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'Green' Builders Make Homes Kinder to the Environment

Interest grows in construction methods that consume fewer resources, produce less waste

By Mark Trumbull
Staff writer of The Christian Science Monitor

SEATTLE

JON ALEXANDER and his crew, like any builders, are hustling to pour concrete foundations for a new home. They want to minimize rental costs for a mixing truck. But Mr. Alexander also incorporates his concern for the environment into his budget-conscious line of work.

Wood forms, which hold the wet cement, are braced not with new timber but with two-by-fours salvaged from the house that used to stand on the site. The new home will be framed using 25 percent less wood than is common. And recycling efforts will save several hundred dollars in dump fees for waste generated at the site.

Few builders go as far as Alexander does with such environment-conscious practices, but he represents part of a growing grass-roots movement. Eventually, proponents say, economic forces and environmental awareness among customers will push architects and builders to make buildings that use materials and energy more efficiently.

"One hundred years from now, we will perceive landfills as resources," says Christopher Kelsey, an architect with the Kansas City, Mo., firm Berkebile, Nelson, Immenschuh, & McDowell.

While most people probably don't think of buildings as a central environmental issue, experts cite several reasons why better construction and design are vital:

Waste. About 20 to 26 percent of the trash headed for landfills is construction waste, says William Browning, a researcher at the Rocky Mountain Institute in Snowmass, Colo.

Resource limits. Buildings account for about 40 percent of the raw materials, by weight, entering the global economy each year, according to the Worldwatch Institute in Washington, D.C. The world's forests, in particular, are under increasing pressure.

Energy. Buildings use 36 to 45 percent of the United States' energy output, Worldwatch estimates. This figure includes making and transporting materials as well as operating costs such as heating.

Social trends. As living standards rise worldwide, homes are getting bigger and using more materials.

Health issues. Some medical experts say companies are losing billions of dollars in lower productivity and health problems related to building design. Key issues are poor ventilation and, in new or remodeled buildings, seepage of chemicals such as formaldehyde from furniture, paint, and carpets.

To counter these trends, advocates of environmentally friendly or "green" building say designs should aim for structures that are long-lasting, energy-efficient, adaptable to future needs, and easy to disassemble when they need replacement.

Some of these goals run counter to another trend in building, the quest for affordability.

Mr. Kelsey says needed changes "will never occur if the economies don't continue to drive it."

Rising wood prices are already causing some important shifts industrywide: use of more salvaged lumber (older houses often have high-quality wood), and the use of "engineered lumber" (beams made of bonded wood fibers) rather than increasingly expensive beams made of solid-sawn timber.

But in some areas, the green way simply costs more. The design process is typically more intensive, for example, says Mr. Browning.

Consumers "are trying to squeeze every last penny out of design fees," he says. Yet up-front planning can have pay-backs in sharply lower heating bills and more efficient use of materials and floor space. Browning says the pay system for architects should be modified to reward them for such achievements, rather paying a simple percentage of project costs.

Alexander, who heads Sunshine Construction in Seattle, says he and his clients weigh issues of environmental benefits and dollar costs regularly.

"It's not 'all or nothing,' " he says. "It's an ongoing process," with each project involving "hundreds if not thousands of decisions."

Alexander is a fourth-generation builder whose uncle, grandfather, and great-grandfather all worked in construction. Though he majored in environmental science, Alexander says it was just three year ago, after seven years in the field, that he got serious about "eco-building."

B. J. Harris, of the Seattle design firm Stafford Harris Inc., says the idea that an environmental approach costs more is largely a "misconception."

She puts out a directory of alternative building products, many of which are cost-competitive with traditional materials.

ROOF shingles made of recycled plastic, she says, are more durable than wood ones but look and cost about the same. With a 50-year warranty on the plastic shingles, "you end up buying two roofs for the price of one."

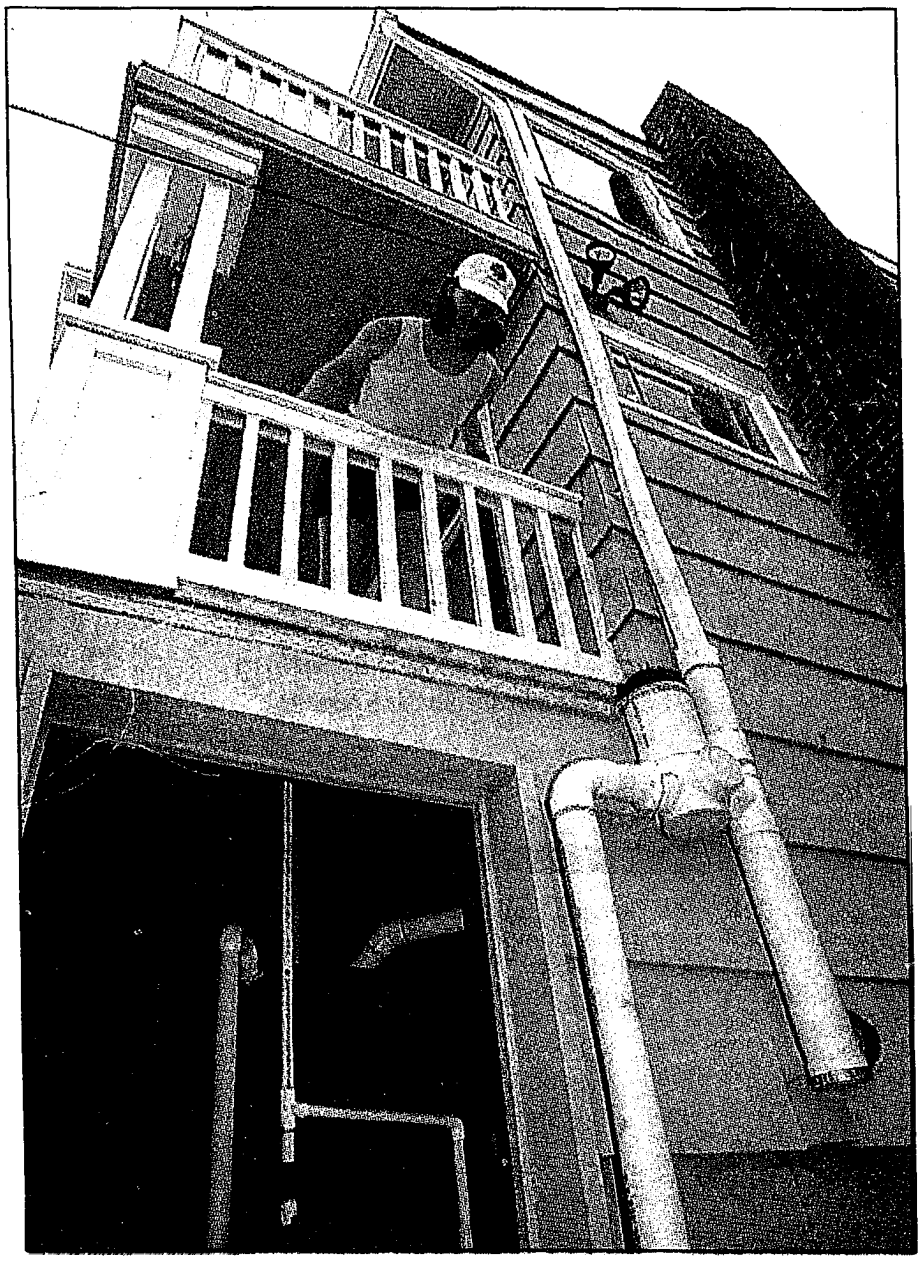
"What we're seeing is that more and more [green building] products are coming on to the market," says Browning of the Rocky Mountain Institute. "The issue is not finding the products, but understanding how to put pieces together," he says.

He estimates a green home costs about 7 percent more to build than a conventional one.

Examples of environmentally aware construction methods include:

■ Job-site recycling. About 80 percent of a demolished building can be recycled, Alexander says, from windows and doors to wallboard and copper pipes. For concrete and brick, he says, dumping costs $100 a ton in Seattle, versus $8 a ton to leave it with a firm that recycles the materials. An offsetting factor is the added labor involved in sorting the materials.

Dumping fees of over $50 a ton are seen as the point where recycling becomes economically efficient, says Peter Yost of the National Association of Home Builders. He says recy-



REMODELED HOUSE: *Suzanna Dalzell (shown) renovated her home with environmental concerns in mind, including energy-efficient windows, and interior plywood and wood finishes that had lower levels of toxic chemicals.*

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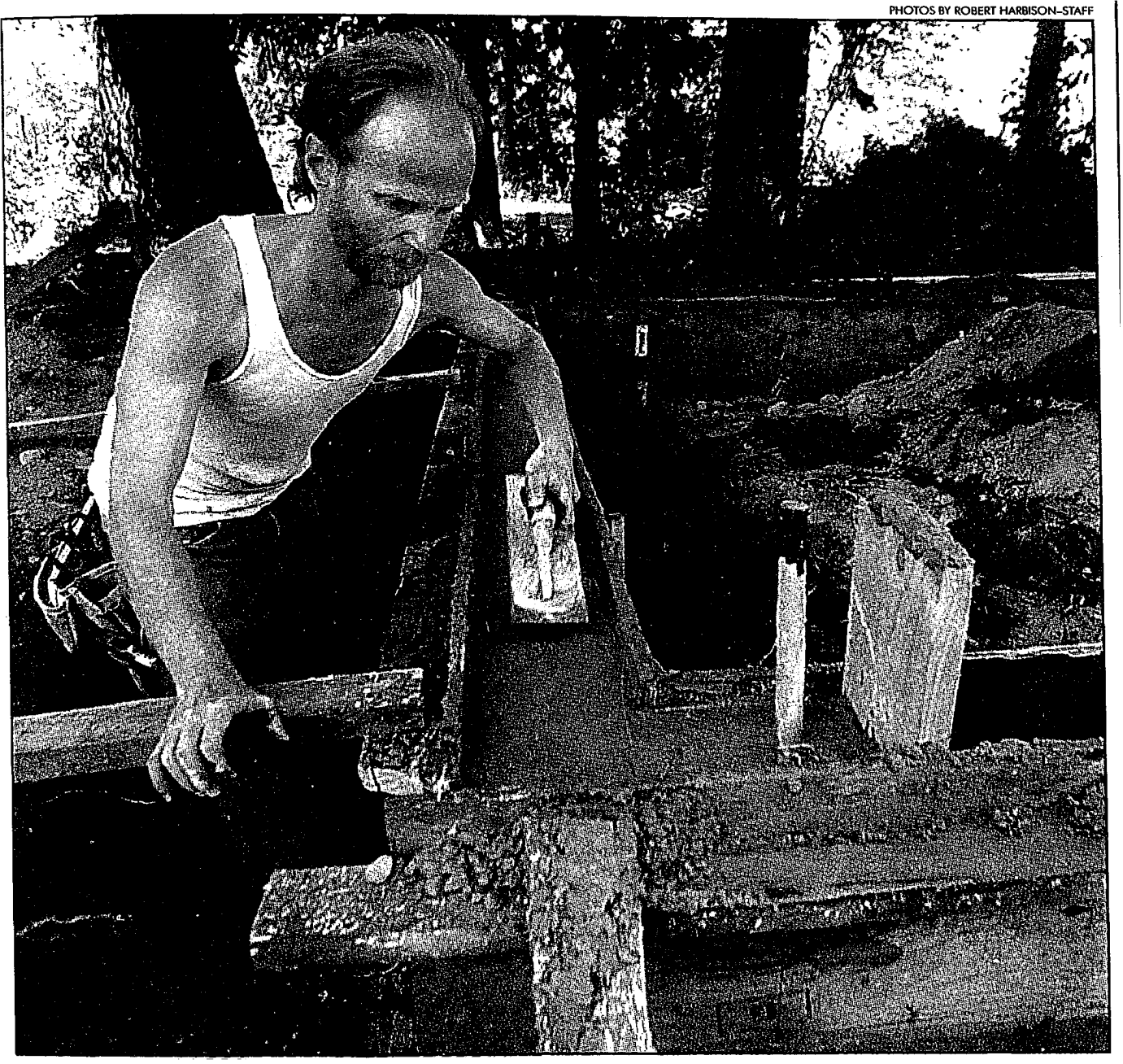
PHOTOS BY ROBERT HARBISON–STAFF



CEMENTING WITH SALVAGED LUMBER: *Jon Alexander works on the concrete foundation for a new resource-efficient home. The wood forms that hold the wet cement in place are two-by-fours scavenged from the house that used to stand on the site.*

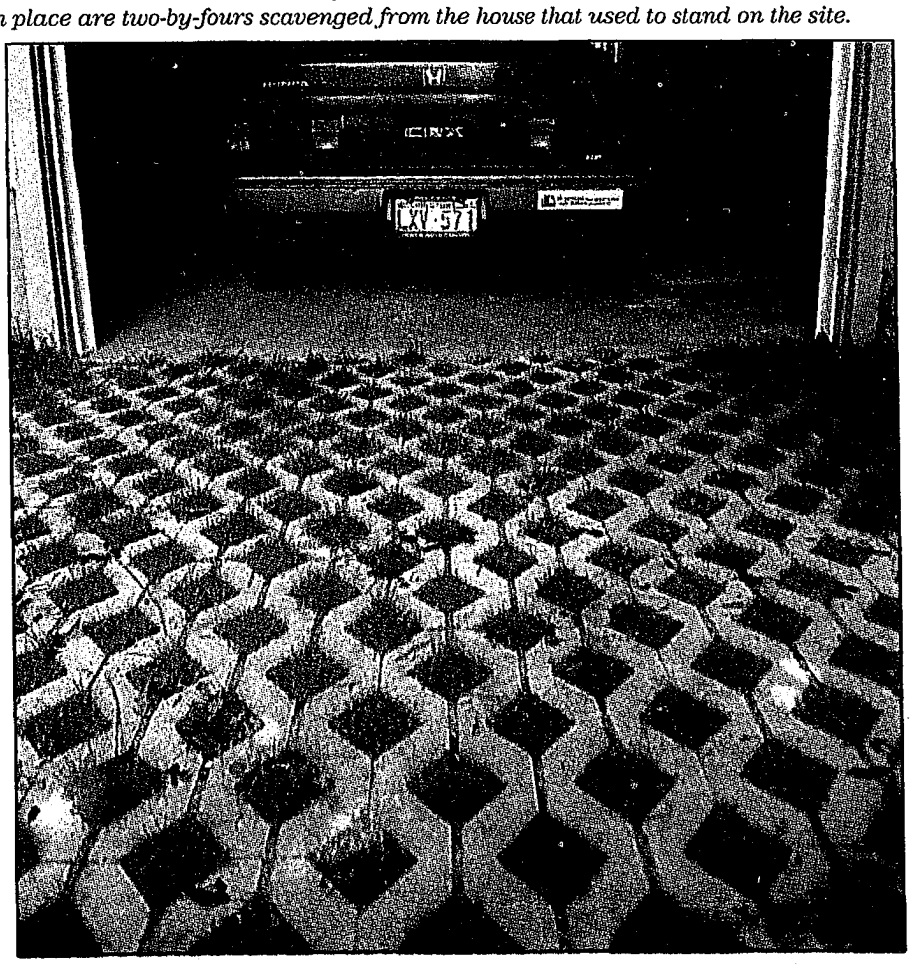
cling waste such as cardboard during new construction is often cost-effective. But Mr. Yost says it is also important for there to be markets for the materials. The Pacific Northwest, he notes, is fortunate to have forest-products plants that want recovered wood fibers.

■ Using second-hand materials. Alexander found a source in Oregon for high-quality Asian hardwood planks once used in railroad cars.

■ Efficient fixtures. Advanced window designs that use argon gas as insulation between panes rose from 1 percent of the US residential market in 1985 to 38 percent by 1991, Worldwatch reports. Efficient light bulbs, new insulation methods, and low-flush toilets are other examples.

■ Innovative energy sources. Architect Kelsey tells of plans afoot in Pattensburg, Mo., a town that is relocating to higher ground after flood damage in 1993. A likely energy source for the town is methane gas produced by manure from nearby hog farms.

Harris says these efforts do not require an aesthetic sacrifice, though she does hope Americans will turn toward smaller homes. "You still can have style and elegance," she says.



BLAZING A GREEN TRAIL: *This 'one-car, four-bicycle' garage was built by Jon Alexander's Sunshine Construction, says homeowner Tyler Folsom. Paving made of 'turfstone' allows grass to grow through and reduce run-off of rain water.*

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