, another polystyrene and concrete insulation product, was used to build the Salvation Army apartments on Owens Avenue in 1996.

Merlin Contracting of Las Vegas used ICFs in building the \$1.9 million, three-level loft at The Lakes that was featured as the New American Home at the 2004 International Builders Show in Las Vegas. It saves 51 percent on cooling costs and 46 percent on heating costs, Merlin's **Bart Jones** said.

"This is how the world has to go," he said. "It's strictly a learning curve. There are additional upfront costs, no question. No one's taking that leap yet." Jones said builders are reluctant to change because they've always done it a certain way and they know they can make money doing it that way. "It's a no-brainer," he said.

Merlin is exclusive distributor in Las Vegas for Canadian-based Arxx, the grandfather of the ICF industry, Jones said. The contractor is building a 20,000-square-foot French estate home in Southern Highlands completely with insulated concrete forms for a local home builder who is committed to green building.

"He saw the Great American Home in 2004 and loved it," Jones said.

Merlin is also using ICFs in a condo project for Toll Bros. at Lake Las Vegas and has been called by Rhodes Homes and Escana Properties about doing projects with Arxx. Escana is putting in basements at its La Luz custom home subdivision in Henderson, and Jones said the basement is where you'd start with ICFs because it's cheaper, faster and easier.

Custom home builder Scot Bugbee of R.W. Bugbee and Associates said he shunned the product for years, but is now introducing it to clients when he can. He's using it on a home at Lake Las Vegas.

"I'm old-school. Every time I try something new, I get bit," he said.

ICFs have become more popular with builders because of lumber prices, which have gone up so far that the cost difference between a wood-framed wall and insulated concrete wall is shrinking, Bugbee said.

"It's still substantially more expensive, probably four to five times more per square foot of wall, but framing is only 7 percent to 8 percent of the total job cost," he said.

"It may add 5 percent at the end of the job, maybe \$100,000 on a \$2 million box."

Saving energy is a main tenet of green building, Shepherd said. The idea is to reduce the effect humans have on our planet, to reduce what we use, recycle waste and reuse products, he said.

In 2004, green building accounted for only 2 percent of nonresidential construction, according to a report from McGraw-Hill Construction. That's expected to grow to 5 percent to 10 percent by 2010, or \$10 billion to \$20 billion in construction.

"We are definitely in our infancy," Shepherd said. "Our European cousins are way ahead of us because of the price of energy. In England, for example, gas is \$6 a gallon, so heating and cooling costs are the same thing. So they've been forced by pure economics to go this way."

Energy-saving applications of cement-based products barely scratch the surface of sustainable development, Shepherd said.

The physics of thermal mass from ICFs is the same as adobe huts built by native Indians in the southwest United States, he said. Buildings with exterior concrete walls, also called mass walls, use less energy to heat and cool than similarly insulated buildings with wood or steel frame walls.

There's also an application called "radiant heating" — concrete with embedded tubing that provides efficient space heating and cooling. Tubes are filled with water to use thermal mass and conductance of concrete to spread heating and cooling throughout the floor and maintain a constant, even temperature, resulting in significant energy savings, he said.

Washington, D.C.-based U.S. Green Building Council sets the standards for LEED certification, or Leadership in Energy and Efficiency Design, of environmentally responsible buildings.