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MARCH 2007

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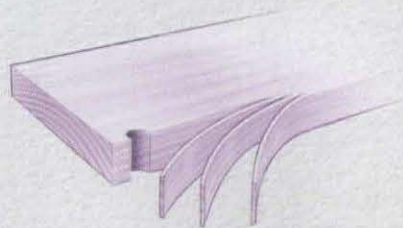
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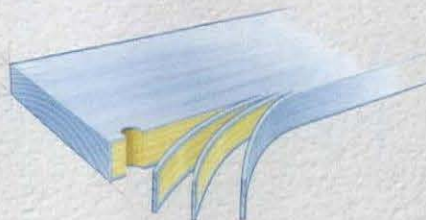


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Mark R. Johnson, FAIA, AIBD

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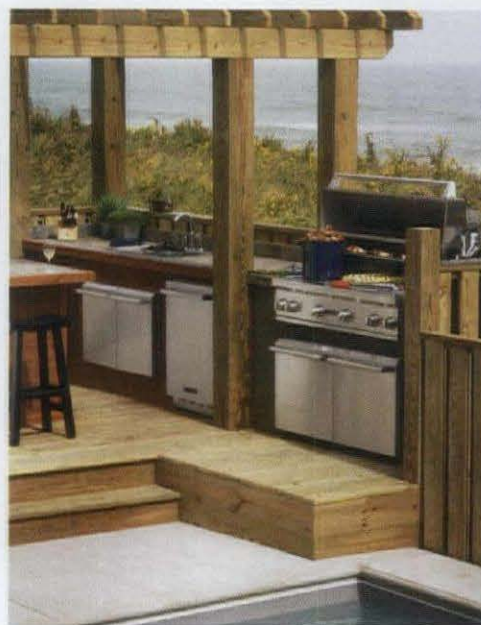
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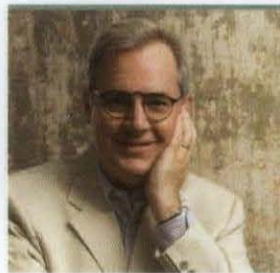


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Mark R. Johnson, FAIA, AIBD
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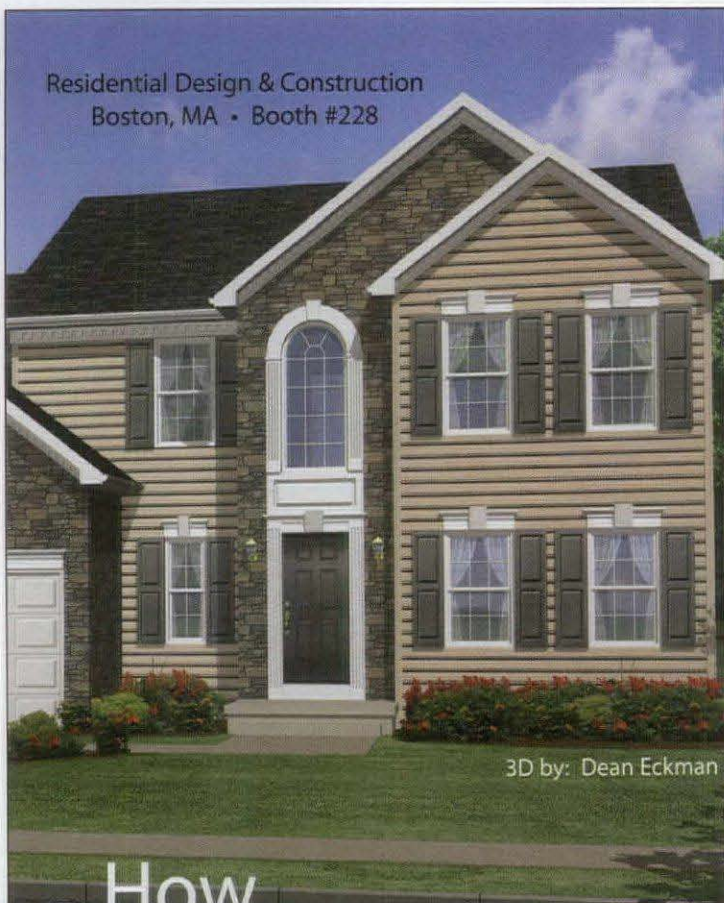
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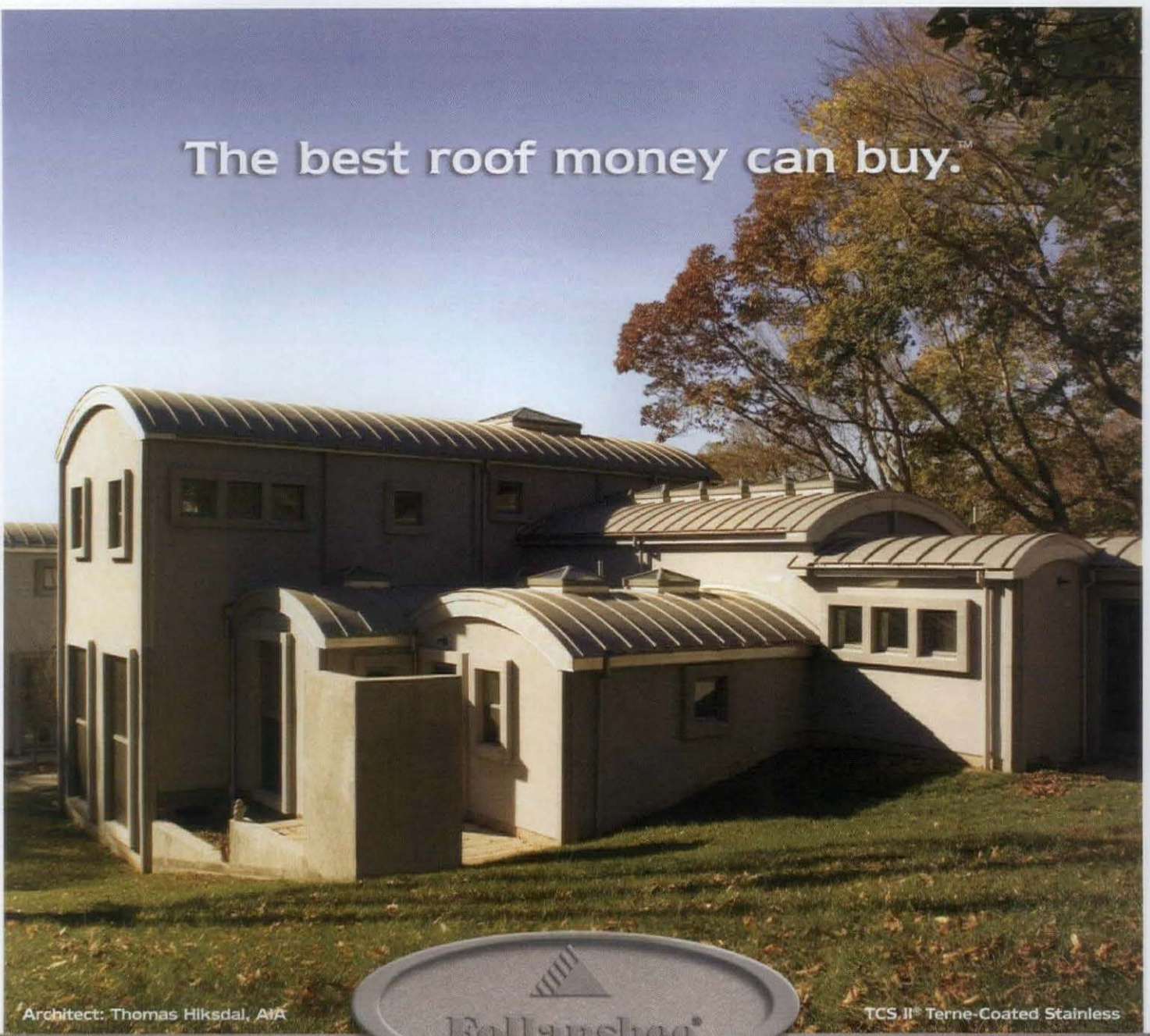
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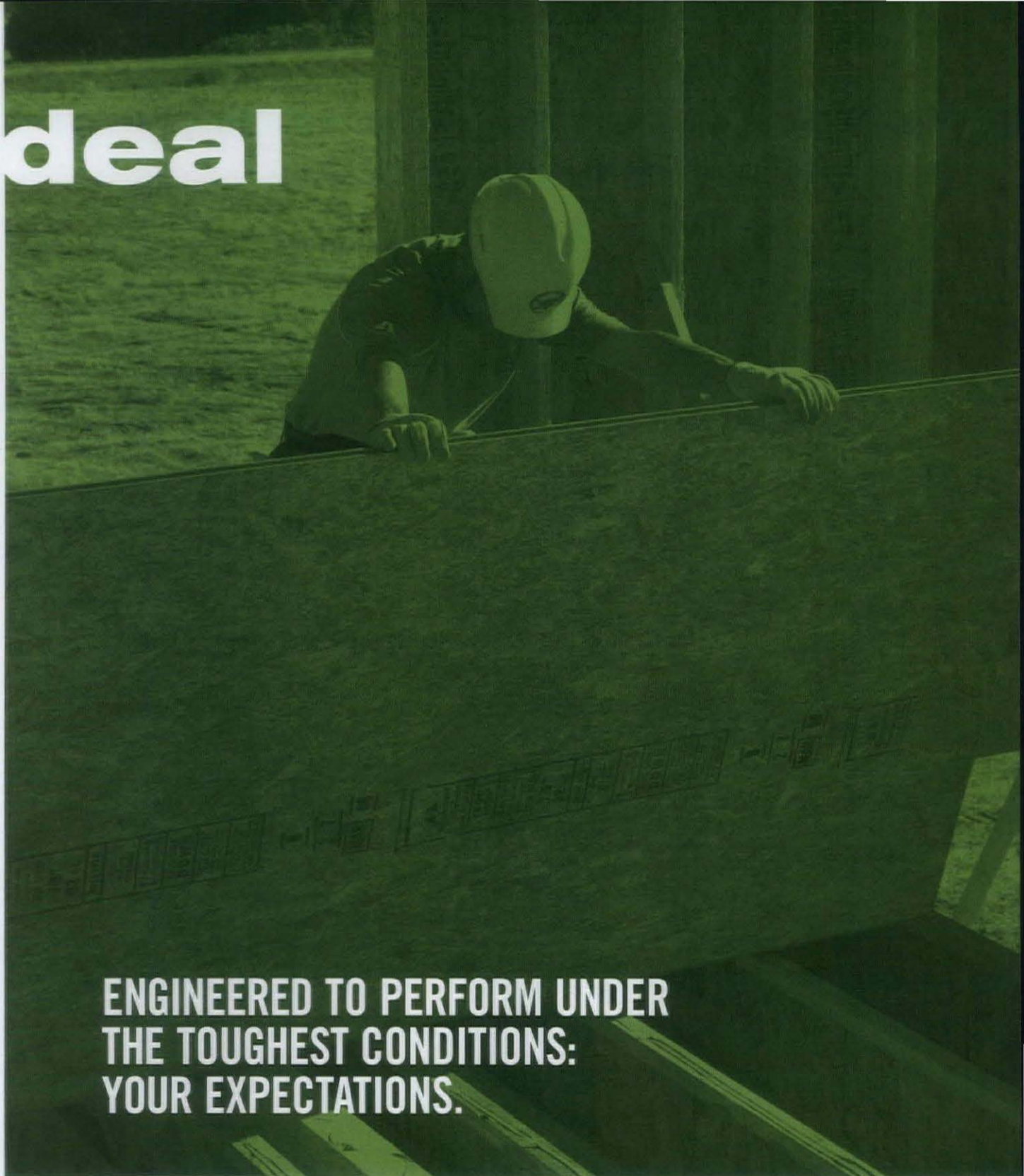
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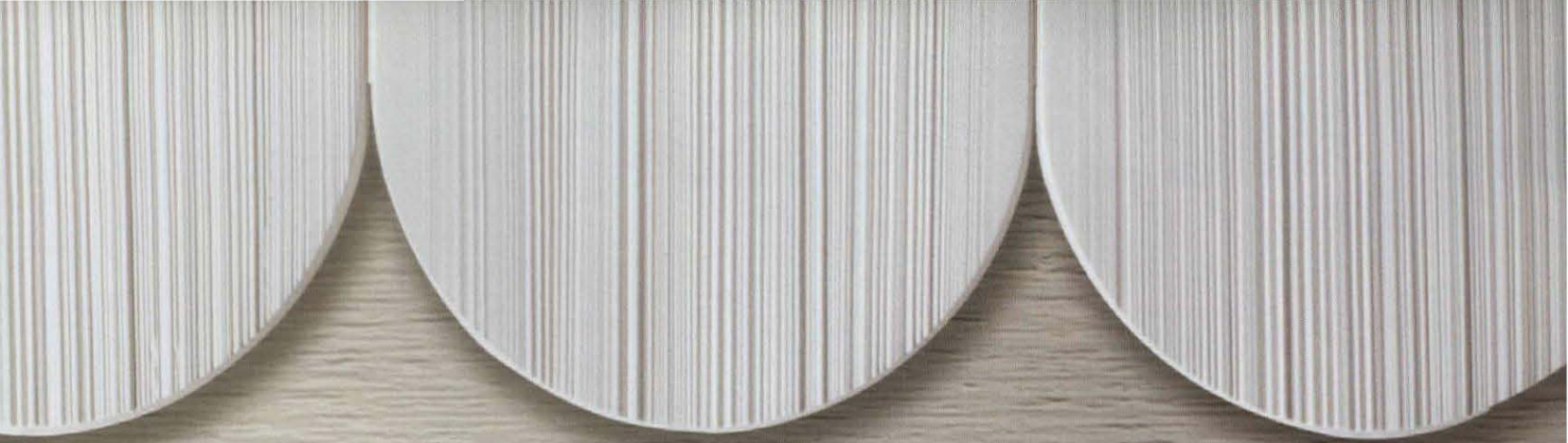
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contents



Tiptoeing across a gully in Brisbane, this ample Aussie house by Shane Thompson aims to lighten its load on the land. Photo: David Sandison. Cover photo: Miller/Hull's Lake Washington Residence by Benjamin Benschneider.

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Sean Bell harnesses the benefits of a steep and narrow site for his family's kitchen-centric house. And he rises above a plumbing layout problem in the master bath.

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LEED for Homes leader Steven Winter explains the new green design initiative.



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Most architects want to design responsibly—guarding the site, the budget, human safety, and Mother Nature. But when it comes to the latter concern, how do you determine what's really best among "best practices"?



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big and green

Some architects claim only small houses can wave the green flag. Others insist amply sized houses have an even bigger obligation to conserve where they can. We check in on the great green debate and look at three houses that live large while trying to consume less.

by Cheryl Weber, Nigel F. Maynard, and Meghan Drueding

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Sasaki Associates' sustainable showcase.



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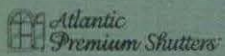
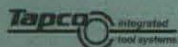
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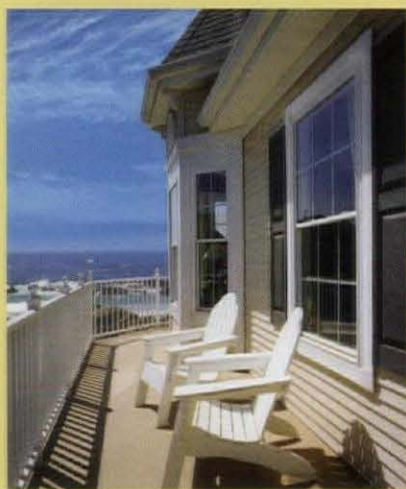
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from the editor

the not so green house

it's not a question of large or small, but high or low.

by s. claire conroy

my study break snack in college was a Snickers bar and a can of TaB from the vending machine in my dorm. I figured if I were going to indulge in the candy, I should at least mitigate the damage with a diet soda. Well, this is pretty much the same approach architects who design large houses are taking with sustainable design. They aren't forgoing the big-house commissions; instead, they're trying to soften the blow by paying attention to passive and active energy conservation and by specifying materials that originate from sustainable, recycled, or salvaged sources. Alas, eco-purists have argued this is greenwashing—and that's when they're being polite.

But what's an architect to do? It's your job to design buildings. If you were to design only small houses, you'd have to design many more of them to pay the bills. And where is the bounty of custom home clients hiring architects to do exquisitely detailed, yet resource-efficient, 900-square-foot houses? Is this a tenable business plan in our current economy?

If we were really going to think about this problem honestly, we'd indict all sizes of single-family houses as wasteful self-indulgence. And let's not even mention vacation and second homes. Those are positively profligate. Undoubtedly, multi-family housing densely packed near public transportation is a much more sustainable model for our planet's future. That is, if our human spirits could tolerate such a model. After all, owning a house is the American dream; saving the Earth is not—yet.

Maybe we'll devise another interim step along the way. Perhaps one day we'll all have our primary residences in high-rise urban buildings, but we'll also have shares in sweet little dachas in what's left of the countryside. A relief valve ... until we solve all of these problems through virtual reality and you design and build all of your work in Second Life or its equivalent. But I digress.

We're going to have to do a lot of work on our models for high-density housing before we and the dear departed Jane Jacobs can rest easy with it. We'll have to find a way to humanize it, to make it as compelling and satisfying as a 2,300-square-



Mark Robert Halper

foot house on a quarter-acre lot. It'll have to offer more than the brick walls, stainless steel appliances, and exposed ducts those so-called loft apartment developers tout.

In the meantime, we have the here and now to consider. We're still designing and building those single-family houses. And some of them are going to be big. And if they're going to be big, shouldn't they also apply the important lessons learned on the green frontier? And can't we give them a little credit for that? Really, big custom houses are the least of our problems. They are a mere fraction of the million-plus single-family homes our country is still building each year, even in the slowdown.

There's a reason why the U.S. Green Building Council's new LEED for Homes certification program primarily targets production housing. That's where the waste on a colossal scale lies—in the millions of new 2,300-square-foot houses burning through our resources year after year. So, orient those big houses toward the sun. Heck, go ahead and get them off the grid, if you can. We've got even bigger problems to conquer now and in the future. *ra*

Comments? Call: 202.736.3312; write: S. Claire Conroy, *residential architect*, One Thomas Circle, N.W., Suite 600, Washington, D.C. 20005; or e-mail: cconroy@hanleywood.com.

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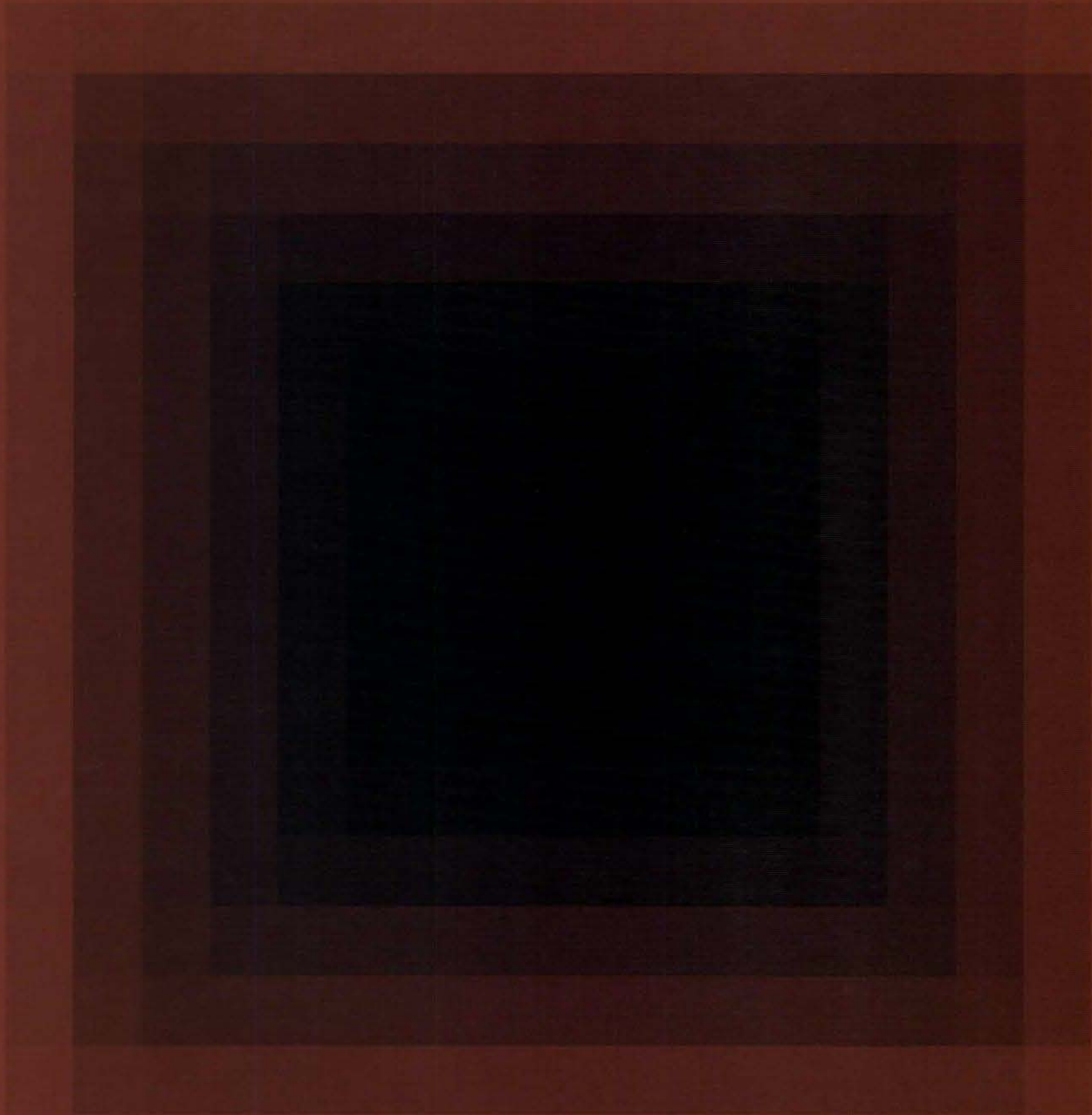
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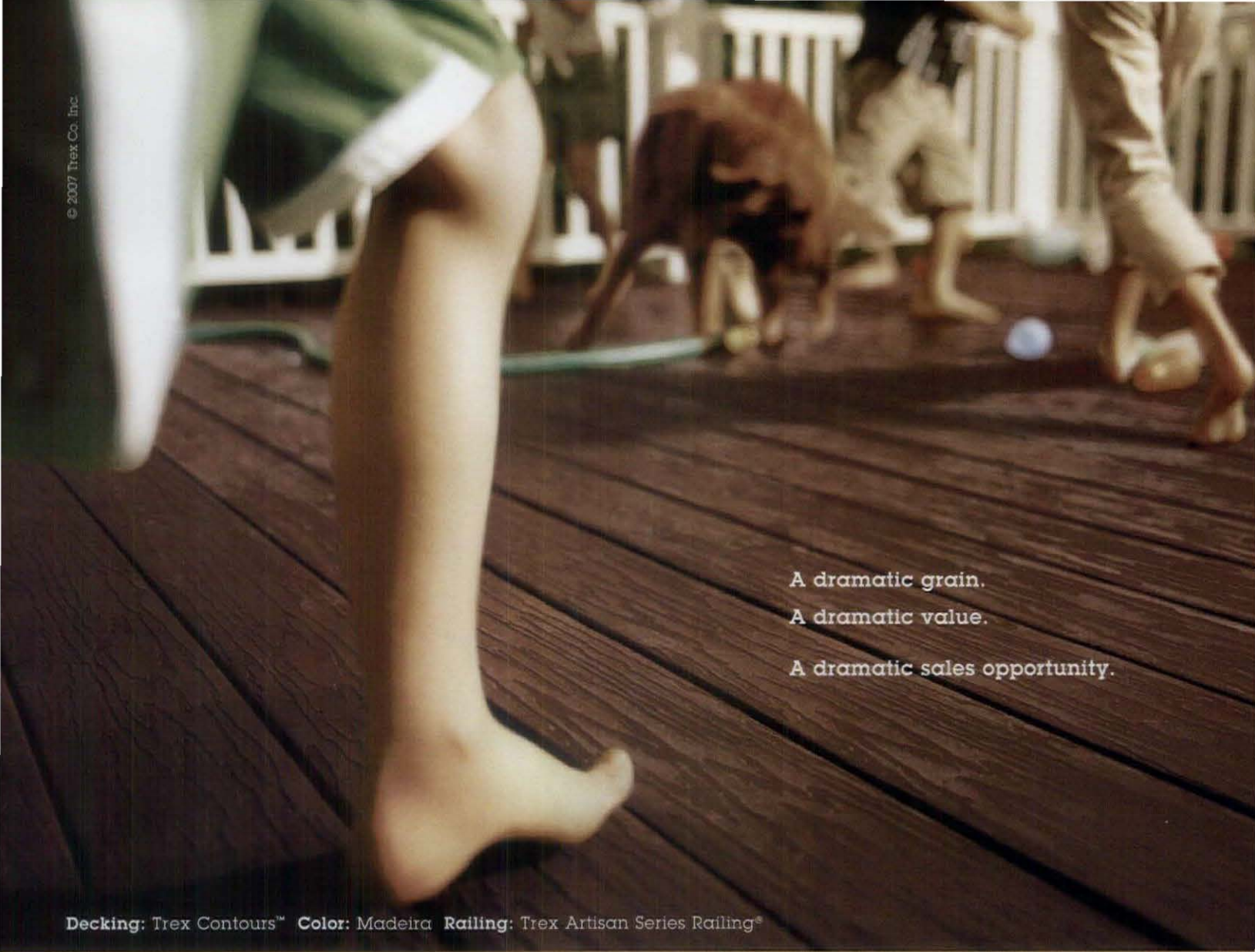


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letters

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hit or miss

I found myself admiring the projects of Pugh + Scarpa in your August 2006 issue ("Core Values," page 44). And why not, for they espouse correct features of architectural currency: compositions of notched rectangular volumes, some dwindled to bend planes also notched and incised, with fashionably industrial, but carefully elegant, materials and detailing. There's also some innovative, high-visibility use of expensive solar panels to signify their well-earned LEED status.

My bubble was burst, however, by the photo of the Fuller Lofts project, which demonstrates an apparent inability to emulate and respect a stylistic vocabulary from another time. The 1920s building appears to be quite handsome, at least on one exposure, in its austere vocabulary of stripped classicism, but the new penthouse levels contrast with it so completely as to debase them both.

The project feeds my concern that a vicious circle of carefully current architects, publications, and professional schools are conspiring to relegate 95 percent of architecture through time to the dustheap by pursuing the myth that we are duty-bound to express the zeitgeist of the present in our work (as

if the current present had all that much to recommend it). I do salute *residential architect* for sometimes featuring the best of historicist residential design, which can be very good indeed, and for sparing us the vast majority of residential construction nationwide, which continues unabated to house the clueless populace in clumsy kitsch.

Actually, you might consider an issue on clumsy kitsch. It would be a bold and courageous move.

Kenneth M. Moffett, AIA

dream weavers

While I think you have correctly stated a problem in residential design, I think there is more to it than a lack of "bravery" ("Home of the Brave?" September/October 2006, page 17).

Many years ago I was employed by an architect who worked on supermarkets for Safeway. The firm's philosophy was this: In our mobile society, it wanted to provide a "familiar" place for new residents, thereby attracting a larger number of shoppers. The bottom line drove this philosophy—and seems to drive the housing industry today. I realize that some developers are "brave" and have received great returns

for providing "out-of-the-norm" housing solutions. The problem isn't just a bottom-line question, however; it's also about the "vision" buyers have of their "castle."

It seems that bold design needs bold clients—those willing to break from the norm and explore new and innovative designs for the way they live. So, the question that may need to be answered by the design and building communities is, How do we educate, change, or empower our clients to support bold, brave design while maintaining profits? I believe this question has been asked over the centuries, and I'm not sure it has ever been totally answered. But it's a place to start to break away from the "cookie-cutter" developments and copying of neighboring houses.

*Leonard Robinson
Architect
Huntsville, Ala.*

chic choices

Why is it a fad to design a home that uses more durable materials and less energy and that requires less maintenance? I believe the problem is one of perception. Architects must educate their clients in ways they will understand. (Of course, they must edu-

cate themselves first.) For example, if clients say they don't want a passive-solar home, we can tell them we will reduce the glass and size the overhang to make the house more comfortable on the west side. If they say they don't want to spend extra money on a more efficient heating and cooling system, we can show them how much they will save on their utility costs. If they understand why, most clients would gladly make the better decision.

Green building proponents realized long ago that they must sell better construction based on good economic sense and not just on saving the planet. If we take the time to learn about this, we can help our clients by designing for them homes that cost less to live in, last longer, and are far more comfortable.

Richard C. MacCrea

redlines

The photographers of the kitchen and bath photos on pages 30–32 of the January/February 2007 issue were misidentified. All but one of the photos were taken by Theo Adamstein; the large photo on page 32 was taken by Timothy Bell.

*Letters may be edited
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letters

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hit or miss

I found myself admiring the projects of Pugh + Scarpa in your August 2006 issue ("Core Values," page 44). And why not, for they espouse correct features of architectural currency: compositions of notched rectangular volumes, some dwindled to bend planes also notched and incised, with fashionably industrial, but carefully elegant, materials and detailing. There's also some innovative, high-visibility use of expensive solar panels to signify their well-earned LEED status.

My bubble was burst, however, by the photo of the Fuller Lofts project, which demonstrates an apparent inability to emulate and respect a stylistic vocabulary from another time. The 1920s building appears to be quite handsome, at least on one exposure, in its austere vocabulary of stripped classicism, but the new penthouse levels contrast with it so completely as to debase them both.

The project feeds my concern that a vicious circle of carefully current architects, publications, and professional schools are conspiring to relegate 95 percent of architecture through time to the dustheap by pursuing the myth that we are duty-bound to express the zeitgeist of the present in our work (as

if the current present had all that much to recommend it). I do salute *residential architect* for sometimes featuring the best of historicist residential design, which can be very good indeed, and for sparing us the vast majority of residential construction nationwide, which continues unabated to house the clueless populace in clumsy kitsch.

Actually, you might consider an issue on clumsy kitsch. It would be a bold and courageous move.

Kenneth M. Moffett, AIA

dream weavers

While I think you have correctly stated a problem in residential design, I think there is more to it than a lack of "bravery" ("Home of the Brave?" September/October 2006, page 17).

Many years ago I was employed by an architect who worked on supermarkets for Safeway. The firm's philosophy was this: In our mobile society, it wanted to provide a "familiar" place for new residents, thereby attracting a larger number of shoppers. The bottom line drove this philosophy—and seems to drive the housing industry today. I realize that some developers are "brave" and have received great returns

for providing "out-of-the-norm" housing solutions. The problem isn't just a bottom-line question, however; it's also about the "vision" buyers have of their "castle."

It seems that bold design needs bold clients—those willing to break from the norm and explore new and innovative designs for the way they live. So, the question that may need to be answered by the design and building communities is, How do we educate, change, or empower our clients to support bold, brave design while maintaining profits? I believe this question has been asked over the centuries, and I'm not sure it has ever been totally answered. But it's a place to start to break away from the "cookie-cutter" developments and copying of neighboring houses.

*Leonard Robinson
Architect
Huntsville, Ala.*

chic choices

Why is it a fad to design a home that uses more durable materials and less energy and that requires less maintenance? I believe the problem is one of perception. Architects must educate their clients in ways they will understand. (Of course, they must edu-

cate themselves first.) For example, if clients say they don't want a passive-solar home, we can tell them we will reduce the glass and size the overhang to make the house more comfortable on the west side. If they say they don't want to spend extra money on a more efficient heating and cooling system, we can show them how much they will save on their utility costs. If they understand why, most clients would gladly make the better decision.

Green building proponents realized long ago that they must sell better construction based on good economic sense and not just on saving the planet. If we take the time to learn about this, we can help our clients by designing for them homes that cost less to live in, last longer, and are far more comfortable.

Richard C. MacCrea

redlines

The photographers of the kitchen and bath photos on pages 30–32 of the January/February 2007 issue were misidentified. All but one of the photos were taken by Theo Adamstein; the large photo on page 32 was taken by Timothy Bell.

*Letters may be edited
for clarity and length.*

The playground just got more interesting.



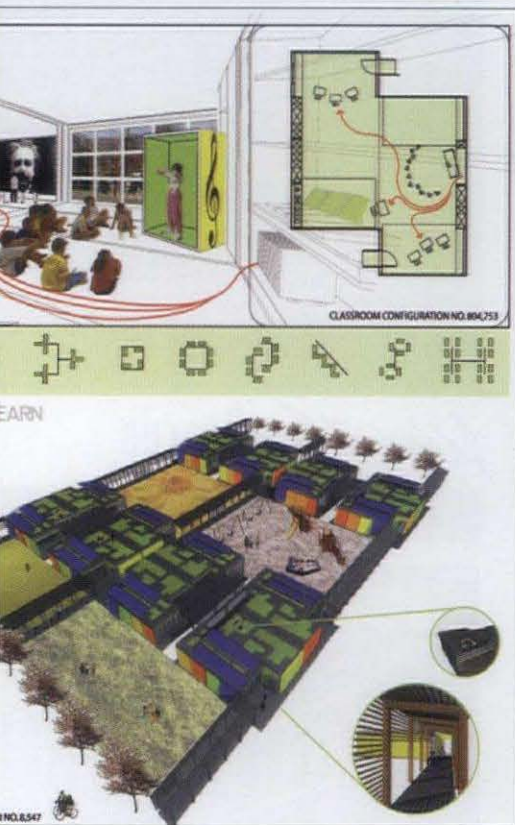
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The National Capital Region brainstormed B2L—Built to Learn modular classrooms (above)—as a model for customizable, portable classrooms. The New York chapter's Soundview Park Nature Center (opposite) includes a "bioswale" that creates a natural boundary between the park and its neighbors.

What began in 2003 with eight members scattered across the country has now burgeoned to more than 80 groups. Officially, EGB is open to students and those within five years of graduation. But Rider says most groups welcome anyone; many members are in the over-30 crowd and include a broad net of professionals, from educators to ecosystem managers. For more information, visit www.usgbc.org/egb. —cheryl weber

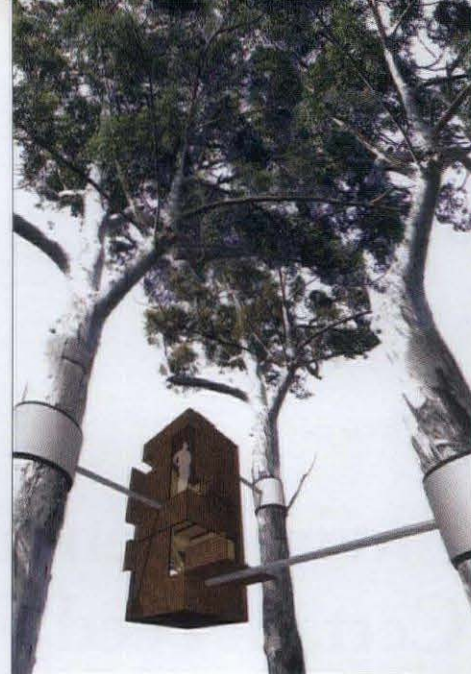
To view the winning entries in detail, please visit www.residentialarchitect.com.

sitting pretty

tree-sitters protesting logging in southwestern Tasmania's Styx Valley forest have relied on a rudimentary platform suspended from branches by rope. Although the so-called Global Rescue Station has made small strides in preventing some logging, its success has been hampered by the structure's inherent limitations.

Enter Melbourne, Australia-based Andrew Maynard (no relation to this writer), an architect and Tasmania native who has a strong interest in ecology in general and in preserving trees in particular. The principal of Andrew Maynard Architects is proposing a second-generation GRS—one that can be installed in multiples to serve as a more formidable deterrent to logging. "It's a conceptual investigation that extrapolates the tactics employed by GRS 'generation 1,'" he explains.

To wit, Maynard designed "GRS 2" to spread its load over three trees rather than



Courtesy Andrew Maynard Architects

Andrew Maynard's second-generation "global rescue station" is designed to allow tree-sitting environmental activists to protect more forests from logging.

one, thereby protecting a larger number of trees per structure and reducing the burden upon individual trees. Unlike "GRS 1," the new structure will protect activists from inclement weather. It can sleep up to three people and has a composting toilet and sink that uses water collected from the roof. And, of course, the view is tremendous.

—nigel f. maynard

best in show

Perhaps because of a cooling housing market, new product introductions at this year's International Builders' Show in Orlando, Fla., were short on excitement. But green products had a strong showing.

Valley Forge, Pa.-based CertainTeed Corp.'s (www.certainteed.com) new fiber-cement siding is now made with 30 percent recycled flyash, resulting in boards that are lighter and require less energy to produce.

Kohler's (www.kohler.com) 1.28-gallons-per-flush Cimarron toilet, shown here, saves up to 3,200 gallons of water per year compared with standard models. It also meets the U.S. Environmental Protection Agency's WaterSense High Efficiency Toilet qualifications, making HET-owning consumers eligible for rebates of up to \$175 from local utility companies.



Because energy-saving lighting is important, too, Sea Gull Lighting Products (www.seagulllighting.com) of Riverside, N.J., served up the Metropolis brushed-nickel pendant, which uses a self-ballasted pin-base 13-watt bulb and is Energy Star-compliant.

And Trane (www.trane.com) introduced the 93-percent-efficient XV90i variable-speed gas furnace, which has an integrated CleanEffects whole-house air-filtration system that removes up to 99 percent of airborne allergens.—n.f.m.



Environmentally Sustainable CertainTeed FiberCement Siding Features New “Green” Formula

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calendar



Courtesy All Elai

**made to scale:
staircase masterpieces**

through june 3
cooper-hewitt, national design museum,
new york city

Staircase design demands an understanding of cantilevering, balance, forms of rotation, baluster styles, and other architectural details. The more than two dozen staircase models that comprise this exhibit are a gift of Eugene Thaw—a Santa Fe, N.M., art collector and retired dealer—and

his wife, Clare. The curved stairway model seen here dates to the early 19th century and stands 26.8 inches tall. For more information, go to www.ndm.si.edu or call 212.849.8400.



NAHB NATIONAL
GREEN BUILDING
CONFERENCE

**nahb national green
building conference**

march 25–27
adam's mark hotel, st. louis

This year's event adds a green remodeling track and "Houses That Work" educational sessions from the Energy and Environmental Building Association. Other sessions address the business of green building; showcase green building programs and projects; and feature speakers NAHB has designated as "green luminaries," including Peter L. Pfeiffer, FAIA, and Eric Corey Freed, LEED AP. A keynote speech by William McDonough, FAIA, and an optional tour of local green homes are also on tap. For details, call 800.368.5242, ext. 8338 or visit www.nahb.org/GreenBuildingConference.

ca boom 4 **CA|BOOM4** March 30 - April 1 07
march 30–april 1 *the west coast independent design show*
barker hangar,
santa monica (calif.) airport

Described by *The New York Times* as "part trade show, part happening, part conference, part home tour, and part party," CA Boom highlights the latest trends in architecture and furniture, interior, and landscape design. This year's conference program includes sessions on prefab and green design, as well as visits to 15 contemporary projects in Santa Monica, Venice, and West Los Angeles/Mar Vista, Calif. To register, call 310.394.8600 or go to www.caboomshow.com.



Courtesy Mass Studies

**open house:
architecture and
technology for
intelligent living**

april 14–july 1
art center college of design,
south campus, pasadena, calif.

The Vitra Design Museum of Germany and the Art Center College of Design invited hundreds of emerging designers to consider how the technologies and materials of today will shape the residential architecture of tomorrow. Fifteen design teams from nine countries were selected to exhibit their visions, which include innovative designs for opening up new urban spaces, flexible and variable room concepts, and ideas for building shells capable of reacting automatically to changing climates and occupant requirements. Shown: Seoul Commune 2026: Rethinking "Towers in the Park," by Mass Studies, South Korea. Call 626.396.2319 or go to www.artcenter.edu/accd/events/events.jsp for details.

sustainable development 2007

april 25–27
hotel tivoli almansor, algarve, portugal

Organized by the Wessex Institute of Technology in the United Kingdom and the University of Thessaly in Greece, this third biennial conference on sustainable development and planning will address topics ranging from city and regional planning to environmental impact assessments, geoinformatics, and resource management. For more information, call 44.238.029.3223 or visit www.wessex.ac.uk/conferences/2007/sustain07.

**greening rooftops for
sustainable communities**



april 29–may 1
hyatt regency minneapolis

Now in its fifth year, this international conference, trade show, and awards program promotes the North American green roofing industry. Educational sessions will once again focus on policies and programs to support green roofs, design and implementation strategies, and performance research. Toronto-based Green Roofs for Healthy Cities, the event's organizer, expects more than 60 exhibitors, 40 speakers, and 1,000 delegates to attend. To view an agenda, visit www.greenroofs.org/minneapolis.

—marla misek

k + b studio

kitchen: open wide

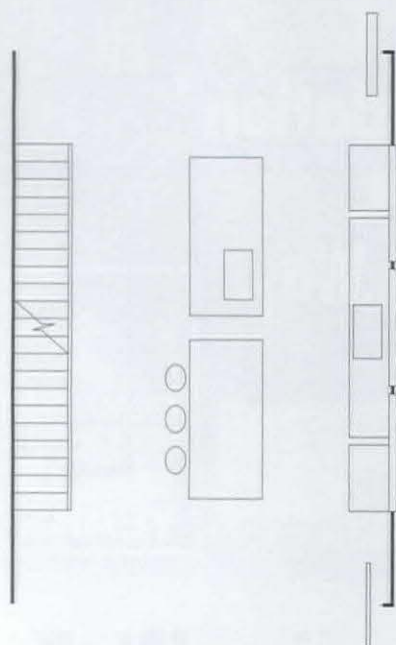
Nothing worth doing is easy, right? Well, the limitations of this Seattle infill site would daunt most mortals: The steep urban lot is deemed a “critical area” in danger of mudslides. Its southern exposures—crucial to passive-solar benefits—face a freeway. And its stringent setback requirements trimmed the buildable envelope to 70 feet deep but only 18 feet wide. Nonetheless, within these parameters, designer, developer, builder, and homeowner Sean Bell managed to insert a sustainable, kitchen-centric, open floor plan without making his family’s new home “feel like a bowling alley.”

Sixteen concrete piles driven 30 feet into the ground anchor the house firmly to its hill. Active energy-saving measures (including a tankless hot water heater, radiant heating, and energy-efficient lighting) help make up for the lack of southern exposure. The open floor plan allows natural light to pass unimpeded through the space.

Although Bell designed the kitchen, dining, and living areas as one big room, he orchestrated circulation to mitigate the elongated plan. A poplar wood screen shields the entry from direct view while providing support for stair risers as well as texture to the long expanses of wall. Twin kitchen islands with raised eating bars add vertical and horizontal layers. Imaginative use of cabinetry enlivens the galley kitchen. Hanging from glulam beams, one bank of cabinets has open storage below for a change in depth. Matching sliding doors flank the cabinets to help define the kitchen area. Behind one door is a pantry plus step-in phone nook with space for small appliances; behind the other is a coat closet.

The kitchen and adjoining living and dining areas appear warm and welcoming, thanks to materials chosen for aesthetic as well as environmental reasons. Poplar and virola woods for the cabinets and walls are fast-growing and responsibly harvested. Stainless steel on the countertops and island backs is recyclable, as are the lightweight concrete floors. A touch of mahogany for the island counters stands up to water and everyday wear and tear. Natural finishes used throughout reduce off-gassing. “I try not to paint anything,” Bell says. “Most materials have an inherent beauty that you don’t need to cover.”

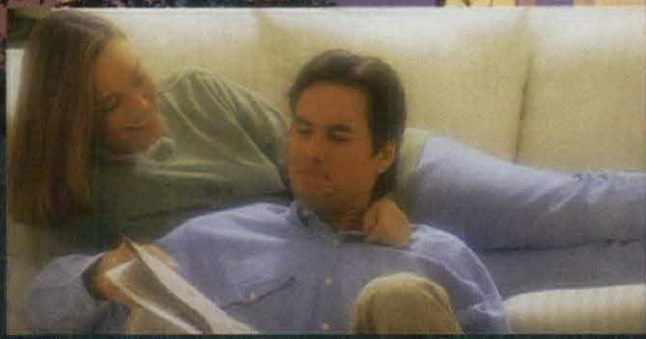
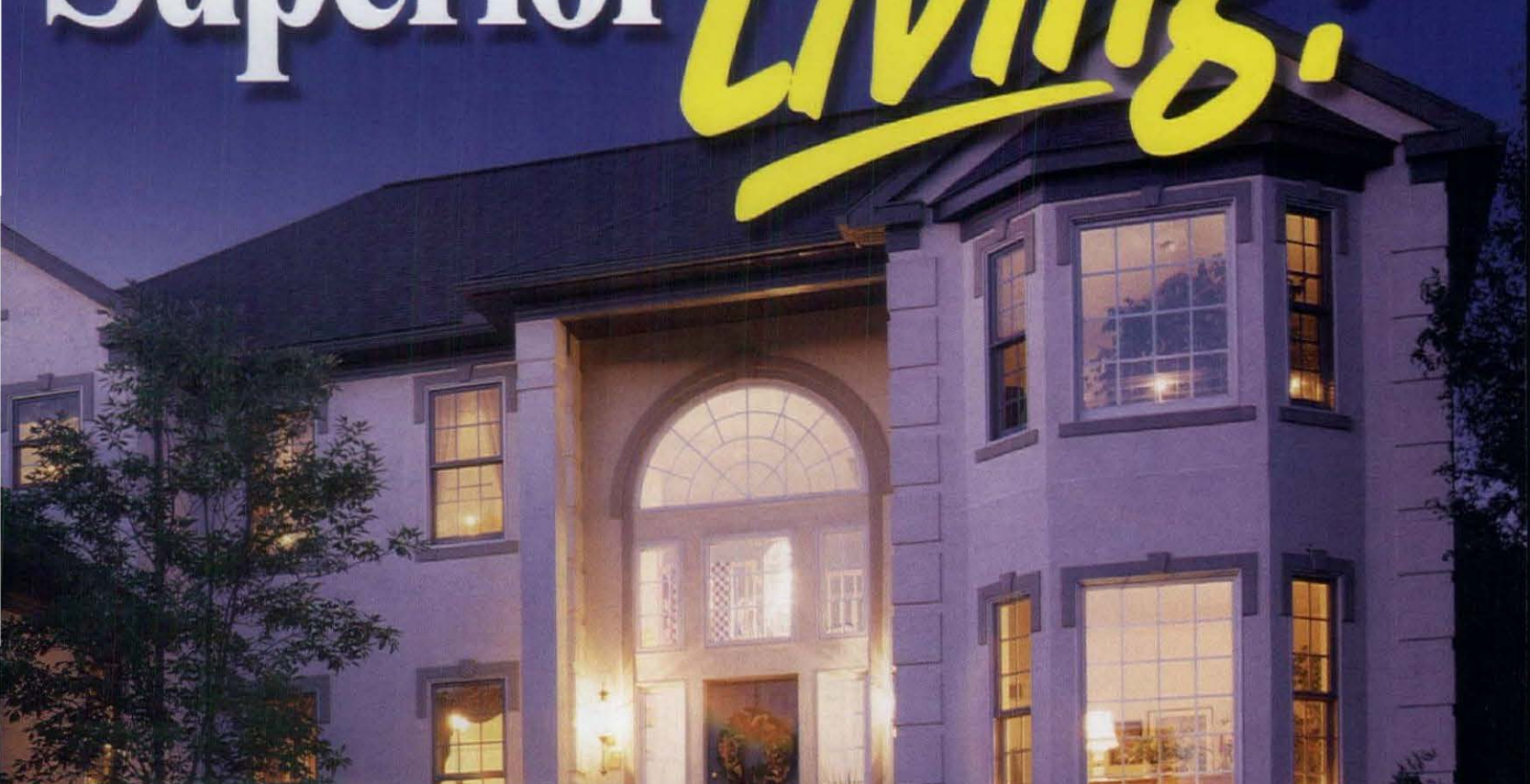
project continued on page 32



Bell says the galley kitchen layout works especially well for parties. The islands become food and drink bars, enabling guests to freely pass around either side.



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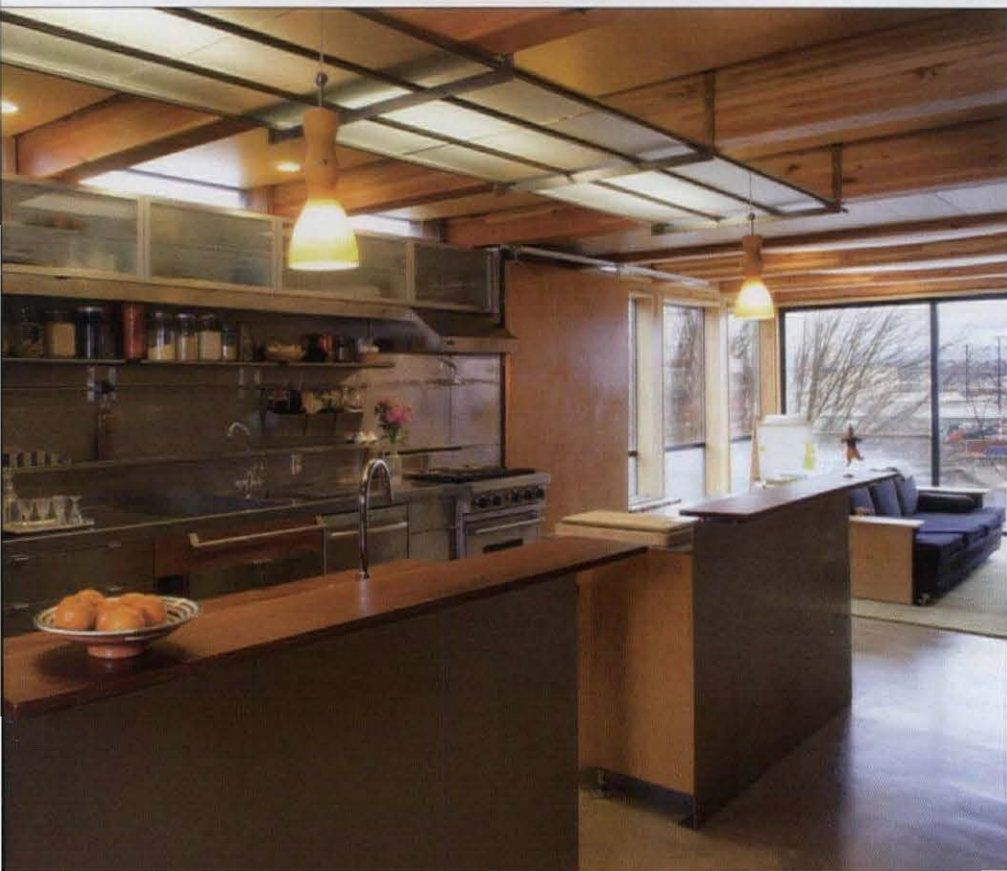
*See the limited warranty. Contact your local Superior Walls representative for details. Superior Walls of America franchises are independently owned and operated.



Bell specced energy-efficient fluorescent lights throughout his house, but he wanted a softer glow. So he custom-designed a kitchen fixture that diffuses the light with frosted-glass panels held in place by a slim steel grid.



Photos: Lara Swimmer



designer/general contractor:
360 Design Studio, Seattle

resources: cabinets and fixtures: Ikea;
range: Viking; refrigerator: Amana

k + b studio

bath: long hall

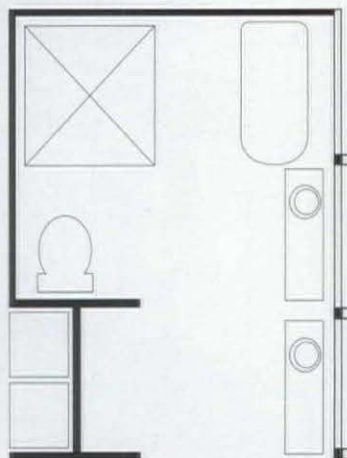
Upstairs, Bell was stuck with a long hallway to access bedrooms and baths, but he worked hard to avoid the dreaded bowling alley effect. He varied surface textures and alternated opaque and translucent segments to add visual interest to the corridor. And he placed the master bath behind a frosted-glass partition that filters light into the hallway. Wooden shelves frame the partition and break the hallway's flat planes. Inside the bath, shelves and their contents create compelling shadows.

Because the structure of the house is expressed, there was nowhere to hide unsightly plumbing, so Bell boosted the bathroom floors by six inches. The extra lift accommodates pipes and allows for a shower pan beneath the entire room. "Water drains through the Ironwood floor into the pan," he explains. Ironwood holds up well to moisture, as do the marine-grade plywood walls.

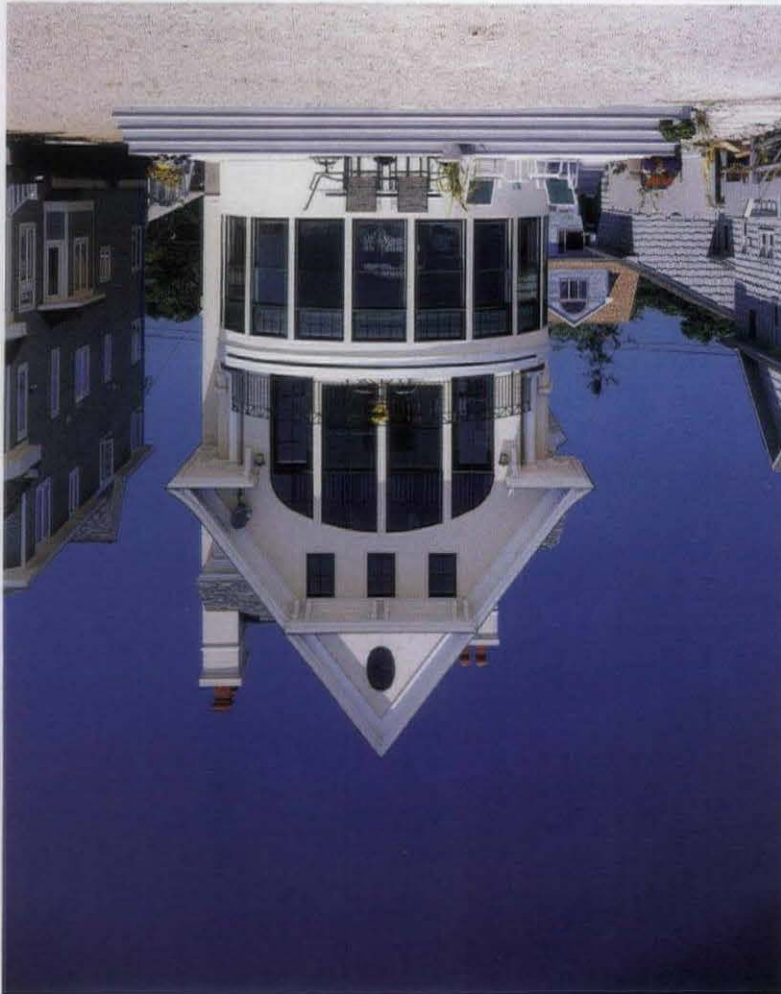
Glass panels provide another layer of protection for the wood walls inside the shower. For the double vanity, Bell cut holes in some salvaged teak tables and configured them for sinks. "When I do bathrooms, I try to get a lot of air movement to avoid moisture issues," Bell says. In this case, he speeded wall-to-wall windows that flood the room with light and fresh air. —shelley d. hutchins



Photos: Lara Swimmer



Stainless steel screws fasten the bath's plywood panels to an earthquake-resistant shear wall. The screws' tight symmetrical pattern not only meets required construction techniques, it also becomes a nifty design detail.



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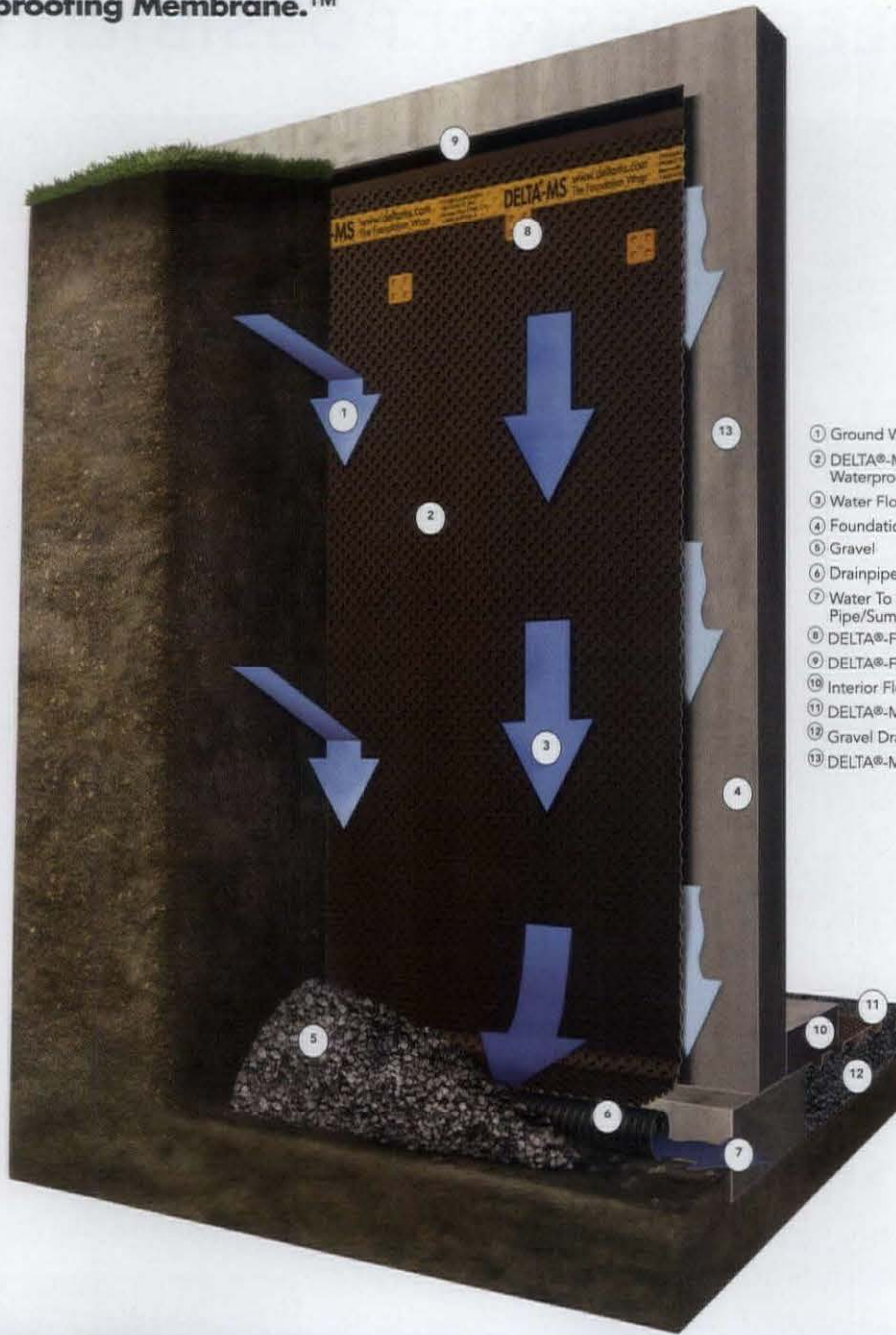
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an insider's tips for meeting residential green building standards.

by steven winter, faia

What defines a "green" home? There are certain adjectives we associate with green building: high-performance, energy-efficient, durable, sustainable, healthy, environmentally benign, and so on.

As early as the mid-1990s, innovators in the residential building market began to recognize the value of establishing certification programs to make green a quantifiable attribute. Examples such as the Green Building Program in Austin, Texas; Built Green Colorado; and Atlanta's EarthCraft House resonated with developers, builders, and home buyers to transform regional markets. But with more than 70 regional green home programs operating across the country, the definition of green still varied. Beginning in 2005, green residential-certification programs took to the national stage for the first time with the introduction of LEED for Homes.

In the past several years, the U.S. Green Building Council's LEED products for commercial buildings have emerged as the dominant brand in green building, and LEED itself has become the dominant national environmental design standard.

As the former chair of USGBC, I am a leader of LEED for Homes, the council's first foray into the residential sector. The LEED for Homes program is currently in its pilot phase in select markets around the country. The pilot rating and delivery systems will be revised as needed, based on feedback from pilot participants and the public, and will be balloted by USGBC before the fully chartered program begins sometime this summer.

Under the LEED for Homes system, builders are ultimately responsible for ensuring that the materials and practices installed in the field meet stringent criteria aimed at rewarding the top 25 percent of homes with best-practice environmental features. But good green buildings ultimately begin with design. In fact, the teams that have been approved by USGBC to administer the program and certify homes—officially designated as LEED Providers—are finding that the impetus for green building often comes from the

architect. LEED for Homes and other green home standards give designers a framework for creating a building that maximizes occupant comfort while minimizing impact on our natural resources and the surrounding environment. The following guidelines are intended to give architects a taste of what to expect when designing to meet established green home standards.

small but strong
Design for durability. To the uninitiated, the mention of a "green" home brings to mind glamorous products

and technologies—bamboo floors, cotton insulation, photovoltaics, and ground-source heat pumps, for example. Designers might be surprised to learn, however, that virtually every green home standard we have encountered places far greater emphasis on durable construction techniques that are later hidden from view than on flashy finish products. Proper details for flashing, drainage, and pest resistance ensure that the building materials have the longest possible useful life. Low-maintenance design of

continued on page 38



LivingHomes/CJ Berg

The LEED for Homes pilot program's first Platinum-rated residence is a prefab model house in Santa Monica, Calif. Designed by Ray Kappe, FAIA, and developed by LivingHomes, the modular house was installed on its site last April.

everything from flooring to landscaping ensures that less time and money and fewer chemical products are consumed throughout the life of the home. Green building standards offer significant incentives for homes designed for maximum durability. Architects wishing to learn more about durable home design can seek out building science research from such sources as the National Association of Home Builders, the U.S. Department of Housing and Urban Development's Partnership for Advancing Technology in Housing (PATH) database, and the U.S. Department of Energy's Building America program.

Design for space efficiency. Yes, home size is client-driven. But bear in mind that larger homes require more natural resources to build and maintain, as well as more energy to light, heat, and cool. Under LEED for Homes, houses that are larger than the national average (based on the number of bedrooms) must earn more points to achieve the same level of certification as smaller homes. Though it may sound challenging, the beauty of a national standard is that it allows the suburban trophy homeowner and the urban apartment

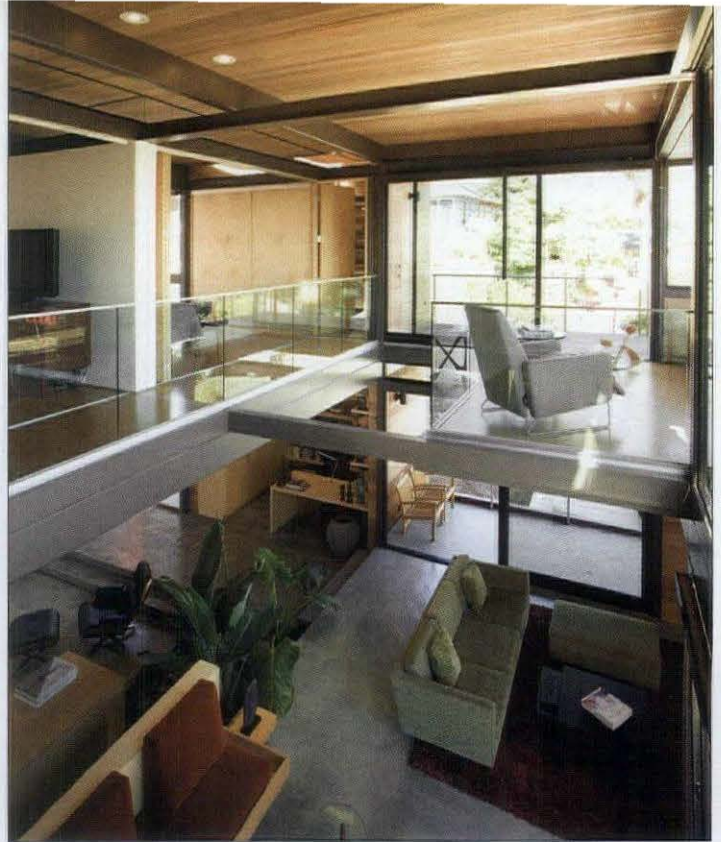
dweller to have a discourse about sustainable living relative to the same scale.

air control

Design for energy efficiency.

Most green home standards require energy performance equivalent to those standards set forth by the U.S. Environmental Protection Agency's Energy Star homes program, and LEED for Homes is no exception. Architects can earn LEED credits based on a Home Energy Rating System (HERS) Index that outperforms the minimum required for Energy Star. Or they can follow a prescriptive path to meet and exceed criteria for insulation R-value and installation quality; window U-values and solar heat-gain coefficients; heating, cooling, and hot water equipment efficiencies; lighting and appliances; and so on.

Architects should become particularly familiar with the new Energy Star Thermal Bypass Inspection Checklist, which requires (among other things) that all insulation be in full contact with an air barrier on six sides. This affects typical design details such as dropped ceilings, window seats, and bathtubs and staircases on exterior walls. A local Energy Star provider can supply a full



Photos: LivingHomes/CJ Berg (above); courtesy Steven Winter Associates (below) Kappe's LivingHomes model achieved its LEED Platinum rating in part by using low-VOC paints and stains, Energy Star appliances, and efficient heating and cooling systems, as author Steven Winter, FAIA, recommends.

explanation of the checklist requirements, which can be found at www.energystar.gov.

Design for health. Indoor environmental quality receives a significant amount of attention (and therefore points) in LEED for Homes. Proper whole-house ventilation, localized exhaust, supply rates of conditioned air, separation of garages, and a host of other issues are either required or strongly recommended for superior occupant health and comfort. Low-VOC, no-formaldehyde alternatives for insulation, paints and coatings, and floor coverings add to LEED point totals at low or no added cost. For more information on healthy building practices, search online for the Energy Star Indoor Air Package (IAP) specifications. GreenSpec and similar resources include a host of options for healthier materials selection.

These strategies for achieving durability, efficiency, and health are by and large invisible in a completed green home, but they represent the most significant, cost-effective steps toward achieving success under LEED for Homes. Architects interested in designing to meet the pilot program criteria can visit the USGBC Web site (www.usgbc.org) to contact a LEED for Homes Provider for more details or to enroll a project in the pilot program. ra

Steven Winter, FAIA, is the current chair of the U.S. Green Building Council's LEED for Homes Committee and the president of Steven Winter Associates, a building systems consultancy with offices in Norwalk, Conn., Washington, D.C., and New York City.

“these strategies ... are by and large invisible in a completed green home.”



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random harvest

picking through the current crop of green building programs.

by cheryl weber

after several years of tentative steps, national green building programs are making strides toward getting their residential guidelines—and their delivery systems—up and running. Just finishing up is the U.S. Green Building Council's LEED for Homes pilot project, a year-and-a-half-long experiment that involved more than 200 builders and resulted in 31 green-certified homes. Demand for the program is strong. The USGBC currently has applications from builders for 3,100 more homes, about 400 of them multifamily units.

If LEED for Homes targets the top 25 percent of the market, in rigor and program costs, the National Association of Home Builders is aiming for a broad swath of builders. Last year at least a dozen state and local Home Builders Associations launched green building programs based on guidelines NAHB published in 2006, and about 18 more are in the pipeline, according to NAHB green building program manager Emily English. Then there are the building science-based national programs that focus on energy efficiency, such as the U.S. Department of Energy's Building America

and Masco Contractor Services' Environments for Living. EFL has certified more than 100,000 homes since its inception in 2001—most of them for big production builders in the southern United States. Add to those the plethora of other well-run regional efforts too numerous to mention, and you've got an extensive green matrix. Rather than reinvent

the wheel, the respective groups have done a lot of protocol-borrowing and consultant-sharing, resulting in a rather complex emerging industry characterized by offshoots, adaptations, and practical alliances. As these disparate green benchmarks start to jell, architects and builders are weighing in on what makes sense, and what doesn't.

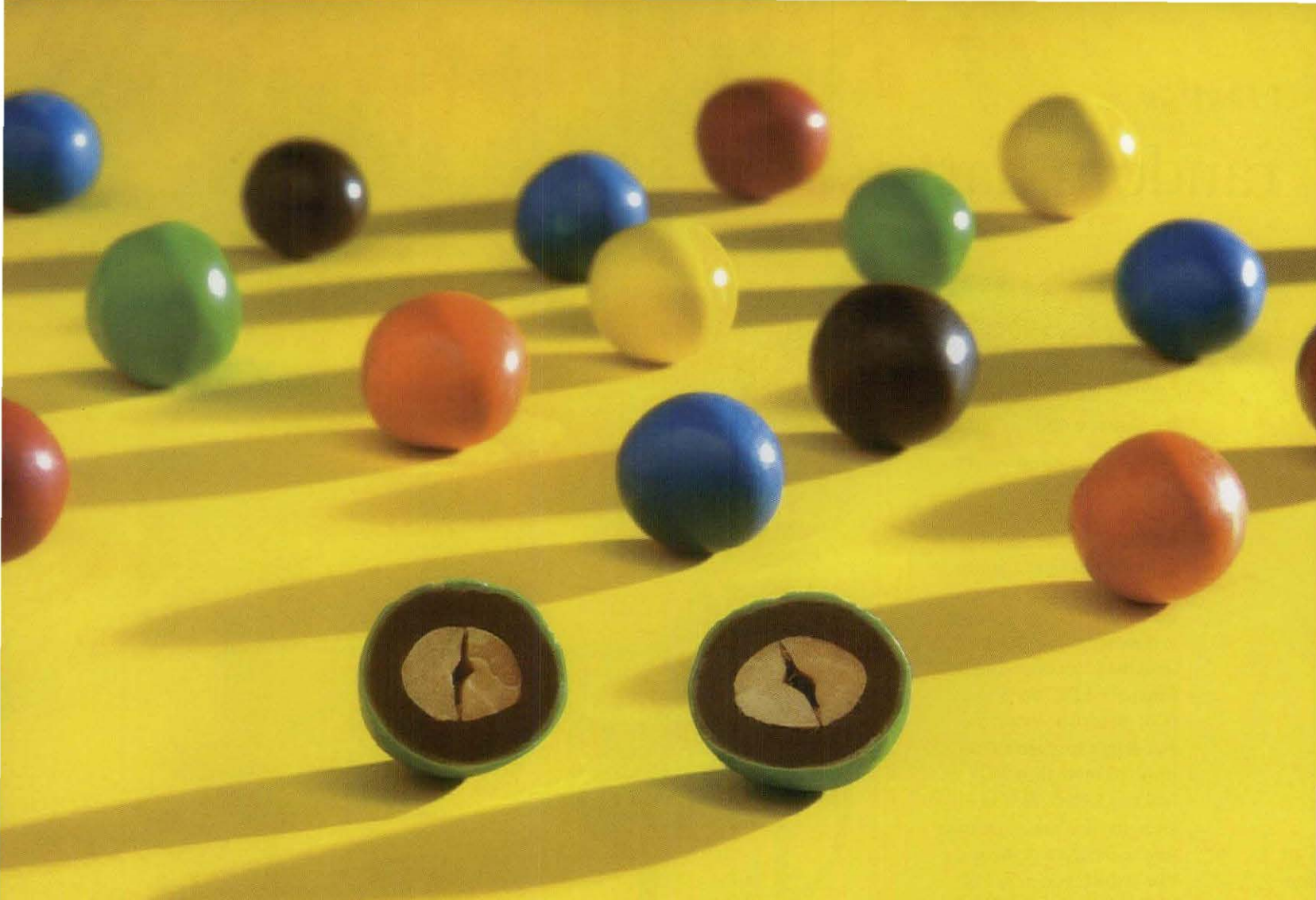
green bugs

While receiving praise for its rigor and marketable cachet, most of the LEED for Homes criticism revolves around its scoring system. One practical problem with a national program is that it's difficult to anticipate the range of circumstances that a rating system should address. But incoming cri-

continued on page 43



Rich Lillash



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Despite its shortcomings—and perhaps because of its high standards—LEED for Homes *does* mean something to the general public. “It requires you to be much tighter about your specs, and it guarantees to homeowners that they’re getting the right stuff,” Pratt says. “But it’s only at the high-end custom home-building level that people are willing to pay for it.”

USGBC, for its part, is tweaking these issues by, among other things, broadening the range of circumstances in various categories, building in more flexibility for builders to qualify for the program, and adjusting the home size calculator to ease the penalty for large

homes. “Because it’s a high-bar program for leaders in the industry, we said we’ll keep the bar high but give people more opportunities to meet that bar,” says Ann Edminster, LEED AP, an architect and USGBC consultant in Pacifica, Calif.

Once there’s more mileage on the tires, USGBC expects the verification costs—now averaging upwards of \$2,000 per custom home, less for production homes—to go down. Jay Hall, acting program manager of LEED for Homes, attributes some of the high costs to the hand-holding that LEED providers have had to do with builders, and to the fact that the current scarcity of providers means they often have to

travel long distances to jobs. Even so, he estimates that the average LEED-certified house costs \$60 more per month over 30 years, including verification costs, while saving 30 percent on energy and water. The net effect, he says, is that the cost of a LEED home is about the same as one that’s built only to code.

But whether LEED can improve the environmental score of housing on a grand scale is up for debate. Some argue that, for starters, it makes more sense to get 90 percent of builders to do houses that are 20 percent greener than to get 25 percent of builders to do homes that are 50 percent to 75 percent better. Edminster thinks there’s room for everyone.

“LEED for Homes may or may not represent more value than a local HBA program, depending on the strength of the local program and how widely recognized it is in the consumer base,” she says. “Early on, when we looked at how and why to develop LEED for Homes, we gathered together folks who run those local programs and said we want to do so to fulfill a niche, not to put them out of business. We heard that leading builders would like someplace else to go when they’ve topped out of the local program. The other piece of that equation is that there are huge areas of the country not serviced by local programs.”

continued on page 46



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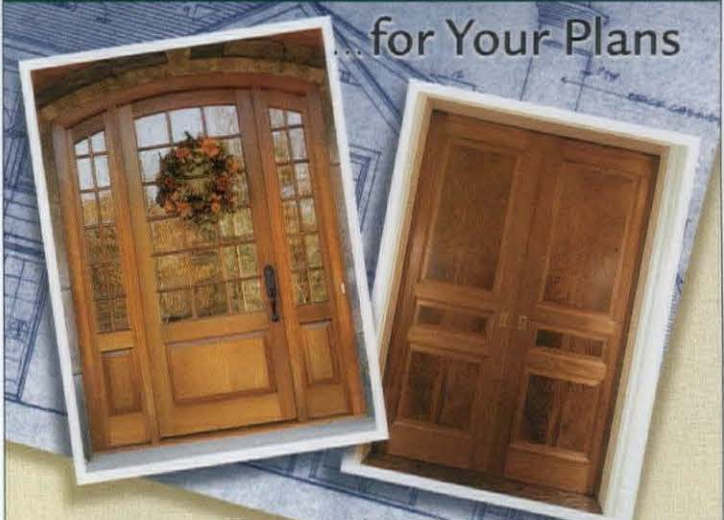
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tiques from architects such as Amy Sims, who worked with Ray Kappe, FAIA, to design the first LEED Platinum home, are helping USGBC smooth out the kinks. Sims was the project architect on the model prefab house for LivingHomes, a startup in Santa Monica, Calif. In an odd twist, the fact that the house has no air conditioning—none is needed in the temperate climate—originally meant forfeiting credits attached to an energy-efficient duct system. However, the architects were able to submit a credit-interpretation request explaining that their ventilation measures should still be worth a point. The design team also applied for and received credit for using an alcohol-based fireplace. “We looked into other programs but chose LEED because we felt it was the most comprehensive,” Sims says. “There are still bugs in it, but it’s helpful as a marketing tool and as a way for us to gauge how green we really are.”

LEED’s point system is a particularly thorny subject for Peter Pfeiffer, FAIA, a principal of Barley & Pfeiffer Architects, Austin, Texas. Practicing in a city that already has a stellar green building program, he’s frustrated with the bureaucratic wrangling required to get LEED credits aligned with local conditions. “Their points don’t necessarily relate to what’s effective in our climate,” he explains. For example, “They give a point for gray

water reuse and a point for rainwater harvesting, when rainwater harvesting can provide 10 times the amount of water per dollar spent, and it doesn’t smell.” Another bone of contention is the ventilation standard. On a recent house, he continues, “We lost points because, in our hot, humid climate, it doesn’t make sense to bring in so much fresh air. It just consumes more energy. Whom do I assign in my office to go through and argue these points?”

The program’s rigid format has left Pfeiffer skeptical of whether it’s destined for use beyond a specialized high-end niche. “It’s very complicated to rate a house through LEED,” he says. “One has to strive to find that sweet spot between something that’s verifiable and authentic and something that’s acceptable to the building market; they haven’t found it yet. It takes an awful lot of effort and money, and you just have to ask, What is the homeowner getting for this?”

Philosophically, Kevin Pratt, AIA, of Kieran-Timberlake Associates, Philadelphia, also objects to LEED’s prescriptive mode and its tendency to “gild the lily” when there would be an economic argument against certain green measures, particularly at the higher certification levels. “Solar panels are still very much not cost-effective in the standard application,” he says, “yet

a lot of people are putting them on things.” Pratt notes that, particularly on big-ticket projects that are candidates for LEED Platinum status, building a thermodynamic model of the house is a better way to fine-tune energy performance than following a checklist.

Lance Hosey, AIA, LEED AP, a director at William McDonough + Partners, Charlottesville, Va., agrees that a checklist format, by its nature, misses the boat. “The point of sustainability is to recognize that what you do in one area has consequences in another area,” he says. “When you break requirements into individual components, it’s missing that point.” For example, the credit for using a rapidly renewable material, like bamboo from China, contradicts the credit for using local resources. And the credit for using local resources says nothing about the material choice. “You could build a house out of solid plutonium, and as long as you get it [from] down the street, it counts,” Hosey says. “You could have a LEED Platinum building and virtually every credit you qualify for could be compromised.”

Even so, “It’s easy to slip into LEED-bashing because there are things about it that are frustrating,” he says. “But the huge caveat is that we wouldn’t be having this conversation if not for USGBC, because it’s raised consciousness almost overnight.”

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Tyvek.

the cost equation
LEED's demanding structure gives HBAs plenty of opportunities to stake out a middle ground. A prime example is the Home Builders Association of St. Louis and

Eastern Missouri, which is complying with NAHB's suggested point scale in all seven categories (lot design, preparation, and development; resource efficiency; energy efficiency; water

efficiency; indoor environmental quality; operation, maintenance, and homeowner education; and global impact). For \$250, builders can get their projects certified. A third-party Home

Energy Rating System (HERS) official checks for energy compliance, and the local gas utility signs off on other categories based on documentation the builders provide.

Belcher Homes' president and founder Matt Belcher, who also serves as HBA's president and chairs its Green Builder committee, is one of roughly 20 contractors who've signed on since the program's launch in 2005. He says he routinely builds to the Gold level, which is 40 percent more energy-efficient than code. "I thought I was doing a good job with waste and material purchasing, but this program has reduced my waste by two-thirds and tightened up my bottom line," says Belcher, who plans to work across party lines. Once a LEED for Homes provider becomes available nearby, he expects to offer LEED as an upgrade from the HBA program.

In arid Albuquerque, the folks at the Home Builders Association of Central New Mexico have increased substantially NAHB's green guidelines on water conservation, raising from six to 30 the number of points required for the Bronze level of its Build Green NM program. Armando Cobo, AIBD, a designer and former builder with an architecture degree, says custom builders pay about \$800 to have a local HERS rater test for energy efficiency and certify that the water-saving features have been installed correctly. A

continued on page 48



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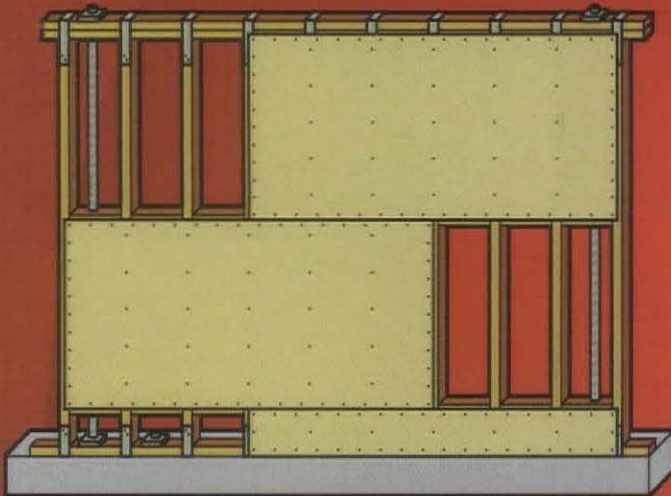
USGBC member who participated in the LEED for Homes pilot, Cobo notes that, particularly for affordable housing, choosing between the two will likely come down to cost. "LEED Silver is similar to Build Green NM Gold," he says. "At that point, you're achieving 40 percent energy reduction over code, and with Build Green you can save maybe 3 percent."

Other architects believe LEED's brand recognition—and regular spec updates from unbiased technical advisory groups—are worth the money. Houston architect LaVerne A. Williams, AIA, LEED AP, is a volunteer advisor for Green Globes, a national materials-rating system affiliated with The Green Building Initiative, the marketing arm of NAHB's Model Green Home Building Guidelines. "The GBI is for builders, not for the consumer," says Williams, whose firm, Environment Associates, has three LEED homes under way. "It's 'green-wash' to a great degree, and I'm not in favor of it because there's no [across-the-board] third-party verification." One of the LEED homes he's working on is also enrolled in Austin's green building program, and he'll use some of its testing to reduce LEED's verification costs.

While top-tier programs are a stretch for production builders in entry-level markets, some are taking them for a spin around the block. Mack Caldwell, AIA, LEED AP, recently designed a zero-energy starter home

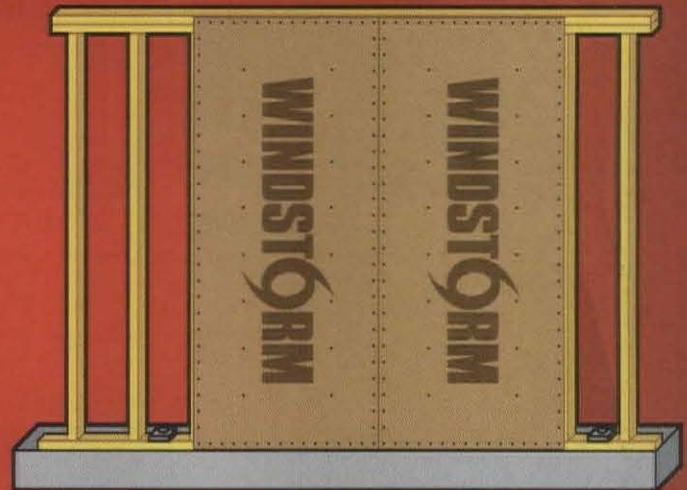
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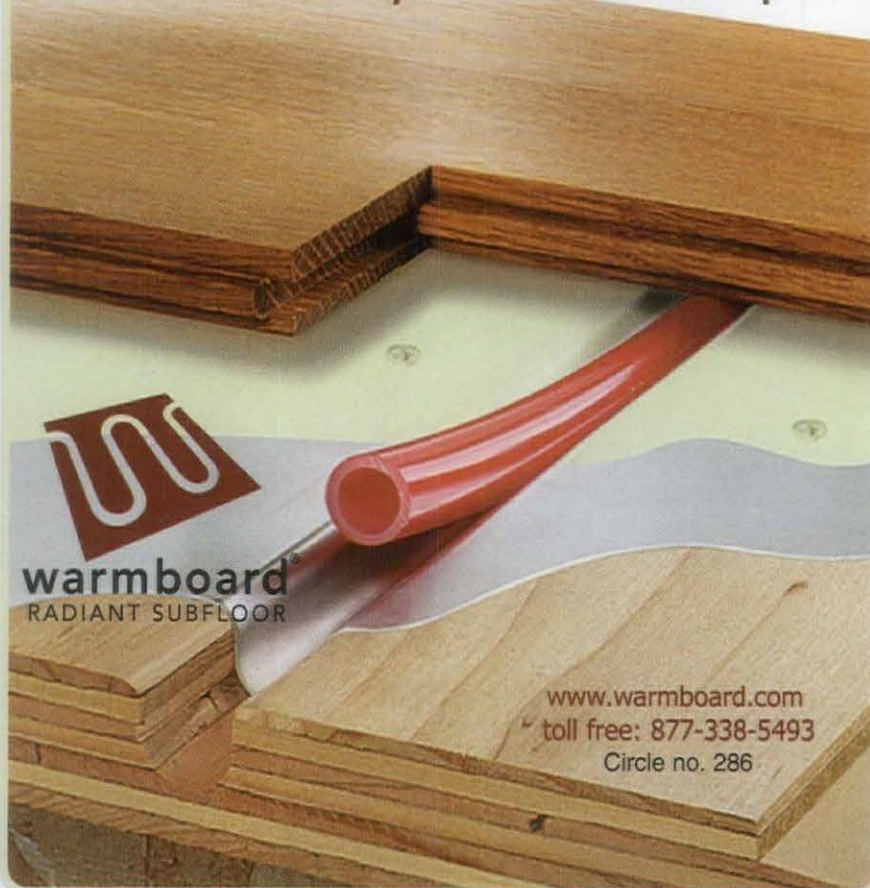
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for Ideal Homes, Oklahoma's largest home builder. With some creative partnering with subs, suppliers, and Building America, the house—which includes 28 solar panels, a geothermal heat pump, and a tankless water heater—was built for just under \$200,000. It was LEED-certified after construction, and Ideal Homes is leasing it for a year to monitor energy use.

After the test period is up, the builder will decide which measures are worth exploring. Caldwell, a professor of architecture at the University of Oklahoma who's also employed by Ideal Homes, says that the builder applied to LEED for Homes because it wanted full third-party verification. "You have to prove you're good to an unbiased authority, and LEED is that kind of rating system," he says.

As these eco-conscious programs evolve, architects and builders stand to become better-educated, and the competition for bona fide green building will become tougher. The goal, though, is that such standards will eventually become obsolete. "At some point, the hope would be that these strategies are so endemic to the industry that we won't need a filter," Hosey says, "and that ultimately, there will be no products out there that don't comply across the board." **ra**

For more on green building programs, please visit www.residentialarchitect.com.



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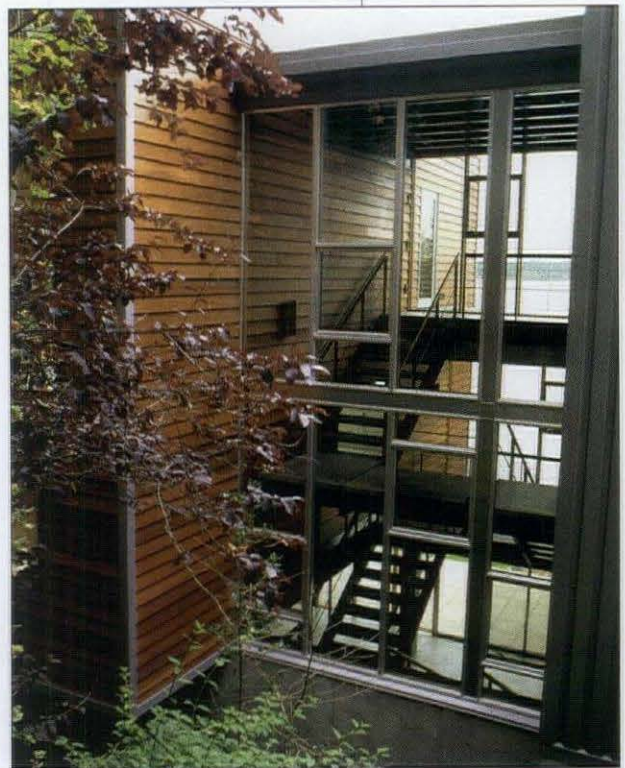
*are they compatible
or contradictory in the
single-family house?*

by cheryl weber

eco-conscious

architects are feeling optimistic these days. Green building programs are off to a solid start, offering tech support and a stamp of approval for homes that adopt environmental measures. The gap between good looks and sustainability is narrowing too. Shimmering solar panels and planted roofs now bestow a hip aesthetic among in-the-know homeowners. As green goes mainstream, more clients want to participate. Yet there's one thing many of them don't want to sacrifice, and that is the pleasure of living large. Despite the recent spate of interest in not-so-big houses, Americans haven't fully assimilated the less-is-more attitude. They still want indulgences like home theaters, heated swimming pools, and three-car garages—particularly the subset that can

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basic training

discourse about sustainability is often dominated by buzz words such as low-odor, non-toxic, and energy-efficient. Though it's laudable to specify products with these characteristics, their overall impact is limited if other, larger issues aren't resolved first. The Miller/Hull Partnership took this important lesson to heart for the design of this Lake Washington home. The emphasis here was on sensitive site preparation, sensible house orientation, and the surefire basics of passive heating and cooling.

The steep site had an existing house the architects needed to raze and a lush, delicate landscape they wanted to preserve. Limiting the amount of excavation of the hillside was another high priority. So the architects devised a continuous concrete wall to make a platform for the structure's two cantilevered wood-framed cubes and to protect it from landslides. "The reason we did this was to use the site's natural vegetation to hold the hillside," says Robert Hull, FAIA, who designed the house with associates Brian Court and Petra Michaely. "The cedars, firs, maples, and ferns were left intact."

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This Washington state residence has large, operable windows that draw in breezes, eliminating the need for air conditioning. A central "stack" also cross-ventilates the house.

and big green

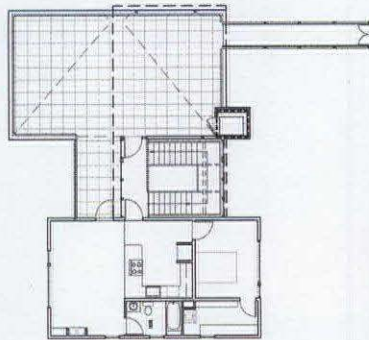
afford an architect. That leaves architects with environmental records pondering the ethics of going green on a grand scale. Does a conservation agenda justify more than 3,000 square feet for a family of four?

It's a conundrum, because a large house violates the first premise of resource stewardship—not just in the collective energy used to build and operate a house but also to furnish and maintain it. Limiting one's carbon footprint is, by itself, a green strategy. On the other hand, what's wrong with a 5,000-square-foot house that produces 100 percent of its electricity? Lance Hosey, AIA, LEED AP, a director at William McDonough + Partners, Charlottesville, Va., thinks a lot about this tension between large and small. His tiny, gas-fed Smart car, for example, is more fuel-efficient than the gas-electric hybrids simply because there's less weight to carry around. The same analogy could be used for a single-family house: In the grand scheme of things, green gadgets don't necessarily cancel out square footage. But he envisions a time when building materials will be made and disposed of cleanly. "In the environmental movement, we talk about emulating nature," Hosey says. "We don't accuse a sequoia of being unnatural. The smarter buildings become about how they use resources; size becomes less of a factor."

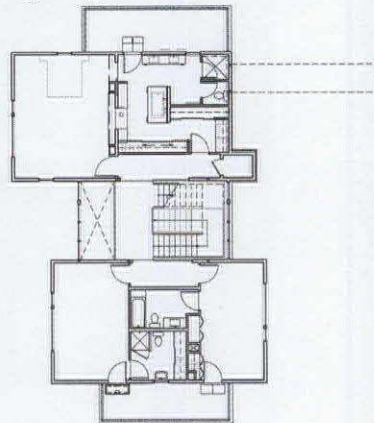
small is beautiful

Until that zero-energy, dust-to-dust house is within reach, however, can clients have their cake and eat it too? For many green architects, the short answer is no. "On principle, I'm very skeptical when people put a geothermal heat pump in a 20,000-square-foot house and call it green," says Brian MacKay-Lyons, FRAIC, Hon. FAIA. "I'm skeptical even of active rather than

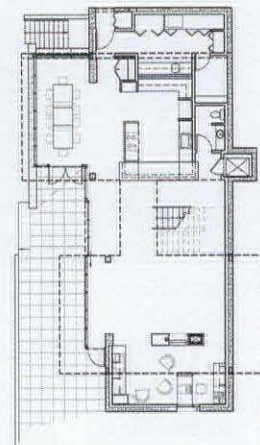
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upper entry floor



middle floor



ground floor

The three-level house places private spaces on the second floor and a self-contained guest suite with its own kitchen on the top floor.

The architects left the flora intact, where possible, and sited the two cantilevered volumes among mature cedars, firs, maples, and ferns. The structure is clad in clear cedar, which carries through to the ceiling inside. Edges are trimmed in contrasting aluminum.





That vegetation creates its own cool, forested microclimate to the east, in contrast to the warmth from the western side facing the water. "Heat gain from afternoon sun bouncing off the lake was a real concern," says Hull, who tries to avoid air conditioning in the predominantly temperate climate in which he works. He found natural ways to cool the house instead, using large, operable windows on the west and a central steel staircase that acts as a "stack" to pull air through the house. "The staircase rises through all three floors, so operable windows up and down the stairs can be reached easily by the owners," he explains. Automatic shades offer protection from the afternoon sun, and operable sliders and smaller windows provide additional air circulation.

Hull scavenged the teardown house for as much salvage material as possible. And he specified a host of other sustainable materials, including certified red cedar siding, recyclable galvanized and black steel, thermally broken aluminum-clad wood windows, flyash exposed-concrete floors, bamboo-veneer cabinets, low-flow toilets, and energy-efficient appliances. Energy-stingy in-floor radiant heat and an energy-efficient gas boiler keep the interior comfortable on cool nights.

Hull's firm has been doing sustainable design since the early 1980s, and he admits that many of these strategies are merely sound construction practices. "Every architect should be thinking about sustainability," he says. "I look forward to the day when we don't have to talk about it."—*nigel f. maynard*



Aluminum-clad wood windows filter light into the first-level interiors (above and below, left), highlighting an eclectic mix of materials, including flyash concrete floors, steel, and bamboo veneers.

project:

Lake Washington Residence, Mercer Island, Wash.

architect:

The Miller/Hull Partnership, Seattle

general contractor:

Miller & Miller Construction, Maple Valley, Wash.

structural engineer:

Quantum Consulting Engineers, Seattle

project size:

4,000 square feet

site size:

0.4 acre

construction cost:

Withheld

photography:

Benjamin Benschneider

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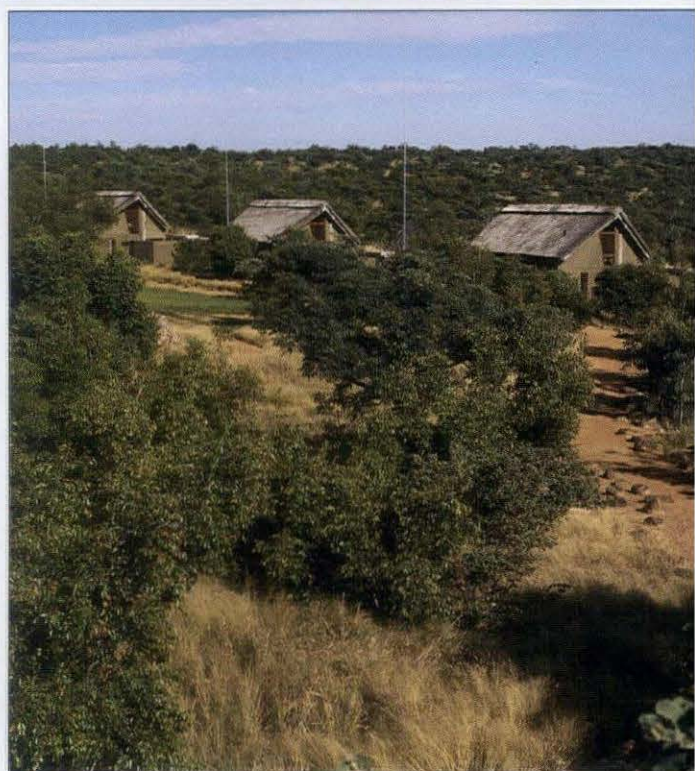
passive solar, because I think 80 percent of the value to be had in solar is passive, not photovoltaic panels.” In 30-odd years of practice, he says his Halifax, Nova Scotia-based firm, MacKay-Lyons Sweetapple Architects, has done maybe one house bigger than 3,000 square feet. MacKay-Lyons also views oversized materials—salvaged or not—as irredeemably wasteful. “I actually get nauseous when I see these big West Coast houses with humongous timbers holding up something that could be held up with a 2x4,” he says. “The size thing and the material thing are connected by the culture of conspicuous consumption that we’re in—the biggest house with the biggest chunks of wood.”

Susan Maxman, FAIA, design principal of Philadelphia’s Susan Maxman & Partners, also believes a sprawling footprint is inherently unsustainable. “I feel people really should look at space differently if they’re going to be sustainable,” she says. “The house has to suit the program, obviously, but if you look at size in terms of conservation, you develop a whole different idea of what’s big and what’s small.” As a sailboat owner, she has found that one actually needs little space to live, as long as it’s efficient. Maxman and her husband are building a 1,900-square-foot house in the Bahamas that will double up on room functions to accommodate visits from seven children and 14 grandchildren. She’s also excited about a potential client who wants to build a 900-square-foot house among megamansions on Long Beach Island, N.J. “If a client came to me asking for a 7,000-square-foot house, I would not do it,” Maxman says. “You can build really nice small houses if they have well-proportioned rooms and big windows and if circulation spaces are minimized.”

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DRY Design pulled apart the main lodge (above) to create a sun-warmed breezeway (opposite, top.) Smaller, separate sleeping lodges (right), like their larger counterpart, showcase grass-roofed verandas and native landscaping.

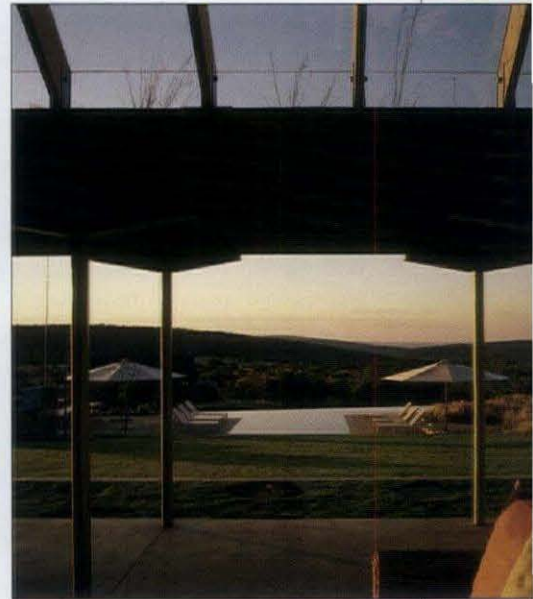


inside and out in africa

architects all over the world strive to establish a strong indoor-outdoor connection in their work. But a 12,863-square-foot lodge in South Africa by Los Angeles-based DRY Design takes the idea of living with nature even further than most. Known as Lengau Lodge, the project sits on a private wildlife preserve in the country's Limpopo province. The clients, a geologist and his wife, had fond memories of living in tented camps while working in the Kalahari Desert. So they hired their son, John Jennings, and Sasha Tarnopolsky, DRY's principals, to create a house that recaptured that sense of living lightly on the land. "They wanted to feel as if they were camping," Jennings says.

He, Tarnopolsky, and their staff ultimately decided to place the lodge's long, narrow main house into the site's natural contours, preserving the original topography. They did the same with the eight outbuildings on the property, including four guesthouses, an outdoor kitchen and dining pavilion, a staff lodge, a ranger lodge, and a workshop/laundry room. "My parents have friends and family all over the world who come and stay for longer periods of time," Jennings says of the project's scope. Locally popular thatched roofs helped dictate the buildings' tentlike shapes. "You can't have thatched roofs flatter than 30 degrees or steeper than 60 degrees," he explains. The durable, natural thatch forms the finishing material on both the inside and outside of the house, serving as

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A wildlife viewing station (above) and the main breezeway and veranda (top) are among the compound's many places for observing and enjoying the spectacular African Bushveld.



and big green

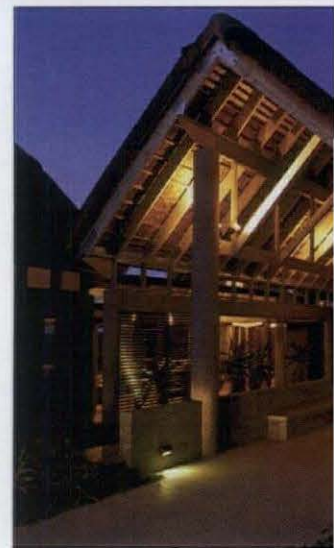
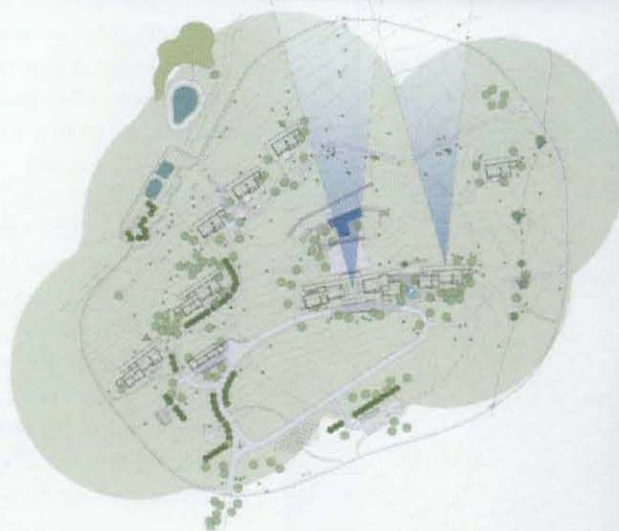
But even purists allow that there are countervailing principles in this debate. It's not just a building's bulk that determines whether it's wasteful but also its formal complexity; the goal is to capture the maximum volume with a minimal amount of materials. "You can build a big, simple volume economically or build a smaller building that's really formally complex and has way too many bumps," MacKay-Lyons says. He points out that a complex form also has a poor surface-to-volume ratio, making it more costly to heat and cool.

In theory, other small-footprint devotees might justify a large green house if it's offset by a low-impact lifestyle. Call it a household's green balance sheet. Colin Cathcart, AIA, a principal of Kiss + Cathcart Architects in Brooklyn, N.Y., feels strongly that an eco-friendly project needs to be sensibly sized. However, he says, "If you can afford 3,000 square feet to 4,000 square feet within reach of transit, then maybe" it could be considered sustainable. He'll even occasionally accept the built-in contradictions of big green houses as the price to be paid for experimenting with sustainable technology. "Sometimes people who have a lot of money can invest in new green technology, and that's a great way to jump-start a new market," he says. "But I don't think anybody should be under the illusion that putting in 3,000 square feet of bamboo flooring makes everything OK."

Paula Baker-Laporte, AIA, agrees. There was a time when she didn't think twice about designing a 10,000-square-foot home for a client. But now her Tesuque, N.M.-based firm, Baker-Laporte & Associates, is concentrating on its trademark EcoNests—roughly 2,000-square-foot homes with clay-and-straw wall systems. "We encourage

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The main house's breezeway (right) and porte cochere (below, middle) and carefully placed windows throughout the compound cross-ventilate the interiors without wasting energy. Sustainably harvested Indonesian hardwood forms the window and door frames.





a sustainable and beautiful roofing solution. Like many of the home's other materials—among them brick walls and pine roof timbers—the thatch comes from nearby sources.

The region suffers from periodic droughts, making water conservation a crucial issue. All gray water and even blackwater produced at the lodge travels through a series of anaerobic and aerobic cleansing filters. The purified water is used for irrigation and for a watering hole that attracts lions, rhinos, giraffes, and other wildlife. Jennings and Tarnopolsky also designed man-made swales to collect rainwater and funnel it into landscaped areas, which contain native and drought-resistant plantings. They took advantage of the area's warm days and cool nights, too, by orienting the buildings to the north for solar gain; at night, concrete floors emit the heat they've stored during the day. "There is radiant heat, but you don't usually need it," Jennings says.

His parents' respect for the South African environment clearly runs deeper than a simple admiration of wildlife. Indeed, their carefully planned house shows their commitment to preserving an extraordinary landscape for the next generation.
—*meghan drueding*



Thatched roofs, visible from inside and outside the house, root the project in the local vernacular while serving as a long-lasting, renewable building material.

project:

Lengau Lodge, Vaalwater, Limpopo, South Africa

architect:

DRY Design, Los Angeles

general contractor:

RO-AL Construction, Randjiesfontein, Gauteng, South Africa

project size:

12,863 square feet

site size:

7 acres

construction cost:

Withheld

photography:

Undine Pröhl



and big green

a small footprint, but it's all relative to what the family is doing in there," she says. "A family might want a large house, but if they're going to work in their home, that's a credit in the other direction. And some of my wealthier clients who had bigger spaces were the ones who did the eco-prototyping on water collection and sewage features, so I don't want to put them down."

large and lean

There's been some browbeating in the environmental movement about how people should live. Often, green advocates try to appeal to the guilt factor of building big. But the idea of asking people to change their values to align with a different point of view strikes some architects as presumptuous, and therefore, as a failed strategy. "There's a large segment of humanity that we'll never access if we're asking them to change their values," Hosey says, "and it's not my place as a designer to ask them to do that. But that doesn't mean we can't do things that challenge them or at least provide a better model."

Angela Brooks, AIA, a principal at Pugh + Scarpa Architects in Santa Monica, Calif., is similarly convinced that taking the high moral ground is counterproductive. Although the energy-conscious firm is doing few single-family homes these days, she does not object to green behemoths, as long as construction waste is kept out of the landfill. "If a client has a piece of property that's big enough, we'll build a 5,000-square-foot house for them and make it sustainable," she says, adding that the size issue should be put into broader perspective. Even in America, she says, we're focusing on the less than 2 percent who can build these houses, so why not?

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Shaded by mature trees and clad in plantation-grown New Zealand plywood siding, the charcoal-stained house stays cool year-round.

building on tradition

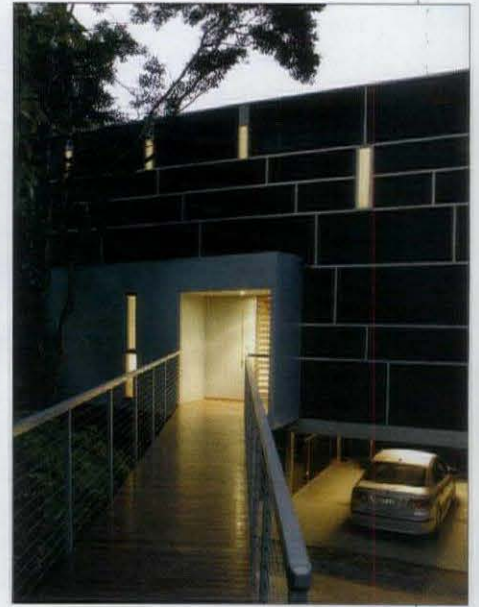
australia's natural environment is harsh, unpredictable, and beautiful—conditions that cause inspiration and perspiration among the country's residential architects. "It's a climate that cannot be ignored, and it creates a larger environment that demands utmost respect," explains Shane Thompson, FRAIA, a principal of Brisbane, Australia-based Bligh Voller Nield.

Mature trees, abundant wildlife, and views to the Brisbane River—these were the assets Thompson plumbed in his design of this 3,207-square-foot house. "I spent a lot of time on the site with my clients," he says. "I would estimate that we spent five or six hours over three or four visits before we started talking about the design."

Thompson oriented the house toward the north and east to maximize passive-solar gain and to capture the southeast and northeast breezes. "It also affords privacy to and from adjoining properties while taking advantage of the larger garden areas to the north and east," he explains. Steel footings raise the house, maintaining the natural terrain and the unfettered movement of animal life. The raised platform also protects the house from flooding during heavy rains.

Thompson wanted a small footprint, so he built up. Cars, storage, and two rainwater-collection tanks occupy the ground floor. The first level contains the main living areas, including a double-height space that opens onto a large north-facing deck. A master bedroom/studio overlooks the two-story living space.

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A lightweight, easily disassembled steel frame lifts the house above the ground, leaving the topography intact and permitting the movement of native animals. On the ground level are rainwater-collection tanks, parking, and storage.

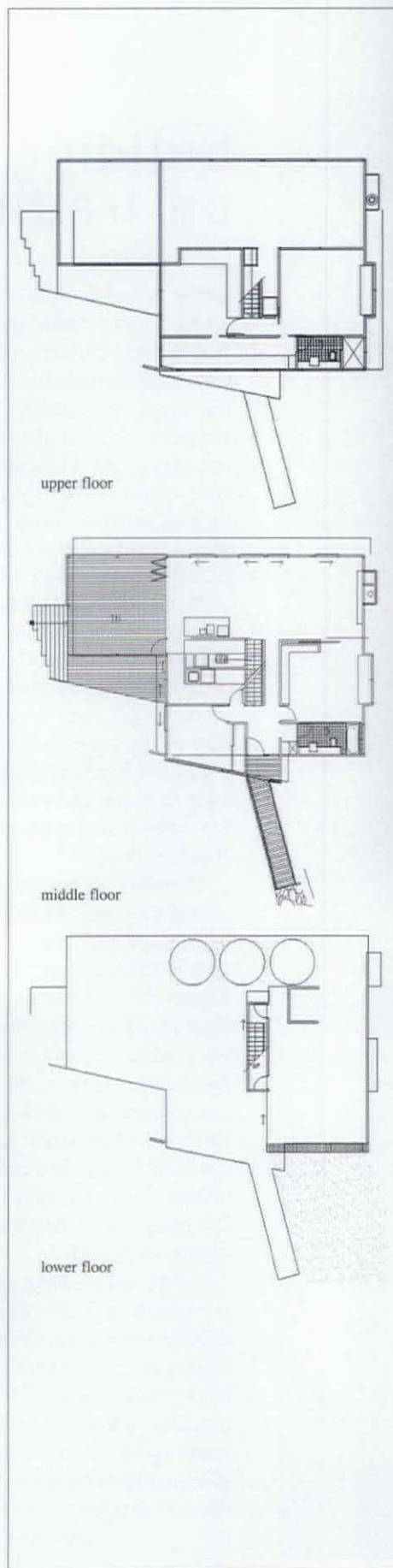


and big green

In fact, giving clients the green light to live large can be a good thing, says Peter Q. Bohlin, FAIA, a principal with Bohlin Cywinski Jackson, Wilkes-Barre, Pa. His reasoning: Substantive environmental measures often result in buildings people love, which ensures that they will be used for a long time. In addition to passive-solar strategies, he is enthusiastic about sod roofs, recycled timbers, and geothermal heating. "In my mind, for any kind of building or at any scale, those things are not only ethical but make for buildings with greater pathos," Bohlin says. And even large houses benefit from cleverly combined functions. "To make a stair that is also a place to sit, to make a fireplace that itself is also a place to gather, I think makes for more touching and powerful architecture."

As reluctant as environmentalists may be to design giant green houses, some see a silver lining in the opportunity for education and compromise. When Warren, Vt., architect John Connell, AIA, designed a 7,000-square-foot home for empty-nesters that could be closed down to 1,800-square-foot for 90 percent of the year (thanks to an internal thermal barrier), he deemed it a success. Most of his clients, he says, are either building empty nests or second homes; they've been around long enough to know who they are and the damage their house can do.

"A family is about values," says Connell, founder of 2morrow Studio. "I can get most of my clients to look 100 years down the road and think about the house as an expression of the values they hold. Do they want their children to say that mom and dad were idiots? If you can get people to be more sustainable without compromising quality of life, it will spread to the next generation." ra



The wide-open interior (right) lives large with a double-height ceiling; folding doors connect to a north-facing covered deck. Large trees keep the main living space and master bedroom/studio (above) private.





Although building codes and budgetary constraints prevented a more extensive green program, which might have included solar-powered energy and hot water, Thompson managed to eke out a sustainable strategy. "Materials are selected wherever possible for their low embodied energy and are designed for easy reuse in the future," he says.

All timber products come from plantation-grown sources. An engineered passive-ventilation system (large windows and doors, high-level roof openings, and permeable walls) and the stack effect cool the house. Energy-efficient light fixtures and appliances and water-efficient faucets conserve resources. The sewage line is designed for future connection to a gray water-treatment system when local building codes allow it.

Thompson designed the home to fit not only the site but also the context. Originally a farming area marked by utilitarian agricultural buildings, the region is now a leafy suburb of modernist housing. "This lightweight house and the tradition of contemporary lightweight housing in Australia, along with the respect for the climate, build on those traditions," he says. —*n.f.m.*



Shane Thompson, FRAIA, designed the house on a budget, using a palette of plantation-grown pine, plasterboard, and corrugated-metal roofing. Blackbutt wood flooring with slight grain variations also add style without breaking the bank.

project:

Gully House, Brisbane, Queensland, Australia

architect:

Bligh Voller Nield, Brisbane, with Daniel R. Fox Architect, Brisbane

general contractor:

Warfield Construction Services, Kenmore, Queensland

project size:

3,207 square feet

site size:

0.16 acre

construction cost:

Approximately \$91 per square foot

photography:

David Sandison





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green piece

when it comes to roofs, sod is in the details.

by nigel f. maynard

The temperature atop Chicago's City Hall building on an average summer day is usually 14 degrees to 44 degrees cooler than the county office building across the street. The reason: the county building has a typical black-tar roof, while City Hall has a green roof planted with grass, plants, and flowers.

The idea of planting grass or other vegetation on the roof of a building or house may seem like a holdover from the '60s counterculture movement, but proponents say such roofing systems are the solution to a wealth of environmental problems plaguing cities and jurisdictions across the country.

"Green roofs reduce resource consumption and are restorative in nature," says Steven Peck, founder and president of Green Roofs for Healthy Cities, a Toronto-based nonprofit industry association and research network. "They clean the water, clean the air, and contribute to the health of a city."

grow your own way

According to GRHC, a green (or sod) roof is actually a multilayer system consisting

of waterproofing and root-repellent membranes, a drainage system, filter cloth, a lightweight growing medium (soil), and vegetation. Green roofs may be installed as modular systems—with all of the aforementioned elements already prepared in movable, interlocking grids—or as individual components that are installed separately.

There are three types of sod roofs: intensive, semi-intensive, and extensive. The green roof research program at Michigan State University reports that intensive green roofs "use a wide variety of plant species that may include trees and shrubs, require deeper substrate layers, are generally limited to flat roofs, require intense maintenance, and are often parklike areas accessible to the general public." Peck says such roofs also have a higher load capacity and, thus, are often used as rooftop decks.

Extensive roofs, on the other hand, are limited to herbs, grasses, mosses, and drought-tolerant sedum. "They are low-cost, low-maintenance, low-weight, and usually [measure] less

than six inches" deep, he continues. What's more, extensive roofs are not designed for public occupation. Semi-intensive roofs, meanwhile, combine the two systems and measure about six inches deep.

What are the benefits of planting grass on your houses? Apparently, there are several. Among other things, a green roof "can add great insulative value," says Lori E. Ryker, a principal of Ryker/Nave Design in Livingston, Mont. "There's a practical side to it." Laura A. Blau, AIA, LEED AP, a principal of Philadelphia-based BluPath Design, explains the benefits in this way: "The roof is not getting direct sunlight, so it's a good insulator for the house." At the same time, "it retains water, which helps keep the structure cool."

A green roof also helps cool urban areas by reducing

the so-called "heat island effect"—an occurrence in which dark surfaces, such as asphalt roofs in a city, absorb sunlight and radiate it back into the atmosphere as heat. It's this effect that makes the Chicago county building so much hotter in the summer.

In areas where storm water runoff is a problem—nearly everywhere, as it happens—green roofs help reduce stress on sewer systems in periods of heavy rain. "The roofs hold the water until it goes back into the atmosphere through evaporation," Blau explains, or they delay the time when runoff occurs. In fact, a green roof may retain up to 90 percent of the rain that falls on it, depending on the depth of the growing medium, GRHC says, and it acts as a natural filter for the water that does run off.

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Courtesy Green Roofs for Healthy Cities

The intensive garden roof on the North Beach Place mixed-use project in San Francisco creates 1.9 acres of outdoor space for residents to enjoy. The roof also helps cool the affordable development's 341 units.



Courtesy GreenGrid



Courtesy National Research Council of Canada, Institute for Research in Construction

A cost-competitive alternative to traditional built-in-place green roofs, the GreenGrid system from Weston Solutions (left) consists of pre-planted modules that can be placed directly on a roof with sufficient structural capacity. The illustration (above) identifies the components of a traditional green roof.

Sod roofs also recover lost green space, filter particulates from the air that move across the roof surface, reduce energy consumption, and improve sound insulation. Some architects even use sod roofs to add aesthetic appeal to a house. “The way we approach design work is to first look at site appointments,” says Eric J. Cobb, AIA, principal of Seattle-based E. Cobb Architects. “The overlapping of landscape and architecture is very rich,” he adds, “and the green roof is a good way to do that. It’s a good way to lift the ground plane up.”

seed money

Green roofs are extremely popular in Asia and Europe—particularly in Germany, where it’s estimated that 10 percent of all flat roofs are green. They’re also widely used in Switzerland, France, and Italy. Such is not the case in this country, however.

According to MSU’s green roof research program, green roofs are less ubiquitous in the United States due to a general lack of awareness,

limited quantifiable data about their benefits, and a lack of government incentives or tax breaks. “In Europe, [government officials] were able to apply public incentives and regulatory drivers to help stimulate the market,” Peck says, adding that the same has to happen here before green roofs will catch on.

To some extent, they already are. It’s no accident that Chicago City Hall has a green roof: Mayor Richard M. Daley has vowed to make Chicago the leading U.S. city in the development of policies and programs that support green roof installation. Others—New York City, Washington, D.C., and Portland, Ore., for example—also have experienced an increase in green roof installations. In fact, a recent survey of GRHC members reported more than 80 percent growth in U.S. green roof square footage in 2004 and 2005.

Today green roofing systems are readily available from a number of manufacturers, including American

Hydrotech in Chicago; Building Logics in Virginia Beach, Va.; and Weston Solutions, a Chicago-based company offering the GreenGrid roofing system for homes and smaller facilities. Despite their increased usability and ease of installation, Blau warns of one ongoing drawback: cost. Indeed, architects who are sold on green roofing and its benefits admit it’s hard finding clients who can afford it.

“It’s true a green roof costs significantly more than a traditional roof,” Peck acknowledges, “so there are barriers to use.” But if a builder is doing a subdivision, for example, there are obvious economies of scale, he adds. Some jurisdictions even offer public and private funding to promote green roofs, which he says can also lower the cost.

weed whacking

As with most materials, green roofs bring their own unique challenges. Structural vapor considerations,

for example, are important, especially if the roof will double as an outdoor space. “It’s a little heavier, but it’s easy to design [one] for a new house,” Blau says. “In a retrofit situation, there’s more investigation involved.”

Design is important too. Alison Ewing, AIA, LEED AP, first designed green roof systems as a principal of William McDonough + Partners in Charlottesville, Va., so she’s well-versed in the nuances of incorporating sod into elegant architecture. “The biggest concern for us is aesthetics,” says Ewing, now a principal at Hays + Ewing Design Studio, also in Charlottesville. “Integrating [the green roof] into the overall design idea is a challenge. It has to look seamless.”

Cobb agrees, noting that proper detailing will help a design maintain an appealing appearance. “I don’t want to see scraggly weeds hanging off the sides, so the technical resolution of the edge of the roof is important to the overall appearance,” he explains.

Once such accommodations are made, the elegance and unlimited potential of green roofs become obvious. “It’s important that we start constructing buildings that have a net positive impact on the environment,” Peck reasons. “A green roof is a way to do it.” *ra*

For more information on green roofing, please visit www.residentialarchitect.com.

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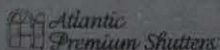
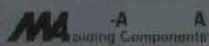
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by rebecca day

In the early days of multi-room audio, homeowners gladly took what they could get: AM/FM radio, a CD player, and maybe a tape player delivered to a few zones around the house. From remote keypads, they could control volume, advance tracks forward and back, and choose radio station presets. But they had to store presets in their own memories, too, since there was no return data to tell them which station they were hearing.

Later on, Category-5 wiring to and from keypads gave consumers limited feedback from tuners, CD players, and cable TV music channels. You knew you were listening to, say, CD No. 3 in the changer or preset No. 5 on the FM dial, but if you couldn't remember that it was Kim Carnes who sang "Bette Davis Eyes," the display couldn't help you.

The ICS system has four controller options. The system control keypad with LCD display includes eight backlit, custom-labeled sound-source keys and seven backlit system-control keys.



The IntelliControl ICS modular multizone receiver from Niles Audio distributes sound from as many as six audio sources—including AM/FM and satellite radio, CD players, and iPods—to up to 30 zones of the house.

The digital era has changed everything. Our iPods feed us the names of the track, artist, and album that's playing. Satellite radio providers give us that information plus the scores for the baseball and football games we follow. It's no longer enough just to hear music or entertainment. We want to know who, what, when, and how much time is left. It's the information age, after all, and we expect our electronics to keep up.

Add to that the variety of music sources we want at our fingertips, and the old sound systems are no longer suited to the task. The successful multiroom systems of the

future will pack the flexibility and bidirectional communications functionality current and future digital audio sources will require—and will be easy to use, to boot.

end zone

Miami-based Niles Audio Corp. has a leg up on the future with IntelliControl ICS (Integrated Control Solutions), its latest and greatest distributed-audio system. Unlike conventional multizone systems, IntelliControl ICS can be personalized to a homeowner's specific audio needs. If you want to know the name of the Bonnie Raitt song playing on XM satellite radio, the display on any ICS interface—touchpanel, wall-mounted keypad, or handheld remote—will read out that it's "Trinkets" from the "Souls Alike" album.

It's not just about convenience, though. Menu-driven digital sources demand user interaction for consumers to be able to operate the device. To browse through

a category of satellite radio stations, you need to be able to see the category you're in. To get to the MP3 player's list of playlists, you have to get to the playlist menu first.

"Older multizone systems pretty much came the way they came," says Frank Sterns, president of Niles Audio. "You'd stack a CD player and radio on it, and in order to customize it you had to write custom software for each touchscreen or keypad to make it do what the customer wanted. It was very expensive because of all the programming." Niles addressed the cost issue with a system that eliminated the programming by offering a set group of sources, but that solution had limitations too. "You could have AM/FM and then three other sources that were infrared-controlled," he says, but that was it. "Installers didn't have to do any programming," he adds, "because it wasn't very flexible."

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Sterns says IntelliControl ICS brings flexibility back to users without the need for programming by the installer. The system uses Ethernet-based Web server technology to go out and look at connected devices and then automatically draws the proper interfaces for whatever equipment is connected to the system. At the heart of IntelliControl ICS is the GXR2 receiver, which is based on interchangeable source-card modules. Homeowners choose modules according to their particular tastes. For example, one family could choose two satellite radio tuners and four iPods—one for each member of the family; another might opt for six separate sources: an AM/FM radio, Sirius tuner, CD player, satellite TV music channel, MP3 player, and music server.

Card modules can be swapped or added at any time, and as new technologies emerge, the system can be updated with new cards to add new sources. The company is now shipping an HD Radio module and will ship a music server module this spring; a video component also



will debut within a year. When the video system launches, the quantity of available sources will expand to a number that has yet to be determined. It will support up to 30 zones.

Niles Audio has taken the Switzerland approach to satellite radio, offering both XM and Sirius (while they exist as separate companies) to meet the tastes of its customers. "One customer is going to pick Sirius to hear Howard Stern, and someone else is going to want XM radio to [keep up with a] favorite baseball team," Sterns says. "We want to serve both." The system can also play "legacy audio" music from such products as CD players, cable TV music channels, and music DVDs, although the data from those devices can't be sent to keypads or remotes. In those cases, you can hear a satellite radio channel but not see the song information or channel number.

User interfaces come in the form of remote controls, keypads, and touchscreen controllers. From each device, users can control sources for that particular room and for any zone in the

house. For parents wanting to issue an all-off command without having to do nightly rounds, this is an especially welcome feature.

retro chic

Unlike most sophisticated whole-house audio systems, IntelliControl isn't just for new-construction projects. Although the system can be wired to keypads with Cat-5 cable to take advantage of the structured wiring systems currently in homes, it doesn't have to be.

"It's completely retrofitable," Sterns says. In fact, the system can be installed as a wireless solution using the ZigBee meshed-network wireless networking standard. ZigBee is a radio frequency standard that can operate through walls and floors, making it particularly useful for outdoor audio systems, where wired keypads and touchscreens aren't practical. The system can even incorporate a combination of wireless and wired keypads if a homeowner chooses.

The ICS system carries a premium compared with other Niles Audio systems, however. The company positions IntelliControl ICS

IntelliControl ICS is completely configurable to a homeowner's audio needs. Niles Audio sells interchangeable source-card modules (left) that can be added to the system for increased versatility. The iRemote hand-held remote control (below) displays metadata, such as song titles and artist names, so users know what they're hearing. The remote also allows them to scan, search, and play content at will.

as its high-end system and sells it exclusively through select custom-installation professionals who cater to custom and semicustom home buyers. The minimum price consumers should expect to pay for the receiver, three card modules, user interfaces, and speakers for six zones is \$5,000. The price goes up as you add rooms, interfaces, and audio sources to the system.

Sterns says the company is looking at IntelliControl for upscale multidwelling units as well. "We're seeing a trend in the market where people are downsizing after their kids are gone but still wanting an upscale lifestyle," he says. "They're getting rid of the house but moving into a luxury condominium, where they want amenities like high-end kitchens and whole-house audio. This would be a perfect fit." ra

Rebecca Day specializes in writing about home electronics. She can be reached at customhomerd@aol.com. A version of this article originally appeared in residential architect's sister publication CUSTOM HOME.

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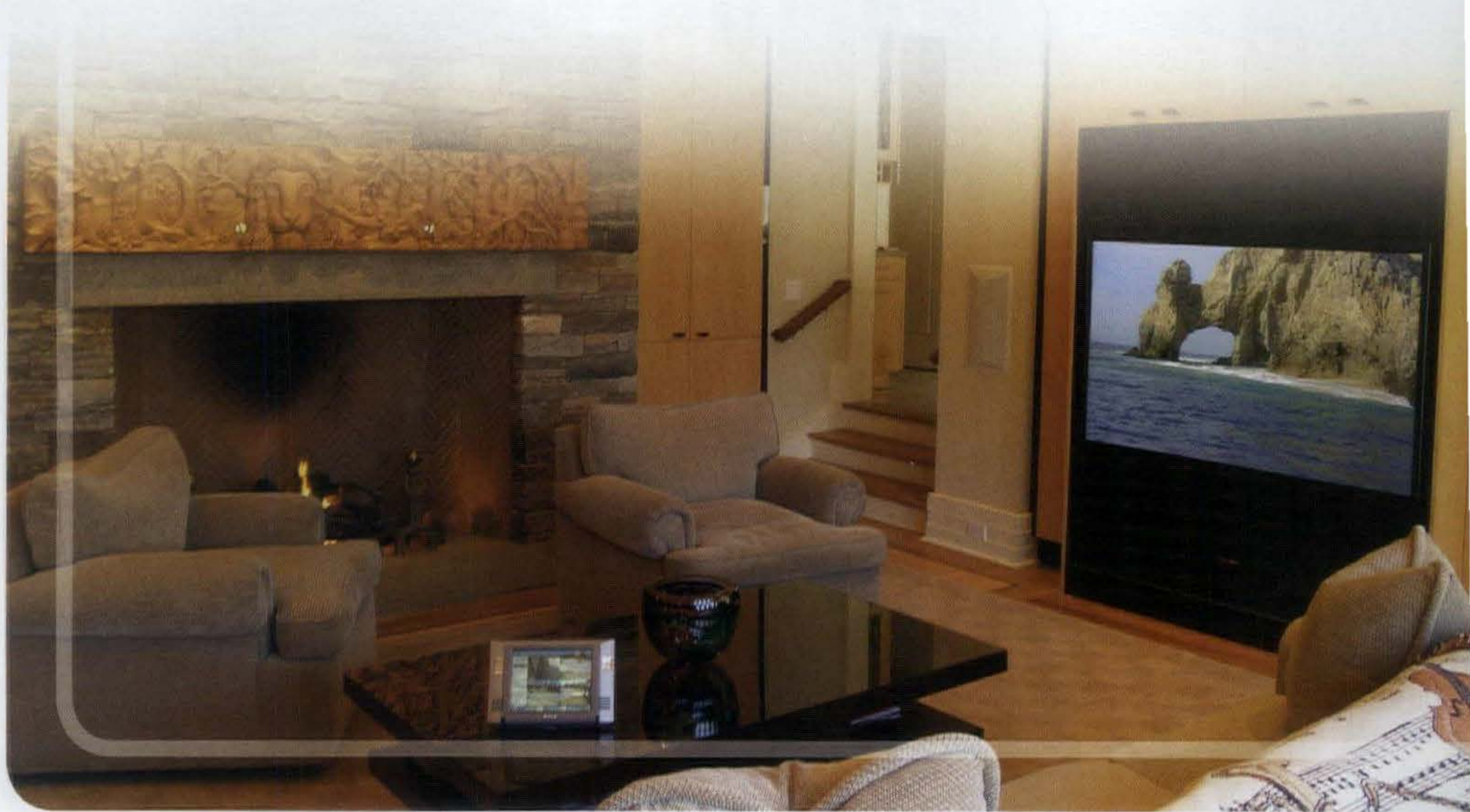
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– Eric Moser, Residential Designer (left)
& Bob Turner, Developer (right)
Habersham, SC



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good form

"Any company that quotes [environmentalist, entrepreneur, and author] Paul Hawken on its Web site is all right by me," Dean says of 3form, a manufacturer of environmentally friendly resin panels that can be specked with a decorative inner layer of fabrics, metals, and other materials. Dean says the Salt Lake City company's signature eco-resin appeals to her because "it's composed of recycled materials and is chemically inert and open to custom creativity." What's more, the product can be purchased in sheets measuring up to 48 inches wide by 120 inches long. 3form, 800.726.0126; www.3-form.com.

blue-ribbon panels

Architects know all too well the benefits of structural insulated panels—the tight, well-insulated building envelope they provide chief among them—and Dean is no exception. "Since structure, insulation, and sheathing are provided in one step, SIPs can [reduce] construction time," she



explains. The panels, which are constructed of foam sandwiched between oriented strand boards, are also lightweight, strong, and resource-efficient. Structural Insulated Panel Association, 253.858.7472; www.sips.org.

clay time

For wall surfaces, eco-conscious AMD eschews paint in favor of earth plaster from Albuquerque, N.M.-based American Clay Enterprises. Manufactured from natural clay and

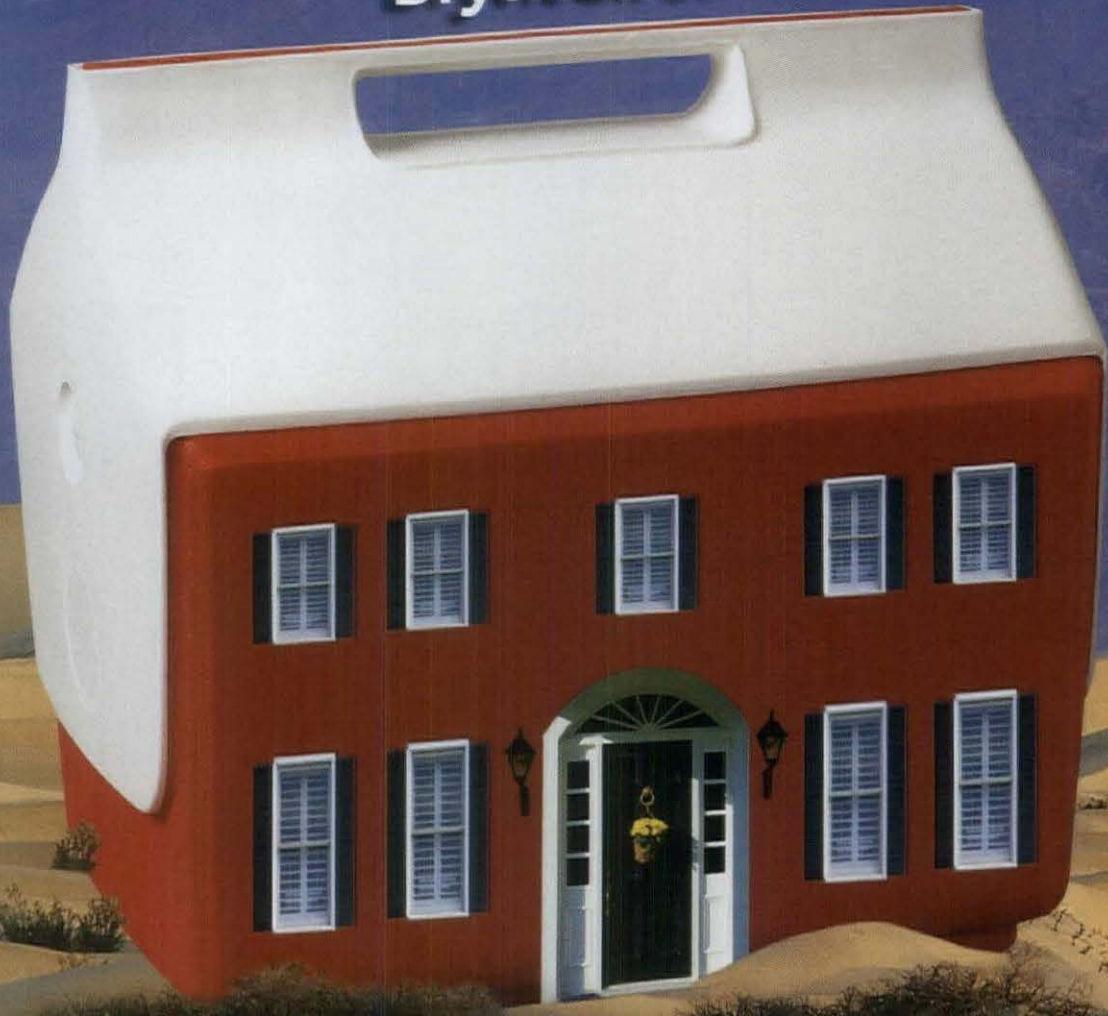
recycled aggregates, the odorless, nontoxic material is said to be mold- and fade-resistant. Dean says her designers love the way the product merges "natural building with mainstream construction." They also appreciate its versatility. With three finishes and 33 colors to choose from, American Clay's earth plasters can be applied "in virtually any style," she says. American Clay Enterprises, 866.404.1634; www.americanclay.com.



—nigel f. maynard

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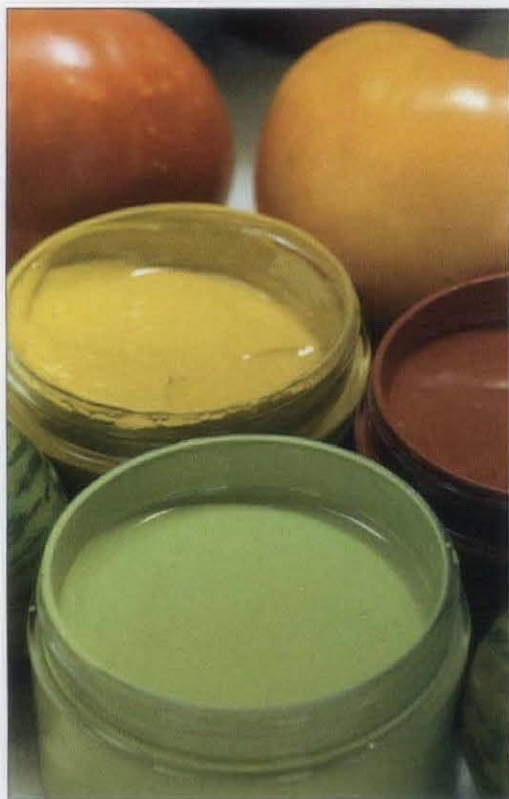


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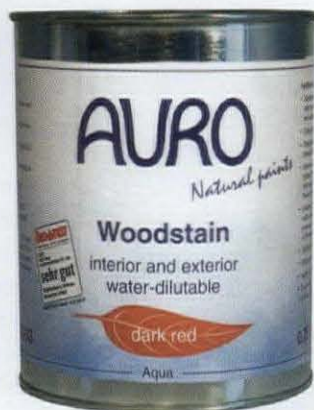
The lack of volatile organic compounds in Green Planet paints says just as much about the company's products as the conscientious manufacturing practices and natural ingredients that go into them. Handcrafting small batches of paints, for example, reduces the overall ecological impact. Renewable plant materials, including soy-based resin and clay pigments, yield rich hues that are safe enough to eat. On the menu: vibrant colors such as Wasabi green, Regret red, and Matisse blue. Green Planet Paints, 520.394.2571; www.greenplanetpaints.com.

take cover

Milliken's 180 Walls line of commercial wall coverings turns 100 percent recycled polyester yarns into art. The eco-conscious coverings go up without paste or chemical adhesives and peel off just as easily with no damage to walls. High-friction backing secures the patterns in place. Air and moisture pass through easily, inhibiting mold and



bacteria growth. What's more, the material contributes to LEED certification in three categories. Milliken & Co., 888.487.8499; www.180walls.com.



auro fixation

Protect exterior wood with Auro's natural stains. The company's semigloss washes of color are easy to apply, resist the toughest of weather conditions, and are good for the globe, to boot. Comprised of simple ingredients such as linseed and sunflower oils, ammonium soap, mineral pigments, and water, Auro can be speeded in clear or in 13 colors ranging from cobalt blue to umber. Auro USA, 888.302.9352; www.aurousa.com.

continued on page 78



strong constitution

Renewable softwood fibers and water are fused through intense heat to form Maplex—a tough, yet flexible, wall and surfacing material from EHV-Weidmann. The chemical-, formaldehyde-, bleach-, and petroleum-free product can be recycled with garden waste or with heavy paper products. Both medium- and high-density versions are pliable, allowing for creative stand-alone partitions or curved wall applications that can be punched, drilled, laminated, stained, or coated. EHV-Weidmann Industries, 800.242.6748; www.maplexmaterial.com.

growing up green

Kids can breathe easy in rooms covered in zero-VOC paints from YOLO. The company's Sprout Collection comes in six gender-neutral colors inspired by spring flora. The paints' mildew-resistant and scrubbable finishes retain a fresh look, even when play-time gets messy. Best of all, YOLO's innovative sample system reduces waste with poster-sized swatches that can be reused, recycled, or converted into gift wrap. YOLO Colorhouse, 503.493.8275; www.yolocolorhouse.com.



cool demeanor

Tex-Cote Cool Wall coating systems are said to incorporate the same technology used in stealth bombers and other military vehicles. According to their manufacturer, the heat-reflective pigments that hide airplanes can keep the outer walls of a house up to 40 degrees cooler than competing exterior paints or coatings, leading, in turn, to lower electric bills. The U.S. Department of Energy backs the claim, reporting in a recent study that Cool Wall can reduce energy costs by as much as 21.9 percent. Fade-resistant properties also help keep maintenance to a minimum. Choose from numerous colors in textured or smooth applications. Textured Coatings of America, 800.454.0340; www.texcotehomes.com.

—shelley d. hutchins

Wine Storage

Many factors go into proper wine storage. Temperature and humidity are prime considerations, affecting everything from layout to location to construction materials used. In addition to these crucial but practical concerns, homeowners should decide whether to build a room solely for wine storage or to create a showroom with furniture, lighting, and decor. By keeping abreast of the wine storage market and advising clients who have an interest in wine, builders and architects can tap into a larger market and improve their own profitability. Read on to learn about wine storage systems on the market today.

One-Stop Shopping, Factory Pricing

Building projects inevitably involve budget overruns and tough choices. One wine storage company makes it easier for you to keep costs under control.



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Circle No. 501

Westside Winecellars offers discount pricing on all wine racking, cabinets, coolers,

and accessories. Using the design wizard on the company's web site, you can assemble wine cellars for 24 to 20,000 bottles of wine, and you can choose from a large inventory that ranges from economy wine cabinets to handcarved furniture. Brands carried include Vinotemp, Avanti, Uline, and Breezaire.

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The correct storage of fine wine begins with well-thought-out racking sections that can accommodate any type of bottle or display environment. By creating racking sections of common proportions, **Baltic Leisure** pro-



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vides a system that is easier to understand and install. Only top-quality clear kiln dried cedar is used to bring you a wine storage area of unparalleled fit and finish. All storage components are partially assembled and require final assembly on site. **Baltic Leisure** also offers the very latest in wine cooling and humidity control equipment, tasting tables, and modular pre-built wine lockers.

The Perfect Wine Cellar From the Industry Leader

Bring ease, efficiency, and unbeatable service to your next wine cellar project with **The Wine Enthusiast Company**, the leader in wine cellar design for custom homes for more than two decades. The company's built-in wine cellars and beverage centers range from 25 to over 200 bottles and take up little floor space. With a front-venting design, they can be built into kitchen cabinets, entertainment centers, or bars. Wine



THE WINE ENTHUSIAST COMPANY
Circle No. 503

Enthusiast's professional consultants conquer any challenge to help you build the perfect wine cellar; whether you are designing comprehensive wine storage for your custom home or simply converting a spare closet.

Keep reading through this special section for more information on fine manufacturers of wine storage products.

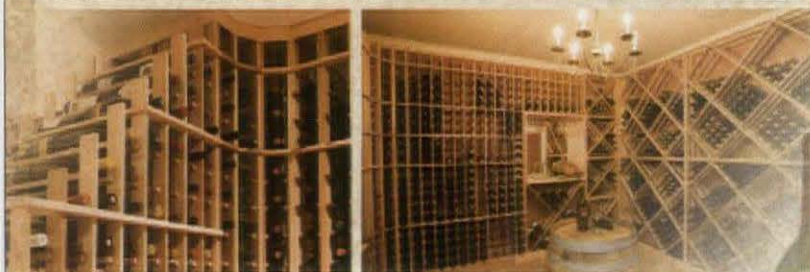
- **Westside Winecellars:**
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- **Baltic Leisure:**
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wine storage

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sasaki associates

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Sasaki Associates wanted to demonstrate its holistic approach to sustainability when deciding on new offices for its San Francisco branch. “The main [goal] was to get the amount of driving we do down,” says Tim Stevens, AIA, one of the firm’s principals. “Aside from that, we were looking for a space that would showcase our ideals.”

Sasaki chose to relocate to an existing building near several public transportation stops so employees could take the train or bus to work. Led by project architects Stevens and

Vitas Viskanta, AIA, LEED AP, another firm principal, Sasaki gutted the space, repurposing many exposed surfaces as finish materials. It reused built-ins from its old office and opted for sustainable new materials such as low-VOC paints and recycled-content carpet.



Photos: Robert Benson



Sasaki gained an appealing work environment, while the Earth’s atmosphere lost some carbon dioxide emissions. According to Stevens, just 5 percent of the staff now drives to work, down from 75 percent before the move.

—megan drueding