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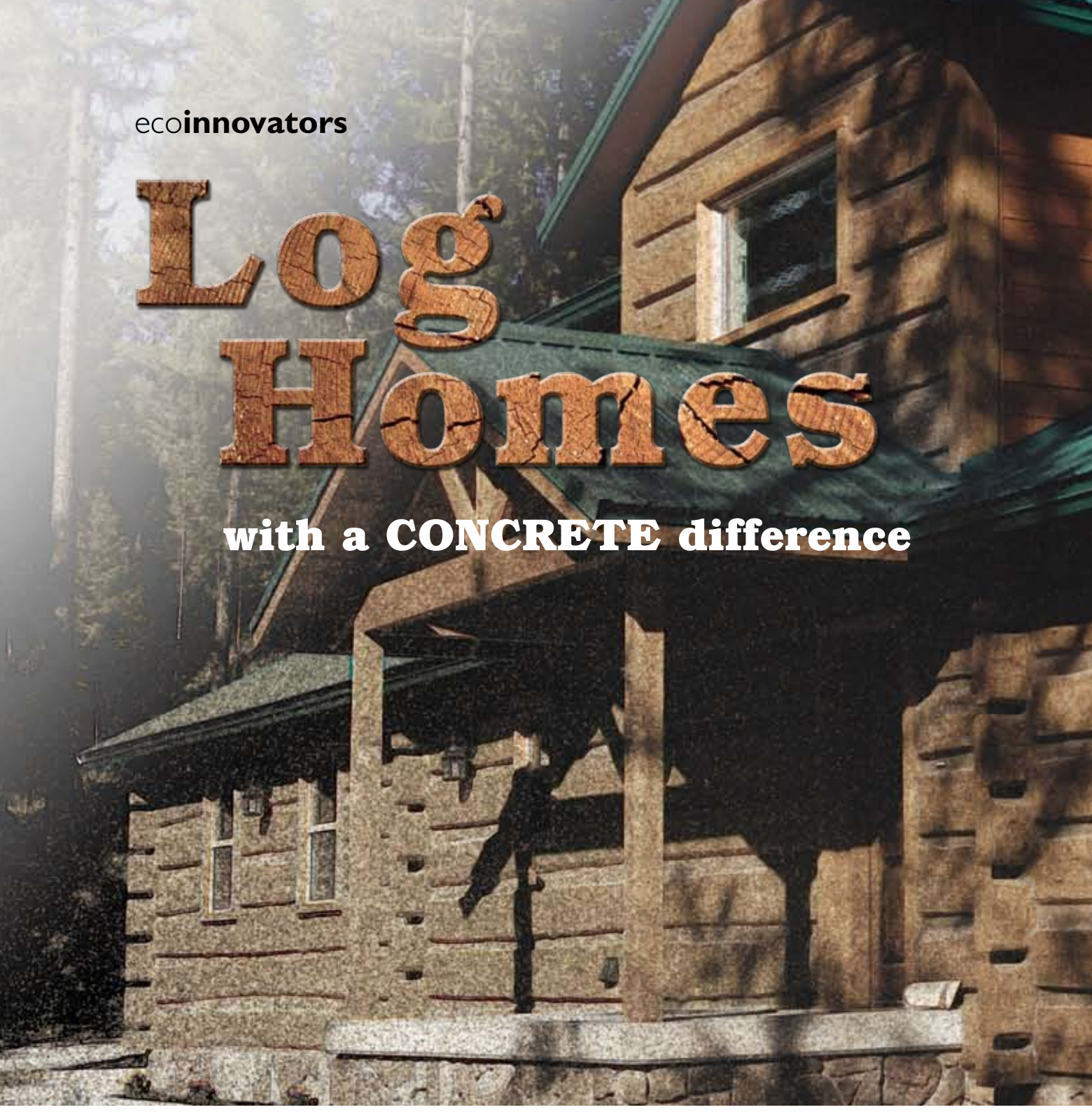
Log Homes

with a CONCRETE difference



Log homes are gaining popularity as a back-to-nature style. But "log" doesn't have to mean wood. A new type of log home construction, featuring walls made of concrete cast to resemble hand-hewn logs, can be more economical while providing other significant benefits.

"There can be a host of inherent problems with typical log construction," says Tom Beaudette, principal in Beaudette Consulting Engineers in Missoula, Mont. He helped

This beautiful log home only looks like wood — it's really concrete. Photos in this article courtesy of Cultured Log Systems.

create the connection designs and schematics for the precast concrete log home designs created by Cultured Log Systems (CLS), also in Missoula. "More and more, we expect these precast concrete designs will take off as word of mouth spreads about what benefits they offer and more people see them being constructed."

Cultured Log Systems worked with Missoula Concrete Construction to create the home system. The catalyst was the potential for a shortage of high-quality timber that

could create wooden logs of sufficient size, says CLS president Stewart Hansen. The concrete material offered added benefits that had appeal to homeowners, too.

Log molds produce the look

The precast concrete panels' resemblance to wood logs results from producing molds from actual hand-hewn logs. The panels measure 16 inches tall, 8 inches deep and a maximum of 28 feet long. Three styles of log currently are offered as standard designs: a 16-inch-tall panel with a hand-hewed, squared-off look; a panel with two 8-inch-tall D-logs; and a 16-inch-tall panel with a squared-off style called the "back East look."

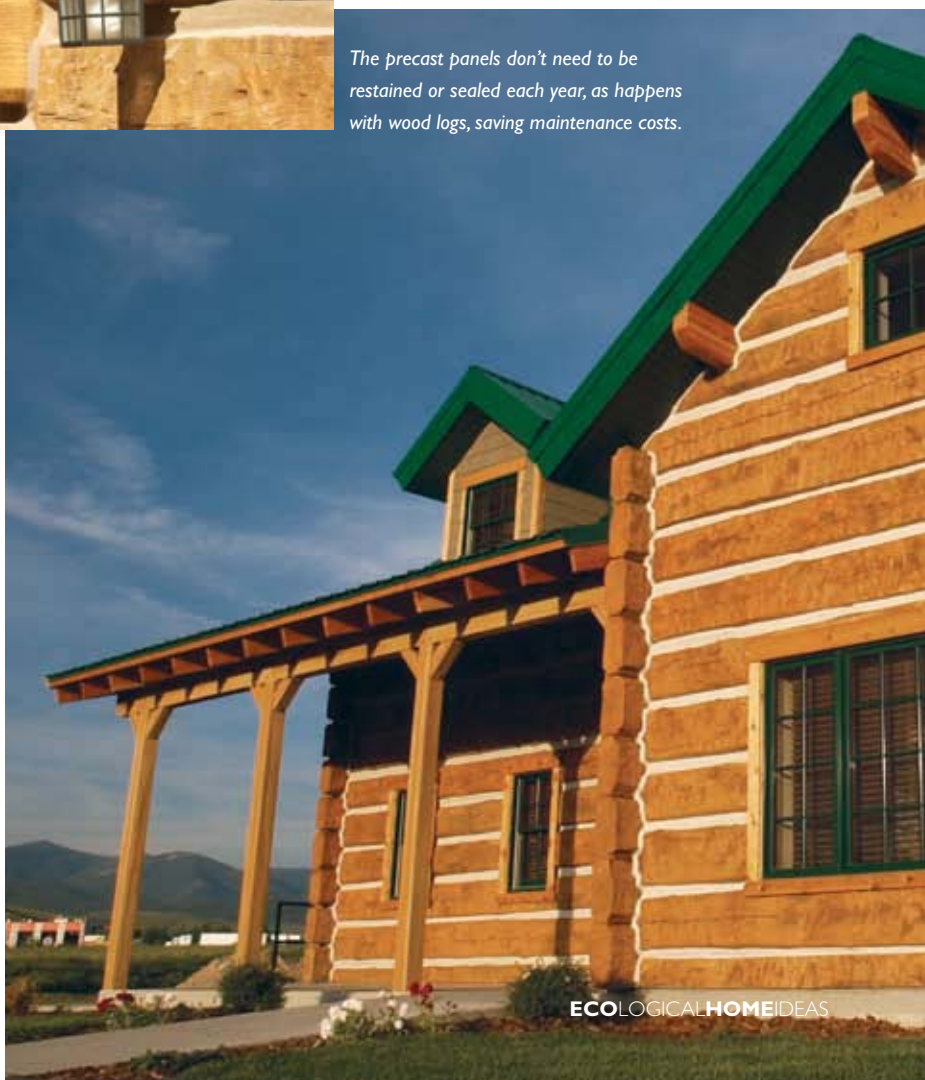
One of the key benefits the panels offer is that each "log" features an insulated core to improve energy efficiency. The logs provide an insulating value of R-19 (a typical production-built new home offers walls with only R-13 insulation value). But that's only the beginning, says Hansen. The panels are cast with a flat interior side, so they can easily be framed out with additional insulation behind an interior wall.

Concrete, right down to the details.

Hansen recommends expanding spray-in foam, which ensures complete coverage of every corner and cranny. The foam offers an R-value of 7 for every inch of thickness, and Hansen typically applies three to six inches. That means even three inches of insulation creates an R-40

Homes can be built as high as five stories thanks to the structural support provided by the 16-inch tall precast concrete panels.

The precast panels don't need to be restained or sealed each year, as happens with wood logs, saving maintenance costs.



Log homes made with precast concrete logs offer significant advantages in energy efficiency and structural support compared to wood homes.

wall. The panels also are designed so the interior insulation completely covers the home's corners, creating no gaps that allow for energy loss. "Concrete also is a good insulator on its own," he points out. Indeed, concrete's thermal mass absorbs heat during the day and releases it more slowly as temperatures cool, providing more even indoor temperature.

In addition, tests by the National Center for Appropriate Technology in Butte, Mont., indicate the homes "exceed the program specifications for air tightness with ease," the group's report said. "This attention to detail significantly reduces the infiltration heat loss, resulting in a more comfortable, quiet and energy-efficient structure."

Other benefits

The concrete construction also offers other environmentally-friendly benefits, Hansen notes. Harvesting of large trees is eliminated, and concrete's basic ingredients — sand, stone and water — are abundantly and readily available. The cement used in the mix is energy-intensive to create, but Hansen is looking into admixture replacements, particularly fly ash, which can reduce the amount of cement needed.

A wide range of roof styles can be attached to the logs, providing a variety of architectural appearances.

Added benefits derive from the concrete design, notes Beaudette. Fundamental among these is the home's structural stability. "This is in stark contrast to the typical wood log home assembly that takes years to stabilize," he points out. "Wood logs shrink and crush against one another, allowing settlement of several inches."

"This is an insulated and stacked series of concrete beam members," Hansen stresses. The panels are connected with rebar through drilled holes, allowing homes to be built as tall as five stories, although most tend to be two stories.

Wood look with concrete stability.

THREE STANDARD STYLES OF LOG DESIGN

Style 1:
A 16-inch-tall panel with a hand-hewed, squared-off look.

Style 2:
A panel with two 8-inch-tall D-logs.

Style 3:
The "back East look," a 16-inch-tall panel with a squared-off style.

A traditional log home's labor costs typically runs $50,000 to $70,000 more than a 2,000-square-foot home.

The precast concrete design offers lower material costs and less construction labor, saving money. A wood-log home's labor cost typically requires an additional $25-$35 per square foot for erection, Hansen estimates. That cost is eliminated with the precast construction, which includes erection in its packaged price. "This is a substantial savings in anyone's budget." The precast home also eliminates the need to re-stain and reseal wood logs to retain protection from weather and insects, saving as much as $6,000 every three to five years. Best of all, homeowners can feel secure knowing their homes are fire-resistant and resistant to deterioration, insect infestation and mold growth.

The combination of energy savings, resistance to nature and good looks gives these homes strong potential for homeowners who realize "log" doesn't have to mean "wood."

By Craig A. Shutt

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